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V. Jacquemont 873. — Punjab. Without exact locality, *Drummond 24733* (BO, Kew) !, *940, 24730, 24734, 24735, 34732;* Rawalpindi, Aug. 1872, *Aitchison 129;* Chamba, between Kulel and Musroond, 4000 ft., Sept. 4, 1896, *Gammie 18476!* Simla, below the cemetary, Aug. 25, 1917, *H. H. Rich 681!* — United Provinces. Garhwal, Lobha, 5—6000 ft., Aug. 31, 1885, *Duthie 4480;* Mussoorie, *Dr. Bacon;* Dehra Dun, Malapani Road, 2000 ft., Oct. 1891, *Gamble 23192;* Dehra, 2000 ft., Aug. 1891, *Gamble 23852;* Moradabad, Aug. 1843, ? *collector.* — Central India. Gwalior, *C. Maries 356* (Herb. Singapore) ! — Bombay. Poonah, wet fields, *V. Jacquemont 344.*

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MISCELLANEOUS BOTANICAL NOTES—IV*

C. G. G. J. VAN STEENIS**

SUMMARY

1. In connection with the first record from Malaysia (Atjeh, North Sumatra) of a species of *Schoepfia* (Olacaceae), viz. *S. fragrans* Wall, in Roxb., some notes on the genus are given, including a key to the species of section *Schoepfiopsis* (emended) and to the two Indian species of *Schoepfia.* The specimens of the Kew and Leyden Herbaria of these two species are listed. The name *Schoepfia ffriffithii* Tiegh. is validly published in the present paper, if this was not done before.

2. *Smilax pygmaea* Merr. (Liliaceae) is recorded from Atjeh, Sumatra.

3. The first indigenous species of *Mivmlus* (Scrophulariaceae), *M. tenellus* Bunge, is recorded for Malaysia from Atjeh, Sumatra.

4. A new species of *Macadamia* (Proteaceae) is described from Celebes: *Macadamia hildebrandii* Van Steenis. It belongs to the same genus as the common Australian bush nut, *M. ternifolia,* with edible seeds.

5. Some information, additional to a previous paper on *Biophytum* (Oxalidaceae) in Malaysia, is given.

6. Some records of plants new to Mount Pangrango, West Java, are mentioned.

7. The recent introduction and the present distribution in Malaysia of the weed *Eupatorium odoratum* L. (Compositae) is discussed.

8. Some additional records of the liana *Hollrungia aurantioides* K. Schum. (Passifloraceae) from New Guinea and from outside this island (Ternate, Moluccas) are published.

31. Notes on Asiatic species of Schoepfia (Olacaceae)

The identification of a species of *Schoepfia* collected in the North Sumatran highlands, in 1934 and 1937, has necessitated the examination of specimens from continental Asia. Besides the work of Masters *(in* Hook, f., Fl. Br. Ind. 1: 581-582. 1875) there are the treatments of Miers *(in* J. Linn. Soc. Bot. 17: 70-77. 1878), Van Tieghem *(in* Bull. Soc. Bot. Fr. 43: 550-551. 1896), and Valeton (Crit. Overz. Olacin. 123-130. 1886). Miers and Van Tieghem have split the genus into two, respectively three, other genera, treated by Engler (Nat. Pfl. Fam. Nachtr. I zum II.-IV. Teil 145. 1897) as sections. I agree with the latter's view. The sections appear well defined, but the general characteristics common to all are

*The first paper in this series appeared *in* Bull. bot. Gdns Buitenzorg[1] III 17: 383-411. 1948; the second *in* Blumea 6: 243-246. 1948; the third *in* Bull. bot. Gdns Buitenzorg III 18: 457-461. 1950.

**Director, Flora Malesiana Foundation.

neatly bracketing them and do not warrant a separation into genera. They were defined as follows:

Sect. *Codonium* (Vahl) Engl.—Flowers in fascicled, axillary spikes (often twin-flowered; flowers not rarely concrescent, sometimes **shortly** pedicelled) ; peduncle without basal perular bracts; flowers subtended by a cupule consisting of 2 bracteoles and 1 bract. Central & South America.

Sect. *Euschoepfia* Engl.—Flowers in axillary racemes; peduncle provided with basal perular bracts; flowers spread, subtended by a cupule consisting of 2 bracteoles and 1 bract. SE Asia.

Sect. *Schoepfiopsis* (Miers) Engl.—Flowers in axillary single spikes; peduncle without perular bracts; flowers mostly opposite, sessile, subtended by 1 bract. SE—E **Asia.**

The specific delimitation of the south-eastern Asiatic species is less satisfactory. Even the distinction between the two species enumerated by Masters, viz. *S. fragrans* Wall, in Roxb. and *S. acuminata* Wall, ex DC. is rather arbitrary. Already Brandis (Ind. Trees 149. 1906) expressed some doubt as to the distinctness of the latter species. Apart from the fact that I have not found the characters mentioned by Masters to hold for his authentic specimens, there is quite some variation in the material at hand, generously put at my disposal by the courtesy of the Keeper of the Herbarium of the Royal Botanic Gardens at Kew.

Whether the corolla is quadri- or pentamerous seems quite unimportant ; both figures can be found in .one specimen. Measurements ought to be taken from flowers in full anthesis; those taken from buds are worthless as both ovary and corolla-tube grow considerably towards anthesis and change in size and shape. This is the reason why I have been able to reduce *S. miersii* Pierre (Pierre 617 from Cambodia). It comes nearest to what has been called S. *acuminata.*

The position of stigma and stamens is, at least in section *Euschoepfia,* rather variable, even in one specimen: sometimes the style exceeds the anthers and the stigma (which is generally three-lobed but is occasionally two-lobed) is slightly protruding from the throat, sometimes the stigma does not reach the stamens.

