1909
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HOOKER'S

ICONES PLANTARUM;

OR,

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

SELECTED FROM THE

KEW HERBARIUM.

FOURTH SERIES.

EDITED FOR THE BENTHAM TRUSTEES BY

D. PRAIN, C.I.E., LL.D., F.R.S.

DIRECTOR, ROYAL BOTANIC GARDENS, KEW.

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Mo. Bot. Garden
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Tabulae 2801 et 2802.

ALEURITES FORDII, *Hemsl.*

Euphorbiaceae. Tribus Crotoneae.

A. Fordii, *Hemsl. (sp. nov.)* ; species adhuc cum *A. cordata* confusa, a qua tamen satis distincta, scilicet foliorum glandulis minoribus haud cupuliformibus, petalis latioribus intus basi glabris, stylis 4 brevissime bifidis, et fructus superficie haud varicosa.

Arbor 3–9-metralis, ramulis crassiusculis glabris. *Folia* coriacea, longe petiolata, tarde glabrescentia, ovata vel cordata, integra, absque petiolo 7–12 cm. longa, vel in ramis sterilibus trilobata et interdum usque ad 20 cm. longa, cum petiolo 45 cm. longo. *Flores* quam folia praecociores, et cum iis in ramorum apicibus conferti, cymoso-paniculati ; cymae breviter pedunculatae, primum folia superantes, pedicellis flores aequantibus. *Calyx* irregulariter ruptus, saepius bilobus, pubescens, circiter 1 cm. longus. *Petala* 5, orbiculari-obovata, circiter 2·5 cm. longa, glabra. *Staminodia* saepissime 5, carnosa, linearisubulata, circiter 3 mm. longa, in floribus masculinis extra stamina inserta. *Stamina* 8–10, biseriata, interiora longiora. *Ovarium* puberulum, saepius 4-loculare, stylis brevibus brevissime bifidis. *Fructus* subglobosus vel turbinatus, 4–5 cm. diametro, apiculatus, haud varicosus. *Semina* obovoideo-compressa, plus minusve verrucosa, funiculo crasso.—*A. cordata*, Muell. Arg. in DC. Prodr. vol. xv. 2, p. 724, pro maxima parte ; Hemsl. in Journ. Linn. Soc. vol. xxvi. p. 433, praeter *Elaeococcam verrucosam* partim, syn. omn. excl. ; Bretschn. Europ. Bot. Discov. in China, pp. 492 et 769, et auctor. alior. plurim., non R. Br. *Elaeococca verrucosa*, A. Juss. Euphorb. Gen. Tent. (1824), t. 11 quoad fructum et semen ; Guibourt, Hist. Nat. des Drogues Simples, ed. 4, vol. ii. p. 338, f. 167, synon. omn. excl. *Dryandra oleifera*, Wall. Cat. n. 7958 ; Hook. f. Fl. Brit. Ind. vol. v. p. 384, non Lam.

China : Chekiang ; Ningpo, *Everard*, *Hancock*. Kiangsi ; Lushan, *Maries*, *Shearer*, *Bullock*. Fokien ; Amoy, *Fortune*, 33. Hupeh ; Ichang, *A. Henry*, 878. Yunnan ; Mile district, *A. Henry*, 10587. Hongkong ; cult., *Tutcher*.

Some years ago Mr. Ch. Ford, I.S.O., then Superintendent of the Hongkong Botanic Garden, sent dried specimens to Kew of what

he regarded as two different species of *Aleurites* which he had in cultivation, together with notes on the differences observed in the living trees. For some reason the question was not investigated at the time, and it was forgotten until Mr. W. J. Tutcher, the present Assistant Superintendent, called my attention to it again last year. I thereupon wrote to Mr. Dunn, the present Superintendent, for further material, which he kindly sent, with some observations of his own confirming the existence of two species, hitherto confused under the name of *A. cordata*, Steud.

The confusion of *A. cordata*, Steud., with *A. Fordii*, Hemsl., was begun by Adrian de Jussieu in the work cited above. He distinguished two species apparently from specimens before him, but he began with the erroneous assumption that *Dryandra cordata*, Thunb., from Japan, was one species and *D. Vernicia*, Correa (*Vernicia montana*, Lour.), inhabiting China and Cochinchina, was a second species ; but there is no doubt that Thunberg and Loureiro had the same species under observation. Jussieu placed them under the genus *Elaeococca*, but he did not give any differential definitions in the work cited above (pp. 38 and 84), where he states that there are two species. The figures in plate 11 of that work represent the fruit and seed of *A. Fordii*, under the name of *Elaeococca verrucosa*, of which *Dryandra cordata* is given by the author as a synonym in the description (p. 112) of the figures. He is therefore in error as to two points : namely, in the assumption that *Vernicia montana*, Lour., and *Dryandra cordata*, Thunb., were different plants, and in the assumption that his *Elaeococca verrucosa* was the same as the latter. Under the circumstances it seems better not to adopt his name for the Chinese species, especially as it only applies to the fruit and seed ; the flowers being apparently those of *A. cordata*. There is a good figure of the strongly wrinkled fruit of *A. cordata* (Ann. Mus. Hist. Nat. Par. vol. viii. (1806), p. 69, t. 32, f. 1), from the Banksian collection, under the name of *Dryandra Vernicia*, Correa.

Aleurites Fordii is the T'ung Yu of the Chinese and is one source of what is called wood oil. *A. cordata* also yields wood oil ; and another oil-seed, under the name of Balucanat seed, has been imported from the Philippine Islands. This also has hitherto been referred to *A. cordata*, but it is different, and is most likely the seed of *A. trisperma*, Blanco (Fl. Filip., ed. 1, p. 755), syn. *A. Saponaria*, Blanco, ed. 2, p. 520 ; ed. 3, p. 156, t. 296 ; Nov. App., p. 191, which bears the same vernacular name. For a fuller account of the oil and a revised synonymy of the species of *Aleurites*, see 'Kew Bulletin,' 1906, pp. 117–121 and 398, 399.

There are flowering specimens of *A. cordata*, Steud. (syn. *Dryandra cordata*, Thunb.), in the Kew Herbarium from Japan, Formosa, Hainan, and Tongking, and also from the Hongkong Botanic Garden, raised from seed received from Cochinchina ; and the type of Loureiro's synonymous *Vernicia montana* is in the British Museum. The only ripe fruit of *A. cordata* at Kew was presented by Mr. Tutcher in 1905.

Shirasawa, a recent Japanese authority (Iconographie des Essences Forestières du Japon, vol. i. p. 93), states that *A. cordata* is cultivated in Japan, and, as he gives no localities for it in a wild condition, it may be assumed that he regarded it as an introduced tree there.

Dryandra cordata, Thunb., is erroneously referred to *Aleurites triloba* in the 'Index Kewensis,' as likewise is *A. trisperma*, Blanco.—W. Botting Hemsley.

Tabula 2801.

Part of a three-lobed leaf from a barren shoot (*A. Henry*, 878), and an inflorescence and young leaves (*A. Henry*, 10,587). *Natural size.*

Tabula 2802.

Fig. 1, a mature leaf from a flowering branch (*Hancock*, 19); 2, a male flower from which the sepals and petals have been removed, revealing five staminodes and eight stamens (*A. Henry*, 10,587); 3, a female flower from which the sepals and petals have been removed, showing the pistil and staminodes (*Hancock*, 19); 4, a cross-section of ovary of the same; 5, a fruit; 6, the same, from which the upper half of the pericarp has been removed; 7, cross-section of the same through the seeds (*A. Henry*, 878); 8 and 9, seeds; 10, section of a seed, showing the embryo (*Tutcher*) *Figures* 1–4 *and* 8–10 *enlarged*; 5–7 *natural size.*

M.S. del. et lith.

Tabula 2803.

PHOEBE HAINESIANA, *Brandis.*

Lauraceae. Tribus Perseae.

P. Hainesiana, *Brandis (sp. nov.)*; inter species indicas petiolo longiusculo, nervis secundariis rectis apice tantum incurvis, calycis fructiferi segmentis coriaceis patentibus non appressis recognoscenda.

Arbor 45-metralis, ramulis ac foliis glabris. *Folia* ad ramulorum apices conferta, obovata vel oblanceolata, integerrima, sed leviter undulata, lamina basi cuneata, inferne glauca, 12–22 cm. longa, petiolo 2·5–4 cm. longo, nervis secundariis conspicuis utrinque 12–16 rectis tantum apicem versus incurvis. *Pedunculi* axillares, validi, folia vix aequantes, paniculas breves 10-15-floras gerentes. *Perianthium* 5 mm. longum, utrinque cum pedicello griseo-tomentosum; segmenta exteriora paullo breviora. *Stamina* perfecta 9, antheris 4-locellatis, filamentis pilosis. *Staminodia* brevia, crassa, capitulo cordato antheriformi instructa, cum staminibus seriei tertiae basi biglandulosis annulo brevi piloso inserta. *Antherarum* omnium locelli inferiores a latere superiores tangentes. *Ovarium* glabrum. *Fructus* ellipsoideus, niger, carnosus, circiter 3 cm. longus, ad dimidium fere calyce coriaceo aucto inclusus.

India: Sikkim; lower hills, ascending to 1,500 m., *H. H. Haines.*

A valuable timber tree, attains a girth of about 6 m. Near *Phoebe indica*, Pax (*Persea indica*, Sprengel), of the Canaries, and *Phoebe attenuata*, Nees, of the Eastern Himalaya and Upper Burma, which has short petioles, leaves hairy beneath, the secondary nerves arching, smaller flowers and fruits. The lower anther cells, of both the glandular and eglandular stamens, extend to the middle of the upper cells, which according to Mez, Lauraceae Americanae (*Jahrbuch des Bot. Gartens Berlin*, vol. v., p. 180), is the principal character which distinguishes *Persea* from *Phoebe*. It seems doubtful whether this character can be held to have generic value. Miss Smith, in examining the anthers of this species, has found that in those of the first and second series the lower cells are always outside, while in those of the third series the lower anther cells are always inside. This may prove a character of some importance, but the discovery must be followed up by the study of fresh specimens.—Dietrich Brandis.

Fig. 1, the staminal system; 2, introrse stamen of the outer series; 3, extrorse stamen of the inner series with two glands at the base and two staminodes next to them; 4, gynaecium; 5, fruit. *Natural size; all the rest enlarged.*

M.S.del. et lith.

Tabula 2804.

DIOSPYROS SINENSIS, *Hemsl.*

Ebenaceae.

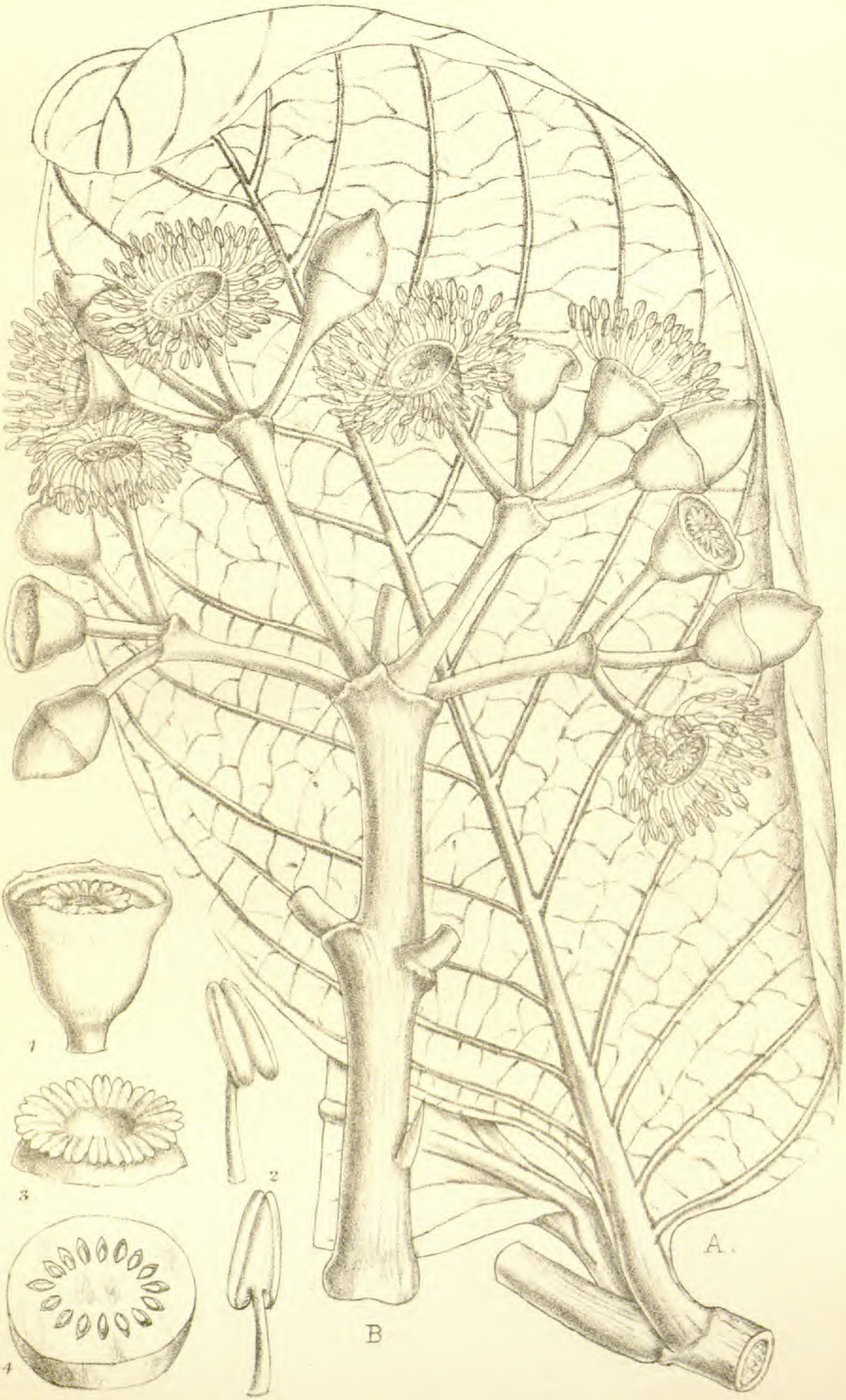
D. sinensis, *Hemsl. in Journ. Linn. Soc.* vol. xxvi. p. 71 (specimen fructiferum tantum descriptum) ; inter species sinenses *D. rhombifoliae* proxima, ab ea foliis angustioribus et calycis fructiferi segmentis ovatis differt.

Frutex vel arbor parva ramis gracilibus puberulis. *Folia* omnia alterna, breviter petiolata, demum subcoriacea, glabra, lanceolata vel ovato-lanceolata, 4–8 cm. longa, obtusa, venis inconspicuis. *Flores* feminei solitarii, extra-axillares, graciliter pedunculati, tetrameri, albi, odorati ; pedunculi 2–4 cm. longi, filiformes. *Calycis segmenta* ovata, circiter 1 cm. longa, vix acuta, puberula. *Corolla* quam calyx brevior, undique puberula ; tubus ventricosus, circiter 5 mm. longus ; limbi lobi circiter 2 mm. longi et lati, reflexi, imbricati. *Stamina* sterilia 6, tubo basi affixa, inclusa, filamentis in parte superiore puberulis. *Ovarium* villosum, 6-loculare, loculis 1-ovulatis ; stylus glaber, 6-lobulatus, brevissime exsertus. *Fructus* globosus, circiter 1–5 cm. diametro, glabrescens. *Semina* oblonga ; albumen haud ruminatum ; embryo rectus.

Western China: Mount Omi at about 1,200 m., *Faber*, 207. —Specimens from plants cultivated near a temple at Ichang were brought home by Mr. E. H. Wilson.

This species probably belongs to Hiern's section *Gunisanthus*, and it is also closely related to the Indian *D. calycina*, Beddome (*Ic. Pl. Ind. Or.* t. 123), which has broadly cordate calyx-lobes.—W. Botting Hemsley.

Fig. 1, section of flower ; 2, corolla ; 3, a barren stamen ; 4, stigmas ; 5, cross section of ovary ; 6, fruit ; 7, seed ; 8, section of the same, showing the embryo. *All except* 6 *enlarged.*



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TABULA 2805.

INDOKINGIA CRASSA, *Hemsl.*

ARALIACEAE.

Indokingia, *Hemsl.* Genus novum *Tupidantho* proximum, a quo foliis pinnatis, ovario circiter 15-loculari, loculis concentricis et stigmatibus bifidis differt.

Calycis tubus paulo supra ovarium productus, truncatus vel obscure dentatus. *Petala* in calyptram crassam carnosam conglutinata, suturis obsoletis. *Stamina* indefinita, pluriseriata, filamentis filiformibus. *Discus* annularis. *Ovarium* circiter 15-loculare ; stigmata radiantia, breviter bifida. *Fructus* ignotus.—Frutex *ramis crassis.* Folia *ampla, pinnata, foliolis carnoso-coriaceis integris.* Flores *pauci umbellato-paniculati, in ordine magni.*

I. crassa, *Hemsl.* (species unica).

Frutex 2·5–3·5 m. altus (Horne) undique glaber, ramis crassissimis spongiosis. *Folia* (folium unum perfectum tantum visum) alterna, imparipinnata, cum petiolo valido terete circiter bipedalia ; foliola 7, paribus oppositis, carnoso-coriacea, crassissima, breviter petiolulata, oblique oblonga vel elliptica, maxima 25 cm. longa et 12·5 cm. lata, apice rotundata. *Paniculae* terminales ? 15–20 cm. longae, ramis crassis rigidis ; umbellae 3–6-florae, pedicellis crassis 1–2 cm. longis cum floribus continuis. *Flores* circiter 2·5 cm. diametro.

SEYCHELLES : Mahé, at 600 m., not common, *Horne*, 273 ; mountain forest, Cascade Estate, *Thomasset*, 177.

The foliage of *Indokingia crassa* is very similar to that of *Gastonia cutispongia*, Lam. (*Polyscias cutispongia*, Baker), with which Horne's very imperfect specimen was associated. Both bear the name of *bois papaye*. The genus is dedicated to my friend Sir George King, F.R.S., late Superintendent of the Calcutta Botanic Gardens.—W. BOTTING HEMSLEY.

Fig. A, portion of leaf ; B, portion of an inflorescence (*natural size*) ; 1, a flower from which the petals and stamens have been removed ; 2, stamens ; 3, top of the ovary and stigmas ; 4, cross section of an ovary. *Enlarged.*

Tabula 2806.

ERYNGIUM PILULARIOIDES. *Hemsley et Rose.*

Umbelliferae. Tribus Saniculeae.

E. pilularioides, *Hemsley et Rose in U.S. Dept. Agric. Contrib. Nat. Herb.* vol. viii. p. 333, excl. f. 18 ; species habitu *E. reptantis*, Hemsl., sed aliter omnino diversa, et inter species mexicanas adhuc cognitas foliis parvis angustissimis aliis fistulosis aliis concavo- vel plano-convexis distincta.

Herba glabra, reptans, caulibus fere filiformibus circiter 10 cm. longis ad nodos radicantibus. *Folia* dimorpha vel trimorpha, fasciculata ; alia minora, 1–2 cm. longa, linearia, acuta, breviter vaginata, vaginis apice 1- vel 2 aristatis, nonnunquam paullo majora, lamina basi in margine aculeis paucis instructa ; alia (petioli ?) ex eodem fasciculo longiora, usque ad 8 cm. longa, circiter 1 mm. diametro, teretia, plurisulcata, curvata, fistulosa, intus septis transversis inter se circiter 5 mm. distantibus instructa. *Capitula* intra folia sessilia vel breviter pedunculata, 10–12-flora, cum bracteis patentibus circiter 1 cm. diametro. *Involucri bracteae* 6–8, lanceolatae, integrae, rigidae, pungentes, flores paullo excedentes. *Paleae* bracteis similes, angustiores, complicatae, flores vix superantes. *Calycis dentes* rigidi, acuminati, quam petala recurva longiores. *Petala* apice denticulata. *Carpella* cum calyce 2–3 mm. longa, squamis conoideis patentibus dense papillosis vestita ; vittae 5, quarum 2 commissurales ; styli erecti calycem aequantes.—*E. Pringlei*, Hemsl. et Rose, loc. sup. cit. p. 334, quoad figuram tantum.

Mexico : Eastern Hidalgo, in shallow hollows of meadows, *C. G. Pringle*.

This is a very distinct species, and remarkable among those I have examined in having fistular leaves ; but Dr. W. L. Jepson, of the Californian University, to whom I have pointed out this peculiarity, tells me that several of the larger North American species have fistular leaves, and on turning to the description of *E. articulatum*, Hook. (*E. petiolatum*, Hook.) I find the following interesting field-note by Geyer : 'In April the young plants are wholly submerged, and present the appearance of some articulated *Juncus* ; the leaves, or rather the petioles, being similarly terete and jointed. On emerging above the water these petioles expand into laminæ at the top, retaining the jointed swollen character in the costa. The radical petioles are 8–10 inches long ; those of the stem, in proportion as they are out of the water, become flattened and the margin spinuloso-ciliate.' It is probable that *E. pilularioides* is submerged in the early stage of growth, and produces its flowers and fruit after the water has dried up. Dr. Rose describes it as an annual.—W. Botting Hemsley.

Fig. 1, portion of base of a flat leaf; 2, section of a fistular leaf; 3, a pale; 4, a flower ; 5, a young mericarp ; 6, a petal ; 7, a section of a mericarp ; 8, scale from the same. *All enlarged.*

M. S. del et lith.

Tabula 2807.

TOXOCARPUS SCHIMPERIANUS, *Hemsl.*

ASCLEPIADACEAE. Tribus SECAMONEAE.

T. Schimperianus, *Hemsl.* (sp. nov.) ; a speciebus Africanis omnibus foliis crassis coriaceis elongato-lanceolatis venis immersis obscuris facile distinguitur.

Frutex scandens, lactescens, undique glaber ; ramuli graciles, internodiis quam foliis multo brevioribus. *Folia* distincte petiolata, demum coriacea, anguste lanceolata, 10–15 cm. longa, maxima vix 2–5 cm. lata, utrinque attenuata, apice acuta, costa supra impressa, subtus elevata, venis immersis obscurissimis. *Flores* expansi circiter 4 mm. diametro, in cymas interpetiolares 2–4 cm. diametro foliis triplo breviores dispositi. *Calycis segmenta* ovali-orbicularia, circiter 2 mm. longa, obscure ciliolata, intus basi biglandulosa. *Corollae* albo-roseae lobi oblongi, nunc imbricati nunc sinistrorsum obtegentes, calyce duplo longiores ; tubus brevissimus, intus puberulus. *Coronae squamae* oblongae, erectae. *Antherae* apice barbellatae. *Folliculi* fusiformes, circiter 8 cm. longi, horizontales, laevi, glabri. *Semina* compressa, clavato-oblonga, absque pilorum coma 8–10 mm. longa ; coma 2–2½ cm. longa.

SEYCHELLES : without locality, *J. Horne*, 533. Mahé ; summit of Mount Sebert, at 550 m., *H. P. Thomasset*, 49.

Mr. Horne collected this plant first, in 1875 ; it was also subsequently collected by the German Deep Sea Expedition.

Toxocarpus Schimperianus is named in memory of the lamented Dr. A. F. W. Schimper, who sent a small collection of Seychelles plants, collected partly by himself, during the German Deep Sea Expedition, partly by Mr. Thomasset, to Kew, for naming, in August 1901 ; but he died in the following month before the plants were actually received. I am indebted to my colleague, Mr. N. E. Brown, for determining the genus of this plant.—W. BOTTING HEMSLEY.

Fig. 1, a flower ; 2, a calyx-lobe, seen from the inside ; 3, corona and gynaecium ; 4, a coronal scale, and anther ; 5, pollinia ; 6, fruit ; 7, a seed. *All except* 6 *and* 7 *enlarged.*

M.S. del, et lith

Tabula 2808.

CLEMATOCLETHRA HEMSLEYI, *Baill.*

Ternstroemiaceae. Tribus Clematoclethreae.

C. Hemsleyi, *Baill. in Bull. Soc. Linn. Par.* i. (1890), p. 873; a speciebus omnibus hactenus descriptis, pedunculis multifloris, i.e. plus quam trifloris, differt.

Frutex alte scandens, novellis tomentellis. *Rami* recti, cito glabrescentes, cortice crebre lenticellato. *Folia* longe graciliterque petiolata, papyracea, ovata, acuminata, absque petiolo 5–10 cm. longa, basi rotundata vel leviter cordata, subtiliter calloso-denticulata, subtus praecipue secus costam et venas primarias rufo-pubescentia; petioli 4–8 cm. longi. *Pedunculi* graciles, 6–12-flori, petiolis saepius breviores, rufopuberuli; pedicelli quam flores vix longiores. *Sepala* 5, basi connata, imbricata, ovali-oblonga, circiter 4 mm. longa, ciliolata, fructu persistentia. *Petala* 5, ovali-rotundata, concava, circiter 8 mm. longa. *Stamina* 10, inclusa. *Ovarium* 5-loculare, loculis multiovulatis, glabrum, stylo filiformi exserto. *Fructus* globosus, circiter 1 cm. diametro, carnosus, carne tenui, niger, quinquangularis. *Semina* in quovis loculo solitaria, oblique ovalia, compressa; testa cartilaginea, striatula; embryo parvus, axilis.—*C. tomentella*, Franch. in Journ. de Bot. vol. viii. (1894), p. 280.

China: Hupeh; Fang, *A. Henry*, 6818, 6885.

Baillon's remarks, in the place where he first described *C. Hemsleyi*, are calculated to cause confusion. In Forbes and Hemsley's 'Enumeration of Chinese Plants' (*Journ. Linn. Soc.* vol. xxvi., p. 34) I included a species of this genus, collected by Faber on Mount Omei, without giving it a name; I mentioned its affinity to *C. scandens*, Franch., and pointed out its similarity to *Actinidia*. This species was subsequently described by Franchet (in *op. sup. cit.*, p. 279) as *C. Faberi*. Referring to the paper by Maximowicz (*Act. Hort. Petrop.* xi. p. 36), Baillon says: 'Je ne connais point ses trois autres espèces. Mais celle de MM. Hemsley et Forbes, de la province de Hupeh, n'est pas non plus l'espèce de M. Franchet. Ce sera notre *C. Hemsleyi*.' Baillon described specimens collected by Dr. Henry which reached the Kew Herbarium after the publication of the part of the 'Enumeration of Chinese Plants' cited above, and then confounded them with Faber's.

Most botanists now refer the Actinidieae and the Clematoclethreae to the Dilleniaceae, and most likely with good reason, but I have not investigated this point.—W. Botting Hemsley.

Fig. 1, a flower; 2, part of calyx, stamens and pistil; 3, a petal; 4, stamens; 5, longitudinal section of ovary; 6, cross section of the same; 7, a seed; 8, section of the same, showing the embryo. *All enlarged*; *7 and 8 very much.*

There are specimens in the Kew Herbarium of three undescribed large-leaved species of *Clematoclethra* which may be characterised as follows :—

C. grandis, *Hemsl.*; species foliorum et florum magnitudine insignis.

Frutex fere omnino glaber vel cito glabrescens. *Folia* papyracea, ovato-lanceolata vel cordata, cum petiolo longissimo usque ad 20 cm. longa et 8–9 cm. lata, acute acuminata, minute calloso-ciliata. *Pedunculi* triflori, quam petioli breviores. *Flores* circiter 1 cm. diametro. *Sepala* fere orbicularia, ciliata. *Petala* fere orbicularia.

China : Szechuen ; near Tachienlu, *Pratt*, 68.

C. Wilsoni, *Hemsl.*; a speciebus omnibus mihi cognitis indumento ferrugineo crasso differt.

Rami validi, pilis longis crassis divaricatis ferrugineis dense vestiti. *Folia* papyracea, ovato-lanceolata vel lanceolata, cum petiolo gracili usque ad 15 cm. longa, 4 cm. lata, longe acuminata, calloso-ciliata; petioli 1–5 cm. longi. *Pedunculi* triflori, graciles, circiter 3 cm. longi. *Sepala* fructifera 3–4 mm. longa, oblonga.

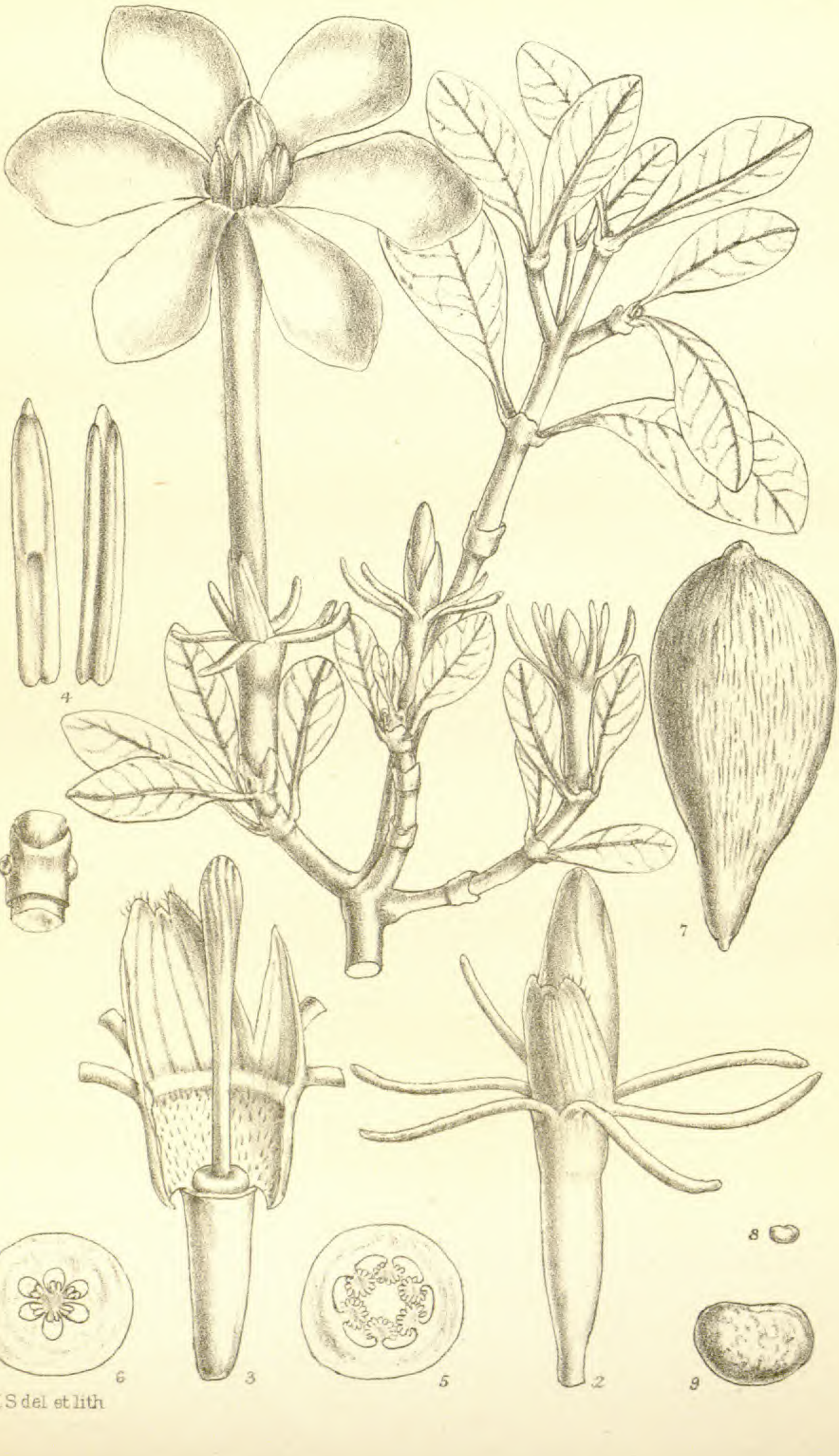
China: Szechuen ; on cliffs, *Wilson*, 3270.

C. disticha, *Hemsl.*; species distincta foliis amplis distichis oblongo-oblanceolatis et sepalis petala fere aequantibus.

Rami recti, ferrugineo-pubescentes. *Folia* cum petiolo 2–4 cm. longo usque ad 15 cm. longa, 5 cm. lata, minute remoteque calloso-ciliata. *Pedunculi* triflori, graciles, petiolis breviores; pedicelli quam flores vix longiores. *Sepala* infra medium pubescentia, ovali-oblonga, circiter 5 mm. longa, apice rotundata. *Petala* oblonga, rotundata, sepala paullo excedentia. *Stamina* inclusa. *Stylus* exsertus.

China : Szechuen ; Mount Omei, *E. H. Wilson*, 4763.

W. Botting Hemsley.



M S del et lith

Tabula 2809.

GARDENIA CORNUTA, *Hemsl.*

Rubiaceae. Tribus Gardenieae.

G. cornuta, *Hemsl.* (*sp. nov.*); ex affinitate *G. Thunbergiae*, L. fil., a qua omnibus partibus minoribus, foliis obovato-lanceolatis, floribus hexameris et calycis appendicibus corniformibus in tubi margine regulariter positis differt.

Frutex glaber vel novellis cito glabrescentibus; rami florigeri brevissimi, rigidi. *Folia* pauca, in ramorum apicibus conferta, subsessilia, vix coriacea, obovata vel oblanceolata, 1–4 cm. longa, apice obtusa vel rotundata, deorsum attenuata; stipulae in annulum connatae, annulo bidentato demum a ramo soluto libero. *Flores* subterminales, solitarii, sessiles, erecti, hexameri. *Calycis tubus* supra ovarium breviter productus, intus puberulus, extus apice appendicibus saepius 6 crassiusculis teretibus curvato-patentibus circiter 1 cm. longis instructus; limbus herbaceus, inaequaliter bilabiatus, labio majore 1–1·2 cm. longo apice tridentato ciliolato, labio altero plus quam dimidio minore acuto. *Corolla* hypocraterimorpha; tubus angustus, 5–6 cm. longus; limbi lobi obovato-spathulati, circiter 3 cm. longi, patentes, leviter concavi, haud obtegentes. *Antherae* dimidio superiore exsertae. *Ovarium* cylindricum, basi 1-loculare placentis parietalibus 6, supra medium 6-loculare, loculis multi-ovulatis; stylus glaber, clavatus, stamina paullo excedens. *Fructus* lignosus, anguste pyriformis, circiter 5·5 cm. longus, et 2·5 cm. diametro, calycis limbo haud coronatus. *Semina* oblonga, compressa, circiter 4 mm. longa.

South Africa: Le Bombo mountains, Tongoland, Zululand, communicated by *Mrs. K. Saunders*. Natal and Zululand, *W. T. Gerrard*, 1620.

The plate of this very distinct *Gardenia* was prepared from a painting and flowering specimens presented to Kew by Mrs. K. Saunders, in whose garden at Eshowe, in Zululand, it was cultivated in 1900. The fruit was drawn from Gerrard's specimen, purchased in 1872. The calyx is very peculiar in a genus presenting considerable variation in that organ. In *G. Thunbergia*, L. fil., the spathaceous calyx-limb is often provided with a cluster of leaf-like appendages springing from the back near the top.—W. Botting Hemsley.

Fig. 1, sheathing stipnles become free from the axis; 2, a flower; 3, pistil and part of calyx; 4, anthers; 5, base, and 6, open cross sections of the ovary; 7, fruit; 8 and 9, seed. *All except* 7 *and* 8 *enlarged*; 7 *and* 8 *natural size.*

M.S. del et lith

Tabula 2810.

NEOSCHIMPERA HETEROPHYLLA, *Hemsl.*

Rubiaceae. Tribus Psychotrieae.

Neoschimpera, *Hemsl.* Genus novum nulli arcte affine.

Calycis tubus ovoideus ; limbi lobi 4 valvati, persistentes. *Corolla* breviter infundibularis, fauce villosa, lobis 4 valvatis apice inflexis. *Stamina* 4, corollae fauce ad annulum villosum inserta ; antherae cordiformes, dorso affixae. *Discus* conspicuus, carnosus, pulvinatus. *Ovarium* 2-loculare ; stylus breviter bifidus ; ovula in loculis solitaria, e basi erecta, anatropa. *Fructus* siccus, 2-coccus, 2-spermus. *Semina* erecta, ovoidea ; testa crustacea ; embryo minimus, axilis, clavatus, radicula infera.

N. heterophylla, *Hemsl.* (species unica).

Frutex parvus, dense ramosus, ramis gracilibus primum furfuraceo-hirsutis ferrugineis. *Folia* in ramorum confertorum lateralium brevissimorum arcte conferta, magnitudine valde inaequalia, papyracea, subsessilia, lanceolata vel ovalia, 2 mm.–4 cm. longa, integra, apice obtusa vel rotundata, basi cuneata vel minima rotundata, supra glabra vel cito glabrescentia, subtus praecipue secus costam pilis longiusculis pubescentia ; stipulae amplae, intrapetiolares, fimbriatae vel setosae, ferrugineae. *Flores* axillares, solitarii, subsessiles, bracteis e basi lata abrupte longeque acuminatis ferrugineo-pilosis suffulti, circiter 5 mm. diametro. *Calycis lobi* lanceolati, ciliati, erecti, corollae tubum aequantes. *Corollae* lobi ovati, divaricati. *Stamina* corollae lobis breviora, filamentis filiformibus ; antherae introrsae. *Fructus* oblongo-ovoideus, 6–8 mm. longus, calycis lobis coronatus, glaber, nudus, 2-coccus, coccis tarde secedentibus, axi persistente nulla.

Seychelles : Mahé ; forest of the Mount Sebert Estate, at about 400 m., *H. P. Thomasset*, 181.

I have not willingly proposed the new genus of which this plant is the type, but I am unable to bring the species under any hitherto described genus nor can I give its exact position. It is named in memory of the talented A. F. W. Schimper, who died at the early age of forty-five, from the effects of malaria contracted on the coasts of Africa while he was engaged on the German Deep Sea Expedition.—W. Botting Hemsley.

Fig. 1, a stipule ; 2, a flower ; 3, part of calyx, disc, and section of ovary ; 4, corolla laid open and pistil ; 5, fruit ; 6, seed ; 7, section of the same, showing embryo ; 8, embryo. *All enlarged.*

M.S. del. et lith.

Tabula 2811.

TRISTIROPSIS CANARIOIDES, *Boerl.*

Sapindaceae. Tribus Melicocceae.

T. canarioides, *Boerl. ex Valeton in Ic. Bogor.* vol. ii. (1906), p. 285. tt. 186 et 187 ; a *T. acutangula,* Radl., pinnis paucioribus, foliolis paucioribus et fructu globoso haud anguloso recedit.

Arbor excelsa, ramulis foliisque glabris. *Folia* bipinnata, circiter 40 cm. longa et lata ; pinnis utrinque 1–3, 8-12-foliolatis ; foliola alterna, breviter petiolulata, coriacea, ovato-oblonga, 9–18 cm. longa, plus minusve obliqua, obtusa, supra nitida. *Paniculae* amplae, folia subaequantes, e foliorum superiorum axillis erectae, fructiferae pendulae. *Flores* numerosissimi, regulares, hermaphroditi vel polygami, 8–10 mm. diametro. *Sepala* 5, orbicularia, extus puberula, ciliata. *Petala* 5, quam sepala fere dimidio minora, rotundata, sericea, basi biauriculata, auriculis inflexis. *Stamina* 7–11, saepius 10, quam petala breviora, filamentis pubescentibus disci margine interno insertis, antheris bilocellatis apiculatis rimis longitudinalibus dehiscentibus. *Discus* latus, annularis. *Ovarium* pubescens, 4-loculare, loculis uniovulatis, ovulis erectis; stylus brevis, stigmatis lobis parvis. *Fructus* drupaceus, pedunculatus, globosus, 2·5–3 cm. diametro, cerasiformis, laevis vel vix obsolete trisulcus (Valeton quoad fructum).

New Guinea : Without locality, *Teysmann, fide* Valeton.

Kew possesses only a flowering specimen of this species, and that is from a tree cultivated in the Buitenzorg Botanic Gardens. Valeton's figures and description, cited above, appear to have been made from fresh specimens, though he does not actually say so.

Our drawings were made and printed last year, before the flowers of the genus were known ; but Valeton has to a certain extent forestalled us in publication. It was at first supposed that *T. Ridleyi,* Hemsl. (tabula nostra 2812), was the same as *T. canarioides,* Boerl., and it may eventually be proved that this is so, but for the present the best course seems to keep the two apart.

Tristiropsis was founded by Radlkofer (Engler and Prantl, *Natürl. Pflanzenf.* iii. 5, p. 325) on fruiting specimens of two species—namely, *T. obtusangula,* from the Marianne Islands, which Kew does not possess, and *T. acutangula,* from the Solomon Islands. The latter is at Kew, and was collected by Mr. H. B. Guppy on the summit of Oima Island. *T. subangula,* K. Schum. (Lauterbach, *Nachträge zur Fl. der Deutsch. Schutzgeb. der Südsee,* p. 310), from German New Guinea, is apparently the same as *T. acutangula,* Radlk.—W. Botting Hemsley.

Fig. 1, a flower ; 2, a petal ; 3, the same, with the auricles flattened out ; 4, back and front views of a stamen ; 5, pistil, probably imperfect ; 6, longitudinal section of ovary ; 7 and 8, cross sections of ovaries. *All enlarged.*

2.

M.S. del. et lith

Tabula 2812.

TRISTIROPSIS RIDLEYI, *Hemsl.*

Sapindaceae. Tribus Melicocceae.

T. Ridleyi, *Hemsl.* (*sp. nov.*); a *T. canarioide*, Boerl., foliis multo minoribus (an semper?), calyce deciduo et fructu oblongo breviter stipitato differt.

Arbor excelsa, ramis foliisque cito glabrescentibus. *Folia* bipinnata, pinnis 2 vel 3, 3–8-foliolatis; foliola alterna, breviter petiolulata, coriacea, oblongo-lanceolata, 4–8 cm. longa, saepius leviter obliqua, obtusa, supra nitida. *Flores* ignoti. *Paniculae* fructigerae parvae, folia vix excedentes. *Fructus* oblongo-ovoideus, obscure costatus, acuminatus, breviter stipitatus, cum stipite circiter 3 cm. longus, lignosus, indehiscens, 4-locularis vel abortu loculis paucioribus; loculi monospermi, intus puberuli. *Semina* erecta, exalbuminosa; cotyledones carnosae, aequales, radicula minima.

Indian Ocean: Christmas Island, about 200 miles south of the west end of Java; Phosphate Hill, *H. N. Ridley*, 67.

This almost certainly belongs to the same species as a specimen collected in the island by Mr. J. J. Lister, F.R.S., in 1887, and recorded by me (*Journ. Linn. Soc.* vol. xxv. p. 353) as probably belonging to the Burseraceae; but Lister's plant has leaves and leaflets twice the size of those figured here, and it is therefore advisable to await further material before giving the same name to all the specimens. Lister's specimen was collected at Flying Fish Cove, and is noted as being from a tree 100 feet high with a trunk thirteen feet in diameter.—W. Botting Hemsley.

Fig. 1, cross section of a four-celled fruit; 2, portion of hairy interior of cell of fruit; 3 and 4, seed; 5, cross section of seed; 6, embryo; 7, the same, from which one cotyledon has been removed. *Figures* 1 *and* 3 *natural size; the rest enlarged.*

M.S. del et lith

Tabula 2813.

WIELANDIA ELEGANS, *Baill.*

Euphorbiaceae. Tribus Phyllantheae.

