CURTIS'S

BOTANICAL MAGAZINE,

ILLUSTRATING AND DESCRIBING

Plants of the Royal Botanic Gardens of Kew,

AND OF OTHER BOTANICAL ESTABLISHMENTS;

EDITED BY

SIR DAVID PRAIN, C.M.G., C.I.E., LL.D., F.R.S.,

DIRECTOR, ROYAL BOTANIC GARDENS, KEW.

VOL. XIV.

OF THE FOURTH SERIES.

(Or Vol. CXLIV. of the Whole Work.)

With hues on hues expression cannot paint
The breath of Nature and her endless bloom.—THOMSON.

LONDON:

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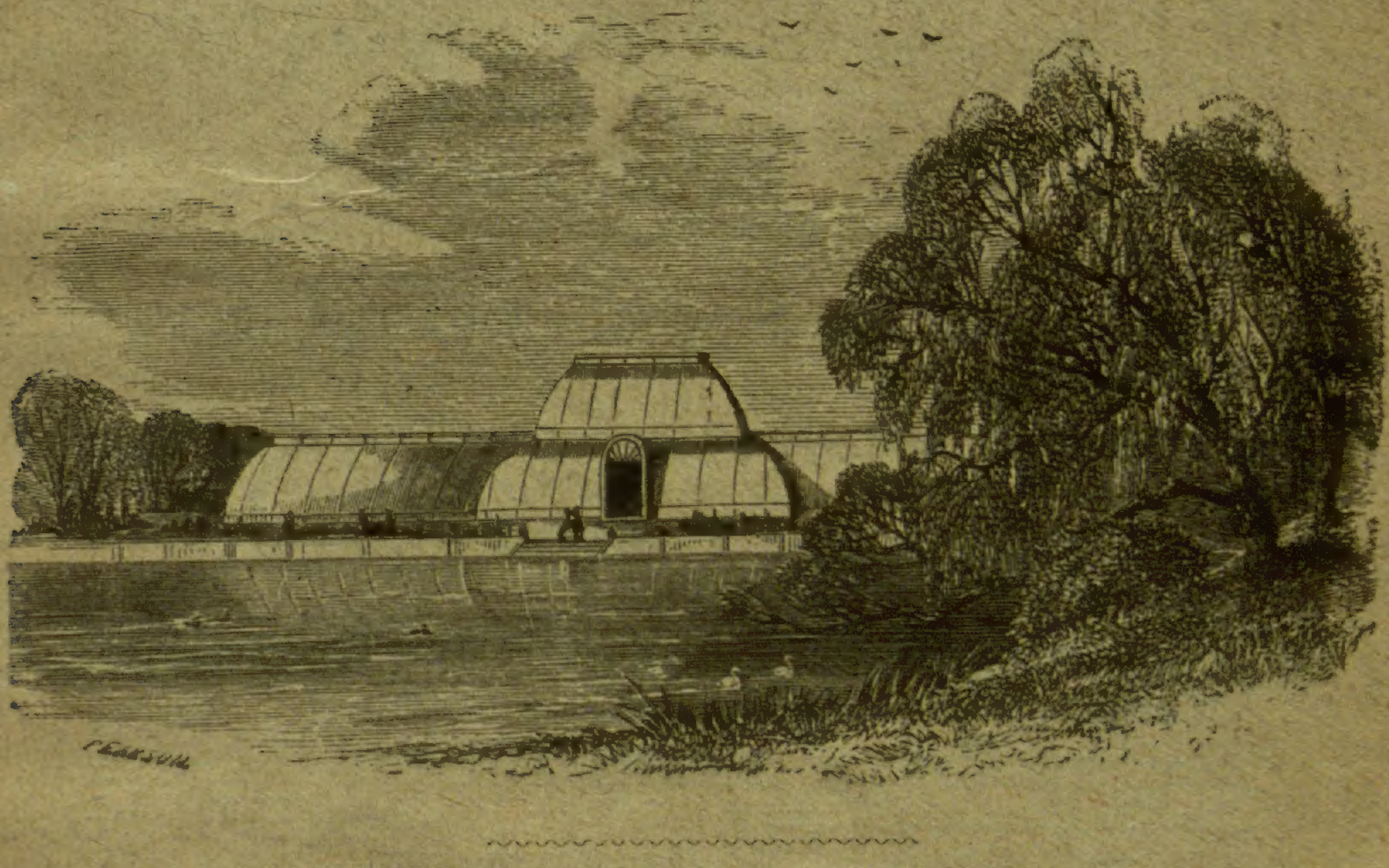

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TAB. 8742.

PAEONIA PEREGRINA.

South-eastern Europe and North-western Asia Minor.

RANUNCULACEAE. Tribe PAEONIEAE.

PAEONIA, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 60.

Paeonia peregrina, *Mill. Gard. Dict.* ed. viii. n. 3; *Fritsch in Verh. Zool.-Bot. Ges. Wien*, vol. xlix. p. 240; *nec Desf., nec DC.*; affinis *P. officinali*, Linn., sed foliis firmioribus, eorum lobis apice inciso-dentatis, florum colore saturate rubro et carpellis maturescentibus eximie villoso-tomentosis distincta.

Herba perennis, caule glabro. *Folia* inferiora biternata, divisionibus longe petiolulatis, segmentis lateralibus sessilibus vel subsessilibus, intermediis longiuscule petiolulatis, lobis magis minusve oblanceolatis vel oblongis vel (intermediis) cuneato-obovatis lobulatis lobulis grosse vel inciso-dentatis, dentibus acutis vel subacuminatis, superiora (caulina) quoad divisiones magis minusve redacta, summa calyci ipso adpressa; omnia glabra, lucidula, subtus pallida, rarissime pilis nonnullis rigidulis in pagina inferiore; segmenta intermedia petiolulo dempto 6–12 cm. longa; lobi laterales 1–3 cm. lati. *Flores* ob petala valde concava aperto-cupulares, 6–10 cm. diametro, pulcherrime saturate rubri. *Sepala* 4, valde concava, oblonga vel late elliptica, glabra, 2·5–4 cm. longa. *Petala* 7–11, late obovata vel elliptica, superne leviter crenulata. *Staminum* filamenta rubra, superne plerumque pallescentia; antherae aureae, ad 5 mm. longae. *Carpella* plerumque 3 vel rarius 4, ovoidea, densissime albido-villoso-tomentosa; stigmata a latere compressa, recurva, rubra. *Folliculi* maturi stellatim patentes, oblongi, apice paulo recurvi, ad 5 cm. longi, villo denso sordide albido vel flavescente longiusculo obtecti. *Semina* elliptico-globosa, circiter 7 mm. longa, atra, nitida.—*P. lobata*, DC. Syst. vol. i. p. 391, pro synonymis plurimis et statione Byzantina; Sweet, Flow. Gard. vol. i. t. 70; nec Desf., nec DC. Prodr. *P. decora*, Anders. in Trans. Linn. Soc. vol. xii. p. 273; DC. Prodr. vol. i. p. 66; Boiss. Fl. Or. vol. i. p. 98; Huth, Mon. Paeon. in Engl. Bot. Jahrb. vol. xiv. p. 269; Baker in Gard. Chron. 1897, vol. xxii. p. 10; Lynch in Journ. Roy. Hort. Soc. vol. xii. p. 439; Petrov., Fl. Nish, p. 47; Velenovsky, Fl. Bulg. p. 16; Suppl. i. p. 11. *P. romanica*, Brandza in An. Acad. Roman. ser. ii. vol. ii. p. 587, t. 2; Prodr. Fl. Roman. p. 529; Grecescu, Consp. Fl. Roman. p. 43.—O. STAPF.

The fine Paeony here figured is met with fairly generally in the Balkan Peninsula from Serbia and Macedonia to Roumania, and our illustration has been prepared from a plant raised from seed sent to Kew from the Geneva Botanic Garden under the name *P. romanica*. But the species also extends beyond the Hellespont; it has been

collected on the Keshish Dagh near Broussa, and quite recently plants raised from seed secured in the neighbourhood of Smyrna have been grown in English gardens as "Sunbeam." So far, however, from being, as this name would suggest, a plant of garden origin recently raised, this Paeony is a very distinct and natural species with a long and interesting cultural history. It was known in the XVI Century to Clusius, who, in an account of the vegetation of Pannonia, published in 1583, says that it was then grown in the gardens of certain noble dames from seeds received from Constantinople. Comparing it with our *P. officinalis*, Linn., the Paeony then familiar in gardens further west, Clusius pointed out the thicker leaves and the richer red, not purple, flowers of this Balkan plant which he aptly termed "Paeonia byzantina." In 1601 Clusius included the species in his renowned Historia and supplied an excellent figure. It was still rare in Europe, though we learn from Bessler that quite early in the XVII Century it has got as far west as the famous garden of the Bishops of Eystedt in Bavaria. The elder Bauhin mentioned the plant in his Pinax in 1623, but altered its name to "Paeonia peregrina flore dilute et sature rubenti." Parkinson in his Paradisus in 1629 called it the "red peony of Constantinople," and supplied a figure which, though clumsy, is unmistakable. It was again mentioned by Johnson, who gave a copy of the figure by Clusius in the 1636 edition of Gerard's Herbal. This figure Morison reproduced in his Historia in 1699. Miller did not mention this Paeony until 1759 when, in the seventh edition of his Gardener's Dictionary, he included it as "Paeonia peregrina flore sature rubente," and gave the Levant as its home. In 1768, in the eighth edition of his work, Miller, introducing the Linnean method of naming his plants, termed this one *P. peregrina*, a name which still remains valid. But Miller appears to have known the plant thus designated by him only from the figures given by earlier writers. There is no example of the species among his specimens in the Banksian herbarium; the only sheet there on which Miller has written the name *P. peregrina* bears two small specimens, both received by him from the Paris garden; these two

specimens belong to two distinct species; neither of the two is the "red peony of Constantinople." One, the more meagre of the two, appears to be but a form of our common garden Paeony with quite glabrous leaves; the other represents a type which occurs in the mountains of southern France and corresponds most closely with *P. monticola*, Jordan. Into the pitfall thus prepared the first to stumble was the editor of this work, at t. 1050 of which Sims in 1807 published as *P. peregrina*, "upon the authority of the Banksian herbarium," not the Byzantine plant to which the name belongs, but the plant of Provence and Languedoc which Miller had mistaken for it. The elder Decandolle followed Sims in the third edition of the Flore Française in 1815 and maintained the same attitude in his Systema in 1818. The error, as errors will, has survived in many subsequent publications, and although the conception of the species to which the name *P. peregrina* has, since 1807, been misapplied may at times have varied, the Balkan plant which Miller so designated has always been excluded from it. This is doubtless partly due to the fact that, as early as 1818, the right of that plant to rank as a species had been revindicated by Anderson who, overlooking the confusion created in this Magazine, renamed it *P. decora*; partly to the circumstance that in the same year Decandolle, in his Systema, confused the Byzantine plant with *P. lobata*, Desf., a name under which, nowithstanding the trouble Decandolle took to rectify his error in the Prodromus in 1824, our species is still often grown in gardens. Handsome as a denizen in a herbaceous border, *P. peregrina* possesses the further recommendation of being easily cultivated. It flowers profusely and ripens seeds freely.

DESCRIPTION.— *Herb*, perennial; stem glabrous. *Leaves*: lower twice ternate, their divisions distinctly stalked, lateral segments sessile or nearly so, intermediate ones rather long stalked, the lobes more or less oblanceolate or oblong, or the intermediate ones cuneate-obovate and lobulate, the lobules coarsely or incised toothed, the teeth acute or almost acuminate; upper cauline leaves with their divisions more or less reduced, the highest appressed to the calyx; all glabrous, rather polished, pale beneath, occasionally with a few rather stiff hairs on the lower surface; intermediate segments, excluding the stalk, $2\frac{1}{2}$–$4\frac{1}{4}$ in. long; lateral lobes $\frac{1}{3}$–$1\frac{1}{4}$ in. wide. *Flowers* with the very concave petals aggregated in an open cup, $2\frac{1}{4}$–4 in. across, brilliant deep red. *Sepals* 4, very concave, oblong or wide elliptic, glabrous, 1–$1\frac{3}{4}$ in. long, *Petals*

7–11, wide obovate or elliptic, slightly crenulate upwards. *Stamens* with red filaments, usually somewhat paler upwards; anthers golden yellow, up to $\frac{1}{5}$ in. long. *Carpels* usually 3, rarely 4, ovoid, very densely tomentose with white hairs; stigmas laterally compressed, recurved, red. *Follicles* when ripe stellately spreading, oblong, slightly recurved at the tip, up to 2 in. long, covered with a dense dirty white or yellowish tomentum. *Seeds* elliptic-globose, about $\frac{1}{4}$ in. long, black, shining.

Tab. 8742.—Fig. 1, a carpel with stamens, showing insertion; 2 and 3, anthers; 4, ripe fruit; 5, seed:—*all enlarged except* 4, *which is of natural size.*

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Tab. 8743.

PTERIDOPHYLLUM racemosum.

Japan.

Papaveraceae. Tribe Hypecoideae.

Pteridophyllum, *Sieb. et Zucc.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 54.

Pteridophyllum racemosum, *Sieb. et Zucc. in Abh. Akad. München*, vol. iii. p. 720, t. 1, fig. a, 1–12; *Miq. in Ann. Mus. Bot. Lugd.-Bat.* vol. iii. p. 12; *Prantl & Kündig in Engl. & Prantl, Nat. Pflanzenfam.* vol. iii. pars 2, p. 137; *Matsumura, Ind. Pl. Japon.* p. 147; *Fedde in Engl. Pflanzenr.* vol. iv. 104, p. 83; species unica.

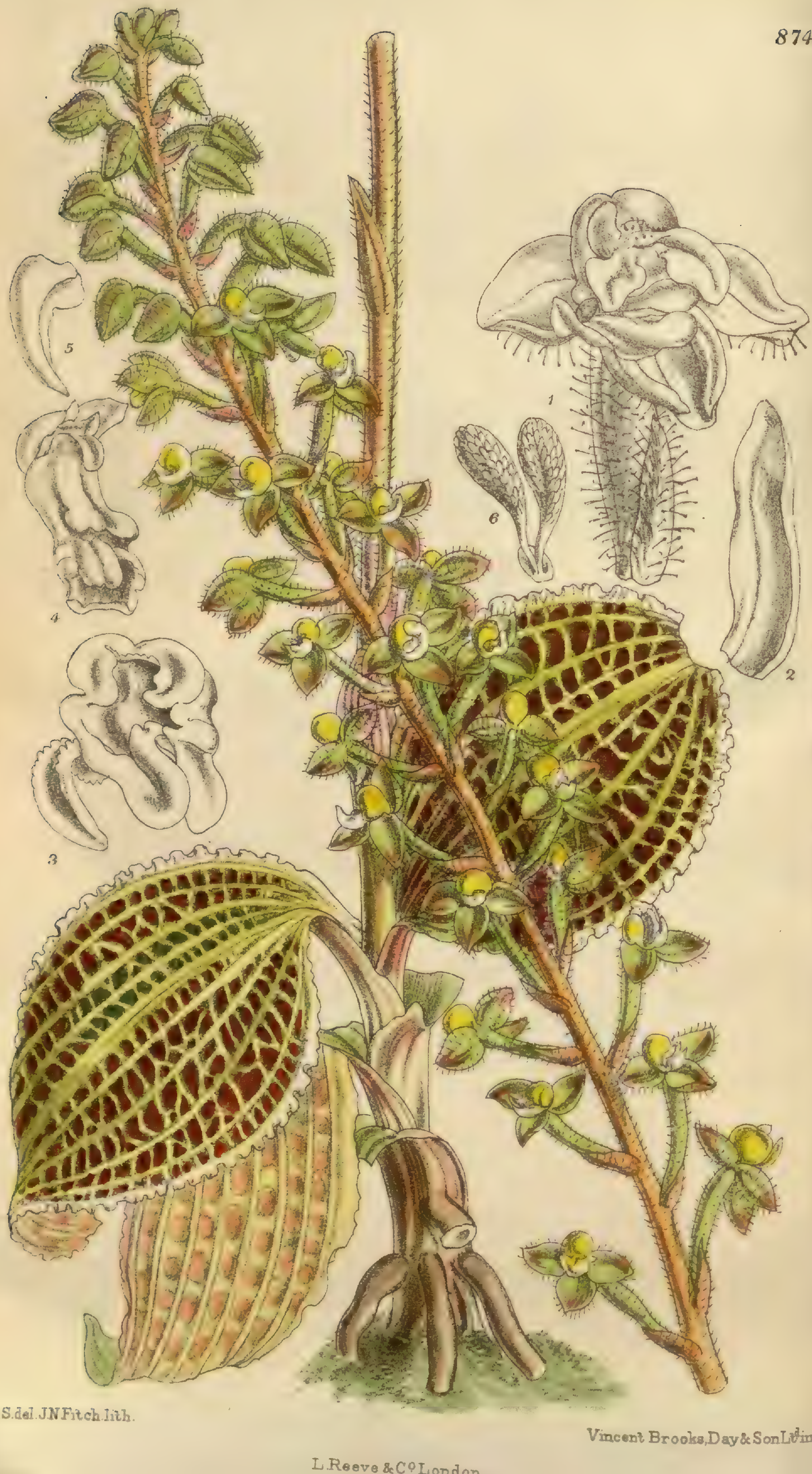
Herba perennis, acaulis, rhizomate praemorso. *Gemma* cataphyllis rotundatis herbaceo-scariosis fimbriatis 8–12 mm. longis. *Folia* petiolata, ambitu oblanceolata, impariter pectinato-pinnatisecta, 6–15 cm. longa, 2–2·5 cm. lata; pinnae angulo fere recto-patente, e parte tertia superiore basin versus cito decrescentes, infimae ad squamas setosas redactae, rectae vel subfalcatae, lineares, apice rotundatae, minute emarginatae et ex sinu mucronulatae, sub eo parce crenulatae, basi in latere versum spectante auriculatae, auriculo integro vel parce dentato dentibus in setas abeuntibus, 3–4 lin. latae, tenues, subtus setis conspersae, caeterum glabrae. *Inflorescentia* racemosa, scapo nudo folia excedente suffulta, racemo subramoso vel superne simplici; pedicelli filiformes, maturi ad 15 mm. longi; bracteae rotundatae, setoso-dentatae vel glanduloso-denticulatae, saepe parvulae vel minutae; bracteolae similes, sed minores, prope basin pedicelli. *Calyx* 2-sepalus; sepala rotundata, caduca, 1·5–2 mm. longa. *Petala* 4, aequalia, elliptico-oblonga, tenuia, mox decidua, alba, ad 6 mm. longa. *Antherae* 4 mm. longae. *Ovarium* obovoideo-orbiculare, glabrum; stylus ad 3 mm. longus; stigma bilobum; ovula 2–4, anatropa, ex ovarii fundo adscendentia. *Fructus* siliculiformis, valvis 2 dehiscens. *Semina* oblongo-obovoidea, plerumque perfecta; testa laevis, embryo minutus.—O. Stapf.

The genus *Pteridophyllum* is represented by the solitary species here figured, which is a native of the mountains of Central Japan and is confined to that area. The species was originally discovered by Siebold in the province of Sinano. In most botanical treatises the genus, which is of much scientific interest, is placed next to *Hypecoum*, itself a connecting link between the *Papavereae* and the *Fumarieae*. But while this is probably the most satisfactory treatment, the affinity between *Pteridophyllum* and *Hypecoum* is apparently somewhat remote. The plant from which our figure has been

prepared was purchased for the Kew collection in 1914 from the Yokohama Nursery Company. The species has proved quite hardy at Kew and is perennial. While its interest is mainly botanical, for the flowers do not invest it with any ornamental or decorative quality, the foliage is pleasing and renders it quite worthy of a place in the Rock Garden, if only on account of the resemblance, which the generic name suggests, that the leaves bear to the fronds of a fern. When plants are grown in a frame the rosette persists during the winter months, but when grown in the open the leaves disappear. Grown out of doors the plant prefers shade during the summer months and should be given a moist soil. This, it may be noted, is the first occasion on which the fruit and the seeds of the plant have been described.

DESCRIPTION.—*Herb*, perennial, stemless; rootstock premorse; buds enveloped by rounded herbaceous-scarious fimbriate scales, $\frac{1}{3}$–$\frac{1}{2}$ in. long. *Leaves* petioled, oblanceolate in outline, unevenly pectinately pinnatisect, $2\frac{1}{2}$–6 in. long, $\frac{3}{4}$–1 in. wide; segments spreading at almost a right angle, rapidly decreasing in size from the upper third towards the base when they become reduced to setose scales, straight or slightly falcate, linear, rounded, slightly emarginate and minutely mucronate at the apex, below the apex sparingly crenulate, auriculate at the base on the upper edge, the auricle entire or sparingly toothed, the teeth passing into setae, $\frac{1}{8}$–$\frac{1}{6}$ in. wide, thin, with scattered setae below, elsewhere glabrous. *Inflorescence* racemose, borne on a naked scape rather longer than the leaves, the raceme itself slightly cymosely branched or simple towards the top; pedicels filiform, when mature about $\frac{1}{2}$ in. long; bracts rounded, setosely toothed or glandular-denticulate, often small or very small; bracteoles near the base of the pedicel like the bracts, but still smaller. *Sepals* 2, rounded, caducous, $\frac{1}{16}$–$\frac{1}{12}$ in. long. *Petals* 4, equal, elliptic-oblong, white, thin, soon falling, about $\frac{1}{4}$ in. long. *Anthers* $\frac{1}{12}$ in. long. *Ovary* obovoid-orbicular, glabrous; style about $\frac{1}{8}$ in. long; stigma 2-lobed; ovules 2–4, anatropous, ascending from the base of the ovary. *Fruit* siliculoid, opening by 2 valves. *Seed* oblong-ovoid, usually perfect; testa smooth; embryo minute.

TAB. 8743.—Fig. 1, portion of a leaf; 2, diagram of the flower; 3, young flower, with bract; 4, flower, fully open; 5, stamen; 6, pistil; 7, ovary in vertical section; 8, fruiting pedicel and fruit; 9, ripe fruit; 10, the same, in vertical section; 11, seed, in vertical section:—*all enlarged except* 8, *which is of natural size.*



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Tab. 8744.

MACODES Sanderiana.

Malay Archipelago.

Orchidaceae. Tribe Neottieae.

Macodes, *Lindl.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 602.

Macodes Sanderiana, *Rolfe in Kew Bulletin*, 1896, p. 47; species *M. argyroneurae*, Rolfe, affinis, sed foliorum venis flavis manifeste latioribus differt.

Herba terrestris. *Folia* rosulata, petiolata, ovato-elliptica, apice acuta, recurva, margine interdum crenulata, 6–10 cm. longa, 4–5 cm. lata, insigniter reticulato-variegata; petiolus dilatatus, 2 cm. longus, basi amplexicaulis. *Scapus* circiter 30 cm. altus, erectus, puberulus, basi vaginis paucis ovato-oblongis obtectus; racemus 8–20 cm. longus, laxe multiflorus; bracteae ovatae, acutae, concavae, membranaceae, 0·6 cm. longae; pedicelli 0·8–1 cm. longi, pubescentes. *Flores* parvi, ochraceo-virides, extra pubescentes. *Sepala* patentia, ovato-oblonga, obtusa, concava, 0·5–0·6 cm. longa. *Petala* lineari-oblonga, obtusa, 0·5–0·6 cm. longa. *Labellum* 0·5 cm. longum; basi ventricosum; limbus recurvus, spathulato-oblongus, obtusus, basi minute crenulatus; saccus basi biglandulosus, apice utrinque minute auriculatus. *Columna* lata, 0·4 cm. longa. *Pollinia* pyriformia, basi attenuata; glandula squamiformis.—*Anoectochilus Sanderianus*, Kraenzl. in Gard. Chron. 1895, vol. xviii. p. 484.—R. A. Rolfe.

A considerable number of terrestrial orchids have long been the objects of especial care on the part of certain cultivators, both in this country and on the continent of Europe, not because they possess striking flowers, but because of the attractive character of their foliage. The salient common feature of this group of plants, generally spoken of as the "Anoectochilus" group, is the possession of a fine and very distinctly marked white or yellow reticulation, corresponding with the nerves and veins, upon a deep olive-green ground. Plants belonging to this group have always been well represented at Kew, where they are grown in the tropical Orchid house. They occur in nature under peculiar oecological conditions, and in cultivation they thrive best when grown in pans of sphagnum moss under bell-glass covers, each plant being set in a small pot containing a mixture of

sphagnum and peat fibre, chopped fine and pressed firmly about the roots; the individual pots are then buried in the sphagnum in the pans. The plants are watered overhead every day in the summer and are never allowed to approach a condition of dryness in winter. They flower only rarely, a fortunate circumstance, since after flowering the plant either dies outright or is so much weakened that it eventually succumbs. Unless stem offsets have been developed, flowering therefore almost inevitably results in the loss of the plant, for it is found that removal of a flower-spike as soon as it shows itself is ineffectual as a means of saving the plant. This habit of being practically monocarpic, at all events in cultivation, is unfortunately shared by many terrestrial orchids. The genera *Lissochilus*, *Eulophia*, *Microstylis*, *Satyrium*, *Disa* all contain species which behave in this way. Though the plants of this particular group are all members of the subtribe *Spirantheae*, to which the genus *Anoectochilus* belongs, they do not all belong to that genus, and until flowers are produced it is sometimes impossible to suggest their true natural position. The member of the group now figured has exemplified this difficulty. This species was originally introduced to cultivation by Mr. L. Forget, who had met with it in some unspecified locality in the Sunda Archipelgo, while collecting on behalf of Messrs. Sander and Sons, St. Albans. It was, as usual, tentatively referred in the first instance to *Anoectochilus*, and was described by Dr. Kraenzlin in 1895 as *A. Sanderianus*. A plant flowered at St. Albans in 1896, and the flower-spike, sent to Kew for examination, made it possible to ascertain that the species is really a *Macodes*. There are other three species of the same genus now in cultivation and all three are, like *M. Sanderiana*, natives of Malaya. One of the three is the original *M. Petola*, Lindl., originally placed by Blume in *Neottia*, which is a native of Java; another is *M. javanica*, Hook. f., figured at t. 7037 of this work, which is also a native of that island; the precise locality of the third species, *M. Rollissonii*, Rolfe, is not known. From all three *M. Sanderiana* is readily distinguished because of the much greater width of the brightly coloured lines of the venation. It comes even nearer as

regards its floral structure to *M. argyroneura*, Rolfe, a species not at present to be met with in living collections, which Miquel originally referred to *Haemaria*. In this case, however, *M. Sanderiana* is readily distinguished not only by having a coloured venation with wider lines, but in having these yellow in place of white. The plant from which our figure has been prepared was acquired for Kew from Messrs. Sander in 1914. It flowered at Kew in September, 1916, and, as is usual, died after flowering.

DESCRIPTION.—*Herb*, terrestrial. *Leaves* rosulate, petioled, ovate-elliptic, apex acute, recurved, margin sometimes crenulate, 2¼–4 in. long, 1¾–2 in. wide, with a handsome yellow reticulate venation on a deep olive-green or rich greenish-brown ground; petiole expanded, ¾ in. long, stem-clasping at the base. *Scape* about 1 ft. high, erect, puberulous, clothed below with a few ovate-oblong sheaths; raceme 3½–8 in. long, flowers many, lax; bracts ovate, acute, concave, membranous, ¼ in. long; pedicels ⅓–⅖ in. long, pubescent. *Flowers* small, pale green lightly suffused with brown, pubescent outside. *Sepals* spreading, ovate-oblong, obtuse, concave, ⅕–¼ in. long. *Petals* linear-oblong, obtuse, as long as the sepals. *Lip* ⅕ in. long, ventricose at the base; limb recurved, spathulate-oblong, obtuse, base finely crenulate; basal sac 2-glandular, minutely auriculate at the apex on both sides. *Column* wide, ⅙ in. long. *Pollinia* pyriform, narrowed to the base; gland scale-like.

TAB. 8744.—Fig. 1, flower; 2, petal; 3, lip; 4, column; 5, anther-cap; 6, pollinarium:—*all enlarged*.

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

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Tab. 8745.

INDIGOFERA pendula.

Yunnan.

Leguminosae. Tribe Galegeae.

Indigofera, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 494.

Indigofera pendula, *Franch. Pl. Delavay.* p. 156, t. 37 (1889); *Craib in Notes Roy. Bot. Gard. Edinb.* vol. viii. p. 68 (1913); affinis *I. Faberi*, Craib, sed ramulis hornotinis adpresse puberulis, foliolis oblongo-ellipticis, pedicellis brevioribus differt.

Frutex patens, 2·5–3 m. altus; ramuli annotini glabrescentes, cinereo-glauci, foliorum delapsorum basibus notati, hornotini parce adpresse puberuli, conspicue lenticellati. *Folia* usque ad 2·5 dm. longa, petiolo circiter 4·5 cm. longo, rhachi supra canaliculata in canaliculo breviter pubescenti; foliola 10–13-juga, oblongo-elliptica, utrinque rotundata, apice longe mucronata, 2–3·5 cm. longa, 1·3–1·8 cm. lata, tenuissime chartacea vel fere membranacea, supra minute et crebre punctulata, infra tenuiter adpresse pilosa, nervis lateralibus utrinsecus 7–8 subdistinctis; petioluli 2–4 mm. longi, pubescentes. *Racemi* axillares, penduli, folia superantes, usque ad 4·5 dm. longi, gracillimi, rhachi basi 7–8 cm. nuda angulari minutisime et parce pubescente; bracteae minutae; pedicelli 1–2 mm. longi, puberuli; corolla in alabastro cinereo-velutina. *Calyx* oblique cupularis; tubus 1·5 mm. longus, extra adpresse pubescens; lobi parum inaequales, subulati, lobo longissimo tubo leviter longiore. *Corolla* roseo-purpurea; vexillum oblongo-ellipticum, 1·3 cm. longum, extra ubique sericeo-puberulum; alae vexillo parum breviores, superne ciliolatae; carina vexillo aequilonga, subobtusa, superne extra puberula. *Antherae* apiculatae. *Ovarium* adpresse strigosum, stylo gracili glabro, stigmate globulari carnoso translucenti coronato. *Legumen* sicco spiraliter tortum, nitidum, 5 cm. longum, parce strigillosum. *Semina* ellipsoidea, nitida, pallide brunnea, 3·5 mm. longa.—J. Hutchinson.

Indigofera pendula is a charming and graceful shrub which was first collected by the late Abbé Delavay in October, 1887, in woods near Lankong in Yunnan. In May, 1906, Mr. G. Forrest met with this species again on the eastern flank of the Likiang Range, where he found it both in open situations amongst scrub and in damp shady pine-woods at elevations of 9,000–10,000 feet. Seeds collected by Mr. Forrest at a later date were presented to Kew by Mr. J. C. Williams, Caerhays

Castle, in 1914, and from these the subject of our illustration was raised. The plants grew quickly and flowered during August and September, 1916, when our figure was prepared. They were cut back to the ground-level during the winter of 1916–17, but broke freely again from the base, grew during the summer to a height of seven feet and flowered freely towards autumn. The racemes are pendulous and the largest are from 15–18 inches long. *Indigofera pendula* is most nearly allied to *I. Faberi*, Craib, another Chinese species, which has almost glabrescent young twigs, ovate leaves and longer pedicels disposed on shorter racemes. The cultivation of *I. pendula* offers no great difficulty; the plant likes a sunny position and an open well-drained soil. Judging from the experience of the winter of 1916–17 it is at least as hardy as most of the other cultivated Indigoferas, all of which die back to the ground-level in winter. Like them it can easily be increased by cuttings.

Description.—*Shrub* of spreading habit, 8–10 ft. high; the year-old shoots glabrescent, glaucous-grey, bearing the bases of fallen leaves; young shoots sparingly adpressed puberulous, distinctly lenticelled. *Leaves* up to 10 in. long; rachis channelled above and shortly pubescent along the groove; leaflets in 10–13 pairs, oblong-elliptic, rounded and distinctly mucronate at the tip, rounded at the base, $\frac{3}{4}$–$1\frac{1}{2}$ in. long, $\frac{1}{2}$–$\frac{3}{4}$ in. wide, thinly papery or almost membranous, pilose and closely punctulate above, thinly adpressed pilose beneath, lateral nerves 7–8 on each side the midrib, tolerably distinct; petiolules $\frac{1}{12}$–$\frac{1}{6}$ in. long, pubescent. *Racemes* axillary, pendulous, longer than the leaves, up to 18 in. long, very slender, rachis naked for about 3 in. at the base, angular, finely and sparingly pubescent; bracts minute; pedicels very short, puberulous; corolla in bud grey velvety. *Calyx* obliquely cup-shaped; tube $\frac{1}{16}$ in. long, adpressed pubescent outside; lobes slightly unequal, subulate, the longest lobe rather longer than the tube. *Corolla* rose-purple; standard oblong-elliptic, $\frac{1}{2}$ in. long, uniformly silky-puberulous outside; wings rather shorter than the standard, ciliolate upwards; keel about as long as the standard, somewhat obtuse, puberulous upwards on the outside. *Anthers* apiculate. *Ovary* adpressed-strigose; style slender, glabrous, crowned by the globose, fleshy, translucent stigma. *Pod* when dry spirally twisted, shining, 2 in. long, sparingly strigillose. *Seeds* ellipsoid, shining, pale brown, $\frac{1}{7}$ in. long.

