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THE NEW YORK BOTANICAL GARDEN

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VENDU EN 1922



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THE NEW YORK BOTANICAL GARDEN

F R A G M E N T A  
F L O R A E P H I L I P P I N A E

CONTRIBUTIONS  
TO THE  
FLORA OF THE PHILIPPINE ISLANDS

BY

J. PERKINS, PH. D.

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FASCICULUS I

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F A S C I C U L U S I

D U P L I C A T A D E L A B I B L I O T H É Q U E  
D U C O N S E R V A T O I R E B O T A N I Q U E D E G E N E V E  
V E N D U E N 1922

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## Preface.

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With this pamphlet I purpose to begin a series of publications which will be devoted to the investigation of our Asiatic colonial Flora.

Up to this time, many different nations, English, French, Dutch and above all the Spanish, (to mention only the names of BLANCO, VILLAR and VIDAL), have taken part in the investigations of the flora of the Philippines.

Now that these in many respects little known Islands, have come into the possession of the United States, it will be an honorable task for the American botanists to devote their energies to the plant world of the Philippines.

Realizing the importance of the theme, I have undertaken to work up the old and new collections belonging to the Berlin Museum.

Prof. WARBURG has permitted me the use of his extensive and extremely valuable Philippine material, which collection, with the duplicates of the plants that Mr. MERRILL and Capt. AHERN have been so assiduously collecting in the Philippines, and have sent to the Berlin Museum, has formed the most important foundation for my publication. In order to secure a reliable starting-point for all determinations, it is absolutely necessary to compare the plants with the types contained in the European herbaria.

The work of the Spanish botanists, which was carried on with a diligence deserving of great praise, failed in many cases of the expected results, because they were not in a position to study the originals of the early established species.

As place for working, I have selected the Botanical Museum of Berlin, where the collection of Cuming is well represented and where I can have access to a large mass of Indo-Malayan material.

By sending specimens to monographers outside of Berlin, I have endeavored to procure reliable type-material and in this respect I have received the kindly assistance of Prof. RADIKOFER (*Sapindaceae*), Prof. BECCARI (*Palmae*) and Dr. BRAND (*Symplocaceae*), to whom I am greatly indebted. I wish also to express my thanks to the directors of the Königl. Bot. Museum, Geheimrat ENGLER and Geheimrat URBAN, who have kindly placed the facilities of this Institution at my disposal.

To the several specialists of the Museum who have aided me in handling this large material and have given me many useful suggestions, I desire also to express my obligations.

We are only at the beginning of the study of this Flora; there is still an endless amount to do before we shall possess even a general view of this rich world of flowers, as at present, many districts are still untrodden ground to the botanist.

Berlin, February, 1904.

**J. Perkins.**

I.

The synonymy of the Philippine species of *Syphorema*

by

J. PERKINS.

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In 1863 TURCZANINOW published the description of a plant of CUMING's, in Bull. Soc. Imp. Nat. Moscou II, p. 212 (1863), giving it the name of *Sczegleewia*, in honor of SERGIUS SCZEGLEEW. The new genus was recognized by TURCZANINOW as belonging to the *Verbenaceae*, and has, as he says, the habit of the *Sphenodesmaceae*. The plant, being from Luzon, was named *Sczegleewia luconensis*. BENTHAM and HOOKER perceived that *Sczegleewia* must be united with *Syphorema* and cite CUMING's number 648, on page 1159, vol. II. of Genera Plantarum.

In both his Revision, p. 212 (1886), and in his Sinopsis, p. 202 (1883), VIDAL agrees with the view of BENTHAM and HOOKER, and in his Flora Forestal t. 75, Fig. F gives a drawing of the plant.

LLANOS, in his Revis. etc. in Mem. Acad. cienc. Mad. 1858 reprinted in Fl. Filipinas ed. 3. IV. p. 105, has recognized, that BLANCO in his Flora had described a species of *Syphorema* under the name of a Lauraceous plant, and he identifies the *Litsaea luzonica* of BLANCO with *Syphorema involucratum* Spreng. VILLAR, in Fl. Filipinas ed. 3. IV. nov. append. p. 162 (1880), accepts the identification of LLANOS, and calls the plant *Syphorema luzonica* and quotes as synonyms *Litsaea luzonica* Blanco and *Syphorema involucratum* Llanos (not Roxb.).

