CONTRIBUTIONS FROM THE ARNOLD ARBORETUM
OF HARVARD UNIVERSITY

VIII

AN ENUMERATION OF PLANTS COLLECTED IN SUMATRA BY W. N. AND C. M. BANGHAM

BY

ELMER DREW MERRILL

WITH FOURTEEN PLATES

PUBLISHED BY
THE ARNOLD ARBORETUM OF HARVARD UNIVERSITY
JAMAICA PLAIN, MASS., U.S.A.
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AN ENUMERATION OF PLANTS COLLECTED IN SUMATRA BY W. N. AND C. M. BANGHAM

INTRODUCTION

The Arnold Arboretum received in 1932 an important accession of about 600 numbers of Sumatran plants collected by Walter N. and Catherine M. Bangham. The field work was accomplished mostly in December 1931, and in January and February 1932, in northern Sumatra, the major political entities in which collections were made being East Coast, Tapianoeli, and Atjeh. Most of the material was collected at medium and higher altitudes and largely in the primary forests. As is always the case in collections made in the primary forests of Malaysia this one contains a high percentage of species of special interest, and a minimum of the common, widely distributed, well known species that form the bulk of the vegetation at low and medium altitudes. In Sumatra, as in other parts of Malaysia, the vast majority of the species that occur in the low and medium altitude secondary forests, and in the settled areas, are of very wide geographic distribution. In such regions there are always a very considerable number of introduced species.

The higher mountains explored include Sibajak, Sinaboeng, and Redelong Volcanoes, as well as the high lands in the vicinity of Bĕrastagi, and various parts of Atjeh. The material is admirably prepared and the specimens are supplied with excellent field notes.

I was entrusted with the identification of the material and, as a preliminary examination of the study set indicated a collection of more than ordinary interest and value, I suggested the preparation and publication of an enumeration of the entire collection. This enumeration is based on the mounted set belonging to the Arnold Arboretum, a nearly complete study set of the same numbers deposited in the herbarium of the New York Botanical Garden, on about 70 numbers of Orchidaceae in the herbarium of Professor Oakes Ames, and about 70 herbaceous plants presented by the Arnold Arboretum to the Gray Herbarium.

It has long been known that the Sumatran flora is in general very similar to that of the Malay Peninsula, Java, and Borneo. However, no comprehensive comparisons are possible on the basis of our fragmentary knowledge of the floras of Sumatra and Borneo; the floras of the Malay Peninsula and Java are much better known, but the work of various authors on these last two regions has not been very well correlated. Extensive field work and much intensive study of comprehensive collections from the entire region will be necessary before a reasonably complete consideration of the phytogeographic problems involved can be written. It is, however, believed that the following data indicate in a general way the essential unity of the flora of the Sunda Islands (Java, Borneo, and Sumatra), and that of the Malay Peninsula.

The Bangham collection contains representatives of about 484 species. Of these about 105 are known only from Sumatra; 34 from only Java and Sumatra; 16 from only the Malay Peninsula and Sumatra; 6 from only Borneo and Sumatra; 10 from only the Malay Peninsula, Java, and Sumatra; 11 from only Java, Borneo, and Sumatra; 9 from only the Malay Peninsula, Borneo, and Sumatra; and 15 from only the Malay Peninsula, Java, Borneo, and Sumatra; 13 additional species also have this last restricted range except that they also extend to the Philippines. Thus nearly 217 of the 484 species are confined to the Sunda Islands and the Malay Peninsula, while most of the other species are much more widely distributed. Some extend northward to India, Burma, Indo-China as far as China, and others eastward and southward to New Guinea, and even to tropical Australia and Polynesia; some species extend over the entire Indo-Malaysian-Polynesian regions. Among the 484 species there are some introduced ones, while others are of general pantropic distribution.

The figures given above clearly indicate a definite relationship in the floras of the several large geographic entities making up the Sunda Islands. This modern phytogeographic relationship between the floras of the Malay Peninsula, Sumatra, Java, and Borneo, is manifestly correlated with the previous geologic history of the region. These geographic units form the area designated by some geologists as Sundaland, that vast region south of the Asiatic Continent delimited by the 200 meter isobath. This great Sunda shelf, the largest continental shelf in the world, carries

upon it the Malay Peninsula (which is almost an island), Sumatra, Java, and the smaller islands eastward to Bali, Borneo, and the Palawan-Calamian group in the Philippines. It is about 1500 miles across from east to west, and yet the average depth of the water covering it, is but about 60 meters. A change in water level today of only 45 meters would unite all of the above islands with the Asiatic continent. This entire region was at times in the Pleistocene, and very likely during a part of the Recent geologic period apparently a part of the Asiatic continent. Intermigrations of both plants and animals would thus be favored at times, and thus the geologic history of the region has a very strong bearing on the present distribution of plants and animals in southern Asia and Malaysia.

There is another element in the Sumatran flora that is worthy of note, and that is the Asiatic or continental types that occur there. If our present conception of the Pleistocene-Recent geologic history of the region is reasonably correct, in that the islands discussed were at times united with the Asiatic continent, then Asiatic-Sundaland intermigrations would be favored. We know there are numerous so-called "Malaysian" elements in the floras of Indo-China, Siam, Burma, and the eastern Himalayan region, and it has been known for a long time that there is a striking series of Asiatic types, especially at higher altitudes, in Sumatra, Java, Borneo, and the Philippines. In some cases the distribution is from Nepal and neighboring regions southward through the Malay Peninsula to Sumatra, Java, and Borneo, but often the distribution is more limited. Thus the Asiatic genus *Sorbus* occurs in the Malay Peninsula and Sumatra but not in Borneo and Java; other genera and species such as *Mahonia*, *Lysimachia*, *Gaultheria nummularioides* D. Don, *Polygonum paniculatum* Blume, *Hydrangea aspera* D. Don, *Meliosma simplicifolia* Walpers, *Rhamnus napalensis* Lawson, *Viola arcuata* Blume, and *Viburnum cylindricum* Hamilton, occur in southern Asia, Sumatra, and Java, but not in the Malay Peninsula.

In the western intermigration of Asiatic-Malaysian types, as opposed to the eastern one through the Philippines to Celebes, it seems justifiable to postulate two subroutes — one through the Malay Peninsula to Sumatra, Java, and Borneo, and another perhaps through what is now Andaman and Nicobar Islands from Asia direct to northern Sumatra. This hypothesis, which is not

new, would thus in part explain the presence of certain definite Asiatic types in Sumatra and Java, and their absence in the Malay Peninsula. Other explanations may be offered in varying climatic conditions in previous geologic periods, and the lack of sufficiently high altitudes in certain regions to allow Asiatic types to persist there. I consider about 25 of the species represented in the Bangham collection definitely to represent Asiatic types and some of these are known outside of continental Asia only from Sumatra, such as *Pinus Merkusii* Junghuhn and De Vriese (also in the Philippines), *Ulmus lanceaefolia* Roxburgh, *Neocinnamomum caudatum* (Wallich) Merrill, *Prunus Wallichii* Steudel, *Meliosma pungens* Walpers, *Viburnum punctatum* Hamilton, *Senecio Walkeri* Arnott, and *Ainsliaea pteropoda* De Candolle; none of these are known from the Malay Peninsula, Borneo, or Java.

The earliest important papers on Sumatran plants were those published by W. Jack in 1820–22, in volumes one and two of the "Malayan Miscellany" printed at Bencoolen, Sumatra. This publication is not available in many botanical libraries, but Jack's descriptions were reprinted by W. J. Hooker[1], 1830–35. In connection with his "Florae Indiae Batavae" (1855–59), Miquel assembled what was then known regarding the flowering plants of Sumatra, and in 1860–61 in his Supplement to that work[2] compiled a list of Sumatran species with descriptions of new ones totalling 1451. In Miquel's publications will be found at least abbreviated descriptions of those species described from Sumatra by Korthals between the years 1839 and 1854. Other descriptions by Miquel are found in his "Annales musei botanici Lugduno-Batavi", four volumes (1863–69).

Between the years 1877 and 1890 Beccari published the descriptions of a number of new species in his "Malesia" based on

[1]Jack, W. Descriptions of Malayan plants. (Hooker, Bot. Miscel. I. 273–290. 1830; II. 60–89. 1831; Hooker, Jour. Bot. I. 358–380. 1834; Comp. Bot. Mag. I. 147–157, 219–224, 253–272. 1835.) Jack's papers were again reprinted, with the addition of data from other than the Malayan Miscellany, in Calcutta Jour. Nat. Hist. IV. 1–62, 159–231, 305–374, t. 14–16, 1843, reprint 1–230. t. 1–2, 1843. The citations to the original papers are Malay. Miscel. I. pt. 1, p. 1–27, pt. 5, p. 1–49. 1820; II. pt. 7, p. 3–96. 1822.

[2]Miquel, F. A. G. Florae Indiae Batavae. Supplementum I. Prodromus Florae Sumatranae. I–XX. 1–656. t. 1–4 (1860–61). There is another edition under the title: "Sumatra, zeine Plantenwereld en hare Voortbrengselen" I–XXIV. 1–656, t. 1–4 (1862) with the same pagination, and a German edition: "Sumatra, seine Pflanzenwelt und deren Erzeugnisse." I–XXIV. 1–656. t. 1–4 (1862). The text is the same in all three.

his own Sumatran collections, and in 1884 Hasselt and Boerlage[1] issued a paper on central Sumatran plants. No important additional papers dealing largely or wholly with Sumatran plants appeared until within the last fourteen years. The larger and most important ones are as follows:

Koorders-Schumacher, A. Systematisches Verzeichnis der zum Herbar Koorders gehörenden, in Niederländisch-Ostindien, besonders in den Jahren 1888—1903 gesammelten Phanerogamen and Pteridophyten. II. Sumatra. 1—62 (1910—1911).

Ridley, H. N. Results of an expedition to Korinchi Peak, Sumatra. (Jour. Fed. Malay States Mus. VIII. pt. 4, p. 1—145, t. 1—4. 1917.)

———— A botanical excursion to northern Sumatra. (Jour. Malay. Branch Roy. As. Soc. I. 46—113. 1923.)

———— The flora of Mentawi Islands. (Kew Bull. 1926, p. 57—94.)

Rendle, A. B. Dr. H. O. Forbes' Malayan plants. (Jour. Bot. LXII. Suppl. 1—48. 1924; LXIII. Suppl. 49—136, 2 fig. 1925; LXIV. Suppl. 137—149, 1 fig. 1926.)

Merrill, E. D. New Sumatran plants. I. (Papers Michigan Acad. XIX. 149—203, t. 16—35. 1934.)

Throughout the period from Jack's pioneer work in 1820 to the present time Sumatran plants have been considered in very numerous scattered articles in periodical literature, in monographic treatises and in various special publications appertaining to the floras of southern Asia and Malaysia, particularly in those of the Botanical Garden at Buitenzorg, Java. The result is that Sumatran references are very widely scattered, and nothing approaching a complete list of the known species is available. Except for those families that have been monographically treated in the publications of the Botanical Garden at Buitenzorg during the past fifteen to twenty years, such as the ferns and fern allies, the Flacourtiaceae, Verbenaceae, Bignoniaceae, Dipterocarpaceae, Sapotaceae, Nepenthaceae, Loganiaceae, Burseraceae, and Polygonaceae, full data on extant material representing Sumatran species have not been compiled, except for the Orchidaceae.[2]

[1]Hasselt, A. L. & Boerlage, J. G. Bijdragen tot de kennis der Flora van Midden-Sumatra. (In Veth, P. J. Midden-Sumatra. IV. pt. 2, p. 1—50, t. 1—8. 1884).

[2]Smith, J. J. Enumeration of the Orchidaceae of Sumatra. (Fedde, Rep. Spec. Nov. XXXII. 129—386. 1933).

Miquel's pioneer "Flora" is of course long out of date, and in any case his list of Sumatran species of 1860–61 probably represents not much more than one-fifth of the species that actually grow in that large island. For those who have occasion to identify Sumatran plants from published floras, the most useful and usable work is the "Materials for a flora of the Malayan Peninsula" by Sir George King, continued by King and J. S. Gamble, and by Gamble, but unfortunately never completed. It appeared in 25 parts in the Journal of the Asiatic Society of Bengal from 1889 – 1915 and was reprinted in five volumes with both the original and a new pagination. In it are found unusually complete descriptions of the then-known species of the Malay Peninsula, from the Ranunculaceae to the Fagaceae, inclusive, in the Bentham and Hooker sequence. Ridley's more recent "Flora of the Malay Peninsula", five volumes (1922–25), is also useful but is unfortunately less usable than is the work of King and Gamble. Both of these works apply strictly to the flora of the Malay Peninsula, but very many of the species therein described occur also in Sumatra, especially the bulk of those found at low altitudes in the settled areas and in the secondary forests. Neither work is of value in making other than generic determinations for the Sumatran endemics.

In studying the flora of Sumatra one must of necessity take into consideration not only what has been published regarding Sumatran plants but must also critically consider the extensive botanical literature appertaining to all the Sunda Islands (Sumatra, Borneo, and Java, and the intervening smaller islands) and the Malay Peninsula. Very frequently one must go farther afield and consider the publications appertaining to the entire Malaysian region, as well as tropical Asia, from India and Ceylon to Burma, Siam, Indo-China, and even southern China. The tropical Asiatic and Malaysian floras intermingle to a marked degree due to former north and south intermigrations which were apparently at times not inhibited by arms of the sea that today separate the islands of "Sundaland" from each other and from the Asiatic continent.

In the course of this study various changes in nomenclature have been found to be inevitable under the rules by which most botanists try to work, the most important being in the adoption of the generic name *Poikilospermum* Zippel (1864) for *Cono-*

cephalus Blume (1825), not of Necker (1790) as validated by Dumortier (1822).

The actual types of the 38 species herein described or indicated as new are deposited, unless otherwise stated, in the herbarium of the Arnold Arboretum; isotypes of most of them are in the herbarium of the New York Botanical Garden.

I am under special obligations to Dr. J. J. Smith of Leiden, Holland, for his courtesy in reporting on the Ericaceae; to Professor Oakes Ames and Charles Schweinfurth for their treatment of the Orchidaceae and to Dr. B. H. Danser of Groningen, Holland, for determining the Loranthaceae.

New York Botanical Garden
New York

ENUMERATION OF THE PLANTS COLLECTED

POLYPODIACEAE

Polypodium pseudolaterale (van Alderwereldt van Rosenburgh), comb. nov.

Pleopeltis pseudo-lateralis van Alderwereldt van Rosenburgh in Bull. Jard. Bot. Buitenzorg, sér. 2, xxviii. 36, t. 6 (1918).

East Coast, Medan Road to Sibajak Volcano, alt. 4200–6500 ft., *no. 1033*, Feb. 15, 1932; Asahan, northwest of Lake Toba, in heavy jungle, *no. 1224;* (a single specimen). — Known only from Sumatra.

Antrophyum semicostatum Blume, Enum. Pl. Jav. 110 (1828).

Asahan, near Lake Toba, *no. 1230*. — Ceylon and tropical Asia through Malaysia to Polynesia.

Asplenium cuneatum Lamarck, Encycl. Méth. ii. 309 (1786).

Asahan, northwest of Lake Toba, in heavy jungle, *no. 1227* (a single specimen). — Tropics of both hemispheres.

Asplenium Belangeri (Bory) Kunze in Bot. Zeit. vi. 176 (1848).

Daraea Belangeri Bory in Bélanger's Voy. Bot. ii 51 (1833).

Asahan, near Lake Toba, *no. 1242*. — Malaysia and the Philippines.

Kunze's specific name is invalidated by *Asplenium Belangeri* Bory, op. cit. 47, which is reduced currently to *A. longissimum* Blume, a species very different from *A. Belangeri* (Bory) Kunze. No change is suggested here because of the confusion that exists in specific limits in this group.

HYMENOPHYLLACEAE

Hymenophyllum Neesii Hooker, Sp. Fil. i. 99 (1844).

Asahan, road northwest of Lake Toba, in dense jungle, *no. 1223* (a single specimen, in herb. Arnold Arboretum). — Ceylon and tropical Asia through Malaysia to New Guinea.

Hymenophyllum pycnocarpum Van den Bosch in Miquel, Pl. Jungh. 564 (1856).

Asahan, road northwest of Lake Toba, in dense jungle, *no. 1226* (a single specimen, in herb. Arnold Arboretum). — Malaysia.

Trichomanes meifolium Bory apud Willdenow, Sp. Pl. v. 509 (1810). — Copeland in Philipp. Jour. Sci. LI. 260 (1933).

Asahan, road northwest of Lake Toba, in heavy jungle, *no. 1255* (a single specimen, in herb. Arnold Arboretum). — Madagascar through Malaysia to the Philippines, New Caledonia, and Samoa.

Trichomanes sp.

Asahan, near Lake Toba, *no. 1243*, a fragmentary specimen without field data.

SCHIZAEACEAE

Schizaea digitata (Linnaeus) Swartz, Syn. Fil. 150, 380. *t. 4, fig. 1* (1806).

Acrostichum digitatum Linnaeus, Sp. Pl. 1068 (1753).

Asahan, near Lake Toba, *no. 1239*. — Mascarene Islands, to tropical Asia, through Malaysia to the Caroline Islands, and Fiji.

OPHIOGLOSSACEAE

Ophioglossum pendulum Linnaeus, Sp. Pl. ed. 2, 1518 (1763).

Tapianoeli, new road to Peso Peso, alt. 4100–4500 ft., in forests, *no. 1159*, Feb. 22, 1932; Asahan, northwest of Toba Lake, in heavy jungle, *no. 1229* (a single specimen). — Tropical Asia, throughout Malaysia and Polynesia.

PSILOTACEAE

Psilotum nudum (Linnaeus) Grisebach in Abh. Ges. Wiss. Göttingen, VII. 278 (1857).

Lycopodium nudum Linnaeus, Sp. Pl. 1100 (1753).

Asahan, northwest of Lake Toba, *no. 1240*. — Tropical and subtropical regions of both hemispheres.

LYCOPODIACEAE

Lycopodium cernuum Linnaeus, Sp. Pl. 1103 (1753).

East Coast, Sinaboeng Volcano, at the summit, alt. 8400 ft., *no. 1184*, Feb. 23, 1932. — Most tropical and subtropical regions in both hemispheres.

Lycopodium Phlegmaria Linnaeus, Sp. Pl. 1101 (1753).

Atjeh, Takengön, in primary forests at 3600 ft. alt., *no. 720*, Jan. 7, 1932. — Tropical Africa and Asia throughout Malaysia and Polynesia.

Lycopodium transiens van Alderwereldt van Rosenburgh in Bull. Jard. Bot. Buitenzorg, sér. 3, v. 227 (1922).

East Coast, Goodyear bungalow to Sibajak Volcano, alt. 5000–6000 ft., *no. 1000*, Feb. 14, 1932 (epiphytic in forests). — Known only from Sumatra.

TAXACEAE

Podocarpus amarus Blume, Enum. Pl. Jav. 88 (1827); Rumphia, III. 213, t. 170 (1847). — Pilger in Engler, Pflanzenr. IV.-5 (Heft 18), 68 (1903).

Tapianoeli, new road near Peso Peso, in primary forests, alt. 4100–4500 ft., *no. 1116*, Feb. 19, 1932 (tree 90 ft. high). — Java, Lombok, the Philippines, and northeastern Australia.

This sterile specimen was first referred to *Podocarpus neriifolius* D. Don but in its relatively short leaves it seems better to agree with the characters of *Podocarpus amarus* Blume.

Podocarpus imbricatus Blume, Enum. Pl. Jav. 89 (1827). — Pilger in Engler, Pflanzenr. IV.-5 (Heft 18), 56 (1903). — Hickel in Lecomte, Fl. Gén. Indo-Chine, v. 1068 (1931).

Podocarpus cupressina R. Brown apud Mirbel in Mém. Mus. Hist. Nat. (Paris), XIII. 75 (1825), nomen nudum. — Bennett, Pl. Jav. Rar. 35, t. 10 (1838).

Podocarpus Cumingii Parlatore in DC. Prodr. XVI. pt. 2, p. 521 (1868).

Podocarpus Kawaii Hayata in Bull. Econ. Indochine, XIX. 439 (1917).

Podocarpus javanicus Merrill in Philipp. Jour. Sci. XIX. 338 (1921); Enum. Philipp. Flow. Pl. I. 3 (1922); Sarawak Mus. Jour. III. 516 (1928); non *Thuja javanica* Burman f.

Tapianoeli, new road near Peso Peso, alt. 4100–4500 ft., *nos. 1074, 1127*, Feb. 16 and 19, 1932 (tree 60–90 ft. high in primary forests). — Burma and Indo-China to Hainan, southward to Java, the Philippines, Celebes, and New Guinea.

In the "Berichtigungen und Zusätze" to Hallier's paper on Elbert's Sunda-Expedition plants[1], page 92, he very casually states in a brief discussion of *Calocedrus* versus *Libocedrus*: "*Thuja javanica* Burman f. (! Hb. L.-B.) gehört zu *Juniperus chinensis* L." I believe that he is correct, although in 1921 I accepted Burman's species as the equivalent of *Podocarpus imbricatus* Blume and transferred his specific name to *Podocarpus*. Hallier's

[1]HALLIER, H. Die botanischen Ergebnisse der Elbert'schen Sunda-Expedition des Frankfurter Vereins für Geographie und Statistik, III. (Meded. Rijks Herb. Leiden, XXXVII. 1–92. 1918).

important note is published so obscurely that it is scarcely to be wondered at that it was overlooked. The specimen in the Leiden herbarium may or may not be one that Burman examined; Doctor Hochreutiner informs me that no specimen is to be found among Burman's plants at Geneva. In 1921 when I identified *Thuja javanica* Burman f. as a *Podocarpus*, it then occurred to me it was strange that Burman, in 1768, should have had any high altitude Javanese material, but it did not occur to me that he might have had material from an introduced and cultivated *Juniperus*. The botanical records show that many plants were introduced into Java from China and Japan, some at a relatively early date. Moreover, Burman's illustration and his description, as far as it goes, agrees perhaps better with *Juniperus chinensis* than with *Podocarpus imbricatus*. I therefore accept the reduction of *Thuja javanica* Burman f., Fl. Ind. 202, t. 64, fig. 3 (1768) to *Juniperus chinensis* Linn. as correct.

Podocarpus neriifolius D. Don in Lambert, Descr. Pin. 21 (1824). — Pilger in Engler, Pflanzenr. IV.-5 (Heft 18), 80 (1903).

Tapianoeli, new road near Peso Peso, in primary forests, alt. 4100–4500 ft., *no. 1128*, Feb. 19, 1932 (sterile specimen). — India to Indo-China, through Malaysia to the Philippines, New Guinea, and tropical Australia.

Dacrydium elatum (Roxb.) Wallich in Hooker, Lond. Jour. Bot. II. 144, t. 2 (1843). — Pilger in Engler, Pflanzenr. IV.-5 (Heft 18), 51 (1903).

Tapianoeli, new road near Peso Peso, in primary forests, alt. 4100–4500 ft., *no. 1070*, Feb. 16, 1932 (tree 90 ft. high). — Malay Peninsula, Borneo, the Philippines, and Fiji.

The specimen is sterile, its rather stout branchlets somewhat resembling the Bornean *D. Gibbsiae* Stapf.

PINACEAE

Pinus Merkusii Junghuhn & de Vriese, Pl. Nov. Ind. Bat. Orient. 5, t. 2 (1845); Bot. Zeit. IV. 13 (1846). — Shaw, Gen. Pinus, 58, t. 33, fig. 198–200 (1914).

Atjeh, Lake Tawar, on slopes near the lake, alt. 3800 ft., *no. 794*, Jan. 10, 1932 (tree 40 ft. high). — Burma, Indo-China, Luzon, and Mindoro.

TYPHACEAE

Typha javanica Schnizlein in Zollinger, Verzeich. Arch. Ind. 77 (1854), nomen nudum. — Rohrbach in Verh. Bot. Ver. Brandenb. XI. 98 (1869).

Typha angustifolia Linnaeus subsp. *javanica* Graebner in Engler, Pflanzenr. IV.-8 (Heft 2), 13 (1900).

Atjeh, between Idi and Lhokseumawe, in marshes at sea level, *no. 660*, Jan. 4, 1932. — Widely distributed in Malaysia, its limits in relation to other described forms uncertain.

PANDANACEAE

Pandanus Burkillianus Ridley in Jour. Malay. Branch Roy. As. Soc. I. 106 (1923).

East Coast, trail Medan road to the summit of Sibajak Volcano, alt. 4200–6500 ft., *no. 1036*, Feb. 15, 1932. — Known only from Sumatra.

The specimen consists of a single leaf and several detached fruiting heads which appear as if they might have been spicately arranged. In spite of Ridley's very sketchy and apparently inaccurate description this seems to be referable to his species, the type of which was from Sibajak. In Bangham's specimen the leaves are 11 cm. wide below and about 120 cm. long, gradually narrowed upward and slenderly long-acuminate; Ridley says: "Leaves probably long, 2.5 in. wide;" it is suspected that he had only the upper part of a leaf.

PALMAE

Caryota furfuracea Blume apud Martius, Hist. Nat. Palm. III. 195 (1833); Rumphia, II. 141 (1836).

Atjeh, Takengön, in primary forests, alt. 3600 ft., *no. 708*, Jan. 7, 1932 (palm 15 to 18 ft. high, fruits dull dark red).

There are two sheets in the herbarium of the Arnold Arboretum, the identification having been made from the description. The same form is represented by *Bartlett 8429*. Miquel gives the range as from Sumatra to Java, Borneo, the Moluccas, and New Guinea, but it is highly probable that he included more than one species in his concept of Blume's species.

Pinanga Forbesii Ridley in Jour. Bot. LXIII. Suppl. 124 (1925).

Atjeh, Takengön, in primary forests, alt. 3600 ft., *no. 727*,

Jan. 7, 1932 (entire plant 10 ft. high). — Known only from Sumatra.

Pinanga sp.

Atjeh, Kabajakan to Tretet, along trails, alt. 3500–5000 ft., *no. 881*, Jan. 13, 1932 (plant 10 ft. high).

This is apparently allied to *Pinanga patula* Blume; I have seen only leaf specimens.

Daemonorops melanochaetes Blume var. **padangensis** Beccari in Ann. Bot. Gard. Calcutta, XII. pt. 1, p. 49 (1911).

Atjeh, Takengön, in primary forests at 3600 ft. alt., *no. 751*, Jan. 8, 1932. — The species in Java.

Calamus sp.

Tapianoeli, new road to Peso Peso, in primary forests, alt. 4100–4500 ft., *no. 1073*, Feb. 16, 1932 (rattan palm, 10 ft. high). Not sufficient for further identification.

Calamus sp.

East Coast, Medan-Bĕrastagi road, near the entrance to the sulphur spring in ravines, in secondary forests, *no. 989*, Feb. 13, 1932 (rattan palm locally known as *rattan besar*). The specimen is fragmentary, the relatively large fruits being dark brown when dry.

ARACEAE

Raphidophora Korthalsii Schott in Ann. Mus. Lugd.-Bat. I. 129 (1863). — Engler & Krause in Engler, Pflanzenr. IV.-23B (Heft 37), 49 (1908).

East Coast, trail from Goodyear bungalow to Sibajak Volcano, in forests, *no. 1008*, Feb. 14, 1932 (spadices green). — Malay Peninsula, Java.

Amorphophallus sp.

East Coast, Baboeli to Paekas, in ravines, alt. 4100 ft., *no. 778*, Jan. 9, 1932 (local name *panam*, the fruits used for the treatment of skin diseases). The specimen consists of a leaf and some detached fruits, and is inadequate for further identification. The same species is represented by *Krukoff 4412* from Asahan, a sterile specimen.

Homalomena angustifolia (Jack) Hooker f., Fl. Brit. Ind. VI. 533 (1893). — Engler & Krause in Engler, Pflanzenr. IV.-23Da (Heft 55), 31 (1912).

Calla angustifolia Jack in Malay. Miscel. I. pt. 1, p. 24 (1820).

East Coast, Medan-Bĕrastagi road, kilometers 59–61, in primary forests, at 4000 ft. alt., *no. 1151*, Feb. 21, 1932. — Malay Peninsula.

Homalomena sp.

East Coast, Medan-Bĕrastagi road, kilometers 59–61, in primary forests at 4000 ft. alt., *no. 1150*, Feb. 21, 1932.

This seems to be allied to *Homalomena gigantea* Engler of Borneo and *H. triangularis* van Alderwereldt van Rosenburgh from Deli, Medan, Sumatra.

Arisaema filiforme (Reinwardt) Blume, Rumphia, I. 102, t. 28 (1835). — Engler in Pflanzenr. IV.-23F (Heft 73), 169 (1920).

Arum filiforme Reinwardt apud Blume, Cat. Gew. Buitenzorg, 103 (1823).

East Coast, trail Medan road to the summit of Sibajak Volcano, in forests, 5200 ft. alt., *no. 1053*, Feb. 15, 1932. — Java.

FLAGELLARIACEAE

Joinvillea borneensis Beccari, Nelle Foreste di Borneo, 198 (1902).

Joinvillea malayana Ridley in Jour. Straits Branch Roy. As. Soc. XLIV. 199 (1905); Fl. Malay Penin. IV. 368 (1924).

East Coast, trail from Medan road to Sibajak Volcano, alt. 4200 — 6500 ft., *no. 1025*, Feb. 15, 1932 (about 8 ft. high, fruits glossy, dark green). — Malay Peninsula, Borneo, Palawan.

The few other known species of the genus are confined to New Caledonia and Hawaii.

COMMELINACEAE

Pollia aclisia Hasskarl, Commel. Ind. 55 (1870).

Atjeh, Takengön, in jungle, alt. 3600 ft., *no. 724*, Jan. 7, 1932 (flowers white). — Tropical Himalayan region to Burma, Indo-China, and Java.

Bangham 817 from Takengön, a fragmentary fruiting specimen represented by a single sheet (herb. Arnold Arboretum) represents another species of the genus.

LILIACEAE

Dianella ensifolia (Linnaeus) De Candolle in Redouté, Lil. I. t. 1 (1802).

Dracaena ensifolia Linnaeus, Mant. I. 63 (1767).

East Coast, trail Goodyear bungalow to Sibajak Volcano, near the sulphur springs, alt. 5200 ft., *no. 996*, Feb. 14, 1932 (flowers pale blue). — India to southern China through Malaysia to Polynesia and tropical Australia.

Dianella javanica (Blume) Kunth, Enum. v. 52 (1850).

Rhuacophila javanica Blume, Enum. Pl. Jav. I. 14 (1827). — Ridley, Fl. Malay Penin. IV. 329, fig. 197 (1924).

Atjeh, Redelong Volcano, on slopes, alt. 4500–5500 ft. *no. 927*, Jan. 14, 1932; East Coast, trail from Medan road to Sibajak Volcano, alt. 5800 ft., *no. 1040*, Feb. 15, 1932. — Malay Peninsula through the Archipelago to the Philippines, New Guinea and New Caledonia.

Disporum Leschenaultianum D. Don in Proc. Linn. Soc. I. 45 (1839); in Trans. Linn. Soc. XVIII. 518 (1841).

East Coast, Sinaboeng Volcano, in forests, alt. 4200 ft.; *no. 1185*, Feb. 23, 1932; between Baboeli and Paekas, in ravines, alt. 4100 ft., *no. 772*, Jan. 9, 1932 (flowers cream). — India and Ceylon.

This form seems to be referable to *D. Leschenaultianum* D. Don rather than to the collective species currently known as *Disporum pullum* Salisbury = *D. cantoniense* (Loureiro) Merrill. The species in this genus are poorly defined.

Ophiopogon malayanus Ridley in Jour. Straits Branch Roy. As. Soc. XLI. 34 (1904); Fl. Malay Penin. IV. 327 (1924).

Atjeh, trail from Kabajakan to Tretet, alt. 3500–5000 ft., at the margins of forests, *no. 872*, Jan. 13, 1932 (herb up to 18 inches high, buds shading from purple at the base to white above). — Malay Peninsula, Borneo, and Sulu.

The identification is from the description and is not certainly correct. The specimen does not agree with Ridley's amplified descriptions of *Ophiopogon caulescens* (Blume) Backer and *O. acaulis* (Blume) Ridley, in Jour. Bot. LXIII. Suppl. 122 (1925), these amplified descriptions both based on Sumatran specimens; Blume's very short original descriptions, sub *Chloopsis*, were based on Javan specimens. Backer, Handb. Fl. Java, III. 74 (1924) transferred Blume's specific name *caulescens* one year earlier than Ridley, and gives a much more complete description.

Smilax ferox Wallich, Num. List, no. 5119 (1832), nomen nudum. — A. De Candolle, Monog. Phan. I. 102 (1878).

Atjeh, Langsa, in marshy places at sea level, *no. 647*, Jan. 3, 1932. — India.

The identification is not with certainty correct, as the specimen is in fruit.

Smilax javensis A. de Candolle, Monog. Phan. I. 175 (1878).

East Coast, trail from Medan road to Sibajak Volcano, alt. 5200 ft., *no. 1048*, Feb. 15, 1932; trail up Sinaboeng Volcano, alt. 3200 ft., *no. 1188*, Feb. 23, 1932 (leafless fruiting specimen). — Java, Amboina.

Smilax leucophylla Blume, Enum. Pl. Jav. I. 18 (1827). — A. De Candolle, Monog. Phan. I. 200 (1878).

East Coast, Nabara Estate, in damp places at low altitudes, *no. 600*, Dec. 7, 1931 (sterile specimen). — Malay Peninsula to Java, the Philippines, and the Moluccas.

AMARYLLIDACEAE

Curculigo capitulata (Lour.) O. Kuntze, Rev. Gen. Pl. II. 703 (1891).

Leucojum capitulatum Loureiro, Fl. Cochinch. 199 (1790).

Curculigo recurvata Dryander apud Aiton, Hort. Kew. ed. 2, II. 253 (1811).

Molineria recurvata Herbert, Amaryll. 84 (1837); Brackett in Rhodora, XXV. 161 (1923).

East Coast, Kaban Djahe to Kota Tjane, in deep ravines, alt. 4000–5500 ft., *no. 1089*, Feb. 17, 1932 (flowers lemon yellow). — India to southern China, through Malaysia to tropical Australia.

Crinum sp.

East Coast, Medan-Bĕrastagi road, between kilometers 59 and 61 at 4100 ft. alt., *no. 1147*, Feb. 21, 1932. The very fragmentary material clearly represents none of the known Sumatran species, *C. asiaticum* Linnaeus, *C. amabile* Don, or *C. sumatranum* Roxb., but one allied to the Philippine *C. gracile* E. Meyer.

DIOSCOREACEAE

Dioscorea orbiculata Hooker f., Fl. Brit. Ind. VI. 292 (1892).

Deli-Atjeh border at sea level, *no. 639*, Jan. 3, 1932 (flowers green, inconspicuous). — Malay Peninsula, Borneo.

ZINGIBERACEAE

Languas sp.

Atjeh, near Idi, in marshy places, *no. 662*, Jan. 4, 1932 (herbaceous plant 6 ft. high). A very fragmentary specimen.

Phaeomeria speciosa (Blume) Koorders, Exkursionsfl. Java, I. 332 (1911). — Merrill, Enum. Philipp. Flow. Pl. I. 241 (1924).

Elettaria speciosa Blume, Enum. Pl. Java, 51 (1827).

Alpinia magnifica Roscoe, Monandr. Pl. t. 75 (1828).

Phaeomeria imperialis Lindley apud K. Schumann[1] in Engler, Pflanzenr. IV.-46 (Heft 20), 262 (1904), in synon.

Phaeomeria magnifica Lindley apud Jackson, Ind. Kew. II. 485 (1894). — K. Schumann, l.c.

Atjeh, road from Takengön to Bireuen, at kilometer 96, at the edge of the jungle at 3800 ft. alt., *no. 819*, Jan. 11, 1932. — Malay Peninsula, Java, Mindanao, and Celebes; introduced into tropical America.

Hedychium cylindricum Ridley in Jour. Malay. Branch Roy. As. Soc. I. 98 (1923).

East Coast, Medan road to Sibajak Volcano, 5800 ft. alt., *no. 1041*, Feb. 15, 1932 (flowers creamy white, slightly fragrant).

The species is also represented by *Yates 1501* from Asahan and *Bartlett 6506, 8630*, from Karoland. — Known only from Sumatra.

Hornstedtia sp.

East Coast to Tapianoeli, along the road to Peso Peso, *no. 1061*, Feb. 16, 1932 (flowers and fruits cherry red). My specimen consists of a detached inflorescence without complete flowers.

Globba candida Ridley in Jour. Malay. Branch Roy. As. Soc. I. 98. (1923).

East Coast, Medan-Bĕrastagi road, kilometers 59—61, *no. 1143*, Feb. 21, 1932. The type was from Bĕrastagi; known only from Sumatra.

Globba sp.

East Coast, Nabara Timber Reserve, near streams in wet places, *no. 1222*, Dec. 1, 1932. *Rahmat Si Toroes 149* from Marbau apparently represents the same species but good flowers are lacking.

Possibly *Bangham 1156* from the Medan-Bĕrastagi road, kilometers 59—61, represents a third species of *Globba*. There are neither flowers nor fruits on the two specimens examined. Mr. Bangham notes that the flowers were bright yellow.

[1]K. Schumann credits the binomial *Phaeomeria imperialis* to Lindley, Nat. Syst. ed. 2, 446 (1836); the entry there is merely "Phaeomeria = Alpinia magnifica."

ORCHIDACEAE

Determined by OAKES AMES and CHARLES SCHWEINFURTH.

Galeola Kuhlii Reichenbach f., Xen. Orch. II. 78 (1865).

Galeola Hydra Reichenbach f., Xen. Orch. II. 77 (1865). — King & Pantling in Ann. Roy. Bot. Gard. Calcutta, VIII. 264, t. 351 (1898).

Along road from Takengön to Bireuen, road to Balique, edges of and in first growth jungle, alt. 3300 ft., *no. 836*, Jan. 11, 1932 (terrestrial, climbing; sepals deep cream color flecked with brown). — A widespread species extending from India, Malay Peninsula, Java and Celebes to the Philippines.

Galeola Lindleyana (Hook. f.) Reichenbach f., Xen. Orch. II. 78 (1865). — King & Pantling in Ann. Roy. Bot. Gard. Calcutta, VIII. 264, t. 352 (1898).

Trail from Medan road to top of Sibajak Volcano, alt. 4500 ft., *no. 1014*, Feb. 15, 1932 (terrestrial; flowers yellow; inner side of lip flecked brown; stalk reddish brown, pubescent); road from East Coast to Tapianoeli (northwest side of Toba Lake), new road near Peso Peso, virgin jungle, alt. 4100–4500 ft., Tapianoeli (kilometer O), *no. 1129*, Feb. 19, 1932 (terrestrial orchid 10 ft. high; no leaves). — An extraordinary member of a small genus with apparently rigid erect stems which are up to 2 cm. in diameter. — Originally reported from India.

Anoectochilus sp.

Medan-Bĕrastagi road, kilometers 59–61, alt. 4100 ft., virgin jungle mixed with second growth jungle, hilly, mountainous, *no. 1146*, Feb. 21, 1932 (herb 2 inches high; leaves variegated, greenish black with light red veins.)

There are two species of *Anoectochilus* reported from Sumatra, namely: *A. longicalcaratus* J. J. Sm. and *A. Reinwardtii* Bl. The Bangham specimens are without flowers, but vegetatively they are very similar to *A. Reinwardtii* and may well be conspecific.

Zeuxine gracilis (Breda) Blume, Fl. Jav. nov. ser. I. 56, t. 18, fig. 2; t. 23D (1858).

Adenostylis gracilis Ames in Jour. Straits Branch Roy. As. Soc. spec. no. 141 (1921).

Dolok Merangir, Div. 12, alt. 800 ft., *no. 943*, Feb. 6, 1932 (terrestrial; flowers minute, white).

The specimens representing this species are fragmentary and for the most part bear the flowers at the summit of mature and swollen ovaries. — Also Malay Peninsula (fide Carr), Java and Borneo.

Corymborchis veratrifolia (Reinw.) Blume, Fl. Jav. nov. ser. I. 105, t. 42E, t. 43, fig. 1 (1858).

Corymbis veratrifolia Reichenbach f. in Flora, XLVIII. 184 (1865).

Takengön, alt. 3600 ft., first growth small jungle, soil very fertile, hilly, *no. 712*, Jan. 7, 1932 (terrestrial; semi-scandent; 7 ft. tall). — Also recorded from India, Java, Borneo, Amboina and New Guinea.

Arundina speciosa Blume, Bijdr. 401, Tab. fig. 73 (1825).

Road to Prapat, alt. 2250 ft., *no. 622*, Dec. 1931 (cultivated; grows 6 ft. high in very rich soil; flowers shade from lavender to red-purple, throat deep yellow); on sides of volcano near Redelong, alt. 3600–6000 ft., to about half way up only, *no. 910*, Jan. 14, 1932 (terrestrial; sepals white, inner parts tipped with purple; common).

Number 622, which is cultivated, bears somewhat larger flowers than usual. — Also Java, Borneo, Celebes, Sumbawa.

Chrysoglossum ornatum Blume, Bijdr. 338 (1825); Fl. Jav. nov. ser. I. 136, t. 46 (1858).

Road from East Coast to Tapianoeli (northwest side of Toba Lake,) new road near Peso Peso, virgin jungle, alt. 4100–4500 ft., Tapianoeli (kilometers 3), *no. 1123*, Feb. 19, 1932 (epiphytic orchid; flowers green on outer side of petals [sepals] creamy green inside; leaf variegated, silver streaked).

The specimen on which this determination is based consists of a single leaf attached to a fragmentary pseudobulb and an elongated few-flowered scape. At its base the lip is provided with a conspicuous scrotiform sac and differs in this character from typical *C. ornatum*. Moreover, the leaf is variegated, not clear green.

Although Bangham 1123 shows these slight differences from typical *C. ornatum*, we feel that separation would be unwise especially as *C. ornatum* is reported by J. J. Smith to be a native of Sumatra. — Also reported from Java and Celebes.

Coelogyne brachygyne J. J. Smith in Bull. Jard. Bot. Buitenzorg, sér. 3, II. 25 (1920); Suppl. II. t. 12, fig. 1 (1930).

Road from East Coast to Tapianoeli (northwest side of Toba Lake), new road near Peso Peso, virgin jungle, alt. 4100–4500 ft., Tapianoeli (kilometers 3), *no. 1122*, Feb. 19, 1932 (epiphytic; flowers dull pink).

This collection differs from the typical form in having a slightly narrower mid-lobe of lip. — Known only from Sumatra.

Coelogyne cuprea Wendland & Kränzlin in Gard. Chron. ser. 3, XI. 619 (1892); Xen. Orch. III. 110, t. 263 (1893).

Medan-Bĕrastagi road, kilometers 59–61, alt. 4100 ft., virgin jungle mixed with second growth jungle, hilly, mountainous, *no. 1136*, Feb. 21, 1932 (epiphytic; flowers translucent dull pink).

The present collection consists of a single leafless plant. — Said to have originated in the Malay Peninsula.

Coelogyne modesta J. J. Smith in Fl. Buitenzorg, VI (Orch. Jav.) 141 (1905); Fig. Atlas, fig. 103 (1909).

Along road from Takengön to Bireuen, alt. 3500 ft., *no. 843*, Jan. 11, 1932 (epiphytic; flowers creamy pink shading deeper toward center). — Also Java.

Coelogyne sumatrana J. J. Smith in Bull. Dép. Agr. Ind. Néerl. XV. 5 (1908); in Bull. Jard. Bot. Buitenzorg, sér. 3, Suppl. II. t. 13, fig. 3 (1930).

Jungle trail over mountains from Kabajakan to Tretet, alt. 3500–5000 ft., edge of jungle near Tretet, *no. 878*, Jan. 13, 1932 (epiphytic; sepals cream-pink, inner parts splotched with golden bronze).

The leaves of this collection are much narrower than typical. — Known only from Sumatra.

Pholidota carnea (Bl.) Lindley, Gen. & Sp. Orch. 37 (1830). — J. J. Smith in Fl. Buitenzorg, VI (Orch. Jav.) 158 (1905); Fig. Atlas, fig. 118 (1909).

Takengön, alt. 3600 ft., first growth small jungle; soil very fertile, hilly, *no. 757*, Jan. 8, 1932 (epiphytic; flowers shell pink, deeper old rose in center). — Also Malay Peninsula, Java and Borneo to the Philippines.

Dendrochilum aurantiacum Blume, Bijdr. 398 (1825). — J. J. Smith in Fl. Buitenzorg, VI (Orch. Jav.) 161 (1905); Fig. Atlas, fig. 120 (1909).

Takengön, *no. 694*, Jan. 6, 1932 (terrestrial clambering orchid; bulbs dull orange; flowers delicate yellow; very sweet fragrance similar to orange). — Also Java.

Dendrochilum fruticicola J. J. Smith in Bull. Jard. Bot. Buitenzorg, sér. 3, v. 52 (1922); Suppl. II. t. 22, fig. 2 (1930).

Road from East Coast to Tapianoeli (northwest side of Toba

Lake), new road near Peso Peso, virgin jungle, alt. 4100–4500 ft., *no. 1057*, Feb. 6, 1932 (epiphytic; leaf bronze; flowers green-bronze with dark brown lip).

A single immature specimen comprises this collection. The buds show somewhat smaller perianth segments than typical and the hypochil of the lip is rather more pronounced. — Known only from Sumatra.

Dendrochilum ovatum J. J. Smith in Bull. Jard. Bot. Buitenzorg, sér. 3, v. 47 (1922); Suppl. II. t. 21, fig. 1 (1930), non *D. ovatum* J. J. Smith in Bull. Jard. Bot. Buitenzorg, sér. 3, x. 30 (1928).

Trail from Goodyear bungalow to foot of Sibajak Volcano, alt. 5000–6000 ft., jungle, *no. 999*, Feb. 14, 1932 (epiphytic; flowers pink with very delightful fragrance).

The perianth parts of this collection are slightly longer and narrower than typical. — Known only from Sumatra.

Liparis bituberculata (Hook.) Lindley in Bot. Reg. XI. sub t. 882 (1825).

Cymbidium ? bituberculatum Hooker, Exot. Fl. II. t. 116 (1824).

Bĕrastagi, alt. 4800 ft., *no. 1215*, 1932 (epiphytic; stems fleshy succulent; flowers red-purple).

This collection consists of a single small specimen with one (upper?) leaf and a raceme which twice surpasses the leaf. *L. bituberculata* is an Indian species hitherto unrecorded from Sumatra.

Liparis caespitosa (Thou.) Lindley in Bot. Reg. XI. sub t. 882 (1825). — J. J. Smith in Fl. Buitenzorg, VI (Orch. Jav.) 266 (1905); Fig. Atlas, fig. 204 (1910).

Takengön, steep hillside, *no. 692*, Jan. 6, 1932 (terrestrial, 3 inches high; flowers minute, pale yellow). — A very widely spread species reputed to extend from Madagascar and adjacent islands (perhaps a different species), through India, Ceylon and the Malay Peninsula to Java and the Philippines.

Liparis condylobulbon Reichenbach f. in Hamb. Gartenz. XVIII. 34 (1862).

Liparis confusa J. J. Smith in Fl. Buitenzorg, VI (Orch. Jav.) 275 (1905); Fig. Atlas, fig. 211 (1910).

Dolok Merangir, Div. 2, alt. 800 ft., *no. 616*, Dec. 1931 (on rubber tree; flowers light yellow with red flecks, fragrant). —

Widely known in Malasia from Java and New Guinea to the Philippines.

Liparis crenulata (Bl.) Lindley, Gen. & Sp. Orch. 30 (1830).— J. J. Smith in Fl. Buitenzorg, VI. 269 (1905); Fig. Atlas, fig. 206 (1910).

Takengön, alt. 3600 ft., first growth small jungle, soil very fertile, hilly, *no. 707*, Jan. 7, 1932 (epiphytic; sepals light bronze, "inner petals" rust color); large mountain ravine between Baboeli and Paekas, alt. 3700–4500 ft., *no. 762*, Jan. 9, 1932 (epiphytic; flowers bronzy yellow). — Also Java.

Liparis lacerata Ridley in Jour. Linn. Soc. XXII. 284 (1886).

Bila, alt. 200 ft., *no. 1210*, 1932 (epiphytic; flowers orange-yellow within, lip burnt orange with creamy margin, fragrant). — Also Tenasserim, Malay Peninsula and Borneo.

Liparis pilifera J. J. Smith in Bull. Jard. Bot. Buitenzorg, sér. 3, XII. 114 (1932).

Medan-Bĕrastagi road, kilometers 59–61, alt. 4100 ft., virgin jungle mixed with second growth jungle, hilly, mountainous, *no. 1139*, Feb. 21, 1932 (epiphytic; flowers maroon).

The two plants which comprise this collection are in very advanced condition and chiefly bear only remnants of the perianth on the summit of swollen ovaries. They differ from the typical form in having rather shorter and much more circular leaves. — Known only from Sumatra.

Liparis (§Distichon) **trullifera** Ames & Schweinfurth, sp. nov.

Herba epiphytica. Rhizoma repens. Basis caulis paulo incrassata, monophylla. Folium oblongo-lineare, rigidum, acutum. Inflorescentia quam folium plus minusve brevior. Bracteae racemi dense distichae. Flores singuli, pallide rosei. Sepala reflexa, elliptico- vel oblongo-lanceolata, lateralia minute apiculata. Petala lineari-oblonga vel subspathulata, apice rotundata. Labellum trulliforme, basi reflexum atque quinquecallosum. Columna brevis, crassa.

Plant epiphytic, with a creeping rhizome, about 22–30 cm. tall. Rhizome concealed by sheaths which are loose, infundibuliform, scarious, imbricating, acute and evanescent. Roots numerous, fibrous, glabrous. Pseudobulbs reduced to inconspicuous swellings at the base of the stems, portion from the rhizome to the articulation of the leaf 2.2–3.2 cm. tall, this portion concealed

and surpassed in youth by two infundibuliform scarious imbricating sheaths. Leaf oblong-linear or ligulate, gradually narrowed and conduplicate at base, 20.9—26 cm. or more long, 9—13 mm. wide, sharply acute, subcoriaceous, rigid, usually much surpassing the inflorescence. Peduncle up to the inflorescence 9.6—17 cm. tall, narrowly bialate especially above, slender. Raceme 2—7 cm. long, consisting of a series of densely distichous bracts, about 1 cm. across; bracts subapproximate, oblong-lanceolate, equitant, ascending, acute. Flowers apparently successive, only one present at a time. Sepals reflexed. Lateral sepals elliptic- or oblong-lanceolate, about 7 mm. long, 3 mm. wide, rounded-obtuse and minutely apiculate, dorsally carinate at the tip. Dorsal sepal similar, about 7 mm. long, 2.6—3 mm. wide, obtuse, dorsally carinate near the tip. Petals linear-oblong or subspatulate-oblong, about 6 mm. long, 1.8—1.9 mm. wide above the middle, rounded at the tip, 1-nerved. Lip trulliform or triangular-ovate in outline, shallowly constricted in the middle of each side, cordate at base, sharply reflexed near the base, about 4.8—5.8 mm. long and 4.5 mm. wide near the base, bluntly and broadly apiculate; disc provided in the center of the base with a fleshy callus which is trilobulate at the apex and with a pair of smaller calli in front, on each side (over the basal fold) is an oblong fleshy callus pointing toward the center of the lip. Column stout, 2.8—3 mm. high, ovoid-triangular, dilated on each side of the broad truncate base, with a pair of porrect triangular wings above. Anther quadrate-semiorbicular.

Jungle trail over mountains from Kabajakan to Tretet, alt. 3500—5000 ft., edge of jungle near Tretet, *no. 867* (type in Herb. Ames no. 39621), Jan. 13, 1932 (epiphytic; flower soft dull rose, more yellow than red).

Among the many more or less similar species, *Liparis trullifera* appears to be most closely allied to *L. geelvinkensis* J. J. Sm. From this it differs, however, in having relatively short peduncles, narrower racemes, broader petals and dissimilar color of the flowers.

Appendicula infundibuliformis J. J. Smith in Ic. Bogor. III. 45, t. 217 (1906).

Takengön, steep hillside, *no. 691*, Jan. 6, 1932 (terrestrial; 1½ ft. high; flowers minute; sepals brownish purple, "inner petal" yellow). — Known only from Sumatra.

Appendicula ovalis (Schltr.) J. J. Smith in Ic. Bogor. II. 57, in nota (1903); in Fl. Buitenzorg, VI (Orch. Jav.) 534 (1905); Fig. Atlas, fig. 408 (1912).

Takengön, alt. 3600 ft., first growth small jungle, soil very fertile, hilly, *no. 719*, Jan. 7, 1932 (epiphytic; sepals white; "inner petal" deep lilac). — Also Java.

Appendicula pendula Blume, Bijdr. 298 (1825). — J. J. Smith in Fl. Buitenzorg, VI (Orch. Jav.) 524 (1905); Fig. Atlas, fig. 399 (1912).

Appendicula Maingayi Hooker f., Fl. Brit. Ind. VI. 85 (1890).

Medan-Bĕrastagi road, kilometers 59–61, alt. 4100 ft., virgin jungle mixed with second growth jungle, hilly, mountainous, *no. 1138*, Feb. 21, 1932 (epiphytic; sepals translucent creamy green; inner petals cream-yellow). — Also Java.

Ceratostylis sp.

Takengön, alt. 3600 ft., first growth small jungle, soil very fertile, hilly, *no. 745*, Jan. 8, 1932 (epiphytic; flower yellow).

This collection, consisting of several specimens, appears to be allied to *C. lancifolia* Hook. f., but the flower is imperfect.

Ceratostylis leucantha Schlechter in Bot. Jahrb. XLV. Beibl. No. 104, p. 21 (1911). — J. J. Smith in Bull. Jard. Bot. Buitenzorg, sér. 3, Suppl. II. t. 36, fig. 1 (1930).

Road from East Coast to Tapianoeli (northwest side of Toba Lake), new road near Peso Peso, virgin jungle, alt. 4100–4500 ft., Tapianoeli (kilometers 3), *no. 1130*, Feb. 19, 1932 (epiphytic; flowers white). — Endemic.

Phajus Tankervilliae ("Tankervillii") (Ait.) Blume, Mus. Bot. Ludg.-Bat. II. 177 (1856).

Limodorum Tankervilliae Aiton, Hort. Kew. III. 302, t. 12 (1789).

Phajus Blumei Lindley, Gen. & Sp. Orch. 127 (1831) — Blume, Fl. Jav. nov. ser. I. 4, t. 1 (1858).

Phajus Wallichii Hooker f., Fl. Brit. Ind. V. 816 (1890), pro parte.

Phajus Incarvillei O. Kuntze, Rev. Gen. II. 675 (1891).

On sides of volcano near Redelong, alt. 3600–6000 ft., half way up mountain, *no. 909*, Jan. 14, 1932 (terrestrial; sepals white outside, red-brown inside; "calyx tube" cream-white, purple tipped). — Widely represented in the Malay Peninsula and Malasia, China, Japan and Australia (a form).

Calanthe furcata Bateman apud Lindley in Bot. Reg. XXIV. Misc. p. 28 (1838).

Calanthe veratrifolia R. Brown in Bot. Reg. IX. t. 720 (1823) as to plant, but not as to name.

Calanthe triplicata Ames in Philipp. Jour. Sci. Sect. C. Bot. II. 326 (1907).

Near Lake Tawar, in ravine between Baboeli and Paekas, alt. 4100 ft., *no. 783*, Jan. 9, 1932 (terrestrial; flowers white; small yellow spot near center).

This species is very widely dispersed in the Eastern tropics, extending from India to the Malay Peninsula and Australia and from Java to the Philippines.

Spathoglottis plicata Blume, Bijdr. 401 (1825). — Linden & Rodigas in Lindenia, II. 15, t. 54 (1886).

Road to Prapat, alt. 2250 ft. *no. 621*, Dec. 1931 (terrestrial, growing on clay bank; flower spikes 2—3 ft.; flowers purple). — Also Malay Peninsula and Malasia to the Philippines.

Eulophia squalida Lindley in Bot. Reg. XXVII. Misc. p. 77 (1841).

Dolok Merangir, alt. 800 ft., *no. 945*, Feb. 6, 1932 (terrestrial; sepals light green; lip white with fine orchid stripes, "upper petals" white; common). — Another widespread Malayan species extending from the Malay Peninsula, Java and New Guinea to the Philippines.

Dendrobium anosmum Lindley in Bot. Reg. XXXI. Misc. p. 32 (1845).

Dendrobium superbum Reichenbach f. in Walpers, Ann. VI. 282 (1861).

Cultivated at Tapianoeli, *no. 1194*, Feb. 22, 1932 (epiphytic; sepals translucent white tinged with orchid; "throat" purple with white edging, slightly fringed).

The present collection differs from the usual form of the species in having the flowers borne on a leafy branch.