Tab. 8745.—Fig. 1, flower; 2, the same, petals removed; 3, wing-petal; 4, keel-petals; 5 and 6, anthers; 7, style and stigma:—*all enlarged.*

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

Vincent Brooks, Day & Son Lit^d imp.

L. Reeve & C^o London

Tab. 8746.

AGAVE fourcroydes.

Yucatan.

Amaryllidaceae. Tribe Agaveae.

Agave, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 733.

Agave (§ Fuagave) **fourcroydes**, *Lem. in Ill. Hort.* vol. xi. Miscell. p. 65; *Trelease in Rep. Miss. Bot. Gard.* vol. xix. pp. 277–279, *et in Mem. Nat. Acad. Sci. Washington*, vol. xi. p. 48, t. 110–112; *Berger*, *Agaven*, p. 238, fig. 69, species e grege *Rigidarum-Sisalanarum*, ab omnibus affinibus differt praesertim rosula caulescente foliorumque spina terminali robusta.

Frutex caulescens, caule robusto erecto 0·75–1·2 m. et ultra alto, 25 cm. diametro, rosula elongata plurifolia coronato basi stolonifero. *Folia* rigidissime erecto-patentia, coriaceo-carnosa, glauca, oblanceolato-ensiformia, circiter 1·4 m. et ultra longa, basin versus attenuata, supra medium 10–12 cm. lata, sensim acuminata, basi supra convexa, hinc planiuscula, superne canaliculata et marginibus erecta, subtus carinato-convexa; ad margines e basi usque 5–7 cm. infra spinam terminalem aculeata, spinae basales parvae saepe confluentes, reliquae majores 2·2–2·5 cm. inter se distantes e basi dilatata 5–6 mm. longa acumine anguste deltoideo re- vel incurvato 2–4 mm. longo atrobrunneae, margine inter spinas recto vel paullum sinuato; spina terminalis robusta, 3 cm. longa, conica, recurvula, basi supra paullum excavata, haud vel vix decurrente, atrobrunnea. *Inflorescentia* 6–7 m. alta; pedunculus erectus, robustus, bracteis vacuis numerosis triangularibus acutis adpressis mox exsiccantibus vestitus; panicula ampla, pedunculum fere aequans vel eo brevior, oblongo-pyramidalis, recta vel subcurvata, ramis circiter 15–20 patentibus apice repetite trichotome divisis et flores numerosos luteo-virides dense aggregatos ferentibus, post anthesin capsuligeris et abundanter bulbiferis. *Pedicelli* circiter 5 mm. longi, bracteis minutis late deltoideis acutis. *Perianthii* tubus obconico-campanulatus, 6-sulcatus, 15–17 mm. longus; segmenta sublinearia, obtusa, tubi longitudine vel paullum longius, luteo-viridia mox exsiccantia. *Filamenta* medio tubi affixa, luteo-viridia, 6·5 cm. longa; antherae luteae. *Ovarium* subtrigono-cylindraceum, utrinque angustatum, superne sub tubo constrictum, 3·5 cm. longum, 6-sulcatum, viride, pruinosum; stylus demum fere 8 cm. longus, stigmate capitato. *Capsula* oblongo-clavata, subtrigona et 3-sulcata, circiter 5·5 cm. longa, basi stipitata, apice rostrata; semina atra, fere semi-orbicularia, 9–10 mm. longa.—*Agave ixtlioides*, Lem. ex Jacobi in Hamb. Gartenzeit. (1866), p. 214, Versuch. p. 237; non Hook. *A. rigida*, var. *longifolia*, Engelm. in Trans. Acad. Sci. St. Louis, vol. iii. p. 361; Collected Works, p. 312. *A. Ixtli*, var. *elongata*, Baker in Gard. Chron. 1877, vol. viii. p. 397; Ricasoli, Monogr, Agav. p. 21; Terracc. Primo Contributo, p. 44. *A. rigida*, var. *elongata*, Baker, Handb. Amaryll. p. 181; Kew Bulletin, 1892, p. 33; Braun in Pflanzer, vol. iv. p. 70. *A. elongata*, Berger, Hort.

Mortol. 11, p. 358; non Jacobi. *A. rigida*, Hort. ex Berger in Gartenwolt, vol. ii. p. 604 cum figura, ex parte. *A. Ixtli*, Hort. *A. longifolia*, Hort. —A. Berger.

The *Agave* here figured from material supplied from a plant that poled in 1914 in the garden of Lady Hanbury at La Mortola, Ventimiglia, Italy, though a species that is neither new nor rare, fully deserves a place in this work on account of its great economic interest. It is the species which supplies from its leaves the fibre known as Henequen, a material which rivals in its qualities and value, and is perhaps at times confused with the now more familiar fibre known as Sisal. The Henequen plant is a native of Yucatan in which province of Mexico it is also largely cultivated. From thence it has now spread to most countries with a tropical or semitropical climate, and where it is not grown for the sake of its fibre it is used as an effective hedge-plant, or as a decorative subject in gardens. It is singular that nothing should be known with certainty as to when or by whom this species was first introduced to cultivation in Europe, and even its introduction as an economic species is obscure. It is difficult to believe that this species and its rival *A. sisalana* were unknown to Jacobi, yet there is no description by that author which agrees entirely with either plant. As regards *A. sisalana* the same is true of Lemaire, and it is only because Professor Trelease has been able to associate Lemaire's name *A. fourcroydes* with the species now figured that we believe Lemaire to have known the Henequen, for the original description of the plant leaves this doubtful. Until Trelease thus vindicated the name Lemaire had proposed, the nomenclature of the Henequen was somewhat confused; other authors, unwilling to establish a new species, have endeavoured to associate the Henequen with *A. rigida*, Mill., *A. elongata*, Jacobi, *A. candelabrum*, Todaro, and yet other species from which it differs very markedly. *A. fourcroydes* belongs to the subgenus *Euagave*, and within this its affinities are with the *Sisalanae* group of the *Rigidae*, among which it is characterised by its narrow leaves and non-decurrent end-spine. Reproduction is singularly well provided for in this species. The

rosette throws out suckers; the panicle gives rise to great numbers of viviparous bulbils, and at the same time ripens capsules which contain an abundance of seeds.

DESCRIPTION.—*Shrub*, developing a stem 3–4 ft. high and 10 in. thick, emitting suckers at the base. *Leaves* numerous in a terminal rosette, rigidly erecto-patent, 4½ ft. long, oblanceolate-ensiform, 4 in. or more wide above the middle, gradually narrowed towards the base, apex rather shortly acuminate, not very fleshy, glaucous and somewhat pruinose, smooth, convex on the upper surface near the base, then flat and channelled with upcurved margins, underneath convex and almost keeled; margins armed from the base to about 2–3 in. below the end-spine, basal prickles very small, often confluent, the others about 1–1½ in. apart, blackish, with a broad horny base and a fine short point, 1–2 lin. long, the lower recurved, the others upcurved (sometimes the point twice bent), the margin between almost straight; end-spine stout, conic, 1¼ in. long, a little recurved, not decurrent, round, grooved below the middle, blackish-brown. *Inflorescence* about 18–21 ft. high, straight or slightly curved at the top; scape stout, green, with numerous adpressed triangular acute empty bracts; panicle oblong-pyramidal, rather loose, with about 15–20 branches, which are patent, tripartite at the top, with numerous flowers in dense clusters; pedicels very short; bracts minute, deltoid, soon withering. *Flowers* 2½–3 in. long. *Perianth* tube about ⅝ in. long, 6-furrowed, broadly obconic-campanulate; segments about as long as or a little longer than the tube, linear, obtuse, yellowish-green, soon withering. *Filaments* inserted in the middle of the tube, 2–2⅓ in. long; anthers 1 in. long, yellow. *Ovary* cylindric-clavate, somewhat triangular, green, pruinose, constricted at the top, 1¾ in. long; style 3 in. long; stigma clavate. *Capsule* oblong-clavate, obtusely triangular, 3-furrowed, with stipitate base and beaked apex, over 2 in. long. *Seeds* almost semiorbicular, 4½–5 lin. long, black. *Bulbils* very numerous.

TAB. 8746.—Figs. 1 and 2, anthers; 3, stigma; 4, sketch of an entire plant: —*all enlarged except* 4, *which is much reduced.*

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

Vincent Brooks, Day & Son Lt.d imp

L. Reeve & Cº London

Tab. 8747.

RHODODENDRON prostratum.

Yunnan.

Ericaceae. Tribe Rhodoreae.

Rhododendron, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 599.

Rhododendron prostratum, *W. W. Smith in Notes Roy. Bot. Gard. Edinb.* vol. viii. p. 202 (1914); affinis *R. nivali*, Hook. f., et *R. Websteriano*, Rehd. et E. H. Wils., ab illo foliis ciliatis, pedicellis dense albido-villosis, ab hoc habitu prostrato floribus pedicellatis differt.

Fruticulus usque ad 10 cm. altus, rami numerosi, prostrati, vetustiores brunnei vel cinerei, juniores pallide virides, pilis debilibus albidis eglandulosis densiusculis ornati; ramuli juniores 2–2·5 cm. longi, cum ramulis annotinis laxe foliati, dense cinereo-lepidoti. *Folia* oblongo-elliptica, apice obtusa vel rotundata, conspicue mucronata, basi late obtusa vel rotundata, 1·5–2 cm. longa, 0·6–1 cm. lata, tenuiter coriacea, margine revoluto primum pilis debilibus albidis longe ciliato demum fere glabro, supra nitida, viridia, glabra, infra squamulis parvis contiguis albidis demum pallide brunneis dense obtecta; costa media supra impressa, infra elevata, parce lepidota; nervi laterales supra conspicui, utrinsecus circiter 6, infra evanidi; petioli 2·5 mm. longi, parce lepidoti et setosi. *Flores* in umbellam terminalem 1–3-floram dispositi; perulae exteriores oblongo-lanceolatae, apice subfoliaceae, mucronatae, circiter 7 mm. longae, brunneae, extra hispido-pubescentes, interiores obovatae vel oblanceolatae, acute et abrupte caudato-mucronatae, dorso carinatae et parce pubescentes; pedicelli subcernui, 2 cm. longi, dense albido-villosi et minute lepidoti. *Calyx* magnus, flavo-viridis, ad basin 5-lobatus; lobi basi conspicue imbricati, late obovato-rotundati, 8 mm. longi, 6–7 mm. lati, extra glabri, margine parce ciliati. *Corolla* perlate infundibuliformis, coccineo-violacea, limbo patulo dorso rubro-maculato; tubus vix 1 cm. longus, utrinque molliter pubescens; lobi 5, ovato-rotundati, basi late auriculati, 1·5 cm. longi, 1·5–1·8 cm. lati, extra parce pubescentes, haud lepidoti. *Stamina* 9–10, corollae tubo longiora; filamenta violacea, usque ad 1·3 cm. longa, apice incurva, prope basin dense villosa; antherae atro-brunneae, 2·5 mm. longae. *Ovarium* minute et dense lepidotum, 3 mm. longum; stylus rubescens, glaber, corolla aequalis, stamina multo superans, stigmate rubro-brunneo capitato coronatus.—J. Hutchinson.

The dwarf *Rhododendron* here figured is a native of Yunnan, where it was discovered in June, 1910, by Mr. G. Forrest, as a prostrate shrub 2–4 inches high, trailing over rocks and on moist peaty soil almost at the limit of vegetation, on the eastern flank of the Likiang Range at elevations of 15,000–16,000 feet.

Jan.–March, 1918.

Seeds sent by Mr. Forrest to Mr. J. C. Williams, Caerhays Castle, were sown there in 1910, and the material for our figure has been provided by a plant presented to Kew by Mr. Williams which flowered in April, 1917. This species, which has been named *R. prostratum* at Edinburgh by Mr. W. W. Smith, comes near to *R. nivale*, Hook. f., from Sikkim, with which it agrees in habit, but from which it differs in having larger ciliate leaves and densely villous flower-stalks. There is no doubt that *R. prostratum* is one of the most distinct and beautiful of the dwarf species now in cultivation. It has shown itself perfectly hardy in this country so far as winter cold is concerned, but whether its flowers will escape the later frosts remains to be seen. The month of April, 1917, being very inclement, the Kew plant was taken into a cool greenhouse as soon as the flower-buds began to open, in order to preserve the blossoms from injury by the frost and snow then prevailing.

Description.—*Shrublet*, 2–4 in. high; twigs numerous, prostrate, the older ones brown or grey, the younger pale green, beset with rather dense weak white hairs; new shoots ¾–1 in. long, laxly leafy like the shoots of the previous season, densely grey lepidote. *Leaves* oblong-elliptic, apex blunt or rounded, conspicuously mucronate, base broadly rounded or truncate, ⅔–¾ in. long, ¼–⅓ in. wide, thinly coriaceous, margin revolute at first ciliate with weak white hairs, at length almost glabrous, green, polished and glabrous above, beneath closely beset with small contiguous scales at first white, at length pale brown; midrib impressed above, raised beneath, sparingly lepidote; lateral nerves about 6 on each side, the midrib conspicuous above, obscure beneath; petiole $\frac{1}{10}$ in. long, sparingly lepidote and setose. *Flowers* in terminal 1–3-flowered umbels; outer bud-scales oblong-lanceolate with mucronate foliaceous tips, about ⅓ in. long, brown, hispidly pubescent outside; inner bud-scales obovate or oblanceolate, acutely and abruptly caudate-mucronate, keeled on the back, and sparingly pubescent; pedicels slightly nodding, ¾ in. long, densely white villous and minutely lepidote. *Calyx* large, yellowish-green, 5-lobed to the base; lobes markedly imbricate below, wide obovate-rounded, ⅓ in. long, ¼ in. wide, glabrous outside, margin sparingly ciliate. *Corolla* very wide funnel-shaped, pink-violet, limb spreading, dotted with red behind; tube ⅖ in. long, softly pubescent on both sides; lobes 5, ovate-rounded, wide auricled at the base, ⅔ in. long, ⅔–¾ in. wide, sparingly pubescent outside but not lepidote. *Stamens* 9–10, longer than the corolla-tube; filaments violet, over ½ in. long, incurved at the top, densely villous near the base; anthers dark brown, $\frac{1}{10}$ in. long. *Ovary* finely and densely lepidote, ⅛ in. long; style reddish, glabrous, as long as the corolla, considerably larger than the stamens; stigma reddish-brown, capitate.

Tab. 8747.—Fig. 1, part of leaf showing the margin and under surface; 2, scale from the same; 3, calyx and pistil; 4, corolla, laid open; 5 and 6, stamens; 7, ovary:—*all enlarged.*

B

A

A

B

1

2

3

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

Vincent Brooks, Day & Son Lit.rs imp.t

L. Reeve & Co. London.

Tab. 8748.

ECHEVERIA setosa.

Mexico.

CRASSULACEAE.

ECHEVERIA, *DC.*; *Rose in N. Amer. Fl.* vol. xxii. p. 13; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 659, *sub* Cotyledon, *Linn.*

Echeveria setosa, *Rose et Purpus in Contrib. U.S. Nat. Herb.* vol. xiii. p. 45; *Rose in Addisonia*, i. 11, cum icon.; a speciebus ceteris foliis et inflorescentiis albo-setosis differt.

Herba succulenta, acaulescens. *Folia* usque ad 100 vel ultra, in rosulam densam 7–10 cm. diametro, 4–7 cm. altam collecta, sessilia, supra fere plana, subtus convexa, oblanceolato-spathulata, ad 5 cm. longa, 1·8 cm. lata, 5 mm. crassa, mucronato-cuspidata, viridia, nitida, pilis patentibus utrinque albo-setosa. *Scapi* e foliorum superiorum axillis orti, 1–4 ex quaque rosula, 10–12 cm. longi, laxe foliati, foliis anguste oblongis. *Inflorescentiae* scorpioideae, simplices vel bifurcatae; bracteae inferiores 1–1·5 cm. longae, apice basique angustatae, utrinque convexae, superiores gradatim minores; pedicelli inferiores 1–3 cm. longi. *Sepala* patula, lineari-oblonga, viridia, ad 10 mm. longa, 2–3 mm. lata. *Corolla* 10–16 mm. longa, basi rubra, apice flava, intus levis, extra leviter setosa fere ad basin in segmenta lineari-oblonga fissa. *Stamina* 10, inclusa, alba. *Carpella* 4–5 mm. longa, in stylum gradatim attenuata; stylus 4–5 mm. longus, viridis.—M. L. GREEN.

The genus *Echeveria* was proposed by Decandolle in 1828 for those species from America which earlier authors had referred to *Cotyledon*, originally founded by Linnaeus on African and Mediterranean plants. The new genus differed from *Cotyledon* mainly in having the petals connate only at the base and the stamens shorter than the petals. In 1865 Bentham and Hooker declined to accept these differential characters as adequate. In their view the only character by which *Echeveria* could be distinguished from *Cotyledon* is to be found in the pentagonal corolla. But floristic convenience at times finds monographic canons unduly severe, and its dictates have induced Dr. Rose to reconsider the verdict of the Genera Plantarum. In 1903 this careful student reverted to the view of Decandolle, and two years later definitely

resuscitated *Echeveria*, which as defined by him, includes some sixty species, mostly Mexican, though some occur in Central America, a few in South America, and one is met with in Texas. It has to be noted, however, that while he accepts the view of Decandolle in preference to that of Bentham and Hooker, the character on which Dr. Rose lays greatest stress is that pointed out in the Genera Plantarum; *Echeveria*, Rose, as contrasted with *Echeveria*, DC., must consequently be held to include several South African plants with a pentagonal corolla. This suggests consequences which need not be discussed in connection with *E. setosa*, the species now figured, which has, so far, only received a name in the genus *Echeveria*. This plant, readily distinguished from all its congeners by its setose leaves, was discovered in 1907 by Dr. C. A. Purpus on the Cerro de la Yerba, near San Luis Tultitlanapa, Puebla, South Mexico. Plants were presented to Kew in 1910 by Dr. Britton, New York Botanic Garden, and in 1912 another was acquired from Messrs. Haage and Schmidt, Erfurt. From the latter, which flowered in 1914, our figure has been prepared; two smaller leaves have been added to the plate from a plant presented by Dr. Britton. In England *E. setosa* can only be grown under greenhouse conditions. It flowers regularly and produces offsets freely.

Description.—*Herb*, succulent, stemless. *Leaves* 100 or more, clustered in a dense rosette 3–4 in. across, and 1½–3 in. high, sessile, almost flat above, convex beneath, oblanceolate-spathulate, up to 2 in. long, ¾ in. wide, ⅕ in. thick, mucronate-cuspidate, green, polished, white-setose on both faces with spreading hairs. *Scapes* 4–5 in. long, 1–4 to each rosette, from the axils of the upper leaves, sparsely beset with narrow oblong leaves. *Inflorescence* scorpioid, simple or forked; lowermost bracts ⅖–⅗ in. long, narrowed to the tip and to the base, convex on both faces, gradually decreasing upwards; lower pedicels ⅖–1¼ in. long. *Sepals* spreading, linear-oblong, green, up to ⅖ in. long, 1/12–⅕ in. wide. *Corolla* ⅖–⅔ in. long, red towards the base, yellow above, smooth within, finely setose without, split almost to the base into 5 linear-oblong segments. *Stamens* 10, included, white. *Carpels* ⅙–⅕ in. long, gradually narrowed into green cylindric styles ⅙–⅕ in. long.

Tab. 8748.—Fig. 1, petal and stamen; 2, pistil; 3, sketch of an entire plant; A, A, leaves from the Erfurt plant figured; B, B, leaves from a plant received from New York:—*all enlarged except* 3, *which is much reduced.*

M S del. J N Fitch lith.

Vincent Brooks, Day & Son Lith. Imp.

Tab. 8749.

PETUNIA integrifolia.

South America.

Solanaceae. Tribe Salpiglossidae.

Petunia, *Juss.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 907.

Petunia integrifolia, *Hort. ex Harrison, Floricult. Cab.* vol. i. p. 144 (1833); *Schinz & Thellung in Vierteljahrsschr. Nat. Ges. Zürich*, vol. lx. p. 361 (1915); species *P. inflatae*, R. E. Fries, valde affinis, sed pedunculis post anthesin plus minusve deflexis, floribus capsulis et seminibus paulum majoribus differt.

Herba vel *suffrutex* diffuse ramosus, fere ubique glanduloso-pubescens; rami graciles, teretes, prostrati, decumbentes vel interdum adscendentes. *Folia* alternata, breviter petiolata, saepius elliptico-lanceolata, interdum ovato-lanceolata vel lanceolata, integerrima, apice acuta, basi cuneata, petiolo incluso 2·5–8 cm. longa, saepe 4–5 cm. longa, 1·5–3·5 cm. lata. *Bracteae* oppositae, foliis simillimae sed minores. *Flores* simulanter axillares, solitarii, pedunculati. *Pedunculi* graciles, 1–6·5 saepe 3–4 cm. longi, primum adscendentes, post anthesin plus minusve deflexi. *Calyx* 1·5–3 cm. longus, leviter accrescens, subaequaliter 5-partitus; segmenta spathulato-linearia vel ligulata, subacuta, 1·2–3 cm. longa, 1·75–5 mm. lata. *Corolla* primum laete roseo-purpurea, demum pallidior, extra pallide roseo-purpurea, tubo extra purpura suffuso et lineis purpureis notato; tubus circiter 2·5 cm. longus, e basi angusta valde ventricosus, apicem versus circiter 1·2 cm. latus; limbus leviter 2-labiatus, breviter 5-lobatus; lobi 1·6–1·8 cm. lati, rotundati. *Stamina* 5, inclusa, quorum 4 didynama, antheris per paria conniventibus, quinto minore; filamenta glabra. *Ovarium* ovoideum, vix 3 mm. longum, glabrum, basi disco angusto circumdatum; stylus glaber, stamina longiora vix aequans; stigma discoideo-capitatum. *Capsula* ovoidea, apiculata, circiter 8 mm. longa et 6 mm. lata.—*P. phoenicea*, D. Don, in Sweet, Brit. Fl. Gard. ser. 2, vol. ii. sub t. 172 (1832); Loud. Gard. Mag. vol. ix. p. 707. *P. violacea*, Lindl. Bot. Reg. vol. xix. t. 1626 (1833); Paxton, Mag. Bot. vol. i. p. 7, cum tab. col.; Rennie, Mag. Bot. & Gard. vol. ii. p. 117, t. 35, fig. 3; G. Don, Gen. Syst. vol. iv. p. 468; Miers in Hook. Lond. Journ. Bot. vol. v. p. 185; Sendtner in Mart. Fl. Bras. vol. x. p. 172; Dunal in DC. Prodr. vol. xiii. pars 1, p. 573; R. E. Fries in K. Svensk. Vet.-Akad. Handl. vol. xlvi. no. 5, p. 53, t. 2, figs. 2–4 & t. 5, fig. 3 a–d (1911). *P. dichotoma*, Sendtner in Mart. Fl. Bras vol. x. p. 173 (1846); Dunal in DC. Prodr. vol. xiii. pars 1, p. 576. *Salpiglossis integrifolia*, Hook. in Bot. Mag. t. 3113 (1831); Lodd. Bot. Cab. t. 1978. *Nierembergia phoenicea*, D. Don in Sweet, Brit. Fl. Gard. ser. 2, vol. ii. sub t. 172 (1832) et t. 193 (1833); Harrison, Floricult. Cab. vol. i. p. 144, t. 8, fig. 2. *N. punicea*, G. Don, Gen. Syst. vol. iv. p. 468 (1837). *Stimoryne purpurea*, Rafin. Fl. Tellur. pars iii. p. 76 (1836). *Nicotiana integrifolia*, O. Kuntze, Rev. Gen. Pl. vol. iii. 2, p. 223 (1898).—S. A. Skan.

The plant figured here under the name of *Petunia integrifolia* (though much better known as *P. violacea*)

first appeared in our gardens in 1831, having been raised from seeds sent to the Glasgow Botanic Garden by John (by some writers erroneously called James) Tweedie, who was at that time residing in Buenos Aires. The genus, now comprising twenty-nine species, was established in 1803 by Jussieu who, at the same date, described two species, *P. parviflora* and *P. nyctaginiflora*. There was an interval of nearly thirty years before the third species, the subject of this note, was discovered. *P. nyctaginiflora*, which appears to have been in cultivation in the Jardin des Plantes, Paris, in 1820, was figured at t. 2552 of this Magazine in 1825, yet it seems to have been so far overlooked when Sir William Hooker described Tweedie's new introduction six years later that the latter was not recognised as belonging to the same genus, and was published at t. 3113 as *Salpiglossis integrifolia*, the figure then given being scarcely a faithful representation of the species. The plant immediately became a favourite. Pretty and graceful as it was in itself its possibilities as a subject for crossing with *P. nyctaginiflora* were quickly realised. Florists took it up with remarkable success; artists repeatedly made drawings of it, and often poor ones, and botanists repeatedly described it, giving it at least nine names under five different genera. A hybrid was first obtained in 1834 by a nurseryman named Atkins of Northampton, and this was figured and described in Sweet's Brit. Fl. Gard. ser. 2, vol. iii. t. 268 as *Nierembergia Atkinsiana*. Many forms of the hybrid soon appeared in gardens, and three were figured at t. 3556 of the Botanical Magazine. Details as to the evolution and history of the *Petunia* have been given by L. H. Bailey (Survival of the Unlike, p. 465), Le Texnier (Rev. Hort. 1908, p. 377) and Lotsy (Archives Néerlandaises, ser. 3 B, vol. ii. p. 221). The true *P. integrifolia* disappeared from cultivation, though plants passing under the name of *P. violacea* were still met with in collections. The *P. violacea* which has been cultivated in the Chelsea Physic Garden for many years—it was found there when Mr. Hales became Curator in 1899—is quite distinct from the true plant. It has an erect habit of growth, rather like that of *P. nyctaginiflora*, and bright rose-coloured flowers with a whitish throat and a pallid

exterior; the corolla-tube is rather longer than that of *P. integrifolia*, and is funnel-shaped rather than ventricose. It agrees with the description of *P. violacea* var. "Gloire de Segrez" in Vilmorin-Andrieux, Les Fleurs de Pleine Terre, ed. 3, p. 848, which was raised from a garden *Petunia* known as "Marquis de la Ferté." It is said to reproduce itself exactly by seed, and is believed to be the same as *P. violacea oculata*, Hort., and *P.* "Countess of Ellesmere." In 1911 an effort was made by Kew to secure the re-introduction of the true *P. integrifolia* from South America, and a request for seeds was sent to Sir Reginald Tower, His Majesty's Minister at Buenos Aires, who had on many previous occasions given invaluable help to the establishment. The trouble he gave himself in consequence of this request seemed endless, and amongst others whom he interested in the search for the plant should especially be mentioned Mr. Carlos Thays, at that time Director-General of Public Parks, Buenos Aires, and Mr. C. E. R. Rowland, Vice-Consul at Monte Video, since 1916 Vice-Consul in Mexico, where, we deeply regret to hear, he died in 1917. Mr. Rowland was at last successful in obtaining seeds of both *P. integrifolia* and *P. nyctaginiflora* from a virgin district on the banks of one of the small tributaries of the River Plate in Uruguay, and these reached Kew in September, 1916. A plant of *P. integrifolia* raised from these seeds flowered in June, 1917, and provided the material for our figure. The species is now known from the Southern states of Brazil, from Paraguay, Uruguay and the Argentine Republic. It appears to vary considerably, and there is reason to believe from specimens in the Kew Herbarium that there are natural hybrids between it and *P. nyctaginiflora*. Dr. Fries has described as a subspecies, named *depauperata*, a form with smaller leaves, shorter peduncles and smaller flowers. His *P. inflata* must be very closely allied to *P. integrifolia*, and judging from the specimens at Kew, which, it should be stated, form but a small part of the material cited by Dr. Fries, it cannot be satisfactorily distinguished. It is characterised mainly by the peduncles remaining erect after flowering, while in *P. integrifolia* they are more or less deflexed. The cultivation of *P. integrifolia* presents

no difficulty other than those experienced in connection with the very varied garden Petunias which are now generally raised from seed. As long ago as 1866 Mr. Naudin pointed out that neither *P. integrifolia* nor *P. nyctaginiflora* vary when raised from their own seed, but that when intercrossed they yield hybrids as fertile as themselves; these hybrids being all alike in the first generation, but in the second varying in the most remarkable degree. Modern Petunias owe more to the skill and attention of Mr. E. Benary of Erfurt than to any other cultivator. Mr. Benary separates his forms into several groups and claims that some thirty per cent. of his forms come true from seed. The plants are treated as tender annuals and are largely grown for summer bedding; the seeds are germinated in spring in heat and the seedlings planted out of doors in May. The plants may also be grown in pots for conservatory decoration. A light soil and abundance of summer heat and direct sunshine are essential to their freedom of growth and flower. In Mr. Benary's experience the best Petunias are not those that show most vigour in the seedling stage. For this reason he has always made it his practice to discard the strongest seedlings when pricking them out from the seed pan.

Description.—*Herb* or *undershrub*, diffusely branched, glandular pubescent in nearly all its parts; branches slender, terete, prostrate, decumbent or occasionally ascending. *Leaves* alternate, short petioled, usually elliptic-lanceolate or lanceolate, quite entire, acute, base cuneate, including the petiole 1–3 in. long, blade often $1\frac{3}{4}$–2 in. long, $\frac{2}{3}$–$1\frac{1}{2}$ in. wide. *Bracts* opposite, like the leaves but somewhat smaller. *Flowers* pseudo-axillary, solitary, peduncled; peduncles slender, $\frac{1}{3}$–$2\frac{1}{2}$ in. (usually $1\frac{1}{4}$–$1\frac{3}{4}$ in.) long, at first ascending, after flowering more or less deflexed. *Calyx* $\frac{2}{3}$–$1\frac{1}{4}$ in. long, slightly accrescent, subequally 5-partite; segments spathulate-linear or ligulate, subacute, $\frac{1}{2}$–$1\frac{1}{4}$ in. long, $\frac{1}{16}$–$\frac{1}{8}$ in. wide. *Corolla* at first bright rose-purple, becoming at length paler, outside pale rose-purple with the tube outside suffused with purple and marked with deeper purple lines; tube about 1 in. long, ventricose above the narrow base, towards the top nearly $\frac{1}{2}$ in. across; limb slightly 2-lipped and shortly 5-lobed; lobes $\frac{2}{3}$–$\frac{3}{4}$ in. wide, rounded. *Stamens* 5, included, the four longer didynamous with their anthers connivent in pairs, the fifth distinctly smaller; filaments glabrous. *Ovary* ovoid, barely $\frac{1}{8}$ in. long, glabrous, surrounded at the base by a narrow disk; style glabrous, hardly as long as the longest pair of stamens; stigma discoid-capitate. *Capsule* ovoid, apiculate, about $\frac{1}{5}$ in. long and $\frac{1}{4}$ in. wide.

Tab. 8749.—Fig. 1, calyx and pistil; 2, lower portion of corolla-tube laid open, showing the stamens; 3 and 4, stamens; 5, ovary and disk:—*all enlarged*.

