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ICONES PLANTARUM;

OR,

FIGURES, WITH DESCRIPTIVE CHARACTERS AND REMARKS,
OF NEW AND RARE PLANTS,

SELECTED FROM THE

KEW HERBARIUM.

FOURTH SERIES.

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HONORARY STUDENT OF CHRIST CHURCH, OXFORD;
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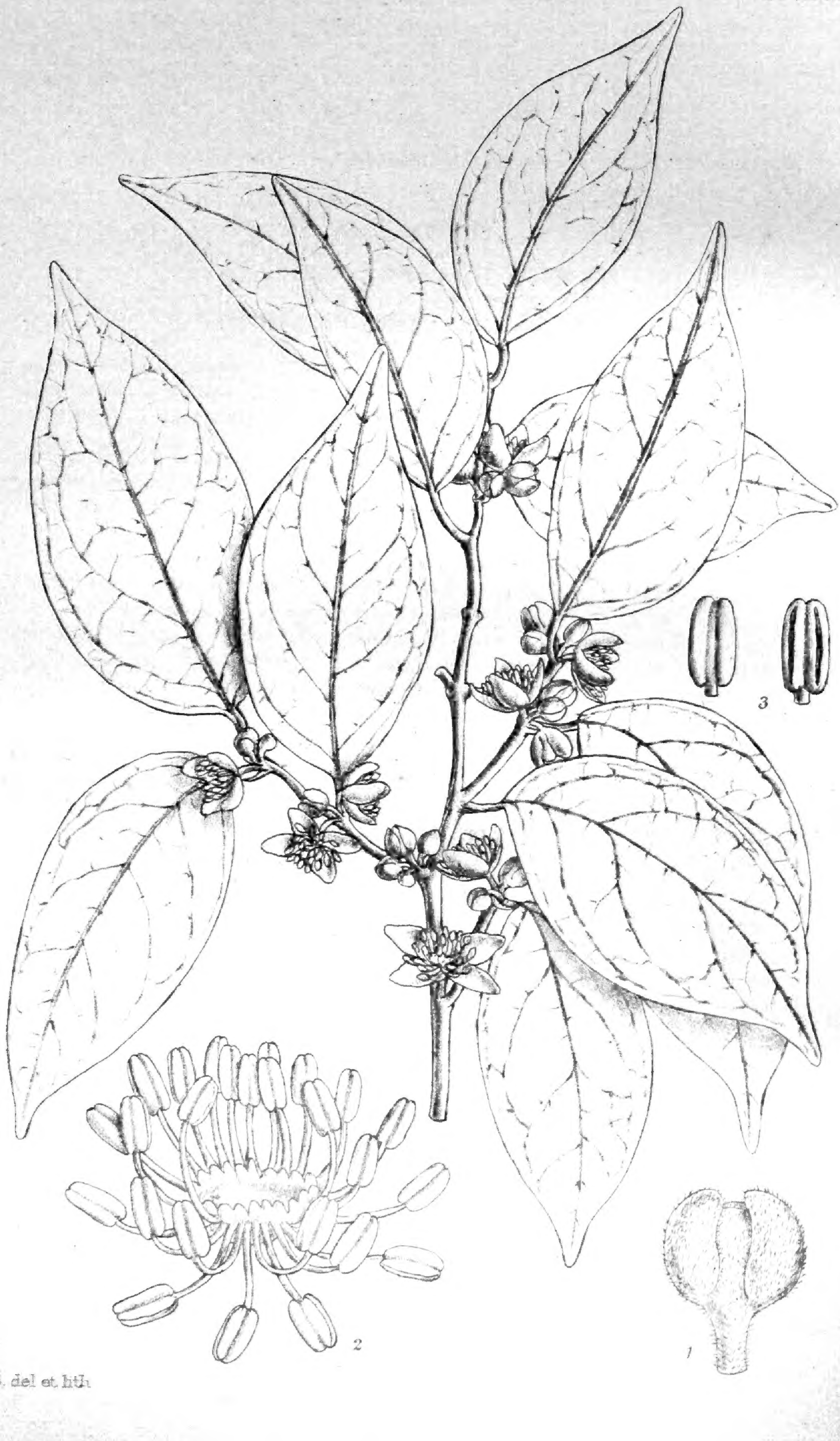


M. S. del et lith

Plate 2701.

HEMICYCLIA PORTERI, *Gamble.*

Euphorbiaceæ. Tribe Phyllantheæ.

H. Porteri, *Gamble* (*sp. nov*); *H. venustæ*, Thwaites, quoad folia similis, sed staminibus numerosioribus differt; a *H. Gardneri*, Thwaites, foliis integerrimis acuminatis, floribus majoribus distincta.

Arbor parva vel frutex 20–30-pedalis, dioica, ramulis pallide fulvis lenticellis multis albis ornatis. *Folia* breviter petiolata, ovata, acuminata, coriacea, integerrima, apice retusa, 2–3 poll. longa, 1–1½ poll. lata, basi inæqualia, supra nitida, glabra, subtus reticulata, glabra vel secus costam glandulis aureo-tomentosis ornata, venis primariis lateralibus curvatis prominulis utrinque 5–6. *Flores masculi* 5–7 lin. diametro, in ramis infra folia vel in axillis foliorum fasciculati, pedicellis 3–4 lin. longis, ad basin bracteis minutis munitis; fl. feminei ignoti. *Sepala* floris masculi 4, rotundata, imbricata, 2 interiora majora, extus aureo-pubescentia, intus etiam præcipue secus nervos pubescentia. *Petala* 0. *Stamina* 24–25, glabra, circa discum centralem latum margine undulatum affixa, filamentis ½ lin. longis, antherarum loculis parallelis longitudinaliter dehiscentibus.

India: Warsanad Valley, Madura District, Madras, at about 2,000 feet, *H. J. Porter*, April 1897.

This small tree is found growing gregariously in moist soil near streams. Its wood is very hard and close-grained, resembling boxwood, and weighs about 61 lbs. per cubic foot. It is locally called 'Agilwood,' which is usually the name of *Aquilaria Agallocha*, with which it seems to have been confused. It is used for posts and rafters, and much esteemed.—J. S. Gamble.

Fig. 1, a flower-bud showing æstivation; 2, andrœcium and disc; 3, anthers. *All enlarged.*

M. S. del et lith

Plate 2702.

CÆSALPINIA ROSTRATA, *N. E. Brown.*

Leguminosæ. Tribe Cæsalpinieæ.

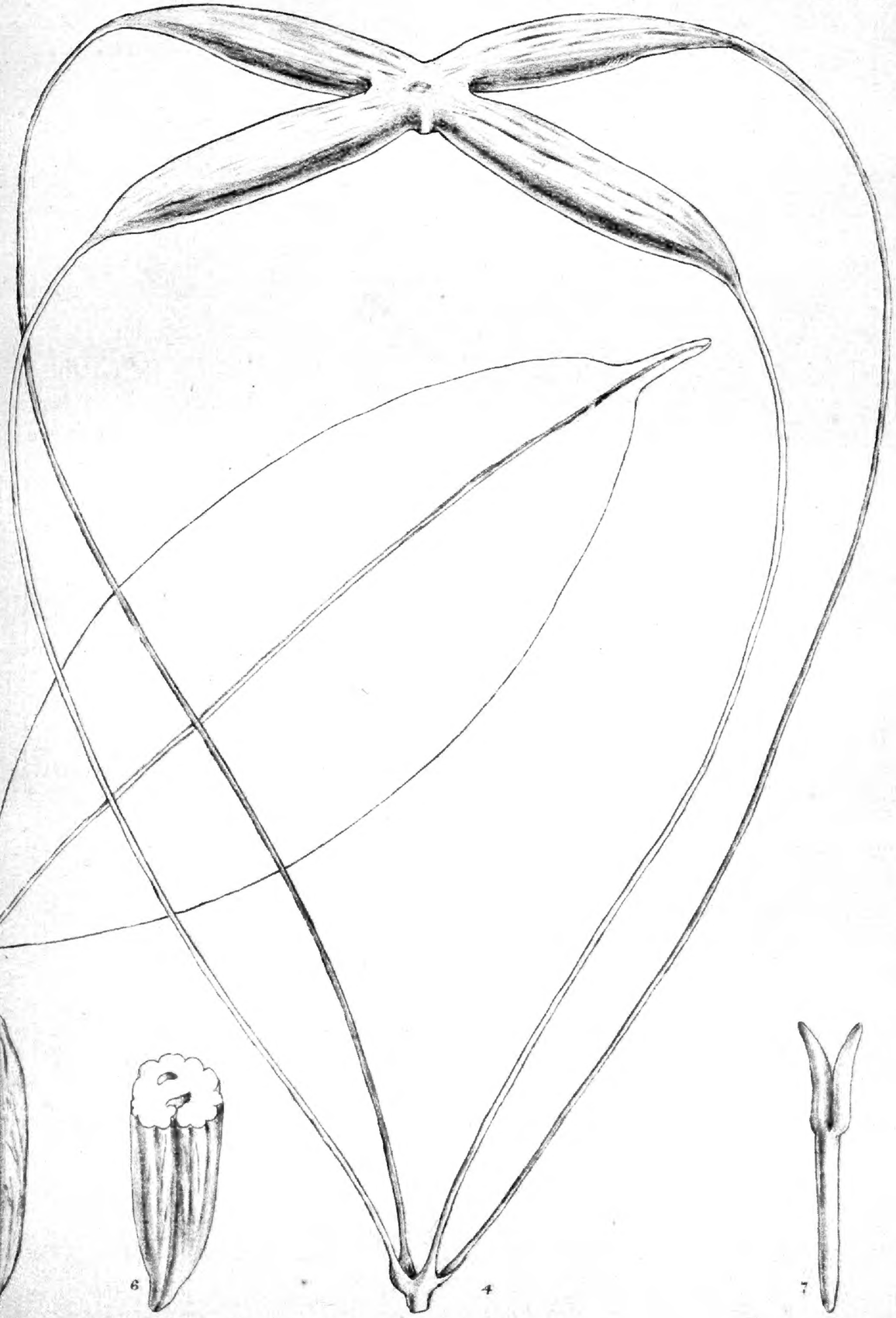
C. rostrata, *N. E. Brown* (*sp. nov.*); species ab omnibus hucusque cognitis sepalo inferiore rostrato distinctissima.

Frutex sarmentosus, 8-pedalis. *Rami* aculeati, cortice cinereo; ramuli juniores puberuli. *Folia* abrupte bipinnata; pinnæ 3–8-jugæ; foliola 6–11-juga, 2–6 lin. longa, 1–2¼ lin. lata, oblonga, obtusissima, utrinque glabra, infra glanduloso-punctata. *Racemi* terminales, 3–5 poll. longi, multiflori. *Bracteæ* caducæ, submembranaceæ, orbiculatæ, apice emarginatæ, aristatæ, profunde concavæ, rubræ, puberulæ. *Pedicelli* 1½–2 lin. longi, puberuli. *Calyx* ad discum inæqualiter 5-lobus, fusco-ruber, puberulus; lobus inferior 4–5 lin. longus, cucullatus, apice dorso longe rostratus. *Corolla* rosea, inæqualiter 5-petala; petalum superius 4½–5 lin. longum, superne 2 lin. latum, spathulatum; cetera 6 lin. longa, 4½–5 lin. lata, latissime obovata, brevissime unguiculata. *Stamina* 10; filamenta rosea, basi lanata; antheræ brunneæ, polline luteo. *Ovarium* ovatum, compressum, 6-ovulatum, glabrum; stylus elongatus, filiformis. *Legumen* 1½ poll. longum, 10 lin. latum, oblongum, oblique truncatum, turgidum, glabrum.

South Africa: Figured and described from specimens of a plant cultivated in the Botanic Garden, Durban, Natal, raised from seed received from Delagoa Bay, *Wood*, 7934.

This species differs from all the others at present known in having the lower sepal very distinctly beaked. Mr. Wood states that it has not yet perfected seed at Durban.—N. E. Brown.

Fig. 1, deciduous bract from base of pedicel; 2, flower-bud; 3, upper petal; 4, a lateral petal; 5, andrœcium; 6, lower portion of andrœcium and gynæceum in section; 7, pod. *All except 7 enlarged.*



3 1 2 5 6 4 7

M.S. del et lith

Plate 2703.

LEPINIA SOLOMONENSIS, *Hemsl.*

Apocynaceæ.

L. solomonensis, *Hemsl.* (*sp. nov.*) ; species quam *L. taitensis*, Decne. fere omnibus partibus major, foliis abrupte acuminatis, corollæ tubo breviore.

Arbor usque ad 15 ped. alta (*Comins*), ramulis floriferis crassis, novellis glabris. *Folia* alterna, petiolata, coriacea, oblonga vel oblongo-lanceolata, cum petiolo 4–8 poll. longa, 1½–2 poll. lata, abrupte longeque acuminata, obtusa, basi cuneata vel subrotundata, venis primariis numerosissimis rectis tenuissimis. *Pedunculi* oppositifolii, quam flores breviores, apice furcati, pauciflori, pedicellis brevissimis crassis rigidis. *Flores* vix pollicares. *Calycis segmenta* parva, ovalia, ciliolata. *Corollæ lobi* oblique quadrati. *Stamina* medio tubi affixa, infra faucem inclusa, filamentis brevibus puberulis. *Ovarium* glabrum, 4-loculare, loculis uniovulatis, stylo incluso. *Fructus* carpella 4 (abortu interdum 3), uno sæpe casso, longissime gracillimeque arcuatim stipitata, apice tantum connata et cruciatim disposita, cum stipitibus usque 8–9 poll. longa, monosperma, parte seminifera circiter sesquipollicari, indehiscentia, demum fibrosa. *Semina* in quoque carpello solitaria, fusiformia vel oblonga, in longitudinem sulcata, transversim rimulosa, testa tenui ; albumen corneum ; ventre fere ad medium impressum ; embryo rectus, tenuis, fere cylindricus, cotyledonibus radice brevioribus.

Solomon Islands : San Cristoval, *R. B. Comins*, 132 ; chiefly New Georgia, *Officers* of H.M.S. Penguin, 1894–5 (fruit associated with leaves of *Cerbera*) ; without locality, *W. Micholitz*.

Specimens of this singular plant were first sent to Kew in 1890 by Archdeacon Comins, and it was thought it might be the original and only described species, *L. taitensis*, Dcne., which is not represented by an authenticated specimen at either Kew or the British Museum. The species inhabiting the Society and Solomon Islands are certainly very closely allied, but there are differences which seem to justify separating them rather than risk combining two under one name. The distribution of the genus is remarkable, for, so far as I am aware, it has not been found between Tahiti and the Solomon Islands, which are separated by 50° of longitude, equal to about 3,300 miles in the latitudes of these islands.—W. Botting Hemsley.

Fig 1, a flower-bud ; 2, calyx and pistil ; 3, part of corolla laid open, showing attachment of stamens ; 4, a ripe fruit ; 5, a seed ; 6, a section of the same ; 7, embryo. *All except* 4 *and* 5 *enlarged.*

1

4

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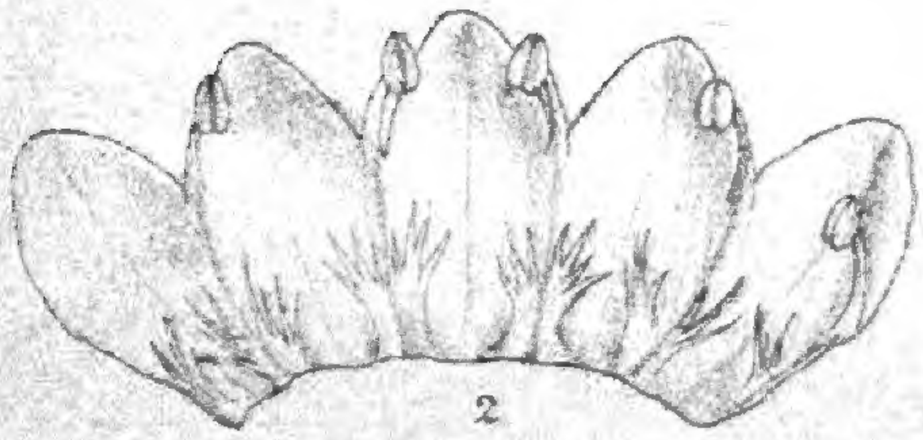


2

M.S. del et lith

Plate 2704.

CUSCUTA HYGROPHILÆ, *H. H. W. Pearson.*

Convolvulaceæ.

C. (§ **Eugrammica**) **Hygrophilæ**, *H. H. W. Pearson* (*sp. nov.*); *C. chinensi*, Lamk., affinis, sed calyce haud carinato, calycis lobis obtusissimis vel rotundatis, squamis multo minoribus differt.

Caules filiformes. *Spica* compacta, umbellata, umbellulis 5–6 breve pedunculatis paucifloris instructa. *Flores* globosi, 1–1¼ lin. diametro. *Calyx* late campanulatus, irregulariter 4–5-lobatus, ½–¾ lin. longus, persistens; lobi subrotundi vel breviter oblongi, apice obtusissimi rotundative. *Corollæ* tubus breviter campanulatus, extus inter lacinias 5-sulcatus, ¾ lin. longus, persistens; laciniæ breviter oblongæ, obtusæ, sub anthesin erectæ vel reflexæ, ¼ lin. longæ. *Antheræ* ovatæ; filamenta ⅛–⅙ lin. longa, ad basin subdilatata. *Squamæ* 10, parvæ vel subnullæ, oblongæ, 2–6-laciniatæ, jugo staminali utrinque adhærentes, inclusæ, ¼–½ lin. longæ. *Ovarium* globosum, apice fovea alta lataque instructum, stylli 2 (rarius 3) subulati, subæquales, ovario breviores; stigmata capitata, leviter lobata. *Capsula* obconica, apice alte depressa, 1–2- (rarius 3-) sperma, circ. 1 lin. longa. *Semina* subangularia, complanata, minutissime tuberculata, ½ lin. diametro.

Malay Peninsula: State of Johor; Johor Bahru, *Ridley*, 9161.

The host plant is *Hygrophila quadrivalvis*, Nees (Acanthaceæ). The fruits of this species are dry and capsular, and open irregularly near the base. These characters place the species in the section *Eugrammica*. Within this section its affinities must be sought for in Engelmann's group *Obtusilobæ*, which, like the other divisions of the subgenus *Grammica*, is most numerously represented in the New World. *C. chinensis*, Lamk., is the only other species of this group found in India, where it is not known to occur east of Silhet. It ranges from Turkey to Siberia and Japan, and southward to Tropical Africa, Madagascar, and Australia. It is also found in China as far south-west as Pakhoi, and it is not improbable that it may yet be recorded from the Malay Peninsula. *C. Hygrophilæ* also bears an external resemblance to the Australian *C. australis*, R. Br., from which it is easily distinguished by its dry fruit, fewer and more flattened seeds, smaller scales, and finer stems.

This is interesting as being the first species recorded from the Malay Peninsula, no specimens having hitherto been received at Kew from the country to the east and south of the Khasia Hills and Silhet.—H. H. W. Pearson.

Fig. 1, calyx and pistil; 2, corolla, showing also the scales and stamens; 3, capsule surrounded by corolla and calyx; 4, different views of seeds. *All enlarged.*

M.S. del. et lith.

Plate 2705.

VITEX MOOIENSIS, *H. H. W. Pearson.*

Verbenaceæ. Tribe Viticeæ.

V. mooiensis, *H. H. W. Pearson* (*sp. nov.*); a speciebus africanis omnibus panicula terminali distinctissima.

Arbor humilis, ramis subangularibus sulcatis glaberrimis vel novellis minute puberulis. *Folia* opposita, rarius subopposita, simplicia, membranacea, elliptica vel ovata, basi cuneata, apice obtusa vel subacuta, marginibus integra vel rarius ad apicem pauci-dentato-serrata, glaberrima vel rarius in nervis minute pubescentia vel scabrido-pubescentia, venis primariis lateralibus undulatis utrinque 3–5 patenti-adscendentibus distinctis, $\frac{3}{4}$–1 poll. longa, 5–7 lin. lata, petiolis tenuibus glabris 2–3 lin. longis, suffulta. *Cymæ* 1–3-floræ, pedunculis 3–5 lin. longis suffultæ, in panicula racemosa terminali laxa bracteata 1–$2\frac{1}{2}$ poll. longa dispositæ; paniculæ axis tenuis, 3–4-nodus, lineis binis oppositis minute pubescentibus instructus; bracteæ lineari-subulatæ, circa $1\frac{1}{2}$ lin. longæ. *Flores* breviter pedicellati, albidi. *Calyx* per anthesin subcampanulatus, ad medium subæqualiter 5-sectus, glandulosus, minute puberulus, prominenter nervatus, 2–$2\frac{1}{4}$ lin. longus, mox paulo accrescens; segmenta oblonga, subacuta, $\frac{1}{2}$–$\frac{3}{4}$ lin. lata. *Corolla* subbilabiata, 4 lin. longa; tubus brevis, curvatus, extus obscure puberulus, intus supra medium villosus, circa 2 lin. longus; labium posterius erectum, breviter 2-lobatum, lobis oblongis apice rotundatis, marginibus pubescentibus, 1 lin. longum; anterius 3-lobatum lobis patentibus ellipticis, medio longissimo, circa 2 lin. longum. *Stamina* didynama, vix exserta; antheræ didymæ, rimis longitudinalibus dehiscentes. *Ovarium* globosum, præsertim apice glandulosum; stylus tenuis, glaber, apice breviter bifidus. *Drupa* pyriformis, glabra, e calyce paulo accrescente exserta, 3 lin. longa, $1\frac{1}{2}$–2 lin. lata. *H. H. W. Pearson in Dyer, Flora Capensis*, v. p. 212.

South Africa: Natal; near the Mooi River, *Gerrard and McKen*, 1238.

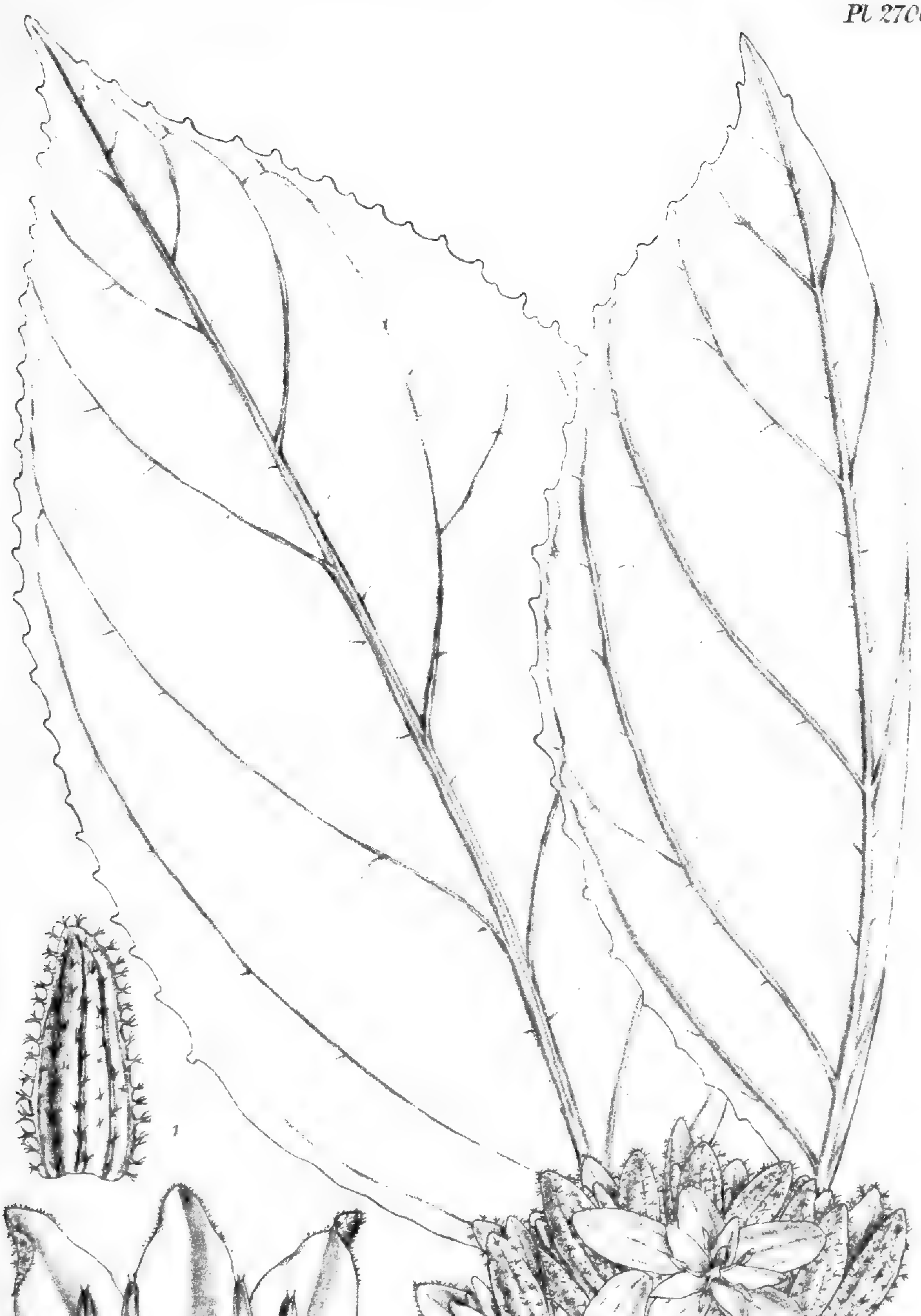
Var. **Rudolphi**, *H. H. W. Pearson* (*var. nov.*). *Rami* novelli pubescentia fulva vestiti. *Folia* verticillata vel opposita, pubescentia, petiolis pubescentibus suffulta. *Calyx* glanduloso-pubescens, dentatus, tubus 1–$1\frac{1}{2}$ lin. longus; dentes circa $\frac{1}{2}$ lin. longi.

South Africa: Delagoa Bay; Ressano Garcia, in stony places, *R. Schlechter*, 11935.

This species is the only known African member of the group *Terminales*. It is undoubtedly related to *Premna somaliensis*, Baker. It is however here placed in *Vitex* on account of its 5-lobed, subbilabiate corolla and its campanulate accrescent calyx.—H. H. W. Pearson.

Fig. 1, calyx enclosing the fruit; 2, corolla, showing the insertion of the stamens; 3, anthers; 4, ovary and style. *All enlarged.*

Pl 2706



M.S del et Lith.

Plate 2706.

PENTAPHRAGMA ALBIFLORUM. *H. H. W. Pearson.*

CAMPANULACEÆ. Tribe CAMPANULEÆ.

P. albiflorum, *H. H. W. Pearson* (*sp. nov.*); valde affinis *P. aurantiaco*, Stapf, a qua foliis glabris majoribus, bracteis majoribus, floribus albidis præsertim differt.

Herba sucosa, circa 1 ped. alta; caulis crassus, fistulosus, glaber. *Folia* membranacea, ovata vel elliptico-ovata, 7–9 poll. longa, 3–5 poll. lata, basi aliquanto inæqualia, breviter attenuata, apice obtusa, marginibus sinuato-crenato-dentatis, glaberrima, pinnatim nervata, nervis lateralibus primariis utrinque 3–5, subito adscendentibus, nervulis prominulentibus, petiolis 1–1½ poll. longis, suffulta. *Cyma* cernua erectave, brevis, compacta, axillaris, pedunculo pubescenti circa ¼ poll. longo suffulta; bracteæ tenues, stellatim puberulæ, infimæ late oblongæ, obtusæ, flores bisexuales vel antheris abortivis feminos, albidos, sessiles arcte congestos, involucrantes, ¾–1 poll. longæ, 7 lin. latæ; interiores minores. *Calyx* cylindricus, limbo patente; tubus stellatim pubescens, 6–8 lin. longus; lobi tenues, nervis prominentibus, oblongo-ovati, obtusi, intus glabri, extus et secundum margines stellatim pubescentes, circa 3 lin. longi. *Corollæ* segmenta ovata, obtusa, calyce breviora. *Antheræ* lineari-oblongæ, extrorsæ, apice setis brevibus duabus instructæ, circa 2 lin. longæ, filamentis latis circa 1 lin. longis. *Stylus* crassus, sulcatus, 1 lin. longus; stigma oblongum, incrassatum, sulcatum, ¾–1 lin. longum. *Bacca* immatura fusiformis, glabrescens, circa 1 poll. longa.

BORNEO: Burgal, on the north-east coast, *Lobb*.

This species, like the other members of this small genus, has a marked cyrtandraceous habit, and its true position is only apparent when the flowers are examined.

The genus, as at present known, is composed of five species, all found in the Malayan region. *P. begoniæfolium*, Wall., is locally abundant in the southern portion of the Malay Peninsula. *P. macrophyllum*, Oliver, from New Guinea, and *P. grandiflorum*, Kurz, from the Moluccas, are confined to these areas respectively. *P. aurantiacum*, Stapf, and our species are only known from the N.E. corner of Borneo; the former from Mount Kinabalu at an elevation of 6,000 feet.—H. H. W. PEARSON.

Fig. 1, calyx-lobe, seen from without; 2, portion of an hermaphrodite flower showing stamens and pistil; 3, anther. *All enlarged*.

M S del. et lith.

Plate 2707.

LYSIMACHIA TRIENTALIOIDES, *Hemsl.*

Primulaceæ.

L. trientalioides, *Hemsl.* (*sp. nov.*) ; species ex affinitate *L. paridiformis,* Franch. (t. 1982 hujus operis), a qua differt imprimis foliis multo numerosioribus anguste lanceolatis.

Herba perennis, glabra, habitu ac statura *Trientalis europææ,* rhizomate pluricauli. *Caules* simplices, graciles, 4–8 poll. alti, infra apicem præter folia pauca squamiformia nudi. *Folia* in apicibus caulorum conferta, sessilia, demum subcoriacea, anguste lanceolata vel lineari-lanceolata, 1½ 2½ poll. longa, maxima 6 lin. lata, utrinque attenuata, vix acuta, glandulis validis immersis crebre instructa ; venæ immersæ obscurissimæ. *Flores* terminales vel pseudo-terminales, umbellatim congesti, circiter 6 lin. diametro, pedicellis brevissimis. *Calycis segmenta* anguste lanceolata, acuta, glandulosa. *Corollæ* lobi ovato-oblongi, subobtusi. *Filamenta* fere ad medium connata, glabra. *Ovarium* glabrum. *Capsula* oblongo-cylindrica, 5-valvis.—*L. paridiformis, α stenophylla,* Franch. in Bull. Soc. Linn. Par. i. p. 434.

China : on the Min river, 25 miles above Suichoo, Province of Szechuen, *Faber* ; Province of Kweichau, *Perny.*

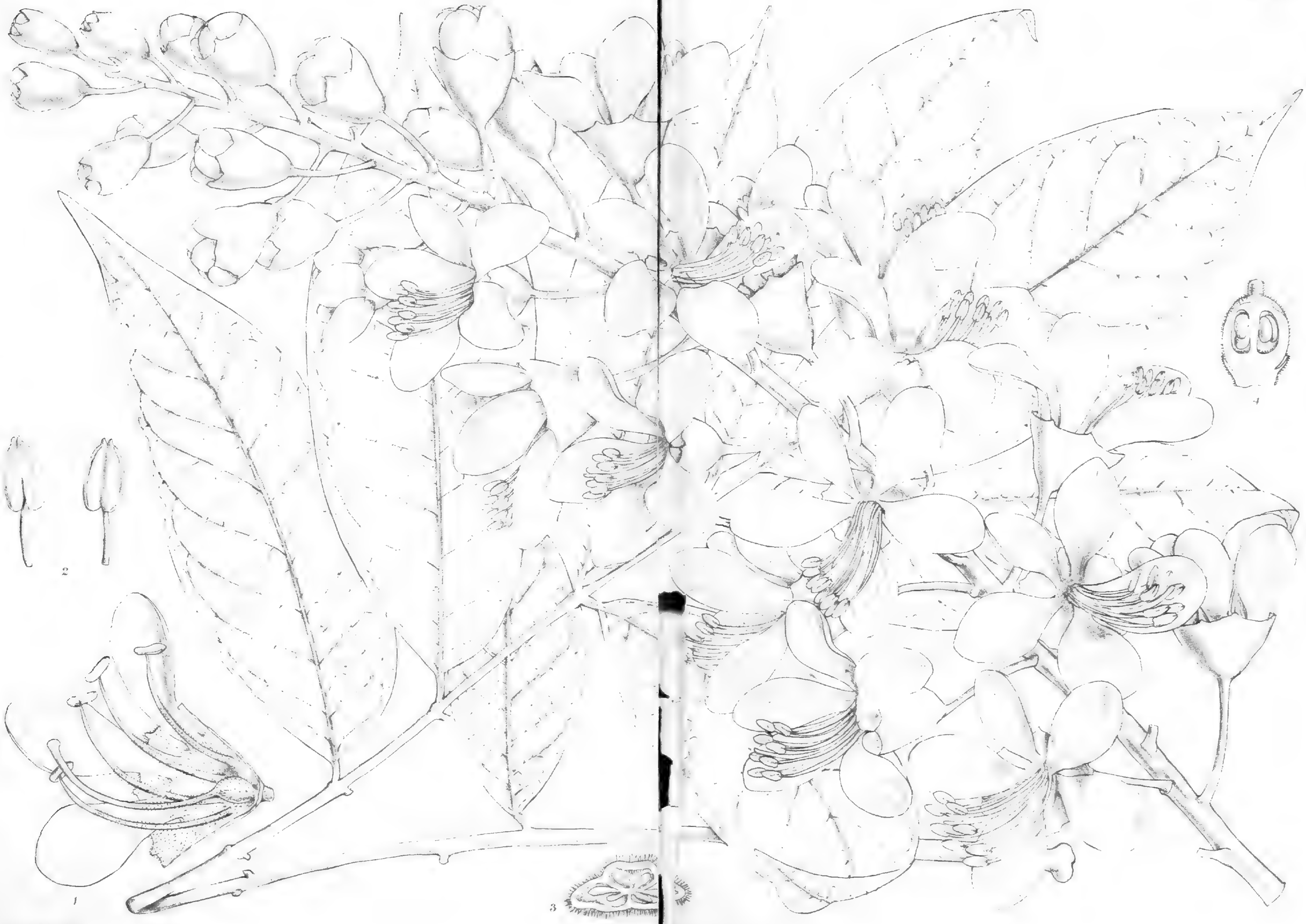
The late Mr. A. Franchet's original description of *L. paridiformis* in the publication cited covers the plant here figured as well as that of Plate 1982. Following the description he adds : Planta valde variabilis quoad foliorum formam videtur.

α stenophylla.—Folia 7-9, verticillata, anguste lanceolata, longe acuminata.

β elliptica — Folia 4-6, verticillata, elliptico-ovata, breviter acuminata.

But I would restrict the name *paridiformis* to his *β elliptica,* to which it aptly applies, and treat his *α stenophylla* as a distinct species under the name adopted. This appears justifiable, because α and β equal the whole, and the name of the whole is not applicable to α.—W. Botting Hemsley.

Fig. 1, calyx and pistil ; 2, corolla laid open and stamens ; 3, capsule and part of calyx. *All enlarged.*



M S del et lith

Plate 2708.

BRETSCHNEIDERA SINENSIS, *Hemsl.*

Sapindaceæ.

Bretschneidera, *Hemsl.* Genus novum ex affinitate *Æsculi*, L., a qua foliis alternis pinnatis, floribus racemosis, etc., differt; etiamque ex affinitate *Ungnadiæ*, Endl., a qua floribus amplis racemosis, petalis ecristatis episepalis, etc., differt.

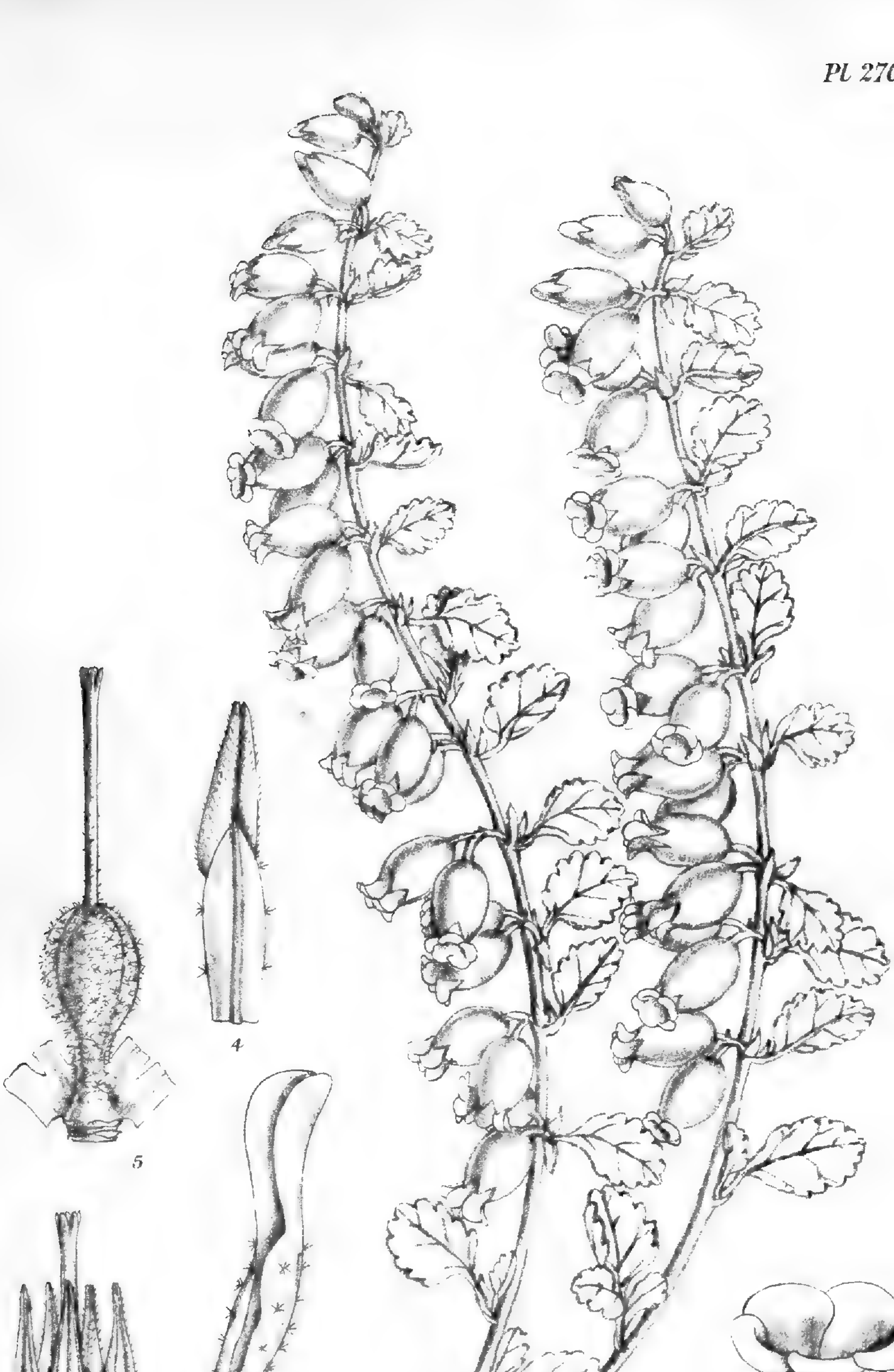
Flores, ut videtur, vere hermaphroditi. *Calyx* late campanulatus, obscure 5-lobulatus, extus puberula, intus pubescens. *Petala* 5, inæqualia, postico minore, unguiculata, medio calycis tubum adnata, fere glabra. *Discus* nullus, vel si adest tenuissimus et calycis tubo confluens. *Stamina* 8, libera, infra petala inserta, declinata, quam petala breviora, filamentis filiformibus deorsum leviter incrassatis infra medium pubescentibus, antheris dorsifixis. *Ovarium* sessile, pubescens, 3-loculare, loculis 2-ovulatis; stylus curvatus, stamina paullo superans, ultra medium pubescens. *Ovula* subcollateralia, ab axi pendula. *Fructus* ignotus.—Arbor 20–30-*pedalis*, *præter flores glabra vel cito glabrescens*, *ramulis ultimis crassis*. Folia *alterna*, *imparipinnata*, 9–18 *poll. longa*, *petiolo communi subtereti gracili*; *foliola* 4–8-*juga*, *opposita vel inferiora alterna*, *breviter petiolulata*, *contigua*, *vix coriacea*, *leviter oblique oblongo-lanceolata vel orato-lanceolata*, 3–6 *poll. longa*, *et usque ad* 2 *poll. diametro*, *acute acuminata*, *basi rotundata vel interdum fere acuminata*, *integra*, *subtus pallidiora*, *venis primariis lateralibus utrinque* 10–15, *venis ultimis minute reticulatis*. Flores *speciosi*, *albo-rosei*, *circiter* 2 *poll. diametro*, *in racemos terminales erectos rigidos* 12–15 *poll. longos dispositi*, *contigui*, *pedicellis divergentibus* 6–12 *lin. longis*; *bracteæ minutæ*, *citissimo deciduæ*.

China: Mengtze, Yunnan, in mountain forests. *A. Henry*, 10540; Szemao, Yunnan, at 5,000 ft., *A. Henry*, 11651.

This highly ornamental tree at first suggests Leguminosæ and the tribe Cassieæ rather than Sapindaceæ; but the number of stamens, associated with the structure of the ovary, seems sufficient to indicate its affinities. The insertion of the petals high up in the calyx-tube and the absence of a disk are characters which distinguish it from its nearest allies. Unfortunately the fruit is unknown, and the ovary is only known in quite a young state. This genus was named in honour of Dr. Emil Bretschneider, and specimens of it were exhibited at a meeting of the Linnean Society, April 18, 1901. Some particulars of

its characteristics and affinities appeared in the *Gardeners' Chronicle*, May 4, 1901, p. 291. Dr. Bretschneider, whose scholarly attainments and writings in connection with the Flora of China are well known, having been previously asked whether it would be agreeable to him, replied under date of February 26 :—'Let me state that I highly appreciate the honour done to me, and that I feel very proud of finding my name commemorated in the Flora of China and in connection with Dr. Henry's vast botanical explorations.' Early in May news reached this country of the death of this eminent sinologist.—W. Botting Hemsley.

Fig. 1. section of a flower showing the insertion of the petals and stamens; 2, anthers; 3, cross section of ovary; 4, longitudinal section of ovary.—*All enlarged.*



M. S. del. et lith.

HERMANNIA JOHANSSENI, *N. E. Brown.*

STERCULIACEÆ. Tribe HERMANNIEÆ.

H. Johansseni, *N. E. Brown* (*sp. nov.*) ; species distinctissima ex affinitate *H. comosæ,* Burch., a qua differt, inter alia, calyce ovoideo nec globoso.

Fruticulus 8–9 poll. altus, basi lignosus et ramosus. *Rami* erecti, simplices, subgraciles, dense stellato-tomentosi, luteo-albidi, e medio vel infra ad apicem floriferi. *Folia* petiolata, utrinque stellato-tomentosa, griseo-viridia ; petiolus $1\frac{1}{2}$-4 lin. longus ; lamina 3–6 lin. longa, 2–4 lin. lata, elliptica vel elliptico-oblonga, obtusissima, basi late cuneata, plicata, crenato-dentata. *Stipulæ* 2-3 lin. longæ, $\frac{3}{4}$–$1\frac{1}{2}$ lin. latæ, lanceolatæ, acutæ, utrinque stellato-tomentosæ. *Flores* in axillis foliorum geminati, secundi. *Pedunculi* axillares, 0–2 lin. longi, stellato-tomentosi, biflori, petiolis breviores. *Pedicelli* $\frac{3}{4}$–$1\frac{1}{2}$ lin. longi, stellato-tomentosi. *Bracteæ* solitariæ, minutæ, $\frac{1}{2}$ lin. longæ, subulatæ. *Calyx* ovoideo-inflatus, breviter 5-dentatus ; tubus 3–$3\frac{1}{2}$ lin. longus, $2\frac{1}{2}$–$2\frac{3}{4}$ lin. diam. ; dentes $\frac{3}{4}$-1 lin. longi, deltoidei, acuti. *Petala* 5–$5\frac{1}{2}$ lin. longa, $1\frac{1}{2}$ lin. lata, anguste cuneato-oblonga, obtusissima, lutea, dorso ultra medium stellato-pubescentia ; unguis cymbæformis. *Stamina* inclusa ; filamenta $2\frac{1}{2}$ lin. longa, lineari-oblonga, apice cuspidata, pilis stellatis ciliata. *Ovarium* stipitatum, subobovoideum, pentagonum, stellato-tomentosum, stylo incluso.

SOUTH AFRICA : Calvinia Division, at Brand Vley, *Johanssen*, 7.

A very distinct species, not very similar to any other, but it should be placed near *H. comosa,* Burch. It is remarkably floriferous, all or nearly all the flowers on the plant being open at the same time. The petals, as is usual in the genus, are twisted to the right in one flower and to the left in the other flower of each pair.—N. E. BROWN.

Fig. 1, a flower ; 2, a flower with calyx and corolla removed; 3, a petal ; 4, a stamen, dorsal view ; 5, the pistil, with the base of the staminal tube opened out ; 6, a tuft of hairs. *All enlarged.*

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M.S. del et lith.

Plate 2710.

BABIANA SPATHACEA, *Gawler.*

Iridaceæ. Tribe Ixieæ.

B. spathacea, *Gawler ex Sims in Bot. Mag. sub* t. 539 (*nec Bot. Mag.* t. 638) ; *Baker in Dyer, Fl. Cap.* vi. p. 108. Gladiolus spathaceus, *Linn. f. Suppl.* p. 96 ; *Thunb. Diss.* no. 55 ; *Thunb. Prod.* p. 9 ; *Thunb. Fl. Cap.* i. p. 208, et *ed. Schultes*, p. 52.

Folia linearia vel lineari-lanceolata, acuta, subplicata, molliter piloso-pubescentia vel interdum subglabra, 4–9 poll. longa, 2–6 lin. lata. *Spica* erecta, stricta, simplex vel basi pauciramosa, 2–3 poll. longa, dense multiflora. *Bracteæ* 9–15 lin. longæ, 3 lin. latæ, lanceolatæ, longe aristato-acuminatæ, complicatæ, membranaceæ, hyalinæ, uninerves, nec striatæ, glabræ, albæ, nervo in aristam rufo-brunneam excurrente. *Bracteolæ* 7–8 lin. longæ, $1\frac{1}{2}$–2 lin. latæ, bracteis similes. *Perianthium* erectum, glabrum ; tubus $1\frac{3}{4}$ poll. longus, gracilis, apice ampliatus et procurvus, purpureus ; lobi subæquales, 6 lin. longi, $1\frac{1}{2}$ lin. lati, oblongi, obtusi, albi, inferiores basi purpureo-notati. *Stamina* exserta ; antheræ 2–3 lin. longæ. *Ovarium* $1\frac{1}{4}$–$1\frac{1}{2}$ lin. longum, trigono-turbinatum, glabrum ; stylus exsertus, filiformis, apice breviter trifidus ; stigmata leviter dilatata.

South Africa : Calvinia Division ; in Bokkeland (Onder Bokkeveld) and the dry regions of Hantam, *Thunberg* ; Brand Vley, *Johanssen*, 14.

This is one of many interesting South African plants found by the older collectors which have long escaped the notice of subsequent travellers. It was discovered in November, 1774, by Thunberg, and apparently has not been collected since that date until now. Its rediscovery by Mr. Johanssen about a hundred miles to the north of the locality where Thunberg found it is, therefore, of considerable interest, the more so as Mr. Johanssen also collected *Eriosphæra Oculus-Cati*, Less., which, like the *Babiana*, has hitherto only been known from the specimens collected by Thunberg.

Babiana spathacea, Gawl., is one of the most distinct species of the genus, the long dense spike, long-tubed flowers, and membranous hyaline bracts serving to distinguish it at once from all others. Unfortunately the name *B. spathacea* was given by Gawler to two distinct plants. When the genus *Babiana* was originally established at the place quoted above (which reference has been overlooked by all subsequent authors, even by Gawler (Ker) himself, since he does not quote it in his *Irid.*

Gen. p. 151), Thunberg's plant was indicated as belonging to it. But two years later, Gawler figured (*Bot. Mag.* t. 638) as *B. spathacea* another species, which he supposed to be the same as *Gladiolus spathaceus*, Thunb. ; but it is utterly different from that plant. This figure exactly agrees with unlocalised specimens in the Kew Herbarium named *B. spathacea*, and with one collected in Little Namaqualand, between Koper Berg, Silver Fontein and Kaus Mountain, 2,000–3,000 feet, by Drège, 8386. These specimens are referred by Mr. Baker to *B. disticha*, Ker, and the plate to *B. mucronata*, var. *longicollis*, Baker ; but as the plant figured in *Bot. Mag.* t. 638 is perfectly distinct from both *B. disticha* and *B. mucronata*, I propose that it should bear the name *B. Gawleri*.—N. E. Brown.

Figs. 1 and 2, bracteoles ; 3, anthers ; 4, upper part of style and stigmas ; 5, ovary. *All enlarged.*

Pl 271

M.S. del. et lith.

O. Stapf anal.

Plate 2711.

URNULARIA BECCARIANA, *Stapf.*

(*With dissections of* U. flavescens, *Stapf*)

Apocynaceæ. Tribe Landolphieæ.

Urnularia, *Stapf* (*gen. nov.*). *Calyx* parvus, 5-partitus, eglandulosus, segmentis rotundatis. *Corolla* urceolari-hypocrateriformis, tubo subgloboso fauce constricta esquamata; lobi contorti, sinistrorsum obtegentes, tubo æquilongi vel breviores, rotundati vel late ovati, basi subcordati. *Stamina* medio tubo inserta, inclusa, antheræ lanceolato-ovatæ vel oblongæ, connectivo sæpe apiculato, in filamentis æquilongis nutantes, loculis basi inappendiculatis. *Discus* nullus. *Ovarium* integrum, 1-loculare, placentis 2 parietalibus, apice basique interdum confluentibus; stylus brevis; stigma ovoideum, basi annulo membranaceo circumdatum, apice breviter bifidum; ovula numerosa, 4-8-seriata. *Fructus* baccatus, globosus, pericarpio crasso, edulis. *Semina* in pulpa carnosa nidulantia, sparsa, ovoidea vel oblongo-ovoidea, ventre profunde sulcata, dorso longitudinaliter angustissime multisulcata; albumen corneum, copiosum, forma et sculptura semini conforme; cotyledones planæ, foliaceæ, radicula longiuscula.—Frutices *scandentes, sæpe cirriferi.* Folia *opposita, petiolata, penninervia, nervis tenuibus crebrioribus parallelis approximatis vel magis distantibus.* Flores *in paniculis axillaribus brevibus laxis multifloris, ramis pedicellisque tenuibus.*

U. beccariana, *Stapf.* *Frutex* ope cirrorum apice ramosorum scandens, glaber; rami juniores subcompressi vel subquadranguli, tandem teretes, ad nodos nodosi, cortice fusco griseo vel griseo. *Folia* elliptica, breviter obtuseque acuminata, basi rotundata, $3\frac{1}{2}$–$5\frac{1}{2}$ poll. longa, $1\frac{3}{4}$–$2\frac{1}{2}$ poll. lata, tenuiter coriacea, supra exsiccando nigro-fuscescentia, sublucida, subtus pallide fusca, costa nervisque supra impressis, subtus prominula, nervis lateralibus tenuibus utrinque circiter 12 oblique patulis sub margine prorsus curvatis, venis obliquis tenuissimis, areolas angustas cingentibus; petiolus $\frac{1}{2}$ poll. longus, supra canaliculatus. *Paniculæ* laxæ, ad $1\frac{1}{2}$ poll. longæ latæque, ramis ramulisque demum magis minusve divaricatis gracilibus bracteis ovatis minutis; pedicelli ad 1 lin. longi. *Calyx* ad $\frac{1}{2}$ lin. altus, segmentis rotundatis vel ovato-rotundatis albo-ciliolatis. *Corolla* in alabastro maturo magis minusve conica, 3 lin. longa; tubus subglobosus; lobi tubo æquilongi vel paululo breviores, late ovati, obtusi. *Stylus* cum stigmate $\frac{1}{2}$ lin. longus. *Willughbeia sp.* Benth. in Benth. & Hook.

Gen. Plant. ii. p. 691. *Ancylocladus beccarianus* O. K. Rev. Gen. i. p. 412 (*nomen*); Pierre in Bull. Soc. Linn. Paris, ii. p. 98.

Borneo: Sarawak, forests of Bintula, *Beccari*, 3764; Baram, *Hose*, 24.

Urnularia is allied to *Willughbeia* and *Chilocarpus*. It differs from the first in the shape of the corolla, the lax, though short, and graceful panicles, and, to judge from the only fruit known so far (see below under *U. ovatifolia*), in the very different structure of the seed, *Willughbeia* possessing exalbuminous seeds with large and very thick cotyledons. So far as the seeds are concerned the new genus approaches *Chilocarpus* very closely, with this exception, that the testa and the albumen are finely but deeply grooved on the back, the grooves running parallel and lengthwise. The baccate edible fruit, however, and the shape of the corolla remove *Urnularia* distinctly from *Chilocarpus*. *Urnularia* comprises at present five species, viz. *U. flavescens*, Stapf (*Willughbeia flavescens*, Dyer ex Hook. f., Fl. Brit. Ind. iii. p. 625), *U. javanica*, Stapf (*Willughbeia javanica*, Bl.), *U. beccariana*, Stapf, described above, and two more new species from Borneo, the descriptions of which are given below. A flower of *U. flavescens* has been added on pl. 2711, to show the corolla completely open. It will also be seen from this figure that the mouth of the corolla of this species is not furnished with 'small lobulate tubercles' as stated in Fl. Brit. Ind. l. c., nor have I been able to find such tubercles in *Willughbeia oblonga*, Dyer. This is placed in Fl. Brit. Ind. l. c. next to *W. flavescens*; but it seems to me to be a typical *Willughbeia*.

In explanation of fig. 6 on pl. 2711, I might remark that I found the ovules of the two placentas of *U. beccariana* completely interlocked and sometimes so cemented together, that, except in very thin sections, the placentas would rather give way at their base when I tried to separate them. The outer integument was always very conspicuous by its dark brown or almost black colouring.

U. oblongifolia, *Stapf (sp. nov.)*. *Frutex* scandens, glaber; rami juniores subcompressi vel quadranguli, tandem teretes, ad nodos paululo nodosi, cortice fusco. *Folia* oblonga, subabrupte obtuseque acuminata, acumine ad $\frac{1}{3}$ poll. longo, basi rotundata, 3–4 poll. longa, $1\frac{1}{4}$–$1\frac{1}{2}$ poll. lata, tenuiter coriacea, supra exsiccando nigricantia, lucida, subtus fusca, costa supra impressa, nervis lateralibus pertenuibus utrinque ultra 30 patulis rectis, venis partim nervis subparallelis partim admodum obliquis areolas angustas cingentibus; petiolus 6–8 lin. longus, supra canaliculatus. *Panicula* floresque iis *U. beccariana* simillima. *Willughbeia javanica*, Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anst. xvii. (1899) p. 145 (quoad spec. Beccar.) non Blume.

Borneo: Sarawak, Mount Matang, *Beccari*, 2272.

U. oblongifolia differs from *U. javanica* in the leaves being larger

(3-4 in. by $1\frac{1}{4}$–$1\frac{1}{2}$ in. instead of 2–3 in. by $\frac{4}{5}$ $1\frac{1}{4}$ in.), more distinctly oblong, more rounded at the base, and long acuminate with more numerous, straighter and more prominent nerves, in the more delicate panicles and in the almost obtuse anthers. It yields, according to Professor Beccari, a good sort of rubber.

U. ovatifolia, *Stapf* (*sp. nov.*). *Frutex* scandens, glaber; rami juniores subcompressi, mox teretes, ad nodos vix nodosi, cortice badio, nonnunquam in cirros apicem versus ramosos hamatos abeuntes. *Folia* ovata vel ovato-elliptica, subabrupte breviterque vel obscure acuminata, acumine obtuso, basi rotundata, $2\frac{1}{2}$–4 poll. longa, $1\frac{1}{2}$–$2\frac{1}{4}$ poll. lata, coriacea, supra exsiccando nigro-virescentia, opaca, subtus pallida vel subglauca, costa supra impressa, nervis lateralibus patulis prorsus curvatis supra tenuibus, infra prominulis utrinque 12–15, venis admodum obliquis plerumque inconspicuis; petiolus supra canaliculatus, circiter $\frac{1}{3}$ poll. longus. *Panicula* $1\frac{1}{4}$-$1\frac{1}{2}$ poll. longa lataque, divaricata, ramulis pedicellis subgracilibus. *Flores* ut in *U. beccariana*. *Fructus* globosus, 2 poll. dimetiens. *Semina* 4-6 lin. longa.

Borneo: Sarawak, near Kuching, *Haviland*, 2302.

The flowers are described by Dr. Haviland as having a pink turgid tube and a yellow limb.—Otto Stapf.

Fig. 1, a flower-bud; 2, longitudinal section of a flower; 3, a corolla-lobe; 4, side view of an anther; 5, front view of the same; 6, cross-section of an ovary of *Uncaria beccariana*; fig. 7, flower and bud of *U. flavescens*. All enlarged.

M. S.del et lith

PLATE 2712.

PARVATIA DECORA, *Dunn.*

BERBERIDACEÆ. Tribe LARDIZABALEÆ.

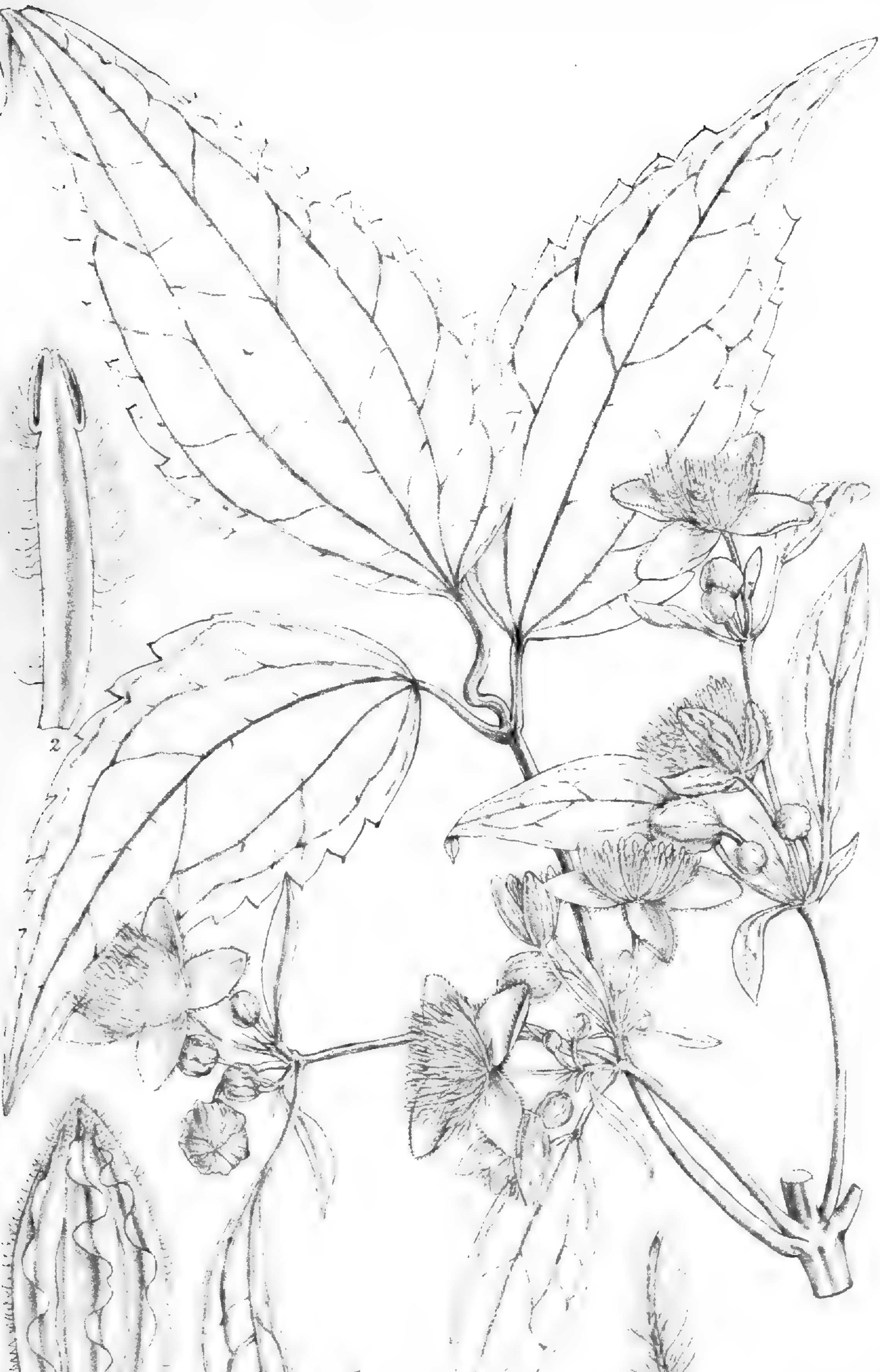
P. decora, *Dunn (sp. nov.)*; a *P. brunoniana*, Dcne., specie adhuc unica, pedunculis subunifloris fasciculatis distincta.

Frutex scandens (*Hancock*), caulibus striatis, glabris, pallidis. *Folia* trifoliolata, petiolo alato, alis decurrentibus; foliola subcoriacea, supra glabra, nitentia, infra pubescentia, glauca, marginibus revolutis, elliptica, 2–4 poll. longa, breviter acuminata; petioluli laterales ½ poll. longi, terminales 1¼ 1½ poll. longi. *Flores* masculi carnei (*Hancock*); pedunculi 1–2 poll. longi, in fasciculis axillaribus collecti, uniflori vel nonnunquam basi ima ramosi, bracteolas paucas minutas ferentes, perulati; feminei ignoti. *Sepala* 6, ovata, longe acuminata, 6–9 lin. longa, stamina excedentia. *Petala* 6, 1–2 lin. longa. *Stamina* 5–8 lin. longa, tertiæ partes inferiores connatæ, antheras et appendices æquantes. *Fructus* ignotus.

CHINA: Yunnan, glen near Mengtze at 3,700 feet, and on mountains above the Red River at the same altitude. *W. Hancock*, 241, 242.

Parvatia brunoniana inhabits the mountains of Eastern India from Khasia to Tenasserim, extending to the N.E. to Szemao, just over the Chinese frontier. The discovery of the above new species at Mengtze extends the range of the genus in an easterly direction for a distance of about 150 miles.—S. T. DUNN.

Fig. 1, a male flower from which the sepals have been removed: 2, a section of the same showing the rudimentary pistil. *Both enlarged.*



M.S. del. et lith.

Plate 2713.

CLEMATIS PTERANTHA, *Dunn.*

Ranunculaceæ. Tribe Clematideæ.

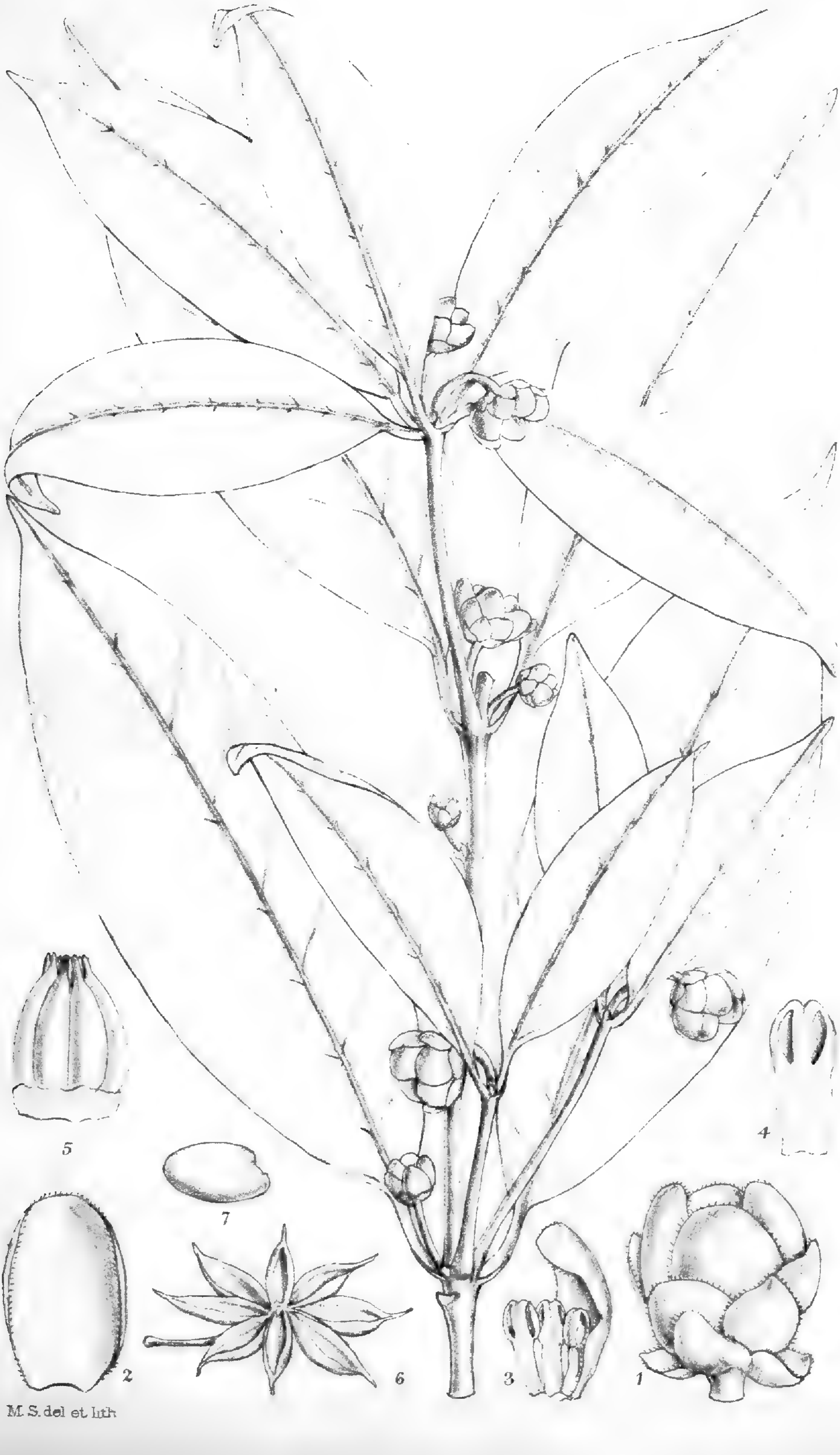
C. pterantha, *Dunn* (*sp. nov.*) ; *C. yunnanensi*, Franch., affinis, sepalis alatis distincta.

Frutex scandens, præter inflorescentiam glaber, caulibus pallidis sulcatis, canali centrali perforatis. *Folia* trifoliolata, petiolos excedentia ; foliola papyracea, ovata, 3–5 poll. longa, acuminata, grosse dentata. *Flores* in apice pedunculorum brevium axillarium cum bracteis collecti, pedicellis sparso hirsutis, alabastris globosis. *Sepala* alba (*A. Henry*), 4, ovata, alis tribus membranaceis dorso provisa, extus glabra, intus pubescentia, margine tomentosa. *Stamina* barbata, filamentis 5–7-plo antheris longioribus. *Ovarium* stylusque hirsuta. *Fructus* ignotus.

China : Yunnan, Szemao, mountain forests to the West, at 5,000 feet. *A. Henry*, 12452.

This species was, when discovered, the only member of the genus having dorsally winged sepals. Among Ducloux's plants, however, which were recently presented to Kew by Dr. Henry and collected in the same region, is another undescribed species, having the same peculiarity, but otherwise distinct from the above.—S. T. Dunn.