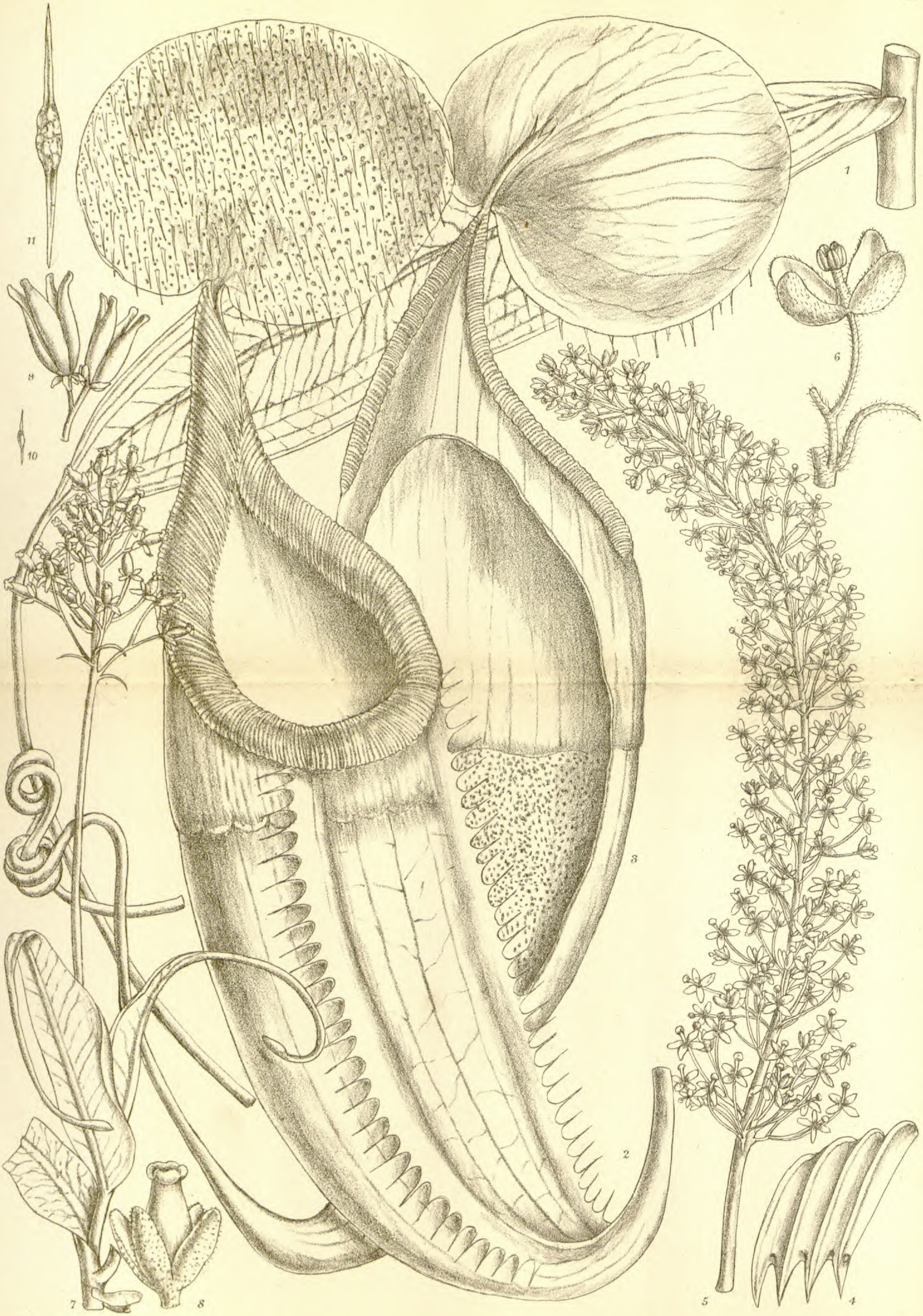
W. elegans, *Baill. Étude Générale du Groupe des Euphorbiacées* (1858), p. 568, t. 22, ff. 6–10 (species unica).

Frutex 3-metralis (Horne), dense ramosus, omnino glaber. *Rami* graciles, demum verruculosi, internodiis quam foliis brevioribus. *Folia* alterna, breviter petiolata, coriacea, oblongo-lanceolata, 4–8 cm. longa, acuminata, acuta, basi cuneata vel rotundata, integerrima, venis inconspicuis. *Flores* unisexuales, in foliorum superiorum axillis fasciculato-racemosi ; racemi 2–12-flori, folia subaequantes, monoici, floribus 1–4 terminalibus femineis longe pedicellatis ; vel flores interdum solitarii ; bracteae et bracteolae obsoletae. *Flores masculi* circiter 5 mm. diametro, pedicellis filiformibus usque ad 1 cm. longis ; calyx alte 5-fidus, lobis rotundatis imbricatis quam petalis dimidio brevioribus ; petala 5, lata, emarginata vel breviter biloba ; discus alte cupularis, obscure 5-lobus ; stamina 5, petalis alterna, filamentis in columnam crassam supra mediam connatis parte libera incrassatis, antheris basifixis recurvis loculis parallelis longitudinaliter dehiscentibus ; ovarii rudimentum columnam stamineam terminans, vertice planum, inter stamina radiatim 5-lobum, lobis 3-denticulatis. *Florum femineorum* calyx et petala maris, sed saltem duplo majora ; discus cupularis, ovarium usque ad medium cingens ; ovarium 5-loculare, stylis brevibus arcte recurvis ; ovula in loculis gemina, pendula. *Fructus* capsularis, depresso-globosus, 2–2·5 cm. diametro, laevis ; exocarpium tenue, coriaceum ; endocarpium lignosum, durum, ab exocarpio demum solutum ; loculi bivalves, abortu monospermi, valvis omnino deciduis columellam persistentem relinquentibus. *Semina* nigra, laevia, trigono-ovoidea, exalbuminosa ; testa duplex, exterior tenuiter crustacea, interior membranacea ; cotyledones carnosae, inaequales, plus minusve lobatae, interdum alte lobatae, lobis valde inaequalibus ; radicula minuta. — *Savia elegans*, Muell. Arg. in Linnaea, vol. xxxii. p. 78 ; DC. Prodr. vol. xv. pars 2, p. 228.

Seychelles : en allant à la forêt noire, *G. de l'Isle* ; common in Mahé and Praslin, J. *Horne*, 445. Mahé ; Cascade Estate, *H. P. Thomasset*, 193.

This is the plant referred to by Baker (Flora of Mauritius and Seychelles, p. 291) as perhaps a species of *Mespilodaphne*. The fruit and seed are here described and figured for the first time, and, like several of the genera with which it has been associated, it has exalbuminous seeds. *Wielandia* is also remarkable for the complete pentamery of the floral whorls. All the figures are from Mr. Thomasset's specimens.—W. Botting Hemsley.

Fig. 1, a male flower; 2, disk and androecium ; 3, a female flower ; 4, disk and gynaecium ; 5, longitudinal section of the same ; 6, cross section of the ovary ; 7, ripe fruit ; 8, one of the carpels after dehiscence from the inside ; 9, side view of the same ; 10, seeds ; 11, seed from which part of the testa has been removed ; section of a seed, showing an extra, thin lobe. *Figures 7–10 natural size ; the rest enlarged.*



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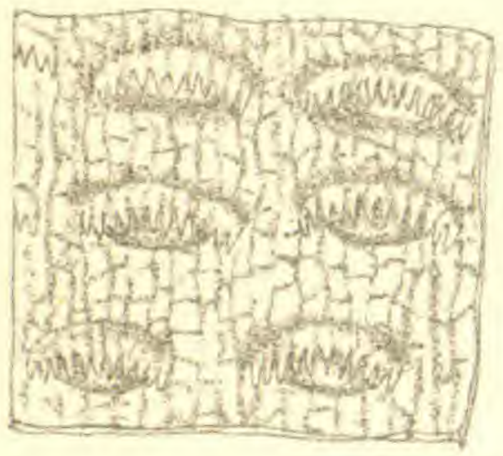

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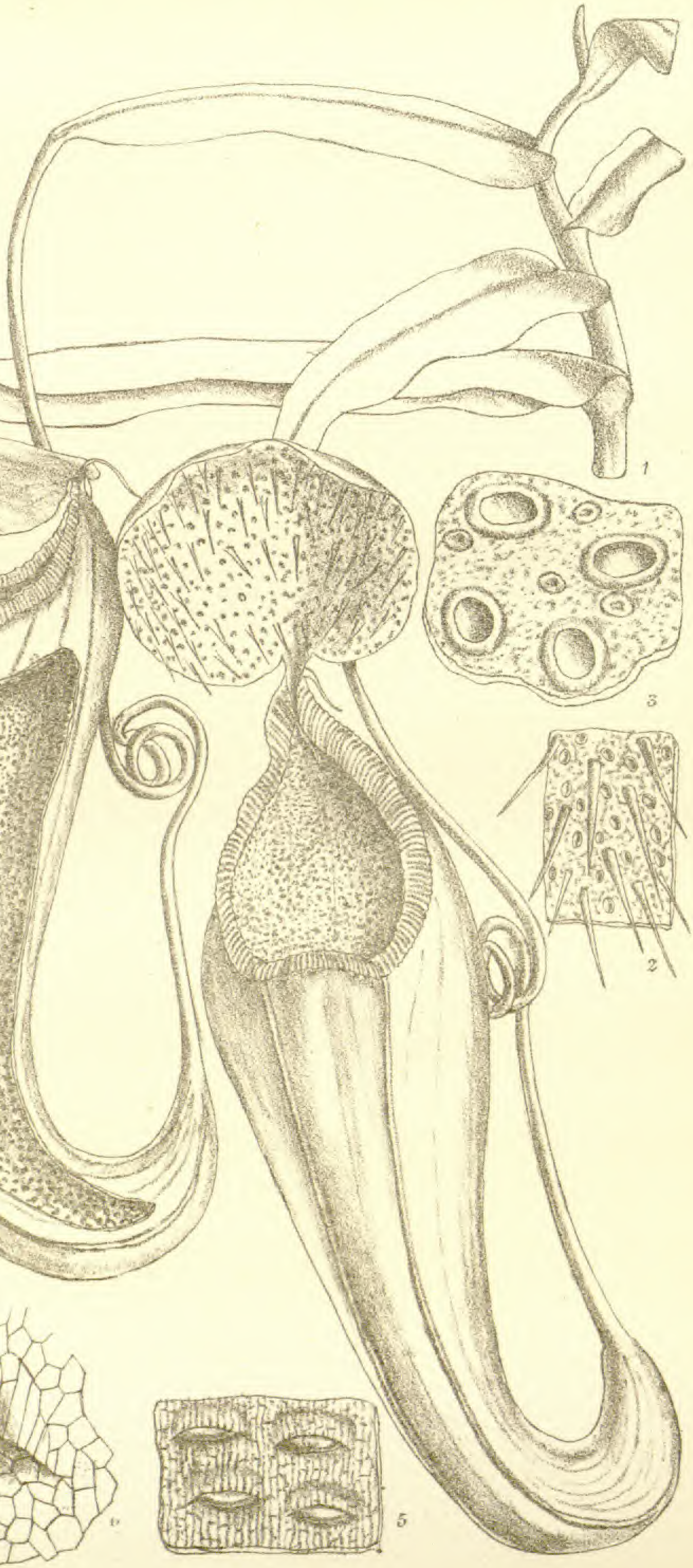

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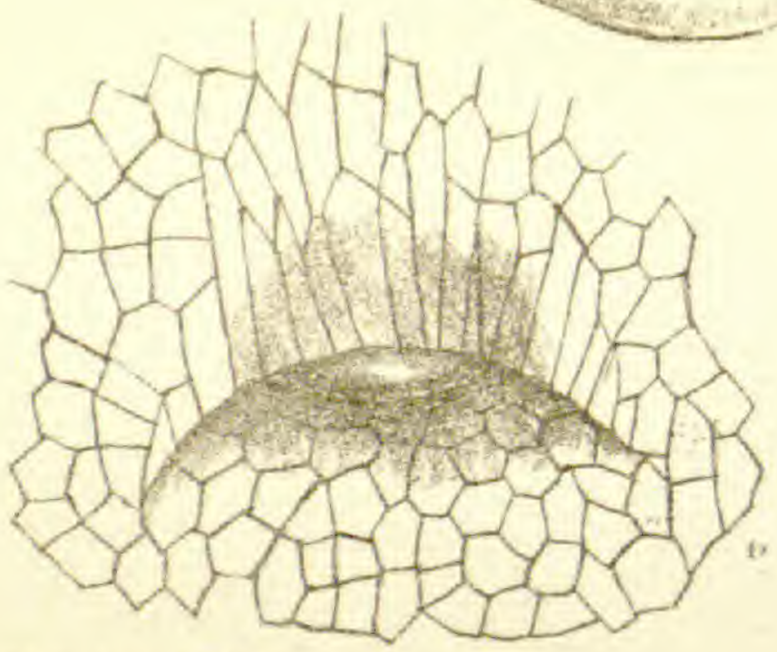

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Tabulae 2814 et 2815.

NEPENTHES MACFARLANEI, *Hemsl.*

NEPENTHACEAE.

N. Macfarlanei, *Hemsl. in Proc. Linn. Soc.* 1905, p. 12, *et Gard. Chron.* 1905, vol. i. p. 241, absque descriptione plena ; praeter *N. Lowii*, Hook. f. species sola est hucusque descripta operculo subtus setoso, sed ascidiorum forma a *N. Lowii* diversissima.

Caules scandentes, 2–5 m. longi, glabri vel cito glabrescentes, ramis florigeris 5–10 mm. crassis. *Folia* sessilia, semiamplexicaulia, coriacea, angusta, 3–15 cm. longa, glabra, venis immersis obscurissimis ; costa subtus elevata, in cirrhum 10–30 cm. longum puberulum producta. *Ascidia* inferiora vel ramorum sterilium minora, tenuia, glabra, cornifformia, circiter 10 cm. longa, e basi curvata sursum gradatim dilatata, extus minute verruculosa ; costae duae anticae angustissimae, exalatae, venis inconspicuae ; intus, praeter zonam angustissimam peristomio propinquam, creberrime glandulosa, pallida, nitida ; glandulae uniformes, numerosissimae, minimae, sub tela cellulosa semitectae. *Os* obliquum, diametro maximo circiter 3 cm. *Peristomium* angustum, semiteres, creberrime transverse plicatum, plicis tenuissimis, postice in collum brevem productum, dorso calcaratum, calcare flaccido. *Operculum* orbiculatum, basi cordatum, demum semi-erectum, quam os majus, extus glabrum, intus glandulis magnis apertis et minoribus perithecioideis melliferis numerosis cum setis rectis rigidiusculis intermixtis ornatum ; glandulae apertae ovales vel rotundatae, marginatae, ·5–·8 mm. diametro ; setae unicellulares, erectae, 6–8 mm. longae. *Ascidia* superiora vel ramorum fertilium saepius majora, interdum cum operculo erecto usque ad 30 cm. longa, et 8 cm. diametro, sed saepius inter 12 et 18 cm. longa, extus costae duae anticae exalatae vel late fimbriato-alatae, intus a basi usque ad medium, vel interdum ultra medium, nitida, glandulis parvis semitectis crebre instructa, supra medium nuda, glauca. *Peristomium* latius, margine interiore pectinatum, dentibus minutis numerosissimis, inter dentes uniporosum, uniglandulosum, collo interdum, ut in icone, valde elongato, dorso apice in appendice angusto flaccido erecto tridentato producto. *Operculum* usque ad 7 cm. diametro, setis numerosissimis usque ad 1 cm. longis instructum. *Flores* utriusque sexus dense angusteque racemoso-paniculati ; paniculae masculae usque ad 17 cm. longae ; paniculae femineae 8–10 cm.

longae, fructiferae densissimae, bracteis paucis linearibus instructae. *Perianthium* utriusque sexus 4-partitum, segmentis oblongis obtusis 3–4 mm. longis. *Stamina* 4 vel 5. *Capsulae* circiter 2 cm. longae, perianthio persistente suffultae.

Malay Peninsula : Perak ; Gunong Bubu and other near localities, at elevations of 1,450 to 2,000 m., *Merton*, 36 ; *L. Wray*, junr., 339, 1643, 3849 ; *Dr. King's Collector*, 7395, 7421 ; *Scortechini*.

This very handsome and distinct species of *Nepenthes* appears to be quite local. Kew has possessed H. J. Merton's specimen, represented on plate 2815, ever since 1878, and it was only after this had been drawn and lithographed that a very fine set of specimens of the same species was received on loan from Calcutta. It is named in compliment to my friend Professor Macfarlane, formerly of Edinburgh, now of Philadelphia, who has for many years made a special study of the Nepenthaceae and Sarraceniaceae.—W. Botting Hemsley.

Tabula 2814.

Fig. 1, portion of flowering-branch and a leaf; 2, pitcher from the same; 3, longitudinal section of pitcher, showing the glandular and eglandular zones; 4, portion of the toothed inner margin of the peristomium, showing the pores between the teeth leading to immersed honey-glands; 5, a male inflorescence; 6, a male flower; 7, a female inflorescence; 8, a female flower; 9, ripe capsules; 10 and 11, seeds. *Figures* 4, 6, 8, *and* 11 *enlarged ; all the rest natural size.*

Tabula 2815.

Fig. 1, branch of a young plant bearing pitchers, whose inner surface is wholly covered with digestive glands; 2, portion of the inner surface of the operculum, showing bristles and large open honey-glands; 3, a portion of the same, showing open and peritbecioid glands; 4, portion of the interior of a pitcher, showing digestive glands as they appear when very dry; 5, the same after soaking a long time; 6, a single gland × 80. *Figure* 1, *natural size ; all the rest much enlarged.*

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M. S. del et lith

Tabula 2816.

STEVIA REBAUDIANA, *Hemsl.*

Compositae. Tribus Eupatoriaceae.

S. Rebaudiana, *Hemsl.* (*sp. nov.*) ; species *S. collinae* similis, differt statura graciliore, et foliis glabrescentibus anguste lanceolatis conspicue venosis.

Herba annua (*fide* Bertoni), fere undique obscure puberula. *Caules* gracillimi, erecti, 30–45 cm. alti, praeter inflorescentiam simplices. *Folia* papyracea, subdisticha, spathulato-lanceolata, 2–4 cm. longa, et usque ad 1 cm. lata, obtusa, deorsum attenuata, haud distincte petiolata, supra medium crenulata, glabrescentia, subtrinervia et elevato-venosa. *Capitula* parva, 5-flora, racemoso-corymbosa, corymbis pauciramosis, ramis pedunculisque gracillimis. *Involucri bracteae* 5, tenues, scariosae, angustae, acutissimae, flores fere aequantes. *Corolla* glandulosa ; lobi lati, obscure barbati. *Antherae* appendice oblonga apice instructae. *Achaenia* parva, angulata, glandulosa. *Pappi setae* circiter 20, filiformes, scabridae, quam corollae tubus breviores.—*Eupatorium Rebaudianum*, Bertoni in Boletino de la Escuela de Agricultura de la Asuncion del Paraguay, vol. ii. (1899), p. 35.

Paraguay : Highlands of Amambai northward to the sources of the Rio Monday, one of the tributaries of the Paraná, in about 55° W. and 25° 30′ S., *Bertoni* ; *Gosling*.

Early in 1901 Mr. Cecil W. Gosling, H.B.M. Consul at Asuncion, Paraguay, sent to Kew some fragments of a plant known by the names of *caá-êhê* and *azuca-caá*, together with Dr. Bertoni's description, to which a reference is given above, and other information, all of which is reproduced in the 'Kew Bulletin,' 1901, p. 173. Since then better specimens, from the same source, have been received through Sir Daniel Morris, Commissioner, Imperial Agricultural Department, Barbados, West Indies, and from these the accompanying plate was drawn by Miss M. Smith. The plant contains a large percentage of saccharine matter, and has awakened considerable interest in cultivators of plants for economic purposes. From time to time paragraphs have appeared in the daily papers on this so-called sugar plant of South America ; but so far as we know it has not yet been the object of experimental cultivation.—W. Botting Hemsley.

Fig. 1, an involucral bract ; 2, a flower ; 3, a bristle of the pappus ; 4, anthers ; 5, style. *All enlarged.*

M.S. del. et lith.

TABULA 2817.

SINOWILSONIA HENRYI, *Hemsl.*

HAMAMELIDACEAE.

Sinowilsonia, *Hemsl.* Genus novum inter *Sycopsin* et *Corylopsin*; a priore foliis papyraceis deciduis, floribus femineis in spicas elongatas terminales dispositis, sepalis cochleari-spathulatis, et staminodiis 5 sepalis oppositis differt; a posteriore floribus unisexualibus (dioicis ?), florum femineorum receptaculo tubuloso-ventricoso et petalis deficientibus recedit.

Flores unisexuales, feminei tantum visi. *Receptaculum* (calycis tubus sensu auctorum nonnullorum) urceolatum vel tubuloso-ventricosum, ovarium multo superans. *Sepala* 5, receptaculi ori affixa, cochleari-spathulata, breviter unguiculata. *Petala* nulla. *Staminodia* 5, staminiformia, mucronata, sepalis opposita et iis dimidio breviora. *Ovarium* fere liberum, 2-loculare; styli liberi, exserti, sepala excedentes; ovula in loculis solitaria, ab apice loculorum pendula. *Capsula* lignescens, sessilis, basi lata, ovoidea, receptaculo supra medium arcte vestita, 2-locularis, 2-sperma, ultra medium loculicide dehiscens, bivalvis; endocarpium corneum, ab exocarpio solutum. *Semina* oblonga; testa dura, nitida, laevis, basi hilo transverso notata; albumen tenuissimum; embryo rectus, axilis, albumen fere aequilongus; cotyledones planae, amplae; radicula brevissima.

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

Arbor 3–6 m. alta, ramulis florigeris graciliusculis foliisque stellato-puberulis. *Folia* iis *Tiliarum* nonnullarum similia, tenuia, fere membranacea, alterna, breviter petiolata, late obovata, elliptica vel fere orbicularia, 10–18 cm. longa, 6–11 cm. lata, acuminata, acuta, basi rotundata vel obscure cordato-lobata, supra demum glabrescentia; venae primariae laterales utrinque 7–9, arcuatae, ut secundariae et tertiariae per totum ambitum in dentes callosos excurrentes. *Stipulae* lineares, circiter 8 mm. longae, citissimo deciduae. *Flores* masculini ignoti; feminei inconspicui, in spicas terminales simplices breviter pedunculatas cum pedunculo 10–12 cm. longas dispositi, numerosi. *Receptaculum* circiter 6 mm. longum, 3mm. latum, extus pilis stellatis multiradiatis, intus pilis longis rectis sericeis dense vestitum. *Sepala* 1 mm. longa. *Staminodia* 5 mm. longa. *Styli* filiformes, quam sepala

dimidio longiores. *Spicae* fructiferae 15-20 cm. longae. *Capsulae* basi lata affixae, circiter 8 mm. longae, receptaculo persistente dense stellato-pubescente, semi inclusae ; epicarpium dense strigosum.

China : Hupeh, Hsingshan and Fang ; *A. Henry*, 6559 ; high hills, Fang, *E. H. Wilson*, 2021.

The investigation of this interesting new genus has involved the examination of several allied genera, more especially *Distylium* S. et Z. and *Sycopsis*, D. Oliv., including a number of unpublished species, and the results are so important as to call for further illustration and description. We have now sufficient material of both of the genera named to admit of the completion of their definitions ; this will be done in the next part of the 'Icones Plantarum.' It is certain that the flowers of *Distylium* are not polygamous, and that the male flowers of *Sycopsis* are more highly organised than was supposed. The genus *Sinowilsonia* is named in compliment to Mr. E. H. Wilson, whose excellent collections have thrown light on many doubtful points conected with Chinese plants.—W. Botting Hemsley.

Fig. 1, a flower attached to the axis ; 2, a stellate hair from the outside of the receptacle ; 3, a sepal ; 4, a staminode ; 5, a longitudinal section of the receptacle ; 6, a hair from the inside of the receptacle ; 7, portion of a spike of ripe capsules ; 8 and 9, seed ; 10, section of the seed, showing the embryo ; 11, section of seed and embryo through the cotyledons. *All except* 7 *and* 8 *enlarged.*

M.S. del et lith

CORYLOPSIS GLANDULIFERA, *Hemsl.*

HAMAMELIDACEAE.

C. glandulifera, *Hemsl.* (*sp. nov.*); a speciebus omnibus nobis cognitis novellis pilis glanduloso-capitatis inter pilos simplices longissimos parce praeditis differt, ceterum *C. spicatae* arcte affinis, ab ea petalis orbiculari-obovatis recedit.

Frutex vel arbor parva. *Folia* (juniora ramulorum floriferorum tantum visa) breviter petiolata, oblique ovato-oblonga, 2–5 cm. longa, utrinque rotundata, supra parcissime pilosula cito glabrescentia, subtus pilis longis sericeis appressis densis tardius deciduis et pilis paucis erectis glanduloso-capitatis subpersistentibus vestita; venae primariae utrinque circiter 7 crassae, in dentes 2 mm. longos excurrentes. *Stipulae* ramulorum floriferorum oblongo-orbiculares, circiter 14–16 mm. longae et 1 cm. latae, basi biauriculatae, extus glabrescentes, intus dense sericeo-hirsutis. *Spicae* laxae, graciles, pauciflorae, cum pedunculo 5–7 cm. longae. *Calyx* glaber, lobis ovato-oblongis. *Petala* late obovato-spathulata, apice rotundata, circiter 6 mm. longa. *Stamina* petalis breviora. *Nectaria* complanata, bidentata, dentibus acutis, calycis lobos aequantia. *Styli* glabri. *Capsula* ignota.—*C. spicata*, Hemsl. in Journ. Linn. Soc. vol. xxiii. p. 290, pro parte, non Sieb. et Zucc.

CHINA: Kiangsi; Kiukiang, *Maries*. Chekiang; Tientai Mountains, at 600–900 m., *Faber*, 177.

From the examination of fresh specimens and a more critical comparison with the dried material at Kew, I was led to the conclusion that the specimens I had formerly referred to *C. spicata* do not belong to that species, and I described (*Gard. Chron.* 1906, vol. i. p. 18, f. 12) one species, partly from cultivated, partly from fresh specimens, under the name of *C. sinensis*. To *C. sinensis* belongs a specimen collected at Kiukiang by Shearer, which is one of those I referred to *C. spicata* in the publication cited above.

A specimen collected by Maries in the same district is my *C. glandulifera*. It is true that these species are closely allied and very similar in aspect, but the floral structure, as illustrated in plate 2820, affords distinctive specific characters.

By an oversight the localities in which *C. sinensis* has been collected were omitted from my account of the species in the 'Gardeners' Chronicle.' They are: Kiangsi; Kiukiang, *Shearer*, 50; *Faber*, 929. Hupeh; Chienshih, *A. Henry*, 5854; Chang-yang, at 1,860 m., *E. H. Wilson*, 65 and 691. Szechuen; near Tachienlu, *Pratt*, 85.—W. BOTTING HEMSLEY.

Fig 1, portion of petiole, showing capitate glands and simple hairs; 2, a flower with bract and bracteoles; 3, the same, from which the petals and stamens have been removed; 4, nectaries. *All enlarged.*

M.S.del.et lith.

Tabula 2819.

CORYLOPSIS WILSONI, *Hemsl.*

HAMAMELIDACEAE.

C. Wilsoni, *Hemsl.* (*sp. nov.*); inter species hucusque descriptas *C. multiflorae* proxima, ab illa foliis acutis vel acuminatis, spicis longioribus et petalis lineari-lanceolatis stamina aequantibus recedit.

Frutex vel arbor parva, ramulis foliisque primum stellato-pubescentibus. *Folia* graciliter petiolata, coriacea, ovato-lanceolata, obovata vel fere elliptica, cum petiolo 2·5 cm. longo, 7–15 cm. longa, abrupte longeque acuminata, acuta, basi leviter cordata, aequalia, supra cito glabrescentia, nitida; venae primariae utrinque circiter 9, supra impressae, subtus elevatae in dentes setaceos excurrentes. *Ramuli* floriferi axillares, saepius (an semper ?) folio evoluto unico instructi, 5–7·5 cm. longi; foliorum immaturorum stipulae ovato-rotundatae, 14–18 cm. longae, per anthesin folia juvenilia occultantes, extus dense sericeotomentosae, intus minus hirsutae; bracteae et bracteolae stipulis similes, minores. *Flores* glabri. *Calycis dentes* minuti, fere obsoleti. *Petala* lineari-spathulata, circiter 5 mm. longa. *Stamina* petalis breviora stylos excedentia, filamentis filiformibus. *Nectaria* 5, crassa, carnosa, apice truncata vel concava. *Ovarium* sessile, late affixum, glabrum, parietibus crassis; styli erecti, apice recurvi. *Capsula* matura non visa, glabra, stylis divergentibus coronata.

CHINA: Western Hupeh, *E. H. Wilson*, 18.

This species has several characters in common with *C. multiflora*, Hance (tab. nostr. 2820, ff. 10–13), including fleshy, truncate nectaries, and a thick-walled ovary. It has elongated, lateral flowering branches bearing one adult leaf, as well as young leaves concealed by the large stipules. In *C. multiflora* the flowering branches bear about three adult leaves, as well as young ones.

Corylopsis Wilsoni and *C. multiflora*, Hance, differ from the other Chinese and Japanese species in having one or more developed leaves on the lateral flowering branches in addition to the undeveloped ones, which are more or less concealed by their large stipules at the time that the flowers expand. They also differ from the others in the large stipules of the flowering branches being very hairy on the outside, and in having thick, truncate nectaries. *C. manipurensis*, Hemsl. (hujus

operis t. 2820, ff. 5 et 6) has a developed leaf on the flowering branches at the time of expansion, but apparently no undeveloped ones.

Fig. 1, a flower with bract and bracteole; 2, pistil attached to axis, one stamen, and nectaries; 3, a stamen; 4, a nectary; 5, a section of the ovary, with portions of the styles and three nectaries; 6, spike of imperfect capsules. *All except 6 enlarged.*

The letterpress to t. 2820 includes an amended description of the genus *Corylopsis*, which presents some very curious and interesting points, especially in the development of the leaves on the flowering branches. I may add here the differential characters of the two other new species.

C. Henryi, *Hemsl.* (*sp. nov.*) tab. nostr. 2820, ff. 14–16; a speciebus omnibus hactenus cognitis ovario fere libero in tubo calycis incluso differt.

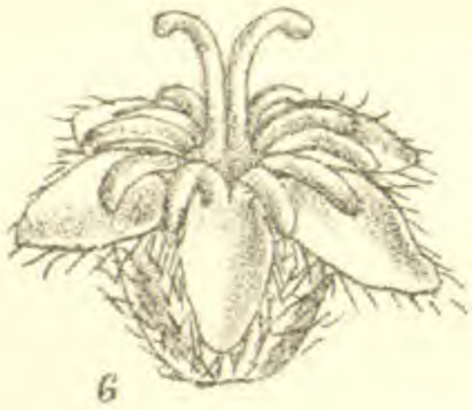
Frutex vel arbor parva ramulis gracillimis glabrescentibus. *Folia* matura non visa. *Ramuli florigeri* cum spicis breves; stipulae rotundatae, extus fere glabrae; folia statu valde immaturo tantum visa. *Flores* omnibus partibus glabri, conferti; bracteae et bracteolae extus fere glabrae. *Calycis lobi* ovato-oblongi, obtusi, circiter 2 mm. longi, tubo paulo longiores. *Petala* lanceolato-spathulata, 6–8 mm. longa, obtusa, 7-striata. *Stamina* petala aequantia. *Nectarii squamae* complanatae, bidentatae, dentibus acutis, sepalis breviores. *Capsula* ignota.

China: Hupeh; Patung, *A. Henry*, 1444.

C. manipurensis, *Hemsl.* (*sp. nov.*), tab. nostr. 2820. ff. 5 et 6; species floribus foliis coetaneis, ab omnibus speciebus adhuc descriptis floribus petalo unico tantum instructis recedit.

Frutex ramosissimus (*fide* Watt) ramulis crebre lenticellatis. *Folia* (matura non visa) obovata, cum petiolo gracili brevi 6–7 cm. longa, acuminata, supra glabra vel citissimo glabrescentia, subtus, praesertim secus venas primarias, pilis longis simplicibus instructa. *Stipulae* lanceolatae 2–2·5 cm. longae, acutae, extus glabrae, intus sericeo-pilosae. *Rami* floriferi saepissime monophylli, breviter sericeo-pilosi. *Spicae* absque pedunculo brevi circiter 4 cm. longae. *Bracteae bracteolaeque* utrinque dense sericeae. *Flores* hirsuti. *Calycis lobi* ovato-oblongi, brevissimi. *Petalum* lanceolatum, unguiculatum, circiter 12 mm. longum. *Stamina* 3 mm. longa. *Nectarii lobi* 10, teretes, recurvi. *Styli* quam petalum quater breviores. *Fructus* ignotus.—*C. himalayana* var. *manipurensis*, Watt, mss.

India: Manipur; Sirohifurar, N.E. Ranges, at 1,950 to 2,250 m., *G. Watt*, 6434.—W. Botting Hemsley.



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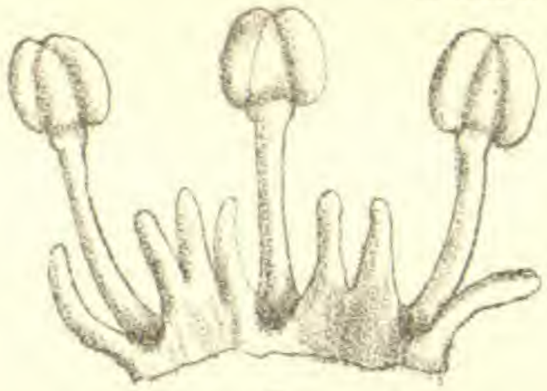

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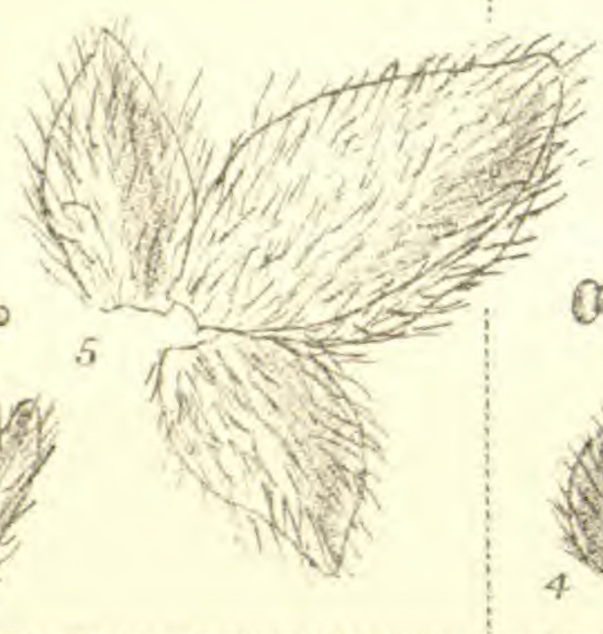

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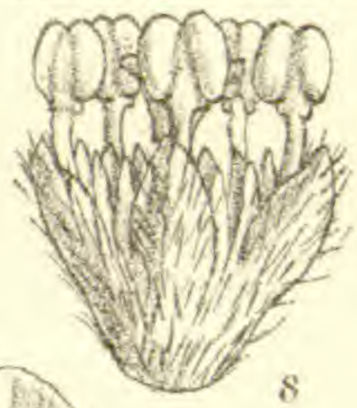

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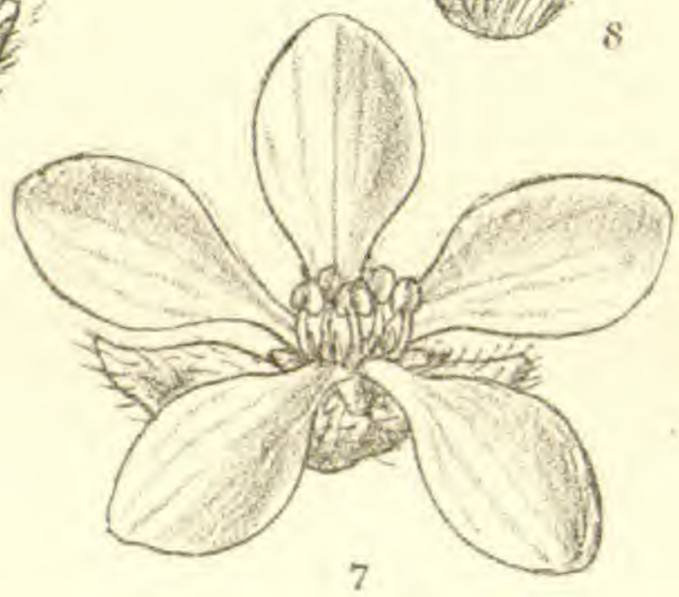

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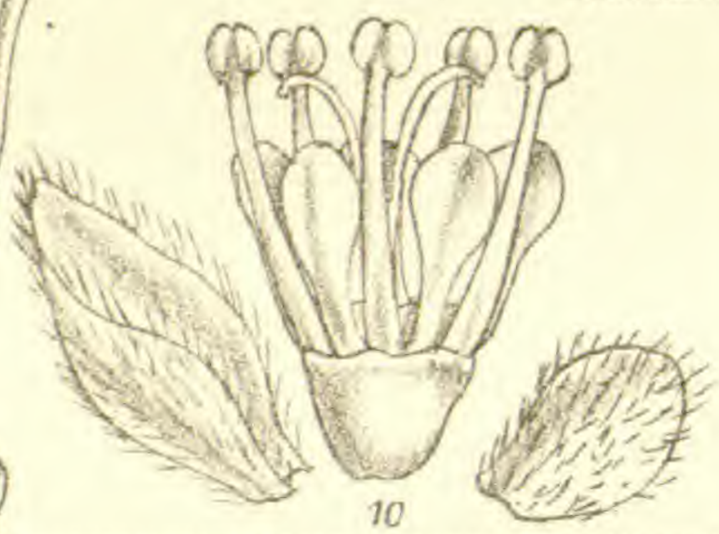

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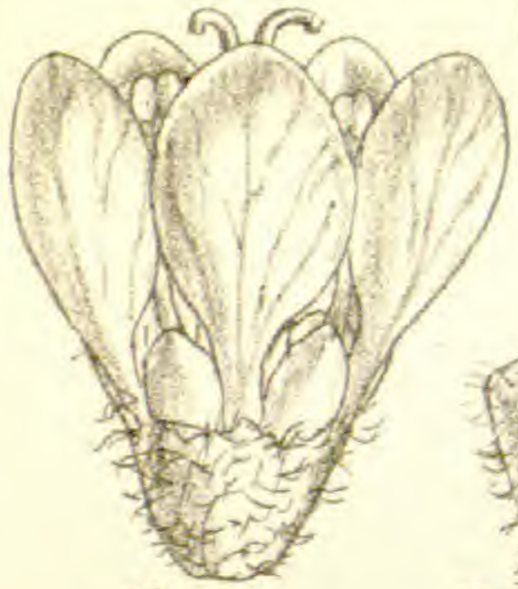

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M.S. del, et lith.

Tabula 2820.

CORYLOPSEOS SPECIERUM DIVERSARUM ANALYSES.

Hamamelidaceae.

Corylopsis, *Sieb. et Zucc. Fl. Jap.*, vol. i., p. 45, tt. 19 et 20.—Descriptio hic emendata.

Calycis tubus ovario adnatus, semiadnatus vel fere omnino liber, truncatus, 5-dentatus vel distincte limbatus; limbus 5-lobus, lobis ovatis valvatis diu persistentibus. *Petala* 5, vel 1 (in *C. manipurensi*), perigyna, spathulata vel orbicularia, deorsum gradatim attenuata vel plus minusve distincte unguiculata. *Stamina* 5, cum petalis inserta, iisdem alterna; filamenta filiformia vel dilatata, libera; antherae, basifixae, oblongae vel fere quadratae, in connectivo angusto laterales, valvis 2 longitudinalibus dehiscentes. *Pollen* globosum, 20–30 μ diametro, triporosum, rimis 3 longitudinalibus ad polos non confluentibus notatum. *Nectaria* vel staminodia inter stamina et pistillum saepe 5, cum staminibus alternantia, crassa et truncata, vel tenuia, plana et bidentata vel bifida, rarius 10 vel plus quam 10. *Ovarium* 2-loculare; styli filiformes, saepius elongati, divergentes, stigmate capitato; ovula in quoque loculo solitaria, pendula. *Capsula* 2-locularis, saepissime semisupera, subglobosa, saepius circiter 6 mm. diametro, a vertice usque ad medium septicide et loculicide dehiscens, 4-valvis; valvae basibus stylorum induratis fissis coronatae; pericarpium lignescens, usque ad medium calycis tubo incrassato primum subcarnoso cinctum; endocarpium corneum ab exocarpio solutum. *Semina* solitaria, pendula, oblongo-cylindracea, 4–5 mm. longa, apice subacuta; testa dura, ossea vel crustacea, nigra vel alba, nitida, basi hilo selliformi notata; albumen tenue, carnosum. *Embryo* rectus; cotyledones planae; radicula brevis, ad hilum spectans. *Frutices* vel arbores parvae, novellis pilis stellatis et simplicibus elongatis vestitis, rarissime pilis capitato-glandulosis additis. *Gemmae* perulatae, foliiferae vel etiam floriferae, foliis stipulis obtectis longitudinaliter conduplicatis simulque secundum venas primarias transversim plicatis. *Ramuli* floriferi ex axillis foliorum delapsorum producti, primum penduli, saepissime 1–3 foliati; folia quam flores tardius evoluta. *Folia* decidua, simplicia, petiolata, saepius ovato-cordata vel orbicularia, inaequilateralia; venae laterales primariae saepius numerosae, conspicuae, rectae, ut secundariae et tertiariae paucae, prope laminae basin in dentes callosos excurrentes. *Stipulae* amplae, caducae, basi biauriculatae, biformes, illae ramulorum floriferorum majores, coloratae, per anthesin persistentes. *Flores* sessiles praecoces, lutei, mediocres, in spicas strobiliformes flexiles nutantes dispositi, singuli bractea ampla et bracteolis 2 similibus sed minoribus

suffulti. *Spicae* fructiferae rigidae, ascendentes.—Species circiter 12, Indiae boreali-orientalis, Chinae et Japoniae incolae.

Corylopsis himalayana, *Griff.* in Journ. As. Soc. Beng. vol. xxiii. (1854), pp. 641 et 649, var. a. t. 32 (*C. grata*) excl. fig. 3, non *C. himalayana*, Bot. Mag. t. 6779, quae eadem est ac *C. Griffithii*, *Hemsl.* in Gard. Chron. 1906, vol. i. p. 19.

Fig. 1, floral bract, one of the pair of bracteoles, and a flower; 2, a petal; 3, a part of the andrœcium and nectaries; 4, a pistil. *All enlarged, mostly about three times; the single petal four times.*

India: Bhotan; Tongsa and other localities, at about 1,600 to 2,250 m., *W. Griffith*, 593.

Corylopsis manipurensis, *Hemsl.*, species nova sub tab. 2819.

Fig. 5, a bract, two bracteoles, and flower; 6, a flower at a later stage, without petal, calyx-lobes reflexed and the terete nectaries reflexed over them. *Enlarged; the flowers about five times.*

India: Manipur; Sirohifurar, at 1,950 to 2,250 m., *G. Watt*, 6434.

Corylopsis Griffithii, *Hemsl.* in Gard. Chron. 1906, vol. i. p. 19. *C. himalayana*, Griff. var. b. in Journ. As. Soc. Beng. vol xxiii. (1854), p. 641, t. 32, f. 3 tantum; Bot. Mag. t. 6779.

Fig. 7, a flower; 8, the same, without the petals; 9, pistil and nectaries. *Enlarged four to five times.*

India: Khasia; Bogu Panee, *J. D. Hooker* and *T. Thomson*.

Corylopsis multiflora, *Hance* in Ann. Sc. Nat. 4^{me} série, vol. xv. p. 224.