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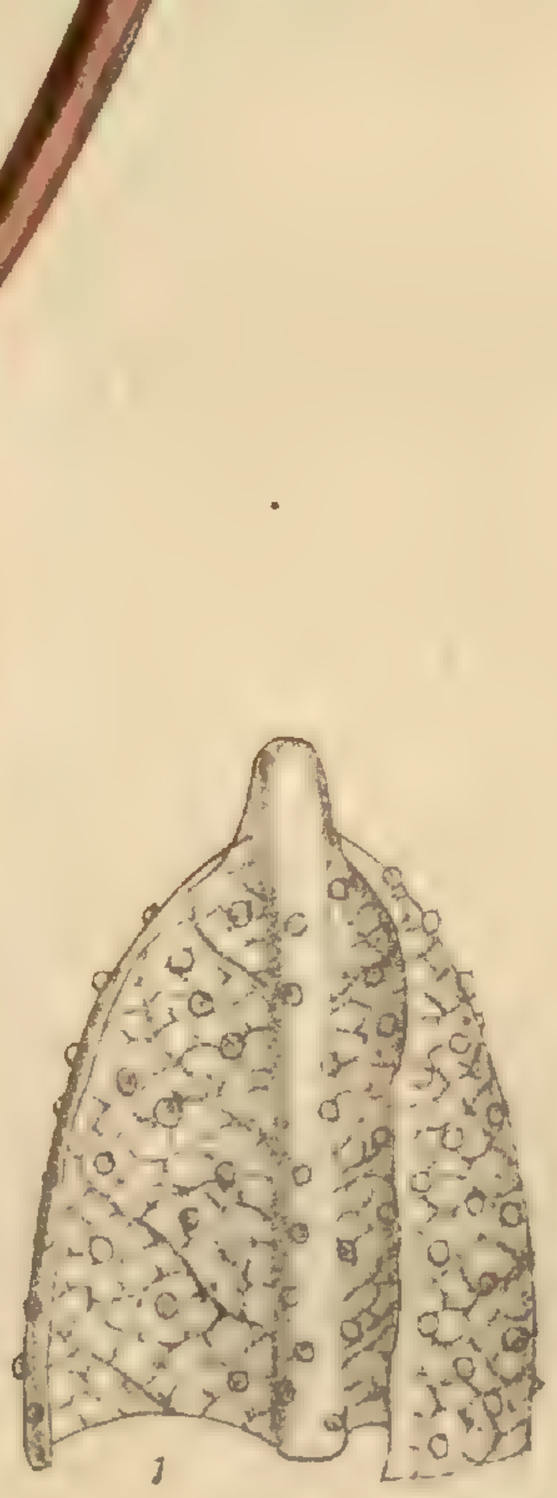

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M.S del J.N.Fitch lith.

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Tab. 8750.

RHODODENDRON BRACHYANTHUM.

Yunnan.

Ericaceae. Tribe Rhodoreae.

Rhododendron, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 599.

Rhododendron brachyanthum, *Franch. in Bull. Soc. Bot. Fr.* vol. xxxiii. p. 234 (1886); affinis *R. campylogyno*, Franch., sed perulis caducis, foliis basi haud cuneatis marginibus integris, pedicellis brevioribus floribus flavis differt.

Frutex parce ramosus; rami crassi, stricti, rigidi; ramuli annotini apicem versus laxe foliati, minute lepidoti, cortice brunneo nitido obtecti, innovationibus densiuscule flavo-lepidotis. *Folia* elliptica vel oblongo-elliptica, utrinque obtusa, apice crasse apiculata, 2–4 cm. longa, 1–2 cm. lata, rigide coriacea, supra viridia et inconspicue glandulosa, infra conspicue glauca et parce glanduloso-lepidota; costa media supra leviter impressa, infra valde prominens et glandulosa sed haud glauca; nervi laterales aliquantum inconspicui, supra impressi; petioli 4–5 mm. longi, crassi, glandulosi. *Flores* umbellati terminales, 3–4-nati; perulae caducae, coriaceae, dense ciliatiae, dorso glandulosae, exteriores foliaceae et infra glaucae; pedicelli erecti vel subnutantes, circiter 2 cm. longi, glanduloso-lepidoti. *Calyx* amplus, subfoliaceus, profunde 5-lobatus, basin versus extra dense lepidotus, lobis ovato-oblongis apice rotundatis dorso parce lepidotis circiter 8 mm. longis et 5 mm. latis marginibus undulatis glabris. *Corolla* pallide flava; tubus late campanulatus 1 cm. longus, glaber; lobi 5, latissime ovati, basi auriculati, 6 mm. longi, 6–8 cm. lati. *Stamina* 10, corolla paulo breviora; filamenta inferne dense villosa; antherae flavo-brunneae, 2 mm. longae. *Ovarium* 5-loculare, dense viridi-lepidotum; stylus staminibus subaequilongus, crassus, glaber, in stigma capitato-disciforme sensim ampliatus. *Fructus* haud visus.—J. Hutchinson.

The neat *Rhododendron* here figured is a native of Yunnan, where it was discovered by Mr. G. Forrest in open rocky situations in dry pine forests on the eastern flank of the Tali Range, at 11,000 feet, and on the Mekong-Salwin Divide to the north-west of Tse-kou at 13,000 feet. In the latter locality it has also been collected by the Rev. Père Monbeig, while in the former it was obtained on Tsang-chau by the Abbé Delavay, whose specimens, which match exactly that now figured, were made the basis of *R. brachyanthum*, Franch. Our plant, it may be mentioned, is by some authorities regarded as a form of the plant subsequently described

by Franchet as *R. sulphureum*. Should this prove to be the case the latter name must disappear from our lists. The material for our plate has been derived from a plant raised from seed supplied by Mr. Forrest to Mr. J. C. Williams, Caerhays, who informs us that in spite of the affection of the plant for open situations in its native home, and though it is not a shade-loving species, it does not survive in this country if given a hot place in the sun. With partial shade it proves quite hardy. When in fruit, as Mr. Williams points out, it is exceedingly like *R. glaucum*, Hook. f., a native of Sikkim with rose-lilac flowers and acute calyx-lobes. It is also very nearly allied to *R. campylogynum*, Franch., a Yunnan species with pale rose-purple flowers.

Description.—*Shrub*, sparingly branched; branches stout, strict, stiff; twigs of the previous season laxly leafy upwards, finely lepidote, clothed with brown polished bark; young twigs densely covered with yellow scales. *Leaves* elliptic or oblong-elliptic, obtuse and distinctly mucronate, base obtuse, $\frac{3}{4}$–$1\frac{1}{2}$ in. long, $\frac{2}{5}$–$\frac{3}{4}$ in. wide, firmly coriaceous, green and sparsely lepidote above, very glaucous and sparingly glandular-lepidote beneath; midrib faintly sunk above, distinctly raised beneath and there glandular but not glaucous; lateral nerves rather inconspicuous, sunk above; petiole $\frac{1}{6}$–$\frac{1}{5}$ in. long, stout, glandular. *Flowers* umbellate, terminal, 3–4 together; scales caducous, coriaceous, densely ciliate, glandular on the back, the outermost leafy and glaucous below; pedicels erect or slightly drooping, about $\frac{3}{4}$ in. long, glandular-lepidote. *Calyx* large, rather leafy, deeply 5-lobed, lepidote towards the base outside, about $\frac{1}{3}$ in. long, $\frac{1}{5}$ in. wide, margins undulate, glabrous. *Corolla* pale yellow; tube wide campanulate, $\frac{2}{5}$ in. long, glabrous; lobes 5, very wide ovate, auriculate at the base, $\frac{1}{4}$ in. long, $\frac{1}{4}$–$\frac{1}{3}$ in. wide. *Stamens* 10, rather shorter than the corolla; filaments densely villous below; anthers yellowish-brow , $\frac{1}{1\frac{1}{2}}$ in. long. *Ovary* 5-locular, densely green-lepidote; style about as long as the stamens, stout, glabrous, widened above into the flat-cap stigma. *Fruit* not seen.

Tab. 8750.—Fig. 1, part of a leaf; 2, calyx and pistil; 3, scales from pedicel; 4 and 5, stamens; 6, ovary; 7, transverse section of ovary:—*all enlarged.*

M S del J.N.Fitch Lith.

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Tab. 8751.

ASPARAGUS falcatus.

Ceylon; Tropical and Extratropical South Africa.

Liliaceae. Tribe Asparageae.

Asparagus, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 765.

Asparagus falcatus, *Linn. Spec. Plant.* ed. i. p. 449; *Bresler, Gen. Aspar. Hist.* no. 2; *Kunth, Enum. Plant.* vol. v. p. 71; *Baker in Journ. Linn. Soc. Bot.* vol. xiv. p. 626, *in Dyer, Fl. Cap.* vol. vi. p. 271 (partim), *et in Dyer, Fl. Trop. Afr.* vol. vii. p. 435 (partim); *Hook. in Trim. Handb. Fl. Ceyl.* iv. p. 285; species ex affinitate *A. Sprengeri*, Regel, a qua cladodiis falcatis latioribus differt.

Frutex late vagans. *Caules* robusti, teretes, lignosi; rami tenues, flexuosi, teretes, lignosi, straminei. *Folia* caulium in spinas validas pungentes patentes mutata. *Cladodia* lateralia 1–3-nata, ad ramorum apices 6–8-nata, lanceolata, falcata, 4–5 cm. longa, 3–5 mm. lata, laete virentia, firma. *Racemi* axillares, 1–3-nati, 5 cm. longi; pedicelli 1–3-nati, medio articulati, 2–3 mm. longi; bracteolae ovatae, quam pedicelli dimidio breviores. *Flores* albi, suaves. *Perianthium* campanulatum; segmenta patentia, oblonga, obtusa, integra, 2 mm. longa. *Stamina* perianthio paullo breviora; antherae minutae. *Ovarium* ovoideum, basi constrictum; stylus brevis, rotunde 3-lobus. *Bacca* globosa, 6 mm. diametro, saepius 1-sperma.—*A. foliis falcatis, etc.*, J. Burm. Thes. Zeyl. p. 36, t. 13, fig. 2. *A. aethiopicus*, var. *ternifolius*, Baker in Gard. Chron. 1872, p. 1588, fig. 338; nec in Saund. Ref. Bot. t. 261.—C. H. Wright.

The *Asparagus* here figured is an old garden plant which has long been in cultivation as a greenhouse climber. It is a native of Ceylon, where it is known as the Hatawariya. This, however, is an outlying locality for the species, though it happened to be the region from which the species was originally known, for it occurs also in Tropical Africa and in the Eastern region of South Africa outside the Tropics. As its nearest ally, *A. Sprengeri*, Regel, is a native of the last mentioned region the possibility of our plant being an early introduction to Ceylon should not be overlooked. There is a fine example of *A. falcatus* in the Temperate House at Kew which forms a screen thirty feet high, clothing a staircase at the northern end of the building. In those seasons in

which this plant flowers freely, which it usually does in June when it blossoms at all, the whole building becomes pervaded by its honey-like odour. Another example, from which the material for our figure has been derived, forms a striking mass which drapes one of the pillars in the Succulent House. Like the companion plant this only flowers freely in certain seasons; it did so profusely in June, 1913. The species thrives best if planted in poor gravelly soil; it may be propagated either from seeds when these are produced, or by means of cuttings taken from the smaller branches. The figure supplied by Burmann, which Linnaeus has cited, appears to be a bad drawing; it shows the flowers as fascicled, which is not the case with our species. There has been some confusion between *A. falcatus* now figured and its Natal ally, *A. Sprengeri*, the fruit of which has been figured at t. 8052 of this work, while its flowers have been figured, under the name *A. ternifolius*, Hook. f., at t. 7728; *A. Sprengeri* has also been figured in Saunders' "Refugium" as *A. aethiopicus*, var. *ternifolius*. Both plants belong to a group of species in the genus *Asparagus* characterised by having flattened cladodia and racemose inflorescences. But they are readily distinguished because in *A. Sprengeri* the cladodia are straight instead of falcate and are but half as broad as those of *A. falcatus*, while the prickles on the main-stem of *A. Sprengeri* are smaller than those of *A. falcatus* and are hooked. The two species agree in having terete branchlets, and in this character both differ from *A. aethiopicus*, Linn., with which they have been confused, but which has the branchlets strongly angled.

Description.—*Shrub*, widely scandent. *Stems* stout, terete, woody; branchlets slender, flexuous, terete, woody, straw-coloured. *Leaves* of the stem reduced to rigid, sharp, spreading spines. *Cladodes* along the stem 1–3 together, at the ends of the twigs in clusters of 6–8, lanceolate, falcate, $1\frac{3}{4}$–2 in. long, $\frac{1}{8}$–$\frac{1}{5}$ in. wide, bright green, firm. *Racemes* axillary, 1–3 together, 2 in. long; pedicels 1–3 together, jointed near the middle, $\frac{1}{12}$–$\frac{1}{8}$ in. long; bracteoles ovate, half the length of the pedicels. *Flowers* white, sweet scented. *Perianth* campanulate; lobes spreading, oblong, obtuse, entire, $\frac{1}{12}$ in. long. *Stamens* rather shorter than the perianth-lobes; anthers minute. *Ovary* ovoid, narrowed at the base; style short, roundly 3-lobed. *Berry* globose, $\frac{1}{4}$ in. across, usually 1-seeded.

Tab. 8751.—Fig. 1, a flower; 2 and 3, stamens:—*all enlarged*.

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Tab. 8752.

PRIMULA anisodora.

Yunnan.

Primulaceae. Tribe Primuleae.

Primula, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 631.

Primula (§ Candelabra) **anisodora**, *Balf. f. et Forr. in Notes Roy. Bot. Gard. Edinb.* vol. ix. p. 147 (1916); species *P. glycosmate*, Petitm., affinis foliis brevioribus, bracteis longioribus, corolla atro-purpurea, lobis brevibus subquadrangularibus differt.

Herba efarinosa, usque ad 1 m. alta. *Folia* oblongo-oblanceolata, apice rotundata, apiculata, basi in petiolum late alatum sensim attenuata, 15–20 cm. longa, 5–7 cm. lata, chartacea, crebre et acute repando-denticulata, laete viridia, supra glabra, infra plus minusve glanduloso-foveolata; nervi laterales utrinsecus circiter 10, a costa sub angulo 45° abeuntes, utrinque distincti; costa pallidiora, in petiolo rubro-venoso complanata. *Flores* in umbellam terminalem interruptam dispositi; pedunculus robustus; bracteae lineares, acutae, usque ad 1 cm. longae, glabrae; pedicelli 1–1·3 cm. longi, nutantes. *Calyx* campanulatus; tubus 4 mm. longus, ruber et viridis; lobi late ovati, apiculati, 1·75 mm. longi, circiter 1·5 mm. lati. *Corolla* extra atro-purpurea, intra lobos rubro-purpurea, ore flavo; tubus basi cylindricus, superne subcampanulato-expansus, circiter 1 cm. longus; lobi plerumque 5, subquadrangulares. *Antherae* medio tubo insertae, oblongae. *Stylus* ovario aequilongus, stigmate globoso coronato. *Capsula* subglobosa, calycem vix auctum paullo superans, stylopodio nigro-rubro crenulato coronata, valvis 5 dehiscens.—J. Hutchinson.

This striking *Primula* was discovered by Mr. G. Forrest in open moist pastures on the mountains of the Chungtien Plateau in Yunnan, at an altitude of about 11,000 feet above the sea, in July, 1913. He met with the species again in the same general locality in July, 1914. The flowers are of a deep purple, almost black colour, and all parts of the plant when fresh are strongly aromatic, the odour resembling that of aniseed. Owing to this circumstance Professor Bayley Balfour and Mr. Forrest in describing the species have given it the name *P. anisodora*. Seeds of the 1913 introduction, presented by Mr. J. C. Williams of Caerhays Castle, Cornwall, in 1915, yielded plants which flowered in the Rock Garden at Kew at the end of June, 1916. It has proved quite

hardy in a sheltered nook, surviving the winter and flowering again in the summer of 1917. The material for our figure has been derived from a plant raised by Mr. Williams from seeds of the second collection by Mr. Forrest made in 1914. This plant flowered in the garden of Mr. Williams in June, 1917. *P. anisodora* is a member of the section *Candelabra*, and it has, according to its authors, a very near ally in *P. glycosma*, Petitm., also a Yunnan species. The dark flowers, perhaps the darkest in any *Primula*, with their yellow "eye," recall those of the Auricula, once so familiar a feature of English gardens in spring. Like many other species of *Primula*, *P. anisodora* dies after flowering freely, but produces an abundant supply of good seeds.

DESCRIPTION.—*Herb*, producing a scape up to 3 ft. in height, all parts devoid of mealiness. *Leaves* oblong-oblanceolate, rounded and apiculate at the tip, gradually narrowed below into a broadly winged petiole, 6–8 in. long, 2–3 in. wide, chartaceous, the margin closely and sharply repand-denticulate, bright green and glabrous above, beneath more or less gland-dotted; lateral nerves about 10 along each side, diverging from the midrib at an angle of 45°, visible on both surfaces; midrib rather pale in colour, within the petiole flattened and streaked with red. *Flowers* forming a terminal, interrupted umbel; peduncle stout; bracts linear, acute, glabrous, up to $\frac{2}{5}$ in. long; pedicels about $\frac{1}{2}$ in. long, nodding. *Calyx* campanulate; tube $\frac{1}{6}$ in. long, red and green; lobes wide-ovate, apiculate, $\frac{1}{14}$ in. long, $\frac{1}{16}$ in. wide. *Corolla* dark plum-purple outside, lobes red-purple within, with a yellow eye; tube cylindric below, widened and slightly campanulate upwards, about $\frac{2}{5}$ in. long; lobes usually 5, somewhat quadrangular. *Anthers* oblong, adnate to the middle of the tube. *Style* as long as the ovary, tipped by the globose stigma. *Capsule* almost globose, slightly exceeding the hardly altered calyx, opening by means of 5 valves and crowned by the dark-red crenulate style-base.

TAB. 8752.—Fig. 1, calyx; 2, corolla, laid open, showing the staminal insertion; 3, pistil:—*all enlarged*.

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Tab. 8753.

ODONTOCHILUS lanceolatus.

Sikkim and Khasia.

Orchidaceae. Tribe Neottieae.

Odontochilus, *Bl.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 600.

Odontochilus lanceolatus, *Benth. ex Hook. f. Fl. Brit. Ind.* vol. vi. p. 101, *et in Ann. R. Bot. Gard. Calc.* vol. v. p. 59, t. 89; *Rolfe in Orch. Rev.* 1915, p. 318; inter species hujus generis labello luteo facile distinguendus.

Herba terrestris, 20–30 cm. alta. *Caules* basi repentes, apice erecti, graciliores. *Folia* petiolata, ovata vel ovato-lanceolata, apice subacuta et recurva, plicata, membranacea, viridia, albo-vittata, 2·5–7 cm. longa, 1–3 cm. lata; petioli 1–2 cm. longi, basi dilatati, amplexicauli. *Scapus* erectus, 5–12 cm. longus; racemus densior, multiflorus; rhachis pubescens; bracteae ovatae vel ovato-lanceolatae, acuminatae, 0·8–1·5 cm. longae; pedicelli circiter 1 cm. longi. *Flores* mediocres, labello luteo excepto virides. *Sepalum* posticum ovatum, obtusum, basi gibboso-concavum, 4 mm. longum; sepala lateralia late elliptica, subobtusa, concava, basi saccata, 0·8–1 cm. longa. *Petala* cum sepalo postico in galeam conçavam cohaerentia, late et oblique ovata, subobtusa, 4 mm. longa, 3·5 mm. lata. *Labellum* late unguiculatum, circiter 1·3 cm. longum; basi bigibbum; saccus processu oblongo intra instructus; unguis fimbriato-appendiculatus; limbus apice patenter bilobus, lobis oblongis oblique truncatis 0·8 cm. longis. *Columna* lata, circiter 2·5 cm. longa; latera biauriculata; pollinia 2, anguste obovoidea, basi in caudiculam elongatam extensa; glandula oblonga; stigmata 2, lateralia.—*Anoectochilus lanceolatus*, Lindl. Gen. & Sp. Orch. p. 499; King & Pantl. in Ann. R. Bot. Gard. Calc. vol. iii. p. 295, t. 392. *A. luteus*, Lindl. in Journ. Linn. Soc. vol. i. p. 179. *A. flavus*, Benth. in Journ. Linn. Soc. vol. xviii. p. 345 (sphalm.).—R. A. Rolfe.

The interesting terrestrial Orchid here figured is a native of the Eastern Himalaya and the Khasia Hills, where it is met with in forest at elevations of 5,000 to 7,000 feet above sea-level. It was originally described by Lindley, eighty years ago, from herbarium material, as *Anoectochilus lanceolatus*, but having been found by Mr. Bentham to belong rather to Blume's allied genus *Odontochilus*, which differs from *Anoectochilus* in having a bilobed globose sac in place of an oblong spur, in the details of the column and in having leaves that are not reticulately veined, it was transferred to *Odontochilus* by

Sir Joseph Hooker. In their account of the Orchids of the Sikkim Himalaya, Sir George King and Mr. Pantling have advanced reasons of some weight in favour of the reunion of these two genera and the inclusion with them of Lindley's genus *Haemaria*, but this course, if adopted, involves so much rearrangement that it appears preferable in this work to follow the generic limitation accepted by Bentham in the "Genera Plantarum." Though so long known from dried specimens, this species is of very recent introduction to European horticulture. It flowered in September, 1915, among the terrestrial orchids in the collection of Mr. H. J. Elwes, at Colesborne, Cheltenham, and our figure has been prepared from a plant in flower sent by him to Kew for identification and for inclusion in the orchid collection at Kew. It flowered, Mr. Elwes informs us, in a damp and shady intermediate house in which it had thriven well. The flowers are light green with a brown patch at the tip of the dorsal sepal; the lip, however, is bright yellow and the anther is pink. The leaves are green with three bright stripes. The plant figured was received from Sikkim, where it had been collected by Mr. G. H. Cave, Lloyd Botanic Garden, Darjeeling.

Description.—*Herb*, terrestrial, 8–12 in. high. *Stem* creeping at the base, erect above, rather slender, purple. *Leaves* petioled, ovate or ovate-lanceolate, tip subacute and recurved, plicate, membranous, green with 3 white longitudinal stripes, 1–3 in. long, $\frac{1}{3}$–$1\frac{1}{4}$ in. across; petiole $\frac{1}{3}$–$\frac{3}{4}$ in. long, the base dilated, stem-clasping. *Scape* erect, 2–5 in. long; raceme rather dense, many-flowered; rachis pubescent; bracts ovate or ovate-lanceolate, acuminate, $\frac{1}{3}$–$\frac{2}{3}$ in. long; pedicels about $\frac{1}{3}$ in. long, *Flowers* medium-sized, green, with a yellow lip. *Sepals*: posterior ovate, obtuse, gibbously concave at the base, $\frac{1}{6}$ in. long; lateral wide elliptic, somewhat obtuse, concave, saccate at the base, $\frac{1}{3}$–$\frac{2}{5}$ in. long. *Petals* cohering with the posterior sepal in a concave hood; widely and obliquely ovate, rather obtuse, $\frac{1}{6}$ in. long, $\frac{1}{7}$ in. wide. *Lip* broadly clawed, about $\frac{1}{2}$ in. long, 2-gibbous at the base; the sac with an oblong process inside; claw fimbriately appendaged; limb with 2 spreading, oblong, obliquely truncate terminal lobes $\frac{1}{3}$ in. long. *Column* broad, about 1 in. long, its sides 2-auricled; pollinia 2, narrow obovoid, produced at the base into a somewhat elongated caudicle; gland oblong; stigmas 2, lateral.

Tab. 8753.—Fig. 1, flower seen from in front; 2, the same, seen from one side; 3, a petal; 4, column with base of the lip, showing the short sac; 5, column, showing the pollinia, the two lateral stigmas, and the appendages: —*all enlarged*.

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

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Tab. 8754.

ZANTHOXYLUM planispinum.

Japan.

Rutaceae. Tribe Zanthoxyleae.

Zanthoxylum, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 297.

Zanthoxylum planispinum, *Sieb. et Zucc. in Abh. Acad. Münch.* vol. iv. pars ii. p. 138; *Maxim. in Bull. Acad. Sci. St. Pétersb.* vol. xxxi. p. 21, *et in Act. Hort. Petrop.* vol. xi. p. 95; *C. K. Schneider in Handb. d. Laubholzk.* vol. ii. p. 120; *Bean in Trees & Shrubs*, vol. ii. p. 692; species *Z. alato*, Roxb., quam maxime affinis sed foliolis simplicibus vel imparipinnatim 1–2-jugis nec 3–6-jugis, spinisque stricte nodalibus facillime distinguenda.

Frutex dumosus, 2–4-metralis; ramuli purpureo-brunnescentes, glabri vel subglabri, spinis 2 nodalibus validis complanatis anguste triangularibus, 0·6–1·8 cm. longis, basi 0·4–1·2 cm. latis, acumine pungente abeuntibus armati, lenticellis albidis crebre notati. *Folia* subpersistentia vel decidua, alterna, trita aromatica, 1–5-foliolata, 7·5–25 cm. longa; rhachis alata, 0·6–0·9 cm. lata, saepe pauci-spinosa; foliola subsessilia anguste elliptica vel lanceolata, 2·5–12·5 cm. longa, 1·2–3·7 cm. lata, apice acuta, basi cuneata, margine minute crenata, lobulis singulis glandula rotundata notatis, supra saturate viridia, subtus pallidiora, costa prope basin pilis brunneis floccosa. *Panicula* axillaris, 1·2–2·5 cm. longa, puberula. *Flores* polygami, viridescentes, parvuli. *Sepala* subulata. *Petala* sepalis similia. *Ovarium* e carpellis 2 saepissime compositum, glabrum, oblique ampullaceum; stylus decurvus. *Fructus* ruber, 2-valvis, globosus, verrucosus, 3 mm. latus, 1-spermus. *Semen* subglobosum, nitidum, nigrum.—*Z. alatum*, var. *planispinum*, Rehd. et Wils. in Plant. Wilson. vol. ii. p. 125. —W. J. Bean.

The *Zanthoxylum* here figured is a native of Japan, which is known in collections of hardy shrubs as *Z. planispinum*. It is, however, doubtful how far it is entitled to rank as a species apart. It is one of the series of forms to be met with in Japan and Corea which extend thence throughout China to Northern India, and which are so intimately related that some authors regard them as belonging to the Indian *Z. alatum*, Roxb. But while from the botanical standpoint it may be possible or even necessary to adopt this view, it is one that from the cultural point of view is distinctly inconvenient. In the Japanese form shown in our plate there never

are more than five leaflets to a leaf; in the true *Z. alatum* from India there are frequently thirteen leaflets. In our Japanese plant the spines are restricted to the nodes; in the North Indian type the spines often are internodal. The Japanese *Z. planispinum* is a fairly hardy garden shrub; at Kew it is impossible to keep *Z. alatum* alive out of doors for any length of time. The material for our figure came from the garden of Bitton Vicarage, and a melancholy interest attaches to our subject in its being the last contribution to the Botanical Magazine by one who was for many years its unfailing and enthusiastic supporter. Canon Ellacombe sent the fruits in December, 1914, and the flowers in June, 1915, only a few months before his death. At Bitton *Z. planispinum* forms a bush six feet high and rather more through. It succeeds there very well in the good loamy soil, and its fine crop of red fruits make a very ornamental object in the winter season. Canon Ellacombe was always greatly interested in the way its leaves roll their margins under during the winter, as is also the habit of some Himalayan Rhododendrons at the same season. This, by minimising the leaf surface exposed to radiation, may be a protection against great cold.

DESCRIPTION.—*Shrub* of bushy, spreading habit, 6–12 ft. high; branchlets purplish-brown, glabrous or nearly so, armed with a pair of spines at each node; spines thin, flat, triangular, $\frac{1}{4}$–$\frac{3}{4}$ in. long by $\frac{1}{6}$–$\frac{1}{2}$ in. wide at the base, ending in a hard slender point; lenticels small, whitish. *Leaves* semi-persistent or deciduous, alternate, aromatic when crushed, 3–10 in. long, unifoliolate, trifoliolate, or pinnate with five leaflets; rachis winged, $\frac{1}{4}$–$\frac{3}{8}$ in. wide, often armed with one or more slender spines; leaflets subsessile, narrowly elliptic to lanceolate, 1–5 in. long, $\frac{1}{2}$–$1\frac{1}{2}$ in. wide, the apex acuminate, the base cuneate, the margins shallowly crenate with a circular gland on each tooth; dark green and glabrous above, pale beneath, with a tuft of brown pubescence on the midrib near the base. *Panicles* axillary, $\frac{1}{2}$–1 in. long, minutely pubescent. *Flowers* polygamous, greenish, very small and inconspicuous. *Sepals* and *petals* subulate. *Ovary* glabrous, flask-shaped, oblique; style decurved; carpels usually two. *Fruit* 2-valved, globose, verrucose, $\frac{1}{8}$ in. wide, red, containing one shining black seed.

TAB. 8754.—Fig. 1, tip of leaf; 2, female flower; 3, the same, sepals and petals removed; 4, fruit; 5, seed:—*all enlarged.*

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Tab. 8755.

ERLANGEA aggregata.

Angola.

Compositae. Tribe Vernonieae.

Erlangea, *Sch.-Bip.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 225; *S. Moore in Journ. Linn. Soc. Bot.* vol. xxxv. pp. 307–313 (1902), *et in Journ. Bot.* vol. xlvi. pp. 155–159 (1908).

Erlangea aggregata, *Hutchinson*; species nova, affinis *E. spissae*, S. Moore, sed foliis latioribus infra puberulis (nec tomentosis) supra minute puberulis dentibus patentibus, involucri bracteis abrupte acutis, pappo majore differt.

Herba perennis; caulis erectus, laxe foliatus, molliter lanato-tomentosus, internodiis inferioribus 2 cm. superioribus 5–7 cm. longis. *Folia* petiolata, ovato-lanceolata, subacuta, basi cuneata, 9–14 cm. longa, 4·5–6·5 cm. lata, tenuissime chartacea, serrata, supra minute infra distincte puberula; nervi laterales sub angulo lato a costa abeuntes, utrinsecus circiter 15, graciles, infra tomentelli; petioli 1·5–2·5 cm. longi, tomentelli et pilosi. *Inflorescentia* trichotome ramosa, capitulis dense aggregatis; pedunculi primarii usque ad 3 cm. longi, molliter tomentosi. *Capitula* sessilia, circiter 8-flora. *Involucri* bracteae virides, marginibus hyalinis, plus minusve ovatae, acutae, usque ad 4 mm. longae. *Flores* roseo-coerulei; corolla circiter 5 mm. longa, lobis linearibus acutis; antherae exsertae. *Achaenia* compressa, glabra; pappi setae paucae, caducae, vix 2 mm. longae, barbellatae.—J. Hutchinson.

The genus *Erlangea* is closely allied to the important Composite genus *Vernonia*, Schreb., from which, however, it is readily distinguished by its reduced achenes crowned with a pappus composed of very short and caducous setae, incapable of playing any part in the distribution of the ripe fruit. The genus, as circumscribed in accordance with this striking feature, includes some four and thirty species, all but one of which are natives of Tropical Africa. The remaining species is a native of New Guinea, a circumstance which must, nevertheless, be regarded as of no significance from the phytogeographical standpoint, since the feature that admits the Eastern plant in question within this characteristically African genus is, in spite of its practical utility, a somewhat artificial one. From the systematic standpoint the existence of this New Guinea plant is, however,

of importance, as indicating the danger that may attend reliance upon characters related with function in the discrimination of forms or groups of plants. The species now described, *E. aggregata*, is a native of Angola, where it was discovered by Mr. J. Gossweiler, by whom seeds of the plant were presented to Kew in 1915. It shares with *E. spissa*, S. Moore, a species from British East Africa, the character of densely aggregated flower-heads, which separates the two from all the other known members of the genus. The West African plant is readily distinguished from the East African one by the characters pointed out by Mr. Hutchinson. The material for our plate has been derived from one of the plants raised from Mr. Gossweiler's seed. The species in cultivation reaches a height of from five to six feet, branches freely and forms a striking object when furnished with its numerous terminal showy flower-heads. As it blossoms in this country in midwinter, and is a perennial, it is likely to become a popular greenhouse plant. Cuttings are readily struck, and from these full-sized plants may be grown in a single season.

DESCRIPTION.—*Herb*, perennial; stem laxly leafy, softly woolly tomentose; lower internodes $\frac{3}{4}$ in. long, upper 2–3 in. long. *Leaves* petioled, ovate-lanceolate, rather acute, base cuneate, blade $3\frac{1}{2}$–5 in. long, $1\frac{3}{4}$–$2\frac{1}{2}$ in. wide, thinly papery, serrate, finely puberulous above, more distinctly so beneath; lateral nerves about 15 on each side, leaving the midrib at a wide angle, slender, finely hairy beneath; petiole $\frac{2}{3}$–1 in. long, finely puberulous and with a few longer hairs. *Inflorescence* trichotomously branched; the heads densely clustered; main peduncles up to $1\frac{1}{4}$ in. long, finely softly puberulous. *Heads* sessile, about 8-flowered; involucral bracts green with hyaline margins, somewhat ovate, acute, up to $\frac{1}{6}$ in. long. *Flowers* blue, flushed with rose; corolla about $\frac{1}{5}$ in. long, its lobes linear, acute; anthers exserted. *Achenes* compressed, glabrous; pappus-setae few, caducous, barely $\frac{1}{2}$ in. long, barbellate.