Fig. 1, a sepal seen from the outside ; 2, a stamen ; 3, an achene. *All enlarged.*



M. S. del et lith

ILLICIUM MICRANTHUM, *Dunn.*

MAGNOLIACEÆ. Tribe WINTEREÆ.

I. micranthum, *Dunn (sp. nov.)*; ab *I. parviflora*, Michx., staminibus pluriseriatis fructuque diversum.

Frutex vel arbor parva, 4–15-pedalis (*A. Henry*), glabra, ramulis flavidis. *Folia* subcoriacea, subtus pallida, lanceolata, acuminata, $2\frac{1}{2}$–$5\frac{1}{2}$ poll. longa, basi cuneata, venis inconspicuis, petiolo brevi. *Flores* solitarii, axillares cum foliis fere in verticillos approximati, pedicellis $\frac{1}{2}$–$1\frac{1}{2}$ poll. longis, bracteolis saepius egentibus. *Sepala* exteriora brevia ovata. *Petala* flava vel aurantiaca (*A. Henry*), interiora 4–5 lin. longa, stamina duplo excedentia. *Stamina* 12, biseriata. *Ovaria* 7–8. *Fructus* 8–10 lin. diam.

CHINA: Yunnan, Szemao forests and mountains to southward at 4,500–5,000 feet. *Henry* 12108, 12108A, 12224, 12224A, 12224B, 12224C.

The specimen of star aniseed sent by Dr. Henry in 1886 from Patung under No. 1079 is exceedingly like the fruit of the above species, but as none of the following specimens of *Illicium* collected by him in that neighbourhood can be referred here, it may be the fruit of some allied species.—S. T. DUNN.

Fig. 1, a flower; 2, an intermediate perianth-leaf; 3, one of the innermost petals and three stamens; 4, a stamen; 5, pistil; 6, fruit; 7, a seed. *All except* 6 *enlarged.*

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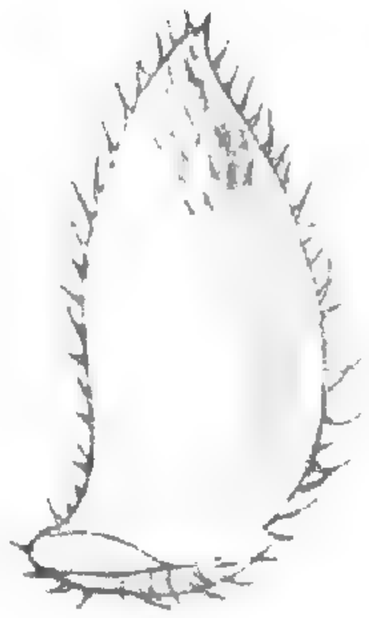

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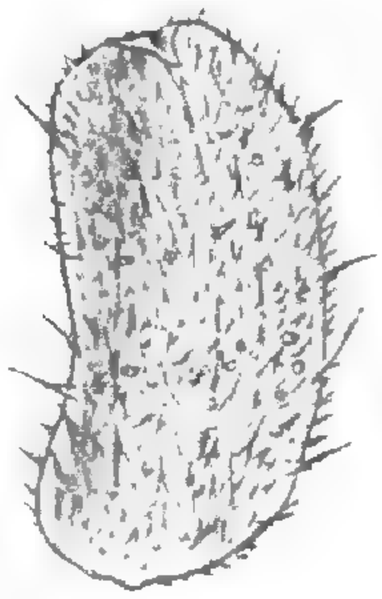

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M S. del et lith.

Plate 2715.

SCALESIA RETROFLEXA, *Hemsl.*

Compositæ. Tribe Helianthoideæ.

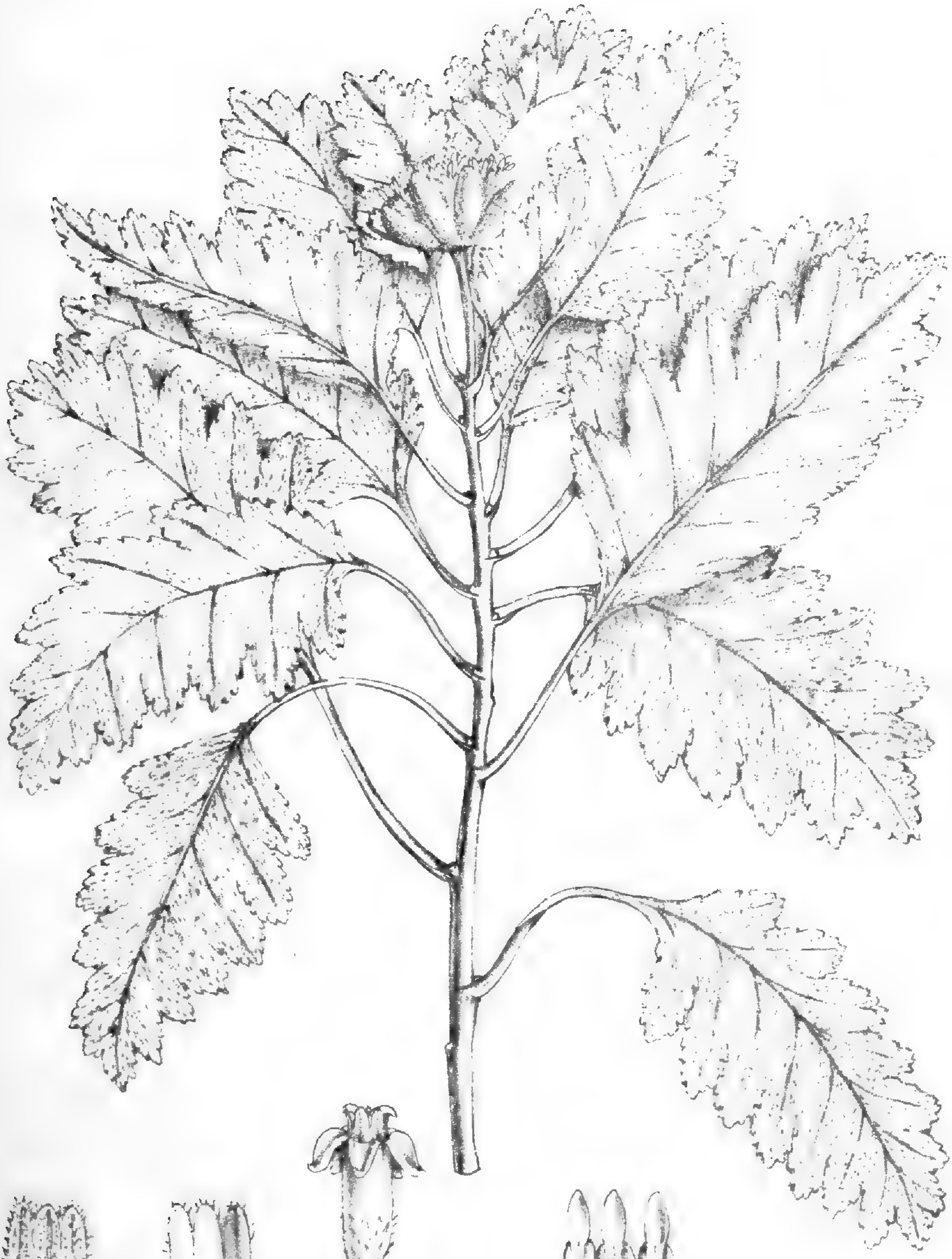
S. retroflexa, *Hemsl.* (*sp. nov.*) ; species ad *S. incisam* magis accedit, recedit foliis crispato-pinnatifidis recurvatis, paleis altius trifidis lobis acutis.

Frutex 6-pedalis (*Habel*). *Ramuli* floriferi graciles, villosuli, internodiis brevissimis. *Folia* ad apices ramulorum conferta, longe graciliterque petiolata, crassiuscula, cordato-ovata vel oblonga, cum petiolo 3–4 poll. longa, complicata, alte crispato-pinnatifida, hispida, simul pilis longis mollibus instructa. *Capitula* in axillis foliorum supremorum breviter pedunculata, homogama, discoidea, multiflora, 7–9 lin. diametro. *Involucri* bracteæ 3-seriatæ, crassæ, rigidæ, ovatæ vel oblongæ, acutæ, obtusæ vel interdum rotundatæ, extus scabridæ, intus fere glabræ, flores fere æquantes. *Receptaculi paleæ* alte trifidæ, lobis acutis hispidulis, flores fere æquantes. *Corolla* extus puberula. *Achænia* glabra, calva.

Galapagos Archipelago : Indefatigable Island, *Dr. Habel*, 1868.

Most of the species of *Scalesia* described by Sir Joseph Hooker (Trans. Linn. Soc. xx. pp. 210-213) were founded on single specimens, or single sheets of specimens, which belonged to the late Professor Henslow, and are now in the University Herbarium at Cambridge. Through the kindness of Professor Marshall Ward the specimens were lent to Kew for purposes of comparison with other material, and advantage has been taken of the opportunity to figure four of them in succeeding plates. —W. Botting Hemsley.

Fig. 1, an involucral bract seen from the outside ; 2, ditto, seen from the inside ; 3, a pale seen from the outside ; 4, ditto, seen from the inside ; 5, a flower ; 6, anthers. 7, stigma. *All enlarged.*



M.S del et lith

Plate 2716.

SCALESIA INCISA, *Hook. f.*

Compositæ. Tribe Helianthoideæ.

S. incisa, *Hook. f. in Trans. Linn. Soc.* xx. p. 210 ; a *S. retroflexa,* Hemsl., foliis minus hirsutis minus dissectis applanatis rectis, involucri bracteis angustioribus, receptaculi paleis obtuse lobulatis, etc., differt.

Galapagos Archipelago : Chatham Island, *Charles Darwin,* September 1835.

Figured from the original specimen in the Cambridge Herbarium, lent for the purpose by Professor Marshall Ward. This, *S. retroflexa,* Hemsl., and *S. Baurii,* Rob. & Greenm. (Am. Journ. Sc. i. (1895), p. 141), are all very closely allied ; and it was in this connection, in consequence of enquiries from America, that I undertook the investigation of the genus.—W. Botting Hemsley.

Fig. 1, a pale seen from the outside ; 2, ditto, seen from the inside ; 3, a flower ; 4, anthers ; 5, stigma. *All enlarged.*

Pl 2717

M.S.del et lith

Plate 2717.

SCALESIA PEDUNCULATA, *Hook. f.*

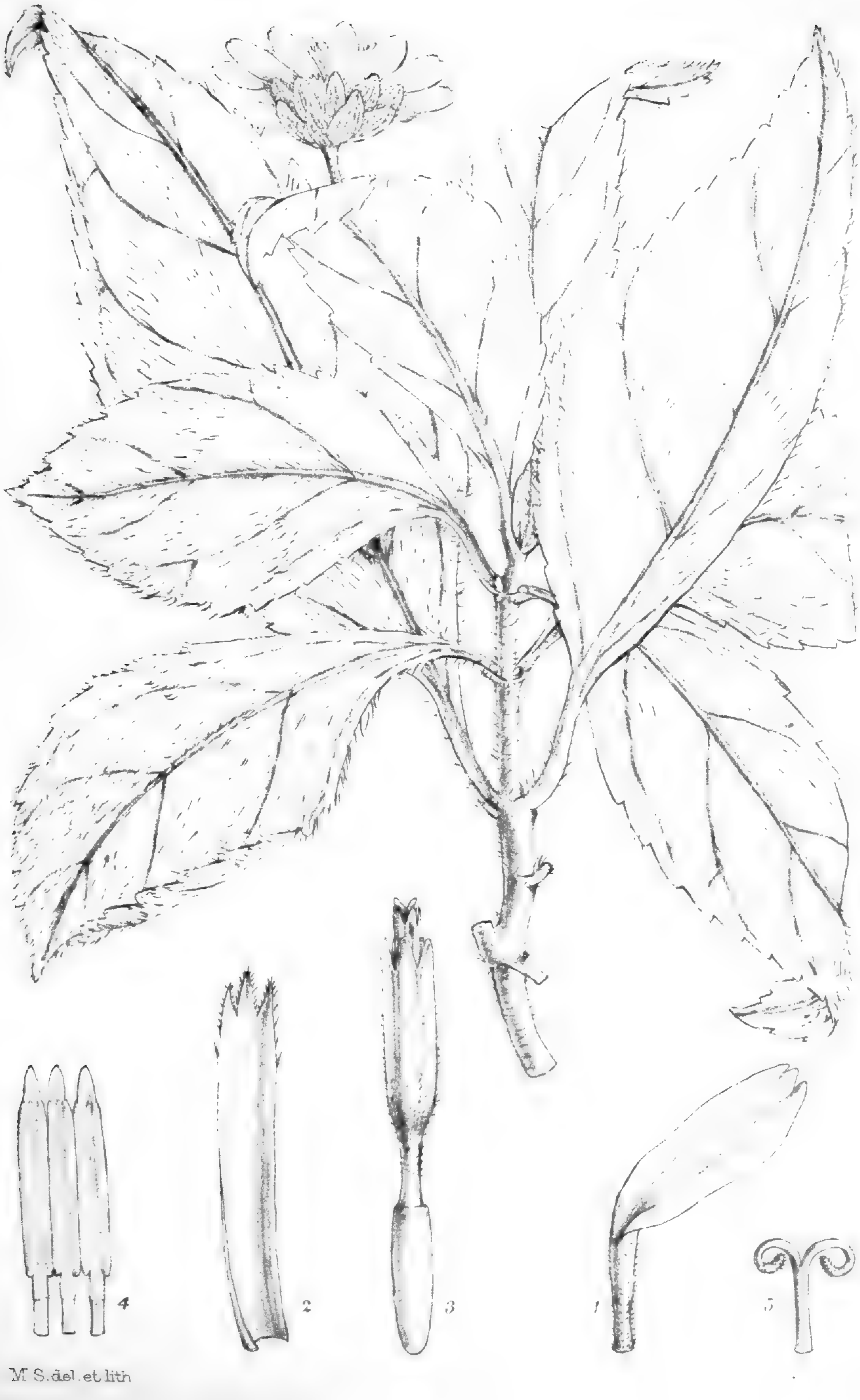
Compositæ. Tribe Helianthoideæ.

S. pedunculata, *Hook. f. in Trans. Linn. Soc.* xx. p. 211 ; ab omnibus speciebus capitulis discoideis hujus generis hactenus cognitis longitudine pedunculorum et magnitudine capitulorum facile distinguitur.

Galapagos Archipelago : James Island, *Charles Darwin*, October 1835.

Designated a tree by Darwin in a note accompanying the specimen in the Cambridge Herbarium. This is mentioned because this species is described by Hooker in the place cited as 'frutescens.' We have seen no other specimens.—W. Botting Hemsley.

Fig. **1**, a pale seen from the inside ; 2, a flower ; 3, anthers ; 4, stigma. *All enlarged.*



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M S. del. et lith

Plate 2718.

SCALESIA AFFINIS, *Hook. f.*

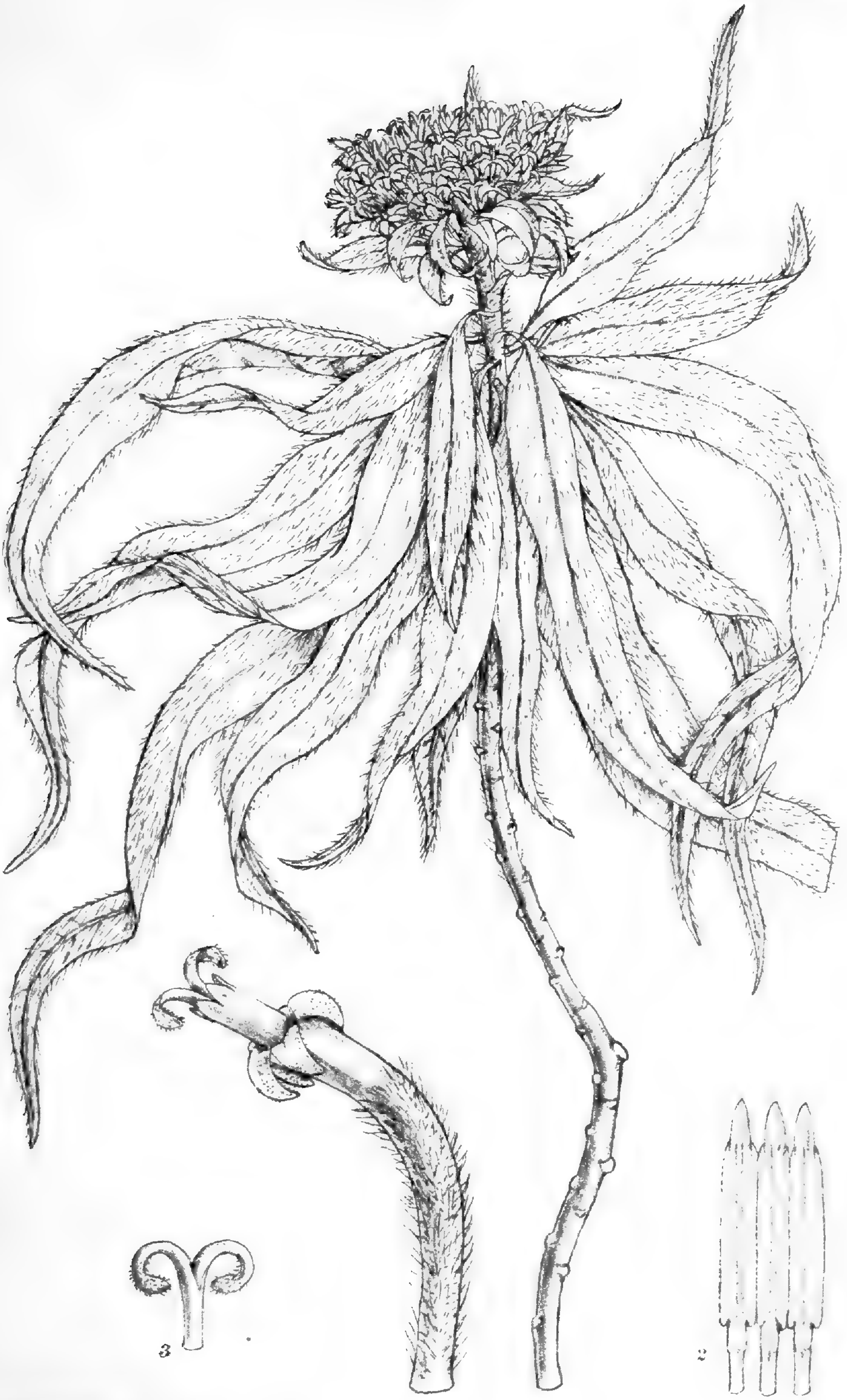
Compositæ. Tribe Helianthoideæ.

S. affinis, *Hook. f. in Trans. Linn. Soc.* xx. p. 212; inter species radiatas '*S. gummiferæ* simillima, sed differt præcipue foliorum petiolis brevibus vel subnullis, capitulisque duplo majoribus latioribus campanulatisque.'

Galapagos Archipelago: Charles Island, *Charles Darwin*, Sept. 1835.

Drawn from specimens in the Cambridge Herbarium, the only ones we have seen. The differential characters are extracted from the place cited above.—W. Botting Hemsley.

Fig. 1, a ray-flower; 2, a pale; 3, a disk-flower; 4, anthers; 5, stigma. *All enlarged.*



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M S del. et lith.

Plate 2719.

SCALESIA DARWINII, *Hook. f.*

Compositæ. Tribe Helianthoideæ.

S. Darwinii, *Hook. f. in Trans. Linn. Soc.* xx. p. 211; species foliorum forma *S. atractyloidi* similis, sed pilis longiusculis vestita et capitulis multo majoribus differt.

Galapagos Archipelago: James Island, *Charles Darwin*, Oct. 1835.

Drawn from specimens in the Cambridge Herbarium, the only ones we have seen. Darwin notes that this species was characteristic of James Island, where it formed woods of very straight trees in the damper alpine parts. Unfortunately no dimensions are given. Robinson and Greenman record it (*Amer. Journ. Sc.* i. p. 146) as having been collected in Charles Island by Dr. G. Baur. They also describe (*loc. cit.* p. 141) a new species, *S. Baurii*, from Duncan Island, collected in August 1891.—W. Botting Hemsley.

Fig. 1, a flower; 2, anthers; 3, upper part of style and stigma. *All enlarged.*

M. S. del et lith

Plate 2720.

HAZARDIA DETONSA, *Greene*.

Compositæ. Tribe Asteroideæ.

H. detonsa, *Greene*, *Pittonia*, i. p. 29 ; species *H. cana*, Greene, simillima, a qua differt (fide Greene) foliis firmioribus argute serratis.

California : Island of Santa Cruz, *E. L. Greene*.

Some years ago Dr. Ed. Palmer collected specimens of a shrubby composite in Guadalupe Island, off the coast of Lower California, which the late Dr. Asa Gray at first regarded as the type of a new genus, but subsequently described (*Proc. Amer. Acad.* xi. p. 75) under the name of *Diplostephium canum*. Since then Prof. E L. Greene, Dr. F. Franceschi, and others, have collected some closely allied plants in the smaller islands of Santa Cruz and San Clemente, some four or five degrees further north. Prof. Greene has dealt with them in the place cited above, where he founds the genus *Hazardia* and describes three species, namely, *H. cana*, *H. detonsa*, and *H. serrata*. Since then several other quite distinct species have been added to the genus. But I have some doubts about the specific distinctness of the three insular forms described as such by Prof. Greene. From fuller material, including cultivated specimens, I suspect that *H. cana* and *H. detonsa* should be united ; but that point can only be settled by examining a large number of specimens. On the other hand, a plant collected by A. W. Anthony in San Clemente and distributed under the name *cana*, seems to be quite distinct.—W. Botting Hemsley.

Fig. 1, one of the innermost bracts of the involucre ; 2, a ray-flower ; 3, a disk flower ; 4, a pappus-bristle ; 5, anthers ; 6, stigma and part of style. *All enlarged.*

M.S. del. et lith.

O. Stapf anal.

Plate 2721.

SYMPETALANDRA BORNEENSIS, *Stapf.*

Leguminosæ. Tribe Dimorphandreæ.

Sympetalandra, *Stapf* (*gen. nov.*). *Calyx* campanulatus, latus, breviter 5-lobus, lobis in alabastro primo imbricatis. *Petala* 5, æqualia, oblonga, imbricata (summo æstivatione intimo), basi in tubum brevem coalita. *Stamina* 10, libera, alterna breviora, in corollæ ore inserta; antheræ uniformes, basifixæ, apice glandula decidua instructæ, loculis longitudinaliter dehiscentibus. *Ovarium* stipitatum, stipite libero, 2-ovulatum; stylus filamenta vix excedens, stigmate terminali punctiformi. *Legumen* ignotum.—Arbor *parva, glabra.* Folia *paripinnata, 2-juga, foliolis coriaceis pellucido punctatis oppositis.* Flores *parvi, breviter pedicellati, racemosi, racemis densis axillaribus et extra-axillaribus versus apices ramorum et terminalibus in paniculam collectis.* Bracteæ *minutæ; bracteolæ nullæ.*

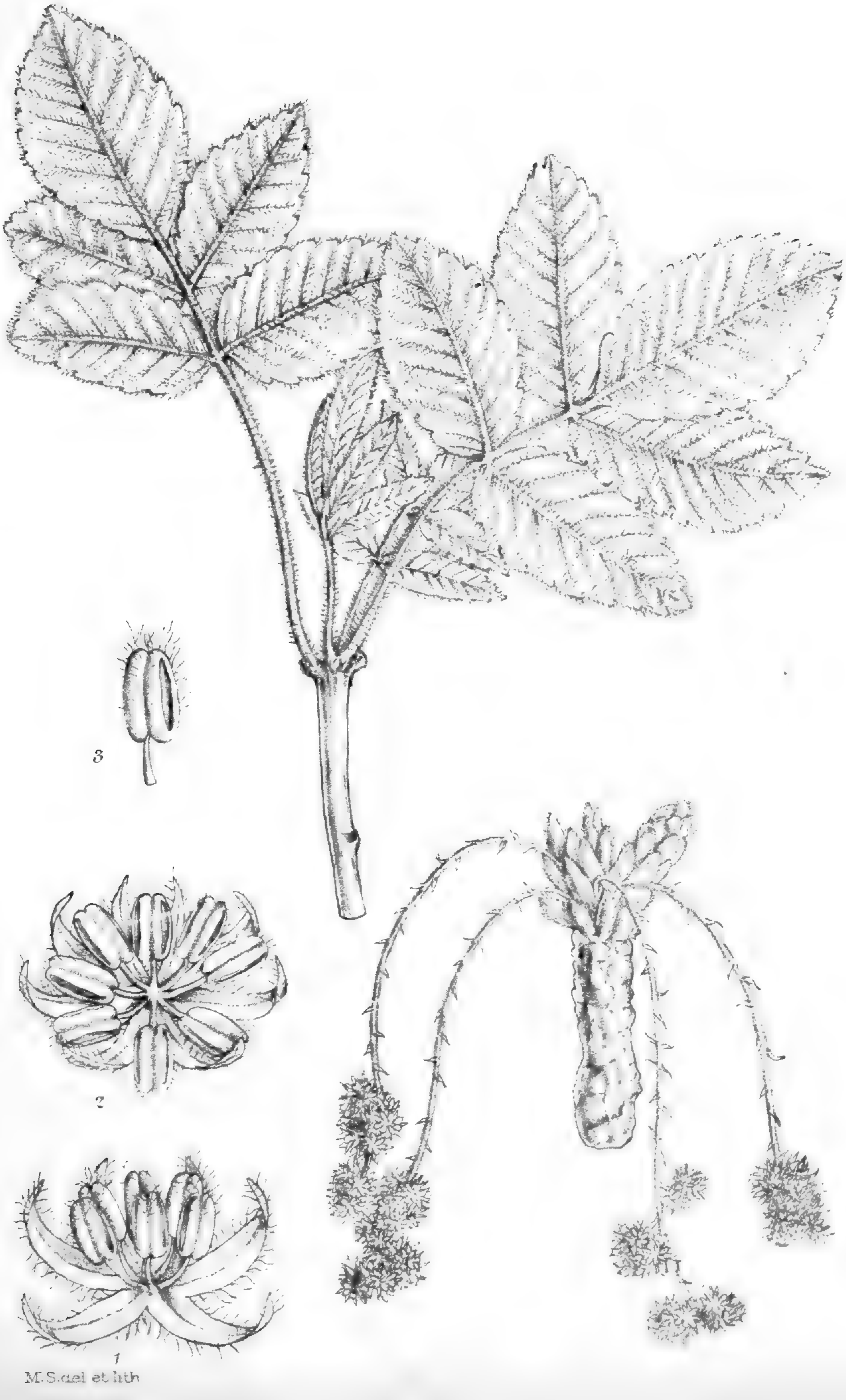
S. borneensis, *Stapf* (*species unica*). *Ramuli* cortice brunnei vel nigricantes. *Folia* bijuga; foliola oblonga vel oblongo-lanceolata, utrinque subacuta vel subacuminata, $3\frac{1}{2}$–5 in. longa, 1–2 in. lata, coriacea, subnitida, nervatione utrinque prominula, nervis secundariis utrinque circiter 5, venarum reticulatione laxa, distincta; petiolus communis 2–$3\frac{1}{2}$ in. longus, basi modice tumidus, apice in subulam productus; petioluli crassiusculi, 4 6 lin. longi. *Racemi* pedunculati, 2–5 poll. longi, ad $\frac{3}{4}$–2 poll. nudi, rhachi tandem incrassata, stricta; bracteæ ovatæ, persistentes, vix $\frac{1}{5}$ lin. longæ; pedicelli ad $\frac{3}{4}$ lin. longi, plerumque breviores. *Calyx* $\frac{3}{4}$ lin. longus, lobis rotundatis vel subacutis, pellucido-punctatus. *Petala* $1\frac{1}{2}$ lin. longa, basi ad $\frac{1}{3}$ lin. coalita, oblonga, obtusa vel subacuta, concava, pellucido-punctata. *Filamenta* rosea, episepala $1\frac{3}{4}$–$1\frac{7}{8}$ lin. longa, epipetala $1\frac{1}{4}$–$1\frac{5}{8}$ lin. longa; antheræ vix $\frac{1}{2}$ lin. longæ. *Ovarium* stipite discum cupularem vix excedente glabro oblongum, superne rufo-villosum.

Borneo: Sarawak, near Kuching, by the river, *Hariland*, 1628.

The distinctly imbricate æstivation of the lobes of the gamosepalous calyx and the corolla distinguish this genus from the *Mimoseæ* as defined at present, and point to the affinity with the small tribe of *Dimorphandreæ* in *Cæsalpineæ*. It can, however, not be said to be closely

allied to one of the four genera composing that tribe. It differs from *Burkea* in the simply pinnate leaves, the long filaments and style, from *Dimorphandra*, two species of which have also simply pinnate leaves, in all the ten stamens being fertile, and the small number of ovules, and from the two remaining genera in the structure of the leaves and the few ovules.—Otto Stapf.

Fig. 1, diagram of a flower; 2, flower-bud seen from above, showing æstivation; 3, a flower; 4, longitudinal section of the same; 5, a corolla; 6, a stamen. *All enlarged.*



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M.S.del et lith

Plate 2722.

JULIANIA MOLLIS, *Hemsl.*

Ordo Naturalis ?

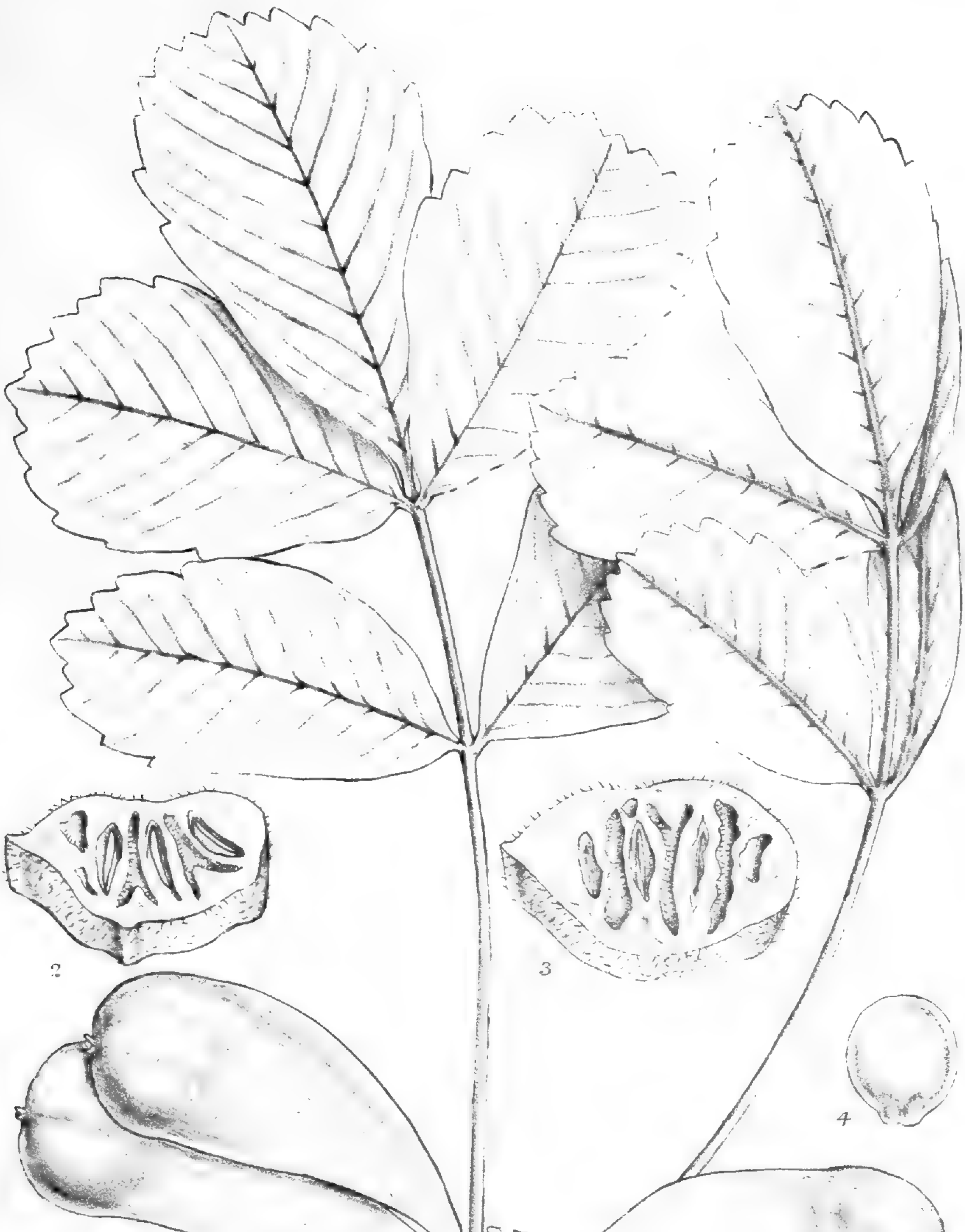
J. mollis, *Hemsl.* (*sp. nov.*) ; a specie unica Mexicana hactenus descripta foliis undique molliter villosis et foliolis ovato-oblongis per totam longitudinem crenatis differt.

Ramuli floriferi crassi. *Folia* decidua, in apicibus ramorum conferta, imparipinnata, distincte petiolata, cum petiolo 3–4 poll. longa, juvenilia saltem omnino albido-villosa ; foliola opposita, sessilia vel subsessilia, crassa, oblonga vel ovato-oblonga, leviter inæqualia, 1–1½ poll. longa, vix acuta, basi rotundata vel subcordata, ab apice usque ad basin alte crenata, venis primariis rectis per crenas excurrentibus. *Flores masculi* minuti, in amenta composita in axillis foliorum superiorum solitaria dispositi ; amenta gracilia, pendula, 2 3 poll. longa, foliis coetanea vel præcociora, infra medium præter bracteolas minutas nuda. *Perianthium* 6–8-partitum ; segmenta lineari-lanceolata, acuta, extus pilosula. *Stamina* 6 8, quam perianthium paullo breviora, antheris longitudinaliter dehiscentibus, supra medium pilis paucis munitis. *Flores* feminei ac fructus hujus speciei ignoti.

Mexico : Barranca of Guadalajara, Jalisco, at 4,000 ft., *C. G. Pringle*, 6871.

This and the following plate are published with the view of elucidating a very obscure genus. It is highly probable that female flowers, if not perfect fruit, of one or the other of the species already exist in herbaria, and these figures may lead to their identification with the foliage. As long ago as 1843 Schlechtendal published (*Linnæa*, xvii. p. 635) a very elaborate description of a Mexican tree, which he named *Hypopterygium adstringens*. This name he afterwards changed (*op. cit.* p. 746) to *Juliania adstringens*, because the former generic name had been previously given to a genus of Hepaticæ. Although Schlechtendal's description is very full so far as it goes, it is insufficient, because he had neither female flowers nor perfect fruit. Our material is not much better, but it comprises three distinct species. A second species, *J. Huaucui*, was published (*Bot. U.S. Expl. Exped.* i. p. 371) by the late Dr. A. Gray ; also from very imperfect material. There are specimens in the Kew Herbarium of *J. Huaucui* from Lima, Matthews, and Canta, in the same district of Peru, McLean. There can be no doubt about the two published species being congeneric, and they are very distinct. Nor is there any doubt about *J. mollis*, Hemsl., being different from the original *J. adstringens*, Schlecht.—W. Botting Hemsley.

Figs. 1 and 2, male flowers; 3, a stamen. *All enlarged.*



M. S. del. et lith.

Plate 2723.

JULIANIA ADSTRINGENS, *Schlecht.*

Ordo Naturalis ?

J. adstringens, *Schlecht. in Linnæa*, xvii. (1843) p. 746 ; a *J. molli*, Hemsl., foliolis supra medium multo latioribus infra medium edentatis facile distinguitur. *Hypopterygium adstringens*, Schlecht. in op. cit. p. 635.

Mexico : Valle Grande, States of Michoacan and Guerrero, at 450 metres, *E. Langlassé*, 319 bis.

There can be little doubt about this being the species described so fully and exactly by Schlechtendal, although he describes the leaves of the sterile branches as *abrupte subcaudato acute acuminata*. With regard to the nature of the fruit, whether inferior or superior, whether two of the seed-vessels spring from a common involucre or from a perianth, we are in no better position to decide than was Schlechtendal some sixty years ago. It will be seen that the seed-vessels are in pairs, and there are indications of some rudimentary enveloping organs at their base. At their apex are remains of styles, and possibly also of perianth-lobes ; but we cannot be sure of their nature. The seed-vessels examined have three collateral or parallel cells, and one imperfect seed was found.

One can only suggest that this singular genus will prove the type of a new natural order, having affinities with the Burseraceæ, Anacardiaceæ, and Juglandaceæ. Mr. Langlassé describes the species here figured as a tree from twelve to twenty feet high having a milky juice and a bark like that of the cork-oak.—W. Botting Hemsley.

Fig. 1, apex of fruit ; 2 and 3, cross sections of the same ; 4, a seed. *All enlarged.*

M.S. del. et lith

Plate 2724.

EMBELIA SAXATILIS, *Hemsl.*

Myrsinaceæ.

E. saxatilis, *Hemsl.* (*sp. nov.*) ; inter species sinenses repentes foliis longe calloso-dentatis insignis.

Frutex ferrugineo-hirsutus caulibus gracilibus elongatis, supra terram et rupes late vagans. *Folia* præcipue in ramulis lateralibus brevibus conferta, distincte graciliterque petiolata, tenuia, lanceolata vel oblongo-lanceolata, cum petiolo 6–15 lin. longa, utrinque attenuata, apiculata, longe calloso-denticulata, nigro-punctata, venis paucis in vagina inferiore satis distinctis. *Inflorescentiæ* pseudo-umbellatæ, in axillis foliorum inferiorum ramulorum lateralium brevissime pedunculatæ, 5–6-floræ, quam folia dimidio breviores, glanduloso-pubescentes, ferrugineæ ; pedicelli filiformes, circiter 3 lin. longi ; bracteolæ lineares, circiter 1 lin. longæ. *Flores* albi (fide *Henry*), dimorphi, i.e. nunc staminibus longe exsertis stylo brevi, nunc stylo exserto staminibus brevibus inclusis. *Sepala* ovata, acuta, $\frac{1}{3}$ lin. longa. *Petala* sublibera, obovato-oblonga, vix acuta, circiter $1\frac{1}{2}$ lin. longa, pulverulenta vel papillosa, glandulis præcipue linearibus prædita. *Genitalia* glabra. *Bacca* globosa, $2\frac{1}{2}$–3 lin. diametro.

China : Mengtze, Yunnan, creeping on wooded cliffs at 8,000 feet. *A. Henry*, 9793.

This is one of several elegant new species of *Embelia* of climbing or trailing habit from Yunnan. The flowers, or rather the genitalia, are dimorphic in the present species. Whether they are functionally unisexual as designated by Dr. C. Mez in his description of *E. polypodioides*, Hemsl. & Mez, I have not been able to ascertain. A description of a very closely allied species may follow here.

E. procumbens, *Hemsl.* (*sp. nov.*) ; species *E. saxatili*, Hemsl., arcte accedit, a qua differt inter cetera foliis tenuioribus oblongo-ellipticis apice rotundatis, floribus minoribus subracemosis, pedunculis longioribus, pseudoracemis folia interdum æquantibus, sepalis denticulatis, petalis nigro-punctatis simul apicem versus rubro-punctatis.

China : Mengtze, Yunnan, growing in mountain forests at 8,000 feet, creeping on the ground, *A. Henry*, 11160.

This also has long- and short-styled flowers with short and long stamens respectively. I should have regarded them as both fertile, in different degrees perhaps, as in Primula ; but it is a point that cannot be settled from the material under examination.—W. Botting Hemsley.

Fig. 1, portion of the margin of a leaf ; 2, a flower ; 3, a part of a calyx and pistil ; 4, a petal and stamen. *All enlarged.*

M.S. del et lith.

Plate 2725.

EMBELIA POLYPODIOIDES, *Hemsl. et Mez.*

Myrsinaceæ.

E. polypodioides, *Hemsl. et Mez in Notizbl. k. Bot. Gart. Berl.* iii. (1901) p. 108; inter species sinenses repentes vel scandentes ramulis foliiferis elongatis, foliis distichis brevissime petiolatis grosse crenatis conspicue insigniterque venosis, pseudo-umbellis 2-3-floris vel interdum floribus in axillis foliorum solitariis, facile distinguitur.

Frutex ferrugineo-hirsutus, vel, præcipue in ramulis, fere setosus, ramulis gracillimis, supra frutices ac arbores scandens. *Folia* dense disticha, superficiebus verticalibus, brevissime petiolata, subcoriacea, cordato-oblonga vel cordato-lanceolata, 9–18 lin. longa, inferiora interdum minora et fere orbicularia, basi leviter cordata, apice mucronata, margine paucicrenata, crenis latis calloso denticulatis, utrinque præter costam glabra vel cito glabrescentia, conspicue nigro-punctata, et subtus insigniter elevato-venosa. *Pseudo-umbellæ* axillares, brevissime pedunculatæ, 2–3-floræ vel interdum floribus solitariis; pedicelli graciles, 1–1½ lin. longi, parce glanduloso-pilosuli; bracteolæ minimæ. *Sepala* subcarnosa, ovato-oblonga, ¾–1 lin. longa, obtusa, margine glanduloso-ciliolata, medio presertim glandulis rubris linearibus immersis instructa. *Petala* rubra, obovato-oblonga, circiter 2 lin. longa, obtusa, papillosa, præcipue supra glandulis rubris immersis instructa. *Stamina* exserta vel inclusa. *Ovarium* glabrum stylo brevi tantum visum. *Bacca* globosa, circiter 2 lin. diametro.

China: South of the Red River from Mammei, at 6,000 ft.; Feng-chenlin, at 7,500 ft.; and forests south-east of Mengtze, at 6,000 ft.—all in the Province of Yunnan. *A. Henry*, 10060, 10060A, and 10060B.

This is a very remarkable species, alike in the shape, crenation, venation, and position of the leaves. Assuming the branches to grow erect, the surfaces of the leaves are in the same vertical plane.—W. Botting Hemsley.

Fig. 1, portion of a leaf; 2, a flower; 3, a part of a calyx and pistil; 4, a fruit; 5, a section of the same. *All enlarged.*

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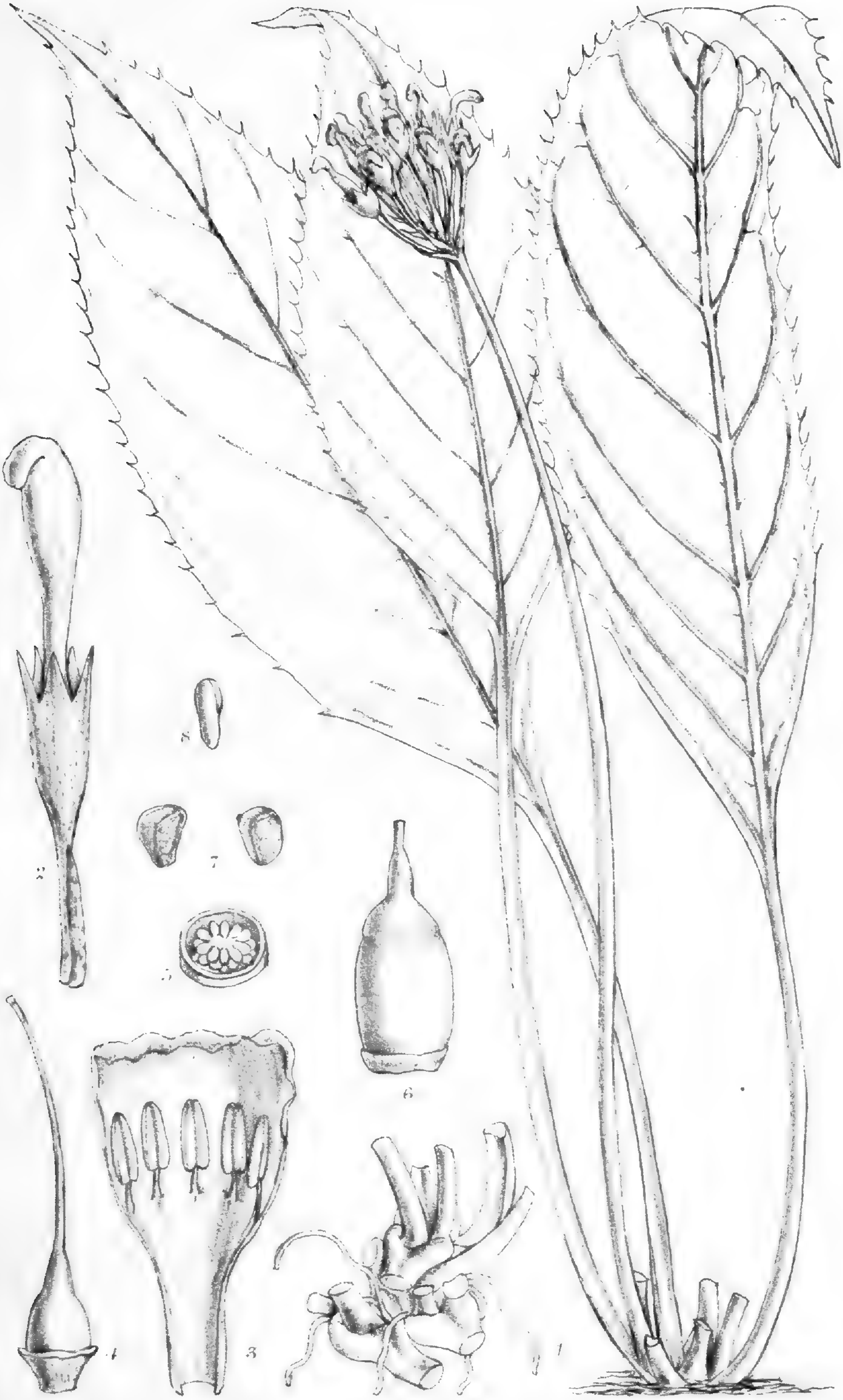


M.S. del. et lith

Plate 2726.

CAROLINELLA HENRYI, *Hemsl.*

Primulaceæ.

Carolinella *Hemsl.* Genus novum habitu et capsula calyptratim dehiscente a *Primula* recedens.

Calyx anguste campanulatus, breviter æqualiterque 5-lobatus, lobis erectis acutis. *Corolla* bene evoluta non visa; tubus cylindricus, rectus, supra medium inflatus; limbus . . . *Stamina* 5, æqualia, inclusa, tubo medio affixa, filamentis brevissimis; antheræ lineari-oblongæ. *Ovarium* oblongo-ovoideum; stylus filiformis, inclusus, basi indurata persistente. *Capsula* ovoidea, polysperma, corolla marcescente coronata. *Semina* inæqualia, sæpius irregulariter cuneata, angulata, lævia, peltatim affixa, longe funiculata.—Herba *perennis scapigera, undique glabra, rhizomate subhorizontali.* Folia *omnia radicalia, coriacea, longe vel longissime petiolata, lanceolata, maxima circiter* 15 *poll. longa, erecta, sæpius utrinque attenuata, interdum basi rotundata, apice acuta, margine aculeolato-dentata, interdum obscure lobulata, venis primariis lateralibus utrinque* 5–6*; petiolus semiteres, quam lamina sæpissime longior.* Scapi *erecti, graciliusculi, per totam longitudinem nudi, quam folia sæpissime longiores.* Flores *parvi,* 10–20 *ad apicem scapi fasciculatim conferti; pedicelli graciles,* 2-5 *lin. longi; bracteolæ lineares, quam pedicelli circiter dimidio breviores.*

C. Henryi, *Hemsl. (species unica).*

China: forests south-east of Mengtze, Yunnan, at 5,000 feet, *A. Henry,* 10735.

This genus is dedicated to the memory of Caroline, the late wife of Dr. A. Henry, who accompanied him to China in 1891, and was with him successively at Shanghai and in Formosa. Mrs. Henry assisted to some extent in collecting, but delicate health necessitated change, and she first went to Japan, where she made a small collection of plants around Arima, near Kobe. Subsequently Mrs. Henry went to Denver, Colorado, accompanied by Miss M. Henry, now Mrs. A. S. Crum, of Mailoor, in the Nilghiris. These two ladies made a considerable collection of Colorado plants, a set of which is at Kew; but Mrs. Henry grew gradually worse, and died in 1894. Perfect flowers of *Carolinella* are still wanting, but I fear we may have long to wait, because the seed from the Kew specimens has not germinated.—W. Botting Hemsley.

Fig. 1. rhizome with bases of leaves and scapes; 2, a flower, the corolla withered; 3, withered corolla laid open, showing stamens; 4, pistil; 5, cross section of ovary; 6, capsule; 7, seeds: 8, embryo. *All except fig.* 1 *enlarged.*

M.S. del. et lith.

Plate 2727.

HARTIA SINENSIS, *Dunn.*

Ternstrœmiaceæ. Tribe Gordonieæ.

Hartia, *Dunn.* Genus novum ex affinitate *Schimæ*, Reinw., a qua staminibus altius monadelphis, fructu acuminato, embryone recto differt.

Sepala 5, basi connata. *Petala* 5, in tubum brevem coalita, superne imbricata. *Stamina* numerosa, corollæ basi adnata, alte monadelpha ; antheræ versatiles. *Ovarium* 5-loculare ; styli 5, connati ; ovula ex basi cujusque loculi 4 5, adscendentia, anatropa. *Capsula* acuminata, 5-sulcata, lignosa, loculicide dehiscens. *Semina* lenticularia, margine alata ; albumen copiosum ; embryo rectus, cotyledonibus orbicularibus planis quam radicula infera brevioribus.—Arbor 20 30-*pedalis* (A. Henry). Folia *alterna, coriacea, supra glabra, infra reticulata, sparse sericea, glabrescentia, ovato-lanceolata,* $2\frac{1}{2}$-4 *poll. longa, acuta vel rarius breviter acuminata, basi rotundata, crenato-serrata ; petiolis semipollicaribus cymbiformibus infra sericeis.* Flores *solitarii, pollicares, pedunculis brevibus axillaribus ; bracteolæ* 2, *ut sepala petalaque externe sericeæ.* Calycis *lobi inæquales, imbricati, rotundati vel acuti, minoribus dentatis, sinibus in fructu apertis.* Petala *alba* (A. Henry), *ovata, margine crenulata, staminibus longiora.* Staminum *tubus partes eorum liberas et corollæ tubum æquans.* Styli *ad apicem cohærentes.* Capsula 7–9 *lin. longa,* 6 *lin. diam.* Semina 1–3 *lin. diam.*

China : Yunnan, south of Manmer in the Red River valley, at 6,000 feet, and in the Szemao forests, at 7,000 feet, *A. Henry*, 10465, 10465a.

The genus is related to *Stuartia*, Linn., and to *Schima*, Reinw. It is distinguished from both by the more extensive cohesion of its stamens ; from the former in addition by its more numerous seeds, and from the latter by its acuminate fruit, more copious albumen, and straight embryo.

The leaves of this species have peculiar boat-shaped petioles, which enclose successively the growing point of the stem.

It is at Dr. Henry's suggestion that the genus is dedicated to Sir Robert Hart, Bart., G.C.M.G., Inspector General of the Chinese Maritime Customs, without whose help and encouragement these and so many other scientific collections by members of his staff could never have been made.—S. T. Dunn.

Fig. 1, a petal ; 2, portion of andrœcium ; 3, pistil ; 4 and 5, seed ; 6, section of a seed, showing embryo. *All except fig.* 4 *enlarged.*

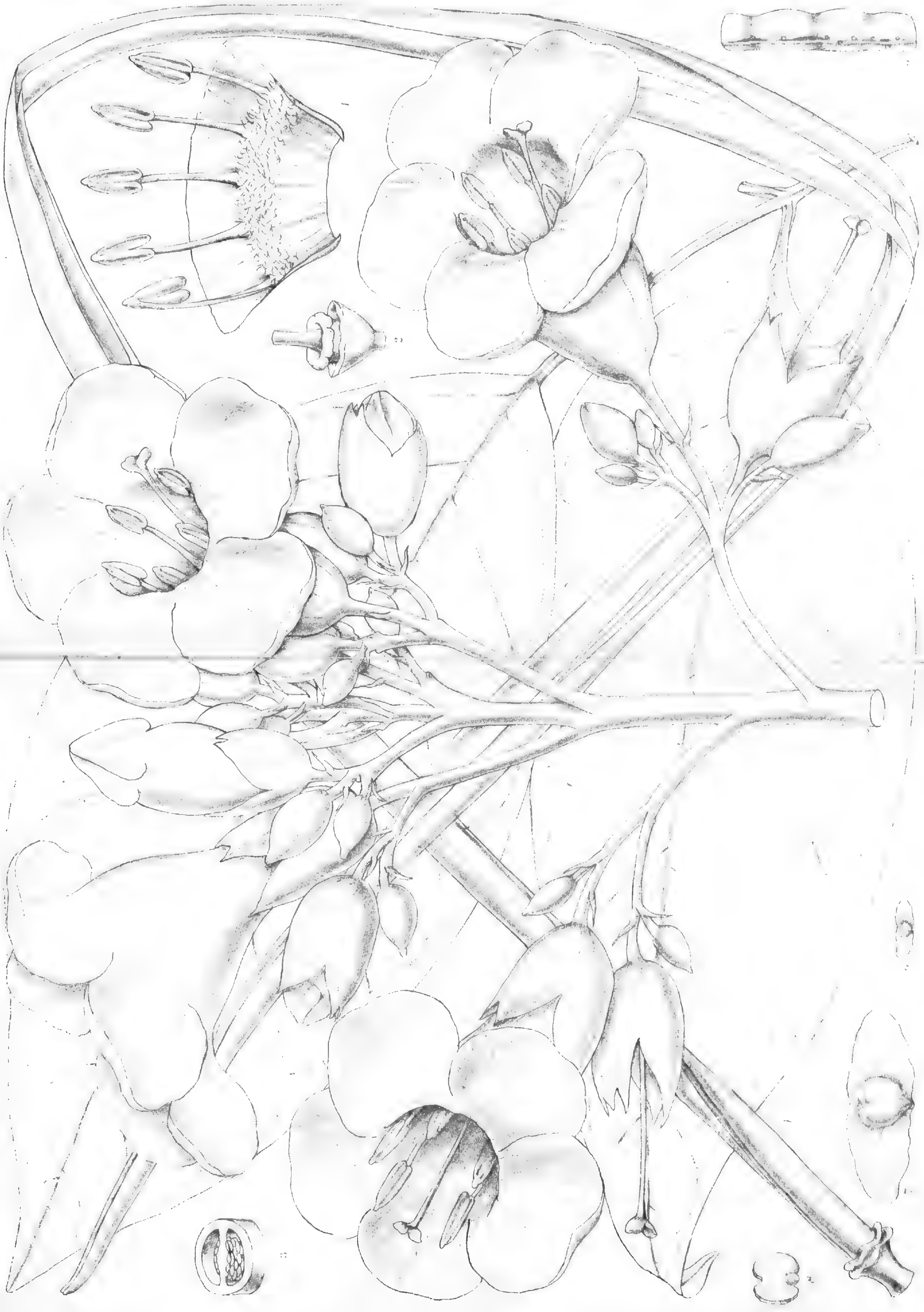


Plate 2728.

RADERMACHERA PENTANDRA, *Hemsl.*

Bignoniaceæ.

R. pentandra, *Hemsl.* (*sp. nov.*); a *R. sinica*, Hemsl., omnibus partibus majoribus, corolla late campanulata, staminibus perfectis 5 differt.

Arbor 20-pedalis, ramulis ultimis crassis rigidis creberrime lenticellatis squamuloso-pulverulentis, medulla copiosa. *Folia* manifeste amplissima, maxima probabiliter pluripedalia, maxima visa circiter tripedalia, cum impari bipinnata vel interdum infra medium tripinnata, circiter quadrijuga, jugis distantibus 3–7-foliolatis, petiolo communi valido; foliola petiolulata, coriacea, ovato-lanceolata, maxima absque petiolulo 9 poll. longa, sæpius 4–6 poll. longa, integra, acute acuminata, basi cuneata vel interdum rotundata, glaberrima, supra subnitida, subtus pallidiora, venis primariis lateralibus utrinque 8–10. *Flores* flavi, $2\frac{1}{2}$–3 poll. diametro, in paniculas laxas rigidas terminales circiter pedales dispositi, pedicellis brevioribus graciliusculis. *Calyx* campanulatus, circiter 1 poll. longus latusque, irregulariter lobatus, lobis acutis. *Corolla* late campanulata, intus ad insertionem staminum annulo pilifero ornata, cetera glabra, lobis subæqualibus late rotundatis integris reflexis. *Stamina* perfecta 5, fere æqualia, corollæ tubum vix superantia. *Discus* crassus, carnosus, cupuliformis, brevissime latissimeque lobatus, fructifer auctus. *Ovarium* glabrum, cylindricum, angustum, circiter $\frac{1}{2}$ poll. longum; ovula numerosissima, multiseriatim superposita. *Capsula* subteres, per totam longitudinem æqualis, usque ad 3 ped. longa, primum squamuloso-pulverulenta, valvis tenuibus coriaceis 3–4 lin. latis. *Semina* 5–7 lin. longa, cotyledonibus planis.

China: Mengtze, Yunnan, at 5,000 ft., *A. Henry*, 10909.

In Bentham and Hooker's 'Genera Plantarum' *Radermachera*, Zoll. et Mor., is treated as a section of *Stereospermum*, Cham., but most subsequent writers on the order have agreed in restoring it to generic rank; and I think there are good grounds for the separation. In *Stereospermum* the seeds are arranged in two rows in each cell of the capsule; the embryo is folded, and the seed in consequence prominently ridged on one side, and the seeds fit into deep depressions in the placenta. *S. sinicum*, Hance, is also a *Radermachera*. The pentandry of the species here figured seems to be as complete as in *Oroxylum*

indicum, Vent. Wight (*Ic. Pl. Ind. Or.* t. 1341) figures *Stereospermum chelonoides*, DC. as pentandrous, but all other authors consulted figure and describe the stamens as didynamous.—W. Botting Hemsley.

Fig. 1, portion of corolla and the five equal stamens; 2. ovary and disk; 3, cross-section of ovary; 4, portion of placenta; 5 and 6, seeds; 7, embryo. *All except figs. 4 and 5 enlarged.*

M.S del. et lith.

Plate 2729.

TEPHROSIA CLEMENTI, *Skan.*

Leguminosæ.

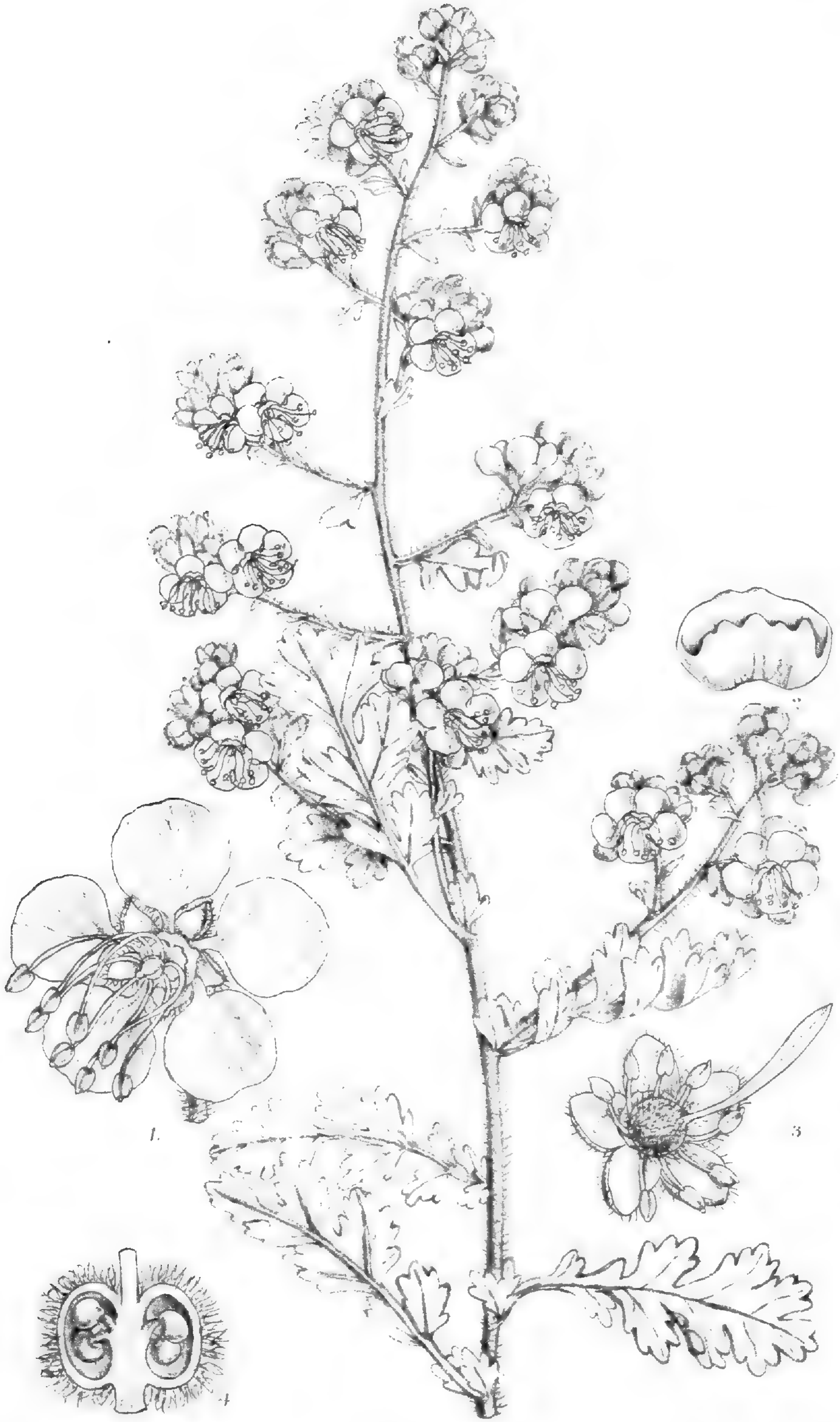
T. Clementi, *Skan* (*sp. nov.*); inter species australienses foliis digitatis facile distinguenda.

Suffrutex 3-6 poll. altus, radice lignosa incrassata. *Ramuli* erecti vel patentes, angulati, persistenter argenteo- vel brunneo-pubescentes. *Folia* digitatim 5–7-foliolata, foliolis lanceolatis vel oblanceolatis mucronatis 4–15 lin. longis $1\frac{1}{2}$-$3\frac{1}{2}$ lin. latis supra luteo-viridibus inconspicue pilosis infra dense appresse argenteo-pilosis; petioli sulcati, $\frac{1}{2}$–$1\frac{3}{4}$ poll. longi; stipulæ aciculares, 3–4 lin. longæ. *Racemi* terminales, stricti, laxissimi, bracteis subulatis 2 $2\frac{1}{2}$ lin. longis instructi. *Flores* breviter pedicellati. *Calyx* 1 lin. longus, dense pubescens, dentibus angustis subæqualibus tubo paulum longioribus. *Corolla* 3 lin. longa, pallide rubra vel purpurea, vexillo orbiculari dorso dense sericeo. *Legumen* lineare, circiter 1 poll. longum, dense brunneo-pubescens, polyspermum.

North-Western Australia: between the Ashburton and Yule Rivers, *Clement.*

T. Clementi has no close ally among the already known Australian species. It is probably most nearly related to the African *T. lupinifolia*, DC., but is a much smaller plant, and may be easily distinguished from it by the long, narrow stipules and the longer calyx-teeth.—S. A. Skan.

Fig. 1, a bract; 2, a flower; 3, a keel-petal; 4, andrœcium; 5, pistil; 6, open pod; 7, a seed. *All enlarged.*



M.S.del.et Lith

PLATE 2730.

DIPLOPELTIS ERIOCARPA, *Hemsl.*

SAPINDACEÆ. Tribe DODONEÆ.

D. eriocarpa *Hemsl.* (*sp. nov.*); a *D. Huegelii*, Lindl., differt petalis 5, ovario fructuque dense piloso.

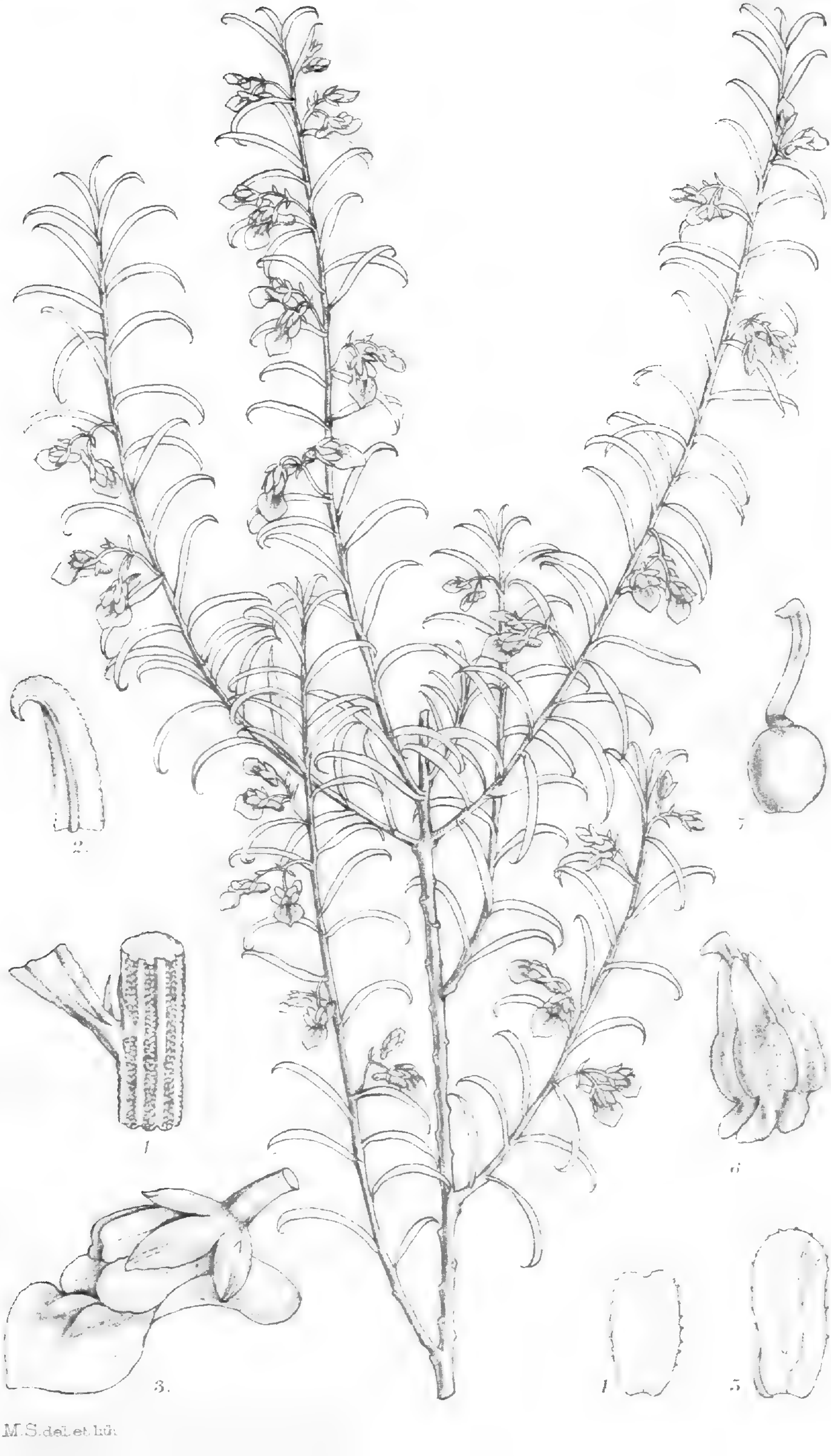
Frutex 1–2-pedalis, dense ramosus, omnino molliter hirsutus vel villosus, ramulis floriferis graciliusculis, internodiis quam foliis multo brevioribus. *Folia* sessilia, crassa, vix coriacea, obovato-oblonga, 1–1½ poll. longa, pinnatifida vel subbipinnatifida, segmentis variabilibus sed sæpius cuneatis apice tridentatis. *Flores* polygami vel monoici, circiter 6 lin. diametro, anguste paniculati, breviter pedicellati. *Sepala* parva, ovalia, hirsuta. *Petala* semper 5, orbicularia, breviter unguiculata. *Stamina* fl. masc. 8, glabra, declinata, petala æquantia vel paullo excedentia; fl. fem. imperfecta, quam petala multo breviora. *Discus* posticus, crassus, carnosus, bilamellatus, lamella interiore breviore denticulata. *Ovarium* hirsutum, biloculare (an semper ?), loculis biovulatis; stylus elongatus, applanatus, sursum curvatus. *Capsula* pilosissima, loculis dispermis. *Diplopeltis Huegelii*, var. (?) *eriocarpa*, Benth. Fl. Austral. i. p. 456.