Fig. 10, a bract, one of the bracteoles, and a flower; 11, a pistil and nectaries; 12, a petal; 13, a perpendicular section of the ovary, showing the thick walls. *Enlarged three to five times.*

China: Fokien; Hills of Ankoe, western limits of the Province, *C. F. M. de Grijs*, hb. Hance, 6684.

Corylopsis Henryi, *Hemsl.*, species nova sub tab. 2819.

Fig. 14, a bract and a bracteole; 15, a flower; 16, a calyx laid open, showing the free pistil. *Enlarged three to six times.*

China: Hupeh; Patung, *A. Henry*, 1444.

C. sinensis, *Hemsl.* in Gard. Chron. 1906, vol. i. p. 18, f. 12.

Fig. 17, an attached old flower, subtended by a bract and two bracteoles; 18, a perfect flower; 19, a stellate hair from the calyx-tube; 20, a longitudinal section through the ovary, with part of the calyx-lobes and nectaries. *Enlarged twice to four times.*

China: Hupeh; Changyang, *E. H. Wilson*, 691.

W. Botting Hemsley.

M.S. del. et lith.

Tabula 2821.

GEOPANAX PROCUMBENS, *Hemsl.*

ARALIACEAE.

Geopanax, *Hemsl.* Genus novum ex affinitate *Heptapleuri* et *Schefflerae*, differt petalis connatis staminibus et ovarii loculis quam petalis duplo pluribus.

G. procumbens, *Hemsl.* (species unica). Frutex in rupibus procumbens, praeter inflorescentiam glaber, ramis ultimis crassis, cortice ruguloso. *Folia* in ramorum apicibus conferta, digitatim composita ; petioli teretes, 5–10 cm. longi ; foliola saepius 8, coriacea, inaequalia, distincte petiolulata, oblonga vel lanceolato-oblonga, cum petiolulo 10–17 cm. longa, integra, acute acuminata, venis immersis inconspicuis ; stipulae circiter 1 cm. longae, intra petiolum connatae, acutae. *Flores* racemoso-capitati ; racemi circiter 15 cm. longi ; capitula circiter 10-flora, sessilia vel inferiora breviter pedunculata. *Calycis limbus* angustissimus, truncatus. *Petala* 5, in calyptram deciduam cohaerentia. *Stamina* 10. *Ovarium* 8–10 loculare, stylis brevissimis. *Fructus* deest.

SEYCHELLES : Mahé ; Cascade Estate, at 450 metres, growing on and among rocks of rough cliff, *H. P. Thomasset*, 192.

I am puzzled as to the genus of this plant. It belongs perhaps to *Schefflera*, as extended by Harms (*Engler & Prantl, Natürl. Planzenf.* iii. 8, p. 35), who includes in it *Sciadophyllum*, P. Browne, *Actinophyllum*, Ruiz & Pavon, *Parapanax*, Miq., *Agalma*, Miq., *Actinomorphe*, Miq., *Heptapleurum*, Gaertn., *Paratropia*, DC., and *Astropanax*, Seem. ; but I am unable to accept this combination without investigation, though it may be a sound one. *Schefflera digitata*, Forst., on which the genus was founded, differs from the plant here described in having a distinctly toothed calyx-limb, free, persistent petals and only five stamens ; and *Geopanax* differs from *Heptapleurum*, as limited by Bentham and Hooker (*Gen. Plant.* i. p. 942), in having connate petals, and in the stamens and cells of the ovary being twice as numerous as the petals. On the whole it is preferable to treat this plant as representing a new genus.—W. BOTTING HEMSLEY.

Fig. 1, a flower-bud ; 2, stamens and pistil ; 3, calyptrate petals ; 4, stamens ; 5, pistil ; 6, longitudinal section of the same ; 7, cross section of the same. *All enlarged.*

M.S.del, et lith

TABULA 2822.

DURANDEA MAGNIFOLIA, *Stapf*.

LINACEAE. Tribe HUGONIEAE.

Durandea, *Planch.* (descr. emend.) ; affinis *Hugoniae*, L, a qua differt stipulis fere suppressis, glabritie, floribus minoribus et drupa 5- (rarius 3-) pyrenia, pyrenis distinctis.

Sepala 5, rotundata, imbricata, firma, post anthesin persistentia et arcte contracta. *Petala* 5, contorta, fugacia, lutea, magis minusve cuneatim unguiculata, hypogyna. *Stamina* 10, omnia perfecta, altera breviora, basi in tubum brevem inferne glanduloso-incrassatum coalita. *Ovarium* 5-3-loculare ; styli 5–3, filiformes, apice capitato stigmatosi ; ovula geminata collateralia, ex apice loculi pendula. *Fructus* drupaceus, vix carnosus, subglobosus, subangulatus, 5-3-pyrenius, pyrenis osseis 1-spermis. *Semina* ovoideo-oblonga. *Embryo* intense viridis.— Fructices *glabri, ope uncorum more Hugoniae scandentes, rarius erecti.* Folia *alterna, penninervia, reticulata, chartacea vel coriacea, saepissime magis minusve crenato-serrata ; stipulae minutissimae, caducae.* Flores *lutei, in paniculas vel rarius racemos terminales et axillares dispositi.*

Species 12, in Borneo, Nova Guinea, Australia orientali et Polynesia occidentali indigenae.

D. magnifolia, *Stapf (sp. nov.)* ; inter affines foliis ad 30 cm. longis chartaceis et inflorescentiis praeter summas parce paniculatas fere omnibus laxe racemosis distincta.

Frutex scandens, uncifer, glaberrimus, ramorum cortice pallido. *Folia* plerumque late oblanceolata, rarius elliptica, breviter obtuseque acuminata, basi saepius longe attenuata, obscure crenata, ad 30 cm. longa, ad 10 cm. lata (in eodem ramo magnitudine valde varia), chartacea, nervis lateralibus utrinque 10–12 marginem versus longe prorsus curvatis et arcuato-connectis uti costa subtus valde supra minus prominentibus, reticulatione conspicua ; petiolus crassiusculus, 8–10 mm. longus. *Inflorescentiae* terminales et laterales ex axillis foliorum et hinc inde inter folia ortae, illae paniculatae panicula breviter pedunculata parce ramosa, hae laxe racemosae, inaequales, plerumque fasciculatae, 2·5–6 cm. longae ; bracteae ovatae, acutae, minutae, deciduae ; pedicelli 4-6 mm. longi. *Sepala* orbicularia,

3–4 mm. diam., pallide vel fusco-viridia, flabellato-nervosa, nervis exsiccando prominulis. *Petala* dextrorsum vel sinistrorsum contorta, elliptica, subunguiculata, 10 mm. longa, 6 mm. lata. *Stamina* glaberrima ; filamenta longiora 6 mm. longa, tubo 2 mm. alto. *Ovarium* 3-loculare ; styli 3 quam filamenta multo breviores. *Fructus* ignotus.

Borneo : Sarawak ; Rejang, *Haviland's Collector*, 2834.

The genus *Durandea* was described by Planchon (in *Hook. Lond. Journ. Bot.* vol. vii. p. 527) from a plant at Kew, collected by Labillardière on the north-east coast of New Caledonia. Unfortunately Planchon described the ovules as solitary, instead of geminate, in each ovary-cell. This may have misled Vieillard, who redescribed Planchon's *Durandea serrata* as *Penicillanthemum neo-caledonicum*, one of the types of his new genus *Penicillanthemum*. Almost simultaneously F. v. Mueller published a new species of *Hugonia*, viz. *H. Jenkinsii* from Queensland, which is no doubt a congener of Planchon's *Durandea*. Several species of *Durandea* were subsequently collected in various parts of Polynesia ; but it was not until 1889 that another species was recognised as belonging to *Durandea*. This was *D. pallida*, K. Schum., from German New Guinea, and quite recently two other species, namely, *D. rotundata* and *D. pentagyna*, have been described by Warburg from the same country. Five more species, hitherto undescribed, have now to be added from the material at Kew.

The geographical distribution of the species of *Durandea* known to me is as follows :—

1. **D. serrata**, *Planch.* (Syn. *Penicillanthemum neo-caledonicum*, Vieill. in Bull. Soc. Linn. Normand. vol. x. p. 7).

New Caledonia : North-east coast ; Balade, *Labillardière*. East coast ; Wagap mountains, *Vieillard*, 934.

2. **D. racemosa**, *Stapf* (Syn. *Penicillanthemum racemosum*, Vieill. l.c. p. 6).

New Caledonia : East coast ; Wagap mountains, *Vieillard*, 2163.

3. **D. latifolia**, *Stapf* (Syn. *Penicillanthemum latifolium*, Vieill. l.c.).

New Caledonia : East coast ; Wagap mountains, *Vieillard*, 2167.

4. **D. Lenormandii**, *Stapf* (*sp. nov.*) ; a *D. serrata* foliis angustioribus (5–10 cm. longis, 8–18 mm. latis) plerumque acutis, inflorescentiis glaberrimis (haud minute puberulis), sepalis petalisque (in alabastris quidem) albociliatis distincta.

New Caledonia : East coast ; on the highest mountains near Wagap, *Vieillard*, 2224.

5. **D. Deplanchei**, *Stapf* (*sp. nov.*) ; a *D. racemosa*, quacum petalis filamentisque basi pilosis congruit, inflorescentiis multo gracilioribus

longioribus, 6–15 cm. longis, 2·5–3 cm. latis, floribus minoribus, i.e. sepalis 2 mm. longis, petalis 6 mm. longis, distincta.

New Caledonia : East coast ; near Canala, *Deplanche*.

6. **D. viscosa**, *Stapf* (*sp. nov.*) ; *D. Deplanchei* foliis ad 20 cm. longis, 7–10 cm. latis, tenuioribus, grossius crenatis, longe petiolatis, i.e. petiolo ad 2 poll. longo, distincta.

New Caledonia : East coast ; on hills near Canala, *Vieillard*, 2339.

7. **D. Jenkinsii**, *Stapf* (Syn. *Hugonia Jenkinsii*, F. v. Muell. in Fragm. Phytogr. Austr., vol. v., p. 7).

Australia : Queensland ; in woods at Rockingham Bay, *Dallachy*.

8. **D. vitiensis**, *Stapf* (*sp. nov.*) ; *D. Jenkinsii* affinis, sed foliis minus coriaceis, inflorescentiis gracilioribus ad 12 cm. longis, plerumque 2·5 cm. lat.s, stylis antheras multo superantibus distincta.

Fiji : Without precise locality, *Storck*, 41.

9. **D. parviflora**, *Stapf* (*sp. nov.*) ; affinis *D. vitiensi*, partibus junioribus minute puberulis, paniculis ovoideis, ad 7·5 cm. longis et 5–7·5 cm. latis, floribus minoribus, sepalis 2 mm. longis, petalis 5 mm. longis distincta.

Solomon Islands : Probably on New Georgia, *Officers of H.M.S. Penguin*.

10. **D. pallida**, *K. Schum.* in Schum. & Hollr. Fl. Kaiser Wilhelmsland, p. 56.

New Guinea : Kaiser Wilhelmsland ; Lagerberg on the Augusta River, *Hollrung*, 760.

11. **D. rotundata**, *Warb.* in Schum. & Lauterb., Nachtr. z. Fl. Deutsch. Schutzg. Südsee, p. 278.

New Guinea : Kaiser Wilhelmsland, in forest, Finschhafen, near Busum, *Hellwig*, 671.

12. **D. pentagyna**, *K. Schum.* in Schum. u. Lauterb., l.c. p. 278 (Syn. *Ancistrocladus pentagynus*, Warb., Pl. Pap., p. 383 ; *Hugonia pentagyna*, Schum. in Schum. & Lauterb., Fl. Deutsch. Schutzg. Südsee, p. 373.

New Guinea : Kaiser Wilhelmsland ; Finschhafen, *Warburg*, *Hellwig*, 460, 671 ; *Weinland*, 176 D. ; Astrolabe Bay; Siar Island, *Warburg*.

13. **D. magnifolia**, *Stapf*. See above.

Borneo : Sarawak ; Rejang, *Haviland*, 2834. —Otto Stapf.

Fig. 1, flower-bud ; 2, androecium and gynaecium ; 3, gynaecium with staminal tube cut open ; 4, longitudinal section of ovary. *All enlarged*.

M.S. del et lith.

Tabula 2823.

ELAEOPHORBIA DRUPIFERA, *Stapf.*

Euphorbiaceae. Tribe Euphorbieae.

Elaeophorbia, *Stapf.* Genus novum *Euphorbiae* L. affinis, sed fructo drupaceo distincta.

Cyathium sessile, semiglobosum, regulare, 5-lobum, lobis membranaceis in alabastro imbricatis brevibus perlatis minute denticulatis, glandulis 5 aequalibus carnosis transverse oblongis integris cum lobis alternantibus. *Flores* ♂ in fasciculos 5 cyathii lobis oppositos dispositi, perianthio destituti ; bracteolae tenues, fimbriatae, inter se magis minusve connatae, involucelli more florum ♂ glomerulos cingentes. *Stamen* 1 ; filamentum breve, crassum, cum pedicello tenui articulatum ; anthera erecta, loculis distinctis ellipsoideis longitudinaliter dehiscentibus. *Flos* ♀ in cyathii centro 1, brevissime pedicellatus, perianthio destitutus. *Ovarium* 3-loculare ; stylus brevissimus, crassus ; stigmata 3, parva, 2-loba, profunde sulcata ; ovula solitaria, ex apice loculi pendula, funiculo caruncula minuta annuliformi mox marcescenti instructo. *Fructus* drupaceus ; exocarpium carnosum, crassum ; putamen osseum 3-loculare, tenuiter 3-sulcatum sulcis in dorso loculorum sitis, inter sulcos sub apice minute perforatum, basi apertum, exsiccando haud vel tardissime dehiscens, sed ictu vel pressione (e.g. sub germinatione) saepe in valvas 3 loculicide solutum, valvis osseis haud elasticis basi integris vel minute bifidis intus medio septum sulcatum durum gerentibus, sulco in foramen abeunte ; axis tenuis, triangulata, post putamen dilapsum libera. *Semina* 3, vel abortu 2–1 oblongo-ellipsoideum, ecarunculatum ; testa tenuiter crustacea ; albumen oleagineo-carnosum, copiosum. *Embryo* semine paulo brevior ; cotyledones ellipticae, basi-cordatae, crassiusculae ; radicula brevis.—Arbores vel frutices *glaberrimi omnibus partibus latice acridissimo repletis, ramis primo obtuse angulatis vetustis uti trunco teretibus cortice tenui confragoso tectis, lignum subspongiosum.* Folia *crassa, carnosa, versus apices ramorum approximata, stipulata ; stipulae post folia lapsa ad cicatricum latera in spinas conicas ecrescentes.* Cyathia *in axillis foliorum summorum in dichasia simplicia vel composita disposita, bracteis oppositis carnosis saepe geminiferis suffulta.*

Species unica in Africa occidentali indigena.

E. drupifera, *Stapf. Arbor* ad 15 m alta ; truncus inermis, cinereus ; rami crassi, juniores succulenti, primo 4–6-angulati. *Folia* obovato- vel interdum obcordato-cuneata, 6–20 cm. longa, 4–7·5 cm. lata, nervis lateralibus paucis obscuris perobliquis ; petiolus brevissimus vel ad 10 lin. longus, validus. *Pedunculi* 2·5–4 cm. longi. *Cyathium* viride, 8–12 mm. diam. *Drupa* forma et magnitudine admodum varia, cerasum vel olivam vel nucem juglandis referens, viridis, ad 5 cm. longa, obtusissima vel acuta ; putamen globosum vel globoso-ellipsoideum, sectione transversa orbiculari vel subtrigona, ad 14 mm. longum, ad 10 mm. diam. *Semina* fusca vel fusco-grisea, laevia, haud nitida.—*Euphorbia drupifera*, Thonn. in Schum. and Thonn. Beskr. Guin. Pl. p. 250 ; Pax in Engl. Bot. Jahrb. vol. xxxiv. p. 68. *E. Renouardi*, Pax in Bull. Mus. Hist. Nat. Paris, vol. viii. p. 61.

Upper Guinea : Gold Coast ; common in the Accra plains, *W. H. Johnson.* 605, 1053 ; Kpong, *Farmar*, 480 ; without precise locality, *Thonning.* Dahomey ; near Porto Novo, and in other localities, *E. Poisson.*

According to a kind communication by Dr. Ostenfeld, there are no specimens of *E. drupifera* from Thonning's collection at Copenhagen, nor, so far as I know, do any occur elsewhere. Yet Thonning's description is—as usually his descriptions are—so complete that there can be no doubt about the identity of his and Johnson's plants. True, he describes the stone as dehiscent, which seems to be rarely the case, except in the sense that it often breaks up loculicidally into three valves when crushed or under the influence of the germinating and expanding seeds. I found even this 'dehiscence' sometimes so imperfect that a stone would break in any other direction rather than in that of the theoretical lines of dehiscence, and Johnson himself writes that the stones are indehiscent. Of *Euphorbia Renouardii* I have, thanks to M. J. Poisson's courtesy, had an opportunity of examining a couple of perfect fruits and cyathia, preserved in spirit, and I cannot discover any difference between his and Johnson's specimens. Mr. Johnson was so kind as to send, beside dried and spirit specimens, a large tin full of fresh fruits, which give a good idea of the great variability of the fruit so far as size and shape are concerned.

Pax (l.c.) and Boissier (in *DC. Prodr.* xv. ii. p. 80) quote *Euphorbia grandifolia*, Haw. (*Syn. Pl. Succ.* p. 130), and the latter also *Euphorbia toxicaria*, Afz. (ex *Loud. Hort. Brit.*, ed. 1830, p. 190), as synonyms of *Euphorbia drupifolia.* Both names refer probably to the same species, a Sierra Leone plant, which was introduced into England about 1793 or 1796. Afzelius' name remained, however, a 'nomen nudum,' and Haworth's description is too meagre for the recognition of the plant which he meant.

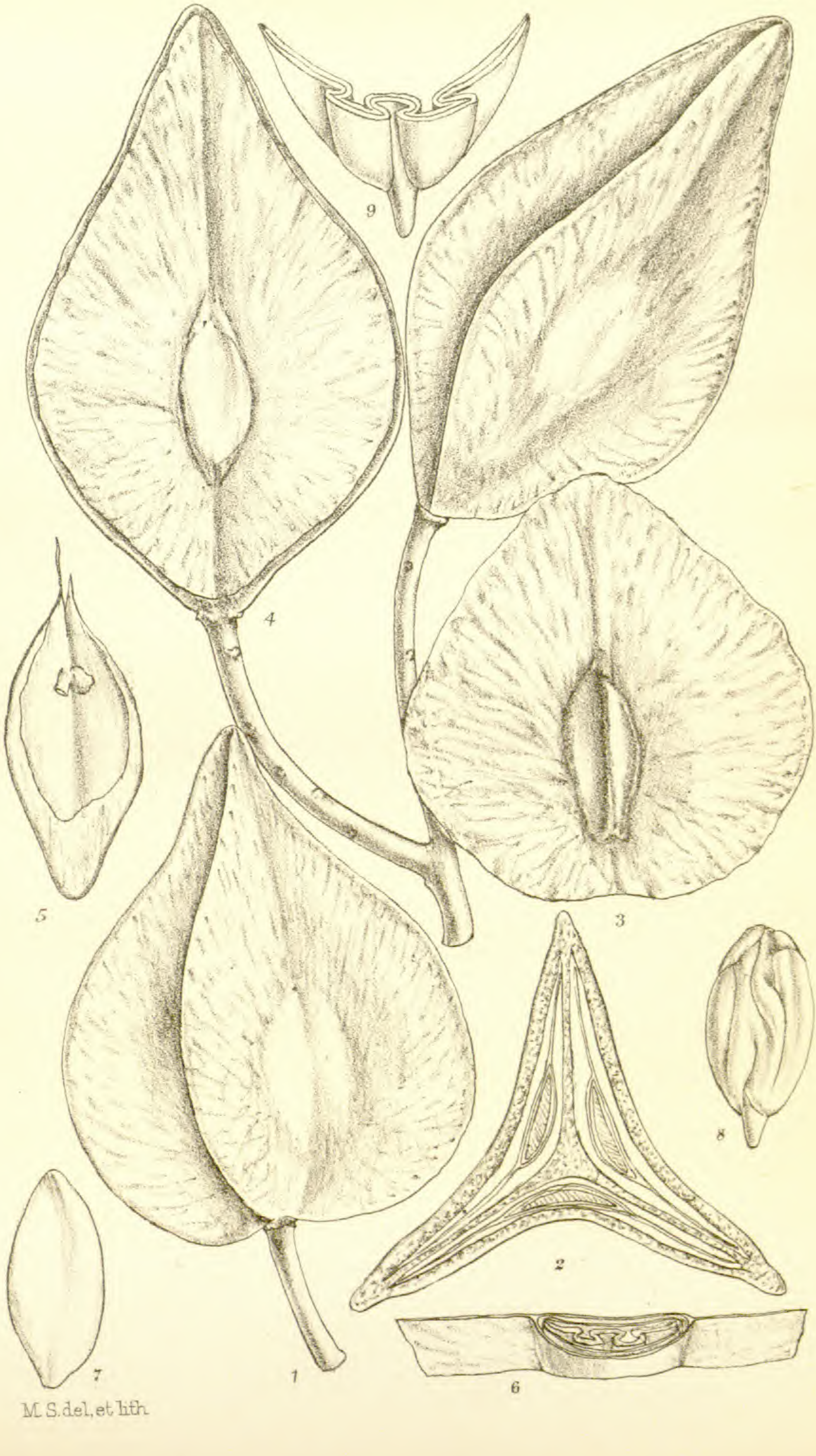
The generic differences between *Euphorbia* and *Elaeophorbia* lie entirely in their fruits, the fruit of *Euphorbia* being a capsule which breaks up into 3 cocci, each coccus dehiscing loculicidally and elastically from below, whilst the fruit of *Elaeophorbia* is a drupe with a hard stone which under pressure, possibly also by excessive drying, may break up

into three perfectly inelastic valves bearing the hard and narrow septa along their middle line. The septa possess a groove, corresponding to the angles of the axis, which passes into the pores traversing the valves some distance below the apex. In the growing fruit these pores are filled with vascular strands passing from the axis to the exocarp; in the germination stage they evidently act as channels for the conveyance of water to the seeds. The larger pore at the base of the stone originates in a similar way by the decay of a portion of the tissue, and no doubt fulfils a similar function.

I might add that Pax (in *Engl. Bot. Jahrb.* vol. xxxiv. p. 68) places *Euphorbia drupifera* and *E. Renouardi* in the section *Diacanthium*, and immediately after *E. Teke*, Schweinf. ex Pax, adding that it was uncertain whether the latter had drupaceous fruits. From an examination of the semi-mature fruits of the Kew specimen of *E. Teke* I do not hesitate to say that this cannot well be the case. Its fruits are very probably like the fruits of the other species of § *Diacanthium*, capsules of the type characteristic of *Euphorbia*.—Otto Stapf.

Fig. 1, part of a compound dichasium; 2, diagram of a cyathium; 3, young cyathium, showing the imbricate æstivation of its lobes; 4, cyathium after flowering; 5, male flowers with bracts; 6, part of the same, the bracts spread out; 7, section of ovary; 8, mature fruit; 9, cross section of fruit, the upper half of the fleshy exocarp removed, to show the top of the stone; 10, cross section through a stone; 11, a seed, back view. *All enlarged, except* 1 *and* 8.

M.S. del. et lith.



M.S. del. et lith.

TABULAE 2824 et 2825.

TRIOMMA MALACCENSIS, *Hook. f.* ♀

BURSERACEAE.

Triomma malaccensis, *Hook. f.* in Trans. Linn. Soc., vol. xxiii. p. 171. Species unica.

Arbor dioica (?), circa 55 m. alta, cortice griseo squamatim soluto; novelli minute puberuli. *Folia* alterna, exstipulata, pinnata, 3–4-juga, glabra; rhachis cum petiolo basi incrassato 15–20 cm. longa, teres; foliola oblique oblonga vel lanceolato-oblonga, acuminata, basi obtusa vel acuta, 7–12 cm. longa, 4–4·5 cm. lata, coriacea, glabra, supra saturate viridia, infra pallidiora, nervis lateralibus utrinque circiter 10, cum venis reticulatim anastomosantibus utrinque prominulis; petioluli laterales 4–8 mm., terminalis 20 mm. longus. *Flores* unisexuales cum partibus alterius sexus magis minusve reductis, in paniculas subterminales 7·5 cm. longas ferrugineo-tomentellas dispositi, odore *Primulae officinalis* (teste Ridley); bracteae minutae, deciduae; pedicelli ad 6 mm. longi, apice nutantes. *Sepala* 5, ovata, vix 2 mm. longa, pubescentia. *Petala* 5, ovata vel oblonga, sepala paulo excedentia, albido-viridia, minutissime pubescentia. *Discus* annuliformis, 5-crenatus. *Stamina* 5, cassa; filamenta brevissima; antherae minutae, polline destitutae. *Ovarium* ovoideum, trigonum; stigma 3-lobum subsessile, lobis recurvis; ovula geminata, sub apice loculi pendula. *Fructus* siccus, drupaceus, 3-alatus, ambitu late ovoideus, acuminatus, basi subcordatus vel rotundatus, 5–6·5 cm. longus, 2–5 cm. diametro, exocarpio lignoso-coriaceo in valvas 3 deciduas quasi septicide soluto, axi 3-alata persistente; pyrenae in loculis solitariae, monospermae, chartaceo-crustaceae, 12–16 mm. longae, 3-angulatae, faciebus late obovato-lanceolatis ad angulos laterales ala suborbiculari brunescente tenuissima ad 5 cm. diam. circumdatae. *Semina* pyrenis conformia; testa tenuis; endosperma nullum. *Embryo* pallide viridis, cotyledonibus foliaceis contortuplicatis, radicula brevi.—*A. Bennet in Hook. f. Fl. Brit. Ind.* i. p. 258; *Engl. in DC. Mon. Phan.* iv. p. 30; *Ridley in Journ. Roy. As. Soc. Straits Branch*, 1901, p. 86.

MALAY PENINSULA: Malacca, *Griffith*. Singapore; in the forest of the Botanic Garden, *Ridley*, 6530; 11236. Sumatra; Lampongs, by the river Tarabangi, *Teysmann*.

Maingay collected in Malacca (No. 299 of the Kew distribution) a form with fruits the valves of which are distinctly attenuated at the base, and widest (4–5 mm.) about 1 inch above it, the wings of the pyrenes also conforming more or less to the shape of the valves. There is no other difference between this and Griffith's plant, and I consider it merely as an individual variation.—Otto Stapf.

Tabula 2824.

Typical Form.—Fig. 1, female flower; 2, same in longitudinal section; 3, pistil with disc and barren stamens; 4, one ovary cell laid open, the ovules, which are contiguous in their normal position, turned back to show their attachment to the common subapical placenta. *All enlarged.*

Tabula 2825.

(Figures 1–3 from the typical form; 4–9 from Maingay's plant.)

Fig. 1, fruit typical form); 2, cross section through the same; 3, stone with wing, from the same; 4, fruits (from Maingay's plant); 5, stone from the same, cut open, and with the wing removed, to show the funicles of the two ovules, one of which had developed into a seed; 6, cross section of a stone; 7, seed; 8, embryo; 9, cross section of the same, *All enlarged*, *except* 1–4.

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TABULA 2826.

CYMBOPOGON CITRATUS, *Stapf.*

GRAMINEAE. Tribus ANDROPOGONEAE.

C. citratus, *Stapf in Kew Bull.* 1906, p. 357 ; affinis *C. Nardo,* Rendle, sed panicula laxiore, spiculis angustioribus linearibus vel linearilanceolatis, gluma inferiore basin versus in dorso distincte concava diversa.

Herba perennis. *Rhizoma* breve, parce ramosum, vix ultra 0·75 cm. crassum, obliquum, annulatim cicatrosum, durum, aromaticum, fasciculos foliorum densissimos ex apice ramorum et axis primariae emittens. *Folia* aromatica, densissime aggregata, basi sese amplectentia ; *vaginae* basi dilatatae, superne angustae et solutae, subcoriaceae, glabrae, 10–30 cm. longae ; *ligulae* scariosae, perbreves, rotundatae ; *laminae* lineares, apicem versus longe tenuissime attenuatae, basi magis minusve angustatae, ad 1 m. longae, 6–10 mm. latae, longe eleganter recurvatae, glauco-virides, ad junctionem cum vagina articulatae et exsiccando nigricantes, margine et superne subtus asperae, costa basi admodum dilatata crassa albida. *Panicula* decomposita, laxa, 30–50 cm. longa, nutans ; rami inaequales, majores ad 15 cm. vel ultra longi internodiis intermediis 2·5–3·5 cm. longis gracilibus ; spathae propriae perangustae, acutae, 2–2·5 cm. longae, rubescentes vel fuscescentes. *Racemi* lateraliter exserti, 1·5–2·5 cm. longi, 3–4-articulati ; articuli pedicellique consimiles, graciles, 2–2·5 mm. longi, ad latera sericeo-ciliati pilis sursum accrescentibus summis 2 mm. longis. *Spiculae sessiles* lineares vel lineari-lanceolatae, acute acuminatae, rubescentes, callo brevi obtuso minute barbulato ; *gluma inferior* dorso basin versus excavata, sursum anguste bicarinata carinis asperulis, inter carinas enervis vel indistincte breviter 1-nervis ; *gluma superior* inferiori subaequilonga, navicularis, carinata, acuta, hyalina, margine superne ciliata ; *valva inferior* vacua, hyalina, glumis paulo brevior, tenuiter 2-nervis, superne ciliolata ; *valva superior* hyalina, anguste linearis, longe acutata, circa 4 mm. longa, 1-nervis, superne ciliata, arista nulla vel rarissime tenui supra valvam mediam inter lobos tenues orta ; *palea* nulla. *Spiculae pedicellatae* sessilibus similes, nisi angustiores ; *gluma inferior* 5–9-nervis, carinis asperulis ; *gluma superior* 3-nervis ; *valva inferior* quam gluma inferior duplo brevior, cum palea hyalina angustissime lineari enervi ciliata et staminibus 3

plerumque hebetatis vel nullis. *Antherae* 2 mm. longae.—*Andropogon Schoenanthus*, L., Syst. ed. x. p. 1304, non Spec. Plant.; Roxb. Fl. Ind., ed. Carey and Wall, vol. i. p. 278. *A. citratus*, DC., Cat. Hort. Monsp. p. 78; Nees in Allgem. Gartenzeit. vol. iii. p. 266. *A. citriodorum*, Desf. in Tabl. École Bot. ed. 2, p. 15. *A. Roxburghii*, Nees in Wight, Catal., No. 1699; Steud. Syn. Pl. Glum. vol. i. p. 395. *A. ceriferus*, Hack. in Mart. Fl. Bras. vol. ii. part iii. p. 281. *A. Nardus*, var. *ceriferus*, Hack., Androp. p. 605. *Schoenanthum amboinicum*, Rumph. Herb. Amboin. vol. v. p. 181, t. 72.

Cultivated in most tropical countries. Not known in a wild state.

For the history of this grass, which is the source of lemon-grass oil, see Stapf in Kew Bulletin, 1906, pp. 322–335 and 357–358.—Otto Stapf.

Fig. 1, entire plant; 2, and of rhizome with tuft of sheaths; 3, upper leaves of a barren tuft; 4, part of an inflorescence; 5, pair of spikelets; 6, sessile spikelet; 7, outer (lower) glume; 8, valve of lower floret; 9, valve of upper floret; 10, outer glume of pedicelled spikelet. *Fig.* 1, *much reduced*; 2–4, *of natural size*; 5–10, *enlarged.*

M.S. del et lith

Tabula 2827.

DYSOXYLUM PACHYPHYLLUM, *Hemsl.*

Meliaceae. Tribus Trichilieae.

D. pachyphyllum, *Hemsl. in Kew Bull.* 1907, p. 58; species a *D. Fraserano*, Benth., quacum confusa, foliis crassis coriaceis obovato-oblongis, floribus minoribus et staminum tubo ultra medium partito differt.

Arbor 12–18 m. alta, ramis florigeris crassis glabris. *Folia* glabra, paripinnata, cum petiolo communi 15 cm. longo usque ad 40 cm. longa, sed saepius minora; foliola 8–12, breviter petiolulata, petiolulis incrassatis, opposita, coriacea, obovato-oblonga, 4–15 cm. longa, obtusissima vel rotundata, basi plus minusve obliqua, venis immersis inconspicuis; petiolus et rhachis teres. *Paniculae* angustae, paucifloræ, foliis breviores; bracteae obsoletae; pedicelli 3–4 mm. longi. *Flores* 3–4 mm. diametro, bene evoluti non visi, tetrameri, puberuli. *Calycis dentes* deltoidei. *Petala* crassiuscula, valvata, marginibus inflexis. *Stamina* 8; antherae tubi staminei lobos paulo superantes. *Stigma* peltatum, stamina superans. *Capsula* subglobosa, 3–4 cm. longa, obscure 3-loba, coriacea, verruculosa, saepius 3-sperma. *Semina* ovoidea, arillo crasso cupuliformi usque ad medium cincta; cotyledones crassae, carnosae, basi ultra insertionem productae, bilobae; radicula brevis; plumula villosula.—*D. Fraseranum*, F. Muell. Fragm. Phytogr. Austral. vol. ix. p. 61, quoad plantam ex insula Lord Howe Island; Hemsl. in Ann. Bot. vol. x. p. 234.

Australia: Lord Howe Island, *C. Moore*, 24, 45.

At the request of Mr. J. H. Maiden, the Director of the Sydney Botanic Garden, the writer made a critical comparison of the Lord Howe Island specimens, described above, with mainland specimens referred by Bentham (Fl. Austral. vol. i. pp. 381–2) to *Dysoxylum Fraseranum*, Benth., and *D. Lessertianum*, Benth. (*Hartigsea*, A. Juss.), with the result that they proved to be quite distinct. Further, as suggested by Dr. Stapf, the specimens in the Kew Herbarium bearing these two names belong to one species. It is probable that the inflorescence of the Lord Howe Island plant is sometimes longer than in the Kew specimens, as Moore has a note to the effect that the fruit is produced on long panicles.—W. Botting Hemsley.

Fig. 1, young flowers; 2, section of a young flower; 3, staminal tube and stigma; 4, a fruit; 5, a seed with aril; 6, embryo; 7, one cotyledon, inner face and minute radicle and plumule; 8, upper part of the same, much more enlarged, and showing the point of attachment between the radicle and plumule of the second cotyledon; 9, radicle, attachment of cotyledon, and hairy plumule, still more enlarged; 10, longitudinal section of a flower of *D. Fraseranum*.—Figs. 4, 5, 6 and 7, *natural size*; the rest *enlarged*.

M.S. del. et lith.

Tabula 2828.

IMPATIENS DORSTENIOIDES, *Warb.*

Geraniaceae. Tribus Balsamineae.

I. dorstenioides, *Warb. in Engl. und Prantl. Natürl, Pflanzenf.* vol. iii. (1895), 5, p. 391, absque descriptione ; ab omnibus speciebus hactenus descriptis labelli nervis 3 crassis et forte trabeculatis differt.

Herba fere glaberrima ; caules e basi repente simplices, ascendentes, 10–15 cm. longi, viscidi, inferne aphylli. *Folia* 2·5 cm. longa, alterna, petiolata, elliptico-ovata vel ovato-lanceolata, acuta vel acuminata, obscure crenata, setulis sinibus interjectis. *Flores* in axillis foliorum solitarii, brevissime pedicellati, ad 1·5 cm. diametro, crasse nervosi ; pedicelli pubescentes, fructiferi elongati, ebracteati (?). *Sepala* 2, 3·5 mm. longa, linearia, obtusa, 3-nervia. *Vexillum* erectum, ob-ovatum, obtusum, fornicatum, costa dorso setulosa 5-nerve, nervis reticulatis. *Alae* sessiles, 8 mm. longae, 2-lobae ; lobus basalis minutus, subquadratus ; distalis longe stipitatus, stipite margine concavo minute tuberculato ; lamina ampla, orbicularis vel flabelliformis, 5–7 mm. lata, creberrime nervosa. *Labellum* scaphiforme, ovatum, acuminatum, ecalcaratum, 3-nerve, nervis crassis trabeculatis interstitiis quasi lacunosis. *Filamenta* gracilia ; antherae didymae. *Ovarium* breve, crassum, forte incurvum, obtusum. *Capsula* immatura, ovoidea, gibba.—*Trimorphopetalum dorstenioides*, Baker, in Journ. Linn. Soc. 1887, vol. xxii. p. 454.

Madagascar : without locality ; *Rev. R. Baron*, 4476.

The imperfection of the specimens of this curious balsam, the paucity, minuteness and bad condition of the preserved flowers, sufficiently account for Mr. Baker having misunderstood the nature of its floral organs and regarded the plant as constituting a new genus of Balsamineae. Having myself studied it on two occasions, I can answer for the remarkable correctness of Miss Smith's drawing here given, with the sole exception that I find the pedicels to be densely pubescent and the sepals to be always obtuse. The nerves of the floral organs vary a good deal in number, direction and composition, those of the vexillum being sometimes as thick as those of the lip.

The distal lobe of the wings also varies from the orbicular of fig. 6 in the accompanying plate to broadly fan-shaped.

Without a study of the many Mascarene balsams, hardly any of which are described, it is impossible to indicate the affinity of *I. dorstenioides*; it no doubt belongs, like *I. balsamina*, Linn., to a group with simply pedicellate flowers, but I find no bract at the base of the pedicel.—J. D. Hooker.

Fig. 1, a leaf from the lower part of the stem; 2, side view of flower; 3, front view of flower; 4, apex of hairy pedicel, sepals and stamens; 5, lip; 6, a lateral petal or wing. *All except fig.* 1 *enlarged.*

M.S.del. et lith.

TABULA 2829.

POUTERIA SUAVIS, *Hemsl.*

SAPOTACEAE.

P. suavis, *Hemsl. in Kew Bull.* 1906, p. 366; species ex affinitate *P. Gardnerianae*, Radlk., a qua foliis angustioribus lanceolatis, floribus dimidio minoribus et sepalis subaequalibus interioribus haud truncatis emarginatis differt; etiam *P. neriifoliae*, Radlk., similis, recedit floribus multo minoribus et fructus forma.

Arbor ramis floriferis rectis graciliusculis appresse sericeis. *Folia* breviter petiolata, glabra, in ramorum apicibus conferta, demum coriacea, anguste oblonga, oblanceolata vel lanceolata, 4–15 cm. longa, saepius circiter 10 cm. longa, 1–2·5 cm. lata, apice obtusa vel rotundata, basin versus attenuata, supra nitida, conspicue venosa. *Flores* 3–4 mm. diametro, infra folia ad foliorum delapsorum axillas fasciculati, numerosi, pedicellis sericeis 3–4 mm. longis. *Sepala* 4, biseriata, 2 omnino interiora, 2 exteriora, omnia similia, ovata, concava, extus sericea, ciliolata. *Corolla* fere ad medium 4-lobata, lobis rotundatis erectis ciliolatis. *Staminodia* oblonga, ciliolata, corollae lobis alterna, usque dimidio breviora. *Stamina* corollae lobis isomera et iis opposita, inclusa. *Ovarium* villosum, biloculare (an semper?), stylo glabro brevissime exserto. *Fructus* pyriformis, 4–5 cm. longus, medio 2·5–2·75 cm. diametro, glaber, pericarpio carnoso tenui. *Semina* saepius 2, semiovoidea, vel 1, ovoideum, testa crassa ossea.

URUGUAY: Concepcion del Uruguay, *P. G. Lorentz*, 1878; Islands of the Uruguay River, *E. Frosio*. There is also a barren specimen in the Kew Herbarium, collected by *John Tweedie*, which apparently belongs to this species.

An account of this tree, as described by Mr. E. Frosio, a botanist and horticulturist of Paysandu, is given in the Kew Bulletin for 1906, pp. 365–6. Both he and Tweedie state that the fruit, though small, has an extremely agreeable odour and flavour.

Mr. Frosio has since written to Kew respecting this tree, which he would refer to *Lucuma*, and he gives it a different specific name under that genus; but we prefer following Radlkofer, Engler and others in retaining *Pouteria* as a genus, rather than as a section of *Lucuma*.—W. BOTTING HEMSLEY.

Fig. 1, a flower; 2, corolla laid open showing the extrorse stamens and staminodes; 3, pistil; 4, transverse section of ovary; 5, fruit; 6, a seed; 7, cross-section of the same; 8, embryo. *All except* 5 *and* 6 *enlarged.*

M.S. del et lith

Tabula 2830.

ANEMONE MILLEFOLIUM, *Hemsl. et E. H. Wils.*

Ranunculaceae. Tribus Anemoneae.

A. (§ Euanemone) **Millefolium**, *Hemsl. et E. H. Wils. in Kew Bull.* 1906, p. 149 ; species habitu *A. albanae*, Stev., sed ab omnibus speciebus hactenus descriptis foliis tripinnatisectis segmentis parvis numerosissimis longe recedit.

Herba perennis, pilosula, acaulis, radice fusiformi. *Folia* procumbentia, petiolata, basi vaginantia, sericea, ambitu oblonga, 4–8 cm. longa, tripinnatisecta, segmentis ultimis minutis acutis. *Scapi* 1-flori, erecti, 10–15 cm. alti. *Involucrum* circiter 3–4 cm. infra florem 3–bracteatum ; bracteae lanceolatae, 1·5–2 cm. longae, alte lobulatae, lobulis angustis acutis. *Flores* erecti, 3–4 cm. diametro, roseo-purpurei. *Sepala* saepius 6, interdum pluria, inaequalia, oblonga, 1·5–2 cm. longa, apice rotundata, integra vel irregulariter paucidentata. *Stamina* petalis plus quam dimidio breviora, stylos hirsutos excedentia. *Carpella* matura non visa.

China : Western Szechuen ; Yalung Valley, in dry, stony places, at about 3,000 m., rare, *E. H. Wilson*, 3050.

This elegant little plant was regarded by Mr. Wilson as one of the prettiest of the genus. It is only known to us from specimens of his collecting.—W. Botting Hemsley.

Fig. 1, a stamen ; 2, a young achene. *Enlarged.*

M.S. del. et lith.

TABULA 2831.

SABIA GRACILIS, *Hemsl.*

SABIACEAE.

S. gracilis, *Hemsl. (sp. nov.)*; *S. Swinhoei,* Hemsl., similis, ab ea tamen differt cymis saepius plus quam 3-floris et petalis breviter acuminatis incurvo-hamatis.

Frutex ramosus, circiter 1·5 m. altus, ramis gracillimis pubescentibus. *Folia* subdisticha, breviter petiolata, tenuia, lanceolata vel oblonga-lanceolata, 2–6 cm. longa, apiculata, praeter costam cito glabrescentia, margine leviter undulata, subtus pallidiora. *Cymae* saepius 4- vel 5-florae, rarius 1–3-florae, cum pedunculo 1–1·5 cm. longae, infra folia conditae; pedicelli 2–3 mm. longi. *Sepala* lanceolata, circiter 1 mm. longa, ciliolata. *Petala* sepalis opposita, lanceolata, 3–4 mm. longa, apice inflexa. *Stamina* 5, petalis opposita, 2 mm. longa, filamentis incrassatis clavatis. *Discus* parvus, 5-dentatus. *Ovarium* glabrum, 2-loculare, carpellis inter se fere liberis; styli breves. *Ovula* in quoque loculo 2, superposita. *Fructus* ignotus.—W. BOTTING HEMSLEY.

CHINA: Szechuen; Mount Omei, *E. H. Wilson,* 4806.