TAB. 8755.—Fig. 1, portion of an inflorescence; 2, flower-bud; 3, a pappus-seta; 4, stamens; 5, style-arms:—*all enlarged*.

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Tab. 8756.

MONADENIUM erubescens.

East Africa.

Euphorbiaceae. Tribe Euphorbieae.

Monadenium, *Pax in Engl. Jahrb.* vol. xix. p. 126 *et in Engl. & Prantl, Nat. Pflanzenfam.* vol. iii. pars 5, p. 457; *N. E. Brown in Dyer, Fl. Trop. Afr.* vol. vi. sect. 1, p. 450.

Monadenium (§ Lortia) **erubescens,** *N. E. Brown in Dyer, Fl. Trop. Afr.* vol. vi. sect. 1, p. 457, *pro parte*; species *M. majori*, N. E. Br., affinis sed tubere globoso, caule prostrato, cyathiis solitariis pedunculis simplicibus singulis in foliorium summorum axillis suffultis, involucro exteriore albido nec viridi-rubro et pubescentia omnium fere partium distinctum.

Herba perennis, tubere globoso 20–35 cm. diametro. *Caules* 1–2 e tubere orti, prostrati, succulenti, simplices vel inferne ramosi ad 5 mm. crassi, ad 15 cm. longi, minute puberuli. *Folia* petiolata, in planta culta variabilia, inter orbiculari-ellipticum et late ovato-lanceolatum fluctuantia, in planta spontanea plerumque late obovato-cuneata, apice breviter acuta vel cuspidato-acuminata, in planta culta 3–6 cm. longa, 2–3 cm. lata, in planta spontanea minora, 2–3·5 cm. longa, 1·8–2 cm. lata, margine crispo-undulata, carnosula, supra viridia, infra rubescentia et viridi-venosa, minute et laxe puberula; petiolus brevis vel ad 1 cm. elongatus, dense puberulus. *Inflorescentia* axillaris, ad cyathium solitarium involucrato-bracteatum in pedunculo sub anthesi 1 cm. vix excedente maturitate elongato nutans redacta; bracteae ad medium in cupulam late apertam campanuliformem 1·8 cm. diametro et paulo ultra 1 cm. altam connatae, minute apiculatae, carnosulae, albae pulchre viridi-venosae et fundum versus roseo-tinctae. *Cyathium* subsessile, globoso-tubulosum, puberulum, pallide viride, 6 mm. diametro, uno latere ad medium apertum, lobis albis fimbriatis 5 glandula annulari flavida crassa integra circumdatis et superatis. *Flores* ♂ nudi, bracteolis fimbriatis intermixti. *Flos* ♀ e cyathii fissura exsertus, nutans; perianthium ad cupulam perbrevem margine subundulatam vel lobulatam ovarii basin cingentem redactum; ovarium obtuse trigonum angulis haud alte bialatis, alis undulatis. *Capsula* matura ignota.—*Lortia erubescens*, Rendle in Journ. Bot. 1898, p. 30.—O. Stapf.

The genus *Monadenium* was established by Pax in 1914 on a species from East Africa with the floral structure characteristic of the genus *Euphorbia*, Linn., but easily distinguished from *Euphorbia* owing to the great development of the glandular apparatus of the cyathium. In this respect *Monadenium*, Pax, agrees with *Synadenium*, established by Boissier in 1862 on a Natal species, though in that genus the glandular ring is closed and not open

on one side as in *Monadenium*. Two more species were added to *Monadenium* by Dr. Stapf in 1900, and since then the number of known *Monadenia* has increased to a score. Most of them appear to be extremely local; the area occupied by the genus extends from Abyssinia and Somaliland to Nyasaland, Ngamiland and Angola. Within the genus *Monadenium*, however, the species arrange themselves in two natural groups. In the first group, to which the original *M. coccineum*, Pax, belongs, the bract-involucres are distinctly dorsi-ventral, the two bracts being asymmetric, and so joined on one side as to form a single 2-keeled and usually 2-dentate or 2-cuspidate involucre. In the second group, to which the subject of our figure belongs, the bract-involucres are fairly regularly cupular or bell-shaped, the two bracts being nearly symmetric and usually equally united at the base or up to the middle. With these characters are associated in our plant that of having simple axillary inflorescences in place of branched inflorescences as in *M. coccineum*, and that of the presence of a perianth in the female flower whereas in *M. coccineum* no perianth was noticed by Pax. On this account the plant now described was made the basis of a distinct genus *Lortia* by Rendle in 1898, and the validity of this genus has since been accepted by Pax. An examination of the original type of *Monadenium* shows, however, that there the female flower has a perianth very like that of *Lortia*, and since the degree of branching in the types of the two genera merely represents extreme manifestations in opposite directions of one character, it has been found by Brown to be desirable to include *Lortia* in the older genus *Monadenium*. The difference in the involucre of the two types is, however, so marked that it is at least necessary to recognise in *Lortia* a distinct section, and it may with fuller knowledge be advisable to restore it to the rank of a genus. The type of this section, *M.* (Lortia) *erubescens*, was discovered by Mrs. Lort Phillips on the Wagga Mountains in Somaliland in 1897, and was met with again on the Colis Range in Somaliland, at nearly 6,000 feet elevation, by Dr. Drake-Brockman in 1914. Other specimens obtained by the same collector from the Arussi and

Boran countries in Abyssinia, attributed by Brown to *M. erubescens*, we believe to represent a distinct species. The material for our illustration has been provided from a living plant from Somaliland, presented to Kew by Dr. Drake-Brockman which has grown well and proved quite healthy in a warm succulent house under the treatment suitable for species of *Stapelia*. During the first two winters the stems formed in the preceding summers died down. It flowered in July, 1916, when the drawing was made, but has not done so again, though since then the stems formed have persisted, and the plant now possesses several of these, the longest of which is three feet long with a few leaves near the top. Young plants have been raised from cuttings, which root readily in spring.

DESCRIPTION.—*Herb*, with a perennial globose tuber 8–14 in. in diameter. *Stems*, 1–2 from each tuber, prostrate, succulent, simple or branching at the base, in the wild plant up to 6 in. long, in cultivated specimens sometimes up to 3 ft. long, about $\frac{1}{5}$ in. thick, finely puberulous. *Leaves* petioled, in cultivated plants varying in shape from orbicular-elliptic to wide ovate-lanceolate, in wild plants usually wide ovate-cuneate, apex shortly acute or cuspidate acuminate, $1\frac{1}{4}$–$2\frac{1}{2}$ in. long and $\frac{3}{4}$–$1\frac{1}{4}$ in. wide in cultivated specimens, only $\frac{3}{4}$–$1\frac{1}{2}$ in. long and $\frac{2}{3}$–$\frac{3}{4}$ in. wide in wild ones, margin crispately wavy, rather fleshy, green above, reddish with green veins beneath, finely and loosely puberulous; petiole from very short to $\frac{1}{3}$ in. long, densely puberulous. *Inflorescence* axillary, reduced to a solitary drooping cyathium surrounded by involucral bracts on a peduncle about $\frac{1}{3}$ in. long at time of flowering, but elongated in fruit; bracts united to the middle in a wide bell-shaped cup $\frac{3}{4}$ in. across, nearly $\frac{1}{2}$ in. deep, minutely apiculate, rather fleshy, white, finely veined with green and tinged towards the base with a rosy flush. *Cyathium* nearly sessile, globose-tubular, puberulous, pale green, $\frac{1}{4}$ in. across, cleft on one side to the middle, lobes 5, white, fimbriate, surrounded and overtopped by an entire thick yellow annular gland. *Male flowers* naked, mixed with fimbriate bracteoles. *Female flower* drooping, exserted from the cleft of the cyathium; perianth reduced to a very short somewhat undulate or lobulate cup surrounding the base of the ovary which is bluntly 3-gonous, the angles with narrow undulate wings. *Ripe fruit* unknown.

TAB. 8756.—Fig. 1, inflorescence; 2, involucre; 3, fimbriate lobe of cyathium; 4, male flower; 5, female flower; 6, sketch of an entire plant:—*all enlarged except* 6, *which is much reduced.*

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

Vincent Brooks, Day & Son Lt^d imp.

L. Reeve & C^o London.

Tab. 8757.

MALUS Sargentii.

Japan.

Rosaceae. Tribe Pomeae.

Malus, *Mill.; Benth. et Hook. f. Gen. Plant.* vol. i. p. 626 (*Pyrus*).

Malus Sargentii, *Rehd. in Sargent, Trees & Shrubs,* vol. i. p. 71, t. 36; *C. K. Schneider in Handb. d. Laubholz.* vol. i. p. 722, ff. 399, 400; species *M. Toringo*, Sieb., et *M. Zumi*, Rehd., valde affinis; ab illa floribus majoribus petalis imbricantibus fructu majore, ab hac calycis tubo glabro petalis orbicularibus et foliis interdum lobulatis apte distinguenda.

Frutex 2-metralis; ramuli pubescentes, intense purpureo-brunnei, nonnunquam spinescentes. *Folia* decidua, ovata vel ovato-oblonga, saepissime 3-lobulata, argute inaequaliter serrata, apice acuta, basi nunc in novellis sterilibus subcordata, nunc in ramulis floriferis truncata vel cuneata, 3·7–7·5 cm. longa, 2–5 cm. lata, primum pilis albidis dense vestita, demum supra saturate viridia nervis primariis pubescentibus exceptis glabra, subtus pallidiora et parce villosa; petioli 1·2–2·5 cm. longi, graciles, pubescentes; stipulae foliaceae, lanceolatae vel lineares, saepe lobulatae, 6–8 mm. longae. *Flores* albi, secus ramulos abbreviatos fasciculati, singuli 2·5 cm. diametro, aestate ineunte aperti; pedicelli graciles, glabri, 2·5 cm. longi. *Calyx* 5-lobus, extra glaber, intus villosa; lobi lanceolati, 5 mm. longi. *Petala* 5, distincte imbricata, ex ungue abbreviato orbicularia. *Stamina* 15–20, petalis breviora; filamenta glabra, antherae luteae. *Ovarium* 3–5-loculare; styli 3–5, basin versus villosi. *Fructus* depresso-globosus, laete ruber, 0·8–1·2 cm. latus, apice calycis delapsi cicatrice notatus. *Semina* brunnea, 4 mm. longa.—*Pyrus Sargentii*, Bean in Trees & Shrubs, vol. ii. p. 293.

—W. J. Bean.

Malus Sargentii was discovered by Prof. C. S. Sargent in Japan in 1892 near a brackish marsh at Mororan, Hokkaido. It is a close ally of *M. Toringo*, Sieb., differing from that species in its larger flowers, overlapping petals, and larger fruit; from another related species, *M. Zumi*, Rehd., it is distinguished by its glabrous calyx-tube, orbicular petals and often lobed leaves. The material for figuring was gathered from a plant purchased from Messrs. Veitch in 1909, but a plant had previously been presented to Kew from the Arnold Arboretum in 1904. As a garden shrub, or perhaps a small tree, *M. Sargentii* is very attractive both in flower and when

laden with its rich red fruits. In both respects we find it more ornamental than *M. Toringo*, and it is as hardy as any of its allies.

DESCRIPTION.—*Shrub* 5-6 ft. high; branchlets pubescent, dark purplish-brown, sometimes spinescent. *Leaves* deciduous, ovate to ovate-oblong, frequently 3-lobed, unevenly and sharply serrate, acute at the apex, the base varying from subcordate in the large leaves of the barren shoots to truncate or cuneate in the smaller ones; 1½–3 in. long, ¾–2 in. wide; at first densely clothed with whitish hairs, finally dark green and pubescent on the chief veins above, pale and slightly villous beneath; petioles ½–1 in. long, slender, pubescent; stipules foliaceous, lanceolate to linear, often lobed, ¼–⅓ in. long. *Flowers* white, 1 in. wide, opening in May, in fascicles on short branchlets; pedicels 1 in. long, slender, glabrous. *Calyx* 5-lobed, glabrous outside, villous within, the lobes lanceolate, 3/16 in. long. *Petals* orbicular with a short claw, overlapping. *Stamens* 15–20, shorter than the petals, filaments glabrous, anthers yellow. *Ovary* 3–5-celled; styles 3–5, villous towards the base. *Fruit* depressed globose, red, ⅓–½ in. wide, marked at the top with a circular scar where the calyx has fallen away. *Seeds* brown, ⅙ in. long.

TAB. 8757.—Fig. 1, part of a very young leaf; 2, flower with petals removed; 3, section of calyx and ovary; 4 and 5, anthers; 6, fruit:—*all enlarged.*

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

Vincent Brooks, Day & Son Lt.d imp.

L. Reeve & Co. London.

Tab. 8758.

ANGRAECUM gracilipes.

Madagascar.

Orchidaceae. Tribe Vandeae.

Angraecum, *Thouars*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 583.

Angraecum gracilipes, *Rolfe*; species nova ab *A. recurvo*, Thouars, foliis amplioribus et pedicellis longissimis differt.

Herba epiphytica, caulibus brevibus. *Folia* disticha, suberecta vel arcuata, lorata, breviter biloba, 8–18 cm. longa, 2–5 cm. lata, coriacea, basi conduplicata. *Pedicelli* axillares, graciles, suberecti vel arcuati, 15–18 cm. longi, vaginis paucis spathaceis obtecti, uniflori. *Flores* mediocres, albi. *Sepala* et *petala* patentia, lanceolata, obtusa, 2·5–3 cm. longa. *Labellum* subpandurato-ovatum, obtusum, 2·5–3 cm. longum, basi subconduplicatum; calcar gracile, 5–7 cm. longum, basi curvatum et incrassatum. *Columna* lata, 0·5 cm. longa, utrinque late auriculata, auriculis truncatis et integris. *Pollinia* 2, orbicularia et subcompressa; stipites brevissimi; glandula oblonga.—*Angraecum recurvum*, Hort. Gard. Chron. 1913, vol. liv. pp. 367, 374, fig. 132; Orch. Rev. 1913, fig. 65; non Thouars.—R. A. Rolfe.

The Madagascar *Angraecum* now described was introduced from that island some years ago by Messrs. Charlesworth and Company, Hayward's Heath. The individual flowers in this species bear so close a resemblance to those of *A. recurvum*, Thouars, also a native of Madagascar, that when in November, 1913, an example flowered in the establishment of Messrs. Charlesworth, it was exhibited in public and was accorded an award of merit under the name *A. recurvum*, which was also employed in connection with figures of the plant, reproduced from a photograph, published in the same year. An example purchased from Messrs. Charlesworth for the Kew collection of orchids flowered there in November, 1916, and enabled the figure here given to be prepared. The study of this plant has made it clear that it belongs to a species, which may be termed *A. gracilipes*, very distinct from the true *A. recurvum* in its greatly elongated pedicels and its much larger leaves.

April–June, 1918.

It is a member of a distinct group of species, one of which is *A. fragrans*, Thouars, figured at t. 7161 of this work, whose sweet-scented leaves, known as "Fahame," have been used after the manner of tea leaves in Bourbon and Mauritius. *A. gracilipes* thrives well in the same house and with the same treatment as that required for the well-known *A. eburneum*, Bory, figured at t. 4761 and *A. sesquipedale*, Thouars, figured at t. 5113 of this work. It is remarkable in the genus for the unusual length of its pedicels which appear in the lower leaf-axils of a short stout stem, and when, as sometimes happens, over a dozen flowers are simultaneously produced, the plant forms a very graceful object.

DESCRIPTION.— *Herb*, epiphytic; stems short. *Leaves* distichous, nearly erect or slightly recurved, lorate, shortly 2-lobed, $3\frac{1}{2}$–$7\frac{1}{2}$ in. long, $\frac{3}{4}$–2 in. wide, coriaceous, conduplicate at the base. *Pedicels* axillary, slender, suberect or slightly recurved, 6–$7\frac{1}{2}$ in. long, 1-flowered, bearing a few spathaceous sheathing bracts. *Flowers* showy, white. *Sepals* and *petals* spreading, lanceolate, obtuse, 1–$1\frac{1}{4}$ in. long. *Lip* subpandurate-ovate, obtuse, 1–$1\frac{1}{4}$ in. long, somewhat conduplicate at the base; spur slender, $2\frac{1}{3}$–$2\frac{3}{4}$ in. long, curved and thickened at the base. *Column* wide, $\frac{1}{5}$ in. long, widely auricled on each side, the auricles truncate and entire. *Pollinia* 2, orbicular and slightly compressed; stalks very short; gland oblong.

TAB. 8758.—Fig. 1 and 2, column, showing the auriculate wings; 3, sketch of the entire plant:—*all enlarged except* 3, *which is much reduced.*

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

Vincent Brooks Day & Son Lt.d imp.

L.Reeve & Co London.

Tab. 8759.

RHODODENDRON SIDEROPHYLLUM.

Yunnan.

Ericaceae. Tribe Rhodoreae.

Rhododendron, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 599.

Rhododendron siderophyllum, *Franch. in Journ. de Bot.* vol. xii. p. 262 (1898); *Hemsl. et E. H. Wils. in Kew Bull.* 1910, p. 115; *Millais, Rhod.* p. 242; species *R. Davidsoniano*, Rehd. et Wils., affinis sed foliis supra glandulis nigris conspicue ornatis infra densissime ferrugineo-glandulosis differt.

Frutex laxe ramosus; ramuli parce foliati, superne glandulis resinosis sessilibus instructi. *Folia* lanceolata vel oblongo-lanceolata, apice sensim acuta, basi angustata, 3–6 cm. longa, 1–2 cm. lata, tenuiter chartacea, minute crenulata, supra glandulis nigris laxe infra glandulis ferrugineis dense obtecta, glandulis infra fere contiguis; nervi laterales vix perspicui; petiolus circiter 8 mm. longus, glandulosus. *Gemmae floriferae* in axillis foliorum superiorum solitariae, circiter 3-florae; perulae dorso dense glanduliferae, ciliatae; pedicelli squamis cinereis sessilibus dense obtecti, 1·5–2 cm. longi, graciles. *Calyx* obsoletus, margine undulatus, extra densissime glandulosus. *Corolla* rosea. indistincte bilabiata, dorso in tubo rubro-maculata; tubus apertus, 1 cm. longus, extra eglandulosus; lobi 5, patuli, oblongo-ovati, extra parce glandulosi. *Stamina* 10, declinata, longe exserta; filamenta inferne parce pilosa; antherae pallide flavae, 2·5 mm. longae. *Ovarium* 5-loculare, glandulis sessilibus obtectum; stylus staminibus paullo longior, roseus, glaber, stigmate viscido coronatus. *Fructus* haud visus.—J. Hutchinson.

The *Rhododendron* here figured is a native of Yunnan, where it was originally met with by the Abbé Delavay and where it has since been collected by Messrs. Ducloux, Soulié, Wilson and Forrest. The last mentioned traveller records it as occurring on dry wooded hills to the north of the Tsu-hsiong-fu valley at elevations of from 6,000–7,000 feet. It was first described by the late Mr. Franchet as *R. siderophyllum*. Its nearest ally in the genus is *R. Davidsonianum*, Rehd. & Wils., figured at t. 8605 of this work, and it shares with that species and a few others belonging to the group with glandular leaves the peculiarity of producing its flowers from several axillary buds, instead, as is more usual, of doing so only from a terminal one. From *R. Davidsonianum* our

plant differs in its much more densely glandular leaves, the under surface of which has in consequence a decidedly rusty and rather dirty look, while the upper surface is usually conspicuously marked with black glands of considerable size. In cultivation at Kew *R. siderophyllum* grows very well, and although rather thinly furnished with leaves, it flowers very freely and is quite hardy. The plant from which the material for our illustration has been derived was raised from seeds collected by Mr. E. H. Wilson and received at Kew in the spring of 1909. Certain plants grown by Messrs. Veitch in their Coombe Wood nursery under the name *R. siderophyllum* belonged, so Messrs. Rehder and Wilson now find, to the species they have named *R. Davidsonianum*. There is, consequently, some confusion in gardens between these two species which it is hoped that a study of the present plate and of the plate referred to above may help to clear away.

Description.—*Shrub* of open habit; twigs rather sparingly leafy, beset upwards with sessile resinous glands. *Leaves* lanceolate or oblong-lanceolate, gradually narrowed to the tip, narrowed to the base, $1\frac{1}{4}$–$2\frac{1}{2}$ in. long, $\frac{2}{5}$–$\frac{3}{4}$ in. wide, thinly chartaceous, minutely crenulate, sparingly dotted with black glands above, beneath closely clothed with numerous almost contiguous rusty glands; lateral nerves indistinct; petiole about $\frac{1}{3}$ in. long, glandular. *Flower-buds* solitary in the axils of the uppermost leaves, about 3-flowered; bud-scales densely glandular on the back, ciliate; pedicels closely beset with grey sessile scales, $\frac{2}{3}$–$\frac{3}{4}$ in. long, slender. *Calyx* nearly obsolete, its margin undulate, very densely glandular outside. *Corolla* rose-coloured, slightly 2-lipped, with red blotches in the tube behind; tube gaping, $\frac{2}{5}$ in. long, eglandular outside; lobes 5, spreading, oblong-ovate, sparingly glandular outside. *Stamens* 10, declinate, far exserted; filaments sparingly hairy below; anthers pale yellow, $\frac{1}{10}$ in. long. *Ovary* 5-celled, clothed with sessile scales; style rather longer than the stamens, rose-coloured, glabrous, crowned by the viscid stigma. *Fruit* not seen.

Tab. 8759.—Fig. 1, apex of leaf; 2, calyx and pistil; 3, scales; 4 and 5, stamens; 6, transverse section of the ovary:—*all enlarged.*

1

2

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8

A

B

M.S. del J.N. Fitch lith

Vincent Brooks, Day & Son Lt.d imp.

L. Reeve & Co. London.

Tab. 8760.

HOWEA Belmoreana.

Lord Howe Island.

Palmae. Tribe Areceae.

Howea, *Becc.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 904; *Baill. Hist. Plant.* vol. xiii. p. 355.

Howea Belmoreana, *Becc. Malesia*, vol. i. p. 66; *Bull. Soc. Tosc. Ort.* 1889, p. 257; *Gard. Chron.* 1890, vol. viii. p. 75; *Hemsl. in Ann. Bot.* vol. x. p. 255; *Maiden in Proc. Linn. Soc. N.S.W.* vol. xxiii. p. 148; *Becc. in Martelli, Webbia*, vol. iv. p. 158, fig, 1–9 and p. 165; species *H. Forsterianae*, Becc., valde affinis, foliolis sursum convergentibus spicisque solitariis differt.

Arbor; caulis gracilis, annulatus, basi incrassatus, ad 10 m. altus. *Folia* ad caulis apicem approximata, subtus ad costam brunneo-paleacea, 2–2·5 m. longa; petiolus 1 m. longus, laevis, subtus convexus, supra late canaliculatus; vagina breviter deltoidea, 7 cm. lata; foliola circiter 70, sursum convergentia, lineari-lanceolata, acuta, 7 dm. longa, 2 cm. lata. *Spicae* ad axillas foliorum imorum productae, indivisae; spatha primum cylindrica, subacuta, spadice aequilonga, explanata 4–5 cm. lata, dorso prope apicem 2-carinata; spadix nutans, monoica, 9 dm. longa, 1·2 cm. diametro, furfuracea; flores numerosi, congesti, in alveolis ternatim dispositi, 2 laterales ♂, centralis ♀. *Flos* ♂ multo ante ♀ evolutus; sepala late cordata, 5 mm. longa, 3 mm. lata, late imbricata, conduplicata, crassa, dense breviterque ciliata, obtuse carinata; petala oblonga, acuta, 7 mm. longa, 4 mm. lata, valvata, cartilaginea; stamina 50–70, congesta; antherae oblongae, acutae, 4 mm. longae, filamentis brevissimis; rudimentum ovarii 0. *Flos* ♀; sepala suborbicularia, concava, 5 mm. longa, 7 mm. lata, coriacea, marginibus dense rufo-ciliata; petala brunneo-ciliata, parte superiore valvata, crassa, 5 mm. longa, 3 mm. lata, viridia, parte inferiore imbricata, tenuiora, alis brunneis vel rubescentibus 2 mm. latis instructa; staminodia 0; ovarium ovoideum, symmetricum, apice purpureum, 4 mm. longum, 2·5 mm. diametro, 1-loculare; ovulum 1, erectum; stigmata 3, lata, auriculata. *Drupa* subsuccosa, 3 cm. longa, sordide fulva; mesocarpium fibrosum; endocarpium pallide fuscum, opacum, ramis rhapheos notatum. *Semen* 2 cm. longum; endospermum aequabile, solidum, corneum; embryo basilaris, conico-ellipticus, 2 mm. longus.—*Kentia Belmoreana*, C. Moore et F. Muell. in F. Muell. Fragm. Phyt. Austr. vol. iii. p. 99, et vol. viii. p. 234; Benth. Flor. Austr. vol. vii. p. 137; Illustr. Hortic. 1874, vol. xxi. p. 186, t. 191 (*Balmoreana*); Le Jardin, 1889, p. 93; Rev. Hort. 1896, p. 77, figs. 25–27; Maiden in Proc. Linn. Soc. N.S.W. vol. xxiii. 138. *Grisebachia Belmoreana*, H. Wendl. et Drude in Linnaea, xxxix. pp. 177, 188, 200, t. 4, fig. 1–2.—C. H. Wright.

This is one of two closely allied species which have been separated from the genus *Kentia*, Bl., on account of

having numerous stamens (*Kentia* having only 6), and because of the absence of staminodes from the female flowers. *H. Belmoreana*, like its ally, *H. Forsteriana*, is confined to Lord Howe Island, where it was reported by Messrs. C. Moore and Carron, its discoverers, as common at altitudes below 1,000 feet. Its specific name is in honour of the Right Hon. the Earl of Belmore, who was Governor of New South Wales in 1868. The flowers of *H. Belmoreana*, as stated by F. Mueller (Fragm. viii. 234), are extremely difficult to distinguish from those of *H. Forsteriana*, which has been figured at t. 7018 of this work under *Kentia*, and has there been referred to the species *Belmoreana*. The pinnae of the true *H. Belmoreana*, however, converge upwards, while those of *H. Forsteriana* are drooping and proportionately broader, thus giving the two species a very different appearance. In addition to this *H. Belmoreana* does not attain so large a size before it flowers as *H. Forsteriana* does. In a letter addressed to Kew in 1892 Mr. Charles Moore called attention to the difference in the fruiting spikes of the palms, those of *H. Belmoreana* being twice as long as those of *H. Forsteriana*, solitary to their respective sheaths and in appearance unisexual, whereas in *H. Forsteriana* the spikes are several united at the base within a common sheath, each spike being manifestly 2-sexual. The apparently unisexual nature of the spike in *H. Belmoreana* is, however, deceptive and is due to the length of time which elapses between the maturing of the male and the female flowers respectively. In each trio of flowers along the spike the two male flowers first appear in close contact, the female flower which is situated between each pair of males being then but slightly developed and deeply seated in the pit of the spadix. The male flowers readily disarticulate and give place to the slowly developing female one. The introduction of *H. Belmoreana* to cultivation in this country took place in 1872, and it has since been as extensively cultivated as an ornamental plant as its ally *H. Forsteriana*. The plant from which our figure has been prepared was purchased when small from Messrs. F. Sander and Sons, St. Albans, and has grown along with *H. Forsteriana*, in the Mexican House at Kew. Both palms require an intermediate

temperature; their suitability for use as decorative plants is due to the fact that they bear rough usage better than most palms. They are both raised from seed imported from Lord Howe Island.

DESCRIPTION.—*Tree*, reaching a height of 35 ft.; stem slender, marked with annular scars, thickened at the base. *Leaves* clustered at the top of the stem, brown-paleate along the midrib beneath, 7–8 ft. long; petiole 3½ ft. long, smooth, convex beneath, widely channelled above; leaf-sheath shortly deltoid, nearly 3 in. wide; pinnules about 70, converging upwards, linear-lanceolate, acute, 2½ ft. long, ¾ in. wide. *Spikes* produced in the axils of the lowermost leaves, simple; spathe at first cylindric, subacute, about as long as the spadix, when flattened out 1¾–2 in. wide, 2-keeled on the back near the tip; spadix drooping, monoecious, 3 ft. long, ½ in. thick, scurfy; flowers congested, numerous, arranged in groups of threes in special pits, the two lateral of each group male, the central female. *Male flowers* reaching maturity long before the female; their sepals wide cordate, ⅕ in. long, ¼ in. wide, much imbricate, conduplicate, thick, densely and shortly ciliate, bluntly keeled; petals oblong, acute, nearly ⅓ in. long, ⅙ in. wide, valvate, cartilaginous; stamens 50–70, closely clustered, with oblong, acute anthers, ⅙ in. long, and very short filaments; rudimentary ovary 0. *Female flower*: sepals nearly orbicular, concave, ⅕ in. long, over ¼ in, wide, coriaceous, their margin densely ciliate with reddish hairs; petals ciliate with brown hairs, their upper portion valvate, thick, ⅕ in. long, ⅛ in. wide, green, their lower portion imbricate, thinner, with lateral brown or reddish wings 1/12 in. wide; staminodes 0; ovary ovoid, symmetrical, purple-tipped, ⅙ in. long, 1/10 in. across, 1-locular; ovule solitary, erect; stigmas 3, broad, auricled. *Drupe* rather fleshy, 1¼ in. long, dirty yellow; mesocarp fibrous; endocarp pale tawny, dull, impressed by the branches of the rhaphe. *Seed* ¾ in. long; endosperm uniform, solid, horny; embryo basilar, conical-elliptic, 1/12 in. long.

TAB. 8760.—Fig. A, a spike, showing only male flowers, as seen early in March, 1917; B, the same spike, showing only female flowers, as seen seven weeks later; 1, portion of a leaflet, showing the paleae on the midrib beneath; 2, portion of an inflorescence with three floral cavities, in two of which the pairs of male flowers are shown; from the third the male flowers have been removed and the very young female flower is seen; 3, a male flower, in vertical section; 4, stamen; 5, a female flower; 6, the same, in section, showing the ovary; 7, ovary, in vertical section; 8, sketch of the entire plant:—*all enlarged except* 8, *which is much reduced.*

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

Vincent, Brooks, Day & Son Lt.d imp.

Tab. 8761.

BULBOPHYLLUM sociale.

Sumatra.

Orchidaceae. Tribe Epidendreae.

Bulbophyllum, *Thouars*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 501.

Bulbophyllum sociale, *Rolfe*; species nova, *E. galbino*, Ridl., affinis, racemis 4–5-floris et florum segmentis convergentibus nec patentibus differt.

Herba epiphytica. *Rhizoma* repens, validum, vaginis membranaceis ovatis subacutis striatis imbricatis vestitum; pseudobulbi distantes, ellipsoideo-oblongi, compressi, 6–7 cm. longi, 2·5–3 cm. lati, basi vaginis ovatis acutis obtecti, monophylli. *Folia* petiolata, elliptica vel elliptico-oblonga, apice subacuta et recurva, subcoriacea, 12–19 cm. longa, 5–7 cm. lata; petioli 2–2·5 cm. longi. *Scapi* erecti, 10–11 cm. longi, basi vaginis ovatis acutis obtecti; racemi circiter 5-flori; bracteae elliptico-lanceolatae, acutae, concavae, 1·5–2 cm. longae; pedicelli 2–3 cm. longi. *Flores* speciosi. *Sepalum* posticum erectum, elliptico-lanceolatum, acuminatum, 3–3·5 cm. longum, concavum; sepala lateralia subconniventia, basi elliptico-ovata, apice attenuata et acuta, 3–3·5 cm. longa. *Petala* subconniventia, triangulari-ovata, acuta, subfalcata, 1·3–1·5 cm. longa. *Labellum* longe unguiculatum; unguis incurvus, oblongus, basi subdilatatus, 0·6–0·7 cm. longus; limbus recurvus, cordato-ovatus, subobtusus, carnosus, circiter 1·5 cm. longus. *Columna* lata, 4 mm. longa, dentibus late tringularibus subacutis.—R. A. Rolfe.