The anthers themselves are sometimes placed quite near the throat, sometimes they are inserted definitely inside the tube, sometimes nearly halfway down the tube. I have not succeeded in tracing a regular flower dimorphism, as Urban (Symb. Ant. 5: 179. 1907) suggested.

As already stated I have not been able to verify the differences in size of the flowers as indicated by Masters, and the only difference left between *S. fragrans* and *S. acuminata* is that in size and shape of the leaves, typical *S. fragrans* having rather small, lanceolate leaves and S.

acuminata rather large, oblong leaves. Additional material shows all intermediates between these two extremes and my conclusion is that they are conspecific. Section *Euschoepfia,* therefore, appears to consist of one species only.

Masters *(op. cit.* p. 582) mentions an other indetermined species, collected by Griffith in Bhotan (no. 1819, *recte* 819). This one is, indeed, quite different. Masters did apparently not realise that it had already been described and depicted by Griffith himself as *Schoepfia sp.* in his posthumous papers. It was later named *S. griffithii* by Van Tieghem; he only cited the collection number and this name is formally a nomen nudum. Taking the description and plate of Griffith into consideration for typification, I think it appropiate to keep van Tieghem's name and authority for it.

In passing it may be remarked that this species is, of course, not identical with *Schoepfia griffithiana* Valeton which was based on Griffith 822 from East Bengal; this has appeared to represent a stage of S. *fragrans* beyond anthesis.

Schoepfia griffithii Tiegh. does not belong to section *Euschoepfia* but to section *Schoepfiopsis* and is entirely different from *S. fragrans.* I have compared it with the two other species of this section, viz. *S. jasminodora* Sieb. & Zucc. from Japan and with *S. chinensis* Champ. & Gardn. from China.

It appears that the characters of section *Schoepfiopsis* can be emended by the following characters:

Deciduous. Plants nigrescent in the herbarium. Flowers on short lateral shoots, not on the main branches, appearing with the flush. Spikes nodding.

Its three species are mutually closely related. Though I have not made a very thorough study of them the following key is tentatively proposed:[1]

KEY TO THE SPECIES OF SECTION SCHOEPFIOPSIS

1a. Flowers more or less urceolate, broadest below above the ovary, about 1.5 X as long as broad 2

b. Corolla tube tubular, slightly broadened towards the throat, about 3 X as long as its basal diameter. (Bract about as long as the ovary. Leaves ovate. Drupe about 10—12 mm long) . . . . . *S. jasminodora* S. & Z.

2a. Leaves ovate. Drupe less than 1 cm long. Style included. . . S. *griffithii* Tiegh.

b. Leaves elliptic-oblong. Drupe about 1.5 cm long. Style exserted. *S. chinensis* Champ. & Gardn.

iUnknown to me is *S. gibbosa* Tiegh. *(I.e.),* based on a sheet (Callery 241) provenant of Macao in China. Formally this is a nomen nudum.

For the convenience of Indian botanists the following key may serve to distinguish between the two Indian species of *Schoepfia* represented in continental south-eastern Asia:

KEY TO THE INDIAN SPECIES OF SCHOEPPIA

1a. Peduncle provided with basal perular bracts. Flowers among full-grown foliage on the main shoots in the axils of leaves; spread on the axis of a short raceme. Pedicels at the apex provided with a cupule consisting of 1 bract and 2 bracteoles. Leaves not nigrescent, elliptic-oblong to lanceolate. Evergreen. *S. fragrans* Wall,

b. Peduncle not provided with basal perular bracts. Flowers on short lateral shoots, appearing with the flush; sessile, often opposite or subopposite, in the axil of 1 bract. Leaves nigrescent, ovate. Deciduous . . . . . *S. griffithii* Tiegh.

The following is the enumeration of the Kew and Leyden specimens examined:

1. SCHOEPFIA FRAGRANS Wall, in Roxb.—Fig. 1

Schoepfia fragrans Wall, *in* Roxb., Fl. Ind.$_r$ ed. Wall. & Carey 2: 188. 1824; Tent. Fl. Nep. 18 *pi. 9.* 1824; Masters *in* Hook, f., Fl. Br. Ind. 1: 581. 1875, excl. tab. Griff. — *Schoepfiopsis fragrans* (Wall, in Roxb.) Miers *in* J. Linn. Soc. Bot. 17: 76. 1878.

Schoepfia acuminata Wall. (Cat. 486) *ex* DC., Prod. 4: 320. 1830. — *Schoepfiopsis acuminata* (Wall, ex DC.) Miers *in* J. Linn. Soc. Bot. 17: 77 *pi. 2.* 1878.

Schoepfia griffithiana Val., Crit. Overz. Olacin. 128. 1886.

Schoepfia miersii Pierre, Fl. For. Cochinch. Fasc. 17: *pi. 265B.* 1892.

Schoepfia fragrans var. *shanensis* Gamble, in sched.