Fig. 1, part of an inflorescence; 2, a flower; 3, part of calyx and disk and the pistil; 4, a petal with its superposed stamen; 5, a stamen; 6, pistil from which a part of the wall of the ovary has been removed revealing the superposed ovules. *All enlarged.*

M.S. del. et lith.

Tabula 2832.

MELIOSMA HENRYI, *Diels*.

Sabiaceae.

M. Henryi, *Diels in Engl. Jahrb.* vol. xxix. p. 452; inter species sinenses foliis simplicibus integris *M. squamulatae*, Hance, proxima, sed ab ea petiolis multo brevioribus, foliis acuminatis nec caudatis, racemis laxioribus, floribus minoribus et petalis 2 minoribus spathulatis integris differt.

Arbor circiter 3-metralis, floribunda, ramis ultimis gracilibus crebre lenticellatis ceterum glabris. *Folia* simplicia, petiolata, coriacea, anguste lanceolata, cum petiolo 8–10 cm. longa, utrinque attenuata, acuta, glaberrima, nitida, subtus pallidiora; venae primariae arcuatae, ante marginem anastomosantes, ultimis minute reticulatis; petioli circiter 1 cm. longi. *Flores* minuti, albi, fragrantes, simpliciter racemoso-paniculati. *Paniculae* erectae, saepius 10–15 cm. longae; rami gracillimi, laterales divaricati, omnes pilis rectis ferrugineis obscuris vestiti, bracteis bracteolisque minutis squamiformibus. *Pedicelli* 1–3 mm. longi. *Sepala* oblonga, 1 mm. longa, obtusa, obscure ciliolata. *Petala* glabra, 3 majora orbicularia, 2 mm. diametro, 2 minora ovato-oblonga, staminibus 2 fertilibus aequilongis opposita. *Staminodia* magna, petalis 3 majoribus opposita, filamentis valde dilatatis; antherarum loculis magnis apertis cassis. *Discus* parvus, 5-dentatus. *Ovarium* glabrum, globosum, cum stylo sursum attenuato 1 mm. longum, 2-loculare, carpellis facile solubilibus. *Ovula* in quoque loculo 2, superposita. *Fructus* ignotus.

China: Hupeh; Chienshih, *A. Henry*, 5865.

This differs from most of the species of *Meliosma* figured, including *M. squamulata*, Hance (see t. 1598), in the inner, smaller petals being entire instead of bifid.

We had overlooked Dr. Diels's publication of this species, but Prof. H. Lecomte, of Paris, called our attention to it just before going to press.—W. Botting Hemsley.

Fig. 1, a flower-bud; 2, an expanded flower; 3, a flower from which the inner petals and staminodes have been removed; 4, a petal and its superposed staminode; 5, a petal and its superposed stamen; 6, dorsal view of a stamen; 7, two stamens and disk; 8, longitudinal section of an ovary. *All enlarged.*

M.S. del. et lith.

TABULA 2833.

SASSAFRAS TZUMU, *Hemsl.*

LAURACEAE.

S. Tzumu, *Hemsl. in Kew Bull.* 1907, p. 55; ab *S. officinali,* Nees, (species sola antehac cognita) differt floribus intus hirsutis, florum masculorum staminodiis 3 staminibus glanduliferis alternantibus, pistillodio valido et florum femineorum staminodiis 6 + 3 + 3.

Arbor saepius 40–50 m. alta, interdum multo major (*A. Henry*), dioica, praeter bracteas et flores omnino glabra vel citissimo glabrescens; rami floriferi crassiusculi, cortice atropurpureo; rami steriles stirpium juvenilium crassi, applanati, angulati, virides, lenticellis numerosis purpureis conspicuis ornati. *Folia* decidua, diversiformia, alterna, ad ramorum apices conferta, longe petiolata, demum subcoriacea, nunc ovata vel ovato-lanceolata, nunc circumscriptione late obovato-cuneata, plus minusve alte trilobata, lobis obtusis vel subacutis sinibus rotundatis, subtus pallidiora, ramorum sterilium cum petiolo usque ad 30 cm. longa, 15 cm. lata, ramorum floriferorum saepius saltem dimidio minora, suprema 8–10 cm. tantum longa. *Flores* utriusque sexus in ramorum apicibus racemosi vel feminei demum subcorymbosi, quam folia praecociores, 4–6 mm. diametro; racemi sericei, 4–8 cm. longi, perulis amplis rotundatis extus sericeo-pilosis suffulti. *Perianthium* sexpartitum, intus basi extusque hirsutum, segmentis linearibus. *Florum masculorum* stamina 6 filamentis nudis, 3 filamentis medio biglandulosis; staminodia 3, staminibus glandulosis alternantia; pistillodium bene evolutum. *Florum femineorum* staminodia 6 + 3 + 3, staminibus et staminodiis florum masculorum similia. *Bacca* pisiformis, circiter 5–7 mm. diametro; pedicelli fructiferi elongati, sursum incrassati.—*Lindera Tzumu,* Hemsl. in Journ. Linn. Soc. vol. xxvi. p. 392. *Litsea laxiflora,* Hemsl. l.c. p. 383, t. 8.

CHINA: Hupeh; Patung and elsewhere, *A. Henry,* 1465, 2856, 5363; *E. H. Wilson,* 64. Chekiang; Ningpo, *Faber.* Kiangsi; Kiukiang, *Maries.*

This is the *tzu-mu* or *huang-chin* of Central China, and is, on the authority of Dr. A. Henry, a valuable timber-tree, sometimes attaining very large dimensions. It is very similar to the North American *S. officinalis,* Nees, but the flowers are smaller and differ in structure, as described above.—W. BOTTING HEMSLEY.

Fig. 1, longitudinal section of a male flower; 2, an eglandular stamen; 3, a glandular stamen; 4, a staminode from a male flower; 5, pistillode from a male flower; 6, a female flower from which the perianth has been removed; 7, young fruit. *All enlarged.*

M.S. del. et lith.

Tabula 2834.

SYCOPSIS TUTCHERI, *Hemsl.*

(with male flowers of *S. sinensis*, D. Oliv.)

HAMAMELIDACEAE.

S. Tutcheri, *Hemsl.* (*sp. nov.*) ; a speciebus omnibus hucusque cognitis foliis obovatis apice fere rotundatis recedit.

Frutex glaber, dense ramosus ; rami rigidi, cortice cinereo. *Folia* alterna, crassa, coriacea, persistentia, breviter petiolata, conferta, obovata, 3–6 cm. longa, integra, venis primariis curvatis subtus sat conspicuis. *Flores* (feminei post anthesin tantum visi) parvi, axillares, solitarii vel 2–4 racemosi, racemis quam folia multo brevioribus ; pedunculi et pedicelli rigidi, lepidoti. *Receptaculum* (calycis tubus sensu auctorum nonnullorum) urceolatum, extus densissime lepidotum, lepidibus permultiradiatis, intus pilis longis rigidis densissime vestitum, interdum bracteolis paucis oblongis irregulariter positis instructum. *Sepala* minuta, dentiformia, interdum inaequalia. *Petala* nulla. *Staminodia* nulla. *Ovarium* liberum, 2-loculare ; styli filiformes, longe exserti, recurvi. *Ovula* in quoque loculo solitaria, ab axi infra apicem pendula. *Capsula* in receptaculo irregulariter rupto sessilis, lignescens, oblonga, circiter 1 cm. longa, densissime ferrugineo-pilosa, tarde dehiscens, bivalvis, stylis elongatis coronata. *Semina* 2, ovali-oblonga, circiter 5 mm. longa, hilo intruso ; testa cornea, laevis ; albumen tenue ; embryo rectus, axilis, albumen fere aequans, cotyledonibus ovalibus, radicula cotyledonibus plus quam dimidio breviore.

CHINA : Hongkong ; Victoria Peak, near the steps on the east of Mountain Lodge, *W. J. Tutcher*, *Hb. Hongk.* 1340.

S. sinensis, *D. Oliv. ante,* t. 1931 ; hic figs. 1–3.

Arbor circiter 12 m. alta. *Flores masculi* capitati ; capitula subsessilia, bracteis ovalibus crassis rufo-velutinis 2–3-seriatis involucrata. *Receptaculum* parvum, ovoideum, hirsutum. *Sepala* minuta, dentiformia, decidua. *Stamina* 10, perigyna, circiter 1·5 cm. longa, glabra ; filamenta filiformia, antheris apiculatis. *Pistillodium* bene evolutum, stylis quam staminibus dimidio brevioribus.

For further particulars of the genus *Sycopsis*, see the letterpress to tab. 2836.—W. Botting Hemsley.

China : Szechuen ; South Wushan, *E. H. Wilson*, 1825.

Fig. 1, a male inflorescence of *Sycopsis sinensis*, D. Oliv. ; 2, a male flower of the same ; 3, section of the same showing the pistillode ; 4, advanced female flowers of *S. Tutcheri*, Hemsl. ; 5, a stellate scale from the receptacle of the same ; 6, longitudinal section of the ovary ; 7, a seed ; 8, a longitudinal section of the same showing the embryo. *All enlarged.*

M. S. del. et lith.

Tabula 2835.

DISTYLIUM CHINENSE, *Hemsl.*

HAMAMELIDACEAE.

D. chinense, *Hemsl.* (*sp. nov.*) ; a *D. racemoso*, Sieb. et Zucc., recedit habitu fruticoso, foliis obovato-oblongis plus minusve aculeato-dentatis et floribus femineis haud racemosis.

Frutex saepius 30 cm. ad 1 m. altus, dense ramosus, novellis stellato-pubescentibus. *Rami* rigidi, cinerei, internodiis brevissimis. *Folia* persistentia, breviter petiolata, coriacea, rigidissima, forma variabilia, obovato-oblonga, oblanceolata vel interdum elliptica vel fere orbicularia, saepius 1·5–4 cm. longa, vel interdum, ut in icone, 5–6 cm. longa, saepissime praesertim supra medium paucidentata, dentibus aculeatis, cito glabrescentia, venis immersis inconspicuis ; stipulae lineares, circiter 5 mm. longae, acutae, caducae. *Flores* monoici vel polygami (?) rubri, in axillis foliorum racemoso-spicati ; spicae pauciflorae, foliis multo breviores, ut flores stellato-pubescentes. *Bracteolae* sepalis exterioribus similes. *Sepala* 2–6, spiraliter inserta, plus minusve unilateralia, decidua, alia bracteoliformia, alia petaloidea, lanceolata, oblonga vel ovata, 3–5 mm. longa, vix acuta, stellato-puberula vel glabra. *Petala* nulla. *Stamina* florum masculorum 2–6, saepe inaequalia, sepala excedentia ; filamenta filiformia ; antherae magnae, carnosae, apiculatae. *Pistillodium* nullum vel interdum bene evolutum et stylis quam staminibus longioribus ; ovarium (an semper ?) cassum. *Flores feminei* anantherati vel 1–3-staminiferi. *Ovarium* 2-loculare, 2-ovulatum, stylis 2 elongatis filiformibus divergentibus persistentibus ; ovula a placenta apicali pendula. *Capsula* sublignosa, ovoidea, 1–1·5 cm. longa, supera, acuminata, densissime stellato-pubescens, septicide dehiscens, bivalvis, valvis bifidis ; endocarpium corneum, ab epicarpio solutum, bivalve. *Semina* in quoque loculo solitaria, oblongo-ovoidea, circiter 5 mm. longa ; testa crustacea, fusca, nitidissima, hilo albo magno intruso. *Embryo* axilis, albumine aequilongus ; cotyledones planae, quam radicula duplo longiores.—*D. racemosum* var. *chinense*, Franchet in litt. ex Hemsl. in Journ. Linn. Soc. vol. xxiii. p. 290.

CHINA : Hupeh ; Ichang, Nanto, Feng and other localities ; *A. Henry*, 1300, 3314, 3314 A, 3314 B, 3826, 4280 ; *E. H. Wilson*, 115 (specimens figured), *Faber*, 576. Szechuen ; Kouimen, *Delavay*, 2290.

With specimens of this bush from numerous distant localities before us we have now no hesitation in separating it specifically from the arboreous *D. racemosum*, Sieb. & Zucc., but it is difficult to define the species by floral characters. *Distylium* and *Sycopsis* are genera in which the floral structure is inconstant and imperfect, owing to irregularity in the placement of the organs. *Sycopsis* differs from *Distylium* in the flowers having an urceolate receptacle and in the stamens being perigynous. Apparently the flowers in both genera are functionally either male or female, never hermaphrodite.

By way of illustration of the absence of uniformity, we may take a male inflorescence, which consists of a number of separate flowers, arranged in a spicate or racemose manner, some of the flowers being sessile, others shortly stalked. Bracteoles and sepals are sometimes indistinguishable, though the organs representing these series vary considerably from the outermost to the innermost, or from the lowermost to the uppermost, on the same axis. Beginning at the base of the male inflorescence selected, the composition of the flowers is as follows :— (1) One bracteole, one sepal and three stamens, one imperfect. (2) One bracteole, five spirally arranged sepals, five perfect stamens, one imperfect stamen, a fully developed pistillode with styles overtopping the stamens, a single cavity in the ovary, but no trace of ovules. (3) One bracteole, five sepals imperfectly whorled, three stamens. (4) Three bracteoles or (in part) displaced sepals, two very unequal petaloid sepals, five perfect stamens, a well-developed pistillode with styles longer than the stamens, no trace of ovules. (5) Two bracteoles or sepals, four unequal stamens. (6) Three bracteoles or (in part) sepals, two unequal stamens. (7) Six unequal petaloid sepals, five perfect stamens, small undeveloped pistillode.

A second inflorescence gave : (1) Four sepals and three stamens. (2) Three sepals and two stamens. (3) One bracteole (?), one petaloid sepal and three stamens. (4) Five petaloid sepals and three stamens. (5) Three bracteoles, two sepals, six stamens and pistillode. The terms bracteole and sepal have no definite meaning in the foregoing descriptions.

Fig. 1, a male inflorescence ; 2, a male flower with pistillode ; 3, anthers ; 4, longitudinal section of an ovary ; 5, capsules ; 6, a seed. *All enlarged.*

There are two other apparently undescribed species at Kew :

1. **D. myricoides**, *Hemsl.* (*sp. nov.*) ; a *D. chinensi*, Hemsl., differt habitu arborescente, foliis majoribus minus coriaceis supra nitidis et bracteolis quam sepalis duplo latioribus ; etiamque a *D. racemoso*, Sieb. et Zucc., foliis dentatis recedit.

Arbor circiter 12 m. alta, novellis stellato-puberulis. *Rami* floriferi graciles, cortice cinereo ; internodia brevissima. *Folia* breviter petiolata, coriacea, glabrescentia, lanceolata vel oblanceolato-oblonga,

5–10 cm. longa, 2–3 cm. lata, supra medium paucicalloso-denticulata, calloso-apiculata, basi cuneata, supra nitida, subtus opaca ; costa facie superiore impressa ; venis primariis utrinque circiter 5. *Bracteolae* ovatae. *Sepala* florum masculorum 3–5, saepe 3, inaequalia, unilateralia. *Stamina* saepius 3, filamentis antheras aequantibus. *Flores* feminei (vel hermaphroditi ?) saepe solitarii, staminibus 2. *Spicae* interdum androgynae (?) flore terminali femineo. *Capsula* ignota.

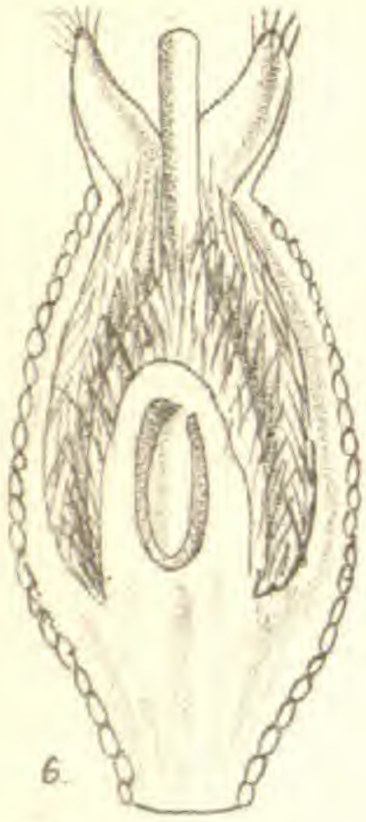
China : Fokien ; *S. T. Dunn, Hb. Hongk.* 2684, 2685.

2. **D. strictum**, *Hemsl.* (*sp. nov.*) ; ut videtur frutex nanus habitu strictissimo foliis parvis integris.

Frutex gracilis, dense ramosus, ramis rigidis erectis appressis. *Folia* conferta, suberecta, brevissime petiolata, rigida, coriacea, oblanceolato-oblonga vel spathulata, 1–4 cm. longa, 5–10 mm. lata, integra vel raro apicem versus obscurissime 1- vel 2-denticulata, apice subacuta vel rotundata simul calloso-apiculata, deorsum gradatim attenuata, margine incrassata ; costa infra leviter elevata ; venae immersae inconspicuae. *Capsula* valde immatura tantum visa, ovoidea, cum stylis erectis circiter 1 cm. longa, dense pilosa, pilis longis stellatis fuscis.

China : Fokien ; *S. T. Dunn, Hb. Hongk.* 2681.

Specimens of a *Distylium* from the same source, numbered 2680, may belong to the same species, though the leaves are 4–6 cm. long, with distinct petioles. The very similar young capsules are either solitary or 2–4 on each peduncle.—W. Botting Hemsley.



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M.S. del. et lith.

TABULA 2836.

SYCOPSIS DUNNII, *Hemsl.*

HAMAMELIDACEAE.

S. Dunnii, *Hemsl.* (*sp. nov.*); ab *S. sinensi*, D. Oliv., floribus femineis haud capitatis, ab *S. Tutcheri*, Hemsl., foliis acuminatis recedit.

Arbor 9–10 m. alta; rami florigeri graciles, primum lepidoti, cortice cinereo. *Folia* petiolata, crassa, coriacea, lanceolata vel ovato-lanceolata, 6–12 cm. longa, utrinque attenuata, integra, cito glabrescentia, supra nitida, subtus pallidiora. *Stamina* monadelpha (?). *Pistillodium* ad stylos 2 breves redactum. *Receptaculum* florum femineorum urceolatum, circiter 5 mm. longum, densissime lepidotum, lepidibus multidenticulatis vel fimbrillatis, ovoideum, bracteolis paucis oblongis obtusis apice ciliolatis irregulariter instructum. *Sepala* (?) 1–3, bracteolis simillima. *Ovarium* densissime sericeo-pilosum, pilis stellatis radiis longissimis; styli glabri, longissime exserti, revoluti. *Capsula* globoso-ovoidea, circiter 1 cm. diametro maximo, dense ferrugineo-pilosa, receptaculo irregulariter rupto suffulta.

CHINA: Fokien; *S. T. Dunn, Hb. Hongk.* 533, 2695.

The genus *Sycopsis*, D. Oliv., was founded (Trans. Linn. Soc. 1860, vol. xxiii. p. 83, t. 8) on *S. Griffithiana*, an inhabitant of the Khasya mountains, and the only species hitherto found in India. The specimens were imperfect, wanting both in fully developed male flowers and fruit. A second species, *S. sinensis*, D. Oliv. (Hook. Ic. Pl. 1890, vol. xx. t. 1931), was also deficient as regards male flowers. Mr. E. H. Wilson collected very complete specimens of *S. sinensis*, and these have thrown a new light on the structure of the male flowers. A male inflorescence and a separate flower, entire and in section, are included in tab. 2834, from which it will be seen that in the male flowers, as well as in the female flowers, there is a well-developed, urceolate receptacle (or calyx-tube) on the margin of which the deciduous sepals are seated. The stamens are perigynous, and there is a prominent pistillode. In *Distylium* the flowers are not so highly organised, no receptacle (or calyx-tube) being developed, and the number of segments of the more or less imperfect unilateral perianth is inconstant. See under tab. 2835.

Fig. 1, a flower-bud with bracteoles on the receptacle; 2, stellate scales from the receptacle; 3, androecium, found adhering to the specimen, but it is not

absolutely certain that it may not be of foreign origin ; 4, an anther ; 5, a female flower ; 6, section of the same ; 7, young fruit. *All enlarged.*

Additional undescribed species :—

1. **S. laurifolia**, *Hemsl.* (*sp. nov.*) ; ab omnibus speciebus adhuc cognitis foliis subtus conspicue paucinervis densissime persistenterque tomentosis distincta.

Frutex circiter 3 m. altus, ramis floriferis rigidis cinereis glabris. *Folia* persistentia, longiuscule petiolata, coriacea, lanceolata, cum petiolo 1–2 cm. longo 5–10 cm. longa, acuta, basi cuneata, integra, supra glabra, nitida, a basi triplinervia, subtus pilis stellatis persistentibus primum fulvis demum cinereis densissime tomentosa ; costa supra impressa, venis ultimis crebre reticulatis, subtus elevata ; venae primariae utrinque saepius 5, e costa sub angulo acuto excurrentes, subtus conspicuae. *Capsulae* ovoideae, circiter 1 cm. longae, pilosae, saepius solitariae, interdum 2 vel 3 aggregatae.

China : Yunnan ; Mengtze, growing on rocks at 1,500 m., *A. Henry*, —14365.

2. **S. philippinensis**, *Hemsl.* (*sp. nov.*) ; species foliis amplis venis primariis subtus conspicuis curvatis inter se intra marginem anastomosantibus.

Rami floriferi cinerei, crebre lenticellati, juniores parce lepidoti, internodiis brevibus. *Folia* distincte petiolata, coriacea, ovato-lanceolata, 5–15 cm. longa, maxima usque ad 6 cm. lata, utrinque cuneata, apice obtusiuscula, integra, marginata, praecipue subtus parcissime stellato-lepidota, petiolis primum densissime lepidotis. *Receptaculum* ovoideum, dense lepidotum. *Bracteolae* sepalis similes et irregulariter positae. *Sepala* 2 vel 3, unilateralia. *Capsulae* dense ferrugineo-pilosae, solitariae vel 2 vel 3 aggregatae. *Semina* alba.

Philippine Islands : Luzon ; Baguio, Benguet, at about 1,500 m., *A. Loher*, 4881.

This is a very distinct species and there are good fruiting specimens. A single, apparently fully developed stamen was found in one of the rather advanced female flowers. The three species described above all differ from *S. Griffithiana*, D. Oliv., and *S. sinensis*, D. Oliv., in not having capitate flowers.—W. Botting Hemsley.

M.S. del et lith

Tabula 2837.

ALTINGIA GRACILIPES, *Hemsl.*

HAMAMELIDACEAE.

A. gracilipes, *Hemsl.* (*sp. nov.*) ; a speciebus adhuc descriptis differt foliis minoribus tenuibus integris graciliter petiolatis.

Arbor circiter 20 m. alta, praeter inflorescentiam omnino glabra vel cito glabrescens. *Rami* floriferi rigidi, recti, lenticellis minutis parce instructi, cinerei, primum obscure puberuli. *Folia* ad ramorum apices conferta, alterna, petiolata, tenuia, chartacea, eleganter lanceolata, absque petiolo 5–7 cm. longa, 1·5–2 cm. lata, caudato-acuminata, integerrima, glaberrima ; petioli gracillimi, 1–2·5 cm. longi ; stipulae non visae. *Pedunculi* florum femineorum pseudoterminales, erecti, 3–4 cm. longi, nudi, monocephali. *Amenta* mascula carent. *Capitula* feminea pauciflora, circiter 1·5 cm. diametro ; sepala atque petala nulla ; ovaria inter se arcte confluentia, apice puberula, bilocularia, stylis 2 ligulatis obtusis recurvis ; ovula in quoque loculo numerosa. *Fructus* ignotus.

CHINA : Fokien, *S. T. Dunn, Hb. Hongk.* 1119, 2682.

There are fruiting specimens in the Kew Herbarium of a large-leaved species of *Altingia* (*A. Henry*, 10395) from Mengtze, Yunnan, in forests at an altitude of 1,800 metres ; and young foliage and detached male inflorescences (*A. Henry*, 11082) from the same locality or district. They may belong to the same species, though the former is described as a tree 3 to 6 metres high, and the latter as an enormous tree as much as 3·5 metres in diameter.—W. BOTTING HEMSLEY.

Fig. 1, a female flower and two staminodia ; 2, a cross-section of the consolidated ovaries of six flowers ; 3, longitudinal section through two ovaries. *All enlarged.*

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M.S. del. et lith.

M.S. del. et lith.

Tabulae 2838 et 2839.

CORDEAUXIA EDULIS, *Hemsl.*

Caesalpinieae. Tribus Amherstieae.

C. edulis, *Hemsl. in Kew Bull.* 1907, p. 361, descriptio hic iterata ; genus novum ex affinitate *Schotiae*, Jacq., a quo differt sepalis 5 valvatis primum conniventibus, staminibus liberis, ovario biovulato, legumine dehiscente apice cornuto et semine saepissime solitario ovoideo.

C. edulis, *Hemsl.* ; species unica.

Frutex humilis, scopiformis, densissime ramosus ; rami erecti, ligno durissimo. *Folia* exstipulata, paripinnata, 3–5 cm. longa. *Foliola* saepissime 4-juga, coriacea, ovali-oblonga, 1–2·5 cm. longa, subtus dense rubro-glandulosa. *Flores* pauci, in ramorum apicibus corymbosi, corymbis folia vix excedentibus. *Sepala* oblonga, obtusa, circiter 1 cm. longa, glandulosa. *Petala* fere aequalia, circiter 1·5 cm. longa, unguiculato-spathulata. *Stamina* 10, libera, filamentis infra medium barbatis. *Ovarium* breviter stipitatum, ut stylus creberrime glandulosum, stigmate terminali obtuso. *Legumen* coriaceum, compresso-ovoideum, 4–6 cm. longum, curvatum, cornutum, dehiscens, bivalve. *Semen* ovoideum, 3·5–5 cm. longum, exalbuminosum, cotyledonibus crasso-carnosis ; radicula parva, recta ; plumula tarde evoluta.

Africa : Somaliland ; The Haud or waterless desert south of Bohotleh, on the southern frontier of the British Protectorate ; *Captain H. E. S. Cordeaux.*

As stated in the Kew Bulletin (1907, p. 361), this plant yields a seed known as the ' yeheb ' nut, said to be of considerable importance as an article of food in its native country. A full account of all that is known of its history and properties will appear in an early number of the Kew Bulletin ; but it may be of interest to explain here the circumstances connected with the discovery of the plant. It is recorded in the place cited above, that Prof. A. H. Church and Prof. W. R. Dunstan had sent seeds to Kew, and that the rest of the material described was contributed by Captain Cordeaux, H.M. Commissioner in Somaliland. Prof. Dunstan now kindly informs us that Colonel Swayne, C.B., ' having realised their probable importance as a food stuff, and who since then has greatly interested himself in the subject,' in the first instance sent all the seeds in question to him in 1905.

In the meantime, at the kind suggestion of the Rev. Dr. Warre, C.B., M.V.O., Kew had applied to Captain Cordeaux, asking him to procure flowering and fruiting specimens of the plant which yields the 'yeheb' nut. Captain Cordeaux at once responded and called our attention to the earliest record of the plant by the late Captain M. S. Wellby (Report on a Journey in Somaliland, 1896), explaining that there were considerable difficulties of distance and native messengers to be overcome, but undertaking to do his best. In January 1907 he sent the bush of which a reduced representation is given (t. 2838), and some seeds without the pods. These were followed, in July, by some flowers, in poor condition, and pods containing seeds. By careful manipulation of the fragments of flowers left uneaten by insects we have been able to build up a complete one and determine the affinities of the plant.

The paragraph in Captain Wellby's report relating to *Cordeauxia* runs :—' *Yee-ep*, a small thick-leaved bush, always green. After the rains the fruit is collected. Kind of nut in a thin crisp shell. Should

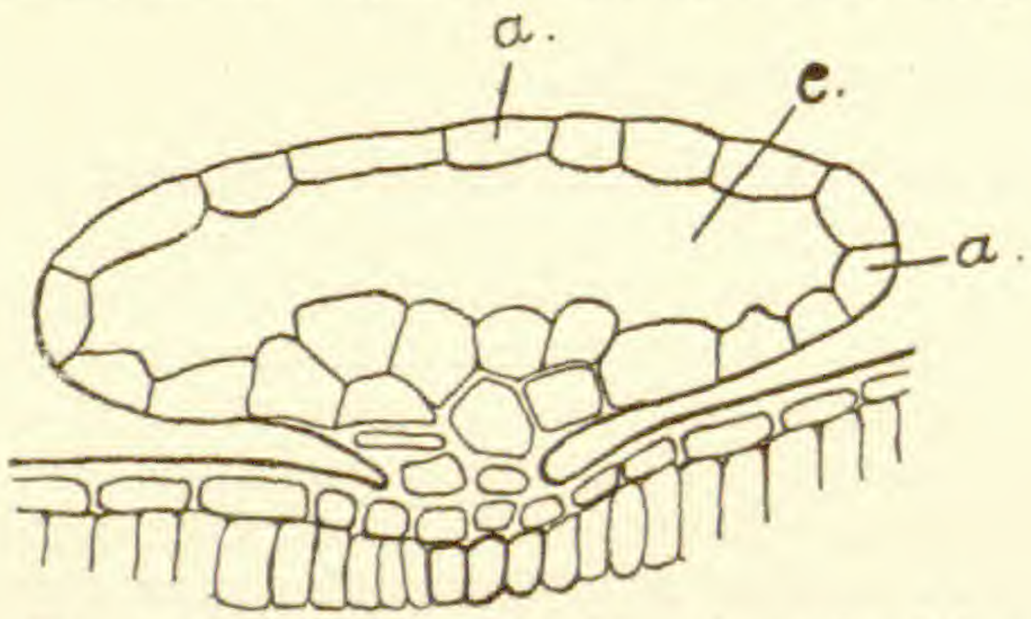


Fig. 1, Median section through a glandular hair on the leaf of *Cordeauxia edulis*; *c.*, secretory cavity; *a.*, layer of cells enclosing the cavity. × 265.

be eaten stewed. If the green leaves are rubbed in the hands, they are stained red.'

The staining is due to the presence of glands containing a red colouring matter. They are present, not only on the under surface and margin of the leaves, but also on the sepals and ovaries. Mr. L. A. Boodle, Assistant in the Jodrell Laboratory, has examined the glands, and his description of them follows.—W. Botting Hemsley.

The glandular hairs on the leaves etc. are peltate, and consist of a very short multicellular stalk and a rather thick approximately orbicular head, in which there is a cavity (*c.*, in text, fig. 1) containing a red secretion. Externally and laterally the cavity is enclosed by a single layer of cells (*a.*), and all the cells immediately bounding the cavity appear to be secretory in the young gland; some of them may project considerably into this central space, and occasionally two cells may be elongated so as to meet across the cavity. In older glands the cells of the stalk become thick-walled, and the inner walls

of the cells on the outer side of the gland may break down, and thus leave a simple membrane covering the secretion. The stalk of the glandular hair is usually inserted in a depression in the surface of the leaf. Glands of the same type have been described by Koepff (Ueber d. Anat. Charaktere d. Dalbergieen. Diss., Muenchen, 1892, pp. 6, 57 and 58, t. 1, figs. 9*a* and 9*b*) in two species of *Centrolobium* (Papilionaceae), and figured by him in *C. robustum*, Mart. Somewhat similar glands, but of a different shape, were found by Dellien (Ueber d. Syst. Bedeutung d. Anat. Charaktere d. Caesalpinieen. Diss., Muenchen, 1892, pp. 10, 74 and 75, figs. 16 and 17) in twenty-two species of *Bauhinia* and figured by him in *B. Bongardi*, Steud.—L. A. Boodle.

Tabula 2838.

Fig. 1, habit of plant ; 2, a leaf, curled from dryness ; 3, a portion of a leaf flattened out ; 4, a pod ; 5, the same from which the terminal horn and one valve have been removed, showing the seed which has begun to germinate ; 6, 7 and 8, seeds ; 9, a seed from which one cotyledon and the plumule have been removed ; 10, axis of the embryo from which the cotyledons have been removed. *Fig.* 1, ½ *natural size* ; 2 to 9, *natural size* ; 10, *enlarged.*

Tabula 2839.

Fig. 1, a seedling, raised at Kew ; 2, a portion of the under surface of a leaf ; 3, a gland from the same ; 4, branch from a flowering plant ; 5, a flower, partly constructed from detached organs and a flower-bud ; 6, a calyx and part of pistil ; 7, a sepal ; 8 and 9, petals ; 10, stamens ; 11, section of pistil. *Figs.* 1, 4 *and* 5, *natural size ; all the rest enlarged.*

Figs. 6–10, t. 2838, and fig. 1, t. 2839, from seeds sent to Kew by *Prof. Dunstan* ; all the rest from materials supplied by *Captain Cordeaux.*

M.S. del. et lith.

Tabula 2840.

NECTAROPETALUM KAESSNERI, *Engl.*

ERYTHROXYLACEAE.

N. Kaessneri, *Engl. Bot. Jahrb.* vol. xxiv. p. 151 ; ab altera specie hujus generis floribus multo minoribus, nectarii squamis 2-dentatis, antheris minoribus distinctum.

Frutex glaberrimus, ramis tenuibus cortice mox cinerascente. *Folia* elliptica vel oblongo-elliptica, basi obtusa, apice obtusa rarius subacuta, 5–8 cm. longa, 2·5–4 cm. lata, papyracea, subtus glaucescentia, nervis lateralibus utrinque circiter 8 uti venis eleganter anastomosantibus utrinque prominulis ; petiolus 6–10 mm. longus, castaneus ; stipulae e basi latiuscula subulata, ad 5 mm. longae. *Flores* in foliorum axillis fasciculati, 4–2, rarius solitarii, brevissime pedicellati. *Calycis segmenta* ovata vel ovato-oblonga, acuta, 2·5 mm. longa. *Petala* obovato- vel oblongo-spathulata, angusta, 12 mm. longa, 3 mm. lata, lutea (?), basin versus squama brevi transversa 2-loba instructa. *Stamina* 10 ; filamenta basi in tubum brevem coalita, episepala quam epipetala distincte longiora ; antherae 1·5 mm. longae. *Ovarium* oblongum, biloculare, loculis 1-ovulatis ; stylus stamina superans ; stigmata duo recurva, latiuscula.

BRITISH EAST AFRICA : Bome River ; *Kaessner*, 306.

Engler (l.c. vol. xxxii. p. 109, and in Engl. und Prantl, Natürl. Pflanzenfam. Nachtr. p. 181) refers this genus to Linaceae without, however, being able to assign any definite position to it in that family, as the fruit of *Nectaropetalum* is still unknown. It appears more satisfactory to place the genus in Erythroxylaceae to which the whole facies and the scales at the base of the petals point. In the young ovaries the placenta has two longitudinal ridges or wings in each cell between which the ovule is placed.—OTTO STAPF.

Fig. 1, pair of stipules attached to axis ; 2, a flower ; 3, genitalia ; 4, a petal ; 5, cross-section of ovary ; 6, longitudinal section of ovary ; 7, ovule. *All enlarged.*

M.S. del. et lith.

TABULA 2841.

PEGLERA CAPENSIS, *Bolus*.

RHIZOPHORACEAE. Tribus LEGNOTIDEAE (?).

Peglera, *Bolus in Kew Bulletin*, 1907, p. 362, descriptio hic iterata et amplificata ; genus novum *Weiheae*, Spr., et *Cassipoureae*, Aubl., et vultu et characteribus floralibus affine, sed a priore foliis alternis, floribus ebracteolatis, petalis integris et ovulis in loculis solitariis differt ; a posteriore foliis alternis, petalis integris et ovariis bilocularibus recedit.

Flores hermaphroditi. *Receptaculum* turbinatum, crassum, apice planum. *Calyx* basi ebracteolatus, campanulatus, alte 5- rarius 4-partitus. *Petala* 5 rarius 4, ad basin disci affixa, spathulata, integra. *Discus* hypogynus, staminifer, annularis, tenuis, perbrevis. *Stamina* 1=serialia, saepius 10 rarius 8 ; filamenta filiformia, in margine disci inserta, eoque confluentia ; antherae omnes perfectae, supra basin affixae, oblongae, longitudinaliter dehiscentes. *Ovarium* superum, liberum, ovatum, 2-loculare. *Stylus* filiformis, exsertus; stigma bilobum. *Ovula* in loculis solitaria, apice ab axi pendula. *Fructus* ignotus.

P. capensis, *Bolus* (species unica).

Arbuscula ramosa, omnino glaberrima, ad 15 m. alta vel ultra. *Rami* adscendentes, cortice rudi. *Folia* patentia, petiolata, elliptica, utrinque angustata, acuminata, integra, tenuia, subrigida vix coriacea, marginibus leviter reflexis, venis primariis lateralibus crebris circiter 12–20 rectis marginem non attingentibus, interstitiis tenuiter reticulatis ; petioli 0·3–0·5 cm. longi ; lamina 2·8–7·3 cm. longa ; stipulae caducae, lanceolatae, arcte involutae, gemmas involventes, circiter 1 cm. longae. *Flores* axillares, saepius 2–3 glomerati, rarius solitarii ; pedunculi ebracteati, 0·2–0·3 cm. longi. *Calycis segmenta* erecto-incurva, ovata, acuta, crassa, coriacea, circiter 0·23 cm. longa. *Petala* erecto-patentia, obtusa, 0·7–0·8 cm. longa. *Discus* 0·05 cm. longus. *Filamenta* erecta, circiter 0·85 cm. longa. *Stylus* erectus, quam stamina paullo longior. *Stigmatis lobi* revoluti, acuti, glanduliferi. *Ovarium* ovatum, glabrum, circiter 0·2 cm. longum.

South Africa: Kentani district, in the Manubi Forest near the coast, at about 120 metres, *Miss A. Pegler*, 1269.

I have hesitated for some time in publishing this genus, owing to the absence of fruit. But renewed search for this by the discoverer having thus far proved unsuccessful, I delay no longer. I have to acknowledge my indebtedness to my friend Prof. H. H. W. Pearson, who has determined the presence of calcium-oxalate crystals in the leaves (according to A. F. W. Schimper, a constant characteristic of the Rhizophoraceae), and this, though not in itself conclusive, when added to the strong resemblance of the plant to *Cassipourea* and *Weihea*, leaves little room for further doubt. The genus is dedicated to Miss Alice Pegler, of Kentani, a lady who for some years past has rendered important services to South African botany by the patient and intelligent investigation, under peculiar difficulties, of the flora of the region in which she resides.—H. Bolus.

Dr. Bolus requested that the affinities of this plant should be investigated, as its position is not obvious, and he was not quite satisfied that he had correctly placed it. He had previously submitted it for opinion, but it was impossible from cursory examination to suggest anything definite. Closer comparison indicates apparent relationships with *Irvingia* (Simarubaceae) in foliage and floral structure. Both *Peglera* and *Irvingia* have axillary convolute stipules and simple leaves, very similar in venation. The principal difference in the floral structure is the absence of a distinct separate disk in *Peglera*, where it is confluent with the base of the stamens.

Mr. Boodle furnishes the following remarks on the anatomy of *Peglera*:—

In the leaf the epidermis consists of a single layer, there is no hypoderm, and the stomata have subsidiary cells parallel to the pore. No mucilaginous cells or secretory cavities are present. The veins are embedded in the mesophyll, and are accompanied by sclerenchyma. In the stem there are pericyclic groups of sclerenchymatous fibres forming an interrupted ring without sclerotic cells, and fibres are present in the secondary bast, which is stratified. The perforations of the vessels are simple, even in the neighbourhood of the primary xylem; the wood fibres have bordered pits, and the medullary rays are either one or two cells in breadth.

Chiefly on account of the presence of fibres in the secondary bast, the absence of scalariform perforations in the vessels, and the character of the stomata, one would be inclined to doubt whether this genus should be placed in the Legnotideae. An anatomical comparison of *Peglera* with the Simarubaceae, however, shows a closer agreement, fibres in the secondary bast being common in this order, the perforations of the vessels simple, and stomata similar to those of *Peglera* being found in a few genera. The published accounts dealing with the anatomy of the Legnotideae do not rest on a very broad basis, but, on the anatomical data available, it appears that this genus would

find a more natural place in the Simarubaceae than in the Legnotideae. It resembles *Irvingia* in the nature of the stomata, but differs in having no mucilage-cavities, and in the absence of sclerotic cells in the pericycle.

Fig. 1, a stipule and base of petiole ; 2, diagram of flower ; 3, a flower ; 4, 5 and 6, petals ; 7, genitalia : 8, section of pistil. *All enlarged.*

NOTE.—The drawings for this plate were made in the first instance by Mr. F. Bolus; but as modifications had to be made in order to comply with the exigencies of space it was found easier to make a fresh drawing.—EDITOR.

2842

M.S. del et lith.

TABULA 2842.

SINOFRANCHETIA CHINENSIS, *Hemsl.*

LARDIZABALACEAE.

Sinofranchetia, *Hemsl.*; genus novum inter affines floribus numerosis longissime racemosis, sepalis rotundatis, nectariis (petalis) latis, antheris apicalibus, ovarii parieti haud pilifero, ovulis biseriatis, et carpellis parvis baccatis distinctum.

Flores unisexuales, similes. *Sepala* 6, inter se similia. *Nectaria* (petala auctorum nonnullorum) 6, sepalis opposita. *Stamina* vel staminodia 6, nectariis opposita, libera. *Pistillum* vel pistillodium 3-carpellare. *Ovula* circiter 20, longitudinaliter biseriata. *Carpella* matura baccata, parva, polysperma, parietibus haud piliferis. *Semina* ovalia, compressa.—*Holboellia*, subgenus *Sinofranchetia*, Diels in Engl. Jahrb. vol. xxix. p. 343, partim.

S. chinensis, *Hemsl.* (species unica).

Frutex alte scandens, volubilis, monoicus vel dioicus, glaber, caulibus primariis crassiusculis primum pruinosis. *Rami* laterales foliiferi atque floriferi brevissimi. *Folia* in ramis lateralibus conferta, ut videtur decidua, pinnatim trifoliolata, longissime petiolata, omnino iis Phaseolearum multarum simillima, exstipulata vel stipulis minimis caducis. *Foliola* papyracea, petiolulata (terminale longe), ovata, integra, acuminata; lateralia obliqua, cum petiolulo brevi 6–12 cm. longa; terminale cum petiolulo 3–4 cm. longo 12–15 cm. longum. *Racemi* axillares, graciles, pendentes, cum pedunculo nudo 20–30 cm. longi, ebracteati; pedicelli 2–3 mm. longi, ebracteolati. *Flores* circiter 5–6 mm. diametro. *Nectaria* florum masculorum quam stamina breviora; florum femineorum quam staminodia longiora. *Staminum* filamenta clavata, carnosa; antherae parvae, biloculares, apicales, connectivo non producto. *Fructus* carpella saepius 3, baccata, circiter 2 cm. diametro. *Semina* lenticularia, ovalia, 6–7 mm. diametro maximo; testa dura, rugulosa. *Embryo* minutus, in basi albuminis erectus.—*Parvatia chinensis*, Franch. in Journ. de Bot. 1894, vol. viii. p. 281. *Holboellia cuneata*, D. Oliv. in Hook. Ic. Pl. 1889, vol. xix. t. 1817, quoad fructum. *Holboellia chinensis*, Diels in Engl. Jahrb. 1900, vol. xxix. p. 343; Réaubourg in Bull. Soc. Bot. France, 1906, vol. liii. p. 455.

China : Western Hupeh and Eastern Szechuen ; in various localities, *A. Henry*, 4887, 6480 ; *E. H. Wilson*, 1030, 3140 ; *R. P. Farges*, 792 ; *Bock von Rosthorn*, 2025, 2328.