This species has not been recorded in Sumatra, although it is a widespread Malayan species ranging from Indo-China and the Malay Peninsula to New Guinea and the Philippines.

Dendrobium atropurpureum (Bl.) Miquel, Fl. Ind. Bat. III. 644 (1859).

Oxystophyllum atropurpureum Blume, Rumphia, IV. 41, t. 193, fig. 4 and t. 198, fig. C (1848).

Bĕrastagi, alt. 5500 ft., *no. 619*, Dec. 1931 (epiphytic; flower deep maroon).

This fragmentary specimen bears a single imperfect flower, and is referred, with some hesitation, to a species which is new to Sumatra. — Also Burma, Malay Peninsula, Java, Borneo, Celebes.

Dendrobium (§ Sarcopodium) **Banghamii** Ames & Schweinfurth, sp. nov.

Herba humilis. Rhizoma longe repens. Pseudobulbi ovoidei, ochracei, bifoliati. Folia parva, perlate ovata, crassa, rigida, apice obtuso inaequaliter bilobata. Scapus uni- vel biflorus. Flos grandis. Sepala lanceolata, lateralia obliqua. Petala oblique elliptico-lanceolata. Labellum in circuitu orbiculari-ovatum, trilobatum, medio breviter tricarinatum; discus verrucosus.

Plant dwarf for the alliance, with relatively large flowers, 12.5 cm. or less high from base of pseudobulb to tip of the flower. Rhizome long-creeping, about 2 mm. in diameter, branching, entirely concealed by sheaths which are short, imbricating, tubular, brownish, obtuse and evanescent (the sheaths on the growing tip of the rhizome are ochraceous and purple barred or maculate). Roots fibrous, glabrous, apparently sparse, issuing from the rhizome beneath the pseudobulbs. Pseudobulbs suborbicular, ovoid or pyriform, diphyllous, 8—14 mm. long, Raw Sienna, shining and coarsely rugose in the dried specimen, about 2 cm. apart on the rhizome, concealed in youth by evanescent sheaths. Leaves broadly ovate or oval, very shortly petioled; lamina up to 2.1 cm. long and 1.6 cm. wide, obtuse at the bilobed apex with blunt lobules, broadly rounded at base, very thickly coriaceous, margined, with the mid-nerve sulcate above and conspicuous beneath. Scape slender, much surpassing the leaves, 1- to 2-flowered; peduncle up to the inflorescence 5.8 cm. or less long, provided at base with two imbricating tubular sheaths and above with two remote tubular sheaths; rachis fractiflex, floral internode (if present) about 1.3 cm. long. Floral bracts membranaceous, ovate, concave, acute. Pedicellate ovary 2—2.5 cm. long. Flower large for the plant, perianth spreading. Lateral sepals lanceolate or ovate-lanceolate, slightly falcate, asymmetric, about 2.2 cm. long, 8—8.4 mm. wide, acute, 7- to 9-nerved. Dorsal sepal lanceolate or oblong-lanceolate, about 2—2.2 cm. long, 6.8—7 mm. wide, acute, 7-nerved. Petals obliquely elliptic-lanceolate, about 1.98—2.3 cm. long, 5.5—6 mm. wide, 5-nerved at the base, acute or subacute. Lip parallel to the column and recurved in natural position, 3-lobed with the lateral lobes incurved and erect, orbicular-ovate in outline, 1.54—1.58 cm. long, about 1.4 cm. wide across the lateral lobes when spread; lateral lobes about 1.28 cm. long, widely spreading, rounded at apex,

the free portion short triangular-ovate; mid-lobe broadly ovate, separated from the lateral lobes by a very short sinus, 6—6.6 mm. long, slightly wider near the base, acute, dorsally carinate at the apex; disc irregularly verrucose below, provided in the middle with three short carinate calli of which the longer central one extends to the base of the mid-lobe. Column short, about 7.7—9 mm. high at the back, prominently winged throughout, concave on anterior face, extended into a concave foot about 5 mm. long.

On sides of volcano near Redelong, alt. 3600—6000 ft., near top, *no. 919* (type in Herb. Ames no. 39617), Jan. 14, 1932 (terrestrial, 3 inches high; sepals flesh-color, inner tube [lip] striped with lilac tipped with deep yellow outlined with deeper lilac); road from East Coast to Tapianoeli (northwest side of Toba Lake), new road near Peso Peso, virgin jungle, alt. 4100—4500 ft., *no. 1058*, Feb. 16, 1932 (epiphytic; delicate orchid "throat [lip] striped deep purple edged with bright deep yellow").

The latter collection, represented by a single 1-flowered plant, differs from the type specimens in the following particulars: — leaf slightly longer (up to 2.8 cm. long), a single bract on the peduncle above the base, pedicellate ovary 3.5 cm. long, lateral sepals merely oblique (not subfalcate), about 2 cm. long, dorsal sepal elliptic-lanceolate, 1.9 cm. long, lip about 1.5 cm. long.

Dendrobium Banghamii appears to be the plant named *Sarcopodium cymbidioides* Kränzl. var. *humile* Carr in Jour. Malay. Branch Roy. As. Soc. xi. pt. i. 86 (1933), but it seems to us to warrant specific rank. The discrepancies from *Dendrobium cymbidioides* (Bl.) Lindl. are perhaps chiefly vegetative viz. the much smaller pseudobulb and smaller and relatively broader leaf, the few- (at most two-) flowered scapes and comparatively large flowers with broader sepals and more verrucose lip.

It differs from *D. longipes* Hook. f. in much smaller size of rhizome, pseudobulb and leaf, one- or two-flowered scape, and differently proportioned lip.

Dendrobium capitellatum J. J. Smith in Ic. Bogor. iii. 13, t. 206 (1906).

Jungle trail over mountains from Kabajakan to Tretet, alt. 3500—5000 ft., edge of jungle near Tretet, *no. 868*, Jan. 13, 1932 (epiphytic; flower white flecked with lilac, lip pure cream-color frilled slightly).

The specimens collected in Sumatra by Bangham diverge from the type in having larger flowers and differently proportioned shorter leaves. Unfortunately these specimens are fragmentary and the discrepancies noted between them and *D. capitellatum* may indicate that a new species is present, but it would be questionable procedure to attempt separation at this time. Kränzlin, in his monograph of *Dendrobium* (in Engler, Pflanzenreich IV.-50, II. B. 21. pt. 1, p. 222. 1910) refers *D. capitellatum* J. J. Sm. to synonymy under *D. salicornioides* Teijsm. & Binn., but J. J. Smith has not subscribed to this opinion in his recent writings. — Known only from Sumatra.

Dendrobium carnosum (Bl.) Reichenbach f. in Walpers, Ann. VI. 280 (1861). — J. J. Smith in Fl. Buitenzorg, VI (Orch. Jav.) 342 (1905); Fig. Atlas, fig. 259 (1910).

Takengön, alt. 3600 ft., first growth small jungle, soil very fertile, hilly, *no. 744*, Jan. 8, 1932 (epiphytic; sepals yellow flecked with red-brown, inner petals yellow; plant worn in hair as ornament by Gayas women). — Also Java.

This species is reduced by Kränzlin in his monograph of *Dendrobium* (in Engler, Pflanzenreich IV.-50, II B. 21. pt. 1, p. 217. 1910) to synonymy under *D. atropurpureum* (Bl.) Miquel, but J. J. Smith in his recent treatment (Enum. Orch. Sumatra & Neighbor. Is. 1933) retains it as a valid species.

Dendrobium cymbidioides (Bl.) Lindley, Gen. & Sp. Orch. 77 (1830).

Sarcopodium cymbidioides Rolfe in Orch. Rev. XVIII. 238 (1910).

Trail up volcano Sinaboeng, alt. at peak where orchid grew 8400 ft., *no. 1181*, Feb. 23, 1932 (epiphytic; sepals yellow, lip creamy yellow splotched with maroon). — Also Java.

Dendrobium (§Sarcopodium) **exilifolium** Ames & Schweinfurth, sp. nov.

Herba humilis, epiphytica. Pseudobulbi graciles, bifoliati, flavidi. Folia linearia, coriacea, ad apicem angustata, obtusa. Inflorescentia brevis, usque ad 3-flora. Flores longipedicellati, magni. Sepala lateralia ovato-oblonga, apice rotundato apiculata. Sepalum dorsale elliptico-lanceolatum. Petala multo angustiora. Labellum trilobatum, in positu naturali erectum cum lobis lateralibus incurvis; lobi laterales semirhombici, apice rotundati; lobus medius rotundato-ovatus; discus medio breviter tricarinatus. Columna alata.

Plant small, slender, 14.5 cm. or less tall, with the remnants of a rhizome. Roots issuing from the rhizome beneath the pseudobulb, sparse, fibrous, glabrous, unbranched, long. Pseudobulb narrowly pyriform-cylindric, bifoliate, up to 3.3 cm. long, yellow, coarsely longitudinally sulcate in the dried specimen, concealed and surpassed by an evanescent sheath. Leaves linear-ligulate, gradually narrowed into a sulcate petiole, 8.4—11.45 cm. long, 5.3—6 mm. wide, narrowed to an obtuse minutely bilobed tip, coriaceous, the mid-nerve sulcate above and prominent beneath, the margins minutely cartilaginous-serrulate in the dried specimen. Scape much shorter than the leaf, 1- to 3-flowered; peduncle up to the inflorescence 3—4.2 cm. long, provided at base with two imbricating sheaths and above with one isolated sheath. Floral bracts membranaceous, concave, acute. Floral internodes 5—7 mm. long. Flower large for the plant. Pedicellate ovary about 3 cm. long. Lateral sepals ovate-oblong, 1.7 cm. long, about 7.5 mm. wide, oblique, obtuse, apiculate, 7-nerved. Dorsal sepal elliptic-lanceolate, about 1.7 cm. long, 6.5 mm. wide, obtuse, 7-nerved. Petals elliptic-linear or oblanceolate-linear, about 1.8 cm. long and 4 mm. wide, obtuse or rounded at the apex, 5-nerved. Lip 3-lobed, erect and parallel to the column with the side lobes incurved in natural position, about 1.38 cm. long and 1.12 cm. wide across the lateral lobes when expanded; lateral lobes semirhombic, 11.3 mm. long, widely spreading, with the free portion triangular and broadly rounded, truncate in front; mid-lobe much smaller, orbicular-ovate, separated from the lateral lobes by a rounded sinus, about 5.8 mm. long and 6.3 mm. wide near the base, subacute, dorsally carinate at the tip; disc provided in the middle with three short approximate fleshy keels. Column 9 mm. high measured at the back, winged on each side, concave on the anterior surface with a central longitudinal keel, extended into a foot about 5.9 mm. long.

Road from East Coast to Tapianoeli (northwest side of Toba Lake), new road near Peso Peso, virgin jungle, alt. 4100—4500 ft., Tapianoeli (kilometers 3) *no. 1124* (type in Herb. Ames no. 39618), Feb. 19, 1932 (epiphytic; sepals red-green outside, yellow inside, "throat" [lip] yellow splotched with red-purple).

This probably is the plant named *Sarcopodium verruciferum* Rolfe var. *pauciflorum* Carr in Jour. Malay. Branch Roy. As. Soc. xi. pt. i. 86 (1933). It appears to differ from *Dendrobium*

verruciferum Reichb. f. in the narrow pseudobulbs, much narrower leaves, short and few-flowered scape, larger flowers, and somewhat dissimilar lip.

Dendrobium secundum (Bl.) Lindley, Gen. & Sp. Orch. 81 (1830).

Wingfoot estate, Bila, alt. 200 ft., *no. 944*, Feb. 6, 1932 (epiphytic; flowers waxy orchid, lip orange).

The present collection consists of a single raceme. — A widespread species extending from Indo-China (Burma), and the Malay Peninsula to Java, Celebes and the Philippines.

Dendrobium (§ Calcarifera) **spathilabium** Ames & Schweinfurth, sp. nov.

Caules graciles, vetustate nudi et floriferi. Folia disticha, lineari-lanceolata, acuminata. Flores ut videtur in racemos bifloros dispositi, membranacei. Sepala lateralia oblique ovato-oblonga, secundum columnae pedem decurrentia et mentum calcariforme formantia. Sepalum dorsale ovato-ellipticum. Petala ovalia, apice rotundato irregularia. Labellum spathulatum, apice late rotundato leviter trilobatum, prope basim dente retrorso conspicuo praeditum.

Stems up to 35.5 cm. long (incomplete), slender, arcuate, sometimes slightly fusiform-thickened below, longitudinally sulcate, yellow, when young entirely concealed by tubular leaf-sheaths which are scarious, striate and punctate in age; internodes of defoliated stems up to 1.9 cm. long, bounded by dark rings at the nodes. Leaves distichous, linear-lanceolate, up to 9.7 cm. long and 6 mm. wide below the middle, acuminate, acute, very indistinctly and unequally bilobed at the summit, submembranaceous, many-nerved, 9—12 mm. apart. Flowers in very short clusters on the leafless stems, apparently in pairs. Pedicellate ovary filiform, about 1.7 cm. long. Flower membranaceous. Lateral sepals obliquely ovate-oblong, running down along an elongated column-foot, about 1 cm. long, concave at the broad apex, subacute, 7- to 8-nerved; mentum conspicuous, arcuate, calcariform, 1.15—1.3 cm. long. Dorsal sepal ovate-elliptic, about 1 cm. long, 5.4 mm. wide, acute or obtuse, 5- to 7-nerved. Petals oval, about 1 cm. long, 5.5—6 mm. wide, irregular at the broad apex, oblique at base, 5-nerved. Lip parallel to the column in natural position, unguiculate; claw

deeply concave, narrowed from a dilated base, fleshy near the lamina in the center; lamina spatulate, simple in outline, trilobulate at the broad apex, 1.5—1.67 cm. long, 9.4—10 mm. wide near the apex, the basal margins converging to form a long linear fleshy curved retrorse tooth about 3 mm. long. At the middle of the disc is a pair of low more or less conspicuous keels, one near each margin, which converge toward the apex. Column short, stout with a short lobe on each side at the apex, produced into a long foot.

Jungle trail over mountains from Kabajakan to Tretet, alt. 3500—5000 ft., trail near top of mountain, *no. 889* (type in Herb. Ames no. 39619), Jan. 13, 1932 (epiphytic; flowers pure white).

Apparently similar to the Javan *D. arcuatum* J. J. Sm., but with much narrower leaves and much smaller flowers. Although there appear to be numerous allies of this species, it is distinct in having very narrow leaves and a long retrorse tooth at the base of the lip.

Dendrobium truncatum Lindley in Jour. Linn. Soc. III. 15 (1859).

Dendrobium clavipes Hooker f., Fl. Brit. Ind. v. 728 (1890); Ic. Pl. XXI. t. 2027 (1890).

Takengön, alt. 3600 ft., first growth small jungle, soil very fertile, hilly, *no. 717*, Jan. 7, 1932 (epiphytic; flowers white, with touches of deep orchid on inner petal). — Also Malay Peninsula, Java, Banka.

Eria sp.

Takengön, alt. 4000—5000 ft., second growth jungle, *no. 678*, Jan. 6, 1932 (orchid 2½ ft. high; flower buds and fruit only).

The plants of this collection resemble *E. compressa* Bl., but are further indeterminable.

Eria sp.

Jungle trail over mountains from Kabajakan to Tretet, alt. 3500—5000 ft., edge of jungle near Tretet, *no. 864*, Jan. 13, 1932 (epiphytic).

A collection of sterile plants of § Dendrolirium.

Eria sp. ?

Road from East Coast to Tapianoeli (northwest side of Toba Lake), new road near Peso Peso, virgin jungle, alt. 4100—4500 ft., *no. 1067*, Feb. 16, 1932 (epiphytic; flowers bright clear yellow).

There are no flowers present in this collection.

Eria albido-tomentosa (Bl.) Lindley, Gen. & Sp. Orch. 66 (1830). — J. J. Smith in Fl. Buitenzorg, VI (Orch. Jav.) 382 (1905); Fig. Atlas, fig. 289 (1911).

On sides of volcano near Redelong, alt. 3600–6000 ft., two-thirds way up, *no. 915*, Jan. 14, 1932 (one ft. high; sepals white-tomentose outside; "inner petals" greenish yellow tipped with reddish brown). — Also Siam, Malay Peninsula and Java.

Eria chrysocardium Schlechter in Bot. Jahrb. XLV. Beibl. No. 104, p. 44 (1911).

Tapianoeli, *no. 1192*, February 22, 1932 (epiphytic; sepals white, "throat" [lip] cream-color with dash of rose). — Endemic.

Eria floribunda Lindley in Wallich, Num. List, no. 7408 (1832), *nomen*; in Bot. Reg. XXIX. Misc. p. 43 (1843); XXX. t. 20 (1844).

Road from East Coast to Tapianoeli (northwest side of Toba Lake), new road near Peso Peso, virgin jungle, alt. 4100–4500 ft., *no. 1072*, Feb. 16, 1932 (epiphytic; flowers rosy pink). — Also Malay Peninsula, Borneo and the Philippines.

Eria hyacinthoides (Bl.) Lindley, Gen. & Sp. Orch. 66 (1830). — J. J. Smith in Fl. Buitenzorg, VI (Orch. Jav.) 410 (1905); Fig. Atlas, fig. 312 (1911).

Tapianoeli, *no. 1196*, Feb. 22, 1932 (epiphytic; flowers white, lip cream-color with rosy brown spots). — Also Java, Bali and Borneo.

Eria robusta (Bl.) Lindley, Gen. & Sp. Orch. 69 (1830).

Eria aeridostachya Reichenbach f. apud Lindley in Jour. Linn. Soc. III. 48 (1859).

Eria falcata J. J. Smith in Fl. Buitenzorg, VI (Orch. Jav.) 404 (1905); Fig. Atlas, fig. 306 (1911).

Near top of volcano near Redelong, alt. 3600–6000 ft., *no. 925*, Jan. 14, 1932 (terrestrial orchid 10 inches high; common; flowers cream-color); road from East Coast to Tapianoeli (northwest side of Toba Lake), new road near Peso Peso, virgin jungle, alt. 4100–4500 ft., *no. 1078*, Feb. 16, 1932 (epiphytic; flowers bronzy cream-color with maroon lip).

The first collection cited is much taller than the other. — Also Malay Peninsula and Java.

Eria schistoloba Schlechter in Bot. Jahrb. XLV. Beibl. 104, p. 38 (1911).

On sides of volcano near Redelong, alt. 3600–6000 ft., *no. 905*, Jan. 14, 1932 (terrestrial; flowers pale yellow, near top [of peduncle]). This collection is represented only by three separate leaves and four separate inflorescences. — Endemic.

Eria velutina Loddiges apud Lindley in Bot. Reg. XXVI. Misc. p. 86 (1840).

Trail from Medan road to top of Sibajak Volcano, alt. 4200–6500 ft., *no. 1015*, Feb. 15, 1932 (epiphytic).

The leaves of these plants are somewhat larger and more acuminate than in the usual form of the species, but the flowers which are somewhat old and imperfect appear to be a good match for those authentically determined as *E. velutina*. — Also Malay Peninsula, Banka, Borneo.

Eria xanthocheila Ridley, Mat. Fl. Malay Penins. I. 102 (1907). — J. J. Smith in Bull. Jard. Bot. Buitenzorg, ser. 3, IX. 45, t. 8, fig. 4 (1927).

Wingfoot estate, Bila, alt. 200 ft., *no. 946*, Feb. 6, 1932 (epiphytic; sepals waxy, greenish cream-color; lip yellow with two orchid lobes).

This collection is represented by fragmentary plants and separate leaves. The leaves and flowers are somewhat smaller than typical. — Also Malay Peninsula, Java, Borneo.

Octarrhena nana (Hook. f.) Schlechter in Fedde, Rep. Spec. Nov. IX. 217 (1911).

Phreatia nana Hooker f., Fl. Brit. Ind. v. 811 (1890); Ic. Pl. XXI. t. 2084 (1892).

Takengön, alt. 3600 ft., first growth small jungle, soil very fertile, hilly, *no. 706*, Jan. 7, 1932 (epiphytic; flowers cream-color). — Also Malay Peninsula and Java.

Phreatia pusilla (Bl.) Lindley, Gen. & Sp. Orch. 64 (1930). — J. J. Smith in Fl. Buitenzorg, VI (Orch. Jav.) 503 (1905); Fig. Atlas, fig. 381 (1912).

Takengön, steep hillsides, *no. 693*, Jan. 6, 1932 (terrestrial orchid, 4 inches high; flowers tiny, white). — Also Java.

Bulbophyllum (§Epicrianthes) sp.

Takengön, alt. 3600 ft., first growth small jungle, soil very fertile, hilly, *no. 695*, Jan. 7, 1932 (epiphytic; flowers reddish purple, maroon).

This collection, represented by two plants with rather imperfect flowers, shows alliance with the interesting section of

Bulbophyllum which has its petals chiefly consisting of linear appendages. It differs from *B. javanicum* J. J. Sm., *B. rigidifilum* J. J. Sm. and *B. vesiculosum* J. J. Sm. in its relatively elongate peduncle and large flowers.

Bulbophyllum croceum (Bl.) Lindley, Gen. & Sp. Orch. 57 (1830). — J. J. Smith in Fl. Buitenzorg, VI (Orch. Jav.) 433 (1905); Fig. Atlas, fig. 328 (1911).

Takengön, alt. 3600 ft., first growth small jungle, soil very fertile, hilly, *no. 696*, Jan. 7, 1932 (epiphytic; flowers deep cream-color).

The plants of this collection vary from the typical form in their short peduncles and small flowers. — Also Java.

Bulbophyllum magnivaginatum Ames & Schweinfurth, Orch. VI. 186 (1920).

Jungle trail from Goodyear bungalow to foot of Sibajak Volcano, alt. 5000–6000 ft., *no. 1004*, Feb. 14, 1932. (sepals deep cream-color; "inner petals" light rust-color).

This species has been recorded previously only from Mt. Kinabalu in British North Borneo.

Bulbophyllum ovalifolium (Bl.) Lindley, Gen. & Sp. Orch. 49 (1830). — J. J. Smith in Fl. Buitenzorg, VI (Orch. Jav.) 455 (1905); Fig. Atlas, fig. 347 (1911).

Takengön, alt. 3600 ft., first growth small jungle, soil very fertile, hilly, *no. 756*, 1932 (epiphytic; sepals yellow, lower petal [lip] slightly orange); jungle trail over mountains from Kabajakan to Tretet, alt. 3500–5000 ft., edge of jungle near Tretet, *no. 875*, Jan. 13, 1932 (epiphytic; flowers white with maroon stripes, lip deep maroon). — Also Malay Peninsula and Java.

Bulbophyllum purpurascens Teijsmann & Binnendijk in Nat. Tijdschr. Ned. Ind. XXIV. 308 (1862). — J. J. Smith in Fl. Buitenzorg, VI (Orch. Jav.) 472 (1905); Fig. Atlas, fig. 362 (1911).

Dolok Merangir, Div. 2, alt. 800 ft., *no. 620*, Dec. 1931 (on tree; leaves reddish brown; flowers creamy with deeper center). — Also Malay Peninsula, Java, Banka and Borneo.

Acriopsis javanica Reinwardt apud Blume, Cat. Gew. Buitenz. 97 (1823), nomen; Reinwardt in Syllog. Ratisbon. II. 4 (1825). — Blume, Bijdr. 377 (1825). — J. J. Smith in Fl. Buitenzorg, VI (Orch. Jav.) 537 (1905); Fig. Atlas, fig. 410 (1912).

Dolok Merangir Estate, Div. 2, alt. 800 ft. *no. 617*, Dec. 1931 (on rubber tree; very common; flowers light red). — A widely spread species extending from Burma and the Malay Peninsula, Java and Celebes to the Philippines.

Cymbidium lancifolium Hooker, Exot. Fl. I. t. 51 (1823).

Jungle trail over mountains from Kabajakan to Tretet, alt. 3500–5000 ft., near edge of jungle toward Kabajakan, *no. 890*, Jan. 13, 1932 (terrestrial; sepals cream-color flecked with lilac). — Also India, Malay Peninsula, Java, China and Japan.

Cymbidium pubescens Lindley in Bot. Reg. XXVI. Misc. p. 75 (1840); XXVII. t. 38 (1841).

Dolok Merangir Estate, Div. 2, alt. 800 ft., *no. 618*, Dec. 1931 (very common, forming large clumps; flowers in long drooping racemes, maroon with yellow stripes). — Also Siam (fide Ridley), Malay Peninsula, Java, Banka, Borneo and the Philippines.

Sarcanthus minutiflorus Ames & Schweinfurth, sp. nov.

Herba epiphytica, apex solum praestat. Caulis foliorum vaginis dense rugosis omnino obtectus. Folia loriformia, in siccitate conduplicata, coriacea, apice obtuso inaequaliter bilobata. Inflorescentia oppositifolia, laxe paniculata ramis angustis. Flores minuti. Sepala elliptico-ovata, lateralia obliqua. Sepalum dorsale valde concavum. Petala ovato-oblonga. Labellum complanato-scrotiforme, apice trilobatum; lobi laterales transverse oblongi, apice rotundato solum liberi; lobus medius reflexus vel patens, ligulato-subquadratus, apice truncatus; saccus intus callosus.

Stem (only the upper part remains) fractiflex, entirely concealed by coarsely rugose leaf-sheaths, 5–6 mm. in diameter. Leaves distichous, oblong-linear, commonly conduplicate and arcuate in the dried specimen, up to 10 cm. long, about 1 cm. wide when expanded, rigid-coriaceous, obtuse and unequally bilobed at the apex (with the longer lobule rounded and the shorter one retuse), 1–1.5 cm. apart. Inflorescence a few-branched loose panicle, arising opposite the bases of the leaves, somewhat exceeding the leaves. Peduncle up to the lowest branch of the panicle slender, provided near the base with several short infundibuliform rugose sheaths. Branches of the panicle 7–8 cm. long, flexuous, beyond the base subdensely many-flowered, 6–7 mm. in diameter across the flowering branch. Flowers minute, fleshy. Lateral sepals obliquely elliptic-ovate, 2.2 mm. long, about 1.5

mm. wide, anterior margins incurved, complicate-acute, 3-nerved. Dorsal sepal oblong-ovate or elliptic-ovate, 2.6 mm. long, about 1.1 mm. wide, concave, cucullate at the apex, 3-nerved. Petals obliquely ovate-oblong, obtuse or subacute, about 2 mm. long and 1 mm. wide, 1-nerved. Lip consisting of a scrotiform sac about 2.2 mm. deep on the dorsal side, 3-lobed in front; lateral lobes transversely oblong, with the free apex semicircular and porrect; mid-lobe abruptly spreading or reflexed, ligulate-subquadrate, very fleshy below, about 1.1 mm. long, erose at the abruptly truncate apex. On the inner surface the sac is provided in the rear, near the base of the column, with a fleshy ovate callus and in front between the erect lateral lobes with a very fleshy transverse thickening. Column very short and stout, bidentate at the apex in front, protuberant in front below the stigmatic orifice. Anther semiglobose.

Tapianoeli, *no. 1195* (type in Herb. Ames no. 39620), Feb. 22, 1932 (epiphytic; flowers minute; sepals red-green outside, maroon with yellow margin inside; "inner petal" yellow).

This species appears to be similar to *Sarcanthus callosilobus* J. J. Sm., but differs in having longer leaves, shorter inflorescences and aseptate spur.

Taeniophyllum sp.

Takengön, alt. 3600 ft., first growth small jungle, soil very fertile, hilly, *no. 718*, Jan. 7, 1932 (epiphytic; tiny).

The single caespitose plant of this collection bears only remnants of the perianth on a large swollen ovary.

The two following species of this collection which were in cultivation belong to large genera that are confined to the American tropics.

Epidendrum evectum Hooker f. in Bot. Mag. XCVII. t. 5902 (1871).

Takengön (said to be wild in jungle), *no. 1110*, Feb. 18, 1932 (epiphytic; flowers crimson).

Oncidium flexuosum Sims in Bot. Mag. XLVIII. t. 2203 (1821).

Tapianoeli, *no. 1193*, Feb. 22, 1932 (epiphytic; "upper petals" [lip] clear brilliant golden yellow; "lower petals" [sepals and petals] golden yellow striped with wine-red).

PIPERACEAE

Piper arcuatum Blume in Verh. Bat. Genootsch. XI. 180, fig. 11 (1826).

Tapianoeli, near Peso Peso, northwest of Lake Toba, in primary forests, alt. 4000–4500 ft., *no. 1119*, Feb. 19, 1932. — Java.

Piper Betle Linnaeus, Sp. Pl. 28 (1753).

East Coast, Dolok Merangir, *no. 940*, Jan. 28, 1932 (cultivated, *sireh* or betle pepper); Siantar, *nos. 1213*, *1214* (two forms of *sireh* as sold in the market). — Cultivated throughout the Indo-Malaysian region.

Bangham 1002, from the trail to Sibajak Volcano, may be a wild form of this species; the specimen is incomplete.

Piper Korthalsii Miquel in Ann. Mus. Bot. Lugd.-Bat. I. 139 (1863).

Atjeh, trail from Kabajakan to Tretet, alt. 3500–5000 ft., *no. 886*, Jan. 13, 1932. — Philippines.

CHLORANTHACEAE

Chloranthus brachystachys Blume, Fl. Jav. Chloranth. 13, t. 2 (1828).

East Coast, Medan-Bĕrastagi road, kilometers 59–61, in second growth jungle at 4100 ft. alt., *no. 1137*, Feb. 21, 1932, (fruits bright red). — India to Japan, southward to Java and the Philippines.

Chloranthus officinalis Blume, Cat. Gew. Buitenzorg, 79 (1827); Fl. Jav. Chloranth. 10, t. 1 (1828).

East Coast, Medan-Bĕrastagi road, kilometers 59 — 61, alt. 4100 ft., *no. 1152*, Feb. 21, 1932; Atjeh, Takengön, in primary forests at 3600 ft., alt., *no. 732*, Jan. 17, 1932 (fruits white). — India to western China, southward to Java, the Philippines, and New Guinea.

SALICACEAE

Salix tetrasperma Roxburgh, Pl. Coromandel, I. 66, t. 97 (1795).

Atjeh, near Sho Soekan, along the road in a swampy area, *no. 939*, Jan. 16, 1932. — India to the Malay Peninsula and Java.

Ridley, Fl. Malay Penin. III. 393 (1924), thinks this to be an introduced plant in the Malay Peninsula as it is there planted and

only the male plant is known. Bangham's specimen is sterile but matches *Yates 1614* from Bandar Poeloeh, and *Krukoff 4413* from Hoeta Padang, both with staminate flowers. Probably an introduced plant in Sumatra.

The Philippine material referred by me to this species, Enum. Philipp. Flow. Pl. II. 22 (1923), represents a totally different one remarkable for its very long staminate and pistillate catkins. It should be known as *Salix azaolana* Blanco.

FAGACEAE

Quercus oidocarpa Korthals, Verh. Nat. Gesch. Nederl. Overz. Bezit. Bot. 216, t. 47, fig. 18 (1839–42). — King in Ann. Bot. Gard. Calcutta, II. 28, t. 21A (1889). — Gamble in Jour. As. Soc. Bengal, LXXV. 409 (Mater. Fl. Malay. Penin. v. 409) (1915).

Atjeh, Takengön, a 90 ft. tree in primary forests at 3600 ft. alt., *no. 859*, Jan. 12, 1932. — Malay Peninsula, Borneo.

Lithocarpus argentata (Korthals), comb. nov.

Quercus argentata Korthals, Verh. Nat. Gesch. Nederl. Overz. Bezit. Bot. 215, t. 47, fig. 1–17 (1839–42). — King in Ann. Bot. Gard. Calcutta, II. 30, t. 24A (1889). — Gamble in Jour. As. Soc. Bengal, LXXV. 408 (Mater. Fl. Malay. Penin. v. 408) (1915).

Tapianoeli, new road near Peso Peso, at kilometer 115, in primary forests 4100–4500 ft. alt., *no. 1117*, Feb. 19, 1932 (tree 45 ft. high). Bangham's no. 809 consisting of detached fruits only, taken from the road between Takengön and Bireuen Atjeh, is probably referable here. — Malay Peninsula.

Lithocarpus Beccariana (Bentham), comb. nov.

Quercus Beccariana Bentham in Hook. Ic. XIV. 10, t. 1315 (1880). — King in Ann. Bot. Gard. Calcutta, II. 83, t. 78 (1889).

Pasania Beccariana Prantl in Engler & Prantl, Nat. Pflanzenfam. III.-1, p. 55 (1889). — Gamble in Jour. As. Soc. Bengal, LXXV. 452 (Mater. Fl. Malay. Penin. v. 452) (1915).

Atjeh, Takengön, on forested slopes at 3600 ft. alt., *no. 845*, Jan. 12, 1932 (about 75 ft. high, the trunk whitish); Tapianoeli, new road near Peso Peso at kilometer 115, in primary forests alt. 4100–4500 ft., *no. 1118*, Feb. 12, 1932. — Singapore, Borneo.

Lithocarpus conocarpa (Oudemans) Rehder in Jour. Arnold Arb. I. 123 (1919).

Quercus conocarpa Oudemans in Versl. Mededeel. Kon. Akad. Wetensch. Amsterd. Afd. Natuurk. XII. 206 (1868); Verh. Akad. Wetensch. Amsterd. XI. no. 3, p. 18, t. 10 (Annot. Crit. Cupulif. Jav.) (1865). — King in Ann. Bot. Gard. Calcutta, II. 61, t. 56A (1889).

Pasania conocarpa Schottky in Bot. Jahrb. XLIX. 357 (1913). — Gamble in Jour. As. Soc. Bengal, LXXV. 430 (Mater. Fl. Malay. Penin. v. 430) (1915).

Tapianoeli, new road near Peso Peso, in primary forests, alt. 4100–4500 ft., *no. 1167*, Feb. 22, 1932 (tree 70 ft. high); Atjeh, Kabajakan to Tretet, a fallen 90 ft. tree, edge of jungle above 3500 ft. alt., *no. 876*, Jan. 13, 1932. — Malay Peninsula, Java, Borneo.

Lithocarpus hystrix (Korthals) Rehder in Jour. Arnold Arb. I. 127 (1919).

Quercus hystrix Korthals, Verh. Nat. Gesch. Nederl. Overz. Bezit. Bot. 201, t. 43 (1839–42). — King in Ann. Bot. Gard. Calcutta, II. 54, t. 50 (1889).

Pasania hystrix Gamble in Jour. As. Soc. Bengal, LXXV. 428 (Mater. Fl. Malay. Penin. v. 428) (1915).

Atjeh, Takengön, a tree about 100 ft. high, in primary forests, at 3600 ft. alt., *nos. 701, 858*, Jan. 7 and 12, 1932; Tapianoeli, new road near Peso Peso, kilometer 116, primary forests, alt. 4100–4500 ft., *no. 1169*, Feb. 22, 1932 (from a 50 ft. fallen tree); East Coast, Kaban Djahe to Kota Tjane, in forested ravines, alt. 4000–4500 ft., *no. 1097*, Feb. 17, 1932. — Malay Peninsula, Borneo.

Lithocarpus pallida (Blume) Rehder in Jour. Arnold Arb. I. 129 (1919).

Quercus pallida Blume, Bijdr. 524 (1825). — King in Ann. Bot. Gard. Calcutta, II. 57, t. 53A (1889).

Pasania pallida Oersted in Vidensk. Meddel. Naturhist. For. Kjöbenhaven, XVIII. 83 (1866).

East Coast, trail up Sinaboeng Volcano, in forests at 2800 ft. alt., *no. 1182*, Feb. 23, 1932 (tree 75 ft. high). — Java.

Lithocarpus sundaica (Blume) Rehder in Jour. Arnold Arb. I. 131 (1919).

Quercus sundaica Blume in Verh. Bat. Genootsch. IX. 216 (1825); Fl. Jav. Cupulif. 11, t. 2, 3 (1828). — King in Ann. Bot. Gard. Calcutta, II. 51, t. 47, 48 (1889).

Pasania sundaica Oersted in Vidensk. Meddel. Naturhist. For. Kjöbenhaven, XVIII. 83 (1866). — Gamble in Jour. As. Soc. Bengal, LXXV. 426 (Mater. Fl. Malay. Penin. v. 426) (1915).

Atjeh, Takengön, in primary forests, *no. 853*, Jan. 12, 1932 (90 ft. tree, trunk slightly buttressed). — Malay Peninsula, Java, Borneo.

Lithocarpus sp.

Atjeh, Takengön, in forests at 3600 ft. alt., *no. 846*, Jan. 12,

1932 (fragmentary material from a fallen branch; fruits immature, no complete leaves).

Lithocarpus sp.

Atjeh, Takengön, in primary forests at 3600 ft. alt., *no. 851*, Jan. 12, 1932 (90 ft. tree). This should be allied to *Lithocarpus hystrix* (Korth.) Rehd.; very immature, the fruits just beginning to form.

ULMACEAE

Trema orientalis (Linnaeus) Blume, Mus. Bot. Lugd.-Bat. II. 62 (1856). — Merrill, Enum. Philipp. Flow. Pl. II. 34 (1923).

Celtis orientalis Linnaeus, Sp. Pl. 1044 (1753).

Atjeh, Takengön, in small jungle, alt. 3600 ft., *no. 704*, Jan. 7, 1932; East Coast, Dolok Merangir Estate, a small tree, alt. 800 ft., *no. 608*, Dec. 29, 1931 (small tree 15–20 ft. high). — India to southern China, through to Malaysia, to tropical Australia and Polynesia.

A characteristic, rapidly growing, dominant, small tree quickly occupying deserted clearings everywhere in Malaysia. This is the species appearing in most publications as *Trema amboinensis* Blume but Blume's species, based on *Celtis amboinensis* Willdenow (1805), is a totally different plant with much smaller, narrow, nearly glabrous leaves which cannot be distinguished from *Trema cannabina* Loureiro (1790).

Ulmus lanceaefolia Roxburgh apud Wallich, Icon. Pl. As. Rar. II. 86, t. 200 (1831). — Schneider in Sargent, Pl. Wilson. III. 263 (1916).

Ulmus lancifolia Roxburgh, Fl. Ind. ed. 2, II. 66 (1832).

Atjeh, Takengön, in primary forests at 3600 ft. alt., *no. 857*, Jan. 12, 1932 (a sterile specimen; "one of the tallest trees, 145 ft. high, trunk slightly fluted, bark reddish-brown, wood slightly reddish"). — Assam, Sikkim, eastern Bengal, Burma, and Yunnan.

No representative of *Ulmus* has previously been recorded from Malaysia. While Bangham's specimen is sterile, it agrees in all characters, as far as comparisons are possible, with Roxburgh's species as represented by *Henry 10571*, and *12864* from Yunnan, referred here by Schneider.

MORACEAE

Ficus alba Reinwardt apud Blume, Bijdr. 477 (1825). — King in Ann. Bot. Gard. Calcutta, I. 147, t. 186 (1888).

East Coast, along the road from Siantar to Bĕrastagi, at kilometer 188, in second growth jungle, at 3600 ft. alt., *no. 956*, Feb. 12, 1932 (small tree); Deli-Atjeh border, at sea level, *no. 635*, Jan. 3, 1932 (tree 20 ft. high). — Malay Peninsula, Java, and Borneo.

Ficus diversifolia Blume, Bijdr. 456 (1825). — King in Ann. Bot. Gard. Calcutta, I. 139, t. 174, 175 (1888).

East Coast, trail from Goodyear bungalow to Sibajak Volcano, near the sulphur spring, *no. 995*, Feb. 14, 1932 (shrub 4—5 ft. high). — Malay Peninsula, Java, and Borneo.

Ficus glabella Blume, Bijdr. 452 (1825). — King in Ann. Bot. Gard. Calcutta, I. 49, t. 60 (1887).

Atjeh, Takengön, in primary forests, alt. 3600 ft., *no. 734*, Jan. 7, 1932 (tree 75 ft. high). Bangham's no. 631 in herb. Arnold Arboretum, from the Deli-Atjeh border may possibly be referable here; there are no leaves with the specimen. — India to Burma, Java, Borneo, and perhaps other parts of the Malaysian region.

Ficus glomerata Roxburgh, Pl. Coromandel, II. 13, t. 123 (1798). — King in Ann. Bot. Gard. Calcutta, I. 173, t. 218 (1888). — Corner in Jour. Malay. Branch Roy. As. Soc. XI. 58, fig. 31 (1933).

East Coast, near Bĕrastagi, in open land, alt. about 4800 ft. *no. 1082*, Feb. 16, 1932 (tree 40 ft. high); Atjeh, Takengön to Bireuen, kilometers 50—51, in rich soil near the river, *no. 938* (tree 60 ft. high; fruits cauline, red). — India to Siam, Indo-China, the Malay Peninsula, and Java.

Ficus hypogaea King in Ann. Bot. Gard. Calcutta, I. 100, t. 125 (1888).

East Coast, Medan-Bĕrastagi road near the entrance to the sulphur spring, in second growth jungle, alt. 4200 ft., *no. 983*, Feb. 13, 1932 (tree 30 ft. high; fruiting branches under the soil humus, fruits yellow). — Malay Peninsula, Borneo.

Ficus indica Linnaeus, Sp. Pl. 1060 (1753). — King in Ann. Bot. Gard. Calcutta, I. 39, t. 45 (1887).

Atjeh, near Lake Tawar, on slopes at 3800 ft. alt., *no. 804*, Jan. 10, 1932 (tree 35 ft. high). — India to Indo-China, Malaysia, and the Philippines.

Ficus leptorhyncha Valeton apud Koorders & Valeton in Meded. Dept. Landbouw, II. 156 (Bijdr. Boomsoort. Java, XI. 156) (1906).

East Coast, Baboeli to Paekas, in ravines at 4100 ft. alt., *no. 773*, Jan. 9, 1932 (tree 25 ft. high). — Java.

Ficus obscura Blume, Bijdr. 474 (1825). — King in Ann. Bot. Gard. Calcutta, I. 81, t. 102, 103 (1888).

East Coast, road from Siantar to Bĕrastagi, kilometers 188–189, in secondary jungle at 3500 ft. alt., *no. 952*, Feb. 12, 1932 (tree 20 ft. high); Atjeh, Takengön, in primary forests at 3600 ft. alt., *no. 748*, Jan. 3, 1932 (tree 25 ft. high). — India to Burma, southward to Borneo and Java.

Ficus padana Burman f., Fl. Ind. 226 (1768). — Merrill in Philipp. Jour. Sci. XIX. 346 (1921).

Ficus toxicaria Linnaeus, Mant. II. 305 (1771). — King in Ann. Bot. Gard. Calcutta, I. 146, t. 184 (1888).

East Coast, road from Siantar to Bĕrastagi, kilometers 188–189, in second growth jungle at 3500 ft. alt., *no. 960*, Feb. 12, 1932 (tree 30 ft. high). — Java, Borneo.

Burman's specific name is unequivocally older than that of Linnaeus; both binomials were undoubtedly based on the same collection, i. e., material that Burman took to Linnaeus when he was making his identifications.

Ficus rostrata Lamarck, Encycl. Méth. II. 498 (1786). — King in Ann. Bot. Gard. Calcutta, I. 86, t. 110 (1888).

Atjeh, Takengön to Bireuen, road to Balique, at the edge of the primary forest, alt. 3200 ft., *no. 823*, Jan. 11, 1932 (shrub 10 ft. high). — India to Java, and Borneo.

Ficus septica Burman f., Fl. Ind. 226 (1768). — Merrill, Interpret. Herb. Amb. 193 (1917); Philipp. Jour. Sci. XIX. 346 (1921).

Ficus leucantatoma Poiret in Lamarck, Encycl. Suppl. II. 654 (1811).— King in Ann. Bot. Gard. Calcutta, I. 119, t. 157 (1888).

East Coast, trail Goodyear bungalow to Sibajak Volcano, in forests at 3000–5000 ft. alt., *no. 1010*, Feb. 14, 1932 (tree 28 ft. high). — India to Formosa, southward to Java and New Guinea. The very common Philippine *Ficus hauili* Blanco, Merrill, Enum. Philipp. Flow. Pl. II. 53 (1923), is probably not specifically distinct.

Poikilospermum suaveolens (Blume), comb. nov.

Conocephalus suaveolens Blume, Bijdr. 484 (1825). — Hooker f., Fl. Brit. Ind. v. 545 (1888). — Bargagli-Petrucci in Nuov. Giorn. Bot. Ital. n. ser. IX. 218 (1902). — Merrill, Enum. Philipp. Flow. Pl. II. 71 (1923). — Gagnepain in Lecomte, Fl. Gén. Indo-Chine, v. 831 (1929).

Urtica naucleiflora Roxburgh, Hort. Bengal. 67 (1814), nomen nudum; Fl. Ind. ed. 2, III. 592 (1832), descr.

Conocephalus naucleiflorus Lindley in Bot. Reg. XIV. t. 1203 (1828). — Engler in Engler & Prantl, Nat. Pflanzenfam. III-1, p. 94 (1889). — Koorders, Exkursionsfl. Java, II. 122, fig. 27 (1912).

Conocephalus naucleiformis Lindley apud Jackson, Ind. Kew. I. 597 (1893).

Procris violacea Blanco, Fl. Filip. 706 (1837).

Conocephalus ovatus Trécul in Ann. Sci. Nat. sér. 3, VIII. Bot. 89 (1847).

Conocephalus microphyllus Trécul, op. cit. 92.

Conocephalus pubescens Trécul, op. cit. 90.

Conocephalus Roxburghii Trécul, op. cit. 89.

Conocephalus ellipticus Trécul, op. cit. 91.

Conocephalus gratus Miquel, Pl. Jungh. 43 (1851).

Conocephalus violaceus Merrill in Govt. Lab. Publ. [Philipp.] XXVII. 80 (1905).

East Coast, Dolok Merangir Estate, alt. about 800 ft., *no. 606*, Dec. 29, 1932 (flowers deep lavender). — India to Indo-China, through Malaysia, to the Philippines, and Celebes.

The generic name *Conocephalus* Blume (1825) is invalidated by *Conicephala* Hill[1] which was taken up by Weber[2] as *Conocephalum*, and by Necker[3] as *Conocephalus*, the latter validated by Dumortier in 1822.[4] This name appertains to a group of Hepaticae congeneric with *Fegatella* Raddi; "*Conocephalus* Necker" is the form and authority generally used by hepatologists. Hill's use of *Conicephala* is pre-Linnaean and may be ignored. We may quibble as to whether or not *Conocephalum* Weber (1780) invalidates *Conocephalus* Blume, but *Conocephalus* Necker (1790) as validated by Dumortier (1822) has clear priority over Blume's use of the name (1825) for a group of moraceous plants. I see no alternative but to accept Zippel's name *Poikilospermum* which all recent authors agree is congeneric with *Conocephalus* Blume. Another generic name is available in *Conocephalopsis* O. Kuntze, which has been overlooked by all recent authors. It was proposed

[1]Hist. Pl. 118 (1751).

[2]Wiggers, Prim. Fl. Holsat. 82 (1780).

[3]Elem. III. 344 (1790).

[4]Comm. Bot. 115 (1822).

as a new name for *Conocephalus* Blume as follows: "Conocephalopsis nom. altern. nov. anstatt **Conocephalus Bl. 1825** [non Conocephalus Hill 1751 Wiggers 1780, wofür aber **Hepatica Hall 1742 gilt**[1]];" it is therefore not strange that the name was overlooked by the compilers to the Supplements to Index Kewensis; Kuntze published no binomials under his new generic name. Kuntze's name is antedated two years by *Balansaephytum* Drake typified by *B. tonkinense* Drake in Bull. Soc. Bot. France, XLIII. 82 (1896), this being congeneric with *Conocephalus* Blume. The range of the genus is from the eastern Himalayan region and the Khasia Mountains in India to Yunnan in southwestern China, southward throughout Malaysia, including the Philippines, to New Guinea, and the Bismarck Archipelago. The following species are recognized:

Poikilospermum acuminatum (Trécul), comb. nov.

Conocephalus acuminatus Trécul in Ann. Sci. Nat. sér. 3, Bot. VIII. 91 (1847). — Bargagli-Petrucci in Nuov. Giorn. Bot. Ital. n. ser. IX. 221 (1902). — Merrill, Enum. Philipp. Flow. Pl. II. 70 (1923).

Philippines.

Poikilospermum amboinense Zippel apud Miquel in Ann. Mus. Bot. Lugd.-Bat. I. 203 (1864).

Conocephalus papuanus Bargagli-Petrucci in Nuov. Giorn. Bot. Ital. n. ser. IX. 228, t. 13 (1902).

Conocephalus amboinensis Warburg in Bot. Jahrb. XVIII. 189 (1894). — Bargagli-Petrucci in Nuov. Giorn. Bot. Ital. n. ser. IX. 227 (1902). — Merrill, Interpret. Herb. Amb. 199 (1917). — H. Winkler in Bot. Jahrb. LVII. 600 (1922).

Funis muraenarum latifolia Rumphius, Herb. Amb. IV. 68, t. 36 (1747).

Moluccas, New Guinea, Bismarck Archipelago.

Poikilospermum amethystinum (H. Winkler), comb. nov.

Conocephalus amethystinus H. Winkler in Bot. Jahrb. XLIX. 359 (1913).

Borneo.

Poikilospermum amoenum (King), comb. nov.

Conocephalus amoenus King apud Hooker f., Fl. Brit. Ind. v. 545 (1888). — Bargagli-Petrucci in Nuov. Giorn. Bot. Ital. n. ser. IX. 220 (1902). — Ridley, Fl. Malay Penin. III. 357 (1924).

Malay Peninsula.

[1]KUNTZE, Rev. Gen. Pl. III. pt. 2, p. 136 (1898).

Poikilospermum annamense (Gagnepain), comb. nov.

Conocephalus annamensis Gagnepain in Lecomte, Fl. Gén. Indo-Chine, v. 832, fig. 96, 1—10 (1929).

Indo-China.

Poikilospermum azureum (Teijsmann & Binnendijk), comb. nov.

Conocephalus azureus Teijsmann & Binnendijk in Nat. Tijdschr. Nederl. Ind. xxvii. 26 (1864).

This Sumatran species is apparently allied to *Conocephalus cordatus* Bargagli-Petrucci of Borneo. Koorders, Exkursionsfl. Java, ii. 122 (1912), credits it also to Java, on the basis of specimens cultivated at Buitenzorg, and also to the Malay Peninsula and Celebes, but the characters by which he distinguishes it from *C. suaveolens* do not conform to those indicated in the original description.

Poikilospermum borneense (Miquel), comb. nov.

Conocephalus borneensis Miquel in Ann. Mus. Bot. Lugd.-Bat. iii. 210. (1868). — Bargagli-Petrucci in Nuov. Giorn. Bot. Ital. n. ser. ix. 219 (1902).

Borneo.

Poikilospermum cordifolium (Bargagli-Petrucci), comb. nov.

Conocephalus cordifolius Bargagli-Petrucci in Nuov. Giorn. Bot. Ital. n. ser. ix. 220, t. 7 (1902).

Borneo.

Poikilospermum diffusum (Merrill), comb. nov.

Conocephalus diffusus Merrill in Philipp. Jour. Sci. ix. Bot. 355 (1914); Enum. Philipp. Flow. Pl. ii. 70 (1923).

Philippines.

Poikilospermum dubium (Bargagli-Petrucci), comb. nov.

Conocephalus dubius Bargagli-Petrucci in Nuov. Giorn. Bot. Ital. n. ser. ix. 225, t. 11 (1902).

Borneo.

Poikilospermum erectum (Blanco), comb. nov.

Procris erecta Blanco, Fl. Filip. 707 (1837).

Conocephalus erectus F. Villar, Novis. App. Blanco Fl. Filip. ed. 3, p. 203 (1880). — Merrill, Enum. Philipp. Flow. Pl. ii. 70 (1923).

Conocephalus canescens Warburg in Perkins, Frag. Fl. Philipp. 167 (1905).

Philippines.

Poikilospermum Forbesii (S. Moore), comb. nov.

Conocephalus Forbesii S. Moore in Jour. Bot. lxiii. Suppl. 112 (1925).

Amboina.

Poikilospermum Gagnepainii, nom. nov.

Conocephalus mollis Gagnepain in Lecomte, Fl. Gén. Indo-Chine, v. 834 (1929), non Merrill (1921).

Indo-China.

Poikilospermum Gjellerupii (H. Winkler), comb. nov.

Conocephalus Gjellerupii H. Winkler in Bot. Jahrb. LVII. 602 (1922).

New Guinea.

Poikilospermum grandifolium (Warburg), comb. nov.

Conocephalus grandifolius Warburg in Perkins, Frag. Fl. Philipp. 167 (1905). — Merrill, Enum. Philipp. Flow. Pl. II. 71 (1923).

Philippines.

Poikilospermum grande (Weddell), comb. nov.

Procris grandis Weddell in Arch. Mus. Hist. Nat [Paris], IX. 337 (1856).

Conocephalus grandis Merrill, Enum. Philipp. Flow. Pl. II. 70 (1923).

Philippines.

Poikilospermum hirsutum (H. Winkler), comb. nov.

Concocephalus hirsutus H. Winkler in Bot. Jahrb. LVII. 509, fig. 14 (1922).

New Guinea.

Poikilospermum intermedium (Bargagli-Petrucci), comb. nov.

Conocephalus intermedius Bargagli-Petrucci in Nuov. Giorn. Bot. Ital. n. ser. IX. 218, t. 4 (1902).

Borneo.

Poikilospermum lanceolatum (Trécul), comb. nov.

Conocephalus lanceolatus Trécul in Ann. Sci. Nat. sér. 3, Bot. VIII. 88 (1847). — Bargagli-Petrucci in Nuov. Giorn. Bot. Ital. n. ser. IX. 226 (1902).

Conocephalus subtrinervius Miquel, Fl. Ind. Bat. Suppl. 417 (1861). — Hooker f., Fl. Brit. Ind. v. 546 (1888). — Bargagli-Petrucci in Nuov. Giorn. Bot. Ital. n. ser. IX. 226 (1902). — Ridley, Fl. Malay Penin. III. 358 (1924).

Malay Peninsula, Sumatra, Borneo.

Poikilospermum micranthum (Miquel), comb. nov.

Conocephalus micranthus Miquel in Ann. Mus. Bot. Lugd.-Bat. III. 210 (1868). — Bargagli-Petrucci in Nuov. Giorn. Bot. Ital. n. ser. IX. 217 (1902).

Borneo.

Poikilospermum microstachys (Bargagli-Petrucci), comb. nov.

Conocephalus microstachys Bargagli-Petrucci in Nuov. Giorn. Bot. Ital. n. ser. IX. 223, t. 9 (1902).

Borneo.

Poikilospermum molle (Merrill), comb. nov.
Conocephalus mollis Merrill in Philipp. Jour. Sci. xviii. 51 (1921); Enum. Philipp. Flow. Pl. ii. 71 (1923).
Philippines.

Poikilospermum nobile (Ridley), comb. nov.
Conocephalus nobilis Ridley in Trans. Linn. Soc. Bot. ix. 150 (1916).
New Guinea.

Poikilospermum oblanceolatum (Ridley), comb. nov.
Conocephalus oblanceolatus Ridley in Kew Bull. Misc. Inform. 1926, p. 81.
Mentawi Islands (west of Sumatra).

Poikilospermum oblongifolium (Bargagli-Petrucci), comb. nov.
Conocephalus oblongifolius Bargagli-Petrucci in Nuov. Giorn. Bot. Ital. n. ser. ix. 222, t. 8 (1902).
Borneo.

Poikilospermum Paxianum (H. Winkler), comb. nov.
Conocephalus Paxianus H. Winkler in Bot. Jahrb. lvii. 602 (1922).
New Guinea.

Poikilospermum peltatum (H. Winkler), comb. nov.
Conocephalus peltatus H. Winkler in Bot. Jahrb. xlix. 360 (1913).
Borneo.

Poikilospermum Piperi (Elmer), comb. nov.
Conocephalus Piperi Elmer, Leafl. Philipp. Bot. viii. 2770 (1915). — Merrill, Enum. Philipp. Flow. Pl. ii. 71 (1923).
Philippines.

Poikilospermum scabrinervium (Bargagli-Petrucci), comb. nov.
Conocephalus scabrinervius Bargagli-Petrucci in Nuov. Giorn. Bot. Ital. n. ser. ix. 223, t. 10 (1902).
Borneo.

Poikilospermum Scortechinii (King), comb. nov.
Conocephalus Scortechinii King apud Hooker f. Fl. Brit. Ind. v. 545 (1888). — Bargagli-Petrucci in Nuov. Giorn. Bot. Ital. n. ser. ix, 224 (1902). — Ridley, Fl. Malay Penin. iii. 357 (1924).
Malay Peninsula, Borneo.

Poikilospermum singalense (Bargagli-Petrucci), comb. nov.
Conocephalus singalensis Bargagli-Petrucci in Nuov. Giorn. Bot. Ital. n. ser. ix. 226, t. 12 (1902) (in Index Kewensis Suppl. iii, by error, *sengalensis*).