NEPAL. *Wallich H.I.485* (duplicate of *type* of *S. fragrans)* ; Pundus, *Wallich H.I. 486* (duplicate of *type* of *S. acuminata).* EAST BENGAL. *Griffith 822 (type* of *S. griffithiana).* ASSAM. Lushai Hills, Nov. 1917, *Mrs. N. E. Parry 295;* Sarpung, Naga Hills, Dec. 1907, fr., *Meebold 7295;* Hundung, ibid., Dec. 1907, *Meebold 6876; King's collector* (loan 504) ; Mishmi Hills, *Griffith 814;* Kossyah and Jynteah Hills, Aug. 1878, *Gallatly 544; Simons s.n.* (LB). KHASIA. Chuna, Aug. 18, 1850, *Hooker f. & Thomson 2107* (as *S. acuminata)* ; *Thos. Lobb* (loan 514) ; Moortye, Sept. 24, 1850, *Hooker f. & Thomson;* Myrung, Oct. 16, 1850, *Hooker f. & Thomson;* Mamloo, Nov. 13, 1850, *Hooker f. & Thomson;* Jarani, Oct. 18, 1913, fr., *Kanjilal 2738;* below Pomnang, Sept. 18, 1850, *Hooker f. & Thomson 2315;* Kyllang Rock, Sept. 10, 1913, *Kanjilal 2520.* — BURMA. Maymyo Plateau, July 30, 1908, *Lace 4140;* Oct. 20, 1908, *Lace 4346;* Maymyo Distr., July 9, 1925, *For. Bot. Coll. 119;* S Shan States, Sept. 3, 1911, *Robertson 415;* Sept. 4, 1911, *Robertson 418; (type* of *S. fragrans* var. *shanensis),* Rutz Mines Distr., Lawa, Jan. 30, 1910, fr., *Lace 5074;* Bhamo Div., Lawlaw, Sept. 1909, *Cubitt 299;* Mandalay Distr., Nov. 20, 1926, *Law Maung My a 3640.* — SIAM. Me-kang, Feb. 1, 1936, *Garrett;* Chungdao, Nov. 9, 1922, fr., *Kerr 64-85A;* Pak ki Nawn, Oct. 29, 1922, *Kerr 6485;* Doi Angka, July 17, 1922, *Kerr 6330;* Khun Tan, Jan. 5, 1914, *Kerr 3076;* April 1, 1914, *Kerr 3076A.* — INDOCHINA. Cambodia, Knang Repaeu, May 1870, *Pierre 617 (type* of *S. miersii).* Annam, Mt. Bani, July 5, 1927, *Clemens 4323.* —• SUMATRA. Atjeh, Gajo Lands, Bur ni Geredong, near Lake Pupandji, about 2000 m alt., treelet in forest border, fls. yellowish, very fragrant, 1 specimen, Sept. 3—5, 1934, *van Steenis 6354;* Mt. Kemiri, mossy forest, 2900—3000 m alt., on ridge, fls. pale rosa-yellowish as thick cream, 4—5-merous, deliciously scented as "melati," shrub 3 m, with yellowish-green foliage, anthers 4—5, 1 specimen, March 11, 1937, *van Steenis 9719.*

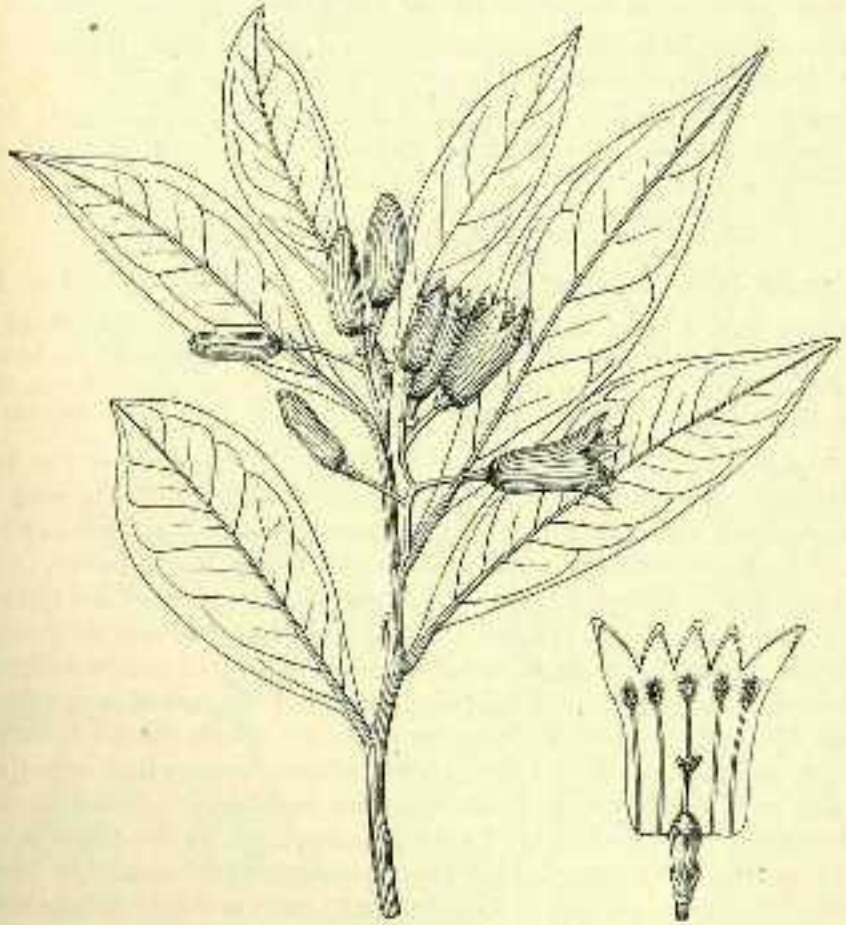

FIG. 1. *Schoepfia fragrans* Wall, from North Sumatra (Van Steenis 9719) flowering twig, x 1, flower, opened, X 2.

The Sumatran specimen figured here (fig. 1), differs slightly from the common type from continental Asia by the somewhat thicker leaves and the style being always half as long as the corolla tube. With respect to the variability found in Asiatic specimens it seems not advisable to give an infraspecific rank to this outlying post which represents the first record of the genus in Malaysia.