It seems strange, that FATHER BLANCO, in his 2<sup>d</sup> edition of the Flora de Filipinas, should have described this plant as belonging to the *Lauraceae*, a family quite different in nearly all its characters

from the *Verbenaceae*. Are LLANOS and VILLAR right, when they regard the *Litsaea* of BLANCO as not belonging to the *Lauraceae*, but as a member of the *Verbenaceae*?

It is well known, that the original types of BLANCO's plants do not exist in any of the larger herbaria, therefore, if we wish to establish the identity of BLANCO's name with the name of TURCZANINOW, we must compare the description of BLANCO's plant most carefully with CUMING's plant and VIDAL'S plate.

As the leaves are described in BLANCO's diagnosis "hojas opuestas", the plant cannot be a *Lauracea*, opposite leaves never being found in that family. BLANCO further describes a very striking peculiarity of the inflorescence; he says "flores terminales en panoja, con los pedúnculos opuestos: cada uno con seis brácteas lanceoladas, grandes, coloridas; tres á cada lado: y contiene reunidas unas siete florecitas", i. e. in English: flowers in a terminal inflorescence, with opposite peduncles; each inflorescence with six large, lanceolate, colored bracts, three on each side, and each containing about seven flowerets. If we examine the plant of CUMING, we find terminal panicles with pedunculated cymes, each cyme with six large involucral-bracts bearing seven flowers. The description of the flower agrees well with that of *Sympcorema*. "Cal. . . figura de embudo" (funnel-shaped calyx). . . . "Cor. de figura de embudo, y el limbo en seis partes redondas" (corolla funnel-shaped, and the limb in 6 rotundate parts). . . . "Estam: once ó doce" (Stamens 11 or 12). . . . We see, therefore, that BLANCO's description accords with the character of *Sympcorema*.

In the first edition of the Flora de Filipinas, he does not give a Latin name, but describes the same plant under the native name *Balibai* (p. 406), and at the end of the diagnosis adds the following note: "Conviene en algunas notas con el gen. *Litsea*" (agrees in some characters with the genus *Litsea*).

It is a curious coincidence, that to the same plant that TURCZANINOW has named luçoniensis, had already been given the similar name *luzonica* by BLANCO. BRIQUET, the well known monographer

of the *Verbenaceae*, in Engler's *Pflanzenfam.* vol. IV, 3<sup>a</sup>, p. 180, introduces apparently the same plant under the name of *Syphorema Cumingianum* Briquet.

The synonymy is as follows:

**Syphorema luxonicum** (Blanco) Villar in Blanco *Flora de Filipinas* vol. IV, nov. append., p. 162 (1880).

*Sczegleeria luconensis* Turcz. in *Bull. Soc. Imp. Nat. Moscou* II, p. 212 (1862).

*Litsea luxonica* Blanco in *Flora de Filipinas* ed. II, p. 284 (1845).

*Syphorema Cumingianum* Briq. in Engler's *Pflanzenfam.* vol. IV, 3<sup>a</sup>, p. 180.

*Balibai* Blanco in *Flora de Filipinas* ed. I, p. 406 (1837).

*Syphorema involucratum* Llanos non Roxb. in *Fl. Filip.* ed. III, vol. IV, p. 105.

I have examined the following specimens:

Luzon, Prov. Laguna (CUMING no. 648); Manila, Tanauan, at the base of Makiling (WICHURA no. 1794 in flower in May); Middle Luzon, San Francisco del Monte (LOHER no. 4456 in flower in November); Bosoboso, Morong (LOHER no. 4455 in flower in March); Mindoro Island, Palauan (MERRILL no. 954 in bud in April).

This plant is also in the Vienna herbarium with the inscription: "Prov. Ilocos del Norte (Ylede Luzon)? Entre 1236 et 1237 coll. CUMING". The numbers of VIDAL's collection which I have not seen are: Luzon, Prov. Manila, San Mateo (VIDAL no. 501); Prov. Tayabas Unisan (VIDAL no. 848). I have called the species "*luxonicum*", not "*luxonica*" as spelled by Villar; the generic name is a neuter, being derived from *συμφόρημα* (cumulus) in allusion to the congested bracts and flowers.

According to VILLAR the plant is widely distributed in Luzon. The Philippine species has glabrous leaves, while in both the other species, *Syphorema polyandrum* Wight and *Syphorema involucratum* Roxb., the leaves are densely pubescent, those of *S. polyandrum* being large and elliptical, and those of *S. involucratum* small and ovate.