Poikilospermum sinense (C. H. Wright), comb. nov.
Conocephalus sinensis C. H. Wright in Forbes & Hemsley in Jour. Linn. Soc. Bot. xxvi. 471 (1899).
China (Yunnan).

Poikilospermum subscaber (H. Winkler), comb. nov.
Conocephalus subscaber H. Winkler in Bot. Jahrb. LVII. 599 (1922).
New Guinea.

Poikilospermum tonkinense (Drake), comb. nov.
Balansaephytum tonkinense Drake in Bull. Soc. Bot. France, XLIII. 83, t. 1 (1896).
Conocephalus tonkinensis Renner in Bot. Jahrb. XXXIX. 409 (1907).
Indo-China.

Poikilospermum Warburgii (Elmer), comb. nov.
Conocephalus Warburgii Elmer, Leafl. Philipp. Bot. I. 278 (1908).
Philippines.

URTICACEAE

Procris frutescens Blume, Bijdr. 510 (1825). — Weddell in De Candolle, Prodr. XVI. pt. 1, p. 192 (1869).

Atjeh, near Lake Tawar, at 3800 ft. alt., *no. 799*, Jan. 10, 1932 (epiphytic on *Mangifera* trees). — Java, Borneo, and the Philippines.

It is suspected that this is the Malay Peninsula form referred to *Procris latifolia* Blume by Ridley, Fl. Malay Penin. III. 365 (1924).

Pouzolzia sanguinea (Blume), comb. nov.
Urtica sanguinea Blume, Bijdr. 504 (1825).
Urtica viminea Wallich, Num. List, no. 4616 (1832), nomen nudum.
Pouzolzia ? borbonica Wight, Ic. VI. 43 (1853).
Pouzolzia ovalis Miquel, Pl. Jungh. 24 (1851). — Weddell in Arch. Mus. Hist. Nat. [Paris] IX. 410 (1856).
Pouzolzia viminea Weddell in De Candolle, Prodr. XVI. pt. 1, p. 228 (1869). — Ridley, Fl. Malay Penin. III. 366 (1924).

Atjeh, near Lake Tawar, on rocky slopes, at 388 ft. alt., *no. 797*, Jan. 10, 1933 (shrub 5 to 7 ft. high). — India to southeastern China, Formosa, southward to Java.

Debregeasia longifolia (Burman f.) Weddell in De Candolle, Prodr. XVI. pt. 1, p. 235[24] (1869).
Urtica longifolia Burman f., Fl. Ind. 297 (1768).

Atjeh, along the road between Takengön and Bireuen, edges of first growth forests, at 3300 ft. alt., *no. 829*, Jan. 11, 1932 (shrub 7 ft. high, the fruits rusty orange colored). — India to southern China, Java, Borneo, and the Philippines.

Oreocnide sylvatica (Blume) Miquel, Pl. Jungh. 40 (1851).

Urtica sylvatica Blume, Bijdr. 506 (1825).

Villebrunea sylvatica Blume, Mus. Bot. Lugd.-Bat. II. 167, fig. 15 (1856).

East Coast, trail up Sinaboeng Volcano, in forests at 2800 ft. alt., *no. 1190*, Feb. 23, 1932. — Malay Peninsula, Java.

LORANTHACEAE

Determined by Dr. B. H. Danser

Helixanthera carinata Danser in Bull. Jard. Bot. Buitenzorg, sér. 3, XI. 373. fig. 17, g-1 (1931).

Loranthus pulcher Ridley in Jour. Fed. Malay States Mus. VIII. pt. 4, p. 81 (1917); non De Candolle.

Atjeh, Takengön, in primary forests, at 3600 ft. alt., *no. 850*, Jan. 12, 1932 (a parasite, the flowers crimson). — Known only from Sumatra.

Helixanthera parasitica Loureiro, Fl. Cochinch. 142 (1790). — Danser in Bull. Jard. Bot. Buitenzorg, sér. 3, XI. 381, fig. 18, e–k (1931).

East Coast, Medan-Bĕrastagi road, kilometers 59–61, in primary forests, alt. 4100 ft., *no. 1132*, Feb. 21, 1932 (parasitic on *Dysoxylum* sp.). — India to Indo-China, southward to Java, Borneo, and the Philippines.

This is the species commonly known as *Loranthus pentapetalus* Roxburgh. About 20 synonyms are recorded.

Helixanthera setigera (Korthals) Danser in Bull. Jard. Bot. Buitenzorg, sér. 3, XI. 387, fig. 18, l–q (1931).

Loranthus setigerus Korthals, Verh. Bat. Genootsch. XVII. 239, 241, 249, 265 (1839).

Atjeh, Takengön, in primary forests, alt. 3600 ft., *nos. 715, 716*, Jan. 7, 1932 (parasitic, the fruits green, flowers pink). — Borneo, Java.

Dendrophthoe falcata (Linnaeus f.) Ettingshausen in Denkschr. Akad. Wiss. Wien Math.-Naturwiss. Cl. XXXII. 52, 53, 68, fig. 14–15 (1872). — Danser in Bull. Jard. Bot. Buitenzorg, sér. 3, XI. 403, fig. 20, d. (1931).

Loranthus falcatus Linnaeus f. Suppl. 211 (1781).

Atjeh, near Idi, at sea level, *no. 669*, Jan. 4, 1932 (a parasitic scandent shrub, corolla tubes maroon, the lobes green). — Southeastern Asia, the Malay Peninsula, Java, Borneo, the lesser

Sunda Islands, Celebes, Moluccas, New Guinea, and tropical Australia.

This is the form with cordate sessile leaves which cannot be distinguished as a species, as all intermediate forms occur between the broadly rounded and cordate leaves and the linear-lanceolate ones.

Dendrophthoe flosculosa Danser in Bull. Jard. Bot. Buitenzorg, sér. 3, xi. 408, fig. 21, a—c (1931).

Loranthus aurantiacus Ridley, var. *multiflorus* Ridley in Jour. Fed. Malay. States Mus. viii. pt. 4, 82 (1917).

East Coast, Redelong Volcano, near the summit, alt. 6000 ft., *no. 906*, Jan. 14, 1932 (parasitic, corolla tubes red, lobes yellow); road from East Coast to Tapianoeli, near Bĕrastagi, alt. 4800 ft. *no. 1081*, Feb. 16, 1932 (parasitic shrub, corolla tubes coral red, the lobes green). — Known only from Sumatra.

Scurrula ferruginea (Roxburgh) Danser in Bull. Jard. Bot. Buitenzorg, sér. 3, xi. 432 (1931).

Loranthus ferrugineus Roxburgh, Hort. Beng. 87 (1814), nomen nudum. — Jack in Malay. Miscel. i. pt. 1, p. 8 (1820); Hooker, Bot. Miscel. i. 279, t. 58 (1830) (a reprint of Jack's original description). — Roxburgh, Fl. Ind. ii. 207 (1824); ed. 2, i. 185 (1832).

Loranthus ferruginosus Roxburgh, Fl. Ind. ed. 2, ii. 188 (1832).

Atjeh, near Lake Tawar, alt. 3800 ft., *no. 769*, Jan. 9, 1932 (parasitic on *Citrus*, flowers bronzy-brown, local name *naloe*). — India to the Malay Peninsula, Borneo, Java, and Palawan.

Viscum articulatum Burman f., Fl. Ind. 211 (1768). — Danser in Bull. Jard. Bot. Buitenzorg, sér. 3, xi. 460, fig. 27, a (1931).

East Coast, Dolok Merangir estate, alt. 800 ft., *no. 1211*, Feb. 1932 (parasitic; fruits white). — Tropical southeastern Asia, through the Malaysian region to tropical Australia.

BALANOPHORACEAE

Balanophora multibrachiata Fawcett in Trans. Linn. Soc. Bot. ii. 236, t. 34, fig. 15—18 (1886). — Ridley, Fl. Malay Penin. iii. 174 (1924).

East Coast, Medan-Bĕrastagi road, and trail from Goodyear bungalow to Sibajak Volcano, in forests at 4000 ft. alt., *nos. 991, 969*, Feb. 13, 14, 1932 (locally known as *tjemar oetang*, the plant brilliant red). — Malay Peninsula.

POLYGONACEAE

Polygonum malaicum Danser in Bull. Jard. Bot. Buitenzorg, sér. 3, VIII. 218, fig. 13 (1927).

Atjeh, Takengön, *no. 689*, Jan. 6, 1932 (herbaceous vine, flowers rose, fruits black). — Malay Peninsula.

Polygonum paniculatum Blume, Bijdr. 533 (1825). — Danser in Bull. Jard. Bot. Buitenzorg, sér. 3, VIII. 233 (1927).

East Coast, trail from Medan road to Sibajak Volcano, *no.1047*, Feb. 15, 1932 (flowers white, fruits black). — Himalayan region and Assam to Sumatra and Java.

Polygonum viscosum D. Don, Prodr. Fl. Nepal. 71 (1825). — Danser in Bull. Jard. Bot. Buitenzorg, sér. 3, VIII. 144 (1927).

Atjeh, Lake Tawar, slopes at 3800 ft. alt., near the lake, *no. 805*, Jan. 10, 1932 (flowers reddish). — India to Japan, southward to Formosa, Burma, and Indo-China.

AMARANTHACEAE

Deeringia amaranthoides (Lamarck) Merrill, Interpret. Herb. Amb. 211 (1917); Enum. Philipp. Flow. Pl. II. 126 (1923).

Achyranthes amaranthoides Lamarck, Encycl. Méth. I. 548 (1785).

Deeringia celosioides R. Brown, Prodr. 413 (1810).

Deeringia baccata Moquin in De Candolle, Prodr. XIII. pt. 2, p. 236 (1849).

East Coast, road from Kaban Djahe to Kota Tjane, in ravines at kilometer 144, *no. 1108*, Feb. 17, 1932 (fruits crimson). — India to China through Malaysia, to tropical Australia.

BERBERIDACEAE

Mahonia sumatrensis, sp. nov. Plate I.

Frutex erectus, circiter 2 m. altus, caulibus circiter 3 cm. diametro, cortice valde longitudinaliter canaliculato-rugoso; foliis 20—45 cm. longis, 5—8-jugis, jugo infimo ab superioribus longe distante ad stipulas aciculares rigidas 7 mm. longas approximato, ejus foliolis quam superioribus multo minoribus, 1.2—2.5 cm. longis, foliolis superioribus, coriaceis, rigidis, nitidis, oblongis, inaequilateralibus, sessilibus, 4—11 cm. longis, 2—3.5 cm. latis, basi inaequilateraliter truncato-rotundatis, nervis perspicuis, subtus elevatis, apice acutissime spinulosis, margine undulato-spinoso, spinis rigidis, rectis vel leviter curvatis, in latere inferiore 5—8, superiore 4 vel 5, foliolis terminalibus quam ceteris vix

majoribus, aequilateralibus, basi rotundatis; racemis usque ad 10, terminalibus 10—20 cm. longis, haud ramosis, rigidis, multifloris, in omnibus partibus floriferis, bracteolis rigidis, inferioribus 5 mm. longis, oblongo-ovatis, acutis, superioribus paullo brevioribus, obtusis, pedicellis 5 mm. longis; floribus flavidis; sepalis exterioribus late ovatis, obtusis, 2—3 mm. longis, 1.5—2.5 mm. latis, interioribus ellipticis, rotundatis, 5-nerviis, 6 ad 7 mm. longis, 3 mm. latis, tenuibus; petalis tenuibus, oblongo-ellipticis, 5 mm. longis, 1.8 mm. latis, 3-nerviis, apice bilobatis, basi nectariis binis distinctis praeditis; staminibus 3.5 mm. longis, connectivo truncato vel truncato-rotundato, filamentis haud dentatis; ovario oblongo-ovoideo, stylis brevibus, ovulis 4 vel 5; fructibus azureis, globosis, in sicco glauco-pruinosis, saltem 6 mm. diametro.

East Coast, Bĕrastagi, in second growth forests, alt. 1400 m., *H. S. Yates 1560* (type, herb. New York Botanical Garden) April 24, 1925 (shrub, flowers yellow, fruits blue); same locality, alt. 1400 m. *Bangham 1111*, Feb. 18, 1932.

A species that, following Hooker f. and Thomson in Hooker f., Fl. Brit. Ind. I. 109 (1872), would certainly be included in *Berberis nepalensis* Sprengel = *Mahonia nepalensis* De Candolle. Fedde, Schneider, and Takeda have taken a much narrower view of specific limits and they have recognized a considerable group of species, many of them closely allied to each other. Takeda's[1] treatment is the most recent. He recognizes ten species in India, twenty in China, two in Formosa, and one each in Japan, Siam, Indo China, and Luzon; he lists also six additional Chinese species of which he saw no specimens. The Sumatran form seems to be most closely allied to *Mahonia Leschenaultii* (Wallich) Takeda as described and illustrated by Takeda. It has rather fewer leaflets, shorter stipules, shorter pedicelled flowers, fewer nerved sepals and petals, the filaments not toothed at their apices. It resembles this species closely in its general appearance and in its globose fruits which are crowned by the persistent styles about 1 mm. in length.

It is, I believe, the species listed from Sumatra by Koorders, Exkursionsfl. Java, I. 227 (1912), as *Mahonia nepalensis* De Candolle, but whether or not it is the same as the Javan form currently referred to that species I cannot say.

[1]Takeda, H. Contributions to the knowledge of the Old World species of the genus Mahonia. (Notes Bot. Gard. Edinb. VI. 209—245, t. 1—37 [text 1917, plates 1921]).

MENISPERMACEAE

Cyclea barbata (Wallich) Miers in Ann. Nat. Hist. ser. 3, XVIII. 19 (1866); Contrib. Bot. III. 237 (1871). — Diels in Engler, Pflanzenr. IV.—94 (Heft 46), 314 (1910).

Cissampelos barbata Wallich, Num. List, no. 4978 (1832), nomen nudum.

Atjeh, near Lake Tawar, on slopes at 3800 ft. alt., *no. 786*, Jan. 9, 1932. — Burma and Indo-China to Japan.

The specimen, a single imperfect fruiting one, in the herbarium of the Arnold Arboretum is referred here with some doubt, as the leaves are rather thick, while the single complete one is obtuse, not acuminate.

MAGNOLIACEAE

Magnolia aequinoctialis Dandy in Kew Bull. Misc. Inform. 1928, p. 185.

Tapianoeli, new road near Peso Peso, at kilometer 9, in primary forests, alt. 4100–4500 ft., *no. 1165* (det. Dandy), Feb. 22, 1932 (tree 35 ft. high, flowers creamy yellow, fragrant). — Known only from Sumatra.

Michelia sp.

Takengön, in primary forests, at 3600 ft. alt., *no. 930*, Jan. 15, 1932 (tree 130 ft. high, fruits mottled gray-brown, seeds orange-pink). — The same species is apparently represented by *Bangham 874* (a single specimen, Herb. Arnold Arboretum), detached fruits only, along the trail, Kabajakan to Tretet, Atjeh, January 13, 1932. Apparently undescribed, fide Dandy.

Manglietia glauca Blume in Verh. Bat. Genootsch. IX. 150 (1923) var. **languinosa** Dandy in Kew Bull. Misc. Inform. 1928, p. 187.

East Coast, Medan-Bĕrastagi road, kilometers 59–61, in primary forests, at 4100 ft. alt., *no. 1133* (det. Dandy) Feb. 21, 1932 (tree 50 ft. high, flowers green, fragrant). — The variety endemic, the species in Indo-China, the Malay Peninsula, Java, and Celebes.

SCHIZANDRACEAE

Kadsura scandens Blume, Fl. Jav. Schizandr. 9, t. 1 (1828). — King in Ann. Bot. Gard. Calcutta, III. 221, t. 71 (1891); Jour. As. Soc. Bengal, LVIII. pt. 2, p. 375 (Mater. Fl. Malay. Penin. I. 19) (1889). — Ridley, Fl. Malay Penin. I. 20, fig. 5 (1922).

Takengön, scandent in primary forests, at 3600 ft. alt., *nos. 703, 705*, Jan. 7, 1932 (buds white, fruits red to brilliant scarlet). — Malay Peninsula to Java, Borneo, and Mindanao.

ANONACEAE

Disepalum platypetalum, sp. nov. Plate II.

Arbor circiter 10 m. alta, glabra, ramulis circiter 2 mm. diametro; foliis chartaceis, ex oblongis ad late oblongo-oblanceolatis, 7—15 cm. longis, 2.5—4.5 cm. latis, supra olivaceis, subtus pallide viridibus, breviter obtuseque acuminatis, basi cuneatis, nervis primariis utrinque 11—14, patulis, gracilibus, haud perspicuis, arcuato-anastomosantibus, petiolo 5—7 mm. longo; floribus solitariis, oppositifoliis, usque ad 6 cm. longis; sepalis 2, concavis, subcoriaceis, glabris, orbiculari-ovatis, rotundatis, circiter 1.3 cm. longis latisque; corolla gamopetala, tubo brevi, lobis 6, orbiculari-ovatis, rotundatis, 5—6 mm. longis latisque extus minutissime consperseque pilis brevibus pubescentibus intus glabris; staminibus oblongis, 1.2 mm. longis, connectivo truncato-rotundato, minute papilluloso; carpellis numerosis, oblongis, adpresse pubescentibus, usque ad 1.5 mm. longis, 1-ovulatis, stylis ovario aequilongis; fructibus numerosis, ellipsoideis, in sicco rufo-brunneis, glabris, 1—1.5 cm. longis, paullo inaequilateralibus.

Tapianoeli, road from East Coast to Tapianoeli, northwest side of Toba Lake, near Peso Peso, in primary forests, alt. 1200—1500 m., *Walter N.* and *Catherine M. Bangham 1077*, Feb. 16, 1932 (tree 30 ft. high; "flower bracts [sepals] deep maroon, fruits bright scarlet"); Asahan, northwest of Lake Toba, in heavy jungle, *no. 1232* (a single specimen, herb. Arnold Arboretum).

A small genus confined to Sumatra, the Malay Peninsula, and Borneo, anomalous in the family in its heteromerous sepals and petals, as well as in its markedly united petals, yet otherwise typically anonaceous in its vegetative characters, stamens, ovaries, styles, and fruits. The present species differs markedly from its congeners in its 6 broadly ovate corolla lobes; in the previously described species the corolla lobes are either 4 or 8, (data not given for *D. grandiflorum* Ridley but the corolla segments I assume to be as in *D. anomalum* Hooker f. to which it is compared). Four previously described species are recognized as follows:

Disepalum acuminatissimum Boerlage & Koorders apud Koorders-Schumacher, Syst. Verzeich. Herb. Koord. II. 19 (1910).

Sumatra.

Disepalum anomalum Hooker f. in Trans. Linn. Soc. Bot. XXIII. 156, t. 20, fig. 1–6 (1860). — Ridley, Fl. Malay Penin. I. 63, fig. 7 (1922); in Sarawak Mus. Jour. I. pt. 3, p. 83 (1913).

Disepalum longipes King in Jour. As. Soc. Bengal, LXV. pt. 2, 69 (Mater. Fl. Malay. Penin. I. 318) (1892); King in Ann. Bot. Gard. Calcutta, IV. 86, t. 118B (1893).

Malay Peninsula, Borneo.

Disepalum coronatum Beccari in Nuov. Giorn. Bot. Ital. II. 155, t. 5 (1870). — Scheffer in Nat. Tijdschr. Nederl. Ind. XXXIV. 70 (1874); Ann. Jard. Bot. Buitenzorg, II. 9 (1885). — Merrill in Jour. Straits Branch Roy. As. Soc., Special Number, 258 (1921).

Borneo.

Disepalum grandiflorum Ridley in Kew Bull. Misc. Inform. 1912, p. 384; Sarawak Mus. Jour. I. pt. 3, p. 83 (1913). — Merrill, l. c.

Borneo.

Orophea parvifolia, sp. nov.

Arbor circiter 12 m. alta, ramis teretibus, glabris, ramulis ultimis minute adpresseque subferrugineo-pubescentibus vix 0.8 mm. diametro; foliis chartaceis, oblongo-ellipticeis vel oblongo-ovatis, 3.5–7 cm. longis, 1.5–2.5 cm. latis, supra pallide olivaceis, nitidis, glabris, subtus pallidioribus, pallide brunneis, praesertim secus costam nervosque adpresse ferrugineo-ciliatis, obtuse acuminatis, basi acutis, nervis primariis utrinque 5–7, gracilibus, haud perspicuis, curvato-adscendentibus, arcuato-anastomosantibus, petiolo ferrugineo-pubescenti, 1–2 mm. longo; floribus ignotis, pedunculo 1–1.5 cm. longo, gracili, adpresse pubescenti, circiter apicem bracteas paucas 1–1.5 mm. longas ferente, ut videtur paucifloro; carpellis maturis 1, rariter 2, paullo inaequilateralibus, oblongo-ellipsoideis vel cylindraceis, apice crasse rostratis, 2–3 cm. longis, circiter 7 mm. diametro, in sicco pallide brunneis, plus minusve rugosis, obscure consperseque breviter pubescentibus, glabrescentibus; sepalis persistentibus extus breviter adpresse ferrugineo-pubescentibus, ovatis, acutis 1–1.5 mm. longis.

Atjeh, Takengön, in primary forests, at 1100 ft. alt., *Walter N.*

and *Catherine M. Bangham 860*, Jan. 12, 1932 (tree 40 ft. high, its trunk smooth, white).

A species in vegetative characters approaching *Orophea uniflora* Hooker f. & Thomson of India and *O. gracilis* King of the Malay Peninsula, both of which have globose fruits.

Pseuduvaria Diepenhorstii Teijsmann & Binnendijk in Nat. Tijdschr. Nederl. Ind. XXVII. 38 (1864). — Merrill in Philipp. Jour. Sci. x. Bot. 255 (1915).

Mitrephora Diepenhorstii Teysmann & Binnendijk, Cat. Hort. Bogor. 175 (1866). — Boerlage in Ic. Bogor. I. 139, t. 47 (1899).

Orophea Diepenhorstii Scheffer in Flora, LII. 302 (1869).

Atjeh, Takengön, in primary forests, at 3600 ft. alt., *nos. 714, 936*, Jan. 7 and 15, 1932 (tree up to 40 ft. high). — Known only from Sumatra, but also cultivated at the botanical garden at Buitenzorg, Java, IV-H-54.

This is one of a considerable group of apparently closely allied species extending from the Malay Peninsula and Sumatra to the Philippines and New Guinea, including possibly as many as 20 described forms, all of which belong in the genus *Pseuduvaria* as defined by Miquel. They have been described in such diverse genera as *Mitrephora*, *Stechelocarpus*, *Orophea*, and *Uvaria*, yet are constantly recognizable by their flowers always being unisexual; and at sight one familiar with this and allied genera can usually determine those appertaining to *Pseuduvaria* from the leaf and fruit characters alone. *Pseuduvaria* was reduced to *Mitrephora* by Bentham and Hooker f. but is manifestly more closely allied to *Orophea*; in the latter two genera the flowers are perfect. The section *Paraorophea* Boerlage[1] of *Mitrephora* is the same as *Pseuduvaria* Miquel.

Mitrephora rufescens Ridley in Kew Bull. Misc. Inform. 1912, p. 385.

East Coast, between Baboeli and Paekas, in ravines at 4100 ft. alt., *no. 782*, Jan. 9, 1932 (shrub 10 ft. high, the sepals lemon yellow, the petals reddish-pink at the base, their tips yellow).

The species was originally described from Borneo, but Baker f., Jour. Bot. LXII. Suppl. 4 (1924), has credited it to Sumatra. There is only one flower on the material I have for study and the exterior petals are distinctly larger than Ridley describes them for the Bornean plant.

[1]Ic. Bogor. I. 138 (1899).

MYRISTICACEAE

Knema glauca (Blume) Warburg in Nov. Act. Leop.-Carol. Akad. Naturf. LXVIII. 594, t. 25, fig. 1–3 (1897).

Myristica glauca Blume, Bijdr. 576 (1825); Rumphia, I. 187, t. 60 (1835).

Deli-Atjeh border, in forests, *no. 652*, Jan. 3, 1932 (tree 30 ft. high, fruits orange, 4 cm. long, aril rose-red). — Andaman and Nicobar Islands, the Malay Peninsula, Java and Borneo.

This form is apparently the var. *sumatrana* Warburg, op. cit. 597, which may or may not have been based on *Myristica sumatrana* Blume, the latter being cited as a synonym of *K. glauca* by Warburg; the mature fruits distinctly larger than in typical *K. glauca* Warburg.

Horsfieldia amygdalina (Wallich) Warburg in Nov. Act. Leop.-Carol. Akad. Naturf. LXVIII. 310 (1897).

Myristica amygdalina Wallich, Pl. As. Rar. I. 79, t. 90 (1830).

Atjeh, trail from Kabajakan to Tretet, in forests above 3500 ft. alt., *no. 882*, Jan. 13, 1932 (tree 30 ft.). — Silhet to Burma and Indo-China, the Andaman Islands, and the Malay Peninsula.

The specimen cited has staminate flowers, its leaves being larger than in the typical form, up to 25 cm. long and 9 cm. wide, the maximum leaf-measurements given by Warburg being 18 by 7 cm.

LAURACEAE

Phoebe cuneata Blume, Mus. Bot. Lugd.-Bat. I. 326 (1851). — Gamble in Jour. As. Soc. Bengal, LXXV. 109 (Mater. Fl. Malay. Penin. v. 109) (1912). — Koorders, Atlas Baumart. Java, II. t. 246 (1914).

Persea macrophylla Blume var. *cuneata* Blume, Bijdr. 568 (1825).

Atjeh, Takengön, in primary forests at 3600 ft. alt., *no. 578*, Jan. 8, 1932 (tree over 100 ft. high). — Malay Peninsula, Java.

Phoebe grandis (Wallich), comb. nov.

Laurus grandis Wallich, Num. List, no. 2594A (1830), nomen nudum.

Alseodaphne grandis Nees in Wallich, Pl. As. Rar. II. 72 (1831).

Persea grandis Nees, op. cit. III. 32 (1832).

Phoebe opaca Blume, Mus. Bot. Lugd.-Bat. I. 327 (1851). — Gamble in Jour. As. Soc. Bengal, LXXV. pt. 1, 108 (Mater. Fl. Malay. Penin. v. 108) (1912). — Koorders & Valeton in Meded. Lands Plant. LXVIII. 91 (Bijdr. Boomsoort. Java, x. 91) (1904). — Koorders, Atlas Baumart. Java, II. t. 248, fig. L, t. 249 (1914).

Phoebe densiflora Blume, l.c.

Phoebe lucida Blume, l.c.
Phoebe attenuata Miquel, Pl. Jungh. 175 (1852).

Atjeh, Takengön, in primary forests, at 3600 ft. alt., *no. 932*, Jan. 15, 1932 (tree up to 120 ft. high). — Malay Peninsula, Borneo, Java.

Phoebe macrophylla Blume, Mus. Bot. Lugd.-Bat. I. 326. (1851). — Gamble in Jour. As. Soc. Bengal, LXXV. pt. 1, 106 (Mater. Fl. Malay. Penin. v. 106) (1912). — Koorders & Valeton in Meded. Lands Plant. LXVIII. 88 (Bijdr. Boomsoort. Java, X. 88) (1904). — Koorders, Atlas Baumart. Java, II. t. 247 (1914).

Persea macrophylla Blume, Bijdr. 568 (1825), pro parte.

East Coast, Medan-Bĕrastagi road, kilometers 59–61, in primary and secondary forests, at 4100 ft. alt., *no. 1141*, Feb. 21, 1932 (tree 20–25 ft. high). — Malay Peninsula, Java.

Actinodaphne sp.

Atjeh, Takengön, in primary forests, at 3600 ft. alt., *no. 743*, Jan. 8, 1932 (tree 25 ft. high). A sterile specimen, indeterminable in the absence of flowers and fruits. It very closely simulates *Actinodaphne areolata* Blume as illustrated by Koorders, Atlas Baumart. Java, II. t. 202, fig. E–G (1913), but the young branchlets are decidedly pubescent, while the leaves are not at all areolate beneath and only very slightly so on the upper surface.

Litsea cubeba (Loureiro) Persoon, Syn. II. 4 (1807). — Merrill in Philipp. Jour. Sci. XV. 235 (1919). — Rehder in Jour. Arnold Arb. XI. 157 (1930).

Laurus cubeba Loureiro, Fl. Cochinch. 252 (1790).
Litsea citrata Blume, Bijdr. 565 (1825). — Koorders & Valeton in Meded. Lands Plant. LXVIII. 142 (Bijdr. Boomsoort. Java, X. 142) (1904).
Tetranthera polyantha Wallich, Num. List, no. 2538 (1830), nomen nudum. — Nees in Wallich, Pl. As. Rar. II. 67 (1831).

Atjeh, Takengön, in primary forests, at 3600 ft. alt., *no. 700*, Jan. 7, 1932 (tree up to 100 ft. high, strongly aromatic).

This much-named species extends from India to central and southern China and Formosa, southward through the Malay Peninsula to Java. I gave nine synonyms in 1919 when I discussed the application of Loureiro's specific name, and in 1930 Rehder (in Jour. Arnold Arb. XI. 157) increased the list to seventeen.

Litsea bancana (Miquel) Boerlage, Handl. Ken. Fl. Nederl. Ind. III. 143 (1900).

Tetranthera bancana Miquel, Fl. Ind. Bat. I. pt. 1, p. 950 (1858).

Tapianoeli, road near Peso Peso, kilometers 4—5, in primary forests, alt. 4100—4500 ft., *no. 1160*, Feb. 22, 1932 (tree 50 ft. high). — Borneo, Banka, Java, and the Moluccas.

The specimen is in fruit and the identification should be considered as approximate rather than as certainly correct.

Litsea mappacea (Blume) Boerlage, Handl. Ken. Fl. Nederl. Ind. III. 143 (1900). — Koorders & Valeton in Meded. Lands Plant. LXVIII. 153 (Bijdr. Boomsoort. Java, X. 153) (1904). — Koorders, Atlas Baumart. Java, II. t. 232 (1914).

Atjeh, near Lake Tawar, at 3800 ft. alt., *no. 770*, Jan. 7, 1932 (tree 25 ft. high). — Java.

Litsea tuberculata (Blume) Boerlage, Handl. Fl. Nederl. Ind. III. 144 (1900).

Cylicodaphne tuberculata Blume, Mus. Bot. Lugd.-Bat. II. 12 (1856).

East Coast, trail from Goodyear bungalow to Sibajak Volcano, in forests, *no. 1003*, Feb. 14, 1932 (tree 30 ft. high).

Definitely known only from Sumatra, but it is suspected that the species has been described from neighboring regions under some other name or names. The specimens closely match two sheets of the original Korthals collection in the herbarium of the New York Botanical Garden. Koorders & Valeton in Meded. Lands Plant. LXVIII. 158 (Bijdr. Boomsoort. Java, X. 158) (1904) place it as a doubtful synonym of *Litsea angulata* Blume which is apparently an erroneous disposition of it.

Litsea umbellata (Loureiro) Merrill in Philipp. Jour. Sci. XIV. 242 (1919).

Hexanthus umbellatus Loureiro, Fl. Cochinch. 196 (1790).

Litsea amara Blume, Bijdr. 563 (1825). — Koorders & Valeton in Meded. Lands Plant. LXVIII. 150 (Bijdr. Boomsoort. Java, X. 150) (1904). — Koorders, Atlas Baumart. Java, II. t. 223 (1914). — Gamble in Jour. As. Soc. Bengal, LXXV. pt. 1, p. 140 (Mater. Fl. Malay. Penin. V. 140) (1912). — Ridley, Fl. Malay Penin. III. 117 (1924).

Atjeh, Takengön, in primary forests at 3600 ft. alt., *no. 754*, Jan. 8, 1932 (tree about 75 ft. high). — Burma and Indo-China to Java and Borneo.

Litsea sp.

Atjeh, Takengön, in primary forests, at 3600 ft. alt., *no. 749*, Jan. 8, 1932 (tree about 100 ft. high). *Yates 1268*, from Asahan, represents the same species; both specimens are in fruit.

Neocinnamomum caudatum (Wallich), comb. nov.

Laurus caudata Wallich, Num. List, no. 2603 (1830), nomen nudum.
Cinnamomum caudatum Nees in Wallich, Pl. As. Rar. II. 76 (1831). — Hooker f., Fl. Brit. Ind. v. 134 (1886).

Atjeh, Takengön, and road from Takengön, to Bireuen at kilometer 96, in primary forests, 3600–3800 ft. alt., *nos. 815, 861*, Jan. 11, 12, 1932 (tree 18 to 60 ft. high, fruits dark red; native name *kaiae manis*, the dried bark used as a spice); East Coast, Sinaboeng Volcano, in forests at 4200 ft. alt., *no. 1189*, Feb. 23, 1932 (tree 30 ft., fruits scarlet). — Central and eastern Himalayan region to Burma.

Neocinnamomum Liou[1] was described as a segregate from *Cinnamomum* Blume in 1933 to take five species of southwestern China and Indo-China. Doctor Liou discusses *Cinnamomum caudatum* Nees in connection with *Neocinnamomum Poilanei* Liou, stating that it is perhaps but a variety of the latter; I suspect that *Neocinnamomum Poilanei* Liou represents the same species as *Neocinnamomum caudatum* (Nees) Merrill.

Beilschmiedia praecox Koorders & Valeton in Meded. Lands Plant. LXVIII. 195 (Bijdr. Boomsoort Java, X. 195) (1904). — Koorders, Atlas Baumart. Java, II. t. 205 (1914).

Atjeh, Takengön, in primary forests, at 3600 ft. alt., *no. 929*, Jan. 15, 1932 (tree over 100 ft. high). — Java.

It is suspected that Hallier f., Meded. Rijks Herb. Leiden, XXXV. 33 (1918), is correct in his reduction of this to *B. assamica* Meisner, together with the Philippine *Linociera nervosa* Elmer = *Beilschmiedia nervosa* Merrill (*B. leytensis* Merrill). If these reductions prove to be correct then Meisner's species extends from Assam to Burma, Yunnan, and Kwangsi to Sumatra, Java, Borneo, and the Philippines.

Endiandra rubescens (Blume) Miquel, Fl. Ind. Bat. I. pt. 1, 918 (1858). — Koorders & Valeton in Meded. Lands Plant. LXVIII. 226 (Bijdr. Boomsoort. Java, X. 226) (1904). — Koorders, Atlas Baumart. Java, II. t. 218 (1914).

Dictyodaphne rubescens Blume, Mus. Bot. Lugd.-Bat. I. 270, 332 (1850).

Tapianoeli, near Peso Peso, in primary forests, at 4100–4500 ft. alt., *no. 1062*, Feb. 16, 1932 (tree 35 ft. high; fruiting specimen). — Java.

[1]Liou, H. Lauracées de Chine et d'Indochine. Contribution à l'étude systématique et phytogéographique. 1–226, fig. 1–14, 1933 (pages 82–95) (dated 1934 but copy received in New York August 8, 1933).

Benzoin sp.

Atjeh, Takengön, in primary forests, at 3600 ft. alt., *no. 735*, Jan. 7, 1932 (tree 80 ft. high). The flower buds are very young, so that it is impossible to determine whether one is dealing with a *Benzoin* or a *Litsea*. It very closely matches *Griffith 4323* distributed as *Litsea* sp.

MORINGACEAE

Moringa oleifera Lamarck, Encycl. Méth. I. 398 (1785).

Moringa pterygosperma Gaertner, Fruct. II. 314 (1791).

East Coast, Dolok Merangir Estate, *no. 613*, Dec. 29, 1931 (small tree, 15 ft. high, flowers white; the flowers, leaves and young fruits cooked and eaten by the natives; locally known as *kalor*). — Widely planted in the Old World tropics, introduced in tropical America.

NEPENTHACEAE

Nepenthes mollis Danser in Bull. Jard. Bot. Buitenzorg, sér. 3, IX. 338, fig. 14 (1928).

Atjeh, on slopes of the volcano near Redelong, near the summit at 6000 ft. alt., *no. 922*, Jan. 14, 1932. — Borneo.

Danser's species was based on an incomplete Bornean specimen, lacking pitchers. The Sumatran specimens are incomplete, one sheet presenting staminate flowers and an immature pitcher that is densely pubescent outside, the other sheet a mature pitcher lacking the lid.

Nepenthes Rafflesiana Jack in Comp. Bot. Mag. I. 270 (1835). — Hooker f. in Bot. Mag. LXXIII. t. 4285 (1847). — Danser in Bull Jard. Bot. Buitenzorg, sér. 3, IX. 357 (1928).

Tapianoeli, road near Peso Peso, in primary forests, alt. 4100–4500 ft., *no. 1063*, Feb. 16, 1932. — Malay Peninsula, Borneo.

Nepenthes spectabilis Danser in Bull. Jard. Bot. Buitenzorg, sér. 3, IX. 373, fig. 21 (1928).

East Coast, Sibajak Volcano, alt. 5200 ft., *no. 1050*, Feb. 15, 1932. — Known only from this locality.

CRASSULACEAE

Bryophyllum pinnatum (Lamarck) Kurz in Jour. As. Soc. Bengal, XL. pt. 2, p. 309 (1876).

Cotyledon pinnatum Lamarck, Encycl. Méth. II. 141 (1786).

Bryophyllum calycinum Salisbury, Parad. Lond. t. 3 (1805).

Atjeh, near Lake Tawar, in pastures, at 3700 ft. alt., *no. 764*, Jan. 9, 1932 (local name *gegamad*). — Widely distributed in the tropics of both hemispheres, native of the Old World.

SAXIFRAGACEAE

Hydrangea aspera D. Don, Prodr. Fl. Nepal. 211 (1824). — C. B. Clarke in Hooker f., Fl. Brit. Ind. II. 404 (1878). — Rehder in Sargent, Pl. Wilson. I. 40 (1911).

Hydrangea oblongifolia Blume, Bijdr. 920 (1826). — Koorders & Valeton in Meded. Lands Plant. XXXIII. 379 (Bijdr. Boomsoort. Java, v. 379) (1900). — Koorders, Exkursionsfl. Java, II. 303, fig. 59 (1912); Atlas Baumart. Java, I. t. 199 (1913).

East Coast, road Siantar to Bĕrastagi, kilometers 188–189, in second growth forests, at 3500 ft. alt., *no. 959*, Feb. 12, 1932. — Himalayan region, to southwestern Yunnan, Indo-China, Sumatra, and Java, but not recorded from the Malay Peninsula.

Dichroa sylvatica (Reinwardt), comb. nov.

Cianitis sylvatica Reinwardt apud Blume, Bijdr. 921 (1826).

Adamia sylvatica Meisner in Walpers, Repert. II. 377 (1843).

Dichroa cyanitis Miquel, Fl. Ind. Bat. I. pt. 1, 721 (1857). — Schlechter in Bot. Jahrb. LII. 121 (1914). — Hallier f. in Meded. Rijks Herb. Leiden, XXXVII. 11 (1918).

Atjeh, Kabajakan to Tretet, at the edge of the forest, alt. 3500–5000 ft., *no. 896*, Jan. 13, 1932 (shrub 8 ft. high). — Borneo, Java, its other distribution problematical because of its long confusion with *Dichroa febrifuga* Loureiro.

While Miquel cites *Adamia cyanea* Wallich as a synonym of *Dichroa cyanitis* Miquel, it is clear that he took his specific name from *Cyanitis sylvatica* Reinwardt. His description is of the Sunda Islands plant, not of the continental form. *Adamia cyanea* Wallich is *Dichroa cyanea* (Wallich) Schlechter, an allied species of British India.

Polyosma oligodonta, sp. nov.

Frutex erectus, ramis glabris, ramulis ultimis 1–1.2 mm. diametro, breviter adpresse pubescentibus; foliis superioribus verticillatis, in sicco subatris, leviter nitidis, utrinque concoloribus, oblongis vel anguste oblongo-obovatis vel late oblongo-oblanceolatis, chartaceis, 5–15 cm. longis, 2–5 cm. latis, glabris vel ad costam utrinque obscure pubescentibus, perspicue acuminatis, basi acutis, margine deorsum integro, sursum remote breviter denticulato, dentibus paucis, patulis, inter se 3–10 mm. distanti-

bus, nervis primariis utrinque 12—15, gracilibus, distinctis, reticulis utrinque paullo elevatis; petiolo 7—15 mm. longo, breviter adpresse pubescenti; racemis terminalibus, solitariis, circiter 10 cm. longis, parcissime pubescentibus, pedicellis circiter 3 mm. longis; floribus albido-roseis, 4-meris, bracteis lineari-lanceolatis, acuminatis, 3.5 mm. longis, bracteolis binis vix 1.5 mm. longis; calycis tubo subcylindrico, obscure pubescenti, 2 mm. longo, lobis triangulari-ovatis, acuminatis, 1.2 mm. longis; petalis 4, linearibus, extus consperse breviterque pubescentibus, circiter 1.6 mm. longis, 2 mm. latis, 7-nerviis, apice revolutis; fructibus ovoideis, glabris vel subglabris, 7 mm. longis.

Tapianoeli, new road near Peso Peso, kilometers 4—5, in primary forests, alt. 1200—1400 m., *Walter N.* and *Catherine M. Bangham 1161*, Feb. 22, 1932 (an epiphytic shrub).

A species manifestly allied to *Polyosma ilicifolia* Blume of Java but with larger, thinner leaves, the flowers obscurely pubescent.

CUNONIACEAE

Weinmannia Blumei Planchon in Hooker, Lond. Jour. Bot. VI. 470. (1847). — Koorders & Valeton in Meded. Lands Plant. XXXIII. 399 (Bijdr. Boomsoort. Java, v. 399) (1900). — Koorders, Exkursionsfl. Java, II. 311 (1912); Atlas Baumart. Java, I. t. 200 (1913). — Ridley, Fl. Malay Penin. I. 682 (1922).

Spiraea pinnata Blume, Cat. Gew. Buitenzorg, 76 (1823), non *Weinmannia pinnata* Linnaeus.

Arnoldia pinnata Blume, Bijdr. 868 (1826).

Weinmannia Hutchinsonii Merrill in Philipp. Jour. Sci. II. Bot. 275 (1907).

East Coast, Siantar to Bĕrastagi, and Medan road to summit of Sibajak Volcano, in forests, alt. 3500—6000 ft., *nos. 947*, *1020*, Feb. 12 and 15, 1932 (shrub or small tree). — Malay Peninsula, Java, Borneo, and the Philippines.

ROSACEAE

Rubus acuminatissimus Hasskarl in Tijdschr. Nat. Gesch. X. 146 (1843); Cat. Hort. Bogor. 266 (1844); in Flora, XXVII. 585 (1844). — Focke in Bibl. Bot. XVII. (pt. 72[II]) 149 (Sp. Rub.) (1911). — Koorders, Exkursionsfl. Java, II. 328 (1912).

Rubus podocarpus O. Kuntze, Rev. Gen. Pl. 223 (1891).

Atjeh, trail from Kabajakan to Tretet, alt. 3600—5000 ft., *no. 879*, Jan. 11, 1932 (trailing vine, flowers white, fruit red, sour). — Java.

Focke's reduction of *Rubus podocarpus* O. Kuntze is verified from an examination of Kuntze's type in the herbarium of the New York Botanical Garden.

Rubus alceaefolius Poiret in Lamarck, Encycl. VI. 247 (1804). — Focke in Bibl. Bot. XVII. (pt. 72[I]) 78, fig. 29 (Sp. Rub.) (1910). — Ridley, Fl. Malay Penin. I. 677 (1922).

East Coast, Dolok Merangir Estate, at 800 ft. alt., *no. 609*, Dec. 29, 1931 (semiscandent, flowers white, fruit red, sweet, edible). — Siam and Indo-China, to the Malay Peninsula, and Java.

Rubus alpestris Blume, Bijdr. 1108 (1826). — Focke in Bibl. Bot. XVII. (pt. 72[II]) 144, fig. 61 (Sp. Rub.) (1911). — Koorders, Exkursionsfl. Java, II. 326, fig. 66 (1912).

Tapianoeli, new road near Peso Peso, in primary forests, 4100–4500 alt., *no. 1076*, Feb. 16, 1932 (fruits bright red). — Siam, Java, Borneo.

Rubus Banghamii, sp. nov. (§ *Ideobatus*, ser. *Alpestres*).

Plate III.

Species *R. Lowii* Stapf affinis differt ramis aculeis paucis crassis, circiter 5 mm. longis armatis, foliolis majoribus, perspicue acuminatis, stipulis bracteisque laciniatis, floribus in cymas laxas paucifloras dispositis, haud solitariis. — Frutex subscandens, ramis teretibus, ramulis ultimis circiter 1 mm. diametro; foliis 3-foliolatis, petiolo 1.5–2 cm. longo, inermi vel 1-, rariter 2-aculeato, stipulis bracteolisque 5–12 mm. longis, persistentibus, subpalmatim laciniatis, laciniis 3–8, linearibus, 2–6 mm. longis; foliolis ellipticis vel subellipticis, subcoriaceis, olivaceis, utrinque subconcoloribus, 5–10 cm. longis, 2.5–5 cm. latis, perspicue acuteque acuminatis, basi acutis vel subacutis, margine simpliciter serrato, medianis aequilateralibus, lateralibus basi distincte inaequilateralibus, omnibus breviter petiolulatis supra glabris vel ad costam breviter hirsutis, subtus ad costam nervosque obscure hirsutis glabrescentibus, nervis primariis utrinque 10–12, gracilibus, distinctis, supra leviter impressis, subtus elevatis; inflorescentiis terminalibus axillaribusque, inermibus vel rarissime leviter aculeatis, pedunculatis, 7–11 cm. longis, paucifloris, floribus 3–6, longe (2.5–3.5 cm.) pedicellatis, bracteis ultimis vel bracteolis interdum simplicibus, linearibus; calycis tubo basi late truncato, extus glabro, segmentis oblongo-ovatis vel ovato-lanceolatis, longe acuminatis,

1—1.7 cm. longis, intus breviter cinereo-pubescentibus; petalis non visis; staminibus numerosis, 1-seriatis, glabris, usque ad 7 mm. longis; carpellis maturis usque ad 35, rubris, carnosis, glabris, acidis, stylis 5 mm. longis, glabris, seminibus rugosis 3—4 mm. longis, carpophoro rostrato, dense cinereo-hirsuto.

Tapianoeli, northwest of Lake Toba, along the new road to Peso Peso, kilometers 4—5, in primary forests at 1200—1400 m. alt., *Walter N. and Catherine M. Bangham 1163*, Feb. 22, 1932 (semiscandent shrub, fruits large, bright red, very fleshy, slightly sour).

A characteristic species, that I have been unable to match, manifestly allied to the Bornean *Rubus Lowei* Stapf, but differing in numerous details as noted in the above description.

Rubus chrysophyllus Reinwardt apud Miquel, Fl. Ind. Bat. I. pt. 1, p. 380 (1855—57). — Focke in Bibl. Bot. XVII. (pt. 72[1]) 74 (1910). — Koorders, Exkursionsfl. Java, II. 323 (1912). — Focke in Meded. Rijks Herb. Leiden, XIV. 39 (1912).

Atjeh, Lake Tawar, in pastures, at 3800 ft. alt., *no. 767*, Jan. 9, 1932 (shrub 6 ft. high, flowers white, fruit yellow). — Java, Lombok.

Rubus elongatus Smith, Ic. Ined. III. t. 62 (1791). — Focke in Bibl. Bot. XVII. (pt. 72[1]) 60, fig. 22 (1910). — Koorders, Exkursionsfl. Java, II. 322 (1912). — Ridley, Fl. Malay Penin. I. 679 (1922).

Rubus Lobbianus Hooker, Ic. VIII. t. 741, 742 (1848).

East Coast, trail from Medan road to Sibajak Volcano, alt. 5800 ft., *no. 1046*, Feb. 15, 1932 (clambering vine, flowers white); Tapianoeli, new road near Peso Peso, scandent in primary forests, alt. 4100—4500 ft., *no. 1066*, Feb. 16, 1932 (fruits red). — Malay Peninsula, Java, Borneo, Celebes, and Tidore.

Rubus glomeratus Blume, Bijdr. 1111 (1826). — Focke in Bibl. Bot. XVII. (pt. 72[1]) 90 (1910). — Koorders, Exkursionsfl. Java, II. 324 (1912). — Ridley, Fl. Malay Penin. I. 679 (1922).

Rubus acerifolius Wallich, Num. List, no. 744 (1828), nomen nudum.

East Coast, road Siantar to Bĕrastagi, kilometers 188—189, and Medan-Bĕrastagi road, near entrance to the sulphur spring, scandent in secondary forests, alt. 3500—4200 ft., *nos. 953, 982*, Feb. 12, 13, 1932 (flowers white, fruits red); Atjeh, Takengön, Lake Tawar, near the lake shore, *no. 685*, Jan. 6, 1932. — Malay

Peninsula, Penang, Java, Borneo, with varieties recorded from the Philippines and Celebes.

Rubus acerifolius Wallich, based on *Wallich 744* from Penang, judging from Wallich's specimen in herb. New York Botanical Garden, represents Blume's species; it is not accounted for by Focke or by Ridley.

Rubus lineatus Reinwardt apud Blume, Bijdr. 1108 (1826).— Focke in Bibl. Bot. XVII. (pt. 72[II]) 47, *fig. 14* (Sp. Rub. I. 47) (1910).

Asahan, near Lake Toba, *no. 1238*. — Himalayan region to Yunnan, southward to Java and Borneo.

Rubus moluccanus Linnaeus, Sp. Pl. 1197 (1753). — Merrill, Interpret. Herb. Amb. 245 (1917).

Asahan, near Lake Toba, *no. 1237*. — Malay Peninsula to Java, Borneo, the Philippines, the Moluccas, and New Guinea.

Rubus pirifolius Smith, Ic. Ined. III. t. 61 (1791). — Focke in Bibl. Bot. XVII. (pt. 72[I]) 64, fig. 23 (1910), excl. syn. *R. sumatranus* Miquel. — Koorders, Exkursionsfl. Java, II. 321 (1912). — Merrill, Enum. Philipp. Flow. Pl. II. 229 (1923).

Atjeh, road from Kaban Djahe to Kota Tjane, at kilometer 133, in deep ravines, alt. 4000 ft., *no. 1102*, Feb. 17, 1932 (fruits bright red); Takengön to Bireuen, road to Balique, at the edge of and in primary forests, at 3300 ft. alt., *no. 828*, Jan. 11, 1932 (trailing vine, flowers white).—Java, Philippines, Indo-China, and Hainan.

Rubus sumatranus Miquel, Fl. Ind. Bat. Suppl. 307 (1860–61).

Rubus sorbifolius Maximowicz in Bull. Acad. Sci. St. Pétersb. XVII. 158 (1872); Mél. Biol. VII. 390 (1872). — Craib, Fl. Siam. Enum. I. 573 (1931).

Rubus rosaefolius Smith var. *sorbifolius* O. Kuntze, Rev. Gen. Pl. I. 223 (1891).

Rubus asper Focke in Bibl. Bot. XVII. (pt. 72[II]) 157, fig. 67 (Sp. Rub. 157) (1911); non D. Don.

Rubus myriadenius Léveillé & Vaniot in Bull. Soc. Bot. France, LI. 218 (1904).

Tapianoeli, new road near Peso Peso, kilometer 115, semi-scandent in primary forests, alt. 4100–4500 ft., *no. 1121*, Feb. 19, 1932 (fruits soft, orange, sweet). — India, through southern and central China, to southern Japan, Formosa, Siam, and Indo-China.

Focke[1] perhaps on the basis of an erroneously named specimen and without checking Miquel's description, gravely erred in reducing *Rubus sumatranus* Miquel to *R. pirifolius* Smith, which is a simple leaved species of the subgenus *Malachobatus*. It is, as Miquel states and as his description clearly indicates, a species allied to *Rubus rosaefolius* Smith. The capitate-glandular hairs unmistakably indicate a form of what currently passes for *Rubus asper* D. Don, and although Miquel does not indicate the length of the capitate-glandular hairs, with Sumatran material before me having long slender capitate ones, I assume this to be the form that he had. Craib, Fl. Siam. Enum. I. 373 (1931), adopted *Rubus sorbifolius* Maximowicz as the proper binomial for what Focke referred to Don's species, stating that Wallich's specimens which he had seen represented *Rubus rosaefolius* Smith rather than *R. sorbifolius* Maximowicz; Don's species was based on a Nepal specimen collected by Wallich and is described as "glanduloso-setosis"; this is apparently *Wallich 741*, the form with short, scattered, glandular-capitate hairs, 1 mm. long or less, or one-fourth or less as long as the aculeae. This is apparently not uncommon in parts of India, and O. Kuntze referred it to *Rubus rosaefolius* Smith var. *sikkimensis* O. Kuntze, and *R. rosaefolius* Smith var. *asper* (D. Don) O. Kuntze; of this particular form I have seen but a single collection from China, *Henry 10842, 10842a* from Yunnan; all other glandular-capitate specimens of the *Rubus rosaefolius* group from China that I have examined (Yunnan, *Henry 11941, 11941a*; Kwangsi, *Ching 6109*; Kwangtung, *Tso 20442*, *Tso* & *Tsang 12103*, *Tsang 20067*; Kiangsi, *Hu 1264*); as well as the Sumatran specimen cited above, and *Petelot 679* from Indo-China, have the characteristic capitate-glandular hairs as long as the aculeae as in two specimens of the type collection of *Rubus sorbifolius* Maximowicz from southern Japan in the herbarium of the New York Botanical Garden. For this particular form Craib accepted *Rubus sorbifolius* Maximowicz; I accept the even older *Rubus sumatranus* Miquel; Maximowicz notes the close alliance of the two species in his original description of the Japanese form.

Sorbus granulosa (Bertoloni) Rehder in Sargent, Pl. Wilson. II. 274 (1915).

Pyrus granulosa Bertoloni in Mem. Accad. Sci. Bologna, ser. 2,

[1]Bibl. Bot. XVII. (pt. 72[1].) 64 (Sp. Rub. 64) (1910).

IV. 312, t. 3 (1864). — King in Jour. As. Soc. Bengal, LXVI. pt. 2, p. 297 (Mater. Fl. Malay. Penin. III. 297) (1897). — Ridley, Fl. Malay Penin. I. 680 (1922). — Cardot in Lecomte, Fl. Gén. Indo-Chine, II. 671 (1920).

East Coast, Medan-Bĕrastagi road, near entrance to the sulphur spring, and Sibajak Volcano, in forests, at 4200–5000 ft. alt., *nos. 977, 1013*, Feb. 13, 1932 (tree 30 ft.). — Khasia Mountains in India to Yunnan, Burma, Indo-China, and the Malay Peninsula.

The species is also represented by *Bartlett 7877, 8657*, May and June, 1927, from Tor Dabolon near Panapparan, Habinsaran, and Deleng Sinkoet, north of Bĕrastagi, on the Karo plateau. Cardot in Not. Syst. III. 347 (1918) refers Sumatran material (*Forbes 2376*) to *Pirus granulosa* Bertoloni var. *turbinata* Cardot, which is described as having turbinate, not globose, fruits, 2 — 2.5 cm. long. All the Sumatra specimens cited above have globose fruits and apparently represent the species rather than the variety. The genus is otherwise unknown in Malaysia.

Pygeum sp.

Atjeh, Takengön, on forested slopes at 3600 alt., *no. 852*, Jan. 12, 1932 (tree 80 ft. high). The material is sterile.

Prunus Wallichii Steudel, Nomencl. ed. 2, II. 404 (1841).

Cerasus acuminatus Wallich, Num. List, no. 719 (1829), nomen nudum; Pl. As. Rar. II. 78, t. 181 (1831).

Cerasus integerrima Wallich, Num. List, no. 722 (1829), nomen nudum.

Prunus acuminata D. Dietrich, Syn. III. 42 (1843). — Hooker f., Fl. Brit. Ind. II. 317 (1878). — Koehne in Bot. Jahrb. LII. 296 (1915), non Michaux.

Laurocerasus acuminatus M. Roemer, Syn. III. 92 (1847).

Prunus integerrima Steudel, Nomencl. ed. 2, II. 403 (1841).

Cerasus Wallichii M. Roemer, Syn. III. 81 (1847).

Atjeh, Kabajakan to Tretet, at the edge of the forest near Tretet, alt. 3500–5000 ft., *no. 871*, Jan. 13, 1932 (tree 30 ft. high, calyx orange, petals white). — Himalayan region to Burma, Siam, Indo-China, and Yunnan.

This specimen differs from the typical form in its very shortly pedicelled flowers.

LEGUMINOSAE

MIMOSOIDEAE

Pithecellobium[1] **jiringa** (Jack) Prain in Jour. As. Soc.

[1]The original spelling rather than *Pithecolobium* the generally used form, is accepted as it was correctly formed from two Greek words meaning "monkey" and "earring."

Bengal, LXVI. pt. 2, p. 267 (King, Mater. Fl. Malay. Penin. III. 267) (1897) in nota.

Mimosa Jiringa Jack in Malay. Miscel. I. pt. 1, p. 14 (1820).