NORTH-WEST AUSTRALIA; Between the Ashburton and De Gray rivers, *Dr. E. Clement*.

Bentham doubtingly referred this to *D. Huegelii*, Endl., but he had only a single specimen from Nichol Bay, collected by F. Gregory. Now, with copious specimens under observation, I have no doubt about its being a different species. In all the descriptions of this genus consulted, the petals are given as four with the place of the fifth vacant. In all of Clement's specimens the flowers appear to be always pentapetalous. W. BOTTING HEMSLEY.

Fig. 1, a male flower; 2, disk of the male flower; 3, a female flower, the petals removed; 4, longitudinal section of ovary. *All enlarged.*

Pl. 2731



M.S. del. et lith.

Plate 2731.

IONIDIUM FLORIBUNDUM, *Walp.*

Violaceæ.

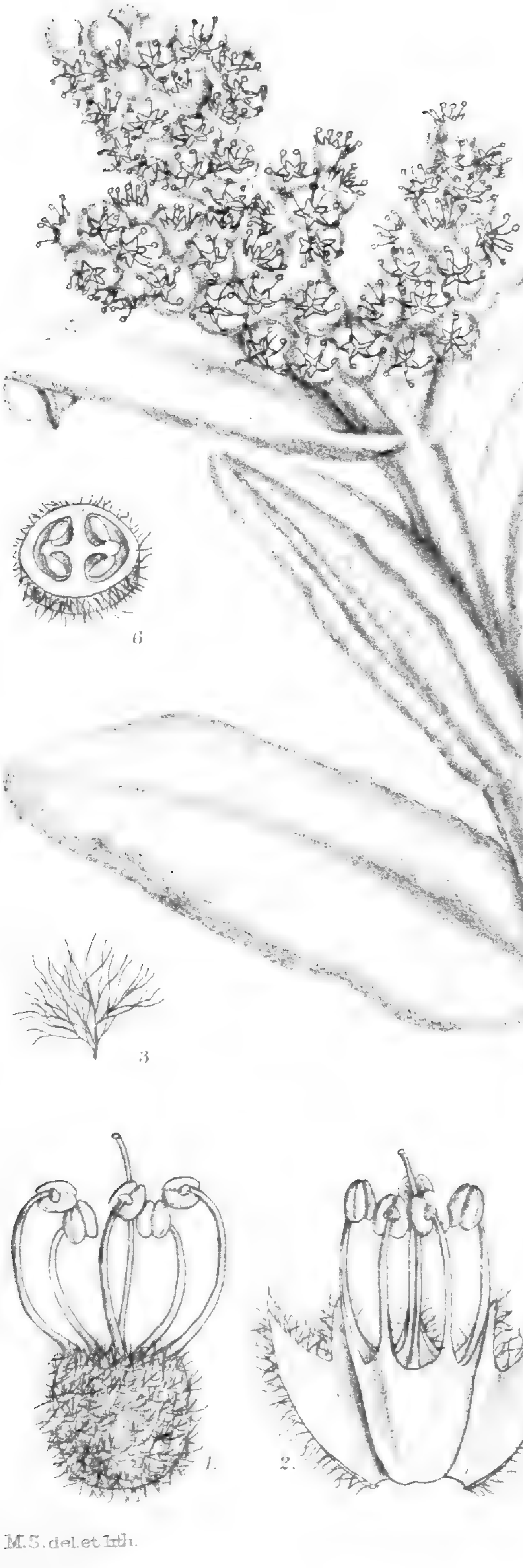
I. floribundum, *Walp. Rep.* ii. p. 767 ; *Benth. Fl. Austral.* i. p. 102 ; species ex affinitate *I. brevilabris*, sed glabra, pedunculis bifloris, floribus duplo majoribus.

Frutex glaber, erectus, 1–2-pedalis, caulibus ramisque gracillimis, internodiis quam foliis brevioribus. *Folia* sessilia, linearia, rigida, marginibus incurvis, sæpius 5–9 lin. longa, apice recurva, mucronata, stipulis minutis cito deciduis. *Pedunculi* axillares, solitarii, gracillimi, sæpissime biflori, cum floribus folia vix superantes ; bracteæ bracteolæque minutissimæ. *Sepala* lanceolata, inæqualia, quam petala lateralia breviora. *Petala* lateralia oblonga, apice rotundata, superiora minora, truncata et emarginata, inferius longiuscule calcaratum. *Antheræ* puberulæ. *Ovarium* glabrum, stylo curvato. *Capsula* deest.

West Australia : Coolgardie, *R. Helms.*

The specimens here figured of this very variable species were received from Mr. Alex. Morrison, Botanist to the Department of Agriculture, Perth, West Australia. They were at first supposed to belong to an undescribed species, and the description only covers the plant figured.—W. Botting Hemsley.

Fig. 1, portions of stem leaf, with stipules; 2, tip of leaf; 3, a flower; 4 and 5, petals; 6, androecium; 7, gynæceum. *All enlarged.*



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M.S. del. et lith.

Plate 2732.

LACHNOSTACHYS VERBASCIFOLIA, *F. Muell.*

Verbenaceæ.

L. verbascifolia, *F. Muell. Fragm. Phyt. Austral.* vi. p. 158 ; Benth. *Fl. Austral.* v. p. 38, floribus pentameris.

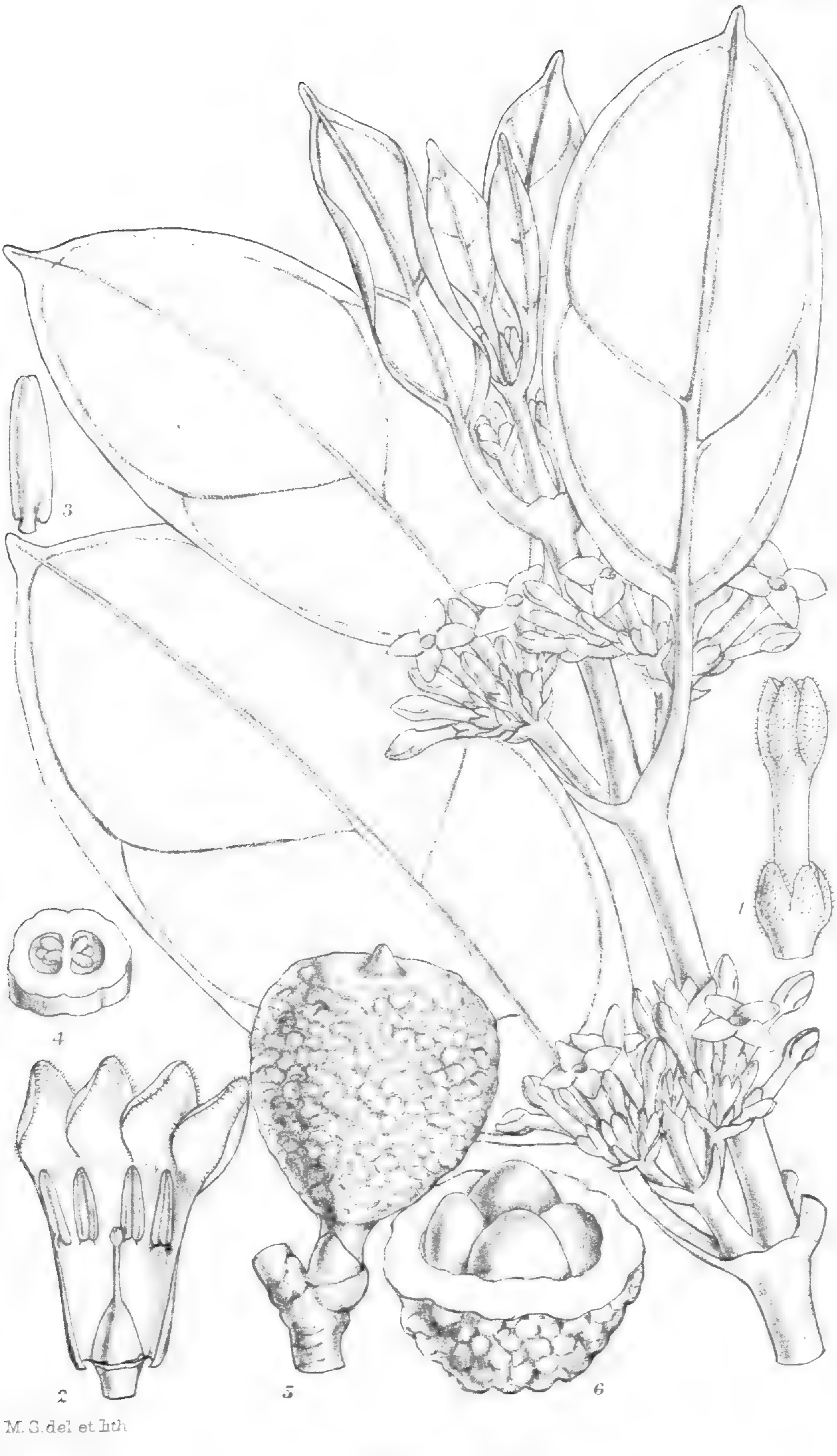
West Australia : Cue, *Victor.* Herbarium of the Bureau of Agriculture, W. A.

This, one of the most singular plants in the Australian Flora, was also received through Mr. Alex. Morrison.

The genus *Lachnostachys*, Hook., was founded in the *Icones Plantarum* in 1842, and two species are figured : *L. albicans*, Hook., t. 414, and *L. ferruginea*, Hook., t. 415 ; but the floral structure was misunderstood and the ovary was not accounted for. It was first referred to Amarantaceæ. Afterwards, F. Mueller, describing (*Fragm. Phyt. Austral.* i. p. 241) another species, under the name of *Walcottia eriobotrya*, placed it in the Buettneriaceæ with the remark : 'plantam Verbenaceam quam Buettneriaceam mentiens.' The same plant was subsequently described by Turczaninow (*Bull. Soc. Nat. Mosc.* 1863, ii. p. 215), as *Pycnolachne ledifolia*, and correctly referred to the Verbenaceæ. *Lachnostachys verbascifolia*, so far as my investigations go, is invariably pentandrous, with a pentamerous calyx and corolla ; but both Mueller and Bentham describe it as sex-novemmerous. The corolla lobes are not developed between the stamens. Briquet (Engler & Prantl, *Natürl. Pflanzenf.* iv. 3. A. p. 164) has, by a slip, substituted the name *Lachnocephalus* for *Lachnostachys*, so that the latter name does not appear in the index to the work cited.—W. Botting Hemsley.

Fig. 1, a flower ; 2, calyx laid open showing attachment of stamens on the rim of the corolla ; 3, a branched hair ; 4, pistil and disk ; 5, longitudinal section of an ovary ; 6, cross-section of the same. *All enlarged.*

Pl 2733



M. S. del et lith

Plate 2733.

LEUCONOTIS ELASTICA, *Becc.*

APOCYNACEÆ.

L. elastica, *Becc. Nelle Foreste di Borneo*, pp. 358, 562, 563, fig. 59 ; ab omnibus speciebus hucusque descriptis foliis amplis ellipticis vel late elliptico-oblongis abrupte cuspidato-acuminatis, nervis utrinque 2–3 patulis subtus eximie conspicuis et sub margine arcuato-connexis distincta.

Rami juniores crassi, glaberrimi, exsiccando nigrescentes, magis minusve vernicosi, internodiis 2 3 poll. longis. *Folia* elliptica vel late elliptico oblonga, utrinque rotundata, apice abrupte cuspidato-acuminata, 5 6 poll. longa, $2\frac{3}{4}$ $3\frac{1}{4}$ poll. lata, crasse coriacea, glaberrima, in alabastra vernice induta, supra exsiccando fuscescentia vel nigrescentia, lucida, subtus magis minusve glauca, costa et nervis lateralibus utrinque 2 3 sub margine arcuato connexis supra immersis subtus prominulis eximie conspicuis ; petioli robusti, 1 poll. longi, paris cujusque linea transversa elevata connexi. *Inflorescentiæ* paniculatæ, congestæ, foliis multo breviores, minute puberulæ, demum glabrescentes ; pedunculus crassus, vix $\frac{1}{2}$ poll. longus ; bracteæ ovatæ, acutæ, inferiores ad 2 lin. longæ ; pedicelli crassi, brevissimi. *Calyx* 2 lin. longus, segmentis oblongis obtusis apicem versus puberulis intus eglandulosis. *Corolla* flava ; tubus ad 5 lin. longus, e basi latiore cylindricus, glaber ; lobi rotundato-ovati, 2 lin. longi. *Antheræ* supra tubum medium insertæ, os attingentes, $1\frac{1}{2}$ lin. longæ. *Ovarium* glabrum, 2-loculare, loculis pauciovulatis. *Fructus* ovoideo-globosus, baccatus, dense verrucosus, $1\frac{1}{5}$–2 poll. longus. *Semina* (haud plane matura) circiter 4, oblonga, ad 6 lin. longa ; cotyledones foliaceæ basi cordata ; radicula brevis.

BORNEO : Sarawak, Bintulu, *Beccari*, 899, 2291 ; near Kuching, *Haviland*, 3063.

Beccari, 3708 (*l.c.* p. 562), also from Sarawak, comes very near to *L. elastica* ; but its leaves taper more gradually towards the acumen, and have 4 or 5 nerves on each side. The internodes of the leaf-bearing branches are also shorter, being only 1–2 in. long. There are, however, neither flowers nor fruits, and it is therefore impossible to say whether it is only a slightly aberrant form of *L. elastica* or not. *L. elastica* is, according to Beccari, an excellent rubber plant.—OTTO STAPF.

Fig. 1, a flower-bud ; 2, the same, in longitudinal section ; 3, an anther ; 4, pistil ; 5, cross-section of ovary. *All enlarged.*

M.C. del. et lith.

Plate 2734.

DIURANTHERA MAJOR, *Hemsl.*

Liliaceæ. Tribe Asphodeleæ.

Diuranthera, *Hemsl.* Genus novum a generibus hujus affinitatis differt staminibus divergentibus, antheris basi bicaudatis.

D. major, *Hemsl.* (*sp. nov.*); a *D. minore*, H. C. Wright (infra), statura, foliis multo latioribus undulatis flaccidis recurvis, floribus majoribus, antherarum caudis acutis recedit.

Herba scaposa, glabra, circiter bipedalis. *Folia* pauca, subcarnosa, late linearia vel lingulata, maxima visa pedalia, crispato-undulata, margine minute papillosa, flaccida, recurva, acuta, nervis utrinque 6–8. *Scapus* erectus, pauciramosus, bracteis quam floribus brevioribus angustis acutissimis. *Flores* albi, glabri, circiter 2 poll. diametro, geminati vel terni, singillatim evoluti, breviter pedicellati, pedicellis medio articulatis. *Perianthii segmenta* similia, sed interiora angustiora, linearia, acutissima, recurva, marcescentia. *Stamina* 6, divaricata, quam perianthium breviora, filamentis filiformibus; antheræ elongatæ, curvatæ, basi bicaudatæ. *Ovarium* sessile, 3-loculare, loculis circiter 12-ovulatis; stylus valde declinatus, apice recurvus, stigmate parvo. *Capsula* trialata, loculis sæpius dispermis. *Semina* orbicularia, compressa, circiter $1\frac{3}{4}$ lin. diametro, basi biauriculata, funiculo inter auriculas posito; testa crustacea, nigra, punctulata; embryo clavatus, in albumine carnoso centralis et oblique positus, radicula hilum spectans.

Western China: raised from seed collected by Mr. E. H. Wilson for Messrs. James Veitch & Sons, who presented Kew with a living plant, from which our drawing and description were made.

D. minor, *H. C. Wright*, hic; *Paradisea minor*, H. C. Wright, in Kew Bulletin, 1895, p. 118.

Western China: Mengtze, Yunnan, at 6,000 feet, *W. Hancock*, 94.

The characters upon which this genus is founded may seem rather slight, but Mr. J. G. Baker, whose knowledge of the Liliaceæ is probably unsurpassed, agrees that it is as distinct as many others, and that it would be difficult, as an alternative, to decide what existing

genus to place it in. The stamens recall those of some of the Melastomaceæ, and especially those of some of the species of *Dichætanthera* figured in Baillon's *Histoire Naturelle des Plantes de Madagascar*, tt 378–382. The seeds are very peculiar, but unfortunately they were not obtained until after the plate was printed off.—W. Botting Hemsley.

Figs. 1 and 2, anthers in different positions; 3, cross-section of ovary. *All enlarged.*

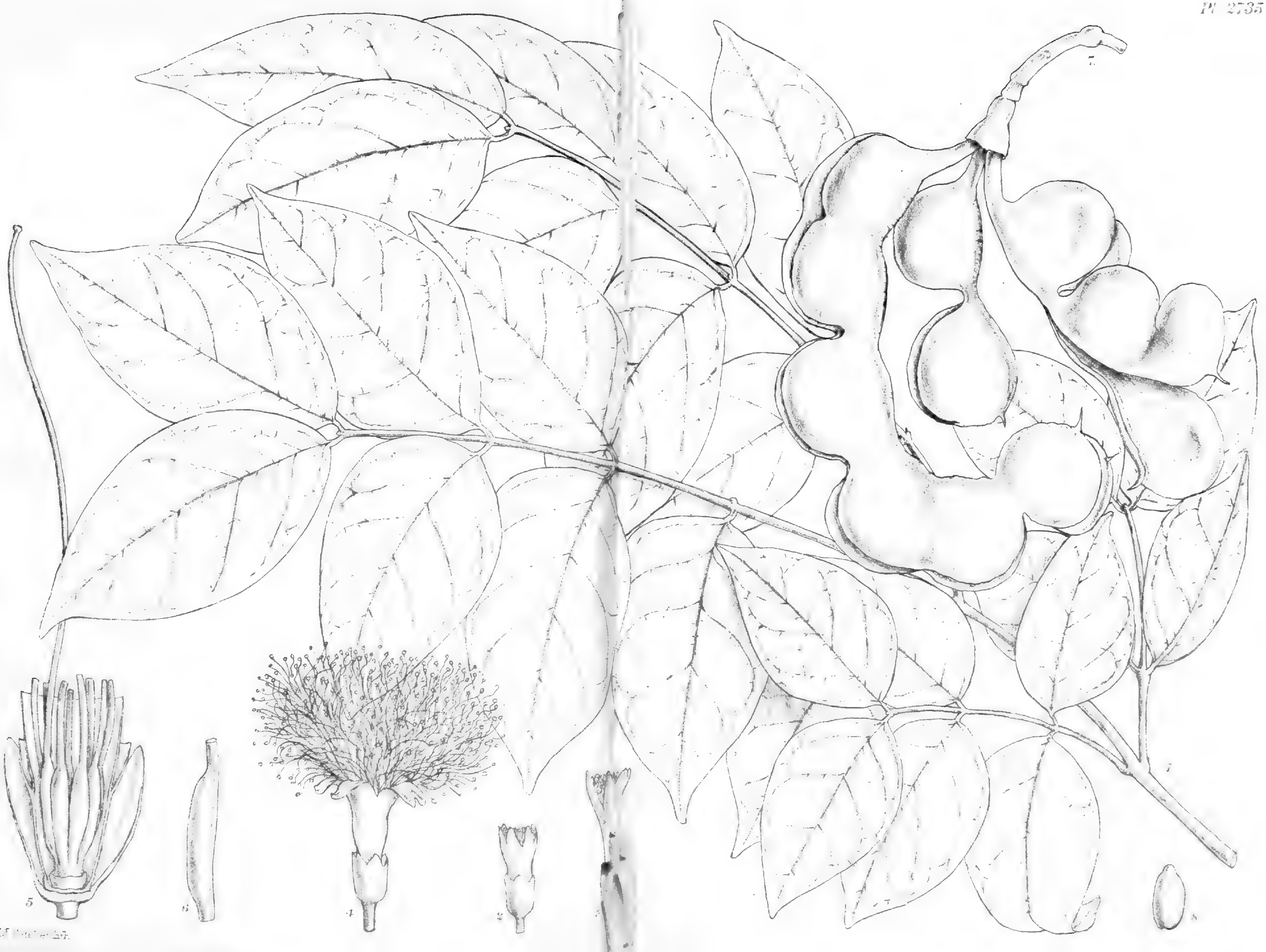

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Plate 2735.

ARCHIDENDRON SOLOMONENSE, *Hemsl.*

Leguminosæ. Suborder Mimoseæ.

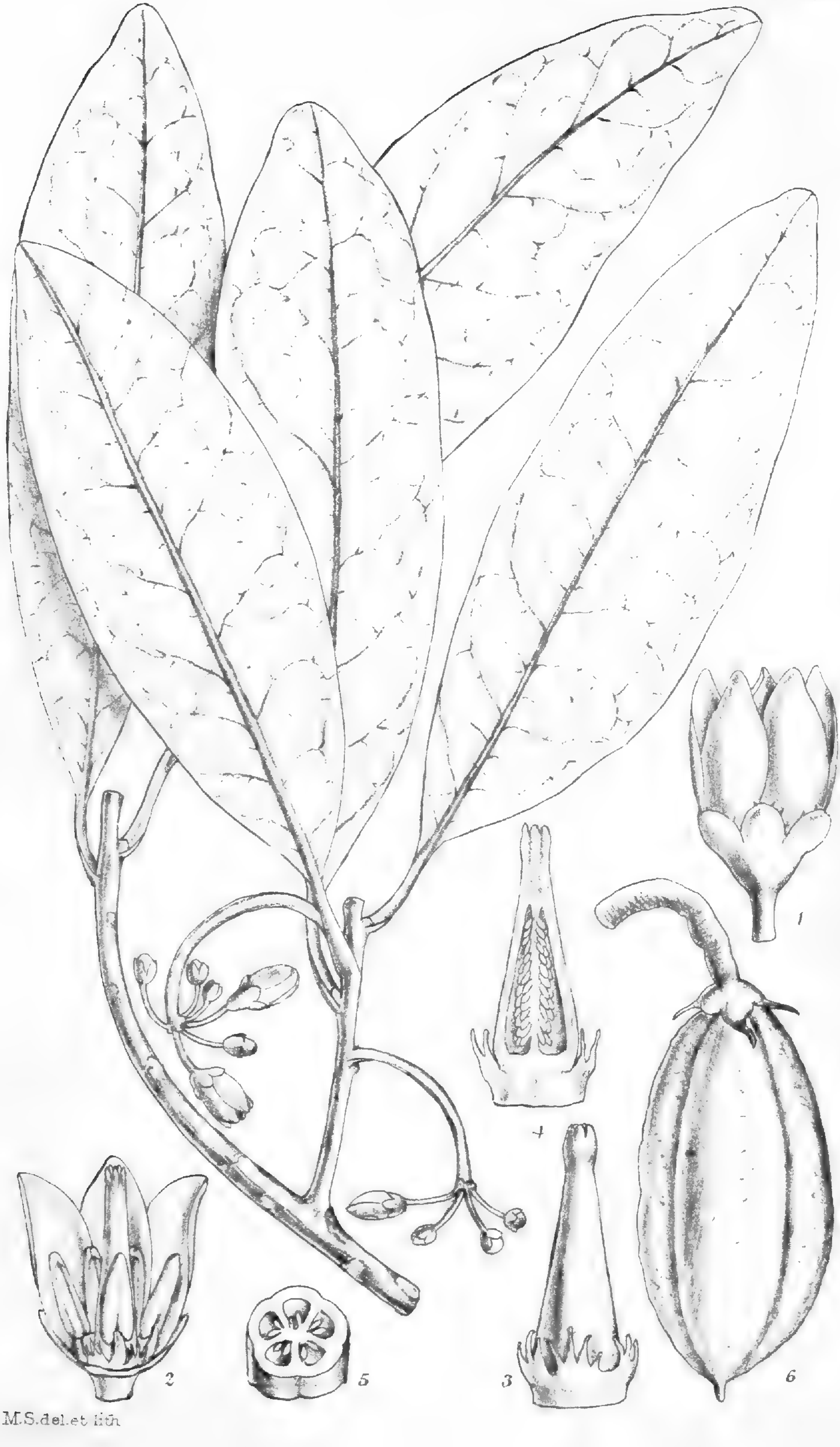
A. solomonense, *Hemsl. (sp. nov.)*; ab *A. incurvato,* Laut. et K. Schum, pinnis inæqualibus, foliolis tenuioribus, venis primariis numerosioribus diversum.

Arbor 20-pedalis, trunciflora. *Folia* petiolata, ampla, glabra, paribipinnata, petiolo communi tereti, perfecto non viso; pinnæ bijugæ, distantes, stipitatæ, inæquales, par superius majus, circiter pedale, 10-foliolatum, par inferius minus, circiter semipedale, 6-foliolatum. *Foliola* breviter petiolulata, tenuia, fere membranacea, ovata, 3–6 poll. longa, interdum leviter obliqua, obtuse acuminata, basi rotundata vel interdum subcuneata, integra, venis primariis lateralibus utrinque circiter 7, venis ultimis conspicue reticulatis. *Pedunculi* ex trunco vel ligno vetere (*Comins*) 3–4 poll. longi, circiter 5–6-flori. *Flores* prope apicem pedunculi conferti, breviter pedicellati, cum staminibus circiter bipollicares. *Calyx* coriaceus, per anthesin tubulosus, inæqualiter breviterque dentatus vel fere truncatus, fructifer auctus, campanulatus, fissus. *Corolla* circiter pollicaris, subcarnosa, lobis apice incrassatis intus carinatis. *Stamina* numerosissima, longe exserta. *Gynæcei carpella* circiter 8, glabra, stylis stamina æquantibus. *Legumina* maturescentia sæpe 3–5, stipitata, crassa, carnosa, vivide rubra, incurva, usque ad 6 poll. longa, dorso alte lobata, cito dehiscentia. *Semina* nigra (*Comins*) ut videtur anguste ovoidea sed perfecta non visa.

Solomon Islands: 'only one tree known near the village of Madoa, Ulawa,' *C. B. Comins,* 249.

Archdeacon Comins, who has sent so many interesting plants to Kew from the Solomon Islands, states that the natives call this tree *Ai mahai,* which is the name they also give to *Pongamia glabra.* So far as I know, no good figure of the ripe fruit of one of these pluricarpellary Mimoseæ has hitherto been published. By soaking the specimen sent by Archdeacon Comins, the artist has been able to give a very fair representation of the pods, but perfect seeds are still wanting. The leaf, too, is not quite perfect, wanting the lower part of the petiole. *Hansemannia oblonga,* Hemsl. (*Kew Bulletin,* 1892, p. 125), is another tree of this affinity from the same source.—W. Botting Hemsley.

Fig. 1, a leaf wanting the lower part of the petiole; 2 and 3, quite young flowers; 4, a fully expanded flower; 5, gynæceum with parts of calyx and corolla, and one of the styles full length; 6, an ovary; 7, a fruit; 8, a seed. *All except 5 and* 6 *natural size.*



M.S.del.et lith

Plate 2736.

THOMASSETIA SEYCHELLANA, *Hemsl.*

Ternstrœmiaceæ.

Thomassetia, *Hemsl.* Genus novum nulli propinquum, inter *Ternstrœmiaceas* ob staminodia insigne.

Flores hermaphroditi. *Sepala* 5, imbricata, rotundata, margine minute denticulata. *Petala* 5, contorto-imbricata, nunc sinistrorsim nunc dextrorsim obtegentia, ovato-oblonga, obtusa, libera, glabra. *Stamina* 5, petalis alternantia et ea paulo excedentia; filamenta carnosa, ima basi inter se et cum staminodiis leviter cohærentia; antheræ basi cordiformes, inter lobos basifixæ, longitudinaliter dehiscentes. *Staminodia* circiter 15, dentiformia, in phalanges 5 inter stamina in eadem serie posita, persistentia, fructifera plus minusve aucta. *Ovarium* glabrum, 5-loculare; ovula numerosissima, biseriatim superposita, ab axi pendula; styli breves, ad apices connati, stigmatibus punctiformibus. *Fructus* capsularis, oblongo-ovoideus, ut videtur septicide dehiscens. *Semina* ovoidea, basi attenuata; perispermium parcum vel tenue. *Embryo* rectus; cotyledones ovoideæ; radicula brevissima. Arbor *parva, ramulis floriferis crassiusculis, novellis glabris.* Folia *alterna, simplicia, distincte petiolata, coriacea, glabra, oblongo-lanceolata vel oblanceolata, cum petiolo* 3–5 *poll. longa, obtusa vel rotundata, basi subrotundata, margine cartilaginea, interdum obscure remoteque crenato-undulata, subtus pallidiora, venis primariis lateralibus utrinque circiter* 10 *in siccis sat conspicuis.* Pedunculi *axillares, compressi, circiter pollicares, recurvi, apice breviter bifurcati.* Flores *flavo-albidi*, 9-12 *lin. diametro, in fasciculos duos divergentes ad pedunculi apicem aggregati, distincte pedicellati.* Fructus *bipollicaris, staminodiis auctis suffultus.*

T. seychellana, *Hemsl.* (*species unica*).

Seychelles: summit of Mount Sebert, Mahé, at 1,800 feet, *H. P. Thomasset*, 33.

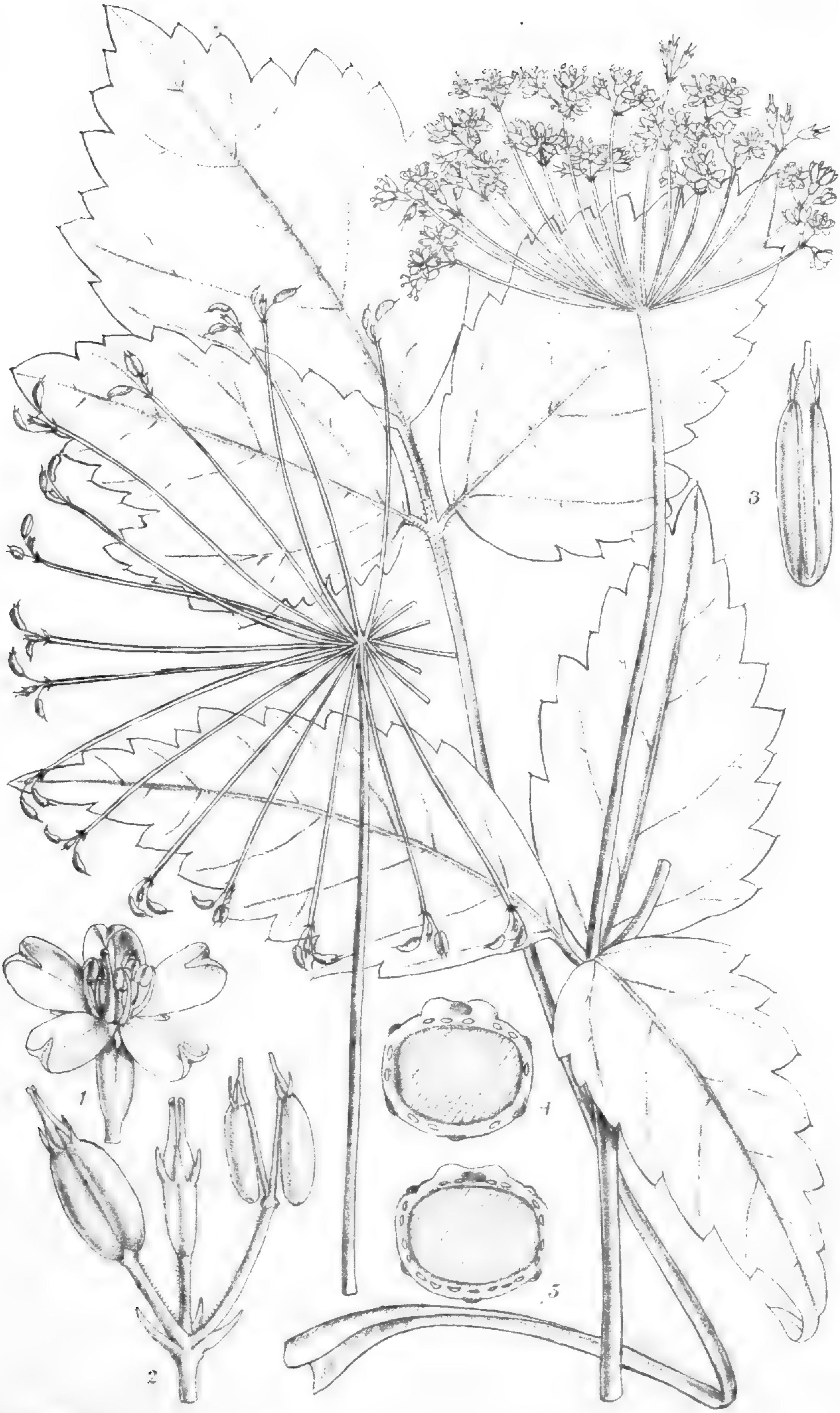
The specimen figured is all that I have seen of this interesting tree. The figure of the fruit is from a drawing by Mr. Thomasset, the collector of this and about fifteen other plants from the same island received at Kew for determination from the late Dr. Schimper, of Basle. Mr. Thomasset is the appreciative possessor of the Cascade

Estate, in Mahé, which includes a considerable tract of original forest. Fortunately for science, Mr. Thomasset intends to preserve this interesting vegetation, and also to investigate thoroughly the natural history of the island.

After the figure here given was printed off, a coloured drawing was found at Kew which evidently represents the same genus and almost certainly the same species. It belongs to the Wallich collection, is numbered 187, and dated 1828, and on the back is the inscription 'of Mauritia,' probably written by the native Indian artist. The presumption is that it was made from a plant cultivated in the Calcutta Botanic Garden at that date. Search for specimens in the London herbaria has been made in vain, and Major Prain, who has kindly searched the Calcutta herbarium, has also been unsuccessful. Wallich's drawing has brought out more strongly some of the characteristics of the plant, especially the short bifurcation of the peduncle, by which the flowers are divided into two distinct clusters, which is not so evident in our imperfect specimen. The embryo, too, was described from his drawing.

The singular inflorescence, five stamens, and the presence of staminodia, which persist and grow out, are characters which render it difficult to determine the exact position of the genus; but I think there is no alternative as to the natural order.—W. Botting Hemsley.

Fig. 1, a flower; 2, the same, from which some of the parts have been removed to show the five stamens; 3, pistil and staminodia; 4, longitudinal section of the ovary; 5, cross-section of the same; 6, a fruit. *All except* 6 *enlarged.*



M.S. del et lith.

Plate 2737.

CRYPTOTÆNIOPSIS VULGARIS, *Dunn.*

Umbelliferæ. Tribe Ammineæ.

Cryptotæniopsis, *Dunn.* Genus novum *Euammineārum* ab affinibus consociatione umbellarum regularium multiradiatarum et umbellulis irregularibus pauciradiatis differt.

Calycis dentes breves vel ad tertiam partem fructus accedentes vel obsoleti. *Petala* in acumen inflexa vel plana. *Fructus* ovatus vel oblongus, a latere compressus, ad commissuram sæpe angustam constrictus ; carpella teretia ; juga primaria æqualia, distantia, plus minus prominula, nonnunquam obscure scabrida ; vittæ 1–5, in quoque valleculo et rarius etiam sub jugis. *Carpophorum* bipartitum. *Semen* teres. Herbæ *perennes.* Folia *pinnatim vel ternatim composita.* Umbellæ *multiradiatæ, regulares.* Umbellulæ 1–4-, sæpius 3-*floræ inæqualiter radiatæ, nonnunquam racemos simulantes.* Involucri *bracteæ nullæ vel paucæ ; involucelli bracteolæ sæpius* 3.

C. vulgaris, *Dunn* (*sp. nov.*). *Herba* perennis, sesquipedalis. *Rhizoma* obliquum, 1–2-caule, radicibus carnosis cylindricis. *Caules* cavi, pauciramosi. *Folia radicalia* 1–2-ternata, 6–12 poll. longa ; foliola papyracea, supra glabra, in margine et infra in venulis setulosa, ovata, acuta, sæpe 2–3-loba vel -partita, $\frac{3}{4}$–4 poll. longa, grosse crenato-serrata, serraturis apiculatis. *Folia caulina* similia sed minora et brevius petiolata vel sessilia. *Umbellæ* caules ramosque terminantes, 15–30-radiatæ ; radii in fructu 2-pollicares ; bracteæ paucæ vel egentes. *Umbellulæ* inæqualiter radiatæ, trifloræ ; involucella 1–3-bracteolata. *Flores* albi vel dilute cærulei. *Calycis* dentes ovario æquantes, oblongi. *Petala* obovata vel oblonga, mucrone sæpe involuta. *Pedicelli* fructiferi $\frac{1}{8}$–1 lin. longi, sæpe ut fructus juga scaberuli. *Fructus* valleculæ multivittatæ, jugis prominulis. *Stylopodium* fructu 2–3-plo brevius.

Eastern Asia : India, Manipur, Ching Sow, at 8,000 feet, *Watt*, 6556. China, Yunnan, Fengchenlin, in forests at 7,000 feet, *Henry*, 10675 ; Szechuen, Tatsienlu, 9,000 to 13,500 feet, *Pratt*, 831, Mount Omei, 4,000 to 8,000 feet, *Faber*, 60, 627, 632 ; Hupeh, Chienshih, *Henry*, 5384, 5444, 5444a, Patung, *Henry*, 5406.

The name *Cryptotaniopsis* was first used by Franchet (*Bull. Soc. Philom. Paris*, sér. 8, vi. p. 119) to designate a group of *Euammineæ*

having 2–4-flowered umbellules and 1–3-vittate vallecules, resembling *Cryptotænia* in habit, but intermediate between *Carum* and *Pimpinella*. These two genera, as represented in China, were united by Franchet and *Cryptotæniopsis* used as a sectional name under the former. Five of the species placed by him in the section and three new ones, including that figured above, appear to form a natural genus, being distinguished from allied groups by the numerous regular umbel rays and by the few very irregular rays of their umbellules, and being moreover closely connected by habit and by minor characters. For this genus it is convenient to retain Franchet's sectional name.

Some of the eight species alluded to have been referred by authors to *Carum* and some to *Pimpinella*, genera which are believed to be distinguishable from one another by the number of vittæ and other characters, and from other genera partly by the relative size of the sepals and by the shape of the petals. In all these respects *Cryptotæniopsis* is remarkably variable, and its separation will confer more definiteness upon the limits of both genera.—S. T. Dunn.

Fig. 1, a flower; 2, an umbellule of fruit; 3, a mericarp; 4 and 5, cross-sections of a mericarp. *All enlarged.*

Plate 2738.

MILLETTIA PACHYCARPA, *Benth.*

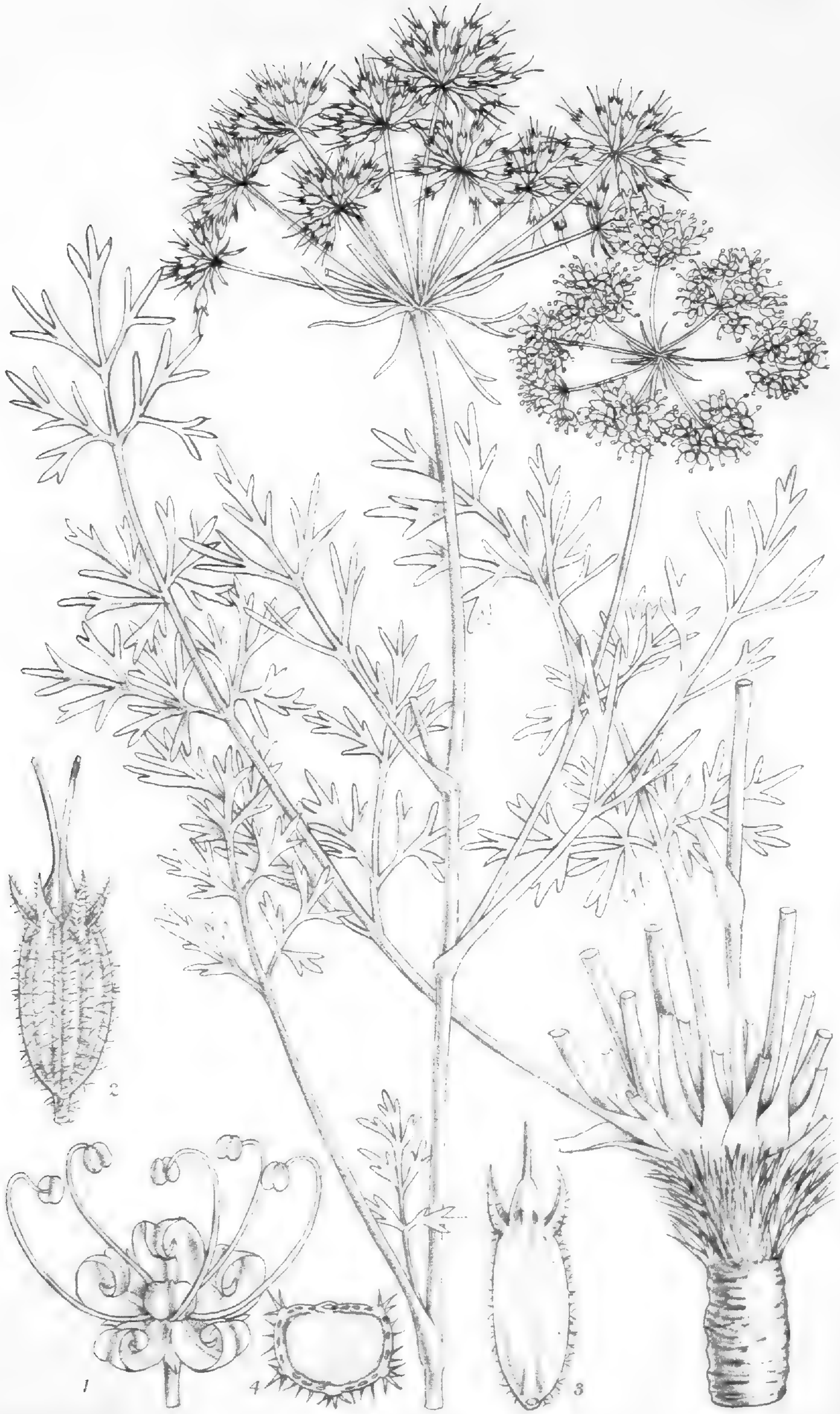
Leguminosæ. Suborder Papilionaceæ.

M. pachycarpa, *Benth. Pl. Jungh.* p. 250, in nota ; *Kurz. For. Fl. Brit. Burm.* p. 353 ; pedunculi (racemi) fructiferi elongati, sæpe pedales et ultra, sæpissime legumen unicum gerentes ; legumen sæpe unispermum, orbiculari-compressum, $1\frac{1}{2}$–2 poll. diametro, interdum plurispermum, 9–10 poll. longum ; semina reniformia, castanea.

China : Szemao, Yunnan, at 4,000 to 4,500 feet, *A. Henry*, 13000 and 13530. Also in Eastern India and Burma.

This plant has been figured on account of the contradictory descriptions of its pod and seed, which are remarkable in the genus, and suggest some alterations in generic limits. But this would involve an investigation of a large number of species.—W. Botting Hemsley.

Fig. 1, calyx laid open, and longitudinal section of ovary ; 2, standard ; 3, a keel-petal ; 4, a wing-petal ; 5, androecium ; 6, a pod ; 7 and 8, seeds. *Figs.* 1–5 *enlarged ;* 6–8 *natural size.*



M S.del et lith.

Plate 2739.

CARLESIA SINENSIS, *Dunn.*

Umbelliferæ. Tribe Ammineæ.

Carlesia, *Dunn.* Genus novum ex affinitate *Sii*, Linn., et *Pimpinellæ*, Linn., a primo habitu foliisque dissectis, a secundo involucro polyphyllo, dentibus calycis conspicuis, carpophoroque obsoleto differt.

Calycis dentes prominentes. *Petala* basi contracta, acumine longo inflexo, quasi biloba. *Stylopodia* conica, a dorso compressa. *Fructus* oblongo-ovatus apice vix contractus, transverse teres; mericarpia semiteretia; juga primaria obtusa; vittæ in quaque vallecula 3, conspicuæ, sub jugo 1, parva; carpophorum obsoletum. *Semen* facie planiusculum. Herba *perennis*, 6–12 *poll. alta, præter inflorescentiam glabra.* Radix *crassa, apice cylindrica, fibris plurimis coronata, multicaulis.* Caules, 2–4 *poll. longi, striati, ramosi, polyphylli.* Folia radicalia *multa, persistentia, caulium longiorum dimidium paullo excedentia, tripinnatisecta, lobis linearibus acutis margine inrolutis; petioli laminas æquantes, basi breviter vaginantes.* Folia caulina *conformia, minus dissecta, brevius petiolata.* Umbellæ 10–20-*radiatæ*, $1\frac{1}{2}$ *poll. sub anthesi ad* 4 *poll. in fructu latæ; involucri bracteæ multæ, lineares vel nonnunquam divisæ, radiis setulosis breviores.* Umbellulæ *mult floræ; bracteolæ floribus fructuque paullo excessæ, lineares, acutæ.* Calycis dentes *lineares*, 3–4-*plo fructu breviores.* Petala *alba.* Styli *erecti, persistentes, fructui æquales.* Fructus *dense hirtellus, sine calycis dentibus* $1\frac{1}{2}$ *lin. longus.*

C. sinensis, *Dunn* (*species unica*). *Umbellifera* dubia *Athamanthæ* affinis, *Hemsl. in Journ. Linn. Soc.* xxiii. p. 337.

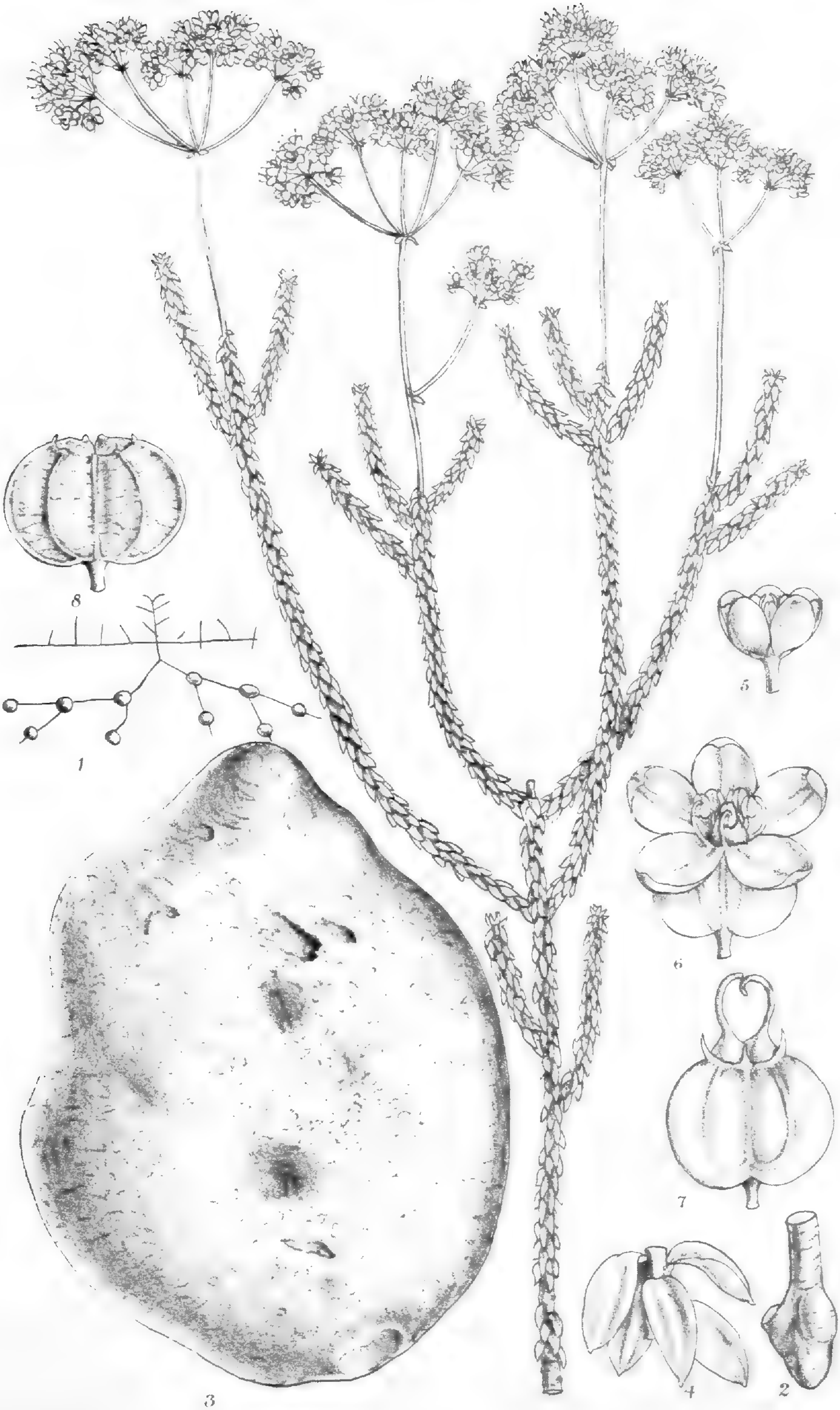
China: Shantung, frequent on rocks at 1,000 to 2,000 feet elevation in the Chefoo Mountains, *Maingay* 49; *Faber* 234.

Maingay's specimen is so fragmentary that its affinities could not be determined for the *Index Floræ Sinensis.* It bears several perfectly ripe fruits, however. These, together with Faber's excellent specimens in flower, make it evident that the Chefoo Mountains contain a member of a hitherto undescribed genus allied to *Sium* and to *Pimpinella.*

There is a special appropriateness in the dedication of this genus to Mr. W. R. Carles, C.M.G., F.R.G.S., late H.M. Consul-General for

Tientsin and Peking, because his botanical explorations in China, which have resulted in the discovery of many new and interesting plants, began at Chefoo, where he has twice been stationed in different official capacities.—S. T. Dunn.

Fig. 1, a flower; 2, a fruit; 3, a mericarp; 4, a cross-section of the same. *All enlarged.*



M.S. del et lith.

Plate 2740.

SIEBERA DEFLEXA, *Benth.*

Umbelliferæ.

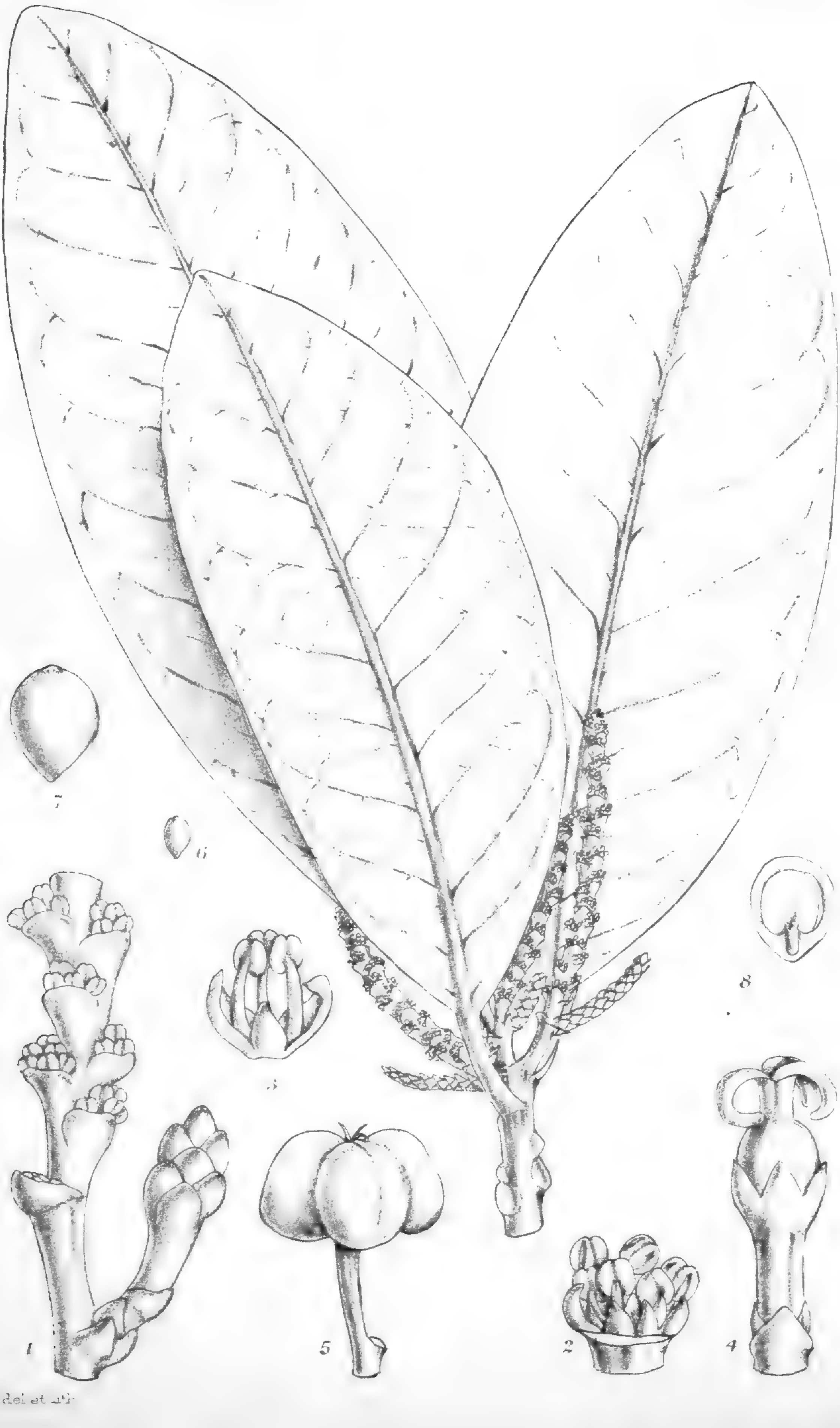
Siebera deflexa, *Benth. Fl. Austral.* iii. p. 355; *Hemsl. in Gard. Chron.* 3rd series, xxx. (1901), p. 363. Trachymene deflexa, *Turcz. in Bull. Soc. Nat. Mosc.* 1849, ii. p. 31.

West Australia: Fitzgerald River; communicated by *A. Morrison.*

This little shrub has been figured on account of its producing an edible tuber. Some months ago Mr. A. Morrison, botanist to the Department of Agriculture, Perth, West Australia, sent the tuber and specimens of the plant here figured, with the information that the tubers were eaten 'by the natives, both raw and cooked in ashes, and also by settlers.' *Siebera deflexa* is known to inhabit the southern coast region from King George's Sound to Israelite Bay—that is from about 118° to 123° E. long.; but this is probably the first record of its forming tubers, or, at least, of the tubers being connected with the plant. The tubers are known to the aborigines as 'yuke,' and in a later communication Mr. Morrison states, in answer to my inquiries, that he did not know whether the plant propagates itself from the tubers, that he did not remember having seen any buds on them, but he would endeavour to obtain further specimens. It is certainly an unusual thing for a woody plant to form separate tubers.—W. Botting Hemsley.

Note.—Since the above was passed for the press further material has been received from Mr. Morrison. It consists of four plants, two of which are bushy and densely branched; the others have few branches, and one is evidently quite young. The aerial part is from six to nine inches high, and the underground part is from nine to fifteen inches long. Each plant bears one tuber near the extremity of its root-system, and the relatively slender, cylindrical axis is continued below each tuber, but only an inch or two. In the young plant the tuber is still plump; in the others it is more or less shrunk and exhausted. I suspect, therefore, that the tuber is the first product of germination, and the statement that the tubers are formed in strings is probably due to some mistake.—W. B. H.

Fig. 1, diagrammatic sketch by Mr. Morrison, showing that the tubers are formed in strings; 2, base of a stem, apparently shewing scar where it had been attached to a tuber; 3, tuber; 4, leaves; 5, a male; 6, a fertile flower; 7, the same with petals and stamens removed; 8, a fruit. *All except* 1 (*reduced*) *and* 2 *and* 3 (*natural size*) *enlarged.*



M. J. del et lith.

Plate 2741.

EXCŒCARIA BENTHAMIANA, *Hemsl.*

Euphorbiaceæ.

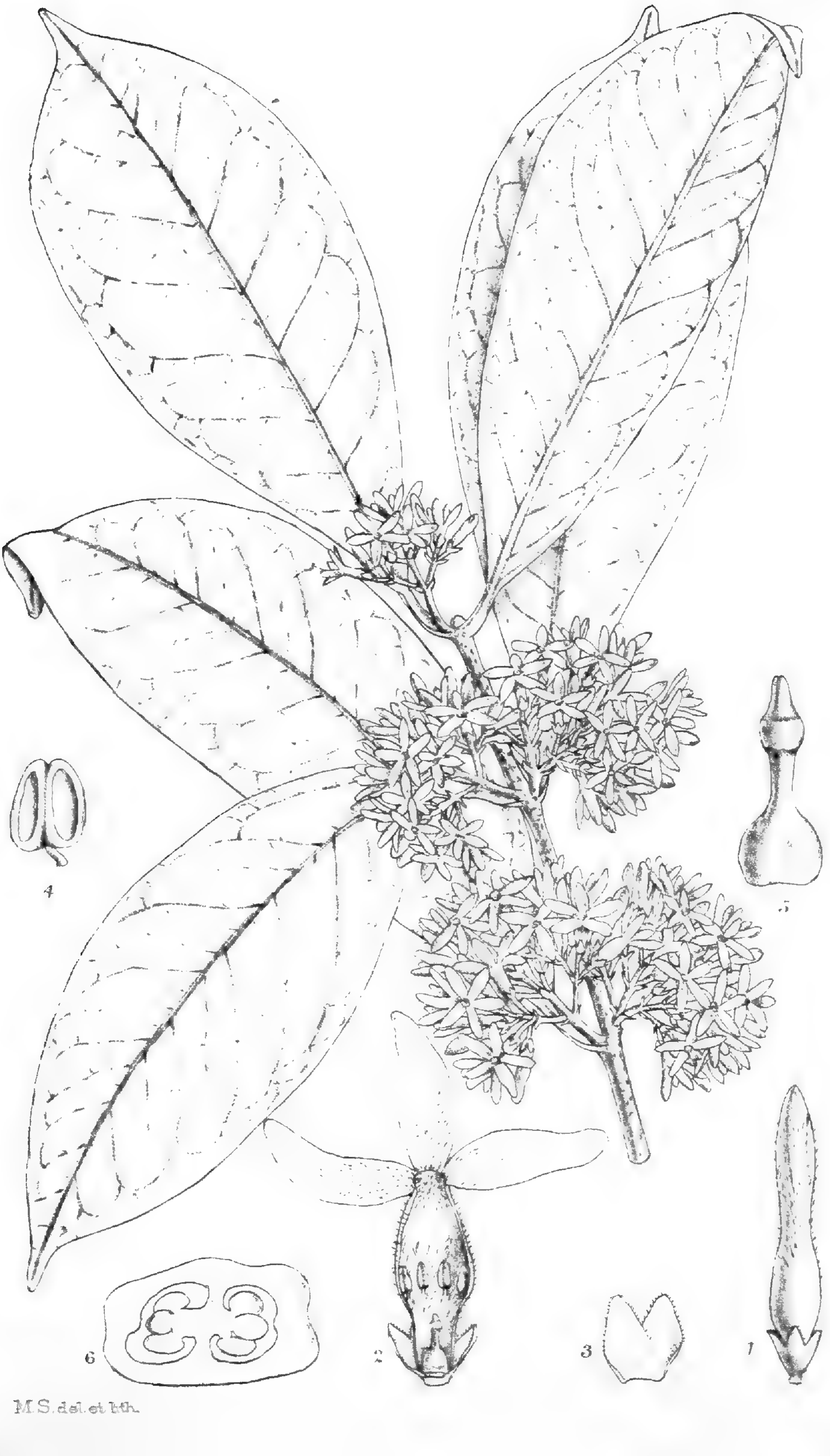
E. benthamiana, *Hemsl.* (*sp. nov.*) ; species ex affinitate *E. Agallocha*, L., a qua foliis multo majoribus crassioribus et floribus femineis in pedunculis distinctis recedit.

Arbor parva, undique glabra, ramulis ultimis rectis crassiusculis. *Folia* conferta, internodiis quam petiolis brevioribus, crassa, coriacea, oblonga vel obovato-oblonga, usque ad 9 poll. longa, sed plerumque minora, apice rotundata, basi subcuneata, margine interdum obscure pauciglandulosa, venis primariis lateralibus numerosis leviter curvatis. *Spicæ* florum masculinorum in axillis foliorum superiorum solitariæ, simplices vel pauciramosæ, 1–3 poll. longæ, densæ, multifloræ ; bracteæ semicyathiformes, trifloræ, flore centrali pedicellato, lateralibus sessilibus. *Perianthium* triphyllum, phyllis $\frac{1}{3}$ lin. longis acutis. *Stamina* 3, perianthium superantia. *Flores feminei* solitarii vel bini (an semper ?) distincte pedicellati. *Perianthium* triphyllum, dorsiventrale, phyllo postico interiore, phyllis lateralibus antice non obtegentibus, sinu uniglanduloso. *Ovarium* glabrum, 3-loculare, stylis validis recurvis persistentibus. *Capsula* tricocca, crustacea, tarde dehiscens. *Semina* ovoidea, $2\frac{1}{2}$–3 lin. longa ; embryo diametro seminis fere æquans. *Stillingia lineata*, var. *densiflora*, Baker, Fl. Maurit. & Seych. p. 314 ; *Excœcariæ species nova*, Benth. in Benth. et Hook. Gen. Pl. ii. p. 334.

Seychelles : without locality, *Wright* ; Mahé, 800 to 2,000 feet, *Horne* ; Mount Sebert, Mahé, *Thomasset*.

Mr. J. G. Baker, with imperfect material before him, referred this plant to *Stillingia lineata*, but, as pointed out by Bentham, it is a species of *Excœcaria*, allied to *E. Agallocha*. It is however very distinct in foliage, in the bracts of the male inflorescence, and in the perianth of the female flowers, which has both edges of the posticous segment overlapped by the lateral segments, which, in their turn, only meet at the base, with a gland in the sinus.—W. Botting Hemsley.

Fig. 1, part of inflorescence ; 2, cluster of male flowers from which the bract has been removed ; 3, a male flower ; 4, an advanced female flower, incorrect as to the perianth ; 5, fruit ; 6, a seed ; 7, the same enlarged ; 8, section of the same showing the embryo. *Figs. 5 and 6 natural size ; all the rest enlarged.*



M.S. del. et lith.

Plate 2742.

CLITANDRA ORIENTALIS, *K. Schum.*

Apocynaceæ.

C. orientalis, *K. Schum. in Engl. Pflanzenwelt Ost-Afr. Teil C.* p. 315. Affinis *C. cymulosæ*, Benth., sed paniculis multifloris, corollæ et foliorum forma distincta.

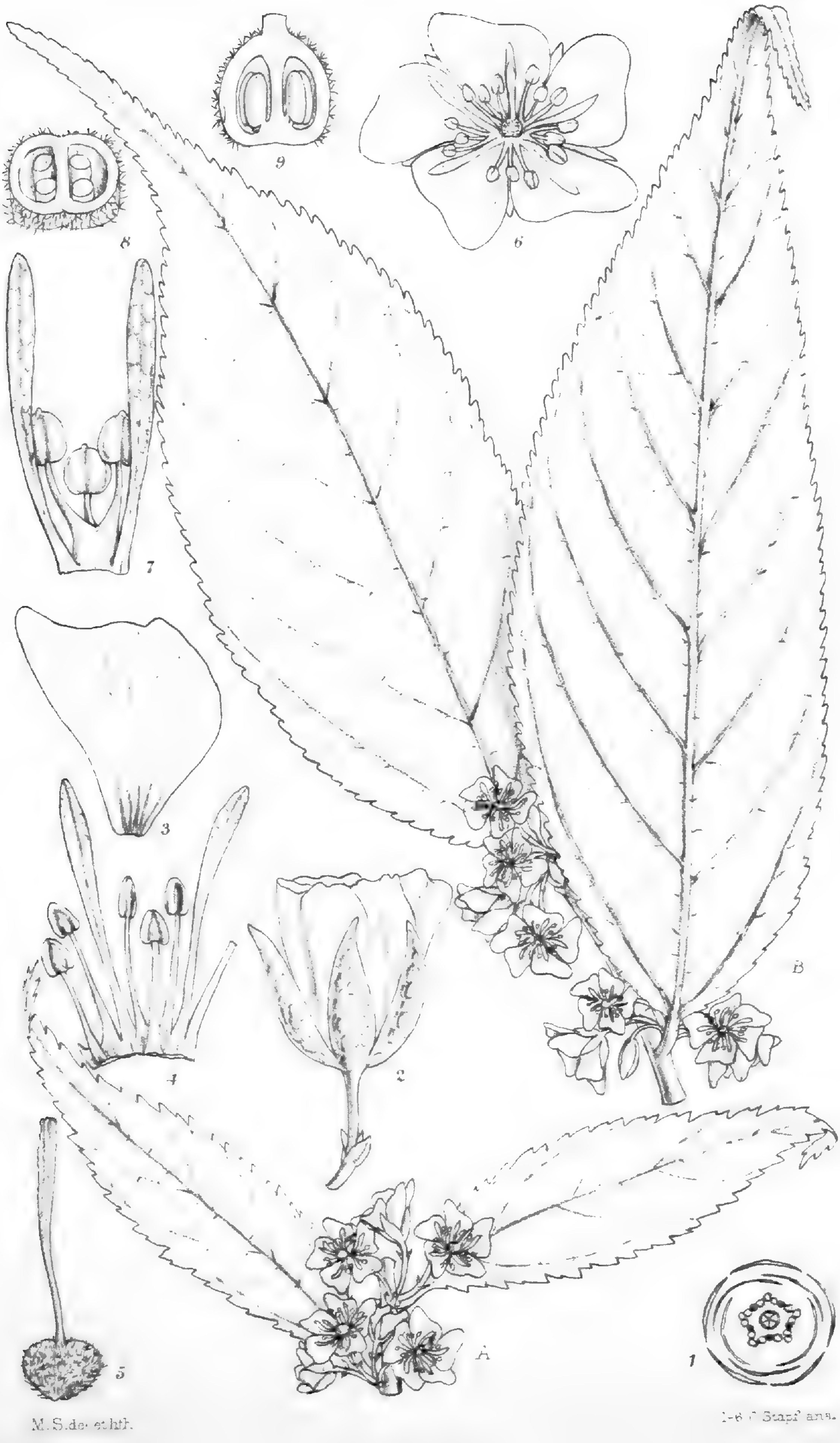
Frutex inflorescentiis exceptis glaberrimus, ramis gracilibus cortice brunneo multilenticelloso tectis. *Folia* oblonga vel oblanceolata, obtuse acuminata, acumine lineari ad 4 lin. longo, basi acuta vel subcuneata, 3–$3\frac{3}{4}$ poll. longa, 1–$1\frac{1}{2}$ lin. lata, coriacea, superne lucidula, nervis secundariis utrinque 9–11 rectis obliquis ut venis pulchre anastomosantibus utrinque prominentibus; petiolus 3–4 lin. longus. *Inflorescentiæ* axillares et terminales, composite paniculatæ, multifloræ, contractæ, vix 1 poll. longæ, subpedunculatæ, tenuiter pubescentes; bracteæ ovatæ, minutæ; pedicelli $\frac{1}{2}$–$\frac{3}{4}$ lin. longi. *Calyx* $\frac{3}{4}$ lin. longus, tenuissime pubescens, segmentis ovatis subacutis. *Corolla* extus minute puberula; tubus infra medium inflatus, 2–$2\frac{1}{2}$ lin. longus, intus pubescens; lobi lineari-oblongi, tubum æquantes vel paulo breviores. *Antheræ* orbiculari-ellipticæ, minimæ, $\frac{1}{4}$ lin. haud attingentes; filamenta tenuia antheris paulo breviora. *Ovarium* glabrum, subovoideum; stylus brevis; stigma capitatum, subconicum, apiculo 2-lobo brevi; loculi ob placentas a basi ad apicem coalitas 2; ovula in utraque placenta 9–12, 3-seriata. *Hallier, f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt, xvii.* (1899) 3. *Beih. p.* 121.