II.

Enumeration of some of the recently collected plants  
of

AHERN, JAGOR, LOHER, MERRILL, WARBURG AND OTHERS.

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Leguminosae

by

J. PERKINS.

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**Mimosoideae.**

**Pithecolobium** Mart.

1. **Pithecolobium aele** Vid.

Luzon, Pr. Rizal, Antipolo (MERRILL no. 1635; in flower in March 1903); Pr. Tayabas, Guinayangan (MERRILL no. 2047; a. 1903); Mindanao Isl., Davao (WARBURG no. 14686; in fruit in June 1888).

2. **Pithecolobium angulatum** Benth.

Luzon, Pr. Tayabas, Sampaloc (WARBURG no. 12821; in fruit in March 1888); Mindoro Isl., Baco River (MERRILL no. 1799; in fruit in April 1903).

3. **Pithecolobium dulce** Benth.

Luzon, Manila (WARBURG no. 12565; in 1888); MERRILL no. 654; in flower in January 1903); Prov. Rizal, Antipolo (MERRILL no. 1640; in flower in March 1903); Panay Isl., Iloilo (MERRILL no. 2410; in flower in April 1903).

4. **Pithecolobium lobatum** Benth.

Luzon, Manila (WARBURG no. 12916; March 1888); Pr. Bataan (WARBURG no. 13742); Pr. Tayabas, Guinayangan (MERRILL no. 2013; in fruit); Sampaloc (WARBURG no. 12822; March 1888); M.-Luzon, Bordeos (WARBURG no. 13741); Mindoro Isl., Pinamalayan

(MERRILL no. 2153; May 1903); Pola (MERRILL no. 2212, 2376, 2474; in fruit); Mindanao Isl., Davao (WARBURG no. 14685).

5. **Pithecolobium montanum** Benth.

Culián Isl. (MERRILL no. 579; in flower in December 1902).

6. **Pithecolobium Saman** Benth.

Luzon, Manila (MERRILL no. 11; in flower in April 1902).

7. **Pithecolobium subacutum** Benth.

North Luzon, Cagayan (WARBURG no. 11514); Pr. Isabela, Malunu (WARBURG no. 12091); Pr. Rizal, Antipolo (MERRILL no. 1622; in flower in March 1903); Tanay (MERRILL no. 2330; in fruit in May 1903).

8. **Pithecolobium** sp. (affinis *P. lobato* Benth.).

Luzon, Pr. Rizal, Antipolo (MERRILL no. 1306; in fruit in February 1903).

### Wallaceodendron Koorders

1. **Wallaceodendron celebica** Koorders.

Luzon, Pr. Tayabas, Guinayangan (MERRILL no. 2026, in fruit 1903).

From a geographical standpoint, it is interesting to observe that some plants first described as coming from Celebes are now recorded as indigenous members of the flora of the Philippine Islands. The genus *Wallaceodendron* was first collected by KOORDERS, on his trip through Minahassa, and described by him in Mededeel. van's Lands Plantentuin XV, (1898) 446 et 630. We have in the family of the *Anacardiaceae* a similar case, the genus *Koordersiodendron* being first discovered in Celebes, and now observed in our colony by AHERN (cf. the enumeration of the *Anacardiaceae*).

### Albizia Durazz.

1. **Albizia julibrissin** Durazz.

Luzon, Pr. Rizal, Bosoboso (MERRILL no. 1865; in fruit in April 1903).

2. **Albizia procera** Teysm. et Binn.

Luzon, Pr. Camarines Sur, Pasacao (AHERN no. 69; 1902); Pr. Principe, Baler (MERRILL no. 1024; a. 1903); Mindoro Isl., Baco (MERRILL no. 1213; Jan. 1903).

3. ***Albizzia retusa*** Benth.

Luzon, Pr. Bataan, Dinalupihan (MERRILL no. 1516, in fruit a. 1903).

4. ***Albizzia saponaria*** Blume.

North Luzon, Enrile (WARBURG no. 12424); Luzon, Pr. Pangas, Arayat (MERRILL no. 1390; March 1903); Pr. Nueva Ecija, Rosales (WARBURG no. 13738); Pr. Bataan, Dinalupihan (MERRILL no. 1515; in fruit a. 1903); Luzon Central, Mariveles (WARBURG no. 12912); Mindoro Isl., Pola (MERRILL no. 2213, 2451, 2469; in flower a. 1903); Mindanao Isl. Taumu (WARBURG no. 14683).