Inga Jiringa Jack, op. cit., II. pt. 7, 78 (1822).

Pithecolobium lobatum Bentham in Hook. Lond. Jour. Bot. III. 208 (1844). — Baker in Hooker f., Fl. Brit. Ind. II. 305 (1878). — Prain in King in Jour. As. Soc. Bengal, LXVI. pt. 2, p. 265 (Mater. Fl. Malay. Penin. III. 265) (1897). — Ridley, Fl. Malay Penin. I. 661 (1922).

East Coast, Bila, near streams at low altitudes, *no. 602*, Dec. 29, 1931 (tree 30 ft. high). — Tenasserin to the Malay Peninsula, Borneo, and Java.

Mimosa koeringa Roxburgh, Hort. Beng. 40 (1814) and *M. Djringa* Roxburgh, op. cit. 93, are older names, both apparently appertaining to this species, but both are *nomina nuda*. For the latter no description was published but the former was described as *M. Kaeringa* Roxburgh, Fl. Ind. ed. 2, II. 543 (1832).

CAESALPINIOIDEAE

Bauhinia bidentata Jack in Malay. Misc. II. pt. 7, p. 76 (1822). — Baker in Hooker f., Fl. Brit. Ind. II. 279 (1878). — Prain in King in Jour. As. Soc. Bengal, LXVI. pt. 2, p. 187 (Mater. Fl. Malay. Penin. III. 187) (1897). — Ridley, Fl. Malay Penin. I. 629 (1922).

East Coast, *no. 1217*, no field data supplied. — Malay Peninsula.

Bauhinia pyrrhaneura Korthals, Verh. Nat. Gesch. Nederl. Overz. Bezit. Bot. 88, t. 11 (1839–42).

Phanera pyrrhaneura Bentham in Miquel, Pl. Jungh. 262 (1853), in nota. — Miquel, Fl. Ind. Bat. I. pt. 1, p. 63 (1855).

East Coast, Nabara Estate, scandent at the margins of primary forests, *no. 1221*, Oct. 15, 1932 (flowers lemon yellow, very fragrant). — Known only from Sumatra.

Bauhinia stipularis Korthals, Verh. Nat. Gesch. Nederl. Overz. Bezit. Bot. 92 (1839–42).

Phanera stipularis Bentham in Miquel, Pl. Jungh. 263 (1853). — Miquel, Fl. Ind. Bat. I. pt. 1, p. 65 (1855).

Deli-Atjeh border, scandent at edge of the mangrove at sea level, *no. 630*, Jan. 3, 1932 (flowers yellow); East Coast, Wingfoot Estate, in secondary forests, *no. 1218*, Nov. 13, 1932. — Known only from Sumatra.

Bauhinia glauca Wallich, Num. List, no. 5785 (1832), nomen nudum. — Baker in Hooker f., Fl. Brit. Ind. II. 282 (1878). — Prain in King in Jour. As. Soc. Bengal, LXVI. pt. 2, p. 186 (Mater. Fl. Malay. Penin. III. 186) (1897). — Ridley, Fl. Malay Penin. I. 629 (1922).

East Coast, road from Kaban Djahe to Kota Tjane, at kilometer 133, scandent in forests at 4000 ft. alt., *no. 1101*, Feb. 17, 1932. — Malay Peninsula, Siam, and Indo-China.

Cassia siamea Lamarck, Encycl. Méth. I. 648 (1785). — Prain in King in Jour. As. Soc. Bengal, LXVI. pt. 2, p. 163 (Mater. Fl. Malay. Penin. III. 163) (1897). — Gagnepain in Lecomte, Fl. Gén. Indo-Chine, II. 167 (1913). — Ridley, Fl. Malay Penin. I. 617 (1922).

East Coast, road from Kaban Djahe to Kota Tjane, at kilometer 157, in forests, alt. 4000–5500 ft., *no. 1106*, Feb. 17, 1932 (tree 40 ft. high with yellow flowers). — Burma, Siam, and Indo-China to the Malay Peninsula; widely cultivated in other tropical regions as a shade tree.

Caesalpinia crista Linnaeus, Sp. Pl. 380 (1753), excl. Fl. Zeyl. 157. — Urban, Symb. Antill. II. 269 (1900). — Merrill in Philipp. Jour. Sci. v. Bot. 53 (1910); Enum. Philipp. Flow. Pl. II. 266 (1923).

Guilandina bonducella Linnaeus, Sp. Pl. ed. 2, 545 (1762).

Caesalpinia bonducella Fleming in As. Research. XI. 159 (1878). — Prain in King in Jour. As. Soc. Bengal, LXVI. pt. 2, p. 226 (Mater. Fl. Malay. Penin. III. 226) (1897). — Ridley, Fl. Malay Penin. I. 649 (1923).

Atjeh, near Bireuen, at sea level, *no. 658*, Jan. 4, 1922. — Pantropic in thickets at and near sea level.

Caesalpinia decapetala (Roth), comb. nov.

Reichardia ? decapetala Roth, Nov. Sp. Pl. 212 (1821). — De Candolle, Prodr. II. 484 (1825).

Caesalpinia sepiaria Roxburgh, Hort. Bengal. 32 (1814), nomen nudum; Fl. Ind. ed. 2, II. 360 (1832). — Prain in King in Jour. As. Soc. Bengal, LXVI. pt. 2, p. 229 (Mater. Fl. Malay. Penin. III. 229) (1897). — Gagnepain in Lecomte, Fl. Gén. Indo-Chine, II. 180 (1913). — Ridley, Fl. Malay Penin. I. 650 (1922).

Atjeh, near Lake Tawar, on slopes at 3800 ft. alt., *no. 768*, Jan. 8, 1932. — India to southern Japan, southward to Luzon and Java; introduced and naturalized in some parts of tropical America.

Caesalpinia nuga (Linnaeus) Aiton, Hort. Kew. ed. 2, III. 32 (1811). — Prain in King in Jour. As. Soc. Bengal, LXVI. pt. 2, p. 227 (Mater. Fl. Malay. Penin. III. 227) (1897). — Ridley, Fl. Malay Penin. I. 650 (1922).

Guilandina nuga Linnaeus, Sp. Pl. ed. 2, 546 (1762).

Atjeh, Peureulah, in a swampy place at sea level, *no. 623*, Jan. 3, 1932 (flowers yellow). — Widely distributed in the Old World tropics near the sea.

Cassia occidentalis Linnaeus, Sp. Pl. 377 (1753). — Prain in King in Jour. As. Soc. Bengal, LXVI. pt. 2, p. 160 (Mater. Fl. Malay. Penin. III. 160) (1897). — Ridley, Fl. Malay Penin. I. 618 (1922).

Atjeh, near Lake Tawar, on slopes in rocky pastures, at 3800 ft. alt., *no. 802*, Jan. 10, 1932. — A pantropic weed apparently of American origin.

PAPILIONATAE

Indigofera suffruticosa Miller, Gard. Dict. ed. 8, no. 2 (1768). — Prain & Baker in Jour. Bot. XL. 137, 138 (1902), in nota. — Merrill, Enum. Philipp. Flow. Pl. II. 275 (1923).

Indigofera Anil Linnaeus, Mant. II. 272 (1771). — Prain in King in Jour. As. Soc. Bengal, LXVI. pt. 2, p. 81 (Mater. Fl. Malay. Penin. III. 81) (1897).

Atjeh, trail from Kabajakan to Tretet, roadsides at 3500 ft. alt., and above, *no. 863*, Jan. 13, 1932. — Most tropical countries; apparently native of tropical America. Indigo.

Miller's specific name is clearly the valid one for this species, which is generally known as *Indigofera Anil* Linnaeus.

Crotalaria calycina Schrank, Pl. Rar. Monac. t. 12 (1819).— Baker in Hooker f., Fl. Brit. Ind. II. 72 (1876).

East Coast, Redelong Volcano, on slopes at 3600 ft. alt., *no. 914*, Jan. 14, 1932 (flowers brown). — Tropical Africa and Asia, through Malaysia to tropical Australia, not, however, recorded from the Malay Peninsula.

Crotalaria ferruginea Graham apud Wallich, Num. List, no. 5398 (1832), nomen nudum. — Bentham in Hooker, Lond. Jour. Bot. II. 476 (1843). — Prain in King in Jour. As. Soc. Bengal, LXVI. pt. 2, p. 37 (Mater. Fl. Malay. Penin. III. 37) (1897). — Ridley, Fl. Malay Penin. I. 560 (1922).

East Coast, Redelong Volcano, on slopes, alt. about 4000 ft., *no.* 913, Jan. 14, 1932 (flowers yellow, striped with brown).—

India to southern China and Formosa, southward to Java and the Philippines.

Tephrosia Vogelii Hooker f., Niger Fl. 296 (1849). — Baker in Oliver, Fl. Trop. Afr. II. 110 (1871). — Backer & Van Slooten, Geïllustr. Handb. Jav. Theeonkr. fig. 137 (1924).

East Coast, trail from Goodyear bungalow to Sibajak Volcano, *no. 1012*, Feb. 14, 1932 (small tree 18 ft. high, flowers white). — Native of tropical Africa, whence it was introduced into Java in 1908, where it is now widely naturalized.

Desmodium caudatum (Thunberg) De Candolle, Prodr. II. 337 (1825).

Hedysarum caudatum Thunberg, Fl. Jap. 286 (1784).
Hedysarum laburnifolium Poiret in Lamarck, Encycl. VI. 422 (1804).
Desmodium laburnifolium De Candolle, Prodr. II. 337 (1825). — Ridley, Fl. Malay Penin. I. 608 (1922).
Catenaria laburnifolia Bentham in Miquel, Pl. Jungh. 217 (1851).
Catenaria caudata Schindler in Fedde, Rep. Spec. Nov. XX. 275 (1924).

Atjeh, near Lake Tawar, on slopes in pastures, alt. 3800 ft. *no. 803*, Jan. 10, 1932 (shrub, 4 ft. high). — India through China to Japan, southward to Java; apparently new to Sumatra.

Desmodium gyroides (Roxburgh) De Candolle, Prodr. II. 326 (1825). — Baker in Hooker f., Fl. Brit. Ind. II. 175 (1876). — Prain in King in Jour. As. Soc. Bengal, XLVI. pt. 2, p. 145 (Mater. Fl. Malay. Penin. III. 145) (1897). — Ridley, Fl. Malay Penin. I. 611 (1922).

Hedysarum gyroides Roxburgh, Hort. Beng. 57 (1814), nomen nudum; Link, Enum. Hort. Berol. II. 247 (1822).
Codariocalyx gyroides Hasskarl in Flora, XXV. Beibl. II. 49 (1842).

East Coast, Redelong Volcano, on slopes at about 3600 ft. alt., *no. 912*, Jan. 14, 1932. — India to southern China and Formosa, southward to New Guinea.

Desmodium sequax Wallich, Pl. As. Rar. II. 46, t. 157 (1831). — Baker in Hooker f., Fl. Brit. Ind. II. 170 (1876).

Desmodium sinuatum Blume apud Miquel, Fl. Ind. Bat. I, pt. 1, p. 255 (1855), in syn. — Baker in Hooker f., Fl. Brit. Ind. II. 166 (1876).
Desmodium strangulatum Wight & Arnott, var. *sinuatum* Miquel, l. c.
Desmodium dasylobum Miquel, Fl. Ind. Bat. Suppl. 305 (1860–61). — Merrill, Enum. Philipp. Flow. Pl. II. 284 (1923).

Atjeh, Takengön, Lake Tawar, alt. about 3000 ft. *no. 683*, Jan. 6, 1932 (semiscandent shrub, 4 ft. high, flowers lilac). — India to southern China and Formosa, through Malaysia to the

Philippines, Java, and New Guinea; not recorded from the Malay Peninsula.

I follow Schindler in Fedde, Rep. Spec. Nov. Beih. XLIX. 113, 123 (1928), in the reductions of *Desmodium sinuatum* Blume and *D. dasylobum* Miquel.

Desmodium scalpe De Candolle, Prodr. II. 334 (1825). — Ridley, Fl. Malay Penin. I. 609 (1922).

Atjeh, Takengön, on steep banks, at 4000–5000 ft. alt., *no. 675*, Jan. 6, 1932 (flowers bright red). — India to tropical Africa and Yunnan, southward to Java and the Philippines.

Pterocarpus indicus Willdenow, Sp. Pl. III. 904 (1800). — Baker in Hooker f., Fl. Brit. Ind. II. 238 (1876). — Prain in King in Jour. As. Soc. Bengal, LXVI. pt. 2, p. 123 (Mater. Fl. Malay. Penin. III. 123) (1897). — Ridley, Fl. Malay Penin. I. 593 (1922).

East Coast, Idi, *no. 664*, Jan. 4, 1932 (roadside tree 30 ft. high, locally known as *assan*). — Tenasserim and Indo-China through Malaysia to Java, the Philippines, and New Guinea, in some regions planted as a shade tree.

Shuteria vestita (Graham) Wight & Arnott, Prodr. 207 (1834). — Baker in Hooker f., Fl. Brit. Ind. II. 181 (1876). — Merrill, Enum. Philipp. Flow. Pl. II. 304 (1923).

Glycine vestita Graham apud Wallich, Num. List, no. 5512 (1832), nomen nudum.

Atjeh, near Lake Tawar, on slopes in pastures, alt. 3800 ft., *no. 793*, Jan. 10, 1932 (flowers reddish purple). — India to southern China, Siam, Burma, Java, Luzon, and New Guinea, but not reported from the Malay Peninsula.

Erythrina subumbrans (Hasskarl) Merrill in Philipp. Jour. Sci. v. Bot. 113 (1910); Fl. Manila, 256 (1912); Enum. Philipp. Flow. Pl. II. 305 (1923).

Hypaphorus subumbrans Hasskarl, Hort. Bogor. Descript. 198 (1858).
Erythrina secundiflora Hasskarl, Pl. Jav. Rar. 378 (1848), non Brotero.
Erythrina sumatrana Miquel, Fl. Ind. Bat. Suppl. 304 (1860–61).
Erythrina lithosperma Miquel, Fl. Ind. Bat. I. pt. 1, p. 209 (1855). — Prain in King in Jour. As. Soc. Bengal, LXVI. pt. 2, p. 73 (Mater. Fl. Malay. Penin. III. 73) (1897). — Gagnepain in Lecomte, Fl. Gén. Indo-Chine, II. 418 (1916). — Ridley, Fl. Malay Penin. I. 579 (1922). — Craib, Fl. Siam. Enum. I. 440 (1928). — Non Blume, nomen nudum (1823), descr. Hasskarl (1848).
Erythrina holosericea Kurz in Jour. As. Soc. Bengal, XLII. pt. 2, p. 69 (1873), p.p. (as to the leaves).

Atjeh, Takengön, *no. 690*, Jan. 6, 1932, (tree with scarlet flowers, locally known as *dadap*). — Siam and Indo-China to Java, and the Philippines.

Blume's use of the binomial *Erythrina lithosperma* Blume, Cat. Gew. Buitenzorg, 92 (1823) as Kurz, Prain, and Craib note is a *nomen nudum*. The binomial was, however, validated by Hasskarl's very full description, Pl. Jav. Rar. 381 (1848), this manifestly invalidating the different and later *Erythrina lithosperma* Miquel, Fl. Ind. Bat. I. pt. 1, p. 209 (1885). *Erythrina lithosperma* Blume (1823 nomen; 1848, descr.) belongs with the next species.

Erythrina variegata Linnaeus in Stickman Herb. Amb. 10 (1754); Amoen. Acad. IV. 122 (1759), var. **orientalis** (Linnaeus) Merrill, Interpret Herb. Amb. 276 (1917); Sp. Blancoanae 187 (1918); Enum. Philipp. Flow. Pl. II. 306 (1923). — Craib, Fl. Siam Enum. I. 442 (1928).

Erythrina corallodendron Linnaeus var. *orientalis* Linnaeus, Sp. Pl. 706 (1753).

Erythrina indica Lamarck, Encycl. Méth. II. 391 (1785). — Baker in Hooker f., Fl. Brit. Ind. II. 188 (1876). — Prain in King in Jour. As. Soc. Bengal, LXVI. pt. 2, p. 70 (Mater. Fl. Malay. Penin. III. 70) (1897).

Erythrina lithosperma Blume, Cat. Gew. Buitenzorg, 92 (1823), nomen nudum. — Hasskarl, Pl. Jav. Rar. 381 (1848), descr. — Non Miquel (1855).

East Coast, open places about Bĕrastagi, *no. 1080*, Feb. 16, 1932 (tree, 40 ft., flowers scarlet). — Normally along the seashore throughout the Indo-Malaysian and tropical Polynesian regions, often planted inland, as it is now in other tropical countries.

Flemingia macrophylla (Willdenow) O. Kuntze apud Prain in Jour. As. Soc. Bengal, LXVI. pt. 2, p. 440 (1897). — Merrill, Enum. Philipp. Flow. Pl. II. 317 (1923). — Craib, Fl. Siam. Enum. I. 471 (1928).

Crotalaria macrophylla Willdenow, Sp. Pl. III. 982 (1800).

Flemingia congesta Roxburgh apud Aiton, Hort. Kew. ed. 2, IV. 349 (1812). — Baker in Hooker f., Fl. Brit. Ind. II. 228 (1876). — Prain in King in Jour. As. Soc. Bengal, LXVI. pt. 2, p. 43 (Mater. Fl. Malay. Penin. III. 43) (1897).

Atjeh, Lake Tawar, on slopes in pastures at 3800 ft. alt., *no. 791*, Jan. 10, 1932 (flowers purplish). — India to southern China, southward to the Philippines and Java.

Dolichos Lablab Linnaeus, Sp. Pl. 725 (1753). — Baker in Hooker f., Fl. Brit. Ind. II. 209 (1876). — Prain in King in Jour. As. Soc. Bengal, LXVI. pt. 2, p. 54 (Mater. Fl. Malay. Penin. III. 54) (1897).

Lablab vulgaris Savi, Osserv. Phaseolus et Dolichos, 19 (1822). — Gagnepain in Lecomte, Fl. Gén. Indo-Chine, II. 235 (1916).

Atjeh, Lake Tawar, on slopes at 3800 ft. alt., *no. 800*, Jan. 10, 1932 (cultivated, said by natives to be also wild, flowers reddish-lilac; local name *katjang jalan*). — Pantropic in cultivation, a native of the Old World; often naturalized.

For those who maintain *Lablab* as a genus distinct from *Dolichos*, attention is called to the fact that with the removal of *Dolichos Lablab* to the genus *Lablab*, not one of the twelve species originally placed by Linnaeus in *Dolichos* remains in that genus. I prefer to maintain *Dolichos Lablab*, the first species listed by Linnaeus, as the standard species of *Dolichos*, as proposed by Miss M. L. Green (in Intern. Bot. Congr. 1930 — Prop. Brit. Bot. 175, 1929). The other genera involved in the twelve original species of *Dolichos* are *Vigna*, *Rhynchosia*, *Atylosia* (*Cantharospermum*), *Pachyrhizus*, *Galactia*, and *Phaseolus*.

RUTACEAE

Acronychia pedunculata (Linnaeus) Miquel, Fl. Ind. Bat. Suppl. 532 (1861). — Merrill, Enum. Philipp. Flow. Pl. II. 333 (1923).

Jambolifera pedunculata Linnaeus, Sp. Pl. 349 (1753).

Cyminosma pedunculata De Candolle, Prodr. I. 722 (1824).

Acronychia laurifolia Blume, Cat. Gew. Buitenzorg, 27, 63 (1823). — Hooker f., Fl. Brit. Ind. I. 498 (1875). — King in Jour. As. Soc. Bengal, LXII. pt. 2, p. 214 (Mater. Fl. Malay. Penin. II.456) (1893).— Ridley, Fl. Malay Penin. I. 347 (1922).

Tapianoeli, new road near Peso Peso, kilometer 116, in primary forests at 4100–4500 ft. alt., *no. 1168*, Feb. 22, 1932 (tree 35 ft. high). — India to southern China and the Malaysian region generally.

Acronychia pedunculata Miquel was based on *Cyminosma* (*Cuminosma*) *pedunculata* De Candolle, Prodr. I. 722, and Wight and Arnott, Prodr. I. 146 "excl. quib. syn;" but the synonyms, including *Jambolifera* Linnaeus, Fl. Zeyl. 58 (1747), on which the description of *Jambolifera pedunculata* Linnaeus, Sp. Pl. 349 (1753) was based, belong with the species as here interpreted, and as named by Miquel.

Glycosmis cyanocarpa (Blume) Sprengel, Syst. Veg. IV. pt. 2, p. 161 (1827). — Tanaka in Jour. Bot. LXVIII. 226 (1930).

Cookia cyanocarpa Blume, Bijdr. 136 (1825).

East Coast, Medan-Bĕrastagi road, near the entrance to the sulphur spring, in secondary forests at 4200 ft. alt., *no. 988*, Feb. 13, 1932 (shrub 10 ft. high). — India to Java, and Borneo.

This is one of the numerous forms that has been placed as a synonym of the collective species *Glycosmis pentaphylla* (Retzius) Correa, but the latter, *sensu strictiore*, does not extend to the Malaysian region.

Citrus aurantifolia (Christman) Swingle in Jour. Washington Acad. Sci. III. 465 (1913). — Merrill, Enum. Philipp. Flow. Pl. II. 343 (1923).

Limonia aurantifolia Christman, Pflanzensyst. I. 618 (1777).

Citrus lima Lunan, Hort. Jamaic. II. 451 (1814).

Citrus acida Roxburgh, Fl. Ind. ed. 2, III. 390 (1832). — Non ? Persoon.

Atjeh, Takengön, in primary forests at 3600 ft. alt., *no. 935*, Jan. 15, 1932 (tree 40–50 ft. high). — Pantropic in cultivation, naturalized in many regions, native of the Old World tropics. The lime.

The specimens are sterile so that the identification cannot be considered as certainly correct; it may be that a form of the sour orange, *Citrus aurantium* Linnaeus, is represented.

SIMARUBACEAE

Brucea javanica (Linnaeus) Merrill in Jour. Arnold Arb. IX. 3, t. 10 (1928).

Rhus javanica Linnaeus, Sp. Pl. 265 (1753); ed. 2, 380 (1762), et herb. Linn.!

Brucea sumatrana Roxburgh, Hort. Bengal. 12 (1814), nomen nudum; Fl. Ind. ed. 2, I. 449 (1832). — Sprengel, Syst. Veg. I. 441 (1825).

Gonus amarissimus Loureiro, Fl. Cochinch. 658 (1790).

Brucea amarissima Desvaux apud Gomes, in Mem. Acad. Sci. Lisb. Cl. Sci. Mor. Pol. Bel. Let. n. ser. IV. 30 (1872).

East Coast, Dolok Merangir Estate, *no. 611*, Dec. 29, 1931; Atjeh, road from Kaban Djahe to Kota Tjane, kilometer 140, in thickets from 800–4000 ft. alt., *no. 1099*, Feb. 17, 1932 (shrub).— India to southern China, throughout Malaysia to tropical Australia.

Picrasma javanica Blume, Bijdr. 248 (1825). — King in Jour. As. Soc. Bengal, LXII. pt. 2, p. 227 (Mater. Fl. Malay. Penin. II. 469) (1893). — Ridley, Fl. Malay Penin. I. 361 (1922).

Atjeh, road from Kaban Djahe to Kota Tjane, kilometers 139–141, in forested ravines, alt. 4000–4500 ft., *no. 1091*, Feb. 17, 1932 (tree 60 ft. high). — India to Indo-China, through Malaysia to Java, and the Philippines.

BURSERACEAE

Dacryodes laxa (A. W. Bennett) H. Lam in Bull. Jard. Bot. Buitenzorg, sér. 3, XII. 355, t. 5, fig. 15 (1932).

Canarium laxum A. W. Bennett in Hooker f., Fl. Brit. Ind. I. 535 (1875). — Engler in De Candolle Monogr. Phan. IV. 139 (1883).

Santiria laxa King in Jour. As. Soc. Bengal, LXII. pt. 2, p. 254 (Mater. Fl. Malay. Penin. II. 496) (1893). — Ann. Bot. Gard. Calcutta, IX. 12, t. 16 (1901). — Ridley, Fl. Malay Penin. I. 377 (1922).

Santiria Forbesii Baker in Jour. Bot. LXII. Suppl. 16 (1924).

Atjeh, road from Kaban Djahe to Kota Tjane, kilometers 139–141, in forested ravines, alt. 4000–5500 ft., *no. 1096*, Feb. 17, 1932 (tree 55 ft. high); det. H. Lam. — Malay Peninsula, Borneo.

MELIACEAE

Cipadessa baccifera (Roth) Miquel in Ann. Mus. Bot. Lugd.-Bat. IV. 6 (1868). — C. de Candolle, Monog. Phan. I. 426 (1878).

Melia baccifera Roth, Nov. Pl. Sp. 215 (1821).

Ekebergia indica Roxburgh, Hort. Bengal. 33 (1814), nomen nudum; Fl. Ind. ed. 2, II. 392 (1832).

Cipadessa fruticosa Blume, Bijdr. 162 (1825).

Atjeh, Lake Tawar, on rocky slopes, in pastures at 3000 ft. alt., *no. 798*, Jan. 10, 1932 (shrub 7 ft. high). — India to Burma, Siam, Indo-China, and southern China, Java, and the Philippines; not recorded from the Malay Peninsula.

Dysoxylum excelsum Blume, Bijdr. 176 (1825). — C. de Candolle, Monog. Phan. I. 752 (1878). — Koorders & Valeton in Meded. Lands Plant. XVI. 56 (Bijdr. Boomsoort. Java, III. 56) (1896). — Koorders, Atlas Baumart. Java, I. t. 171 (1913).

East Coast, Medan-Bĕrastagi road, kilometers 59–61, in primary forests at 4100 ft. alt., *no. 1148*, Feb. 21, 1932 (tree 30 ft. high). — Java, and if *D. lampongum* Miq. and *D. macrothyrsum* Miq. be considered as synonyms, the Malay Peninsula and Borneo.

Dysoxylum sp.

East Coast, Medan-Bĕrastagi road, *no. 1132* p.p., Feb. 21, 1932, detached fruits only; *1132* is *Helixanthera parasitica*

Loureiro and doubtless this fruit was that of the host plant of the *Helixanthera*.

Aphanamixis polystachya (Wallich), comb. nov.

Aglaia ? polystachya Wallich apud Roxburgh, Fl. Ind. II. 429 (1824). — Pellegrin in Lecomte, Fl. Gén. Indo-Chine, I. 768 (1911).

Andersonia Rohituka Roxburgh, Hort. Bengal. 87 (1814), nomen nudum; Fl. Ind. ed. 2, II. 213 (1832).

Sphaerosacme polystachya Wallich, Num. List, no. 1277 (1829), nomen nudum.

Amoora Rohituka Wight & Arnott, Prodr. 119 (1834). — C. de Candolle, Monog. Phan. I. 581 (1878).— King in Jour. As. Soc. Bengal, LXIV. pt. 2, p. 53 (Mater. Fl. Malay. Penin. II. 541) (1895).

Aphanamixis Rohituka Pierre, Fl. Forest. Cochinch. IV. sub t. 334 (1895). — Ridley, Fl. Malay Penin. I. 401 (1922).

Amoora polystachya Jackson, Ind. Kew. I. 109 (1895). — Craib, Fl. Siam. Enum. I. 260 (1926).

East Coast, Bila, at edge of a stream, alt. 150 ft., *no. 601*, Dec. 7, 1931 (tree 20 ft. high, fruits light red). — India to Siam, Indo-China, southern China, Hainan, and the Malay Peninsula.

The Philippine *Aphanamixis tripetala* (Blanco) Merrill may not be specifically distinct. In very modern times Pellegrin retains this in *Aglaia*, Craib in *Amoora* and Ridley in *Aphanamixis*. It seems improbable that many systematists will follow Pellegrin in Lecomte, Fl. Gén. Indo-Chine I. 750 (1911), in reducing *Lansium*, *Amoora*, and *Aphanamixis* to *Aglaia*. *Aphanamixis* is distinguishable from *Amoora* and from *Aglaia* by constant and apparently dependable characters. Dr. J. Burtt Davy[1] cites Gamble's note to the effect that the wood of *Aphanamixis* is distinguishable from that of *Amoora* by certain anatomical characters, this supplying additional support for the taxonomic segregation of *Aphanamixis*.

Aglaia argentea Blume, Bijdr. 170 (1825). — C. de Candolle, Monog. Phan. I. 618 (1878). — King in Jour. As. Soc. Bengal, LXIV. pt. 2, p. 70 (Mater. Fl. Malay. Penin. II. 558) (1895). — Koorders & Valeton in Meded. Lands Plant. XVI. 160 (Bijdr. Boomsoort. Java, III. 160) (1896); Icon. Bogor. I. t. 13 (1901). — Koorders, Atlas Baumart. Java, I. t. 151 (1913). — Ridley, Fl. Malay Penin. I. 405 (1922).

Atjeh, Takengön, in primary forests at 3600 ft. alt., *nos. 711, 755*, Jan. 7, 8, 1932 (tree 40 to 90 ft. high). — As interpreted by

[1]Tropical Woods, xv. 26 (1928).

King (including *A. hypoleuca* Miquel and *A. speciosa* Teijsmann & Binnendijk) extending from the Nicobar Islands and Burma to Sumatra, Java, and New Guinea; this broad interpretation would probably include the Philippine *A. iloilo* (Blanco) Merrill.

Aglaia argentea var. **eximia** (Miquel) Miquel in Ann. Mus. Bot. Lugd.-Bat. IV. 55 (1869). — King in Jour. As. Soc. Bengal, LXIV. pt. 2, p. 70 (Mater. Fl. Malay. Penin. II. 558) (1895). — Ridley, Fl. Malay Penin. I. 405 (1922). —

Aglaia eximia Miquel, Fl. Ind. Bat. Suppl. 506 (1861).

Atjeh, Takengön, in primary forests, alt. 3600 ft., *no. 698*, Jan. 7, 1932 (tree 100 ft. high, with very young fruits). — Malay Peninsula.

Aglaia ochneocarpa, sp. nov. (§ *Euaglaia*). Plate IV.

Arbor usque ad 20 m. alta, ramis ultimis teretibus, circiter 6 mm. diametro, breviter stellato-pubescentibus; foliis 40—70 cm. longis, 9- vel 11-foliolatis, rhachibus petiolisque junioribus breviter stellato-pubescentibus, vetustioribus glabrescentibus, petiolo 3.5—7 mm. crasso; foliolis oppositis vel suboppositis, coriaceis, oblongo-ellipticis vel inferioribus oblongo-ovatis et superioribus oblongo-obovatis, breviter acuminatis, basi rotundatis et plerumque obscure auriculato-subcordatis, 15—30 cm. longis, 6—10 cm. latis, supra pallide olivaceis, glabris vel junioribus ad costam breviter stellato-pubescentibus, subtus ferrugineis, uniformiter breviterque stellato-pubescentibus, nervis primariis utrinque 12—20 (in foliolis inferioribus) vel 30 (in foliolis superioribus) supra planis vel impressis, subtus elevatis, perspicuis, circiter ad marginem arcuato-anastomosantibus, petiolulis crassis, 3—5 mm. longis, terminalibus longioribus; paniculis axillaribus, pyramidatis, apertis, ferrugineis, dense stellato-pubescentibus, usque ad 30 cm. longis, ramis primariis patulis, inferioribus usque ad 15 cm. longis, superioribus gradatim brevioribus, ramis secundariis 1—3.5 cm. longis, floribus sessilibus in ramulis ultimis dense glomeratim dispositis, glomerulis ovoideis vel oblongis, circiter 3 mm. diametro; floribus numerosis, sessilibus, 5-meris, parvis, subglobosis, glabris; sepalis orbiculari-reniformibus, vix 0.5 mm. longis, glabris; petalis ellipticis, concavis, glabris 1—1.2 mm. longis; tubo obovoideo-subgloboso, glabro, libero, obscure crenato, antheris 5, inclusis; fructibus pyriformibus, 4—5.5 cm. longis, 2.5—3.5 cm. diametro, in sicco brunneis, minute denseque stellato-lepidotulis vel stellato-pubescentibus.

SUMATRA: East Coast, Asahan, Masihi Forest Reserve, *Krukoff 4118, 4140*, October 19, 22, 1932 (type, herb. New York Botanical Garden); Atjeh, Takengön, in primary forests up to 3600 ft. alt., *Bangham 746*, Jan. 8, 1932 (tree).

The specimens were originally referred to *Aglaia tomentosa* Teijsmann & Binnendijk, a species very inadequately described, but one distinct from the form here described if Hochreutiner's interpretation, Pl. Bogor. Exsic. 66 (no. 139) (1904), be correct; Hochreutiner states that *A. palembanica* Miquel, in part, belongs with *A. tomentosa*. The present species differs from both in its glabrous calyces and its very much larger fruits.

Aglaia sp.

In addition to the above two other species of this genus, both in fruit, are represented in the collection, *Bangham 855*, and *856* from Takengön, Atjeh. In the absence of flowers I am unable to carry the identifications beyond the genus.

POLYGALACEAE

Polygala venenosa Jussieu apud Poiret in Lamarck, Encycl. Méth. v. 493 (1804). — Chodat in Mém. Soc. Phys. Hist. Nat. Genève, XXXI. pt. 2, p. 98 (Monog. Polygal. 98) (1893). — King in Jour. As. Soc. Bengal, LIX. pt. 2, p. 130 (Mater. Fl. Malay. Penin. I. 70) (1890). — Ridley, Fl. Malay Penin. I. 138 (1922).

Atjeh, trail from Kabajakan to Tretet, in primary forests, above 3500 ft. alt., *nos. 866, 988*, Jan. 11, 1932 (shrub one foot high, flowers cream-green with bright yellow lip, the lip occasionally red; in *no. 988*, flowers pink with deep red or yellow lips); Tapianoeli, new road near Peso Peso, in primary forests, above 4100 ft. alt., *no. 1075*, Feb. 16, 1932 (shrub, 6–7 ft. high, flowers reddish-purple); East Coast, Medan Road to Sibajak Volcano, *no. 1049*, Feb. 15, 1932 (shrub in mid-mountain forests, flowers orchid pink, the petals deeper colored). — Siam to Java, Borneo, and the Philippines.

A variable species, several described ones not readily distinguishable from it. It is suspected that *Polygala Simassan* Miquel and *P. sumatrana* Miquel, Fl. Ind. Bat. Suppl. 392 (1860–61), are but forms of *P. venenosa* Jussieu; neither are accounted for by Chodat in his monograph of the genus (1893). *Numbers 1049, 1075*, narrow-leaved forms, originally identified as representing *P. glaucocarpa* Ridley (type from Korinchi Peak and the Barisan

Range, Sumatra), almost certainly represent *P. Simassan* var. *lanceolata* Miquel, l. c. Ridley's species is described as having its fruits, except the wings, covered with "a greyish white mass of short thick hairlike bodies"; in the specimens cited above the ovaries and fruits are glabrous.

Xanthophyllum citrifolium Chodat in Bull. Herb. Boiss. IV. 255 (1896).

East Coast, Medan-Bĕrastagi road, kilometers 59–61, in primary forests at 4100 ft. alt., *no. 1157*, Feb. 21, 1932 (tree 20 ft. high). — Borneo.

The specimen is in fruit so that the identification cannot be considered as certainly correct. Gagnepain, Bull. Soc. Bot. France, LVI. 35 (1909); Lecomte, Fl. Gén. Indo-Chine, I. 242 (1909), maintains the Xanthophyllaceae as a family distinct from the Polygalaceae. The oldest generic name for the group is *Eystathes* Loureiro (1790).

EUPHORBIACEAE

Glochidion hirsutum (Roxburgh) Voigt, Hort. Suburb. Calcutta, 153 (1845). — Mueller-Arg. in Linnaea, XXXII. 61 (1863). — Hooker f., Fl. Brit. Ind. v. 311 (1887). — Beille in Lecomte, Fl. Gén. Indo-Chine, v. 616 (1927).

Bradleia hirsuta Roxburgh, Fl. Ind. ed. 2, III. 699 (1832).

Phyllanthus hirsutus Mueller-Arg. in Flora, XLVIII. 370 (1865); in De Candolle Prodr. XV. pt. 2, p. 283 (1866).

Atjeh, road from Takengön to Bireuen at kilometer 84, at the edge of the jungle at 3800 ft. alt., *no. 811*, Jan. 11, 1932 (shrub 10 ft. high). — India to Indo-China, the Malay Peninsula and Penang.

Roxburgh's original description is very short and imperfect; he says that the specimen in the Calcutta Garden came from Prince of Wales Island, i.e. Penang; Hooker f. notes Wallich's statement that the plant came from China. Ridley does not admit the species as occurring in the Malay Peninsula, but he does admit *Glochidion villicaule* Hooker f., giving its range as from Burma to Yunnan, Indo-China, and the Malay Peninsula; Beille does not admit *G. villicaule* Hook. f. as an Indo-China species. It is suspected that *Glochidion villicaule* Hooker f. may prove to be the same as *G. hirsutum* Mueller-Arg. A critical comparison of types is highly desirable. The Wallich numbers involved are

7861A from Silhet, which may or may not belong here, and *7861B* "Bradleia hirsuta Herb. Roxb."

Breynia reclinata Hooker f., Fl. Brit. Ind. v. 331 (1887). — Ridley, Fl. Malay Penin. III. 219 (1924).

Phyllanthus reclinatus Roxburgh, Fl. Ind. ed. 2, III. 669 (1832).

Melanthesa reclinata Mueller-Arg. in Linnaea, XXXII. 74. (1863).

Deli-Atjeh border, at sea level, *no. 634*, Jan. 3, 1932. — Malay Peninsula, its occurrence in Java doubtful.

Sauropus androgynus (Linnaeus) Merrill in Philippine Bur. Forestry Bull. I. 30 (1903). — Pax & K. Hoffmann in Engler, Pflanzenr. IV.-147, XV (Heft 81), 217 (1922). — Beille in Lecomte, Fl. Gén. Indo-Chine, V. 645 (1927).

Clutia androgyna Linnaeus, Mant. I. 128 (1767).

Sauropus albicans Blume, Bijdr. 596 (1825). — Ridley, Fl. Malay Penin. III. 220 (1924).

Sauropus sumatranus Miquel, Fl. Ind. Bat. Suppl. I. 446 (1860–61).

East Coast, Serbalawan, near dwellings, *no. 612*, Dec. 29, 1931 (shrub, the leaves cooked and eaten, local name *katae*). — India and Ceylon to Indo-China and central China, southward to Java, Borneo, and the Philippines.

Ridley retains *Sauropus sumatranus* Miquel as a distinct species but states that he had seen no Sumatran material; Pax & Hoffmann reduce it to *S. androgynus* Merrill.

Sauropus villosus (Blanco), comb. nov.

Kirganelia villosa Blanco, Fl. Filip. 712 (1837); ed. 2, 493 (1845); ed. 3, III. 116, t. 399 (1879).

Phyllanthus Llanosi Mueller-Arg. in Flora, XLVIII. 387 (1865).

Phyllanthus pubescens Klotzsch, in Nov. Act. Leop.-Carol. Acad. Nat. Cur. XIX, Suppl. I. 420 (1843).

Glochidion Llanosi Mueller-Arg. in Linnaea, XXXII. 68 (1863). — Merrill, Sp. Blancoanae 217 (1918); Enum. Philipp. Flow. Pl. II. 400 (1923).

Sauropus Llanosii Gage in Rec. Bot. Surv. India, IX. 233 (1923). — Ridley, Fl. Malay Penin. III. 221 (1924).

Atjeh, near Idi, at sea level, *no. 665*, Jan. 4, 1932. — Siam, Malay Peninsula, and the Philippines.

This species, long known as a *Glochidion*, clearly belongs in *Sauropus*. I can see no essential differences between the Sumatran and the Malay Peninsula forms and Philippine material. As Blanco's specific name is the oldest and is valid in *Sauropus* it is here adopted.

Drypetes sp.

Atjeh, Takengön, in primary forests at 3600 ft. alt., *no. 750*, Jan. 8, 1932 (tree 35 ft. high, the fruits orange when ripe). — A species of the section *Sphragidia* apparently allied to *S. longifolia* (Blume) Pax and Hoffmann; flowers needed.

Croton argyratus Blume, Bijdr. 602 (1825). — Mueller-Arg. in De Candolle, Prodr. xv. pt. 2, p. 526 (1866). — Ridley, Fl. Malay Penin. III. 260 (1924). — Gagnepain in Lecomte, Fl. Gén. Indo-Chine, v. 277 (1925).

Atjeh, road from Kaban Djahe to Kota Tjane, kilometers 139–141, in forested ravines at 4000 ft. alt., *no. 1092*, Feb. 12, 1932 (tree 35 ft. high). — Andaman Islands, Burma, and Indo-China to Java, Borneo, and the Philippines.

Claoxylon polot (Burman f.) Merrill, Interpret. Herb. Amb. 200 (1917), in nota.

Croton polot Burman f., Fl. Ind. 205 (1768).
Erythrochilus indicus Reinwardt apud Blume, Bijdr. 615 (1825).
Claoxylon indicum Hasskarl, Cat. Hort. Bogor, 235 (1844). — Pax & Hoffmann in Engler, Pflanzenr. IV.-147. VII (Heft 63), 108, fig. 16 (1914).

East Coast, Dolok Merangir, alt. 800 ft., *no. 942*, Jan. 28, 1932 (tree 25 ft. high, fruits green, seeds bright red); Atjeh, near Idi, at sea level, *no. 668*, Jan. 4, 1932 (small tree). — India to southern China, through Malaysia to Java and New Guinea, but not known from the Philippines.

Mallotus peltatus (Geiseler) Mueller-Arg. in Linnaea, XXXIV. 187 (1865); in De Candolle, Prodr. xv. pt. 2, p. 967 (1866). — Pax & Hoffmann in Engler, Pflanzenr. IV.-147. VII (Heft 63), 174 (1914).

Aleurites peltata Geiseler, Croton. Monogr. 81 (1807).
Adisca acuminata Blume, Bijdr. 610 (1825).
Mallotus acuminatus Mueller-Arg., in Linnaea, XXXIV. 187 (1865). — Ridley, Fl. Malay Penin. III. 290 (1924).

Atjeh, road from Kaban Djahe to Kota Tjane, kilometers 139–141, in forested ravines at 4000 ft. alt., *no. 1093*, Feb. 17, 1932 (fruits red-brown). — Andaman islands and Tenasserim to the Malay Peninsula, and Java.

Wetria macrophylla (Blume) J. J. Smith in Meded. Dept. Landbouw, x. 471 (Koorders & Valeton, Bijdr. Boomsoort. Java, XII. 471) (1910). — Pax & Hoffmann in Engler, Pflanzenr. IV.-147. VII (Heft 63), 219 (1914).

Trewia macrophylla Blume, Bijdr. 612 (1825).

Wetria trewioides Baillon, Étud. Gén. Euphorb. 409 (1858). — Ridley, Fl. Malay Penin. III. 282 (1924).

Atjeh, road from Kaban Djahe to Kota Tjane, in forests at 4000 ft. alt., *no. 1090*, Feb. 17, 1932 (tree 80 ft. high). — Malay Peninsula, Java, Borneo, and the Philippines (Luzon).

Macaranga hypoleuca (Reichenbach f. & Zollinger) Mueller-Arg. in De Candolle, Prodr. xv. pt. 2, p. 992 (1866). — Pax & Hoffmann in Engler, Pflanzenr. IV.-147. VII (Heft 63), 311 (1914). — Ridley, Fl. Malay Penin. III. 300 (1924).

Mappa ? hypoleuca Reichenbach f. & Zollinger in Verh. Natuurk. Ver. Nederl. Ind. I. 30 (1856).

Ricinus inermis Wallich, Num. List, no. 7806 (1833–49), nomen nudum.

Atjeh, road from Kaban Djahe to Kota Tjane, kilometers 139–141, *no. 1095*, Feb. 17, 1932. — Malay Peninsula, Borneo.

Macaranga javanica (Blume) Mueller-Arg. in De Candolle, Prod. xv. pt. 2, p. 1004 (1866). — Pax & Hoffmann in Engler, Pflanzenr. IV.-147. VII (Heft 63), 340 (1914).

Mappa javanica Blume, Bijdr. 625 (1825).

Atjeh, road from Kaban Djahe to Kota Tjane, kilometer 133, in forested ravines at 4000 ft. alt., *no. 1103*, Feb. 17, 1932 (shrub 15 ft.); Deli-Atjeh border at sea level, *no. 632*, Jan. 3, 1932. — Banka, Java.

The Malay Peninsula form referred here by Hooker f., Fl. Brit. Ind. v. 451 (1887) = *M. montana* Pax & Hoffmann in Engler, Pflanzenr. IV.-147. VII (Heft 63), 321 (1914), non Merrill (1912) = *Macaranga Heynei* I. M. Johnston in Contrib. Gray Herb. LXVIII. 90 (Aug. 18, 1923) (*M. robiginosa* Ridley in Kew Bull. Misc. Inform. 1923, p. 367; Fl. Malay Penin. III. 303. 1924). Number 10 of the Kew Bulletin in which Ridley's new name appears was issued in December 1923, the date of publication being given as "12/23" at the foot of the first page of no. 10. *Macaranga Merrilliana* Pax & Hoffman, op. cit. 304, is a synonym of *M. montana* Merrill.

Macaranga tanarius (Linnaeus) Mueller-Arg. var. **tomentosa** (Blume) Mueller-Arg. in De Candolle, Prodr. xv. pt. 2, p. 997 (1866).

Mappa tomentosa Blume, Bijdr. 624 (1825).

Atjeh, road from Kaban Djahe to Kota Tjane, at kilometer 143, and from Takengön to Bireuen, alt. 3300–4000 ft., *nos. 837, 1085*, Jan. 11 and Feb. 17, 1932 (tree 20 to 30 ft. high). — Andaman

Islands to Indo-China, southern China, and the Liu Kiu Islands, southward to Java and New Guinea.

The type of the species is the Amboina form with glabrous leaves, which has much the same geographic distribution as the var. *tomentosa*. Pax and Hoffman in Engler, Pflanzenr. IV.-147. VII (Heft 63), 352 (1914) do not recognize the variety.

Aleurites moluccana (Linnaeus) Willdenow, Sp. Pl. IV. 590 (1805). — Pax in Engler, Pflanzenr. IV.-147 (Heft 42), 129, fig. 45 (1910).

Jatropha moluccana Linnaeus, Sp. Pl. 1006 (1753).

East Coast, Dolok Merangir Estate, alt. 800 ft., *no. 941*, Jan. 28, 1932 (tree 35 ft. high). — The common candle nut tree, widely distributed in tropical Asia, Malaysia, and Polynesia; introduced in tropical America.

Ostodes paniculata Blume, Bijdr. 620 (1825). — Pax in Engler, Pflanzenr. IV.-147, III (Heft 47), 20 (1911).

Atjeh, road from Takengön to Bireun, at kilometer 84, at the edge of the jungle, *no. 820*, Jan. 11, 1932 (tree 75 ft. high); East Coast, Medan-Bĕrastagi road, near the entrance to the sulphur spring, in second growth forests at 4200 ft. alt., *no. 967*, Feb. 13, 1932 (tree 40 ft. high). — India to Indo-China and Hainan, Sumatra, and Java; not recorded from the Malay Peninsula.

Endospermum Banghamii, sp. nov. (§ *Euendospermum*).

Arbor circiter 30 m. alta, partibus junioribus inflorescentiisque exceptis glabra; ramis teretibus, purpureo-brunneis teretibus, glabris, ultimis circiter 3 mm. diametro, medullosis, novellis (alabastris) cinereo-pubescentibus; foliis subcoriaceis, ovatis, 8—15 cm. longis, 5—10 cm. latis, utrinque subconcoloribus, pallide brunneis, nitidis, acuminatis, integris, basi late rotundatis vel truncato-rotundatis, subtus haud glandulosis, glabris vel junioribus ad costam nervosque leviter obscure stellato-pubescentibus cito glabrescentibus, basi 5-nerviis, nervis lateralibus utrinque supra basin 3 vel 4, subtus elevatis, perspicuis; petiolo 3—6 cm. longo, glabro; inflorescentiis lateralibus axillaribusque vel e axillis defoliatis, sub fructu usque ad 15 cm. longis, anguste paniculatis, ramis paucis, inferioribus usque ad 3 cm. longis, leviter simpliciter cinereo-pubescentibus; floribus ♀ racemose dispositis, bracteolis oblongo-ovatis, 1.5 mm. longis, pedicellis sub fructu 3—4 mm. longis; fructibus ovoideis vel oblongo-ovoideis, junioribus circiter 8 mm. longis, subrostratis, obscure

breviter cinereo-puberulis, cito glabrescentibus, 3- vel 4-locularibus.

Atjeh, Takengön, in primary forests at 1100 m. alt., *Walter N.* and *Catherine M. Bangham no. 739*, Jan. 8, 1932, (tree 100 ft. high, the trunk white, 2 ft. in diameter).

In spite of its 3—4-celled ovaries, I place this in the section Euendospermum, and again in spite of its leaves being eglandular on the lower surfaces at the junction of the petioles, I place it next to *E. chinense* Bentham. Were I certain that it represented the form placed by Pax under *Endospermum chinense* Bentham var. *malayanum* Pax and Hoffmann in Engler, Pflanzenr. IV.-147. iv (Heft 52), 36 (1912), I should adopt the latter name. If, however, the presence or absence of the striking leaf glands is any criterion, the present species can scarcely be referred to *E. chinense* Bentham. However, in this genus there is some evidence that the glands may be present or absent on leaves of the same species. It differs from Bentham's species not only in its glandular leaves but also in its indumentum and in its distinctly long-pedicelled not sessile, differently shaped, more numerously celled, ultimately glabrous fruits.

Homalanthus populneus (Geiseler) Pax in Engler & Prantl, Nat. Pflanzenfam. iii.—5, p. 96 (1896). — Pax & Hoffmann in Engler, Pflanzenr. IV.-147. v (Heft 52), 46 (1912).

Stillingia populnea Geiseler, Croton. Monogr. 80 (1807).

Atjeh, road from Takengön to Bireuen, near Balique, at the edge of the jungle, alt. 3300 ft., *no. 826*, Jan. 11, 1932 (tree 25 ft. high). — Malay Peninsula, Java, Borneo, the Philippines, and New Guinea.

Ridley, Fl. Malay Penin. iii. 313 (1924), retains *Homalanthus* [*Omalanthus*] *populifolius* Graham as the name for the common Malaysian form, giving its range as Malaysia and Australia. Pax and Hoffman limit Graham's species to Australia, yet citing Hooker's illustration, Bot. Mag. t. 2780, under it, which was based on Javan material. They place the Malaysian form under *H. populneus*, an older specific name than that of Graham. Graham's original description was based on a specimen cultivated at Edinburgh.

Sapium discolor (Champion) Mueller.-Arg. in Linnaea, xxxii. 121 (1863). — Pax & Hoffmann in Engler, Pflanzenr. IV.-147. iv (Heft 52), 239 (1912). — Ridley, Fl. Malay Penin. iii. 316. fig. 155 (1924).

Stillingia discolor Champion apud Bentham in Hooker, Jour. Bot. Kew. Gard. Miscel. VI. 1 (1854).

Deli-Atjeh border at sea level, *no. 633*, Jan. 3, 1932 (shrub 8—10 ft. high). — Southern China and Indo-China to the Malay Peninsula, Borneo, and the Philippines (Sulu Archipelago).

ANACARDIACEAE

Mangifera indica Linnaeus, Sp. Pl. 200 (1753). — Engler in C. de Candolle, Monog. Phan. IV. 198 (1883).

Atjeh, Lake Tawar, between Baboeli and Paekas, in ravines at 3900 ft. alt., *no. 785*, Jan. 9, 1932 (tree 80 ft. high, fruits green, sour, with little flesh and few fibers). — Native of tropical Asia, now pantropic in cultivation; the mango.

Semecarpus sp.

Atjeh, Lake Tawar, between Baboeli and Paekas, at 4000 ft. alt., *no. 784*, Jan. 9, 1932 (tree 40—50 ft. high, the juice reported to cause skin eruptions or itchings). — There are neither flowers nor fruits with the specimen.

Rhus chinensis Miller, Gard. Dict. ed. 8, no. 7 (1768). — Britten in Jour. Bot. XXXVIII. 315 (1900), in nota.

Schinus indicus Burman f., Fl. Ind. 215 (err. 315). (1768) ex descr.

Rhus semialata Murray in Comm. Gotting. VI. 27, t. 3 (1784). — Engler in C. de Candolle, Monog. Phan. IV. 380 (1883). — Merrill in Jour. Arnold Arb. IX. 3, t. 11 (1928).

Rhus javanica auct. plur., non Linnaeus.

Atjeh, Lake Tawar, in pastures at 3800 ft. alt., *no. 765*, Jan. 9, 1932 (shrub 8 ft. high, flowers white, fruits red); Tapianoeli, *Yates 2096*. — India through Burma, Siam, Indo-China and China to Korea, Japan, and Formosa; also in Java but apparently introduced there although now naturalized (fide Koorders).

The Sumatran form is the one with the wingless petioles (*Rhus javanica* var. *Roxburghii* Rehder & Wilson, *R. semialata* var. *Roxburghii* De Candolle, *R. Roxburghii* Decaisne) similar to the specimen in the Linnaean herbarium (pinned to the sheet of *Rhus javanica* Linnaeus, but not so named). For discussions of the application of this Linnaean binomial see Britten, Jour. Bot. XXXVIII. 315—316 (1900), and Merrill, Jour. Arnold Arb. IX. 1—4, t. 10—11 (1928); plate 11 in the latter reference is a photographic reproduction of the Osbeck specimen in the Linnaean herbarium and doubtless represents the true *Rhus chinensis* Osbeck which, however, appeared as a *nomen nudum*, and as

such has no standing and cannot invalidate *Rhus chinensis* Miller. *Schinus indicus* Burman f. was published in the same year as *Rhus chinensis* Miller.

AQUIFOLIACEAE

Ilex grandifolia Merrill in Papers Michigan Acad. XIX. 163. t. 25 (1934).

East Coast, Siantar to Bĕrastagi, in second growth forests at 3500 ft. alt., *no. 949*, Feb. 12, 1932 (tree 35 ft. high, flowers greenish, fruits dark red). — Known only from Sumatra.

Ilex spicata Blume, Bijdr. 1149 (1826). — Loesener in Nov. Act. Leop.-Carol. Akad. Naturf. LXXVIII. 428 (Monogr. Aquif.) (1901).

East Coast, Medan road to Sibajak Volcano, in forests above 4200 ft. alt., *no. 1034*, Feb. 15, 1932 (tree 18 ft. high). — Java, Borneo, New Guinea.

CELASTRACEAE

Evonymus sumatranus, sp. nov.

Frutex epiphyticus (fide Bangham), glaber, ramis teretibus, ramulis ultimis teretibus vel obscure 4-angulatis vel sulcatis 1—1.2 mm. diametro; foliis ellipticis, subcoriaceis, 4—8 cm. longis, 2—4 cm. latis, rotundatis vel obtusis vel obscure obtuseque acuminatis, basi late acutis vel rotundatis, margine deorsum integro, sursum distanter crenulato-serrato, dentibus parvis, obscuris, glanduloso-apiculatis, in sicco pallidis, utrinque concoloribus vel subtus paullo pallidioribus, nervis primariis utrinque 5 vel 6, supra leviter elevatis, subdistinctis, subtus haud perspicuis, curvato-adscendentibus, anastomosantibus, reticulis laxis; petiolo 4—5 mm. longo; inflorescentiis terminalibus, brevibus, paucifloris, subcymosis, usque ad 2 cm. longis; floribus 5-meris, circiter 12 mm. diametro, sepalis exterioribus ovato-reniformibus, 2—2.5 mm. longis, 3.5 mm. latis, interioribus minoribus, 1—1.5 mm. longis; petalis purpureo-brunneis, obovatis, 5—5.5 mm. longis, 4 mm. latis, fimbriatis, fimbriis numerosis, vix 1 mm. longis; disco 5-angulato, 3 mm. diametro; filamentis circiter 1 mm. longis; ovario laevi; pedicellis articulatis, 6 mm. longis.

Tapianoeli, northwest side of Toba Lake, near Peso Peso, in primary forests at 1250—1400 m. alt., *Walter N.* and *Catherine M.*

Bangham no. 1064, Feb. 16, 1932 (epiphytic shrub, flowers maroon).

A species which does not conform to the characters of any of the few described Malaysian forms of this genus, characterized by its terminal, few-flowered inflorescences, its 5-merous flowers, and its maroon, short-fimbriate petals.

Celastrus axillaris Ridley in Jour. Malay. Branch Roy. As. Soc. I. 56 (1923).

Atjeh, trail from Kabajakan to Tretet, at edge of the jungle, at 3500–5000 ft. alt., *no. 870*, Jan. 13, 1932 (scandent, flowers white). — Known only from Sumatra.