German East Africa: Bukoba on Lake Victoria, *Stuhlmann*, 1131.

This species, which is the easternmost representative of the genus, approaches very closely to *C. cymulosa*, Benth., from Sierra Leone, the species on which the genus was established. It differs from it in the rather narrower leaves with a more raised venation, in the many-flowered panicles, the more inflated corolla tube and broader corolla lobes and the very obtuse anthers. It has been pointed out by Bentham in Hooker and Bentham, *Genera Plantarum*, ii. p. 692, that the ovary of *Clitandra*—he knew then only 2 species, viz. *C. cymulosa* and another undescribed one, probably *C. Barteri* or *C. Mannii*—was imperfectly 2-locular, adding 'placentis valde prominentibus (medio tamen haud junctis ?)' There is no doubt that the placentas project in most species

very much—so much so, indeed, that they sometimes give, seen in cross-section, the impression of being fused into a septum, and in *C. cirrhosa* fusion actually takes place at the base and the top of the cavity of the ovary, the result being a perforated septum. In *C. orientalis* this fusion has gone a step farther and become complete. The species is, however, in other respects so closely allied to *C. cymulosa* that there can be no doubt whatever about its congenerity with this species, the complete or incomplete partition of the ovary being evidently of no great taxonomic value in this group.—Otto Stapf.

Fig. 1, a flowerbud; 2, a flower in longitudinal section; 3, part of calyx, seen from within; 4, an anther; 5, pistil; 6, cross-section of ovary. *All enlarged.*



M. S. del. et lith.

Imp. Becquet Frères.

Corrigenda.

Since the text accompanying Plate 2743 was printed, further material of *Paradombeya burmanica* has been received at Kew, consisting of excellent specimens collected by W. Boxall in the same locality. From these specimens and Mr. Boxall's communication, it appears that *P. burmanica* is a shrub six feet or more in height, with leaves as much as five inches long and over one inch broad, furnished with 5–8 secondary nerves on each side. The flowers are snow-white in a fresh state, but yellow when dry, and crowded in axillary fascicles of 5–12, or more, all along the long slender branches.—Otto Stapf.

Plate 2743a.

PARADOMBEYA BURMANICA, *Stapf.*

STERCULIACEÆ. Tribe DOMBEYEÆ.

Paradombeya, *Stapf.* Genus novum affine *Corchoropsi*, Sieb. & Zucc., et *Pentapeti*, L., ab illa ovarii, ab hac andrœcii structura, ab utraque ovulorum numero differt.

Calyx fere ad basin 5-partitus, herbaceus, glaber, receptaculis subcutaneis mucilagine repletis abundans, segmentis valvatis. *Petala* inæqualilatera, late obovata, truncata, marcescentia. *Stamina* perfecta 15, terna cum staminodiis ligulatis mucilaginiferis episepalis alternantia et cum iis basi in annulum coalita ; filamenta e basi paulo dilatata filiformia ; antheræ late ovatæ vel ellipticæ ; pollinis grana sphærica, spinulosa. *Ovarium* sessile, 2 5-loculare, stellato-tomentosum, loculis facile uno ab altero solutis 2-ovulatis, ovulis a basi ascendentibus ; stylus elongatus, superne leviter incrassatus, 4 5-sulcatus et subinteger. Fructus ignotus.—Frutices (?) Folia *alterna, herbacea, angusta, serrata vel crenata.* Flores *fasciculati, axillares, flavi ; pedicelli verticillatim 3-bracteolati et ad bracteolas articulati.*

P. burmanica *Stapf* (*sp. nov.*) ; caulium foliorumque pilis simplicibus crispulis, bracteolis subpersistentibus, ovario 5-loculari.

Ramuli linea latiuscula crispo-puberula notati, cæterum glabri. *Folia* lanceolata, serrata, acuminata, basi rotundata, ad $2\frac{1}{2}$ poll. longa, 8 lin. lata, utrinque in parenchymate parce minuteque setulosa, præterea supra in nervo medio crispo puberula, nervis secundariis utrinque 5-6, imis e basi ortis ; petiolus 2 lin. longus, crispo-puberulus. *Pedicelli* gracillimi, ad 2 lin. longi ; bracteolæ lanceolatæ, $\frac{1}{2}$ lin. longæ. *Calycis* segmenta oblongo-lanceolata, acuta vel subacuminata, $2\frac{1}{2}$ lin. longa. *Petala* 3–$3\frac{1}{2}$ lin. longa lataque. *Filamenta* inæqualia, exteriora (uniuscujusque phalangis intermedia) breviora, antheræ vix $\frac{1}{2}$ lin. longæ. *Staminodia* 3 lin. longa. *Ovarium* 5-loculare.

BURMA : Upper Shan States, at Supmut, 3,500 feet, *H. H. Hildebrand.*

The diagram of the flower of *Paradombeya* is practically the same as that of *Pentapetes* ; but the staminal tube is very short, the filaments are much longer, the ovary cells easily separable from each other, and the

number of ovules in each cell only two, not many. The general habit, the shape and texture of the leaves, and the character of the rather scanty tomentum point likewise to *Pentapetes* as a near ally. *Paradombeya* approaches at the same time rather closely to *Corchoropsis*. This differs, however, in having normally 10 fertile stamens and numerous ovules in each cell. The fruit of *Corchoropsis* is a long, cylindric, 3-locular capsule, containing numerous superposed seeds. The fact that there are, in *Paradombeya*, only two collateral ovules in each cell suggests, of course, a fruit of a structure different from that of *Corchoropsis*. This genus was placed in the Genera Plantarum near *Corchorus*, but the comparison with *Pentapetes* makes it evident that its place is by the side of it. *Dombeya* has also almost the same diagram as *Paradombeya*, and in many species only two ovules in each cell, but the staminodes are here (always ?) episepalous, and the habit is quite different. *Melhania* again has epipetalous staminodes like *Pentapetes*, but only five perfect stamens and a very distinct habit.—OTTO STAPF.

Fig. 1, floral diagram; 2, a flower; 3, a petal; 4, part of the andrœcium; 5, pistil. *All enlarged.*

PLATE 2743B.

PARADOMBEYA SINENSIS, *Dunn*.

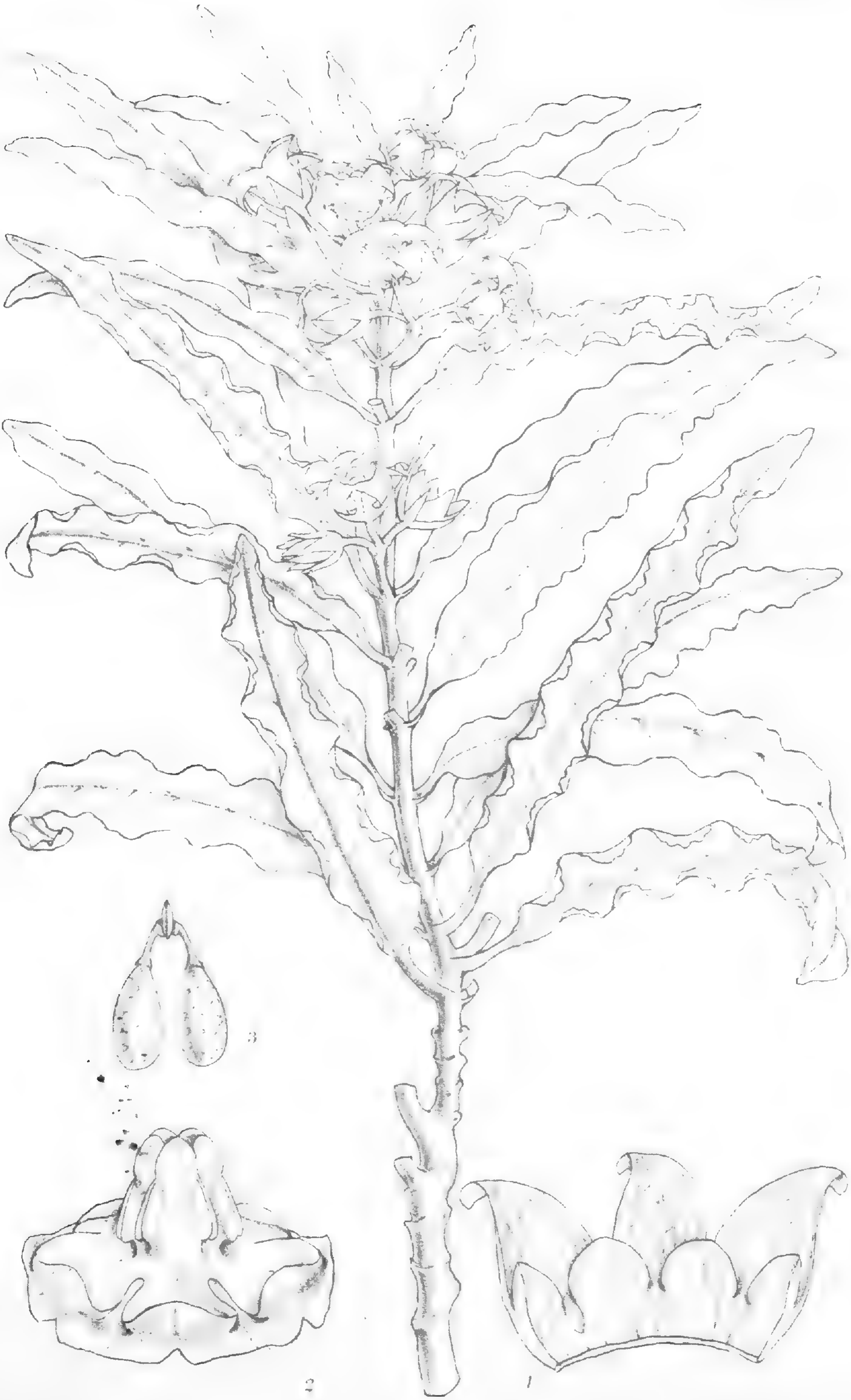
P. sinensis, *Dunn* (*sp. nov.*) a *P. burmanica*, Stapf, caulium foliorumque indumento stellato, bracteolis caducissimis, et ovario biloculari distincta.

Folia ovata, undulata et crenulata, longe acuminata, basi rotundata, 4-5 poll. longa, 1½–2 poll. lata, pube stellata primo tecta, mox glabra, nervis secundariis utrinque circa 10, imis e basi ortis, subsessilia. *Pedicelli* graciles, semipollicares in medio articulati; bracteolæ caducissimæ. *Calycis segmenta* ovata, acuminata, 2-lin. longa. *Petala* 2½ lin. longa lataque. *Antheræ* apiculatæ, ⅓ lin. longæ, in phalanges 5 dispositæ. *Staminodia* staminibus duplo longiora, petalis paullo breviora. *Ovarium* depresso-globosum, 2-loculare, loculis faciliter separabilibus, stylo quadrisulcato duplo brevius.

CHINA: Yunnanfu, *Ducloux*, 480.

This species was collected in a locality about 500 miles N.E. of that of the Shan plant. It resembles the latter very closely in habit, but differs in its two-celled ovary. Such a variation in the number of ovarian cells within the same genus is not without parallel among the Dombeyeæ, for *Dombeya* itself includes species with 2- and 5-celled ovaries.—S. T. DUNN.

Fig. 6, an expanded flower; 7, part of the andrœcium; 8, cross-section of an ovary: 9, longitudinal section of the same. *All enlarged.*



M S del et lith

Plate 2744.

PARAPODIUM CRISPUM, *N. E. Brown.*

Asclepiadaceæ. Tribe Cynancheæ.

P. crispum, *N. E. Brown* (*sp. nov.*) ; a *P. costato*, E. Mey., foliis angustioribus crispatis breviter petiolatis facile distinguitur.

Herba perennis, 5–8 poll. alta. *Caulis* erectus, validus, bifariam puberulus, foliosus. *Folia* patentia vel subincurvato-adscendentia, glabra ; petiolus 1–3 lin. longus ; lamina $1\frac{3}{4}$–3 poll. longa, 2–5 lin. lata, anguste vel lineari-lanceolata, acuta, basi breviter cuneata, marginibus crispato-undulata. *Umbellæ* ad nodos laterales, pedunculatæ, 3–4-floræ. *Pedunculi* 1–$2\frac{1}{2}$ lin. longi. *Pedicelli* 3–4 lin. longi. *Sepala* 3–4 lin. longa, $\frac{3}{4}$ lin. lata, lanceolato-attenuata, acuta, glabra. *Corolla* glabra ; tubus $1\frac{1}{2}$ lin. longus, globoso-campanulatus ; lobi 2–$2\frac{1}{2}$ lin. longi, $1\frac{1}{2}$–$1\frac{2}{3}$ lin. lati, ovato-lanceolati, subacuti, basi concavi, apice recurvi. *Coronæ* lobi corollæ tubo inferne adnati, superne liberi, transverse oblongi, $1\frac{1}{6}$–$1\frac{1}{2}$ lin. lati. *Columna* staminum breviter stipitata, conica ; antheræ appendices oblongæ, acutæ, conniventes, ad apicem crateriformem styli attingentes.—*Pachycarpus gomphocarpoides*, E. Mey. in Herb. Drège, *a*, non descript. in Comm. Pl. Afr. Austr. p. 213.

South Africa : on the Sneeuwberg Range, near Graaf Reinet, at 4,100 feet, *Bolus* ; on grassy hills near Shiloh, at 4,000 feet, *Drège*.

Although the genus *Parapodium* was established by E. Meyer, on a South African plant collected by Drège, as long ago as 1836, it has escaped recognition by all subsequent authors, as Decaisne, Harvey, and Bentham and Hooker state that it was unknown to them. Yet specimens of the original species have existed in the Hookerian herbarium for about sixty years, one of them collected by Drège and distributed under a wrong name ; the other, collected by Burke in 1841, is named, in Decaisne's handwriting, *Parapodium costatum*. This specimen must have been quite overlooked by Bentham and Hooker, since I found it, together with the species described above, placed in the genus *Gomphocarpus*. Schlechter, who has paid much attention to South African Asclepiadaceæ, and has had the opportunity of seeing Drège's herbarium, states (Engler's *Jahrb.* xxi., *Beibl.* 54, p. 3) that Drège's specimen of *Parapodium costatum* is identical with *Asclepias orbicularis*, Schltr. (*Xysmalobium orbiculare* Dietr.). If this is the

case, the plant cannot be represented under its right name in Drège's herbarium, as the description of *Parapodium costatum* does not at all agree with *Xysmalobium orbiculare*. But the peculiar and very distinct structural characters of *Parapodium* seem not to have been understood by Schlechter, since (Engler's *Jahrb.* xx., *Beibl.* 51, p. 41) he has redescribed *Parapodium costatum*, E. Mey., as the type of a new genus, under the name of *Rhombonema lurida*.

The position of *Parapodium*, in my opinion, should be immediately before *Xysmalobium*, some species of which the two of *Parapodium* now known much resemble in habit.—N. E. Brown.

Fig. 1, part of corolla and corona, seen from within; 2. androecium and corona, seen from without; 3, a pair of pollen-masses. *All enlarged.*

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PL 27-46

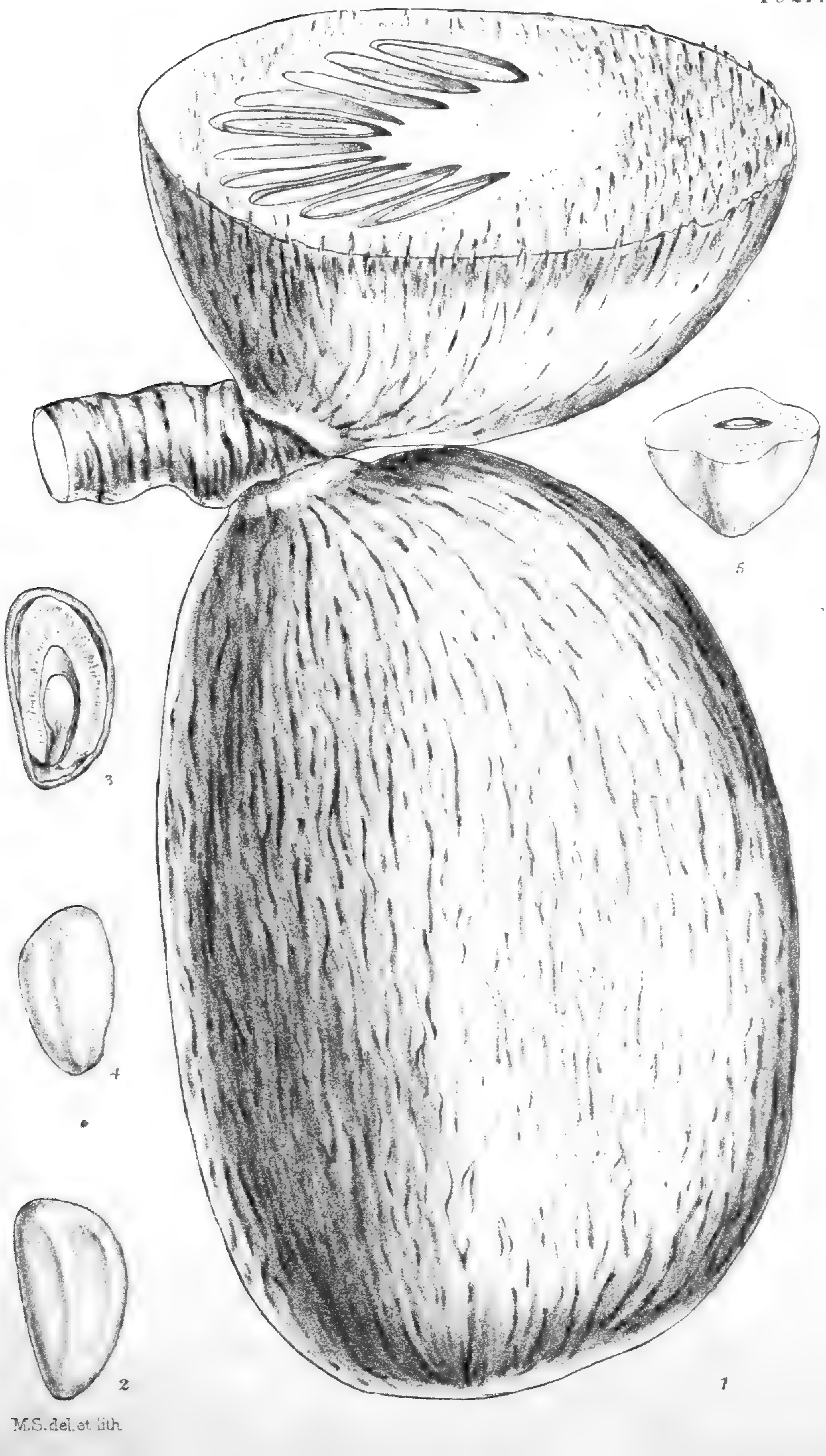

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Plate 2745–2746.

PICRALIMA KLAINEANA, *Pierre.*

Apocynaceæ. Tribe Plumerioideæ.

P. klaineana, *Pierre in Bull. Soc. Linn. Paris,* 1896, 1278 (*species unica*).

Arbor 30–80 ped. alta, ramulis robustis teretibus exsiccando nigricantibus. *Folia* oblonga, magis minusve abrupte acuminata, basi rotundata vel subacuta, $5\frac{1}{2}$–7 poll. longa, 2–3 poll. lata, subcoriacea, supra nitida, nervis secondariis utrinque circiter 20, interdum tertiariis parallelis similibus interjectis, sub ipso margine arcuatim connectis, venis prominulis areolas elongatas nervis subparallelas cingentibus ; petiolus robustus, canaliculatus, ad 6 lin. longus, basi excavatus et glandibus stipatus. *Pedunculus* robustus, $\frac{1}{2}$–1 poll. longus ; bracteæ minutæ vel vix ullæ ; pedicelli 4 6 lin. longi. *Sepala* ovato-oblonga, obtusa, 3 lin. longa, nitidula, intus basi multiglandulosa. *Corolla* alba ; tubus carnosulus, 7 9 lin. longus, extus glaber, intus versus medium laxe pubescens ; lobi tubum æquantes, sinistrorsum obtegentes. *Antheræ* oblongo-lineares, a stylo liberæ, $1\frac{1}{2}$ lin. longæ. *Carpella* secundum suturas ventrales cohærentia : stylus cum stigmate lævi oblongo 4 lin. longus. *Mericarpia* baccata, obovoidea-oblonga, divaricata, libera, 4-6 poll. longa, 3 4 poll. diam. ; pericarpium crassum, carnosum, intus fibrosum. *Semina* in pulpa carnosa immersa, 1 poll. longa ; testa coriacea, lævis ; endosperma copiosum, carnosum.—K. Schum. in Engl. & Prantl, Pflanzenfam., Nachtr. p. 284, Ergänz. i. p. 60. *Tabernæmontana nitida,* Stapf in Kew Bulletin, 1894, p. 22, et in De Wild. & Durand, Contrib. Fl. Congo in Ann. Mus. Congo, Bot. Sér. 2, i. fasc. i. p. 39 ; De Wild. & Durand, Reliquiæ Dewèvreanæ in Ann. Mus. Congo, Bot. Sér. 3, fasc. ii. p. 153.

Tropical West and Central Africa : Upper Guinea, Old Calabar, *Robb.* Cameroons, Ambas Bay, *Mann,* 710. Gaboon, Mount Bouët, near Libreville, *Jolly,* 27 ; *Klaine,* 299. Congo Free State, Middle and Upper Congo Region, Lukolela, *Deuèrre,* 847. Lokandu, *Deuèrre,* 1113.

When I described this species as *Tabernæmontana nitida* nearly eight years ago, I was already aware of the very heterogeneous character of the genus *Tabernæmontana* as generally understood ; but having then no time to examine it critically, I preferred to refer the

plant figured here to *Tabernæmontana* in the wide sense of most authors. Pierre has since made it the type of a new genus. On further examination and after a general revision of the group of Tabernæmontanoideæ, I have no hesitation in accepting Pierre's suggestion. More than that, the structure of the seeds differs so much from that of the Tabernæmontanoideæ that *Picralima* cannot even be referred to this tribe. It occupies, in fact, a rather isolated position in the Plumerioideæ, perhaps approaching the *Landolphia* group more than any other.—Otto Stapf.

Plate 2745.

Fig. 1, a flower-bud; 2, pistil and part of calyx; 3, section of corolla showing attachment of stamens; 4, an anther; 5, cross-section of ovary. *All enlarged.*

Plate 2746.

Fig. 1, one whole mericarp and the other in section of a fruit natural size; 2, a seed; 3, longitudinal section of the same showing the embryo; 4, a seed from which the testa has been removed; 5, cross-section of the same. *All enlarged.*

M. S. del. et lith

Plate 2747.

AINSLIÆA ELEGANS, *Hemsl.*

Compositæ. Tribe Mutisiaceæ.

A. elegans, *Hemsl.* (*sp. nov.*) ; inter species scaposas statura majore, foliis crassis cordiformibus subtus densissime tomentosis et inflorescentia ramosissima flaccida, distincta.

Herba perennis, scaposa, erecta, 3-4 ped. alta. *Folia* longissime petiolata, subcoriacea, maxima absque petiolo 6 poll. longa, ambitu vere cordiformia, apice nunc rotundata nunc acuminata, remote callosodenticulata (an semper ?) denticulis deinde deciduis, supra primum plus minusve strigillosa, demum glabrescentia, subtus (in siccis) albotomentosa vel fere lanata, in venis et ad margines fulvescentia ; petioli usque ad 7-8 poll. longi, teretes, dense fulvo-villosi, pilis longissimis diu persistentibusque. *Scapi* graciliusculi, cito glabrescentes, infra medium simplices, nudi vel interdum folio unico prædíti, supra medium in paniculam multiramosam flaccidam ampliati, ramulis pedunculisque gracillimis. *Capitula* numerosissima, pendula, angusta, biflora. *Involucri bracteæ* glumaceæ, scariosæ, pluriseriatæ, exteriores parvæ, omnes apiculatæ. *Corollæ limbus* unilateralis, fere æqualiter 5-lobatus, lobis linearibus. *Achænia* villosa ; pappi setæ plumosæ, corollæ tubum æquantes.

China : Mengtze, Yunnan, at 7,000 to 8,000 feet, *Henry*, 9108, 9108 a.

Western China is the centre of this beautiful genus, and the French missionaries and Dr. A. Henry between them have added upwards of a dozen previously undescribed species. *A. elegans*, Hemsl., in some respects closely resembles *A. ramosa*, Hemsl. (Journ. Linn. Soc. xxiii. p. 471), but the latter has a leafy flower-stem and a rigidly erect panicle.—W. Botting Hemsley.

Fig. 1, an involucral bract ; 2, a flower ; 3, anthers ; 4, upper part of the style. *All enlarged.*

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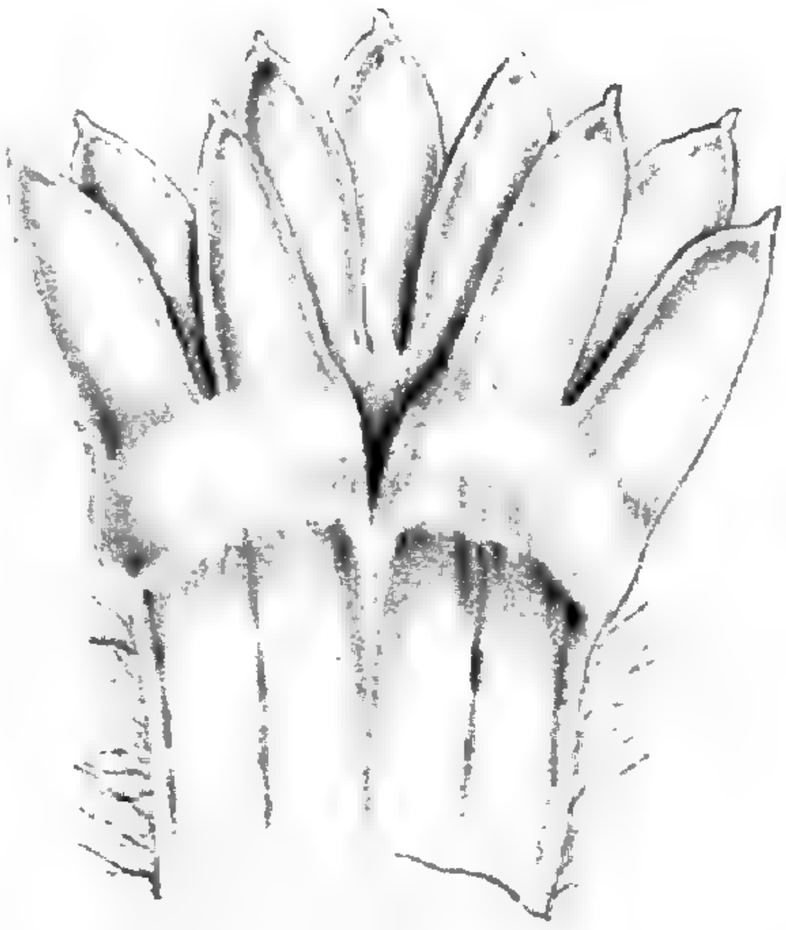

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Plate 2748.

HAMADRYAS SEMPERVIVOIDES, *Sprague.*

RANUNCULACEÆ.

Hamadryas sempervivoides, *Sprague* (*sp. nov.*) ; a ceteris speciebus differt habitu rosulato, sepalis petalisque glabris.

Radicelli fibrosi, crassi, adventitii. *Caulis* simplex vel bifidus, 1–1½ poll. longus, subtus foliorum basibus vestitus. *Folia* sessilia, rosulata, caulem vaginantia ; lamina bis trisecta, 2–2½ lin. longa, segmento medio exteriore, laciniis oblongis cuspidatis glabris ; vagina 5–6 lin. longa, 3½–4 lin. lata, scariosa, superne spongiosa, extus lanata. *Scapus* foliis occultus, 8 lin. longus, 1-florus. *Flores masculos* non vidi. *Flores feminei* : sepala 5–6 deltoideo-subulata, 1½ lin. longa, ½–¾ lin. lata, scariosa ; petala circa 7, lineari-subulata, 4 lin. longa, supra basin callo nectarifero instructa. *Ovaria* ovata, superne in stylum uncinatum attenuata. *Achænia* basi postice producta.

S. PATAGONIA : on lava rocks in Cordilleras, *J. B. Hatcher*, February 1897.

A most distinct species showing typical adaptation to high mountain conditions. Mr. Hatcher was attached to the Princeton Scientific Expedition to Patagonia, and the specimens of *Hamadryas sempervivoides* and a few other plants were sent to Kew for identification by Professor G. Macloskie, of the Princeton University, New Jersey, U.S.A.—T. A. SPRAGUE.

Fig. 1, upper surface of leaf ; 2, lower surface of the same ; 3 and 4, flowers ; 5, receptacle ; 6, a sepal ; 7, a petal ; 8, 9, and 10, carpels. *Enlarged, except fig.* 3.


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Plate 2749.

PERICHLÆNA RICHARDI, *H. Baill.*

Bignoniaceæ. Tribe Tecomeæ.

Perichlæna Richardi, *H. Baill. in Hist. Pl.* x. p. 50 ; *K. Sch. in Engler u. Prantl Pflanzenf.* iv. 3 *B.* p. 232 (species unica).

Frutex scandens, præter caulis apicem pubescentem glaber, caulibus striatis, senioribus conspicue lenticellosis. *Folia* opposita (in speciminibus cultis supra alterna), imparipinnata, $3\frac{1}{2}$–6 poll. longa ; rhachis communis 1–2 poll. longa, sulcata ; foliola 2–3-juga, elliptica vel elliptico-oblonga, obtusa vel retusa, $1\frac{1}{4}$–$2\frac{1}{4}$ poll. longa, 7–15 lin. lata, coriacea, tenuiter reticulato-venosa, supra nitida, subtus pallidiora, margine reflexa, venis utrinque 6–7 acutis ut nervo medio subtus prominentibus ; petioluli folioli terminalis 4–6 lin., lateralium 1–$1\frac{1}{2}$ lin. longi. *Bracteæ* parvæ inconspicuæ. *Bracteolæ* 2, setaceæ, ad vel infra pedicelli medium insertæ. *Flores* in ligno ramis brevibus simpliciter racemosi vel in cymorum racemo. *Calyx* tubulosus, 5-nervosus, dentibus 5 subæqualibus tubi $\frac{1}{6}$ æquantibus. *Corollæ* tubus arcuatus, calycem subduplo superans, intus subter filamentorum insertionem pilis glandulosis furfuraceus ; limbus valde 2-labiatus, labio superiore 2-lobo erecto, inferiore 3-lobo reflexo. *Stamina* didynama, $4\frac{1}{2}$ lin. supra corollæ basin inserta ; filamenta compresso-alata, basi incrassata ; antheræ ad medium affixæ, lobis subter insertionem parallelis liberis, connectivo supra late expanso bituberculato ; staminodium minutum vel deficiens. *Discus* annularis, margine undulato, juventute depresse conicus ad ovarium appressus. *Ovarium* 2-loculare, ovulis in utroque loculo 2-seriatis ; stylus stamina superans ; stigmatis lamellæ lanceolatæ acutæ intus et margine puberulæ. *Fructus* oblongo-lanceolatus, glaber, septo parallele compressus, loculicidus. *Semina* margine hyalino, 10 lin. longa, 4 lin. lata.

Madagascar : Bay of Diego Suarez, *Richard*, 124, 166 (1837), in the Paris Herbarium.

A very isolated genus of Tecomeæ. Baillon (Hist. Pl. x. p. 50) places it next to *Kigelianthe*, from which it differs in the nature of the calyx and disc, and by its 2-seriate ovules ; this seems to be the closest affinity. *Perichlæna* has, of all the Bignoniaceæ, the most strongly bilabiate corolla, the only genus approaching it in this respect being *Tynnanthus* (Bignonieæ) from tropical America. We are indebted to Professor Bureau for the loan of the type specimen, *Richard* 124, from which the present figure is taken.—T. A. Sprague.

Fig. 1, calyx laid open showing pistil ; 2, base of corolla with stamens; 3 and 4, anthers ; 5, longitudinal section of the fully developed ovary and disc ; 6, cross-section of ovary ; 7, part of a fruit ; 8, a seed. *All enlarged except 7 and 8.*

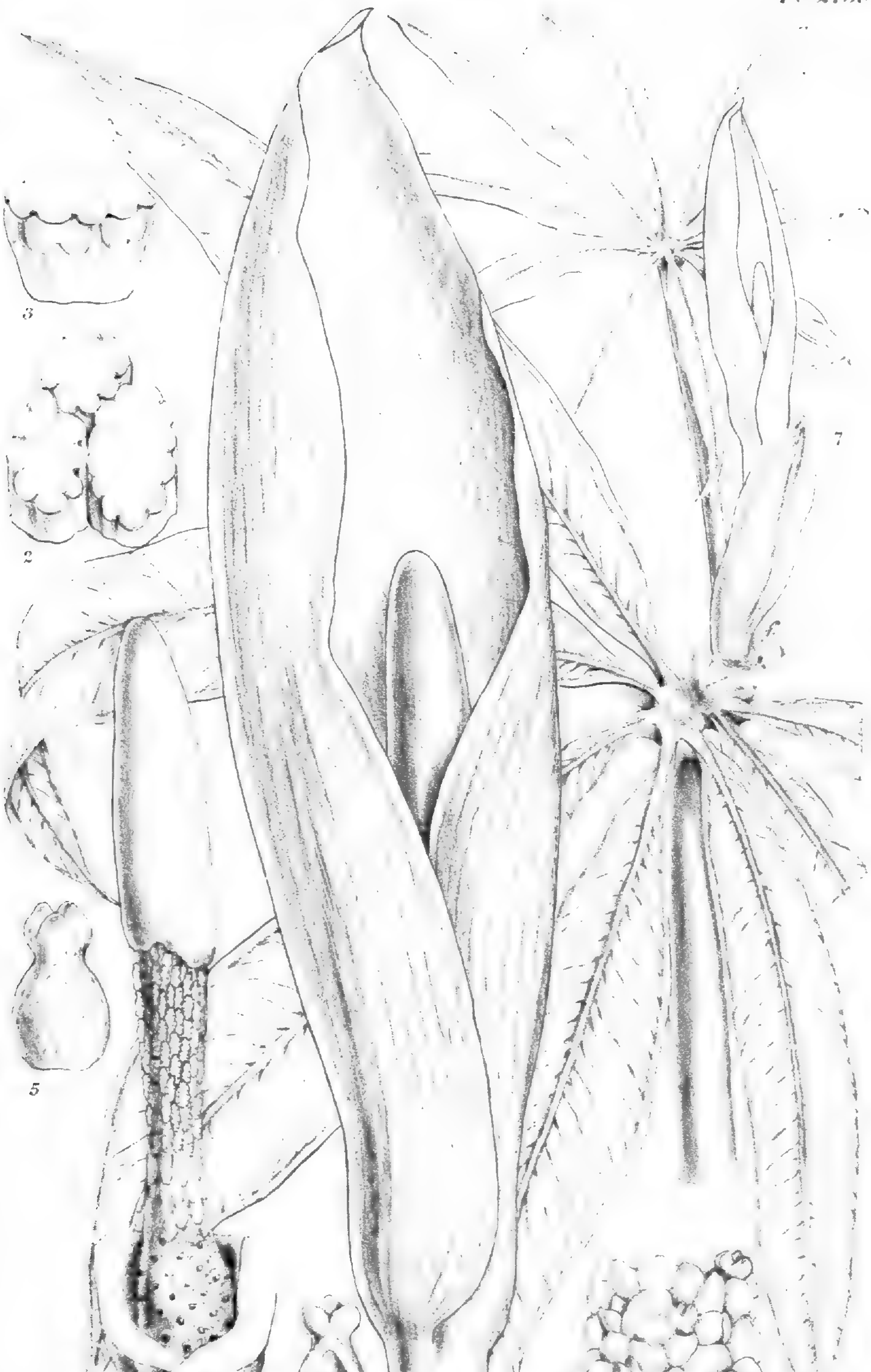

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Plate 2750.

PROTARUM SECHELLARUM, *Engler.*

Araceæ. Tribe Arineæ.

P. Sechellarum, *Engler Jahrb.* xxx., *Beibl.* 67, p. 42 ; species unica.

Herba tuberosa. *Folium* solitarium, inflorescentia coætaneum, cataphyllo magno subtendens, subpedato-radiatisectum ; petiolus 8–12 poll. longus, crassus ; segmenta $4\frac{1}{2}$–7 poll. longa, 1–$1\frac{1}{3}$ poll. lata, brevissime petiolulata, lanceolata, acuminata, basi acuta, glabra. *Pedunculus* 2–$4\frac{3}{4}$ poll. longus. *Spatha* 6–7 poll. longa basi convoluta, lamina $1\frac{1}{2}$ poll. lata, cymbiformi acuta. *Spadix* sessilis, $3\frac{1}{2}$ poll. longus ; pars feminea 7–8 lin. longa ; pars organis neutris vestita 6 lin. longa, leviter constricta ; pars mascula cylindrica, 1 poll. longa ; appendix $1\frac{3}{4}$ poll. longa, $\frac{1}{2}$ poll. crassa, conoidea, levis. *Flores feminei :* staminodia vel perianthii segmenta 4–6, oblonga, truncata, 4–6-angulata ; ovarium ovoideum, uniloculare ; stigma sessile, 2-3-lobum ; ovula 4, basilaria, erecta. *Organa neutra* conferta, deplanata, lateraliter compressa. *Flores masculi :* stamina 3–6, in synandrium sessile lateraliter compressum truncatum crenulatum connata.

Seychelles : Cascade Estate, Mahé, *Thomasset.*

This is a very remarkable and anomalous genus, which does not fit well into any of the tribes as at present constituted. Engler associates it with the *Arineæ*, from which group I do not propose to remove it, for in leaf and spathe it agrees with that tribe, but in the appearance of the spadix and in the structure of the flowers it closely resembles the genus *Alocasia* of the tribe Colocasiæ ; indeed, but for the presence of the staminodia (or perianth segments ?) surrounding the ovary, the floral structure would exactly agree with that of *Alocasia*, whilst the spathe is much like that of an *Arum*, and the leaf that of an *Arisæma*. The material from which this plate and description were prepared was presented to Kew by Mr. H. P. Thomasset. The specimens described by Engler were collected in the same island by the late Dr. W. Schimper.—N. E. Brown.

Fig. 1, spadix from which the spathe has been removed ; 2. male flowers seen from above ; 3. side view of a male flower ; 4, female flowers seen from above ; 5, ovary ; 6, longitudinal section of ovary. *Fig.* 1 *natural size, the rest enlarged.*

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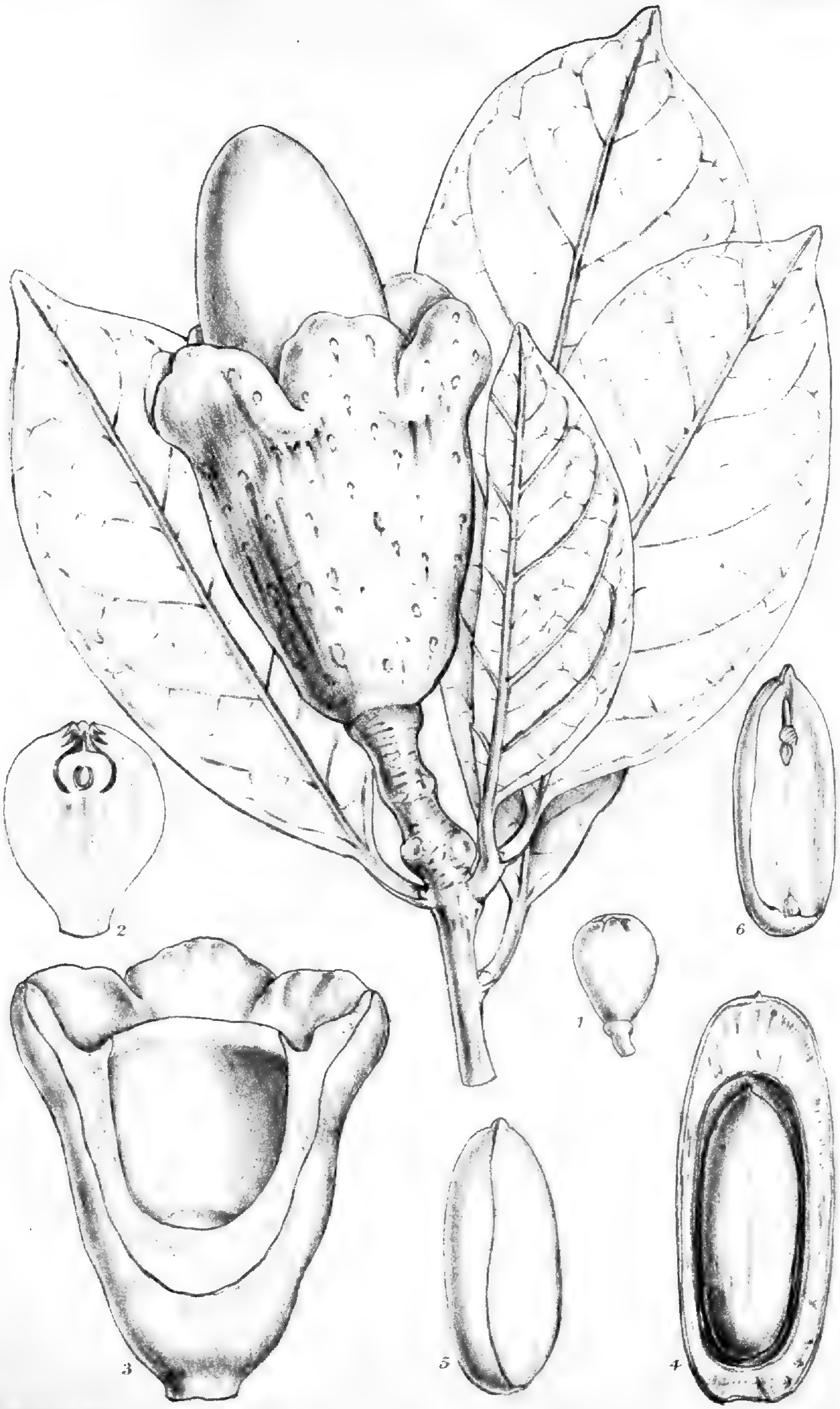

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Plates 2751 and 2752.

ANIBA MEGACARPA, *Hemsl.*

Laurineæ.

A. megacarpa, *Hemsl.* (*sp. nov.*); species fructus magnitudine insignis.

Arbor interdum ultra 60-pedalis (*Hart*) præter inflorescentiam omnino glaberrima, ramulis ultimis floriferis crassiusculis rigidis rectis. *Folia* ad apices ramulorum conferta, breviter petiolata, crassa, coriacea, obovata, obovato-oblonga, oblanceolata vel interdum fere elliptica, 3–5 poll. longa, apice rotundata vel subito obtuseque acuminata, basi cuneata, supra nitida, subtus pallidiora venis arcuatim connexis sat conspicuis. *Flores* minuti, unisexuales, in paniculas puberulas axillares 1–2 poll. longas dispositi, pedicellis brevissimis. *Bracteæ* bracteolæque minutæ, oblongæ vel ovatæ, puberulæ, citissime deciduæ. *Perianthium* glabrum, globosum vel pyriforme, 1–1½ lin. diametro, lobis inflexis fere clausum; tubus crassissimus ovarium omnino includens; lobi 6, 2-seriati, rotundati arcte inflexi. *Stamina* ac *staminodia* bene evoluta non visa, ut videtur 9, 3-seriata. *Ovarium* glabrum, stylo incluso. *Fructus* oblongus, glaber, circiter 3 poll. longus, e perianthio valde aucto grosse lobato 2 poll. diametro semiexsertus, pericarpio incrassato. *Semen* oblongum; cotyledones alte peltatim affixæ, corculum omnino includentes.

Trinidad: Guasso and Tabaquite, collected by *Dammouse*. Trinidad herbarium, 6786.

Mr. J. H. Hart, Superintendent of the Botanical Department in Trinidad, sent fruiting specimens of this tree to Kew in 1900, and again in 1901, together with very young flowers and drawings of the parts of the flower as observed by him in the fresh state. Notwithstanding all the trouble he took, I am not quite certain about the composition and structure of the androecium. Mr. Hart adds that this tree yields a valuable timber, called 'Laurier matac' in the patois French of the colony.—W. Botting Hemsley.

Plate 2751.

Fig. 1, a cluster of flowers; 2 and 3, bracteoles from the same; 4, flowers in a more advanced stage; 5, a section of one of the same; 6, the same from which the perianth segments have been removed; 7, one of the outer stamens or staminodia in a very early stage; 8, one of the intermediate series; 9, one of the inner series; 10, longitudinal section of ovary. *All enlarged.*

Plate 2752.

Fig. 1, a very young fruit; 2, longitudinal section of the same; 3, longitudinal section of the cupule of a ripe fruit; 4, longitudinal section of the nut; 5, embryo; 6, the same halved, showing the peltately attached cotyledon. *All, except fig.* 2, *natural size.*

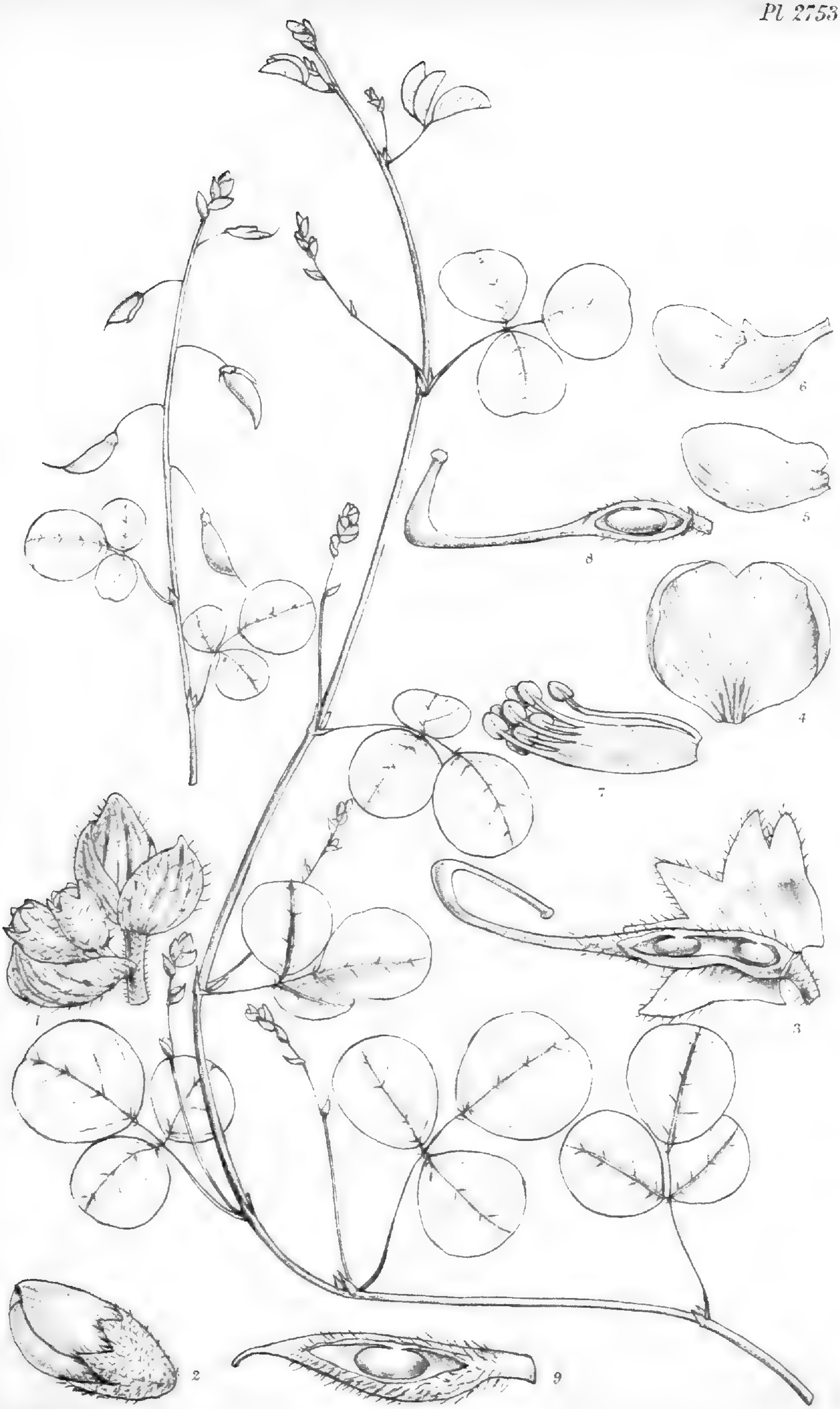

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PLATE 2753.

ELEIOTIS TRIFOLIOLATA, *T. Cooke.*

LEGUMINOSÆ. Tribe HEDYSAREÆ.

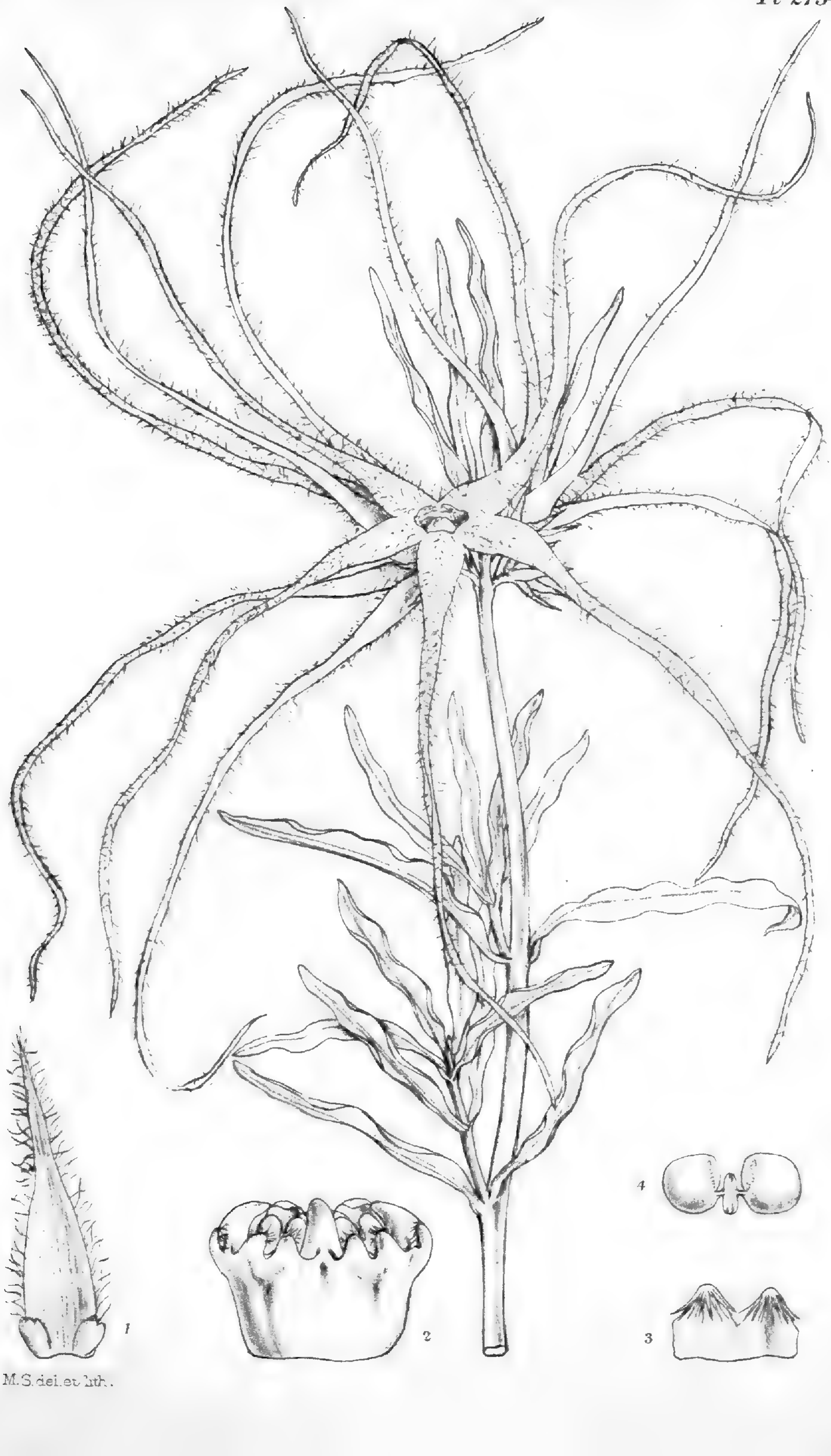
E. trifoliolata, *T. Cooke in Flora Pres. Bomb.* (1902), p. 342 ; species distinctissima, foliis trifoliolatis, foliolis basi attenuatis nec cordatis, et calycis dentibus longioribus ab *E. sororia*, unica specie hactenus descripta, differt.

Herba annua, prostrata. *Caules* plures, cæspitosi, gracillimi, usque ad 18 poll. longi, obscure triquetri, glabri. *Folia* 3-foliolata ; petioli filiformes, 6–12 lin. longi, glabri ; stipulæ $2\frac{1}{4}$ lin. longæ, lineari-lanceolatæ, cuspidatæ, striatæ. *Foliola* fere æqualia seu terminale lateralibus paullo longius, $4\frac{1}{2}$–$7\frac{1}{2}$ lin. longa, obovata, apice rotundata, truncata vel retusa, supra glabra, subtus paucis pilis appressis instructa, basi attenuata ; nervi et venæ subtus conspicui ; stipellæ 2 sub unoquoque foliolo, subulatæ. *Inflorescentia* primo in summis pedunculis aggregata, demum in racemum laxum pauciflorum elongata. Pedunculi axillares vel terminales, pilosi, parte infra flores 1 vel 2 bracteis scariosis instructa. *Pedicelli* filiformes. *Florum bracteæ* magnæ, striatæ, ovato-orbiculares, breviter acuminatæ, ciliatæ, unaquaque bractea duos flores tegente. *Calyx* $\frac{3}{4}$ lin. longus ; dentes triangulares, tubo paullo breviores. *Corolla* $1\frac{1}{2}$ lin. longa ; vexillum emarginatum. *Ovarium* pubescens, breviter stipitatum, 1- raro 2 ovulatum ; stylus inflexus, in flexura incrassatus. *Legumen* 3–$3\frac{3}{4}$ lin. longum, cymbiforme, faciebus pubescentibus, dorso sulcatum.

INDIA : Presidency of Bombay, near Badami, August 1892, *T. Cooke.*

A rare plant, which, so far as is known, has been found only at Badami, near the station of that name on the Southern Maratha Railway in the Presidency of Bombay. It flowers during the cold season.—T. COOKE.

Fig. 1, a cluster of flowers ; 2, a flower ; 3. calyx laid open, and section of ovary containing two ovules ; 4, standard ; 5, a wing-petal ; 6, a keel-petal ; 7, andrœcium ; 8, uniovulate ovary—the usual condition ; 9, ripe fruit. *All enlarged.*



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M.S. del. et lith.

Plate 2754.

BRACHYSTELMA JOHNSTONI, *N. E. Brown.*

ASCLEPIADACEÆ. Tribe CEROPEGIEÆ.

B. Johnstoni, *N. E. Brown* (*sp. nov.*) ; species ab omnibus hactenus descriptis corollæ lobis longissimis supra densissime albo-villosis distinctissima.

Herba 6-9 poll. alta. *Caulis* ramosus, compressus, puberulus. *Folia* opposita, $\frac{1}{2}$–$1\frac{1}{2}$ poll. longa, 1–2 lin. lata, linearia, acuta, subsessilia, supra glabra, subtus parce puberula, marginibus incurvis undulatis. *Umbella* 5-flora, subterminalis. *Pedicelli* 1–$1\frac{1}{2}$ lin. longi, puberuli. *Sepala* 3 lin. longa, basi $\frac{2}{3}$ lin. lata, attenuata, acuta, dorso puberula. *Corolla* extus glabra, brunneo-purpurea, intus densissime albo-villosa, vel in tubo puberula, fusco-purpurea, albido-zonata ; tubus $\frac{1}{4}$ poll. longus, campanulatus ; lobi basi 2 lin. lati, in caudas lineari-filiformes 3 poll. longas attenuati. *Corona exterior* cupularis, 10 dentata, atropurpurea ; dentes intus ad apicem retrorsum barbata. *Coronæ interioris* lobi $\frac{1}{2}$ lin. longi, lineari-oblongi, obtusi, antheris incumbentes.

BRITISH EAST AFRICA : Uganda Protectorate ; at Fort Ternan in Nandi district, *Sir H. Johnston.*

A most distinct and remarkable species ; the very long woolly tails of the flowers, which are clustered at the top of the stem, give it a very unique appearance.—N. E. BROWN.

Fig. 1, sepal seen from the inside, biglandular at the base ; 2, coronal body ; 3, lobes of the outer series of the corona ; 4, pollen-masses. *All enlarged.*


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Plate 2755.

LANDOLPHIA KIRKII, *Dyer*.

Apocynaceæ. Tribe Plumerioideæ.

Landolphia Kirkii, *Dyer in Kew Report*, 1880, pp. 39, 42; Stapf in *Flora Trop. Africa*, iv. p. 55; *L. Heudelotii* affinis differt corollis minoribus, ovario glabro, foliorum nervis numerosioribus.

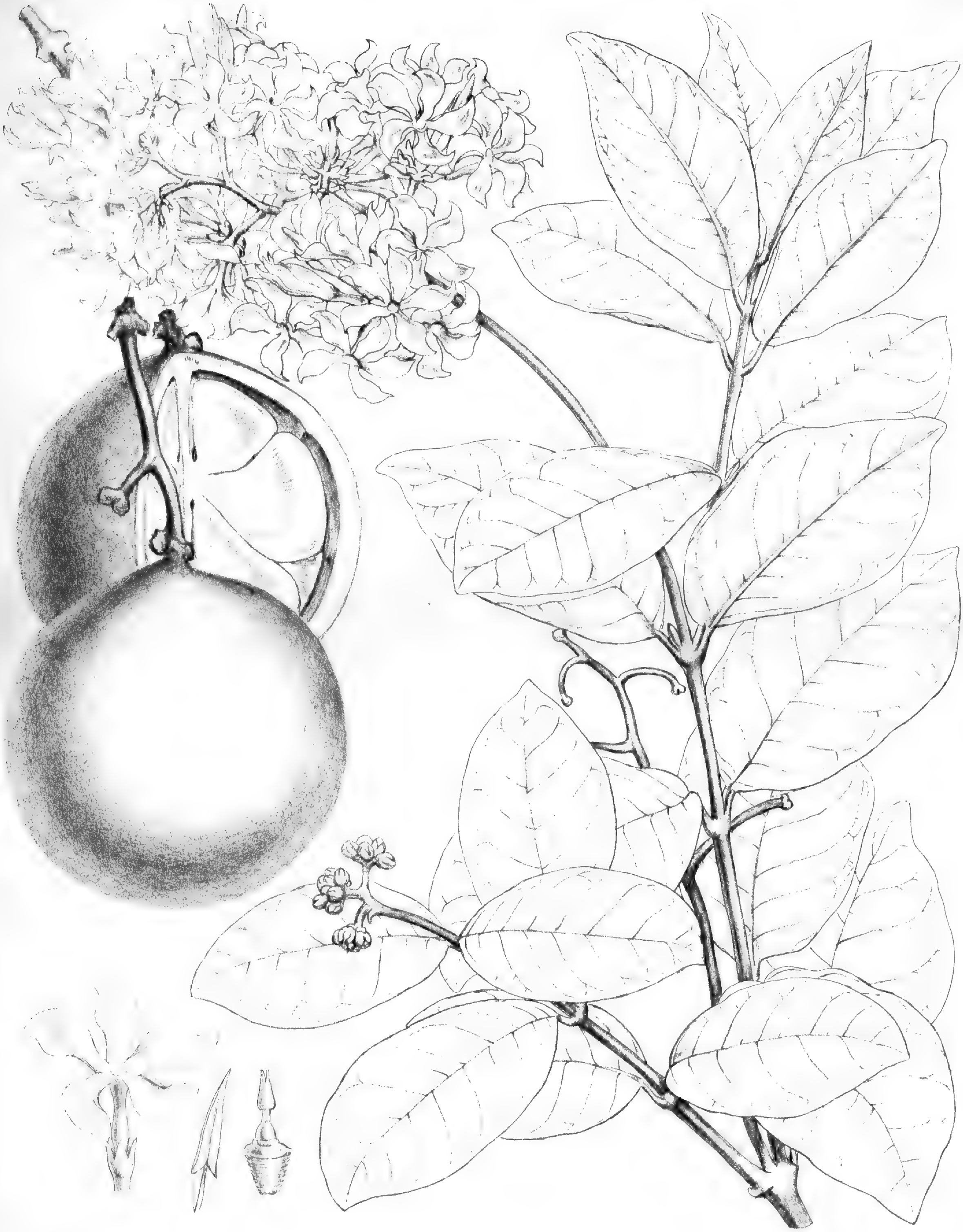
Arbuscula cirrhis ramosis scandens, cortice rugoso-tuberculato, novellis ramulisque primum velutinis, ramis deinde glabris nigrescentibus albo-punctulatis. *Folia* lanceolata vel oblongo- ad lineari-lanceolata, 1–4 poll. longa, ad $1\frac{1}{4}$ poll. lata, utrinque attenuata, interdum acuminata et basi rotundata, breviter petiolata, membranacea, supra læte viridia et glabra, subtus pallidiora et præcipue nervo medio velutina, nervis lateralibus patentibus prope marginem anastomosantibus. *Cymæ* terminales, fusco pubescentes, vel longiter pedunculatæ et laxe thyrsoideo-corymbosæ, pedunculo deflexo 2-5 poll. longo, ramis plus minusve distantibus patentibus, vel subsessiles et densæ. *Flores* minusculi, condensati, brevissime pedicellati; alabastra $2\frac{1}{2}$ lin. longa. *Sepala* ovato-elliptica, obtusiuscula, carinata. *Corolla* tubo pubescente superne dilatato calyce duplo longiore, lobis tubum subæquantibus linearibus acutis externe puberulis. *Antheræ* oblongæ, acutæ. *Ovarium* ovoideum, glabrum, stylo filiformi ad apicem subincrassato, stigmate cylindraceo bifido. *Fructus* pyriformis, ad 3 poll. longus. *Semina* plurima, angulata, diametro ad 9 lin.—*L. elastica*, Vatke ex Dewèvre, Caoutch. Afric. Monogr. Landolph., p. 45; *L. polyantha*, K. Schum. in Engl. Jahrb. xxviii. p. 452; *Vahea Kirkii*, Sadeb. in Jahrb. Hamburg. Wissensch. Anstalt, ix. i. (1891), p. 226; *V. elastica*, Klotzsch ex Dewèvre, *l.c.* p. 46.

Tropical East Africa: British East Africa to the Shire Highlands, where the typical form grows.

The development of the important india rubber trade of East Africa was entirely due to the energy and sagacity of Sir John Kirk. As early as 1868 he sent specimens of the present species and rubber made from it to Kew. This is collected in a way which is perhaps unique in any rubber-yielding plant. Some of the milk from a wound is allowed to coagulate. The pellet so obtained is applied to a fresh cut, 'and being turned with a rotary motion, the exuding milk is drawn off like

silk from a cocoon.' It is said that by working hard one person can collect 5 lbs. of rubber *per diem*. According to Sir John Kirk, *Landolphia Kirkii* 'yields the best rubber of the Zanzibar coast.' He had long endeavoured to induce the natives to collect it. 'Every one was engaged in the slave-trade, and the experiment in consequence failed.' But it eventually 'created a new trade for all those classes whose means of subsistence came to an end' with its suppression.—W. T. Thiselton-Dyer.

Fig. 1, a flowering branch—*natural size*; 2, a flower-bud; 3, an expanded flower; 4 and 5, ventral and dorsal view of anther; 6, gynæceum—*all enlarged*; 7, fruit—*natural size*.



W. Hood. Fitch lith.

Henbert imp.

Plate 2756.

LANDOLPHIA PETERSIANA, *Dyer.*

Apocynaceæ. Tribe Plumerioideæ.

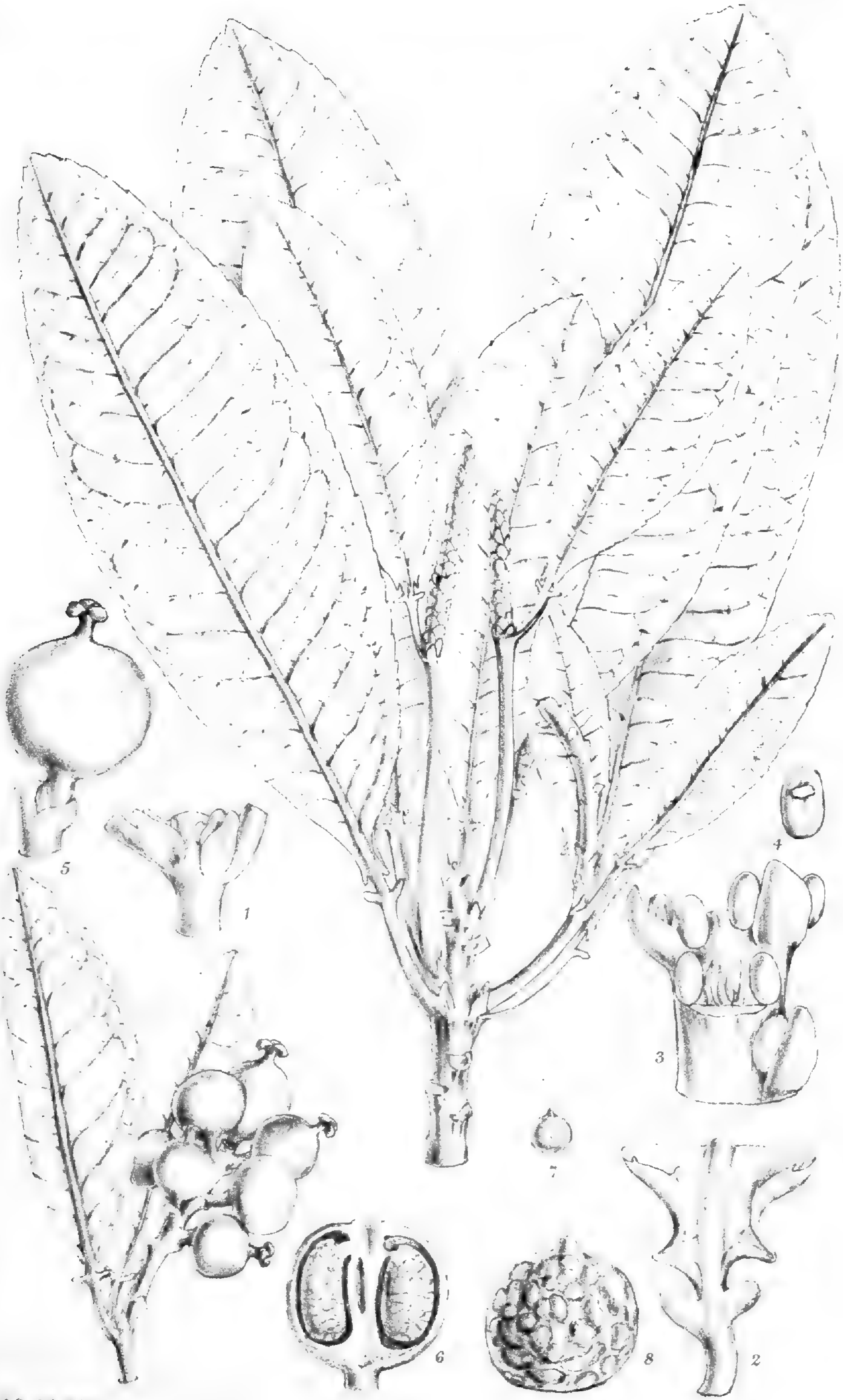
Landolphia petersiana, *Dyer in Kew Report*, 1880, p. 42 ; *Stapf, Flora Trop. Africa*, iv. p. 47 ; *L. scandenti* affinis differt corollae tubo quam lobis multo breviore, foliorum nervis minus numerosis.