Dr. L. Diels first discovered that the fruit associated with male *Holboellia cuneata*, D. Oliv., did not belong to that plant, but to *Parvatia chinensis*, Franch., and he provisionally referred the two plants to *Holboellia* under the subgeneric name of *Sinofranchetia*. Mr. Wilson procured excellent specimens of both sexes of *P. chinensis*, Franch., and we have now no hesitation in raising Diels's subgenus *Sinofranchetia* to generic rank, excluding male *Hoboellia cuneata*, D. Oliv. The latter, of which the female flowers and fruit are unknown, differs from all the species of *Stauntonia* (including *Holboellia* and *Parvatia*) in having apparently deciduous leaves with very oblique lateral leaflets, long solitary flaccid racemes of flowers, narrow, laterally involute sepals, almost quadrate fleshy nectaries, very short free filaments and no pistillodes, and probably belongs to an undescribed genus.—W. Botting Hemsley.

Fig. 1, nectaries (petals) and stamens of a male flower ; 2, section of the same showing the pistillodes ; 3, a female flower ; 4, nectary (petal) and stamen from the same ; 5, pistil ; 6, section of ovary ; 7, carpels at a later stage ; 8, ripe fruit ; 9, section of seed ; 10, embryo. *Figs.* 1 *to* 7, 9 *and* 10, *enlarged* ; 8 *natural size.*

M.S. del. et lith.

Tabula 2843.

STAUNTONIA BRUNONIANA, *Wall.*

LARDIZABALACEAE.

S. Brunoniana, *Wall. Cat.* n. 4952 ; ab *S. elliptica*, Hemsl., foliolis oblongo-lanceolatis acuminatis, floribus majoribus et staminum cornibus antheris longioribus recedit.

Frutex dioicus (?), alte scandens, omnino glaber, caulibus primariis crassiusculis, cortice saepe suberoso. *Folia* persistentia, exstipulata, pinnatim trifoliolata, cum petiolo interdum usque ad 30 cm. longa, sed saepius in ramis lateralibus floriferis minora, petiolo rhachique gracilibus ; foliola distincte petiolulata, tenuiter coriacea, oblongo-lanceolata, cum petiolulo 5–15 cm. longa, acuminata, acuta, integra, supra nitida, subtus pallidiora. *Flores* unisexuales, albi, feminei majores, sepalis circiter 1·5–1·7 cm. longis. *Florum masculorum* sepala 3 exteriora ovata, 6–9 mm. longa, 3–4 mm. lata, intus longitudinaliter 7-cristato-striata, 3 interiora lanceolata, 5–8 mm. longa, 5-striata, omnia prope apicem leviter incrassata, acuta ; nectaria oblonga, carnosa, 1–2 mm. longa ; filamenta fere ad apices usque connata, antherae birimosae, extrorsae, longe cornutae ; pistillodia 3, filiformia, filamenta excedentia. *Sepala* florum femineorum iis florum masculorum similia sed majora. *Nectaria* (petala) lanceolata, circiter 2 mm. longa, abrupte acuminata. *Staminodia* filiformia, nectariis opposita et iis aequilonga. *Pistilli carpella* 3 ; ovula numerosa parieti pilifero affixa, pluriseriata. *Carpella* matura ovoideo-oblonga, 3·5 cm. longa, endocarpio crustaceo. *Semina* ignota.—*Parvatia Brunoniana*, Decaisne, in Arch. Mus. Hist. Nat. Par. 1839, vol. i. p. 190, t. 12A ; Hook. f. Fl. Brit. Ind. vol. i. p. 108. *Stauntonia trifoliata*, Griff. Notulae, 1854, vol. iv. p. 330 ; Ic. Pl. As. t. 495, ii. et iii.

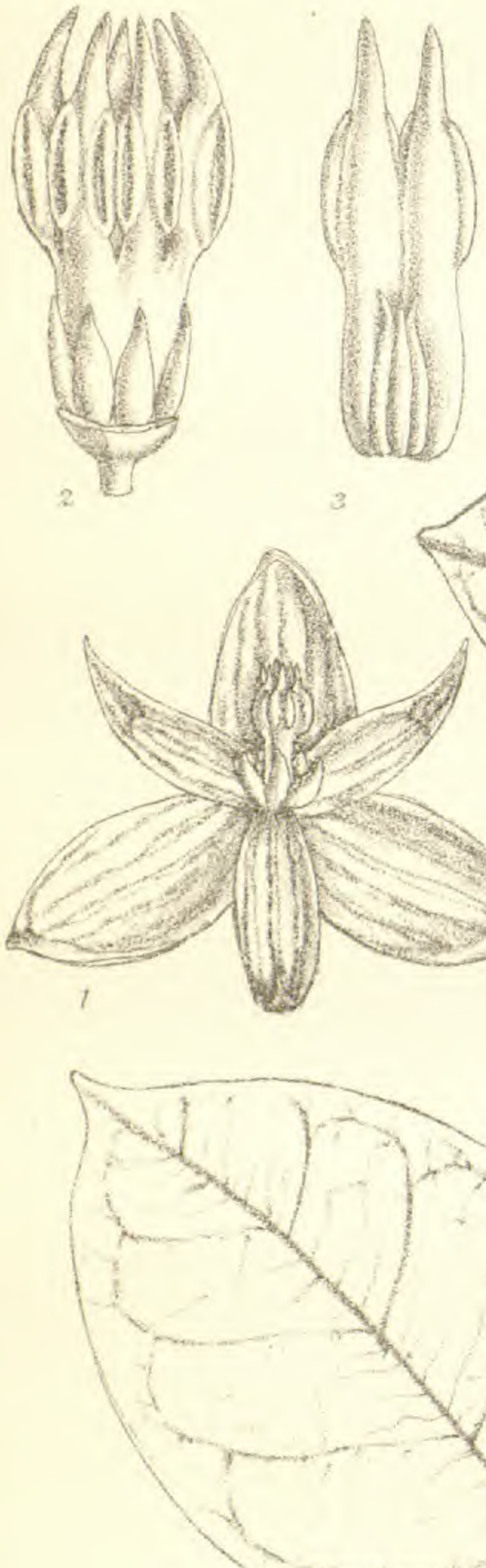
INDIA : Khasya Hills ; in various localities, *Griffith*, *Hooker & Thomson*, etc. CHINA : Yunnan ; Szemao, at 1,200 m., *A. Henry*, 12664.

Working with fresh material, Griffith referred the two members of this group, which he described in detail, to the genus *Stauntonia* of De Candolle, and Wallich reduced his first *Holboellia* to *Stauntonia* when he established his second *Holboellia*, a genus of grasses. Some years later Decaisne established a third genus, *Parvatia*, and restored

Wallich's original *Holboellia*, as generically different from *Stauntonia*. This course was hardly justifiable, even with the few species he had under observation, and the great accession of material from China leaves us no alternative but to combine *Parvatia* and *Stauntonia*, and there are no satisfactory characters by which to separate *Holboellia*. The only character on which a number of species might be retained under this name is that of the free stamens, but this would involve the exclusion of species with only slightly connate filaments. Decaisne relied on the leaves being either pinnately or peltately compound, on the presence or absence of petals, and on the free or monadelphous stamens. These characters and others are not correlative throughout, and the presence or absence of petals fails altogether. The organs designated petals by Decaisne are described as glands both by Wallich and Griffith, and we have employed the term nectaries. De Candolle does not mention them in his description of *Stauntonia chinensis*, and Decaisne overlooked them in this plant, which he describes as having no petals, in contradistinction to *Parvatia* and *Holboellia*. But *Stauntonia chinensis* has nectaries (petals), at least in the female flowers, and possibly in the male flowers, for they are sometimes exceedingly small, as are also the staminodes, when present. A good specific character is afforded by the muticous, apiculate or corniculate connective of the anther. The fruit of a few species only is known, but a comparison of that of *Holboellia latifolia*, Wall. (Tent. Fl. Nep. t. 16), with that of *Stauntonia hexaphylla*, Sieb. et Zucc. (Fl. Jap. vol. i. t. 76), is convincing as to the close affinities of the proposed genera. In this place all the species dealt with are referred to *Stauntonia*, and a synopsis of all the species will follow in the Kew Bulletin.

The plate has been prepared entirely from specimens in the Kew Herbarium collected by Hooker and Thomson.—W. Botting Hemsley.

Fig. 1, a male flower from which the perianth has been removed, showing nectaries and staminal column; 2, a section of the same showing the pistillodes; 3, a female flower from which the perianth has been removed, showing the nectaries, staminodes and carpels; 4, a nectary and staminode; 5, a ripe (?) carpel from which the fleshy part has disappeared. *All except* 5 *enlarged.*



M.S. del. et lith.

TABULA 2844.

STAUNTONIA ELLIPTICA, *Hemsl.*

LARDIZABALACEAE.

S. elliptica, *Hemsl.* (*sp. nov.*) ; *S. Brunonianae* arcte affinis, differt petiolis brevibus, foliolis saepe ellipticis, floribus minoribus, sepalis exterioribus latioribus, et staminum cornibus quam antheris brevioribus.

Frutex scandens, glaber. *Folia* cum petiolo interdum usque ad 20 cm., sed saepius circiter 10 cm. longa, petiolo gracili basi leviter incrassato ; foliola tenuiter coriacea, graciliter petiolulata, elliptica, oblonga, ovato-oblonga, obovata vel interdum fere orbicularia, absque petiolulo 3–10 cm. longa, utrinque rotundata, vel raro apice obtuse acuminata. *Racemi* numerosi, ad foliorum axillas fasciculati, graciles, multiflori, saepius 4–6 cm. longi. *Flores* masculi tantum visi vix 1 cm. longi, pedicellos gracillimos excedentes. *Sepala* exteriora late ovata, interiora lanceolata. *Nectaria* clavata, filamentis breviora. *Filamenta* alte connata ; antherae breviter cornutae.—W. BOTTING HEMSLEY.

INDIA : Assam ; without locality, *Griffith*, K. D. 116 ; *Simons* 195 ; *Jenkins*.

Fig. 1, a male flower ; 2, nectaries and androecium ; 3, section of the latter showing the pistillodes. *All enlarged.*

M.S. del. et lith.

Tabula 2845.

STAUNTONIA FILAMENTOSA, *Griff.*

Lardizabalaceae.

S. filamentosa, *Griff. Notulae*, 1854, vol. iv. p. 334 ; *Ic. Pl. As.* t. 495, f. 1 ; species distincta foliis amplissimis, foliolis conspicue venosis, floribus in ramis brevissimis lateralibus aphyllis fasciculato-racemosis et filamentis brevibus.

Frutex scandens, undique glaber, caulibus crassiusculis striatis, cortice cinereo. *Folia* palmatim 7-foliolata, longe petiolata, 25–30 cm. diametro ; petiolus communis 10–15 cm. longus, striatus, basi apiceque leviter incrassatus ; foliola longe petiolulata, inaequalia, coriacea, oblonga, obovata vel fere elliptica, absque petiolulo 10–20 cm. longa, 3–10 cm. lata, acuminata vel acuta, basi rotundata, margine incrassata, conspicue venosa ; petioluli 1·5–7 cm. longi, striati, basi apiceque leviter incrassati. *Flores* masculi tantum visi, circiter 1·3 cm. longi, racemosi ; racemi ad foliorum delapsorum axillas fasciculati, 4–8 cm. longi, multiflori ; pedicelli 2·5–5 mm. longi, quam bracteolae longiores. *Sepala* carnosa, suberecta ; 3 exteriora oblonga, obtusa, 3 interiora lanceolata, subacuta. *Nectaria* 6, carnosa, obtusa, circiter 1 mm. longa, staminibus opposita. *Stamina* monadelpha, circiter 8 mm. longa, quam sepala breviora ; antherae birimosae, filamentis longiores, breviter apiculatae. *Pistillodia* 3, filiformia.

India : Upper Assam ; Tingrei, in a wood, associated with *Thea*, *Griffith*, Feb. 23, 1836.

The specimens in the Herbarium of *S. filamentosa*, Griff., were placed with *Holboellia latifolia*, Wall., and so named in the handwriting of T. Thomson, and in the Index Kewensis it is treated as a synonym of that plant, but neither in Hooker and Thomson's Flora Indica, nor in Hooker's Flora of British India, is the name cited as a synonym. The specimens bear the number 118 of the Kew distribution of Griffith's plants ; the number accompanying all the specimens distributed under the name of *Holboellia latifolia*, Wall. Still it does not follow that there were any duplicates of the true *S. filamentosa*, Griff., to distribute, and those at Kew may possibly be the only ones in existence in this country. On the other hand a manuscript name of Griffith (*Staun-*

tonica assamica) is bracketed with *Holboellia latifolia* in the Kew Catalogue of the Distribution, and seven specimens were distributed, so that it is possible some of these may have been *Stauntonia filamentosa*, Griff. G. Réaubourg (Bull. Soc. Bot. France, vol. liii. p. 452) cites *S. filamentosa* as a synonym of *H. latifolia*, but the Index Kewensis was probably his authority for this conclusion.—W. Botting Hemsley.

Fig. 1, a male flower ; 2, androecium and nectaries ; 3, a single stamen showing the extrorse dehiscence ; 4, a section of the androecium showing the three filiform pistillodes. *All enlarged.*

M.S. del. et lith.

Tabula 2846.

STAUNTONIA CHINENSIS, *DC.*

LARDIZABALACEAE.

S. chinensis, *DC. Prodr.* 1824, vol. i. p. 96, *non Benth. Fl. Hongk.* p. 14 ; ab *S. obovata,* Hemsl., foliis longe petiolatis, foliolis oblongo-lanceolatis acuminatis conspicue venosis, floribus majoribus, et antheris longe cornutis facile distinguitur ; ab *S. hexaphylla* foliolis oblongis et antheris longe cornutis recedit.

Frutex dioicus, scandens, undique glaber, caulibus teretibus cinereis. *Folia* palmatim 5–7-foliolata, maxima visa circiter 20 cm. longa lataque ; petioli 8–10 cm. longi, striati, basi apiceque incrassati, suberosi ; foliola petiolulata, coriacea, inaequalia, oblonga vel oblongo-lanceolata, absque petiolulo 4–12 cm. longa, primum acuminatissima, acumine deinde marcido, basi rotundata, margine incrassata, supra nitida, costa impressa, subtus conspicue venoso-reticulata ; petioluli 1·5–3 cm. longi. *Flores* corymboso-racemosi, utriusque sexus similes, circiter 2 cm. longi, pedicellos subaequantes ; corymbi saepius triflori, pedunculati, quam folia breviores, pedunculis gracilibus basi perulis amplis suffultis. *Sepala* omnia similia, sed 3 interiora paullo minora, lanceolata, acuminata. *Nectaria* in floribus masculis nulla, in femineis 6, ovata, 2–3 m. longa. *Stamina* alterna paullo breviora, omnia sepalis multo breviora ; filamenta per totam longitudinem connata ; antherae birimosae, apice cornutae, cornibus erectis rectis acutis, antheris aequilongis. *Pistillodia* 3, minuta. *Pistilli carpella* claviformia, multiovulata. *Fructus* ignotus.—*S. chinensis,* Benth. Fl. Hongk. p. 14, pro minima parte.

CHINA : Hongkong ; *Champion,* intermixed with *S. obovata,* Hemsl. (t. 2847) ; Tai Mo mountains, opposite Hongkong, *Ford,* 99, 1885.

For some remarks on this species in particular and on *Stauntonia,* DC., *Holboellia,* Wall., and *Parvatia,* Decne., generally, see letterpress to t. 2843.—W. BOTTING HEMSLEY.

Fig. 1, a branch bearing a leaf and male flowers ; 2, a male flower ; 3, androecium ; 4, section of the same showing the pistillodes ; 5, female flowers ; 6, nectaries and young carpels. *Figs.* 1 *and* 5 *natural size ; the rest enlarged.*

M.S. del et lith.

Tabula 2847.

STAUNTONIA OBOVATA, *Hemsl.*

Lardizabalaceae.

S. obovata, *Hemsl.* (*sp. nov.*); species ab *S. chinensi*, DC., cum qua a cl. Bentham et postea auctoribus plurimis confusa, differt imprimis foliolis saepissime obovatis marginatis venis immersis inconspicuis, floribus minoribus et antheris breviter apiculatis.

Frutex dioicus, scandens vel in rupibus repens, omnino glaber, caulibus gracilibus. *Folia* peltatim 3–5-foliolata, maxima cum petiolo communi 15–18 cm. longa et 10–12 cm. diametro, sed saepius praecipue in ramis floriferis saltem dimidio minora; foliola coriacea, graciliter petiolulata, obovato-cuneata, interdum oblonga vel fere elliptica, magnitudine valde variabilia, cum petiolulo 2–10 cm. longa, apice rotundata, margine incrassata, supra nitida, subtus pallidiora. *Racemi* in foliorum axillis fasciculati, foliis breviores, pauciflori, pedunculis pedicellisque gracillimis; bracteolae parvae, caducae. *Flores masculi* circiter 1 cm. longi. *Sepala* 6, biseriata, 3 exteriora ovata, longe acuteque acuminata, 3 interiora multo angustiora. *Nectaria* nulla. *Stamina* sepalis dimidio breviora, filamentis fere ad apices usque connatis, antheris apiculatis. *Pistillodia* 3, minuta. *Flores feminei* masculis similes sed nectariis minimis (circiter 0·5 mm.) instructi.—*Stauntonia chinensis*, Benth. in Hook. Kew Journ. Bot. iii. p. 258 et Fl. Honkg. p. 14, non DC.

China: Hongkong; various localities, *Champion*, 43, in part; *Wright*, 7; *Wilford*, 338; *Lamont*.

Fortune's n. 166 also belongs to this species, which is apparently confined to the island of Hongkong. The type of *S. chinensis* is at the British Museum, and Champion's specimens at Kew are a mixture of that species and *S. obovata*, mostly the latter. On one sheet there is a large leaf of *S. chinensis*, and the rest is *S. obovata*. On another sheet a small, imperfect fruiting specimen of the latter is associated with foliage and flowers of the former. Only two female flowers of *S. obovata*, Hemsl., were found, and unfortunately it is not certain from which specimen they were taken; but there is no doubt about the species, as it was the only one under observation at the time. They were not found until after the plate had been printed off.—W. Botting Hemsley.

Fig. 1, a male flower; 2, an outer sepal; 3, an inner sepal; 4, androecium; 5, section of the same showing the pistillodes. *All enlarged.*

M. S. del. et lith.

TABULA 2848.

STAUNTONIA LONGIPES, *Hemsl.*

LARDIZABALACEAE.

S. longipes, *Hemsl.* (*sp. nov.*); species distincta pedunculis longissimis 1–3-floris et floribus pro genere amplis.

Frutex monoicus, scandens, omnino glaber, ramis teretibus cinereis. *Folia* (juniora tantum visa) palmatim 5-foliolata, cum petiolo 12–15 cm. longa; foliola 6, graciliter petiolulata, tenuia, lanceolato-oblonga vel oblanceolata, cum petiolulo 4–8 cm. longa, basi cuneata, apice minute apiculata. *Pedunculi* nudi, 1–3-flori, elongati, folia subaequantes, longiores cum pedicello 12–15 cm. longi; bracteolae minutae, fere obsoletae. *Flores masculi* paullo majores (an semper ?), circiter 2 cm. longi; sepala inaequalia, carnosa, oblongo-spatulata, apice obtusa, incrassata; nectaria squamiformia, fere orbicularia, circiter 0·75 mm. lata; stamina quam sepala breviora; filamenta ima basi leviter connata; antherae quam filamenta breviores, apiculatae; pistillodia 3, clavata. *Flores feminei* masculis similes; sepala obovoideo-rotundata, interiora minora; nectaria deltoidea, 0·5 mm. lata; staminodia antheroidea, circiter 0·75 longa, loculis cavis albis discretis, connectivo crasso. *Pistilli carpella* 3, ovulis longitudinaliter circiter 5-seriatis. *Fructus* ignotus.

CHINA: Western Hupeh; *E. H. Wilson*, 648.

Very small nectaries and staminodes are characteristic of this species. The staminodes resemble sessile anthers with two white, parallel cells, separated by a thick connective. The number of parts in the various floral whorls varies. Male flowers have been examined which show seven sepals, nectaries and stamens; and one had four pistillodes. One female flower had all the parts except the carpels in sevens.—W. BOTTING HEMSLEY.

Fig. 1, a branch bearing one male flower; 2, a separate male flower; 3, the same from which the sepals have been removed, showing the nectaries and stamens; 4, a section of the same showing the pistillodes; 5, a branch bearing leaves and female flowers; 6, a separate female flower; 7, the same from which the sepals have been removed showing the pistil and three of the nectaries and staminodes. *Figs.* 1 *and* 5 *natural size; all the rest enlarged.*

2

1.

3

4

M. S. del. et lith.

Tabula 2849.

STAUNTONIA PARVIFLORA, *Hemsl.*

LARDIZABALACEAE.

S. parviflora, *Hemsl.* (*sp. nov.*) ; inter species parvifloras *S. brevipedi*, Hemsl., proxima, differt petiolis longioribus, foliolis tenuioribus longe acuminatis, sepalis interioribus fere dimidio minoribus et antheris haud apiculatis.

Frutex scandens vel vagans, undique glaber, ramis striatis. *Folia* pinnatim 3-foliolata, cum petiolo 15–20 cm. longa ; petiolus teres, gracilis ; foliola fere aequalia, tenuiter coriacea, lanceolata vel oblongo-lanceolata, cum petiolulo 8–10 cm. longa, longe acuminata, supra nitida, subtus conspicue venosa. *Flores* (masculi tantum visi) parvi, carnosi, in foliorum axillis numerosi, fasciculati ; pedicelli graciles, 0·5–1·5 cm. longi ; bracteae fere orbiculares, maximae circiter 5 mm. latae. *Sepala* 3 exteriora crassa, ovalia, concava, circiter 5 mm. longa, obtusa ; 3 interiora tenuiora, lanceolata, circiter 3 mm. longa, acuta. *Nectaria* 1 mm. longa. *Stamina* 6, sepala interiora aequantia, alterna paullo breviora ; filamenta libera, carnosa, teretia ; antherae breves loculis contiguis, connectivo supra loculos haud producto.

CHINA : Yunnan ; Mengtze, at 1,500 metres, *A. Henry*, 10462A.

Fig. 1, a male flower ; 2, the same with the sepals and nectaries artificially spread out ; 3, section of the same showing the pistillodes ; nectaries and stamens. *All enlarged.*

There is another very distinct undescribed small-flowered species which may be described here :—

S. brevipes, *Hemsl.* (*sp. nov.*) ; *S. parviflorae*, Hemsl., affinis, a qua differt foliis breviter petiolatis, foliolis oblongo-lanceolatis crassis rigidis, bracteis bracteolisque elongatis, et antheris apiculatis.

Frutex scandens, volubilis, undique glaber, ramis graciliusculis striatis. *Folia* pinnatim trifoliolata, cum petiolo gracili 1–3 cm. longo 8–12 cm. longa ; foliola fere aequalia, breviter petiolulata, anguste lanceolato-oblonga, absque petiolulo 5–8 cm. longa, 1–2 cm.

lata, apiculata. *Flores* haud bene evoluti tantum visi, in foliorum axillis fasciculati, breviter pedicellati ; bracteae spathulatae, pedicellos aequantes. *Sepala* alabastri utriusque sexus oblonga, 4–6 mm. longa, obtusa, 3 interiora paullo minora. *Nectaria* squamiformia, 0·25 mm. lata. *Stamina* sepala interiora fere aequantia ; filamenta brevissima, libera ; antherarum loculi paralleli, circiter 3 mm. longi, connectivo apiculato. *Pistillodia* minuta. *Pistilli carpella* 3, clavata.

China : Hupeh ; Ichang, *A. Henry*, 1276.—W. Botting Hemsley.

M.S. del. et lith.

Tabula 2850.

Figs. 1–6.—**SCIAPHILA MAJOR**, *Becc.*

Figs. 7–14.—**SCIAPHILA CLEMENSAE**, *Hemsl.*

Triuridaceae.

S. major, *Becc. Malesia*, vol. iii. p. 332, t. 40, ff. 1–11.

Borneo: without locality, *Lobb*; Sarawak; Mount Mattang, *Beccari*, 1507.

This species was included in the plate through error. Analyses of the flowers of several species were made for purposes of comparison, and *S. major* was mistaken for an unnamed species. In another place (Annals of Botany, vol. xxi. pp. 71–77, tt. 9 and 10) I have discussed the propriety of retaining in the genus *Sciaphila* such a wide range of modification in floral structure as that presented by the thirty species, or thereabouts, from the most distant parts of the world, referred here by Beccari, Schumann and other botanists. In the same place I gave reasons for not attempting to deal with the whole group; and as those reasons still hold good, *S. major*, Becc., is reproduced without any alteration in nomenclature, though I think that it and *S. Clemensae* should not be placed in the same genus.

S. Clemensae, *Hemsl.* (*sp. nov.*); affinis *S. tenellae*, Blume, a qua differt pedicellis ascendentibus, bracteolis minoribus, floribus subcorymbosis et stylis ovarium longe excedentibus.

Herba saprophila, tenuissima, glaberrima; caules simplices vel pauciramosi, 6–12 cm. alti. *Folia* pauca, ad squamas minutas redacta. *Flores* subcorymbosi, 1–2 mm. diametro, longiuscule pedicellati, pedicellis capillaribus, unisexuales, superiores masculi. *Perianthium* utriusque sexus alte 6-fidus, segmentis inappendiculatis. *Flores masculi* triandri; perianthii segmenta 6, e basi lata abrupte acuminata; stamina divaricata, quam perianthium dimidio breviora, filamentis distinctis, antheris 4-lobatis; pistillodia nulla. *Flores feminei* carpellis fere maturis 1·5–2 mm. diametro, perianthii segmenta lanceolata; staminodia nulla; stylus supra medium lateralis, filiformis, ovarium longe excedens.

PHILIPPINE ISLANDS: Mindanao; Camp Keithlay, Lake Lanao, on shaded banks at about 750 metres, *Mrs. Clemens*.—W. BOTTING HEMSLEY.

SCIAPHILA MAJOR, *Becc.*

Fig. 1, plant, *natural size*; 2, part of inflorescence bearing one male and one female flower; 3, a stamen: 4, a young carpel; 5, a ripe carpel; 6, a seed. *All enlarged.*

SCIAPHILA CLEMENSAE, *Hemsl.*

Fig. 7, plant, *natural size*; 8, a male flower-bud; 9, an expanded male flower; 10, a stamen; 11, a female flower; 12, ripe fruit; 13 and 14, carpels. *All enlarged.*

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J.D.Hooker anal.

Tabula 2851.

IMPATIENS AURELIANA, *Hk. f.*

Balsaminaceae.

I. Aureliana, *Hk. f.* (*sp. nov.*); species inflorescentia simpliciter pedicellata speciebus Burmanicis pedicellis fructiferis decurvis verisimiliter affinis.

Herba erecta, pusilla, caule simplice petiolis foliis subtus pedicellisque tomentellis. *Folia* 3–4 cm. longa, alterna, petiolata, firma, ovata, acuta, obscure crenulata vel integerrima, supra glabra, subtus albescentia, basi rotundata vel cuneata, petiolo 1–3 cm. longo, nervis utrinque 4–5. *Inflorescentia* simpliciter pedicellata; pedicelli erecti, apice decurvi, foliis longiores, ima basi minute bracteati. *Flores* ad 2 cm. expansi, perigonio crassiusculo. *Sepala* 2, minima, vix 1 mm. longa, ovata, acuta. *Vexillum* late oblatum, fere didymum, basi retusum, apice bilobum, costa dorso carinata breviter rostrata. *Alae* breves, sessiles; lobi subaequales, 10 mm. longae, obovatae, apice retusae vel obcordatae; auricula dorsalis rotundata. *Labellum* infundibulare, in calcar gracillimum 1–5 cm. longum attenuatum, ore circulari apiculato. *Filamenta* brevissima, subulata; antherae parvae, obtusae. *Ovarium* ovoideum, acutum. *Capsula* ovoidea, gibba, 1–5 cm. longa, breviter stipitata, rostrata, tomentosa, oligosperma. *Semina* oblonga, 3–5 mm. longa, laevia, glabra, castanea.—J. D. Hooker.

Indo-China: Without precise locality; *Pr. Henri d'Orléans*. Paris Herbarium.

Fig. 1, pedicel and sepals; 2, standard; 3, wing; 4, lip; 5, stamens; 6, ovary; 7, capsule; 8, seed. *All more or less enlarged.*

M.S. del et lith.

J.D.Hooker anal.

Tabula 2852.

IMPATIENS SEMOUNENSIS, *Hk. f.*

BALSAMINACEAE.

I. semounensis, *Hk. f.* (*sp. nov.*); species ramosa inflorescentia simpliciter pedicellata, pedicellis gracillimis, labello scaphiforme et calcare gracili.

Herba erecta, ramosa, glaberrima, 2–3 dm. alta, ramulis foliosis. *Folia* 4–7 cm. longa, alterna, petiolata, ovata vel obovata, acuta vel obtusa, crenulata vel serrulata, membranacea, basi in petiolum gracilem 1–3 cm. longum angustata, marginibus infra medium nudis vel longe ciliatis, utrinque concoloria, costa gracili, nervis utrinque 4–5. *Inflorescentia* simpliciter pedicellata; pedicelli solitarii, foliis subaequilongi, gracillimi, ima basi bracteati. *Flores* ad 1·5 cm. expansi, albi, calcare viridi. *Sepala* 2, lata, oblique ovato-cordata, acuta, 3–4 mm. longa. *Vexillum* trigono-obcordatum, 7 mm. latum, costa dorso carinata longe mucronata. *Alae* 8 mm. longae, sessiles; lobi suberecti, obcordati, subaequales vel basalis major; auricula dorsalis obscura. *Labelli limbus* ad 6 mm. longus, scaphiformis, ovatus, ascendens, apice aristulatus; calcar gracile, 2–5 cm. longum. *Filamenta* brevissima, late subulata; antherae didymae, obtusae. *Ovarium* rectum, acuminatum. *Capsulae* 12–15 cm. longae, gibbosae, ovoideae, breviter stipitatae et rostratae, polyspermae. *Semina* oblonga vel obovoidea, 2·5–3 mm. longa, laevia vel minutissime papillosa, glabra, castanea.—J. D. HOOKER.

INDO-CHINA: Bay of Semoun, on the walls of a ruined temple on the banks of the river Seng-treng, *Dr. Harmand*, 89. Paris Herbarium.

Fig. 1, sepal; 2, standard; 3, wing; 4, lip; 5, stamens; 6, ovary; 7, capsule; 8, seeds. *All more or less enlarged.*

M.S.del.et lith.

J.D.Hooker anal.

Tabula 2853.

IMPATIENS ATTOPEUENSIS, *Hk. f.*

Balsaminaceae.

I. attopeuensis, *Hk. f.* (*sp. nov.*); species inflorescentia simpliciter pedicellata, alarum lobis filo instructis et labello scaphiforme calcare elongato gracillimo instructo.

Herba glaberrima, caule gracili. *Folia* alterna, 3–5 cm. longa, petiolata, ovata vel ovato-lanceolata, acuminata, setoso-serrata vel serrulata, crassiuscula vel coriacea, basi in petiolum 1–2 cm. longum angustata, marginibus basin versus ciliatis, nervis utrinque 5–6. *Inflorescentia* simpliciter pedicellata; pedicelli solitarii, foliis longiores, graciles, ima basi bracteati. *Flores* ad 2 cm. expansi. *Sepala* 2, oblique oblate ovato-rotundata, acuta, crassiuscula, 7 mm. lata. *Vexillum* subquadratum, late bifidum, 1·4 cm. latum, costa dorso alte carinata, carina in rostrum breve subterminale sensim dilatata. *Alae* breves, sessiles, latiores quam longae; lobi apice filis ad 5 mm. longis instructi; basalis oblongus, decurvus, apice acutus; distalis subduplo major, obcordatus, sinu filifero; auricula dorsalis rotundata. *Labelli limbus* scaphiformis, suberectus, ovatus, acuminatus, ad 12 mm. longus; calcar elongatum, 4·7 cm. longum, gracillimum. *Filamenta* brevia, falcata, late linearia; antherae majusculae, didymae, obtusae. *Ovarium* ellipsoideum, obtusum.—J. D. Hooker.

Indo-China: Tonkin; Laos, Attopeu region, *Dr. Harmand.* Paris Herbarium.

Fig. 1, pedicel and bract; 2, sepal; 3, standard; 4, wing; 5, lip; 6, stamen; 7, ovary. *All more or less enlarged.*

M.S. del. et lith.

J.D. Hooker anal.

Tabula 2854.

IMPATIENS INDO-CHINENSIS, *Hk. f.*

Balsaminaceae.

I. indo-chinensis, *Hk. f.* (*sp. nov.*); frutex foliis serrulatis, inflorescentia simpliciter pedicellata, sepalis minutis, labello cymbiformi et calcare limbo paullo longiore robusto.

Frutex ramosus, glaberrimus, foliosus, ramulis oppositis alternis et verticillatis gracilibus strictis. *Folia* 4–6 cm. longa, alterna vel quasi-verticillata, petiolata, ovata, acuminata, serrulata, basin versus ciliata, in petiolum gracilem, 2–3 cm. longum angustata, nervis utrinque 5–6 gracillimis. *Inflorescentia* simpliciter pedicellata; pedicelli foliis breviores, graciles, filiformes, basi minute bracteati. *Flores* ad 1·5 cm. expansi. *Sepala* 2, minuta, orbicularia, longe cuspidata. *Vexillum* orbiculare, 10 mm. diametro, apice bilobum, costa dorso carinata, sinu apiculato. *Alae* ad 15 mm. longae, sessiles; lobi lati, superpositi; basalis rotundatus; distalis paullo major, semilunatus, apice recurvus; auricula dorsalis parvula. *Labelli limbus* profunde cymbiformis, ore acuminato; calcar limbo paullo longius, robustum, incurvum, obtusum. *Filamenta* minuta, subulata; antherae adnatae, didymae. *Ovarium* rectum, obtusum. *Capsulae* 13 mm. longae, breviter stipitatae, turgidae, acute rostratae, oligospermae. *Semina* ellipsoidea, 4 mm. longa, tuberculata, fusca.—J. D. Hooker.

Indo-China: Plain of Cambodia? *Pierre.* Paris Herbarium.

Fig. 1, sepal; 2, standard; 3, wing; 4, lip; 5, stamen; 6, ovary; 7, capsule; 8, seed. *All more or less enlarged.*

M.S.del et lith.

J.D.Hooker anal

Tabula 2855.

IMPATIENS LANESSANI, *Hk. f.*

Balsaminaceae.

I. Lanessani, *Hk. f.* (*sp. nov.*); species inflorescentia simpliciter pedicellata, foliis longe petiolatis serrulatis, sepalis orbicularibus, alarum lobis distalibus connatis et labello cupulari brevissime calcarato.

Herba glaberrima, caule elongato gracili sparsim folioso. *Folia* 10–15 cm. longa, alterna, petiolata, membranacea, ovato-lanceolata, acuminata, serrulata, basi in petiolum gracilem 2–5 cm. longum angustata, nervis utrinque 10–12 gracilibus. *Inflorescentia* simpliciter pedicellata; pedicelli solitarii, petiolis multo breviores, vix 1 cm. longi, filiformes. *Flores* ad 2 cm. expansi. *Sepala* 2, orbicularia, cuspidata, 10 mm. diametro, membranacea, multinervia. *Vexillum* ellipticum, 12 mm. longum, apice rotundatum, costa gracili medio dorso incrassata. *Alae* ad 2 cm. longae; lobi basales falcati, obovati; distales oblongi, connati; auriculae dorsales confluentes. *Labellum* cupulare, obtusum, calcare brevissimo incurvo fisso. *Filamenta* linearia; antherae didymae, obtusae. *Ovarium* rectum, gracile, acuminatum. *Capsulae* 10 mm. longae, medio ventricosae, longe stipitatae, rostratae, oligospermae. *Semina* oblonga, 4 mm. longa, minutissime puberula.—J. D. Hooker.

Indo-China: Lower Cochinchina; Pulo-Condor, *De Lanessan.* Paris Herbarium.

Fig. 1, pedicel and lip; 2, sepal; 3, standard; 4, wings; 5, stamen; 6, ovary; 7, capsule; 8, seed. *All more or less enlarged.*

M S. del. et lith.

J.D. Hooker anal.

TABULA 2856.

IMPATIENS VERRUCIFER, *Hk. f.*

BALSAMINACEAE.

I. verrucifer, *Hk. f.* (*sp. nov.*); fruticulus glaberrimus, caule subsimplice, ramulis creberrime verrucosis, sepalis orbicularibus et alarum lobis distalibus plus minus connatis.

Fruticulus ? 50 cm. altus, glaberrimus, caule columnari simplice vel furcato lignoso vel carnoso creberrime verrucoso apice folioso. *Folia* 0·5–2 dm. longa, alterna, subfasciculata, petiolata, crassiuscula, ovata vel ovato-lanceolata, acuta, serrulata, basi in petiolum gracilem apice biglandulosum 2–3 cm. longum angustata, nervis utrinque 5–6. *Inflorescentia* simpliciter pedicellata; pedicelli foliis multo breviores, basi minute bracteati. *Flores* ad 3 cm. expansi, pallide rosei. *Sepala* 2, orbicularia, apiculata, multinervia, costa obscura. *Vexillum* 1·5 cm. longum, obcordatum, costa dorso infra medium crasse alata dein carinata, apice truncata. *Alae* 2–2·5 cm. longae, basi acutae; lobi basales ampli, rotundati; distales dolabriformes, cohaerentes; auricula dorsalis magna. *Labellum* profunde cymbiforme, acutum; calcar brevissimum, incurvum, subinflatum, bifidum, lobulis obtusis. *Filamenta* linearia; antherae obtusae, connatae. *Ovarium* lente curvum, acutum. *Capsulae* 2 cm. longae, elongato-ellipsoideae, utrinque attenuatae, rostratae, polyspermae. *Semina* subglobosa, 2·5 mm. diametro, papillosa vel minute granulata, fusco-fulva.—J. D. HOOKER.

INDO-CHINA: Tonkin; limestone rocks, Tan Kaun, *Balansa*, 1131; Mont Soi and Mont Nancong, *Abbé Bon*, 2879. Paris Herbarium.

Fig. 1, sepal; 2 and 3, standard; 4, wing; 5, lip; 6, stamens; 7, ovary; 8, seed. *All more or less enlarged.*

M.S.del.et lith.

J.D.Hooker anal.

Tabula 2857.

IMPATIENS ZYGOSEPALA, *Hk. f.*

Balsaminaceae.

I. zygosepala, *Hk. f.* (*sp. nov.*); fruticulus, inflorescentia simpliciter pedicellata, sepalis orbicularibus in saccum involucriforme bifidum connatis et alarum lobis distalibus connatis.

Fruticulus 5–8 dm. altus, ramosus, glaberrimus, ramis gracilibus. *Folia* 5–10 cm. longa, alterna, petiolata, membranacea, elliptica vel ovata, acuta vel acuminata, integerrima, setulis marginata, basi cuneata, petiolo 0·5–2 cm. longo gracili, nervis utrinque 12–14. *Inflorescentia* simpliciter pedicellata; pedicelli solitarii vel bini, 1–2 cm. longi, graciles, ima basi bracteati. *Flores* campanulati, 3 cm. expansi, rosei. *Sepala* 2, orbicularia, 1–5 cm. diametro, in saccum globosum membranaceum involucriforme bicuspidatum labellum occludentem connata. *Vexillum* parvum, obovato-oblongum, apice bilobum, 13 mm. longum; costa dorso medio carinata, apiculata. *Alae* ad 3 cm. longae; lobi basales falcatim flabelliformes; distales in laminam orbicularem apice bilobam 2 cm. latam connatae; auricula dorsalis inconspicua. *Labellum* hemisphaericum, calcare brevi bitesticulato, ore circulari ad 1 cm. diametro apiculato. *Filamenta* gracilia; antherae parvae, obtusae. *Ovarium* rectum, utrinque attenuatum.—J. D. Hooker.

Indo-China: Cambodia; on limestone rocks at Kampoh, *Geoffray*. Paris Herbarium.

Fig. 1, flower; 2, connate sepals; 3, standard; 4, wings; 5, lip; 6, stamens; 7, immature capsule. *All more or less enlarged.*

M.S.del.et lith.

J.D.Hooker anal.

Tabula 2858.

IMPATIENS HARMANDI, *Hk. f.*

Balsaminaceae.

I. Harmandi, *Hk. f.* (*sp. nov.*) ; herba flaccida, inflorescentia simpliciter pedicellata, sepalis 4, 2 orbicularibus ad medium connatis, 2 minutis ovatis et alarum lobis distalibus connatis.

Herba flaccida, glaberrima, parviflora, caule 2–4 dm. alto gracili simplice erecto nudo apice tantum folioso. *Folia* conferta, 1–1·5 dm. longa, alterna, petiolata, membranacea, ovato- vel oblongo-lanceolata, attenuato-acuminata, subserrulata, basi in petiolum gracilem 1–1·4 cm. longum angustata, nervis utrinque 10–12 gracillimis. *Inflorescentia* simpliciter pedicellata ; pedicelli solitarii vel bini, petiolis breviores, filiformes, basi bracteati. *Flores* mediocres, campanulati. *Sepala* 4 ; 2 orbicularia, apiculata, membranacea, 8 mm. diametro, ad medium connata ; 2 minuta, ovata. *Vexillum* ellipticum, 12 mm. longum, apice bifidum, costa dorso infra medium breviter alata. *Alae* ad 2·5 mm. longae ; lobi basales falcatim flabelliformi, liberi ; distales longiores, in laminam apice bilobam connati ; auricula dorsalis parva. *Labelli limbus* cymbiformis vel obconicus, ore obtuso ; calcar brevissimum, incurvum, fissum, inflatum vel bitesticulatum. *Filamenta* longiuscula, linearia ; antherae didymae, obtusae. *Ovarium* gracile, acuminatum. *Capsulae* ad 10 mm. longae, stipitatae, obtuse rostratae, oligospermae. *Semina* oblonga, 2 mm. longa, laevia.—J. D. Hooker.

Indo-China : Cochinchina ; island of Pulo Condor, *Harmand*. Paris Herbarium.

Fig. 1, pedicel, bract, and lip ; 2, sepals ; 3, wings ; 4, ovary ; 5, stamens ; 6, capsule ; 7, seed. *All more or less enlarged.*

M.S. del. et lith.

J.D. Hooker anal.

Tabula 2859.

IMPATIENS SPIREANA, *Hk. f.*

Balsaminaceae.

I. Spireana, *Hk. f.* (*sp. nov.*) ; fruticulus ? ramulis crassis verrucosis, inflorescentia simpliciter pedicellata, sepalis ovatis cuspidatis, alarum lobis distalibus connatis, labelli calcare limbum aequante profunde fisso.

Fruticulus ? glaberrimus, ramis crassis verrucosis subconfertim foliosis. *Folia* 1–1·2 dm. longa, alterna, petiolata, crassiuscula, exsiccata fusca, ovato-oblonga, acuta, subserrulata, basi nuda vel biglandulosa, in petiolum robustum 4–6 cm. longum angustata, costa crassa, nervis utrinque 12–15. *Inflorescentia* simpliciter pedicellata ; pedicelli 1–1·5 cm. longi, crassiusculi, basi ebracteati. *Flores* inter minores, perigonio exsiccato corneo. *Sepala* 2, oblique ovata, cuspidata, 10 mm. longa, coriacea, multinervia. *Vexillum* ellipticum, sepalis aequilongum, apice rotundatum, costa dorso carinata. *Alae* ad 2·5 cm. longae ; lobi basales falcatim flabelliformes ; distales in laminam amplam bifidam connati ; auricula dorsalis inconspicua. *Labelli limbus* profunde cymbiformis, in calcar fere aequilongum crassum, incurvum, profunde fissum attenuatus, ore ascendente acuto. *Filamenta* angusta, linearia ; antherae obtusae. *Ovarium* rectum, acuminatum.—J. D. Hooker.