2. Schoepfia griffithii Tiegh.

Schoepfia griffithii Tiegh. *in* Bull. Soc. Bot. Fr. 43: 551. 1896, nomen nudum, based on Griffith 819 typified by Griff., Not. PL As.' 4: 639-641. 1854; Ic. PI. As. 4: *pi. 629.* 1854.

Schoepfia sp. Mast, *in* Hook, f., Fl. Br. Ind. 1: 582. 1875.

Corolla fere urceolata, longitudine sesqui majore quam latitudo. Folia ovata. Drupa minus longa quam 1 cm. Stylus inclusus.

BHOTAN. *Griffith 876; Griffith 819 (type* of *S. Griffithii) ;* anno 1851, *Griffith 2487; Griffith (Lemann 1844).* — ASSAM. Chiboan Delei Valley, April 9, 1928, *Kingdon Ward 8040.*

32. Smilax pygmaea Merr. in Sumatra (Liliaceae)

SMILAX PYGMAEA Merr. *in* Philipp. J. Sc. 5 C: 339. 1910.—Fig. 2

SUMATRA. A t j e h. Gajo Lands, Mt. Losir, near summit, 3250—3300 m alt., mossy forest, in shade along brook, not in exposed localities, browsed by mountain goat, Feb. 3, 1937, *van Steenis 8627;* Mt. Kemiri, near summit, scrub-forest, 2900—3300 m alt., berry and underside of leaf glaucous, March 7, 1937, *van Steenis 9640.*

Though I have not seen either of the two original specimens on which Merrill based this species, the Sumatran material exactly fits in both with the description and with a topotype (Ramos & Edaiio, Bur. Sci. 44903) in Herbarium Bogoriense and collected on Mount Pulog, North Luzon, in open grasslands above 2700 m altitude. The habit of this unarmed ecirrhiferous species with its stiff, wiry, erect habit is very characteristic by its bifarious zigzag twigs. To the excellent description of Merrill can be added that all specimens seen by me are branched, and that the height is not 20—40 cm, but 20—100 cm. Though the upper leaves are wholly devoid of tendrils, the lower leaves have often rudimentary caducous ones, which are slightly hook-like curved, measuring 2—10 mm. The leaf-shape is rather variable, viz. from ovate to lanceolate, its dimensions 2—3 by 3—9.75 cm. The umbels are 4—12-flowered. This species apparently belongs to the set of mountain plants common to Sumatra and Luzon to which belong species of *Oreobolus, Monostachya, Potentilla, Gentiana, Eriocaulon,* and *Patersonia.*

33. A native Mimulus in Malaysia (Scrophulariaceae)

The genus *Mimulus* is widely distributed; its centre of distribution is North America; it is absent in Europe, the greater part of Africa and Asia, but present in eastern Australia and New Zealand. Hitherto no species has been reported native to Malaysia, the generic name *Mimulus* being mentioned only in the synonymy of other Scrophulariaceae.