Arbuscula ope cymarum cirrhiformium scandens, novellis ramulisque plus minusve ochraceo-velutinis, ramis nigrescentibus albo-punctatis. *Folia* oblonga vel oblongo obovata, 1½–4 poll. longa, ¾ 2 poll. lata, apice obtusiuscula, acuta vel brevissime acuminata, basi obtusa, interdum utrinque plus minusve rotundata, chartacea, supra saturate- subtus sæpe flavido-viridia, crebre reticulato venulosa, utrinque sparsim puberula deinde glaberrima. *Panicula* longe pedunculata, laxe thyrsoidea, pedunculo 2 5 poll. longo, ramis paucis patentibus, deinde deflexis, capitulis ferrugineo-pubescentibus. *Flores* sessiles, capitatim congesti ; alabastra ¾ poll. longa. *Sepala* lanceolata, acuta. *Corollæ* tubo canescenti inferne dilatato, lobis tubum subaequantibus lineari-lanceolatis acutis glabris margine fimbriatis. *Antheræ* lineari-oblongæ, acutæ. *Ovarium* late ovoideum, stigmate basi incrassato, stylo brevi. *Fructus* globosus, ad 2½ poll. diametro, denique lævis. *Semina* ad 9 lin. longa.—*L. scandens* vars. *petersiana*, *rotundifolia* et *stuhlmanniana*, Hallier f., Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt, xvii. (1890), 3. Beih. pp. 82, 83 ; *Ancylobothrys petersiana* et *A. rotundifolia*, Pierre in Bull. Soc. Linn. Paris, 1898, p. 91 ; *Willughbeia petersiana* et *W. senensis*, Klotzsch in Peters, Reise Mossamb. Bot. i. pp. 281, 282.

Tropical East Africa : British East Africa to the mouth of the Zambesi, where the typical form was found.

The rubber of *Landolphia petersiana* does not coagulate spontaneously on exposure to the air like that of *L. Kirkii*, 'the juice being gathered in a fluid state by tapping, and coagulated by heat, or in some other way similar to that used in Madagascar or the Brazils. The product is said, however, to be of an inferior quality.'—W. T. Thiselton-Dyer.

Fig. 1, a flowering branch—*natural size*; 2, a flower; 3, a stamen ; 4, a pistil—*all enlarged* ; 5, fruit—*natural size.*



M.S. del. et lith.

Plate 2757.

SAPIUM STYLARE, *Muell. Arg.*

EUPHORBIACEÆ. Tribe CROTONEÆ.

S. stylare (§ **Emmenostylum**, *sect. nov.*), *Muell. Arg.* in Linnæa, xxxii. p. 119 ; a speciebus omnibus mihi cognitis lamina foliorum basi auriculata recedit.—*Excæcaria stylaris*, Muell. Arg. in DC. Prodr. xv. 2, p. 1204. *Sapium biglandulosum* var. *moritzianum* in Herb. Mus. Brit. non Muell. Arg., vide sub tab. nostr. 2647.

VENEZUELA : near the former German colony of Tovar, south-west of Caracas, *A. Fendler*, 1231 ; *C. Moritz*, 1775. ECUADOR : eastern side of the Andes, *H. Jumelle.*

A representation of this species, which is most nearly related to *S. verum*, Hemsl., plate 2647 of this work, is here given, because what appears to be the same has been sent by Prof. H. Jumelle to Kew for identification, with the information that it was from the eastern side of the Andes of Ecuador and yielded caoutchouc of inferior quality. Only leaves were sent, but they are so exactly like those of typical *S. stylare*, including the basal auricles, that I think the identification is beyond doubt. The leaves were sent under three names : *caucho blanco*, *caucho verde*, and *caucho morado* ; yet they are quite indistinguishable from each other, and Prof. Jumelle (*Revue des Cultures Coloniales*, x. p. 170), while pointing out certain trivial differences in the colour of the bark and shape of the leaves, agrees that they are specifically the same. From Prof. Jumelle's sources of information this is the principal species of the Eastern Province of Ecuador, where it is never found below about 3300 ft., and ascends to upwards of 8000 ft. It flourishes best and yields the greatest quantity of rubber at elevations above 5000 ft., where the mean temperature ranges from 57° to 61° Fahr. Further particulars will be found in the publication cited.

It may be useful to add here some reference to what is known of the species of *Sapium* of the Western Provinces of Ecuador. Dr. Paul Preuss, formerly director of the Botanic Garden, Victoria, Cameroons, was deputed by the Berlin Colonial-wirtschaftliches Komitee to visit America in the interests of tropical agriculture, and in his excellent report, *Expedition nach Central- und Süd-Amerika*, he describes and figures the species of *Sapium* he met with in Western Ecuador. He states (p. 385) that he met with three species of *Sapium*, two of which inhabited

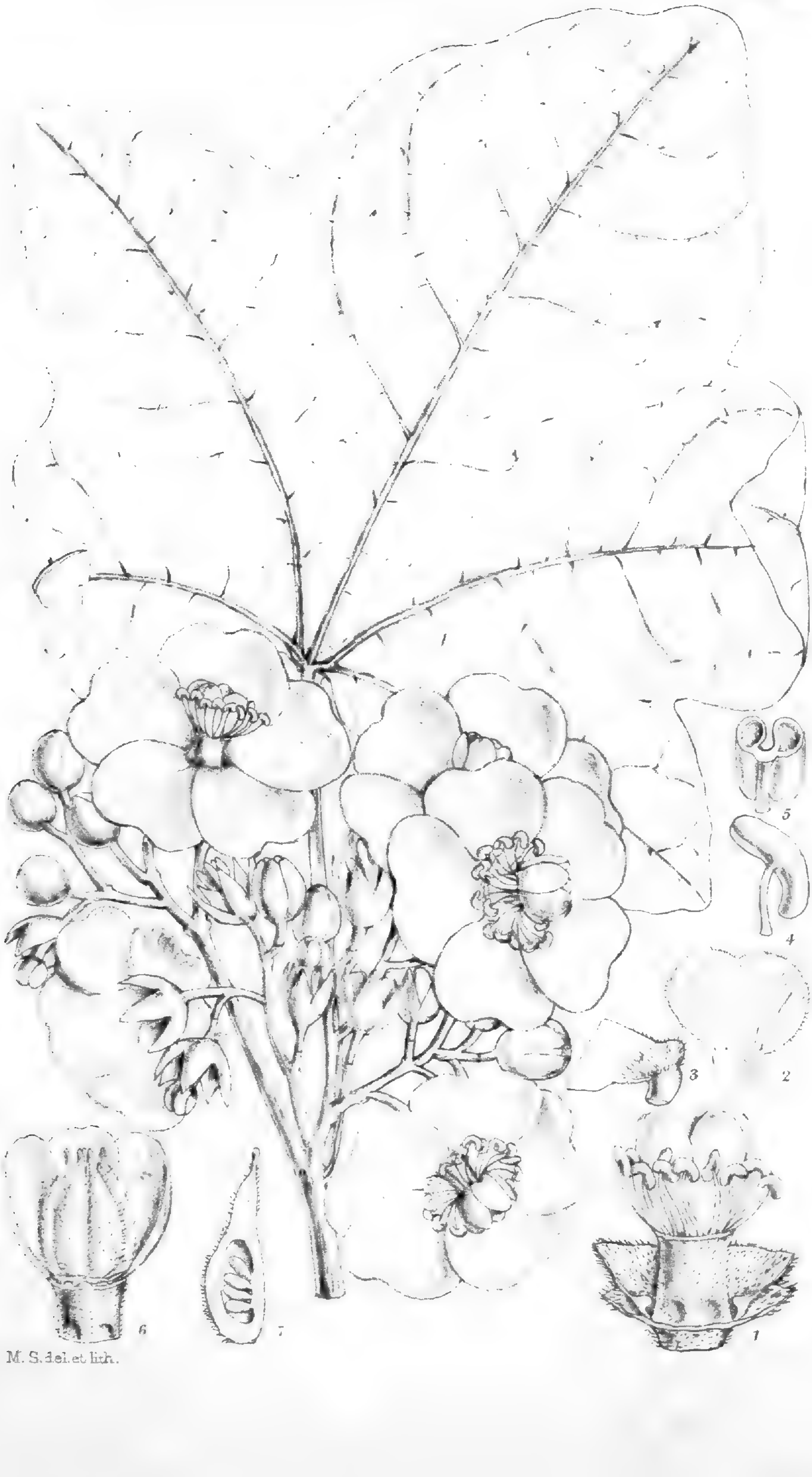
the lowlands, and the third exclusively the highlands. The last is by far the most valuable, he adds, furnishing the true *caucho blanco* of commerce, and is probably the same as the virgin rubber tree of Colombia. The two species of the lowlands are the source of the *caucho andullo blanco* or *cauchillo*, and bear the name *palo de leche*, milktree, in common. The highland species was provisionally referred by Preuss to *S. verum*, Hemsl. (plate 2647 of this work), and the other two he described and figured under the names *S. utile* (t. 11, fig. 1) and *S. decipiens* (t. 12), why is inexplicable, because further on he states that they will certainly prove to be forms of one and the same species—'welche beide sich auch jedenfalls nur als Formen einer und derselben Art herausstellen werden.'

Through the kindness of Dr. I. Urban, the Assistant Director of the Berlin Botanic Garden, Preuss's specimens have been sent to Kew for comparison, and, so far as one can decide from leaves alone, I think the highland species is correctly referred to my *S. verum*, which is the only one besides *S. stylare* known to me as having persistent styles. In this connection it should be mentioned that the British Museum specimen cited in the letterpress to plate 2647 as *Sapium biglandulosum*, var. *moritzianum*, Muell. Arg., is not that plant, but typical *S. stylare*.

With regard to *S. utile* and *S. decipiens*, they are undoubtedly the same, and the species should bear the former name. It is distinguished from all the other species Kew possesses from western South America by the petiolary glands being very much reduced or obsolete. A leaf from Moyobamba, Peru, sent to Kew by Prof. Jumelle, is apparently *S. utile*.

From the foregoing it seems now an established fact that *S. stylare* and *S. verum* both extend from Colombia to Ecuador, and that the latter yields a superior quality of rubber.—W. Botting Hemsley.

Fig. 1, portion of a branch, bearing stipules and base of petioles; 2, portion of a leaf showing the auricled base of the blade and the two glands on the petiole; 3, a portion of the male part of an inflorescence; 4, one of the peltate glands of a bracteole; 5, a fruit; 6, a section of the same; 7 and 8, seeds. *All, except fig.* 7, *enlarged.*



M. S. del. et lith.

Plate 2758.

TRIPLOCHITON JOHNSONI, *C. H. Wright.*

Triplochitonaceæ.

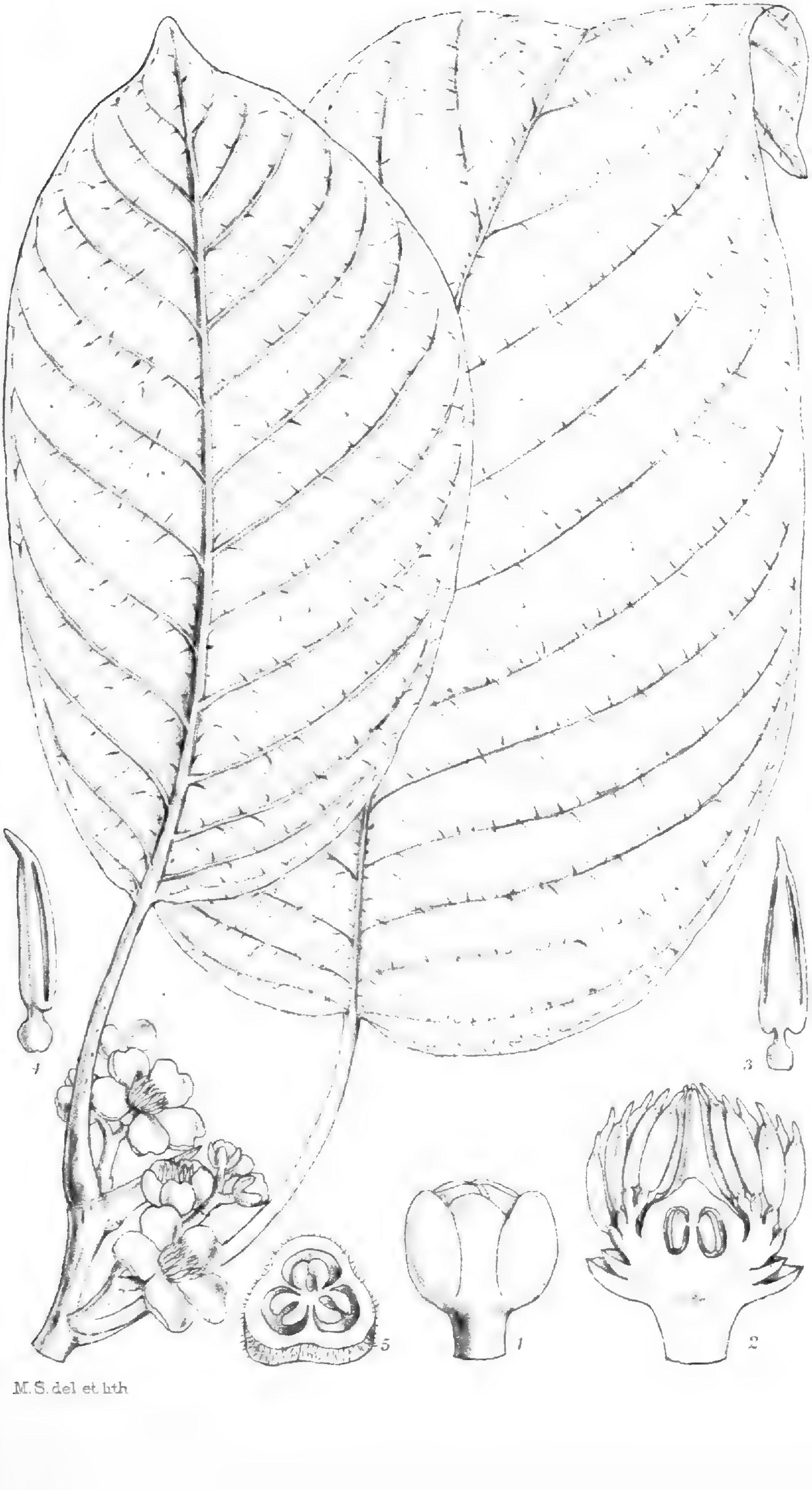
T. Johnsoni, *C. H. Wright* ; a *T. scleroxyloni*, K. Schum., floribus hermaphroditis, antheris bilocularibus, ovulis 4–6, differt.

Arbor alta, ligno molli. *Folia* palmatim 5–lobata, 5 poll. longa, 7½ poll. lata, basi cordata, apice obtusa, supra obscure pilosa, demum glabra, subtus glaberrima, nervis secundariis pinnatis, reticulatione minuta ; petiolus 3 poll. longus. *Paniculæ* axillares, petiolis breviores, cymosæ, circa 20-floræ, bracteis deciduis ? *Calyx* 5 partitus, 7 lin. diam., utrinque dense appresseque rufo-sericeus ; lobi ovati, acuti, valvati, patentes. *Petala* obcordata, basi late unguiculata, 7 lin. longa, 7 lin. lata, utrinque pilosa, alba, basi purpurea. *Gynandrophorum* 1–2 lin. longum, pubescens. *Stamina* circa 20 ; filamenta filiformia, libera vel basi brevissime connata ; antheræ 1 lin. longæ, dorsifixæ, oblongæ, curvatæ, loculis 2 induplicatis demum e connectivo revolutim dehiscentibus ; staminodia 5, late ovalia, concava, glumacea, uninervia, glaberrima, 1½ lin. longa. *Carpella* 5, ad apicem gynandrophori, a staminodiis velata, libera, oblique lanceolata, 1 lin. longa, rufo pubescentia ; stylus subulatus ; ovula 4–6, ad suturam ventralem affixa.

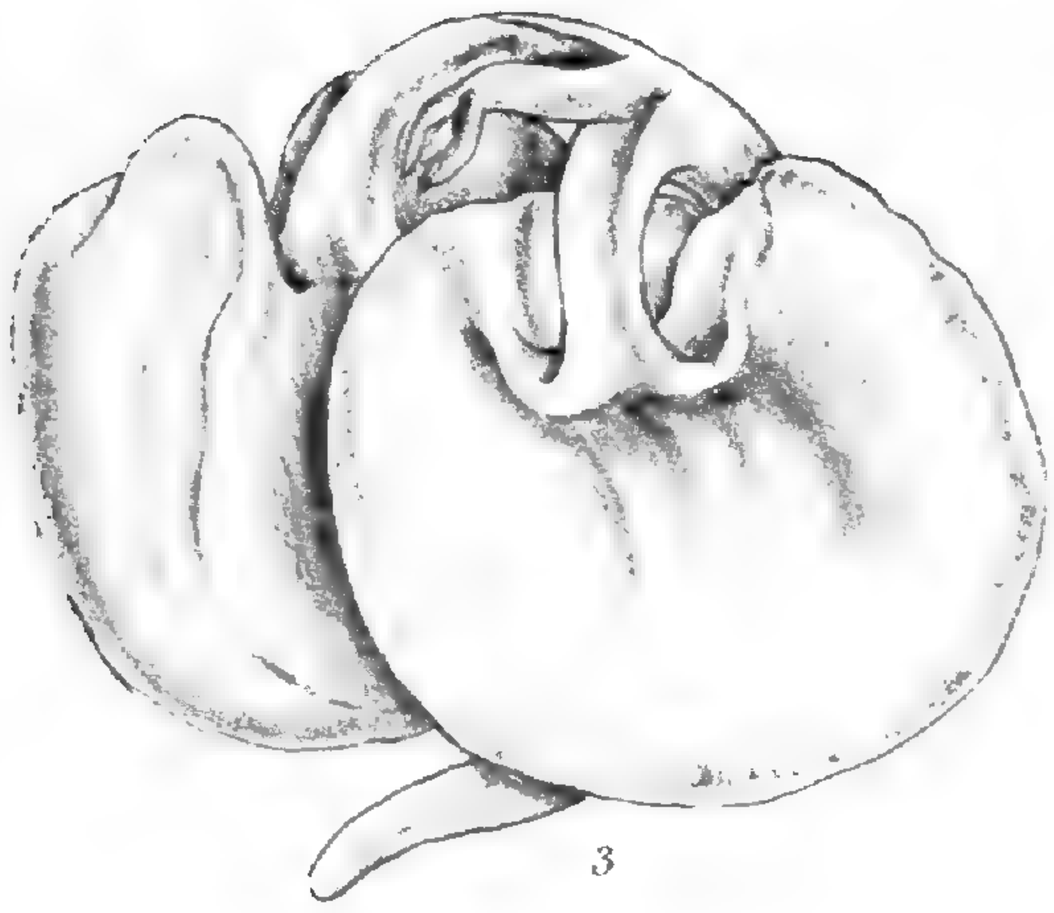
West Africa. Gold Coast : Anum, *W. H. Johnson*, 813. Native name 'Owa wa.'

K. Schumann (in *Engl. Bot. Jahrb.* xxviii. p. 330) gives as a character of this genus 'antheris monothecis,' but in the present plant the two flat cells of the longitudinally curved anther are folded inwards so as to lie side by side ; dehiscence takes place by longitudinal slits close to the connective on the ventral side, and the wall of both anther cells rolls back in such a manner as to give the appearance of an originally 1-celled anther. In spite of this and the flowers being hermaphrodite, I consider it better to place this plant in *Triplochiton* than to make it the type of a new genus.—C. H. Wright.

Fig 1, gynandrophore bearing stamens and scarious staminodes which conceal the carpels, with portions of calyx and two petals at the base; 2, front view of a petal; 3, side view of the subpeltate claw of the petal; 4, an anther; 5, cross section of the same; 6, pistil and some of the scarious staminodia; 7, a carpel in longitudinal section. *All, except fig. 2, enlarged.*



M.S. del et lth



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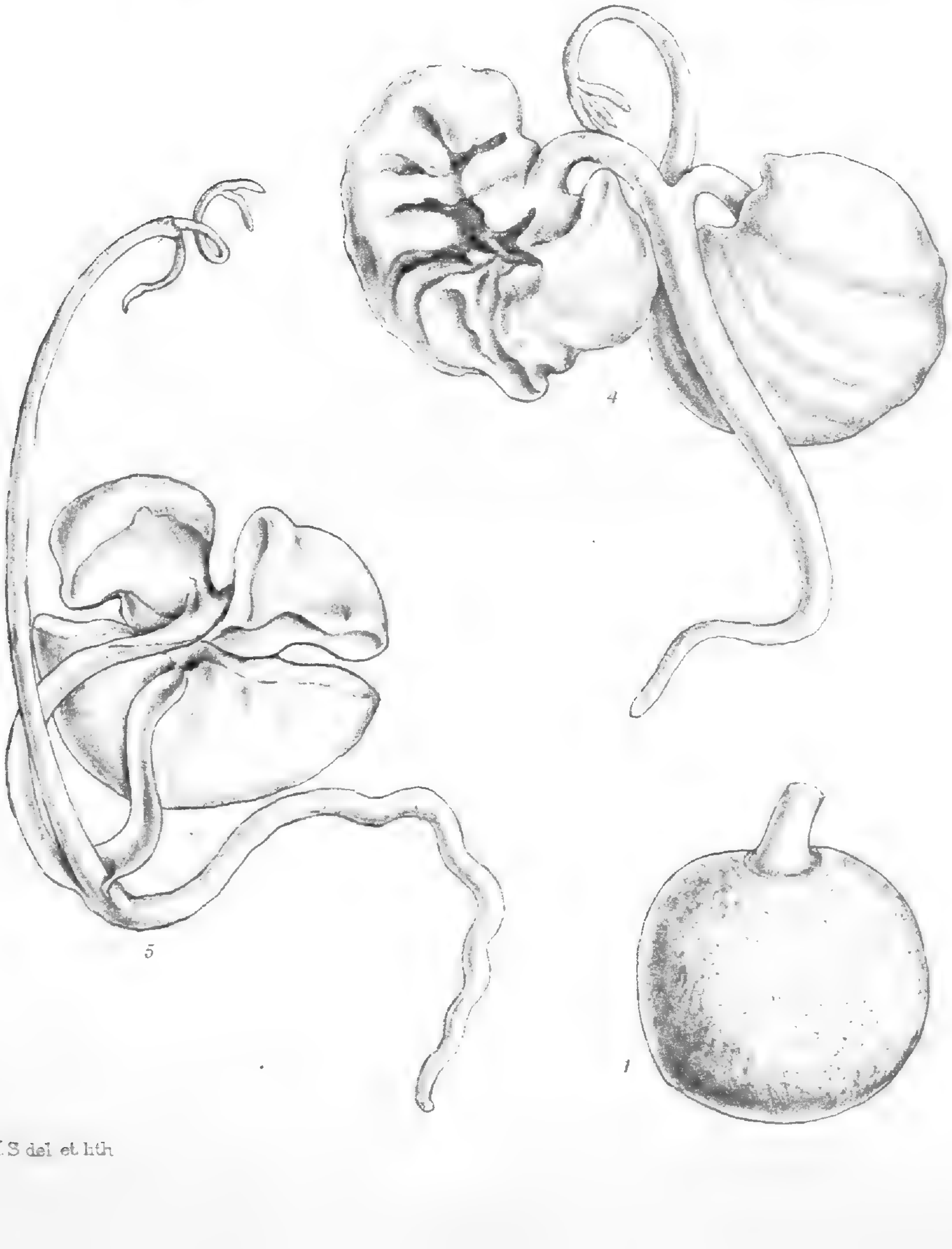

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M.S del et lith

Plates 2759 and 2760.

VATERIA SEYCHELLARUM, *Dyer.*

Dipterocarpeæ. Tribe Vateriæ.

V. Seychellarum, *Dyer in Baker, Fl. Maurit.* p. 326 ; *Journ. Bot.* xvi p. 103 ; Brandis, *Journ. Linn. Soc.* xxxi. p. 144 ; species habitu *V. ceylanicæ*, a qua differt petiolis longioribus, staminibus indefinitis, sepalis haud reflexis.

Arbor 80–100 pedes alta, ramulis petiolisque canitie fulva obtectis, denique glabriusculis. *Folia* elliptica vel obovato-oblonga, ad 9 poll. longa, 7 poll. lata, breviter apiculata, basi rotundata, coriacea, utraque pagina glaberrima, nervis lateralibus utrinque ad 20 erecto-patentibus subtus prominentibus, petiolo tereti, ad 4 poll. longo, stipulis ignotis. *Racemi* axillares, $1\frac{1}{2}$–2 poll. longi, pauciflori. *Flores* breviter pedicellati, glabriusculi, $\frac{3}{4}$ poll. lati. *Sepala* ovata, obtusa, fructu minime accreta, nequaquam recurva. *Petala* obovata, erosa, apice marginibusque incurvis. *Stamina* perplura, apiculo brevi munita ; antheræ valvis exterioribus majoribus. *Ovarium* glabrum. *Fructus* globosus, diametro sesquipollicaris, calyce persistente suffultus, pericarpio fibroso. *Semina* in fructu præcoque germinantia. *Cotyledones* carnosæ, petiolatæ, orbiculares, ad basin auriculatæ, plano-convexæ, externe radiato-sulcatæ, radiculam incurvam crassam complectentes.—*Vateriopsis Seychellarum*, Heim, Recherch. Diptérocarp. p. 94.

Seychelles : near Port Glaud, Mahé, *J. Horne* ; Mahé, without special locality, *H. P. Thomasset*.

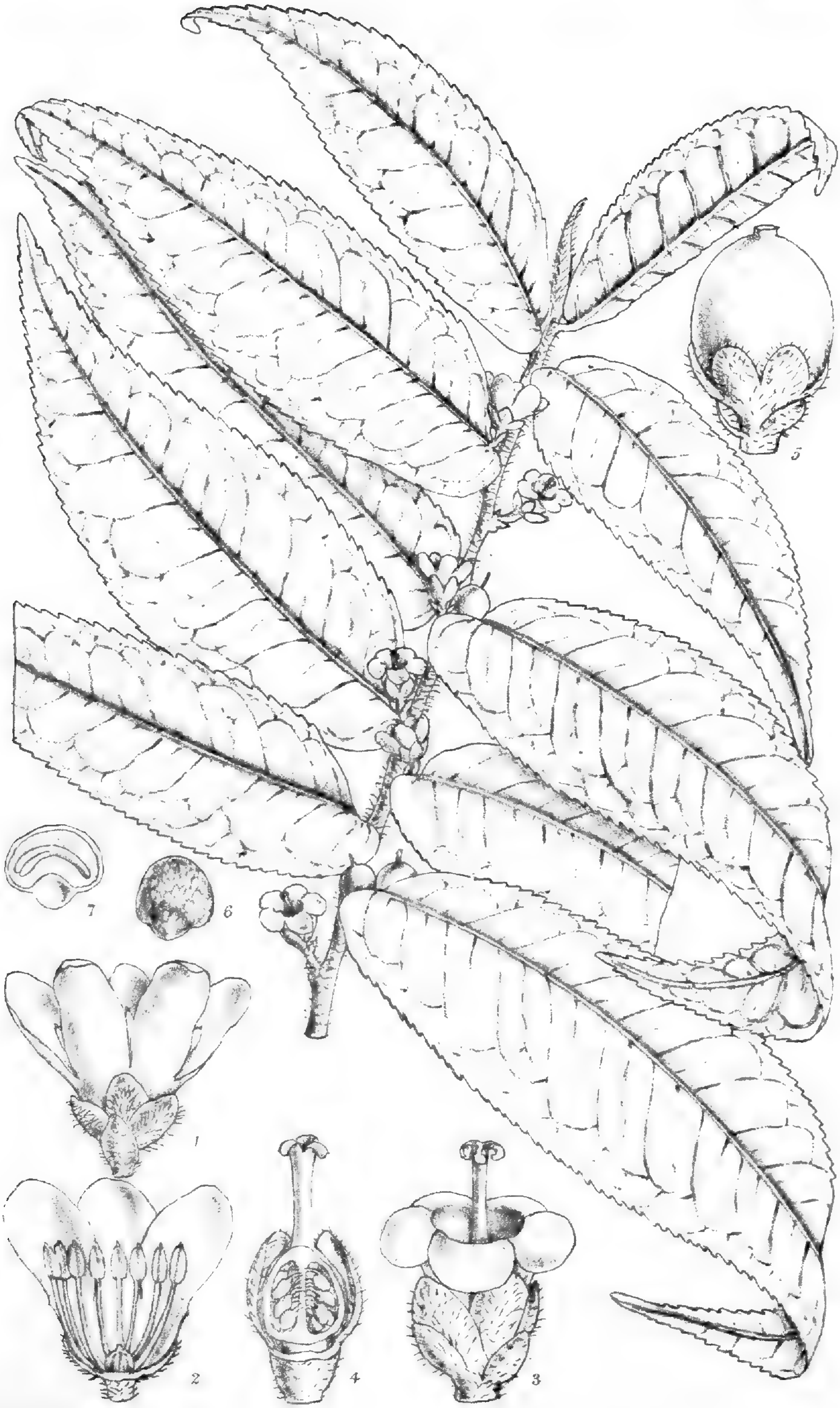
This interesting species is the most western outlier of the order as now usually limited. The unexpected occurrence of so marked an Indo-Malayan type on a distant island composed of primary rocks is a fact of great interest in geographical botany. It was discovered in 1874 by Mr. John Horne, F.L.S., late Director of Gardens and Forests, Mauritius. He describes it as attaining a height of from 80 to 100 feet. Its timber is valuable and 'is a favourite tree for making canoes.' When wounded the trunk exudes an inflammable resin, formerly used for incense. The tree is now becoming scarce and 'large trees are now only found near Port Glaud (erroneously printed Port Glean in the *Flora of Mauritius*) and in very inaccessible parts of the forests at elevations of from 600 to 1000 feet.'—W. T. Thiselton-Dyer.

Plate 2759.

Fig. 1, a flower-bud ; 2, section of a flower from which the sepals and petals have been removed, 3 and 4, different views of an anther ; 5, cross-section of an ovary. *All enlarged.*

Plate 2760.

Fig. 1, a fruit ; 2, the same, from which a portion of the pericarp has been removed ; 3–5, germinating seeds in different stages. *All natural size.*



M.S.del.et lith

Plate 2761.

EURYA OBLIQUIFOLIA, *Hemsl.*

Ternstrœmiaceæ.

E. obliquifolia, *Hemsl.* (*sp. nov.*) ; a speciebus sinensibus mihi cognitis foliis brevissime petiolatis basi obliquis differt.

Arbor parva vel frutex 10-pedalis, ramis floriferis graciliusculis rectis setuloso-hirsutis. *Folia* disticha, subsessilia, vix coriacea, oblongo-lanceolata, $1\frac{1}{2}$–4 poll. longa, maxima $1\frac{1}{4}$ poll. lata, longe acuminata, vix acuta, basi oblique cordata, lobo inferiore majore, crebre serrulata, præter costam subtus setuloso-hirsutam cito glabrescentia, supra subnitida, costa supra impressa subtus elevata, venis primariis lateralibus numerosis arcuatim conjunctis. *Flores* dioici, dimorphi, 5 lin. diametro, feminei minores, in axillis foliorum solitarii binive (id est flos et fructus maturus in eadem axilla) brevissime pedicellati ; bracteolæ sepalis similes sed minores. *Sepala* puberula, rotundato-oblonga. *Petala* obovato-oblonga, infra medium coalita, demum, saltem in fl. fem., recurva. *Stamina* circiter 15, quam petala tertia parte breviora, filamentis filiformibus glabris. *Ovarium* glabrum, 3-loculare, stylo glabro breviter tritido petala excedente. *Bacca* ovoidea vel fere globosa, circiter $2\frac{1}{2}$ lin. diametro maximo, glabra. *Semina* numerosa, compressa, circiter $\frac{1}{2}$ lin. diametro, punctulata, basi cavernula vacua instructa ; embryo axilis, curvatus.

China : mountain forests south-west of Mengtze, at 5000 feet, *A. Henry*, 10914, 10914 A.

Another new species of the same affinity from the same district may be described here.

E. Henryi, *Hemsl.* ; ab. *E. obliquifolia*, Hemsl., foliis basi rotundatis differt ; ab *E. distichophylla*, Hemsl. (*Journ. Linn. Soc.* xxiii. p. 77) floribus glabris petalis subacutis differt.

Arbor 10-pedalis (*A. Henry*). *Rami floriferi* elongati, gracillimi, recti, dense setuloso-hirsuti. *Folia* disticha, brevissime petiolata, coriacea, anguste lanceolata vel interdum in eodem ramo oblonga vel ovata, $\frac{3}{4}$–3 poll. longa, 3-8 lin. lata, longe acuminata, obtusa, basi rotundata, vel interdum utrinque rotundata, obscure arcteque denticulata, subtus secus costam et in margine plus minusve setulosa ; costa

supra impressa, subtus elevata. *Flores feminei* glabri, $2\frac{1}{2}$–3 lin. diametro, 1–3 in foliorum axillis, brevissime pedicellati. *Bracteolæ* sepalis similes, minores. *Sepala* ovata, subacuta, quam petala multo breviora. *Petala* anguste lanceolata, apiculata. *Ovarium* villosum, stylo glabro trifido.—W. Botting Hemsley.

China: mountains to the east of Mengtze at 7000 feet, *A. Henry*, 11342.

Fig. 1, a male flower; 2, a section of the same; 3, a female flower; 4 a section of the same; 5, a fruit; 6, a seed; 7, a section of the same showing the embryo. *All enlarged.*

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M.S. del. et lith.

Plate 2762.

POLYADOA UMBELLATA, *Stapf.*

Apocynaceæ. Tribe Plumerioideæ.

P. umbellata, *Stapf, in Fl. Trop. Afr.* iv. part i. p. 103 ; ab altera specie generis foliis majoribus, nervis magis remotis, ovulis numerosioribus differt.

Arbor 24–30 ped. alta, ligno durissimo ; ramuli novelli admodum compressi, exsiccando nigrescentes vel rufo-fuscescentes, adulti lenticellis sparsis verruculosi. *Folia* elliptica vel lato-oblonga, breviter obtuseque acuminata vel subacuminata, basi acuta, 4–9 poll. longa, $1\frac{1}{2}$–$3\frac{1}{2}$ poll. lata, chartacea, exsiccando fuscescentia, costa supra canaliculata infra admodum prominente, nervis secondariis utrinque circiter 10–14 obliquis ultra medium rectis utrinque (imprimis vero infra) prominulis, venis inconspicuis ; petiolus $\frac{1}{2}$–$\frac{3}{4}$ poll. longus. *Flores* in fasciculis subsessilibus, rarius distincte pedunculatis, terminalibus vel pseudoterminalibus multifloris vel in inflorescentiis umbelliformibus congestis ; pedicelli ad $1\frac{1}{2}$ lin. longi. *Calyx* resinosus ; sepala rotundato-ovata, obtusa, coriacea, intus glandulis numerosis cylindricis obsita, $\frac{1}{2}$–$\frac{3}{4}$ lin. longa. *Corolla* luteo-alba ; tubus gracilis, 3–$3\frac{1}{2}$ lin. longus, infra stamina parce pubescens ; lobi lineari oblongi, flexuosi, tubum æquantes vel paulo longiores. *Antheræ* ovato-oblongæ, subacutæ, $\frac{1}{2}$ lin. longæ. *Ovula* circiter 6-seriata, 3–4 in unaquaque serie.—*Carpodinus umbellata*, K. Schum. in Engl. Jahrb. xxiii. p. 221 ; Pierre in Bull. Soc. Linn. Paris, 1898, p. 38 ; *Hunteria umbellata*, Hallier f., Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. p. 190.

West Africa : Lagos, Ibadan Forest, *Punch*, 128 ; Cameroons, Mbanga Mountain near Lolodorf, 2300 feet, *Staudt*, 130 ; Bipinde, 500 feet, *Zenker*, 1707, 1729.

The genus *Polyadoa* comprises two species, *P. umbellata* and *P. Elliotii*. I have already called attention to it in 'Journ. Linn. Soc.' xxx. (1894), p. 90 ; but as the material then at my disposal was very scanty, I did not give it a name, but merely described Elliot's plant as the representative of a presumably new genus of *Apocynaceæ*. *Polyadoa* is nearly allied to *Pleiocarpa* and *Hunteria*, but differs from both in the greater number of ovules, namely 10–12 in each cell in *P. Elliotii*, and twice as many in *P. umbellata*, against 1–4 in *Pleiocarpa* and 2 in *Hunteria*. The fruit is not known, but the greater number of ovules suggests that the genera mentioned also differ in this respect. Other characters distinguishing *Pleiocarpa* from *Polyadoa* are the axillary position of the inflorescences, the submembranous or herbaceous texture of the sepals, and the absence of glands within the calyx of *Pleiocarpa*.—Otto Stapf.

Fig. 1, portion of calyx and interior glands ; 2, section of corolla, showing insertion of stamens and pistil ; 3 and 4, anthers in different position ; 5, upper part of style and stigma ; 6, longitudinal section through carpel, to show ovules.

M. S. del. et lith.

Plate 2763.

ANDROTIUM ASTYLUM, *Stapf.*

ANACARDIACEÆ. Tribe MANGIFEREÆ.

Androtium, *Stapf.* Genus novum *Buchananiæ* arcte affine, sed antheris incurvis apice ob connectivum dilatatum bilobum quasi auriculatis, stigmatibus sessilibus distinctum.

Flores hermaphroditi (?), 5- rarissime 4-meri. *Calyx* brevis, segmentis subrotundis imbricatis. *Petala* oblonga, imbricata, patula vel apice demum recurva. *Stamina* 10 (rarissime 8), basi disci extus inserta; filamenta brevia, linearia vel subulato-linearia incurva; antheræ magis minusve obcordata, inflexæ, thecis lateralibus distinctis lateraliter dehiscentibus, connectivo inter et imprimis supra thecas dilatato et magis minusve obtuse bilobo. *Discus* carnosulus, cupuliformis, 20-lobatus, lobis staminibus oppositis brevioribus, ovarium ad medium cingens. *Carpella* 5, libera; unicum fertile subglobosum, dense tomentosum, stigmate subobliquo subterminali sessili inter pilos occulto, cætera sterilia, solida, oblonga, extus curvata, pilosa; ovulum carpelli fertilis a funiculo e basi lateris ventralis ascendente suspensum. *Fructus* drupaceus, sublentiformis, magis minusve obliquus, minute apiculatus, exocarpio tenui, endocarpio crustaceo. *Semen* lenticulare; testa membranacea; cotyledones suborbiculares; radicula supera, accumbens. Arbor (?). Folia *alterna, coriacea, tenuiter eleganterque reticulata, petiolata.* Flores *parvi, breviter pedicellati in paniculas breves multifloras axillares conferti.*

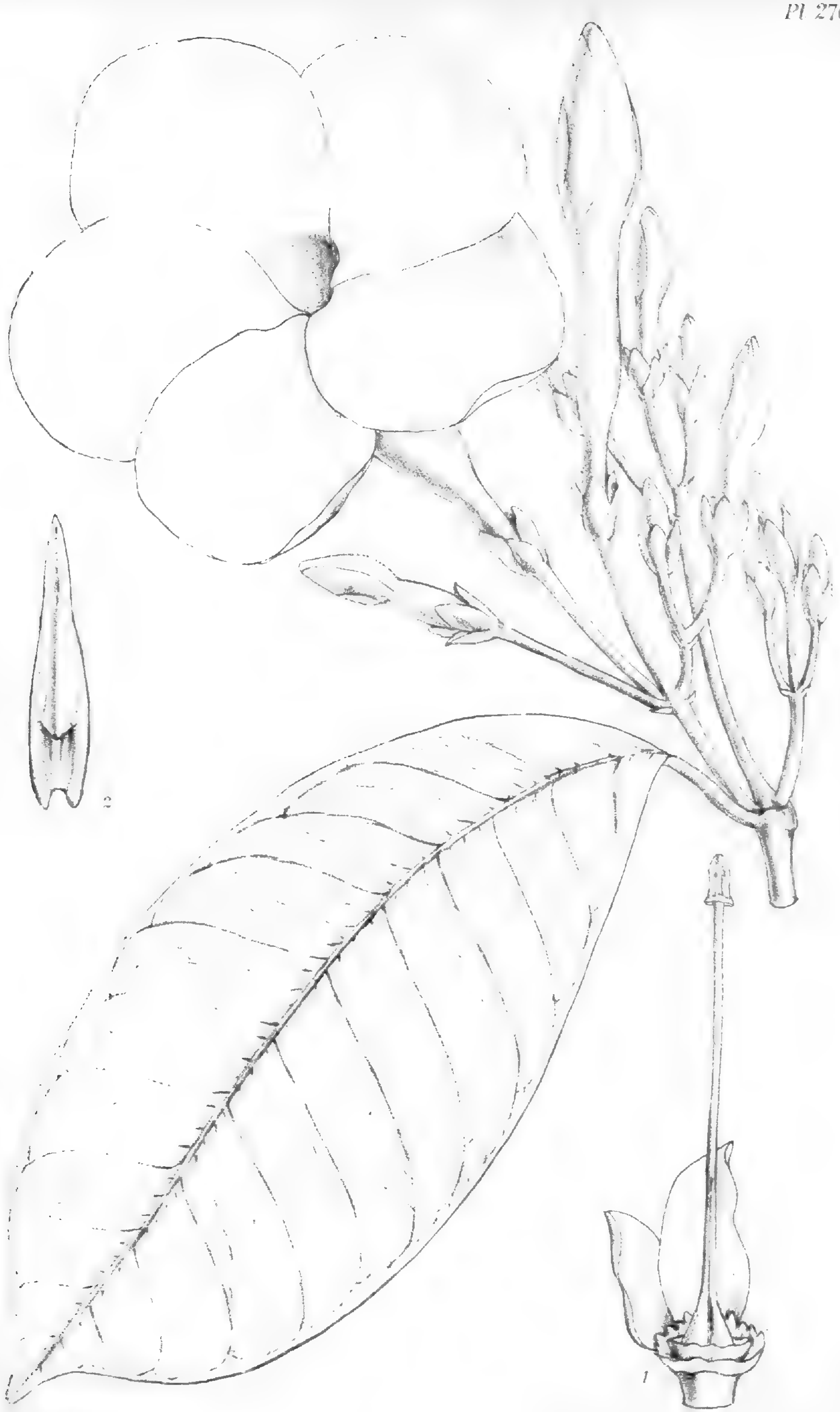
A. astylum, *Stapf* (*species unica*). *Rami* juveniles dense fulvo-pubescentes, citissime glabrati, teretes. *Folia* elliptico-oblonga, breviter et suboblique acuminata, basi subacuta, $1\frac{1}{2}$–4 poll. longa, 1–2 poll. lata, in gemma subtus dense fulvo pubescentia, citissime glabrata, matura coriacea, nitida, nervis secundariis utrinque 9 10 uti reticulatione utrinque eleganter prominulis; petiolus crassiusculus, ad $\frac{1}{2}$ poll. longus. *Paniculæ* ad $1\frac{1}{2}$ poll. longæ, densiusculæ, omnibus partibus fulvo-pubescentes, breviter pedunculatæ; bracteæ minimæ, pedicelli circa $\frac{1}{2}$ lin. longi. *Calyx* ad $\frac{1}{2}$ lin. longus; segmenta ciliolata, laxe pubescentia. *Petala* subacuta, viridula, vix 1 lin. longa. *Antheræ* $\frac{1}{6}$–$\frac{1}{8}$ lin. longæ. *Drupa* semipollicaris.

BORNEO: Sarawak, near Kuching, *Hariland,* 2860.

Androtium (ἀνήρ and ὠτίον) has quite the facies of a *Buchanania,* of which it has also the peculiar structure of the gynæceum in common.

It differs, however, from *Buchanania* in the curiously shaped, strongly inflexed anthers, and in the sessile stigmas. The barren carpels are approximately cylindric bodies with their slightly thickened and almost glabrous tips gently curved outside. The only fertile carpel is much stouter, almost globose, and densely covered with stiff hairs, which hide completely the small sessile stigma. After the fall of the corolla the fertile carpel soon outgrows the barren ones, losing at the same time the hairs when the stigma becomes visible. It had, however, in all the flowers I examined, the appearance of a rudimentary organ, although the carpel always contained an apparently perfect ovule. It may therefore be that most of the flowers are functionally male. I found, in fact, among the more advanced carpels or young fruits up to 1 lin. long, only one in which the ovule had started growing into a seed.—Otto Stapf.

Fig. 1, a flower; 2, petals and portions of the andrœcium and disk; 3, portion of disk separated; 4, a stamen; 5 and 6, pistillodia; 7, fertile carpel; 8, section of the same showing the ovule; 9, a fruit; 10, an embryo. *All, except fig.* 9, *enlarged.*



M.S. del. et lith.

Plate 2764.

EUCORYMBIA ALBA, *Stapf.*

APOCYNACEÆ. Tribe TABERNÆMONTANOIDEÆ.

Eucorymbia, *Stapf.* Genus novum ex affinitate *Callichiliæ*, Stapf, sed calyce mox deciduo glandulis intracalycularibus numerosis in annulum confluentibus resiniferis, æstivatione corollæ dextrorsa, stigmate elongato cylindrico indiviso distinctum.

Calyx mediocris, herbaceus, intus basi glandulis numerosis carnosis magis minusve in annulum fusis copiose resiniferis cinctus ; sepala 5, imbricata, elliptica, obtusa vel acuta, sæpe inæqualia, anthesi perfecta vel prius decidua. *Corolla* hypocrateriformis ; tubus inferne (a basi ad tertiam partem) graciliter cylindricus tunc sensim ampliatus, a medio latiuscule cylindricus, ore nudus ; lobi perlate obovati, subobliqui, ampli, dextrorsum obtegentes, subrecti. Stamina 5, paulo infra medium inserta, inclusa ; antheræ callo lineari-oblongo insidentes, vix conniventes, a stigmate fere totæ liberæ, lanceolatæ, acuminatæ, basi 2-lobæ, loculis ima basi prominentibus, appendicibus solidis corneis connectivi pedi tota fere longitudine adnatis eocum sulcum formantibus, pede ipso ima basi barbato. *Discus* annularis, brevissimus, subundulatus. *Carpella* 2, libera, in stylum filiformem attenuata ; stigma cylindricum, obscure pentagonum, obtusum, integrum, basi annulo viscoso instructo et ejus ope connectivi pedi ubi barbulato agglutinatum ; ovula numerosa, pluriseriata. Fructus ignotus.—Frutex *glaberrimus.* Folia *opposita, papyracea, petiolata ; petioli utrinque linea elevata transversa conjuncta, stipulis axillaribus nullis, glandulis axillaribus minutis.* Inflorescentiæ *terminales, cymoso-corymbosæ, laxiusculæ, 5–7-floræ, breviter pedunculatæ, floribus amplis conspicuis albis longiuscule pedicellatis.*

E. alba, *Stapf* (sp. unica). *Rami* graciles, teretes, fistulosi. *Folia* oblongo elliptica, breviter vel brevissime abrupte acuminata, basi rotundata, 5–6 poll. longa, 2–3 poll. lata, nervis secundariis rectis subhorizontalibus subtus prominentibus utrinque 22–24, sub margine arcubus distinctis connexis ; venis parcis prominulis nervis magis minusve parallelis ; petioli subgraciles, circiter 6 lin. longi. *Corymbi* 2–3 in ramulorum apicibus ; pedunculi ad $2\frac{1}{2}$ poll. longi ; bracteæ minutæ ; pedicelli demum ad $1\frac{1}{2}$ poll. longi, graciliusculi. *Sepala*, 2 $3\frac{1}{2}$ lin. longa. *Corollæ* tubus $1\frac{2}{3}$ ad 2 poll. longa, inferne $\frac{3}{4}$ lin.

superne $2\frac{1}{2}$ lin. dimetiens ; lobi $1\frac{1}{2}$–$1\frac{3}{4}$ poll. longi, ad $1\frac{1}{3}$ poll. lati. *Antheræ* $4\frac{1}{2}$ lin. longi, connectivi dorso pilosulo.

BORNEO : Sarawak, near Kuching, *Haviland*, 2300 ; Saribas, *Haviland's collector*, 1572.

Although the fruit of *Eucorymbia* is unknown, it is evident from all the other characters that it belongs to the Tabernæmontanoideæ. It resembles *Callichilia*, a genus from tropical West Africa, in many respects, without, however, being very closely allied. The calyx is early deciduous, as in *Orchipeda* and *Voacanga*, but the sepals are free to the base and fall singly, and the ring of intracalycular glands remains on the torus. The dextrorse æstivation is also very characteristic. It occurs, in the tribe of Tabernæmontanoideæ, outside of *Eucorymbia* only in the section *Anartia* of *Ervatamia*.—OTTO STAPF.

Fig. 1, pistil, disk, ring of intracalycular glands and two sepals ; 2, anther, front view. *Both enlarged.*

M.S. del. et lith.

Plate 2765.

ERYNGIUM CRASSISQUAMOSUM, *Hemsl.*

E. (§ **Spinescentes**) **crassisquamosum,** *Hemsl.* (*sp. nov.*) ; ab *E. pectinato*, Presl, capitulis minoribus numerosioribus, involucri bracteis multo minoribus integris, carpellorum squamis majoribus differt.

Herba ut videtur saltem 2-3 ped. alta. *Caules* graciliusculi, recti, rigidi, striati, supra medium alternatim ramosi, ramis terminalibus subumbellatis sæpe tricephalis, pedunculis lateralibus multo brevioribus. *Folia* coriacea, pinnatim spinoso-lobata ; radicalia falcata, caudata, 1–2 ped. longa, absque spinis 5–6 lin. lata, lobis vel spinis oppositis vel alternis linearibus longioribus 9 10 lin. longis basi sæpe spinula minuta ornatis ; caulina prope basin paucispinosa, inferiora longissime caudata. *Capitula* numerosa, globosa vel ellipsoidea, sæpius 6 9 lin. diametro maximo, pedunculis striatis vel sulcatis. *Involucri bracteæ* circiter 9, rigidæ, 6-15 lin. longæ, deflexæ, integræ. *Paleæ* rigidissimæ, acutissimæ, flores superantes. *Calycis dentes* late ovati, mucronati. *Petala* apice denticulata. *Stamina* quam petala inflexa duplo triplove longiora. *Styli* breviores vix divergentes. *Carpella* (matura non visa) undique squamis magnis crassis spongiosis vestita ; vittæ dorsales 5, commissurales 0 ?—*E. pectinatum*, Seem. Bot. Voy. Herald, p. 294, non Presl.

Mexico : Sierra Madre, *Seemann*, 2136.

The name Sierra Madre has been given to several different ranges of mountains in Mexico, and old and new maps are not uniform in this respect. The Sierra Madre of Seemann's journey is in Durango, or perhaps partly in Sinaloa. In the 'Royal Atlas' the mountain range on the confines of North Sonora and Chihuahua bears this name, as also a range in Guerrero, where E. W. Nelson collected.

Eryngium crassisquamosum, Hemsl., is one of several species which have been taken for *E. pectinatum*, Presl. Particulars on this point are given in the letterpress to plate 2766.

The Mexican and Central American species of *Eryngium* may be roughly classified by their leaves into four sections, namely: 1, *Inermes* ; 2, *Setoso-dentatæ* ; 3, *Aculeatæ* ; 4, *Spinescentes* ; the last being more robust and rigidly spinous than section 3.

The following briefly described species belong to the *Spinescentes*, and are similar to *E. crassisquamosum*, Hemsl., especially in having narrow, undivided involucral bracts.

E. Palmeri, *Hemsl.* (*sp. nov.*).

Herba 4–5 ped. alta inflorescentia subternatim ramosa, caule graciliusculo. *Folia radicalia* fere linearia, 1–2 ped. longa, remotiuscule spinosa, spinis oppositis vel alternis sæpe spinula minuta basi ornatis; caulina pauca, multo minora, basi spinis confertis. *Capitula* subglobosa, 9–12 lin. diametro. *Involucri bracteæ* circiter 9, inæquilongæ, fere aciculares, edentatæ, longiores bipollicares. *Paleæ* flores excedentes. *Petala* apice denticulata. *Carpella* (matura non visa) squamis acutis vestita.

Mexico: Rio Blanco, Jalisco, *Palmer*, 681.

Pringle's 7623, Hills near Guadalajara, Jalisco, and Nelson's 4003, near Huachinango, Jalisco, are probably this species, but I have before me only drawings of the specimens.

E. globosum, *Hemsl.* (*sp. nov.*).

Species *E. Palmeri*, Hemsl., similis sed gracilior, minus rigida, foliis usque ad apicem spinosis; spinis sæpius binis subæqualibus. *Capitula* pauca, globosa, 9–12 lin. diametro. *Involucri bracteæ* circiter 7, lanceolatæ, 2–3 lin. longæ. *Petala* apice denticulata. *Carpella* immatura squamis acutis omnino vestita.

Mexico: Near Tepic at 5000 feet, *Nelson*, 4174. Specimen in the United States National Herbarium; drawing of the same at Kew.—W. Botting Hemsley.

Fig. 1, a pale; 2, a flower; 3, a very young fruit; 4, a petal; 5, cross section of a very young mericarp. *All enlarged.*

M.S. del et lith

Plate 2766.

ERYNGIUM PECTINATUM, *Presl.*

Umbelliferæ.

E. (§ **Spinescentes**) **pectinatum**, *Presl*, ex DC. Prodr. iv. p. 96; inter species hujus sectionis foliis radicalibus angustis recurvis, involucri bracteis angustis alte plurispinosis sat distincta.

Herba erecta, glabra, circiter 3 ped. alta, caule 3–4 lin. diametro, ramis alternis vel terminalibus ternis monocephalis. *Folia* rigida, pinnatim spinoso-lobata, lobis vel spinis longioribus sesquipollicaribus; radicalia 10–15 poll. longa, absque spinis usque ad 6 lin. lata, supra medium sæpius inermia, longe caudata, recurva, marginibus inflexa, spinis basi sæpe spinula minuta munitis; caulina similia, sursum gradatim minora spinis confertioribus. *Capitula* pauca, oblonga, vel subglobosa, maxima 1 poll. longa et 9 lin. lata, pedunculis sæpius nudis. *Involucri bracteæ* sæpius circiter 7–9, rigidissimæ, 1–1½ poll. longæ, reflexæ, utrimque 1- vel 2-spinosæ, spinis 2–4 lin. longis. *Paleæ* rigidissimæ, mucronatæ, flores excedentes. *Calycis dentes* late ovati, apiculati. *Petala* apice denticulata. *Stamina* quam petala inflexa multo longiora. *Styli* divergentes, quam stamina breviores. *Carpella* (matura non visa), apice tantum paucisquamosa; vittæ 5, quarum 2 commissurales, vel 6, 3 commissurales.

Mexico: in terris Mexicanis occidentalibus, *Haenke*; Forêt del Desierto Viejo, Vallée de Mexico, *Bourgeau*, 1177; near Ozumba, State of Mexico, *Rose & Hay*, 5354.

Through the courtesy of Dr. Ritter von Beck, Professor of Botany in the German University at Prague, I have been able to examine the original specimen of *E. pectinatum*, Presl, and compare it with the rich material in the United States, Kew, and the British Museum herbaria, with quite satisfactory results, although the original specimen bears no flowers.* Haenke travelled only between Acapulco and the city of Mexico, and the other specimens cited above are from the same district, and Rose & Hay's is the one figured. *E. pectinatum* is one of the most distinct species of the group to which it belongs, but botanists have named at least half-a-dozen different species *pectinatum*; the name being more or less applicable to the leaves in each instance.

E. pectinatum, Benth. Pl. Hartw. p. 38=*E. columnare*, Hemsl. Ic. Pl. t. 2511. *E. pectinatum*, Coulter et Rose in Donnell Smith

* Admirably executed, almost facsimile drawings of this and many other specimens received on loan have been made by Miss M. Smith for the Kew collection.

Enum. Pl. Guat. ii. p. 29 = *E. guatemalense*, Hemsl. infra. *E. pectinatum*, Seem. Bot. Voy. Herald, p. 294; Hemsl. Biol. Centr. Am. Bot. i. p. 561, quoad specimen a cl. Seemann lectum = *E. crassisquamosum*, Hemsl. t. 2765.

The following species belong to the *Spinescentes* and are similar to *E. pectinatum*, Presl, especially in having spinously lobed involucral bracts.

E. guatemalense, *Hemsl.* (*sp. nov.*).

Herba robusta, probabiliter pluripedalis, caule juxta inflorescentiam circiter 9 lin. diametro. *Folia radicalia* 1–2 ped. longa, absque spinis usque ad 9 lin. lata, per totam longitudinem regulariter spinosa; spinæ sæpius 6 9 lin. longæ, intervallis sæpius 4-6 lin. longis, basi spinula minuta ornatæ. *Capitula* numerosa, hemi-spherica, maxima $1\frac{1}{2}$ poll. diametro *Involucri bracteæ* circiter 10, lanceolatæ, acutæ, integræ, usque ad $1\frac{1}{2}$ poll. longæ. *Paleæ* flores parum excedentes.

Guatemala: mountains near Hacienda de Chancol, at 11,000 feet, *Nelson*, 3654; San Rafael, Zacatepequez, at 6500 feet, *Helmrich*.

E. stenolobum, *Hemsl.* (*sp. nov.*).

Herba 3 4 pedalis, caule 3-4 lin. diametro, supra medium trifurco, ramis iterum trifurcis monocephalis. *Folia* angusta, fere linearia, radicalia usque 18 poll. longa, omnia confertim spinosa, spinis geminatis fere æqualibus tenuibus aciculatis. *Capitula* subglobosa, 9-12 lin. diametro, pedunculis nudis 3–4 poll. longis. *Involucri bracteæ* circiter 5, inæquales, angustæ, maximæ $1\frac{3}{4}$–2 poll. longæ, sæpius trifidæ, lobis vel spinis lateralibus multo brevioribus. *Paleæ* flores longe excedentes. *Carpella* (matura non visa) ad angulos paucisquamosa, squamis parvis. *Vittæ* 6, quarum 3 commissurales.

Mexico: near Cuernavaca, Morelos, *Rose & Hough*, 4393. Specimen in United States National Herbarium; drawing of the same at Kew.

E. monocephalum, *Cav. Ic. Pl.* vi. t. 553, p. 35.

Mexico: Sierra de Pachuca, Hidalgo, at 10,000 feet, *Pringle*, 8217. Specimen in the United States National Herbarium; drawing of the same at Kew.

This identification is included, because several other species have been mistaken for this.

E. longispinum, *Coulter et Rose, ined.*? from Pedregal, Valley of Mexico, *Pringle*, 4359, is another species of this affinity and most nearly related to *E. guatemalense*, Hemsl., differing in having narrower leaves, deflected involucral bracts, and relatively longer pales.—W. Botting Hemsley.

Fig. 1, a pale; 2, a flower; 3, a mericarp, showing the commissural face; 4, a petal; 5, cross section of a mericarp. *All enlarged.*

M S del et lith

Plate 2767.

ERYNGIUM MEDIUM, *Hemsl.*

Umbelliferæ.

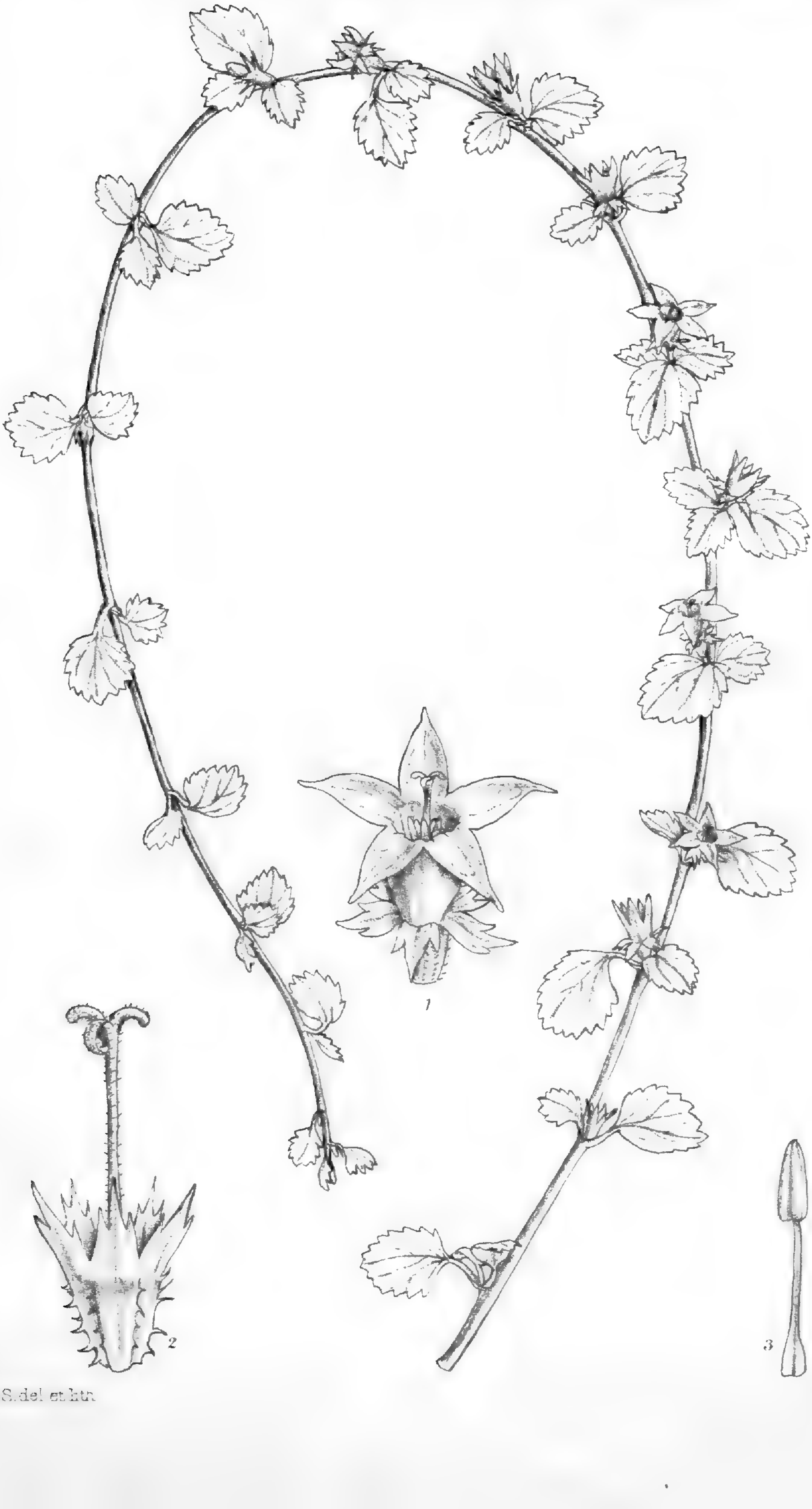
E. (§ **Aculeatæ**) **medium,** *Hemsl.* (*sp. nov.*); species ex affinitate *E. Carlinæ* et *E. serrati*, a priore involucri bracteis fere semper integris carpellis paucisquamosis, a posteriore involucri bracteis flores excedentibus distincta.

Herba glabra, erecta, circiter sesquipedalis, caulibus gracilibus præter inflorescentiam simplicibus. *Folia radicalia* fere linearia, 3–8 poll. longa, spinoso-lobulata, inter lobulos usque ad 3 lin. lata, sed deorsum perattenuata; lobuli superiores curvati 2–3 lin. longi intervallis 3–4 lin. longis, inferiores ad spinas parvas vel minutas reducti, remotioresque. *Folia caulina* angustiora, lobulis angustioribus longioribus remotioribusque. *Inflorescentia* bis subumbellatim pauciramosa, ramulis pedunculisque gracillimis, capitulis sæpius ternis. *Involucri bracteæ* circiter 8, rigidæ, anguste lanceolatæ, 4–6 lin. longæ, spinoso-acuminatæ, sæpissime integræ sed interdum unilateraliter 1-dentatæ. *Capitula* subglobosa, 2–3 lin. diametro, haud comosa. *Paleæ* lanceolato-subulatæ, flores paullo excedentes. *Flores* minuti, vix $\frac{1}{2}$ lin. diametro. *Calycis dentes* oblongo-ovati, apiculati. *Petala* apice integra. *Carpella* immatura tantum visa, paucisquamosa, squamis uniformibus.

Mexico: near San Julian, Chihuahua, at 7000 to 8000 feet, *E. W. Nelson*, 4929.

I have seen only one specimen of this species, which in foliage resembles some forms of *E. serratum*, Cav. For a proposed rough classification of the Mexican and Central American species of *Eryngium*, see the letterpress to plate 2765.—W. Botting Hemsley.

Fig. 1, a pale; 2, a flower; 3, a mericarp; 4, a petal. *All enlarged.*



M.S. del et lith.

Plate 2768.

WAHLENBERGIA BREVIPES, *Hemsl.*

CAMPANULACEÆ.

W. brevipes, *Hemsl.* (*sp. nov.*) ; species habitu *W. hederaceæ*, Reichb., sed forma florum subsessilium ab ea omnino recedit.

Herba prostrata, ut videtur perennis, fere undique glabra. *Caules* numerosi, gracillimi, elongati, 1–2 ped. longi, compressi, angustissime bialati ; internodia quam folia breviora vel longiora. *Folia* primaria alterna, longe petiolata, membranacea sæpius rotundato-cordata, interdum basi subcuneata, maxima 6 lin. diametro, sed sæpius minora, serrulato-denticulata, pilis paucis minutis conspersa ; petiolo lamina æquante vel breviore. *Flores* purpurascentes, 4-5 lin. diametro, in axillis foliorum primarium subsessiles, foliis 2 secundariis parvis suboppositis suffulti. *Calycis tubus* longitudinaliter 10-angularis, secus angulos setulosus ; lobi tridentati, dentibus acutis intermedio lateralibus duplo longiore. *Corolla* glabra, rotato-campanulata, lobis lanceolatis patentibus. *Stamina* inclusa, glabra, filamentis filiformibus ima basi leviter dilatatis. *Ovarium* 3-loculare, multiovulatum ; stylus puberulus, exsertus, trifidus, lobis recurvis. *Capsula* ignota.

CHINA : forests south-west of Mengtze at 5000 feet, *A. Henry*, 10941.