The identification has been made from Ridley's not very definite description; his type was from Bĕrastagi. None of the leaves approach in either shape or size the larger ones as described by him, but do approximate those of the floral branches.

Perrottetia alpestris (Blume) Loesener in Engler & Prantl, Nat. Pflanzenfam. III-5, p. 220 (1892). — Koorders & Valeton in Ic. Bogor. II. 137, t. 127 (1904). — Ridley, Fl. Malay Penin. I. 454 (1922).

Celastrus alpestris Blume, Bijdr. 1145 (1826).

East Coast, Medan-Bĕrastagi road, near entrance to the sulphur spring, scandent in second growth forests, alt. about 4200 ft., *no. 966*, Feb. 13, 1932. — Malay Peninsula, Java, Borneo, and the Philippines.

STAPHYLEACEAE

Turpinia montana (Blume) Kurz in Jour. As. Soc. Bengal, LXIV. pt. 2, p. 182 (1875). — Koorders, Exkursionsfl. Java, II. 528 (1912); Atlas Baumart. Java, I. t. 92 (1913).

Zanthoxylum montanum Blume, Bijdr. 248 (1825).
Zanthoxylum serrulatum Blume, op. cit. 249.
Fagara dioica Reinwardt apud Koorders, Exkursionsfl. Java, II. 528 (1912) in syn.
Fagara trigyna Blume apud Koorders, loc. cit., in syn.
Kindasia montana Blume apud Koorders, loc. cit., in syn.
Irina opilioides Zippel apud Koorders, loc. cit., in syn.
Maurocenia Zollingeri O. Kuntze, Rev. Gen. Pl. I. 150 (1891).
Cassine Zollingeri O. Kuntze, loc. cit., in syn.
Turpinia parva Koorders & Valeton in Meded. Lands Plant. LXI. 249 (Bijdr. Boomsoort Java, IX. 249) (1903).

West Coast, Mount Singgalan, in forests, alt. about 1900 m., *Yates 2515*, April 24, 1927; Atjeh, trail from Kabajakan to Tretet, alt. 3500–5000 ft., *Bangham 887*, Jan. 13, 1932 (shrub). — Java.

I have followed Koorders in the synonymy, adding *Maurocenia Zollingeri* O. Kuntze and *Cassine Zollingeri* O. Kuntze, both names based on a Javan specimen collected by Zollinger, Kuntze's own specimen from Sindanglaya, Java, being in the herbarium of the New York Botanical Garden; there is also in this herbarium a specimen of the original collection of *Irina opilioides* Zippel. I have, however, eliminated *Staphylea chrysodonta* Junghuhn, erroneously placed here as a synonym by Kooders, as the type was from Japan, not from Java.

Turpinia nepalensis Wallich, Num. List, no. 4277 (1830), nomen nudum. — Wight & Arnott, Prodromus, 156 (1834). — Wight, Ic. III. pt. 3, t. 972 (1843—45).

Turpinia montana Kurz var. *nepalensis* Kurz in Jour. As. Soc. Bengal, LXIV. pt. 2, p. 182 (1875).

Turpinia pomifera De Candolle var. *nepalensis* Lawson in Hooker f., Fl. Brit. Ind. I. 699 (1875), in nota.

Atjeh, Takengön, *no. 862*, Jan. 12, 1932 (tree 40 ft. high, immature fruits green); East Coast, Medan-Bĕrastagi road, near entrance to the sulphur springs, in secondary forests at 4200 ft. alt., *no. 981*, Feb. 13, 1932 (tree 35 ft. high, fruits brownish-purple). — India to Indo-China and southeastern China, southward to the Philippines and Java.

The species in this group are not well defined and Wallich's species has been much confused with *Turpinia pomifera* (Roxburgh) De Candolle. The form here placed under *Turpinia nepalensis* has globose purplish fruits 1—1.5 cm. diameter. In *T. pomifera* the fruits are much larger, up to at least 3 cm. long. I suspect that most of the Malaysian material referred to *Turpinia pomifera* really belongs to *T. nepalensis* or to *T. sphaerocarpa* Hasskarl.

Triceros Loureiro (1790) is an older generic name for this group than *Turpinia* Ventenat (1803). In my judgment Loureiro's description conforms to the characters of *Turpinia*.

SABIACEAE

Meliosma pungens (Wallich) Walpers, Repert. I. 423 (1842). — Hooker f., Fl. Brit. Ind. II. 4 (1876).

Millingtonia pungens Wallich apud Wight & Arnott in Edinb. New Philos. Jour. XV. 178 (1833).

Millingtonia acuminata Royle, Ill. Himal. Pl. 139 (1839), nomen nudum.

Meliosma acuminata Hooker f., Fl. Brit. Ind. II. 4, 774 (1876–79), in syn. et indice.

Atjeh, Takengön, in primary forests at 3600 ft. alt., *no. 721*, Jan. 7, 1932 (tree 50 ft. high, flowers white, fragrant). — Subtropical and temperate Himalayan region.

The specimen agrees very closely with our series of Indian ones. I do not think, however, that *Meliosma rigida* Siebold & Zuccarini and *M. ferruginea* Siebold & Zuccarini (1843), of Japan, belong here, as Hooker f. has placed them. Chinese material referred to the latter (*Henry 11737, a, b*) is *M. glomerulata* Rehder & Wilson.

Meliosma simplicifolia (Roxburgh) Walpers, Repert. I. 423 (1842). — Hooker f., Fl. Brit. Ind. II. 5 (1876).

Millingtonia simplicifolia Roxburgh, Pl. Coromandel, III. 50; t. 254 (1819); Fl. Ind. I. 102 (1820).

Meliosma angulata Blume, Rumphia III. 197 (1847). — Koorders & Valeton in Meded. Lands Plant. LXI. 131 (Bijdr. Boomsoort. Java, IX. 131) (1903). — Koorders, Atlas Baumart. Java, II. t. 378 (1914).

Atjeh, road from Takengön to Bireuen, at kilometer 96, *no. 818*, Jan. 11, 1932 (shrub 8 ft. high, flowers white). — India and Ceylon to Indo-China. Recorded by Miquel from Sumatra and from Java (by reduction of *M. angulata* Blume) but Koorders and Valeton, Meded. Lands Plant. LXI. 131 (Bijdr. Boomsoort. Java, IX. 131) (1903) retain Blume's species as a valid one, citing *Millingtonia simplicifolia* Roxburgh and *Meliosma simplicifolia* Walpers as synonyms. Roxburgh's specific name is the oldest one.

Meliosma sumatrana (Jack) Walpers, Annales, I. 135 (1848). — Miquel, Fl. Ind. Bat. I. pt. 2, p. 617 (1858–59). — Hooker f., Fl. Brit. Ind. II. 6 (1876).

Millingtonia sumatrana Jack in Malay Miscel. II. pt. 7, p. 30 (1822).

Meliosma nitida Blume, Cat. Gew. Buitenzorg, 32 (1823); Rumphia, III. 202, t. 169 (1847). — Koorders & Valeton in Meded. Lands Plant. LXI. 117 (Bijdr. Boomsoort Java, IX. 117) (1903).

Atjeh, road from Takengön to Bireuen near Balique, in primary forests at 3300 ft. alt., *no. 833*, Jan. 11, 1932. — Malay Peninsula, Java, Borneo, and the Philippines.

Meliosma sp.

Atjeh, Takengön, in primary forests at 3600 ft. alt., *no 753*, Jan. 8, 1932 (tree 120 ft. high). — A sterile specimen with pinnate leaves, the leaflets entire, softly ferruginous-pubescent beneath; not matched.

BALSAMINACEAE

Impatiens Junghuhnii Miquel, Ill. Fl. Arch. Ind. 99 (1871).

Atjeh, Baboeli to Paekas, in ravines at 4100 ft. alt., *no. 780*, Jan. 9, 1932 (flowers corn yellow). — The type was from Tapianoeli. Known only from Sumatra.

Impatiens platypetala Lindley in Bot. Reg. xxxii. t. 68 (1846).

East Coast to Tapianoeli, new road near Peso Peso at kilometer 9, in primary forests at 4100 ft. alt., *no. 1166*, Feb. 22, 1932 (flowers pink). — Java, Borneo.

RHAMNACEAE

Rhamnus napalensis (Wallich) Lawson in Hooker f., Fl. Brit. Ind. i. 640 (1875), as "*nipalensis*". — Pitard in Lecomte, Fl. Gén. Indo-Chine, i. 927 (1912). — Schneider in Sargent, Pl. Wilson. ii. 245 (1914). — Koorders, Exkursionsfl. Java, ii. 554, fig. 82 (1912). — Craib, Fl. Siam Enum. i. 300 (1926). — Rehder in Jour. Arnold Arb. xv. 14 (1934).

Ceanothus napalensis Wallich apud Roxburgh, Fl. Ind. ii. 375, 575 (1824) (err. napalansis).

Rhamnus javanicus Miquel, Fl. Ind. Bat. i. pt. 1, p. 646 (1856—57). — Koorders & Valeton in Meded. Lands Plant. xxxiii. 324 (Bijdr. Boomsoort. Java v. 324) (1900).

Rhamnus sumatrensis Ridley in Jour. Malay Branch Roy. As. Soc. i. 57 (1923).

Atjeh, Lake Tawar, scandent on slopes at 3800 ft. alt., *no. 792*, Jan. 10, 1932; East Coast, trail from Goodyear bungalow to Sibajak Volcano, in forests at 5000 ft. alt., *no. 1011*, Feb. 14, 1932. — Nepal, Sikkim, and Khasia, to Siam, Indo-China, southern China, and Java.

I follow Koorders in reducing *Rhamnus javanicus* Miquel to *R. napalensis* (Wallich) Lawson, and suspect that other species proposed in this group, other than *R. sumatrensis* Ridley, should also be reduced (at least they are very closely allied to the Indian form) such as *Rhamnus formosanus* Matsumura and *R. philippinensis* C. B. Robinson. The type of *Rhamnus sumatrensis* Ridley was from Bĕrastagi; the species is also represented by *Yates 1483, 1561* from Bĕrastagi, *Bartlett 8360, 8374* from Toba, and *Hamel & Rahmat Si Toroes 780* from Karoland.

Gouania tiliaefolia Lamarck, Encycl. Méth. iii. 5 (1789). — Roxburgh, Pl. Coromandel, i. 67, t. 98 (1795). — De Candolle,

Prodr. II. 40 (1825). — Merrill, Enum. Philipp. Flow. Pl. II. 526 (1923).

Gouania leptostachya De Candolle, Prodr. II. 40 (1825). — King in Jour. As. Soc. Bengal, LXV. pt. 2, p. 383 (Mater. Fl. Malay. Penin. II. 669) (1896). — Craib, Fl. Siam. Enum. I. 301 (1826).

Atjeh, Peureulah, and road from Kaban Djahe to Kota Tjane, in ravines, sea level to 4000 ft. alt., *nos. 629, 1107*, Jan. 3 and Feb. 17, 1932. — India to the Mascarene Islands and Indo-China, southward to Java and the Philippines.

VITACEAE

Ampelocissus thyrsiflora (Blume) Planchon in C. de Candolle, Monog. Phan. v. 409 (1887).

Cissus thyrsiflora Blume, Bijdr. 187 (1825).

Vitis thyrsiflora Miquel in Ann. Mus. Bot. Lugd.-Bat. I. 88 (1863).

East Coast, Sinaboeng Volcano, in mid-mountain forests at about 3000 ft. alt., *no. 1183*, Feb. 23, 1932; Prapat, in secondary and primary forests at 300–400 ft. alt., *no. 1219*, Dec. 14, 1931 (sterile specimen in herb. Arnold Arboretum). — Java.

Tetrastigma glabratum (Blume) Planchon in C. de Candolle, Monog. Phan. v. 430 (1887). — Gagnepain in Lecomte, Not. Syst. I. 379 (1911). — Merrill, Enum. Philipp. Flow. Pl. III. 3 (1923).

Cissus glabrata Blume, Bijdr. 189 (1825).

Atjeh, Lake Tawar, between Baboeli and Paekas, in ravines, alt. 3700–4500 ft., *no. 788*, Jan. 9, 1932 (fruiting specimen). — Java, Philippines, Malay Peninsula.

Gagnepain refers *King's collector 6287* from Perak to this species, but King in Jour. As. Soc. Bengal, LXV. pt. 2, p. 394 (Mater. Fl. Malay. Penin. II. 680) (1896) places this number under *Vitis Lawsoni* King. The species in this group are poorly defined.

Tetrastigma pergamaceum (Blume) Planchon in De Candolle, Monog. Phan. v. 431 (1887).

Cissus pergamacea Blume, Bijdr. 183 (1825).

Tapianoeli, near Peso Peso, in forests at 4100 ft. alt., *no. 1065*, Feb. 16, 1932. — Java, Celebes.

Tetrastigma sp.

Atjeh, Takengön to Bireuen, near Balique, scandent in primary forests at 3300 ft. alt., *no. 838*, Jan. 11, 1932 (fruiting specimen, not matched).

Cissus repens Lamarck, Encycl. Méth. I. 31 (1783). — Planchon in C. de Candolle, Monog. Phan. v. 504 (1887).

Vitis repens Wight & Arnott, Prodr. 125 (1834). — King in Jour. As. Soc. Bengal, LXV. pt. 2, p. 400 (Mater. Fl. Malay. Penin. II. 686) (1896).

Atjeh, Langsa, at sea level, *no. 645*, Jan. 3, 1932 (scandent shrub). — India to southern China, through Malaysia to Java, the Philippines, and the Moluccas.

Columella japonica (Thunberg) Merrill in Philipp. Jour. Sci. XIII. Bot. 145 (1918). — Craib, Fl. Siam. Enum. I. 310 (1926).

Vitis japonica Thunberg, Fl. Jap. 104 (1784).

Cissus japonica Willdenow, Sp. Pl. I. 659 (1797). — Planchon in C. de Candolle, Monog. Phan. v. 561 (1887).

Causonia japonica Rafinesque, Sylva Tellur. 87 (1838).

Cayratia japonica Gagnepain in Lecomte, Not. Syst. I. 349 (1911); Lecomte, Fl. Gén. Indo-Chine, I. 983, t. 26, fig. 11–16 (1912).

Atjeh, road from Takengön to Bireuen, near Balique, at edge of primary forests, alt. 3300 ft., *no. 839*, Jan. 11, 1932. — Nicobar Islands to Siam, China and Japan, southward to Java.

While *Columella* is here retained, attention is called to the fact that in the proposals of British botanists presented to the Fifth International Botanical Congress at Cambridge, August 1930, it was recommended that *Cayratia* Jussieu be retained and Loureiro's generic name be rejected. *Cayratia* was most informally published in 1823, without a binomial, but based on *Columella* Loureiro. No binomial was supplied until 1910 when Gagnepain actually published *Cayratia pedata* Jussieu in Not. Syst. I. 346 (1910). It is only by inference that the binomial *Cayratia pedata* Jussieu, as actually published by Gagnepain, may be considered to have been based on *Columella pedata* Loureiro (1790) as Gagnepain also cites the earlier *Cissus pedata* Lamarck (1783). It was not realized in 1930 that *Lagenula* Loureiro (1790) was congeneric with *Columella* Loureiro, nor that in 1838 Rafinesque, Sylva Tellur. 37, had published two other names, congeneric with *Columella* and *Lagenula*, namely *Pediastis* Rafinesque based on *Cissus pedata* auct., and *Causonia* Rafinesque based on *Vitis japonica* Thunberg. My judgment is that *Lagenula* Loureiro should be adopted in place of *Columella* Loureiro and *Cayratia* Jussieu.

Leea aequata Linnaeus, Mant. I. 124 (1767). — C. B. Clarke in Jour. Bot. XIX. 163 (1881). — Gagnepain in Lecomte, Fl. Gén.

Indo-Chine, I. 940 (1912). — Merrill, Interpret. Herb. Amb. 346 (1917). — Craib, Fl. Siam. Enum. I. 316 (1926).

Atjeh, road from Kaban Djahe to Kota Tjane, kilometers 139–141, in forests at 4000 ft. alt., *no. 1088*, Feb. 17, 1932 (shrub 5 ft. high); East Coast, Dolok Merangir, at 800 ft. alt., *no. 1212*. — India to Indo-China, southward to Java, the Philippines and the Moluccas.

Leea angulata Korthals apud Miquel in Ann. Mus. Bot. Lugd.-Bat. I. 97 (1863). — Koorders & Valeton in Meded. Lands Plant. LXI. 5 (Bijdr. Boomsoort. Java, IX. 5) (1903). — King in Jour. As. Soc. Bengal, LXV. pt. 2, p. 414 (Mater. Fl. Malay. Penin. II. 700) (1896).

Leea horrida Teijsmann & Binnendijk, Cat. Hort. Bot. Bogor. 169 (1866), nomen nudum.

Atjeh, in thickets at sea level, *no. 656*, Jan. 4, 1932 (shrub, 15 ft. high). — Nicobar Islands, and the Malay Peninsula to Java, and the central and southern Philippines.

Leea gigantea Griffith, Notul. IV. 697 (1854); Ic. Pl. As. t. 645, fig. 3 (1854). — C. B. Clarke in Jour. Bot. XIX. 140 (1881). — King in Jour. As. Soc. Bengal, LXV. pt. 2, p. 412 (Mater. Fl. Malay. Penin. II. 698) (1896).

Atjeh, Takengön, in primary forests at 3600 ft. alt., *no. 709*, Jan. 7, 1932 (shrub 10 ft. high). — Burma, Siam, the Malay Peninsula, and Penang.

Leea indica (Burman f.) Merrill in Philipp. Jour. Sci. XIV. 245 (1919); Enum. Philipp. Flow. Pl. III. 11 (1923). — Craib, Fl. Siam. Enum. I. 318 (1926).

Staphylea indica Burman f., Fl. Ind. 75, t. 24, fig. 2 (1768).

Aquilicia sambucina Linnaeus, Mant. II. 211 (1771).

Leea sambucina Willdenow, Sp. Pl. I. 1177 (1797). — C. B. Clarke in Jour. Bot. XIX. 139 (1881). — King in Jour. As. Soc. Bengal, LXV. pt. 2, p. 414 (Mater. Fl. Malay. Penin. II. 700) (1896). — Gagnepain in Lecomte, Fl. Gén. Indo-Chine, I. 941 (1912).

East Coast, Medan-Bĕrastagi road, kilometers 59–61, *no. 1145*, Feb. 21, 1932; Atjeh, Takengön to Bireuen, near Balique, at the edge of second growth forests, alt. 3300–4100 ft., *no. 831*, Jan. 11, 1932 (shrub). — India to Indo-China, southward to Java and the Philippines, eastward to Fiji.

Staphylea indica Burman f. (1768) and *Aquilicia sambucina* Linnaeus (1771) were apparently based on the same collection; in any case they represent a single species.

ELAEOCARPACEAE

Elaeocarpus sphaericus (Gaertner) K. Schumann in Engler & Prantl, Nat. Pflanzenfam. III.-6, p. 5 (1895). — Hochreutiner, Pl. Bogor. Exsic. 27 (1904).

Ganitrus sphaericus Gaertner, Fruct. II. 271, t. 139, fig. 6 (1791).

Elaeocarpus ganitrus Roxburgh, Hort. Beng. 42 (1814), nomen nudum; Fl. Ind. ed. 2, II. 592 (1832). — Hooker f., Fl. Brit. Ind. I. 400 (1874). — King in Jour. As. Soc. Bengal, LX. pt. 2, p. 122 (Mater. Fl. Malay. Penin. I. 231) (1891). — Koorders & Valeton in Meded. Lands Plant. XXXIII. 419 (Bijdr. Boomsoort. Java, V. 419) (1900). — Koorders, Atlas Baumart. Java, III. t. 426 (1914).

Elaeocarpus angustifolius Blume, Bijdr. 120 (1825). — Koorders & Valeton in Meded. Lands Plant. XI. 260 (Bijdr. Boomsoort. Java, I. 260) (1894).

Atjeh, near Lake Tawar, in ravines between Baboeli and Paekas, *no. 771*, Jan. 9, 1932 (tree 50 ft. high, locally known as *kajoe sirey*). — India to Burma and Siam, southward and eastward through Malaysia to Java, the Moluccas, and New Guinea.

TILIACEAE

Grewia acuminata Jussieu in Ann. Mus. Hist. Nat. (Paris) IV. 9, t. 48, fig. 2 (1804). — Merrill, Enum. Philipp. Flow. Pl. III. 24 (1923); Philipp. Jour. Sci. XXXVII. 168 (1928). — Burret in Notizbl. Bot. Gart. Berlin, IX. 699 (1926).

Grewia umbellata Roxburgh, Hort. Beng. 42 (1814), nomen nudum. — De Candolle, Prodr. I. 509 (1824). — Roxburgh, Fl. Ind. ed. 2, II. 591 (1832). — Masters in Hooker f., Fl. Brit. Ind. I. 385 (1874). — King in Jour. As. Soc. Bengal, LX. pt. 2, p. 109 (Mater. Fl. Malay. Penin. I. 109) (1891). — Craib, Fl. Siam. Enum. I. 187 (1925). — Burret in Notizbl. Bot. Gart. Berlin, IX. 700 (1926).

Atjeh, Peureulah, Takengön, and at the Deli-Atjeh border, in secondary forests, sea level to 3600 ft. alt., *nos. 624, 653, 699*, Jan. 3 and 7, 1932. — Siam, through Malaysia to the Philippines, and the Moluccas.

Burret retains *Grewia acuminata* Jussieu as a species distinct from *G. umbellata* Roxburgh, but Gagnepain's examination of Jussieu's type specimen from Java, as previously reported by me, Philipp. Jour. Sci. XXXVII. 168 (1928), clearly indicates the identity of the two species. It is a rather remarkably uniform plant considering its wide geographic distribution. *Hochreutiner*, Pl. Bogor Exsic. 36, 37, represents Jussieu's species.

Microcos tomentosa Smith in Rees, Cycl. XXIII. no. 2 (1812–13). — Burret in Notizbl. Bot. Gart. Berlin, IX. 776 (1926).

Grewia paniculata Roxburgh, Hort. Beng. 93 (1814), nomen nudum. — De Candolle, Prodr. I. 510 (1824). — King in Jour. As. Soc. Bengal, LX. pt. 2, p. 110 (Mater. Fl. Malay. Penin. I. 219) (1891).

Atjeh, Langsa, at sea level, *no. 648*, Jan. 31, 1932 (tree 30 ft. high, flowers pale yellow). — Siam and Indo-China to the Malay Peninsula and Java.

Triumfetta pilosa Roth, Nov. Pl. Sp. 233 (1821). — Masters in Hooker f., Fl. Brit. Ind. I. 394 (1874). — King in Jour. As. Soc. Bengal, LX. pt. 2, p. 116 (Mater. Fl. Malay. Penin. I. 225) (1891).

Atjeh, between Baboeli and Paekas, in ravines, alt. 3700 ft., *no. 787*, Jan. 9, 1932. — India to southern China, through Malaysia to Java, the Philippines, and New Guinea.

Gagnepain in Lecomte, Fl. Gén. Indo-Chine, I. 552 (1911), apparently includes this form in his conception of *Triumfetta tomentosa* Bojer in Ann. Sci. Nat. sér. 2, XX. 103 (1843). Bojer's species was based on African material as noted by King, who calls attention to the differences between it and *T. pilosa* Roth. *T. tomentosa* Gagnepain, non Bojer, is *T. pseudocana* Sprague & Craib in Kew Bull. 1911, p. 23.

Muntingia Calabura Linnaeus, Sp. Pl. 509 (1753). — Gagnepain in Lecomte, Fl. Gén. Indo-Chine, I. 562 (1911). — Merrill, Enum. Philipp. Flow. Pl. III. 32 (1923).

Atjeh, Idi, near dwellings, *no. 663*, Jan. 4, 1932 (tree 18 ft. high). — Native of tropical America, introduced in various parts of the Old World tropics, in some places spontaneous.

MALVACEAE

Sida retusa Linnaeus, Sp. Pl. ed. 2, 961 (1763). — Merrill, Enum. Philipp. Flow. Pl. III. 35 (1923).

Sida rhombifolia Linnaeus var. *retusa* Masters in Hooker f., Fl. Brit. Ind. I. 324 (1874). — King in Jour. As. Soc. Bengal, LX. pt. 2, p. 41 (Mater. Fl. Malay Penin. I. 150) (1891).

Atjeh, Lake Tawar, in pastures, alt. 3700 ft., *no. 790*, Jan. 9, 1932. — India to Java and the Philippines.

Urena lobata Linnaeus var. **scabriuscula** (De Candolle) A. Gray, Bot. Wilkes U. S. Explor. Exped. 169 (1854). — Masters in Hooker f., Fl. Brit. Ind. I. 329 (1874).

Urena scabriuscula De Candolle, Prodr. I. 441 (1824).

Atjeh, Takengön, alt. 4000 ft., *no. 680*, Jan. 6, 1932 (low shrub). — A pantropic variable weed, probably native of the Old World.

Hibiscus macrophyllus Roxburgh, Hort. Beng. 51 (1814), nomen nudum; De Candolle, Prodr. I. 455 (1824). — Masters in Hooker f., Fl. Brit. Ind. I. 337 (1874). — King in Jour. As. Soc. Bengal, LX. pt. 2, p. 45 (Mater. Fl. Malay. Penin. I. 154) (1891).

Deli-Atjeh border, at edges the mangrove swamps, *no. 651*, Jan. 3, 1932 (tree 40 ft. high, flowers lemon-yellow). — India to Siam and Indo-China, the Malay Peninsula, and Java.

Hibiscus surattensis Linnaeus, Sp. Pl. 696 (1753). — Masters in Hooker f., Fl. Brit. Ind. I. 334 (1874). — Merrill, Enum. Philipp. Flow. Pl. III. 38 (1923).

East Coast, Dolok Merangir Estate, *no. 603*, Dec. 29, 1931 (flowers yellow with maroon centers, leaves acid, edible). — Tropical Africa, Asia, and Malaysia.

Hibiscus tiliaceus Linnaeus, Sp. Pl. 694 (1753). — Masters in Hooker f., Fl. Brit. Ind. I. 343 (1874).

Atjeh, at sea level near Idi, *no. 670*, Jan. 4, 1932 (tree 35 ft. high, flowers yellow with a deep red center).— Pantropic near the seashore.

Abelmoschus moschatus Medicus, Malv. 46 (1787). — Moench, Meth. 617 (1794). — Merrill, Enum. Philipp. Flow. Pl. III. 40 (1923).

Hibiscus Abelmoschus Linnaeus, Sp. Pl. 696 (1753). — Masters in Hooker f., Fl. Brit. Ind. I. 342 (1874).

Atjeh, road from Takengön to Bireuen, at kilometer 96, alt. 3800 ft., *no. 814*, Jan. 11, 1932 (flowers bright yellow, with deep maroon centers). — Pantropic; probably a native of the Old World.

Thespesia Lampas (Cavanilles) Dalzell & Gibson, Bombay Fl. 19 (1860). — Masters in Hooker f., Fl. Brit. Ind. I. 345 (1874).

Hibiscus Lampas Cavanilles, Diss. III. 154, t. 56, fig. 2 (1787).
Azanza Lampas Alefeld in Bot. Zeit. XIX. 298 (1861).

Atjeh, near Bireuen, on slopes at sea level, *no. 659*, Jan. 4, 1932 (shrub 4 ft. high, flowers yellow with maroon centers). — Tropical Africa and Asia, extending to southwestern China, southward through Malaysia, and the Philippines.

It may prove desirable to adopt Alefeld's generic name *Azanza* for this species which has dehiscent fruits, in this character radically differing from *Thespesia populnea* Solander, the type of *Thespesia*, and a species that has indehiscent fruits.

STERCULIACEAE

Melochia umbellata (Houttuyn) Stapf in Kew Bull. Misc. Inform. 1913, p. 317. — Merrill in Philipp. Jour. Sci. IX. Bot. 315 (1914); Enum. Philipp. Flow. Pl. III. 47 (1923). — Craib, Fl. Siam. Enum. I. 179 (1925).

Visenia umbellata Houttuyn, Handl. VIII. 309 (1777).
Melochia arborea Blanco, Fl. Filip. 524 (1837).
Melochia velutina Wallich apud Beddome, For. Man. Bot. p. XXXV, t. 5, fig. 3 (1871). — Ridley, Fl. Malay Penin. I. 285 (1922).

Atjeh, near Lake Tawar, and East Coast, Kaban Djahe to Kota Tjane, in secondary forests in ravines, and on slopes, *nos. 789, 1100*, Jan. 9 and Feb. 17, 1932. — India to Mauritius, eastward to Indo-China, and southward to Java, the Philippines, and New Guinea.

Leptonychia heteroclita (Roxburgh) Kurz in Jour. As. Soc. Bengal, XXXIX. pt. 2, p. 67 (1870). — Craib, Fl. Siam. Enum. I. 180 (1825).

Grewia heteroclita Roxburgh, Hort. Beng. 93 (1814), nomen nudum. — G. Don, Gen. Syst. I. 547 (1831).
Leptonychia glabra Turczaninow in Bull. Soc. Nat. Mosc. XXXI. pt. 1, p. 223 (1851). — King in Jour. As. Soc. Bengal, LX. pt. 2, p. 94 (Mater. Fl. Malay. Penin. I. 203) (1891).
Turraea trichostylis Miquel, Fl. Ind. Bat. Suppl. 502 (1861).
Binnendykia trichostylis Kurz in Nat. Tijdschr. Nederl. Ind. XXVIII. 164 (1865).

East Coast, Medan-Bĕrastagi road, kilometers 59–61, in primary forests, at 4100 ft. alt., *no. 1158*, Feb. 21, 1932 (tree 30 ft. high). — India to Burma, Indo-China, Java, the Philippines, and the Moluccas.

Roxburgh's type was from the Moluccas. I doubt very much if the Philippine *L. banahaensis* (Elmer) Merrill can be distinguished from it. Burret, Notizbl. Bot. Gart. Berlin, IX. 729 (1926), refers Penang material to *Leptonychia caudata* (Wallich) Burret (*Grewia caudata* Wallich), retaining *L. heteroclita* Kurz as a distinct species. The Sumatran material safely represents the same species as the Malay Peninsula form currently referred to *Leptonychia glabra* Turczaninow.

Abroma augusta (Linnaeus) Linnaeus f., Suppl. 341 (1781) (*Ambroma*). — King in Jour. As. Soc. Bengal, LX. pt. 2, p. 89 (Mater. Fl. Malay. Penin. I. 198) (1891).

Theobroma augusta Linnaeus, Syst. ed. 12, III. 233 (1768).

Abroma fastuosa Jacquin, Hort. Vindob. III. 3, t. 1 (1776).

East Coast, Dolok Merangir Estate, at 800 ft. alt., *no. 607*, Dec. 29, 1931 (tree 15 ft. high). — Most tropical countries, apparently a native of tropical Asia.

Sterculia sumatrensis Ridley in Jour. Malay. Branch Roy. As. Soc. I. 54 (1923).

Asahan, road northwest of Lake Toba, in heavy jungle, *no. 1233* (a single specimen, herb. Arnold Arboretum). — Known only from Sumatra, the type from Bĕrastagi.

Firmiana fulgens (Wallich) K. Schumann in Engler & Prantl, Nat. Pflanzenfam. III.-6, p. 97 (1893).

Sterculia fulgens Wallich, Num. List, no. 1135 (1829), nomen nudum. Masters in Hooker f., Fl. Brit. Ind. I. 360 (1874). — King in Jour. As. Soc. Bengal, LX. pt. 2, p. 72 (Mater. Fl. Malay. Penin. I. 181) (1891).

Erythropsis fulgens Ridley, Fl. Malay Penin. I. 277 (1922).

Field data lacking, *no. 1216*. — Burma, Malay Peninsula, Java.

This Sumatran form has its calyces 3.5 cm. long, much longer than in the allied *Firmiana colorata* (Roxburgh) R. Brown.

DILLENIACEAE

Tetracera indica (Christman & Panzer) Merrill, Interpret. Herb. Amb. 367 (1917), in nota.

Assa indica Christman & Panzer, Pflanzensyst. IV. 40, t. 26, fig. 1 (1779).

Tetracera Assa De Candolle, Syst. I. 402 (1918). — Hooker f., Fl. Brit. Ind. I. 31 (1872). — King in Jour. As. Soc. Bengal, LVIII. pt. 2, p. 362 (Mater. Fl. Malay. Penin. I. 6) (1889). — Gagnepain in Lecomte, Fl. Gén. Indo-Chine, I. 14 (1907). — Ridley, Fl. Malay Penin. I. 5 (1922).

Atjeh, near Peureulah, at sea level in marshy places, *no. 654*, Jan. 3, 1932. — India to Burma, Siam, and Indo-China, southward to Java.

Saurauia Forbesii Baker f. in Jour. Bot. LVI. 164 (1918).

Atjeh, Takengön, near Lake Tawar, *no. 688*, Jan. 6, 1932 (shrub or small tree, 8—30 ft. high, flowers white). — Known only from Sumatra.

This is apparently very closely allied to the Javan *S. bracteosa* De Candolle.

Saurauia nudiflora De Candolle in Mém. Soc. Phys. Hist. Nat. Genève, I. 422, t. 5 (1822). — Koorders & Valeton in Meded. Lands Plant. XVI. 270 (Bijdr. Boomsoort. Java, III. 270) (1896). — Koorders, Atlas Baumart. Java, III. t. 576 (1915). — Baker f. in Jour. Bot. LVI. 165 (1918) (var. *sumatrana* Baker f.). — Ridley, Fl. Malay Penin. I. 207 (1922).

Saurauia Noronhiana Blume, Bijdr. 126 (1825).

Atjeh, Takengön, in primary forests at 3600 ft. alt., *no. 752*, Jan. 8, 1932 (tree 40 ft. high, flowers pink). — Siam (a variety), the Malay Peninsula, Java, and Borneo.

Saurauia Reinwardtiana Blume, Bijdr. 128 (1825). — Koorders & Valeton in Meded. Lands Plant. XVI. 259 (Bijdr. Boomsoort. Java, III. 259) (1896). — Koorders, Atlas Baumart. Java, III. t. 572 (1915).

East Coast, trail, Goodyear bungalow to Sibajak Volcano, in forests at 5000 ft. alt., *no. 1009*, Feb. 14, 1932 (tree 20 ft. high, flowers white). — Java.

Saurauia roseata Ridley in Jour. Malay. Branch Roy. As. Soc. I. 54 (1923).

Atjeh, Takengön, near Lake Tawar, *no. 684*, Jan. 6, 1932 (tree 60 ft. high, flowers pink). The species is also represented by *Yates 1408*, from Bĕrastagi, *Bartlett 7444*, *7910*, *8656*, from Habinsaran, and the Karo Plateau; and *Hamel & Rahmat Si Toroes 726* from Karoland. Ridley's type was from Bĕrastagi. Known only from Sumatra.

Saurauia vulcani Korthals, Verh. Nat. Gesch. Nederl. Overz. Bezit. Bot. 128 (1839–42). — Baker f. in Jour. Bot. LVI. 162 (1918).

East Coast, road from Siantar to Bĕrastagi, kilometers 188–189, in second growth forests at 3500 ft. alt., *no. 958*, Feb. 12, 1932 (tree 20 ft. high, flowers pink).— Known only from Sumatra.

Saurauia tristyla De Candolle var. **sumatrana** Baker f. in Jour. Bot. LVI. 165 (1918)?

Atjeh, Bireuen to Takengön, kilometers 17–18, in thickets, on slopes, *no. 674*, Jan. 5, 1932 (shrub, flowers pink).

This may or may not be the form that Baker f. briefly characterized. The slender 1.5–2.5 cm. long peduncles are fascicled,

and each bears 3, slenderly pedicelled flowers, the inflorescences being 3—4 cm. long. De Candolle's species, as currently interpreted, is a collective one, extending from Burma to southern China and Formosa, south to the Malay Peninsula, Celebes and the Moluccas; it is suspected that on the basis of a critical revision several species will eventually be segregated. The type was from Amboina.

THEACEAE

Gordonia excelsa Blume, Bijdr. 130 (1825). — Koorders & Valeton in Meded. Lands Plant. XVI. 289 (Bijdr. Boomsoort. Java, III. 289) (1896). — Koorders, Atlas Baumart. Java, III. t. 580, fig. D—G (1915). — Burkill in Jour. Straits Branch Roy. As. Soc. LXXVI. 155 (1917).

Schima excelsa Blume, Cat. Gew. Buitenzorg, 80 (1823).

Antheëischima excelsa Korthals, Verh. Nat. Gesch. Nederl. Overz. Bezit. Bot. 138, t. 27 (1839–42).

Atjeh, Takengön, in primary forests, alt. 3600 ft., *no. 697*, Jan. 7, 1932 (tree 50 ft. high). — Java.

Adinandra dumosa Jack in Malay. Miscel. II. pt. 7, p. 50 (1822); in Hooker, Comp. Bot. Mag. I. 153 (1835). — Koorders & Valeton in Meded. Lands Plant. XVI. 223 (Bijdr. Boomsoort. Java, III. 223) (1896). — King in Jour. As. Soc. Bengal, LIX. pt. 2, p. 188 (Mater. Fl. Malay. Penin. I. 128) (1890). — Ridley, Fl. Malay Penin. I. 194 (1922).

Tapianoeli, near Peso Peso, in primary forests, alt. 4100—4500 ft., *no. 1162*, Feb. 22, 1932 (tree 25 ft. high). — Malay Peninsula, Java, and Borneo.

Pyrenaria serrata Blume, Bijdr. 1120 (1826). — Korthals, Verh. Nat. Gesch. Nederl. Overz. Bezit. Bot. 146, t. 30 (1839–42). — Koorders & Valeton in Meded. Lands Plant. XVI. 297 (Bijdr. Boomsoort. Java, III. 297) (1896). — Koorders, Atlas Baumart. Java, III. t. 582 (1915).

Atjeh, Takengön, in primary forests, alt. 3600 ft., *nos. 747, 931*, Jan. 8, 15, 1932 (tree 30—40 ft. high). — Java.

Eurya euprista Korthals, Verh. Nat. Gesch. Nederl. Overz. Bezit. Bot. 113 (1839–42).

Eurya acuminata De Candolle, var. *euprista* Dyer in Hooker f., Fl. Brit. Ind. I. 285 (1874).

East Coast, road from Kaban Djahe to Kota Tjane, kilometers 139—141, in forested ravines, alt. about 4000 ft., *no. 1094*,

Feb. 17, 1932. — Malay Peninsula, Java, Borneo, and probably other parts of Malaysia.

Korthals' type was from Sumatra. The species has generally been referred to the widely distributed collective species *Eurya acuminata* De Candolle, either as a synonym, or as a variety. The group is badly in need of a critical revision.

Eurya reticulata Korthals, Verh. Nat. Gesch. Nederl. Overz. Bezit. Bot. 118, t. 17, fig. 3 (1839–42).

East Coast, Sinaboeng Volcano, in forests, alt. about 4200 ft., *no. 1180*, Feb. 23, 1932 (shrub 10 ft. high).

Korthals' type was from Mount Merapi, Sumatra. The species was reduced by Blume, Mus. Bot. Lugd.-Bat. II. 107 (1852), to *Eurya obovata* Blume as var. *elliptica* Blume, l. c., but Miquel, Fl. Ind. Bat. I. pt. 2, 470 (1858–59), retains Korthals' species as a distinct one. Definitely known only from Sumatra.

GUTTIFERAE

Hypericum Leschenaultii Choisy in De Candolle, Prodr. I. 545 (1824). — Guillemin in Delessert, Ic. Sel. Pl. III. 17, t. 27 (1837). — Stapf in Bot. Mag. CLII. t. 9160 (1928).

Hypericum Hookerianum Wight & Arnott var. *Leschenaultii* Dyer in Hooker f., Fl. Brit. Ind. I. 254 (1874). — Ridley in Jour. Fed. Malay States Mus. VIII. 17, pt. 4 (1917) as "var. *Leschenaultianum*[1] W. & A. Prodr. 99."

East Coast, Redelong Volcano, alt. 6000 ft., *no. 921*, Jan. 14, 1932 (shrub 5 ft. high, flowers golden yellow). Also represented by *Yates 2457* from Mount Singgalan. — Java, Lombok (*Fenwall 45*).

Stapf has recently given a critical consideration of this species, limiting it to Java and Sumatra. He cites twelve synonyms which it seems unnecessary to repeat here.

Cratoxylon sumatranum (Jack) Blume, Mus. Bot. Lugd.-Bat. II. 16 (1852).

Elodea sumatrana Jack in Malay. Miscel. II. pt. 7, p. 22 (1822). — Hooker, Jour. Bot. I. 372 (1834).

Atjeh, Bireuen to Takengön, *no. 672*, Jan. 5, 1932 (tree 20 ft. high).

As currently interpreted recorded only from Sumatra, but probably widely distributed in Malaysia, including perhaps the

[1]This name does not occur in Wight & Arnott's work either as a species or as a variety but only the binomial *H. Hookerianum* Wight & Arnott which is there first published.

following described forms: *Hornchuchia hypericina* Blume (1823) = *Cratoxylon hypericinum* Merrill (1921), *C. Hornschuchii* Blume (1825), *C. clandestinum* Blume (1852), *C. celebicum* Blume (1852), *C. Blancoi* Blume (1852), and *C. floribundum* (Turczaninow) F.-Villar (1880) (the latter reduced by Gagnepain, Not. Syst. I. 20 (1920), to *C. clandestinum* Blume), and *C. arboreum* Elmer (1919).

Calophyllum inophyllum Linnaeus, Sp. Pl. 513 (1753).

Atjeh, Bireuen, at sea level near dwellings, *no. 655*, Jan. 4, 1932. — Along the seashore from tropical East Africa, through tropical Asia to southeastern China, Malaysia, and Polynesia.

Kayea Catharinae, sp. nov. (§ *Eukayea*.) Plate VI.

Arbor glabra, circiter 12 m. alta, ramis teretibus, cinereis vel brunneis, ramulis ultimis 1.5—2 mm. crassis, minute verruculosis, sursum leviter compressis; foliis anguste oblongis, coriaceis, 10—13 cm. longis, 2.5—4 cm. latis, acuminatis, basi obtusis vel anguste rotundatis, supra pallide olivaceis, subtus pallidioribus vel brunneis, atro-puncticulatis; nervis primariis utrinque 16—20, subtus elevatis, distinctis, juxta marginem curvato-anastomosantibus; nervis secundariis brevioribus alternantibus, plerumque evanescentibus, reticulis gracilibus, obscuris; petiolo crasso, 4—6 mm. longo, horizontaliter plicato-verruculoso, axillis folia bina valde reducta 4—6 mm. longa lanceolata acuminata stipuliformia gerentibus; fructibus axillaribus terminalibusque, lateralibus solitariis, terminalibus plerumque trinis, omnibus brevissime crasseque pedicellatis, pedicellis circiter 3 mm. longis; sepalis orbiculari-ovatis, crassis, glabris, rotundatis, concavis, accrescentibus, circiter 1.5 cm. longis, 1—1.5 cm. latis; fructibus junioribus ovoideis, circiter 2 cm. diametro, furfuraceis, rostratis, 1-locellatis, ovulis 8.

East Coast, trail from Goodyear bungalow to the foot of Sibajak Volcano, in forests, alt. 1500—1800 m., *Walter N.* and *Catherine M. Bangham no. 997*, Feb. 14, 1932 (tree about 12 m. high).

This is apparently the first representative of the genus for Sumatra. The group is well developed in the Malay Peninsula (11 species), in Borneo (7 species), and in the Philippines (7 species), with one in India, one in Australia, and several in Burma, Siam, and Indo-China, but is not known to occur in Java. The present species belongs in a group of closely interallied and not

very well defined ones including *Kayea Kunstleri* King and allied forms, and among these is apparently closest to *Kayea rivulorum* Ridley of the Malay Peninsula; it has the same type of axillary, greatly reduced, stipule-like leaves as the latter.

Garcinia lateriflora Blume, Bijdr. 214 (1825). — Koorders & Valeton in Meded. Lands Plant. LXI. 372 (Bijdr. Boomsoort. Java, IX. 372) (1903).

Tapianoeli, near Peso Peso, in primary forests, alt. 3300–4500 ft., *no. 1115*, Feb. 19, 1932; Atjeh, near Balique, *no. 824*, Jan. 11, 1932 (tree 20–40 ft. high, both specimens in fruit). — Java, Philippines.

VIOLACEAE

Viola arcuata Blume, Bijdr. 58 (1825). — Koorders, Exkursionsfl. Java, II. 629 (1912).

East Coast, at the summit of Sinaboeng Volcano, alt. 8400 ft., *no. 1176*, Feb. 22, 1932. — India to southeastern China, southward to Java.

Viola sumatrana Miquel, Fl. Ind. Bat. Suppl. 389 (1860–61). — W. Becker in Beih. Bot. Centralbl. XL. pt. 2, p. 108 (1923).

Viola Hossei W. Becker, op. cit. XXXIV. pt. 2, p. 257 (1916).

East Coast, trail from Medan road to the summit of Sibajak Volcano, alt. 5200 ft., *no. 1019*, Feb. 15, 1932. — India to Burma, Siam, Indo-China, southwestern China, the Malay Peninsula, and Borneo.

FLACOURTIACEAE

Taraktogenos heterophylla (Blume) Van Slooten in Bull. Jard. Bot. Buitenzorg, sér. 3, IV. 280 (1922).

Hydnocarpus heterophylla Blume, Rumphia, IV. 22, t. 178B, fig. 1 (1848). — Koorders, Atlas Baumart. Java, II. t. 349 (1914).

Taraktogenos Blumei Hasskarl in Nat. Tijdschr. Nederl. Ind. X. 127 (Retzia I.) (1856). — Koorders & Valeton in Meded. Lands Plant. XXXIII. 4 (Bijdr. Boomsoort. Java, V. 4) (1900).

Atjeh, Takengön, in primary forests, alt. 3600 ft., *no. 844*, Jan. 12, 1932 (tree 85 ft. high). — Java, Borneo, and the Philippines.

The specimens have neither flowers nor fruits but apparently represent this species.

Xylosma sumatrana Van Slooten in Bull. Jard. Bot. Buitenzorg, sér. 3, VII. 379, fig. 12 (1925).

Atjeh, Lake Tawar, in pastures at 3700 ft. alt., *no. 763*, Jan. 9,

1932 (tree 25 ft. high, with galled inflorescences, local name *taeni*). — Known only from Sumatra, type from Habinsaran.

Casearia coriacea Ventenat, Choix Pl. Jard. Cels. 45, t. 45 (1803). — Koorders & Valeton in Meded. Lands Plant. XI. 179 (Bijdr. Boomsoort. Java, I. 179) (1894). — Koorders, Atlas Baumart. Java, II. pl. 345 (1914). — Van Slooten in Bull. Jard. Bot. Buitenzorg, sér. 3, VII. 402 (1925).

East Coast, Takengön, in primary forests, at 3600 ft. alt., *no. 937*, Jan. 15, 1932 (tree 35 ft. high, the fruits orange). — Malay Peninsula, Java.

PASSIFLORACEAE

Adenia Catharinae, sp. nov. Plate VII.

Species, *A. nicobaricae* (Kurz) King affinis, differt foliis majoribus, nervis magis numerosis, pedunculis ♂ usque ad 5.5 cm. longis, petalis acuminatis. — Herba scandens, glabra, caulibus gracilibus, 1.5–2 mm. crassis; foliis membranaceis, oblongis, graciliter acute acuminatis, basi rotundatis, anguste peltatis, subtus biglandulosis, 10–15 cm. longis, 3–4.5 cm. latis, in sicco viridibus, nitidis, subtus paullo pallidioribus, nervis primariis utrinque plerumque 6, distantibus, arcuato-anastomosantibus, subtus distinctis, reticulis laxis; petiolo 1.2–1.8 cm. longo; cymis ♂ paucifloris, gracilibus, longe (usque ad 5.5 cm.) graciliterque pedunculatis, cirrhiferis, bracteolis vix 1 mm. longis; floribus ♂ flavido-viridibus, circiter 1.5 cm. longis; sepalis lanceolatis, acuminatis, sub anthesi erectis, 1.6 cm. longis, 2.5 mm. latis; petalis lanceolatis, acuminatis, 1 cm. longis et 2 mm. latis, reticulatis; staminibus 5, quam petalis multo brevioribus, filamentis 2 mm., antheris erectis, oblongis, 3 mm. longis; floribus ♀ fructibusque ignotis.

Atjeh, Takengön, scandent in primary forests, at about 1100 m. alt., *Walter N.* and *Catherine M. Bangham no. 729*, Jan. 7, 1932 (flowers greenish-yellow).

This is very similar to *Passiflora nicobarica* (Kurz) King of the Andaman Islands and the Malay Peninsula, differing in the details mentioned above. The original description of *Modecca nicobarica* Kurz, Jour. Bot. XIII. 326 (1875), is very short, but it has been amplified by King, Jour. As. Soc. Bengal, LXXI. pt. 2, 52 (Mater. Fl. Malay. Penin. III. 580) (1902), and by Ridley, Fl. Malay Penin. I. 840 (1922). Kurz's species has been credited to

Sumatra by Hallier f., Meded. Rijks Herb. Leiden, XLII. 9 (1922), on the basis of a sterile specimen.

BEGONIACEAE

Begonia Beccariana Ridley in Jour. Malay. Branch Roy. As. Soc. I. 62 (1923).

East Coast, trail from Medan road to Sibajak Volcano, common in forests at 5200 ft. alt., *no. 1017*, Feb. 15, 1932. The same species is represented by *Yates 1460* from Bĕrastagi, and *Bartlett nos. 8479, 8515, 6621*, from Deleng Baroes and Deleng Singkoet, Karoland. — Known only from Sumatra.

Begonia sp.

East Coast, Sibajak Volcano, and Baboeli to Paekas, *nos. 1018, 776*, Jan. 9 and Feb. 15, 1932.

Two additional species are represented by single sheets in the herbarium of the Arnold Arboretum, Lake Tawar, *no. 776 bis*, with one staminate flower and two old pistillate ones; and *no. 775* from the Baboeli-Paekas trail, a fruiting specimen.

THYMELAEACEAE

Eriosolena composita (Linnaeus f.), comb. nov.

Scopolia composita Linnaeus f., Suppl. 409 (1781).

Daphne pendula Smith, Ic. Ined. II. 34, t. 34 (1790). — Hooker f., Fl. Brit. Ind. v. 194 (1886). — Ridley, Fl. Malay Penin. III. 144 (1924).

Eriosolena montana Blume, Bijdr. 651 (1825). — Hallier f. in Meded. Rijks Herb. Leiden, XLIV. 30 (1922).

Daphne composita Gilg in Engler & Prantl, Nat. Pflanzenfam. III-6A, 238 (1894). — Valeton & J. J. Smith in Koorders & Valeton in Meded. Dept. Landbouw, XVIII. 49 (Bijdr. Boomsoort. Java, XIII. 49) (1914).

Eriosolena pendula Lecomte[1] in Not. Syst. III. 101 (1915); Fl. Gén. Indo-Chine, v. 171 (1915).

Atjeh, trail from Kabajakan to Tretet, alt. 3500–5000 ft., *no. 894*, Jan. 31, 1932 (shrub 10 ft. high, flowers white, fruits red); East Coast, Medan-Bĕrastagi road near the entrance to the sulphur spring, in secondary growth forests at 4200 ft. alt., *no. 974*, Feb. 13, 1932. — Burma and Indo-China to the Malay Peninsula, and Java.

[1]Lecomte most peculiarly published this new binomial thus "*E. pendula* (Sm.) Bl." and as "*E. pendula* Bl. Sm."; neither Smith nor Blume published the binomial, the former using *Daphne pendula*, the latter *Eriosolena montana*.

LYTHRACEAE

Lawsonia inermis Linnaeus, Sp. Pl. 349 (1753).

East Coast, Dolok Merangir, near habitations, *no. 614*, Dec. 29, 1931 (shrub 5–6 ft. high, locally known as *partja*). — Introduced here, as it is in other parts of Malaysia. Henna.

COMBRETACEAE

Lumnitzera littorea (Jack) Voigt, Hort. Suburb. Calcut. 39 (1845). — Kurz, For. Fl. Brit. Burma, I. 469 (1877). — Merrill, Enum. Philipp. Flow. Pl. III. 153 (1923).

Pyrranthus littoreus Jack in Malay. Miscel. II. pt. 7, p. 57 (1822).

Lumnitzera coccinea Wight & Arnott, Prodr. 316 (1834). — C. B. Clarke in Hooker f., Fl. Brit. Ind. II. 452 (1878).

Atjeh, Langsa, in brackish marshy places, along the seashore and tidal streams, *no. 642*, Jan. 3, 1932 (tree 30 ft. high with scarlet flowers). — Tropical Asia through Malaysia to tropical Australia, and Polynesia.

MYRTACEAE

Rhodamnia trinervia (Smith) Blume, Mus. Bot. Lugd.-Bat. I. 79 (1849). — Koorders, Atlas Baumart. Java, III. t. 443 (1914). — Craib, Fl. Siam. Enum. I. 630 (1931).

Myrtus trinervia Smith in Trans. Linn. Soc. London, III. 280 (1797).

Myrtus trinervia Loureiro, Fl. Cochinch. 312 (1790).

Rhodamnia cinerea Jack in Malay. Miscel. II. pt. 7, p. 48 (1822). — Koorders & Valeton in Meded. Lands Plant. XL. 30 (Bijdr. Boomsoort. Java, VI. 30) (1900). — Ridley, Fl. Malay Penin. I. 717 (1922).

SUMATRA: East Coast, Medan road to Sibajak Volcano, *no. 1035*, Feb. 15, 1932 (tree 16–18 ft. high, fruits reddish). — Burma and Indo-China, to Java, Borneo, and tropical Australia.

Blume's binomial is based on *Myrtus trinervia* Smith (1797), not on the earlier *M. trinervia* Loureiro (1790), which, however, represents the same species.

Eugenia densiflora Blume apud De Candolle, Prodr. III. 287 (1828) in syn. — Duthie in Hooker f., Fl. Brit. Ind. II. 473 (1878). — Koorders & Valeton in Meded. Lands Plant. XL. 57 (Bijdr. Boomsoort. Java, VI. 57) (1900). — Koorders, Atlas Baumart. Java, III. t. 447 (1914).

Myrtus densiflora Blume, Bijdr. 1087 (1826).

Jambosa densiflora De Candolle, Prodr. III. 287 (1828).

Atjeh, Takengön, in primary forests at 3600 ft. alt., *no. 993*, Jan. 15, 1932 (tree 100 ft. high, with very young flower buds); East Coast, Siantar to Bĕrastagi, in secondary forests at 3500 ft. alt., *no. 962*, Feb. 12, 1932 (tree 50–60 ft. high, local name *jamboe altang*). — Siam, Malay Peninsula, Java, and Borneo.

Eugenia oblongifolia Duthie in Hooker f., Fl. Brit. Ind. II. 491 (1878). — King in Jour. As. Soc. Bengal, LXX. pt. 2, p. 84 (Mater. Fl. Malay. Penin. III. 514) (1901).

Atjeh, Takengön, in primary forests at 3600 ft. alt., *no. 934*, Jan. 15, 1932 (tree 100 ft. high, with neither fruits nor flowers). — Malay Peninsula.

Eugenia sulphurata Ridley in Jour. Malay. Branch Roy. As. Soc. I. 59 (1923).

Atjeh, Takengön, in primary forests at 3600 ft. alt., *nos. 741, 854*, Jan. 8 and 12, 1932 (tree 30–50 ft. high); East Coast, trail from Goodyear bungalow to Sibajak Volcano, *no. 944*, Feb. 14, 1932 (shrub 12 ft. high, "found only adjacent to the sulphur springs"); Ridley's type was from "the sulphurous stream at the foot of Sibajak volcano". — Known only from Sumatra.

Eugenia sp.

East Coast, Medan-Bĕrastagi road, near the entrance to the sulphur spring, *no. 973*, Feb. 13, 1932 (tree 40 ft. high, a fruiting specimen, probably representing the same species as *Krukoff 4406*).

Eugenia sp.

Atjeh, trail from Kabajakan to Tretet, *no. 873*, Jan. 13, 1932 (old material from a fallen tree, local name *tinkeri*).

MELASTOMACEAE

Melastoma malabathricum Linnaeus, Sp. Pl. 390 (1753). — King in Jour. As. Soc. Bengal, LXIX. pt. 2, p. 6 (Mater. Fl. Malay. Penin. III. 414) (1900). — Ridley, Fl. Malay Penin. I. 763 (1922).

Atjeh, Takengön to Bireuen, road to Balique, at the edges of the forest, alt. 330 ft., *no. 827*, Jan. 11, 1932 (very common shrub, 5–6 ft. high). — India to Indo-China, southward through Malaysia to tropical Australia.

Melastoma malabathricum Linnaeus as currently interpreted is a collective species. In this Sumatran form the adpressed indumentum on both surfaces of the leaves is rather soft, but similar types are found in Asia, Malaysia, and in Australia.