Indo-China : Tonkin ; region of Laos, *Spire*, 346. Paris Herbarium.

Fig. 1, sepal ; 2, standard ; 3, wings ; 4, lip ; 5, stamens ; 6, ovary. *All more or less enlarged.*

M.S. del. et lith.

J.D. Hooker anal.

TABULA 2860.

IMPATIENS BONI, *Hk. f.*

BALSAMINACEAE.

I. Boni, *Hk. f.* (*sp. nov.*) ; herba succulenta, inflorescentia simpliciter pedicellata, sepalis ovatis ellipticisve, alarum lobis distalibus cohaerentibus, labelli limbo cupulari, calcare brevissimo inflato incurvo.

Herba glaberrima, succulenta, caule columnari 1–2 dm. alto simplice vel furcato gracili vel crasso apice tantum folioso. *Folia* 3–7 cm. longa, alterna, conferta, petiolata, ovata, acuta vel acuminata, crenato-serrata, basi rotundata vel in petiolum gracilem 2–6 cm. longum repente angustata, nervis utrinque 3–5. *Inflorescentia* simpliciter pedicellata ; pedicelli solitarii, 3–5 cm. longi, filiformes, fructiferi valde elongati, basi ebracteati. *Flores* ad 3 cm. expansi, rubri, fusco-maculati vel albi, apicibus violaceis. *Sepala* 2, late ovata vel elliptica, mucronata, multinervia. *Vexillum* obcordatum, 15 mm. longum, costa dorso basin versus cornuta. *Alae* 2–2·5 cm. longae ; lobi basales falcatim flabelliformes, basi acutae ; distales oblongi, in laminam bifidam plus minusve connati, rarius fere liberi, integri vel dorso apicem versus excisi ; auriculae dorsales parvae, confluentes. *Labelli limbus* cupularis vel cymbiformis, 1–1·8 cm. longus, acutus vel obtusus, in calcar brevissimum incurvum ovoideum inflatum integrum vel bilobum attenuatus. *Filamenta* anguste linearia ; antherae ? *Ovarium* lente curvum. *Capsulae* 10–12 mm. longae, ellipsoideae, stipitatae, obtusae, oligospermae. *Semina* subglobosa, 3 mm. diametro, uno latere sulcata.—J. D. HOOKER.

INDO-CHINA : Tonkin ; on limestone rocks at Thongsan and Kienkhe, *Abbé Bon*, 286. Paris Herbarium.

Fig. 1, sepal ; 2 and 3, standard ; 4, wings ; 5, lip ; 6, stamens ; 7, ovary ; 8, capsule ; 9, seed. *All more or less enlarged.*

M.S. del et lith.

J.D. Hooker anal.

Tabula 2861.

IMPATIENS ABBATIS, *Hk. f.*

Balsaminaceae.

I. Abbatis, *Hk. f.* (*sp. nov.*) ; herba gracilis, inflorescentia simpliciter pedicellata, sepalis 4, 2 exterioribus oblique ovatis falcatis, 2 interioribus lanceolatis.

Herba glaberrima, ramis gracilibus rigidis. *Folia* sparsa, 2–4 cm. longa, alterna, breviter petiolata, ovata, acuta vel acuminata, serrulata, basi in petiolum 0·5–1 cm. longum angustata, nervis utrinque 5–7. *Inflorescentia* simpliciter pedicellata ; glandulae stipulares nullae ; pedicelli solitarii, foliis breviores, rarius bini, ima basi bracteati ; bracteae setaceae. *Flores* 4 cm. longi. *Sepala* 4 ; 2 exteriora 4–7 mm. longa, dimidiato-ovata, recurva, infra medium valde dilatata, basi rotundata, costa margine superiori proxima ; 2 interiora consimilia, fere aequilonga, sed multo angustiora. *Vexillum* orbiculare, ad 12 mm. diametro, costa gracili apiculata. *Alae* 2–5 cm. longae, sessiles ; lobus basalis late oblongus, apice retusus ; distalis duplo major, oblongo-dolabriformis, apice rotundatus ; auricula dorsalis mediocris. *Labellum* 3 cm. longum, saccatum, paullo incurvum, basi in calcar robustum uncinatum incurvum vix 1 cm. longum attenuatum, ore orbiculari, apice acuto vel rotundato et apiculato. *Filamenta* breviuscula, linearia ; antherae didymae. *Ovarium* fusiforme. *Capsulae* 2–5 cm. longae, angustae, rectae, medio cylindraceae, utrinque attenuatae, oligospermae. *Semina* orbicularia, 2·5 mm. diametro, compressa, sublaevia, glabra, castanea.

China : Yunnan ; *Abbé Delavay*, 3634. Paris Herbarium.

I. Abbatis so closely resembles *I. arguta*, Hk. f. and T., of the Eastern Himalaya and Burma that I have doubts of its proving distinct. It differs from that plant in the branching habit, small leaves, and in the dolabriform distal lobes of the wings ; those of all forms of *I. arguta* seen by me being obcordate, as may be seen by referring to the variety *Bulleyana* figured on tab. 2875 of this volume.—J. D. Hooker.

Figs. 1 and 2, sepals ; 3, wing ; 4, lip ; 5, stamen ; 6, ovary ; 7, capsules ; 8, seed. *All more or less enlarged.*

M.S. del. et lith.

J.D.Hooker anal.

TABULA 2862.

IMPATIENS BALANSAE, *Hk. f.*

BALSAMINACEAE.

I. Balansae, *Hk. f.* (*sp. nov.*); herba ramis ramulis pedunculisque robustis, floribus racemosis, bracteis 1–1·5 cm. longis, sepalis 4, labelli calcare limbo saccatim infundibulare dimidio breviore.

Herba robusta, glaberrima, ramosa, ramis ramulisque duris. *Folia* 1·5 dm. longa, alterna, ovato-oblonga, acuminata, serrulata, basi integra, in petiolum brevem crassum nudum angustata, nervis utrinque 9–12. *Pedunculi* 0·5–1 dm. longi, validi erecti, multiflori. *Flores* racemosi, magni, subcampanulati, penduli, pedicellis 1·3–2 cm. longis; bracteae pedicellis aequilongae, ovato-lanceolatae, concavae, deciduae. *Sepala* 4, vexillo longiora, membranacea; 2 exteriora 2 cm. longa, dimidiato-ovata, acuminata; 2 interiora paullo breviora, lineari-oblonga, cuspidata. *Vexillum* ad 12 mm. longum, ellipticum vel obovatum, costa apice mucronata. *Alae* 2·5 cm. longae; lobus basalis obovato-cuneatus, majusculus; distalis longior, substipitatus, geniculatim incurvus, dolabriformis; auricula dorsalis nulla. *Labellum* saccatim infundibulare, in calcar incurvum limbo dimidio brevius attenuatum, ore ascendente acuminato. *Filamenta* 5 mm. longa, plana, deorsum angustata; antherae didymae, obtusae, stipitatae. *Ovarium* rectum, apice incurvum, acutum.—J. D. HOOKER.

INDO-CHINA: Tonkin; valley of Lankok, forests of Mont Bavi, *Balansa*, 3880. Paris Herbarium.

Figs. 1 and 2, sepals; 3, standard; 4, wing; 5, lip; 6, stamen; 7, ovary. *All more or less enlarged.*

M.S. del et lith.

J.D. Hooker anal.

Tabula 2863.

IMPATIENS CLAVIGER, *Hk. f.*

Balsaminaceae.

I. claviger, *Hk. f.* (*sp. nov.*); inflorescentia pedunculata, floribus racemosis, sepalis 4, capsula claviforme, ovulis collateralibus.

Fructiculus ? erectus, glaberrimus, caule stricto robusto inferne lignoso. *Folia* 1–1·5 dm. longa, alterna, petiolata, membranacea, obovata vel oblanceolata, acuminata, crenato-serrata, basi in petiolum 1–2 cm. longum longe angustata, subtus pallida, nervis utrinque 5–6. *Pedunculi* foliis multo breviores, robusti, erecti, pluriflori; pedicelli 1–2 cm. longi, fructiferi elongati, robusti; bracteae ovatae, acuminatae, deciduae. *Flores* ampli, 4–5 cm. expansi, penduli, pallide-flavi. *Sepala* 4; 2 exteriora 12 mm. longa, late oblique ovata vel ovato-cordata, acuta, basi uno latere gibba, 5-nervia; 2 interiora longiora, 1·7 cm. longa, lineari-lanceolata, falcata. *Vexillum* obovatum, 2 cm. longum, apice rotundatum, emarginatum, costa tenui supra medium gibba. *Alae* 2–6 cm. longae, basi acutae; lobus basalis amplus, orbicularis, acutatus; distalis longior, incurvus, oblongus, apice rotundatus; auricula dorsalis rotundata. *Labelli limbus* subsaccatus, 3 cm. longus, basi in calcar incurvum limbo dimidio brevius repente attenuatus, ore ascendente 2 cm. longo acuminato. *Filamenta* linearia; antherae minutae, didymae, obtusae. *Ovarium* ovoideum. *Capsula* immatura claviformis, nempe basi angusta, vacua dein dilatata, compressa, acute rostrata, ovulis 4 biseriatim collateralibus pendulis, oblongis.—J. D. Hooker.

Indo-China: Tonkin; Lankok valley, in the forests of Mt. Bavi, *Balansa*, 3881. Paris Herbarium.

Figs. 1 and 2, sepals; 3, standard; 4, wing; 5, lip; 6, stamen; 7, ovary. *All more or less enlarged.*

M.S.del et lith.

J.D.Hooker anal

TABULA 2864.

IMPATIENS CAPUSII, *Hk. f.*

BALSAMINACEAE.

I. Capusii, *Hk. f.* (*sp. nov.*); herba diffusa, ramosa, polyantha, pedunculo 2–4-floro, sepalis 2 ovato-cordatis, labelli limbo obconico, calcare brevi vel nullo.

Herba glaberrima, diffusa, ramosa, caule basi crasso-lignoso ramos saepe fastigiatos emittente. *Folia* 2–5 cm. longa, alterna, petiolata, membranacea, elliptica, ovata vel orbicularia, acuta, crenulata vel serrulata, in petiolum gracilem 1–2 cm. longum angustata, nervis utrinque 3–6. *Pedunculi* numerosi, foliis breviores, filiformes vel capillares, 2–4-flori, divaricati; bracteae minimae, caducae. *Flores* ad 1·5 cm. expansi. *Sepala* 2, ovata, acuminata, 3 mm. longa, basi cordata. *Vexillum* orbiculare, cucullatum, dorso carinatum vel anguste alatum, apiculatum. *Alae* sessiles, 9–10 mm. longae; lobus basalis oblongus; distalis aequilongus, dolabriformis, supra medium angustatus, obtusus; auricula dorsalis parva. *Labellum* obconicum vel infundibulare, in calcar breve rectum acutum attenuatum vel ecalcaratum, ore 6 mm. longo acuto horizontali. *Filamenta* gracilia; antherae obtusae. *Ovarium* fusiforme, acutum. *Capsulae* clavatae vel lineari-clavatae, 1–2 cm. longae, rectae, acuminatae, oligospermae. *Semina* oblonga, 5 mm. longa, laevia, castanea, nitida.—J. D. HOOKER.

INDO-CHINA: Sangirdak; at the mouth of the Red River, *Capus*, second voyage, 1866–7. Paris Herbarium.

Fig. 1, flower; 2, sepal; 3, standard; 4, wing; 5, lip; 6, androecium; 7, ovary; 8, capsule; 9, seed. *All more or less enlarged.*

M. J. del. et lith.

J. D. Hooker anal.

TABULA 2865.

IMPATIENS LEVEILLEI, *Hk. f.*

BALSAMINACEAE.

I. Leveillei, *Hk. f.* (*sp. nov.*) ; inflorescentia pedicellata, pedicellis pedunculo abbreviato stipatis basi bracteatis, sepalis 4, 2 exterioribus ovato-lanceolatis, 2 interioribus linearibus, labelli saccati calcare 2 cm. longo.

Herba elata ? glaberrima, caule robusto. *Folia* 1–1·5 dm. longa, alterna, longe petiolata, tenuiter membranacea, ovata, longe acuminata, crenulata crenis apiculatis, vel subserrulata, marginibus basi setulosa, in petiolum gracilem 2–4 cm. longum sensim angustata, nervis utrinque 9–10. *Pedicelli* solitarii vel bini, pedunculo brevissimo axillari inserti, filiformes, ima basi bracteati ; bracteae setiformes, 6–7 mm. longae. *Flores* magni, 3–4 cm. longi, 3 cm. expansi, violacei. *Sepala* 4 ; 2 exteriora ovato-lanceolata, acuminata, unilateralia, basi gibba, 12 mm. longa ; 2 interiora anguste linearia, 8 mm. longa, hyalina. *Vexillum* orbiculare, costa dorso medio acute rostrata apicem versus cuspidata. *Alae* sessiles, ad 3 cm. longae ; lobus basalis amplus, rotundatus ; distalis dolabriformis, apice rotundatus ; auricula dorsalis majuscula, inflexa. *Labellum* sacciforme, 3–4 cm. longum, basi in calcar incurvum 2 cm. longum attenuatum, ore ascendente acuminato. *Filamenta* 4 mm. longa, filiformia ; antherae obtusae. *Ovarium* lineare. *Capsulae* erectae, lineares, sursum sensim latiores, longe acuminatae, ad 3 cm. longae, polyspermae. *Semina* orbicularia, 3 mm. diametro, compressa.

CHINA : Kweichau ; Yangfien, *Le Mans Herbarium*, 493.

A very handsome plant, allied to *I. arguta* of India and its near ally *I. pseudarguta* of China, but differing greatly in the size and membranous texture of the crenulate leaves, and in the much larger flowers and capsules. Unfortunately the specimens are in a very bad state of preservation as regards the flowers, which I found it impossible to analyse satisfactorily ; these are described as of a violet colour.—J. D. HOOKER.

Figs. 1 and 2, sepals ; 3, standard ; 4, wing ; 5, lip ; 6, stamen ; 7, pedicel, bracts and ovary ; 8, capsule ; 9, seed. *All except 5 enlarged.*

M.S.del.et lith.

J.D.Hooker anal.

Tabula 2866.

IMPATIENS CYANANTHA, *Hk. f.*

Balsaminaceae.

I. cyanantha, *Hk. f.* (*sp. nov.*); species foliis breviter petiolatis serrulatis, pedunculis plurimis strictis erectis multifloris, sepalis oblique rotundatis inaequilateris apiculatis, vexillo parvo, labelli infundibularis calcare gracili.

Ramuli folia et inflorescentia glaberrima. *Folia* 0·5–1 dm. longa, alterna, breviter petiolata, ovato-lanceolata, caudato-acuminata, crenulata, setulis passim interjectis, sicca atro-fusca, basi in petiolum 1–3 cm. longum angustata, subtus pallida, nervis utrinque 5–6; glandulae stipulares binae, parvae, stipitatae vel nullae. *Pedunculi* in axillis foliorum supremorum pauci vel plurimi et subcorymbosim dispositi, foliis longiores, stricti, erecti, multiflori; pedicelli filiformes, floriferi 1 cm. longi, fructiferi triplo longiores; bracteae minutae, caducae. *Flores* ad 2–5 cm. expansi, violaceo-caerulei. *Sepala* 2, oblique rotundata, apiculata, 7 mm. longa, inaequilatera, basi uno latere saepe gibbo, nervosa, coriacea, exsiccata brunnea. *Vexillum* parvum, orbiculare vel oblatum, costa tenui. *Alae* breves, ad 1·8 cm. longae, substipitatae; lobus basalis amplus, rotundatus; distalis inflexus, duplo longior, dolabriformis; auricula dorsalis majuscula, inflexa. *Labelli limbus* saccatim infundibularis, 1·5–2·5 cm. longus, in calcar gracile lente curvum vel involutum limbo brevius attenuatus, ore 10–16 cm. longo ascendente acuto. *Filamenta* brevia, angusta; antherae parvae, obtusae. *Ovarium* lineare, longe tenuiter rostratum. *Capsulae* 2 cm. longae, anguste clavatae, rectae vel falcatae, acutae, polyspermae. *Semina* oblonga vel obovoidea, 3–5 mm. longa, laevia, castanea, nitida.

China: Kweichau; *Le Mans Herbarium*, 226.

There are two sheets of this species in the Le Mans Herbarium, kindly lent for determination, but the specimens are all so fragmentary that I have been obliged to remove, moisten, and analyse many flowers to determine approximately the form, etc. of their organs. No habitat is attached to either sheet, one of which bears a ticket inscribed 'No. 226, fleur bleu violette; gousse longue.'—J. D. Hooker.

Fig. 1, sepal; 2 and 3, standard; 4, wing; 5, lip; 6, stamen; 7, ovary; 8, capsule; 9, seed. *All enlarged.*

M.S. del. et lith

J.D. Hooker anal

Tabula 2867.

IMPATIENS LEPIDA, *Hk. f.*

Balsaminaceae.

I. lepida, *Hk. f.* (*sp. nov.*); herba gracilis foliis ovatis minute crenatis nervis utrinque 4–5, pedunculis 1- vel 2-floris, pedicello inferiore basi superiore altius bracteato, sepalis rotundatis apiculatis, labelli calcare gracili, antheris acutis.

Herba gracilis, glaberrima, caule 3–4 dm. longo subsimplice flaccido, internodiis inferioribus elongatis nudis. *Folia* 3-5 cm. longa, alterna, petiolata, ovata vel ovato-lanceolata, acuminata, minute crenato-serrulata, marginibus minutissime denticulatis, subtus pallida, subglauca, basi cuneata vel acuta, in petiolum gracilem 1–2 cm. longum angustata, nervis utrinque 4–5. *Pedunculi* gracillimi, 1- vel 2-flori, 4–5 cm. longi, fructiferi 6–7 cm. longi; pedicelli breves, inferiore basi superiore altius bracteato; bracteae minutae. *Flores* ad 2–5 cm. expansi, roseo-flavi. *Sepala* orbicularia, mucronata, 4 mm. diametro, 3-nervia. *Vexillum* oblatum, 12 mm. diametro, apice emarginatum, breviter rostratum. *Alae* 2 cm. longae, basi cuneatae; lobus basalis rotundatus; distalis sub-duplo longior, oblongus vel dolabriformis, recurvus, apice rotundatus; auricula dorsalis angusta, inflexa. *Labelli limbus* profunde cymbiformis vel saccatim infundibularis, in calcar gracile limbo aequilongum vel longius infra medium involutum attenuatus; ore 10–13 mm. longo horizontali. *Filamenta* brevissima, linearia; antherae acutae. *Ovarium* fusiforme, rectum, acutum. *Capsula* immatura tenuis.

China: Kweichau; Piu-fa, *Le Mans Herbarium.*

There are two flowering specimens of this in the Le Mans Herbarium, one with a single-flowered, the other with a 2-flowered peduncle. The bract at the base of the lower pedicel, or at the fork of the peduncle, is so small as to be easily overlooked. There is much difference in the form of the lip in the two flowers examined. The flowers are noted on the accompanying ticket as 'rose-jaunâtre.'—J. D. Hooker.

Fig. 1, sepal; 2 and 3, standard; 4, wing; 5 and 6, forms of lip; 7, stamen; 8, peduncle, pedicels, and ovaries. *All except* 5 *and* 6 *enlarged.*

M.Sdel et lith.

J.D.Hooker anal

Tabula 2868.

IMPATIENS ATHEROSEPALA, *Hk. f.*

Balsaminaceae.

I. atherosepala, *Hk. f.* (*sp. nov.*); species parviflora caule simplice, foliis lanceolatis serratis, pedunculis foliis brevioribus 1-floris supra medium 1-bracteatis, sepalis ovatis aristatim acuminatis, labelli limbus cymbiformis calcare medio inter basim et apicem orto 1·5 cm. longo.

Herba 2 dm. alta, parviflora, glaberrima, caule simplice erecto laxe folioso. *Folia* 4–6 cm. longa, alterna, inferiora et intermedia petiolata, suprema sessilia, lanceolata, longe acuminata, spinuloso-serrata, basi in petiolum 1–2 cm. longum sensim angustata, nervis utrinque 6–8. *Pedunculi* foliis breviores, uniflori, supra medium 1-bracteati; bracteae ovato-lanceolatae, longe acuminatae. *Flores* ad 1 cm. expansi, rubro-flavi. *Sepala* ovata, acuminata, dein aristata, arista laminam fere aequante, rigida, 3-nervia, 5 mm. longa. *Vexillum* orbiculare, 8 mm. latum, basi cordatum, apice emarginatum, costa dorso medio gibba apicem versus cuspidata. *Alae* sessiles, 12 mm. longae; lobus basalis amplus, rotundatus; distalis paullo longior, dolabriformis, obtusus; auricula dorsalis inflexa. *Labelli limbus* cymbiformis, 10 mm. longus, acutus; calcar medio limbi insertum, 1·5 cm. longum, fere rectum, apice paullo incrassatum, incurvum. *Filamenta* linearia; antherae acuminatae. *Ovarium* rectum, fusiforme, acuminatum.—J. D. Hooker.

China: Kweichau; Piu-fa, *Le Mans Herbarium*, 570.

Fig. 1, sepal; 2, standard; 3, wing; 4, lip; 5, stamen; 6, pedicel, bract, and immature capsule. *All enlarged.*

M.S.del. et lith.

J.D.Hooker anal.

TABULA 2869.

IMPATIENS PIUFANENSIS, *Hk. f.*

BALSAMINACEAE.

I. piufanensis, *Hk. f.* (*sp. nov.*); herba caule simplice longe nudo, foliis ovato-lanceolatis serratis, pedunculis 1-floris, sepalis late oblongis apice rotundatis mucronatis, vexillo cornuto, labelli limbo infundibulari in calcar gracile incurvum attenuato.

Herba gracilis, 2–3 dm. alta, glaberrima, caule basi repente internodiis tuberosis, dein erecto stricto apicem versus folioso. *Folia* 3–6 cm. longa, alterna, breviter petiolata, firma, ovato-lanceolata, acuminata, serrata, basi acuta vel acuminata, in petiolum 0·5–2 cm. longum angustata, nervis utrinque 4–5. *Pedunculi* foliis breviores, erecti, 4–5 cm. longi, graciles, apices versus unibracteati, fructiferi elongati, divaricati; bractea ovata, acuminata. *Flores* ad 3 cm. expansi, rosei. *Sepala* 2, late oblonga, 5 mm. longa, apice rotundata, costa crassa excurrente mucronata. *Vexillum* obovato-orbiculare, 14 mm. latum, costa crassa dorso infra apicem forte rostrata. *Alae* subsessiles, basi cuneatae, 1·8 cm. longae; lobus basalis amplus, rotundatus; distalis paullo longior, dolabriformis, apice rotundatus; auricula dorsalis rotundata. *Labelli* 2·5 cm. longi; limbus infundibularis, in calcar gracile limbum aequante incurvum attenuatus, ore subascendente acuto. *Filamenta* brevia, linearia; antherae acuminatae. *Ovarium* fusiforme, rectum, acuminatum.—J. D. HOOKER.

CHINA: Kweichau; at Piu-fa, *Le Mans Herbarium*, 314.

Fig. 1, sepal; 2, standard; 3, wing; 4, lip; 5, stamen; 6, ovary. *All enlarged.*

M.S. del. et lith.

J.D. Hooker anal.

Tabula 2870.

IMPATIENS MARTINII, *Hk. f.*

BALSAMINACEAE.

I. Martinii, *Hk. f.* (*sp. nov.*) ; herba ramosa, parviflora, foliis ovato-lanceolatis serratis, pedunculis bifloris, pedicellis medio bracteatis, sepalis ovatis costa alata, labelli limbo in calcar elongatum attenuato.

Herba glaberrima, parviflora, caule ramoso 4–5 dm. alto, ramis gracilibus. *Folia* 5–8 cm. longa, alterna, breviter petiolata, ovato-lanceolata, acuminata, serrata, basi parce ciliata, in petiolum nudum minute biglandulosum 0·5–1 cm. longum angustata, nervis utrinque 6–10. *Pedunculi* 4–5 cm. longi, graciles, erecti, biflori ; pedicelli 0·5–1·5 cm. longi, medium versus tantum bracteati ; bracteae lanceolatae, 5 mm. longae, recurvae, dentatae. *Flores* ad 1·5 cm. expansi, albi vel flavi. *Sepala* 2, ovata, acuta, 6–7 mm. longa, costa late alata. *Vexillum* rotundatum vel oblatum, apice bilobum, 8 mm. latum, crassiusculum, costa incrassata. *Alae* sessiles, angustae, 12–14 mm. longae ; lobus basalis minutus ; distalis substipitatus, anguste dolabriformis, subacutus ; auricula dorsalis prominens. *Labelli* crassi limbus brevis, infundibularis, subcymbiformis, in calcar elongatum obtusum incurvum 1·5–1·7 cm. longum attenuatus, ore 8–10 mm. longo horizontali. *Filamenta* brevissima, linearia ; antherae didymae, obtusae. *Ovarium* rectum, acuminatum.

CHINA : Kweichau ; on hills near Piu-fau, *Le Mans Herbarium*, 1329, 1905.

The specimens in Le Mans Herbarium are fragmentary, but afford good material for description. The flowers are described as white under 1329, and yellow under 1905.—J. D. HOOKER.

Fig. 1, portion of pedicel and bract ; 2, sepal ; 3, standard ; 4, wing ; 5, lip ; 6, stamen ; 7, ovary. *All enlarged.*

M.S.del et lith.

J.D.Hooker anal.

Tabula 2871.

IMPATIENS LASIOPHYTON, *Hk. f.*

Balsaminaceae.

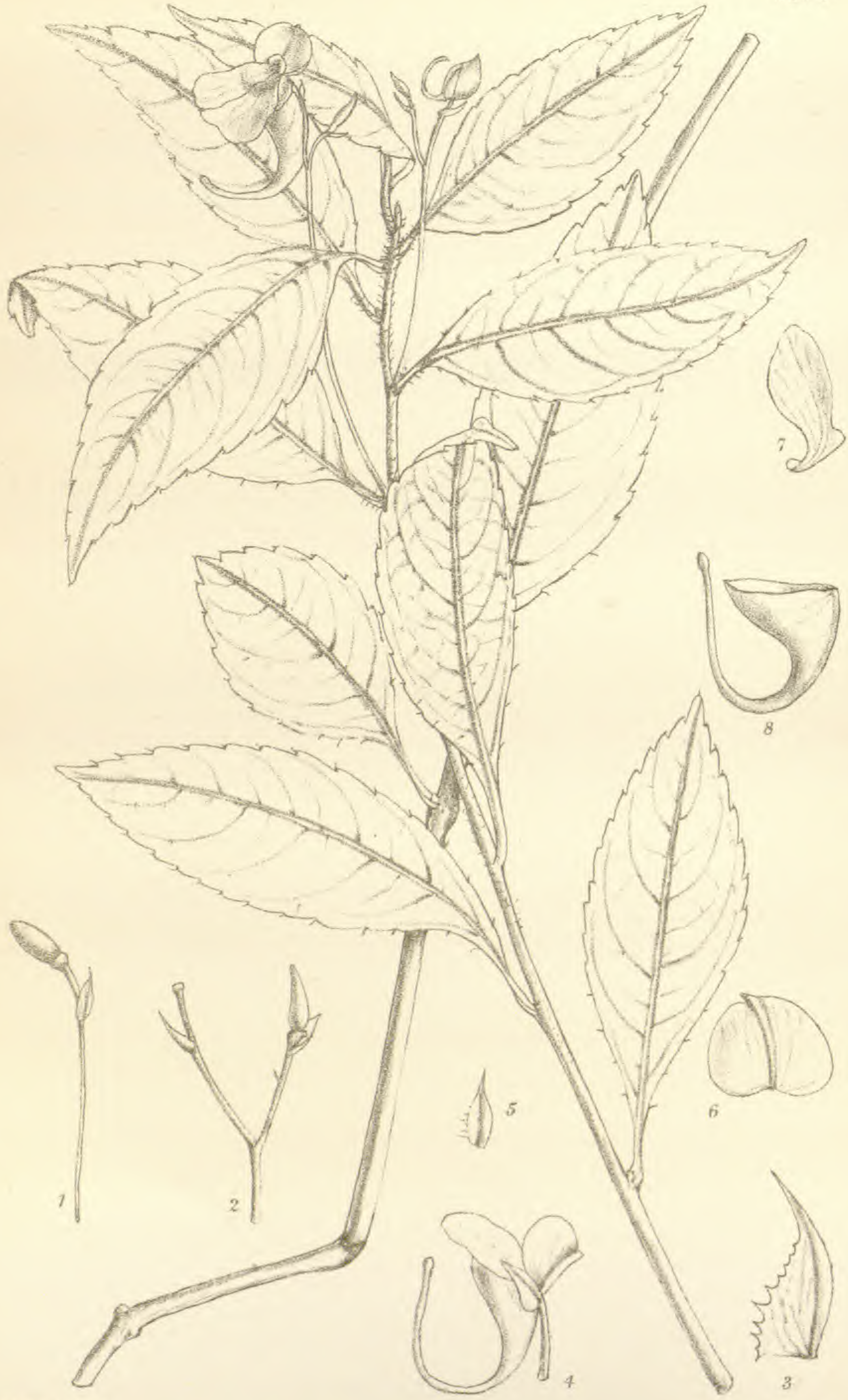
I. lasiophyton, *Hk. f.* (*sp. nov.*); herba pubescens, parviflora, foliis ovatis crenatis, pedunculis 2-floris, pedicellis infra flores tantum bracteatis, sepalis 2 vel 4, 2 exterioribus ovato-lanceolatis longe cuspidatis, 2 interioribus brevioribus glabris, labelli infundibularis calcare limbo subaequilongo.

Herba erecta, robusta, pilis patulis tomentosa, ramis 3–4 dm. longis gracilibus sparsim foliosis. *Folia* 3–8 cm. longa, alterna, petiolata, membranacea, elliptica, ovata vel ovato-lanceolata, acuta, obtusa vel acuminata, grosse crenata vel crenato-serrata, utrinque vel subtus tantum pubescentia, basi acuta in petiolum 2–3 cm. longum angustata, nervis utrinque 7–8. *Pedunculi* 3–5 cm. longi, biflori; pedicelli 2 cm. longi, infra flores solum bracteata; bracteae lanceolatae, 5 mm. longae. *Flores* ad 1·5 cm. expansi, albi vel flavi. *Sepala* 2 vel 4; 2 exteriora dimidiato-lanceolata, 5–8 mm. longa, cuspidata, inaequilatera, hispido-pilosa; 2 interiora dum adsint elliptica, 4–5 mm. longa, obtusa, uninervia, glabra. *Vexillum* orbiculare, 7 mm. diametro, basi bilobum, costa dorso ala crassa superne in rostrum latum acutum dilatatum producta. *Alae* 11 mm. longae, sessiles; lobus basalis parvus vel obsoletus; distalis substipitatus, late dolabriformis vel semi-lunaris; auricula dorsalis protrusa. *Labelli limbus* late infundibularis vel cymbiformis, 1 cm. longus, in calcar robustum subaequilongum incurvum apice integrum vel bidentatum attenuatus, ore horizontali acuto. *Filamenta* brevia, linearia; antherae didymae, obtusae. *Ovarium* fusiforme, obtusum.

China: Kweichau; Pin-ue district, *Cavaleria* and *Fortunat*, 2448; environs of Touchan, *Bodinier*, 2334. Paris and Le Mans Herbaria.

One of the few Chinese pubescent species of the genus.—J. D. Hooker.

Fig. 1, section of stem; 2, outer sepal; 3, standard; 4, wing; 5, lip; 6, stamen; 7, immature capsule and bract. *All enlarged.*



M.S.del et lith.

J.D.Hooker anal.

TABULA 2872.

IMPATIENS LEPTOCAULON, *Hk. f.*

BALSAMINACEAE.

I. leptocaulon, *Hk. f.* (*sp. nov.*); herba gracilis, parviflora, foliis ovatis, pedunculis 1- vel 2-floris, pedicello superiore infra florem bracteato, inferiore ebracteato, sepalis dimidiato-ovatis dentatis, labelli limbus infundibularis, calcare gracili.

Herba gracilis, fere glaberrima, parviflora, caule 3–5 dm. longo debili inferne longe nudo apicem versus puberulo, internodiis 5–10 cm. longis. *Folia* 8–10 cm. longa, alterna, breviter petiolata, opaca, ovata vel ovato-lanceolata, acuta vel acuminata, crenulata vel serrulata, marginibus basi pauci-glandulosa, basi in petiolum 0·5–1 cm. longum angustata, nervis utrinque 5–6. *Pedunculi* 4–5 cm. longi, graciles, erecti, 1- vel 2-flori; pedicelli breves, inferiore ebracteato, superiore infra florem bracteato; bracteae minutae, lanceolatae. *Flores* 1–5 cm. expansi, roseo-purpurei. *Sepala* 2, dimidiato-ovata, subfalcata, 5 mm. longa, longe cuspidatim-acuminata, costa unilaterali crassa, margine uno integerrimo altero tenuissime hyalino dentato. *Vexillum* fere orbiculare, 9 mm. latum, apice paullo angustatum, costa carinata, apice minute rostrata. *Alae* sessiles, 11 mm. longae; lobus basalis minimus, rotundatus; distalis obovato-oblongus, apice rotundatus; auricula dorsalis parva. *Labelli limbus* cymbiformis, in calcar duplo longius incurvum apice clavellatum attenuatus, ore 9 mm. longo obtuso apiculato horizontali. *Filamenta* brevia, linearia; antherae obtusae. *Ovarium* fusiforme, obtusum. *Capsula* immatura clavata.—J. D. HOOKER.

CHINA: Kweichau; plain near Tsin-tchan, *L. Martini*; *Emile Bodinier*, 1813. Le Mans Herbarium.

Fig. 1 and 2, peduncles and bracts; 3, sepal; 4, flower; 5, bract; 6, standard; 7, wing; 8, lip. *All enlarged.*

M.S. del et lith.

J.D. Hooker anal.

TABULA 2873.

IMPATIENS GANPIUANA, *Hk. f.*

BALSAMINACEAE.

I. Ganpiuana, *Hk. f.* (*sp. nov.*); herba ramosa, foliis ovatis serratis, pedunculis 1–2-floris, pedicello inferiore basi superiore altius bracteato, sepalis ovatis, labelli limbo cymbiformi in calcar robustum longius attenuato.

Herba gracilis, glaberrima, caule simplice 3 dm. longo flaccido basi repente. *Folia* 3–6 cm. longa, remota, alterna, petiolata, submembranacea, ovata vel oblonga, acuminata, serrata, basi acuta, interdum ciliata, in petiolum gracilem 1–2 cm. longum angustata, nervis utrinque 6. *Pedunculi* 2–2·5 cm. longi, graciles 1- vel 2-flori; pedicelli ad 1 cm. longi, inferiore basi superiore altius bracteato; bracteae lanceolatae. *Flores* ad 2 cm. expansi, flavi. *Sepala* 2, 3–4 mm. longa, ovata, hyalina, costa valida excurrente percursa. *Vexillum* orbiculare, 10 mm. diametro, costa gracile apice infra marginem nodosa. *Alae* sessiles, 1–7 mm. longae; lobus basalis amplus, rotundatus; distalis subduplo longior, dolabriformis, dorso infra apicem rotundatum excisus; auricula dorsalis majuscula, inflexa. *Labelli limbus* cymbiformis, in calcar 2·2–5 cm. longum fere rectum apice bidentatum attenuatus, ore 10 mm. longo acuto horizontali. *Filamenta* brevia, linearia; antherae parvae, obtusae. *Ovarium* fusiforme, rectum, acutum. *Capsulae* anguste fusiformes, ad 1·5 cm. longae, stipitatae, longe acuteque rostratae, oligospermae. *Semina* oblonga, 2 mm. longa, laevia, atra.

CHINA: Kweichau; margins of streams near Ganpiu, *L. Martini*; *Emile Bodinier*, 1782. Le Mans Herbarium.

I have had difficulty in ascertaining the nature of the bracteation in this species owing to the very early fall of the bract of the lower pedicel.—J. D. HOOKER.

Fig. 1, buds showing bract at base of lower pedicel; 2, lower bract; 3, upper bract; 4, standard; 5, wing; 6, lip; 7, stamens. *All enlarged.*

M.S. del. et lith.

J.D. Hooker anal

Tabula 2874.

IMPATIENS MORSEI, *Hk. f.*

Balsaminaceae.

I. Morsei, *Hk. f.* (*sp. nov.*) ; herba caule robusto succulento, foliis ellipticis serrulatis, inflorescentia simpliciter pedicellata, pedicellis ebracteatis, sepalis oblique rotundatus, alarum lobis distalibus connatis, labelli limbo infundibulare, calcare robusto incurvo.

Herba 3–6 dm. alta, glaberrima, caule robusto ramoso succulento parce ramoso inferne longe nudo, internodiis elongatis. *Folia* 6–10 cm. longa, alterna, petiolata, crassiuscula, ovata, elliptica vel oblonga, acuminata, serrulata vel crenulata, basi cuneata vel acuminata, biglandulosa, petiolo 3–4 cm. longo robusto, costa valida, nervis utrinque 10–12. *Inflorescentia* simpliciter pedicellata ; *pedicelli* solitarii, ebracteati, post anthesin elongati. *Flores* ad 3 cm. expansi, albi, rosei vel purpurei, intus aurantiaco-punctati. *Sepala* 2, oblique orbicularia, 8 mm. lata, multinervia, crassiuscula, costa valida extrusa. *Vexillum* orbiculare, apice bilobum, costa dorso medio incrassata. *Alae* 3 cm. longae ; lobi basales falcatim flabelliformes ; distales oblongi in laminam bilobam connati ; auricula dorsalis inconspicua. *Labelli limbus* 12 mm. longus, cymbiformis vel infundibularis, in calcar validum incurvum limbo brevius attenuatus, ore horizontali acuto. *Filamenta* elongata, angusta ; antherae didymae, obtusae. *Ovarium* fusiforme.

China : Kansu, *H. B. Morse*, 308. Kew Herbarium.

The specimens are in a poor state, but are accompanied with a pencil sketch of a flower which has aided me in the description.—J. D. Hooker.

Fig. 1, flower with the wings removed ; 2, sepal ; 3, wings ; 4, stamen ; 5, ovary. *All enlarged.*

M. S. del. et lith.

J. D. Hooker anal.

Tabula 2875.

IMPATIENS ARGUTA, *Hk. f., et Thoms.* var. BULLEYANA, *Hk. f.*

Balsaminaceae.

I. arguta, *Hk. f., et Thoms., in Journ. Linn. Soc. Bot.* vol. iv. 137, var. **Bulleyana,** *Hk. f.*; herba rigida, procumbens, foliis serrulatis, inflorescentia simpliciter pedicellata, sepalis 4 falcatis, 2 exterioribus late dimidiato-ovatis, 2 interioribus lanceolatis.

Herba rigida, glaberrima, caule ramisque procumbente. *Folia* sparsa 2–4 cm. longa, alterna, breviter petiolata, ovata, acuta vel acuminata, serrulata, basi in petiolum 0·5–1 cm. longum gracilem angustata, nervis utrinque 5–7; glandulae stipulares 0. *Inflorescentia* simpliciter pedicellata; *pedicelli* solitarii, foliis breviores, rarius bini, ima basi bracteati. *Flores* 4 cm. longi, rosei. *Sepala* 4, 7 mm. longa; 2 exteriora dimidiato-ovata, falcatim recurva, infra medium valde dilatata, basi rotundata costa margine superiori proxime; 2 interiora exterioribus fere aequilonga, lanceolata. *Vexillum* orbiculare, ad 12 mm. diametro, costa gracili apiculata. *Alae* 2–5 cm. longae, sessiles; lobus basalis late oblongus, apice retusus; distalis duplo major, dolabriformis, apice bilobus; auricula dorsalis mediocris, protrusa. *Labellum* 3 cm. longum, saccatum, infundibularis, paullo incurvum, basi in calcar robustum uncinatum incurvum vix 1 cm. longum angustatum, ore orbiculari ascendente acuto vel apiculato. *Filamenta* breviuscula, linearia; antherae didymae, obtusae. *Ovarium* fusiforme. *Capsulae* 2–5 cm. longae, angustae, rectae, medio cylindraceae, utrinque attenuatae, polyspermae. *Semina* orbicularia, 2·5 mm. diametro, compressa, sublaevia, glabra, castanea.

China: Yunnan; in moist woods near Chen-Twong, *G. Forrest*, 100.

Var. *Bulleyana* differs from the typical E. Himalayan and Burmese form of *I. arguta* in the shorter, branched, more or less procumbent stem, small, shortly petioled leaves and short bracts.

The name recalls the service rendered to Botany by Mr. Bulley, of Ness Nurseries, Neston, Cheshire, in sending so excellent a collector as Mr. Forrest to China in the interests of his establishment.—J. D. Hooker.

Fig. 1 and 2, sepals; 3 and 4, standard; 5, wing; 6, lip; 7, stamen; 8, ovary; 9, pedicel, bracts, and capsule; 10, seed. *All more or less enlarged.*

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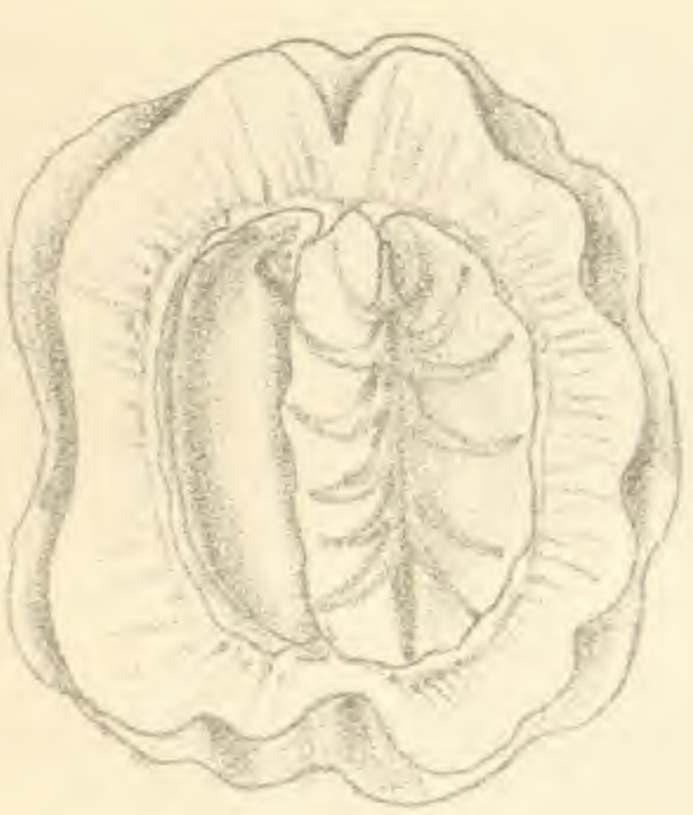

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TABULAE 2876, 2877.

MANIHOT DICHOTOMA, *Ule.*

EUPHORBIACEAE. Tribus CROTONEAE.

M. dichotoma. *Ule in Notizbl. Kgl. Bot. Gart. Berlin*, Nov. 1907, p. 2, et Jan. 1903, pp. 19 et 24, ff. F–H; *Tropenpflanzer*, 1907, vol. xi. p. 863; *Kew Bull.* 1908, p. 59; species foliis valde polymorphis palmatim lobatis et fructu late 6-undulato-alato insignis; *M. heterophyllae*, Pohl, et *M. caricaefoliae*, Pohl, foliis simillimis, sed inflorescentia omnino diversa.