This pretty little trailing plant is so like *Pratia begoniefolia* in general appearance that it was mistaken for a congener before the flowers were examined.—W. BOTTING HEMSLEY.

Fig. 1, a flower ; 2, the same with the corolla removed ; 3, a stamen. *All enlarged.*

3

5

4

2

1

7

6

8

M.S. del et lith.

Plate 2769.

GLUMICALYX MONTANUS, *Hiern.*

Scrophulariaceæ. Tribe Digitaleæ.

Glumicalyx, *Hiern.* Genus novum subtribus *Eudigitalearum* foliis alternis, calycis segmentis 5 glumaceis, corollæ labio postico sub-erecto atque staminibus 4 a consortibus distinguendum.

Calycis segmenta 5, oblongo-spathulata, inter se æqualia, rigide glumacea, erecto-incurva, apice glanduloso-laciniata, lateribus inclinatis concava. *Corolla* infundibulari-campanulata ; tubus calyce parum longior ; limbi bilabiati labium posticum bilobum, suberectum ; labium anticum trilobum, patens, postico paulum longius ; lobi omnes rotundati, plani, vel marginibus subincurvis, posteriores altius connati ; æstivatio quincuncialis. *Stamina* 4, didynama, corollæ tubum æquantia vel breviter exserta, glabra ; filamenta complanata, erecta, corollæ tubo inserta, posteriora longiora uno margine corollæ tubo adnata, anteriora breviora facie corollæ tubo adnata ; antheræ ovales, leviter curvæ, dorsifixæ, confluentim uniloculares, posteriores minores, breviter exsertæ, subhorizontales, parce polliniferæ, anteriores majores, primum subverticales, tandem subhorizontales, copiose polliniferæ ; pollen globosum, leve, minimum. *Discus* hypogynus, parvus, carnosus, glaber, unilateralis. *Ovarium* ovale, obtusum, biloculare, septo contrarie leviter compressum, glabrum, faciebus lateribusque utrinsecus plus minusve unisulcatum. *Stylus* filiformis, compressus, erectus, glaber, rectus vel apicem versus leviter curvus, basi centralis, apice exsertus, androecio paullo longior, integer, ad apicem lineari-lanceolatum vix incrassatum stigmatosus. *Ovula* numerosa, placentis centralibus carnosis inserta. *Fructus* maturus non visus.—Suffrutex *humilis.* Folia *sparsa, approximata, crenato-serrata.* Flores *sessiles, sat numerosi, parvi, bracteati, subcapitati, in spicam abbreviatam subglobosam terminalem conferti.*

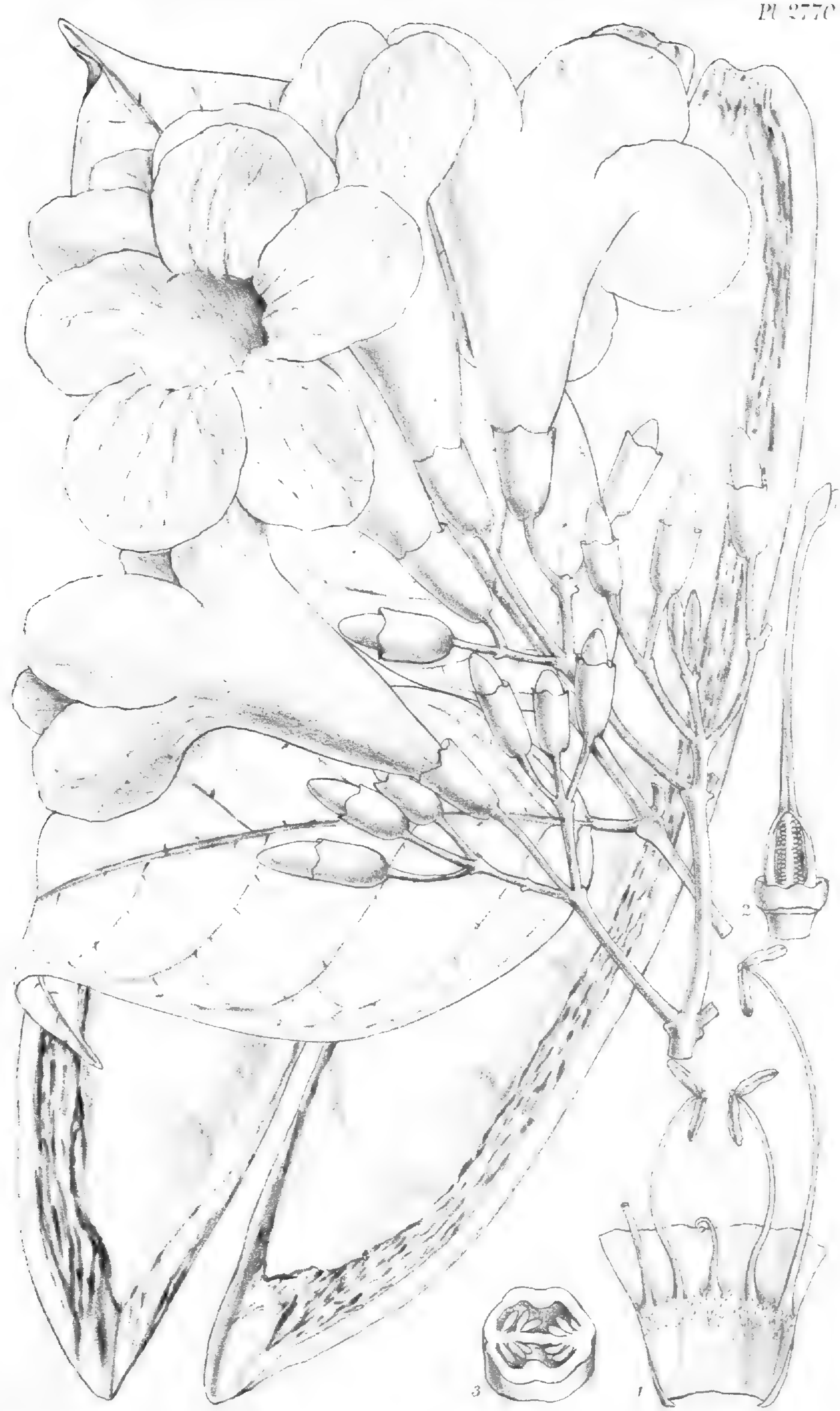
G. montanus, *Hiern* (*species unica*). Suffruticosus forsan pluricaulis. *Caulis* adscendens, subteres, simplex, subpedalis, confertim foliosus, basi sublignosus, superne pilis albidis brevibus turgidis reclinatis pubescens. *Folia* obovata, apice obtusa vel rotundata, basim latiusculam versus cuneata, sessilia, tenuiter carnoso-coriacea, glabra vel minute glandulosa, erecto-patentia, sparsa 3–4½ lin. longa 1½–2 lin. lata, secus dimidium superius crenato-serrata. *Flores* 3–4 lin. longi ; capitula circiter 7½ lin. diametro. *Bracteæ* rotundo-obovatæ vel ovales, sessiles, glumaceæ,

denticulato-ciliolatæ, minute glandulosæ, nitidæ, 2–2½ lin. longæ, primum concavæ, tandem subplanæ. *Calycis* segmenta minute glandulosa, 2 lin. longa. *Corolla* 3–3½ lin. longa, ochroleuca (cremea) marginibus aurantiacis; tubus glaber, 2¼–3 lin. longus; lobi ¾–1 lin. longi, minute glandulosi, intus subtiliter bullati. *Filamenta* ¾–1 lin. longa. *Antheræ* circiter 1 lin. longæ. *Pollen* circiter $\frac{1}{165}$ lin. diam. *Ovarium* ⅘ lin. longum ½ lin. latum. *Stylus* 2¼–2½ lin. longus.

South Africa: Kalahari region; Orange River Colony, on the slopes of the Mont-aux-Sources mountain, 7000 to 8000 feet alt., January 1894, only two or three specimens seen, *Flanagan*, 2018.

The genus stands nearest to *Digitalis* and *Isoplexis*, differing from the former by its suffruticose habit, from the latter by its crenate-serrate leaves, and from both by the texture of the calyx-segments, the mode of insertion of the filaments, and the entire not bilobed apex of the style. Among South African genera it is most closely related to *Camptoloma*, but the inflorescence is terminal, the calyx is sufficiently different, and the leaves are sessile.—W. P. Hiern.

Fig. 1, a bract; 2 and 3, different views of a flower; 4, a sepal; 5, diagram of the æstivation of the lobes of the corolla; 6, corolla laid open, showing the attachment of the stamens; 7, pistil; 8, cross section of ovary, showing that the placentas scarcely meet in the middle. *All enlarged.*



M.S. del et lith.

Plate 2770.

XYLOPHRAGMA PRATENSE, *Sprague.*

Bignoniaceæ. Tribe Bignonieæ.

Xylophragma, *Sprague.* Genus novum ex affinitate *Saldanhææ*, a qua differt fructus valvis brevioribus, crassioribus, in duas partes findentibus.

Calyx tubulosus, truncatus. *Corolla* infundibuliformis, intus prope staminum insertionem puberula. *Stamina* antherarum lobis fere horizontaliter divaricatis rectis, connectivoque lato. *Ovarium* breve, stylo juventute tetraquetro. *Discus* parvus, cupularis. *Ovula* pro loculo 6–8-seriatim affixa. *Fructus* valvæ lignosæ, crassæ, demum longitudinaliter fissæ.—Frutices *scandentes vel volubiles, Peruviæ orientalis Brasiliæque incolæ.*

Xylophragma pratense, *Sprague.* Tecoma pratensis, *Bur. et K. Schum. in Engler u. Prantl Pflanzenf.* iv. 3. B, p. 238. Bignonia pratensis, *Poepp. ex Bur. et K. Schum. in Mart. Fl. Bras.* viii. 2, p. 256. Saldanhæa pratensis, *Bur. et K. Schum.* l.c.

Peru : Tarapoto, in sylvis, Spruce, 4232.

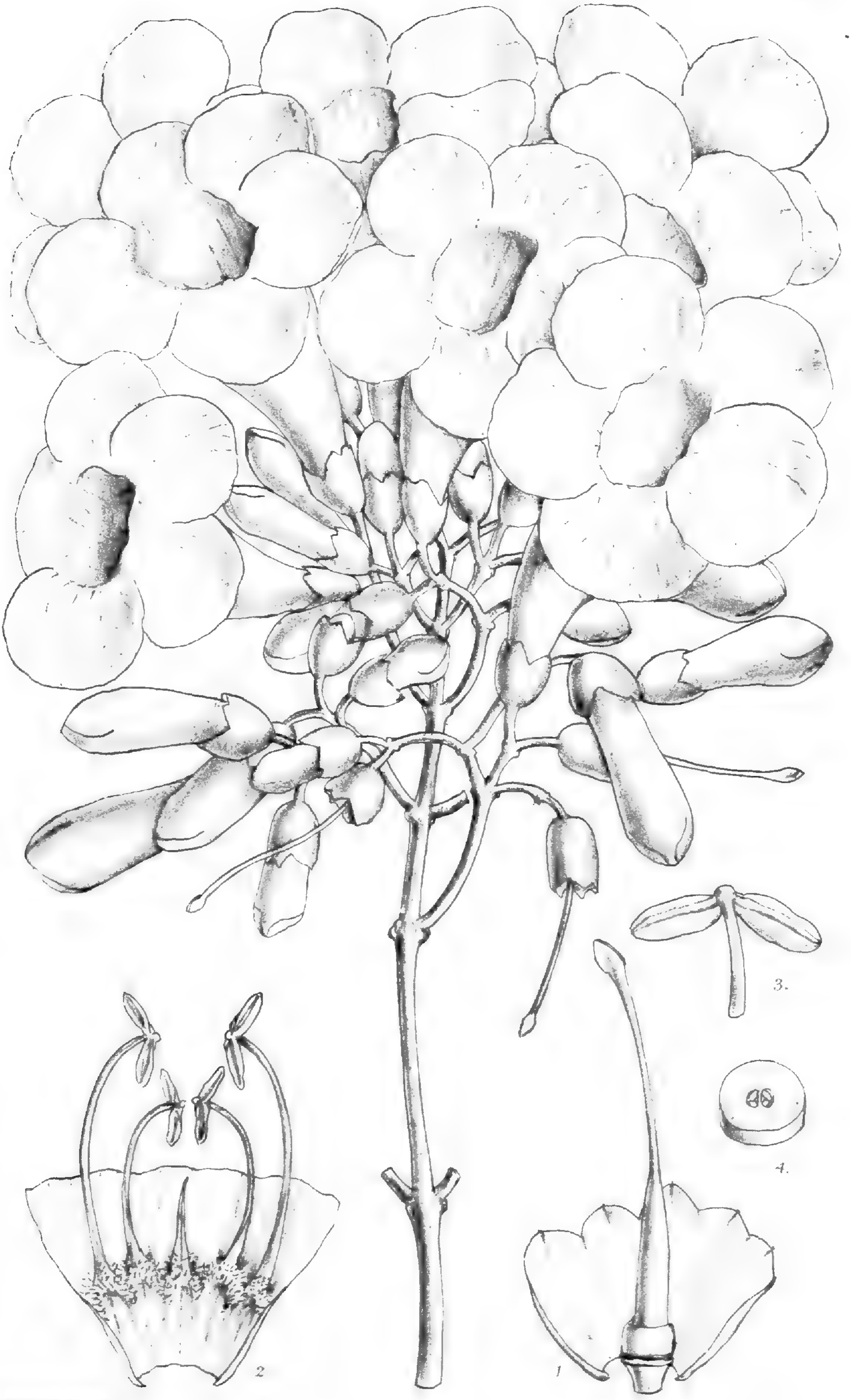
Xylophragma myrianthum, *Sprague* (species altera). Bignonia myriantha, *Cham. in Linnæa*, vii. (1832), p. 684. Tecoma myriantha, *DC. Prodr.* ix. p. 220. Saldanhæa myriantha, *Bur. in Vidensk. Meddelel. naturhist. Foren.* 1893, p. 104 ; *Bur. et K. Schum. in Mart. Fl. Bras.* viii. 2, p. 255.

S. Brazil, Sellow.

Saldanhæa is one of the three genera separated by Bureau and Baillon, on the discovery of their fruits, from *Cuspidaria*, DC., and at first included only the two species *S. lateriflora*, Bur., and *S. confertiflora*, Bur., both from Brazil, to which Otto Kuntze (*Rev. Gen.* ii. p. 480) added a third, *S. seemanniana*, from Panama and Trinidad. These three are the only undoubted species of *Saldanhæa* which we have seen. In 1893 Bureau transferred *Bignonia myriantha*, Cham., to *Saldanhæa*, and finally in the *Flora Brasiliensis* Bureau and Schumann added *S. pratensis* and two doubtful species, *S. heterocalyx* and *S. bracteata* ; at the same time, however, Schumann pointed out the

close affinity of *S. myriantha* and *S. pratensis* to each other, and observed that, till the nature of their fruit was known, it would remain doubtful whether they really belonged to the genus *Saldanhæa*. The valves of the fruit of *S. pratensis* (Spruce, 4232), preserved in the Kew Museum, showed at once that a new genus would have to be created to receive that species and *S. myriantha*. Additional characters separating *Xylophragma* from *Saldanhæa* are the straight anther lobes, tetraquetrous style, and the large number of rows of ovules in each chamber of the ovary. The structure of the wood is essentially the same as in *Saldanhæa*. According to Spruce the main stem of *X. pratense* measures a foot in diameter, and the flowers, which are purple, have a scent like that of the Primrose.—T. A. Sprague.

Fig. 1, portion of corolla showing attachment of stamens; 2, pistil and disk; 3. transverse section of ovary. *All enlarged.*



3.

4.

1

2

M.S. del. et lith.

M.S del. et lith.

Plates 2771 and 2772.

PARAGONIA PYRAMIDATA, *Bur.*

Bignoniaceæ. Tribe Bignonieæ.

Paragonia pyramidata, *Bur. in Vidensk. Meddelel. naturhist. Foren.* 1893, p. 104 ; *K. Schum. in Engler u. Prantl Pflanzenf.* iv. 3 B., p. 219 ; *Bur. et K. Schum. in Mart. Fl. Bras.* viii. 2, p. 182.

Bignonia pyramidata, *Rich. in Act. Soc. Hist. Nat. Par.* i. (1792) p. 110. B. laurifolia, *Vahl Ecl. Am.* ii. p. 44 (1796). B. ehretioides, *Cham. in Linnæa*, vii. (1832) p. 704. B. rupestris, *Gardn. in Hook. Lond. Journ. Bot.* i. (1842) p. 179. B. lenta, *Mart. ex DC. Prodr.* ix. p. 159, *partim.* B. martiusiana, *DC. Prodr.* ix., p. 156. B. Sinclairii, *Benth. Bot. Voy. Sulph.*, p. 129. Tabebuia pyramidata, *DC. Prodr.* ix., p. 214. Temnocydia lenta, *Mart. ex DC.* l.c. p. 159, *partim.* T. elliptica, *Mart. ex DC.* l.c. pp. 156 et 176 (haud *Bignonia elliptica* auct. aliorum). Pachyptera umbelliformis, *DC.* l.c. p. 175. P. dasyantha, *DC.* l.c. p. 176. Zeyheria (?) surinamensis, *Miq. in Linnæa*, xviii. (1844) p. 250. Arrabidæa diehasia, *Donn. Sm. in Coult. Bot. Gaz.* xx. (1895) p. 6. –Species unica.

Tropical America: Mexico, Atoyac, *Kerber*, 178 ; Tabasco, Playas de Paso ancho, *Rovirosa*, 241. Guatemala, Escuintla, *J. Donn. Smith*, 2048. Honduras, San Pedro Sula, *C. Thieme* (*J. Donn. Sm*, 5393) ; Ruatan Island, *Gaumer*, 86. Costa Rica, Tucurrique, *Tonduz*, 12799. Trinidad, *Fendler*, 519 ; Port of Spain, *Lockhart*, 169. Colombia, Panama, *Seemann*, 400 ; *Cuming*, 1179 ; Panama, *Sinclair* ; Cundinamarca, *Jerrise.* Peru, Monterico, *Pearce.* Bolivia, Coroico, *Pearce.* British Guiana, *Schomburgk*, 65 ; Essequibo R., *Jenman*, 1341 ; Demarara R., *Jenman*, 4950 ; Barima R., *Jenman*, 7057 ; Corentyne R., *Jenman*, 487 ; *im Thurn.* French Guiana, *Poiteau.* Dutch Guiana, *Miquel ; Hostmann*, 211. Brazil, Rio Trombetas, *Spruce*, 537 ; Prov. Rio de Janeiro, *Gardner*, 78 ; *Tweedie*, 1347 ; *Glaziou*, 6720 ; *Burchell*, 2138. Paraguay, Bellavista, *Hassler*, 8418.

Var. **tomentosa,** Bur. et K. Schum., Brazil, *Burchell*, 6362.

Few plants illustrate better than the species under consideration the confusion which prevailed in the *Bignoniaceæ* prior to the revision of that order by Bureau and Baillon, and more recently by Schumann. Originally described from Guiana under the name *Bignonia pyramidata*, this plant now possesses fourteen other synonyms, three of which

are here reduced for the first time, while the remaining eleven have been verified. It actually appears in De Candolle's *Prodromus* as seven distinct species belonging to three different genera, but, singularly enough, has not previously been figured.

When in fruit the finely warted convex valves of *Paragonia pyramidata* afford a ready means of identification; in flower, it may be recognised by the velvety corolla, the large cupular disc, and the very thick walls and small chambers of the ovary. The best description of *P. pyramidata* is that by Schumann in the *Flora Brasiliensis*. The present figure is of im Thurn's Corentyne River specimen, except the fruit, which is Jenman's 1341.—T. A. Sprague.

Plate 2771.

Fig. 1, calyx laid open, showing pistil and disk; 2, part of corolla, showing attachment of stamens; 3, anther from the back; 4, transverse section of ovary. *All enlarged.*

Plate 2772.

Fig. 1, a fruit; 2, a seed. *Both natural size.*

Plate 2773.

BAMBUSA OLDHAMI, *Munro.*

Gramineæ. Tribe Bambuseæ.

B. Oldhami, *Munro in Trans. Linn. Soc.* xxvi. (1870), p. 109; affinis *B. kingianæ*, Gamble, spiculis duplo majoribus, antheris mucronatis, stylo minus diviso, foliis minoribus distincta.

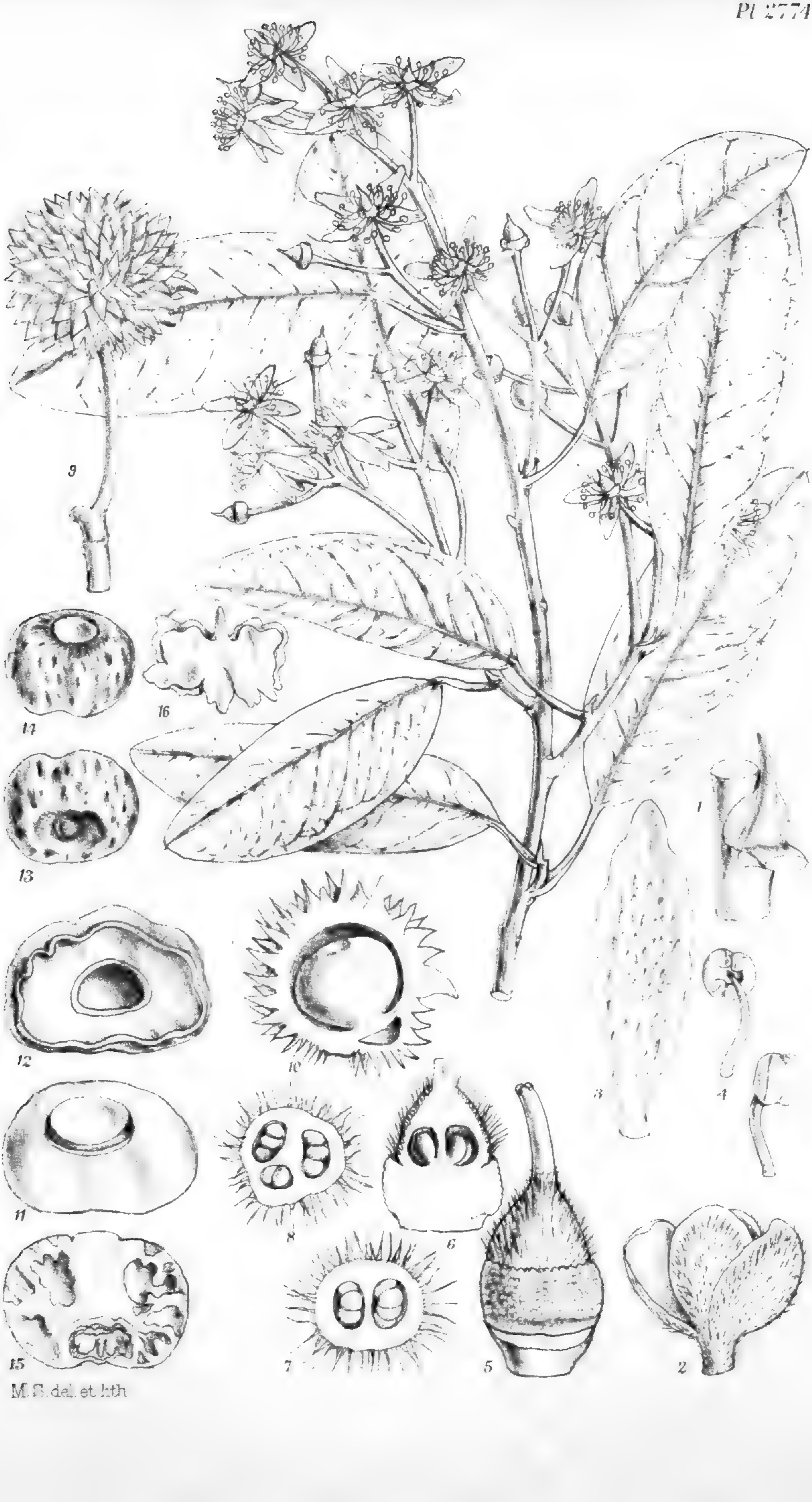
Frutex ad 50 ped. altus, ramosissimus. *Culmi* stricte erecti, basi diametro pluripollicares, fistulosi, teretes, primo pallide virides, demum lutescentes vel fuscescentes nodis supra vaginarum delapsarum cicatrices annulatim prominentibus; rami 2–4-nati vel solitarii, graciles vel crassiusculi. *Folia imperfecta* innovationum ad vaginas latas 6–10 poll. longas mox emarcidas densissime tenuiterque striatas intus nitentes laminas triangulares 2–4-pollicares coriaceas intus pilosas gerentes redacta, ligulis angustis exauriculatis glabris. *Folia perfecta* circiter 5–6 in ramulis majoribus; vaginæ arctæ, striatæ, inferiores ad 3 poll. longæ, glabræ, ligulæ truncatæ, breves, fimbriatæ; laminæ lanceolatæ, acuminatæ, basi rotundatæ, innovationum ad 9 poll., ramulorum ad 5 poll. longæ, illæ ad $1\frac{2}{3}$ hæ ad $1\frac{1}{4}$ poll latæ, supra virides, subtus subglaucæ, infra primo sæpe pubescentes, deinde glabratæ vel juniores quoque subglabræ, margine utroque scabræ, nervis secundariis utrinque 8–12 tenuibus, venulis transversis brevissimis. *Spiculæ* ad nodos ramorum florentium brevium vel pluripedalium gracilium vel interdum robustorum solitariæ vel 2–3, rarius plures vel interdum ad ramorum foliiferorum apices terminales, ambitu ovato-lanceolatæ, acutæ, 10–14 lin. longæ, virides vel purpurascentes, circiter 6–8-floræ, subsessiles, basi squamis 2 brevibus gemmiparis suffultæ, rhachilla glabra, articulis inferioribus brevissimis. *Glumæ* vacuæ uti valvæ explanatæ perlate ovatæ, magis minusve acuminatæ vel acutæ, ad 9 lin. longæ, multinerves, glabræ, margine tenuiter ciliatæ. *Paleæ* valvis paulo breviores, bicuspidatæ, intra et extra carinas ciliatas plurinerves. *Lodiculæ* plerumque 2 oblongæ, ciliatæ, $1\frac{1}{2}$ lin. longæ. *Stamina* 6; antheræ mucronatæ, mucrone pilis minutis scabro. *Ovarium* breviter stipitatum, ovoideum, ut stylus ad vel fere ad medium 3-fidus, longe pilosus, stigmata plumosa.

Formosa: Tamsui, *Oldham*, 648; Takow, cultivated in plantations for the edible shoots, *Henry*, 1955. South Formosa, *Maries*.

The drawing was made from specimens, communicated by Dr.

F. Franceschi of the Southern California Acclimatizing Association, Santa Barbara, California. According to him, this bamboo, which has been under cultivation at Santa Barbara for the last seven years, was imported from Japan, where it appears not to be native, but is imported by nurserymen there from the island of Formosa or from some point on the coast of southern China. On comparison with Henry's and Maries's specimens quoted above, it proved to be practically identical with them. The original of *B. Oldhami* differs slightly in so far as the branches are considerably thicker and so hollow that they are easily compressed, whilst the bracts supporting the spikelets or clusters of spikelets are on the whole broader or shorter. The specimen is, however, somewhat defective and, as Munro remarked, partly abnormal; but there seems to me sufficient evidence of the specific identity of Oldham's plant and the plant figured here. Some of Henry's specimens are moreover quite intermediate, particularly with respect to the habit of the flowering branches. The cultivated Californian specimen has the leaves almost glabrous, even in a young state, but the very scanty pubescence of some of them is of the same kind as in the other specimens. *B. Oldhami* has, like the allied *B. kingiana*, more the habit of a *Dendrocalamus*, but the floral characters are those of *Bambusa*, as it is understood at present. I may mention here in connection with this resemblance, that a part of Hance's 1050 at Kew, which is quoted by Munro under *Dendrocalamus*, is in fact a *Bambusa*, so similar to *B. kingiana* that the small flowering branchlet of which it consists cannot be distinguished externally from it.—Otto Stapf.

Fig. 1, top of sheath and base of blade; 2, two florets, laid open; 3, an anther; 4, a lodicule; 5, pistil. *All enlarged.*



M.S. del. et lith

Plate 2774.

RHOPALOCARPUS LUCIDUS, *Bojer.*

Rhopalocarpaceæ.

The illustration of this singular genus was taken up partly in consequence of the original description having been entirely lost sight of, and partly in consequence of all subsequent descriptions being more or less incorrect or incomplete, or both. Even the generic name has suffered. Bojer first published the misprinted name *Rapolocarpus lucidus* in 1837 (*Hortus Mauritianus*, p. 44) without any description, and most, if not all, subsequent writers on the genus knew only of this publication, and were content with altering the spelling to *Ropalocarpus*. But Bojer published (*Travaux de la Société d'Histoire Naturelle de l'Ile Maurice*, 1846, pp. 149–151) a very full and generally accurate description of his proposed new genus. The early publications of the Society in question, which subsequently became the Royal Society of Arts and Sciences of Mauritius, are exceedingly rare, fragments only existing in the libraries of Kew, the Royal and Linnean Societies, but not the one containing Bojer's description. For a copy of this Kew is indebted to M. Casimir de Candolle of Geneva, and it is reproduced below with a few corrections of obvious misprints, but otherwise as copied.

'**Rhopalocarpus** (*Boj.*) qui in Hort. Mauritiano nomen *Rapolocarpus* male scrib. Ord. Tiliacearum ?

'Rh. alabastris globulosis magnitudine pisi minimi, appresse pilosis. *Calycis* sepala 4, orbiculata, concava, subhyalina, ante evolutionem sepalis 2 exterioribus 2 interna involventibus, demum reflexis caducis. *Corollæ* petala 4, sepalis alterna, linearia, tortuoso-plicata, albida, basi longe angusta, esquamosa, cum sepalis caduca. *Stamina* circiter 40, libera, toro brevi et sub disco crasso colorato inserta, filamentis subpatentibus subulatis luteo-viridibus tarde deciduis. *Antheræ* medifixæ, horizontales, ovatæ, utrinque retusæ, croceæ, facie superna planæ, 2-loculares, pollinis globosis vesiculosis. *Ovarium* 1, superum 1-loculare (rarius 2-locul.) loculis 1-ovulatis, disco lato, ad ortum albo-pilosum, pilis rigidis postmodo in spinis lignosis evadentibus. *Stylus* stam. longior et crassior, apice geniculatus. *Stigma* acutum, rubrum. *Fructus* globosus, pollicem fere in diametro, albidus, 1-locularis, 1-spermus, spinis crebris acerosis circumdatus, indehiscens. Pericarpium sub-

lignosum, coriaceum, sed facile fractum. Endocarpium in fructu porrecto opaco-gelatinosum nuci adhærens, in fructu maturescente (ex succo) testaceo-luteum, ex succo proprio productum, liberum, aut passim pericarpio adhærens. Nux solida, altitudine latior, reniformis, transverse posita, nigra, infra medium umbilico strophiolato donata, juxta insertionem pedunculi adhærens, cæt. libera in vacuo locata. Albumen corneum ; processibus plurimis lignosis nigris in albumine immersis. Cotyledones foliaceæ, tenues, in foramine albuminis multiplicatæ. Embryo inferus rectus in regione umbilici situs. Radicula viridis.—Arbor madagascariensis, ramis elongatis nutantibus. *Folia* alterna, petiolata, elliptico-ovalia, integra, lucida, glaberrima, penninervia. Stipula intra axillam acuminata, decidua. *Flores* terminales, parvi, pedicellis verticillatis. *Fructus* sphæricus, spinosus, *Æsculum Hippocastanum* aspectu æmulans, pedunculus solidus, pollicaris, apice accrescens, cum fructu spinoso exacte forma clavæ antiquæ exhibens, unde nomen gen. (*Rhopalon*) clava, (*karpos*) fructus.

'**Rh. lucidus** (*Boj.*). Caule arboreo, foliis elliptico-ovalibus retusis, mucrone brevi calloso, margine subcartilagineis integris lucidis glaberrimis, nervis mediis latis albidis, lateralibus tenellis, stipulis intra axillas solitariis acuminatis deciduis, flores terminales, parvi, pedicellis verticillatis, basi bracteis latis abbreviatis persistentibus, fructus sphærici spinosi 1-loculares 1-spermi, nuces reniformes, nigræ.

'Arbor 20–25 pedalis, trunco brevi recto, cortice lævi, ligno albo flexili. Rami veteres recti, juvenes elongati patentes v. penduli, teretes, cinereo-albi, apice virides, albo-punctati, glabri, ramulis confertis floriferis. *Folia* alterna, elliptico-ovalia, ovata v. obovata, integra, retusa v. emarginata, interdum calloso-mucronata v. mutica, crassiuscula, haud coriacea, subpatentia, plana v. carinata, utrinque concoloria, lucida, glaberrima, 3 poll. longa (inclus. petiolo tenello 7 lin.) pollicem lata, interdum minora, vetera margine chartacea ; nervis mediis latis supra planis, subtus convexiusculis, albidis (ex sicco nigrescentibus) venis tenellis vix conspicuis. Stipula unica axillaris, triangularis, acuminata, petiolo duplo breviora, decidua. *Flores* ad extremitatem ramulorum orti, foliis breviores, parvi, fugacei. Pedunculi terminales v. axillares, ramulosi v. simplices, apice pedicellis ternis quaternis verticillatim umbellatis strictis subtriquetris 6-lin. longis glabris, basi bracteis abbreviatis membranaceis persistentibus. Sepala cruciatim opposita, orbiculata, vix lineam diametro, concava, viridi-lutea. *Petala* linearia, basi angustiora, subsphacellata, albida, fugacea, sepalis duplo longiora, caduca. (Stam. Anth. Ovar. Styl. ut in gen.) Spinis fructus crebris conoideis duris acerosis lineam longis, passim brevioribus. *Fructus* maturus exsuccus albidus, 1-spermus, rarissime 2-spermus.'

Madagascar : sandy plains in Bombatok Bay, Western Coast, Bojer, 1824. Since cultivated at Mauritius, Kew, Calcutta, and other places. Kew possesses one of Bojer's original specimens.

Some passages in the foregoing description are not very clear, and in some cases it either does not agree with that observed, or does not

cover the whole range of variation observed in the various organs. For instance, the sepals are sometimes 3+3 with 3 petals, and the ovary is 2–3-celled with 2–4 ovules in each cell.

The seed is indeed very peculiar. It is a depressed spheroid, broadly ribbed with shallow, narrow furrows, and the attachment to the pericarp is broad. Testa of two distinct layers: outer somewhat fleshy; inner thicker, hard and cartilaginous. At the top of the seed there is a circular projection corresponding to the chalazal point from which, and other points of the testa, nipple-like and club-shaped masses of tissue grow into the horny albumen. The minute embryo with foliaceous, lobed and undulated cotyledons occupies a cavity at the base.

Rhopalocarpus has been doubtfully referred to the Tiliaceæ, Capparidaceæ, Ternstrœmiaceæ, and Flacourtiaceæ. The late Dr. Baillon, who described two additional species—*R. triplinervius* ('Adansonia,' x. [1871], p. 106) and *R. thouarsianus* ('Bull. Soc. Linn. Par.' i. [1883] p. 393)—remarked in the latter place that its position became more uncertain with increasing material, and I cannot suggest a more satisfactory solution of the question than separation. There are at least four species in the Kew Herbarium, one of which is probably *R. thouarsianus*, Baill. The others are:

R. similis, *Hemsl.* (*sp. nov.*); foliis iis *R. lucidi*, Bojer, simillimis sed fructu verruculoso non echinato differt.

Central Madagascar: *Rev. R. Baron*, 3361.

R. longipetiolatus, *Hemsl.* (*sp. nov.*); a *R. triplinervio*, Baill., foliis amplis fructu grosse verrucoso recedit.

Ramuli fructigeri sericeo-pubescentes. *Folium* unicum visum longe petiolatum, crassum, coriaceum, fere orbiculare, 5–6 poll. diametro, margine undulatum, apice emarginatum, basi vix cordatum, a basi ad apicem trinerve, venis conspicue reticulatis; petiolus teres, $2\frac{3}{4}$ poll. longus. *Fructus* compressus, didymus et 2-locularis vel subglobosus et 1-locularis, immaturus usque ad $1\frac{1}{4}$ poll. latus, undique grosse irregulariterque spongioso-verrucosus.

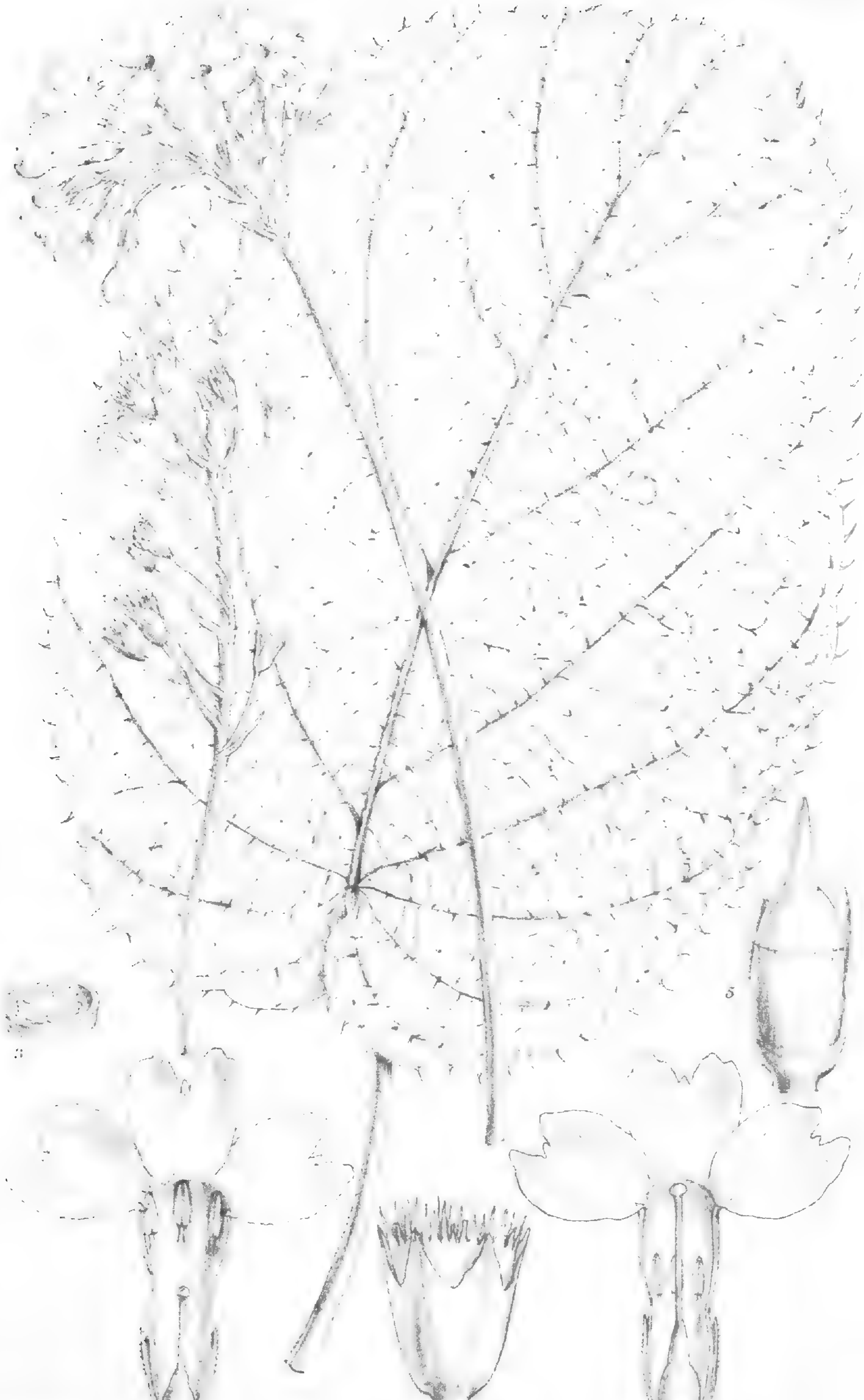
North Madagascar: *Rev. R. Baron*, 6479.

Flowers are wanting of all the five species known except the original *R. lucidus*. For the fresh specimens used in preparing the accompanying plate we are indebted to Major Prain, Superintendent of the Royal Botanic Gardens, Calcutta, who took much trouble to procure flowers and ripe fruit.—W. Botting Hemsley.

Fig. 1. portion of branch with the base of a petiole and interpetiolar stipule (or connate stipules); 2, a tetramerous calyx; 3, a petal in which the mucilaginous (?) glands are visible; 4, stamens; 5, disk and gynæceum; 6. longitudinal section of an ovary, showing basal attachment of the ovules; 7, cross section of a two-celled ovary; 8, cross section of a three-celled ovary; 9, a fruit in which the indurated base of the style is lateral in consequence of the development of only one cell; 10, the same laid open, showing the one seed and an almost obliterated second cell—the

large projection on the right is part of the indurated, enlarged style-base; 11, upper part of the removed testa, seen from the outside; 12, the inside of the same; 13, a seed from which the testa has been removed, showing the base; 14, the same, showing the top with the stopper-like chalazal point; 15, vertical section of a seed, to show the intruded tissue from the chalazal end and other points, and the small embryo in a basal cavity;* 16, embryo. *All, except* 10, 13, *and* 14, *more or less enlarged:* 15, *slightly*; 16, *very much.*

* The shading of this figure failed in the printing, so that this darker tissue has the appearance of cavities.



H.S. del. et lith.

Plate 2775.

CAROLINELLA CORDIFOLIA, *Hemsl.*

Primulaceæ.

C. cordifolia, *Hemsl.* (*sp. nov.*) ; a speciebus hucusque cognitis foliis amplis cordatis omnino differt.

Herba perennis, scapigera, novellis plus minusve ferrugineo-tomentosis, demum fere undique glabra. *Folia* longe petiolata, papyracea ; petiolus gracilis, plano semiteres, anguste alatus, 3 9 poll. longus ; lamina papyracea, elliptico ovato- vel rotundato cordata, lobis basilaribus obtegentibus, margine setaceo-denticulata et obscure lobulata, supra glabra vel cito glabrescentia, subtus præcipue secus venas ferrugineo-puberula, costa subtus elevata, venis primariis lateralibus utrinque 7- 9 prominulis. *Scapi* quam folia semper breviores, graciles, teretes, erecti, infra flores nudi. *Flores* rosei, circiter 6 lin. diametro, 7 8 lin. longi, cymoso-racemosi, cymis fructiferis elongatis, graciliter pedicellati, pedicellis brevioribus bracteis linearibus suffultis, dimorphi, alii staminibus altius affixis stylo brevi consociatis, alii staminibus medio tubo affixis stylo elongato consociatis. *Calyx* minute puberulus, tubulosus, 5-costatus ; lobi angusti, acutissimi, erecti, tubo paullo breviores. *Corolla* sparsissime minuteque puberula, hypocraterimorpha, limbi lobis subquadratis erosis sinu unidenticulato. *Ovarium* glabrum. *Capsula* calyptratim dehiscens, ora demum fimbriata. *Semina* ignota.

China ; Mengting mountains, Yunnan, in forests at 7500 ft. *A. Henry*, 10890.

We have figured this second species of *Carolinella* in order to complete the generic character (given under plate 2726) which, after all amounts to little more than the calyptrate capsule, as distinguished from *Primula*.

In answer to inquiries, Dr. Henry wrote : 'The *Carolinella*, with large cordate leaves, was collected by me in the district of Mengting, south of the Red River, in a direction somewhat south-west of Mengtze. This was the extreme limit reached by me on a trip I made south of the Red River, after crossing the great range, which is the watershed between the Red and the Black Rivers, in a densely wooded virgin forest country. I turned back after descending two or three miles of the southern slope of the range, exactly at the point where

I discovered this plant. It grew on the side of the bank down the mountain, in the shade of an immense tree with a trunk eight feet in diameter, and in other similar shaded places.'

A third species from the same source is :—

C. obovata, *Hemsl.* (*sp. nov.*) ; foliis oblongo-obovatis facile distinguitur.

Herba perennis, acaulis, scapigera, fere omnino glabra. *Folia* breviter petiolata, papyracea, venoso-rugulosa, oblongo-obovata vel obovata, cum petiolo 1½ 6 poll., sæpissime 3 4 poll., longa, maxima supra medium 2 poll. lata, apice late rotundata, basi cuneata vel anguste rotundata, margine obscure crenulata et interdum plus minusve calloso-denticulata ; petiolus subteres, supra leviter canaliculatus. *Scapi* gracillimi, folia sæpius superantes, infra flores nudi, erecti, teretes. *Flores* rosei, circiter 5 lin. diametro et 6 lin. longi, cymoso umbellati, cymis 5 10-floris, graciliter pedicellati, pedicellis quam flores brevioribus bracteis parvis linearibus suffultis, dimorphi ut in specie precedenti. *Calyx* glaber vel cito glabrescens, breviter tubulosus, 5-costatus, dentibus acutis tubo æqualibus. *Corolla* hypocraterimorpha, limbi lobis bilobulatis. *Ovarium* glabrum. *Capsula* ignota.

China ; on cliffs in forests south-east of Mengtze, Yunnan, at 5000 ft., *A. Henry*, 10626, 10626 A, and 10626 B.

It is probable that a thorough study of the Primulaceæ of China will lead to further generic alterations.—W. Botting Hemsley.

Fig. 1, section of a long-styled flower of *C. cordifolia* ; 2, section of a short-styled flower ; 3, cross section of an ovary ; 4, basal part of an old capsule ; 5, young fruit. *All enlarged.*

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EDITED FOR THE BENTHAM TRUSTEES BY

SIR WILLIAM T. THISELTON-DYER,

K.C.M.G., C.I.E., LL.D., Sc.D., M.A., F.R.S.

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DIRECTOR, ROYAL BOTANIC GARDENS, KEW.

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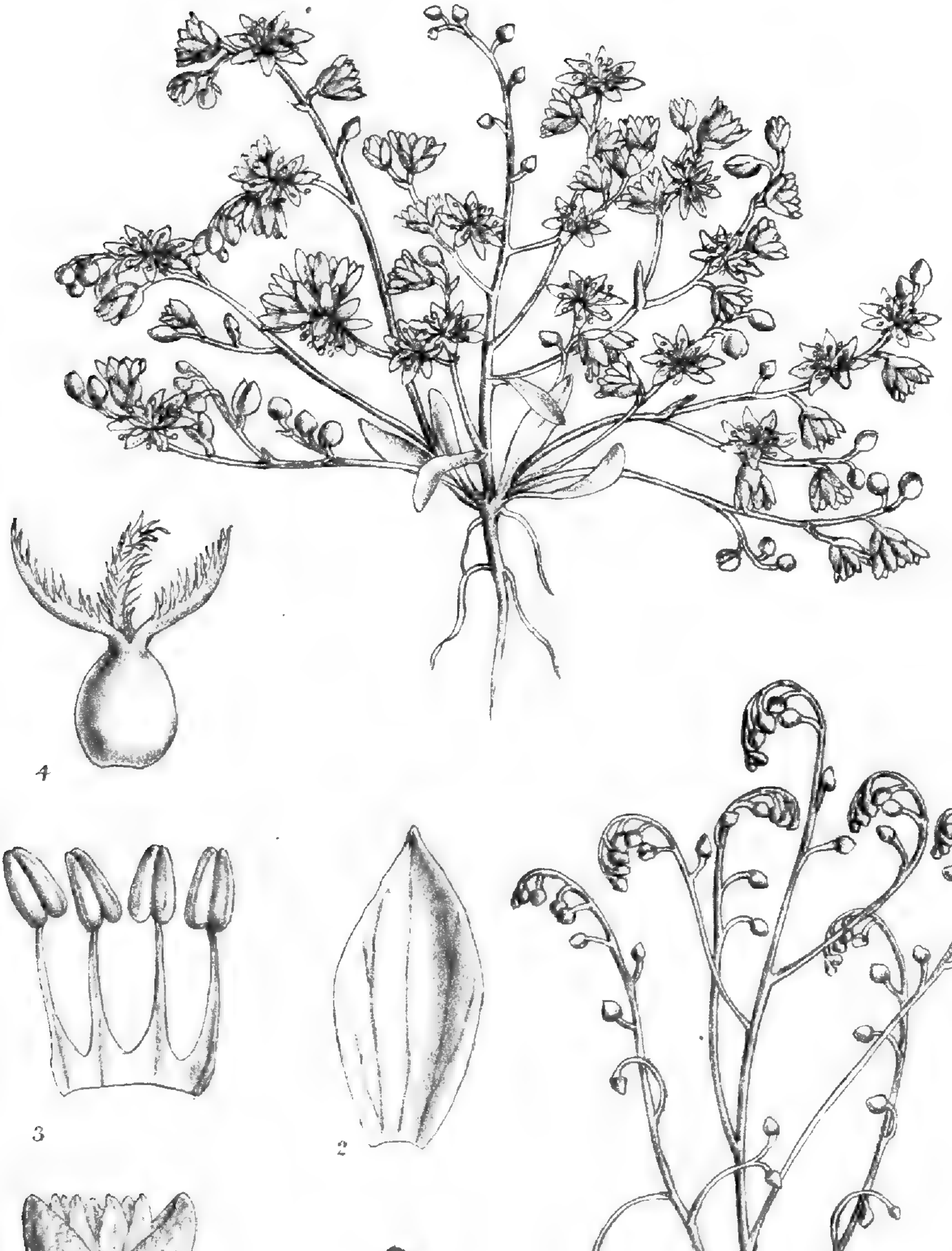


M.S. del. et lith.

Plate 2776.

CALANDRINIA GRANULIFERA, *Benth.*

Portulacaceæ.

C. granulifera, *Benth. Fl. Austral.* vol. i. p. 176 ; species ramulis fructiferis recurvis et capsula nigra nitida poro apicali dehiscente insignis.

Herba monocarpica, 2–4 poll. alta, a basi multiramosa, glabra, ramis gracillimis. *Folia* carnosa, radicalia rosulata, spathulata, integra, 6–8 lin. longa, caulina pauca, similia sed minora. *Flores* numerosi, albi, circiter 4 lin. diametro, unilateraliter cymoso-racemosi, breviter pedicellati, bracteis minutis cito deciduis. *Sepala* ovato-rotundata, circiter 1 lin. longa. *Petala* sæpius 7, angusta, $1\frac{1}{2}$–2 lin. longa, acuta. *Stamina* petalis duplo plura. *Semina* numerosissima, $\frac{1}{60}$ poll. diametro.

West Australia : Dedari, twenty-four miles west of Coolgardie, at about 1,400 feet above sea-level, *G. H. Thiselton-Dyer*.

Mr. Bentham described this plant from rather advanced specimens collected by Drummond on the Swan River. He states that the capsules are usually indehiscent, but after being steeped in water for some time they open at the top by a circular pore. There are also indications that they split into two or three valves at a later stage.

Plates 2776 to 2783 were drawn from specimens collected between Perth and Coolgardie, in 1903, by Mr. G. H. Thiselton-Dyer, son of the Director of Kew. Mr. Thiselton-Dyer, who is a mechanical engineer, and was engaged on the official tests of the pumping machinery for the Coolgardie Water Supply, makes no pretension to botanical knowledge, but in the very little leisure he had, he succeeded in drying a collection of about two hundred species of plants. Having no means of transporting large parcels, and acting on advice, he confined himself almost entirely to small and chiefly inconspicuous plants, which constitute a most interesting element in the flora of West Australia. This miniature collection contains a number of curious plants, including two new genera and a considerable number of new and very rare species. Some of them had been collected previously by Dr. L. Diels and Dr. E. Pritzel, though the descriptions were not actually published. To these gentlemen, who made very extensive collections during 1900-1902, as well as to Mr. S. Le Marchant Moore, who also collected in the same region, I am greatly indebted for assistance in determining a number of doubtful things. I wish also to record here the valuable assistance I have received from Mr. L. Farmar in comparing this and other Australian collections.—W. Botting Hemsley.

Fig. 1, a flower; 2, a petal ; 3, part of the stamens ; 4, pistil ; 5, capsule laid open showing the insertion of the seeds ; 6, a seed ; 7, section of the same, showing the embryo. *All enlarged.*

M S del,et lith.

Plate 2777.

ERICHSENIA UNCINATA, *Hemsl.*

Leguminosæ. Tribe Podalyrieæ.

Erichsenia, *Hemsl.* Genus novum inter *Viminariam* et *Daviesiam* sed stipulis, calycis forma, æstivatione, etc. differt.

Calyx subbilabiatus ; lobi leviter inæquales, rotundati, tubo duplo breviores ; labium superius æstivatione interius, loborum marginibus contiguis valvatis ; labii inferioris lobus intermedius omnino exterior. *Petala* omnia unguiculata ; vexillum reniforme ; alæ dolabriformes ; carinæ petala alis similia, ultra medium connata. *Stamina* libera, alterna breviora. *Ovarium* sessile, biovulatum ; ovula estrophiolata. *Legumen* ignotum.—Fruticulus. Folia *alterna, simplicia, rigida, stipulata.* Stipulæ *bracteiformes.* Flores *mediocres, racemosi, bracteati.*

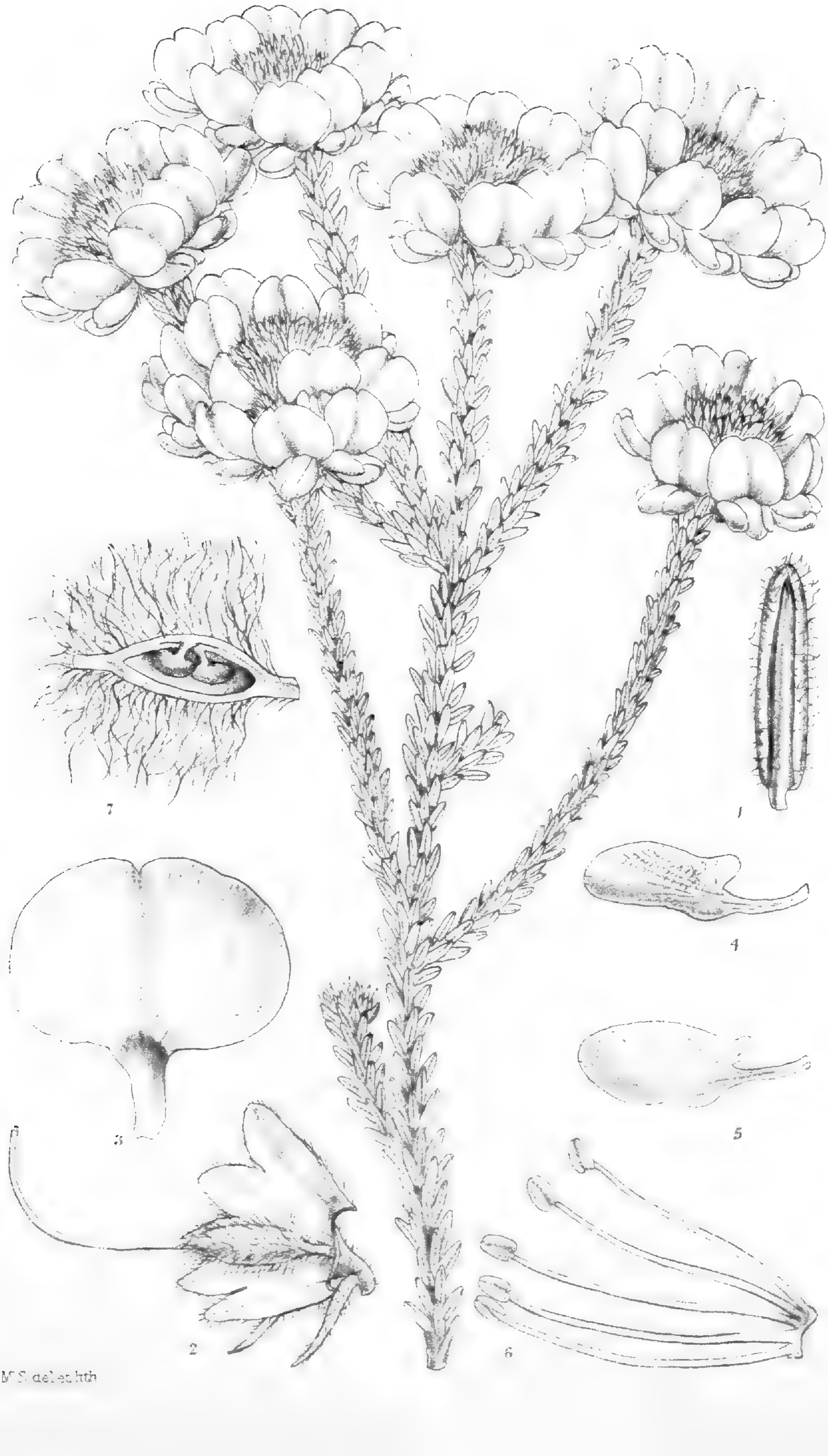
E. uncinata, *Hemsl.* (species unica). *Frutex* nanus, a basi ramosus, ut videtur, vagans et forsan interdum major quam specimina sub oculis. *Caules* ramique glabri, teretes, graciles, virides. *Folia* pauca, teretia, maxima semipollicaria, apice uncinata. *Flores* lutei, purpureo-striati, circiter semipollicares, pedicellati ; bracteæ variabiles, herbaceæ vel scariosæ, medio unicostatæ, pedicellos involventes, apice acuminatæ vel tridentatæ, dente intermedio sæpe indurato uncinato, lateralibus mollibus herbaceis. *Calyx* pilis longis albis sericeis dense vestitus, oblique campanulatus, subbilabiatus, petalis plus quam dimidio brevior ; lobi rotundati labii superioris majores. *Petala*, præter vexillum, ciliolata. *Stamina* glabra, omnino inclusa ; filamenta filiformia. *Ovarium* glabrum, obliquum, stylo filiformi curvato incluso ; ovula 2, subcollateralia, distincte funiculata.

West Australia : Railway between Cunderdin and Dedari, *G. H. Thiselton-Dyer.*

This genus is named after Mr. Frederik Ole Erichsen, with whom Mr. Thiselton-Dyer was associated as assistant at the official tests of the pumping machinery for the Coolgardie Water Supply. This gentleman assisted in forming the collection alluded to in the letterpress to plate 2776.

There is always some risk in establishing a new genus in such a natural order as the Leguminosæ, but the present plant is a very distinct one, and, so far as I can ascertain, had not previously been collected.—W. Botting Hemsley.

Fig. 1, a leaf and stipules attached to branch ; 2, calyx laid open and stamens; 3, the same, stamens removed; 4, standard; 5, a wing-petal; 6, keel spread open; 7, pistil, ovary laid open. *All enlarged.*



M S. del. et lith

Plate 2778.

PHYLLOTA GEORGII, *Hemsl.*

Leguminosæ. Tribe Podalyrieæ.

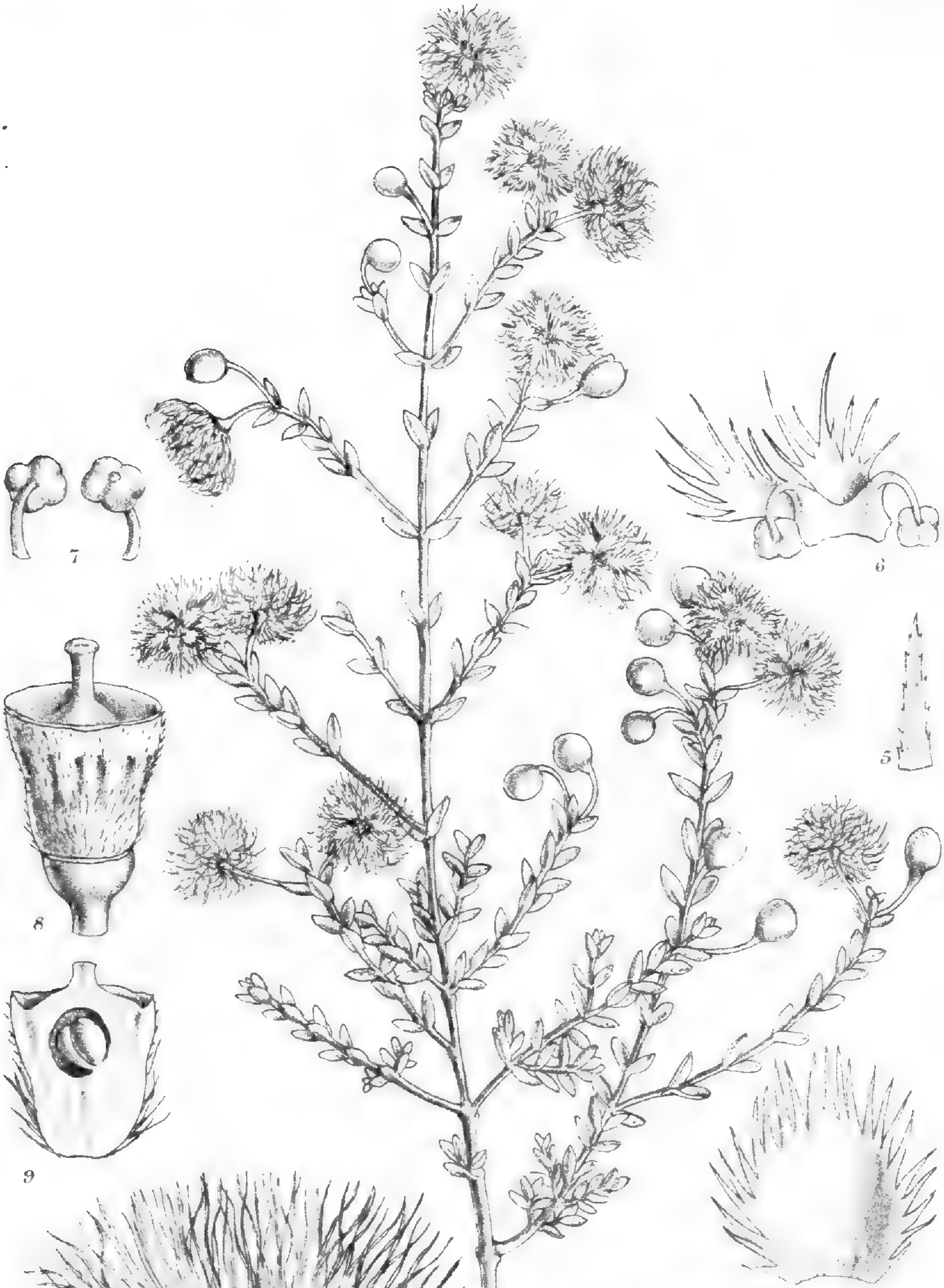
P. Georgii, *Hemsl.* (sp. nov.); species ex affinitate *P. Luehmanni*, F. Muell., a qua foliis dimidio minoribus apice inermis differt.

Frutex nanus, ericoideus, multiramosus, ramis gracilibus pubescentibus. *Folia* conferta, subsessilia, crassiuscula, albido-pubescentia, mollia, oblonga, 1–2 lin. longa, secundum margines arcte reflexa, obtusa; stipulæ nullæ. *Flores* in ramorum apicibus densissime capitati, brevissime pedicellati, aureo-purpurei, 4–5 lin. longi; pedicelli bibracteolati, bracteolis linearibus calyce brevioribus. *Calyx* sericeo-hirsutus, fere æqualiter 5-lobatus, lobis tubo brevioribus obtusiusculis, 2 superioribus latioribus. *Petala* omnia distincte unguiculata, glabra; vexillum reniforme, circiter 5 lin. diametro; alæ et carinæ petala similia, dolabriformia, apice rotundata. *Stamina* inclusa, ima basi cohærentia, filamentis filiformibus glabris, antheris conformibus. *Ovarium* breviter stipitatum, pilosum, biovulatum, stylo filiformi glabro incluso. *Ovula* distincte funiculata, ut videtur, estrophiolata. *Legumen* ignotum.

West Australia: Railway between Cunderdin and Dedari, *G. H. Thiselton-Dyer.*

In the absence of seed it is difficult to determine whether this plant should be referred to *Phyllota* or *Pultenæa*; but the absence of stipules, the slight cohesion of the stamens, the distinctly stipitate ovary, and the apparently ecarunculate ovules point to the former genus, as characterised in Bentham and Hooker's 'Genera Plantarum.'—W. Botting Hemsley.

Fig. 1, a leaf seen from below; 2, calyx laid open and pistil; 3, standard; 4, a wing-petal; 5, a keel-petal; 6, half of the stamens; 7, ovary in section. *All enlarged.*



M.S. del et lith.

Plate 2779.

VERTICORDIA ROEI, *Endl.*

Myrtaceæ. Tribe Chamælaucieæ.

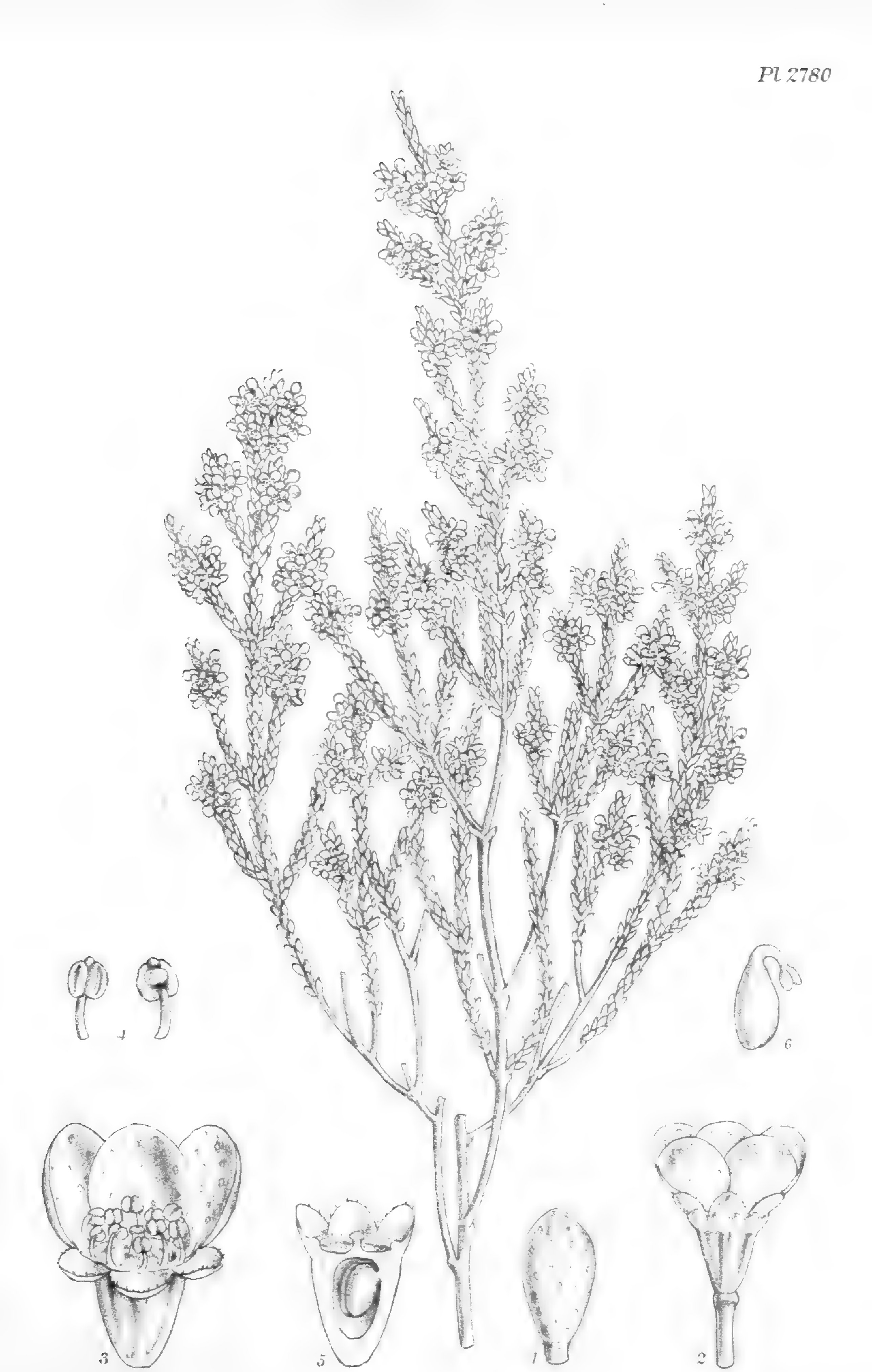
V. Roei, *Endl. in Ann. Wiener Mus. der Naturgesch.* vol. ii. (1838), p. 194; species a *V. insigni* foliis parvis crassis concavo-convexis recedit.