The history of this Orchid is somewhat singular. In 1908 a large clump of *Bulbophyllum Ericssonii*, Kränzl., from the collection of the Hon. Walter Rothschild was purchased for the Kew collection. Since then it has produced flowers on various occasions; these have agreed with the description of *B. Ericssonii* by Dr. Kränzlin in the Gardeners' Chronicle in 1893, and with the figure of that species at t. 8088 of the present work from a plant belonging to the collection of the late Sir Trevor Lawrence. In July, 1916, however, the clump produced a different inflorescence, which showed that it includes a second species, so similar in habit to *B. Ericssonii* that its presence had remained unsuspected. The figure now published was prepared from the inflorescence in question, and its comparison with our t. 8088 will show

how close is the general resemblance of the two species. Information kindly supplied by Messrs. Sander and Son, St. Albans, indicates that all the plants of *B. Ericssonii* now in cultivation belong to the original importation by that firm in 1893, and suggests that *B. Ericssonii* has only been collected once. The history of *B. sociale*, now figured, may therefore be regarded as identical with that of *B. Ericssonii* which was forwarded to Messrs. Sander from Bencoolen, on the western coast of Sumatra Its locality should therefore be somewhere in the district in which *Rafflesia Arnoldi* was discovered. The collection made in this district by Sir Stamford Raffles and his friends Messrs. Arnold and Jack was lost in 1824 owing to a fire at sea. No serious attempt has ever been made to replace it, and very little is known of the flora of the district in which *B. Ericssonii* and its companion, *B. sociale*, appear to have been obtained. The species with which *B. sociale* appears to be most comparable is *B. galbinum*, Ridl., a native of the Malay Peninsula, which, however, has spreading, not converging, perianth-segments. At Kew *B. sociale* is grown in a tropical house, and does well under the cultural treatment suitable for *B. virescens*, J. J. Sm., and other Malayan species.

Description.—*Herb*, epiphytic; rootstock stout, creeping, clothed with ovate, subacute, striate, imbricating membranous sheaths; pseudobulbs distant, ellipsoid-oblong, compressed, $2\frac{1}{2}$–$2\frac{3}{4}$ in. long, 1–$1\frac{1}{4}$ in. wide, beset at the base with ovate acute sheaths. *Leaf* solitary to each pseudobulb, petioled, elliptic or elliptic-oblong, apex subacute and recurved, rather firm, $5\frac{1}{2}$–7 in. long, 2–$2\frac{1}{2}$ in. wide; petiole $\frac{3}{4}$–1 in. long. *Scape* erect, 4–$4\frac{1}{2}$ in. long, with ovate acute basal sheaths; raceme about 5-flowered; bracts elliptic-lanceolate, acute, concave, $\frac{2}{3}$–$\frac{3}{4}$ in. long; pedicels $\frac{3}{4}$–$1\frac{1}{4}$ in. long. *Flowers* showy. *Sepals*: posterior erect, elliptic-lanceolate, acuminate, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long, concave; lateral somewhat connivent, with elliptic ovate base and narrowed acute apex, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long. *Petals* somewhat connivent, triangular-ovate, acute, slightly falcate, $\frac{1}{2}$–$\frac{2}{3}$ in. long. *Lip* long-clawed; claw incurved, oblong, somewhat dilated at the base, about $\frac{1}{4}$ in. long; limb recurved, cordate-ovate, rather blunt, fleshy, about $\frac{2}{3}$ in. long. *Column* wide, $\frac{1}{6}$ in. long, with a broadly triangular acute tooth near the apex on each side.

Tab. 8761.—Fig. 1, a flower with the sepals removed; 2, column; 3, anther-cap; 4, pollinia:—*all enlarged.*

M.S del J.N Fitch lith.

Vincent Brooks Day & Son Lt.d imp.

L. Reeve & Co. London.

see Gardeners Chronicle
59: 318. 1916.

Tab. 8762.

PRIMULA sylvicola.

Yunnan.

Primulaceae. Tribe Primuleae.

Primula, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 631.

Primula sylvicola, *Hort. ex Hutchinson*; species *P. sino-molli*, Balf. f. et Forr., affinis sed petiolis pilosis (nec villosis) lamina foliorum oblongo-elliptica crenato-lobata, corollae tubo e calycis tubo vix exserto differt.

Herba rhizomate carnoso. *Folia* patentia vel dependentia, longa petiolata, oblongo-elliptica, apice rotundata, basi cordata, 9–14 cm. longa, 6–8 cm. lata, grosse crenata, crenis minute crenulatis, tenuiter chartacea, supra atro-viridia, minute setulosa, infra flavido-viridia et plerumque in nervis et venis crispato-puberula; nervi laterales utrinsecus circiter 8, basales leviter recurvati, a costa sub angulo 45° abeuntes, infra prominentes, venis laxe reticulatis; petioli usque ad 15 cm. longi, rubro-purpurei, crispato-pilosi. *Flores* in verticillorum racemos dispositi; pedunculus communis rubescens, pilosus; verticillastra circiter 6-flora; pedicelli usque ad 3 cm. longi, pilosi; bracteae subulato-lanceolatae, 7–8 mm. longae. *Calyx* turbinato-campanulatus, extra pilosus; tubus 3 mm. longus; lobi lanceolati, acuti, 3 mm. longi. *Corolla* rotata, roseo-purpurea; tubus late cylindricus, 5 mm. longus, glaber; lobi 5, patentes vel leviter recurvati, late orbiculari-obovati, apice late emarginati, circiter 5 mm. longi et lati. *Antherae* ad tubi medium insertae, oblongo-ovoideae, 1·25 mm. longae. *Stylus* 6 mm. longus, gracilis; stigma depresso-capitatum.—J. Hutchinson.

The handsome *Primula* here described is very closely allied to *P. sino-mollis*, Balf. f. & Forr. From a series of specimens of that species communicated to Kew by Professor Bayley Balfour it differs most markedly in its much shorter corolla-tube which scarcely protrudes beyond the tips of the calyx-lobes. According to a letter from Professor Balfour, *P. sylvicola*, as the name implies, grows in woods, whilst *P. sino-mollis* favours pastures. *P. sylvicola* was collected by Mr. G. Forrest in Western China, and seed sent by him was first raised by Messrs. Wallace and Company, Colchester, from whose establishment the plant now figured was obtained by Kew in 1916 under the name here published. This plant flowered in a greenhouse in March, 1917, and ripened seed

from which a stock has been raised. The species appears to be short-lived under cultivation and is best treated as a biennial. The flower-spikes reach a height of about two feet, and as the whorls of flowers develop in slow succession the plants remain in blossom for about three months in spring. At Kew this species is too tender for cultivation out of doors.

DESCRIPTION.—*Herb*, rootstock fleshy. *Leaves* spreading or drooping, long-stalked, oblong-elliptic, apex rounded, base cordate, $3\frac{1}{2}$–$5\frac{1}{2}$ in. long, $2\frac{1}{4}$–3 in. wide, coarsely crenate, the lobes minutely crenulate, thinly papery, dark-green above and finely setulose, beneath yellowish-green and usually crisply puberulous on the nerves and veins; lateral nerves about 8 along each side the midrib, the basal pair slightly recurved, all leaving the midrib at an angle of about 45°, and all raised beneath; venation laxly reticulate; petiole up to 6 in. long, reddish-purple, crisply pilose. *Flowers* disposed in racemes of whorls; common scape reddish, pilose; whorls about 6-flowered; pedicels up to $1\frac{1}{4}$ in. long, pilose; bracts subulate-lanceolate, up to $\frac{1}{3}$ in. long. *Calyx* turbinate-campanulate, outside pilose; tube $\frac{1}{8}$ in. long, lobes lanceolate, acute, $\frac{1}{8}$ in. long. *Corolla* rotate, rose-purple; tube wide cylindric, $\frac{1}{5}$ in. long, glabrous; lobes 5, spreading or slightly recurved, wide orbicular-ovate, apex wide emarginate, about $\frac{1}{3}$ in. long, and as much across. *Anthers* inserted near the middle of the tube, ovoid-oblong, $\frac{1}{20}$ in. long. *Style* $\frac{1}{4}$ in. long, slender; stigma depressed-capitate.

TAB. 8762.—Fig. 1, young flower; 2, corolla laid open, showing staminal insertion; 3, pistil; 4, sketch of an entire plant:—*all enlarged except* 4, *which is much reduced.*

1

9

8

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

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Tab. 8763.

MELICYTUS ramiflorus.

New Zealand and Polynesia.

Violaceae. Tribe Alsodeieae.

Melicytus, *Forst.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 119.

Melicytus ramiflorus, *Forst. Char. Gen.* p. 124, t. 62; *DC. Prodr.* vol. i. p. 257; *A. Rich. Ess. Fl. Nouv.-Zél.* p. 313; *A. Cunn. in Ann. Nat. Hist.* vol. iv. p. 256; *Hook. f. Fl. Nov. Zel.* vol. i. p. 18, *et Handb. New Zeal. Fl.* p. 17; *Kirk, For. Fl. New Zeal.* t. 3, *et Students' Fl.* p. 42; *Hemsl. in Journ. Linn. Soc.* vol. xxx. p. 168; *Gibbs*, l.c. vol. xxxix. p. 140; *Cheeseman, Man. New Zeal. Fl.* p. 46, *et Illustr.* vol. i. t. 13; species *M. macrophyllo*, A Cunn., proxima, sed foliis floribus et fructibus minoribus facile distinguenda.

Frutex magnus vel *arbor* ad 9 m. alta, dioicus, glaber; truncus 3–6 dm. diametro cortice griseo dense lenticellato. *Folia* alternata, petiolata, oblongo-lanceolata, apice acuminata vel acuta, rarius obtusa, basi cuneata, paulum undulata, serrata vel crenato-serrata, tenuiter coriacea, leviter nitida, supra atro-viridia, infra pallidiora, 5–15 cm. longa, 2–5 cm. lata; petiolus 1–2 cm. longus; stipulae minutae, cito deciduae. *Flores* inconspicui, 5–9, in fasciculos axillares dispositi, saepe ad ramulos annotinos ex axillis foliorum delapsorum, pallide luteo-virides; pedicelli graciles, 0·5–1·5 cm. longi, bracteis minutis 1–3 instructi. *Calyx* subpatelliformis, circiter 3 mm. diametro, dentibus 5 minutis triangularibus brunneis praeditus. *Petala* 5, patentia, ovato-triangularia, vix 2 mm. longa, crassiuscula, obtusa vel subacuta. ♂: *Stamina* 5; antherae subsessiles, connectivo dorso squama majuscula suborbiculare nectarium minutum ferente instructo. *Ovarii rudimentum* parvum. ♀: *Staminorum* rudimenta 5, minuta. *Ovarium* ovoideum, stigmate sessile 4–6-lobo coronatum. *Bacca* depresso-globosa, 4–5 mm. diametro, violaceo-coerulea. *Semina* saepe 6–8, brunnea, ovoideo-angulata, leviter foveolata, 2–2·5 mm. longa.—*M. umbellatus*, Gaertn. Fruct. vol. i. p. 206, t. 44, fig. 3. *Tachites umbellata*, Soland. ex Gaertn. l.c. p. 206.—S. A. Skan.

The genus *Melicytus* comprises five or six species all of which, excepting that here figured, are restricted to New Zealand and the neighbouring islands. *M. ramiflorus*, originally discovered during Cook's first voyage, 1768–71, occurs in both the North and South Islands of New Zealand, in Stewart Island and the Kermadec Islands, and is everywhere abundant up to an elevation of 3,000 feet. It was collected in the island of Eua, Tonga Islands, by Mr. J. J. Lister. Miss L. S. Gibbs, during

her visit to the Fiji Islands in 1907, found it at Nadarivatu, Viti Levu, at an elevation of 2,700 feet. It has been recorded from Norfolk Island, but the material from this locality, collected by A. Cunningham, Milne and Backhouse, and preserved in the Kew Herbarium, does not quite agree with that from New Zealand. The Norfolk Island plant was described as *Hymenanthera oblongifolia*, A. Cunn. (Hook. Lond. Journ. Bot. vol. i. p. 124) in 1842, and this has been identified, but certainly not correctly, with *H. dentata*, R. Br. It is evidently a *Melicytus* and must be very closely allied to *M. ramiflorus*. The material for our figure was communicated by the Rev. Arthur T. Boscawen of Ludgvan Rectory, Long Rock, Cornwall, the fruit in November, 1916, and the flower in June, 1917, from plants cultivated in the open raised from seed received from New Zealand in 1907. At Ludgvan the plant has withstood ten degrees of frost without serious injury. The species, which was introduced into England in 1822, is represented at Kew by plants in the Temperate House, one of which is planted out in ordinary garden soil, and is now a bush about 10 feet high. Flowers are occasionally produced at Kew, but not fruit.

Description.—*Shrub* of considerable size or at times a *tree* up to 30 ft. high, dioecious, glabrous; trunk 1–2 ft. in diameter, bark grey, closely lenticelled. *Leaves* alternate, petioled, oblong-lanceolate, acuminate or acute, rarely obtuse, base cuneate, margin slightly undulate, serrate or crenate-serrate, thinly coriaceous, somewhat polished, dark green above, paler beneath, 2–6 in. long, $\frac{3}{4}$–2 in. wide; petiole $\frac{1}{3}$–$\frac{3}{4}$ in. long; stipules minute, soon falling. *Flowers* inconspicuous, in axillary clusters of 5–9, often on older shoots from the axils of fallen leaves, pale yellowish-green; pedicels slender, $\frac{1}{5}$–$\frac{3}{5}$ in. long; bracts 1–3, minute. *Calyx* somewhat cup-shaped, about $\frac{1}{8}$ in. across; teeth 5, minute, triangular, brownish. *Petals* 5, spreading, ovate-triangular, barely $\frac{1}{12}$ in. long, rather thick, obtuse or somewhat acute. *Male*: *Stamens* 5; anthers subsessile, the connective with a rather large suborbicular scale bearing a minute nectary. *Rudimentary ovary* small. *Female*: *Rudimentary stamens* 5, minute. *Ovary* ovoid, crowned by the sessile 4-lobed stigma. *Berry* depressed-globose, $\frac{1}{6}$–$\frac{1}{5}$ in. across, violet-blue. *Seeds* usually 6–8, brown, angled-ovoid, slightly foveolate, $\frac{1}{12}$–$\frac{1}{10}$ in. long.

Tab. 8763.—Fig. 1, portion of twig with fascicles of male flowers; 2, male flower, seen from above; 3, the same, seen from beneath; 4, stamen seen from in front; 5, the same, seen from behind, showing the nectariferous scale; 6, twig with female flowers; 7, a female flower; 8, pistil and rudimentary stamens; 9, seed;—*all enlarged except* 1 *and* 6, *which are of natural size.*

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Tab. 8764.

SOPHORA japonica.

China.

Leguminosae. Tribe Sophoreae.

Sophora, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 555.

Sophora japonica, *Linn.*, *Mant.* p. 68; *Loud. Arbor. et Frutic. Brit.* vol. ii. p. 563; *C. K. Schneider, Ill. Handb. Laubholzk.* vol. ii. p. 19; *Elwes & Henry, Trees of Gt. Brit. and Irel.* vol. i. p. 37; *Bean, Trees and Shrubs*, vol. ii. p. 520 cum icon.; species *S. affini*, Torr. et Gr., proxima, ab ea inflorescentiis terminalibus, leguminibus glabris et statura majore facillime distinguenda.

Arbor 15–25-metralis, cortice demum valde fisso; ramuli brunnei, juniores magis minusve pubescentes. *Folia* decidua, alterna, imparipinnata, 15–25 cm. longa; rhachis pubescens, basi tumescens; foliola 9-15, ovata, acuta, apiculata, basi rotundata, 2·5–7·5 cm. longa, 1·2–1·8 cm. lata, supra nitentia, saturate viridia, subtus glauca, adpresse pubescentia; petioluli 2·5 mm. longi, pubescentes; stipulae falcatae, 8 mm. longae, caducae. *Panicula* terminalis, pyramidalis, 10–20 cm. longa ac lata. *Flores* lactei, 1·5 cm. longi, aestate exacta aperti. *Calyx* campanulatus; lobi 5, perbreves, triangulares, minute pubescentes. *Corolla* papilionacea; vexillum ex unge perbrevi late cordatum, lineis dilute purpureis notatum; carina 9 mm. longa. *Stamina* 10; filamenta libera, inaequilonga, omnia inter petala carinae nidulantia. *Legumen* 2·5-5 cm. longum, glabrum, 1–4-spermum, inter semina valde constrictum. *Semina* reniformia, atro-brunnea.—W. J. Bean.

Sophora japonica was introduced to this country from China in 1753 by James Gordon, a nurseryman of that time at Mile End. It is not believed to be indigenous to Japan, although much cultivated there. Five trees of the original introduction were planted at Kew, one at least of which remains. The Sophora is one of the most ornamental of all hardy trees. Its foliage is elegant and richly luxuriant, and flowering as it does in September when no other large tree is in blossom, its beauty is very conspicuous. It does not as a rule flower until it is thirty to forty years old, and is always seen at its best after a hot summer. The pods are rarely developed in England; the only time we have seen them in recent years was in 1911. Even then the seeds do not ripen,

although they do so in Central and Southern Europe. Every part of the tree is permeated with a cathartic principle. The tree likes a rich loamy soil and should be planted in full sun. If we exclude the *Edwardsia* group of *Sophora*, which is confined to the Southern Hemisphere and is well distinguished by the erect, nearly uniform petals and small, more numerous leaflets, *S. japonica* is distinct from all other species cultivated in this country in being a tree. *S. affinis*, Torr. & Gr., a small North American tree, differs in its axillary racemes and its 4–8-seeded pubescent fruits.

Description.— *Tree*, 50–80 ft. high, the bark of the trunk much fissured in old specimens; branchlets bright brown, more or less pubescent, especially when young. *Leaves* deciduous, alternate, imparipinnate, 6–10 in. long; rachis pubescent, swollen at the base. *Leaflets* 9–15, ovate, acute, apiculate, rounded at the base, 1–3 in. long, $\frac{1}{2}$–$\frac{3}{4}$ in. wide, dark glossy green above, glaucous and furnished with adpressed pubescence beneath; petiolules $\frac{1}{16}$ in. long, pubescent; stipules sickle-shaped, $\frac{1}{3}$ in. long, caducous. *Panicles* terminal, pyramidal, 4–8 in. high and wide. *Flowers* creamy white, $\frac{5}{8}$ in. long, opening in September. *Calyx* campanulate, with five shallow triangular teeth, minutely pubescent. *Corolla* papilionaceous, the standard petal broadly cordate with a short claw, faintly lined with purple; keel $\frac{3}{8}$ in. long. *Stamens* ten, variable in length but all enclosed in the keel-petals. *Pod* 1–2 in. long, glabrous, 1-4-seeded, very much constricted between the seeds. *Seeds* dark brown, kidney-shaped.

Tab. 8764.—Fig. 1, flower with petals removed; 2, standard; 3, wing-petal; 4, keel-petal; 5, pistil:—*all enlarged.*

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Tab. 8765.

RAMONDIA serbica.

Serbia.

Gesneriaceae. Tribe Cyrtandreae.

Ramondia, *Rich.; Benth. et Hook. f. Gen. Plant.* vol. ii. p. 1024.

Ramondia serbica, *Pančic, Fl. Princip. Serb.* p. 498; *Petrović, Fl. Agri Nyssani*, p. 573; *C. B. Clarke in DC. Monogr. Phanerog.* vol. v. p. 168; *Mottet in Rev. Hort.* 1906, p. 230; *C. F. Ball in The Garden*, vol. lxxii. 1908, p. 349; *Adamović, Vegetationsverh. d. Balkanländer*, p. 221, fig. 5; species a *R. pyrenaica*, Rich., tota planta saepe minore, foliis basi magis attenuatis, corolla minore, antheris cyaneis apice muticis differt.

Herba perennis, parva, acaulescens. *Folia* rosulata, spathulata vel obovata, irregulariter dentata, apice rotundata, basi in petiolum latum angustata, petiolo incluso 3–6·5 cm. longa, 1·5–3·5 cm. lata, primo omnino dense longeque ferrugineo-hirsuta, demum supra villosa, infra dense ferrugineo-hirsuta. *Scapi* adscendentes, 4–8 cm. longi, sat dense glanduloso-pubescentes, 1–8-flori. *Calyx* 4–6-lobus, circiter 6 mm. longus, glanduloso-pubescens; lobi oblongo-lanceolati, 4 mm. longi, basi 2 mm. lati, obtusi. *Corolla* subrotata, subaequaliter 4–6-loba, 2–2·5 cm. diametro, sparse et breviter glanduloso-puberula, lilacina, fauce tubi lutea barbata; lobi late obovati, apice rotundati, circiter 1 cm. longi, 8–9 mm. lati. *Stamina* 4 vel 5, rarius 6; filamenta crassiuscula, glabra, 2–3 mm. longa; antherae cordato-ovatae, dorso sparse puberulae, cyaneae, 2·5 mm. longae. *Ovarium* late ovoideum, dense glanduloso-puberulum, 3 mm. longum, basi disco angusto circumdatum. *Stylus* circiter 3 mm. longus, crassus, stigmate capitato. *Capsula* ellipsoideo-ovoidea, 7–12 mm. longa.—S. A. Skan.

The Ramondia here figured is a pretty plant for the rock garden. It bears a close general resemblance to the well-known *R. pyrenaica* which, however, is usually more robust in growth and has larger flowers with yellow apiculate anthers. Its distribution is particularly interesting. While the original *R. pyrenaica* and the four forms —for they are really nothing more—of that species which have been regarded as distinct by Jordan, occur only in the Iberian Peninsula, extending as far south as the Province of Jaen in Spain, all the other European *Gesneriaceae*, comprising *Ramondia serbica*, *R. Nathaliae*, Panč. & Petrov., *R. Heldreichii*, Janka, *Haberlea rhodopensis*, Friv., with its variety *virginalis*, and *H. Ferdinandi-*

Coburgii, Urumoff, are confined to the Balkan Peninsula and Thessaly (Mount Olympus). *R. serbica* was originally discovered on Mount Zlot in Southern Serbia by Pančic, growing on rocks in calcareous soil. It has since been found in other parts of Serbia and in Albania, but, as pointed out by Adamović, the specimens from Albania, collected by Baldacci, have been distributed and recorded under the name of *R. Nathaliae*. The record for Bulgaria by Velenovsky is shown by Derganc to be based on an incorrect identification, the plant supposed to have been *Ramondia serbica* being in reality *Haberlea rhodopensis*. *R. Nathaliae*, regarded by some authorities as merely a variety of *R. serbica*, is, according to Adamović, a distinct species, differing in having broadly ovate leaves which are narrowed almost equally to base and apex, regularly tetramerous flowers, a patelliform corolla and longer anthers. *R. serbica* has long been in cultivation at Kew, where it is established along with *R. pyrenaica* in a loose stone wall in the Rock Garden, thriving well in a shaded situation and flowering annually during May and June. A few plants are also grown in a cold frame to flower earlier in the Alpine House. It may be propagated by its seeds, which ripen freely. The plant from which our figure has been prepared was communicated by Sir F. W. Moore from the Royal Botanic Garden, Glasnevin, in June, 1917.

Description.—*Herb*, small, stemless, perennial. *Leaves* rosulate, spathulate or obovate, irregularly toothed, rounded at the apex, narrowed at the base to a broad petiole, including the petiole $1\frac{1}{4}$–$2\frac{1}{2}$ in. long, $\frac{2}{3}$–$1\frac{1}{4}$ in. wide, at first uniformly and densely rusty-hirsute with long hairs, ultimately villous above and densely rusty-hirsute beneath. *Scapes* ascending, $1\frac{1}{2}$–3 in. long, rather densely glandular-pubescent, 1–3-flowered. *Calyx* 4–6-lobed, about $\frac{1}{4}$ in. long, glandular-pubescent; lobes oblong-lanceolate, $\frac{1}{8}$ in. long, $\frac{1}{12}$ in. wide at the base, blunt. *Corolla* somewhat rotate, subequally 4–6-lobed, $\frac{3}{4}$–1 in. across, sparingly shortly glandular-puberulous, lilac, with a yellow-bearded throat; lobes wide-obovate, rounded at the apex, about $\frac{2}{5}$ in. long, and about $\frac{1}{3}$ in. wide. *Stamens* 4 or 5, rarely 6; filaments rather stout, glabrous, $\frac{1}{12}$–$\frac{1}{8}$ in. long; anthers cordate-ovate, sparingly puberulous on the back, dark blue, $\frac{1}{16}$ in. long. *Ovary* wide-ovoid, densely glandular-puberulous, $\frac{1}{8}$ in. long, surrounded at the base by the narrow disk. *Style* about $\frac{1}{8}$ in. long, stout; stigma capitate. *Capsule* ellipsoid-ovoid, $\frac{1}{3}$–$\frac{1}{2}$ in. long.

Tab. 8765.—Fig. 1, corolla-limb; 2, calyx and pistil; 3, corolla, laid open, showing staminal insertion; 4 and 5, stamens; 6, pistil; 7, transverse section of the ovary:—*all enlarged.*

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Tab. 8766.

GONGORA latisepala.

Colombia.

Orchidaceae. Tribe Vandeae.

Gongora, *Ruiz et Pav.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 549.

Gongora latisepala, *Rolfe*; species nova a *G. odoratissima*, Lem., sepalis multo brevioribus latioribusque et floribus omnino copiose maculatis differt.

Herba epiphytica. *Pseudobulbi* aggregati, ovoidei, subcompressi, leviter sulcati, 4·5–5 cm. longi, 2–2·5 cm. lati, vaginis ovatis acutis obtecti, diphylli. *Folia* breviter petiolata, elliptica vel lanceolato-elliptica, acuminata, subrecurva, plicata, circiter 25 cm. longa, 5 cm. lata. *Scapi* arcuati vel subpenduli, basi vaginis brevibus obtecti, 15–18 cm. longi; racemi multiflori; bracteae ovato-oblongae, acutae, 3–5 mm. longae; pedicelli graciles, arcuati, 2–3 cm. longi. *Flores* speciosi, copiose brunneo-maculati. *Sepalum* posticum basi columnae adnatum, elliptico-lanceolatum, acutum, 1·5–2 cm. longum, margine recurvum; *sepala* lateralia basi columnae pedi adnata, valde reflexa, ovata, acuminata, 2·5–3 cm. longa, margine recurva. *Petala* cum sepalo postico basi columnae adnata, oblique falcato-linearia, acuminata, circiter 1 cm. longa. *Labellum* cum pede columnae continuum, patens, angustum, a latere compressum, carnosum, circiter 2 cm. longum, basi breviter unguiculatum, medio articulatum; hypochilium obovato-oblongum, infra medium utrinque cornu incurvo breve instructum, apice utrinque aristis setiformibus circiter 1 cm. longis notatum; epichilium lateraliter compressum, anguste triangulare, acuminatum, circiter 0·8 cm. longum, basi angulatum. *Columna* arcuata, gracilis, circiter 2 cm. longa, apice angulata; pollinia 2, anguste ovoideo-oblonga; stipes oblongus; glandula squamiformis.—R. A. Rolfe.

The striking *Gongora* here figured is one of the plants which formed part of the collection of the late Sir Trevor Lawrence, presented to Kew by the late Lady Lawrence in 1914. This particular plant bore no name and no indication of its origin. When it subsequently flowered at Kew it was not possible to identify it with any named specimen, though it was found to match so closely an unnamed one belonging to the herbarium of the late Consul Lehmann as to leave little doubt that the two are forms of one species. The Lehmann specimen was collected in 1899 on the banks of the Timbiqui in the

forests of Cotejo, Colombia. There are several species of the genus *Gongora* only known from the descriptions written by the late Professor Reichenbach. The plant now described cannot be identified with any of these, and it is therefore regarded as a new species for which the name *G. latisepala* is employed with reference to its relatively broad sepals. It bears a certain resemblance to *G. gratulabunda*, Reichb. f., figured at t. 7224 of this work, but in addition to having sepals of a different shape that species may readily be distinguished by the absence of the pair of short horns at the base of the hypochile of the lip, a character of some value in this genus. In the possession of these horns our species comes nearer to *G. odoratissima*, Lem., which, however, has longer and narrower unspotted sepals. At Kew *G. latisepala* thrives well in the tropical house under the conditions suitable for its congeners and for the species of *Stanhopea*.

Description.—*Herb*, epiphytic. *Pseudobulbs* clustered, ovoid, somewhat compressed, slightly sulcate, $1\frac{3}{4}$–2 in. long, $\frac{3}{4}$–1 in. wide, clothed with ovate acute sheaths, 2-foliate. *Leaves* shortly petioled, elliptic or lanceolate-elliptic, acuminate, somewhat recurved, plicate, about 10 in. long, 2 in. wide. *Scapes* curved or somewhat pendulous, clothed below with short sheaths, 6–$7\frac{1}{2}$ in. long; racemes many-flowered; bracts ovate-oblong, acute, $1\frac{1}{4}$–2 in. long; pedicels slender, curved, $\frac{3}{4}$–$1\frac{1}{4}$ in. long. *Flowers* showy, abundantly dotted with brown spots. *Sepals*: posterior adnate to the base of the column, elliptic-lanceolate, acute, $\frac{2}{3}$–$\frac{3}{4}$ in. long, with recurved edges; lateral adnate at the base to the foot of the column, strongly reflexed, ovate, acuminate, 1–$1\frac{1}{4}$ in. long, with recurved edges. *Petals* adnate along with the posterior sepal to the base of the column, obliquely falcate-linear, acuminate, about $\frac{1}{3}$ in. long. *Lip* continuous with the foot of the column, spreading, narrow, laterally compressed, fleshy, about $\frac{3}{4}$ in. long, shortly clawed at the base, jointed in the middle; hypochile obovate-oblong, with a short incurved horn below the middle on each side, and with bristle-like teeth about $\frac{1}{3}$ in. long at the apex on each side; epichile laterally compressed, narrow-triangular, acuminate, about $\frac{1}{3}$ in. long, angled at the base. *Column* curved, slender, about $\frac{3}{4}$ in. long, angled at the apex; pollinia 2, narrowly ovoid-oblong; stipe oblong; gland scale-like.

Tab. 8766.—Fig. 1, lip and column; 2, anther-cap; 3 and 4, pollinarium, seen from in front and from behind:—*all enlarged*.

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Tab. 8767.

RHODODENDRON argyrophyllum, var. leiandrum.

Western Szechuan.

Ericaceae. Tribe Rhodoreae.

Rhododendron, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 599.

Rhododendron (§ Eurhododendron) **argyrophyllum**, *Franch. in Bull. Soc. Bot. France*, vol. xxxiii. p. 231 (1886), *et in Nouv. Arch. Mus. Paris, sér* 2, vol. x. p. 48 (*Pl. David.* vol. ii. p. 86); *Hemsl. et E. H. Wils. in Kew Bull.* 1910, p. 111; *Rehd. et E. H. Wils. in Sargent, Pl. Wilson.* vol. i. p. 526 (1913); var. **leiandrum**, *Hutchinson*, varietas nova, a planta typica filamentis glabris differt.

Frutex; ramuli annotini parce foliati, glabri, hornotini farinaceo-puberuli. *Folia* oblonga vel oblongo-elliptica, basi rotundata, apice obtusa vel subacuta, 8–12 cm. longa, 2·5–4 cm. lata, rigide coriacea, supra viridia, mox glabra, infra costa excepta indumento farinaceo albido omnino obtecta; nervi laterales utrinsecus circiter 10, supra leviter impressi, infra inconspicui; petioli circiter 1 cm. longi, glabri. *Flores* in racemos breves terminales laxe dispositi; axis 1·5–2 cm. longus, parce pubescens; pedicelli graciles, 2 cm. longi, breviter crispate-puberuli. *Calyx* parvus, 5-lobus, lobis late ovatis obtusis usque ad 1·25 mm. longis fere glabris. *Corolla* rosea, tubuloso-campanulata, 3·5 cm. longa, glabra, limbo circiter 4 cm. diametro; lobi 5, late ovati, leviter emarg nati. *Stamina* 10, corollae tubo vix aequilonga; filamenta glabra; antherae nigrescentes, parvae. *Ovarium* 8-loculare, pilis brevibus albis dense obtectum; stylus paullo exsertus, 1·5 cm. longus, glaber, stigmate discoideo viride 5 mm. diametro coronatus. *Fructus* haud visus.—J. Hutchinson.