Arbor 5–12 m. alta, dense dichotomo-ramosa, ramis florigeris crassis glabris. *Folia* longe petiolata, subcarnosa, glaberrima, anguste peltata (*i.e.* petiolo prope laminae marginem excurrente) vel petiolo continuo, palmatim 3–7-lobata, lobis insigniter polymorphis; plantarum juvenilium folia primaria tenuiora, longe graciliterque petiolata, ultra medium subaequaliter trilobata, anguste peltata, cordata, cum petiolo 10-15 cm. longa, lobis ovatis acutis integris lateralibus obliquis divaricatis; plantarum florigerarum folia cum petiolo quam lamina longiore 15–30 cm. longa, ambitu orbicularia, haud peltata, basi cordata, fere ad basin 5–7-loba, lobis ovatis lanceolatis oblongis ellipticis oblanceolatis vel oblongis, nunc integris nunc varie lyrato-lobulatis, apice rotundatis obtusis acutis acuminatis vel fere truncatis, lobulis saepius rotundatis. *Stipulae* atque bracteae non visae. *Flores* monoici, masculi et feminei intermixti, carnosi, glaberrimi, racemoso-paniculati; paniculae terminales, subglobosae, circiter 10 cm. diametro, ramulis pedicellisque glaberrimis crassissimis, axe primario 1–2 cm. diametro. *Perianthium* florum masculorum anguste campanulatum, circiter 2·5 cm. longum, ultra medium 5-lobatum; lobi ovato-oblongi, suberecti, apice inflexi, intus pulverulenti, 2 interiores infra apicem apiculati. *Stamina* 10, inclusa, alterna breviora; filamenta filiformia, inter disci lobos affixa; antherae oblongae, dorsifixae. *Grana pollinis* globosa, circiter 150 μ diametro. *Perianthium* florum femineorum 5-partitum, lobis lineari-lanceolatis. *Discus* annularis. *Ovarium* sessile, glabrum, 6-alatum, 3-loculare; styli brevissimi, ramis multifidis. *Fructus* ob pedicellum arcte recurvum nutans, capsularis, oblongo-globosus, circiter 4 cm. longus, alis 6 latis undulatis longitudinaliter cinctus. *Semina* strophiolata, circiter 2 cm. longa. *Embryo* centralis, rectus, albumine fere aequilongus; cotyledones tenues, venosae, ovato-oblongae, evolutae graciliter petiolatae, cum petiolo 6–8 cm. longae.

Brazil: Province of Bahia, *J. A. Davy*.

Mr. J. A. Davy, of the Companhia Agricola Fazenda Dumont, Riberião Preto, S. Paulo, Brazil, sent the material from which the accompanying plates were prepared, under the name of Maniçoba Jequié, and we have the authority of Mr. Ule that it is certainly his *Manihot dichotoma*, one of the best of the rubber-yielding species of the genus.

For fuller particulars, including cultivation, of *M. dichotoma* and some allied species, see Kew Bulletin, 1908, pp. 59–68.—W. Botting Hemsley.

Tabula 2876.

Fig. 1, a flower-bud; 2, male flower from which a part of the perianth has been removed; 3, anthers; 4, cross section of an anther; 5, disk; 6, a female flower from which a part of the perianth has been removed. *All enlarged.*

Tabula 2877.

Fig. 1, part of an infrutescence; 2, section of a seed-vessel, showing an empty cell and the ribbed endocarp; 3, section of a seed-vessel with a seed in position; 4, the endocarp removed from fig. 2, showing the funicle; 5, a young seed; 6 and 7, sections of the same, showing undeveloped embryo; 8, undeveloped embryo removed; 9 and 10, mature seed; 11, a section of the same, showing fully developed embryo; 12, embryo removed. *All natural size, except* 8 *and* 12, *which are enlarged.*

M.S. del et lith.

M. S. del. et lith.

SAPIUM OBOVATUM, *Klotzsch.*

Euphorbiaceae. Tribus Crotoneae.

S. obovatum, *Klotzsch in sched. ex Muell.-Arg. in Linnaea,* vol. xxxii. p. 120 ; *Huber in Bull. Herb. Boiss.,* sér. 2, vol. vi. p. 447, f. 41 ; species ob foliorum venas primarias utrinque circiter 30 conspicuas distincta.

Frutex 0·4–1·2 m. altus, undique glaberrimus ; rami crassi, recti, internodiis saepius petiolo vix longioribus. *Folii lamina* coriacea, saepius oblongo-obovata vel oblongo-elliptica, interdum lanceolata, 7–14 cm. longa vel inferiora et superiora in eodem ramo quam intermedia minora, basi cuneata, apice rotundata, breviter obtuse vel acute acuminata, glandulifera, margine creberrime serrulata, hinc inde glandulifera, venis primariis numerosis, interdum utrinque usque ad 30, arcuatis conspicuis ; petiolus crassus, 3–15 mm. longus, glandulis amplis apicalibus vel fere apicalibus. *Spicae* terminales, robustae, erectae, 10–20 cm. longae, androgynae vel masculae. *Flores masculi* sub quaque bractea 12–15 ; bractea brevis, rotundata, integra ; glandulae amplae, oblongae. *Flores feminei* sparsi, interdum in eadem spica usque ad 15–20, sessiles ; perianthium triphyllum, phyllis suborbicularibus diu persistentibus. *Ovarium* 3-loculare ; styli validi, consolidati, ramis stigmaticis latis revolutis. *Capsula* ac semina mihi ignota.—*Stillingia obovata,* Baill., in Adansonia, vol. v. p. 321. *Excoecaria obovata,* Muell.-Arg. in DC. Prodr. vol. xv. 2, p. 1203 ; Fl. Bras. vol. xi. 2, p. 613. *Sapium obovatum,* var. *ellipticum,* Chodat in Bull. Herb. Boiss. sér. 2, vol. v. p. 676. *Sapium Hasslerianum,* Huber in Bull. Herb. Boiss. sér. 2, vol. vi. p. 448.

Brazil : Without any locality, *Riedel ; Glaziou,* 22118. Paraguay : In the upper course of the River Apa, *Hassler,* 7734, 7734 *a.*

I have combined *S. obovatum,* Klotzsch, and *S. Hasslerianum,* Huber, because I have failed to find any valid characters whereby they can be distinguished. Huber himself refers to their very close affinity with each other, and also with *S. Martii,* Huber (*Excoecaria Martii,* Muell.-

Arg.), of which I have not seen an authenticated specimen. Burchell's 6125 and 7602, as well as Gardner's 3434, belong to this species, or this group of species, as Dr. Huber designates it.—W. Botting Hemsley.

Tabula 2878.

Typical *S. obovatum*, Klotzsch, drawn from Glaziou's n. 22118.

Fig. 1, base of petiole and stipules attached to axis ; 2, base of blade and petiolar glands ; 3, apex of leaf ; 4, part of inflorescence bearing one advanced female flower with ruptured perianth and only remains of style, and a cluster of male flowers ; 5, male flower-bud ; 6, the same laid open ; 7, cross section of ovary. *All enlarged.*

Tabula 2879.

Typical *S. Hasslerianum*, Huber, drawn from Hassler's n. 7734.

Fig. 1, base of petiole and stipules attached to axis ; 2, base of blade of leaf and petiolar glands ; 3, apex of leaf ; 4, part of margin of leaf showing serration and one gland ; 5, part of inflorescence, showing one female flower and a cluster of males ; 6, style-branches. *All enlarged.*

Observations on the Genus Sapium.

In the twenty-seventh volume of the Icones, 1901–2 (tt. 2647–2650 and 2677–2684), I commenced a revision of the American species of *Sapium*, and it was intended to proceed with it in the next volume, giving figures of all the species of which authenticated specimens were accessible ; but circumstances prevented this plan from being carried out. Meanwhile Dr. J. Huber, of Para, Brazil, took up the genus and published (Bull. Herb. Boiss. 1906, sér. 2, vol. vi. pp. 345–364 and 433–452) two instalments of a "Revue critique du genre Sapium," illustrated by reduced figures of detached leaves, and natural size figures of the flowers, fruits and seeds, so far as he was able. This review is an exceedingly valuable contribution to the subject, and I am indebted to the author for the correction of some mistakes that I had made. On the other hand, I do not agree with him in a few instances, having, perhaps, had fuller material under observation than he had. Unfortunately, Huber does not include all the species of the Amazon region, so that I am obliged to act independently, so far as some of them are concerned.

One of the most important points on which he does not agree with me is my identification of *S. Aucuparium*, Jacq., and, after much consideration, I think he is right ; but for further particulars on this subject see the letterpress to tab. 2895.

Huber also correctly reduces *Sapium mexicanum*, Hemsl. (Ic. t. 2680) to *Sapium macrocarpum*, Muell.-Arg., and *Sapium cupuliferum*, Hemsl. (Ic. t. 2679) to *Stillingia Salpingadenia*, Huber.

Although Huber has anticipated me to a great extent in the work I had begun, the publication of good figures of authenticated specimens of another set of species will be none the less useful.

Beginning with *Sapium obovatum*, Klotzsch, it was soon apparent that *S. Hasslerianum*, Huber, was founded on very fine specimens of the

same species. This was not discovered until representations of typical specimens of both had been drawn on the stone. There is considerable diversity in the shape of the leaves of this species, and especially in the tips of the same, from slightly glandular-apiculate to a cucullate prolongation nearly a quarter of an inch long.

Limitation of the Genus Sapium.

The genus *Sapium*, P. Browne, has been variously limited and defined by different writers on the Euphorbiaceae. J. Mueller at first (Linnaea, 1863, vol. xxxii. pp. 84, 115) retained it as a distinct genus, but later (De Candolle's Prodromus, 1866, vol. xv. 2, p. 1202, and Flora Brasiliensis, 1874, vol. xi. 2, p. 611) he treated it as a section of *Excoecaria*, Linn. H. Baillon had previously (Étude générale des Euphorbiacées, 1858, p. 510) reduced nearly a dozen commonly recognised genera to *Sapium;* whilst Bentham and Hooker (Genera Plantarum, 1880, vol. iii. p. 334) restricted it to the American species as here illustrated, and to a few Old World species which I have not examined. I do not propose discussing and valuing these very divergent views, as that would involve much investigation. It is sufficient that Patrick Browne's genus *Sapium*, as adopted by Jacquin (Sel. Stirp. Amer. Hist., 1763, p. 249, t. 158), was founded upon an American species, of which all those described and figured here are undoubtedly congeners; but it may be useful to add a description embodying the essential and general characters of the genus as represented by these American species.

Arbores mediocres fruticesve, saepissime undique glabri. *Folia* simplicia, alterna vel subopposita, stipulata, petiolata, saepissime lanceolata vel oblongo-lanceolata, nunc linearia, nunc late elliptica vel fere orbicularia, apice uniglandulosa, plana, incurva vel cucullata, integra, denticulata, glanduloso-denticulata vel glanduloso-ciliata; petiolus fere semper biglandulosus, glandulis lateralibus superioribus vel inferioribus stipitatis sessilibus vel immersis raro ad basin laminae locatis. *Stipulae* saepius latae, rotundatae, rarius inconspicuae. *Flores* monoici, parvi, flavi vel virides perianthio simplice, spicati vel racemosi, masculi sub quaque bractea plures aggregati, subsessiles, feminei solitarii, sessiles vel breviter pedicellati. *Spicae* laterales vel terminales, androgynae, ad basin floribus femineis pluribus, parte mascula demum decidua, rarius unisexuales. *Bracteae* saepius latae, rotundatae, integrae, fimbriatae vel denticulatae, basi glandulis 2 collateralibus magnis carnosis peltatis oblongis vel orbicularibus instructae. *Bracteolae* nullae vel ad squamas vel filamenta redactae. *Perianthium* florum masculorum bipartitum segmentis rotundatis. *Stamina* 2, exserta, antheris bilocularibus. *Perianthium* florum femineorum saepius tubulosum, ovarium includens, tridentatum, interdum alte trifidum vel fere tripartitum. *Ovarium* 1–3-loculare (an unquam ab initio vere uniloculare ?), loculis uniovulatis. *Styli*

rami liberi vel plus minusve connati, saepissime cito decidui. *Capsula* globosa vel pyriformis, raro plus quam 1 cm. diametro, nuda. *Semina* subtrigona, oblongo-ovoidea vel suborbicularia et compressa, strato cellulari carnoso colorato arilliformi saepius (an semper ?) inclusa ; testa crustacea, saepius tuberculata vel verrucosa ; albumen carnosum. *Embryo* axilis, cotyledonibus latis fere planis.—W. Botting Hemsley.

M. S. del. et lith.

Tabula 2880.

SAPIUM PALLIDUM, *Klotzsch.*

Euphorbiaceae. Tribus Crotoneae.

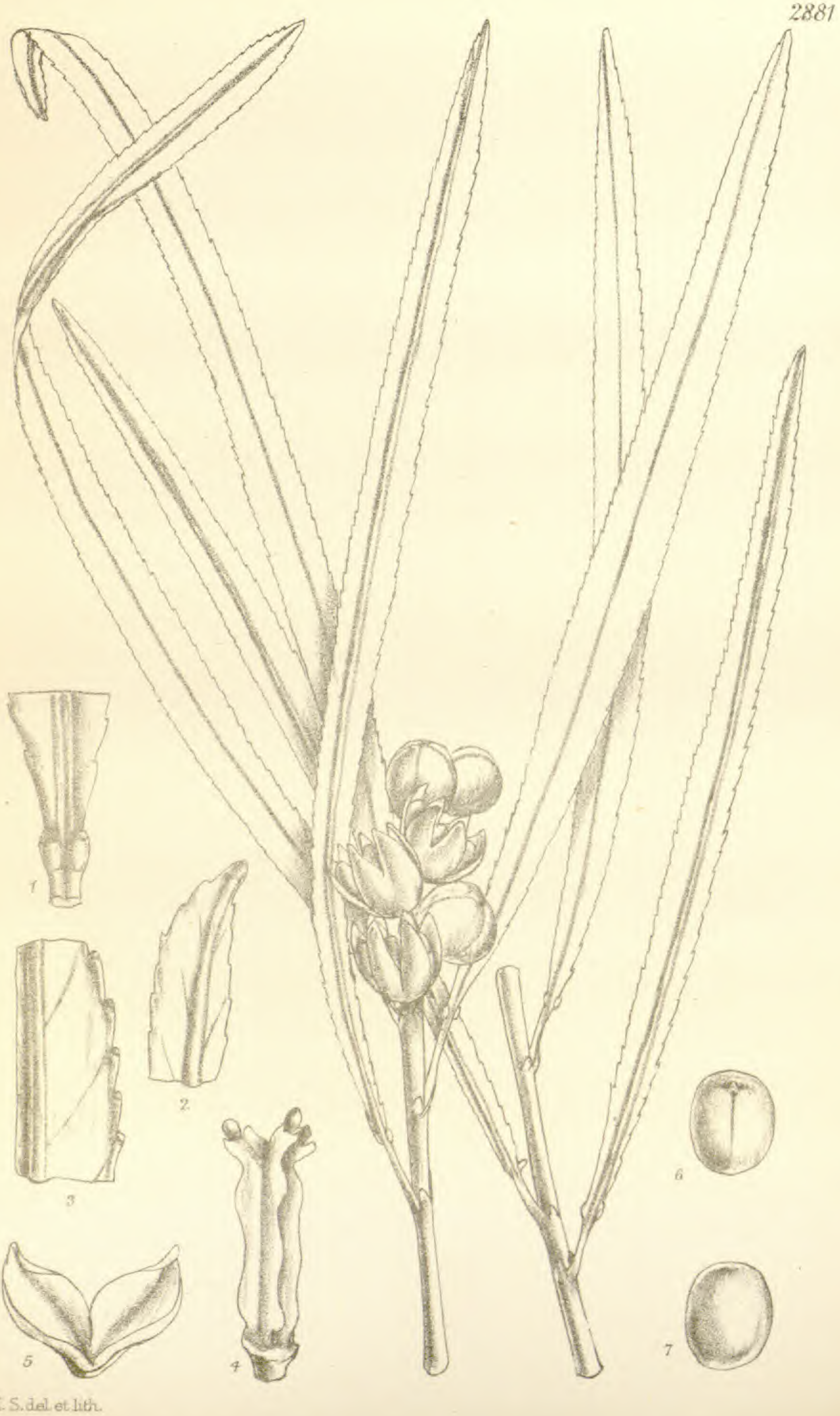
S. pallidum, *Klotzsch in herbariis nonnullis*; *Huber in Bull. Herb. Boiss.* sér. 2, vol. vi. p. 450, f. 44; species foliis mediocribus oblongis conspicue reticulato-venosis subtus pallidis distinctissima.

Frutex ramis florigeris gracilibus purpureis, internodiis petiolos vix aequantibus. *Folii lamina* coriacea, oblonga vel oblongo-lanceolata, 2·5–7 cm. longa, utrinque obtusa vel rotundata, margine integra vel obscurissime serrulata, supra nitida, subtus pallida, venis insigniter reticulatis, costa facie inferiore elevata; petiolus 0·5–1 cm. longus, glandulis ovoideis contiguis sessilibus inconspicue porosis. *Spicae* plures, ramos breves terminantes, 5–7 cm. longae, androgynae vel masculae. *Bracteae* integrae; glandulae ellipticae vel oblongae. *Perianthium masculum* bipartitum, segmentis rotundatis. *Perianthium femineum* trilobatum, quam ovarium brevius, lobis triangularibus obtusiusculis. *Styli* rami 3, sessiles, recurvi.—*Sapium biglandulosum* var. *pallida*, Muell.-Arg. in Linnaea, vol. xxxii. p. 116. *Excoecaria biglandulosa* var. *pallida*, Muell.-Arg. in DC Prodr. vol. xv. 2, p. 1205. *Excoecaria pallida*, Muell.-Arg. in Fl. Bras. vol. xi. 2, p. 623.

This very distinct species appears to have been collected by no traveller since Riedel, for neither Mueller nor Huber records any other specimens.—W. Botting Hemsley.

Brazil: Bahia; Serra Jacobina, *Blanchet*, 2689.

Fig. 1, base of petiole and stipules attached to axis; 2, base of leaf and petiolar glands; 3, part of male inflorescence; 4, an expanded male flower and detached bracteoles; 5, female flower with bract and glands. *All enlarged.*



M. S. del. et lith.

TABULA 2881.

SAPIUM LINEARIFOLIUM, *Hemsl.*

EUPHORBIACEAE. Tribus CROTONEAE.

S. linearifolium, *Hemsl.*; species nova ex affinitate *S. longifolii*, Huber, et *S. haematospermi*, Muell.-Arg., ab utroque tamen foliis linearibus et fructu sessili differt.

Frutex 0·75 m. altus, caulibus simplicibus (fide *Balansa*) omnino glaber. *Folii lamina* subcoriacea, usque ad 15 cm. longa, 5–7 mm. lata, per totam longitudinem calloso-serrulata, apice glandulosa, venis immersis obscuris; petiolus circiter 5 mm. longus, apice glandulis 2 oblongis sessilibus instructus. *Flores* non visi. *Spica fructifera* terminalis, capsulas circiter 8 sessiles confertas gerens. *Capsulae* valvae circiter 1 cm. longae. *Semina* compresso-sphaeroidea, circiter 3–6 mm. diametro, colorata, facie interiore costata.

PARAGUAY: Humid pastures bordering the Rio Jequi, near Caaguazu, *Balansa*, 1709.

This comes near some of the specimens referred to *S. longifolium*, Huber, and it is very similar to Hassler's 4833, which Chodat has named *S. biglandulosum*, var. *longifolia*, forma *longissima* in Bull. Herb. Boiss. sér. 2, vol. v. p. 676, but that has broader, less rigid, less distinctly toothed leaves on longer petioles, with a more distinct venation. The capsules, too, of *S. longifolium* are less crowded and distinctly stalked.—W. BOTTING HEMSLEY.

Fig. 1, base of leaf-blade and petiolar glands; 2, apex of leaf,; 3, margin of leaf; 4, central column of capsule; 5, a detached carpel; 6 & 7, ventral and dorsal views of a seed. *All enlarged.*

M. S. del et lith.

Tabula 2882.

SAPIUM LONGIFOLIUM, *Huber*.

Euphorbiaceae. Tribus Crotoneae.

S. longifolium, *Huber in Bull. Herb. Boiss.* sér. 2, vol. vi. p. 444, f. 39; species *S. haematospermo*, Muell.-Arg., proxima, differt imprimis ovario sessili biloculari.

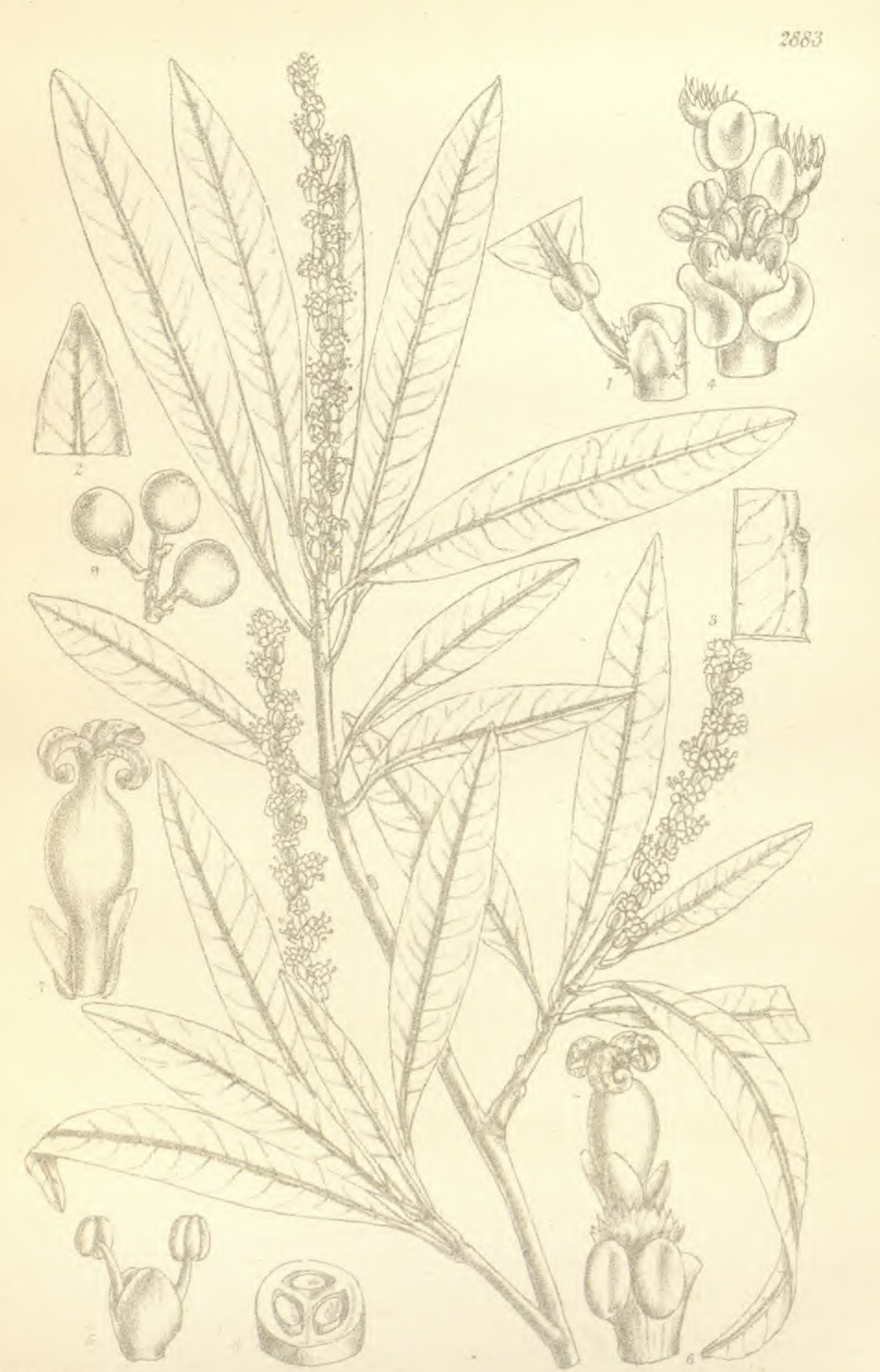
Arbor parva (*Gardner*), 5–6 m. alta (*Balansa*), 13 m. (*Morong*), salicoidea, undique glabra, ramis gracilibus luteolis. *Folii lamina* petiolata, subcoriacea, lineari-lanceolata, oblongo-lanceolata, oblonga, vel interdum anguste obovata, 5–15 cm. longa sed saepius circiter 10 cm. longa, 1–2 cm. lata vel rarius paullo latiora, apice glandula parva instructa, basi cuneata, margine crenulata, raro hinc inde glandulosa, venis primariis numerosis sat conspicuis; petiolus 1–1·5 cm. longus, glandulis ovalibus sessilibus sat prominentibus; stipulae rotundatae, integrae. *Spicae* terminales, graciles, 7–14 cm. longae, androgynae vel masculae. *Flores masculi* sub quaque bractea 9–12; bractea fimbriata; glandulae oblongae. *Flores feminei* sessiles; perianthium trilobatum, ovarium superans, lobis acutis. *Ovarium* biloculare; styli recurvi, cito decidui. *Capsula* globosa, circiter 1 cm. diametro; semina subglobosa, circiter 4 mm. diametro.—*Sapium biglandulosum* var. *longifolium*, Muell.-Arg. in Linnaea, vol. xxxii. (1863) p. 118. *Excoecaria biglandulosa* var. *lanceolata*,** *longifolia* Muell.-Arg. in DC. Prodr. vol. xv. 2 (1866), p. 1206. *E. biglandulosa* var. *longifolia*, Muell.-Arg. in Fl. Bras. vol. xi. 2 (1874), p. 622, etiam var. *angustifolia*, Muell.-Arg. l.c. *Sapium glandulosum*, Morong in Ann. N. York Acad. Sc. vol. vii. (1893) p. 227; Chodat in Bull. Herb. Boiss. sér. 2, vol. i. (1901) p. 398. *S. biglandulosum*, varietates *Sellowiana*, *longifolia* et *intercedens*, Chodat in Bull. Herb. Boiss. sér. 2, vol. v. (1905) pp. 676–7.

Brazil: Piauhy; banks of the river Gurgueia, *Gardner*, 2721. Paraguay: various localities; *Balansa*, 1710; *Hassler*, 1361, 1365, 3479, 4833; *Morong*, 196; *Fiebrig*, 942.

So far as Miss Smith's and my investigations go, the ovary of *S. longifolium*, Huber, is always two-celled, but it should be added that most of the specimens bear only male flowers, and Huber does not refer

to the number of cells as a distinctive character. Indeed his figure, cited above, shows an apparently tricarpellary ovary.—W. Botting Hemsley.

Fig. 1, base of petiole and stipules attached to axis ; 2, base of leaf and petiolar glands ; 3, tip of leaf ; 4, base of a flower-spike ; 5, a cluster of male flower-buds ; 6, an expanded male flower, showing the overlapping perianth-lobes and laterally exserted stamens ; 7, a female flower from which a portion of the perianth has been removed, bract and glands and bracteoles ; 8, cross section of an ovary ; 9, ripe fruit ; 10, a seed.—The main figure and dissections drawn from Fiebrig's n. 542. Fruit and seed from Hassler's n. 1365, a. *All except* 9 *enlarged.*



M. S. del. et lith.

Tabula 2883.

SAPIUM HAEMATOSPERMUM, *Muell.-Arg.*

Euphorbiaceae. Tribus Crotoneae.

S. haematospermum, *Muell.-Arg. in Linnaea*, vol. xxxiv. (1866) p. 217; *Huber in Bull. Herb. Boiss.* sér. 2, vol. vi. p. 446; species *S. longifolio*, Huber, simillima, sed ovario stipitato triloculare facile distinguitur.

Arbor parva (fide peregrinatorum plurimorum); nunc frutex 2–3 m. altus, nunc arbor 8–10 m. alta (*Hassler*), salicoidea, undique glabra, ramis gracilibus griseis. *Folii lamina* petiolata, vix coriacea, linearis, rarius anguste oblonga, anguste lanceolata vel obovata, saepius 5–10 cm. longa rarius tantum 2 cm. vel usque ad 20 cm. longa, 0·5–2 cm. lata, apice glandula parva instructa, basi cuneata, margine obscurissime crenato-dentata, venis inconspicuis; petiolus 0·5–1 cm. longus, eglandulosus vel obscure 1- vel 2-glandulosus. *Spicae* terminales (interdum ramulos breves laterales terminantes), sessiles, 4–12 cm. longae, masculae vel androgynae. *Flores masculi* sub quaque bractea 9–12; bractea fimbriata; glandulae oblongae, conspicuae. *Flores feminei* usque ad 10 in eadem spica, sessiles; perianthium trilobatum, quam ovarium stipitatum dimidio brevius, lobis obtusis. *Ovarium* stipitatum, triloculare; styli revoluti. *Capsulae* circiter 1 cm. diametro. *Semina* subglobosa, 5 mm. diametro, laevia, sanguinea.—*Excoecaria haematosperma*, Muell.-Arg. in DC. Prodr. vol. xv. 2, p. 1209; Fl. Bras. vol. xi. 2, p. 623. *Sapium biglandulosum lanceolatum squarrosum*, Muell.-Arg. in Linnaea, vol. xxxii. (1863) p. 118. *Excoecaria biglandulosa lanceolata*, Muell.-Arg. in Fl. Bras. vol. xi. 2, p. 621. *Stillingia salicifolia*, Klotzsch in herbariis nonnullis. *Stillingia sylvatica* var. *paraguayensis*, Morong in Ann. N. York Acad. Sc. vol. vii. (1893) p. 226.

Brazil: Without locality, *Sello*. Paraguay: Various localities, *Hassler*, 7242, 7446; *Morong*, 814. Uruguay: Various localities, *Gibert*, 20, 181; *A. Saint-Hilaire*, 2513 bis; *Hieronymus*, 249. Argentina: Buenos Ayres, *Tweedie*; Catamarca, *Lorentz*.

This is apparently the commonest of the South American species having long, narrow leaves, which, I believe, may always be recognised

by its stipitate, three-celled ovary. Huber describes the petioles of this species as glandless, but, as in all other species of the genus that I have examined, glands are almost always present, though sometimes small and obscure.—W. Botting Hemsley.

Fig. 1, base of leaf and stipules, attached to axis; 2, tip of leaf; 3, margin of leaf; 4, base of a male spike; 5, a male flower; 6, a female flower with bract and glands; 7, a female flower with one segment of the perianth removed; 8, cross section of an ovary; 9, young fruit.—The main figure and flowers drawn from Hassler's n. 7242; the female flowers and young fruit from Tweedie's n. 105. *All except 9 enlarged.*

M. S. del et lith.

Tabula 2884.

SAPIUM MUELLERI, *Hemsl.*

Euphorbiaceae. Tribus Crotoneae.

S. Muelleri, *Hemsl.*; species nova ex affinitate *S. lanceolati*, Huber, a quo differt foliis majoribus apice haud involutis, spicis longissimis et stylorum columna elongata.

Rami florigeri curvati, rubri, internodiis quam petiolis brevioribus. *Folia* subcoriacea, graciliter longiuscule petiolata; lamina oblanceolato-oblonga, 7–13 cm. longa, maxima 3 cm. lata, utrinque attenuata vel basi rotundata, apice cucullato-glandulosa, margine integra vel raro hinc inde praecipue prope apicem pauciglandulosa; costa supra impressa, subtus elevata; venae primariae numerosae, sat conspicuae, arcuatae, propter marginem anastomosantes; petiolus gracilis, 1·5–2·5 cm. longus; glandulae laterales, saepe oblique positae, divergentes. *Spicae* terminales, solitariae, breviter pedunculatae, 15–18 cm. longae, folia superantes, curvatae, androgynae vel pleraeque masculae. *Flores masculi* circiter 8–10 aggregati; bractea parva crenulata, glandulis maximis oblongo-ellipticis. *Perianthium* florum femineorum ad medium trilobatum, lobis lanceolatis subacutis. *Styli* elongati, consolidati, ramis 3 arcte recurvis. *Capsula* ignota.—W. Botting Hemsley.

Brazil: Santa Catarina, *Fritz Mueller*, 200.

Fig. 1, base of a leaf and petiolar glands; 2, tip of a leaf; 3, group of male flower-buds with bract and glands; 4, stamens; 5, a male flower before complete expansion; 6, a female flower bract and glands attached to axis; 7, female flower with perianth laid open. *All enlarged.*

M.S. del. et lith.

TABULA 2885.

SAPIUM SELLOWIANUM, *Klotzsch.*

EUPHORBIACEAE. Tribus CROTONEAE.

S. Sellowianum, *Klotzsch ex Baill. in Adansonia*, vol. v. (1865) p. 320; *Huber in Bull. Herb. Boiss.* sér. 2, vol. vi. p. 442; inter species mihi cognitas glandulis petiolaribus bene evolutis elongatis sub laminam recurvis et semitortis singularis.

Rami florigeri breves, nigro-brunnei, internodiis quam foliis saepius breviores. *Folia* graciliter petiolata, vix coriacea; lamina oblanceolata vel oblonga, 3–7 cm. longa, obtusa, obscure crenulata; venae inconspicuae; petiolus 0·5–1·5 cm. longus; glandulae auriculiformes, laterales, laminae adherentes, supra umbonatae, subtus elongatae, sub laminam arcuatim inflexae. *Spicae* in axillis superioribus solitariae, androgynae, quam folia breviores. *Flores masculi* sub quaque bractea saepius 3; bractea parva, denticulata. *Perianthium* femineum tubulosum, breviter tridentatum. *Stylorum columna* longiuscule exserta; rami 3, arcte recurvi. *Capsula* globosa, circiter 8 mm. diametro. *Semina* compresso-globosa, 4 mm. diametro.—*Sapium biglandulosum* var. *Sellowiana*, Muell.-Arg. in Linnaea, vol. xxxii. p. 118. *Excoecaria biglandulosa* var. *Sellowiana*, Muell.-Arg. in DC. Prodr. vol. xv. 2, p. 1206 et in Fl. Bras. vol. xi. 2, p. 620.

BRAZIL: Without locality, *Sello*; São Paulo, near the Tieté River, *Burchell*, 4224, 4801.

The twisted, recurved petiolar glands are not absolutely peculiar to this species. They are similar in *S. sublanceolatum*, Huber, but much smaller, and not obviously curled back towards the under surface of the leaf.—W. BOTTING HEMSLEY.

Fig. 1, base of petiole and stipule attached to axis; 2, base of leaf-blade and petiolar glands, seen from below; 3, the same seen from above; 4, apex of leaf; 5, lower part of flower-spike, bearing both male and female flowers; 6, a male flower-bud opened; 7, ripe capsules; 8, a seed.—The principal figure and flowers from Sello's specimens; the fruit and seed from Burchell's specimens. *All more or less enlarged.*

M. S. del. et lith.

Tabula 2886.

SAPIUM GIBERTII, *Hemsl.*

Euphorbiaceae. Tribus Crotoneae.

S. Gibertii, *Hemsl.*; species nova inter affines foliis subdistichis insignis.

Arbor mediocris (*Gibert*) novellis glaberrimis. *Rami* florigeri graciles, internodiis saepius petiolos 5–10 mm. longos vix excedentibus. *Folia* petiolata, subcoriacea, in eodem ramo florigero inferiora et superiora quam intermedia saepius minora; lamina anguste lanceolata, oblonga, oblanceolata vel interdum fere elliptica, absque petiolo 2–8 cm. longa, 1–2 cm. lata, apice glandula minuta instructa vel eglandulosa, basi cuneata, margine obscure crenulata, rarissime hinc inde glandulis 1–3 praedita, venis inconspicuis; petiolus rigidus, glandulis superioribus conicis erectis distincte porosis; stipulae triangulares, circiter 2 mm. longae, persistentes. *Spicae* subterminales, sessiles, rigidae, densiflorae, 4–8 cm. longae, masculae vel androgynae. *Flores* masculi sub quaque bractea circiter 8; bractea paucidenticulata, glandulis orbicularibus ellipticis imbricatis. *Perianthium* florum femineorum ovoideum, tridentatum, dentibus vix acutis. *Stylorum columna* distincte exserta; styli rami 3, recurvi. *Capsula* immatura tantum visa, globosa, circiter 8 mm. diametro.

Uruguay: Monte Video; banks of rivers, *Gibert*, 8, 171, 181.

Of this very distinct looking species I have only seen Gibert's specimens, which were collected on three different dates.—W. Botting Hemsley.

Fig. 1, base of peticle and stipules attached to axis; 2, base of leaf-blade and erect petiolar glands; 3, tip of leaf; 4, lower part of inflorescence, bearing both male and female flowers; 5, a male flower; 6, a capsule. *All except 6 more or less enlarged.*

M.S. del. et lith.

Tabula 2887.

SAPIUM MONTEVIDENSE, *Klotzsch.*

Euphorbiaceae. Tribus Crotoneae.

S. montevidense, *Klotzsch ex Baill. in Adansonia*, 1865, vol. v. p. 320 ; *Huber in Bull. Herb. Boiss.* sér. 2, vol. vi. p. 443, f. 38 ; *S. Sellowiano*, Klotzsch, simile, sed petiolis brevioribus et glandulis petiolaribus oblongis sessilibus diversum.

Rami florigeri crassiusculi, rigidi, rubescentes, internodiis brevibus sed saepe petiolos excedentibus. *Folia* subcoriacea, breviter petiolata ; lamina lanceolata, oblonga vel oblanceolata, 4–9 cm. longa, supra nitida, subtus pallidiora, basi cuneata, apice plana, obtusa, rarius rotundata vel subacuta, margine obscure serrulata, venis inconspicuis ; petiolus gracilis, 6–12 mm. longus ; glandulae laterales, ovoideae, sessiles, apice distincte 1-porosae. *Spicae* subterminales, 8–10 cm. longae, ramulos collaterales aequantes, androgynae vel masculae. *Flores masculi* 6–8 aggregati. *Flores feminei* bene evoluti non visi ; ovarium triloculare, stylis cito deciduis. *Capsulae* 1·3 cm. diametro. *Semina* compresso-globosa, circiter 5 mm. diametro, laevia. —*Sapium serratum*, Klotzsch ex Baill. in Adansonia, 1865, vol. v. p. 320. *S. biglandulosum* var. *serrata*, Muell.-Arg. in Linnaea, vol. xxxii. p. 118. *Excoecaria biglandulosa* var. *serrata*, Muell.-Arg. in DC. Prodr. vol. xv. 2, p. 1206 ; Fl. Bras. vol. xi. 2, p. 620. *E. biglandulosa* var. *montevidensis*, Muell.-Arg. in Fl. Bras. vol. xi. 2, p. 621.—W. Botting Hemsley.

Brazil : Without locality, *Sello* ; confines of Piauhy, *Spruce*, 2435 ; Rio Grande do Sul; Porto Alegre, *Reineck*.

Fig. 1, base of leaf and stipules attached to axis ; 2, tip of leaf ; 3, base of inflorescence, bearing one female flower from which the style-arms have fallen, and several clusters of male flowers ; 4, a male flower and bud subtended by filiform bracteoles ; 5, a capsule ; 6 & 7, seeds. *Figures 5 and 6 of natural size ; all the rest enlarged.*

2

4

3

6

7

M.S del et lith

Tabula 2888.

SAPIUM LAUROCERASUS, *Desf.*

Euphorbiaceae. Tribus Crotoneae.

S. Laurocerasus, *Desf. Cat. Pl. Hort. Par.* ed. 3, 1829, p. 411 ; *Urban, Symb. Antill.* vol. iii. p. 307 ; *Huber in Bull. Herb. Boiss.* sér. 2, vol. vi. p. 347, f. 1 ; inter species Indiae Occidentalis foliis crassis coriaceis mediocribus praesertim oblongo-ellipticis, venis primariis numerosis ab angulo fere recto excurrentibus, et glandulis petiolaribus stipitatis facile distinguitur.

Arbor usque ad 15 m. alta (*Urban*), undique glabra ; ramuli floriferi crassiusculi, rigidi, internodiis quam petiolis saepius brevioribus. *Folia* petiolata, crassa, coriacea ; lamina circumscriptione admodum variabilis, scilicet lanceolata, oblonga, elliptica, late obovata vel interdum fere orbicularis, sed saepius elliptica vel oblongo-elliptica, 2–12 cm., plerumque 6–8 cm., longa, usque ad 6·5 cm. lata, utrinque rotundata, apice nunc in acumen subplanum brevissimum obtusum abrupte contracta, nunc apiculata, rarissime emarginata, integra vel obscurissime serrulata vel crenulata, margine, saltem in siccis, recurva, supra nitida ; venae primariae numerosae, rectae, angustissimae ; petiolus 1–2 cm. longus ; glandulae conoideae, laterales, discretae, divergentes, apice satis distincte uniporosae. *Spicae,* ut videtur, fere semper unisexuales, complures in axillis foliorum superiorum solitariae, simplices, foliis dimidio breviores, erectae. *Flores masculi* circiter 4–6 sub quaque bractea aggregati. *Perianthium* florum femineorum 3-dentatum, segmentis demum solutis ; bractea integra, perianthio dimidio brevior, glandulis amplis orbicularibus cupulatis vel alte concavis. *Ovarium* 3-loculare, stylis connatis ramis recurvis. *Capsulae* longe stipitatae, subglobosae, circiter 1 cm. diametro. *Semina* ovato-trigona, 5–6 mm. longa, sub membrana extima tuberculata.—*Stillingia Laurocerasus*, Baill. Étud. Gén. Euphorb. p. 513, t. 6, f. 1–9. *Sapium Laurocerasus* var. *genuina*, Muell.-Arg. in Linnaea, vol. xxxii. p. 116. *Excoecaria Laurocerasus* var. *genuina*, Muell.-Arg. in DC. Prodr. xv. 2, p. 1202 ; Baill. Hist. Pl. vol. v. p. 134, f. 210 et 211. *Sapium Aucuparium*, Bello Ap. vol. ii. p. 111 ; non Jacq., fide Urban.

West Indies : Portorico ; in various localities, *Sintenis*, 1659, 2574 ; *Eggers*, 1213 ; Jardin des Plantes, Paris, cult., Sept. 1822, *Herb. J. Gay.*

A specimen in the Kew Herbarium collected by Imray in Dominica, and named *S. Aucuparium* by Grisebach, probably belongs to this species, which was founded upon and described from plants cultivated in Paris ; Gay's specimen, cited above, may be regarded as typical.—W. Botting Hemsley.

Fig. 1, a female inflorescence, bearing a reduced very thick foliar organ with conspicuously pored glands ; 2, base of leaf and spreading petiolar glands ; 3, tip of leaf ; 4, portion of a male inflorescence ; 5, portions of axillary female spikes from which the leaves have fallen.—The upper branch and all the numbered figures except 5, drawn from Gay's specimens ; the lower branch and fruit from Sintenis's 1659. *All except 5 enlarged.*

Fendler's n. 1012, from Trinidad, collected between 1877 and 1880, is a species closely allied to *S. Laurocerasus*, differing as here set forth :—

S. Fendleri, *Hemsl.* ; species nova, ab *S. Lauroceraso*, Desf., recedit foliis tenuioribus apice late cucullatis margine integris, glandulis petiolaribus elongatis patentibus, spicis folia excedentibus androgynis et capsulis sessilibus.—W. Botting Hemsley.

M.S. del. et lith.

Tabula 2889.

SAPIUM JAMAICENSE, *Swartz.*

Euphorbiaceae. Tribus Crotoneae.