Frutex nanus, glaber, dense ramosus, ramis gracilibus. *Folia* sessilia, crassa, concavo-convexa, ramis sæpe arcte appressa, 1–3 lin. longa, dorso carinata, obtusa vel subacuta, nunc conferta nunc quam internodia duplo triplove breviora. *Flores* albi, circiter 6 lin. diametro, in axillis foliorum superiorum solitarii, pedicellati; pedicelli quam folia sæpius duplo triplove longiores, interdum pollicares, apice cupulatim dilatati, articulati; bracteolæ 2, herbaceæ, orbiculares, alabastrum includentes, ante anthesin caducæ. *Calycis limbi* segmenta 10, biseriata, 5 exteriora arcte reflexa, 5 interiora erecta, omnia profunde plumoso-fimbriata. *Petala* 5, quam sepala breviora, crassiora, ovalia, argute dentata vel simpliciter fimbriata. *Stamina* 10, brevissima, cum staminodiis palmatifidis totidem alternantia. *Ovarium* 10-costatum, præsertim infra medium tomentosum, uniloculare, stylo brevissimo. *Ovula* 2, placentæ basilari excentricæ collateraliter affixa.

West Australia: Railway between Cunderdin and Dedari, *G. H. Thiselton-Dyer.*

Bentham (*Fl. Austral.* vol. iii. p. 28) dealt with *Verticordia Roei*, Endl., as 'appearing to be only a small-leaved variety' of *V. insignis*, Endl., but with more complete materials there is no doubt that it is specifically different. The late Sir Ferdinand Mueller called attention to this fact when sending a specimen from the sources of the Blackwood River, collected by Miss Cronin, in 1893, but I cannot find that he published anything about it. In the Botany of the Elder Expedition, by Mueller and Tate (*Trans. Roy. Soc. S. Australia*, vol. xvi. part 3 [1896], p. 354), a specimen of this species is referred to *V. insignis*. This was collected by P. A. Gwynne, eighty miles north-east from Esperance Bay. There is also a specimen in the Kew Herbarium from the Oldfield Range, collected by G. Maxwell. An original specimen, collected by J. S. Roe, is labelled 'Interior, S.W. Australia.' Kew now possesses *V. Roei* from five different and distant localities, and all the specimens agree in character, except that the one from the Blackwood River has unusually long pedicels.—W. Botting Hemsley.

Fig. 1, a pair of leaves attached to branch; 2, a flower enclosed by bracteoles; 3, calyx-lobes, two of the reflexed outer series and one of the inner erect series; 4, a petal; 5, one of the teeth; 6, stamens and staminodes; 7, stamens; 8, pistil; 9, section of ovary, showing attachment of the ovules. *All enlarged.*



M.S. del. et lith.

Plate 2780.

MICROMYRTUS ERICHSENII, *Hemsl.*

Myrtaceæ. Tribe Chamælaucieæ.

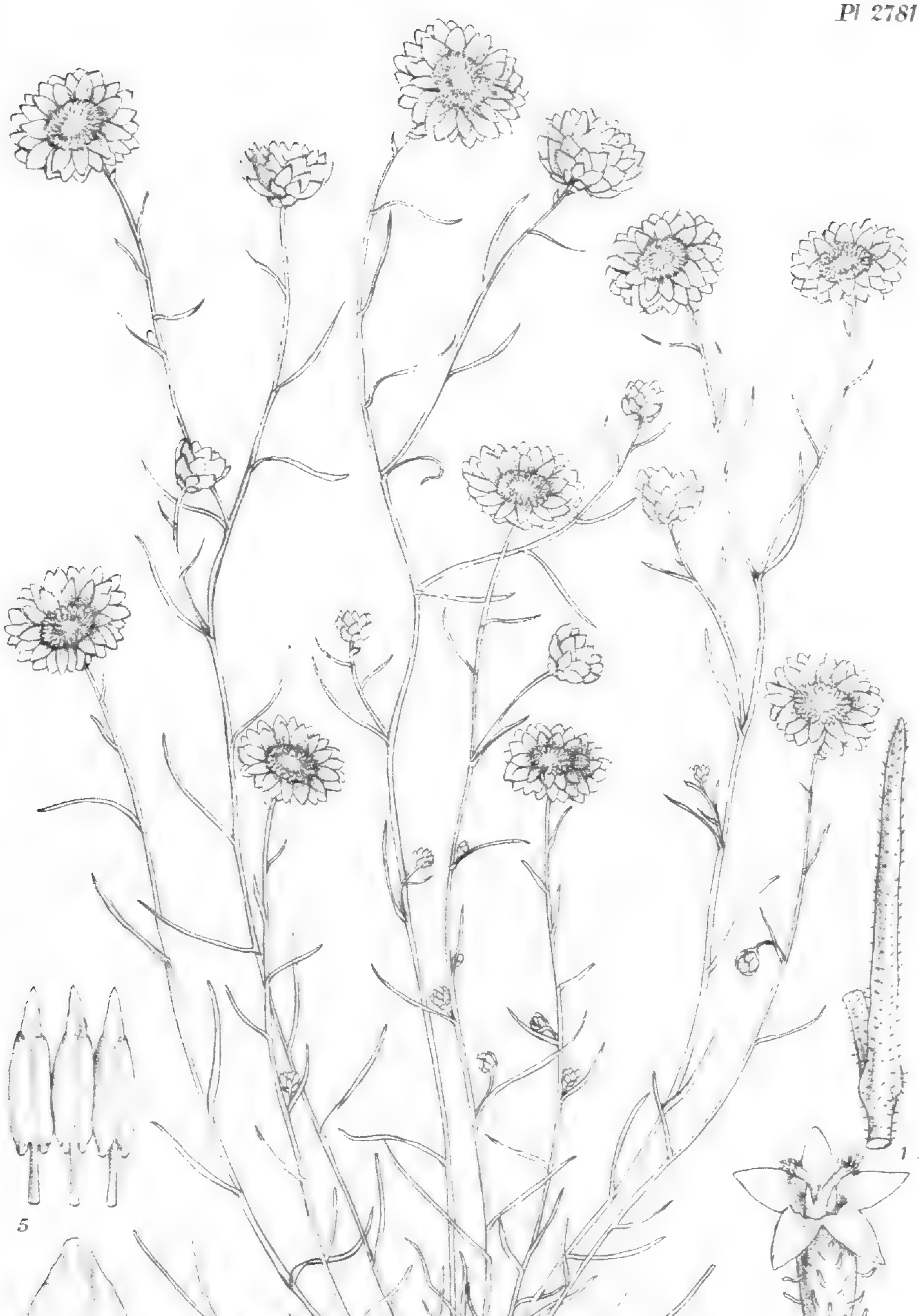
M. Erichsenii, *Hemsl.* (*sp. nov.*); species *M. Drummondii* simillima sed ab ea pedicellis quam folia brevioribus floribus minoribus et staminibus 10 recedit.

Frutex glaber, dense ramosus, ramis virgatis. *Folia* ericiformia, conferta, oblongo-clavata, $\frac{1}{2}$–$1\frac{1}{2}$ lin. longa, appressa, concavo-convexa, subtus carinata, crebre nigro-punctata. *Flores* albi, circiter 1 lin. diametro, ad axillas solitarii, breviter pedicellati, pedicellis apice articulati. *Calycis tubus* 5-costatus; lobi minimi, rotundati. *Petala* orbicularia, circiter $\frac{1}{3}$ lin. diametro. *Stamina* 10, alterna sepalis opposita minora. *Ovarium* 1-loculare; ovula 2, ad apicem placentæ filiformis a basi ad apicem loculi adscendentis collateraliter pendula. *Fructus* indehiscens. *Semen* unicum. *Embryo* semini conformis; cotyledones minimæ; cotyledones ac hypocotyledon reflexæ, radicula crassissima.

West Australia: Dedari, twenty four miles west of Coolgardie, about 1,400 feet above sea-level, *G. H. Thiselton-Dyer*.

The full description of this plant leaves it a little doubtful whether it is specifically different from *M. Drummondii*, Benth. The same thing was collected by R. Helms, of the Elder Exploring Expedition, 1891, at Gnarlbine (about 121° E. long. and 31° S. lat.), and by Pritzel (n. 863) east of Southern Cross. These localities are all in the same inland district, while Drummond's specimens are from the Swan River. The filiform basal placenta is not shown in our figure, having been at first overlooked in these exceedingly small structures.—W. Botting Hemsley.

Fig. 1, a leaf; 2, a flower; 3, the same, from which two of the petals have been removed; 4, stamens; 5, section of ovary, showing ovules; 6, embryo. *All enlarged.*



M.S.delet lith

Plate 2781.

THISELTONIA DYERI, *Hemsl.*

Compositæ. Tribe Helichryseæ.

Thiseltonia, *Hemsl.* Genus novum ex affinitate *Pithocarpæ,* sed involucri bracteis omnibus latis tenuissimis glabris et antheris ecaudatis diversum.

Capitula homogama, multiflora, discoidea, floribus hermaphroditis, omnibus, ut videtur, fertilibus. *Involucrum* hemisphæricum; bracteæ multiseriatæ, imbricatæ, omnes tenues, ecostatæ, breviter unguiculatæ, serierum 2 vel 3 exteriorum breviores, cordiformes, rubescentes, ceteræ albæ, ovatæ. *Receptaculum* fere planum, nudum. *Corollæ* regulares, tubulosæ. *Antheræ* oblongæ, apice connectivo producto membranaceo appendiculatæ, basi obtusiuscule breviterque mucronatæ. *Styli rami* apice truncati, barbellati. *Achænia* calva.—Herba *nana, annua, gracillima, ramosa.* Folia *alterna, subulata.* Capitula *terminalia, distincte pedunculata.* Flores *minuti, numerosissimi.*

T. Dyeri, *Hemsl.* (species unica).

Herba annua, circiter 6 poll. alta, caulibus pluribus divaricatis fere filiformibus foliisque minute glanduloso puberulis. *Folia* linearisubulata, semiteretia, maxima 6-8 lin. longa, vix acuta. *Capitula* 6-8 lin. diametro. *Involucri bracteæ* interiores lamina alba petaloidea, unguiculo scarioso perlucido medio costa viridi instructæ. *Corollæ tubus* sursum leviter dilatatus, glandulosus; limbi lobi ovato-lanceolati, acuti, patentes. *Achænia* minuta, oblonga (matura non visa) puberula, pappo nullo.

West Australia: Dedari, twenty-four miles west of Coolgardie, at 1,400 feet above sea-level, *G. H. Thiselton-Dyer.*

The plant represented in the accompanying plate is the only one known to us, and Dr. Diels writes that it is totally unknown to them in Berlin. In habit it strongly resembles some of the *Heliptera,* but the absence of a pappus is important in classification, though we are not sure that *Thiseltonia* is best placed next to *Pithocarpa,* with which it agrees in the involucral bracts being very numerous and arranged in many series, and in having no pappus. The very minute flowers are difficult to examine in a dried, pressed condition, as the glandular corollas stick together in an almost solid mass.—W. Botting Hemsley.

Fig. 1, a leaf attached to a branch; 2, one of the outer bracts of the involucre; 3, one of the intermediate bracts of the involucre; 4, a flower; 5, anthers; 6, style-arms. *All enlarged.*

M.S.del.et lith

Plate 2782.

VERREAUXIA DYERI, *E. Pritzel.*

Goodeniaceæ.

V. Dyeri, *E. Pritzel* (*sp. nov.*) ; ex affinitate *V. Reinwardtii,* Benth., sed tomento villosiore flavescente cinereo et multo copiosiore, et in foliis et in inflorescentia calycibusque diversa.

Frutex erectus, pauciramosus, circiter 3 ped. altus, sed sæpe multo humilior florens, omnino densissime flavescente cinereo villoso-tomentosus. *Folia* in partibus superioribus sub inflorescentia conferta, obovata vel oblonga, basi attenuata, 1–2½ poll. longa, dense adpresse flavescente cinereo-tomentosa. *Rami* spicigeri paulo ramosi, dense villosi. *Spicæ* elongatæ, interruptæ, sed efoliatæ, apice densiores. *Flores* subverticillate aggregati, subsessiles ; bracteolæ breves. *Calyx* densissime subfuscescente villosus, pilis longioribus simplicibus rufescentibus et brevioribus ramosis intermixtis ; lobi tubum æquantes, late lineares. *Corolla* calycis lobos circa duplo superans, circiter 4 lin. longa, lobis 3 superioribus alte connatis, 2 inferioribus profunde separatis, inauriculatis. *Stylus* patente pilosus ; indusium ad marginem ciliatum. *Ovulum* planum, basi affixum.—E. Pritzel.

West Australia : Waranzering, *Helms.* ; Marmion, eighteen miles south of Menzies, *L. Diels,* 5191 ; railway between Cunderdin and Dedari, *G. H. Thiselton-Dyer.*

Dr. Pritzel writes doubting the validity of this species as distinct from *V. Reinwardtii,* Benth., but the numerous specimens of the latter in the Kew Herbarium from the Swan River, Champion Bay, and Murchison River districts have, at least, a very different appearance.—W. Botting Hemsley.

Fig. 1, an expanded flower ; 2, pistil in section, showing the ovule and two calyx-lobes attached ; 3, dorsal view of a corolla-lobe ; 4, dorsal and ventral views of an anther ; 5, upper part of style with portion of indusium removed. *All enlarged.*

M.S del.et lith

Plate 2783.

MICROCORYS DIELSII, *Hemsl.*

Labiatæ. Tribe Prostantheræ.

Microcorys Dielsii, *Hemsl.* (*sp. nov.*) ; species a *M. barbata* foliis complicatis et floribus multo majoribus differt.

Frutex ramosus, ramis gracilibus rigidisque minute puberulis. *Folia* opposita, breviter petiolata, rigidiuscula, lineari-falcata, ½–1 poll. longa, arcte complicata (saltem in siccis), puberula, apice breviter uncinata. *Flores* axillares, solitarii, distincte pedicellati, circiter semipollicares. *Bracteolæ* 2, lineares, calyci propinquæ et ejus tubum æquantes. *Calyx* sericeo-villosus, leviter obliquus, fere æqualiter 5-dentatus ; dentes erecti, acuti, quam tubus paullo longiores. *Corolla* extus puberula, distincte bilabiata ; tubus latus, calycem vix excedens, intus hirsutus ; labium superius æqualiter bilobatum, lobis rotundatis crenulato-undulatis ; labium inferius trilobatum, lobo intermedio majore obcordato, omnibus crenulato-undulatis. *Stamina* 4, didynama, inclusa, antica longiora ; filamenta basi dilatata, barbata ; anticorum antheræ inæqualiter biloculares, loculis connectivo applanato separatis ; posticorum antheræ unilaculares, connectivi appendice applanato cristato. *Discus* cupuliformis. *Nucula* juveniles apice pubescentes, stylo filiformi glabro incluso.

West Australia : Railway between Cunderdin and Dedari, *G. H. Thiselton-Dyer.*

I am a little doubtful about the genus of this plant, as the stamens are more like those of some of the species of *Hemigenia*, but the calyx is not two lipped. The genera of the *Prostantheræ* are not well defined, and the discovery of new species invalidates some of the characters upon which they were founded. Mueller (*Fragm. Phytogr. Austral.* vol. xi. p. 20) reduces *Hemiandra* to *Hemigenia* and transfers his *Microcorys loganiacea* to *Hemigenia*. *Colobandra*, *Atelandra*, and *Anisandra*, genera founded mainly on modifications of the anthers, had previously been reduced by Bentham (*Fl. Austral.* vol. v.). Many of the differences in the stamens appear to be of no more than specific value. *Prostanthera* is perhaps the best defined genus of the group. – W. Botting Hemsley.

Fig. 1, tip of a folded leaf; 2, bracteoles, part of calyx, disk, and pistil ; 3, corolla laid open, showing attachment of stamens ; 4, anther and upper part of the filament of one of the anterior stamens; 5 and 6, anther and upper part of the filament of one of the posterior stamens. *All enlarged.*

2

5

1

6

4

3

M.S del et lith

Plate 2784.

LINDERA AROMATICA, *Brandis.*

Lauraceæ.

L. aromatica, *Brandis* (*sp. nov.*); species *L. assamicæ*, Kurz, et *L. citriodoræ*, Hemsl., affinis, ab illa antheris 4-locularibus, ab hac foliis perennantibus distincta.

Frutex glaber, erectus, valde aromaticus. *Folia* tenuiter coriacea, lanceolata, integerrima, lamina 2–6 poll. longa, petiolo $\frac{1}{2}$–$\frac{3}{4}$ poll. longo, nervis secundariis utrinque 6–10, arcuatis, debilibus, intermediis ac tertiariis reticulatis. *Flores masculi* albi; pedunculi graciles, glabri, 4–6 lineas longi, sæpius fasciculati vel breviter racemosi. *Umbellæ* involucratæ, 5- (rarius 4-) floræ, involucri bracteis 4 persistentibus, basi minute pilosis, ceterum glabris, pedicellis sericeis. *Sepala* $1\frac{1}{2}$–2 lin. longa, hyalina, intus dense pilosa; antheræ 4- (rarissime abortu 2-) loculares, introrsæ; filamenta pilosa.

Flores feminei ignoti. *Drupæ* subglobosæ, in racemis brevibus axillaribus, pedicello apice incrassato. *Pericarpium* valde aromaticum sapore gratissimo; endocarpium duriusculum; semen 1 exalbuminosum; cotyledones carnosæ; radicula supera.

Burma: Hills east of Toungoo at 2,000 ft., and Donat range between the Thaungyin and Haundrow valleys at 4,000 ft., *D. Brandis.*

The 4-celled anthers * would, at first sight, place this species in *Litsæa*. In that case, however, *L. citriodora*, Hemsl. (*Aperula citriodora*, Blume, *Benzoin citriodorum*, Sieb. & Zucc.), ought also to be removed from *Lindera*. These two species, with a number of others, belong to that section of *Lindera* which has penninerved entire leaves, and which eventually it may be convenient to establish as a distinct genus.

The following are some of the more prominent East-Asiatic species of this group :—

A. Bracts of involucre 4, large concave, persistent until the flowers open or longer.

(*a*) Anthers 2-celled, leaves deciduous.

1. *L. præcox*, Blume, umbels 3–5-flowered.

* The upper pair of cells in *L. aromatica* is sometimes very minute, giving the appearance of 2-celled anthers.

(*b*) Anthers 2-celled, leaves persistent.

2. *L. assamica*, Kurz, umbels 10–14-flowered. 3. *L. Meissneri*, King.

(*c*) Anthers 4-celled.

4. *L. citriodora*, Hemsl., leaves deciduous, umbels 5-flowered. Siebold and Zuccarini (*Fl. Jap. Fam. Nat.* No. 711) give a description of this species, but say: 'Umbellæ florentes non observatæ.' Blume (*Museum Bot.* i. 366) mentions it under *Aperula* (antheræ bilocellatæ).

5. *L. aromatica*, Brandis, leaves persistent, umbels 5-flowered. Near this, but distinct, are, 6: A shrub or small tree, Yunnan, 5–6,000 ft., *Henry* 10439, 11395, 11395 A; *Hancock* 244. Umbels and flowers smaller and perfectly glabrous. Male only known. 7. A shrub, Tonkin, wild and cultivated on account of the aromatic fruit. Balansa 558, 2430; female only known.

B. Bracts of involucre narrow, early deciduous.

(*a*) Umbels many-flowered, leaves deciduous.

8. *L. umbellata*, Thunb. 9. *L. sericea*, Blume.

(*b*) Umbels 3-8-flowered.

10. *L. glauca*, Blume, leaves deciduous. 11. *L. communis*, Hemsl., leaves persistent.—Dietrich Brandis.

Fig. 1, involucre reflexed, two flowers and bases of the pedicels of three others; 2. a stamen from a bud; 3, a petal and a stamen of the outer series; 4, dorsal view of the same stamen; 5, a stamen of the inner series; 6, rudimentary pistil from a male flower. *All enlarged.*

M.S. del et lith.

Plate 2785.

LIRIODENDRON CHINENSE, *Sarg.*

Magnoliaceæ. Tribe Magnolieæ.

L. chinense, *Sarg. Trees and Shrubs*, vol. i. part 3 (Nov. 14, 1903), p. 103, t. 51 ; The Chinese Tulip-tree, *Hemsl. in Gard. Chron.*, Nov. 28, 1903, p. 370 ; L. sp. nov., *S. Moore in Journ. Bot.* vol. xiii. (1875), p. 225 ; L. Tulipifera, var. ? chinense, *Hemsl. in Journ. Linn. Soc.* vol. xxiii. (1886), p. 25 ; L. Tulipifera, var. sinensis, *Diels in Engler Bot. Jahrb.* vol. xxix. (1901), p. 322.

Species a *L. Tulipifera* floribus dimidio minoribus, petalis angustioribus divergentibus, carpellorum columna tardius soluta et carpellis maturis apice rotundatis rectisque differt.

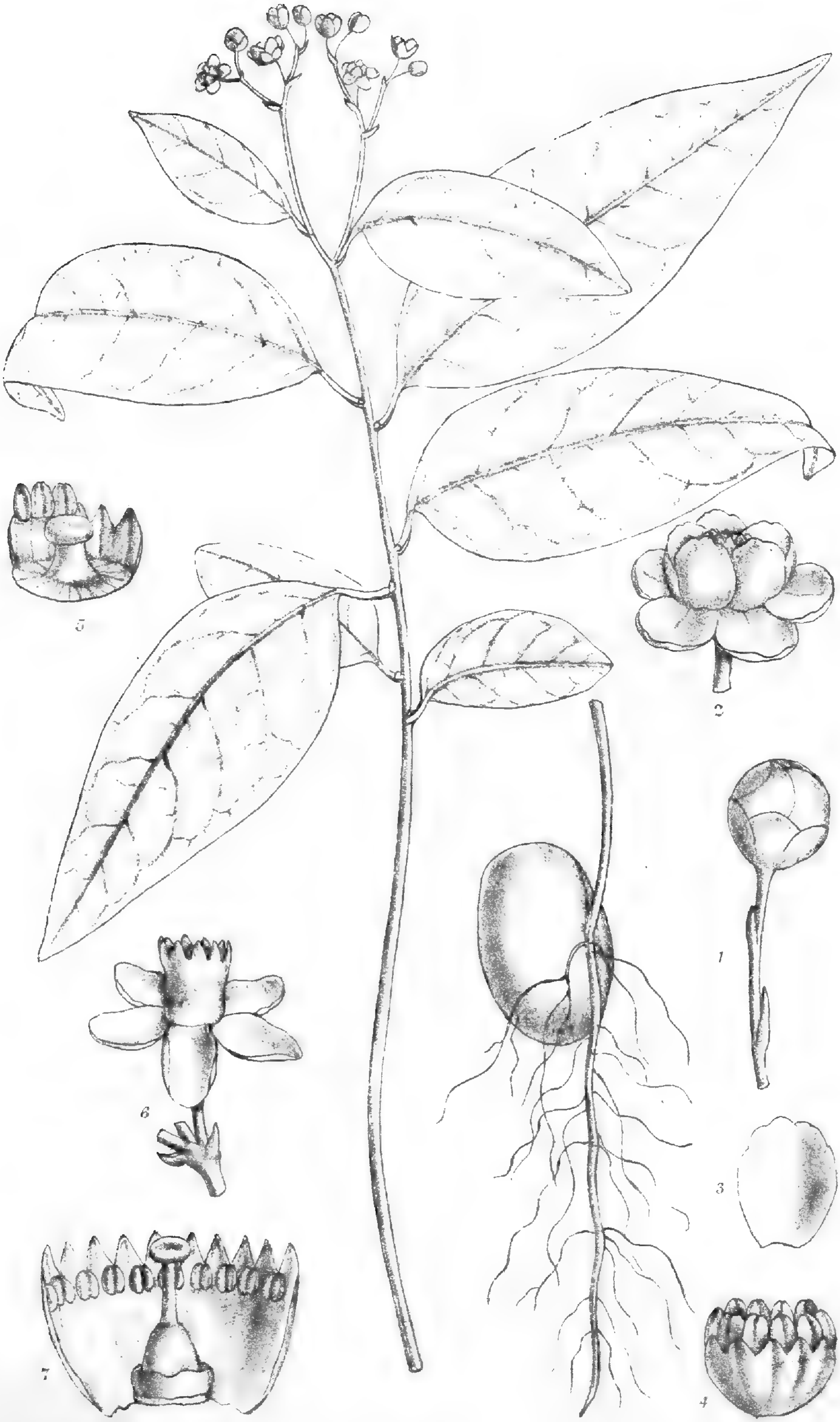
China : Lushan mountains, Kiukiang, Kiangsi, *Shearer*, 1875 ; *Maries*, 1877 ; Chienshih, Paokang, Hupeh, *A. Henry*, 5836, 5836 A, 5836 B, 1885–1889 ; Western Hupeh, 1049, *E. H. Wilson*, 1900 ; Chenkoutin, Eastern Szechuen, *R. P. Farges.*

The Chinese Tulip-tree has been gradually revealed to Western botanists. Shearer sent foliage ; then Messrs. J. Veitch & Sons presented Kew with a specimen bearing one flower, collected by Mr. Maries, who noted : 'I found it in flower at the south end of the mountains. I do not think it so good as the American. Green flowers, one at the end of each shoot. It is a fine spreading tree.'

It was only after the arrival of the very complete specimens collected by Dr. Henry and Mr. Wilson that we were in a position to decide on its status as a distinct species, and I communicated its differential characters to the 'Gardeners' Chronicle,' as cited above, at the same time announcing a fuller description in this place. Shortly afterwards Professor Sargent's figure and description reached Kew, but as our drawings were already made, and they in some particulars supplement his, they are now published.

The plate was prepared from Mr. Wilson's specimens, and it may be added that the foliage of *L. chinense* is as variable in form as that of *L. Tulipifera*. Dr. Henry's 5836 B consists of leaves from a young tree, the largest being a foot across.—W. Botting Hemsley.

Fig. 1, back view of an anther ; 2, front view of the same ; 3, a young fruit ; 4, a ripe fruit ; 5, a detached carpel ; 6, lower part of the same, from which the wall has been removed, showing the seeds. *Figs* 3 *and* 4 *natural size ; the rest more or less enlarged.*



M.S. del et lith

Plate 2786.

SWIETENIA MAHAGONI, *Jacq.*, var. PRÆCOCIFLORA, *Hemsl.*

(*Planta juvenilis florigera.*)

Meliaceæ. Tribe Swieteniæ.

S. Mahagoni, *Jacq. Enum. Syst. Pl. Carib.* p. 20 ; *Catesby, Nat. Hist. Carol.* vol. ii. p. et t. 81 ; Linn. Sp. Pl. ed. 2, p. 548 ; *Lam. Encycl.* vol. iii. p. 678 (Mahogoni) ; *C.DC. in DC. Monogr. Phaner.* vol. i. p. 723, t. 8, f. 11 (Mahogani).

Plantæ plures 6–10 poll. altæ, florigeræ in Horto Botanico Trinitensi educatæ in Herbario Kewensi conservatæ sunt. *Caulis* simplex, gracillimus. *Folia* alterna, graciliter petiolata, simplicia, tenuia, glabra, infima minora, elliptica, utrinque rotundata, cetera lanceolata, 2 3 poll. longa, basi rotundata, apice acuminata. *Flores* pauci in foliorum superiorum axillis solitarii vel 2–5 aggregati, graciliter pedicellati, 2 3 lin. diametro, pentameri, glabri. *Calycis lobi* orbiculares, interdum fere liberi, petala æquantes. *Petala* orbicularia, erecta. *Tubus staminens* campanulatus, 10-dentatus, petalis paulo brevior ; antheræ 10, breviter exsertæ, cassæ vel polline imperfecto. *Discus* nullus. *Ovarium* rudimentare, solidum, stylo brevissimo, stigmate amplo capitato.

The specimens illustrating this remarkable instance of precocious flowering were sent to Kew in 1896 by Mr. J. H. Hart, F.L.S., Superintendent of the Royal Botanic Gardens, Trinidad, with a clue to their identity ; otherwise we might, perhaps, have remained ignorant of the fact up to the present time. A complete investigation and comparison leaves no doubt that these specimens are really juvenile mahogany plants.

In reply to our questions Mr. Hart writes : 'The conditions under which they were raised were of the ordinary type ; the seed was sown in boxes rather thickly. It is probable that at some stage they suffered from want of water. I cannot remember exactly what became of the plants, but I distinctly remember their taking on normal growth.'

So far as I know, nobody has published any general account of the precocious flowering of plants and its causes. All field botanists are familiar with starved seedlings of *Aira præcox*, *Papaver Rhœas*, and numerous other plants flowering when less than an inch high ; but there are many instances of precocious flowering which are not so

easily explained, and the phenomenon is evidently due to a variety of causes and conditions. Since I first examined the case here illustrated I have found records of several similar occurrences, and my colleagues have called my attention to others. Of course I cannot enter into particulars here, but I hope to treat the subject more fully in another place at an early date.

A. P. de Candolle (*Physiologie Végétale*, vol. ii. p. 468) mentions the case of a seedling rose producing a flower-bud immediately following the development of the primordial leaves, and he adds: 'Et j'ai eu en fleur dans le jardin de Genève des pins des Canaries âgés de quatre ans, et hauts de trois pieds seulement, quoique cet arbre s'élève jusqu'à soixante pieds dans son sol natal.'

In the Kew Museum there is a drawing of a germinating coco-nut, representing three simple, bifid leaves and a small inflorescence growing out from the shell. At this stage the albumen would hardly be exhausted.

Several authors mention the common oak and *Ailantus glandulosa* as occasionally flowering in the seed-beds. Möbius (*Beiträge zur Lehre der Fortpflanzung der Gewächse*, p. 89) states that they die soon after the event, but this does not appear to be without exception. Sargent (*Silva*, vol. viii. t. 396) figures and describes a variety of *Quercus virginiana*, from one to two feet high, which is common in the Pine Barrens of the South-eastern States of North America. It spreads by underground stems and freely bears fruit, which is usually larger than that of large trees. Ordinary *Q. virginiana* commonly grows from thirty to forty feet high, and occasionally sixty to seventy, with a trunk six or seven feet in diameter. Professor Sargent does not state the age at which seedlings of this variety bear flowers and fruit.

Another remarkable instance of precocious flowering is described and illustrated by our friend Mr. Ed. André (*Revue Horticole*, 1894, p. 370). It is a variety of the common lilac, which throws up thick, fleshy suckers bearing flowers a few inches above the soil, often before the appearance of any leaves. The flowers are equal in colour, size, and fragrance to those produced at the ends of the branches of the normally developed shrub. It is not merely a casual occurrence; the phenomenon is a fixed peculiarity of the race or sport. I presume it can only be propagated vegetatively.

Sir Dietrich Brandis (*The Indian Forester*, vol. xxv. p. 22) figures a bamboo, *Dendrocalamus strictus*, flowering when only thirteen months old and less than a foot high.

The most recent contribution to the records of this kind is by Dr. J. C. Costerus (*Recueil des Travaux Botaniques Néerlandais*, vol. i. p. 128) entitled 'Pædogenesis?' and relates to the flowering of seedling plants, two or three inches high, of *Melia azyuta*.—W. Botting Hemsley.

Fig. 1, a flower-bud; 2, a young expanded flower; 3, a petal; 4, andrœcium; 5, part of andrœcium and the rudimentary gynæceum; 6, a flower from an adult specimen of *S. Mahagoni*; 7, andrœcium laid open, showing disk and gynæceum of the same. *All enlarged.*

M.S. del. et lith.

Plate 2787.

EUPTELEA DAVIDIANA, *Baill.*

Trochodendraceæ.

E. davidiana, *Baill. Adansonia,* vol. xi. (1875) p. 305.

Frutex patulus vel arbor parva, elegans, gracilis, interdum usque ad 20–40 pedalis, sæpius in silvis sub arboribus altioribus crescens, ut videtur dioica, undique glabra vel glabrescens, ramulis ultimis gracillimis, cortice brunneo-purpureo plus minusve lenticellato. *Gemmæ* perulatæ, nitidæ. *Folia* decidua, exstipulata, alterna, longe graciliterque petiolata, tenuia, cito glabrescentia, subtus sæpius pallida, ovata, interdum lanceolata vel fere orbicularia, maxima cum petiolo semipedalia sed in eodem ramo magnitudine variabilia (sæpe 1–5 poll.), sæpius longe acuteque acuminata, basi cuneata, margine irregulariter calloso-serrata, venis primariis lateralibus numerosis conspicuis in dentes excurrentibus. *Flores* foliis coætanei vel præcociores, breviter pedicellati, ad foliorum vel bractearum axillas pauci fasciculati vel solitarii. *Perianthium* nullum. *Flores masculi* sæpius quaterni, bracteas vel cataphylla paullo excedentes; pedicelli graciles, staminibus breviores. Staminum numerus variabilis —7–15 (10–20, fide H. Baillon) sæpius circiter 12; filamenta capillaria, 2–5 lin. longa, quam antheræ nunc breviora nunc longiora; antheræ lineares, biloculares, rimis longitudinalibus dehiscentes, demum tortiles, connectivo apice in mucronem ultra loculos producto. Pollen globosum, læve, 25–30 μ diametro. Carpella rudimentaria staminibus isomera vel pauciora, cassa vel ovula imperfecta includentia. *Flores feminei* infra juxtaque folia hornotina fasciculata (vere ad cataphyllorum delapsorum axillas solitarii) graciliter pedicellati, pedicellis 4–6 lin. longis. Staminodia nulla. Carpella circiter 6–12, subuniseriata, longe graciliterque stipitata, parte ovulifera obliqua, stigmate sessili, matura circiter semipollicaria, dolabriformia, apice ala tenui subreniformi ventre ala angusta curvata ornata, 1–3-sperma. *Semina* ab angulo interiori pendula, ovoidea, albuminosa, testa nitida. Embryo minutus, hilo proximus.—*E. pleiosperma*, Solereder in Ber. Deutsch. Bot. Gesellsch. vol. xvii. (1899), p. 399, vix Hook. f. et Thoms. in Journ. Linn. Soc. vol. vii. p. 240, t. 2. *E. Franchetii*, Van Tiegh. in Morot, Journ. de Bot. vol. xiv. (1900), p. 272. *E. Delavayi* Van Tiegh. loc. cit. p. 273. Non *Eucommia ulmoides*, Oliv., vide Hook. Ic. Pl. t. 2361, et Harms in Engler & Prantl Natürl. Pflanzenf., Nachträge zum ii.–iv. p. 159.

China: Szechuen: Moupin, *A. David*; Chengkou, *Farges*, 1120; chiefly near Tachienlu, *A. E. Pratt*; Mount Omei at 2,500 ft., *E. Faber*, 129; South Wushan, *A. Henry*, 7232, 7337; Yunnan, *Delavay*, 7349; forests north of Mengtze, at 7,000 ft., *A. Henry*, 10746. Hupeh: Hsingshan and Fang, *A. Henry*, 6455, 6918; W. Hupeh, *E. H. Wilson*, 1048.

I have described this species of *Euptelea*, as I understand it, in con-

siderable detail, because Professor Van Tieghem and Dr. H. Solereder have come to quite different conclusions, working partly with the same material. As may be gathered from the numerous collections cited above, Kew now possesses a very copious set of specimens, every one of which I have examined. The result is the combination of all the Chinese specimens under *E. davidiana*, from which *E. polyandra*, Sieb. & Zucc., the original species, a native of Japan, is easily distinguished by its unequally toothed leaves and uniovulate carpels. *E. pleiosperma*, Hook. f. & Thoms., a native of Mishmi, North-east of Assam, is certainly very near the Chinese *E. davidiana*, Baill., but I think it undesirable to follow Dr. Solereder in combining them. The imperfect Indian specimens are apparently those of a more robust species, having unequally toothed leaves and differently shaped carpels.

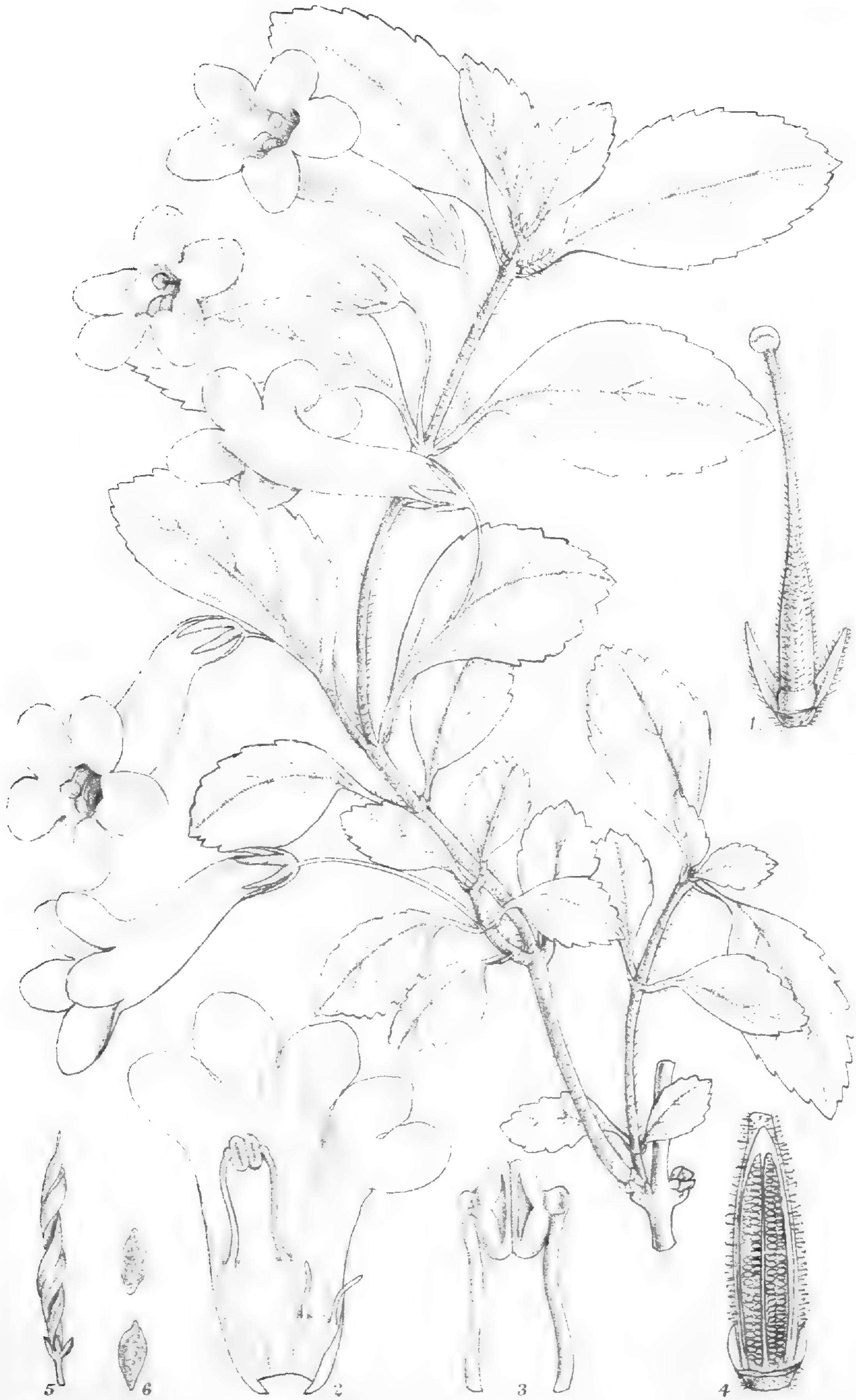
Professor Van Tieghem's species are mainly founded on the relative lengths of filament and anther and the number of ovules in each carpel. With the permission of Professor Ed. Bureau and through the kind offices of Mr. J. Poisson, I have been able to examine the actual types of *E. Francheti* and *E. Delavayi*, Van Tiegh., in the Paris Herbarium. Moreover, Kew possesses specimens of Henry's No. 7337 and Pratt's No. 77, cited by Van Tieghem as belonging respectively to the species named. Briefly stated, the anthers of *E. Francheti* are sometimes even shorter than the filaments, and the carpels are often biovulate and the mature ones dispermous. My observations on these and other points have been verified for me by Miss M. Smith and Dr. O. Stapf. I also find that the filaments of some of the stamens in Delavay's No. 3749 are as long as the anthers, and I believe that their relative lengths are to some extent due to age. In all the numerous specimens examined the number of ovules or seeds, as the case might be, was variable ; in some usually one or two, in others usually two or three.

The accompanying plate was wholly prepared from Wilson's specimens, numbered 1048, and many more drawings were made than are here published. Miss Smith opened one ovary in which she found only one ovule ; all the others contained either two or three ovules. I have not found a single instance of a solitary ovule, but Dr. Stapf, who examined several ovaries while I was writing the foregoing, found, in seven examined, one uniovulate, four biovulate, and two triovulate. Most of the ripe carpels in Wilson's specimens are three-seeded.

I may add that the leaves present no essential differences, and both Dr. Henry and Mr. Wilson, who are familiar with *Euptelea* in a living state, came independently to the conclusion that all our Chinese specimens belong to one species.—W. Botting Hemsley.

Fig. A, a branch bearing male flowers, mostly in clusters of four ; B, a branch bearing female flowers and young leaves ; C, a branch bearing ripe fruit and fully developed leaves. *All natural size.*

Fig. 1, a bract from a male inflorescence ; 2, a male flower ; 3, a stamen ; 4, cross section of a dehisced empty anther ; 5, a rudimentary carpel from a male flower ; 6, a female flower ; 7, section of a young, uniovulate carpel ; 8, section of a young, triovulate carpel, one ovule in process of abortion ; 9, a ripe carpel ; 10, a section of a ripe, one-seeded carpel ; 11, a section of a ripe, two-seeded carpel ; 12, a seed ; 13, a section of the same, showing the embryo embedded in the albumen ; embryo. *All enlarged.*



M.S.del et lith

Plate 2788.

RHABDOTHAMNOPSIS SINENSIS, *Hemsl.*

Gesneraceæ. Tribe Cyrtandreæ.

Rhabdothamnopsis sinensis, *Hemsl. in Journ. Linn. Soc., Bot.*, vol. xxxv. p. 517 (*species unica*).

Fruticulus debilis, a basi ramosus, ut videtur procumbens, *Loniceræ* speciebus nonnullis simillimus. *Caules* ramique graciles, vetustorum cortice ferrugineo desquamato, ramulis ultimis puberulis. *Folia* opposita, quam internodia sæpius longiora, breviter petiolata, membranacea, circumscriptione variabilia sed sæpius ovato-lanceolata vel obovato-lanceolata, interdum fere orbicularia, ½–2 poll. longa, sæpius circiter sesquipollicaria, basi semper plus minusve cuneata, apice acuta, obtusa vel rotundata, præter partem tertiam inferiorem crenulato-serrata, simul in margine ciliolata, utrinque primum parce puberula, deinde glabrescentia. *Flores* circiter 1¼ poll. longi, axillares, solitarii, graciliter pedicellati; pedicelli quam folia nunc longiores nunc breviores, ebracteolati. *Calycis* pubescentis segmenta 5, æqualia, lineari-lanceolata, circiter 3 lin. longa, acutissima. *Corolla* 1¼–1½ poll. longa, puberula, intus glabra, tubuloso-campanulata; tubus leviter curvatus, prope basin circiter 2 lin. diametro, sursum sensim dilatatus, 4–5 lin. diametro, longitudinaliter striatus; limbus oblique bilabiatus, lobis rotundatis, iis labii inferioris longioribus. *Stamina* 2, antica, tubo inclusa; filamenta infra medium tubo affixa, dilatata, apice incrassata; antheræ cohærentes, dense barbatæ. *Discus* leviter oblique cupularis. *Ovarium* elongatum, stylusque pubescens, distincte biloculare, ovulis numerosissimis; stylus filiformis, vix exsertus, stigmate distincte bilamellato. *Capsula* pubescens, immatura cum stylo persistente sesquipollicaris, matura absque stylo circiter pollicaris, valvis tortis. *Semina* numerosissima, oblonga vel ovoidea, ⅐–⅕ lin. longa, utrinque apiculata, foveolato-reticulata.

China: Tachienlu, Szechuen, *Pratt*, 147; Yunanfu, Yunnan, *Ducloux*, 120.

Western China is exceedingly rich in Cyrtandreæ, many of them very beautiful. The genus *Rhabdothamnopsis* was founded on the present plant, which in general appearance strongly resembles *Rhabdothamnus Solandri*, also a monotype and the only representative of the Cyrtandreæ in New Zealand. Structurally it is near *Bæa* and *Streptocarpus*.—W. Botting Hemsley.

Fig. 1, part of calyx, disk, and pistil; 2, corolla laid open, showing the stamens and staminodes; 3, the stamens; 4, longitudinal section of ovary; 5, dehiscing capsule; 6, seeds. *All except 5 enlarged.*

M.S. del et lith

Plate 2789.

GRISOLLEA THOMASSETII, *Hemsl.*

Olacaceæ. Tribe Icacineæ.

G. Thomassetii, *Hemsl.* (*sp. nov.*); a *G. myrianthea*, Baill., specie sola adhuc cognita, foliis majoribus sæpius oblongis venis primariis lateralibus paucioribus, inflorescentia mascula multo minore recedit.

Arbor 30-pedalis, dioica, ut videtur sempervirens, ramis floriferis crassiusculis foliisque glabris. *Folia* alterna, exstipulata, petiolata, coriacea, oblonga vel interdum subovata, 3–6 poll. longa, sed sæpius 4–5 poll. longa, apice obtusa vel rotundata, integra. *Flores masculi* 5–7-meri sed sæpius 5-meri, minuti, in cymas parvas axillares puberulas dispositi, sessiles, bracteis minutis; calyx cupularis, sæpius 5-dentatus, dentibus valvatis obtusis ciliolatis; petala minuta, squamiformia, calycis dentibus isomera et iis alterna; stamina sæpius 5, calycis dentibus opposita iis triplo longiora, filamentis crassis carnosis, antheris extrorsis birimosis; pistillodium minutum, globosum. *Flores feminei* in cymas parvas subterminales puberulas dispositi, calyce petalisque marium; staminodia nulla; ovarium puberulum, oblique cylindricum, circiter 3 lin. longum, apice glabrum, carnosum, papilloso-verrucosum, stylo brevi coronatum, 1-loculare; placenta ab loculi apice pendula, biovulata. *Fructus* drupaceus, anguste compresso-ovoideus, 1–1¼ poll. longus, 1-spermus, mesocarpio carnoso, endocarpio tenui fibroso-lignoso. *Semen* unicum perfectum pendulum, loculo conformum; testa tenuis; albumen copiosum. *Embryo* minutus, hilo proximus; radicula crassa, conica, quam cotyledones rectæ triplo longior.

Seychelles: not uncommon in the forest on the Cascade Estate, Mahé, *H. P. Thomasset*, 31 and 54.

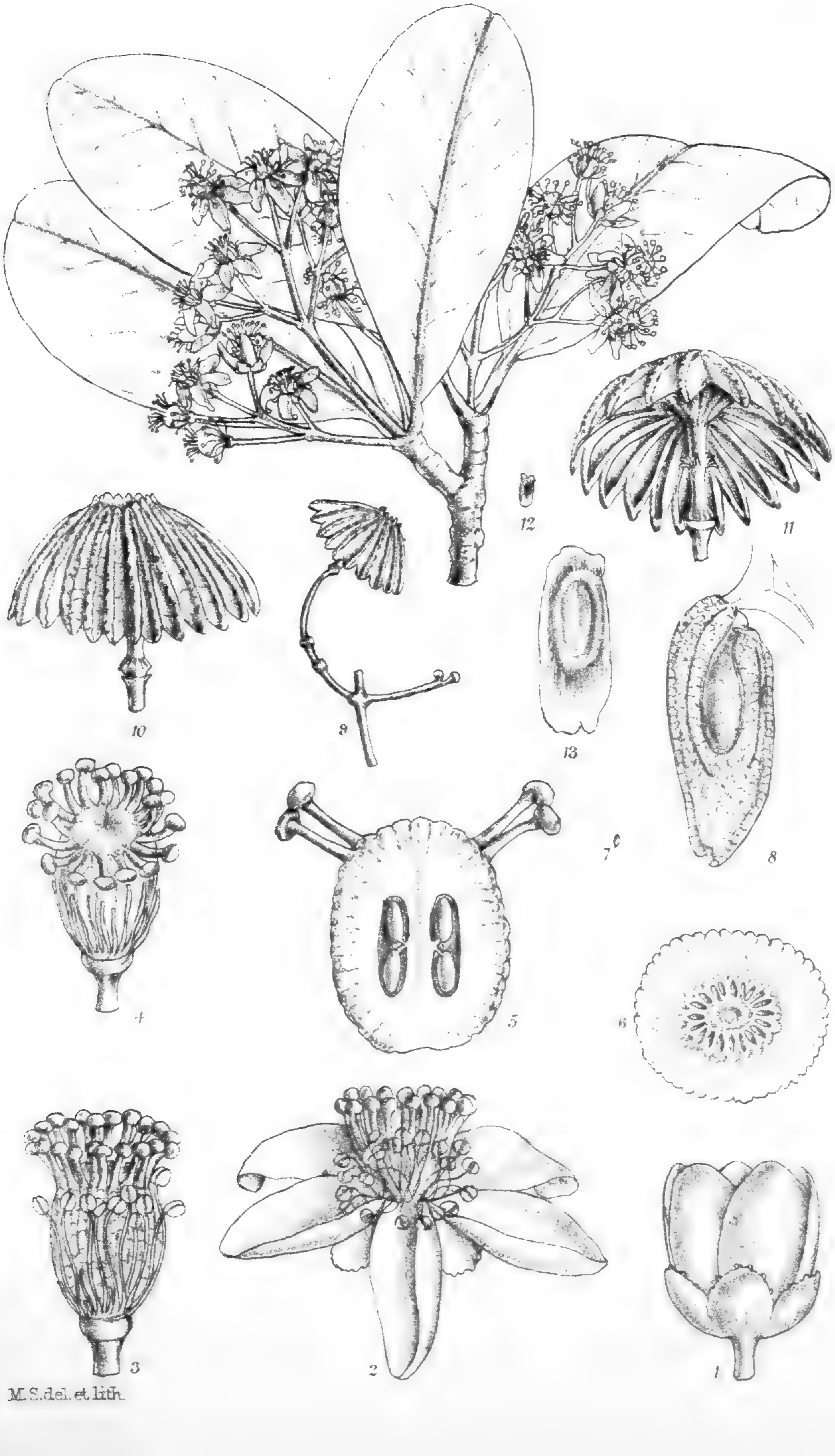
The late Dr. Baillon founded this genus (*Adansonia*, vol. iv. pp. 211–219, tt. 3 & 4) on specimens collected by Boivin in the islands of Mayotta and Nossibé, west of Madagascar. Mr. Thomasset, who is to be congratulated on the number of novelties he has discovered in the virgin vegetation of his estate, first sent male flowers only, and we were unable to say to what order they might belong. Baillon (*Histoire des Plantes*, vol. v. p. 336) describes the Madagascar species as 'arbor adspectu Artocarpearum nonnullarum,' and that was our first impres-

sion of the Seychelles species. However, Mr. Thomasset soon supplied complete specimens, which led to the identification of the genus. We are also indebted to him for the figure of the ripe fruit.

Baillon describes the normal male flowers as apetalous, and he also found rudimentary stamens in the female flowers.—W. Botting Hemsley.

Fig. A, a branch bearing male flowers; B, a branch bearing female flowers. *Natural size.*

Fig. 1, a male flower; 2, the same seen from above; 3, front and back views of a stamen; 4, cross section of a young anther; 5, a female flower; 6, longitudinal section of the same, showing the ovules attached to a pendulous placenta; 7, a ripe fruit; 8, the same from which the epicarp has been removed; 9, the same; 10, section of seed, showing embryo; 11, embryo. *All except* 7, 8, *and* 10 *enlarged.*



M.S. del. et lith.

Plate 2790.

MEDUSAGYNE OPPOSITIFOLIA, *J. G. Baker.*

Ternstrœmiaceæ.

M. oppositifolia, *Baker, Fl. Maurit. & Seych.* p. 16; *Oliver, Ic. Pl. ante*, t. 1252 (*species unica*).

Frutex ramosus, paucipedalis, undique glaber, ramis crassiusculis, internodiis sæpius brevissimis. *Folia* ad ramorum apices conferta, opposita, exstipulata, brevissime petiolata, coriacea, rigida, obovata, oblanceolata, interdum ovata vel oblonga, 1–2½ poll. longa, apice rotundata simul emarginata, basi cuneata vel plus minusve rotundata, sæpius obscure remoteque calloso-denticulata, venis ultimis utrinque eximie minuteque reticulatis. *Paniculæ* terminales, trichotomæ, foliis breviores vel interdum paullo longiores; pedicelli graciles, rigidiusculi, 3-6 lin. longi, basi nodosi, articulati, sursum leviter incrassati; bracteæ bracteolæque nullæ. *Flores* rubri, glabri, 4–5 lin. diametro. *Sepala* 5, imbricata, orbicularia, circiter 1 lin. diametro, obscure denticulata, subcarnosa, colorata, decidua. *Petala* 5, imbricata, uno omnino exteriore uno interiore, medio crassiuscula, margine tenuia, obovata circiter 2½ lin. longa, concava. *Stamina* numerosissima, hypogyna, gynæceo breviora, filamentis capillaribus; antheræ basifixæ, biloculares, inappendiculatæ, rimis 2 longitudinalibus dehiscentes. *Pollen* globoso-trigonum, triporosum, circiter 20 μ diametro. *Ovarium* multiloculare (sæpius 20–25 loculare) loculis angustis, ellipsoideum, glabrum, longitudinaliter costatum, verruculosum; carpella complicata, fere ad axin centralem jam per anthesin libera; styli validi, infra carpellorum apices subuniseriati, tarde decidui, stigmatibus capitatis. *Ovula* in quoque loculo 2, axis medio affixa, superposita, alterum pendulum, alterum adscendens. *Fructus* capsularis, crustaceus, verrucosus, oblongus, circiter 4 lin. longus, stylorum basibus coronatus, apertus pileatus vel umbraculiformis, 6–7 lin. diametro; carpella a basi septicide dehiscentia, sursum divergentia, apice persistentia. *Semina* (unicum tantum visum) oblonga, circiter 1½ lin. longa et ½ lin. lata, reticulata, circumalata, ala præcipue supra nucleum producta; nucleus circiter ¾ lin. longus et ¼ lin. latus; funiculi columnæ centrali persistentes. *Embryo* ignotus.

Seychelles: in exposed places at 1,800 ft., Mahé, *J. Horn*, 1874; summit of Mount Sebert, Mahé, at 1,700 ft., *H. P. Thomasset*, 1903.

Mr. Baker described this singular plant from flowering specimens,

and referred it without doubt to the Ternstrœmiaceæ, and Prof. D. Oliver followed him in placing it in this order. Now, with the fruit before me, I cannot suggest any alternative, but it is not closely allied to any genus of Ternstrœmiaceæ. Indeed, the position of the leaves and the structure of the flower and fruit present a combination of characters more or less exceptional in this natural order. For example, opposite leaves are exceptional in the genera *Marila* and *Haplocla-thrum* ; very numerous cells in the ovary and solitary ovules, exceptional in *Anthodiscus*, and a fruit with septicidal dehiscence from the base, exceptional in *Archytæa*. In each case the other characters are very different from those of *Medusagyne*. It has also been suggested that this genus might belong to the *Guttiferæ*, but the anatomical characters, the seed, and the fruit are not those of that order.

Mr. L. A. Boodle, Assistant in the Jodrell Laboratory, Kew, who has partially studied the anatomy of *Medusagyne*, finds that it differs from the *Guttiferæ* in possessing no secretory cavities, and in the type of the stomata ; the latter being usually surrounded by four to six epidermal cells. This type of stomata does not materially differ from that of certain Ternstrœmiaceæ ; but the isolated sclerenchymatous elements so characteristic in the mesophyll of that order are not present. The presence of cortical bundles in the stem of *Medusagyne* is an important deviation from the anatomical characters of both *Guttiferæ* and *Ternstrœmiaceæ*, but in this point it agrees with the neighbouring *Dipterocarpaceæ*. From the last-named order *Medusagyne* differs in having no resin canals, and in the structure of the petiole.

We are indebted to Mr. Thomasset for flowering specimens and two old seed-vessels, in one of which was a solitary, apparently not quite perfect seed ; but there being only one, it has been preserved intact. Consequently the embryo remains unknown ; but the probabilities are that the seed is exalbuminous. —W. Botting Hemsley.

Fig. 1, a partially expanded flower ; 2, a fully expanded flower ; 3, the same, from which the sepals and petals have been removed ; 4, a different view of the same ; 5, longitudinal section of a gynæceum, showing the attachment of the ovules ; 6, cross section of the same, showing the thick central axis and the numerous carpels, which are almost free from each other, at this stage, up to the cell-cavities ; 7, an ovule ; 8, an ovule attached ; 9, dehisced fruit ; 10 and 11, different views of the same ; 12, a seed ; 13, the same. *All except* 7, 9, *and* 12 *enlarged* ; *the exceptions natural size.*

M.S. del. et lith

Plate 2791.

ALNIPHYLLUM PTEROSPERMUM, *Mats.*

Styraceæ.

A. pterospermum, *Mats. Bot. Mag. Tokyo Bot. Soc.* vol. xv. (1901), p. 67 (*species unica*).

Frutex vel arbor usque ad 50-pedalis, ramis floriferis crassiusculis rigidis foliisque pilis stellatis ferrugineo-pubescentibus, annotinis glabrescentibus. *Folia*, ut videtur, decidua, alterna, petiolata, crassiuscula, oblongo-lanceolata, ovata vel obovata, maxima 8 poll. longa, sed sæpius multo minora, obscure glanduloso-denticulata, subacuta, subtus pallida, venis primariis lateralibus numerosis conspicuis. *Flores* albi, cymoso-racemosi, circiter 1 poll. diametro, stellato-pubescentes. *Calyx* persistens, 5-dentatus, dentibus brevibus acutis. *Petala* lanceolato-oblonga, obtusa, basi connata. *Stamina* 10, glabra, fere ad medium in tubum connata, alterna filamentis brevioribus; antheræ dorso affixæ, biloculares, rimis longitudinalibus dehiscentes. *Ovarium* liberum, basi constrictum, styloque puberulum, 5-loculare, loculis pluriovulatis. *Fructus* oblongus, acutus, circiter semipollicaris (epicarpio subcarnoso deinde deciduo ex Matsumura), endocarpio tenui lignoso in valvis 5 loculicide dehiscente, valvis rectis. *Semina* numerosa, 3–4 lin. longa, utrinque irregulariter alata, alis valide venoso-reticulatis; albumen tenue; embryo $\frac{1}{2}$–$\frac{3}{4}$ lin. longus, rectus, teres, cotyledonibus brevissimis.—*A. macranthum*, Perk. in Engler. Jahrb. vol. xxxi. (1902), p. 488. *Halesia? Fortunei*, Hemsl. in Journ. Linn. Soc. vol. xxvi. (1889), p. 75.

Formosa: mountains of Bankinsing, *A. Henry*, 430; Central District, *C. Owatari*, ex Matsumura. China: Amoy, Fokien, *R. Fortune*, 27; Hainan, *B. C. Henry*; in forests at 4,500 to 5,000 ft., Szemao, Yunnan, *A. Henry*, 10593, 11608, 11957, 11957 A.

When I described this as a doubtful species of *Halesia*, the fruit and seeds were unknown. Dr. J. Matsumura subsequently obtained complete specimens from Formosa and established the genus *Alniphyllum*, which is a very distinct one. Dr. Henry also collected it in Formosa, where, as well as in Hainan, it attains a height of fifty feet. Henry's numerous Yunnan specimens are labelled: 10, 15, 30, and 40 ft. high; but there is no doubt that all the specimens belong to one species.—W. Botting Hemsley.

Fig. 1, portion of calyx and pistil; 2, a stellate hair from the calyx; 3, portion of corolla and stamens attached; 4, a cross section of an ovary; 5, longitudinal section of the same; 6, fruit entire and dehiscing; 7, a seed; 8, an embryo. *All except* 6 *enlarged; the exception natural size.*

M.S. del. et lith

Plate 2792.

JUSTICIA PATENTIFLORA, *Hemsl.*

Acanthaceæ. Tribe Justicieæ.

Justicia patentiflora, *Hemsl.* (*sp. nov.*); ex affinitate *J. vasculosæ*, Wall., et illi simillima, differt imprimis floribus patentibus corollæ labio superiore breviore rotundato.

Herba perennis, erecta, præter flores glabra. *Caules* subsimplices, teretes, usque ad 6 ped. alti. *Folia* petiolata, tenuia, fere membranacea, lanceolata, usque ad 9 poll. longa, acuminata, vix acuta, deorsum longe attenuata. *Flores* rubri, spicati, spicis axillaribus terminalibusque simplicibus vel interdum pauciramosis. *Bracteæ* bracteolæque squamiformes, puberulæ, quam calyx breviores. *Calyx* circiter 1 lin. longus, puberulus, æqualiter 5-dentatus, dentibus acutis. *Corolla* circiter semipollicaris, extus puberula; tubus paullo supra basin subito recurvus; labium superius fere orbiculare, quam inferius fere dimidio brevius, margine recurvum; labium inferius intus biplicatum, æqualiter trilobatum, lobis rotundatis patentibus. *Stamina* 2, inclusa vel brevissime exserta, supra medium tubi affixa; filamenta filiformia, glabra; antheræ oblique biloculares, approximatæ. *Ovarium* glabrum, stylo parcissime puberulo. *Capsula* ignota.

China: forests south-east of Szemao, Yunnan, at 5,000 ft., *A. Henry*, 12773.

In general appearance the plant figured so strongly resembles the species with which it is compared that it was at first named *J. vasculosa*, Wall.—W. Botting Hemsley.

Fig. 1, a pair of flowers, the corolla removed from one of them; 2, part of calyx, disk, and pistil; 3, a corolla laid open, showing the attachment of the stamens; 4, back and front views of an anther; 5, longitudinal section of ovary and disk. *All enlarged.*

12

13

11

14

10

M.S. del. et lith.

Plate 2793.

UTRICULARIA ECKLONII, *Spreng.*

Lentibulariaceæ.

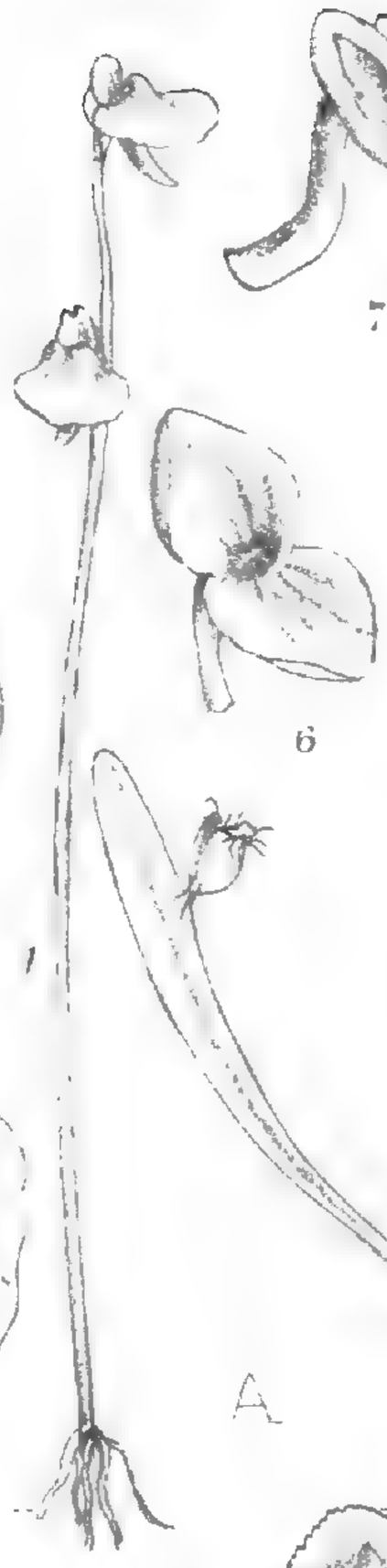
U. Ecklonii, *Spreng. Syst.* iv. ii. p. 336 ; *Stapf in Thiselton-Dyer, Flora Capensis*, iv. p. 430 ; *U. capensi* affinis, sed corolla multo minore labio infero breviter 3-lobo diversa.

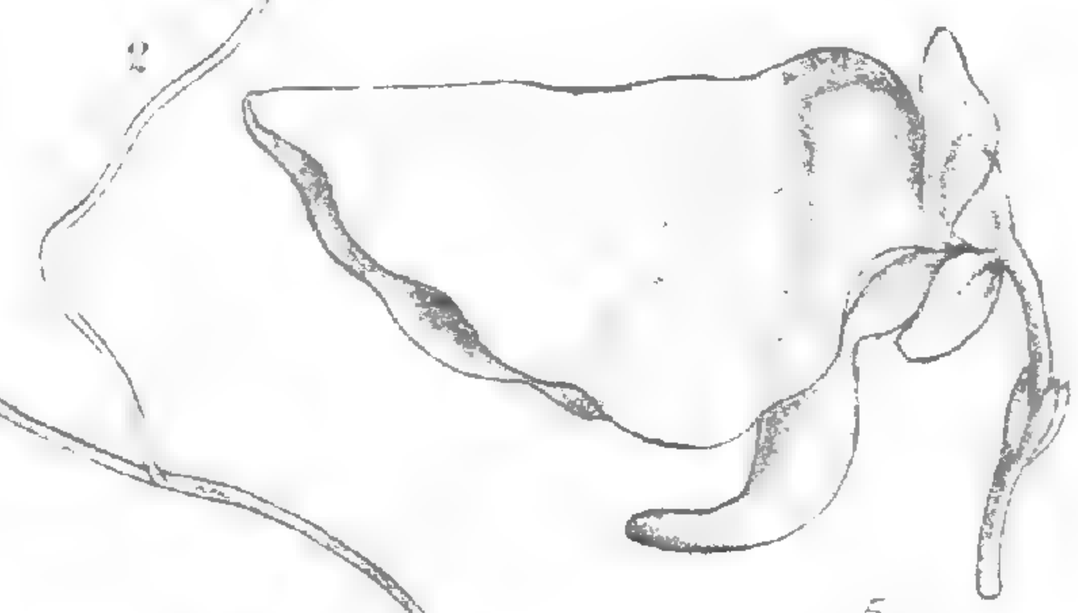
Herba terrestris, perpusilla, inter muscos herbasque nanas vel in solo humido reptans, interdum cæspitosa ; stolones tenuiter filiformes vel capillares ; rhizoidea e pedunculi basi vel e stolonibus vel e foliis orta. *Folia* secundum stolones sparsa vel pauca ad pedunculorum bases subrosulata ; laminæ anguste spathulato-lineares, obtusæ, longe in petiolum attenuatæ eo incluso ad 5 lin. longæ, $\frac{1}{3}$ lin. latæ. *Utriculi* e stolonibus foliisque orti, ovoideo-globosi, $\frac{1}{4}$–$\frac{1}{3}$ lin. longi, bilabiati, labiis fimbriatis. *Pedunculus* filiformis, rectus, simplex, 1–3 poll. altus, 1–6-florus, floribus distantibus ; bracteæ bracteolæque ovato-lanceolatæ vel lanceolatæ $\frac{1}{4}$–$\frac{1}{3}$ lin. longæ, bracteæ 1–2 infimæ plerumque steriles ; pedicelli brevissimi, tandem fere 1 lin. longi. *Sepala* orbicularia vel ovato-orbicularia, ad $\frac{3}{4}$ lin. longa. *Corolla* pallide purpurea vel alba et purpureo-venosa, palato luteo vel tota lutea, 2–$2\frac{1}{5}$ lin. longa ; labium superum ovatum, emarginatum vel integrum, $\frac{3}{4}$ lin. longum, inferum rotundatum, leviter 3-lobum, 1–$1\frac{1}{2}$ lin. longum ; palatum læve, subbigibbosum ; calcar labium inferum æquans vel sæpius superans, leviter curvatum vel rectum. *Antheræ* $\frac{1}{5}$–$\frac{1}{4}$ lin. longæ ; filamenta $\frac{1}{3}$ lin. longa ; pollinis grana globosa, 30 μ dimetientia, vittis meridianis tenuibus circiter 6. *Stigma* sessile ; labium superum lineare, quam inferum late orbiculare brevius. *Capsula* globosa, 1 lin. vel ultra dimetiens. *Semina* magis minusve globosa, lævia, $\frac{1}{7}$ lin longa.—*U. capensis*, Spreng. Syst. v. p. 723, et aliorum (in parte ; non Spreng. Syst. i. p. 50) ; *U. Lehmannii*, Benj. in Bot. Zeit. 1845, p. 213 (e descriptione) ; *U. exilis*, Kam. in Engl. Bot. Jahrb. xxxiii. p. 97 (in parte, non Oliv.) ; *U. delicata*, Kam. l c. ; *U. brachyceras*, Schlecht. in Engl. Jahrb. xxvii. p. 191 ; *Antirrhinum aphyllum*, Linn. f. Suppl. p. 280 ; *Linaria aphylla*, Spreng. Syst. ii. p. 797.