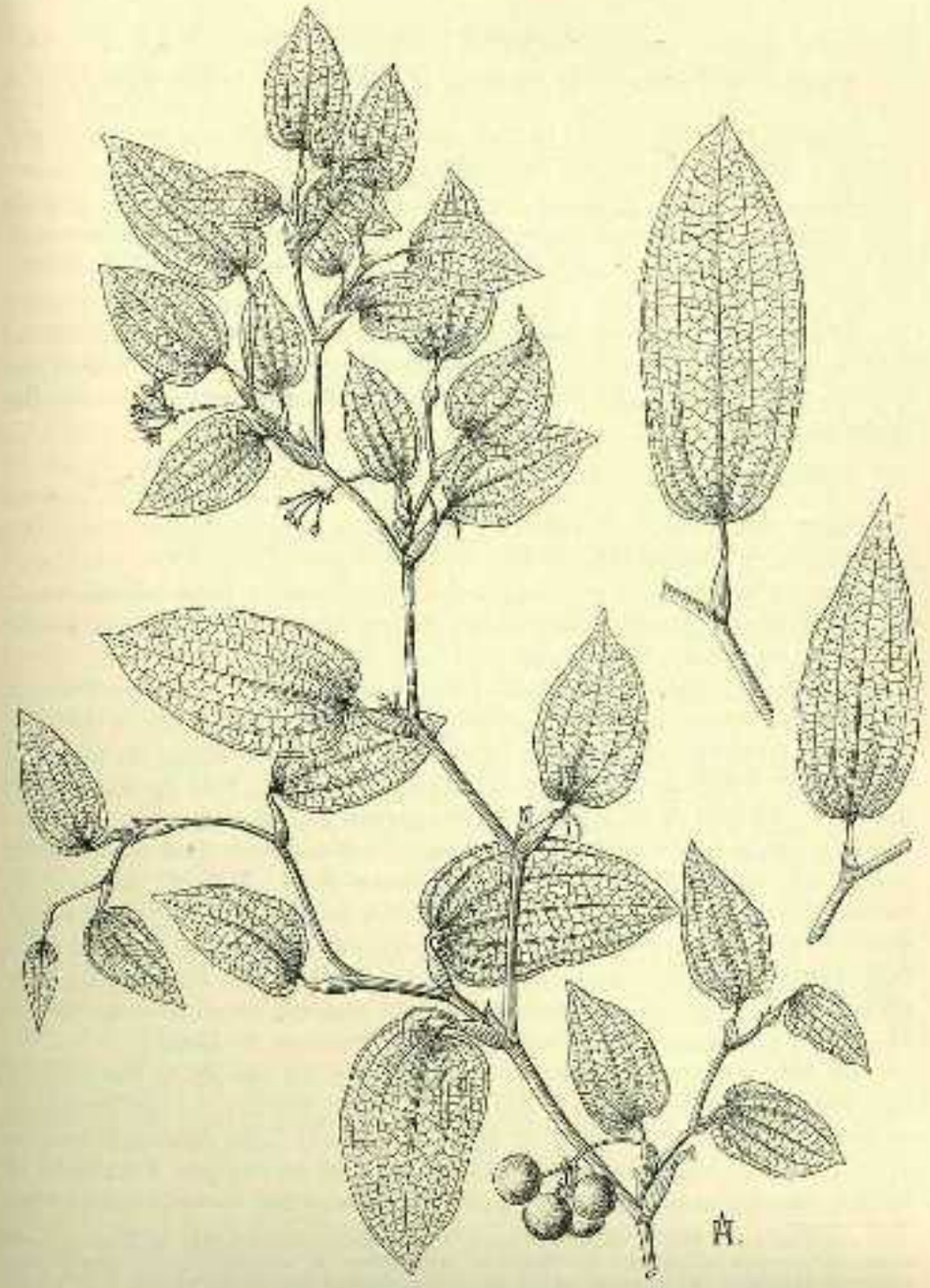

FIG. 2. *Smilax pygmaea* Merr. from North Sumatra (Van Steenis 8627), x 0.7.

MIMULUS TENELLUS Bunge

Mimulus tenellus Bunge, PI. En. China 49. 1831; Benth. *in* DC., Prod. 10: 373. 1847.

Mimulus nepalensis Benth. *in* Wall., Cat. no. 3917. 1828, nomen; Scroph. Ind. 29. 1835; Grant *in* Ann. Mo. Bot. Gard. 11: 206. 1924.

SUMATRA. A t j e h, Gajo Lands, Bur ni Geredong, above Takengon, above Lake Pupandji, about 2300 m alt., wet swampy mountain forest, along elephant trail, local, fresh herb with yellow flowers, throat and tube red-speckled, Sept. 3—5, 1934, *van Steenis 6515.*

The species is widely distributed from the Sikkim Himalaya to Manchuria, Japan and Formosa. The Sumatran specimens exactly match the Sikkim ones. The species may be expected to occur somewhere in the mountains of Luzon.

34. **A new species of Macadamia from Celebes (Proteaceae)**

Ever since 1913, Herbarium Bogoriense has possessed flowering material of a Celebesian species of *Macadamia.* Since 1930 additional fruiting material has been obtained and collections have accumulated, especially though the diligence of the Forest Research Institute at Bogor and it seems the appropiate moment to name the species.

The genus *Macadamia* is allied to *Helicia* but differs in the position of the two ovules which are inserted at the base of the ovary in *Helicia,* and hang from the top in *Macadamia.* Additional characters do not hold exclusively: pedicels connate (rarely free) in *Helicia,* free in *Macadamia* (except in *M. prealta* F. Muell.) ; leaves spread in *Helicia* (rarely suboppo-site, still more rarely in threes), whorled in *Macadamia* (but occasionally partly opposite in *M. prealta* and *M. whelani* F. M. Bailey) ; anthers inserted at the base of the petal-top in *Helicia,* mostly lower down in *Macadamia;* fruit indehiscent with a fleshy exocarp in *Helicia* and (one- to) two-valved in *Macadamia* but occasionally indehiscent; disk mostly consisting of free glands in *Helicia* and cup-shaped or short-cylindric in *Macadamia* (except in *M. prealta* and *M.youngiana* F. Muell.).

Of *Macadamia,* which occurs with about seven species in Queensland and New South Wales, *M. hildebrandii n. sp.*[2] belongs to the group of of species with a cup-shaped or short-cylindrical disk. Among them the alliance seems mostly with *M. whelani* and *M. verticillata* F. Muell. in having whorled peduncles and five- to seven-whorled leaves, both species

[2]Named after Mr. F. H. Hildebrand, Forest Research Institute at Bogor, Java, whose devoted work in the naming and arranging of (mostly sterile) herbarium material has been of immense value to forest exploration in Indonesia, and whose knowledge and services are well recognized by all concerned.

differing by smaller flowers (3—4 mm), *M. ivhelani* having, moreover, filaments inserted near the base of the tepals, and *M. verticillata* coarsely toothed leaves.

It is rather surprising that the material collected in Celebes is **far** from uniform. At first sight this material falls more or less into two groups, one with Small, broad, bluntish leaves and relatively short inflorescences and one with long, acute leaves and slender inflorescences. The examination of the flowers shows that this does not coincide with floral characters, and as to the latter there is quite some degree of variation in hairiness of the ovary (in Kjellberg 647 even being glabrous), the length of the flower (7—11 mm), and length and hairiness of the inflorescence (Kjellberg 647 is glabrous save the puberulous base of the pedicels).

As a matter of fact these minor characters appear not to be coupled in the different specimens, and I consider all specimens to belong to one species, without seeing necessity for differentiating varieties.

Macadamia hildebrandii Van Steenis, *sp. nov.*

A speciebus descriptis differt disco breviter cylindrico, foliis integris cum racemis verticillatis, perianthiis 7—11 mm longis, filamentis in mediis tepalis insertis.