Melastoma vulcanicum Ridley in Jour. Malay. Branch Roy. As. Soc. I. 60 (1923).

East Coast, trail from Medan road to Sibajak Volcano, alt. 4200–6500 ft., *no. 1031*, Feb. 5, 1932 (shrub 15 ft. high). Also represented by *Yates 1490, 1976* from the same locality. Ridley's type was from near the summit of Sibajak Volcano. — Known only from Sumatra.

Anplectrum cyanocarpum (Blume) Triana in Trans. Linn. Soc. XXVIII. 84, t. 7, fig. 90 (1871). — Cogniaux in C. de Candolle, Monog. Phan. VII. 569 (1891).

Melastoma cyanocarpum Blume, Bijdr. 1073 (1826).

Dissochaeta cyanocarpa Blume in Flora, XIV. 501 (1831). — Korthals, Verh. Nat. Gesch. Nederl. Overz. Bezit. Bot. 238, t. 56 (1839–42).

Atjeh, Kabajakan to Tretet, edge of forests, alt. 3500–5000 ft., *no. 901*, Jan. 13, 1932 (fruits blue-purple); East Coast, Medan-Bĕrastagi road, kilometers 59–61, in primary and secondary forests at 4100 ft. alt., *no. 1140*, Feb. 21, 1932. — Java, Borneo.

Dissochaeta sumatrana Boerlage & Koorders in Koorders-Schumacher, Syst. Verzeich. Herb. Koord. II. 46 (1911).

East Coast, road from Siantar to Bĕrastagi, kilometers 188–189, scandent in thickets at 3500 ft. alt., *no. 951*, Feb. 12, 1933. The same species is represented by *Bartlett 7315, 6900, 6995* from Aek Kanopan, Loendoet Concession, Koaloe, and *Rahmat Si Toroes 1864* from Rantan, Parapat, Bila. — Known only from Sumatra.

Pogonanthera pulverulenta Blume in Flora, XIV. 521 (1831). — Cogniaux in C. de Candolle, Monog. Phan. VII. 610 (1891). — King in Jour. As. Soc. Bengal, LXIX. pt. 2, p. 65 (Mater. Fl. Malay. Penin. III. 473) (1891).

Pogonanthera reflexa Blume, loc. cit.

East Coast, road from Siantar to Bĕrastagi, kilometers 188–189, in second growth forests at 3500 ft. alt., *no. 963*, Feb. 12, 1932 (shrub 4–5 ft. high). — Malay Peninsula, Java, Borneo, and the Philippines.

Oxyspora racemosa Ridley in Jour. Malay. Branch Roy. As. Soc. I. 60 (1923).

East Coast, Medan-Bĕrastagi road, near the entrance to the sulphur spring, in second growth forests, alt. 4200 ft., *no. 980*, Feb. 13, 1932 (tree 18 ft. high). The same species is represented by *Yates 1403*, *Bartlett 8351* from Toba; *7974* from Dolok

Soeroengan, Habinsaran; and *Hamel & Rahmat Si Toroes* 716 from Deleng Piso-piso, Karoland. Ridley's type was from Sibajak Volcano. — Known only from Sumatra.

Medinilla javanensis Blume in Flora, XIV. 516 (1931). — Koorders & Valeton in Meded. Lands Plant. XXXIII. 189 (Bijdr. Boomsoort. Java, v. 189) (1900).

Melastoma javanense Blume, Bijdr. 1078 (1826).

East Coast, road from Siantar to Bĕrastagi, kilometers 188–189, in secondary forests, alt. 3500 ft., *no. 957*, Feb. 12, 1932 (shrub 5 ft. high, flowers pink). — Java.

Medinilla patens Ridley in Jour. Fed. Malay States Mus. VIII. pt. 4, p. 36 (1917).

East Coast, trail Goodyear bungalow to Sibajak Volcano, alt. 5000–6000 ft., *no. 1001*, Feb. 14, 1932 (epiphytic shrub, flowers pink). — Ridley's type was from Korinchi Peak. Known only from Sumatra.

Medinilla speciosa Blume in Flora, XIV. 515 (1831). — King in Jour. As. Soc. Bengal, LXIX. pt. 2, p. 60 (Mater. Fl. Malay. Penin. III. 468) (1900). — Ridley, Fl. Malay Penin. I. 801 (1922).

East Coast, route from Baboeli to Paekas, in forested ravines at 4100 ft. alt., *no. 779*, Jan. 8, 1932. — Malay Peninsula, Java, Borneo, and Celebes.

Medinilla vulcanica Ridley in Jour. Malay. Branch Roy. As. Soc. I. 61 (1923).

East Coast, trail from Medan road to summit of Sibajak Volcano, alt. 4200–6500 ft., *no. 1032*, Feb. 15, 1932 (epiphytic shrub). The same species is represented by *Yates 1423, 1977*, Sibajak Volcano, the type locality; *Yates 2279*, Kwala Masihi; *Bartlett 8000*, Dolok Soeroengan, Habinsaran; and *Bartlett 6568*, Deleng Si Bajak, Karoland. Known only from Sumatra.

To be compared with *Medinilla Clarkei* King of the Malay Peninsula.

Medinilla sp.

Atjeh, Takengön, in forests at 3600 ft. alt., *no. 738*, Jan. 7, 1932 (fruiting specimen).

Memecylon caeruleum Jack in Malay. Misc. I. pt. 5, p. 26 (1820). — King in Jour. As. Soc. Bengal, LXIX. pt. 2, p. 80 (Mater. Fl. Malay. Penin. III. 488) (1900). — Ridley, Fl. Malay Penin. I. 816 (1922).

Atjeh, near Peureulah, at sea level, *no. 626*, Jan. 3, 1932 (small tree 15 ft. high, fruits blue). — Malay Peninsula; erroneously credited to the Philippines.

ARALIACEAE

Trevesia arborea, sp. nov.

Arbor 12—15 m. alta, partibus junioribus breviter castaneo-pubescentibus; foliis palmatim 9-lobatis, coriaceis, 25—40 cm. longis, supra glabris, subtus consperse subfurfuraceo-pubescentibus, pilis brevibus, ferrugineo-brunneis vel castaneis, lobis oblongo-ellipticis vel late oblongo-oblanceolatis, acuminatis, margine sursum distanter dentato-serrato, deorsum integro, lobis exterioribus brevioribus, 5 x 3 cm. — 6 x 10 cm., interioribus majoribus, usque ad 35 x 13 cm., sinibus angustissimis; petiolo 17—50 cm. longo, inermi, brevissime subferrugineo-pubescenti glabrescenti; inflorescentiis saltem 35 cm. longis, rhachibus crassis, circiter 1 cm. diametro, rugosis, breviter castaneo-pubescentibus, indumento subdeciduo, deorsum spinis paucis curvatis 5—10 mm. longis armatis, sursum inermibus, ramis primariis paucis, patulis, crassis, inermibus, usque ad 15 cm. longis, bracteis oblongo-ovatis acuminatis nitidis subtentis; floribus in ramulis primariis umbellatim dispositis, umbellis 8—13-floris, pedicellis crassis, rugosis 1.5—2.5 cm. longis, 3 mm. crassis, breviter decidue castaneo-pubescentibus, vetustioribus glabris vel subglabris, bracteis oblongo-ovatis vel oblongo-lanceolatis, acuminatis, circiter 5 mm. longis; floribus ♂, calycibus late cupulatis, truncatis, circiter 1.2 cm. diametro, extus brevissime castaneo-pubescentibus, vetustioribus rugosis, subglabrescentibus, corolla calyptrata, decidua, petalis omnino connatis, extus dense brevissime castaneo-pubescentibus, calyptra 12 mm. diametro, circiter 5 mm. alta, obtusa vel subrotundata; staminibus circiter 13, filamentis crassis, 4 mm. longis, antheris oblongo-ovoideis, filamentis aequantibus; ovario 14-loculari.

Atjeh, Takengön, in primary forests at 1100 m. alt., *Walter N.* and *Catherine M. Bangham no. 725*, Jan. 7, 1932 (tree 12—15 m. high, a large conspicuous plant, the flowers cream color).

This species is characterized by its large size, a tree 12—15 m. high, with its leaves somewhat pubescent beneath, by its densely castaneous-pubescent flowers, the petals entirely united into a rounded coriaceous calyptra, and by its 14-celled ovaries. The

other described Malaysian species are shrubs or small trees and of these few, *Trevesia sundaica* Miquel based on Javan material has been recorded from Sumatra by Burck, *T. Beccarii* Boerlage was based on Sumatran material, while *T. cheirantha* (C. B. Clarke) O. Kuntze of the Malay Peninsula and Sumatra is probably to be reduced to *T. Burckii* Boerlage, which also occurs in Borneo.

Schefflera capitulifera, sp. nov. (§ *Cephaloschefflera*).

Plate VIII.

Arbor circiter 6 m. alta, ramulis incrassatis, rugosis, circiter 1 cm. diametro, glabris, cicatricibus magnis notatis; foliis palmatim 6-foliolatis, petiolo circiter 40 cm. longo, glabro, petiolulis 2—7 cm. longis; foliolis subcoriaceis, oblongis vel late oblongo-lanceolatis, 18—27 cm. longis, 6—9 cm. latis, supra olivaceis, opacis, subtus pallidioribus, utrinque glabris, graciliter subcaudato-acuminatis, basi late acutis ad rotundatis, aequilateralibus, margine deorsum integro, sursum distanter conspicue undulato-serrato, dentibus inter se 1—2 cm. distantibus, nervis primariis utrinque 9—12, subtus perspicuis, elevatis, arcuato-anastomosantibus, reticulis primariis laxis, elevatis; floribus in capitulis densis globosis circiter 1 cm. diametro dispositis, capitulis 17—25, racemose dispositis, racemis circiter 5, terminalibus, subfurfuraceis, 15—20 cm. longis, pedunculis (ramis primariis) furfuraceis, 5—7 mm. longis, bracteis ovatis vel oblongo-ovatis, acuminatis, furfuraceis, 3—4 mm. longis; fructibus sessilibus, confertis, 7-locellatis, 7-sulcatis, circiter 4 mm. longis, 2—3 mm. diametro, apice subrotundatis, radiatim sulcatis, stylis brevissimis, stigmatibus 7, radiatim dispositis; bracteolis circiter 4, basi fructibus subinvolucrantibus, oblongis, obtusis, 2—2.5 mm. longis, extus pubescentibus.

East Coast, Medan-Bĕrastagi road, near the entrance to the sulphur spring, in deep ravines in second growth forests at 1300 m. alt., *Walter N.* and *Catherine M. Bangham no. 985* (a single specimen in herb. Arnold Arboretum), Feb. 13, 1932 (tree about 6 m. high, fruits green).

This seems clearly to be a representative of the section *Cephaloschefflera* in spite of its rather small heads, and the small irregular bracteoles subtending the fruits; in these bracteole characters *Brassaia* is suggested but the specimen does not otherwise resemble the few known representatives of the latter genus. The

inflorescence has no common rachis, the five or six racemes of capitate flowers springing directly from the apices of the leafy branches.

Schefflera farinosa (Blume) Merrill, comb. nov.

Actinophyllum farinosum Blume, Cat. Gew. Buitenzorg, 43 (1823).

Sciodaphyllum tomentosum Blume, Bijdr. 877 (1826).

Heptapleurum tomentosum Hasskarl, Cat. Hort. Bogor. 165 (1844). — King in Jour. As. Soc. Bengal, XLVII. pt. 2, p. 50 (Mater. Fl. Malay. Penin. III. 394) (1898). — Koorders & Valeton in Meded. Lands Plant. XLII. 25 (Bijdr. Boomsoort. Java, VII. 25) (1900).

Paratropia tomentosa Miquel in Bonplandia, IV. 138 (1856); Fl. Ind. Bat. I. pt. 1, p. 753 (1856–57).

Schefflera tomentosa Harms in Engler & Prantl, Nat. Pflanzenfam. III.-8, p. 39 (1894). — Koorders, Atlas Baumart. Java, IV. t. 685). (1916).

East Coast, road from Kaban Djahe to Kota Tjane, kilometers 139–141, in forested ravines, alt. 4000–5500 ft., *no. 1087*, Feb. 17, 1932. — Malay Peninsula, Java.

Judging from rather numerous collections referred to *Schefflera tomentosa* Harms, this is more or less a "collective species". The form here recorded has sessile umbels, and closely approximates the Javan form as illustrated by Koorders. The oldest specific name is here adopted.

Schefflera phanerophlebia, sp. nov. (§ *Euschefflera*, III. *Heptapleurum*). Plate IX.

Frutex circiter 3 m. altus, glaber, ramis teretibus, ultimis circiter 7 mm. diametro; foliis palmatim 6-foliolatis, petiolo 10–15 cm. longo, petiolulis 2–3 cm. longis, stipulis coriaceis, oblongo-ovatis, acutis, caulibus amplectentibus, axillaribus, circiter 1.5 cm. supra petiolum productis; foliolis integerrimis, subcoriaceis, oblongo-ovatis vel oblongo-ellipticis, pallide olivaceo-viridibus, utrinque sublucidis, subtus paullo pallidioribus, 10–17 cm. longis, 4–6.5 cm. latis, graciliter subcaudato-acuminatis, basi acutis, nervis primariis utrinque circiter 8, subtus elevatis, valde perspicuis, leviter curvatis, arcuato-anastomosantibus, reticulis distinctis; inflorescentiis terminalibus, paniculatis, rhachibus brevibus, crassis, ramis primariis 12–15 cm. longis, patulis, glabris vel junioribus leviter substellato-pubescentibus, umbellis 20–25, racemose dispositis, ramis secundariis (pedunculis) 7–9 mm. longis, 6–9-floris, pedicellis 2–3 mm. longis; fructibus ovoideis, 3–3.5 mm. longis, 5-locellatis, longitudinaliter 5-sulcatis, stylis haud productis, stigmatibus 5, radiatim dispositis.

East Coast to Tapianoeli, northwest of Toba Lake, new road to Peso Peso, in primary forests, alt. 1200—1600 m., *Walter N.* and *Catherine M. Bangham no. 1056* (a single sheet in herb. Arnold Arboretum), Feb. 16, 1932 (shrub 8 ft. high, fruits red).

The axis of the inflorescence is scarcely produced, the racemes of umbels, about 12 in all, being rather crowded at the apices of the somewhat thickened ultimate branchlets, the lowermost being in the axils of leaves or of fallen leaves; the umbels are scattered throughout the entire length of the primary branches except in the lower 1.5 to 2 cm. The leaflets in shape and venation resemble those of *Schefflera aromatica* (Blume) Harms, as illustrated by Koorders, Atlas Baumart. Java, IV. t. 683 (1916), but the inflorescences are totally different.

Schefflera rhynchocarpa, sp. nov. (§ *Euschefflera*, III. *Heptapleurum*). Plate X.

Frutex scandens, inflorescentiis parce subfurfuraceis exceptis glaber (ramis non visis); foliolis palmatim 9-foliolatis, petiolo 45 cm. longo, glabro, foliolis omnibus longe (3—6 cm.) petiolulatis, oblongis, chartaceis, glabris, 15—25 cm. longis, 4.5—6.5 cm. latis, graciliter acute acuminatis, basi late acutis vel obtusis, supra olivaceis, opacis, subtus paullo pallidioribus, margine deorsum integro, sursum distanter repando-serrulato, dentibus inter se 1—2 cm. distantibus; nervis primariis utrinque circiter 10, subtus elevatis, perspicuis, curvatis, reticulis primariis laxis; inflorescentiis ut videtur terminalibus, ramis primariis racemose dispositis, 35—40 cm. longis, inter se ad anthesin vix 1 cm. distantibus, umbellis numerosis, 8—12-floris, in ramis primariis racemose dispositis, pedunculis 10—13 mm. longis, pedicellis 5—7 mm. longis, parce furfuraceis, vetustioribus glabrescentibus; floribus 6—7-meris, petalis plerumque 6, oblongo-ovatis, acutis, patulis, haud cohaerentibus, 3.5 mm. longis; filamentis 6 mm. longis; fructibus oblongo-ellipsoideis, circiter 4 mm. longis, 6—7-sulcatis, 6—7-locellatis, stylis circiter 1 mm. longis coronatis.

Atjeh, Takengön, scandent on large trees in primary forests at 1100 m. altitude, *Walter N.* and *Catherine M. Bangham no. 713*, Jan. 7, 1932 (flowers greenish white).

Characterized by the closely arranged, racemosely disposed primary branches of its inflorescences, these up to 40 cm. long, and scarcely 1 cm. apart, these primary branches bearing numerous racemosely disposed umbels of 6—7-merous flowers; the

rachis of the inflorescence is apparently short. Other striking characters are its long-petioled, 9-foliolate leaves and its oblong, sinuate-toothed, long petiolulate leaflets. The fruits are terminated by the distinctly elongated, rostrate styles, whence the specific name.

Schefflera scandens (Blume) Viguier in Ann. Sci. Nat. sér. 9, Bot. IX. 348 (1909). — Koorders, Exkursionsfl. Java, II. 713 (1912); Atlas Baumart. Java, IV. t. 686 (1916). — Ridley, Fl. Malay Penin. I. 878 (1922).

Sciodaphyllum scandens Blume, Bijdr. 878 (1826).

Heptapleurum scandens Seemann in Jour. Bot. III. 79 (1865). — King in Jour. As. Soc. Bengal, LXVII. pt. 2, p. 53 (Mater. Fl. Malay. Penin. III. 397) (1898). — Koorders & Valeton in Meded. Lands Plant. XLII. 27 (Bijdr. Boomsoort. Java, VII. 27) (1900).

Paratropia scandens Miquel in Bonplandia, IV. 138 (1856); Fl. Ind. Bat. I. pt. 1, p. 757 (1856–57).

East Coast, Medan-Bĕrastagi road, kilometers 59–61, scandent in primary forests, alt. 4100 ft., *no. 1134*, Feb. 21, 1932. — Malay Peninsula, Java.

Schefflera sibayakensis, sp. nov. (§ *Euschefflera*, III. *Heptapleurum*). Plate XI.

Frutex glaber, circiter 3 m. altus, ramulis ultimis teretibus, circiter 6 mm. diametro, in sicco atris, consperse lenticellatis; foliis palmatim 5–6-foliolatis, petiolo 5–6.5 cm. longo, atro, petiolulis 0.5–2.5 cm. longis; stipulis crassis, coriaceis, axillaribus, late ovatis, retusis, circiter 1 cm. longis latisque; foliolis coriaceis, nitidis, in sicco atris vel atro-castaneis, oblongo-ellipticis vel late oblongo-lanceolatis, 5–10 cm. longis, 2–3.5 cm. latis, integris vel distanter obscure parcissime serrulatis, dentibus minutis, inter se 1–2 cm. distantibus, vel nullis, apice distincte acuminatis, basi late acutis vel subrotundatis, nervis primariis utrinque 10–14, gracilibus, haud perspicuis, supra planis vel impressis, subtus paullo elevatis vel obscuris vel obscurissimis, reticulis primariis laxis vel obsoletis; inflorescentiis terminalibus, multifloris, ramis primariis 5 vel 7, 10–15 cm. longis, robustis, rhachibus sub anthesi haud productis, sub fructu usque ad 3 cm. longis floribus umbellatis, umbellis in ramis primariis racemose dispositis, pedunculis (ramis secundariis) 1–1.5 cm. longis, oppositis vel subverticillatis; floribus 6–7-meris, umbellis circiter 10-floris, pedicellis 7–10 mm. longis, calycibus turbinatis, truncatis, 3 mm. diametro, ovario 6–7-loculari, apice rotundato, stigmatibus

sessilibus; fructibus ovoideis, 4 mm. longis, 6—7-locellatis, longitudinaliter 6—7-sulcatis.

East Coast, trail from Medan road to the summit of Sibajak Volcano, in forests, alt. about 1400 m., *Walter N.* and *Catherine M. Bangham no. 1043*, Feb. 15, 1932 (shrub 3 m. high, odor pungent, fruits green, their tips maroon).

A species characterized by its rigid shining leaflets which are sometimes entire, sometimes distantly and obscurely toothed, and particularly by its racemosely arranged umbels being verticillately arranged at the nodes. At anthesis there is no evident rachis of the inflorescence, their several branches springing direct from the tips of the ultimate branchlets but in fruit the rachis is slightly extended, bearing a terminal whorl of three branches, the remaining ones scattered.

Aralia Beccarii Ridley in Jour. Malay. Branch Roy. As. Soc. I. 64 (1923).

East Coast, road from Kaban Djahe to Kota Tjane, kilometer 143, in forested ravines at 4000—5500 ft. alt., *no. 1084*, Feb. 17, 1932 (tree 18 ft. high); also represented by *Rahmat Si Toroes 38* from Silo Maradja, Asahan. — Known only from Sumatra.

It seems to me doubtful if Ridley's species is really distinct from *Aralia javanica* Miquel as interpreted by Koorders & Valeton in Meded. Lands Plant. XLII. 54 (Bijdr. Boomsoort. Java, VII. 54) (1900), and illustrated by Koorders, Atlas Baumart. Java, IV. t. 670 (1916).

CORNACEAE

Mastixia acuminatissima Blume, Mus. Bot. Lugd.-Bat. I. 258 (1850). — Wangerin in Engler, Pflanzenr. IV.-229 (Heft 41), 22, fig. 1, F (1910).

Atjeh, Takengön, in primary forests, alt. 3600 ft., *nos. 702, 849*, Jan. 7, 12, 1932 (tree 60—75 ft. high, the trunk somewhat fluted). — Known only from Sumatra.

CLETHRACEAE

Clethra pulcherrima Ridley in Jour. Malay. Branch Roy. As. Soc. I. 75 (1923).

East Coast, trail from Goodyear bungalow to Sibajak Volcano, near the sulphur spring at the foot of the volcano, *no. 992*, Feb. 14, 1932 (tree 25 ft. high, flowers pinkish white); *Yates 1518* from

Sibajak Volcano represents the same species. — Definitely known only from this locality but not certainly distinct from *C. sumatrana* J. J. Smith. — Known only from Sumatra.

ERICACEAE

Determined by J. J. Smith

Rhododendron malayanum Jack in Malay. Misc. II. pt. 7, p. 17 (1822). — J. J. Smith in Koorders & Valeton in Meded. Dept. Landbouw, XVIII. 103 (Bijdr. Boomsoort. Java, XIII. 103) (1914).

East Coast, Redelong Volcano, on slopes, alt. 3600–6000 ft., *no. 916*, Jan. 14, 1932 (shrub 4 ft. high, flowers cherry color). — Malay Peninsula, Java, and Borneo.

Rhododendron retusum Bennett, Pl. Jav. Rar. 88, t. 20 (1838). — J. J. Smith in Koorders & Valeton in Meded. Dept. Landbouw, XVIII. 110 (Bijdr. Boomsoort. Java, XIII. 110) (1914).

East Coast, Redelong Volcano, on slopes near the summit, alt. about 6000 ft., *no. 920*, Jan. 14, 1932 (shrub 3 ft., flowers orange-red); Sinaboeng Volcano, along the trail, alt. about 4200 ft., *no. 1175*, Feb. 22, 1932 (shrub 4 ft, flowers flame red). — Java.

Rhododendron pubigermen J. J. Smith, sp. nov.

Fruticulus ramulis tenuibus, initio dense lepidotis, innovationibus 6–1 cm. longis. Folia parva in pseudoverticillos 6–10-meros disposita oblongo-vel lanceolato-obovata, apice rotundata vel obtusa, basi sensim cuneato-angustata, adulta supra glabra, subtus dense lepidota, nervis lateralibus obsoletis, 1.35–3 cm. longa, 0.45–0.85 cm. lata; petiolus brevissimus initio lepidotus, 0.1 cm. longus. Gemmae floriferae sessiles ovoideae, 0.8 cm. longae, ramentis numerosis suborbicularibus, minutissime fimbriato-erosulis. Flores circiter 3, pedicello lepidoto et minutissime puberulo, 1.45 cm. longo. Calyx 0.37 cm. diam., extus dense lepidotus. Corolla ample infundibuliformi-campanulata, basi rotundata, fere medium usque 5-fida, margine loborum excepto extus sparse lepidota, intus glabra, explanata flabellata, 1.9 cm. longa, 3.9 cm. lata, lobis erectis ut videtur deinde recurvis, sexangulato-obovatis plus minusve truncatis, 1.1–1.15 cm. longis, 0.86–1 cm. latis. Stamina 1.15–1.225 cm. longa; filamentum supra basin rotundato-dilatatum antice leviter convexo-incrassatum pilosumque, ceterum lineare, glabrum; anthera

cernua, brevis, ambitu subquadrata, 0.16–0.18 cm. longa. Ovarium ovoideum lepidotum et villosum, 0.36 cm. longum; stylus glaber, 0.6 cm. longus. Discus glaber, 0.275 cm. diam.

East Coast, Upper Petani valley, Lan Deboek-deboek marsh, *W. M. Docters van Leeuwen no. 7747* (type), Feb. 4, 1924 (small epiphytic shrub, flowers scarlet); also *Lörzing no. 7256*, Feb. 1920; *Biinnemeijer no. 5471*, Nov. 4, 1918, *no. 8491*, March 5, 1920, *no. 8628*, March 1920; Medan-Bĕrastagi road, near entrance to sulphur spring, alt. 1300 m., *Bangham no. 970*, Feb. 13, 1932 (epiphytic shrub 3 feet, leaves glossy above, flowers crimson); trail up Sinaboeng Volcano in the mid-mountain wooded belt, *Bangham no. 1173*, Feb. 23, 1932 (shrub 3–4 ft., flowers flame).

Rhododendron pubigermen var. **Banghamiorum** J. J. Smith, var. nov.

Differt a typo ovario lepidoto non villoso.

East Coast, Atjeh, Redeloeng Volcano, near the summit, alt. about 1900 m., *Bangham, no. 917*, Jan. 14, 1932 (shrub 4 ft., flowers raspberry or rosy red).

Rhododendron Frey-Wysslingii J. J. Smith, sp. nov.

Frutex bene ramosus innovationibus 3.5–0.3 cm. longis, ramulis tenuibus, sparse minute lepidotis, verruculosis. Folia parva, in pseudo-verticillos 5–8-meros in ramulis ultimis approximatos disposita, obovato- vel saepe anguste obovato-lanceolata, obtusa, versus basin sensim angustata, acuta, novella utrinque sparse cinnamomeo-lepidota, adulta supra glabra, subtus punctata, nervis lateralibus obsoletis, 0.45–2.6 cm. longa, 0.15–0.55 cm. lata; petiolus supra sulcatus, sparse lepidotus, 0.1–0.175 cm. longus. Inflorescentiae l-florae, ramentis triangulis ad lineari-triangulis, parce lepidotis, usque 0.6 cm. longis. Flos parvus, pedicello lepidoto, 1.15 cm. longo. Calyx 5-lobulatus, dorso sparse lepidotus, 0.33 cm. diam. Corolla tubuloso-campanulata, basin versus paulum ampliata, 5-loba, extus omnino sparse minute lepidota, intus lobis exceptis parce puberula, secta et explanata ambitu quadrangula, 1.4 cm. longa, inferne 1.4 cm. lata, lobis recurvis, ovatis, subacutis, 0.375–0.4 cm. longis. Stamina 0.9–1 cm. longa; filamentum lineare, supra basin latissimum, versus apicem angustatum patentissime pilosum; anthera subquadrango-ovalis, poris magnis hians, 0.14–0.16 cm. longa. Ovarium ovoideo-conicum, 5-sulcatum, dense lepidotum albido-

villosumque, fere 0.4 cm. longum; stylus teres, 2/5 partibus inferioribus puberulus, 0.6—1.1 cm. longus. Discus vertice puberulus.

Atjeh, Boer-ni-Telong, 2000 m. *A. Frey-Wyssling no. 25* (type), June 16, 1930; Redelong Volcano, near summit, alt. 1900 m., *Bangham no. 918*, Jan. 14, 1932 (shrub 2.5 ft. high, flowers Chinese red). — In the shape of the leaves this somewhat resembles *R. pubigermen* J. J. Smith, but in floral structure it is quite different.

Rhododendron multicolor Miquel, Fl. Ind. Bat. Suppl. 251, 586 (1860—61).

Atjeh, Takengön, near Lake Tawar, on slopes, alt. 3200 ft., *nos. 681, 761*, Jan. 6 and 8, 1932 (shrub about 4 ft. high, flowers cream or cream with a slight pinkish cast). — Known only from Sumatra.

Rhododendron basirotundatum J. J. Smith, sp. nov.

Frutex, ramulis breviter puberulis, innovationibus 8—3.5 cm. longis. Folia in pseudoverticillos 4—5-meros disposita, magna, oblongo- ad lanceolata-ovata, apicem versus sensim angustata vel leviter acuminata, anguste obtusiuscula vel vix cordulata, adulta supra subtusque praesertim in costa puberula, subtus dense lepidota, nervis lateralibus irregularibus tenuissimis patentibus ad patentissimis utrinque prominulis in utraque parte costae mediae subtus convexo-prominentibus, 10—14.5 cm. longa, 2.7—5.1 cm. lata; petiolus subteres, puberulus lepidotusque, 0.6—1.3 cm. longus. Inflorescentia pluriflora (4—8). Flores magni, pedicello puberulo, 3.2—3.5 cm. longo. Calyx subobsoletus, puberulus. Corolla infundibuliformis, extus glabra, 5-fida, secta et explanata 7 cm. longa, tubo longo, satis angusto, basi reverse rotundato-quinquelobulato superne leviter ampliato intus pubescenti, 2.5—3.4 cm. longo, lobis subrhombeo-obovatis, late obtusis, retusis, 3.4—3.7 cm. longis, 2—2.6 cm. latis. Stamina 5.5—5.9 cm. longa; filamentum lineare, 1/3 inferiore pilosum ceterum glabrum; anthera oblonga, 0.35—0.4 cm. longa. Ovarium conicum, 5-sulcatum, dense erecto-patenter pubescens, lepidotus, 1.35 cm. longum, apice sensim in stylum abiens; stylus elongatus, basi pubescens lepidotusque, ceterum glaber, 4.9 cm. longus. Discus puberulus, 0.5 cm. diam.

Atjeh, base of the Boer-ni-Telong, alt. 1800 m., *A. Frey-Wyssling no. 20* (type), June 16, 1920 (flowers salmon colored);

Atjeh, jungle trail from Kabajakan to Tretet, alt. 1000—1500 m. edge of jungle near Tretet, *Bangham nos. 877, 893*, Jan. 1932 (epiphytic, flowers salmon colored); Takengön, on slopes in pastures, alt. about 1000 m., *Bangham nos. 742, 760*, Jan. 8, 1932 (flowers soft flame, tips of petals salmon to yellow, center deeper, fruit red); east Coast, slopes of Redelong Volcano, alt. 1400—1700 m., *Bangham no. 926*, Jan. 14, 1932 (shrub to 6 ft., flowers with varying shades of light orange-red or scarlet, all deepening toward throat). Also *Beccari no. 218*, June—July 1878; *Doctors van Leeuwen no. 3986*, Jan. 29, 1920; *Biinnemeijer no. 4005*, July 26, 1918.

A near ally of *A. javanicum* Benn. but well characterized by the very different leaves and larger flowers with a very long tube.

Rhododendron sessilifolium J. J. Smith, sp. nov.

Frutex innovationibus usque 10 cm. longis, ramulis initio lepidotis. Folia in pseudoverticillos 5-meros disposita, magna, patentissima, subsessilia, lanceolata, sensim acuminata, acuta vel anguste obtusa, basi rotundata, novella utrinque sparse basi dense lepidota, plus minusve glabrescentia, nervis lateralibus 10—13 tenuibus patentibus in utraque parte costae mediae supra valde convexo-prominentis subtus leviter convexo-prominentis versus apicem attenuatae, 11—17.75 cm. longa, 2.35—4.6 cm. lata; petiolus brevissimus, lepidotus, 0.1—0.2 cm. longus, 0.3—0.4 cm. latus. Inflorescentiae 5-florae. Flores mediocres pedicello sparse lepidoto, 2.6 cm. longo. Calyx parvus. Corolla infundibuliformis, 5-fida, extus glabra, secta et explanata flabelliformis, 3.9 cm. longa, 5.7 cm. lata, tubo angulato, basi reverse 5-lobulato, superne ampliata, intus in parte brevi contracta puberulo, lobis subobovato-ovalibus, late saepe angulato-rotundatis, 2—2.1 cm. longis, 1.4—1.7 cm. latis. Stamina 2.6—3.1 cm. longa; filamentum lineare, basin versus paululum dilatatum, inferne longitudine 0.95—1.25 cm. puberulum, ceterum glabrum; anthera oblonga, 0.4—0.5 cm. longa. Ovarium conicum, 5-sulcatum, glabrum, 0.77 cm. longum, 0.3 cm. diam; stylus glaber, 2 cm. longus. Discus glaber.

East Coast, road to Pangoeloebao, near Prapat, alt. 1600 m., in light jungle, *C. Heusser no. 1* (type), Dec. 17, 1930 (shrub 1—3 m. high. flowers yellow); trail from Medan road to summit of Sibajak Volcano, alt. 1300—2000 m., *Bangham no. 1016*, Feb. 15, 1932 (shrub 8 ft., flowers clear yellow). Also *Yates no. 1496, 2003*.

Another ally of *R. javanicum* Benn., but with quite different leaves. In the shape of the latter it much resembles *R. basirotundatum*, but this has very much larger, differently colored flowers with a glabrous pistil and disk. It cannot represent *R. Teysmannii* Miq., or *R. javanicum* Benn. var. *Teysmannii*, for that plant has elliptic leaves with an acute base and distinctly petioled like *R. javanicum*.

Rhododendron rarilepidotum J. J. Smith, sp. nov.

Frutex innovationibus 11—4 cm. longis, ramulis initio minute lepidotis. Folia in innovationibus 6—8, alterna, superne densiora, summa plus minusve in pseudoverticillos disposita, elliptica vel oblongo-elliptica, apice acutata vel plerumque brevissime acuminata, obtusa, basi acuta, novella dense lepidota, plus minusve glabrescentia, nervis lateralibus 4—7 irregularibus patentibus vel subpatentissimis tenuibus in utraque parte costae mediae supra sulcatae subtus late prominentis, 4.8—8.8 cm. longa, 1.8—3.7 cm. lata; petiolus initio lepidotus, 0.7—1.4 cm. longus. Inflorescentiae 12-florae; gemmae floriferae 2.3 cm. longae, ramentis conspicuis obtusis glabris. Flores parvuli, pedicello sparse lepidoto, 2.2 cm. longo. Calyx oblique undulato-5-lobulatus, 0.4 cm. diam. Corolla infundibuliformis, 5-fida, extus inferne lepidibus raris inspersa, intus glabra, secta et explanata 2.2—2.3 cm. longa, 3.4 cm. lata, tubo basi obsolete reverse 5-lobulato superne ampliato, lobis obovatis, 1.2—1.3 cm. longis, 0.9—1 cm. latis. Stamina 1.8—2.1 cm. longa; filamentum anguste lineare, glabrum; anthera oblonga, 0.36—0.375 cm. longa. Ovarium breve, crassum, ovale, longitudinali-5-canaliculatum, abrupte obtusum, glabrum (interdum sublepidotum?), 0.325 cm. longum, fere 0.3 cm. diam; stylus impositus, plus minus excentricus, glaber, fere 0.9 cm. longus. Discus conspicuus, glaber, 0.35 cm. diam.

East Coast, northern slope of the Sinaboeng, 2000—2400 m., rather common, *J. A. Lörzing no. 8166* (type), Jan. 19, 1921 (shrub 2—3.5 m. high, flowers scarlet); trail up Sinaboeng Volcano, at the summit, alt. 2500 m., *Bangham no. 1174*, Feb. 23, 1932 (shrub 4—5 ft., flowers crimson); Atjeh, Takengön, alt. 1000 m., on slopes, in pastures, *Bangham no. 759*, Jan. 8, 1932 (shrub 3—4 ft., peduncles red, flowers crimson); East Coast, Redelong Volcano, near summit at 1900 m. alt., *Bangham no. 923*, Jan. 14, 1932 (shrub 5 feet, high; flowers crimson). Also *Lörzing no. 8161*, Jan. 19, 1921; *no. 8295* Jan. 23, 1921; *no. 7331*,

June 28, 1920; *no. 8240*, Jan. 22, 1921; *Frey-Wyssling no. 22*, June 15, 1930; *no. 2*, Feb. 16, 1930; *W. Burck no. 18*; *Biinnemeijer no. 9168*, April 7, 1920, *Bartlett no. 8646*, June 25–26, 1927; *Heusser no. 4*, 1930.

A well marked apparently rather common species, especially in North Sumatra, which I failed, however, to connect with any described species.

Gaultheria nummularioides D. Don, Prodr. 150 (1825). — C. B. Clarke in Hooker f., Fl. Brit. Ind. III. 457 (1882). — J. J. Smith in Koorders & Valeton in Meded. Dept. Landbouw, XVIII. 114 (Bijdr. Boomsoort. Java, XIII. 114) (1914).

Gaultheria repens Blume, Bijdr. 857 (1826).

East Coast, Sinaboeng Volcano, at the summit, alt. 8400 ft., *no. 1178*, Feb. 22, 1932 (woody creeper, flowers white, fruits purplish black). — Himalayan region, and the Khasia mountains in India; Java.

Gaultheria leucocarpa Blume, Bijdr. 856 (1826). — J. J. Smith in Koorders & Valeton in Meded. Dept. Landbouw, XVIII. 117 (Bijdr. Boomsoort. Java, XIII. 117) (1914).

East Coast, Redelong Volcano, on slopes, alt. about 3600 ft., *no. 907*, Jan. 14, 1932 (shrub 6 ft., flowers inconspicuous, greenish, fruits snow white, edible, slight wintergreen flavor, stems reddish). — Malay Peninsula, Java.

Gaultheria screnulata Kurz in Jour. Bot. XI. 195 (1873).

East Coast, trail from Goodyear bungalow to the foot of Sibajak Volcano, near the sulphur springs, alt. 1600 m., *Walter N.* and *Catherine M. Bangham no. 993*, Feb. 14, 1932 (semiscandent shrub, flowers white, fruits dark purple, with a slight wintergreen flavor).

Gaultheria fragrantissima Wallich var. **punctata** (Blume) J. J. Smith in Koorders & Valeton in Meded. Dept. Landbouw, XVIII. 121 (Bijdr. Boomsoort. Java, XIII. 121) (1914).

Gaultheria punctata Blume, Bijdr. 856 (1826).

Atjeh, Takengön, on slopes, alt. 4000–5000 ft., *no. 677*, Jan. 6, 1932 (shrub 4 ft. high, the flowers and leaves with a strong wintergreen odor); East Coast, Redelong Volcano, near the summit at 6000 ft. alt., *no. 908*, Jan. 14, 1932 (6 ft. shrub, flowers white, fruits purplish black, stems reddish); trail from Medan road to the summit of Sibajak Volcano, alt. 4200–6000

ft., *no. 1026*, Feb. 15, 1932 (6 ft. shrub, flowers white, fruits red-purple, the crushed leaves especially with characteristic wintergreen odor). — Java, Malay Peninsula; the species in India.

Diplycosia Kingii Merrill, nom. nov.[1]

Vaccinium microphyllum King & Gamble in Jour. As. Soc. Bengal, LXXIV. pt. 2, p. 62 (Mater. Fl. Malay. Penin. IV. 272) (1905); non Blume.

Diplycosia microphylla C. B. Clarke in Hooker f., Fl. Brit. Ind. III. 458 (1882) — Ridley, Fl. Malay Penin. II. 213 (1923). — Non Beccari.

East Coast, Deleng Sinkoet, north of Bĕrastagi, Karo Plateau, *Bartlett 6597*, Feb. 1927; Medan-Bĕrastagi road, near the entrance to the sulphur springs, in forested ravines at 4200 ft. alt., *Bangham 976*, Feb. 13, 1932; Sinaboeng Volcano, near the summit, alt. 8400 ft., *Bangham 1079*, Feb. 22, 1932. — Malay Peninsula.

Beccari 2931 from Mount Mattang, Sarawak, Borneo, of which I have a specimen, is the type of *Diplycosia microphylla* Beccari, a species totally different from the Javan *Vaccinium microphyllum* Blume which is a true *Vaccinium*.

Vaccinium parvibaccatum J. J. Smith, sp. nov.

Frutex, ramulis subgracilibus, sicco valde angulatis, puberulis, subdense foliatis, gemmis axillaribus squamis subulatis tectis. Folia parva, elliptica ad oblonga, interdum subovata vel obovata, obtusa, basi breviter cuneata, adulta supra ad basin in costa media puberula, subtus sparse punctata, 5—7-plinervia, nervis valde adscendentibus, 1.2—1.8—2 cm. longa, 0.75—0.9—0.7 cm. lata; petiolus canaliculatus, puberulus, 0.15—0.2 cm. longus. Inflorescentiae axillares et terminales, dense satis multiflore 3—4 cm. longae, pedunculo 0.4 cm. longo, rachi piloso. Bracteae persistentes, foliaceae, ellipticae, obtusae, 0.55—0.775 cm. longae. Flores parvi, brevissime pedicellati, pedicello puberulo, 0.075 cm. longo, bracteolis lanceolatis ad ellipticis puberulis. Calyx corollae adpressus, laciniis ovatis, acuminatis, ciliatis, 0.14 cm. longis. Corolla ovoideo-urceolata, breviter 5-loba, extus glabra, intus inferne puberula, secta et explanata 0.64 cm. longa, 0.85 cm. lata, lobis recurvis ovato-triangulis, obtusis 0.1 cm. longis. Stamina 0.34 cm. longa; filamentum lineare, supra basin paulum dilatatum,

[1]This was identified by Doctor Smith, in the absence of flowers or fruits, as *Diplycosia* sp. My identification is as *D. microphylla* C. B. Clarke, non Beccari. — E.D.M.

fere omnino longe pilosum; anthera usque 2/5 partes infra apicem in tubulos 2 satis amplos fissa ecalcarata, 0.1 cm. longa. Ovarium subglobosum, pubescens; stylus glaber 0.55 cm. longus. Discus longius pilosus. Fructus parvus, globosus, pubescens, sicco 0.4 cm. diam.

Road from East Coast to Tapianoeli (northwest side of Toba lake), new road near Peso Peso, in primary forest, alt. 1200–1500 m., *Walter N.* and *Catherine M. Bangham no. 1069* (type), Feb. 16, 1932 (epiphytic shrub, 3–4 feet, flowers deep pink, bracts pale green); East coast trail from Medan road to the summit of Sibajak Volcano, alt. 1300–1900 m., *Walter N.* and *Catherine M. Bangham no. 1022*, Feb. 15, 1932 (epiphytic shrub 6 ft., flowers greenish white); trail up Sinaboeng Volcano, near the summit, alt. 2600 m., *Walter N.* and *Catherine M. Bangham no. 1179*, Feb. 23, 1932 (shrub 6 ft., flowers pink, fruit green). Also *Lörzing no. 5988*, Aug. 28, 1918; *no. 8300*, Jan. 23, 1921; *nos. 8180, 8154*, Jan. 19, 1921; *no. 8253*, Jan. 22, 1921.

Differs from *V. korinchense* Ridl. in the smaller leaves, smaller relatively broader bracts, the inside puberulous corolla, the long anther tubes and the glabrous style.

MYRSINACEAE

Maesa Blumei G. Don, Gen. Syst. IV. 22 (1838). — Mez in Engler, Pflanzenr. IV.-236 (Heft 9), 46 (1902).

East Coast, between Baboeli and Paekas, in ravines at 4100 ft. alt., *no. 777* bis, Jan. 9, 1932; Atjeh, Takengön to Bireuen, in edges of and in the primary forests, alt. 3500 ft., *no. 830*, Jan. 11, 1932. — Java.

Maesa oligotricha Merrill in Papers Michigan Acad. XIX. 185 (1934).

East Coast, trail from Medan road to the summit of Sibajak Volcano, alt. 4200–6500 ft., *nos. 1023, 1039*, Feb. 15, 1932 (shrub or small tree, 12–20 ft. high, flowers white, fruits translucent, dirty white). — Known only from Sumatra.

Ardisia Banghamii, sp. nov. (§ *Tinus*).

Frutex glaber, circiter 2.5 m. altus, ramis teretibus, ramulis circiter 2.5 mm. diametro; foliis alternis, oblongo-obovatis vel oblongo-ellipticis vel ellipticis, integris, chartaceis vel subcoriaceis, 14–18 cm. longis, 5–9 cm. latis, pallide olivaceis, utrinque subconcoloribus vel subtus pallidioribus, maculato-punctatis,

maculis numerosis, utrinque jam oculo nudo distinctis, apice acuminatis, basi acutis, nervis primariis utrinque circiter 20, gracilibus, quam secundariis vix magis distinctioribus, petiolo 1—1.5 cm. longo; inflorescentiis lateralibus, solitariis, pedunculatis, usque ad 9 cm. longis, bipinnatim paniculatis, ramis primariis 3—5, racemose dispositis, floribus in ramis primariis racemose vel subumbellatim dispositis; floribus roseis, pedicellis 8—12 mm. longis; calycibus 6 mm. diam., lobis orbicularibus, 2.5 mm. longis, 3 mm. latis, valde dextorsum tegentibus, atropunctatis, glandulis numerosis, margine ciliato; petalis ovatis, obtusis, sursum obscure punctatis, 6 mm. longis, 4 mm. latis; antheris 3 mm. longis, connectivo glanduloso-punctato; ovario ovoideo, glabro, stylis 5 mm. longis.

Atjeh, near Lake Tawar, in ravines between Baboeli and Paekas, alt. about 1250 m., *Walter N.* and *Catherine M. Bangham no. 774*, Jan. 9, 1932 (shrub, flowers rose color, waxy). Apparently *Bangham 722*, from Takengön, flowers not quite mature, represents the same species.

The inflorescences are definitely lateral from the terminal branches. The species is characterized by its numerous, rather conspicuous, large, maculate glands which are manifest on both surfaces, and readily visible without the use of a lens.

Ardisia colorata Roxburgh, Hort. Beng. 16 (1814), nomen nudum; Fl. Ind. II. 274 (1824).— Mez in Engler, Pflanzenr. IV.-236 (Heft 9), 113 (1902). — King & Gamble in Jour. As. Soc. Bengal, LXXIV. pt. 2, p. 129 (Mater. Fl. Malay. Penin. IV. 339) (1905).

East Coast, trail from Medan road to summit of Sibajak Volcano, about 3000 ft. alt., *nos. 1029*, *1042*, Feb. 15, 1932 (shrub 7—12 ft. high, flowers pinkish-white or rose). — India to Burma, and Indo-China, southward to Java, and Borneo.

Ardisia colorata var. **salicifolia** King & Gamble in Jour. As. Soc. Bengal, LXXIV. pt. 2, p. 131 (Mater. Fl. Malay. Penin. IV. 341) (1905).

Tapianoeli, new road near Peso Peso, northwest of Lake Toba, in primary forests, alt. 4100—4500 ft., *nos. 1120*, *1172*, Feb. 19, 22, 1932 (tree 25—30 ft. high, flowers white). — Malay Peninsula.

The identification is from the description. The specimens were first referred to *Ardisia Blumei* A. de Candolle, which Mez dis-

tinguishes from its congeners by its crenate leaves; but Koorders & Valeton in Meded. Lands Plant. XXXIII. 258 (Bijdr. Boomsoort. Java, v. 271) (1900), in their ample description of De Candolle's species do not mention this character.

Ardisia crenata Roxburgh, Hort. Beng. 85 (1814), nomen nudum; Fl. Ind. II. 276 (1824), ed. 2, I. 583 (1832). — King & Gamble in Jour. As. Soc. Bengal, LXXIV. pt. 2, p. 148 (Mater. Fl. Malay. Penin. IV. 358) (1905).

Atjeh, near Lake Tawar, on slopes in pastures at 3800 ft. alt., *no. 766*, Jan. 9, 1932 (shrub 8 ft. high, fruits purple); East Coast, trail from Medan road to the summit of Sibajak Volcano in forests, alt. 5200 ft., *no. 1052*, Feb. 15, 1932 (shrub 5 ft. high, fruits cerise). — India to Java and Borneo.

Roxburgh's type was from Penang. His species has been reduced to *Ardisia crispa* (Thunberg) A. de Candolle, the type being a Japanese form. Mez's interpretation of the latter, Pflanzenr. IV.-236 (Heft 9), 144 (1902), is as a variable collective species. If the broader specific limits be accepted, then Thunberg's specific name is the oldest one. I do not consider the two Sumatran specimens cited as being typical representatives of Thunberg's species.

Ardisia elliptica Thunberg, Nov. Gen. Pl. 119 (1798). — Trimen, Fl. Ceyl. III. 74 (1895).

Ardisia littoralis Andrews, Bot. Repos. x. t. 630 (1811). — King & Gamble in Jour. As. Soc. Bengal, LXXIV. pt. 2, p. 135 (Mater. Fl. Malay. Penin. IV. 345) (1905). — Ridley, Fl. Malay Penin. II. 241 (1923).

Ardisia obovata Blume, Bijdr. 688 (1826).

Climacandra obovata Miquel, Pl. Jungh. 199 (1852). — Koorders & Valeton in Meded. Lands Plant. XXXIII. 271 (Bijdr. Boomsoort. Java, v. 271) (1900).

Ardisia humilis Mez in Engler, Pflanzenr. IV.-236 (Heft 9), 127 (1902); non Vahl.

Atjeh, Langsa, in marshy places at sea level, *no. 649*, Jan. 3, 1932 (shrub 8 ft. high, flowers lilac). — Ceylon and India to Indo-China, southward to Java, Borneo, the Philippines, and Celebes.

Mez has most curiously misinterpreted Vahl's species, as indicated by me in Lingnan Sci. Jour. XI. 50 (1932). Vahl's species is the one described by Mez as *Ardisia hainanensis* Mez and again as *A. racemosa* (Loureiro) Mez, and is known only from

Hainan and from Indo-China, the actual type being from Hainan. The *Ardisia "humilis"* of Mez (non Vahl) is for the most part *A. littoralis* Andrews, the type of which was from Penang. Were Mez's synonymy correct *Anguillaria zeylanica* Gaertner (1788) supplies the oldest valid specific name, but Mr. Alston states that Gaertner's figure showing very very narrow calyx lobes is as likely to be *Embelia Ribes* Burman f. as an *Ardisia*; that Burman's figure cited by Gaertner is apparently *A. Willisii* Mez rather than *A. "humilis"* Mez; and that the third element, the specimen in Hermann's Museum, is indeterminable as no specimen is extant. I accept Thunberg's specific name as the oldest valid one for this widely distributed species. The type was from Ceylon and Trimen, Fl. Ceyl. III. 74 (1895), states that the species still grows in the locality where Thunberg collected it. A photograph of Thunberg's specimen was courteously supplied by Dr. Carl G. Alm.

Ardisia fuliginosa Blume, Bijdr. 692 (1826). — Mez in Engler, Pflanzenr. IV.-236 (Heft 9), 99 (1902).

Atjeh, Takengön, in primary forests, at 3600 ft. alt., *no. 726*, Jan. 7, 1932 (small tree, 18–20 ft. high, fruits pinkish-red). — Java, Borneo, and Sumbawa.

Ardisia punctipetala, sp. nov. (§ *Crispardisia*)

Frutex glaber, circiter 1 m. altus, ramulis ultimis subcompressis, 1–1.5 mm. diametro; foliis oblongis, membranaceis, olivaceis, utrinque concoloribus, 10–17 cm. longis, 3–4.5 cm. latis, utrinque subaequaliter angustatis, basi acutis, apice acutis vel acute acuminatis, utrinque consperse glandulosis, glandulis parvis, elevatis, margine subincrassato, obscurissime undulato-crenato, praeter glandulas magnas obscuras subgeneri typicas punctis marginalibus specialibus destitutis, nervis primariis utrinque circiter 18, gracilibus, patulis, vix vel obscure arcuato-anastomosantibus, petiolo 8–10 mm. longo; inflorescentiis terminalibus, breviter (1 cm.) pedunculatis, compositis, floribus in ramis primariis umbellatim dispositis, ramulis depauperato-umbellatis, terminalibus sessilibus, lateralibus 2 vel 3 longe (2–5 cm.) pedunculatis, omnibus 7–9-floris; floribus albidis, 1.2 cm. diametro, pedicellis 1–1.5 cm. longis; sepalis ovatis, subacutis, 1–1.2 mm. longis, margine haud ciliato, vix vel obscure glandulosis; petalis ellipticis, acutis, 6 mm. longis, 3 mm. latis, perspicue

glanduloso-punctatis, punctulis atris, rotundatis elongatisque; antheris 4 mm. longis, connectivo atro-glanduloso; ovario glabro, stylis 4 mm. longis; fructibus rubris, globosis, sicco atro-brunneis, obscure glandulosis, 8 mm. diametro.

Atjeh, near Lake Tawar, on slopes in rocky pastures at about 1000 m. alt., *Walter N.* and *Catherine M. Bangham no. 796*, Jan. 10, 1932 (shrub about 1 m. high, flowers waxy white). — This same species is also represented by *no. 1028*, Feb. 15, 1932, from along the trail, Medan road to Sibajak Volcano, alt. above 1300 m.

This species, except for its olivaceous leaves and its very much smaller and obscurely, or not at all glandular sepals, and certain other details, approximates *Ardisia virens* Kurz, and is certainly allied to that species. The inflorescence made up of one terminal sessile umbel, and two or three long-peduncled lateral ones, their peduncles subumbellately arranged, is characteristic.

Ardisia sanguinolenta Blume, Bijdr. 685 (1826).

Ardisia Zollingeri A. de Candolle, Prodr. VIII. 670 (1844). — Mez in Engler, Pflanzenr. IV.-236 (Heft 9), 111 (1902).

Ardisia polyneura Miquel, Pl. Jungh. 198 (1852). — Koorders & Valeton in Meded. Lands Plant. XXXIII. 257 (Bijdr. Boomsoort. Java, V. 257 (1900).

Ardisia colorata Roxburgh, var. *polyneura* C. B. Clarke in Hooker f., Fl. Brit. Ind. III. 520 (1882). — King & Gamble in Jour. As. Soc. Bengal, LXXIV. pt. 2, p. 130 (Mater. Fl. Malay. Penin. IV. 340) (1905).

East Coast, Medan-Bĕrastagi road, near the entrance to the sulphur spring, in second growth forests in ravines, alt. 4200 ft., *no. 973*, Feb. 13, 1932 (tree 20 ft. high, flowers white). — Malay Peninsula, Java, Borneo.

Assuming Mez's synonymy under *Ardisia Zollingeri* A. De Candolle to be correct, the adoption of Blume's binomial for this species is inevitable as it is the oldest valid one. Mez erred in retaining *A. sanguinolenta* Wallich, nomen nudum (1830), as the valid name for what should be known as *A. Wallichii* A. De Candolle (1834).

Ardisia villosa Roxburgh, Hort. Beng. 85 (1814), nomen nudum; Fl. Ind. II. 274 (1824); ed. 2, I. 582 (1832).

Ardisia vestita Wallich apud Roxburgh, Fl. Ind. II. 274 (1824), in obs. — Mez in Engler, Pflanzenr. IV.-236 (Heft 9), 141 (1902).

Atjeh, Kabajakan to Tretet, at the margin of and in forests, alt. 3500–5000 ft., *nos. 885, 895*, Jan. 13, 1932 (shrub 6 ft. high,

buds pink, fruits red). — Burma to Indo-China and southern China, southward to the Malay Peninsula, Borneo, and Java.

Mez was not warranted in replacing *Ardisia villosa* Roxburgh by *A. vestita* Wallich, even though both original descriptions occur on the same page. Neither was he warranted in coining the new binomial *A. villosa* (Thunberg) Mez for a species of Japan and China = *A. pusilla* A. de Candolle, as Roxburgh's use of the specific name (1814, 1824) invalidates the one proposed by Mez in 1902. Roxburgh's type was from Penang, while that of Wallich was from Singapore. The Chinese form with somewhat smaller, more pubescent leaves (*A. dumetosa* Dunn, *A. trichocarpa* Merrill) is probably to be placed here.

Embelia pergamacea (Blume) A. De Candolle, Prodr. VIII. 85 (1844). — Mez in Engler, Pflanzenr. IV.-236 (Heft 9), 310 (1902).

Ardisia pergamacea Blume apud De Candolle, l.c., in synon.

East Coast, trail from Medan road to the summit of Sibajak Volcano, alt. above 5800 ft., *nos. 1044, 1045*, Feb. 15, 1932 (shrub 3—4 ft. high, common near the summit, buds greenish-white, fruits reddish). — Malay Peninsula, Java, Borneo.

Ridley, Fl. Malay Penin. II. 233 (1923), reduces this to *Embelia coriacea* Wallich which was originally described in 1834 as having leaves 6 inches long and 1½ inches wide. To Wallich's species Mez has referred material with much larger leaves, 28 x 8 cm., the form named by Blume as *E. macrophylla* Blume. The Sumatran specimens have smaller more prominently punctate leaves than authentic Javan material, and the bracteoles are only one-half as long as the pedicels or less.