***Acacia*** Willd.

1. ***Acacia caesia*** Willd.

North Luzon, Malunu (WARBURG no. 12090).

2. ***Acacia Farnesiana*** Willd.

Luzon, Pr. Rizal, Antipolo (MERRILL no. 1641; in flower in March 1903).

3. ***Acacia pennata*** Willd.

North Luzon, Cagayan, Alcalá (WARBURG no. 11735); Prov. Manila, Montalban (WARBURG no. 12655, 12914; March 1888); Pr. Tayabas, Sampaloc (WARBURG no. 12820; in flower in March 1888); Pr. Rizal, Antipolo (MERRILL no. 1660; in flower in March 1903).

4. ***Acacia Richei*** A. Gray.

Luzon, Pr. Batale, Botulan (WARBURG no. 13739); Pr. Zambales, Subig and vicinity (MERRILL no. 2114; in flower in April 1903).

This species of *Acacia* belongs to the Section *Phyllodineae*, the larger part of which occurs only in Australia, there being only a few species of this group which are not found there.

Bentham calls these species: "Insulares, Australiae exules". He mentions *A. Richei* A. Gray as occurring in the islands of the South Pacific, and as probably observed by OLDHAM in Formosa. In VIDAL's papers the species is not mentioned.

***Leucaena*** Benth.

1. ***Leucaena glauca*** Benth.

Luzon, Manila (MERRILL no. 49; in flower in May 1902); (WARBURG no. 12915); Pr. Tayabas, Sampaloc (WARBURG no. 12819; March 1888); Pr. Rizal, Bosoboso (MERRILL no. 1880; in flower in April 1903).

**Mimosa** Linn.

1. **Mimosa pudica** Linn.

Luzon, Pr. Isabela, Santa Maria (MERRILL no. 199; in flower in June 1902); Pr. Tayabas, Luzena (MERRILL no. 2417; in flower in April 1903).

**Prosopis** Linn.

1. **Prosopis juliflora** DC.

Luzon, Manila (MERRILL no. 370; in flower in August 1902).

**Adenanthera** Linn.

1. **Adenanthera pavonina** Linn.

Luzon, Pr. Zambales, Subig (MERRILL no. 1977; April 1903).

**Entada** Adans.

1. **Entada scandens** Benth.

North Luzon, Pr. Isabela, Digamai (WARBURG no. 12044).

**Parkia** R. Br.

1. **Parkia Roxburghii** Don.

Luzon Central, Mariveles (WARBURG no. 12917).

**Caesalpinoideae.****Cynometra** Linn.

1. **Cynometra bijuga** Span.

Luzon Central, Siniloan (WARBURG no. 13740).

**Tamarindus** Linn.

1. **Tamarindus indica** Linn.

North Luzon, Enrile (WARBURG no. 12426); Pr. Rizal, Tanay (MERRILL no. 2318; in flower in May 1903); Pr. Zambales, Subig and vicinity (MERRILL no. 2098; in flower in April 1903); Rosales, Pangasinan (MERRILL no. 273; in flower in May 1902); Mindanao Isl., Surigao (AHERN no. 315).

**Afzelia** Sm.

1. **Afzelia bijuga** A. Gray.

Luzon, Pr. Camarines Sur (AHERN no. 208); Pr. Zambales, Ataula (WARBURG no. 13748); Subig (MERRILL no. 1750; in flower in

April 1903); Mindoro Isl., Abonaban (MERRILL no. 2184; in flower in May 1903); Pola (MERRILL no. 2250; in flower in May 1903); Mindanao Isl., Davao, Taumu (WARBURG no. 14690).

### **Bauhinia** Linn.

#### Sect. I. **Pauletia**.

1. **Bauhinia acuminata** L.

Luzon, Manila. From a garden (WARBURG no. 13004 in flower in June).

This species is widely distributed in Tropical Asia.

#### Sect. II. **Pileostigma**.

2. **Bauhinia malabarica** Roxb.

Luzon, Prov. Manila, Mt. Alban, a large forest-tree (WARBURG no. 12904, with fruit in March.).

#### Sect. III. **Lysiphyllum**.

3. **Bauhinia Blancoi** Baker.

Luzon, Prov. Tayabas, Pagbalao (MERRILL no. 1972 with fruit in April); Prov. Zambales, Palawig (WARBURG no. 13746).