Tree, 3—33 m tall; unbranched bole 2—20 m, 10—40 cm in diaTneter; crown in small specimens about globular. Bark after wounding exuding some sap turning red. Twigs terete. Leaves in whorls of 5—7, entire, variable in shape, obovate to oblanceolate, the base rounded to cuneate, in the rounded leaves with a distinct petiole, in the elongate leaves either with a distinct petiole or the blade nearly decurrent to the base; petiole up to 2 cm; apex acute or rounded or bluntish; blade in the herbarium distinctly prominently reticulately-veined, 7—10 by 4—6 to 20—40 by 5—17 cm. Inflorescences on top of a whorl of 4—7 brachyblasts, emanating from the axils of the apical leaf-whorl; the brachyblasts provided with reduced, 1—2 cm long, bract-like leaves and then each shoot with a whorl of racemes, or, if the reduced leaves are more or less absent, each brachyblast producing one terminal raceme, the peduncle and the internode being demarcated by a thickened articulation. Inflorescences generally exceeding the leaves, adpressed-puberulous or glabrous; peduncle up to 10 cm; rhachis 10—40 cm, slender or rather thickish. Bracts absent (or minute?). Flowers in twos, white or creamy, sweet-scented. Buds club-shaped, adpressed-puberulous, or almost glabrous, first opening laterally by a bulging out of the style through a slit. Pedicels free, 5—6 mm, spreading, adpressed-puberulous or almost glabrous, reddish (according to collector). Tepals ligulate, at last free, rolled outward, 7—11 mm long, 0,5 mm broad, linear. Filaments 0.25—1.25 mm long, flat; inserted about the middle of the tepals or somewhat higher; anthers 1.75—2.25 mm long, with pale cells and a dark, broad, protruding connective. Ovary sparsely

adpressed-ferrugineous hairy, rarely glabrous; style glabrous, its apex club-shaped. Disk short-cylindrical, faintly 4-lobed or irregularly erenulate, about 0.5 mm high. Ovules 2, hanging from the apex of the ovary. Fruits 1—2 per raceme, globular, oblique, with a short, hard, conical style-base, and a prominent longitudinal rib, apparently indehiscent, 3.5 cm in diameter, green-brown (according to collector). Pericarp very hard, 2 mm in diameter, consisting of a thin, smooth endocarp and a thick fibrous exocarp. Seed globular, about 3 cm in diameter, purple brown (according to collector), surrounded by a very thin testa, thicker and of other structure at the micropylar half as compared with the funicular half.

TYPE SPECIMEN.—Rachmat 712 (Herb. Bogor., duplicate in Leyden Herb.).

SPECIMENS EXAMINED.—CELEBES. West Central: Palu, Mt. Njilalaki, 1250 m alt., l.n. perande (Tado), primary forest, tree 33 m high, 17 m to the first branch, 40 cm in diam., 29 cm at breastheight, *bb. 28228.* Toradja: Makale-Rantepao, near Kambutu, 1000 m alt., l.n. lila bai (Toradja), tree 10 m, bole up to 1st branch 5 m, 13 cm in diam., *bb.24-703;* Tondon near Rantepao, 1000 m alt., l.n. tanapu (Toradja), fl. May 8, 1936, in young forest, tree 11 m tall, bole 3 m to 1st branch, 10 cm in diam., *bb. 20545;* Madong near Rantepao, fl. Oct. 13, 1929, 800 m alt., l.n. tinapu or tomaku (Toradja), rather rare in young forest, *bb. 13905.* East Central: Malili, near Lauwoli, fr. March 12, 1938, 25m alt., l.n. kaju balo molaba (Padoe), treelet 7m, in primary forest, *bb. 23943;* Malili, near Usu, fl. Oct. 19, 1931, 5 m alt., l.n. kaju balomotea (Tobela), tree 18 m tall, rather common in old forest *Cel.1111-23;* Malili, B. Tabale Kadju, 1500 m alt., l.n. kandjolee (BareE), tree 30 m tall, bole 20 m to 1st branch, *bb.24091;* Malili, fr. March 14, 1936, 25 m alt., l.n. balo molaba (Tobela), tree 20 m tall, 7 m to 1st branch 20—32 cm in diam., in old forest *Cel./IV-190;* Malili, fl. July, 26, 1932, fr. April 14, 1932, 20 m alt., tree 14 m, l.n. balomolaba (Tobela), bole to 1st branch 2 m, 32 cm in diam. *Cel.IIV-92;* Malili, near Lampea, sealevel, tree 6—7 m tall, *Kjellberg 2082;* Lake Towuti, fl. Aug. 25, 1929, 300 m alt., tree 5 m, *Kjellberg 2173;* G. Sojo, *Rachmat 712 {type).* Southeast: North Kendari, fl. March 3, 1929, 150 m alt., one treelet 3—4 m tall in rainforest, *Kjellberg 647;* Kendari region, Lepolepo, July 24, 1874, *O. Beccari, sheet no. 8031* (Florence).

As is well known, a common Australian species, *Macadamia ternifolia* F. Muell., is praised for its production of edible seeds: it is called the Australian bush nut. It has been subjected to various studies[3] and has been cultivated far beyond Australia in other tropical countries. It was formerly cultivated in its typical form with large, sessile, toothed

[3]FRANCIS, W. D.: The anatomy of the Australian bush nut *(Macadamia ternifolia). In* Proc. R. Soc. Queensland 39: 43-53. 1927.
KAUSIK, S. B.: Studies in the Proteaceae II. Floral anatomy and morphology of *Macadamia ternifolia* F. v. M. *In* Proc. Ind. Ac. Sc. 8B: 45-62. 1938.
HARTING, M. E. & W. B. STOREY: The development of the fruit of *Macadamia ternifolia. In* J. Agric. Research 59: 397-406. 1939.
Compare further Queensl. Agric. J. 93-95. 1923; Current Science 9: 22-25. 1940 (floral anatomy); ibid. 9: 130. 1940 (fruit structure).

leaves in the Mountain Gardens at Tjibodas, West Java, sub no. C.13, now G.56. The form of Australian bush nut more commonly cultivated in Java is its variety *integrifolia* (Maiden & Betche) Maiden & Betche, earlier assumed to represent a separate species characterized by petioled, entire, smaller leaves.