Rapanea sp.

East Coast, Siantar to Bĕrastagi, kilometers 188—189, in second growth forests, at 3500 ft. alt., *no.* 955, Feb. 12, 1932 (tree 25 ft. high. flowers greenish-white).

In the absence of ♀ flowers I am unable to refer this to any known species, and suspect it to be undescribed. The petals are free or very nearly so. In some respects *Embelia* is suggested.

PRIMULACEAE

Lysimachia platyphylla, sp. nov. (§ *Alternifoliae.*)

Plate XII.

Herba perennis, usque ad 45 cm. alta fide Bangham, basi decumbente lignosa 3 mm. diametro, ramis paucis, erectis vel ad-

scendentibus, deorsum glabris, sursum brevissime pubescentibus; foliis alternis, late ovatis vel elliptico-ovatis, membranaceis vel subchartaceis, 4—9 cm. longis, 3—6 cm. latis, integris, breviter acute acuminatis, basi latissime acutis vel rotundatis, utrinque glabris vel subglabris sed juxta marginem distincte breviter ciliatis, sicco supra olivaceis, subtus pallidioribus, nervis primariis utrinque 6 vel 7, distinctis; petiolo 1—1.5 cm. longo; inflorescentiis subterminalibus, paucifloris, laxis, 4—6 cm. longis, floribus longe (1—1.5 cm.) pedicellatis, foliis floriferis inferioribus paucis, plerumque solitariis, elliptico-ovatis, 9—12 mm. longis, 8 mm. latis, superioribus bracteiformibus, lanceolatis, acuminatis, 6—8 mm. longis, 1.3—2.5 mm. latis; floribus flavidis, in ramis primariis subumbellatim dispositis, ramis paucis, plerumque 3-floris, pedicellis sub fructu usque ad 1.5 cm. longis; sepalis lanceolatis, acuminatis, 6 mm. longis, 2 mm. latis, glabris vel obscure breviter pubescentibus, atro-puncticulatis; corollae tubo 1.5 mm. longo, lobis oblongo-obovatis vel subellipticis, rotundatis, 9 mm. longis, 5 mm. latis, glabris vel margine minutissime breviter pubescente, circiter 10-nerviis, nervis gracilibus; filamentis 1.5 mm. longis, antheris oblongo-ovatis, 2.4 mm. longis; capsulis cartilagineis, subglobosis, 6 mm. diametro.

Atjeh, trail over the mountains from Kabanjakan to Tretet, at the edge of the forest near Tretet, alt. 1000—1500 m., *Walter N.* and *Catherine M. Bangham no. 865* (type in herb. New York Botanical Garden, iso-type, a fruiting specimen, Gray Herbarium) Jan. 11, 1932 (herb, flowers golden yellow, lower surfaces of the leaves very dark purplish-red when fresh).

A species manifestly allied to *Lysimachia cuspidata* Blume of Java and Sumatra, distinguished by its very much broader leaves, as well as by its rounded petals, shorter pedicels, its glandular-punctate sepals, and other characters.

PLUMBAGINACEAE

Plumbago indica Linnaeus in Stickman, Herb. Amb. 24 (1754); Amoen. Acad. IV. 133 (1759). — Merrill, Interpret. Herb. Amb. 414 (1917).

Plumbago rosea Linnaeus, Sp. Pl. ed. 2, p. 215 (1762).

Atjeh, Idi to Lhokseumawe, at sea level, *no. 661*, Jan. 4, 1932. — Tropical Asia and Malaysia, frequently planted; introduced in tropical America.

Plumbago zeylanica Linnaeus, Sp. Pl. 151 (1753). — Boissier in De Candolle, Prodr. XII. 692 (1848).

East Coast, road from Kaban Djahe to Kota Tjane, at kilometer 120, near dwellings, *no. 1105*, Feb. 17, 1932 (flowers white). — Widely distributed in the Old World tropics.

STYRACACEAE

Styrax paralleloneurus Perkins in Bot. Jahrb. XXXI. 484 (1902); in Engler, Pflanzenr. IV.-241 (Heft 30), 37 (1907).

Styrax sumatranus J. J. Smith in Tectona, X. 204 (1917); Bull. Jard. Bot. Buitenzorg, sér. 3, IV. 238, t. 10 (1922).

Tapianoeli, new road near Peso Peso, in primary forests, alt. 4100–4500 ft. *no. 1126*, Feb. 19, 1932 (tree 20 ft high). A specimen remarkable for its fascicled, slender, spirally twisted galls from 8–14 cm. long and 4 mm. in diameter; there are neither flowers nor fruits; *Yates 2532*, in flower, from Tapianoeli, represents the same species. — Malay Peninsula.

OLEACEAE

Linociera pubipaniculata Merrill in Papers Michigan Acad. XIX. 187 (1934).

Atjeh, on slopes, at 3000 ft. alt., near Lake Tawar, *no. 801*, Jan. 10, 1932 (tree 25 ft. high, flowers creamy white, fruits purplish brown). — Known only from Sumatra.

Ligustrum glomeratum Blume, Mus. Bot. Lugd.-Bat. I. 314 (1850). — Mansfeld in Bot. Jahrb. LIX. Beibl. CXXXII. 58 (1924).

Atjeh, near Lake Tawar, on slopes at 3000 ft. alt., *no. 807*, Jan. 10, 1932 (shrub, 5 ft. high, fruits brownish-black); Takengön to Bireuen, *no. 812*, Jan. 11, 1932 (shrub 16–20 ft. high, flowers creamy white). — Ava and Tenasserim ?, Java, Madura, Borneo, and the Philippines.

Ligustrum robustum (Roxburgh) Blume, Mus. Bot. Lugd.-Bat. I. 313 (1850). — Mansfeld in Bot. Jahrb. LIX. Beibl. CXXXII. 44 (1924).

Phillyrea robusta Roxburgh, Fl. Ind. I. 101 (1820), ed. 2, I. 34 (1832).

Atjeh, Langsa, in marshy places at sea level, *no. 650*, Jan. 3, 1932 (shrub 12 ft. high, flowers white, fragrant). — Bengal to Burma and Indo-China.

Jasminum bracteatum Roxburgh, Fl. Ind. I. 92 (1820); ed. 2, I. 94 (1932).

Jasminum pubescens Willdenow var. *bracteata* C. B. Clarke in Hooker f., Fl. Brit. Ind. III. 593 (1882).

Atjeh, Kabanjakan to Tretet, and Takengön to Bireuen, in thickets, alt. 3000–5000 ft., *nos. 822, 841, 899, 900*, Jan. 11, 13, 1932 (vine with white flowers).

This particular form is referred by some authors to *Jasminum pubescens* Willdenow, which I interpret to be the same as *J. multiflorum* (Burman f.) Andrews, the latter being the oldest specific name. *Nyctanthes pubescens* Retzius = *Jasminum pubescens* Willdenow was based on specimens from plants cultivated in the Botanic Garden at Calcutta. *Jasminum bracteatum* Roxburgh was also based on specimens cultivated at Calcutta, introduced from Sumatra.

Jasminum decussatum Wallich, Num. List, no. 2860 (1831), nomen nudum.—A. de Candolle, Prodr. VIII. 306 (1844). — King & Gamble in Jour. As. Soc. Bengal, LXXIV. pt. 2, p. 260 (Mater. Fl. Malay. Penin. IV. 470) (1905). — Ridley, Fl. Malay Penin. II. 313 (1923).

Atjeh, Langsa, in marshy places at sea level, *no. 646*, Jan. 3, 1932 (scandent, flowers white, very fragrant). — Burma, Siam, and the Malay Peninsula.

Jasminum officinale Linnaeus f. **grandiflorum** (Linnaeus) Kobuski in Jour. Arnold Arb. XIII. 161 (1932).

Jasminum grandiflorum Linnaeus, Sp. Pl. ed. 2, p. 9 (1762).

East Coast, cultivated in a garden at Bĕrastagi, *no. 1109*, Feb. 18, 1932 (flowers very fragrant, white inside, outside tinged with light red). — A native of India, now cultivated in the tropics of both hemispheres.

LOGANIACEAE

Geniostoma arboreum (Blume) Kuntze, Rev. Gen. Pl. II. 425 (1891). — Cammerloher in Bull. Jard. Bot. Buitenzorg, sér. 3, v. 296 (1923).

Haemospermum arboreum Blume, Bijdr. 1018 (1826).

Geniostoma haemospermum Steudel, Nomencl. ed. 2, I. 669 (1840). — Koorders & Valeton in Meded. Lands Plant. LXI. 56 (Bijdr. Boomsoort. Java, IX. 56) (1903). — Koorders, Atlas Baumart. Java, II. t. 328 (1914).

East Coast, along the road from Siantar to Bĕrastagi, at kilometers 188–189, in secondary forests at 3500 ft. alt., *no. 954*, Feb. 12, 1932 (shrub 15 ft. high, flowers white, fruits orange-red). — Java.

Fagraea intermedia Ridley in Jour. Fed. Malay States Mus. VIII. pt. 4, p. 63 (1917).

Atjeh, trail from Kabajakan to Tretet, alt. 3500–5000 ft., *no. 880*, Jan. 13, 1932 (fallen flowers picked up in the forest); East Coast, trail from Medan road to the summit of Sibajak Volcano, at 4200–6500 ft. alt., *no. 1038*, Feb. 15, 1932 (tree 25–80 ft. high, flowers cream color). — Known only from Sumatra.

The numbers cited are represented only by single specimens in the herbarium of the Arnold Arboretum. Cammerloher in his treatment of the Loganiaceae of the Netherlands East Indies, Bull. Jard. Bot. Buitenzorg, sér. 3, v. 294–333 (1923), apparently overlooked Ridley's species.

Fagraea lutea Cammerloher in Bull. Jard. Bot. Buitenzorg, sér. 3, v. 330, fig. 8 (1923).

Atjeh, Takengön, in primary forests at 3600 ft. alt., *no. 847*, Jan. 12, 1932 (fruits green). — Known only from Sumatra.

Fagraea obovata Wallich in Roxburgh, Fl. Ind. II. 33 (1824).—King & Gamble in Jour. As. Soc. Bengal, LXXIV. pt. 2, p. 606 (Mater. Fl. Malay. Penin. IV. 816) (1907). — Cammerloher in Bull. Jard. Bot. Buitenzorg, sér. 3, v. 322 (1923).

East Coast, Siantar to Bĕrastagi, in secondary forests at kilometer 180, alt. about 3500 ft., *no. 961*, Feb. 12, 1932 (tree 30 ft. high, fruits glossy green). — India to Indo-China southward to Java, the Philippines, and Celebes.

As currently interpreted this is a collective species, the specimens referred here showing a wide range of variation. Bangham's specimen represents the form with oblong-oblanceolate, acuminate leaves, the lateral nerves obsolete, not the one with ovate to obovate, blunt leaves as originally described by Wallich from Penang.

Fagraea sp.

East Coast, trail from Medan road to the summit of Sibajak Volcano, alt. 4200–6500 ft., *no. 1021*, Feb. 15, 1932 (a single sheet, herb. Arnold Arboretum, fragments of a fallen flower only). Apparently a species near *Fagraea Curtissii* King & Gamble of the Malay Peninsula is represented.

GENTIANACEAE

Crawfurdia trinervis (Blume) D. Dietrich, Syn. Pl. II. 919 (1840). — Hasskarl, Cat. Hort. Bogor. 128 (1844).

Tripterospermum trinerve Blume, Bijdr. 849 (1826).

Crawfurdia Blumei G. Don, Gen. Syst. IV. 200 (1838), "Blumii". — King & Gamble in Jour. As. Soc. Bengal, LXXIV. pt. 2, p. 90 (Mater. Fl. Malay. Penin. IV. 300) (1905).

Crawfurdia Tripterospermum Makino in Tokyo Bot. Mag. XVI. 172 (1902).

East Coast, trail from Medan road to the summit of Sibajak Volcano, alt. 4200–6500 ft., *no. 1030*, Feb. 15, 1932 (vine, flowers white, fruits maroon). — Malay Peninsula, Java.

Makino, Bot. Mag. Tokyo XVI. 171 (1902), erred in publishing the binomial *Crawfurdia trinervis* Makino, based on *Convolvulus trinervis* Thunberg, as Dietrich's and Hasskarl's independent transfers of Blume's specific name automatically invalidate the one proposed by Makino for the Japanese species.

APOCYNACEAE

Tabernaemontana sumatrana, sp. nov. Plate XIII.

Arbor circiter 10 m. alta, glabra, ramis subteretibus, haud incrassatis, pallidis, ramulis ultimis circiter 2 mm. diametro; foliis in paribus leviter inaequalibus, chartaceis, oblongo-ellipticis, utrinque subaequaliter angustatis, basi acutis, apice breviter obtuseque acuminatis, sicco atro-olivaceis, subtus paullo pallidioribus, utrinque glabris, 9–15 cm. longis, 4.5–6.5 cm. latis, nervis lateralibus utrinque 9–12, gracilibus, leviter curvatis, reticulis obsoletis; petiolo 8–14 mm. longo; cymis terminalibus, breviter pedunculatis vel e basi ramosis, paucifloris, circiter 7 cm. longis, pedicellis incrassatis, 1–1.5 cm. longis; floribus albidis, sepalis orbiculari-ovatis, rotundatis, 2 mm. longis, 3 mm. latis, margine ciliato, basi intus vix glandulosis; corollae tubo cylindrico, utrinque glabro, crasso, 2.5 cm. longo, circiter 3 mm. diametro, lobis anguste falcato-obovatis, rotundatis, circiter 12 mm. longis, 5–6 mm. latis, intus deorsum minute puberulis; antheris oblongo-lanceolatis, acuminatis, 2.5 mm. longis, inclusis, circiter 17 mm. supra basin tubo insertis, tubo haud inflato; carpellis oblongo-ovoideis, glabris; folliculis immaturis 3–3.5 cm. longis, 1.5–2 cm. latis, obtusis vel subacutis, ut videtur subcarnosis, vix longitudinaliter carinatis, leviter falcatis.

Atjeh, along the road from Takengön to Bireuen, at kilometer 96, at the edge of forest, alt. about 1000 m., *Walter N.* and *Catherine M. Bangham no. 813*, Jan. 11, 1932 (tree 30 ft. high, flowers white, delightfully fragrant, fruits green).

This seems to belong in the group with *Tabernaemontana divaricata* (Linnaeus) R. Brown (*T. coronaria* Willdenow). It is characterized by its very stout cylindric corolla-tubes which are not at all inflated opposite the anthers.

This species is an *Ervatamia* as that genus was defined by Stapf in 1902. In 1844 A. de Candolle proposed *Ervatamia* as a section of *Tabernaemontana* based solely on the species commonly known as *Tabernaemontana coronaria* Willdenow (*Nerium coronarium* Jacquin). Stapf[1] raised this section to generic status as *Ervatamia* (A. de Candolle) Stapf, adopting the binomial *Ervatamia coronaria* (Jacquin) Stapf. *Nerium divaricatum* Linnaeus, Sp. Pl. 209 (1753) has generally been considered to be identical with *Tabernaemontana coronaria* Willdenow and is an older name. In selecting Jacquin's specific name Stapf states: "*Nerium divaricatum*, Linn. Sp. Pl. 1. 209, based on Hermann's *Apocynum zeylanicum* (Parad. Batav. 40) and supposed to be identical with *Nerium coronarium*, Jacq. (R. Brown in Mem. Werner. Soc. 1. 72) is *Wrightia zeylanica*, R. Br." I do not accept Stapf's interpretation of the type of *Nerium divaricatum* Linnaeus and believe that R. Brown was correct in adopting the binomial *Tabernaemontana divaricata* (Linnaeus) R. Brown as synonymous with *T. coronaria* (Jacquin) Willdenow. *Nerium divaricatum* Linnaeus was based on *two* pre-Linnean binomials, not wholly on Hermann's reference as one would infer from Stapf's statement. The *first* reference is "Nerium foliis lanceolato-ovatis, ramis divaricatis Fl. zeyl. 109"; the *second* is "Apocynum zeylanicum indicum frutescens nerii flore candidissimo Herm. par. 40". The Linnaean specific name of 1753 is taken from the *first* reference and the actual specimen on which the Flora Zeylanica description was based, as far as that description was a new one, was studied by Linnaeus, and is still extant. Trimen[2] definitely states that it is *Tabernaemontana coronaria* Willdenow. I do not hesitate in accepting this as typifying the species.

The original error was made by Linnaeus himself, Fl. Zeyl. 46 (1747), for in describing *Nerium foliis lanceolato-ovatis* from an actual specimen in Hermann's herbarium, he erroneously added to it the reference *Apocynum zeylanicum indicum* of Hermann =

[1]Stapf, O. in W. T. Thiselton-Dyer, Fl. Trop. Afr. iv. pt. 1, p. 127 (1902).

[2]Trimen, H. Hermann's Ceylon herbarium and Linnaeus' 'Flora Zeylanica.' (Jour. Linn. Soc. Bot. xxiv. 138. 1887.)

Wrightia zeylanica R. Brown, and another reference *Apocynum zeylanicum sylvestre inodorum siliquosum*, Burm. Thes. Zeyl. 25; the latter is clearly no *Tabernaemontana* (*Ervatamia*) but apparently represents *Calotropis gigantea* (Linnaeus) R. Brown. Thus the original Linnaean description of 1747 was in itself, as to the references and specimen cited, a mixture of three different species, the type, an actual specimen of the species here discussed, and two added references that represent species not even congeneric with the type specimen. One of these erroneous references was eliminated when Linnaeus proposed the binomial *Nerium divaricatum* in 1753, but the other was retained. The binomial *Nerium divaricatum* Linnaeus might be eliminated under the rule that a species based on a mixture of two or more different ones is invalid; and here at least two, one a *Tabernaemontana* (*Ervatamia*), the other a *Wrightia* are involved. If, however, this rule be strictly applied to all Linnaean binomials that are actually based on mixtures, several hundred generally accepted Linnaean names in current use will be replaced by later, or in some cases, even by new ones. I prefer to typify *Nerium divaricatum* Linnaeus by the extant specimen that Linnaeus examined in preparing his description published in 1747, this being the first reference under the binomial of 1753 and, as noted above, the one from which his specific name was derived. The synonymy is as follows:

Tabernaemontana divaricata (Linnaeus) R. Brown apud Roemer & Schultes, Syst. IV. 427 (1819).

Nerium divaricatum Linnaeus, Sp. Pl. 209 (1753), quoad syn. Fl. Zeyl., excl. syn. Hermann.

Tabernaemontana alternifolia Linnaeus, Sp. Pl. 211 (1753)?

Nyctanthes acuminata Burman f., Fl. Ind. 5 (1768).

Nerium coronarium Jacquin, Coll. I. 138 (1786).

Tabernaemontana coronaria Willdenow, Enum. Hort. Berol. 275 (1809).

Ervatamia coronaria Stapf in Thiselton-Dyer, Fl. Trop. Afr. IV. 127 (1902).

Ervatamia divaricata Burkill in Rec. Bot. Surv. India, X. 320 (1925).—Alston in Trimen, Fl. Ceyl. VI. Suppl. 191 (1931).

Kopsia cochinchinensis Kuntze[1], Rev. Gen. Pl. II. 415 (1891).

[1]The actual type of this species is *Kuntze 3953*, from Saigon, in the herbarium of the New York Botanical Garden. Pitard's interpretation of the species in Lecomte, Fl. Gén. Indo-Chine, III. 1134 (1933), was based on *Pierre 32* from Mt. Dinh near Baria, and is entirely erroneous. A duplicate of this together with a copy of Pierre's detailed drawings is in the herbarium of the New York Botanical Garden. It is a true *Kopsia* and may be called **K. Pitardii**, nom. nov. (*K. cochinchinensis* Pitard, non O. Kuntze; *K. longiflora* Pierre apud Pitard, l.c. in syn., non Merrill).

A native of India, now widely cultivated in tropical and subtropical regions of both hemispheres.

Were I sure that *Tabernaemontana alternifolia* Linnaeus represented this species I should adopt this binomial. It was based wholly on *Curutu-pala* Rheede, Hort. Malabar. I. 83, t. 46, erroneously cited by Linnaeus as "*Curutu-pala* Rheede Mal. 4. p. t. 43." The illustration is rather crude but in spite of most of the leaves being delineated as alternate, it clearly represents a *Tabernaemontana* (*Ervatamia*). Rheede states that it grows in "arenosis" and does not indicate that it was cultivated. Apparently *T. divaricata* (Linnaeus) R. Brown occurs in India only as a cultivated plant. I suspect that some other species is represented by Rheede's illustration.

The genus *Tabernaemontana* was first described by Plumier, based on American material. It must be typified by one of the three species originally proposed by Linnaeus in 1753: 1. *T. citrifolia* Linnaeus, 2. T. *laurifolia* Linnaeus, and 3. *T. alternifolia* Linnaeus. The specimens named *T. citrifolia* and *T. laurifolia* in the Linnaean herbarium are not the types, as these were not in the herbarium in 1753, having been added some time after 1755. Curiously, the first two are each based on references representing two or more different species, and the third on an erroneous citation. In spite of the fact that the first one, *T. citrifolia* Linnaeus, was based on a reference to Plumier, an American plant, and one to Rheede, an Indian plant, with additional references to the Hortus Cliffortianus and to Royen, it will be generally accepted as the type of the genus (excluding the reference to Rheede) because it is the only one of the three species having a reference to Plumier, the original author of the genus. Linnaeus made a curious error in citing Rheede, quoting the reference as "*Pala. Rheed. mal.* 1. *p.* 81 *t.* 46". *Pala* Rheede, Hort. Malabar. I. 81, t. 45, is *Alstonia scholaris* (Linnaeus) R. Brown, but *Curutu-pala* Rheede, Hort. Malabar. I. 83, t. 46 (in text as t. 47) is the *Tabernaemontana*; it may represent *T. divaricata* (Linnaeus) R. Brown. The second species *T. laurifolia* Linnaeus is based on a reference to Amm. Herb. 212 and one to *Nerium arboreum* Sloane, Hist. Jamaica, II. 62, t. 186, fig. 2 (1725); the Sloane reference apparently represents a species of *Tabernaemontana*, although his description of the fruits as "two long pods, forked like Horns, as in the other oleanders" is not too good for this

genus. The third species *T. alternifolia* was based wholly on "*Curutu-pala* Rheede Mal. 4 p. t. 43", an erroneous citation. *Curutu-pala* Rheede is Hort. Malabar. I. 83, t. 46 and this is the illustration that Linnaeus apparently intended. It may represent *Tabernaemontana* (*Ervatamia*) *divaricata* (Linnaeus) R. Brown.

Since Stapf gave *Ervatamia* generic rank in 1902, about thirty binomials have been published under this name, chiefly transfers of Old World species of *Tabernaemontana*. It has apparently been assumed by most authors that all the Old World species of *Tabernaemontana* belong in *Ervatamia* and that all the tropical American species represent the original Linnaean genus. I am not convinced that this is the case, and accordingly have not felt justified in accepting *Ervatamia* as a sufficiently well distinguished generic segregate from *Tabernaemontana*. Markgraf[1] recognizes both *Tabernaemontana* and *Ervatamia* as occurring in New Guinea, and tabulates the relatively slight differences whereby the two genera may be distinguished. Before *Ervatamia* is more generally accepted as a generic segregate from *Tabernaemontana* it would seem desirable to examine a large series of specimens representing both American and Old World types with view to determining whether or not the slight differential characters hold, and especially whether or not some of the American species of *Tabernaemontana* should not be transferred to *Ervatamia* if the latter is to be retained as a distinct genus.

The other point to be considered is the relationship of *Rejoua* Gaudichaud (1826) to *Ervatamia* De Candolle (1844), as a section, Stapf (1902) as a genus. The type, *Rejoua aurantiaca* Gaudichaud, Bot. Freyc. Voy. 451, t. 61 (1826) was from Rawak, in the Moluccas = *Tabernaemontana aurantiaca* Gaudichaud. Gamble, Fl. Madras 812 (1923), retains *Rejoua* as a genus distinct from both *Ervatamia* and *Tabernaemontana*, but the distinguishing characters between *Rejoua* and *Ervatamia* appear to me to be totally inadequate; he transfers *Tabernaemontana dichotoma* Roxburgh to *Rejoua* as *R. dichotoma* Gamble. What I feel should be done, if *Tabernaemontana* be broken up is that most of the Old World species should be transferred to *Rejoua*, treating this as congeneric with *Ervatamia*, for *Rejoua* has clear priority over *Ervatamia*. H. Winkler in Bot. Jahrb. XLIX. 372 (1913) in retain-

[1]MARKGRAF, F. Apocynaceae. In Nova Guinea, Bot. XIV. 285 (1927).

ing the Old World species in *Tabernaemontana* states: "Nun ist aber *Tabernaemontana dichotoma* Roxb. von Ceylon ganz entschieden eine Übergangsform von *Ervatamia* Stapf zur Sektion *Rejoua* DC."

Alyxia Forbesii King & Gamble in Jour. As. Soc. Bengal, LXXIV. pt. 2, p. 420 (Mater. Fl. Malay. Penin. IV. 630) (1907).

East Coast, trail from Medan road to the summit of Sibajak Volcano, alt. 4200–6500 ft., *no. 1037*, Feb. 15, 1932 (vine with white flowers); Tapianoeli, new road near Peso Peso, in primary forests, alt. 4100–4500 ft., *no. 1055*, Feb. 16, 1932. — Malay Peninsula.

Alyxia Reinwardtii Blume, Cat. Gew. Buitenzorg, 43 (1823).
Gynopogon Reinwardtii Koorders, Exkursionsfl. Java, III. 74 (1912).
Alyxia stellata Blume, Bijdr. 1031 (1826); non Roemer & Schultes.

Atjeh, Takengön, in primary forests, at 3600 ft. alt., *no. 740*, Jan. 8, 1932 (scandent, flowers white). — Java, and probably other parts of Malaysia.

Cerbera manghas Linnaeus, Sp. Pl. 208 (1753).

Deli-Atjeh border, at sea level, *no. 636*, Jan. 3, 1932 (tree 30 ft. high, flowers white, fruits 3½ inches in diameter). — Along the sea shore, tropical Asia, through Malaysia to Polynesia.

The species is generally known as *Cerbera Odollam* Gaertner, but the Linnaean description was based, at least in part, on an actual Javan specimen collected by Osbeck and I interpret this specimen as the type.

ASCLEPIADACEAE

Sarcolobus globosus Wallich in As. Research. XII. 568, t. 5 (1816). — King & Gamble in Jour. As. Soc. Bengal, LXXIV. pt. 2, p. 536 (Mater. Fl. Malay. Penin. VI. 746) (1907).

Deli-Atjeh border at sea level, *no. 638*, Jan. 3, 1932 (fruiting specimen). — Along the banks of tidal streams, India to Burma, the Malay Peninsula, Java, and Sumatra.

Dischidia polyphylla Ridley in Jour. Malay. Branch Roy. As. Soc. I. 78 (1923).

Tapianoeli, along the road near Peso Peso, in primary forests, alt. 4100–4500 ft., *no. 1060*, Feb. 16, 1932 (flowers white). — Known only from Sumatra, the type from Bĕrastagi.

Dischidia sp.

Tapianoeli, along the new road near Peso Peso, in primary

forests, at 4100–4500 ft. alt., *no. 1059*, Feb. 16, 1932 (flowers white).

Apparently allied to *Dischidia atropurpurea* Schlechter, the type of which was from Padang-Pandjang, but the inflorescences and flowers do not conform to Schlechter's description.

CONVOLVULACEAE

Porana volubilis Burman f., Fl. Ind. 51, t. 21, fig. 1 (1768). — King & Gamble in Jour. As. Soc. Bengal, LXXVI. pt. 2, p. 296 (Mater. Fl. Malay. Penin. IV. 506) (1905).

Atjeh, near Bireuen, at sea level, *no. 657*, Jan. 4, 1932 (vine, flowers white, delicately fragrant). — Burma and Indo-China, to Java and the Philippines, but in some parts of this range occurring only as a cultivated plant.

Lettsomia Robinsonii Ridley in Jour. Fed. Malay States Mus. VIII. pt. 4, p. 65 (1917).

Atjeh, along the road, Takengön to Bireuen, at the edge of and in primary forests, alt. 3300 ft., *nos. 840, 1131*, Jan. 11 and Feb. 21, 1932 (scandent, fruits purplish red). — Known only from Sumatra.

BORAGINACEAE

Cordia dichotoma Forster f., Prodr. 18 (1786). — Merrill, Enum. Philipp. Flow. Pl. III. 373 (1923).

Varronia sinensis Loureiro, Fl. Cochinch. 138 (1790).

Argyreia arborea Loureiro, op. cit. 135.

Cordia obliqua Willdenow, Phytogr. 4, t. 4, fig. 1 (1794); Sp. Pl. I. 1072 (1797). — Hutchinson in Kew Bull. Misc. Inform. 1918, p. 221 cum syn.

Cordia Myxa Auct., non Linnaeus.

Atjeh, near Tawar, on open rocky slopes at 3800 ft. alt., *no. 808*, Jan. 10, 1932 (tree 25 ft. high, flowers white). — India to southern China and Formosa, southward through Malaysia to Java and tropical Australia, and eastward to Polynesia.

Hutchinson in Kew Bull. Misc. Inform. 1918, p. 221, in accepting the binomial *Cordia obliqua* Willdenow (1794) for this common and widely distributed species, clearly shows that the binomial *Cordia Myxa* Linnaeus appertains strictly to a species confined to Egypt, the Sudan, Asia Minor, and Mesopotamia. For the Indo-Malaysian form I have adopted *Cordia dichotoma* Forster f., a binomial eight years older than that of Willdenow.

If it should be shown ultimately that the Polynesian *Cordia dichotoma* Forster f. represents a species distinct from the Indo-Malaysian *C. obliqua* Willdenow there are still two names supplied by Loureiro's binomials above reduced to synonymy, both older than Willdenow's.

Tournefortia tetrandra Blume, Bijdr. 845 (1826).

Tetrandra Zollingeri Miquel, Fl. Ind. Bat. II. 928 (1858–59).

Atjeh, road from Bireuen to Takengön, kilometers 17–18, *no. 673*, Jan. 5, 1932 (vine, fruits green). — Java, Borneo.

VERBENACEAE

Callicarpa longifolia Lamarck, Encycl. Méth. I. 563 (1753). — H. Lam & Bakhuizen van den Brink in Bull. Jard. Bot. Buitenzorg, sér. 3, III. 26 (1921).

Deli-Atjeh border at sea level, *no. 640*, Jan. 3, 1932 (shrub, 6–8 ft. high, flowers lilac); East Coast, Medan-Bĕrastagi road, near the entrance to the sulphur spring, in second growth forests, at 4200 ft. alt., *no. 987*, Feb. 13, 1932 (shrub 12 ft. high, fruits white). — This is the typical form as originally described from Malaccan specimens. India to southern China, through Malaysia to Java, Borneo, the Philippines, New Guinea, and New Ireland.

Premna integrifolia Linnaeus, Mant. II. 252 (1771). — H. Lam & Bakhuizen van den Brink in Bull. Jard. Bot. Buitenzorg, sér. 3, III. 42 (1921).

Atjeh, Langsa, at sea level in marshy places, *no. 644*, Jan. 3, 1932 (low shrub, fruits purple). — India and Ceylon to Madagascar, and southeastern China, through Malaysia to the Philippines, and western Polynesia.

The particular form of the collective species as interpreted by Lam and Bakhuizen van den Brink is apparently "*V. foetida*" (*Premna foetida Reinwardt*).

Vitex trifolia Linnaeus, Sp. Pl. 638 (1753). — H. Lam & Bakhuizen van den Brink in Bull. Jard. Bot. Buitenzorg, sér. 3, III. 52 (1921).

Atjeh, near Lake Tawar, near the lake shore, at 3800 ft. alt., *no. 806*, Jan. 10, 1932 (shrub up to 10 ft. high, often planted by the natives for hedges, flowers lilac); East Coast, Dolok Merangir, near dwellings at 800 ft. alt., *no. 615*, Dec. 29, 1931 (shrub 4 ft. high, local name *saleh puteh*). — India and Ceylon to Mauritius,

and Réunion, eastward to southern Japan, and throughout Malaysia to Polynesia, particularly near the sea.

Gmelina elliptica Smith in Rees, Cycl. XVI. no. 2 (1810–11). — Merrill, Enum. Philipp. Flow. Pl. III. 399 (1923).

Gmelina villosa Roxburgh, Hort. Beng. 46 (1814), nomen nudum; Fl. Ind. ed. 2, III. 86 (1832).

Gmelina asiatica Linnaeus var. *villosa* Bakhuizen van den Brink in Bull. Jard. Bot. Buitenzorg, sér. 3, III. 70 (1921).

Atjeh, Pereulah and Idi, at sea level, *nos. 628, 667*, Jan. 3, 4, 1932 (shrub or small tree, flowers yellow). — Burma to Indo-China, southward to Penang, Borneo, the Philippines and the Moluccas.

Bakhuizen van den Brink in maintaining Roxburgh's specific name of 1814–1832 as a variety, gives the publication of *Gmelina elliptica* Smith as 1836; volume 16 of Rees' Cyclopedia, in which it appears, was published in 1810–11, and Smith's name has clear priority.

Clerodendron Colebrokianum Walpers, Repert. IV. 114 (1844–48). — H. Lam & Bakhuizen van den Brink in Bull. Jard. Bot. Buitenzorg, sér. 3, III. 87 (1921).

Tapianoeli, new road near Peso Peso, kilometer 9, alt. 4100–4500 ft., *no. 1171*, Feb. 22, 1932 (shrub 18 ft. high, flowers red). — India to the Malay Peninsula and Sumatra.

Clerodendron disparifolium Blume, Bijdr. 809 (1826). — H. Lam & Bakhuizen van den Brink in Bull. Jard. Bot. Buitenzorg, sér. 3, III. 83 (1921).

East Coast, Dolok Merangir Estate, alt. 800 ft., *no. 610*, Dec. 29, 1931 (shrub 10 ft. high, the persistent calyces red.) — Siam to Java, and Borneo.

Clerodendron japonicum (Thunberg) Makino in Bot. Mag. Tokyo, XVII. 91 (1903).

Volkameria japonica Thunberg, Fl. Jap. 255 (1784).

Clerodendron squamatum Vahl, Symb. II. 74 (1791). — H. Lam & Bakhuizen van den Brink in Bull. Jard. Bot. Buitenzorg, sér. 3, III. 93 (1921).

Atjeh, Takengön, near Lake Tawar, *no. 682*, Jan. 6, 1932 (shrub 4 ft. high, flowers scarlet). — India to China and Japan, southward to Java, and other parts of Malaysia.

Thunberg's specific name is the oldest valid one; a photograph of his type specimen shows clearly that his species is identical with *Clerodendron squamatum* Vahl.

Clerodendron serratum (Linnaeus) Sprengel, Syst. II. 758 (1825). — H. Lam & Bakhuizen van den Brink in Bull. Jard. Bot. Buitenzorg, sér. 3, III. 78 (1921).

Volkameria serrata Linnaeus, Mant. I. 90 (1767).

East Coast, Dolok Merangir Estate, alt. 800 ft., *no. 604*, Dec. 29, 1931 (common shrub, flowers white tinged with lavender. —India to Madagascar, and tropical east Africa, westward to Yunnan and Kwangsi in China, and southward to Java, the Lesser Sunda Islands, and Celebes.

Clerodendron villosum Blume, Bijdr. 811 (1826). — H. Lam & Bakhuizen van den Brink in Bull. Jard. Bot. Buitenzorg, sér. 3, III. 89 (1921).

East Coast, Dolok Merangir Estate, alt. 800 ft., *no. 605*, Dec. 29, 1931 (shrub 10 ft. high, flowers white, their throats lavender). — India to Burma, southward to Java, Borneo, and the Philippines.

LABIATAE

Gomphostemma oblongum Wallich, Num. List, no. 2154 (1828), nomen nudum. — Bentham in Wallich, Pl. As. Rar. II. 12 (1831); Lab. Gen. Sp. 648 (1832–36). — King & Gamble in Jour. As. Soc. Bengal, LXXIV. pt. 2, p. 725 (Mater. Fl. Malay. Penin. IV. 935) (1907). — Prain in Ann. Bot. Gard. Calcutta, III. 261, t. 95 (1891). — Ridley, Fl. Malay Penin. II. 653, fig. 131 (1923).

Atjeh, Takengön, in primary forests, alt. 3600 ft., *no. 736*, Jan. 7, 1932 (up to 5 ft. high, flowers white). — Tenasserim and Burma to Indo-China, the Andaman Islands, and the Malay Peninsula.

Gomphostemma dolichobotrys, sp. nov. (§ *Stenostoma*)

Herba perennis, circiter 2 m. alta, caulibus superne 5 mm. diametro, sulcatis, dense longe subplumoso-hirsutis atque breviter stellato-pubescentibus, pilis stellatis cinereis, pilis ramosis pallide brunneis; foliis chartaceis, ovato-ellipticis, 18–25 cm. longis, 11–14 cm. latis, breviter acuminatis, basi late acutis ad subrotundatis, margine breviter dentato vel denticulato, supra olivaceis, consperse simpliciter ciliatis, subtus cinereis, molliter stellato-pubescentibus et ad costam nervosque pilis rigidis ramosis inspersis, nervis primariis utrinque 6, supra impressis, subtus elevatis, perspicuis, reticulis primariis laxis; petiolo 4–7 cm. longo, dense stellato-pubescente atque pilos elongatos paucos ramosos gerente; inflorescentiis axillaribus, solitariis, simplici-

bus, circiter 10 cm. longis, dense stellato-pubescentibus, verticillastris inter se 1—3 cm. distantibus, 6—8-floris, bracteis anguste lanceolatis, stellato-pubescentibus, 8 mm. longis, deciduis; floribus albidis, circiter 2 cm. longis, gracilibus, pedicellis usque ad 3 mm. longis; calycibus basi acutis, extus dense stellato-pubescentibus, intus simpliciter adpresse-hirsutis, lobis 5, lanceolatis, acuminatis, 3—4 mm. longis; corollae tubo gracili, cylindrico, 2 mm. diametro, recto, extus deorsum glabro, sursum hirsuto, intus glabro, lobis 4—6 mm. longis, superioribus integris; filamentis ciliatis; ovario glabro.

Atjeh, Takengön, in primary forests at 1100 m. alt., *Walter N.* and *Catherine M. Bangham no. 728*, Jan. 7, 1932 (flowers white).

A species characterized by its mixed indumentum which is made up of simple hairs, especially on the upper surfaces of the leaves, with short, cinereous stellate hairs, and intermixed, longer, pale brownish, irregularly branched hairs on the younger parts of the stem, the petioles, the midrib and lateral nerves beneath, and to a less degree on the inflorescences. Its alliance is clearly with *Gomphostemma parviflorum* Wallich, from which it differs in its elongated, simple inflorescences, its small deciduous bracts, and its elongated petioles.

Scutellaria sumatrana Miquel, Fl. Ind. Bat. II. 974 (1858—59).

Atjeh, trail from Kabanjakan to Tretet, at the edge of the forest, alt. 3500—5000 ft., *no. 898*, Jan. 13, 1932 (flowers white). — Known only from Sumatra; the identification is from the description.

Ocimum sanctum Linnaeus, Mant. I. 85 (1767). — Hooker f., Fl. Brit. Ind. IV. 609 (1885).

Atjeh, near Idi, at sea level, *no. 666*, Jan. 4, 1932 (flowers lavender, plant very aromatic, local name *kamangin*). — Pantropic, but apparently a native of tropical Asia.

SOLANACEAE

Solanum aculeatissimum Jacquin, Coll. I. 100 (1786); Ic. Rar. I. t. 41 (1781—86). — C. B. Clarke in Hooker f., Fl. Brit. Ind. IV. 237 (1883).

Solanum Bodinieri Léveillé & Vaniot in Bull. Soc. Bot. France, LV. 206 (1908).

Atjeh, road from Takengön to Bireuen, alt. 3500 ft., *no. 842*, Jan. 11, 1932 (3 ft. high, flowers white, fruits bright orange). — Native of tropical America, introduced in various parts of the Old World — Hawaii, Formosa, southern China, Java, and the Malay Peninsula. It resembles the Indian *Solanum surattense* Burman f. (*S. xanthocarpum* Schrader & Wendland).

Solanum verbascifolium Linnaeus, Sp. Pl. 184 (1753). — C. B. Clarke in Hooker f., Fl. Brit. Ind. IV. 230 (1883).

Atjeh, road from Takengön to Bireuen, edges of and in forests at 3300 ft. alt., *no. 821*, Jan. 14, 1932 (tree 20 ft. high). — Pantropic.

Cestrum aurantiacum Lindley in Bot. Reg. XXX. Misc. 71 (1844); XXXI. pl. 22 (1845).

East Coast, near Bĕrastagi, alt. 4800 ft., *no. 1113*, Feb. 18, 1932 (vine, flowers orange-yellow, fruits white; "a possible escape from cultivation"). — A native of Central America, here introduced.

Cestrum fasciculatum Miers in Hooker, Lond. Jour. Bot. v. 151 (1846).

East Coast, near Bĕrastagi, alt. 4800 ft., *no. 1112*, Feb. 18, 1932 (scandent, flowers bright rose; "a possible escape from cultivation"). — A native of Mexico, here introduced.

SCROPHULARIACEAE

Wightia borneensis Hooker f., Ic. XV. t. 1444 (1883).

Atjeh, on cliffs near Lake Tawar, alt. 3800 ft., *no. 795*, Jan. 10, 1932 (shrub 6 ft. high). — Borneo.

There are neither flowers nor fruits with the two specimens examined. The following Sumatran collections from Simeloengoen apparently represents the same species: *Bartlett 7144* and *Yates 2172, 2673*.

BIGNONIACEAE

Oroxylum indicum (Linnaeus) Ventenat, Dec. Gen. Nov. 8 (1808). — C. B. Clarke in Hooker f., Fl. Brit. Ind. IV. 378 (1884).

Bignonia indica Linnaeus, Sp. Pl. 625 (1753).

Atjeh, road from Bireuen to Takengön, kilometer 19, on slopes in secondary forests, *no. 671*, Jan. 5, 1932 (tree 35 ft. high, flowers deep red-purple, fruits 3 ft. long, local name *bidoek*). — India to Indo-China, southward to Java, and the Philippines.

GESNERIACEAE

Trichosporum Boschianum (De Vriese) Kuntze, Rev. Gen. Pl. II. 477 (1891).

Aeschynanthus Boschiana De Vriese in Ann. Soc. Agr. Bot. Gand, I. 403, t. 39 (1845).

Aeschynanthus lamponga Miquel, Fl. Ind. Bat. Suppl. 563 (1861). — C. B. Clarke in C. de Candolle, Monog. Phan. v. 42 (1883).

Medan-Bĕrastagi road, kilometers 59—61, in primary forests at 4100 ft. alt., *nos. 1142, 1144*, Feb. 21, 1932 (epiphytic vine, flowers scarlet). — Known only from Sumatra.

The specimens agree better with the colored plate accompanying the original description of De Vriese's species than they do with Waitz's specimen cited by Clarke as representing Miquel's species. Clarke overlooked *Aeschynanthus Boschiana* De Vriese, the place of publication being as cited above, not to vol. II. 403 (1846) as given in Index Kewensis.

Trichosporum elongatum (C. B. Clarke) Kuntze, Rev. Gen. Pl. II. 477 (1891).

Aeschynanthus elongata C. B. Clarke in C. de Candolle, Monog. Phan. v. 45 (1883).

Atjeh, trail from Kabanjakan to Tretet, alt. 3500—5000 ft., *no. 883*, Jan. 13, 1932 (epiphytic vine, corolla scarlet, calyx darker). — Borneo.

Trichosporum longiflorum (Blume) Kuntze, Rev. Gen. Pl. II. 477 (1891).

Lysionotus longiflorus Blume, Bijdr. 766 (1826).

Aeschynanthus longiflora De Candolle, Prodr. XI. 262 (1845). — C. B. Clarke in C. de Candolle, Monog. Phan. v. 32 (1883). — Non Wallich.

Tapianoeli, new road near Peso Peso, in primary forests at 4500 ft. alt., *no. 1068*, Feb. 16, 1932 (epiphytic vine, flowers scarlet). — Java, Borneo.

Trichosporum oligodontum, sp. nov. (§ *Haplotrichum*)

Plate XIV.

Species *T. tetraquetrae* (C. B. Clarke) Kuntze manifeste affinis, differt foliis brevioribus latioribusque, floribus terminalibus, magis numerosis, capsulis brevioribus, 10 cm. longis. — Frutex epiphyticus, glaber, ramis ramulisque 4-angulatis, ramulis ultimis circiter 1 mm. diametro; foliis quaternatim verticillatis, coriaceis, sessilibus vel brevissime petiolatis, elliptico-ovatis vel oblongo-ellipticis vel oblongo-ovatis, 2—3 cm. longis, 7—10 mm. latis,

acutis vel breviter acuminatis, margine distanter serrato vel glandulo-serrulato, pallidis vel olivaceis, coriaceis, nervis lateralibus obsoletis; floribus 2.3 cm. longis, rubro-purpureis, terminalibus, fasciculis 4—6-floris, pedicellis glabris, usque ad 1 cm. longis; calycibus alte fissis, segmentis liberis, lanceolatis vel linearilanceolatis, acuminatis, glabris vel parcissime pubescentibus, circiter 4 mm. longis; corollae tubo recto vel leviter curvato, deorsum angustato, extus parce consperseque pubescente; ore paullo obliquo, lobis vix 3 mm. longis; filamentis breviter exsertis, leviter pubescentibus; capsulis linearibus, cylindricis, utrinque longe angustatis, graciliter acuminatis, circiter 9 cm. longis, 3 mm. diametro; seminibus minutis, pilis utrinque solitariis, albidis, circiter 8 mm. longis.

East Coast, trail from Goodyear bungalow to Sibajak Volcano, in forests, alt. 5000—6000 ft., *Walter N.* and *Catherine M. Bangham no. 998*, Feb. 14, 1932 (epiphytic shrub, flowers wine-red).

Clearly a close ally of *Trichosporum tetraquetrum* (C. B. Clarke) Kuntze as described and excellently illustrated by C. B. Clarke in C. de Candolle, Monog. Phan. v. 38, t. 1 (1883), from Sumatran material, differing in its leaf shape and size, and in certain floral and fruit characters. It is one of the very few known species of the genus with toothed leaves.

Trichosporum radicans (Jack) Nees in Flora, VIII. 144 (1825).

Aeschynanthus radicans Jack in Trans. Linn. Soc. XIV. 43 (1825). — C. B. Clarke in C. de Candolle, Monog. Phan. v. 41 (1883).

Atjeh, Takengön, on an old decayed tree trunk, alt. 4000—5000 ft., *no. 676*, Jan. 6, 1932 (epiphytic vine, flowers red). — Malay Peninsula, Borneo, Java.

Trichosporum stenophyllum (Ridley), comb. nov.

Aeschynanthus stenophylla Ridley apud King & Gamble in Jour. As. Soc. Bengal, LXXIV. pt. 2, p. 733 (Mater. Fl. Malay. Penin. IV. 943) (1908). — Ridley, Fl. Malay Penin. II. 498 (1923).

East Coast, road from Siantar to Bĕrastagi, kilometers 180—189, in second growth forests at 3500 ft. alt., *no. 965*, Dec. 12, 1932 (semiscandent epiphyte, corolla tubes green, their tips brown). — Malay Peninsula.

In the original consideration of the species where it was described from Malay Peninsula and "Sumatra (*Forbes 2535*)" material, and in the repeated one, the position of the leaves is not clearly defined; in the first (key) they are indicated as opposite

but crowded, and in the second (key) as whorled. In the specimen cited above the very narrow leaves are in whorls of 3 or 4 at each node.

Trichosporum ternifolium, sp. nov. (§ *Haplotrichum*)

Plate XIV.

Frutex scandens, epiphyticus, glaber, ramis gracilibus, pallidis, teretibus vel subteretibus, ramulis ultimis circiter 1 mm. diametro, infra nodis plerumque triangularibus; foliis plerumque ternatim verticillatis, oblongis vel lanceolatis, 2—4.5 cm. longis, 5—10 mm. latis, subsessilibus vel breviter (usque ad 1.5 mm.) petiolatis, coriaceis, sicco subolivaceis, rugosis, nervis obsoletis, margine irregulariter obscure subundulato-dentato, vel integro; floribus axillaribus, solitariis, aurantiacis vel flavidis, pedicellis gracilibus, glabris, 8 mm. longis; sepalis lineari-lanceolatis, glabris, liberis, 3 mm. longis; corolla 2.2 cm. longa, angusta, glabra, sursum leviter ampliata, recta vel leviter curvata, lobis 2—4 mm. longis, subellipticis, rotundatis, brunneo-marginatis, margine minute ciliato; filamentis breviter exsertis, sursum minute glanduloso-pubescentibus.

East Coast, in ravines between Baboeli and Paekas, alt. about 1200 m., *Walter N.* and *Catherine M. Bangham no. 781,* Jan. 9, 1932 (epiphytic vine, corolla tubes orange, shading to yellow, the lobes with a narrow brown border.)

A species apparently belonging in the group with *Trichosporum tetraquetrum* (Clarke) Kuntze but with very different leaves which are for the most part ternate, and different flowers. The brown-margined corolla lobes mentioned by the collector in his field notes, are very evident in the dried material.

Agalmyla angustifolia Miquel, Fl. Ind. Bat. II. 723 (1857—59). — C. B. Clarke in C. de Candolle, Monog. Phan. v. 57(1883).

Tapianoeli, new road near Peso Peso, in primary forests, alt. 4100—4500 ft., *nos. 1071, 1125, 1122,* Feb. 16 and 19, 1932 (herbaceous vine, flowers red). — Known only from Sumatra.

The identification has been made from the published descriptions which are far from satisfactory; Clarke in citing the type collection in the Utrecht herbarium stating: "Exemplum visum mancum." Clearly neither *A. brevifolia* S. Moore nor *A. sericea* Ridley, the other two described Sumatran species, are represented.

Chirita Horsfieldii R. Brown in Bennett, Pl. Jav. Rar. 117

(1839), var. **scaberrima** (R. Brown) C. B. Clarke in C. de Candolle, Monog. Phan. v. 124 (1883).

Chirita scaberrima R. Brown, l.c.

Atjeh, Takengön, near Lake Tawar, on slopes, *no. 686*, Jan. 6, 1932 (about 5 ft. high, corollas white with deep blue-purple margins, calyx maroon, local name *mata koela*). — Java.

The Sumatran *Chirita Forbesii* Moore has free bracts but is otherwise similar to this and the few described closely allied species; in Bangham's specimen the bracts are unusually large, attaining a length of 2 cm. The oldest specific name *Didymocarpus barbata* Jack (1825) is invalidated in *Chirita* by the very different *C. barbata* Sprague.

Didymocarpus sp.

East Coast, Medan-Bĕrastagi road, near the entrance to the sulphur spring, at 4200 ft. alt., *no. 971*, Feb. 13, 1932 (flowers white, throat yellow-spotted, outside stippled with red).

From the single specimen available I have not been able to place this in reference to the numerous previously described species of the genus.

Cyrtandra sp.

Three species of *Cyrtranda* are represented in the collection by incomplete material, none of which can be referred to described species. *Number 1187* from Sinaboeng Volcano, East Coast, in fruit, is near *C. falcata* Ridley of the Malay Peninsula, a species of the section *Whitia*; *Number 968* from the Medan-Bĕrastagi road is another species of the same section. *Number 730* from Takengön apparently belongs in the section Aureae.

Number 1051 from Sibajak Volcano, of which I have seen but a single flower, probably belongs in this family; dissection material is lacking.

ACANTHACEAE

Strobilanthes pedunculosa Miquel, Fl. Ind. Bat. II. 803 (1857–59).

East Coast, trail from Goodyear bungalow to Sibajak Volcano, *no. 1005*, Feb. 14, 1932 (flowers white). — Java.

Strobilanthes rufo-pauper C. B. Clarke in King & Gamble in Jour. As. Soc. Bengal, LXXIV. pt. 2, p. 657 (Mater. Fl. Malay. Penin. IV. 867) (1907). — Ridley, Fl. Malay Penin. II. 573 (1923).

Atjeh, Kabajakan to Tretet, alt. 3500–5000 ft., *no. 897*,

Jan. 13, 1932 (flowers lavender inside, white outside). — Malay Peninsula.

More adequate material may indicate that this Sumatran plant form is different from that of the Malay Peninsula.

Strobilanthes Ridleyi, nom. nov.

Strobilanthes anceps Ridley in Jour. Malay. Branch Roy. As. Soc. I. 82 (1923); non Nees (1847).

Atjeh, Takengön, in primary forests at 3600 ft. alt., *no. 731*, Jan. 7, 1932 (shrub 6 ft. high, flowers white). — Known only from Sumatra.

There are certain discrepancies between the specimen cited and Ridley's not very definite description; his type was from Bĕrastagi. In any case the species described by Ridley needs a new name.

Acanthus ilicifolius Linnaeus, Sp. Pl. 639 (1753). — C. B. Clarke in Hooker f., Fl. Brit. Ind. IV. 481 (1884).

Deli-Atjeh border at sea level, *no. 637*, Jan. 3, 1932 (shrub 3 ft. high, flowers bluish white). — Brackish swamps, tropical Africa through tropical Asia and Malaysia to Polynesia.

Pseuderanthemum sumatrense (Ridley), comb. nov.

Eranthemum sumatrense Ridley in Jour. Malay. Branch Roy. As. Soc. I. 83 (1923).

East Coast, along the road from Kaban Djahe to Kota Tjane, in forested ravines, alt. 4000–4500 ft., at kilometer 143, *no. 1086*, Feb. 17, 1932 (corolla lobes blotched with red-purple); Atjeh, Kabanjakan to Tretet, near streams, alt. 3500–5000 ft., *no. 902*, Jan. 11, 1932. — Known only from Sumatra.

Justicia Gendarussa Burman f., Fl. Ind. 10 (1768). — Linnaeus f., Suppl. 85 (1781).

East Coast, Sinaboeng Volcano, in thin forests, *no. 1186*, Feb. 23, 1932 (shrub 4 ft. high, flowers white, specked with purple).

Filetia sp.?

East Coast, Medan-Bĕrastagi road, kilometers 59–61, in primary forests, alt. 4100 ft., *no. 1155*, Feb. 21, 1932 (herb 5 ft. high, flowers deep rose tinged with cream).

I have seen none of the species placed under Miquel's genus by Clarke and by Ridley, one species having been described from Sumatra, six from the Malay Peninsula, and several undescribed ones indicated for Borneo.

PLANTAGINACEAE

Plantago major Linnaeus, Sp. Pl. 112 (1753). — Prain in King & Gamble in Jour. As. Soc. Bengal, LXXIV. pt. 2, p. 727 (Mater. Fl. Malay. Penin. IV. 937) (1907).

Plantago asiatica Linnaeus, Sp. Pl. 113 (1753). — Ridley, Fl. Malay Penin. II. 225, fig. 95 (1923).

Atjeh, Takengön, in second growth forests at 3600 ft. alt., *no. 848*, Jan. 12, 1932. — All warm countries.

This is a form that is currently referred to *Plantago major* Linnaeus; it is unquestionably an introduced plant in Malaysia. It is exactly the form illustrated by Ridley as representing *P. asiatica* Linnaeus. I can express no opinion as to whether or not two different species are involved here.

RUBIACEAE

Hedyotis capitellata Wallich, Num. List, no. 837 (1829), nomen nudum. — G. Don, Gen. Syst. III. 527 (1834). — King & Gamble in Jour. As. Soc. Bengal, LXXII. pt. 2, p. 159 (Mater. Fl. Malay. Penin. IV. 49)(1903).

Tapianoeli, new road near Peso Peso, in primary forests, alt. 4100–4500 ft., *no. 1170*, Feb. 22, 1932 (scandent, flowers white, tinged with orchid). — Burma and Siam to Yunnan, and Indo-China, the Malay Peninsula, and Borneo.

Ophiorrhiza deflexa Ridley in Jour. Malay. Branch Roy. As. Soc. I. 65 (1923).

Atjeh, trail from Kabajakan to Tretet, near the edge of the forest, alt. 3500–5000 ft., *no. 891*, Jan. 13, 1932 (herb 4 ft. high, flowers white tinged with maroon). — Known only from Sumatra, type from Bĕrastagi.

Ophiorrhiza Ridleyi Merrill in Papers Michigan Acad. XIX. 198 (1934).

Ophiorrhiza bracteata Ridley in Jour. Fed. Malay States Mus. VIII. pt. 4, p. 47 (1917); non Korthals.

East Coast, trail from Medan road to the summit of Sibajak Volcano, alt. 4200–4500 ft., *no. 1024*, Feb. 13, 1932 (flowers white); also represented by *Yates no. 2433* from Mount Singgalan; *Yates no. 1529* from Bĕrastagi; and *Bartlett no. 7940* from Habinsaran. Ridley's type was from Siolak Daras and Sungei Kumbang. — Known only from Sumatra.