According to Messrs. Rehder and Wilson *Rhododendron argyrophyllum*, Franch., "is one of the commonest species in Western Szechuan and shows much variation." The material of this species in the Kew herbarium bears out this statement. But the variations are confined to single organs and are somewhat inconspicuous. They are simple morphological fluctuations, readily recognisable, but not of specific importance. The authors cited have accorded the rank of varieties to two of these fluctuations: *cupulare*, with rather smaller cup-shaped flowers; and *omeiense*, with slender drooping pedicels and a rather darker indumentum on the leaves beneath. Both of these varieties agree with Mr. Franchet's

original type in having hairy filaments; that now figured differs from all three in having the filaments without hairs. This is a difference which, in the genus *Rhododendron*, usually is specific; in the present instance it certainly does not possess that value. There is within *R. argyrophyllum* a fifth recognisable form, collected by Mr. Wilson on Wa-shan (*Wilson*, n. 1210), which has glabrous filaments like those of var. *leiandrum*, but has some of its calyx-lobes over one-third of an inch in length. The nearest ally of *R. argyrophyllum* is *R. hypoglaucum*, Hemsl., described at t. 8649 of this work, where the close relationship of the two species is discussed. The plant from which the flowering branch now figured was cut on 5 May, 1916, was raised from seed received from the Arnold Arboretum and sown in 1909. This seed was collected in Western Szechuan in 1908 by Mr. Wilson and was received as his n. 1353. This number, however, belongs in part to *R. Wiltonii*, Hemsl. & Wils., and it may be that in some collections *R. argyrophyllum* var. *leiandrum* bears the name *R. Wiltonii*. The plants at Kew are rounded, much branched bushes, now about a foot and a half to two feet high, slow of growth and sturdy. The species is apparently very hardy and did not suffer in the least from the severe winter of 1916–17. The flowers do not open until late April or early May, and thus have a better chance of escaping injury from late spring frosts than those of many of the new Chinese species.

Description.—*Shrub*; year-old twigs sparingly leafy, young shoots mealy-puberulous. *Leaves* oblong or oblong-elliptic, obtuse or subacute, rounded at the base, 3–5 in. long, 1–1¾ in. wide, firmly coriaceous, green above and soon glabrous. beneath covered with a white mealy indumentum everywhere except on the midrib; lateral nerves about 10 on each side the midrib, slightly sunk above and not very visible beneath; petiole about ⅖ in. long, glabrous. *Flowers* in short lax terminal racemes, with a sparingly pubescent axis ⅔–¾ in. long; pedicels slender, ¾ in. long, finely puberulous with crispate hairs. *Calyx* small, 5-lobed; lobes wide-ovate, obtuse, very short, nearly glabrous. *Corolla* rose-coloured, tubular-campanulate, 1⅓ in. long, glabrous; limb about 1½ in. across; lobes 5, wide-ovate, slightly emarginate. *Stamens* 10, hardly as long as the corolla-tube; filaments glabrous; anthers small, blackish. *Ovary* 8-celled, densely clothed with short white hairs; style slightly exserted, ⅔ in. long, glabrous, crowned by the green disk-like stigma, which is ⅕ in. across. *Fruit* not yet seen.

Tab. 8767.—Fig. 1 and 1*a*, tip of leaf; 2, calyx and pistil; 3 and 4, stamens; 5, anther; 6, transverse section of the ovary:—*all enlarged.*

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Tab. 8768.

GOVENIA tingens.

Peru.

Orchidaceae. Tribe Vandeae.

Govenia, *Lindl.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 542.

Govenia tingens, *Poepp. et Endl. Nov. Gen. et Sp.* vol. iii. p. 5, t. 107, fig. 1–7; *Reichb. f. in Bot. Zeit.* 1852, p. 835, *et in Walp. Ann.* vol. vi. p. 559 (*excl. syn.*); species a *G. Gardneri*, Hook., bracteis longioribus et labello latiore differt.

Herba terrestris. *Caulis* erectus, brevis, diphyllus. *Folia* sessilia, recurva, elliptico-oblonga, breviter et abrupte acuminata, plicata, 21–29 cm. longa, 6–8 cm. lata, submembranacea. *Scapi* erecti, 20–30 cm. alti, medio vagina spathacea obtecti; racemi multiflori, 10–15 cm. longi; bracteae lanceolatae acutae, 1·5–2 cm. longae; pedicelli subgraciles, 1·5–2 cm. longi. *Flores* mediocres, albescentes, petalis minute roseo-punctulatis, labello flavo-viride. *Sepalum* posticum incurvum, oblongum, obtusum, concavum, circiter 1·5 cm. longum; sepala lateralia falcata, obovato-oblonga, obtusa, 1–1·2 cm. longa. *Petala* subfalcato-oblonga, obtusa, 1–1·3 cm. longa. *Labellum* late subpandurato-oblongum, apiculatum, 0·7–0·9 cm. longum; discus tricarinatus. *Columna* incurva, oblonga, late alata, 0·7–0·8 cm. longa; pollinia subglobosa, glandula parva.—R. A. Rolfe.

Govenia tingens, the subject of our illustration, was originally described and figured by Poeppig and Endlicher in 1838 from material collected in the dense forests of eastern Peru at Cuchero and Pampayaca. A specimen collected at Chacapoyas by Matthews is probably identical with the original plant, and examples of a *Govenia* introduced from Peru by Messrs. Sander and Sons, St. Albans, through their collector, Forget, which flowered in February, 1915, were tentatively referred to *G. tingens*. The genus *Govenia* is a very natural one, most of the members of which are extremely similar in habit; indeed, Lindley has remarked that among the genera of Orchids there is not one whose species are so difficult to distinguish from each other. In a dried state they are so much alike if the specimens have been similarly prepared, or they may vary so much in appearance, owing to the

manner in which their flowers shrink, when they have been prepared differently, that their recognition is at times hardly possible. One result of this has been that the Peruvian *G. tingens* has been actually recorded from Caracas, a statement that is at least doubtful, because there is a species from Caracas, described by Lindley as *G. fasciata*, which is clearly distinct from *G. tingens*. The chief difficulty connected with *G. tingens* lies in our imperfect knowledge of the original plant. The specimen figured was taken from a plant purchased for Kew in 1912 at a sale held by Messrs. Prothero and Morris, the floral details of which agree well with the original figure. The plant is grown in a tropical house along with species of *Calanthe*, and flowers in early spring. It is most readily comparable with *G. Gardneri*, Hook., figured at t. 3660 of this work.

Description.—*Herb*, terrestrial. *Stem* erect, short, 2-foliate. *Leaves* sessile, recurved, elliptic-oblong, shortly and abruptly acuminate, plicate, almost membranous, 8–12 in. long, $2\frac{1}{2}$–3 in. wide. *Scapes* erect, 8–12 in. high, each with a membranous sheath near the middle; racemes many-flowered, 4–6 in. long; bracts lanceolate, acute, $\frac{2}{3}$–$\frac{3}{4}$ in. long; pedicels rather slender, $\frac{2}{3}$–$\frac{3}{4}$ in. long. *Flowers* medium-sized, whitish, the petals finely rose-punctate, the lip greenish-yellow. *Sepals*: posterior incurved, oblong, obtuse, concave, about $\frac{2}{3}$ in. long; lateral falcate, obovate-oblong, obtuse, $\frac{1}{3}$–$\frac{1}{2}$ in. long. *Petals* somewhat falcate-oblong, obtuse, $\frac{1}{3}$–$\frac{1}{2}$ in. long. *Lip* somewhat pandurately oblong, apiculate, $\frac{1}{4}$–$\frac{1}{3}$ in. long; disk 3-keeled. *Column* incurved, oblong, widely winged, about $\frac{1}{3}$ in. long; pollinia subglobose; gland small.

Tab. 8768.—Fig. 1, flower, with sepals and petals removed; 2, lip; 3, column; 4, anther-cap; 5, pollinia; 6, sketch of the entire plant:—*all enlarged except* 6, *which is much reduced.*

M S del J.N Fitch lith

Vincent, Brooks Day & Son Ltd imp.

L. Reeve & Co London.

Tab. 8769.

LINUM elegans.

Greece.

Linaceae. Tribe Eulineae.

Linum, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 242.

Linum elegans, *Sprunner ex Boiss. Diagn.* ser. ii. no. 1, p. 99; *Boiss. Fl. Or.* vol. i. p. 854; *Halácsy, Consp. Fl. Graec.* vol. i. p. 257; species *L. flavo*, Linn., et *L. campanulato*, Linn., affinis; ab illo differt caulibus crassioribus, foliis minoribus, sepalis angustioribus et brevioribus, cymis contractis, ab hoc foliis infimis minoribus uninerviis, sepalis tenuiter acuminatis, floribus minoribus.

Herba viridis, glabra, basi suffrutescens, caespitosa, ramuli exteriores prostrati, interiores erecti. *Caulis* gracilis, cylindricus, viridi-fuscus, ad 20 cm. altus. *Folia* oblongo-spathulata, ima saepius conferta, obtusiuscula, superiora linearia, acuta, 10–30 mm. longa, 3–7 mm. lata, glaucescentia, costa infra conspicua; stipulae lineares, inferiores circa 2 mm. longae, superiores minutissimae. *Inflorescentia* cymosa, 2–7-flora. *Sepala* viridia, lanceolato-linearia, marginibus magis minusve anguste membranacea, glandulosa, circiter 7 mm. longa, 2 mm. lata. *Petala* patentia, unguiculata, flava, distincte nervosa, 2·3 cm. longa, 1 cm. lata, caduca. *Antherae* lineares, ad 2 mm. longae; filamenta subulata. *Ovarium* 5-loculare; styli 5, liberi, filiformes; stigmata simplicia, linearia.—*L. iberidifolium*, Auch. ex Planch. in Hook. Lond. Journ. Bot. vol. ii. p. 515.—M. L. Green.

The specimens on which the original account of *Linum elegans* was based were collected on Mount Parnassos by Sprunner, who suggested the name it bears, and on Mount Olympus by Heldreich. It occurs, however, elsewhere in Greece, and has been gathered on Mount Ida in Asia Minor. Before Boissier published his description under Sprunner's name, it had also been met with by Aucher, who suggested for it the name *L. iberidifolia*, which was similarly taken up by Planchon. Besides the specimen to which Aucher gave that name, this collector had also gathered it on Mount Athos, and Planchon, when he monographed the genus in 1848, after having referred to the Mount Athos plant under *L. caespitosum*, Sibth. & Sm., finally decided, and with reason, that it

too may be included in the present species. The nearest allies of *L. elegans* are *L. flavum*, Linn., a species which is to be met with in south-eastern Germany and southern Russia, and *L. campanulatum*, Linn., a species confined to southern France. From the former our plant differs in its smaller leaves, from the latter in its smaller flowers. The plant from which our figure has been prepared was presented to Kew by Miss Willmott, from her garden at Warley Place, Great Warley. It is not yet possible to say whether it will prove hardy at Kew. It flowers freely in May in a frame, but does not ripen its seeds. It can, however, be propagated readily by means of cuttings.

Description.—*Herb* with a somewhat woody base, tufted; outer branches prostrate, central branches erect. *Stem* slender, cylindric, tawny-green, up to 8 in. high. *Leaves* oblong-spathulate, the lowest usually close-set, rather obtuse, the uppermost linear, acute, $\frac{1}{3}$–$1\frac{1}{4}$ in. long, $\frac{1}{8}$–$\frac{1}{4}$ in. wide, glaucescent, with the midrib prominent beneath; stipules linear, the lower about $\frac{1}{12}$ in. long, the upper very small. *Inflorescence* cymose, 2–7-flowered. *Sepals* green, linear-lanceolate, with the margins somewhat membranous, glandular, about $\frac{1}{4}$ in. long, $\frac{1}{12}$ in. wide. *Petals* spreading, distinctly clawed, yellow, with well marked nerves, nearly 1 in. long, $\frac{2}{5}$ in. wide, caducous. *Stamens* with subulate filaments; anthers linear, $\frac{1}{12}$ in. long. *Ovary* 5-celled; styles 5, free, filiform; stigmas simple, linear.

Tab. 8769.—Fig. 1, flower, after removal of the petals; 2, calyx in vertical section, showing stamens and pistil; 3, pistil:—*all enlarged.*

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

Vincent Brooks, Day & Son Lt^d imp.

L. Reeve & C^o London

Tab. 8770.

ALNUS firma, var. Yasha.

Japan.

Cupuliferae. Tribe Betuleae.

Alnus, *Gaertn.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 404.

Alnus firma, *Sieb. et Zucc.*, var. **Yasha**, *Winkler in Engl. Pflanzenr.-Betulaceae*, p. 104; *Elwes & Henry, Trees of Gt. Brit. and Ireland*, vol. iv. pp. 953; *Bean, Trees and Shrubs*, vol. i. p. 180; a var. *typica* ramulis pubescentibus, foliis angustioribus cum nervis paucioribus (utrinque 10–16), strobilis saepe 2 vel 3 minoribus recedit.

Frutex vel *arbor* parva ad 9 m. alta. *Rami* patentes, longissimi, graciles, ramulis lenticellis numerosis conspicuis instructis primo pubescentibus demum glabrescentibus. *Gemmae* sessiles, elongato-conicae. *Folia* petiolata, lanceolato-ovata, apice acuta vel breviter acuminata, basi rotundata et saepe leviter inaequalia, calloso-serrulata, supra glabra, infra ad nervos adpresse pubescentia, 6–8 cm. longa, basin versus 2·5–3 cm. lata; nervi laterales utrinque 10–16, conspicui, subparalleli, supra cum costa impressi, infra elevati; petiolus saepe 10–12 mm. longus, pubescens. *Amenta* mascula solitaria vel geminata, terminalia vel subterminalia, cylindrica, 5–7 cm. longa. *Bracteae* peltatae, 2 mm. longae, 2·5 mm. latae, glandulosae, ciliatae, apice brunneae, membranaceae. *Bracteolae* 2, minutae, ad bracteam arcte adpressae. *Perianthium* 4-lobum; lobi minuti, glandulis paucis stipitatis luteis instructi. *Stamina* saepissime 4. *Amenta* femina (strobili) 2–5 in racemum erectum terminalem disposita, vere enascentia, florifera ellipsoidea, 6–8 mm. longa, bracteis crassis ovatis, fructifera solitaria vel 2, raro plura, ovoideo-ellipsoidea, 1·7–2 cm. longa, 1·3–1·5 cm. lata. *Pedunculi* ad 2 cm. longi. *Nuculae* ala membranacea inclusa saepissime oblique obovatae, emarginatae, 3–4 mm. longae, apice 2–2·5 mm. latae. A. *Yasha*, Matsumura in Journ. Coll. Sci. Tokyo, vol. xvi. art. 5, p. 4, t. 2; C. K. Schneider, Ill. Handb. Laubholzk. vol. i. p. 123. A. *firma*, Sieb. et Zucc. in Abhandl. Acad. Muench. vol. iv. pars 3, p. 230, partim; Regel, Monogr. Betulac. p. 84, t. 15, figs. 1–9, partim; Miq. in Ann. Mus. Bot. Lugd.-Bat. vol. ii. p. 137, partim; Franch. et Savat. Enum. Pl. Jap. vol. i. p. 457, partim. A. *firma*, var. *typica*, Regel in Bull. Soc. Nat. Mosc. vol. xxxviii. pars 2, p. 423 et in DC. Prodr. vol. xvi. pars 2, p. 183, partim. A. *firma*, var. *hirtella*, Franch. et Savat. l.c. vol. i. p. 457 et vol. ii. p. 502, partim. *A. Harinoki*, Sieb. in Verh. Gen. Bat. vol. xii. p. 25. *Betula Alnus*, Thunb. Fl. Jap. p. 76, excl. syn. *Alnaster firma*, Schweinf. ex Winkler, l.c. p. 104.—S. A. Skan.

Alnus firma is a variable species which is widely distributed in Japan, and with A. *Alnobetula*, Hartig

(*A. viridis*, Regel), belongs to the section of the genus characterised by having the female inflorescences in terminal racemes, which make their appearance in the spring, while in all the other known species they are solitary or racemose in the axils of the leaves and appear in autumn. *A. firma* is moreover easily recognised by its leaves having numerous straight almost parallel lateral nerves, which in the variety *multinervis* are as many as 18 to 24 on each side of the midrib. In this respect the leaves much resemble those of some hornbeams. Though sometimes found as a bush, at others it appears as a small tree, having long, slender, spreading branches, which give a graceful effect. A tree at Kew has now reached the height of nearly 30 ft., and has a trunk about 6 inches in diameter. Three varieties have been distinguished, each by some authorities regarded as species. The variety *multinervis* (*A. pendula*, Matsumura) has longer, more acuminate, doubly serrate leaves with 18–24 pairs of lateral nerves, and smaller cones in a pendulous raceme. This was the first representative of the species introduced into this country, it is believed by Mr. John Gould Veitch in 1862. The variety *Sieboldiana* (*A. Sieboldiana*, Matsumura) has solitary cones, which are larger than in the other varieties; its leaves are broader and fewer-nerved than in the variety *multinervis*, and its young branchlets, which are pubescent in the variety *Yasha*, are glabrous. *A. firma* var. *Sieboldiana* is not in cultivation. The variety now figured was introduced into America by Professor Sargent in 1892, and through him to Kew in 1893. At Kew it thrives well and makes a very elegant small tree, very distinct owing to its handsome, hornbeam-like leaves. It enjoys a deep, stiffish, loamy soil. Professor Matsumura records it from many localities in the island of Hondo, from one in Sikoku and from three provinces in Kiushiu. Its Japanese name is Ōba-minebari. It is presumbly of this variety that Professor Sargent speaks in his "Forest Flora of Japan" as "largely planted along the margins of rice-fields near Tokyo to afford support for the poles on which the freshly cut rice is hung to dry." It has hitherto been quite a rare tree in English collections, but it well deserves attention and

ought soon to be more frequently seen as it produces seeds plentifully at Kew.

DESCRIPTION.—*Shrub* or small *tree*, reaching 30 ft. in height; branches very long, slender, spreading; twigs with numerous conspicuous lenticels, at first pubescent, at length becoming glabrous; buds sessile, long-conical. *Leaves* petioled, ovate-lanceolate, acute or shortly acuminate, base rounded and often slightly unequal, thick-serrulate, glabrous above, adpressed-pubescent on the nerves beneath, $2\frac{1}{2}$–3 in. long, 1–$1\frac{1}{4}$ in. wide above the base; lateral nerves 10–16 on each side of the midrib, conspicuous, nearly paralled, sunk above like the midrib, raised beneath; petiole often nearly $\frac{1}{2}$ in. long, pubescent. *Male catkins* solitary or in pairs, terminal or nearly so, cylindric, 2–$2\frac{1}{2}$ in. long; bracts peltate, $\frac{1}{12}$ in. long, $\frac{1}{10}$ in. wide, glandular, ciliate, brown and membranous at the tip; bracteoles 2, minute, closely adpressed to the bract. *Perianth* 4-lobed; lobes minute, beset with a few yellow stalked glands. *Stamens* usually 4. *Female catkins* (strobiles) produced in spring in erect terminal racemes of 2–5 together, when in flower ellipsoid, $\frac{1}{4}$–$\frac{1}{3}$ in. long, with thick, ovate bracts; when in fruit solitary or in pairs, rarely more than 2, ovoid-ellipsoid, about $\frac{3}{4}$ in. long, over $\frac{1}{2}$ in. wide; peduncles up to $\frac{3}{4}$ in. long. *Nutlets* with a membranous wing, often obliquely obovate, emarginate, $\frac{1}{8}$–$\frac{1}{6}$ in. long, $\frac{1}{12}$–$\frac{1}{10}$ in. wide at the tip.

TAB. 8770.—Fig. 1 and 2, clusters of male flowers; 3, a single male flower; 4 and 5, female flowers; 6 and 7, bracts of female strobile with nutlets; 8, a nutlet:—*all enlarged.*

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

Vincent Brooks, Day & Son Ltd imp

L. Reeve & Co London

Tab. 8771.

STEWARTIA serrata.

Ternstroemiaceae. Tribe Gordonieae.

Stewartia, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 185 (*Stuartia*).

Stewartia serrata, *Maxim. in Bull. Acad. Petersb.* vol. xi. p. 430 (1867); *C. K. Schneider, Ill. Handb. Laubholzk.* vol. ii. p. 331, fig. 218 (h); species cum *S. sinensi*, Rehd. et Wils., comparanda sed ovario glabro filamentis liberis foliisque subtus ad venarum axillas caespitoso-pilosis apte distinguenda.

Arbor in cultis parva; ramuli pilosi demum glabrescentes. *Folia* decidua, acuta vel acuminata, basi cuneata, ambitu elliptica vel obovata, margine incurvo-serrata et minute ciliata, 3·7–7·5 cm. longa, 2–3·7 cm. lata, supra glabra, sordide viridia, subtus pallidiora secus costam et ad venarum axillas pilosa; petiolus 3–12 mm. longus, glaber. *Flores* speciosi, secus ramulos juniores axillares, solitarii, ineunte aestate aperti; pedunculi 4–6 mm. longi, tomentosi. *Sepala* 5–6, foliacea, ovata, margine parce et minuto serrata, 1·2–1·8 cm. longa, margine ciliato excepto glabra, recurva, persistentia. *Petala* 5, pallide luteo-alba, extra rubro-tincta, cucullata, distincte imbricata, margine indentata. *Stamina* indefinita; filamenta libera, basi sericea; antherae luteae. *Ovarium* ovoideum, glabrum, e carpellis 5 compositum; stylus simplex, glaber; stigmata abbreviata. *Capsula* lignosa, ovoidea, rostrata, 2 cm. longa, loculicide 5-valvis. *Semina* compressa, alata.—W. J. Bean.

We are indebted for the material from which the figure in the accompanying plate has been prepared to Sir Edmund Loder of Leonardslee, Horsham, who supplied the flowering spray on 12 June, 1917, and the fruit during the following November. Save for the specimens thus gathered from the plants at Leonardslee, *Stewartia serrata* is only represented in the Kew herbarium by a single leafy spray and a solitary detached flower, both collected in Japan in 1863 by the late Mr. Maximowicz. From the cultivated form now figured Maximowicz's specimen differs in having the petals velvety outside on the upper half, and in having the shoot quite glabrous, as also are the leaves except for the axil-tufts of tomentum beneath. In all other respects the two specimens appear to agree. We have failed to ascertain at all definitely the dimensions this *Stewartia*

is capable of attaining. Maximowicz states that it had been reported to him that it may reach a large size: "arbor dicitur altissima, 4 pedes usque crassa." In spite of this, however, we believe it will never become more than a small tree in this country. It seems to be quite hardy both at Leonardslee and at Kew, and like its allies will no doubt thrive well elsewhere in either loamy or peaty soil. In the absence of seeds it may be propagated by cuttings made of fairly firm wood in July or August. The nearest ally of *S. serrata* is probably *S. sinensis*, Rehd. et Wils., a Chinese species first discovered by Professor A. Henry, and first introduced to cultivation by Mr. E. H. Wilson in 1901. This species, however, is readily distinguished from *S. serrata* by its pilose ovary, its monadelphous stamens and its leaves without pubescence in the axils of the veins on the undersurface.

DESCRIPTION.—*Tree*, as cultivated in this country of small size; young shoots pilose, finally glabrescent. *Leaves* deciduous, elliptic or obovate, acute to acuminate, base cuneate, margin serrate with the teeth incurved, 1½–3 in. long, ¾–1½ in. wide, dull dark green and glabrous above, paler and pilose on the midrib and in the axils of the veins; petiole ⅛–½ in. long, glabrous. *Flowers* showy, cup-shaped, 2–2½ in. wide, solitary in the leaf-axils of the young shoots, opening in June; peduncles ⅙–¼ in. long, tomentose. *Sepals* 5–6, leafy, ovate, minutely and sparingly serrate, ½–¾ in. long, ciliate on the margin but elsewhere glabrous, recurved and persisting on the fruit. *Petals* 5, cream-coloured, stained with red on the outside, cucullate and jagged on the margin, imbricate, 1 in. wide. *Stamens* many, free; filaments silky at the base; anthers yellow. *Ovary* ovoid, quite glabrous; style simple, glabrous; stigmas very short. *Capsule* woody, ovoid, rostrate, ¾ in. long, 5-valved, opening loculicidally. *Seeds* compressed, winged.

TAB. 8771.—Fig. 1, portion of undersurface of a leaf, showing pubescence; 2, stamens; 3, pistil; 4, fruit; 5 and 6, seed:—*all enlarged except* 4 *and* 5, *which are of natural size.*

5

1

2

3

4

6

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

Vincent Brooks Day & Sos Lt.d imp.

L. Reeve & Co. London.

TAB. 8772.

POLYSTACHYA POBEGUINII.

Tropical Africa.

ORCHIDACEAE. Tribe VANDEAE.

POLYSTACHYA, *Hook.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 540.

Polystachya Pobeguinii, *Rolfe in Orch. Rev.* 1918, p. 106; species *P. elasticae*, Lindl., affinis, floribus paullo minoribus, sepalis lateralibus haud apiculatis, labelloque breviore differt.

Herba epiphytica, caespitosa. *Caules* teretes, stricti, 10–15 cm. longi, basi in pseudobulbum ovoideo-globosum incrassati, vaginis brevibus obtecti, pauci-folii. *Folia* 3–7, disticha, patentia vel suberecta, lanceolata, subacuta, glabra, 2–10 cm. longa, 0·7–1 cm. lata. *Scapi* erecti, circiter 20 cm. longi, basi vaginis brevibus obtecti; racemi multiflori, rhachis sparse puberula; bracteae patentes, ovatae, acutae, glabrae, concavae, margine minute denticulatae; pedicelli circiter 1 cm. longi. *Flores* mediocres, rosei, labelli crista flava. *Sepalum* posticum inferum, ovatum, concavum, apiculatum, 0·5 cm. longum; sepala lateralia oblique et late triangulari-ovata, obtusa, 0·6 cm. longa, 0·8 cm. lata. *Petala* obovato-oblonga, obtusa, 0·5 cm. longa. *Labellum* cum columnae pede articulatum et abrupte refractum, unguiculatum, elongatum et pandurato-trilobum, 0·8 cm. longum, basi carina quadrata elevata instructum, medio arcte recurvum; lobi laterales breviter rotundati; lobus intermedius spathulato-orbicularis, obtusus, margine recurvus, medio concavus; isthmus crista pulvinata pubescente instructus. *Columna* lata, 2 mm. longa, exalata; pollinia 4, sphaerica; stipes cylindricus, gracilis; glandula squamiformis.—*Epiphora Pobeguinii*, Finet in Lecomte Notul. Syst. vol. ii. p. 29, fig. 2, 1–12.—R. A. ROLFE.

The *Polystachya* here figured is an unusually showy member of its large and somewhat polymorphic genus. Within that genus it belongs to a small group of species the original representative of which is *P. elastica*, Lindl., but which is now known to include, in addition to *P. Pobeguinii* described above, two other forms from tropical Africa, *P. liberica*, Rolfe, and *P. Smytheana*, Rolfe. The species which forms the subject of our plate was discovered by Mr. Pobéguin in the peninsula of Ninkan and again at Labé in French Guinea, and was described from this material as *Epiphora Pobeguinii* by Mr. Finet, who took the opportunity thus offered of suggesting the restoration of the genus *Epiphora* based

by Professor Lindley on the South African species described at t. 5886 of this work as *P. pubescens*, Reichb. f. There is, however, no outstanding character by which *Epiphora* can be generically distinguished from *Polystachya*, and even if this had been the case there is the further difficulty that the present species is not very closely allied to *P. pubescens*, but belongs to another section of that rather variable genus. The species is reported to have been in cultivation at Paris from the original specimens. The plant now figured was obtained for the Kew collection from Messrs. Sander and Sons, St. Albans, and flowered at Kew in October, 1913. Another example of *P. Polleguinii* flowered at Glasnevin in November, 1917. The species is remarkable for its bright rose sepals and petals and for its strongly recurved lip which has a darker purple front lobe, and a prominent cushion-like, bright yellow crest on the disk. It thrives in a tropical Orchid House if planted in a mixture of peat fibre and sphagnum. It should be kept dry when not in active growth.

DESCRIPTION.—*Herb*, epiphytic; stems terete, strict, 4–6 in. long, thickened at the base into ovoid-globose pseudobulbs, clothed with short sheaths and bearing few leaves. *Leaves* 3–7, distichous, spreading or somewhat erect, lanceolate, rather acute, glabrous, ¾–4 in. long, ¼–⅓ in. wide. *Scapes* erect, about 8 in. long, clothed below with short sheaths; racemes many-flowered, rachis slightly puberulous; bracts spreading, ovate, acute, glabrous, concave, with finely denticulate margin; pedicels about ⅓ in. long. *Flowers* medium-sized, rose-coloured, the lip with a yellow crest. *Sepals*: posterior the lowest, ovate, concave, apiculate, ⅕ in. long; lateral obliquely and broadly triangular-ovate, obtuse, ¼ in. long, ⅓ in. wide. *Lip* jointed at the foot of column, suddenly refracted, clawed, elongated and pandurately 3-lobed, ⅓ in. long, with a raised quadrate basal keel and sharply recurved in the middle; lateral lobes shortly rounded; mid-lobe spathulate orbicular, obtuse, with margin recurved and concave in the middle; isthmus with a pubescent pulvinate crest. *Column* broad, 1/12 in. long, not winged; pollinia 4, spherical; stipe slender, cylindric; gland scale-like.

TAB. 8772.—Fig. 1, flower, seen from in front; 2, the same, seen from behind; 3 and 4, lip; 5, column; 6, pollinarium:—*all enlarged*.

M.S del J.N.Fitch lith.

Vincent Brooks, Day & Son Lt.d imp.

L.Reeve & Co. London.

Tab. 8773.

HYPERICUM laeve, forma rubra.

Orient.

Hypericaceae. Tribe Hypericeae.

Hypericum, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 165.

Hypericum laeve, *Boiss. et Hausskn. in Boiss. Fl. Orient.* i. 797 (β. **rubrum**); affine *H. scabro*, Linn., caulibus ramisque laevibus et foliis anguste linearibus distinctum.

Herba perennis, multicaulis, 3–6 dm. alta; caules teretes, virgati, laeves, glabri, ex axillis ramulosi. *Folia* linearia vel in caulibus robustioribus lineari-oblonga, obtusa, plerumque secundum margines revoluta (praecipue ea ramulorum), pellucido-punctata, 1–1·5 (raro ad 3 cm.) longa, 2 (raro fere 5) mm. lata, ea ramulorum ob margines arcte revolutis saepe 1 mm. vix latiora. *Panicula* breviter ovoidea, subcorymbosa, densa, rarius elongata et laxior, bracteis ovato-oblongis vel oblongis nigro-glandulosis. *Sepala* elliptico- vel ovato-oblonga, obtusiuscula, glanduloso-crenulata glandulis nigris, 2–2·5 mm. longa. *Petala* patula, elliptica vel oblongo-elliptica, basi subunguiculata, superne nigro-glanduloso-fimbriatula, 5–7 mm. longa, rubro-aurea vel scarlatino-rubra. *Filamenta* stylique rubella.—*H. rubrum*, Hochst. in Lorent, Wander. Orient, p. 343.—O. Stapf.

The graceful St. John's Wort here delineated was first discovered by Kotschy in 1841 near Diarbekir. Since then the species has been met with by Lorent, Haussknecht and others in the Orient, where it inhabits a somewhat limited area which extends from Aintab and Nisib in Northern Syria to Kharput and Diarbekir in Kurdistan. Within this area it is said to grow chiefly on calcareous soil. The colour of its flower varies, sometimes in the same locality, from rich yellow to pure red or nearly scarlet. Haussknecht, who collected both colour-forms at Aintab and Nisib, was inclined to attribute the colour of the red form, which we now figure, to the ferruginous nature of the loam in which he found it growing, though when describing the yellow form as *Hypericum laeve*, he and Boissier nevertheless accorded the red one the status of a variety, while Hochstetter treated specimens of the red flowered plant, collected by

Lorent, as a distinct species, *H. rubrum*. There is, however, no character other than the colour of the flowers by which the two can be distinguished, and we have therefore reverted here to what would seem to have been the view taken by Haussknecht when he examined the two plants as they grew under natural conditions. The plant which forms the subject of our plate flowered in the collection at Kew in June, 1917. It was obtained from Messrs. Bees, Limited, of Neston, who exhibited it in flower at the Holland Park meeting of the Royal Horticultural Society in June, 1914. With Messrs. Bees, at Sealand, Cheshire, the plant withstood two successive winters and grew to a height of eighteen inches, but at Kew it has proved to be tender and has died after flowering. Though it continues in flower for about two months, it has failed to ripen seeds at Kew, but it has been successfully propagated by means of cuttings made from young shoots. The yellow-flowered form, regarded by the authors of the species as the typical one, has not yet been introduced to English gardens. The nearest ally of *H. laeve* is the Arabian *H. scabrum*, Linn., from which our plant is readily distinguished by its smooth and glabrous, in place of rough and glandular stems.