About the usefulness of the Celebesian nut nothing is known to me and some simple cultivation experiments ought to be devoted to it. There is reason to assume it to be palatable, and its broad altitudinal range from sealevel to 1500 m altitude will simplify such experiments. It is, possibly, better adapted to Indonesian climates than is the Queensland species.

The structure of the fruit and seed differs considerably from that described for several species by Francis *(in* Proc. R. Soc. Queensl. 39: 43-53. 1927) ; it appears to have a similar structure as *M. prealta* F. Muell. (Francis, *op cit.* p. 50) in that the testa is papery and not hard and connate with the pericarp.

35. Additional note on Malaysian Biophytums (Oxalidaceae)

The examination of *Biophytum* preserved at Bogor gave the following additions to my former paper on this genus (Van Steenis *in* Bull. Bot. Gard. Buitenzorg III 18: 449 seq. 1950).

BIOPHYTUM REINWARDTII (ZUCC.) Klotzsch.—Additional islands: Madura and Celebes.

BIOPHYTUM DENDROIDES (H. B. K.) DC.—This species seems to be an escape from the Botanic Gardens at Bogor (Buitenzorg) where it was already collected by H. Hallier, March 24, 1893 (D245). This material was later named *B. intermedium* Wight by Boerlage. Still later Boldingh (Lijst der planten, etc. 599. 1916) mentioned it as *Biophytum sp.* under XV.K.B.XXI.8; material of this number was poisoned in 1914. Recently my colleague J. H. Kern collected fresh material near his house at Bogor. From the latter locality specimens are now planted again in the Gardens there.

BIOPHYTUM FRUTICOSUM Bl.—Two additional specimens were located, viz. from the Philippines, Bohol Island, August—October, 1923, M. Ramos (Bur. Sci. 42854), and from south-west Celebes, Pasui, 600 m, open, limestone, May 1929, flowers white (Kjellberg 3826). The Philippine specimens are dwarfs, as are Kjellberg's, and the first-named ones have fewer jugae of leaflets than I mentioned formerly. Henderson S. F. 35246 from the Malay Peninsula has very slender pedicels in fruit, up to 15 mm. These

features tend to diminish the value of the differentiating characters between *B. fruticosum* and the Papuan *B. albiflorum.*

36. Some mountain plants new to Mount Pangrango, West-Java

March 30, 1950, I found in the sterile central hollow (alun-alun) on the summit of Mount Pangrango, at about 3000 m, local patches of *Tripogon exiguus* Trin., a grass which up till 1929 was not found west of Mount Sumbing in Central Java; in 1929 we found it also on Mount Papandajan.

On a later excursion a trail was cut from Kadangbadak, a hut well-known to many foreign visitors of Bogor, towards the West, between 2400 and 2550 m, which is now about three hours' rather rough going. The aim of this trail was to locate and examine non-forested spots on the Pangrango cone which can easily be observed from the Tjibodas Gardens. The open, green places appeared to represent steep slopes with landslides overgrown with dense thickets, sometimes very large, of paku andam, i.e., species of *Gleichenia, G. linearis, G. volubilis,* and *G. longissima.* One of these smaller landslips contained moreover a serai of *Gnaphalium longifolium* and *G. maximum.* The latter Java endemic is exceedingly rare and hitherto found only on the mountains Tjikuraj, Tjareme, Dijeng, and Sumbing in West and Central Java.

In the surrounding forest many sterile, slender plants could be found of *Berberis wallichiana,* also a new plant for Mount Gede.

At the end of the trail, a peculiar open, not forested slope was reached, which I suppose to represent a lavastream covered by a later landslide. Solid, dark andesite rocks line the streamlet in the centre producing a canyon-like effect; the soil of the landslide consists of 'padas,' a kind of soft conglomerate, very sterile, covered in many places by ground lichens (Lecidiaceae). The vegetation is half open, heathy, and dwarfed and the miniature shrubs are richly covered by *Usnea* and other lichens.

37. **Eupatorium odoratum** L., **an introduced composite in Malaysia**

Already a long time ago *Eupatorium odoratum* L. was introduced into south-eastern Asia. In 1872 C. B. Clarke collected it near Dacca (no. 16733) ; it probably grew at that time also in other places. It is probable that it had escaped from the Calcutta Botanic Gardens, in which it was cultivated under the name *Eu. repandum* (Clarke, Compos. Ind. 30. 1876). Clarke says: "in Java efferata."

In Siam it was collected in 1910 by the late A. F. G. Kerr, but probably occurred at the time in many other places in south-eastern Asia.

The exact date of its introduction in Malaysia is not to be traced with certainty; according to Clarke *(I.e.)* it was present in Java in the last century, but I have not seen any material of it. This rather conspicuous tall plant was collected in Java for the first time in 1940 (see below). It may have been cultivated much earlier in the Botanic Gardens at Bogor, but no material is present in the Garden Herbarium.