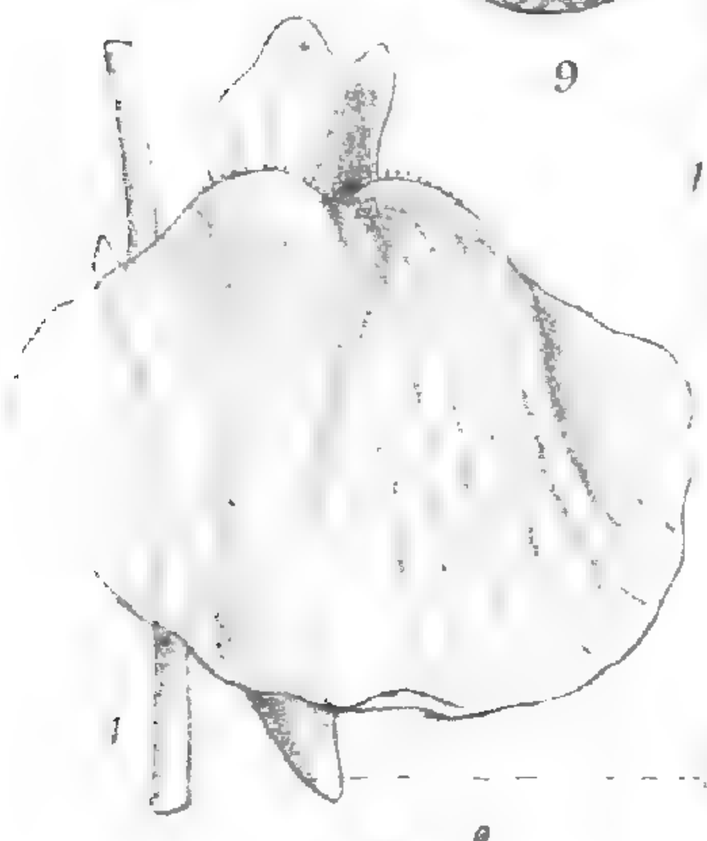
South Africa : In boggy places or in wet sand, from German South-west Africa to the Cape, eastward as far as Northern Transvaal in the north and Graaff Reinet and Uitenhage Divisions in the south.

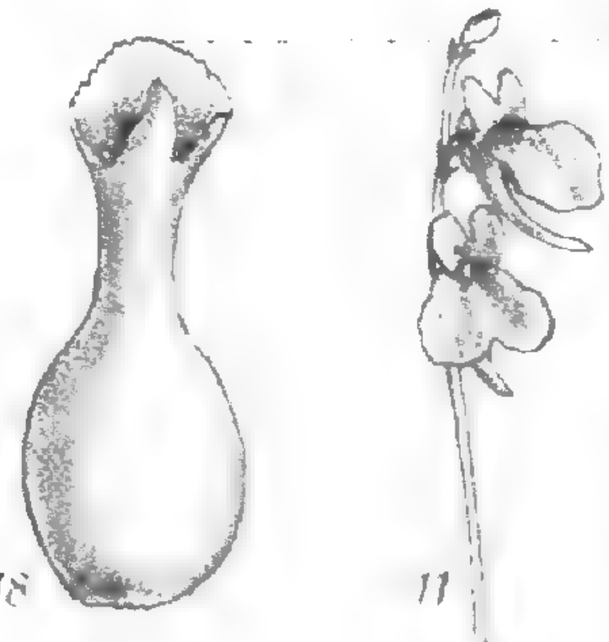
Sprengel credited his *U. Ecklonii* with 'foliis linearibus acutis strictis persistentibus;' but from a specimen in Sonder's herbarium, named *U. Ecklonii* by Sprengel himself, it appears that the leaves described in this way were the leaves of a dwarf or seedling *Cyperacea*, with which the *Utricularia* had been growing. *U. delicata*, Kam., seems to be merely a particularly dwarf state of *U. Ecklonii*, while Schlechter's *U. brachyceras* is, in my opinion, a short-spurred state of the same species, analogous to the variety *brevicalcarata* Oliv. of *U. capensis*. Schlechter's specimens of *U. brachyceras* (see fig. 14) were collected on Packhuis Mountain, Clanwilliam Division. Drège found the same form, together with the normal one, near Ellebogensfonteinsberg, Little Namaqualand.—Otto Stapf.

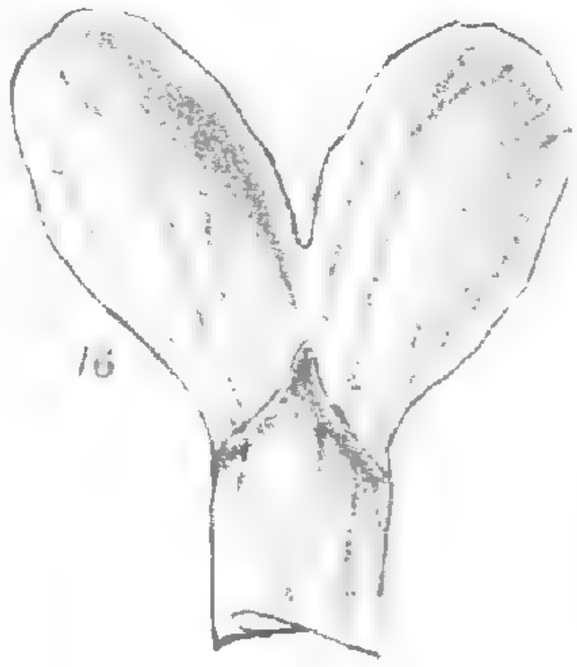
Fig. 1, flowering specimen; 2, specimen with the scape undeveloped; 3, bladder; 4, flower, typical form; 5, calyx; 6, upper lip of corolla; 7, lower lip of corolla; 8, pistil and stamens, side view; 9, pollen; 10, seed; 11, flower, very small state (*U. delicatula*, Kam.); 12 and 13, upper and lower lips of the same; 14, flower with short-spurred corolla (*U. brachyceras*, Schlecht.). *All enlarged except* 1.











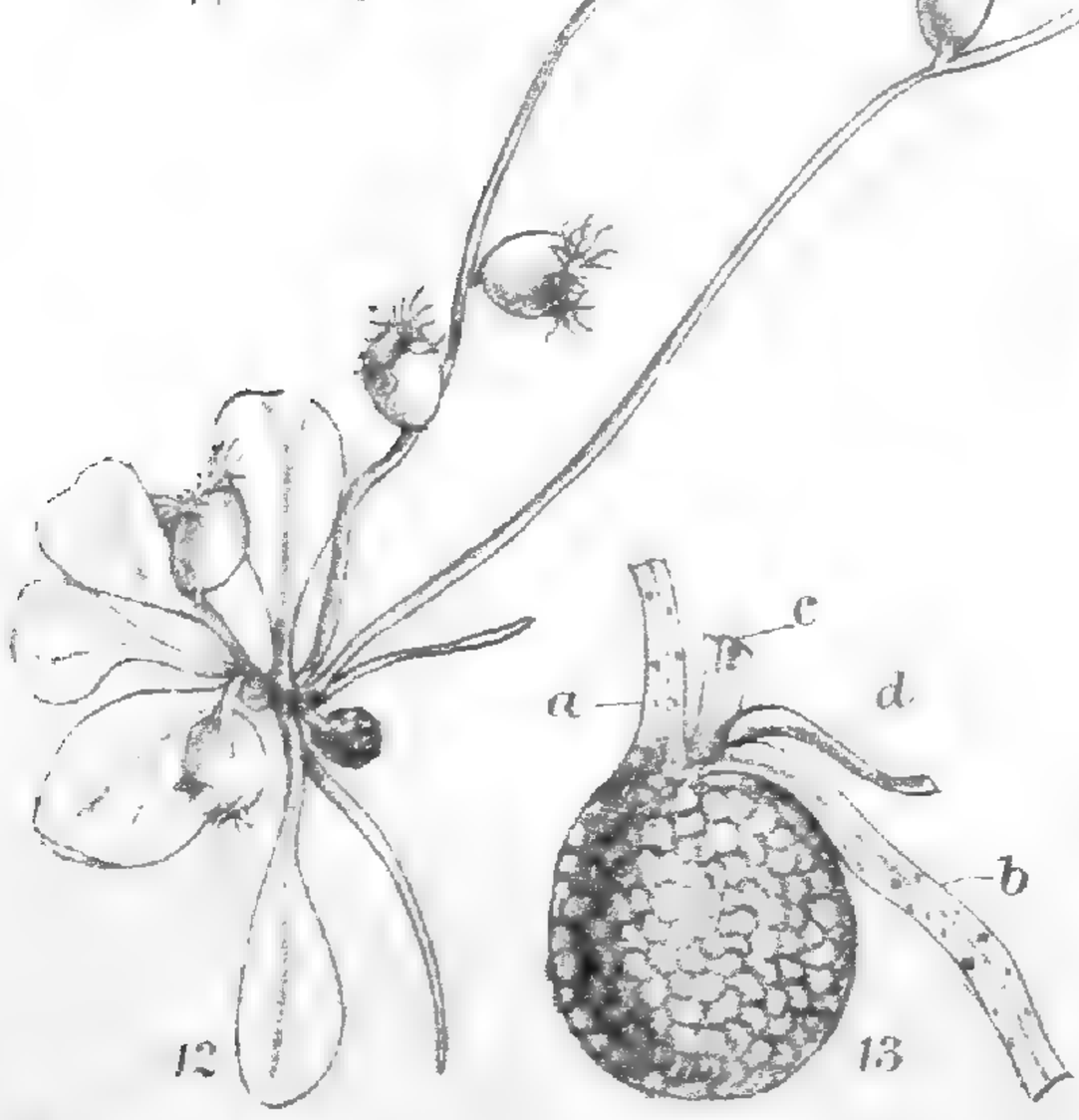


Plate 2794.

A. UTRICULARIA CAPENSIS, *Spreng.*

Lentibulariaceæ.

U. capensis, *Spreng. Syst.* i. p. 50 ; *Stapf in Thiselton-Dyer, Flora Capensis,* iv. p. 429 ; *U. Ecklonii* affinis, sed corolla multo majore labio infero semi-orbiculari undulato vel vix lobato diversa.

Herba terrestris, pusilla ; stolones et rhizoidea ut in *U. Ecklonii*. *Folia* et utriculi ut in *U. Ecklonii* (vide tab. 2793). *Pedunculus* filiformis vel subcapillaris, 2–8 poll. longus, rectus vel subflexuosus, simplex, rarius prope basin ramulo 1–2 additis, 1–6-florus, floribus distantibus ; bracteæ ovato-lanceolatæ vel lanceolatæ, infimæ 1–2 plerumque steriles, bracteolæ lanceolatæ, $\frac{1}{2}$ lin. longæ ; pedicelli breves vel tandem ad vel ultra 1 lin. longi. *Sepala* orbicularia vel ovato-orbicularia, $\frac{3}{4}$–$\frac{4}{5}$ lin. longa. *Corolla* palato amplo flavo excepto pallide purpurea, 3–5 lin. longa ; labium superum ovatum vel ovato-orbiculare, minute 2-lobum vel emarginatum, 1 lin. longum, labium inferum semi-orbiculare, $2\frac{1}{2}$–4 lin. longum, latissimum, obsolete lobatum vel undulatum ; palatum læve, leviter bigibbosum ; calcar tenue, sæpius acutum, rectum vel subcurvatum, subhorizontale vel deflexum, labium superum magis minusve æquans. *Antheræ* circiter $\frac{1}{3}$ lin. longæ ; filamenta filiformia $\frac{1}{2}$ lin. longa ; stigma sessile ; labium superum subulato-lineare vel filiforme, quam labium inferum late orbiculare brevius. *Capsula* globosa, ad $1\frac{1}{2}$ lin. dimetiens. *Semina* subglobosa vel irregulariter obovoidea, $\frac{1}{8}$–$\frac{1}{6}$ lin. longa, tenuiter reticulata.—*U. Rehmannii,* Kam. in Engl. Jahrb. xxxiii. p. 99 ; *U. Sprengelii,* Kam. l. c. p. 100 ; *U. Schinzii,* Kam. l. c. p. 101.

South Africa : Western and South-western Divisions of Cape Colony, from Little Namaqualand to Uniondale Division.

Certain flowers from Giftberg and Modderfonteinberg have much reduced spurs (see fig. 10) ; they represent Oliver's var. *brevicalcarata* of *U. capensis* (Journ. Linn. Soc. ix. p. 154). There are, however, also perfectly normal specimens and intermediate states among the Giftberg collection.—Otto Stapf.

Fig. 1, flowering specimen ; 2, portion of a stolon with leaf and bladders ; 3, bladder ; 4, flower, typical form, front view ; 5, flower, typical form, side view ; 6, calyx ; 7, stamens ; 8, pistil, side view ; 9, seed ; 10, flower with short-spurred corolla *All enlarged except* 1.

B. UTRICULARIA SANDERSONII, *Oliv.*

U. Sandersonii, *Oliv. in Journ. Linn. Soc.* ix. p. 155; *Stapf in Thiselton-Dyer, Flora Capensis,* iv. p. 431; e grege *U. capensis,* labio supero profunde 2-fido distinctissima.

Herba pusilla, terrestris; stolones capillares, parce ramosi. *Folia* pleraque per anthesin persistentia, rosulata et secundum stolones sparsa, obovata-orbicularia vel obovato-spatulata, apice rotundata, basi cuneata, maxima ad 2 lin. longa, ad $1\frac{1}{2}$ lin. lata, plerumque multo minora; petioli brevissimi vel laminam æquantes. Utriculi numerosi, e stolonibus foliisque orti, globosi vel ovoideo-globosi, $\frac{3}{8}$–$\frac{5}{8}$ lin. longi, 2-labiati labiis ad margines et in faciebus glanduloso-fimbriatis. *Pedunculus* filiformis vel capillaris, ascendens vel erectus, $1\frac{1}{2}$ poll. longus, simplex, 1–3-florus, floribus sua longitudine vel minus distantibus; bracteæ bracteolæque ovato-lanceolatæ, $\frac{3}{8}$ lin. longæ, bracteæ infimæ 1–2 steriles; pedicelli graciles, 1 lin. longi. *Sepala* elliptica vel orbicularia, superum infero longius latiusque, 1 lin. longum. *Corolla* purpurea, 6 lin. longa; labium superum ultra 2 lin. longum, profunde 2-lobum, lobis ovato-oblongis; labium inferum, cuneato-suborbiculare, $2\frac{1}{2}$ lin. longum; palatum subbigibbosum, læve; calcar gracile, curvatum, 4 lin. longum. *Antheræ* ultra $\frac{1}{4}$ lin. longæ; filamenta linearia; pollinis grana globosa, vittis circiter 9 meridianis, 30 μ diametro. *Stylus* stigma æquans, distinctus; stigmatis labium superum ovato-oblongum, quam inferum late ovatum vel orbiculare brevius. *Capsula* ignota. *Semina* globosa, tenuissime reticulata, $\frac{1}{5}$ lin. dimetientia.—*U. Treubii,* Kam. in Ann. Jard. Buitenz. 1898; Suppl. ii. p. 143.

South-east Africa: On wet rocks in Pondoland and Natal.

There were among the specimens collected by Dr. Bolus at the mouth of St. John's River, Pondoland, a few seedling plants with the testa still attached to them (see figs. 12 and 13).—Otto Stapf.

Fig. 11, flowering specimen; 12, young specimen, attached to the seed, with the scape still undeveloped; 13, germinating seed (*a*, petiole of primary leaf; *b*, stolon, cut; *c*, primary axis?; *d*, rhizoid); 14, bladder; 15, flower; 16, upper corolla lip; 17, pollen; 18, pistil, back view. *All enlarged except* 11.

M.S. del. et lith.

Plate 2795.

A. UTRICULARIA SANGUINEA, *Oliv.*

Lentibulariaceæ.

U. sanguinea, *Oliv. in Journ. Linn. Soc.* ix. p. 153 (in parte); *Hiern in Cat. Welw. Afr.* Pl. iv. p. 788; *Kam. in Engl. Jahrb.* xxxiii. p. 96 (*the Angola plant*); *U. lividæ* affinis differt stolonibus longis carnosulis, foliis majoribus diutius persistentibus, floribus sanguineis palato magis aperto levissime tuberculato.

Herba pusilla, terrestris, 4–5 poll. alta; stolones filiformes, albidi, carnosuli, ultrapollicares, parce remote ramosi; rhizoidea capillaria, 2 3 lin. longa, e pedunculi basi orta. *Folia* rosulata, ad pedunculorum bases et secundum stolones sparsa, per anthesin persistentia; laminæ orbiculares vel obovato-ellipticæ, basi breviter cuneatæ, 1–2½ lin. longæ, carnosulæ; petioli 1–3 lin. longi vel rosularum brevissimi. *Utriculi* e stolonibus laminis vel petiolis orti, haud numerosi, distincte stipitati, subglobosi, ⅓ lin. dimetientes, 2-labiati, labiis fimbriatis. *Pedunculus* erectus, filiformis, simplex, 2–4-florus, floribus distantibus; bracteæ ovatæ, ½ lin. longæ, bracteolæ lanceolatæ, bracteis æquilongæ; pedicelli ad ½ lin. longi. *Sepala* subæqualia, 1½–2 lin. longa, rotundato-elliptica, obtusa. *Corolla* sanguinea, fulgens, 5-6 lin. longa; labium superum ultra 2 lin. longum, obovatum vel e basi lata late oblongum, subtruncatum; labium inferum late cuneato-rotundatum, 3 lin. longum, deflexum; palatum elevatum, leviter 2-gibbosum, gibbis subtuberculatis; calcar cylindricum, labium inferum potius excedens, descendens. *Antheræ* ½ lin. longæ. *Capsula* globosa, 1½ lin. dimetiens. *Semina* truncato-obpyramidata vel obconica, facie summa elliptica vel orbiculari, tenuiter marginata.

Tropical West Africa: Angola, Huilla, in swampy pastures and damp abandoned fields, 5,000 feet, *Welwitsch*, 259.

The shape of the corolla, as represented by fig. 4, will probably be found to require correction when better material, preserved in spirit or formalin, comes to hand.—Otto Stapf.

Fig. 1, flowering specimen; 2, rosette of leaves, stolons, and rhizoids; 3, bladder; 4, flower. *All enlarged except* 1.

B. UTRICULARIA TRIBRACTEATA, *Hochst.*

U. tribracteata, *Hochst. in A. Rich. Tent. Fl. Abyss.* ii. p. 18; *Stapf in Thiselton-Dyer, Flora Capensis,* iv. p. 427; *U. lividæ* affinis, foliis angustis, floribus minoribus, palato minute-tuberculato distincta.

Herba pusilla, terrestris, 1½–3 poll. alta inflorescentia inclusa; stolones tenuiter filiformes, ramosi, interdum cæspitantes; rhizoidea numerosa e pedunculi basi, 3–4 lin. longa. *Folia* pauca ad pedunculorum bases vel sparsa, plerumque sub anthesi evanida; laminæ spatulato-cuneatæ, 1½–3 lin. (rarius ultra) longæ, ½ lin. latæ, sensim in petiolum longum tenuem abeuntes. *Utriculi* e foliis (imprimis e petiolis) et stolonibus orti, globoso-ovoidei, ad ½ lin. longi, stipitati, bilabiati, labiis fimbriatis. *Pedunculus* erectus, filiformis, simplex, 4–1-florus, floribus in parte superiori, distantibus; bracteæ bracteolæque lanceolatæ, acutæ, ad ½ lin. longæ, bracteæ infimæ plerumque steriles; pedicelli bracteas æquantes vel demum superantes. *Sepala* subæqualia, 1¼–1½ lin. longa, obtusa, superum orbiculare vel ovato-orbiculare, inferum ellipticum. *Corolla* purpurea, 2½–3 lin. longa; labium superum 1½–2 lin. longum, obovatum, infra medium constrictum apice rotundatum vel subemarginatum; labium inferum subquadratum vel rotundatum, 1½–2 lin. longum, calcari subparallelum; palatum elevatum, labio supero subparallelum, gibbis binis minute tuberculatis saturatius purpureis; calcar subrectum, late conicum, labium inferum æquans vel superans. *Antheræ* ⅓–½ lin. longæ; filamenta filiformia. *Stylus* stigma subæquans; stigmatis labium superum oblongum vel ovatum, quam inferum rotundatum amplum duplo brevius. *Capsula* globosa, 1¼ lin. dimetiens. *Semina* irregulariter hemiellipsoidea vel breviter obpyramidata, angulata, ⅛–⅙ lin. longa, facie summa tenuiter vel obsolete marginata.—*U. elevata,* Kam. in Engl. Bot. Jahrb. xxxiii. p. 99.

Tropical Africa: Abyssinia, in swamps near Selamanka, 8,000 ft., *Schimper,* 1149 (a. 1862); Shire plain, *Schimper,* iii. 1943. Somaliland, *E. Cole.*

South Africa: From the Transvaal to Durban (Natal) and the Bosch Berg (Cape Colony) (see Fl. Cap. l.c.).

Figure 6, representing the base of a flowering branch bearing leaves, stolons, and rhizoids, and sprung from a stolon, was drawn from a specimen collected by Miss E. Cole in Somaliland. All the other specimens quoted consist merely of inflorescences with rhizoids and fragments of stolons at their base. The assumption of the specific identity of the South African with the Abyssinian and Somaliland plant rests therefore on the congruity of those parts.—Otto Stapf.

Fig. 5, flowering specimen (Schimper, 1149); 6, flowering specimen with the scape cut off above the base (Cole); 7, bladder; 8, flower; 9, pistil and stamens, side view; 10, capsule and calyx; 11, seed; 12, embryo. *All enlarged except* 5.

C. UTRICULARIA KIRKII, *Stapf.*

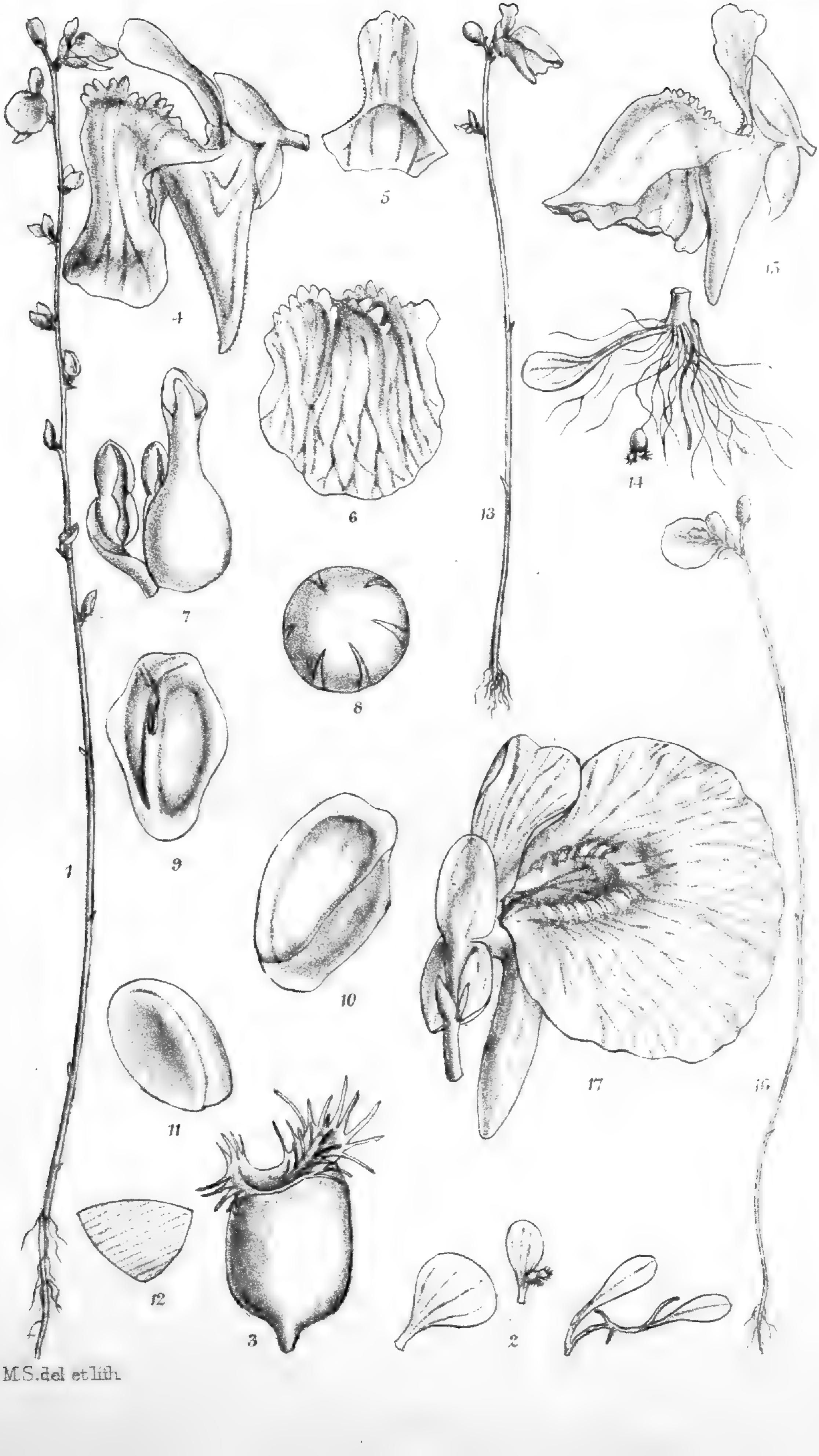
U. Kirkii, *Stapf in Thiselton-Dyer, Flora Capensis*, iv. 428; *U. tribracteatæ* et *U. exili* simillima, a priore floribus minoribus, ab altera palato tuberculato distincta.

Herba perpusilla, terrestris, cum inflorescentia 1–5 poll. alta; stolones filiformes, ramosi; rhizoidea capillaria e pedunculorum basibus orta. *Folia* secundum stolones sparsa, plerumque sub anthesi evanida; laminæ spathulato-cuneatæ, ad $1\frac{1}{2}$ lin. longæ, $\frac{1}{2}$ lin. latæ, sensim in petiolum longum tenue attenuatæ. *Utriculi* e foliis orti, ovoideo-globosi, $\frac{1}{3}$ lin. longi, bilabiati, labiis fimbriatis, ore stipiti opposito. *Pedunculus* erectus, interdum flexuosus, simplex, 5–1-florus, floribus in parte superiore, distantibus; bracteæ bracteolæque lanceolatæ, acutæ, plerumque $\frac{1}{2}$ lin. breviores, infimæ steriles; pedicelli bracteas subæquantes vel tandem paulo superantes. *Sepala* 1 lin. longa, obtusa, superum ovato-orbiculare vel orbiculare, inferum ellipticum. *Corolla* pallide purpurea, $1\frac{1}{2}$–2 lin. longa; labium superum infra medium constrictum, supra obovato-oblongum vel obovato-quadratum, subtruncatum carnosulum, saturate purpureum; labium inferum subquadratum, 1 lin. longum, palatum labio supero subparallelum, bigibbosum gibbis minute tuberculatis; calcar $1\frac{1}{2}$ lin. longum, e basi lata abrupte attenuatum, superne tenue et sursum curvatum. *Antheræ* $\frac{1}{4}$ lin. longæ; filamenta filiformia. *Stigma* stylo longius; labium superum oblongum, quam inferum suborbiculare duplo brevius. *Capsula* globosa, 1 lin. (vel ultra) longa. *Semina* breviter truncato-conica, subangulata, facie summa tenuiter vel obsolete marginata.—*U. exilis*, Kam. in Engl. Jahrb. xxxiii. pp. 97, 98 (in parte); *U. exilis* var. *Ecklonii*, Kam. l.c. 98 (in parte); *U. exilis* var. *hirsuta*, Kam. l.c.

Africa: Damaraland, Waterberg, *Dinter*. Batoka Country, *Kirk*. Zanzibar and Zanguebar, *Kirk*. Transvaal, Hooge Veld, between Porter and Frigardsfontein, *Rehmann*, 6599; Houtbosch, *Rehmann* (?).

The plant is not hairy as stated by Kamienski in his description of *U. exilis* var. *hirsuta*. The author may have been misled by the presence of an *Œdogonium* which I found in the type specimens of this variety to cover a portion of the peduncles. The same alga also occurred under similar conditions on the Transvaal specimens.—Otto Stapf.

Fig. 13, flower. *Enlarged.*



M.S.del et lith.

Plate 2796.

A. UTRICULARIA LIVIDA, *E. Meyer.*

U. livida, *E. Meyer, Comm. Pl. Afr. Austr.* 281 ; *Stapf in Thiselton-Dyer, Flora Capensis*, iv. p. 425 ; *cum vars.* pauciflora et micrantha, *Kam. in Engl. Jahrb.* xxxiii. p. 94 ; inter species palato tuberculato ornatas floribus majoribus tubercuis conspiculis distincta.

Herba tenuis, terrestris, cum inflorescentia 3 poll. ad 1 ped. alta ; stolones brevissimi (semper ?), tenuiter filiformes, parce ramosi ; rhizoidea 3–6 lin. longa, fasciculata. *Folia* ad pedunculorum bases parce laxeque rosulata vel secundum stolones sparsa, plerumque sub anthesi evanida ; laminæ foliorum rosularum orbiculares vel obovato-spathulatæ, in petiolum brevem attenuatæ, ad 1¼ lin. longæ, carnosulæ, foliorum sparsorum minores, angustiores, longius petiolatæ. *Utriculi* e foliis stolonibusque orti, brevissime stipitati, ovoideo-globosi, ⅓ lin. longi, 2-labiati, ore terminali labiis fimbriatis. *Pedunculus* rectus vel flexuosus, filiformis, plerumque simplex, pauci- ad 10-florus, floribus remotis secundum dimidium superius axis floralis dispositis ; bracteæ ovatæ, ½ lin. longæ, infimæ steriles ; bracteolæ quam bracteæ angustiores ; pedicelli bracteas sub anthesi vix superantes, demum ad 1½ lin. longi. *Sepala* subæqualia, rotundato-ovata vel orbicularia, 1–1½ lin. longa, demum leviter aucta. *Corolla* purpurascens, luteo-variegata, raro alba, 3½–4½ lin. longa ; labium superum 2 lin. longum, angustum, obovatum vel oblongum, basin versus constrictum, subemarginatum vel integrum ; labium inferum subquadratum, 2½–4 lin. longum, plerumque subhorizontale ; palatum labio supero subparallelum, elevatum, bigibbosum gibbis saturatius coloratis conspicue tuberculato-cristatis ; calcar rectum vel subrectum, subcylindricum e basi conicum vel subconicum, labium inferum æquans vel superans, eique sæpius parallelum. *Antheræ* ¼–½ lin. longæ ; filamenta e basi latiore filiformia ; pollinis grana globosa, vittis circiter 6 angustis meridianis, 30 μ dimetientia. *Stigma* stylum æquans ; labium superum anguste oblongum, quam inferum late ovatum vel orbiculare brevius. *Capsula* globosa, 1–1¼ lin. dimetiens. *Semina* irregulariter hemiellipsoidea, magis minusve angulata, ⅛ lin. longa, facie summa tenuiter marginata.—*U. longecalcarata*, Benj. in Linnæa, xx. p. 314 (e descriptione).

SOUTH-EASTERN AFRICA : From the Transvaal to Natal and Griqualand East (see Fl. Cap. l.c.).

Fig. 1, flowering specimen : 2, portion of a stolon and leaves ; 3, bladder ; 4, flower ; 5, upper corolla lip ; 6, lower corolla lip ; 7, pistil and stamens : 8, pollen grain ; 9, seed, seen from the hilum side; 10, seed, oblique top view ; 11, embryo ; 12, cross section of an embryo. *All enlarged except* 1.

Var. **Engleri**, *Stapf in Thiselton-Dyer, Flora Capensis*, iv. p. 426 ; *flores* 2-3 versus apicem axis floralis ; *corollæ* palatum distincte tuberculato-cristatum, calcar labio infero brevius vel ei æquilongum.—*U. Engleri*, Kam. in Engl. Jahrb. xxxiii. 95 (in parte) ; *U. sanguinea*, Oliv. in Journ. Linn. Soc. ix. p. 154 (Burke's specimen).

South Africa. **Transvaal** (see Fl. Cap. l.c.).

Fig. 13, flowering specimen ; 14, leaf and tuft of stolons and rhizoids at the base of a scape ; 15, flower. *All enlarged except* 13.

B. UTRICULARIA TRANSRUGOSA, *Stapf.*

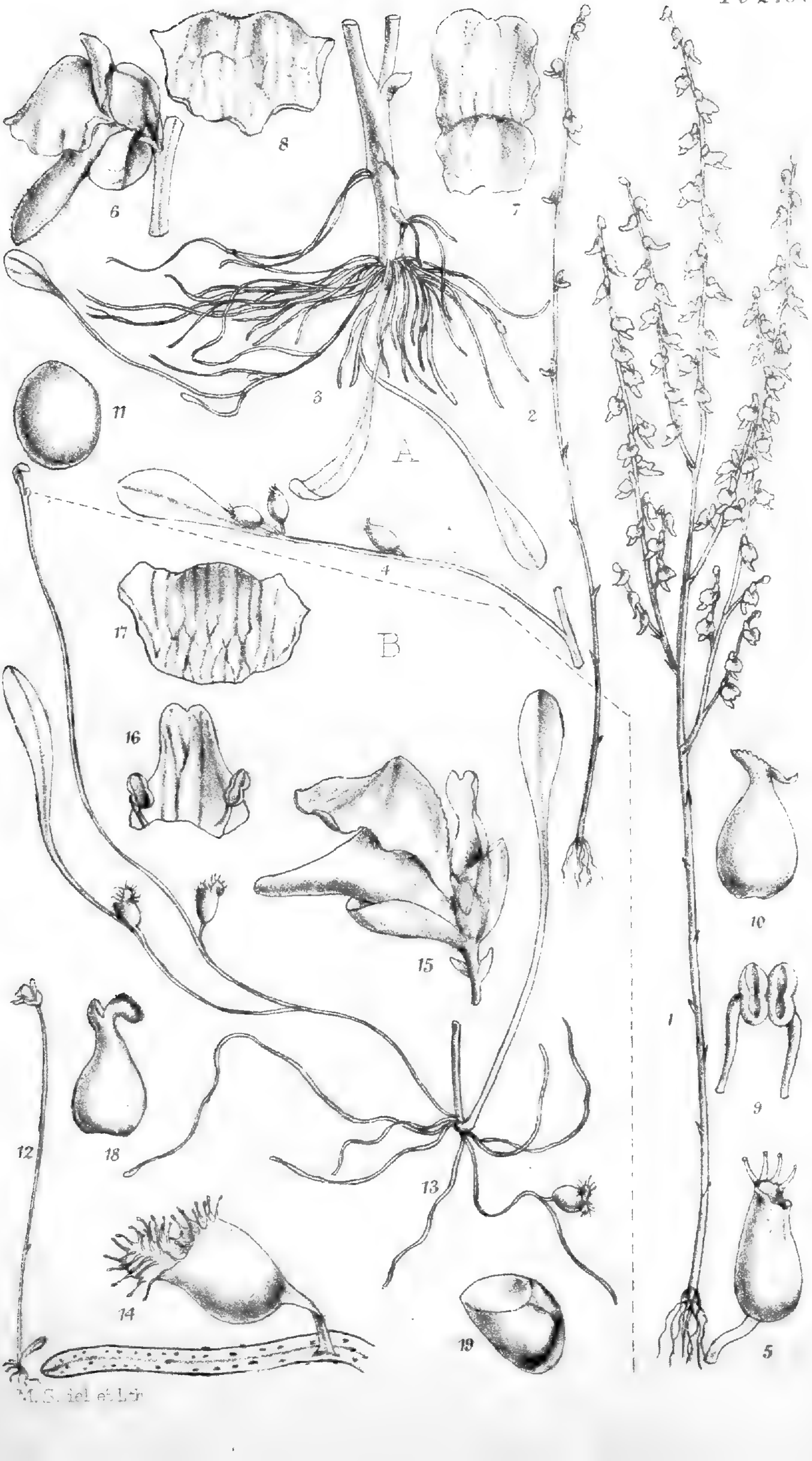
U. transrugosa, *Stapf in Thiselton-Dyer, Flora Capensis*, iv. p. 428 ; *U. lividæ* valde affinis, sed floribus majoribus, labio infero suborbiculari ad 5 lin. lato patente, palato gibbis transverse rugosis distincta. *U. sanguinea, Moore in Journ. Bot.* 1903, p. 405, *non Oliv.*

South Africa : From the Transvaal (see Fl. Cap. l.c.) to Mashonaland (Salisbury, *Rand*, 517).

Some of Miss Pegler's specimens from Rustenburg approach *U. livida*, and particularly the var. *Engleri* ; most of them correspond, however, distinctly to the diagnosis of *U. transrugosa*, as given above, and the figures 16 and 17 of this plate, which were drawn from Galpin's specimen, No. 520.—Otto Stapf.

Fig. 16, flowering specimen ; 17, flower.—16 *natural size*, 17 *enlarged*.

Pl 2797



M. S. del et Lith

Plate 2797.

A. UTRICULARIA FIRMULA, *Welw.*

U. firmula, *Welw. ex Oliv., in Journ. Linn. Soc.* ix. (1867), p. 152 ; *Hiern in Cat. Welw. Afr.* Pl. iv. p. 788 ; *Kam. in Engl. Bot. Jahrb.* xxxiii. p. 93 (*in parte*) *et in Baum, Kunene-Sambesi Exped.* 372 ; ab affinibus inter species Africanas (*U. linarioidi* et *U. Welwitschii*) **corollis minutis totis luteis distincta.**

Herba annua, tenuis, terrestris, cum inflorescentia ad 8 poll. alta ; stolones capillares, magis minusve ramosi ; rhizoidea numerosa, fasciculata ad pedunculorum bases. *Folia* pauca ad pedunculorum bases et secundum stolones sparsa, sub anthesi plerumque evanida ; laminæ obovato-spathulatæ vel lineari-spathulatæ, in petiolum longum attenuatæ, eo incluso ad 4 lin. longa, $\frac{1}{2}$ lin. lata. *Utriculi* e foliis stolonibusque orti, ovoidei, ore oblique angusto terminali, in margine superiore pilis brevibus rigidulis plerumque 4 ornato. *Pedunculus* filiformis, simplex vel ramosus, ramis strictis suberectis, multiflorus, floribus 2-3 lin. distantibus ; bracteæ ovatæ vel ovato-lanceolatæ, bracteolæ lanceolatæ, $\frac{1}{3}$ ad vel ultra $\frac{1}{2}$ lin. longæ ; pedicelli bracteis breviores. *Sepala* orbicularia, admodum concava. *Corolla* lutea, palato aurantiaco, $1\frac{1}{2}$–$1\frac{3}{4}$ lin. longa ; labium superum quadratum, breviter bilobum, emarginatum vel integrum, carnosulum, $\frac{1}{2}$ lin. altum, inferum $\frac{1}{2}$–$\frac{2}{3}$ lin. longum, paulo latius, sub-3-lobum ; palatum læve, subbigibbosum ; calcar e basi brevi lata cylindricum vel conico-cylindricum, plerumque rectum, descendens, 1–$1\frac{1}{2}$ lin. longum. *Antheræ* $\frac{1}{6}$–$\frac{1}{4}$ lin. longæ. *Stigma* subsessile ; labium superum minutum, ovatum vel triangulare, inferum truncatum, latum. *Capsula* globosa, vix 1 lin. dimetiens. *Semina* globosa, lævia, $\frac{1}{8}$ lin. dimetientia, nitidula.

Tropical Africa : Angola, Pungo Andongo, in damp woods near Sansamanda, *Welwitsch*, 262 ; Mossamedes, in a swampy spring by the Chitanda River, 4,000 feet, *Baum*, 142. British Central Africa, on an island in the Zambesi, near the Victoria Falls, *Kirk* ; Tanganyika plateau, Fort Hill, 3,000–4,000 feet, *Whyte* ; Uganda, in wet mud near Nandi, *Scott Elliot*, 7039 ; Zanzibar, *Kirk*.

Kamienski, l.c., also refers to *U. firmula*, a plant collected by Afzelius in Sierra Leone ; but there is no specimen of his comparable to it at the British Museum.

Fig. 1, flowering specimen, branched state (Baum, 142); 2, flowering specimen, simple state (Welwitsch, 226); 3, rosette of leaves, stolons, and rhizoids at the base of a scape ; 4, bladder bearing leaf; 5, bladder; 6, flower; 7, upper corolla lip; 8, lower corolla lip; 9, stamens; 10, pistil, side view; 11, seed. *All enlarged except* 1 *and* 2.

B. UTRICULARIA EXILIS, *Oliv.*

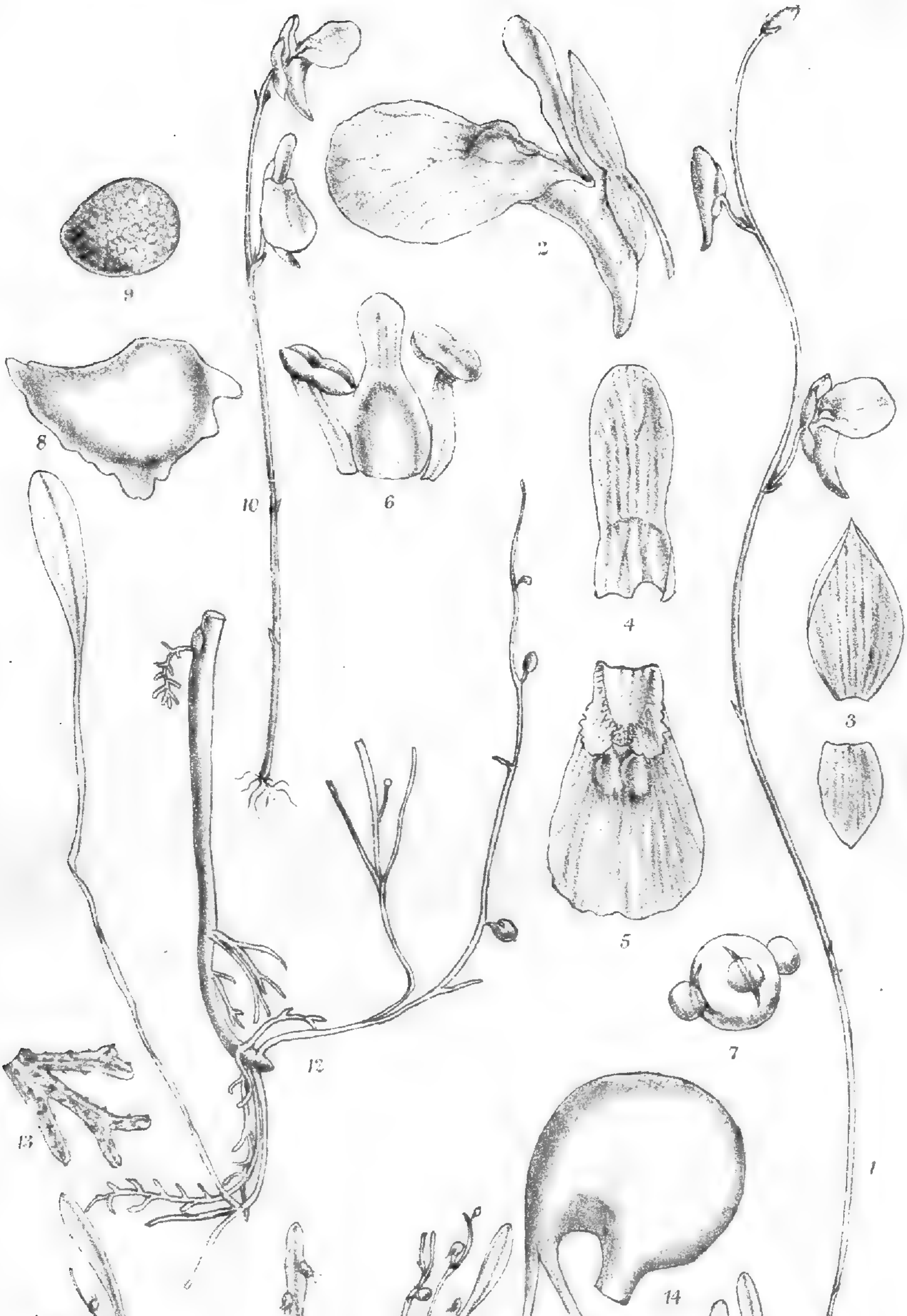
U. exilis, *Oliv. in Journ. Linn. Soc.* ix. (1867) pp. 154; *Hiern in Cat. Welw. Afr.* Pl. iv. p. 788; *Kam. in Engl. Bot. Jahrb.* xxxiii. (1902), p. 97 (*in parte, varietatibus plerisque exclusis*) *et in Baum, Kunene-Sambesi Exped.*, p. 372; *U. Kirkii* et speciminibus parvulis *U. firmulæ* valde similis, ab illa vero palato lævi, ab altera utriculis ore bilabiato labio utroque fimbriato distincta.

Herba perpusilla, terrestris; stolones filiformes, parce ramosi; rhizoidea capillaria, prope pedunculorum bases orta. *Folia* pauca e pedunculorum basibus et secundum stolones sparsa, sub anthesi plerumque evanida; laminæ anguste spathulatæ vel ligulatæ, in petiolum longum tenuem attenuatæ, eo incluso ad 3 (vel ultra) lin. longæ, $\frac{1}{4}$–$\frac{1}{3}$ lin. latæ. *Utriculi* e foliis stolonibusque orti, subglobosi, $\frac{1}{3}$–$\frac{2}{3}$ lin. longi, 2-labiati; labium superum late ellipticum, inferum brevissimum, utrumque fimbriatum. *Pedunculus* capillaris, 1–2 poll. altus, simplex, raro ramis 1–2 ex parte inferiore auctus, 1 3-florus, floribus distantibus; bracteæ bracteolæque subæquales, ovato-lanceolatæ, $\frac{1}{3}$ lin. longæ; pedicelli bracteas subæquantes. *Sepala* orbicularia vel late elliptica, $\frac{3}{4}$ lin. longa. *Corolla* $1\frac{1}{2}$–$2\frac{1}{4}$ lin. longa, alba, lutea vel magis minusve purpurascens, palato luteo interdum purpureo-striato; labium superum e basi brevi lata subquadratum vel subobovatum, subemarginatum, carnosulum, $\frac{5}{8}$–1 lin. altum; labium inferum subquadratum, obsolete undulatum, $\frac{5}{8}$–1 lin. longum; palatum læve, obsolete gibbosum; calcar rectum vel curvatum, e basi late infundibuliformi subito contractum, cylindricum. *Antheræ* $\frac{1}{4}$ lin. longæ. *Stylus* brevissimus; stigmatis labium superum ovatum vel semi-orbiculare, infero obovato-quadrato multo brevius. *Capsula* globosa, 1 lin. dimetiens. *Semina* irregulariter hemiellipsoidea, magis minusve angulata, $\frac{1}{10}$–$\frac{1}{9}$ lin. longa.

Tropical Africa: Angola, Pungo Andongo, in marshy or moist and sandy places, *Welwitsch*, 254, 255, 256; Huilla, in similar places, up to 5,000 feet, *Welwitsch*, 252, 253; Upper Kunene basin, between Hartebeest and Löwenpan, 3,600 feet, *Baum*, 116; Amboland, Olukunda, *Rautanen*; Jurland, near Ghatta's Seriba, *Schweinfurth*, 2545.

The varieties *bryoides* and *nematoscapa*, admitted by Hiern, represent hardly more than states differing in the colour of the corolla and in size.—Otto Stapf.

Fig. 12, flowering specimen; 13, rosette of leaves, stolons, and rhizoids, with the base of a scape; 14, end of a stolon, with a bladder; 15, flower; 16, upper corolla lip and stamens; 17, lower corolla lip; 18, pistil, side view; 19, seed. *All enlarged except* 12.



M. E. del. et lith

Plate 2798.

UTRICULARIA PREHENSILIS, *E. Meyer.*

Lentibulariaceæ.

U. prehensilis, *E. Meyer, Comm. Pl. Afr. Austr.* i. 282 ; *Stapf in Thiselton-Dyer, Flora Cap.* iv. p. 432 ; inter species Africanas utriculis basistomis instructas corolla 6–8 lin. longa et labio supero sepalum superum multo superante distincta.

Herba gracilis, terrestris ; stolones filiformes, albidi, carnosuli, laxe intricati ; rhizoidea e pedunculorum basibus orta, breviter copiose ramulosa, glanduloso-asperula. *Folia* secundum stolones sparsa vel pauca ad pedunculorum basin, plerumque sub anthesi evanida ; laminæ lineari-lanceolatæ vel lingulatæ, obtusæ, ad 1 poll. longæ, 1 lin. latæ, in petiolum longiusculum gracilem attenuatæ, tenues. *Utriculi* numerosi, e foliis stolonibusque orti, ore subbasali, globosi vel ovoideo-globosi, fere $\frac{1}{2}$ lin. dimetientes, tentaculis 2 cornuiformibus. *Pedunculus* filiformis, 3 poll. ad ultra 1 ped. altus, erectus, plerumque flexuosus quum brevis, tortilis et scandens quum longus, floribus 1 6 remotis ; bracteæ ovatæ vel ovato-lanceolatæ, acutæ, ultra 1 lin. longæ, infimæ steriles ; bracteolæ lanceolatæ vel subulatæ, bracteas æquantes vel breviores ; pedicelli filiformes, 2–5 lin. longi. *Sepala* membranacea, inæqualia, superum ovatum, acutum vel acuminatum, multinerve, 2 $2\frac{1}{2}$ lin. longum, demum auctum ; inferum plerumque brevius, obtusum. *Corolla* lutea, 6–8 lin. longa ; labium superum late oblongum, apice rotundatum vel emarginatum, $2\frac{1}{2}$–4 lin. longum, inferum 3–4 lin. longum late ovatum ; palatum labio supero subparallelum, 2-gibbosum, inter gibborum bases fasciculo ciliorum ornatum ; calcar rectum, descendens, acutum, 3 $4\frac{1}{2}$ lin. longum. *Antheræ* $\frac{1}{2}$ lin. longæ. *Stylus* brevis ; stigmatis labium superum brevissimum, inferum rotundatum. *Capsula* ellipsoidea, $2\frac{1}{2}$ lin. longa. *Semina* oblique ovoidea, dorso tuberculata, $\frac{1}{3}$–$\frac{1}{2}$ lin. longa.—*U. madagascariensis,* A. DC. Prodr. viii. p. 20 ; *U. hians,* A. DC. l.c. p. 25 ; *U. lingulata,* Baker, in Journ. Linn. Soc. xx. p. 216.

Tropical Africa : Angola, Huilla, Humpata plateau in marshy woods, *Welwitsch,* 261; Amboella, in swamps by the Kuebe and Longa Rivers, *Baum,* 303, 691, a ; Nyassaland, Ubena, Liangiro swamp, *Goetze,* 799 ; lower plateau, north of Lake Nyasa, *Thomson.* South

AFRICA : From the Transvaal to Pondoland and Natal (see Fl. Cap. l.c.). MADAGASCAR: East-Imerina, Andrangoloaka, *Hildebrandt*, 3726, Parker, 5483 ; Ambohimitombo forest, *Forsyth Major*, 241 ; Central Madagascar, *Baron*, 4317.

Kamienski, in Engl. Bot. Jahrb. xxxiii. (1902), 102, quotes what he considers as the typical form of *U. prehensilis* from 'Angola (Welwitsch, Iter angol. n. 261, Golungo),' and the variety *huillensis* from 'Benguella (Welwitsch, Iter benguellense, n. 261, Dist. Huilla).' Specimens were actually distributed from Lisbon with the inscription 'Welw. Iter Angolense, 261, *Utricularia prehensilis*, E. Mey., Golungo Alto ;' but there is no such label in Welwitsch's collection at the British Museum, and the supposed Golungo Alto specimens are evidently also from Huilla.—OTTO STAPF.

Fig. 1, flowering specimen, typical form ; 2, flower ; 3, sepals ; 4, upper corolla lip ; 5, lower corolla lip ; 6, pistil and stamens, front view ; 7, pollen ; 8, seed ; 9, embryo ; 10, flowering specimen, dwarf state with straight peduncle (var. *huillensis*, Kam.) ; 11, stolon with very young peduncle, with a rosette of leaves and stolons at the base ; 12, base of a peduncle with rhizoids and stolons at the base ; 13, end portion of a rhizoid ; 14, bladder. *All enlarged except* 1 *and* 10.

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Plate 2799.

RHIGOZUM TRICHOTOMUM, *Burch.*

Bignoniaceæ. Tribe Tecomeæ.

Rhigozum trichotomum, *Burch. Trav.* i. p. 299 ; *Drège in Linnæa*, xx. p. 195 ; *DC. Prodr.* ix. p. 234 (synon. exclus., descr. falsa) ; *Sprague in Thiselton-Dyer, Fl. Cap.* iv. 2, p. 451 ; *non auct. alior.* ; ab *R. obovato*, Burch., ramis ternatis, foliis undulatis, calyce tubuloso-campanulato, antheris duplo longioribus et capsula oblonga differt.

Frutex erectus, 3–4-pedalis, ramis ternatim cymosis, ramulis strictis, oblique erectis. *Folia* simplicia, subsessilia, fasciculata, oblongo- vel obovato-spathulata, rarius obcordata, $3\frac{1}{2}$–8 lin. longa, $1\frac{1}{2}$–$3\frac{1}{2}$ lin. lata, undulata, glabra. *Flores* in ramorum apicibus conferti. *Calyx* tubuloso-campanulatus, 4 lin. longus, irregulariter fissus, 3–4-lobus, 5-cuspidatus, circiter 15-costatus, pilosus, glandulosus. *Corolla* infundibuliformis, $\frac{3}{4}$ poll. longa (fide Bolus, salmonea), parte cylindrica basali calycem æquante, extus glabra, intus infra staminum insertionem leviter pilosa ; lobi orbiculares, 5 lin. diametro, crenulati. *Stamina* 4 lin. supra corollæ basin inserta, filamentis 4 lin. longis, antheris rostratis, lobis inferne liberis parallelis 4 lin. longis. *Ovarium* $1\frac{1}{2}$ lin. longum. *Capsula*, oblonga, attenuata, circiter 4 poll. longa, 5 lin. lata. *Semina* desiderantur.

South Africa : Bitterfontein, 3,000–4,000 ft., Calvinia, *Zeyher* ; at the northern exit of the Karree Bergen Poort, near Carnarvon, *Burchell*, 1572 ; near Petrusville, Philipstown, *Burchell*, 2680 ; near Hopetown, *Burchell*, 2663/2 ; on the Orange River, *Shaw*.

The genus *Rhigozum* comprises at least seven species, native of Tropical and South Africa. Burchell founded the genus on *R. trichotomum* and *R. obovatum* ('Travels,' vol. i. pp. 299, 389). Of the former he says merely : 'That part of it [the track] next to the Karreebergen abounded in bushes, three and four feet high, of that singular shrub *Rhigozum trichotomum*, whose stiff branches, constantly dividing and subdividing, in a most regular manner, into threes, present a very rare and curious ramification, and have obtained for it the name of *Driedoorn*—Three-thorn.' Of *R. obovatum* he gives the following diagnosis : 'Frutex 6-pedalis. Ramuli alterni horizontales. Folia

obovata.' The meagreness of these descriptions gave rise to confusion between the two species, and Fenzl (*Denkschr. Bot. Gesellsch. Regensb.* iii. p. 201, t. 5) figured and described as *R. trichotomum* the true *R. obovatum*, Burch., a much more widely spread plant; and in this mistake he was followed by Bureau (*Monogr. Bignon.* t. 19), Schumann (*in Engl. & Prantl, Pflanzenfam.* iv. 3, B., p. 233), and other botanists.

The accompanying figure represents Shaw's Orange River specimen.

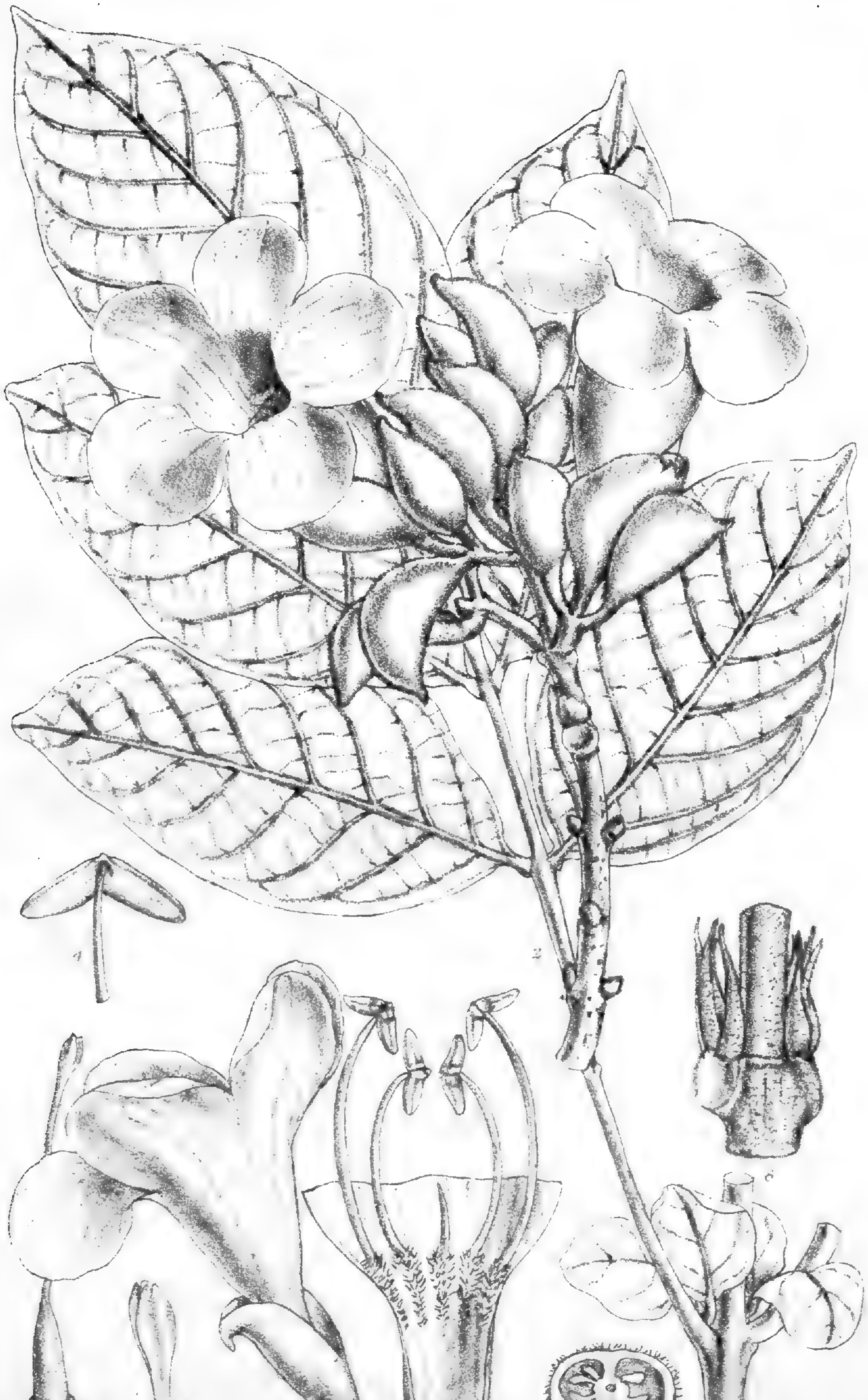
It will be useful to add a description of *R. obovatum*.

Frutex 5–8-pedalis, ramis alternis vel oppositis, ramulisque patentibus. *Folia* simplicia vel trifoliolata, fasciculata, tomentella, demum glabrescentia, petiolo gracili 1–3½ lin. longo, lamina obovata vel obovato-oblonga, nonnunquam emarginata, 3–7 lin. longa, 1½–3 lin. lata. *Florum fasciculi* semper laterales. *Calyx* breviter campanulatus, 2-2½ lin. longus, lobis leviter mucronulatis, costis inconspicuis, tomentellus, glandulosus. *Corolla* campanulato-infundibuliformis, 7–8 lin. longa, lutea, parte cylindrica basali calycem æquante, extus superne, intus ore et infra staminum insertionem pilosa; lobi suborbiculares, 4 lin. diametro, ciliati. *Stamina* 6 lin. supra corollæ basin inserta, filamentis 3 lin. longis, antheris muticis, lobis inferne parallelis vel leviter divergentibus, 1½–2 lin. longis. *Ovarium* vix 1 lin. longum. *Capsula* elliptico-oblonga, 1½-2 poll. longa, 7–10 lin. lata, rostro 5–6 lin. longo. *Semina* nucleo orbiculari, ala hyalina 2–2½ lin. lata.

South Africa: Between Spuigslang Fontein and the Vaal River, Griqualand West, *Burchell*, 1713; near Hamapery, Bechuanaland, *Burchell*, 2487/6. It also occurs in George, Uitenhage, Albany, British Kaffraria, Somerset, Graaff Reinet, and Aliwal North.—T. A. Sprague.

R. trichotomum, Burch.

Fig. 1, leaves flattened out after soaking; 2, calyx and style; 3, the same, part of calyx removed, showing ovary and disk; 4, stamens; 5, cross-section of ovary; 6, fruit. *All except* 1 *and* 6 *enlarged.*



M.S. del et Lith

Plate 2800.

MARKHAMIA PLATYCALYX, *Sprague.*

(*With Parts of other Species.*)

Bignoniaceæ. Tribe Tecomeæ.

Markhamia platycalyx, *Sprague. Arbor* 30–40-pedalis, ramulis quadrangularibus, novellis dense lepidotis. *Folia* ½–1 ped. longa, 2–4-juga ; foliola breviter petiolulata, elliptico-oblonga vel obovata, apice breviter abrupte obtuseque acuminata, mucronulata, basi cuneata, 2–5½ poll. longa, 1¼–2¾ poll. lata, integra vel serrata, serrulis minoribus interjectis, utrinque subtus densissime lepidota, glandulis patelliformibus prope nervum medium inspersis, subtus in axillis venarum pilosa, inconspicue reticulata, venis lateralibus subtus ut nervus medius valde prominentibus, utrinque 4–5 ; pseudostipulæ foliaceæ suborbiculares ½–1 poll. diametro. *Paniculæ* terminales et axillares, e racemis cymarum plurifloratum compositæ ; pedicelli 3-5 lin. longi, ut rhachis nodi dense pubescentes. *Calyx* cymbiformis, apice breviter obtuseque cuspidatus, basi in pedicellum attenuatus, 7–8 lin. longus, postice ultra medium vel brevius fissus, extra pubescens, denseque lepidotus, intra indumento sparsiore. *Corolla* lutea, intra antice rubro-vittata, breviter patenter pilosa, utrinque lepidota, conspicue venosa ; tubus 1¼–1½ poll. longus, supra campanulatus, parte basali cylindrica 4 lin. longa, 1⅓ lin. diametro ; lobi obovato elliptici, 6 7 lin. longi, utrinque glandulis magnis patelliformibus ornati. *Stamina* 4½ lin. supra corollæ basin inserta, filamentis basi valde incrassatis furfuraceo-pilosis, antherarum lobis 1¼ lin. longis. *Discus* cupularis, crassus, 1¼ lin. altus. *Ovarium* oblongum, 3½ lin. longum, densissime lepidotum, brevissime pubescens ; stylus 1 poll. longus, stigmatis lobis ellipticis apice bifidis. *Capsula* circiter 1 ped. longa, 4½–5 lin. lata, minute puberula et lepidota, valvis nervo medio valde prominente percursis. *Semina* 9 lin. longa, 1½ lin. lata, nucleo 3½ lin. longo.—*Dolichandrone platycalyx*, Baker in Kew Bull. 1894, p. 30.

Uganda : Near Entebbe, 4,000 ft., *Mahon* ; Usoga, *Scott-Elliot*, 7208 ; Wimi Valley, 7,000 to 8,000 ft., *Scott-Elliot*, 7830 ; without precise locality, *Wilson*, 119.

In Uganda the native name of this tree is *Lusambia*, and it is said on the authority of Mr. John Mahon, to yield the finest of local timbers.

The only *Markhamia* with which it is likely to be confused is *M. Hildebrandtii* (*Dolichandrone Hildebrandtii*, Baker), which is distinguished by having an uncinate calyx and a more funnel-shaped corolla (fig. 9).

The genus is divided into two very natural sections according to the form of the pseudostipules. In seven of the ten species, including *M. platycalyx*, they are foliaceous and orbicular; in the remaining three they are conical or subulate, as shown in fig. 8. This character separates *M. lutea* and *M. tomentosa* at the first glance. These two species were described by Bentham, under *Spathodea*, in Hooker's 'Niger Flora,' pp. 461–462, where the only character given to separate *Spathodea tomentosa* from *S. lutea* is the 'soft, rusty down' on the under surface of the leaves of the former, contrasted with the puberulous or glabrous leaves of the latter. With the help of the additional material of the two species now in the Kew Herbarium, they may be defined as follows:—*M. lutea* has foliaceous orbicular pseudostipules, corymbose panicles, a lepidote calyx, and narrow lepidote capsules. *M. tomentosa* has conical pseudostipules, elongated oblong panicles, a tomentose calyx, and relatively broad, softly pubescent capsules. Vogel's specimen from Patteh, on the Quorra, quoted by Bentham under his *Spathodea lutea*, is a glabrescent-leaved form of *M. tomentosa*. The original description of *Spathodea lutea* combines some of the characters of *M. lutea* with others of *M. tomentosa*.—T. A. Sprague.

Fig. 1, portion of branch with leaf and pseudostipules; 2, inflorescence; 3, portion of corolla, showing attachment of stamens; 4, anther; 5, pistil and disk; 6, stigma; 7, cross section of ovary; 8, node and pseudostipules of *Markhamia lanata*, K. Schum.; 9, flower of *M. Hildebrandtii*, Sprague. *Figures* 1, 2, *and* 9 *natural size; the rest enlarged.*

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