Description.—*Herb*, perennial, sending up several stems, in wild plants 1-2 ft. in height; stems terete, virgate, smooth and glabrous, with many axillary branchlets. *Leaves* linear or on the stouter stems linear-oblong, obtuse, usually and especially on the twigs with revolute edges, dotted with transparent glands, $\frac{1}{3}$–$\frac{2}{3}$ rarely $1\frac{1}{4}$ in. long, $\frac{1}{12}$–$\frac{1}{5}$ in. wide, those of the twigs owing to their much revolute edges often under $\frac{1}{20}$ in. across. *Panicle* shortly ovoid, rather corymbose and dense, very rarely elongated and more open; bracts ovate-oblong or oblong, dotted with black glands. *Sepals* elliptic-oblong or ovate-oblong, somewhat obtuse, glandular-crenulate with black glands, $\frac{1}{12}$–$\frac{1}{16}$ in. long. *Petals* spreading, elliptic or oblong-elliptic, shortly clawed, towards the apex shortly fringed with black glands, $\frac{1}{5}$–$\frac{1}{3}$ in. long, golden-yellow, or yellow with a reddish tinge or, in the form figured, scarlet-red, as are the filaments and the styles.

Tab. 8773.—Fig. 1, a leaf; 2, flower; 3, a group of stamens; 4 and 5, single stamens; 6, pistil:—*all enlarged.*

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

Vincent Brooks, Day & Son L^td imp

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Tab. 8774.

SCABIOSA Hookeri.

Eastern Himalaya and Western China.

Dipsaceae.

Scabiosa, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 159.

Scabiosa Hookeri, *C. B. Clarke in Hook. f. Fl. Brit. Ind.* vol. iii. p. 218; species foliis omnibus subradicalibus pedunculis scapigeris efoliatis capitulo magno distincta.

Herba scapigera perennis, usque ad 30 cm. alta; rhizoma suberectum, vestigiis foliorum indutum, plerumque monocephalum. *Folia* subrosulata, adscendentia, ambitu oblanceolata, obtusa, basi in petiolum alatum attenuata, pinnatifida vel rarius integra, 15–20 cm. longa, 1·5–4 cm. lata, tenuiter chartacea, utrinque longe pilosa, lobulis oblique ovatis apice rotundatis usque ad 6 mm. longis; costa infra lata, conspicua, nervis lateralibus inconspicuis. *Pedunculus* monocephalus, usque ad 35 cm. longus, basin versus circiter 5 mm. crassus, sicco sulcatus, inferne longe pilosus, superne villosus. *Capitulum* subnutans, circiter 6 cm. diametro. *Bracteae* 2–3-seriatae, lanceolatae vel ovato-lanceolatae, subacutae, 1·8 cm. longae, usque ad 7 mm. latae, longe ciliatae, dorso pilosae intus glabrae. *Involucellus* 2 mm. longus, villosus, apice undulato-dentatus. *Calycis* setae circiter 20, corollae tubo parum breviores, filiformes, plumosae. *Corolla* pallide violacea; tubus infundibuliformis, leviter obliquus, 1 cm. longus, extra pilosus; lobi 5, patentes, rotundatae, 3·5 mm. longae. *Antherae* atro-purpureae, exsertae, 3·5 mm. longae. *Stylus* exsertus, glaber, stigmate depresso-globoso coronatus.—J. Hutchinson.

The very attractive *Scabiosa* now figured was raised from seed presented to Kew by Mr. A. K. Bulley in 1915. This seed had been obtained in Bhutan by Mr. Cooper when collecting there on behalf of Messrs. Bees, Limited. This species, *S. Hookeri*, was first collected by the late Sir J. D. Hooker in July, 1849, in the Sikkim Himalaya near Tungu at altitudes of 12,000–14,000 feet above sea-level. It was met with again by Mr. H. J. Elwes in 1877, and since then it has been gathered in the vicinity of Ta-chien-lu in Western Szechuan by various French and British collectors. This is by far the most handsome of the species of *Scabiosa* met with in the Himalaya, and is readily

recognised among them by its radical leaves, and its leafless, scapigerous one-headed peduncles. At Kew it has flowered in an open border in July and has proved quite hardy, making vigorous growth in spring after a winter, unprotected, out-of-doors. What appears to be another form of the species with light yellow flowers has been gathered in the neighbourhood of Chumbi, immediately to the east of Sikkim, by one of the collectors employed by the late Sir George King. The same form has also been found near Lhassa in Tibet by Captain H. J. Walton.

DESCRIPTION. — *Herb*, scapigerous, reaching 1 ft. in height; rootstock perennial, suberect, usually monocephalous, clothed with the remains of the old leaf-stalks. *Leaves* somewhat tufted, ascending, oblanceolate, obtuse, narrowed below into a winged petiole, pinnatifid or less often nearly entire, 6–8 in. long, $\frac{2}{3}$–$1\frac{1}{2}$ in. wide, thinly papery, pilose with long hairs on both faces, lobules obliquely ovate with rounded tips, about $\frac{1}{4}$ in. long; midrib beneath wide and conspicuous, lateral nerves rather obscure. *Peduncle* monocephalous, up to 14 in. long, about $\frac{1}{5}$ in. thick at the base, furrowed when dry, pilose with long hairs below, villous above. *Capitulum* slightly drooping, nearly $2\frac{1}{2}$ in. across. *Bracts* 2–3-seriate, lanceolate or ovate-lanceolate, somewhat acute, $\frac{3}{4}$ in. long, over $\frac{1}{4}$ in. wide, long ciliate, pilose on the outside, glabrous within. *Involucel* $\frac{1}{12}$ in. long, villous, with undulately toothed margin. *Calyx* composed of about 20 filiform plumose setae, rather shorter than the corolla-tube. *Corolla* pale violet; tube funnel-shaped, slightly oblique, $\frac{1}{5}$ in. long, pilose outside; lobes 5, spreading, rounded, $\frac{1}{7}$ in. long. *Anthers* dark-purple, exserted, glabrous, crowned by the depressed-globose stigma.

TAB. 8774.—Fig. 1, flower; 2, section of flower, the corolla removed; 3, part of an involucel, seen from within; 4 and 5, anthers:—*all enlarged.*

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Tab. 8775.

RHODODENDRON orbiculare.

Szechuan.

Ericaceae. Tribe Rhodoreae.

Rhododendron, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 599.

Rhododendron orbiculare, *Decne in Fl. des Serres*, vol. xxii. p. 169 (1877); *Hemsl. et E. H. Wils. in Kew Bull.* 1910, p. 108; *Rehd. et E. H. Wils. in Sargent, Plant. Wils.* vol. i. p. 540; *Millais, Rhodod.* p. 221; species *R. Fargesii*, Franch., affinis foliis plerumque suborbicularibus basi profunde cordatis petiolis multo longioribus apte tamen distinguenda.

Frutex usque ad 3 m. altus; ramuli robusti, nitidi, glabri, apicem versus laxe foliati; gemmae axillares anguste ovoideae, obtusae vel subacutae, glabrae. *Folia* elliptica vel elliptico-orbicularia, apice interdum leviter emarginata vel mucronulata, basi profunde cordata lobis imbricatis, 5–10 cm. longa, 3·5–7 cm. lata, coriacea, glabra, supra viridia, infra glauca et delicate reticulata; costa supra plana, infra valde conspicua, basi circiter 2·5 mm. lata, apicem versus angustissima; nervi laterales utrinsecus circiter 10, graciles, marginem versus ramulosi, infra inconspicui; petioli robusti, fere teretes, usque ad 6 cm. longi, nitidi, glabri. *Inflorescentia* terminalis, laxa, circiter 10-flora. *Flores* nutantes, roseo-carminei; pedicelli 2·5–3·5 cm. longi, glabri. *Calyx* parvus, breviter lobatus, lobis margine glandulosis. *Corolla* late campanulata, elepidota; tubus 3 cm. longus, apice 3·5 cm. diametro; lobi 7, suberecti vel patuli, breves, late emarginati. *Stamina* circiter 13, inaequalia, tubo leviter longiora; filamenta glabra, albida; antherae atro-brunneae, 2·5 mm. longa. *Ovarium* 7-loculare, glandulis subsessilibus ornatum; stylus brevissime exsertus, glaber.—*R. rotundifolium*, David in Journ. As. Soc. N. China Br. vol. vii. p. 216 (1873) nomen; Franch. Pl. David. vol. ii. p. 85 (1888); Schneider, Ill. Handb. Laubholzk. vol. ii. p. 483, fig. 321a (1909); Bean, Trees and Shrubs Brit. Isles, vol. ii. p. 377 (1914).—J. Hutchinson.

The very distinct *Rhododendron* now figured is a native of Western Szechuan, where it occurs at altitudes of 9,000–10,000 feet above sea level. It was first collected near Moupine, in 1869, by the Abbé David who, noting it as remarkable for its rounded leaves, used for it the name *R. rotundifolium* published, but without a full description, in 1873. In 1877 Professor Decaisne supplied an account of the plant under the name *R. orbiculare*, and although the late Mr. Franchet took up the Abbé's

name in 1888, that of Decaisne has, with reason, been definitely adopted by Messrs. Rehder and Wilson. The species was first introduced to cultivation in this country by Messrs. J. Veitch and Sons from seed obtained for them by Mr. E. H. Wilson in 1904. It is, however, comparatively rare in gardens, owing to the circumstance perhaps that it did not thrive very well at Coombe Wood, so that the stock in the country was for a time somewhat scanty. Two plants were obtained for Kew from the Coombe Wood nursery in 1908, and although they have proved hardy in so far that they have not been injured by winter cold, they have not thriven well. They have flowered occasionally, and have ripened seeds from which plants have been raised, but after ten years they still remain small and stunted. The species, however, is well adapted to the milder damp climate of the south-west of England, and in the collection of Mr. J. C. Williams at Caerhays Castle it forms rounded bushes over five feet through, many of which thrive well when given a rather open well-drained situation facing the east. The first plant to flower at Caerhays did so on April 20, 1910, and Mr. Williams, to whom we are indebted for the material for our plate from a plant that blossomed at Caerhays in 1914, regards *R. orbiculare* as one of the most remarkable of the Rhododendrons obtained by Mr. Wilson. "I think," he writes, "I would prefer to keep a good plant of it if I were only to be allowed one of the whole family." Mr. Williams, in the same letter, says, "Wilson told me he found it with his glasses on the far side of a deep valley, and that it took him a day and a half's journey to get there." From Caerhays seeds of *R. orbiculare* have been distributed freely, while the species has also been propagated there by the slower process of establishing cuttings. In addition to this *R. orbiculare* has been crossed with *R. discolor*, Franch.; the hybrids have flowered, and although no improvement on *R. orbiculare* they much resemble that parent and are more robust. The species is readily distinguished from other known Chinese ones by its suborbicular, deeply cordate leaves borne on unusually long petioles. Its nearest ally is *R. Fargesii*, Franch., figured at t. 8736 of this work, which differs mainly in its leaf characters.

Description.—*Shrub*, 9–10 ft. high; twigs stout, shining, glabrous, laxly leafy towards the tip; axillary buds narrow-ovoid, obtuse or somewhat acute, glabrous. *Leaves* elliptic or elliptic-orbicular, sometimes slightly emarginate or mucronulate, deep cordate at the base with the lobes overlapping, 2–4 in. long, 1½–3 in. wide, coriaceous, glabrous, green above, glaucous and finely veined beneath; midrib flat above, very conspicuous beneath, about $\frac{1}{10}$ in. broad at the base, becoming very slender near the tip; lateral nerves about 10 on each side, slender, branching towards the leaf-margin, inconspicuous beneath; petiole stout, nearly cylindric, over 2 in. long, shining, glabrous. *Inflorescence* terminal, open, about 10-flowered. *Flowers* nodding, rose-carmine; pedicels 1–1½ in. long, glabrous. *Calyx* small; lobes short, with glandular margins. *Corolla* wide-campanulate, without scales; tube 1¼ in. long, 1½ in. wide at the mouth; lobes 7, nearly erect or spreading, short, widely emarginate. *Stamens* about 13, unequal in length, rather shorter than the tube; filaments glabrous, whitish; anthers very dark brown, $\frac{1}{10}$ in. long. *Ovary* 7-celled, beset with nearly sessile glands; style little exserted, glabrous.

Tab. 8775.—Fig. 1, tip of a leaf; 2, calyx and pistil; 3 and 4, stamens; 5, transverse section of ovary:—*all enlarged.*

A

B

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Tab. 8776a.

MESEMBRYANTHEMUM fulviceps.

South Africa.

Ficoideae. Tribe Mesembryanthemeae.

Mesembryanthemum, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 853.

Mesembryanthemum (§ Sphaeroidea) **fulviceps**, *N. E. Br. in Kew Bull.* 1914, p. 167; affine *M. Lesliei*, N. E. Br., fissura inter folia multo profundiore et apicibus foliorum fulvis maculis parvis rotundatis atroviridibus notatis apte tamen distinguenda.

Herba succulenta, perparva, acaulis; radix descendens, elongata. *Folia* 2, in corpusculum ultra medium connata. *Corpuscula* subsolitaria vel subcaespitosa, 2·5–4·5 cm. longa, obconica, laevia, glabra, apice 2·5–2·8 cm. lata, truncata, fissura transversa notata, fulva, maculis parvis rotundatis sordide atroviridibus ornata, lateribus leviter purpureo-cinerascentia opaca; fissura 7–8 mm. alta. *Flores* breviter pedicellati, 2·5 cm. diametro. *Calyx* circiter 1 cm. longus, 5-lobus; tubus breviter exsertus; lobi oblongi, obtusi, 0·5–0·6 cm. longi. *Petala* patentia, linearia, obtusa, circiter 1·2 cm. longa, lutea versus apicem rubro-aurantiaca. *Stamina* suberecta; filamenta gracilia; antherae ellipsoideae.—R. A. Rolfe.

The little *Mesembryanthemum* here figured is a member of the *Sphaeroidea* section of the genus, characterised by the leaves being reduced to a single pair, united to form a more or less globose or ovoid mass termed a "corpusculum." It is a native of Great Namaqualand, where it was collected by the late Professor H. H. W. Pearson of Cape Town in the course of the Percy Sladen Expedition to the Great Karasberg Range. In its native habitat it grows on sandy plains at an elevation of 4,300 feet above the sea. Living plants were presented to Kew by Professor Pearson in the early part of 1913, and had not yet flowered when in June, 1914, a description of the species was published by Mr. N. E. Brown. In October, 1915, however, a plant flowered in the collection of succulents at Kew and admitted of the preparation of our illustration. The nearest ally of this Namaqualand plant is *M. Lesliei*, N. E. Br., a native of the Transvaal in which, however, the leaves are more completely confluent into

an obovoid truncate corpusculum with markings of a somewhat reticulated character, while the petals are longer, more reflexed and relatively narrower.

DESCRIPTION.—*Herb*, fleshy, small and stemless, with a rather long tap-root. *Leaves* 2, connate beyond their middle to form a fleshy corpuscle. *Corpuscles* at times 1–2, at times several and caespitose, obconic, 1–1¾ in. long, truncate and about 1 in. wide at the top, which is marked by the transverse fissure due to the incomplete union of the component leaves, smooth, glabrous, with small rounded dark green spots on the tawny apical surface, uniformly dull grey-purple on the sides; the transverse fissure about ⅓ in. deep. *Flowers* shortly pedicelled, 1 in. across. *Calyx* over ⅓ in. long, 5-lobed; tube shortly exserted; lobes oblong, obtuse, about ¼ in. long. *Petals* spreading, linear, obtuse, about ½ in. long, yellow with orange-red tips. *Stamens* suberect; filaments slender; anthers ellipsoid.

TAB. 8776A.—Fig. 1, petal; 2 and 3, stamens:—*all enlarged.*

Tab. 8776b.

MESEMBRYANTHEMUM Elishae.

South Africa.

Ficoideae. Tribe Mesembryanthemeae.

Mesembryanthemum, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 853.

Mesembryanthemum (§ Cordiformia) **Elishae,** *N. E. Br. in Gard. Chron.* 1916, vol. lx. p. 252; affine *M. styloso*, N. E. Br., sed foliis punctatis multo brevioribus et stylis valde recurvis differt.

Herba succulenta, nana; radix descendens. *Folia* 2, in corpusculum semiconnata. *Corpuscula* dense caespitosa, 1·4–2·5 cm. longa, 1·2–2 cm. crassa, subobovoidea, apice valde compressa lobis erectis carinatis, glabra, coeruleo-viridia, obscure punctata. *Flores* breviter pedicellati, 2·1 cm. diametro. *Calyx* 3–5-lobus, submembranaceus, pallide virescens lobis rubescentibus. *Petala* 35–45, 3-seriata, linearia, apice 2-fida vel obtusa, inferne in tubum connata, lutea. *Stamina* indefinita, lutea. *Stigmata* 5–6, filiformia, pallide lutea, inferne in stylum columnarem connata.—R. A. Rolfe.

The small *Mesembryanthemum* now figured is a member of the section *Cordiformia*, based originally by Mr. A. Berger on *M. bilobum*, Marloth, but which is now known to include at least three other species: *M. gracilipes*, Bolus; *M. stylosum*, N. E. Br., figured at t. 8595b of this work; and *M. Elishae*, the species here described. The section is characterised by the very fleshy, somewhat elongated leaves being more or less united at the base but remaining free above so that the resulting corpusculum is more or less heart-shaped. The precise habitat of this species in South Africa has not been recorded. It appeared originally in this country in the collection of Mr. G. Elisha, Canonbury Park Road, a keen cultivator of species of *Mesembryanthemum*. The specimen here depicted flowered with Mr. Elisha in October, 1916, and was described by Mr. N. E. Brown. Since then Mr. Elisha has presented a plant to Kew. Mr. Brown has remarked that the nearest allies of *M. Elishae* are *M. bilobum* and *M. stylosum*, but it differs from both in its dwarfer and relatively shorter growths, which form

very compact clusters. The neat habit and the markedly glaucous green with scattered darker dots of the half-connate leaves give it a pleasing appearance. The flowers are bright yellow, expanding in full sunshine and closing at night.

Description.—*Herb*, succulent, dwarf; root descending. *Leaves* 2, connate to their middle to form a fleshy corpuscle. *Corpuscles* densely tufted, ⅔–1 in. long, ½–¾ in. thick, somewhat obovoid, much compressed at the apex with erect keeled lobes, glabrous, bluish-green, indistinctly marked with darker dots. *Flowers* shortly pedicelled, ¾ in. across. *Calyx* 3–5-lobed, somewhat membranous, pale green with the lobes becoming reddish. *Petals* 35–45, 3-seriate, linear, 2-fid or obtuse at the tip, connate below in a tube, bright yellow. *Stamens* many, yellow. *Stigmas* 5–6, filiform, pale yellow, connate below in a columnar style.

Tab. 8776b.—Fig. 4 and 5, stamens; 6, pistil:—*all enlarged.*

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

Vincent Brooks, Day & Son Lit.d imp.

Tab 8777.

PRIMULA sinopurpurea.

Yunnan.

Primulaceae. Tribe Primuleae.

Primula, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 631.

Primula sinopurpurea, *Balf. f. in Journ. Roy. Hort. Soc. Lond.* vol. xxxix. pp. 137, 160, nomen (1913); *Irving in Gard. Chron.* 1917, vol. lxii. p. 241, fig. 92; species *P. nivali*, Pall., affinis sed foliis repando-denticulatis farinosis differt.

Herba robusta, saepius circiter 1 dm. alta sed interdum robustior et usque ad 4 dm. alta. *Folia* rosulata, suberecta vel patula, oblanceolata, acuta vel subacuta, basi in petiolum alatum longe attenuata, usque ad 20 cm. longa et 4 cm. lata, tenuiter chartacea vel fere membranacea, repando-denticulata, supra glabra, infra flavo-farinosa; nervi laterales adscendentes, utrinsecus circiter 8, valde ramosi, utrinque prominuli; petioli lati, usque ad 7 cm. longi. *Scapus* usque ad 4 dm. altus, robustus, superne farinosus; flores circiter 6 in umbellam terminalem dispositi; bracteae ovato-lanceolatae, acuminatae, subacutae, 5–8 mm. longae, 1–1·75 mm. latae, farinosae; pedicelli leviter nutantes, 1–2 cm. longi, dense flavo-farinosi. *Calyx* anguste tubuloso-campanulatus, extra parce intus dense farinosus; tubus 4 mm. longus; lobi 5, oblongi, obtusi, 3·5 mm. longi, 1 mm. lati. *Corolla* saturate violacea; tubus cylindricus, superne ampliatus, 1–1·2 cm. longus, striatus, extra basin versus leviter farinosus, in limbum patulum 5-lobum circiter 3·5 cm. diametro expansus; lobi late elliptici vel suborbiculares, circiter 1·3 cm. longi. *Antherae* circiter in tubi medium insertae, oblongae, 2·5 mm. longae. *Stylus* 7 mm. longus; stigma subglobosum. *Fructus* cylindricus, 2 cm. longus, medio 6 mm. diametro.—*Primula nivalis*, var. *purpurea*, Franch. in Bull. Soc. Bot. Fr. vol. xxxv. p. 429 (1888). *P. nivalis*, Forbes et Hemsl. in Journ. Linn. Soc. vol. xxvi. p. 40 (1889); non Pall. *P. nivalis*, var. *sinensis*, Pax et Knuth in Engl. Pflanzenr.—Primulaceae, p. 104.—J. Hutchinson.

The example of *Primula sinopurpurea* which is here figured was raised at Kew from seed collected by Mr. G. Forrest in Yunnan and presented by Mr. J. C. Williams, Caerhays Castle, in 1915. It is closely allied to the rather widely distributed *P. nivalis*, Pall., figured at t. 1161 of this work, but differs from that plant in its more remotely repand-denticulate leaves, which are conspicuously farinose on the under side. In his memorable discourse on Chinese Primulas, addressed to the members of the Primula

Conference held in April, 1913, Professor Bayley Balfour remarked that the group of forms of which *P. nivalis*, Pall., is the type includes no fewer than seven Chinese species, all of which, with the exception of *P. albiflos*, Ward, have blue or purple flowers. Of these *P. sinopurpurea* is one of the most striking. It has proved quite hardy at Kew, where, planted in the Rock Garden in half-shade, it has grown well and flowered freely. The first examples to flower did so in April, 1916, and from one of these our figure was made. Examples which flowered in April, 1917, and again in April, 1918, have developed into specimens more robust than the original ones, with the flowers sometimes arranged in two whorls about a couple of inches apart, the upper whorl then producing as many as twenty flowers. In each season these plants have ripened seeds from which a new crop has been raised. Like some other Chinese Primulas, *P. sinopurpurea* must be treated as a biennial, for under cultivation the plants usually die after flowering.

DESCRIPTION.—*Herb*, stout and frequently about 4 in. high, but sometimes larger and exceeding a foot in height. *Leaves* rosulate, ascending or spreading, oblanceolate, acute or subacute, narrowed at the base with a winged petiole, up to 8 in. long and $1\frac{3}{4}$ in. wide, thinly papery or almost membranous, repand-toothed, glabrous above, yellow and mealy beneath; lateral nerves ascending, about 8 on each side, much branched, prominent on both surfaces; petiole broad, up to 3 in. long. *Scapes* up to over a foot in height, stout, mealy in the upper half; flowers about 6 in a terminal umbel; bracts ovate-lanceolate, acuminate, $\frac{1}{5}$–$\frac{1}{3}$ in. long, narrow, mealy; pedicels slightly drooping, $\frac{1}{3}$–$\frac{3}{4}$ in. long, densely covered with yellow meal. *Calyx* narrowly tubular-campanulate, sparingly mealy without, densely mealy within; tube $\frac{1}{6}$ in. long; lobes 5, oblong, obtuse, $\frac{1}{7}$ in. long, very narrow. *Corolla* deep violet; tube cylindric, widened upwards, $\frac{2}{5}$–$\frac{1}{2}$ in. long, striate, slightly mealy externally near the base, with a spreading 5-lobed limb about $1\frac{1}{3}$ in. wide; lobes broadly elliptic or sub-orbicular, about $\frac{1}{2}$ in. long. *Anthers* inserted near the middle of the tube, oblong, $\frac{1}{10}$ in. long. *Style* over $\frac{1}{4}$ in. long; stigma subglobose. *Fruit* cylindric, $\frac{3}{4}$ in. long, $\frac{1}{4}$ in. across.

TAB. 8777.—Fig. 1, calyx and pistil; 2, corolla, laid open; 3, pistil:—*all enlarged.*

M.S del. J.N Fitch lith

Vincent Brooks Day Son Lt.d imp

L. Reeve & Co. London.

Tab. 8778.

STEWARTIA sinensis.

Western China.

Ternstroemiaceae. Tribe Gordonieae.

Stewartia, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 185 (Stuartia).

Stewartia sinensis, *Rehd. et Wils. in Sargent, Plant. Wils.* vol. ii. p. 395; *Bean in Trees and Shrubs Brit. Isles*, ed. 2, vol. ii. p. 553; species *S. monadelphae*, Sieb. et Zucc., necnon *S. serratae*, Maxim., affinis sed ab illa capsula distincte 5-angulata manifeste maiore, ab hac filamentis monadelphis et ovario glaberrimo apte distinguenda.

Frutex vel *arbor* parva, 4·5–9-metralis; novelli dense pubescentes. *Folia* decidua, ovata vel oblongo-ovata, acuminata, basi cuneata, margine serrata dentibus parvis, 4–10 cm. longa, 2–4·5 cm. lata, ciliata, laete viridia, supra primum pilis sparsis adpressis induta, subtus costa nervisque primariis exceptis glabra; petiolus pubescens, 3–8 mm. longus. *Flores* speciosi, circiter 5 cm. lati, axillares, solitarii, aestate jam adulta aperti; pedunculi crassiores, 4 mm. longi, pubescentes. *Sepala* 5, ovata, acuta, integra vel parce serrulata, 8–15 mm. longa, ciliata, extra versus basin sericea, persistentia. *Petala* 5, alba, prope basin cohaerentia, obovato-orbicularia, extra sericea, circiter 2·5 cm. longa, 2 cm. lata. *Stamina* indefinita; filamenta monadelpha, basi sericea; antherae luteae. *Ovarium* ovoideum, dense hirsutum, e carpellis 5 compositum; stylus simplex, glaber; stigmata 5, radiatim patentia, recurva. *Capsula* distincte 5-gona, lignosa, 2 cm. lata, loculicide 5-valvis. *Semina* brunnescentes, compressa, alata.—*S. monadelpha*, Hort. Veitch (non Sieb. et Zucc.); Bean in Trees and Shrubs Brit. Isles, ed. 1, vol. ii. p. 553.—W. J. Bean.

We are indebted for the flowering spray and the fruit of *Stewartia sinensis* now figured to Mr. H. Williams Grigg, in whose grounds at Cann House, Crown Hill, near Plymouth, it forms part of a very extensive and exceedingly well cultivated collection of rare trees and shrubs. There are also young examples in the collection at Kew, where they thrive well and are evidently quite hardy, since they have remained quite unaffected by the rigorous winters of 1916–17 and 1917–18, though they do not grow with the luxuriance that characterises them in the softer air of South Devon. This species was originally discovered in Western Hupeh by Mr. E. H. Wilson in 1901 when collecting for Messrs. Veitch, by

whom it was introduced to cultivation. It was distributed under the name *S. monadelpha* and is doubtless in cultivation under that name in various English gardens. The true *S. monadelpha*, Sieb. & Zucc., is, however, a purely Japanese shrub and is readily distinguished from *S. sinensis* by its much smaller, scarcely angled capsules, which are only one-third of an inch wide. Another near ally of *S. sinensis* is *S. serrata*, Maxim., also a purely Japanese species, figured at t. 8771 of this work, which is even more readily distinguished from our plant by its polyadelphous stamens, its glabrous ovary, and its leaves with tufts of pubescence at the axils of the main-nerves on the under surface of the leaves. While still quite young all the species of *Stewartia* enjoy an admixture of peat with the soil in which they are grown, though this is not essential if the soil be light, warm and loamy and if it be free from lime. In the absence of seeds, the Stewartias may be propagated by summer cuttings.

DESCRIPTION.—*Shrub* or small *tree* 15 to 30 ft. high; young shoots densely clothed with fine hairs. *Leaves* deciduous, usually oval, sometimes ovate-oblong, acuminate, cuneate at the base, finely serrate; 1½–4 in. long, ¾–1¾ in. wide; ciliate, bright green on both surfaces, the upper furnished at first with scattered appressed hairs, the lower glabrous except on the midrib and chief nerves; petiole hairy, ⅛–⅓ in. long. *Flowers* solitary, about 2 in. wide, produced in July from the leaf-axils of the young shoots; peduncle stout, hairy, ⅙ in. long. *Sepals* 5, ovate, acute, entire or sparsely serrulate, ⅓–¾ in. long, ciliate, silky-hairy towards the base outside, persistent. *Petals* 5, white, coherent at the base, obovate-orbicular, about 1 in. long, ¾ in. wide, silky-pubescent outside. *Stamens* many, monadelphous; filaments hairy at the base; anthers yellow. *Ovary* ovoid, 5-celled, densely hirsute; style simple, glabrous; stigmas 5, radiating, recurved. *Capsule* distinctly 5-angled, woody, ¾ in. in diameter, pilose; seeds brown, compressed, winged.

TAB. 8778.—Fig. 1, calyx and pistil; 2 and 3, anthers; 4, transverse section of ovary; 5, fruit; 6, a ripe carpel, laid open:—*all enlarged, except 5 and 6, which are of natural size.*

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

Vincent Brooks, Day & Son Lt^d imp

Tab. 8779.

CEREUS Tunilla.

Costa Rica.

Cactaceae. Tribe Echinocacteae.

Cereus, *Haw.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 849.

Cereus (§ Weberocereus) **Tunilla,** *Weber in Bull. Mus. Nat. Hist. Paris,* vol. viii. p. 460 (1902); *K. Schum. Gesamb. Kakt. Nachtr.* p. 60; a *C. Biolleyi*, Weber, caulibus latioribus et aculeatis differt.

Fruticulus subrepens, ramosus, parce radicans. *Caules* subgraciles, tetragoni, raro trigoni vel pentagoni, virides, angulis obtusis; pulvilli circiter 1·5 cm. sejuncti; aculei 3–5 mm. longi, divaricati, graciles vel crassiusculi. *Flores* laterales, solitarii, patentes, circiter 6 cm. longi. *Calycis* tubus circiter 1 cm. latus, basi copiose setosus; lobi oblongi, subobtusi, patentes, 2–2·5 cm. longi, pallide brunnei; squamae quam calycis lobi breviores, acutae, reflexae. *Petala* elliptico-oblonga, obtusa, subpatentia, numerosa, lilacino-rosea. *Stamina* numerosa, inclusa; antherae oblongae, flavae. *Stylus* inclusus. *Bacca* elongata, setoso-spinosa, flava, edulis.—*Weberocereus Tunilla*, Britton & Rose in U.S. Dept. Agric. Contrib. Nat. Hist. vol. xii. p. 431. *Cereus Gonzalezii*, Weber in Bull. Mus. Nat. Hist. Paris, vol. viii. p. 460; K. Schum. Gesamb. Kakt. Nachtr. p. 60.—R. A. Rolfe.

The attractive species now described is a native of Costa Rica. It was presented to the Kew collection in 1913 by Mr. C. H. Lankester. Since its arrival it has thriven well in the Cactus House at Kew. It produced flowers for the first time in October, 1917, when the accompanying figure was prepared. The study of species of the Cactus family presents several difficulties. Owing to the trouble experienced in preserving them satisfactorily they are, as a rule, but imperfectly represented in herbaria. Their determination from descriptions unaccompanied by drawings or photographs is often somewhat uncertain. Even where there are ample material and adequately illustrated descriptions, students of the family often are beset with doubts as regards the delimitation not only of the species themselves, but also of the genera to which they should be referred. In the present instance all the difficulties alluded to have been encoun-

tered. There is no specimen in the herbarium at Kew with which our plant may be exactly matched. Although Mr. Lankester has not supplied any note as to the local name of this plant, we believe it to be that known in Costa Rica as the Tunilla, which is stated to bear an elongated, spinose edible fruit and fragrant flowers, and has been described by Dr. Weber as *Cereus Tunilla*. At all events the plant figured accords well with Weber's account of the Tunilla and still better, perhaps, with the description given by the same author of *Cereus Gonzalezii*, a closely allied one subsequently regarded by Professor Schumann as merely a form of the Tunilla. This verdict of Schumann has been accepted by Dr. Britton and Dr. Rose, though these authors have deviated from both Weber and Schumann in that they regard the Tunilla as the type of a distinct genus on which they have bestowed the name *Weberocereus*. Whether our plant really be the Tunilla or not, it accords so well in essentials with *Cereus* that we have felt it desirable to retain it in that genus. The original type of *Cereus Tunilla* was found growing on an oak in the village of Tablon near Cartago, at a little over 6,000 feet above sea-level; that of *C. Gonzalezii* was collected at Pacayo, at a similar elevation. If, as we believe, the plant figured be *Cereus Tunilla*, the present is not the first occasion of its introduction to European collections; a young plant, grafted upon the Mexican *Cereus nycticalus*, Link, is reported to have blossomed at Paris in October, 1901.