S. jamaicense, *Swartz, Adnot. Bot.* 1829, p. 62 ; *Urban, Symb. Antill.* vol. iii. p. 308 ; *Huber in Bull. Herb. Boiss.* sér. 2, vol. vi. p. 347, f. 2 ; species distinctissima, foliis iis *S. Laurocerasi,* Desf., similis sed saepius majoribus venis primariis arcuatis ; ab omnibus speciebus hujus generis mihi cognitis bracteis praesertim femineis bene evolutis et perianthio femineo urceolato longe distat.

Arbor 25 m. alta (*Eggers*), ramis florigeris crassiusculis rigidis rectis. *Folia* longe petiolata, coriacea ; lamina saepius oblonga vel elliptica, aliquando lanceolata vel oblanceolata, 7–20 cm. longa, sed pleraque 10–15 cm. longa, apice rotundata, abrupte obtuseque acuminata, basi rotundata vel rarius cuneata, margine integra vel obscurissime denticulata vel crenulata ; venae primariae laterales numerosae (utrinque usque ad 30) conspicuae, arcuatae ; petiolus 1–5, saepius 2–4 cm. longus ; glandulae laterales, sessiles, parvae, oblongae, interdum obscurae vel omnino carentes. *Spicae* 1–4, in axillis foliorum summorum solitariae, unisexuales vel androgynae, foliis breviores. *Bracteae* utriusque sexus amplae, rotundatae ; bracteolae fimbriatae ; glandulae ellipticae. *Flores masculi* sub quaque bractea circiter 3. *Perianthium* florum femineorum tridentatum, ovarium excedens. *Ovarium* triloculare (interdum biloculare), stylis (bene evolutis non visis) erectis approximatis exsertis. *Capsulae* globosae, 6–8 mm. diametro ; semina fere orbicularia, compressa, circiter 3 mm. diametro, leviter verrucosa.—*Sapium Laurocerasus*, var. *elliptica* et var. *laurifolia*, Muell.-Arg. in Linnaea, vol. xxxii. p. 116. *Excoecaria Laurocerasus*, var. *laurifolia* et var. *elliptica*, Muell.-Arg. in DC. Prodr. vol. xv. 2, p. 1203, pro parte. *Sapium laurifolium*, Griseb. Fl. Brit. W. Ind., p. 49. *Stillingia laurifolia*, A. Rich. in Ramon de la Sagra, Hist. Nat. Cuba, Fl. Cub. Phaner. vol. iii. p. 201 ; Ic. Pl. Cub. t. 69. *Sapium Brownei*, Banks ex Griseb. Fl. Brit. W. Ind. p. 49. *Sapium pleiostachys*, Schum. et Pittier ex Pittier in Contrib. U.S. Nat. Herb. vol. xii. p. 164, t. 10. *Sapium anadenum*, Pittier loc. cit. p. 164, t. 11. *Sapium biglandulosum*, var. *Klotzschiana*, Donn.-Sm. Enum. Pl. Guat. pars vi. p. 44.

Jamaica : Without locality, *Macfadyen* ; Moneague, *Alexander Prior.* San Domingo : without locality, *Sir R. Schomburgk.* Cuba : near

Monte Verde, *Wright*, 578 ; Cienfuegos ; Santa Clara, *R. Combs*, 160 ; Loma de Jaquey, *Eggers*, 4909. GUATEMALA : Retalhuleu ; San Felipe, *J. Donnell-Smith*, 2607. COSTA RICA : Forests of Golfita de Osa, close to sea-shore, *H. Pittier*, 9906 ; Orosi ; Hacienda Valverde, at 1200 m., *H. Pittier*. COLOMBIA : Bogota ; La Mesa, at 1300 m., *Triana*.

I have reduced *S. pleiostachys*, Schum. and Pittier, to *S. jamaicense*, Sw., although I have only seen Donnell-Smith's Guatemalan specimen cited by Pittier. This differs from the typical Jamaican specimens in the leaves being more decidedly cuneate at the base, but some of the Cuban and San Domingo specimens are exactly like that from Guatemala. Most of the American species of *Sapium* present considerable variation in the size and shape of the leaves, often on the same branch. *S. anadenum*, Pittier, is distinguished from *S. pleiostachys* by the petiolar glands being 'absent or rudimentary,' but his own figure shows them as fully developed as they are in some other specimens of *S. jamaicense*, and occasional absence of glands from some of the leaves has been observed in several species Moreover, Pittier, discussing the affinities of his species, says : 'I would place it near *S. pleiostachys*, with which it may prove identical upon examination of more complete material,' which is of itself almost sufficient to justify the reduction.—W. BOTTING HEMSLEY.

Fig. 1, base of petiole and stipules, attached to the axis ; 2, base of blade of leaf and petiolar glands ; 3 & 4, portions of a male flower-spike ; 5, young female flower, attached to axis ; 6, a female flower from which the bract and glands have been removed ; 7, the same detached, and perianth laid open ; 8, cross section of an ovary ; 9, a seed ; 10, section of the same, showing the embryo. *All enlarged.*

M.S. del. et lith.

Tabula 2890.

SAPIUM HIPPOMANE, *G. F. W. Meyer.*

Euphorbiaceae. Tribus Crotoneae.

S. Hippomane, *G. F. W. Meyer, Prim. Esseq.*, 1818, p. 275; *Miq. Stirp. Surin. Sel.* p. 97, t. 29; *Urban, Symb. Antill.* vol. iii. p. 305; *Huber in Bull. Herb. Boiss.* sér. 2, vol. vi. p. 360; inter species orientales Americae foliis saepius late ellipticis, venis primariis numerosis conspicuis arcuatis, et glandulis petiolaribus longis teretibus sub angulo recto abeuntibus, facile distinguitur.

Arbor ramis florigeris graciliusculis teretibus nigrescentibus; internodia petiolis longiora. *Folia* petiolata, vix coriacea; lamina oblongo-elliptica, oblongo-lanceolata vel interdum obovata, 4–15 cm. longa et usque ad 8 cm. lata, integra (in ramis sterilibus usque ad 25 cm. longa, apice acuta, margine serrulata et hinc inde glandulis paucis distantibus instructa), apice rotundata, abrupte acuminata acumine cucullato-glanduloso inflexo, basi rotundata vel cuneata; venae primariae numerosae, utrinque conspicuae, leviter arcuatae; petiolus canaliculatus, 1–3 cm. longus, gracilis, paullo infra apicem biglandulosus; glandulae laterales, teretes, 2–3 mm. longae, rectae, recurvae vel incurvae. *Spicae* androgynae, subterminales, solitariae, erectae, 10–25 cm. longae, graciles. *Bracteae* quam perianthium breviores, integrae, glandulis oblongis 4–5 mm. longis. *Flores masculi* sub quaque bractea 6–9. *Flores feminei* solitarii, pauci ad basin spicae sessiles. *Ovarium* triloculare; styli rami recurvi. *Capsulae* globosae, circiter 1·5 cm. diametro. '*Semina* sublenticularia, circiter 5 mm. longa; testa dura, crustacea, arillo totam obtegente, in immaturis albo, in maturis cinnabarino' (*Meyer*).—*Hippomane glandulosa* Linn. Sp. Pl. ed. 1, 1753, p. 1191, pro parte, quoad syn. Pluk. *Hippomane biglandulosa* Linn. Sp. Pl. ed. 2, 1763, p. 1431, pro parte, quoad syn. Pluk. *Sapium Aucuparium* Willd. Sp. Pl. vol. iv. p. 572, pro parte; Mayc. Barb. p. 369. *Stillingia Hippomane*, Baill. Étud. Gén. Euphorb. p. 513. *Sapium Aucuparium*, β *Hippomane*, Griseb. Fl. Brit. W. Ind. p. 49, pro parte. *Sapium biglandulosum*, α *Meyerianum*, Muell.-Arg. in Linnaea, vol. xxxii. p. 116. *Sapium suberosum*, Muell.-Arg. in Linnaea, vol. xxxiv. p. 217; Hemsl. in Hook. Ic. Pl. t. 2681. *Excoecaria suberosa*, Muell.-Arg. in DC. Prodr. vol. xv. 2, 1202. *Tithymalus arbor Americanus*,

Mali Medicae foliis amplioribus tenuissime crenatis, succo maxime venenoso, Pluk. Almag. p. 369 ; Phytograph. t. 229, f. 8.

Barbadoes : Without locality, *Robert Schomburgk*, 709. Dutch Guiana : Surinam, *Hostmann*, 314 ; *Focke*. Brazil : Amazonas ; Juruá, *Ule*, 5355, 5358.

The foregoing synonymy is partly taken from Urban, with whom I agree in regarding *S. suberosum*, Muell.-Arg. (t. 2681), as a diseased condition of *S. Hippomane*, Meyer. I had my doubts about its being normal, to which I gave expression in the letterpress to the plate cited, and Urban confirms them. To *S. Hippomane*, Meyer, belong the detached leaves of Plukenet's herbarium (Hb. Sloane, vol. iv. pp. 82 and 111 in Herb. Mus. Brit.). According to notes attached to Ule's specimens from the Amazonas, this species yields rubber of the first quality. —W. Botting Hemsley.

Fig. 1, base of petiole and stipules ; 2, base of leaf and petiolar glands ; 3, tip of leaf ; 4, lower part of flower-spike, bearing both male and female flowers ; 5, fruit.—The main figure and flowers were drawn from Hostmann's n. 314, and the fruit from Ule's n. 5355. *All except* 5 *enlarged.*

M.S. del. et lith.

TABULA 2891.

SAPIUM BOGOTENSE, *Huber*.

EUPHORBIACEAE. Tribus CROTONEAE.

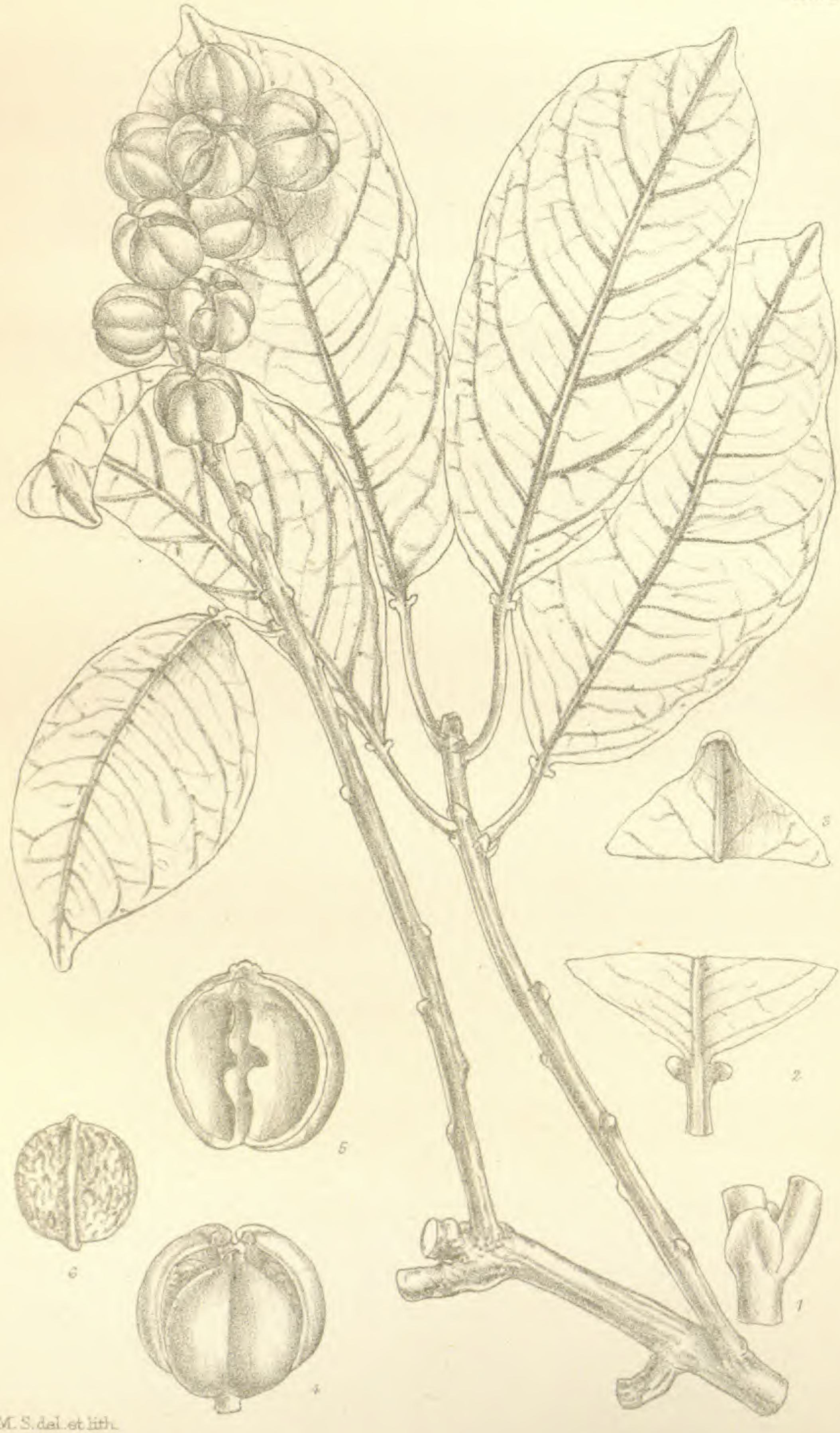
S. bogotense, *Huber in Bull. Herb. Boiss.* sér. 2, vol. vi. p. 355, f. 13; species *S. sulcifero*, Pittier, et *S. Pittieri*, Huber, simillima, ab hoc glandulis petiolaribus rectis, ab illo stipulis lanceolatis subacutis foliis subtus pallidioribus venis primariis paucioribus (utrinque circiter 8) petiolis brevioribus et seminibus minoribus oblongis differt.

Arbor ? ramis rubescentibus. *Stipulae* lanceolatae, subacutae. *Folia* petiolata, subcoriacea; lamina elliptica vel obovata, 5–9 cm. longa, margine obscure crenulata et interdum hinc inde glandulosa, glandulis distincte uniporosis, utrinque saepius rotundata, apice leviter cucullata, subtus pallidiora; venae primariae paucae, tenuissimae, inconspicuae, arcuatae; petiolus circiter 1 cm. longus, inter glandulas anguste tubulosi-canaliculatus, infra medium ecaniculatus; glandulae laterales, incurvae, distincte porosae. *Spicae* terminales, solitariae, androgynae, folia aequantes vel paullo superantes. *Bracteae* utriusque sexus integrae; glandulae ellipticae. *Flores* masculi circiter 8 aggregati. *Perianthium* florum femineorum brevissimum, trilobum. *Ovarium* 3-loculare, stylis elongatis recurvis. *Capsulae* subglobosae, circiter 1·2 cm. diametro, distincte stipitatae. *Semina* oblonga, circiter 5 mm. longa, verruculosa.

COLOMBIA: Bogota; Ubala, at 1700 m., *J. Triana*.

This species, *S. aereum*, Klotzsch (t. 2682), and *S. sulciferum*, Pittier (t. 2892), are very similar in appearance, but I think specifically different, though I have seen only one specimen of each.—W. BOTTING HEMSLEY.

Fig. 1, base of petiole and stipules attached to the axis; 2, base of leaf with glands; 3, tip of leaf; 4, portion of spike bearing male flowers; 5, portion of spike bearing female flowers; 6, ripe fruit; 7, seed. *All except* 6 *enlarged*.



M. S. del. et lith.

Tabula 2892.

SAPIUM SULCIFERUM, *Pittier*.

Euphorbiaceae. Tribus Crotoneae.

S. sulciferum, *Pittier in Contrib. U.S. Nat. Herb.* vol. xii. p. 169, f. 10; species ad *S. bogotense*, Huber, arcte accedens, recedit stipulis fere semiorbicularibus, foliis longius petiolatis utrinque concoloribus, venis primariis numerosioribus, et seminibus compresso-globosis.

Arbor mediocris, coma applanata, ramis griseis striatis (*Pittier*) florigeris crassiusculis rigidis. *Stipulae* latae, rotundatae. *Folia* distincte petiolata, coriacea; lamina lanceolata, elliptica vel obovata, 5–10 cm. longa, margine integra vel interdum obscurissime denticulata, apice obtusa, leviter inflexa, basi saepius rotundata; venae primariae utrinque circiter 9, sat conspicuae; petiolus gracilis, 1·5–2 cm. longus, inter glandulas anguste tubuloso-canaliculatus, deorsum ecanaliculatus; glandulae laterales, divergentes, crassae, oblongo-conicae. *Spicae* (fructiferae tantum visae) terminales, rectae. *Capsulae* brevissime pedicellatae, globosae, laeves, circiter 1·5 cm. diametro, 3-loculares. *Semina* compresso-globosa, circiter 5 mm. diametro, sub membrana extima distincte verrucosa.

Costa Rica: Bord de la route de la Palma, *A. Tonduz*, 12428.

See remarks under plate 2891. Both this and *S. bogotense*, Huber, have somewhat peculiar petioles; the upper part next the blade and between the glands is channelled or furrowed and extends downwards for a short distance as a closed tube, whilst the lower part of the petiole is solid. Unfortunately this peculiarity is not well brought out in the drawing.—W. Botting Hemsley.

Fig. 1, base of petiole and stipules attached to the axis; 2, base of blade and upper part of petiole with glands; 3, tip of leaf; 4, dehiscing capsule; 5, the same, from which one carpel has been removed; 6, a seed. *All enlarged.*

M.S.del. et lith.

Tabula 2893.

SAPIUM PEDICELLATUM, *Huber*.

Euphorbiaceae. Tribus Crotoneae.

S. pedicellatum, *Huber in Bull. Herb. Boiss.* sér. 2, vol. vi. p. 352, f. 9; ab omnibus speciebus Mexicanis florum femineorum perianthio minimo et ovario longiuscule stipitato discrepat.

Arbor ramis floriferis graciliusculis; internodia petiolos paullo excedentia. *Stipulae* triangulares, denticulatae. *Folia* longe petiolata, tenuia; lamina oblongo-lanceolata vel oblanceolata, rarius fere elliptica, 5–12 cm. longa, apice acuminata, acuta, acumine haud inflexo, basi cuneata, margine integra vel obscure denticulata, raro glandulis perpaucis instructa; venae primariae numerosae, satis distinctae, arcuatae; petiolus gracilis, 1–2 cm. longus; glandulae petiolares laterales, elongatae, 2–3 mm. longae, divergentes, rectae. *Spicae* terminales, androgynae, graciles, folia superantes. *Flores masculi* supra quamque bracteam circiter 5 vel 6; bractea denticulata. *Flores feminei* distantes; perianthium minimum, acute tridentatum, ovarii stipitem vix aequans. *Ovarium* longe stipitatum, ovoideum, 3-loculare, stylis bene evolutis arcte revolutis.—*Stillingia arborea*, Pav. in sched. in Herb. Mus. Brit. *Sapium biglandulosum* var. *Klotzschiana*, *β oblongata*, Muell.-Arg. in DC. Prodr. vol. xv. 2, p. 1205; pro parte, quoad plantam Mexicanam.

Mexico: Without locality, *Ruiz and Pavon*.

This is a very distinct species, the figure of which was prepared, with the permission of Dr. A. B. Rendle, from specimens preserved in the British Museum, which were identified from Huber's description.—W. Botting Hemsley.

Fig. 1, base of petiole and stipules attached to the axis; 2, base of blade of leaf and apex of petiole, bearing ascending glands; 3, apex of leaf; 4, part of spike, bearing several clusters of male flowers; 5, a young male flower; 6, anthers; 7, part of spike bearing a female flower; 8, cross section of ovary. *All enlarged*.

M.S. del. et lith.

TABULA 2894.

SAPIUM RUIZII, *Hemsl.*

EUPHORBIACEAE. Tribus CROTONEAE.

S. Ruizii, *Hemsl.*, species nova, inter species Centrali-Americanas foliis praecipue suboppositis rotundatis serratis distincta.

Rami florigeri graciliusculi, internodiis petiolis longioribus. *Folia* subopposita, petiolata, coriacea ; lamina ambitu variabilis, nempe lanceolata, elliptica, fere orbicularis, vel obovata, 3–6 cm. longa, 2–4 cm. lata, margine irregulariter pauciglanduloso-serrata, breviter acuminata ; petiolus 0·5–1 cm. longus ; glandulae globosae, conspicue porosae. *Spicae* terminales, solitariae, androgynae, folia paulo excedentes. *Bracteae* utriusque sexus obscure denticulatae. *Flores masculi* sub quaque bractea circiter 6–8. *Perianthium* florum femineorum bilobum ? *Ovarium* exsertum, 3-loculare, stylis arcte revolutis.

MEXICO or CENTRAL AMERICA : Without any special locality, *Ruiz and Pavon.*

This plate was prepared by permission of Dr. Rendle from specimens in the British Museum, on the sheet of which is written '*Hippomane glandulosa* de Mexico,' and 'Central America' appears on the same sheet. According to Lasègue (Mus. Bot. Deless. p. 322) the Mexican plants of Ruiz and Pavon's herbarium in the British Museum 'paraissent avoir formé une partie de l'herbier de Mociño et Sessé.'—W. BOTTING HEMSLEY.

Fig. 1, base of petiole and stipules attached to axis ; 2, base of blade and apex of petiole bearing glands ; 3, similar, bearing one large gland on the base of blade ; 4, tip of leaf ; 5, portion of margin of leaf ; 6, portion of spike bearing one female flower and two clusters of male flowers ; 7, male flower-bud, laid open ; 8, anthers. *All enlarged.*

There is a specimen in the British Museum of a second apparently undescribed species of *Sapium* from the herbarium of Ruiz and Pavon, which may be characterised as follows :—

S. simile, *Hemsl.*, species nova foliis iis *S. ciliati*, Hemsl. (hujus operis t. 2683), similibus sed dimidio brevioribus, brevius petiolatis lanceolatis acutis, haud caudatis, et glandulis petiolaribus minoribus inconspicuis cum lamina confluentibus. *Rami* crassiusculi, internodiis

quam foliis saepius paulo longioribus. *Folii lamina* lanceolata, 6–8 cm. longa, medio 3–4 cm. lata, acuta, basi obtusa, per totum ambitum crebre glanduloso-ciliata ; venae primariae utrinque circiter 10, sat conspicuae ; petiolus 3–5 mm. longus ; glandulae parvae vel interdum obsoletae, si adsint laminae adnatae ; stipulae parvae, bidentatae. *Spicae* solitariae, subterminales, androgynae, folia vix excedentes. *Flores masculi* sub quaque bractea circiter 3; bractea integra, glandulis orbicularibus distantibus. *Flores feminei*. . . . *Capsula*, unica imperfecta tantum visa, sessilis, globosa, circiter 1 cm. diametro. *Semina* non visa.

Central America : Without locality, *Ruiz and Pavon.*

The specimen in the British Museum is labelled '*Hippomane eglandulosa*. Ruiz and Pavon, N. E.'—*i.e.* Nouvelle Espagne, the geographical limits of which are obscure. 'Central America' also appears on the same sheet.—W. Botting Hemsley.

M.S. del. et lith.

Tabula 2895.

SAPIUM AUCUPARIUM, *Jacq.*

Euphorbiaceae. Tribus Crotoneae.

S. Aucuparium, *Jacq. in Enum. Pl. Carib.*, 1760, p. 31, et *Sel. Stirp. Amer. Hist.*, 1763, p. 249, t. 158, excl. synon. nonnull. ; *Huber in Bull. Herb. Boiss.* sér. 2, vol. vi. p. 358, f. 18 ; non *S. Aucuparium*, Hemsl. (S. Hemsleyanum, *Huber*) antea, t. 2650, a quo species hic depicta foliis elongatis oblongo-lanceolatis, glandulis petiolaribus crassis distincte 1-porosis et spicis tenuioribus laxioribus recedit.

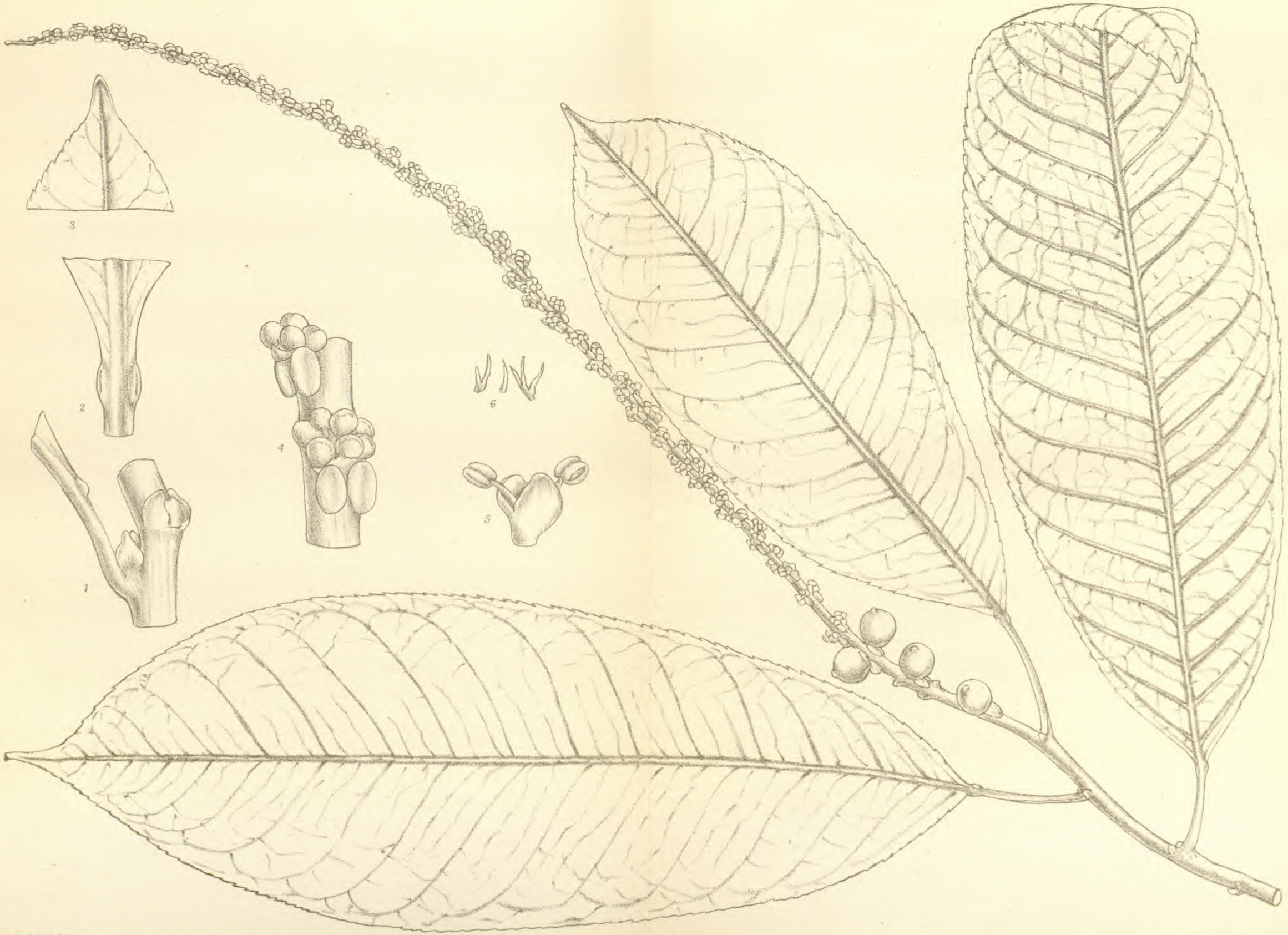
'*Arbor* haec elegans, nitida, comosa, trigintapedalis' (*Jacquin*) ; rami florigeri graciliusculi, cortice cinereo ; internodia quam petioli saepius longiora. *Folia* saepe subopposita ; lamina oblonga vel anguste oblongo-lanceolata, saepius 6–12 cm. longa, interdum usque ad 20–24 cm. longa, apice cucullata, margine obscure serrulata, simul pauciglandulosa ; petiolus plerumque 0·5–1·5 cm. longus, interdum 2·5 cm. longus ; glandulae crassae divergentes, apice conspicue uniporosae. *Spicae* androgynae, terminales, solitariae, graciles, haud rigidae, 15–20 cm. longae, folia nonnunquam excedentes, laxiflorae, dimidio inferiore saepius flores femineos tantum gerentes. *Bracteae* latae, rotundatae, obscure fimbriatae. *Glandulae* oblongo-ellipticae, contiguae. *Flores masculi* sub quaque bractea circiter 8. *Flores feminei* numerosi, distantes ; ovarium 3-loculare, stylis cito deciduis non visis. *Capsula* globosa, circiter 1 cm. diametro.

Colombia : Santa Marta, *Purdie* ; *H. H. Smith* ; Turbaco, *Goudot*.

As mentioned in my Introductory Remarks, I have accepted Dr. Huber's conception of *S. Aucuparium*, Jacq., chiefly, I may say, on account of the locality being the same, and the fact that we have no other species from that district. A very fragmentary specimen collected by Crueger in Trinidad, and referred to this species by Grisebach, may be the same. There are also specimens in the Kew Herbarium from Guatemala, collected by Friedrichsthal, and presumably the same as those named *S. biglandulosum* var. *Klotzschiana* by Mueller (DC. Prodr. vol. xv. 2, p. 1205) which are very similar to the Colombian plant ; differing in the leaves being strongly involute at the tip ; but as only quite young male flowers are present, a satisfactory comparison is impossible.

Sutton Hayes's No. 709, from Frijoli Station, Panama Railway, 1862, of this affinity, is also referred by Mueller to *Excoecaria* (*Sapium*) *biglandulosa* var. *Klotzschiana* (Fl. Bras. vol. xi. 2, p. 619). Further material is necessary to decide whether it is specifically distinct from *S. Aucuparium*, Jacq. It differs from the plant figured in having more strictly lanceolate leaves with a very curious tip, which is hooded and inflexed with an upcurved, hook-like termination. This, however, may be an abnormal condition.—W. Botting Hemsley.

Fig. 1, petiolar glands; 2, tip of leaf; 3, part of inflorescence bearing male flower-buds; 4, a male flower; 5, a portion of an inflorescence bearing one old female flower from which the styles have disappeared, and two pairs of glands; 6, section of an ovary; 7, an open carpel; 8, a seed. *All enlarged.*



M.S. del et lith.

Tabula 2896.

SAPIUM UTILE, *Preuss.*

Euphorbiaceae. Tribus Crotoneae.

S. utile, *Preuss, Expedition nach Süd- und Central-Amerika,* p. 386, t. 11 ; *Hemsl. in Hook. Ic. Pl.,* 1903, vol. xxviii. ad tab. 2757 ; *Jumelle, Les Plantes à Caoutchouc,* 1903, p. 156 ; *Huber in Bull. Herb. Boiss.* sér. 2, vol. vi. p. 356, f. 15 ; species distincta foliis amplis oblongo-lanceolatis, glandulis petiolaribus obscuris vel obsoletis, spicis masculis vel androgynis usque ad 20–25 cm. longis et stylis cito deciduis.

Arbor 12–15 m. alta ; rami crassiusculi, recti, internodiis quam petiolis brevioribus. *Folia* ampla, glandulis inconspicuis ; lamina oblonga, lanceolata vel oblanceolata, saepius 15–20 cm. longa, nunc brevior nunc paullo longior, apice acuminata, haud inflexa, basi subcuneata vel interdum rotundata, margine per totum ambitum crebre serrulata, venis primariis numerosis sat conspicuis ; petiolus gracilis, 1·5–3·5 cm. longus ; glandulae lineares, immersae, obscurae vel interdum obliteratae. *Spicae* androgynae vel masculae, terminales, quam folia semper longiores, interdum usque ultra 25 cm. longae, rigidiusculae. *Flores masculi* saepius circiter 8-ni aggregati, cum squamis (bracteolis ?) linearibus simplicibus bifidis vel trifidis intermixti ; glandulae ellipticae ; bractea brevis, integra. *Flores feminei* vetusti stylis jam delapsis tantum visi. *Capsula* globosa, matura non visa.—*S. biglandulosum* var. *Pavoniana,* Muell.-Arg. in Linnaea, vol. xxxii. p. 116. *S. Pavonianum,* Huber in Bull. Herb. Boiss. sér. 2, vol. vi. p. 356. *Excoecaria biglandulosa, β Pavoniana,* Muell.-Arg. in DC. Prodr. vol. xv. 2, p. 1204. *S. decipiens,* Preuss, Expedition nach Süd- und Central-Amerika, t. 12.

Colombia : Wächst vereinzelt in dichten Wäldern an den Flüssen Naya, Micay, Sayja, Timbiqui, etc., vom Meeresstrand bis 200 m. Bodenerhebung. Blüht jedes andere Jahr im Juni, *Lehmann.*
Ecuador : Buschwald bei Juan de Oro, 60 m. Meereshöhe, *Preuss,* 1925, 1935.

Reference was made to this species in the letterpress to t. 2757 (*S. stylare,* Muell.-Arg.) more especially in relation to the specific identity of *S. utile* and *S. decipiens,* Preuss, a point practically suggested by the author himself. Since then (1903) I have had oppor-

tunities of studying further material from various sources. At the British Museum there are specimens of a *Sapium*, labelled ' Peru, Herb. Pavon, *Sapium Aucuparium* sp. nov., Ruiz et Pavon, de Huayaquil,' and I think there is no doubt that they are the same as *Excoecaria biglandulosa*, *β Pavoniana*, Muell.-Arg., (*Sapium Pavonianum*, Huber).

Thanks to the Keeper of the Botanical Department of the British Museum and to the Directorate of the Royal Botanic Garden, Berlin, Kew now possesses complete drawings of two sheets of specimens of Herb. Pavon, and Nos. 1925 and 1935 of Herb. Preuss ; also fragments of 1925 and 1935 ; also several barren specimens from Herb. Lehmann. Both Lehmann and Preuss state that this tree yields the *Caucho andullo blanco* or *Cauchillo*, a rubber not of the best quality. All the specimens here referred to this species are from slight elevations in the coast region, and I doubt very much now whether the leaf from Moyobamba, Peru, mentioned in the letterpress to t. 2757, belongs to *S. utile*, Preuss.—W. Botting Hemsley.

Fig. 1, base of leaf and stipules attached to axis ; 2, petiolar glands ; 3, tip of leaf ; 4, portion of spike bearing two clusters of male flower-buds ; 5, an expanded male flower ; 6, interfloral filaments or bracteoles.—The main figure is from Preuss's type specimen, n. 1935, in the Berlin Herbarium. *All enlarged.*

2
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6
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3
M.S.del et lith.

TABULA 2897.

SAPIUM LANCEOLATUM, *Huber*.

EUPHORBIACEAE. Tribus CROTONEAE.

S. lanceolatum, *Huber in Bull. Herb. Boiss.* sér. 2, vol. vi. p. 441, f. 33; *S. prunifolio*, Klotzsch, simile, recedit foliis tenuioribus, apice involutis supra nitidis, venis sat conspicuis et inflorescentiae glandulis majoribus elongatis.

Arbor novellis glaberrimis; rami florigeri breves. *Folia* alterna petiolata, juniora tantum visa; lamina membranacea, anguste oblongo-lanceolata, 5–10 cm. longa, apice cucullato-incurva, basi cuneata, margine obscure serrulata, venis primariis lateralibus numerosis inconspicuis; petiolus gracilis, 1–2 cm. longus, glandulis parvis divergentibus. *Spicae* androgynae, graciles, folia vix excedentes; glandulae linearioblongae, circiter 3 mm. longae, oblique collaterales. *Flores masculi* minuti, 6–8-ni aggregati. *Flores feminei* perfecti non visi; perianthium tubulosum, tridentatum, ovarium includens, stylis jam delapsis.—*S. biglandulosum* var. *lanceolata*, Muell.-Arg. in Linnaea, vol. xxxii. p. 118. *Excoecaria glandulosa* var. *lanceolata*, Muell.-Arg. in DC. Prodr. vol. xv. 2, p. 1206. excl. subvar. *longifolia*, fide Huber.

FRENCH GUIANA: Cayenne, *Poiteau*; Iles du Salut, *Sagot*, 514.

Poiteau's specimen is very young and extremely fragile and Sagot's consists of a branch bearing only leaves, apparently quite young, and fragments of a detached capsule. The relatively long, narrow glands of the inflorescence are characteristic.—W. BOTTING HEMSLEY.

Fig. 1, base of a leaf with petiolar glands; 2, apex of a leaf; 3, part of flower-spike, bearing one cluster of male flowers and the subtending glands, bract and bracteoles; 4, a male flower; 5, a female flower, glands, bract and bracteoles; 6, ovary, crowned with scar of the deciduous style-arms; 7, longitudinal section of an ovary; 8, cross section of the same. *All enlarged.*

M.S. del et lith

Tabula 2898.

SAPIUM TABURU, *Ule.*

Euphorbiaceae. Tribus Crotoneae.

S. Taburu, *Ule in Tropenpflanzer*, vol. ix. 1905, *Beiheft*, vol. vi. pp. 13 & 16, f. D & E; *Engl. Jahrb.* vol. xxxv. pp. 671–3, f. 2, E. F. G.; species foliis iis *S. eglandulosi*, Ule, simillimis sed glandulis petiolaribus bene evolutis, etiam ab ea floribus masculis 5–7-nis tantum aggregatis et spicis graciliusculis androgynis recedit.

Arbor 20–40 m. alta (*Ule*), ramis floriferis crassiusculis; internodia petiolos subaequantia. *Folia* ampla; lamina lanceolato-oblonga, saepius 8–15 cm. longa, apice obtusa, plana (apice glandula cuculliformi saepe evoluta, *Ule*), basi subcuneata; petiolus 1·5–2·5 cm. longus, glandulis conspicuis rectis vel sursum curvatis minutis. *Spicae* androgynae, ex *Ule* fere omnino masculae, sed a me omnino masculae tantum visae, 15–20 cm. longae, densiflorae. *Flores masculi* circiter 7 aggregati, glandulis orbiculari-ellipticis. *Flores* feminei non visi. *Semina* subtrigona, compressa, 6–7 mm. diametro.

Brazil: Amazonas; Bom Fim, Juruá, *Ule*, 5357, 5899.

Of this species Kew possesses drawings of specimens lent by Berlin in 1905, from which the plate was prepared, which, however, is rather deficient in details. It is desirable that Dr. Huber should at an early date publish his promised account of the species of *Sapium* inhabiting the Amazonas. Awaiting that, I may refer readers interested from an economic standpoint to his paper: Arvores de borracha e de balata da região Amazonica, i. Especies do genero Sapium (Tapurú, Umrupita, Curupita, Seringarana) in the Boletim do Museu Goeldi, vol. iv. (1904), which is a discussion on the application of these vernacular names. Ule in the publication cited above gives no very definite particulars of the yield of rubber of this and his *S. eglandulosum*; but he suggests relationship with *S. prunifolium*, Klotzsch, a representation of the type of which appears in t. 2900.—W. Botting Hemsley.

Fig. 1, part of a leaf with petiolar glands; 2, portion of flower-spike, bearing male flower-buds with subtending glands, bracts and a galled gland; 3, male flowers further advanced. *All enlarged.*

M.S. del et lith.

TABULA 2899.

SAPIUM EGLANDULOSUM, *Ule*.

EUPHORBIACEAE. Tribus CROTONEAE.

S. eglandulosum, *Ule in Tropenpflanzer*. vol. ix., 1905, *Beiheft*, vol. vi. p. 14; *Engl. Jahrb.* vol. xxxv. pp. 672–3, f. 2, A–C; species ex affinitate *S. Taburu*, Ule, a quo glandulis petiolaribus obscuris vel obsoletis recedit; differt praeterea ab omnibus speciebus mihi cognitis spicis femineis 1–3 brevibus ad basin spicarum mascularum elongatarum positis.

Arbor 5–15 m. alta (*Ule*), ramis florigeris crassiusculis rigidis. *Folia* mediocria, petiolata; lamina oblongo-lanceolata, 10–15 cm. longa, apice glandulosa sed haud inflexa, obtusiuscula, basi subcuneata, integra, venis primariis numerosis tenuibus; petiolus tenuis, 2–3 cm. longus, eglandulosus vel glandulis plus minusve inconspicuis instructus. *Spicae*, ut videtur, semper unisexuales, masculae terminales, validae, densiflorae, 10–20 cm. longae; spicae femineae infra masculas laterales, multo breviores, sed perjuveniles et vetustiores tantum visae. *Flores masculi* ad quamque bracteam numerosi. *Flores feminei* perfecti non visi; ovarium 3-loculare; styli cito decidui non visi. *Capsulae* maturae desunt.

BRAZIL: Amazonas; Bom Fim, Juruá, *Ule*, 5356.

Kew is indebted to Berlin for the loan of the type specimens of *S. eglandulosum*, Ule, from which the accompanying plate was prepared, and also for some detached leaves and portions of female spikes past the flowering stage. Dr. Ule gave the specific name under the impression that petiolar glands were always wanting, but they are sometimes evident and often present in a rudimentary condition hardly visible to the naked eye.

This species differs from all the others that I have examined in the lateral female spikes being seated at the base of the male spikes; but as only exceedingly young female flowers were present their structure was not quite clear to me. —W. BOTTING HEMSLEY.

Fig. 1, base of a leaf on which petiolar glands are present; 2, flat tip of leaf; 3, portion of a male inflorescence; 4, a male flower-bud opened out; 5, portion of a very young female inflorescence, showing a pair of glands and a bract which conceals the flower-bud; 6, the same, with the bract turned down revealing the flower-bud and bracteoles; 7, bracteoles and flower, with the style protruding. *All enlarged.*

M.S. del. et lith.

TABULA 2900.

SAPIUM PRUNIFOLIUM, *Klotzsch*.

EUPHORBIACEAE. Tribus CROTONEAE.

S. prunifolium, *Klotzsch in Hook. Lond. Journ. Bot.* vol. ii. p. 45 ; *Huber in Bull. Herb. Boiss.* sér. 2, vol. vi. p. 439, f. 32 ; species inter affines foliis subtus pallidis et venis immersis obscurissimis diversa.

Arbor ramis vagantibus, omnibus partibus glabra, ramis florigeris rigidis. *Folia* alterna, subcoriacea ; lamina oblongo-lanceolata, saepius 6–12 cm. longa, apice cucullato-inflexa, basi cuneata, margine integra vel obscurissime denticulata et hinc inde glandulam porosam instructa, costa valida, venis primariis tenuibus indistinctis ; petiolus 1–2·5 cm. longus, glandulis oblongis divaricatis. *Spicae*, ut videtur, unisexuales, laterales, quam folia breviores. *Flores masculi* sub quaque bractea 5–7, glandulis oblongis. *Flores feminei* non visi. *Capsula* trilocularis, trigono-pyriformis, circiter 1·5 cm. longa. *Semina* ovoidea, circiter 5 mm. longa, etuberculata.—*S. biglandulosum* var. *Klotzschiana*, subvar. *minor*, Muell.-Arg. in Linnaea, vol. xxxii. p. 117. *Excoecaria biglandulosa* var. *prunifolia*, Muell.-Arg. in DC. Prodr. vol. xv. 2, p. 1205.

BRITISH GUIANA : Near Savannahs, *Schomburgk*, 283 ; *H. F. Talbot*, anno 1840. FRENCH GUIANA : Cayenne, *Martini*.

In many respects *S. prunifolium*, Klotzsch, resembles *S. Aucuparium*, Jacq., which has very long androgynous flower-spikes. The venation of the leaves is less conspicuous than one might suppose from the figure. Ule compares this species with his *S. Taburu* (t. 2898), and *S. eglandulosum* (t. 2899).—W. BOTTING HEMSLEY.

Fig. 1, base of leaf-blade and petiolar glands ; 2, tip of leaf ; 3, portion of male flower-spike ; 4, a capsule ; 5 & 6, seeds.—The flowering-branch is from Schomburgk's n. 283, Klotzsch's type ; the fruit is from Talbot's specimen. *All except 5 enlarged*.

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