Argostemma invalidum Ridley in Jour. Bot. LXV. 38 (1927).

Atjeh, trail from Kabanjakan to Tretet, alt. 3500–5000 ft., *no. 892*, Jan. 13, 1932 (flowers white). Probably *no. 1153*, Feb. 21, 1932 (a single specimen, herb. Arnold Arboretum) from the Medan-Bĕrastagi road, East Coast, represents a form of the same species. — Known only from Sumatra.

Argostemma montanum Blume var. **minor** Ridley in Jour. Bot. LXV. 31 (1927).

East Coast, Medan-Bĕrastagi road, kilometers 59–61, alt. 4100 ft., *no. 1154*, Feb. 21, 1932. — The variety known only from Sumatra, the species in Java.

Uncaria sp.

East Coast, trail from Goodyear bungalow to Sibajak Volcano, *no. 1006*, Feb. 14, 1932 (scandent, lower surfaces of the leaves dark red or maroon, galls light yellow). A sterile specimen with large, rostrate, fleshy, axillary galls, and rather large, thin, nearly glabrous leaves, apparently undescribed.

Neonauclea nicobarica (Haviland) Merrill in Jour. Washington Acad. Sci. v. 541 (1915).

Nauclea nicobarica Haviland in Jour. Linn. Soc. Bot. XXXIII. 59 (1897).

Nauclea purpurascens Korthals var. *latifolia* Korthals apud Miquel in Ann. Mus. Bot. Lugd.-Bat. IV. 182 (1869).

East Coast, along the road, Siantar to Bĕrastagi, kilometers 188–189, in second growth forests, at 3500 ft. alt., *no. 964*, Feb. 12, 1932 (tree 40 ft. high, flowers white). — Nicobar Islands.

This specimen agrees in all essentials with Haviland's description and doubtless represents the Sumatran form he tacitly referred to this species through his reduction of Korthals' variety. The leaves are elliptic-obovate to broadly obovate and up to 17 by 13 cm. in size.

Mussaenda hirsuta Ridley in Jour. Malay. Branch Roy. As. Soc. I. 68 (1923).

East Coast, route to Tapianoeli, open land near Bĕrastagi, alt. 488 ft., *no. 1083*, Feb. 16, 1932 (clambering vine, flowers orange-yellow, the large petaloid sepal white). — Known only from Sumatra, the type from Bĕrastagi.

Mycetia angustifolia Ridley in Jour. Malay. Branch Roy. As. Soc. I. 68 (1923).

East Coast, Medan-Bĕrastagi road, kilometers 59–61, in primary forests, at 4100 ft. alt., *no. 1149*, Feb. 21, 1932 (shrub

4–6 ft. high, fruits translucent white, flowers pale yellow). — Known only from Sumatra, the type from Bĕrastagi.

Urophyllum grandifolium Ridley in Jour. Malay. Branch Roy. As. Soc. I. 68 (1923).

East Coast, Medan-Bĕrastagi road, near the entrance to the sulphur spring, alt. 4200 ft., in forested ravines, *no. 986*, Feb. 13, 1932 (shrub 10 ft. tall, flowers white). — Known only from Sumatra, type from Bĕrastagi.

Urophyllum macranthum Ridley, op. cit. 69.

East Coast, Medan-Bĕrastagi road, near the entrance to the sulphur spring, alt. 4200 ft., *no. 978*, Feb. 13, 1932 (shrub 12 ft. tall, flowers waxy white). — Known only from Sumatra; type from Bĕrastagi.

Urophyllum vulcanicum Ridley in Jour. Bot. LXX. 224 (1932).

East Coast, Medan-Bĕrastagi road, near the entrance to the sulphur spring, in forested ravines at 4200 ft. alt., *no. 979*, Feb. 13, 1932 (fruits green). — Known only from Sumatra; type from "Bĕrastagi. Volcanic woods of Mount Sibajak."

Tarenna mollis (Wallich) B. L. Robinson in Proc. Am. Acad. XLV. 405 (1910). — Valeton in Bot. Jahrb. XLIV. 558 (1910) (merely as *T. mollis* Wall. ?, without the name-bringing synonym).

Stylocoryna mollis Wallich Num. List, no. 8454 (1848) nomen nudum. — King in Jour. As. Soc. Bengal, LXXII. pt. 2, p. 202 (Mater. Fl. Malay. Penin. XIV. 92) (1903). — Ridley, Fl. Malay. Penin. II. 109 (1923).

East Coast, road from Kabajakan to Kota Tjane, kilometer 140, alt. 4000–5000 ft., *no. 1098*, Feb. 17, 1932 (tree 45 ft. high, flowers creamy white). — Malay Peninsula.

Tarenna sylvicola (Ridley), comb. nov.

Stylocoryne sylvicola Ridley in Jour. Malay. Branch Roy. As. Soc. I. 69 (1923).

East Coast, road from Siantar to Bĕrastagi, kilometers 188–189, in secondary forests, at 3500 ft. alt., *no. 950*, Feb. 12, 1932 (shrub 12 ft. high, flowers white, fruits green). — Known only from Sumatra, type from Bĕrastagi.

Randia oppositifolia (Roxburgh) Koorders, Exkursionsfl. Java, III. 257 (1912). — Craib, Fl. Siam. Enum. II. 106 (1932), var. **parvifolia** (King & Gamble) Craib, op. cit. 107.

Randia densifolia Benth. var. *parvifolia* King & Gamble in Jour. As. Soc. Bengal, LXXII. pt. 2, p. 209 (Mater. Fl. Malay. Penin. IV. 99) (1903).

Tapianoeli, new road near Peso Peso, in primary forests, at kilometer 115, alt. 4100–4500 ft., *no. 1114*, Feb. 19, 1932 (tree 25 ft. high, fruits red-brown, flowers white). — Siam, and the Malay Peninsula, the species extending to southeastern China, Formosa, the Philippines, and through Malaysia to tropical Australia.

This is the species commonly known as *Randia densiflora* (Wallich) Bentham, which I have reduced to *R. racemosa* (Cavanilles) F.-Villar; Craib calls attention to the fact that *Randia racemosa* Roxburgh (1814, 1824) invalidates F.-Villar's binomial and follows Koorders in accepting Roxburgh's specific name *oppositifolia*.

Randia oocarpa Ridley, Fl. Malay Penin. II. 71 (1923). — Craib, Fl. Siam. Enum. II. 105 (1932).

Atjeh, Peureulah, at sea level, *no. 625*, Jan. 3, 1932 (a single fragmentary specimen, herb. Arnold Arboretum; 12 ft. tree). — Siam, and the Malay Peninsula. This has been confused with *Randia dumetorum* Lamarck.

Petunga sp.

Atjeh, Takengön, in forests, alt. 3600 ft., *no. 723*, Jan. 7, 1932 (fruits green).

This should be near *P. venulosa* Hooker f. of the Malay Peninsula. The leaves are smaller than described for that species, while the fruiting racemes do not exceed 3 cm. in length and the ellipsoid fruits are up to 1.5 cm. long.

Pavetta indica Linnaeus, Sp. Pl. 110 (1753). — King & Gamble in Jour. As. Soc. Bengal, LXXIII. pt. 2, p. 84 (Mater. Fl. Malay. Penin. IV. 158) (1904), var.

Atjeh, Takengön, in forests at 3600 ft. alt., *no. 733*, Jan. 7, 1932 (shrub 8 ft. high, fruits dark green). — India and Ceylon to southern China, the Philippines, and Malaysia.

This large-leaved glabrous form is by no means typical *Pavetta indica* Linnaeus but in the absence of flowers I have tentatively placed it here under the collective species as *P. indica* Linneaus is interpreted by most botanists. The type specimen in the Linnaean herbarium is a form with glabrous leaves.

Ixora javanica (Blume) De Candolle, Prodr. IV. 487 (1830).— Koorders & Valeton in Meded. Lands Plant. LIX. 160 (Bijdr. Boomsoort. Java, VIII. 160) (1902).

Pavetta javanica Blume, Bijdr. 949 (1826).

Atjeh, near Peureulah, at sea level, *no. 627*, Jan. 3, 1932 (shrub 8 ft. high, flowers light orange). — Java, Borneo.

Ixora salicifolia (Blume) De Candolle, Prodr. IV. 487 (1830).

Pavetta salicifolia Blume, Bijdr. 951 (1826).

Ixora fulgens Roxburgh var. *salicifolia* Koorders & Valeton in Meded. Lands Plant. LIX. 158 (Bijdr. Boomsoort. Java, VIII. 158) (1902). — Koorders, Atlas Baumart. Java, III. t. 551 (1915).

East Coast, Nabara timber reserve, in primary forests, at 500 ft. alt., *no. 1220*, Dec. 1, 1932 (shrub 4 ft. high, flowers yellow-orange). — Malay Peninsula, Java, Borneo, and the Philippines.

Psychotria hedyotifolia, sp. nov. (§ *Grumilea*) Fig. 1

Frutex gracilis, scandens, floribus exceptis glaber, ramis teretibus, ramulis ultimis circiter 1 mm. diametro, leviter albido-lineolatis, internodiis 8—12 mm. longis; foliis numerosis, lanceolatis, chartaceis vel subcoriaceis, viridibus, utrinque subconcoloribus vel subtus paullo pallidioribus, glabris, 3—5 cm. longis, 1—1.5 cm. latis, utrinque subaequaliter angustatis, apice acuminatis, basi cuneatis, nervis primariis utrinque circiter 7, gracilibus, haud perspicuis; petiolo circiter 5 mm. longo; stipulis oblongis, 2 mm. longis, obtusis, integris vel breviter 2-dentatis; cymis terminalibus, glabris, pedunculo usque ad 1 cm. longo incluso circiter 3 cm. longis, 3 cm. latis, ramis oppositis, circiter 1 cm. longis, inferioribus bracteis foliaceis lineari-lanceolatis vel anguste spathulatis 1—1.5 cm. longis subtensis, bracteis superioribus multo brevioribus, lineari-lanceolatis, acuminatis, vix 3 mm. longis; floribus pallide flavidis, 5-meris, in ramulis ultimis subumbellatim dispositis, pedicellis 2—2.5 mm. longis, glabris, bracteolis oblongo-lanceolatis, curvatis, acuminatis, 2—2.5 mm. longis; calycis lobis 5, triangulari-ovatis, obtusis, 0.5—0.8 mm. longis; corolla extus puberula, tubo 3.5 mm. longo, intus villoso, lobis 5, tubo aequantibus, oblongis, obtusis; filamentis glabris, 3 mm. longis; antheris oblongis, 1—1.2 mm. longis; fructibus circiter 7 mm. longis, ellipsoideis, longitudinaliter 8-carinatis, junioribus viridibus pericarpio albido-lineolatis; seminibus plano-convexis, dorsaliter obscure 4-carinatis, albumine obscure ruminato.

Atjeh, trail from Kabanjakan to Tretet, alt. 1000—1500 m., *Walter N.* and *Catherine M. Bangham no. 884*, Jan. 13, 1932 (vine, flowers light yellow, fruits white).

A species belonging in the group with *Psychotria sarmentosa* Blume, characterized by its lanceolate, subequally narrowed,

FIGURE 1. PSYCHOTRIA HEDYOTIFOLIA Merrill

A. Flowering Branch.
B. Fruit.

small leaves which resemble those of some species of *Hedyotis*, and its glabrous inflorescences, the corollas only being bearded inside and minutely puberulent externally.

Psychotria pachyphylla (King & Gamble) Ridley, Fl. Malay Penin. II. 129 (1923).

Psychotria sarmentosa Blume var. *pachyphylla* King & Gamble in Jour. As. Soc. Bengal, LXXIV. pt. 2, p. 6 (Mater. Fl. Malay. Penin. IV. 216) (1905).

East Coast, trail from Medan road to the summit of Sibajak Volcano, alt. 4200–6500 ft., *no. 1027*, Feb. 15, 1932 (epiphytic vine, flowers white). — Malay Peninsula, Borneo.

Psychotria stipulacea Wallich in Roxburgh, Fl. Ind. II. 164 (1824). — King & Gamble in Jour. As. Soc. Bengal, LXXIV. pt. 2, p. 17 (Mater. Fl. Malay. Penin. IV. 227) (1905). — Ridley, Fl. Malay Penin. II. 140 (1923).

East Coast, Medan-Bĕrastagi, road near the entrance to the sulphur spring, in second growth forests, alt. 4200 ft., *no. 984*, Feb. 13, 1932 (shrub 6 ft. high, fruits bright scarlet, shining). — Malay Peninsula.

Psychotria viridiflora Reinwardt apud Blume, Bijdr. 965 (1826). — King & Gamble in Jour. As. Soc. Bengal, LXXIV. pt. 2, p. 15 (Mater. Fl. Malay. Penin. IV. 225) (1905). — Ridley, Fl. Malay Penin. II. 139 (1923).

Atjeh, along the road, Takengön to Bireuen, near Balique, in forests at 3000 ft. alt., *no. 832*, Jan. 11, 1932 (shrub 5 ft. high, fruits red). — Burma to the Malay Peninsula, and Java.

Lasianthus vulcanicus Ridley in Jour. Malay. Branch Roy. As. Soc. I. 71 (1923).

East Coast, Medan-Bĕrastagi road, near the entrance to the sulphur spring, alt. 4200 ft., *no. 972*, Feb. 13, 1932 (shrub 10 ft. high, fruits green). Ridley's type was from the neighboring Sibajak Volcano; the species is also represented by *Bartlett 7962* from Habinsaran. — Known only from Sumatra.

Lasianthus sp.

Atjeh, trail from Kabajakan to Tretet, at 3500–5000 ft. alt., *no. 869*, Jan. 13, 1932 (shrub 6 ft. high, fruits green).

I am unable to refer this to any described species, but flowers are desirable for study purposes.

Saprosma urophyllum, sp. nov.

Frutex circiter 6 m. altus, glaber, ramis teretibus, ramulis

pallidis, nitidis, 4-angulatis vel compressis sulcatisque, ultimis circiter 1.5 mm. diametro, internodiis ultimis 3—6.5 cm. longis; foliis lanceolatis vel elliptico-lanceolatis vel oblongo-lanceolatis, 5—10 cm. longis, 1.2—3 cm. latis, graciliter caudato-acuminatis, cauda 1—2 cm. longa, recta vel leviter falcata, basi cuneatis vel decurrento-acuminatis, chartaceis vel subcoriaceis, pallide olivaceis, concoloribus, nervis primariis utrinque 6 vel 7, curvato-adscendentibus, subtus elevatis, distinctis, axillis minute barbellatis; petiolo 4—6 mm. longo; fructibus terminalibus, sessilibus, solitariis, ellipsoideis vel oblongo-ellipsoideis, 12 mm. longis, sepalis persistentibus, circiter 2 mm. longis.

Atjeh, trail from Kabanjakan to Tretet, at the edge of the forest, alt. 1100—1500 m., *Walter N.* and *Catherine M. Bangham no. 903*, Jan. 13, 1932 (tree 15 ft. high, fruits green).

A species manifestly belonging in the group with *Saprosma arboreum* Blume, characterized by its narrow, slenderly caudate-acuminate leaves.

Paederia scandens (Loureiro), comb. nov.

Gentiana scandens Loureiro, Fl. Cochinch. 171 (1790).

Paederia tomentosa Blume, Bijdr. 968 (1826). — Hooker f., Fl. Brit. Ind. III. 197 (1881). — King & Gamble in Jour. As. Soc. Bengal, LXXIII. pt. 2, p. 97 (Mater. Malay. Penin. IV. 171) (1904) (var. *glabra* Kurz). — Pitard in Lecomte, Fl. Gén. Indo-Chine, III. 415 (1924).

Atjeh, Langsa, at sea level, *no. 643*, Jan. 3, 1932. — India to China and Japan, southward to Java and the Philippines.

This is *Gentiana scandens* Loureiro as represented by his type specimen in the Paris herbarium of which I have a photograph. It is the form with nearly globose fruits currently referred to *Paederia tomentosa* Blume. *Paederia foetida* Linnaeus, which is supposed to have ellipsoid fruits, is frequently confused with this species.

Nertera depressa Banks & Solander apud Gaertner, Fruct. I. 124, t. 26 (1788). — Ridley, Fl. Malay Penin. V. 318 (1925).

East Coast, Sinaboeng Volcano, at the summit, alt. 8400 ft., *no. 1177*, Feb. 23, 1932 (fruits red). — The most western known station; Malay Peninsula, Java, Borneo, and the Philippines to Australia, and New Zealand, and also in South America.

Morinda citrifolia Linnaeus, Sp. Pl. 176 (1753). — Hooker f., Fl. Brit. Ind. III. 155 (1880).

Atjeh, Langsa, at sea level, *no. 641*, Jan. 3, 1932 (tree 25 ft. high, flowers white, fruits greenish-white). — Tropical Asia through Malaysia to Polynesia, especially near the sea.

CAPRIFOLIACEAE

Sambucus javanica Reinwardt apud Blume, Bijdr. 657 (1826). — Schwerin in Mitt. Deutsch. Dendrol. Ges. XVIII. 41 (1909).

Atjeh, Takengön, near Lake Tawar, *no. 687*, Jan. 6, 1932 (shrub 10 ft. high, flowers white, fruits purple). — India to central and southern China, the Philippines, and Malaysia.

Viburnum cylindricum Hamilton apud D. Don, Prodr. Fl. Nepal. 142 (1825). — Rehder in Sargent, Pl. Wilson. I. 110 (1911).

Viburnum coriaceum Blume, Bijdr. 656 (1826). — Koorders & Valeton in Meded. Lands Plant. XXXIII. 38 (Bijdr. Boomsoort. Java, v. 38) (1900). — Hallier f. in Meded. Rijks Herb. Leiden XIV. 35 (1912).

East Coast, Redelong Volcano, on slopes, alt. 3500–4000 ft., *no. 928*, Jan. 14, 1932 (shrub or tree up to 25 ft. high, flowers white, fruits blue); Siantar to Bĕrastagi, alt. 3500 ft., *no. 948*, Feb. 12, 1932. — Himalayan region to Ceylon, Central China, Burma, and Java, but not recorded from the Malay Peninsula.

Viburnum punctatum Hamilton apud D. Don, Prodr. Fl. Nepal. 142 (1825). — C. B. Clarke in Hooker f., Fl. Brit. Ind. III. 5 (1880). — Craib, Fl. Siam. Enum. II. 3 (1932).

Viburnum acuminatum Wallich, Num. List, no. 465 (1829), nomen nudum. — De Candolle, Prodr. IV. 325 (1830). — Wight & Arnott, Prodr. 388 (1834).

Atjeh, Takengön to Bireuen, near Balique, at the edge of and in primary forests, at 3300 ft. alt., *no. 825*, Jan. 11, 1932 (tree 50–60 ft. high, flowers white, fragrant, leaves somewhat bronzy beneath). — Nepal, Kumaon, and Deccan to Siam and Indo-China.

The first record of this Asiatic type as Malaysian. The specimen very closely matches Wallich's Nepal material and *Wight 1253*, distributed as *V. acuminatum* Wallich.

Viburnum sp.

Tapianoeli, new road near Peso Peso, kilometer 9, in primary forests, at 4100–4500 ft. alt., *no. 1164*, Feb. 22, 1932.

In making the preliminary determination this small-leaved form was referred to *Viburnum cylindricum* Hamilton; it more closely approaches some forms of *V. odoratissinum* Ker, but the fruits are rather large for this species; flowers needed.

Lonicera pulcherrima Ridley in Jour. Malay. Branch Roy. As. Soc. I. 64 (1923).

Atjeh, Takengön, near Lake Tawar, *no. 679*, Jan. 6, 1932 (scandent, flowers white when young, turning yellow in age). — Known only from Sumatra; very similar to the Javan forms currently referred to *Lonicera macrantha* Sprengel.

CUCURBITACEAE

Trichosanthes bracteata (Lamarck) Voigt, Cat. Hort. Calcut. 58 (1845). — Cogniaux in C. de Candolle, Monog. Phan. III. 375 (1881). — King in Jour. As. Soc. Bengal, LXVII. pt. 2, p. 29 (Mater. Fl. Malay. Penin. III. 373) (1898).

Modecca bracteata Lamarck, Encycl. Méth. IV. 210 (1796).
Trichosanthes palmata Roxburgh, Fl. Ind. III. 704 (1832).

Atjeh, Takengön to Bireuen, near Balique, in thickets, at 3300 ft. alt., *no. 835*, Jan. 11, 1932 (flowers white, petals fringed). — India to Burma, southward to Java, Borneo, Celebes, and Timor.

Probably *Bangham no. 710* from Takengön, a fruiting specimen, belongs in this genus. Its seeds are peculiarly sculptured, not smooth and compressed, although its leaves look more like those of *Thladiantha* than *Trichosanthes*; flowers are needed.

Gynostemma laxum (Wallich) Cogniaux in C. de Candolle, Monog. Phan. III. 914 (1881).

Zanonia laxa Wallich, Num. List, no. 3726 (1831), nomen nudum; Pl. As. Rar. II. 29 (1831).

Atjeh, Takengön, in thickets at 3600 ft. alt., *no. 737*, Jan. 7, 1932 (scandent, fruits green). — India to the Malay Peninsula, Java, Borneo, and Mindanao.

King in Jour. As. Soc. Bengal, LXVII. pt. 2, p. 40 (Mater. Fl. Malay. Penin. III 384) (1898) reduces this to *Gynostemma pedatum* Blume = *G. pentaphyllum* (Thunb.) Makino, stating that so many specimens unite the characters of the several accepted species that he followed Clarke in considering that a single one was represented.

CAMPANULACEAE

Pratia montana (Reinwardt) Hasskarl, Cat. Hort. Bogor. 106 (1844). — Koorders, Exkursionsfl. Java, III. 304 (1912).

Lobelia montana Reinwardt apud Blume, Bijdr. 728 (1826).

East Coast, trail from Medan road to the summit of Sibajak Volcano, at 5200 ft. alt., *no. 1054*, Feb. 15, 1932 (6 ft. high, flowers purplish-blue, shading to white, fruits deep purple). — Java.

COMPOSITAE

Vernonia javanica (Blume) De Candolle, Prodr. v. 22 (1836). — Ridley, Fl. Malay Penin. II. 187 (1923).

Eupatorium javanicum Blume, Bijdr. 903 (1826).

Vernonia arborea Hamilton var. *javanica* Koorders & Valeton in Meded. Lands Plant. XXXIII. 54 (Bijdr. Boomsoort. Java, v. 54) (1900).

Atjeh, road from Takengön to Bireuen, and East Coast, from Kaban Djahe to Kota Tjane, *nos. 810, 1104*, Jan. 11 and Feb.17, 1932 (tree up to 90 ft. high, the trunk up to 3 ft. in diameter, flowers cream color). — Malay Peninsula to Java, Borneo, and the Philippines.

This form may have a wider geographic distribution than indicated above. It has been reduced by most botanists to the collective species *Vernonia arborea* Hamilton, which has been credited with a very wide geographic distribution in the Indo-Malaysian region.

Anaphalis longifolia (Blume) De Candolle, Prodr. VI. 274 (1837).

Gnaphalium longifolium Blume, Bijdr. 900 (1826).

East Coast, Redelong Volcano, on slopes at about 5000 ft. alt., *no. 911*, Jan. 14, 1932. — Java.

Gynura procumbens (Loureiro) Merrill, Enum. Philipp. Flow. Pl. III. 618 (1923).

Cacalia procumbens Loureiro, Fl. Cochinch. 485 (1790).

Cacalia sarmentosa Blume, Bijdr. 907 (1826).

Gynura sarmentosa De Candolle, Prodr. VI. 298 (1837). — King & Gamble in Jour. As. Soc. Bengal, LXXIV. pt. 2, p. 39 (Mater. Fl. Malay. Penin. IV. 249) (1905).

Atjeh, along the road from Takengön to Bireuen at kilometer 96, alt. 3800 ft., *no. 816*, Jan. 11, 1932 (involucre reddish purple, corollas orange tipped with red-purple). — Burma to Indo-China, southward to Java, the Philippines, and the Moluccas.

Senecio Walkeri Arnott in Nov. Act. Leop.-Carol. Akad. Naturf. XVIII. 349 (1836). — De Candolle, Prodr. VI. 364 (1837). — Gagnepain in Lecomte, Fl. Gén. Indo-Chine, III. 634, fig. 69, 12–13 (1924).

Senecio arachnoideus Wallich, Num. List, no. 3136 (1831), nomen nudum.
Cacalia volubilis Blume, Bijdr. 908 (1826), non *Senecio volubilis* Hooker.
Senecio araneosus De Candolle, Prodr. VI. 364 (1837). — Hooker f., Fl. Brit. Ind. III. 351 (1881).
Senecio Blumei De Candolle, Prodr. VI. 334 (1837).
Cissampelopsis volubilis Miquel, Fl. Ind. Bat. II. 102 (1856).

Atjeh, road from Takengön to Bireuen, near Balique, at the edges of the forest at 3300 ft. alt., *no. 834*, Jan. 11, 1932. — Himalayan region to Ceylon and Indo-China; also in Java, but not recorded from the Malay Peninsula.

Ainsliaea pteropoda De Candolle, Prodr. VII. 14 (1838). — Hooker f., Fl. Brit. Ind. III. 388 (1881). — Beauverd in Bull. Soc. Bot. Genève, sér. 2, I. 379 (1909). — Gagnepain in Lecomte, Fl. Gén. Indo-Chine, III. 663 (1924).

Vernonia lobelioides Wallich, Num. List, no. 2927 (1831), nomen nudum.

East Coast, Sinaboeng Volcano, near the summit at 8400 ft. alt., *no. 1191*, Feb. 23, 1932. — Himalayan region to western and southern China, Burma, Siam, and Indo-China.

Koorders, Exkursionsfl. Java, III. 346 (1912), lists this as perhaps occurring in Java, but saw no Javan specimens; it is not recorded from the Malay Peninsula.

UNCLASSIFIED

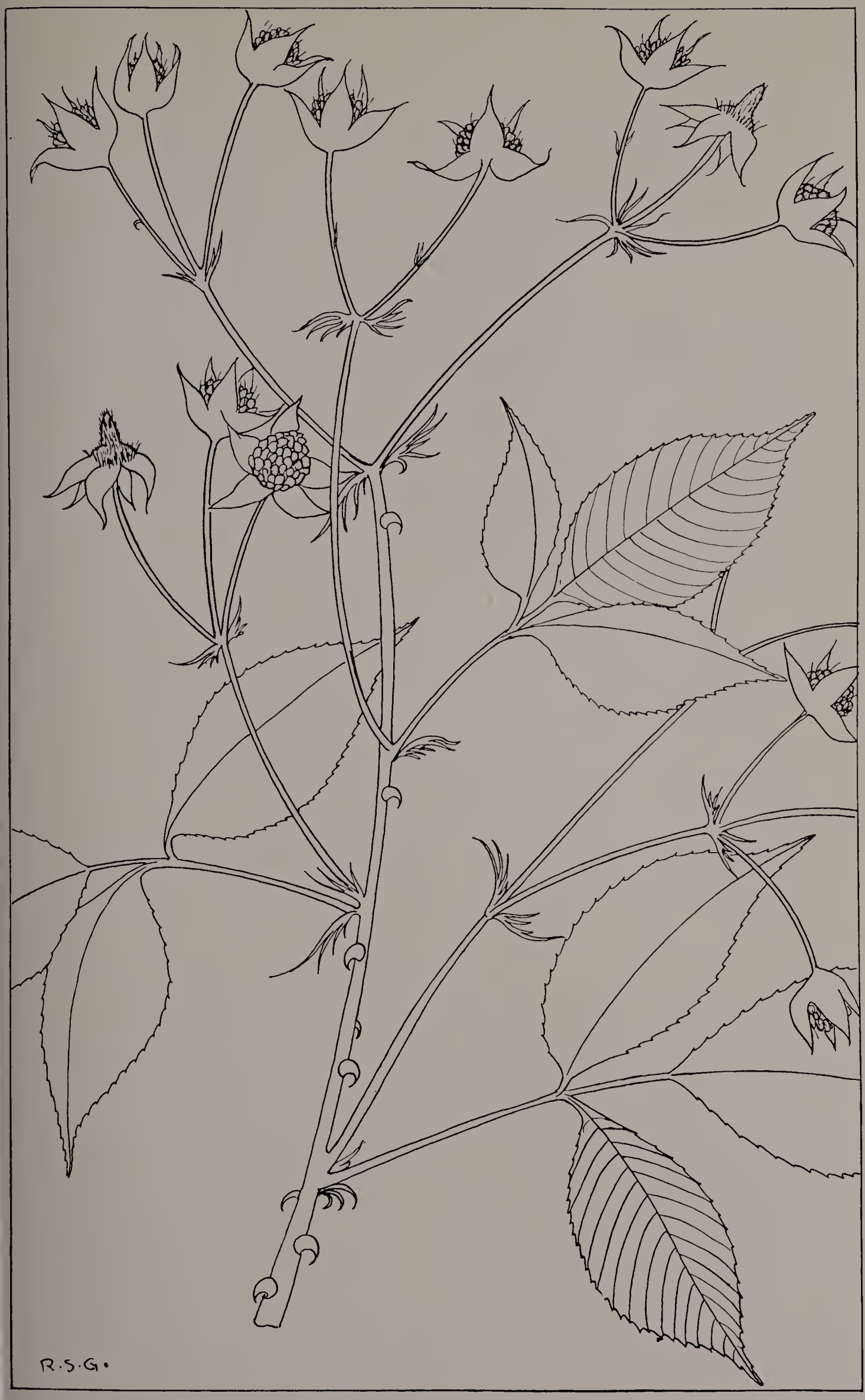
Bangham 1007, from Sibajak Volcano consists of detached simple pinnate leaves, and detached badly crushed, apparently very fleshy fruits, picked up from the ground. These were maroon red, with latex, and with an apple-like odor. There is probably some mixture of material here; in any case the fragmentary material is undeterminable.

INDEX

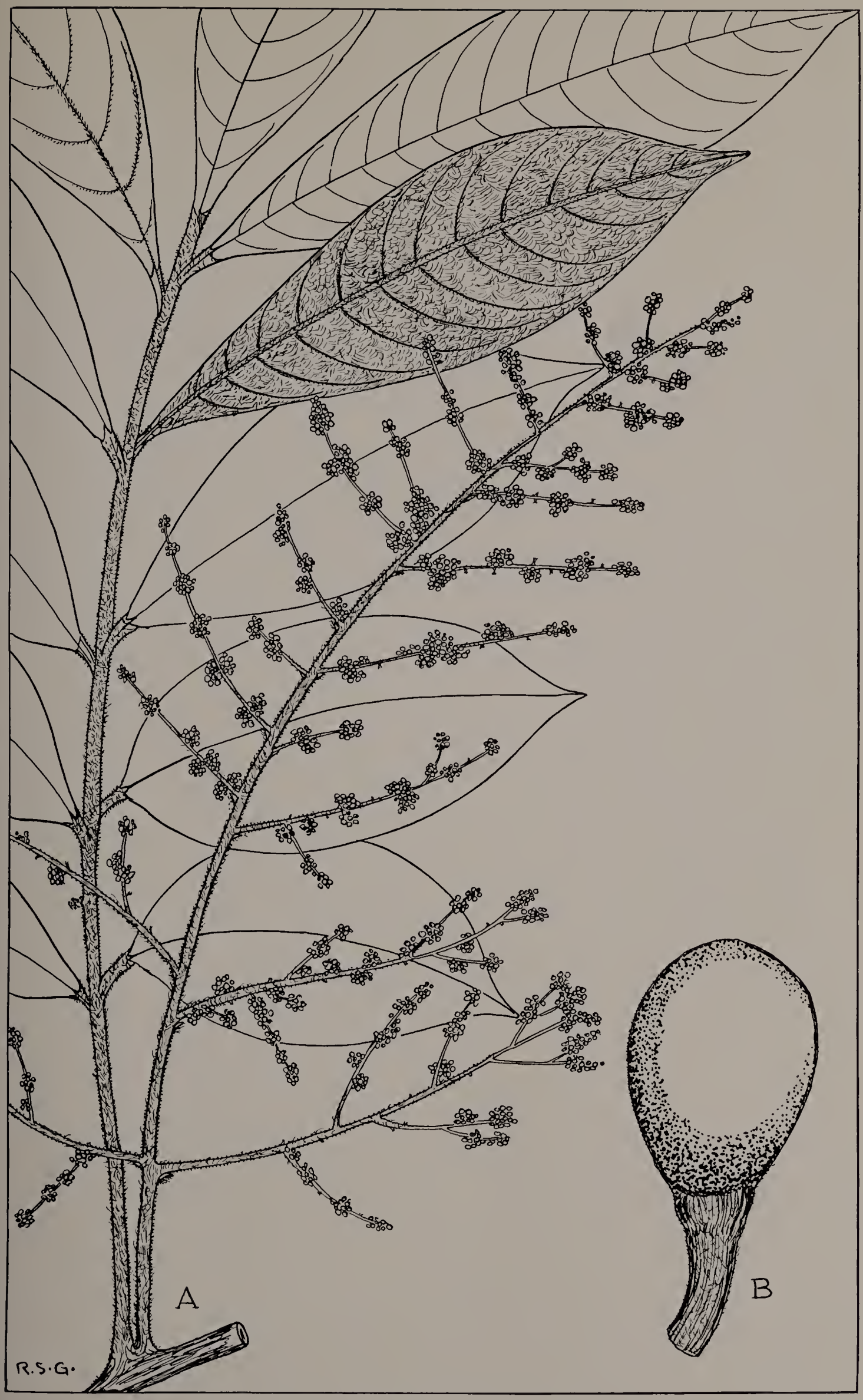
Synonymns are printed in *italics*; new names in **bold face** type; names of families in small CAPITALS.

Mahonia sumatrensis Merrill.

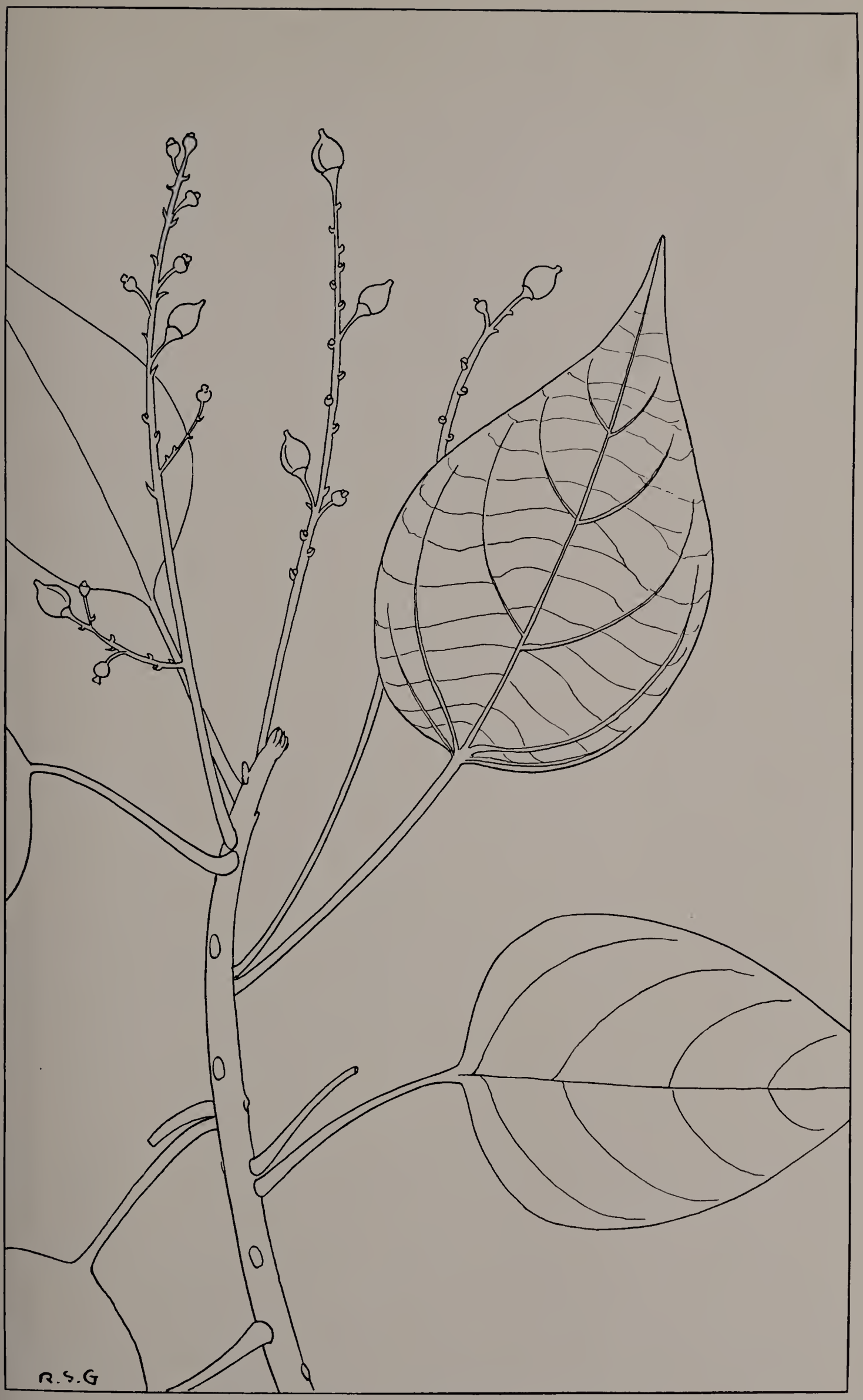
Disepalum platypetalum Merrill.



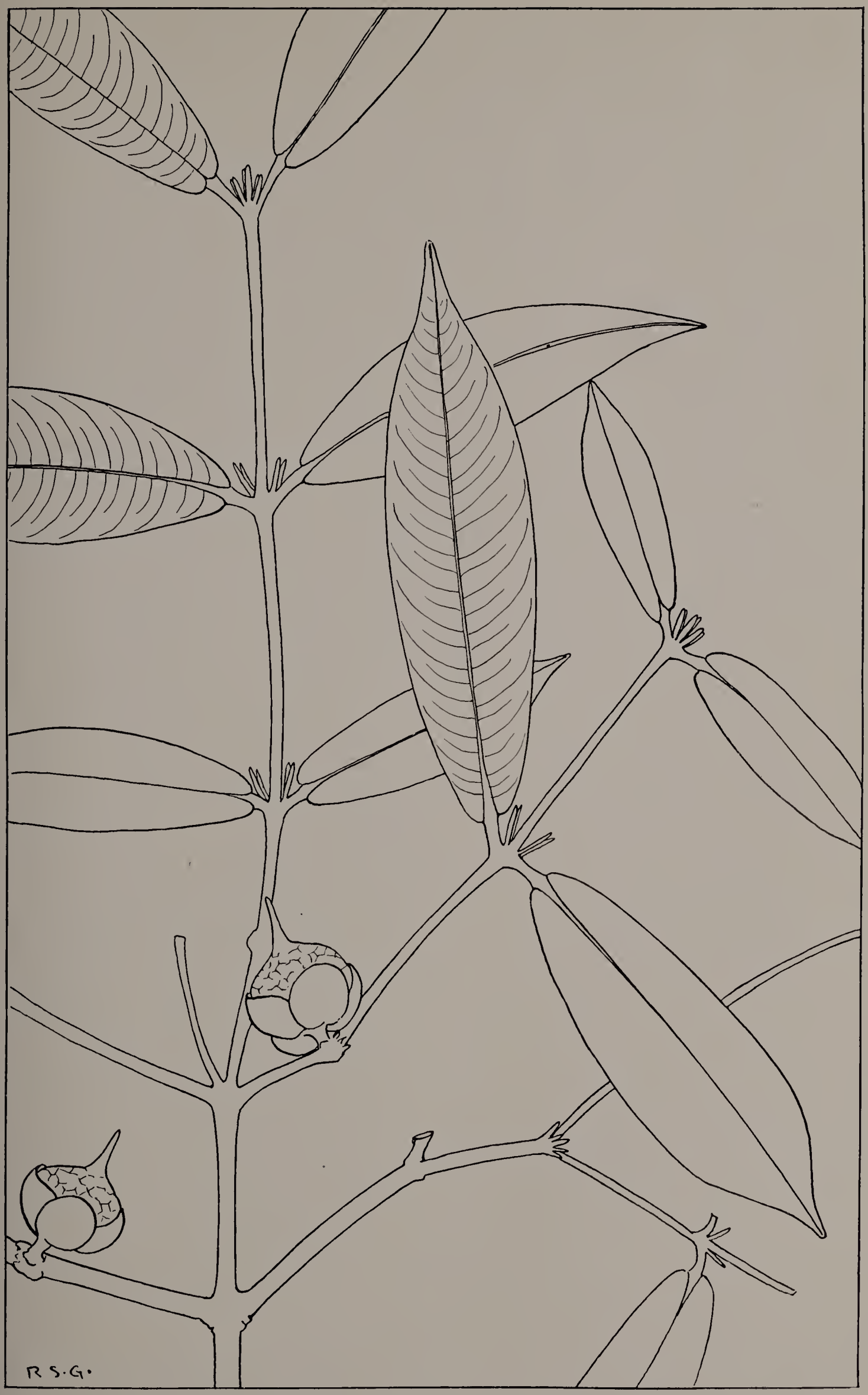
Rubus banghamii Merrill.



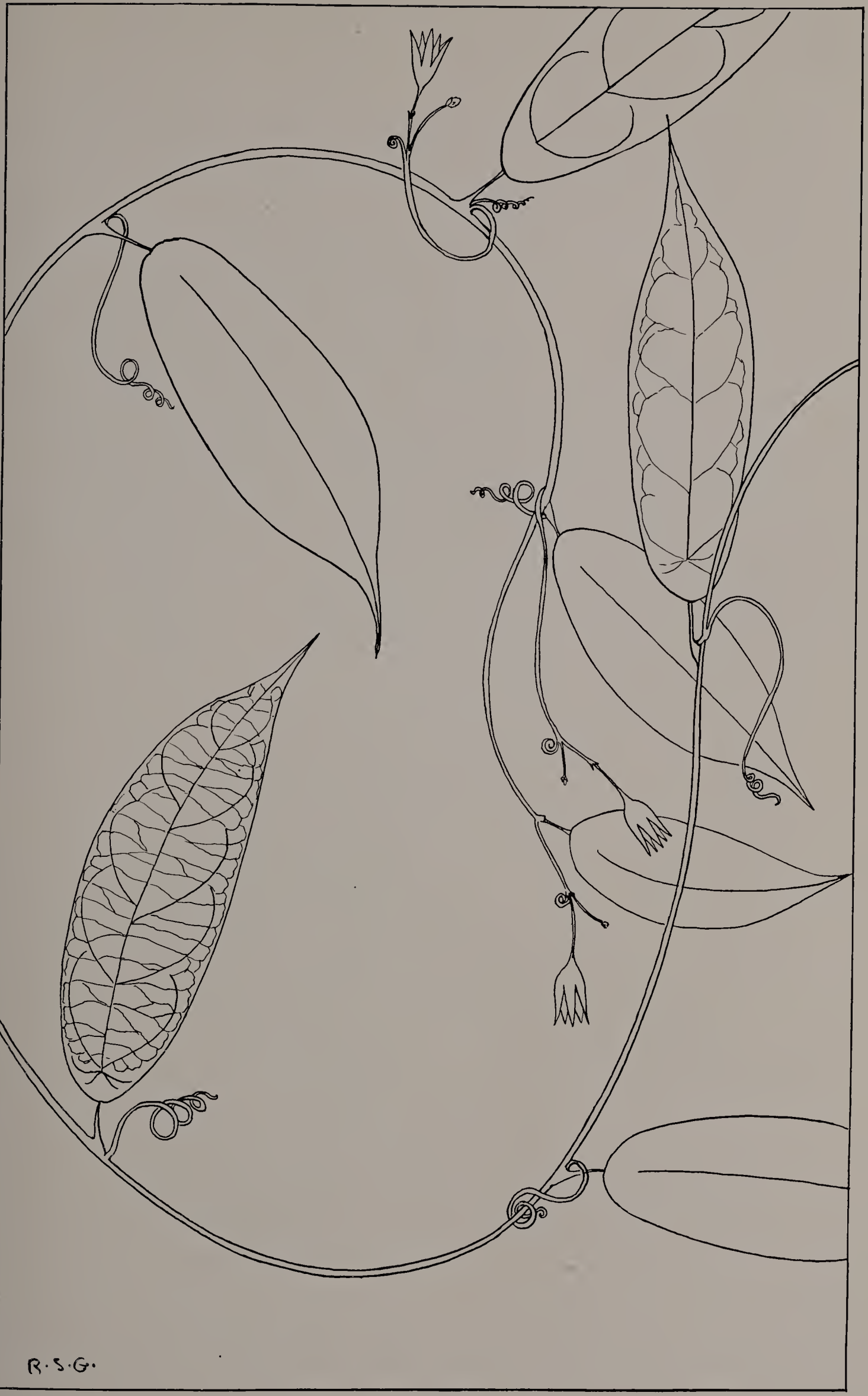
Aglaia ochneocarpa Merrill.



Endospermum banghamii Merrill.



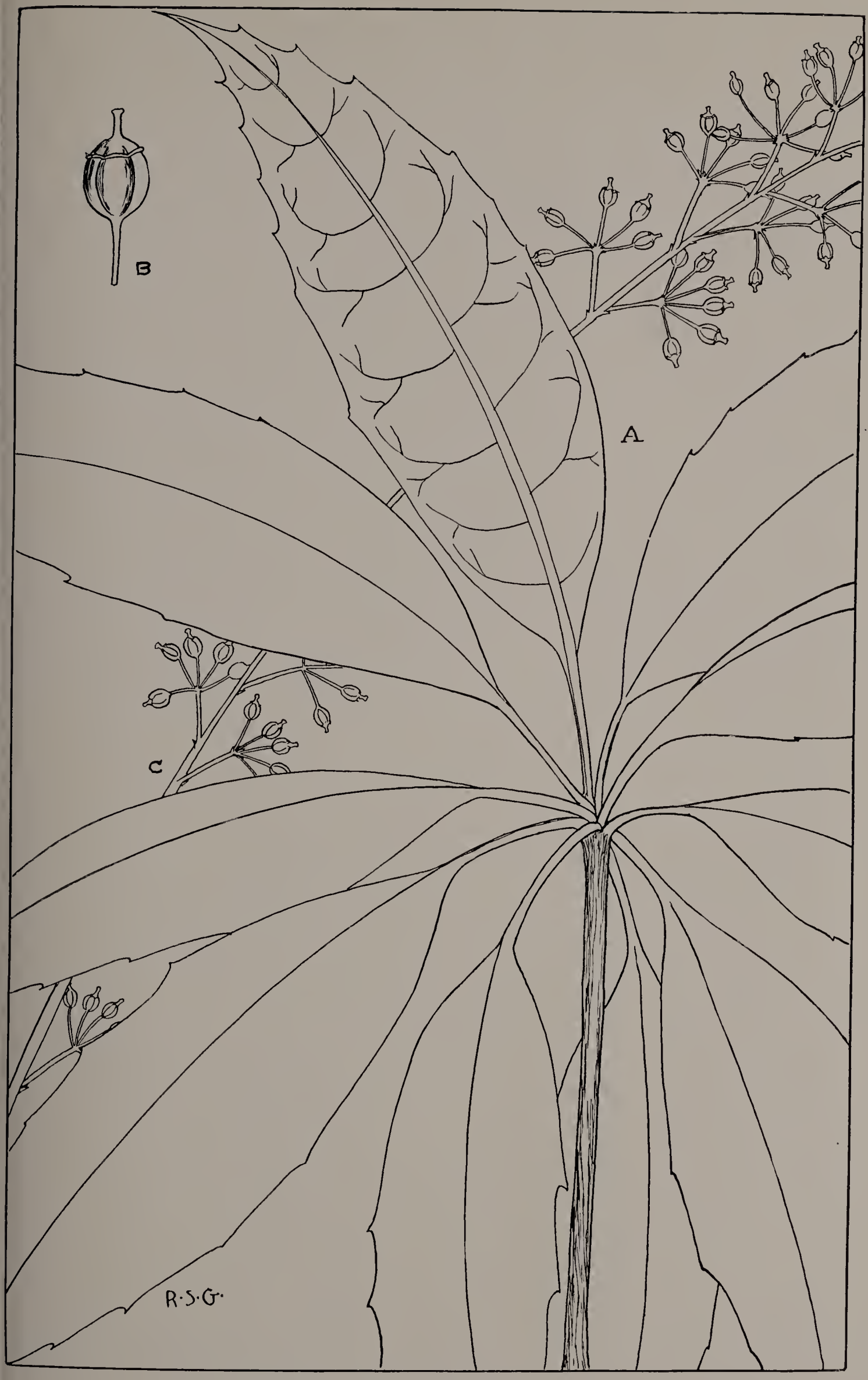
Kayea Catharinae Merrill.



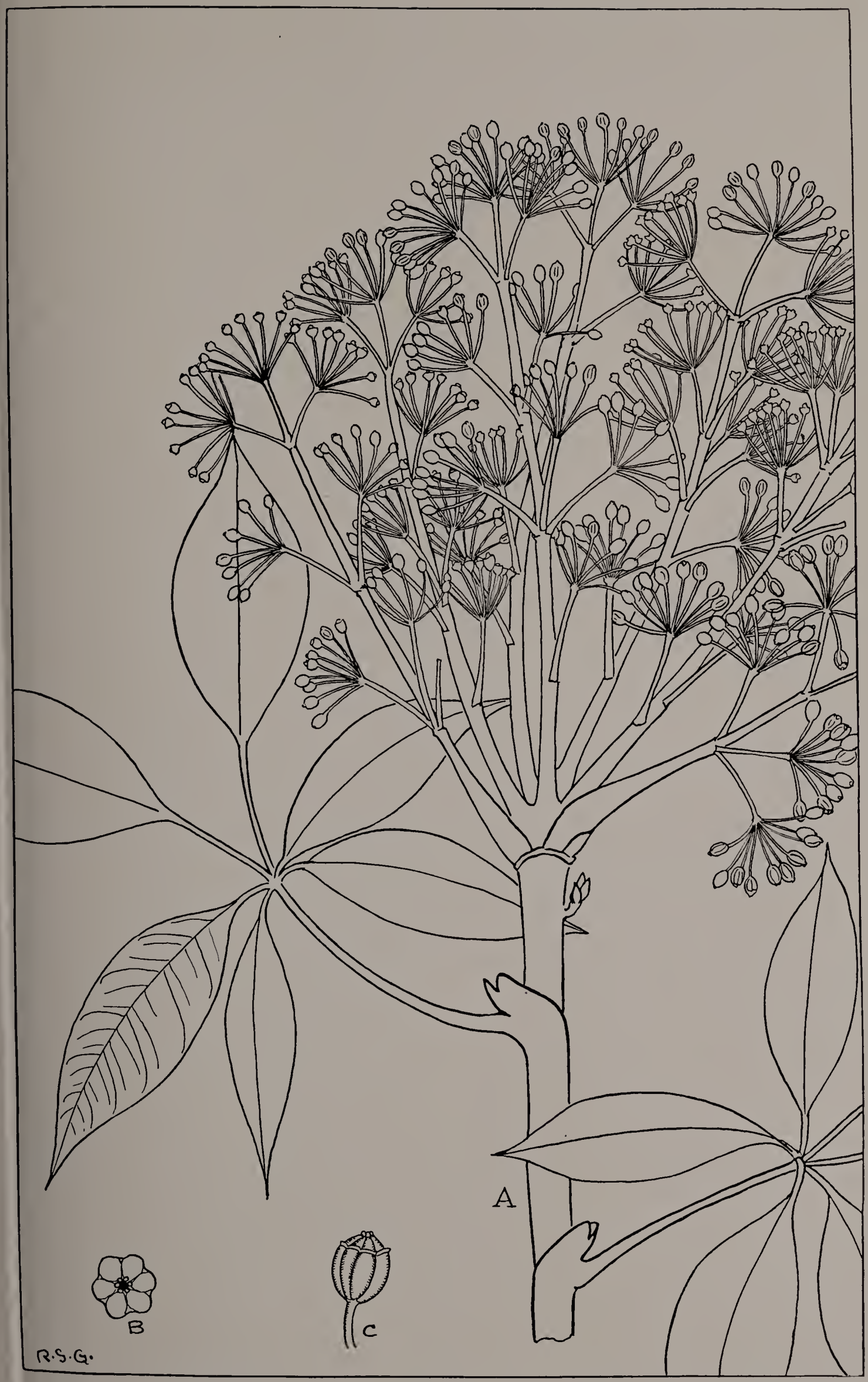
Adenia Catharinae Merrill.

Schefflera capitulifera Merrill.

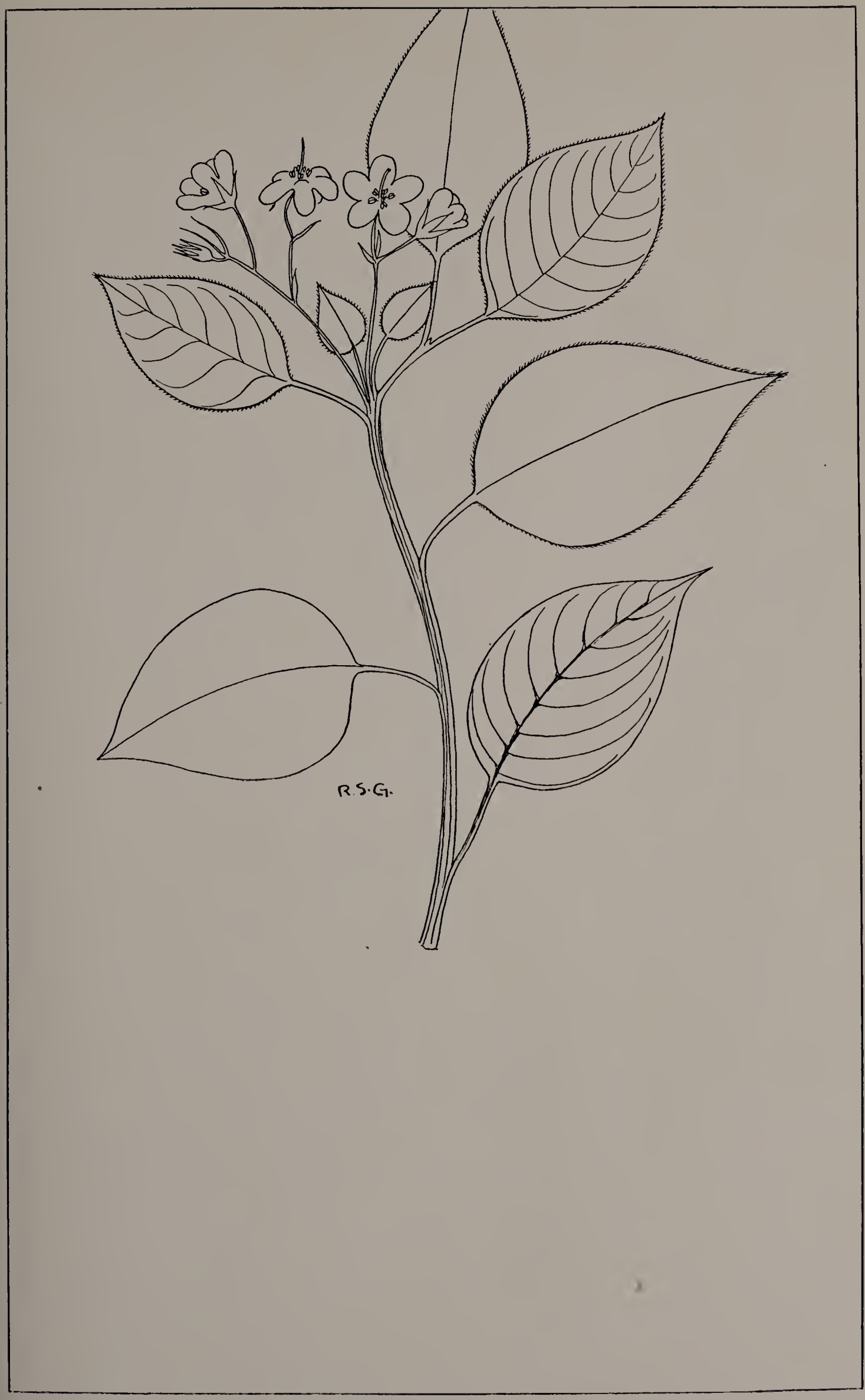
SCHEFFLERA PHANEROPHLEBIA Merrill.



SCHEFFLERA RHYNCHOCARPA Merrill.



Schefflera sibayakensis Merrill.



LYSIMACHIA PLATYPHYLLA Merrill.

Tabernaemontana sumatrana Merrill.

A. Trichosporum oligodontum Merrill.
B. Trichosporum ternifolium Merrill.

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