Description.—*Shrub* of small size, with branched more or less creeping stems, emitting a few aerial roots. *Shoots* rather slender, green, usually 4-angled, rarely 3- or 5-angled, angles blunt; spine-cushions about $\frac{2}{3}$ in. apart; spines $\frac{1}{8}$–$\frac{1}{5}$ in. long, divaricate, slender to rather stout. *Flowers* lateral, solitary, spreading, about $2\frac{1}{4}$ in. long. *Calyx* brownish; tube about $\frac{1}{3}$ in. wide, copiously setose near the base; lobes oblong, rather blunt, spreading, $\frac{3}{4}$–1 in. long; scales shorter than the calyx-lobes, acute, reflexed. *Petals* elliptic-oblong, blunt, somewhat spreading, numerous, rose-lilac. *Stamens* many, included; anthers oblong, yellow. *Style* included. *Fruit* elongated, setosely spinescent, yellow, edible.

Tab. 8779.—Fig. 1, pulvinus with spines; 2 and 3, spines; 4 and 5, stamens:—*all enlarged.*

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

Vincent Brooks Day & Son Imp

L. Reeve & Co London

Tab. 8780.

ODONTOGLOSSUM praevisum.

Colombia.

Orchidaceae. Tribe Vandeae.

Odontoglossum, *H. B. et K.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 561.

Odontoglossum praevisum, *Rolfe in Orch. Rev.* 1904, p. 176; 1915, pp. 101, 155; hybrida inter *O. glorioso*, Lindl. et Reichb. f., et *O. Lindleyano*, Reichb. f., artefacta.

Herba epiphytica. *Pseudobulbi* aggregati, ellipsoideo-oblongi, 5–7 cm. longi, 2·5–3 cm. lati, apice diphylli. *Folia* ligulata, subobtusa, recurva, 25–30 cm. longa, 2·5–3 cm. lata. *Inflorescentia* lateralis, paniculata, 30–40 cm. longa, multiflora; bracteae ovatae, cucullato-concavae, 0·5–0·7 cm. longae; pedicelli graciles, circa 2 cm. longi. *Flores* mediocres, flavi, brunneo-maculati. *Sepala* et *petala* patentia, lanceolata, acuminata, subundulata, 2·5–3 cm. longa. *Labellum* late unguiculatum; unguis erectus, conduplicato-concavus, 1 cm. longus; limbus patens, deltoideo-ovatus, acuminatissimus, undulatus, subconvexus, circiter 2 cm. longus, apice recurvus; discus crista erecta biloba puberula instructus. *Columna* clavata, 1·5 cm. longa; alae falcato-lineares, acuminatae, circiter 3 mm. longae.—R. A. Rolfe.

Since the introduction, more than half a century ago, of *O. crispum*, Lindl., orchid growers have found that, among their plants of repeated importations, occasional examples, on coming into blossom, prove to belong to one or another of three species other than *O. crispum*. This is not surprising. Mr. Rolfe has shown (Orchid Review, vol. i. p. 277) that, in the district of Bogota in Colombia, *O. gloriosum*, Lindl. & Reichb. f., *O. Lindleyanum*, Reichb. f., and *O. luteopurpureum*, occur naturally in association with *O. crispum*, and the casual inclusion of one or other of the three in what was believed to be an unmixed parcel of *O. crispum* is intelligible. What has been more puzzling to growers has been the occurrence among their plants of forms that on flowering proved to be unlike any of the four species named. Their intermediate characters suggested that such forms must be of hybrid origin, though their precise parentage has often been in doubt. When dealing with these hybrids Mr. Rolfe pointed out that

although they did not include a cross between *O. gloriosum* and *O. Lindleyanum*, an instance might be anticipated, and a plant which flowered in 1904 in the collection of Mr. W. Thompson, Walton Grange, Stone, exhibited characters that led Mr. Stevens, his gardener, to conclude that it must be this natural hybrid. The characters of the plant induced Mr. Rolfe to adopt the conclusion of Mr. Stevens and to describe the form as *O. praevisum*. In order to confirm the parentage of the supposed hybrid, an opportunity was taken to cross *O. gloriosum* and *O. Lindleyanum*. Several seedlings, of which *O. gloriosum* was the seed-parent, were secured, and the first of these to flower did so at Kew in March, 1915, when our drawing was made. As compared with the natural hybrid, that now figured has a brighter yellow ground-colour, and shows more of the influence of the female parent. It is of interest to note that *O. Wilckeanum*, Reichb. f., a natural hybrid between *O. crispum* and *O. luteopurpureum*, and *O. Conradinei*, Reichb. f., a natural hybrid between *O. crispum* and *O. Lindleyanum* have now both been raised artificially; also that *O. Adrianae*, Lindl., a plant from another locality in Colombia, where *O. crispum* grows in company with *O. Hunnewellianum*, Rolfe, has been shown by Mr. Rolfe from crosses effected at Kew to be a natural hybrid between these two species. Cultivated under the conditions suitable for its parents, *O. praevisum* thrives as satisfactorily as they do.

Description.—*Herb*, epiphytic. *Pseudobulbs* clustered, ellipsoid-oblong, 2–3 in. long, 1–1¼ in. wide, 2-foliate. *Leaves* ligulate, rather blunt, recurved, 10–12 in. long, 1–1¼ in. wide. *Inflorescence* lateral, panicled, 12–16 in. long, many-flowered; bracts ovate, very concave, about ¼ in. long; pedicels slender, about ¾ in. long. *Flowers* medium-sized, yellow with brown blotches. *Sepals* and *petals* spreading, lanceolate, acuminate, somewhat wavy, 1–1¼ in. long. *Lip* wide-clawed; claw erect, hollow conduplicate, ⅖ in. long; limb spreading, deltoid-ovate, slightly concave, very acuminate, margin wavy, tip recurved; disk with an erect 2-lobed puberulous crest. *Column* clavate, ⅔ in. long; wings falcate-linear, acuminate, about ⅛ in. long.

Tab. 8780.—Fig. 1, lip; 2, column, showing the falcate wings :—*both enlarged.*

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4

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

1

2

Vincent Brooks, Day & Son Lt^d imp.

Tab. 8781.

BERBERIS Beaniana.

Szechuan.

Berberidaceae. Tribe Berbereae.

Berberis, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 43.

Berberis Beaniana, *Schneider in Sargent, Plant. Wils.* vol. iii. p. 439; species inter congeneres fructibus purpureis insignis vix arcte cum quaquam aliarum specierum conveniens.

Frutex erecta, densiuscula, 2–3-metralis; novelli brunneo-rubescentes, glabri, obsolete angulati, spinis gracilibus 3-fidis subtus canaliculatis 1·2–2·5 cm. longis armati; nodi inter se 2·5–4 cm. remoti. *Folia* decidua, glabra, in fasciculos 5–8-folios aggregata, elliptico-lanceolata, acuta in apiculum pungentem abeuntia, basi cuneata, margine nunc integra nunc dentibus utrinsecus 2–12 serrata, supra intense viridia, subtus glaucescentia, 2–5 cm. longa, 8–12 mm. lata. *Flores* intense lutei, 6 mm. lati, ineunte aestate in paniculas axillares corymbosas 10–20-flores, 4–5 cm. longas dispositi; pedicelli graciles, glabri, 6–15 mm. longi. *Sepala* 9, exteriora 3 ovata, minuta, interiora 6 maiora, plus minusve rotundata, cucullata, 4 mm. longa. *Petala* 6, obovata, apice marginata. *Stamina* 6, petalis breviora. *Ovarium* oblongo-ellipticum, stigmate sessile rotundato coronatum. *Fructus* ovoideo-ellipsoideus, 9 mm. longus, laete purpureus, pruinosus. *Semina* 2, 4 mm. longa, ovoidea, compressa.—W. J. Bean.

The handsome *Berberis* here described and figured was purchased for the Kew Collection from Messrs. J. Veitch and Sons, Coombe Wood, in 1913. It had been raised from seed collected for the firm by Mr. E. H. Wilson in Western Szechuan, China, in 1904, and may be grown in various gardens under Wilson's seed-number, 1930. The Kew examples flowered for the first time in June, 1914, and developed an abundant crop of its richly coloured fruits in the autumn of that year. Since then the plants have flowered and fruited freely, and now form bushes six to eight feet high. Being without a name, flowering and fruiting material of the species was sent to the Arnold Aboretum, where it has been examined by Dr. Schneider, who has described it as a new species, observing when so doing that "this is a very distinct species of which the taxonomic position is yet unknown."

As a shrub for gardens *B. Beaniana* promises to be one of the most attractive of the many new Chinese barberys, especially as an ornamental fruit-bearer. It is evidently quite hardy; its flowers are of a rich deep yellow, and its fruits are of a fine purple and very plentiful. The seed it produces so copiously ought soon to give plants sufficient to make it wide-spread in gardens.

Description.—*Shrub*, ultimately 8–10 ft. high, of erect rather dense habit; young shoots reddish-brown, glabrous, obscurely angled, armed with slender trifid spines ½–1 in. long and grooved on the underside; nodes 1–1½ in. apart. *Leaves* deciduous, glabrous, fasciculate, 5–8 in a fascicle, elliptic-lanceolate, acute, spine-tipped, cuneate at the base, margins sometimes entire, but usually serrate and with from 2–12 spiny teeth at each side, dark green above, rather glaucous beneath, ¾–2 in. long, ¼–½ in. wide. *Flowers* rich yellow, ¼ in. wide, produced in June ten to twenty together from the leaf axils in corymbose panicles 1½–2 in. long; pedicels slender, glabrous, ¼–⅗ in. long. *Sepals:* outer 3 ovate, very small; inner 6 larger, more rounded, cupped, ⅙ in. long. *Petals* obovate, notched at the apex. *Stamens* 6. shorter than the petals. *Ovary* oblong-elliptic, crowned by a rounded sessile stigma. *Fruit* ovoid-ellipsoid, ⅜ in. long, bright purple, pruinose. *Seeds* two in each fruit, 3/16 in. long; compressed, ovoid.

Tab. 8781.—Fig. 1, flower-bud; 2, flower; 3, petal, seen from within, and stamen; 4 and 5, stamens; 6, pistil:—*all enlarged.*

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M.S del. J.N Fitch lith

Vincent Brooks, Day & Son Ltd imp.

Tab. 8782.

DIASCIA Aliciae.

South Africa.

Scrophulariaceae. Tribe Hemimerideae.

Diascia, *Link et Otto*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 931.

Diascia Aliciae, *Hiern in Dyer, Fl. Cap.* vol. iv. sect. 2, p. 155; species *D. Burchellii*, Benth., proxima, sed foliis acutis vel apiculatis, corollae calcaribus longioribus differt.

Herba perennis, usque ad ·75 m. alta, inflorescentia excepta glaberrima, diffuse ramosa. *Caules* adscendentes, quadrangulares, anguste 4-alati, 4–6 mm. diametro. *Folia* opposita, decussata, petiolata, ovata, apice acuta vel apiculata, basi rotundata, dentato-serrata, 3–5 cm. longa, 3–4·5 cm. lata; petiolus ·5–1·5 cm. longus, anguste alatus. *Racemi* terminales, laxi, multiflori, 5–25 cm. longi. *Bracteae* ovatae, acuminatae, integerrimae vel basi paucidenticulatae, 4–7 mm. longae. *Pedicelli* erecto-patentes, graciles, ·5–1·5 cm. longi, glanduloso-pubescentes. *Calyx* 5-partitus, 3–4 mm. longus, parce glanduloso-pubescens; segmenta subaequalia, lineari-lanceolata, circiter ·75 mm. lata. *Corolla* pallide rosea, basi labiorum maculis rubescentibus ornata, intra saccum viridescens, parce glanduloso-pubescens; tubus brevissimus, latus, postice saccatus, antice bicalcaratus; limbus bilabiatus, circiter 1·5 cm. longus et 1·3 cm. latus; labium posticum breviter bilobum; lobi subquadrati, leviter recurvi, circiter 2 mm. diametro; labium anticum trilobum; lobi laterales suborbiculares, patentes vel recurvi, 3 mm. diametro; lobus intermedius patens, orbicularis, 7–8 mm. diametro, basi papillis minutis purpureis instructus; calcaria 6–7 mm. longa, sub lobo intermedio labii antici incurva. *Stamina* 4, inclusa, 2·5 mm. longa; filamenta glanduloso-pubescentia; antherae conniventes vel cohaerentes. *Ovarium* anguste ovoideum, glabrum; stylus crassiusculus, staminibus subaequilongus; stigma obscure bilobum. *Capsula* ellipsoidea, 3–4 mm. longa, 1·5 mm. lata.—S. A. Skan.

The genus *Diascia* includes some fifty species, all of them natives of South Africa. Most of them are without horticultural value, and the only species, other than *D. Aliciae* here figured, known in European gardens is *D. Barberae*, Hook. f., which was introduced in 1870 and is figured at t. 5933 of this work. The species now described was discovered in 1903 in the Kentani district of the Transkei by Miss Alice Pegler, who met with it in damp sheltered spots at about 1,500 feet above sea-level. The material for our plate has been provided by plants

raised at Kew from seed received in 1915 from the late Professor Pearson, Cape Town. Grown in an outside border during the summer, they flowered freely in 1916. At Kew the plant is not hardy and has not ripened seeds; propagation is, however, easily effected by means of cuttings. Its nearest ally is *D. Burchellii*, Hiern, which also occurs in the Transkei but extends thence westward to near Cape Town; this latter species has not yet been introduced, and is unlikely to prove more effective horticulturally than that now figured, which as a decorative plant, although not without charm, is much inferior to the better known *D. Barberae*. If the flowers of *D. Barberae* and *D. Aliciae* be compared it will be observed that in both species the filaments of the lower and longer pair of stamens form a loop through which the two upper stamens are deflected, the anthers of the latter being thus placed on the lower side, the four being connivent or coherent round the tip of the style. But whereas in *D. Aliciae* the style and anthers are appressed to the upper lip across the sac at its base, in *D. Barberae* they are diverted towards the median lobe of the lower lip and stand between the mouths of the spurs.

Description.—*Herb*, perennial, up to 2½ ft. high, all parts except the inflorescence glabrous, diffusely branched. *Stems* ascending, 4-angled and narrowly 4-winged, $\frac{1}{6}$–$\frac{1}{4}$ in. thick. *Leaves* opposite, decussate, petioled, ovate, acute or apiculate, rounded at the base, dentate-serrate, 1¼–2 in. long, 1¼–1¾ in. wide; petiole $\frac{1}{4}$–$\frac{2}{3}$ in. long, narrowly winged. *Racemes* terminal, lax, many-flowered, 2–10 in. long; bracts ovate, acuminate, entire or sparingly denticulate at the base, $\frac{1}{6}$–$\frac{1}{4}$ in. long; pedicels slightly spreading, slender, $\frac{1}{5}$–$\frac{2}{3}$ in. long, glandular-pubescent. *Calyx* 5-partite, $\frac{1}{8}$–$\frac{1}{6}$ in. long, sparingly glandular-pubescent; segments nearly equal, linear-lanceolate, very short. *Corolla* pale rose, with darker blotches at the base of each lip, greenish inside the pouch, sparingly glandular-pubescent; tube wide, very short, pouched behind and 2-spurred in front; limb 2-labiate, about $\frac{2}{3}$ in. long and $\frac{1}{4}$ in. across; upper lip shortly 2-lobed, the lobes somewhat quadrate and slightly recurved, $\frac{1}{12}$ in. wide; lower lip 3-lobed, the lateral lobes almost orbicular, spreading and recurved, the mid-lobe spreading, orbicular, nearly $\frac{1}{3}$ in. wide, with minute purple papillae at the base; spurs about $\frac{1}{4}$ in. long, incurved under the mid-lobe of the lower lip. *Stamens* 4, included, $\frac{1}{10}$ in. long; filaments glandular-pubescent; anthers connivent or cohering. *Ovary* narrow-ovoid, glabrous; style rather stout, almost as long as the stamens; stigma indistinctly 2-lobed. *Capsule* ellipsoid, about $\frac{1}{6}$ in. long, $\frac{1}{16}$ in. wide.

Tab. 8782.—Fig. 1, a flower seen from below; 2, the same, from above; 3, ovary with a portion of the calyx; 4, stamens and base of corolla; 5, anther with portion of its filament:—*all enlarged.*

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Vincent Brooks Day & Son Lith.

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Tab. 8783.

MESEMBRYANTHEMUM edule.

South Africa.

Ficoideae. Tribe Mesembryanthemeae.

Mesembryanthemum, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 853.

Mesembryanthemum (§ Acinaciformia) **edule,** *Linn. Sp. Pl.* ed. 2, p. 695; *Ait. Hort. Kew.* ed. 1, vol. ii. p. 190; *Haw. Obs. Mesemb.* p. 392; *Brongn. in Ann. Sc. Nat.* sér. 3, vol. xviii. p. 234, 250, t. 10, fig. 25–28; *Harv. et Sond. Fl. Cap.* vol. iii. p. 412; *Bolus et Wolley-Dod in Trans. S. Afr. Phil. Soc.* vol. xiv. p. 265; *Berger, Mesemb.* pp. 203, 204, fig. 40, 1–5; *Marloth, Pl. S. Afr.* vol. i. p. 203, t. 50, fig. A, etiam in textu, fig. 92; *N. E. Br. in Gard. Chron.* 1885, vol. xxiv. pp. 145, 266; *J. Hutchinson in Gard. Chron.* 1917, vol. lxii. p. 31; species a *M. acinaciforme*, Linn., foliis subaequaliter triquetris oblongis nec obovato-oblongis, et floribus flavis vel senescentibus carneis nec violaceo-rubris statim distinguenda.

Herba succulenta, valde ramosa, procumbens vel pendula, 0·5–1 m. longa, ramulis crasiusculis angulatis. *Folia* opposita, sessilia, oblonga, subobtusa, subaequaliter triquetra, subincurva, crasso-carnosa, viridia, 4–7 cm. longa, circiter 1 cm. lata. *Flores* terminales, solitarii, 7–8 cm. diametro, primum flavi demum carnei. *Calycis* tubus turbinatus, 2–2·5 cm. longus; lobi inaequales, ovati vel oblongi, subobtusi, 2–3 cm. longi. *Petala* patentia, numerosissima, lineari-oblonga, flava sed senescentia carnea. *Stamina* numerosissima, brevia; antherae lineari-oblongae, flavae. *Stigmata* subsessilia, numerosa, reflexa. *Fructus* turbinatus, grandis, edulis.—*M. acinaciforme*, var. *flavum*, Linn. Sp. Plant. ed. 1, p. 485. *M. falcatum majus flore amplo luteo*, Dill. Hort. Eltham. p. 283, t. 212, fig. 272 (1732). *M. sive Flos meridianus Africanus triangulari folio frutescens maximus procumbens fructu turbinato edule flore luteo*, Breyn. Prodr. vol. ii. p. 67 (1689). *Chrysanthemum Aizooides Africanus triangulari folio flore aureo*, Breyn. Exot. Pl. cent. i. p. 163 (1678).—R. A. Rolfe.

No *Mesembryanthemum* to be met with in succulent collections is more handsome than the long known *M. edule*, figured here from material obtained by Mr. J. Hutchinson on the face of an old quarry at the entrance to Caerthillian Valley in Cornwall, where it is thoroughly naturalised in company with the Australian and Chilian species *M. aequilaterale*, Haw. A native of South Africa, *M. edule*, in most parts of Britain, requires the protection of a greenhouse during winter. But in certain localities in Cornwall, South Devon and Jersey, it is now established

as an alien, and in those parts of the United Kingdom with a similar climate the species is hardy and is seen to best advantage when planted along the top of a low wall and allowed to hang down. It thrives best if planted in poor sandy soil, and may be propagated with ease by cuttings taken at any season. The nearest ally of *M. edule* is another Cape species, *M. acinaciforme*, Linn., figured at t. 5539 of this work. The two are readily distinguished, when alive, by their differently coloured flowers and their differently shaped leaves. As seen in dried specimens, however, they are not always easily discriminated, and when Linnaeus enumerated both in 1753 he regarded them as varieties of one species. Ten years later Linnaeus recognised the species now described as distinct, and this judgment has never since been challenged. *M. edule* and *M. acinaciforme*, together with the somewhat similar *M. aequilaterale* which, however, is confined to the Pacific coasts of America and to Australia, but does not occur in S. Africa, were grouped by Haworth in the section *Acinaciformia*, which, as Marloth points out, differs from all other sections of the genus in bearing fleshy fruits—in the S. African species known as Zuurvygen or Hottentot figs—with numerous small seeds embedded in a subacid edible pulp; in other sections the fruits are dry capsules. The cultural history of *M. edule* began long before it received that name. In 1732 it was, as a figure by Dillenius shows, in the garden of Sherard at Eltham. Moreover it was, as Dillenius knew, in the Breynian collection; Breyn tells us it was in his garden in Holland in 1668.

Description.—*Herb*, succulent, much branched, prostrate or pendulous, 2–4 ft. long, with rather stout angular branches. *Leaves* opposite, sessile, oblong, rather blunt, more or less 3-gonous, somewhat incurved, thickly fleshy, green, $1\frac{3}{4}$–3 in. long, over $\frac{1}{3}$ in. wide. *Flowers* terminal, solitary, about 3 in. across, yellow when they open, changing later to flesh-coloured. *Calyx* with a turbinate tube, $\frac{3}{4}$–1 in. long; lobes ovate or oblong, rather blunt, unequal, $\frac{3}{4}$–$1\frac{1}{4}$ in. long. *Petals* spreading, very many, linear-oblong. *Stamens* very many, short; anthers linear-oblong, yellow. *Stigmas* subsessile, numerous, reflexed. ***Fruit*** **turbinate large, edible.**

Tab. 8783.—Fig. 1, stamen seen from in front; 2, the same, seen from behind; 3, section of calyx-tube, showing stamens and stigmas:—*all enlarged.*

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Tab. 8784.

RHODODENDRON oreotrephes.

Yunnan.

Ericaceae. Tribe Rhodoreae.

Rhododendron, *Linn.; Benth. et Hook. f. Gen. Plant.* vol. ii. p. 599.

Rhododendron oreotrephes, *W. W. Sm. in Notes Roy. Bot. Gard. Edinb.* vol. viii. p. 201 (1914); *Millais, Rhodod.* p. 221 (1917); species *R. stereophyllo*, Balf. f. et Smith, et *R. apiculato*, Rehd. et Wils., affinis; ab illo ramulis fere laevibus nec lepidotis, foliisque supra glabris, ab hoc foliis majoribus ellipticis vix conspicue apiculatis differt.

Frutex vel *arbor* usque ad 8 m. alta (*Forrest*); ramuli annotini nitidi, glabri, brunnescentes, hornotini parce peltato-glandulosi. *Folia* parva, late elliptica, utrinque rotundata, apice obtuse mucronata, 3–4·5 cm. longa, rigide coriacea, supra glabra, fusco-viridia, infra glauca, dense glanduloso-squamosa, nervis inconspicuis; petioli 8–10 mm. longi, supra sulcati, infra transverse rugosi, minute et parce squamigeri vel fere glabri. *Inflorescentia* terminalis, circiter 6-flora; pedicelli 1–2 cm. longi, parce lepidoti. *Calyx* obsoletus, circiter 1 mm. longus, undulatus, extra laxe lepidotus. *Corolla* saepius rosea, late infundibuliformis; tubus 2 cm. longus, extra glaber, intus minute puberulus; lobi 5, patuli, late ovato-orbiculares, 2·5 cm. longi, apice rotundati. *Stamina* 10, corolla fere aequilonga; filamenta inaequalia, basin versus parce pubescentia; antherae 2·5 mm. longae, ochraceae. *Ovarium* 5-loculare, dense squamigerum; stylus exsertus, glaber, 3·5 cm. longus, stigmate 5-lobulato coronatus.—J. Hutchinson.

The species now figured, *Rhododendron oreotrephes*, is a native of Yunnan, where it was discovered by Mr. G. Forrest on the eastern flank of the Li-Kiang range at altitudes of 11,000–12,000 feet, growing in company with several other species of Rhododendron, and forming a tree fifteen to twenty-five feet high. The material for our plate has been received from Mr. J. C. Williams, in whose collection at Caerhays Castle, Cornwall, it thrives remarkably well, and where, Mr. Williams informs us, it is easy to grow if given a fairly exposed situation. It bears exposure to the sun at Caerhays better than most Rhododendrons, but Mr. Williams has found individual plants die very suddenly from no evident cause, and has experienced this more frequently with *R. oreotrephes*

than with other species of the genus. At Kew the species is evidently perfectly hardy. It passed through the winter of 1916–17, notwithstanding the severity of the conditions to which it was exposed, with as little injury as any Chinese Rhododendron. At Caerhays Mr. Williams finds that the flowers have a considerable range of colour, the shades varying a good deal in value; the form of the blossom varies also in individual plants. At Kew it flowers freely, and produces seed from which young plants have been raised. The most striking feature of *R. oreotrephes* is, however, the beauty of the foliage, due to the bloom on the underside of the leaves. In Cornwall, Mr. Williams remarks, the foliage of many of his plants is, at a particular stage of growth, among the most brilliant of any plant seen in the south-west of England, recalling the colour of the leaves of the sea-hollies. In the neighbourhood of London this character is far less striking. As yet none of the plants in cultivation have attained the dimensions noted by Mr. Forrest for the wild plant in China. In situations otherwise suitable it is best planted on a slope, so that the glaucous hue of its young leaves may be seen from below. As a practical point, Mr. Williams observes that rabbits eat this Rhododendron more than they do most shrubs.

Description.—*Shrub* or, in the wild state, a *tree* up to 25 ft. high; new shoots sparingly beset with peltate glands, in their second year shining, glabrous and brownish. *Leaves* small, wide elliptic, rounded at apex and base, and at the apex bluntly mucronate, 1¼–1¾ in. long, ⅔–1¼ in. wide, firmly coriaceous, glabrous and tawny green above, beneath glaucous, densely clothed with glandular scales, the nerves indistinct; petiole ⅓–⅖ in. long, channelled above, transversely rugose beneath, finely and sparingly lepidote or nearly glabrous. *Inflorescence* terminal, about 6-flowered; pedicels ⅓–¾ in. long, sparingly lepidote. *Calyx* obsolete or very small and with undulate margin, sparingly lepidote outside. *Corolla* usually rose but sometimes variously flushed with lilac or lavender, wide funnel-shaped; tube ¾ in. long, glabrous outside, finely puberulous within; lobes 5, spreading, wide ovate-orbicular, 1 in. long, rounded to the tip. *Stamens* 10, nearly as long as the corolla; filaments unequal, sparingly pubescent towards the base; anthers $\frac{1}{10}$ in. long, yellow. *Ovary* 5-celled, densely lepidote; style exserted, glabrous, over 1½ in. long; stigma 5-lobed.

Tab. 8784.—Fig. 1, apex of a leaf; 2, calyx and pistil; 3 and 4, stamens; 5, anther; 6, ovary, in transverse section:—*all enlarged.*

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Tab. 8785.

BULBOPHYLLUM Hamelinii.

Madagascar.

Orchidaceae. Tribe Epidendreae.

Bulbophyllum, *Thouars*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 501.

Bulbophyllum Hamelinii, *Rolfe in Orch. Rev.* 1902, p. 284; ibid. 1904, p. 268; species insignis, pseudobulbis latis et valde compressis, foliis et inflorescentiis magnis distincta.

Herba epiphytica, grandis; rhizoma breve, validum, lignosum. *Pseudobulbi* sessiles, aggregati, obcordato-orbiculares, valde compressi, 7–10 cm. diametro, basi vaginis ovatis acutis imbricatis obtecti, apice diphylli. *Folia* elliptica vel obovato-elliptica, obtusa, 40–75 cm. longa, 7–12 cm. lata, valde coriacea, basi subattenuata. *Scapi* axillares, arcuati, validi, 40–75 cm. longi, vaginis numerosis spathaceis imbricatis obtecti; racemi subpenduli, 10–14 cm. longi, densiflori; bracteae late ovatae, subobtusae, concavae, 1·3–1·8 cm. longae; pedicelli validi, 0·5 cm. longi. *Flores* mediocres, numerosi, purpureo-suffusi et maculati, labello atropurpureo. *Sepalum* posticum elliptico-ovatum, 1·2 cm. longum, apice recurvum et subobtusum; *sepala* lateralia ovata, acuta, concava, 1·2 cm. longa, basi connata. *Petala* deltoideo-subulata, acuta, 4 mm. longa. *Labellum* elliptico-oblongum, subobtusum, recurvum, carnosum, 0·7 cm. longum, facie et margine papillosum; discus bicarinatus. *Columna* lata, 4 mm. longa; dentes triangulares subacuti, 1 mm. longi.—R. A. Rolfe.

Bulbophyllum Hamelinii was first found in Madagascar a quarter of a century ago. Living plants were sent by Mr. Hamelin to Messrs. Sander and Sons, St. Albans, and in 1893 a note in "Garden and Forest" (p. 336) detailed the leading features of the species—its large size, its curious pseudobulbs "like some great flat marine shell," its erect scape "thick as one's finger" and a foot and a half long, and the large number of flower-scars along the upper portion of the scape. When that note was written the flowers had not been seen, and it was not until August, 1902, that a plant acquired by the Royal Botanic Garden, Glasnevin, produced an inflorescence which enabled a description of the flowers to be prepared. The note from Sir F. W. Moore which accompanied this inflorescence indicated that the plant hardly

fulfilled the expectations its size had led growers to form. This note refers to the disagreeable odour characteristic of this interesting plant, which is not closely allied to any other known *Bulbophyllum*, and is readily distinguished from all the cultivated species by its obcordate-orbicular, compressed pseudobulbs, concave on one face, convex on the other, and closely flattened against the thick climbing rootstock. The Glasnevin plant of *B. Hamelinii* blossomed again in 1904. Another plant, obtained for Kew from Messrs. Sander, flowered for the first time in August, 1916, when our plate was prepared. In August, 1917, a third plant, part of the collection of the late Sir Trevor Lawrence, presented to Kew by Lady Lawrence in 1914, also flowered for the first time. Both Kew plants thrive well in a tropical house in baskets of peat and sphagnum suspended from the roof. They require abundant water whilst making their growth in autumn. Though *B. Hamelinii* has no near allies it resembles in its carrion-like odour the Bornean *B. Beccarii*, Reichb. f., figured at t. 6567 of this work. When the original consignment of *B. Hamelinii* reached this country, no precise habitat was recorded, but a fruiting specimen collected by Mr. Warpur, which reached Kew in 1900, is noted as being from a forest at Tanabe.

Description.—*Herb*, large, epiphytic; rootstock short, stout, woody; pseudobulbs sessile, clustered, obcordate-orbicular, much compressed, 3–4 in. across, clothed at the base with ovate, acute, imbricate sheaths; 2-foliate. *Leaves* elliptic or obovate-elliptic, blunt, 1½–2½ ft. long, 3–5 in. wide, very firmly leathery, rather narrowed towards the base. *Scapes* axillary, in flower curved, in fruit nearly erect, stout, 1½–2½ ft. long, clothed with numerous spathaceous imbricate sheaths; raceme somewhat drooping, 4–5 in. long, dense-flowered; bracts wide ovate, rather blunt, concave, ½–¾ in. long; pedicels stout, ⅕ in. long. *Flowers* medium-sized, numerous, suffused and blotched with purple and with a dark-purple lip. *Sepals*: posterior elliptic-ovate, ½ in. long, with a recurved rather blunt tip; lateral ovate, acute, concave, ½ in. long, connate below. *Petals* deltoid-subulate, acute, ⅙ in. long. *Lip* elliptic-oblong, rather blunt, recurved, fleshy, nearly ⅓ in. long, papillose on the surface and margin; disk 2-keeled. *Column* broad, ⅙ in. long; teeth triangular, somewhat acute, very short.

Tab. 8785.—Fig. 1, flower; 2, petal; 3, lip; 4, column; 5, anther-cap; 6, pollinia; 7, sketch of the entire plant:—*all enlarged except* 7, *which is much reduced.*

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