The first record in Malaysia dates back to 1934 and was made by J. C. van der Meer Mohr (De Tropische Natuur 25: 96-99 *S figs.* 1936; 27: 226. 1938; Chrom. Nat. 103: 165. 1947) who observed its locally abundant occurrence in the secondary growth of abandoned tobacco fields in the Deli districts, Eastcoast of Sumatra. He stated that it spread gradually in the thickets. It appeared a dangerous plant there, as it spreads tobacco virus. He alludes to a prior occurrence mentioned *(in* Meded. Deli Proef st. No. 3: 64. 1909) where a plant was referred to under the name of *Eu. repandum* said to have been introduced from the Botanic Gardens at Bogor (Buitenzorg) by Dr. P. J. S. Cramer. According to Backer, however, this plant was probably *Eu. pallescens = Eu. inulifolium.* At present *Eu. odoratum* L. is grown at Bogor sub no. XV.K.A.XXI.19 raised from seed received from Deli in 1934.

At the same time it was collected in Langkawi Islands (1934) and Kedah (1938) in the Malay Peninsula. It is quite probable that it was present in Kedah and Perlis at an earlier date; cattle breeders complained earlier of an *Eupatorium* as an obnoxious weed converting their pastures into thickets.

March 15, 1940, it was also collected in the Natuna Islands (between the Malay Peninsula and Borneo) ; according to Ir. F. K. M. Steup it bore the Malay name "serunai" and its abundant growth had an unfavourable effect on coconut plantations.

The first specimens from Java were collected, August 24, 1940, in the southern parts of West Priangan, West Java, at low altitude near the estate Sempora, near Sindangbarang, where it was found in clearings. In 1941, Mr. S. de Meyier planted it intentionally near Sindanglaja, north slope of Mount Gede, West Java, for its profuse leaf production, near his dairy farm at an altitude of about 1000 m. During an excursion on June 11, 1950, we found it had indeed covered big stretches of waste land and abandoned tea-gardens from Parungkuda and Tjibadak southward towards the Wijnkoopsbaai (Pelabuhanratu) between 1 and 600 m altitude. Some weeks later I also observed it locally on the northern slope of Mount Salak in thickets near Imah Leutik.

This species is apparently spreading over big areas in West Java. It seems more agressive than *Eu.inulifolium* and it is also named "ki rinju," in the Sundanese language, though its habit and the colour of its flowers are different. It suppresses *Imperata* and other coarse grasses, but it may be a nuisance in open tea-gardens and other low cultivations, converting them into thickets by its vigorous growth and sprawling habit, which physiognomically resembles that of *Lantana.* It hangs also down over tali and if the thicket grows dense it even clambers up small trees. In due time it will conquer big areas in the secondary growth areas of Java, probably mostly in the everwet regions from the beach up to the montane zone. There is no doubt about its napoleonic ambitions and ability.

Miss Dr. J. Koster *(in* Blumea 1: 492. 1935) dit not include it in her account as at that time no material was available to her, and she dit not accept Clarke's record of 1876. The species is easily keyed out from her no. 5.a. *Eu. riparium,* a glabrous semi-prostrate or ascendent plant with white flowers and narrow-elliptic-lanceolate leaves, by its coarse habit, stiff ascendent-patent branches, pale lilac flowers, aromatic foliage (if crushed), rhomboid, coarsely dentate leaves hairy and glandular beneath; the flush is pale rosa coloured.

38. **The genus Hollrungia K. Schum. (Passifloraceae)**

This rare New Guinea liana has been known for a long time only from the type collection in North-East New Guinea. In 1943 Merrill & Perry published a second record from West New Guinea. Here two others are reported, viz. from south-eastern New Guinea and from the Island of Ternate, Northern Moluccas, which extend its area into other parts of the East Malaysian province.

HOLLRUNGIA AURANTIOIDES K. Schum.

Hollrungia aurantioides K. Schum. *in* Bot. Jahrb. 9: 212. 1888; Harms -m-Engl. & Pr., Nat. Pfl. Pam. 3, 6a: 86 *fig. 25 E, F.* 1893; *op. cit.,* 2nd Ed., 21: 495 *fig. 218 E, F.* 1925; Merr. & Perry *in* J. Arnold Arb. 24: 210. 1943; 30: 44. 1949.

NORTHERN MOLUCCAS. Ternate I., North Foramidiahi, 900 m, branched liana 20 m tall, buds yellowish green, March 15, 1921, *Beffuin 1535* (BO, LB, Kew). — NEW GUINEA. West New Guinea: Bernhard Camp, rainforest canopy liana, 1200m, *Brass 12880* (not seen). North-East New Guinea: Finschhafen, *Hollrung 62 {type,* not seen). Papua: Boridi, secondary forest, 1200m, flowers pale green, Nov. 11, 1935, *Carr 14876;* Mafulu, *Brass 5239* (not seen).

The specimens differ slightly mutually. The Ternate specimens have hardly any tendrils in the inflorescence. The flowers of both newly record-

ed collections are slightly smaller than the dimensions given by Harms, but most of the material is in bud. In Carr's specimens the inflorescences are distinctly supra-axillary, in the Ternate sheets they are not or slightly so. The leaves of the Ternate specimens are slightly broader elliptic in shape than those of Carr's, they measure 6.5—13.5 by 3.5—7 cm, those of Carr are 10—10.5 by 3.5—4.5 cm. The petiolar glands were described by Harms as "just above the base of the petiole"; in the new specimens they are found higher up, up to the middle of the petiole. In both collections the floral parts (calyx, corolla, anthers) are provided with dark-brown, Myrsinaceous-like glandular dots. The anthers are distinctly dorsifixed, their parallel cells are separated by the connective, and their lower part is free. The leaf-margin possesses a distinct nerveless flat extreme edge. The inner corona appears to be somewhat more crisped and complicated than is shown in Harm's drawing.

In all essential points the specimens agree with the type description. The genus is distinctly allied to *Adenia,* and might be reduced to that genus as another section.