#### Sect. IV. **Phanera**.

4. **Bauhinia Aherniana** Perk. n. sp. Shrubby, young branches brown-pilose, older ones glabrescent. Leaves distinctly cordate, bifid  $\frac{2}{5}$  way down, sinus rather narrow, papyraceous, 5—6,5 cm long, 6—8 cm broad, above downy at first, later glabrescent, beneath softly pubescent, lobes round; nerves 9—10; petiole 3,25—4 cm long with a few long hairs especially at the slightly thickened ends; stipules broadly obovate, 5 mm long. Flowers in pyramidal terminal racemes, 8 cm long; pedicels spreading, thinly pilose, 4—5,5 cm long; bracts ovate, apex acuminate, on both sides rusty-pilose, 5 mm long, deciduous; buds 1,5—2 cm long, the broadly, ovoid upper part much exceeding the cylindrical base. Calyx brown-pubescent, limb splitting into ovate-lanceolate segments with an acuminate apex, 2,5 cm long, 5 mm wide, tube slightly dilating toward the base, 7 mm long. Petals 5, subequal, broadly oblong, obtuse, short-clawed, 2,5 cm long, 1,5 cm wide, subglabrous within, densely red-brown-pilose externally. Stamens 10, 3 fertile, 7 staminodial, linear-oblong. Ovary distinctly stalked, densely silky, style thickly silky, 1,3 cm long, stigma large, peltate.

Mindoro Island, Baco (MERRILL no. 1237, in flower in January).

Nearly related to *B. ferruginea* Roxb., from which it differs in the texture and the very slightly cordate base of the leaves.

5. **Bauhinia antipolana** Perk. n. sp. A shrubby climber, branches moderately stout, younger branches pubescent, older ones glabrescent, tendrils compressed, circinate, pubescent. Leaves roundish, base cordate, bifid  $\frac{1}{2}$  to  $\frac{4}{7}$  down, sinus rather wide, coriaceous, 4—7,5 cm long and broad, sometimes a little longer than broad, glabrous above, shortly, thinly rusty-pubescent beneath, 13—15-nerved; lobes subacute; petiole 1,5—2,5 cm long. Flowers in lax long peduncled copious terminal racemes, 8—18 cm long, lower flowers usually deciduous; bracts ultimately deciduous, ovate-acute; pedicel 3—3,5 cm long, densely rusty-tomentose or velvety; buds narrowly clavate, 1,5—2 cm long, the narrowly fusiform upper part rather longer than the narrow slightly infundibuliform base. Calyx rusty-velutinous or subsilky, limb splitting into reflexed equal linear-lanceolate lobes, 2 cm long, 4 mm wide, infundibular lower part 1 cm long. Petals 5, subequal, oblanceolate, clawed, about 2,4 cm long, 6 mm wide, externally rusty-silky. Stamens 5, 3 fertile, linear-oblong, filaments of fertile stamens uniform. Ovary distinctly stalked, densely silky, style silky, stout, about 1,2 cm long, stigma large peltate.

Luzon, Prov. Rizal, Antipolo (MERRILL no. 1317, in flower in February).

This species is probably closely allied to *Bauhinia ferruginea* Roxb., but differs from it in the leaf-lobes which are more acute in our specimen, in the more numerous nerves, and in the shape of the calyx-tube.

6. **Bauhinia Cumingiana** (Benth.) Vill.

Cebú Island (CUMING no. 1785); Samar Island (JAGOR no. 939, 942); Mindanao, Island Davao, Taumu (WARBURG no. 14687); North Luzon, Malunu (WARBURG no. 12089); Isabela, Digamai (WARBURG no. 12046); Middle Luzon, Polillo (WARBURG no. 13744); Mariveles (WARBURG no. 12903); Bordeos (WARBURG no. 13745).

7. **Bauhinia ferruginea** Roxb.

Island of Paragua, Ewiig River (MERRILL no. 731, with buds in Feb.).

I have determined this specimen as *Bauhinia ferruginea* Roxb., as it agrees in many of its characters with that plant. King, however, in his description of *B. ferruginea* Roxb., Materials for Fl. Malay Peninsula no. 9 p. 184 (1897), describes the leaves as being glabrous beneath, while the leaves of this plant are pubescent.

8. ***Bauhinia leptopus*** Perk. n. sp. Shrubby climber, branches slender, younger branches thinly rusty-pubescent, later glabrescent, tendrils compressed, slender, thinly but persistently rusty-pubescent. Leaves ovate, truncate or very shallowly cordate, coriaceous, 3,5—5,5 cm long, 3—4 cm wide, above glabrous, beneath subglabrous, on the nerves minutely puberulous, 5-nerved; petiole 0,6—1,5 cm long, glabrous, thickened at both ends. Flowers in dense terminal, pyramidal racemes, pedicels rusty-silky, slender erecto-patent, lower ones 7—8 cm long; buds clove-shaped, the cylindrical base about as long as the spherical apiculate portion. Calyx aureo-silky, splitting into 5 subequal ovate, shortly acuminate lobes, 7 mm long, 3,5 mm wide, tube shortly and obliquely curved, sulcate, 3 mm long. Petals 5, externally rusty-silky, 1,5 cm long, 9 mm wide, rotundate, orbicular, shortly clawed. Stamens 13, 3 fertile, 10 staminodial; staminodia glabrous, subulate, apex acuminate, with small abortive anthers. Ovary rusty-pubescent, stalked, with the stalk adnate to the calyx-tube, stigma large, peltate, terminal.

Luzon, Prov. Tayabas, Sampaloc (WARBURG no. 12824 in flower in March).

This species is related to *Bauhinia bidentata* Jack, our plant, however, has a shorter calyx-tube and larger petals.

9. ***Bauhinia Merrilliana*** Perk. n. sp. Shrubby, reaching 8—9 m in length, with slender, zig-zag, glabrescent branches. Leaves roundish, base shallowly cordate, bifid  $\frac{1}{2}$ — $\frac{2}{3}$  down, sinus rather wide, papyraceous, 2,5—4,5 long, always about as broad as long, glabrous above, pubescent only on the nerves beneath, 9-nerved, lobes rounded, obtuse; petiole 1,5—2 cm long, younger tomentose, older pubescent, thickened at both ends. Flowers in terminal, shortly peduncled, many flowered racemes, 7—13 cm long, white, turning yellow, fragrant (ex Merrill), lower flowers usually deciduous; bracts ultimately deciduous, 8 mm long, 2 mm

wide, lanceolate, silky on both sides; pedicels 6 mm long, slender, rusty-tomentose; buds club-shaped, 1,2 cm long, tapering from the blunt apex to the base. Calyx rusty-velvety, limb splitting into obovate-lanceolate, acuminate lobes, 9—11 mm long, 4 mm wide, infundibular part 6 mm long. Petals 5, subequal, ovate, distinctly clawed, 1,2 cm long, 6 mm wide, on both sides with long silky hairs. Stamens 5, 3 fertile, 2 staminodial, linear, oblong, filaments uniform, glabrous. Ovary densely rusty-tomentose, stalk 5 mm long, tomentose as is the style, 6 mm long; stigma peltate. Pod dark brown, shiny, 11—12 cm long, 3 cm wide, tapering slightly to both ends, woody. Seeds from 5—7, much compressed, orbicular, dark brown, 1,3 cm long, 9 mm wide.

Island of Paragua, Ewiig River (MERRILL no. 694; in flower in February).

10. **Bauhinia nymphaeifolia** Perk. n. sp. Shrubby, branches cupreо-fusco-tomentose, subterete. Leaves roundish, base deeply cordate, bifid  $\frac{1}{4}$ — $\frac{1}{3}$  down, sinus narrow, subcoriaceous, 5—12 cm long, rather broader than long, above cupreо-fusco-velvety at first, later shining, glabrous, beneath densely cupreо-fusco-tomentose especially at the nerves, 12—13-nerved; lobes rotundate; petiole 3—5 cm long, cupreо-fusco-tomentose, slightly thickened at both ends. Flowers in copious, lax terminal racemes, 2—5 cm long; pedicels silky, erecto-patent, the lower 3—4 cm long, bracts at the base usually deciduous, 1 mm long, ovate, acute, tomentose; bracteoles very small; bud 1,5 cm long, the narrowly-infundibuliform base much shorter than the ovoid apiculate upper part. Calyx closely cupreо-fusco-velvety, limb splitting into 5 subequal, reflexed, broadly lanceolate lobes, 8 mm long, 2,5 mm wide; tube narrow-infundibuliform, 5 mm long. Petals subequal, 2 being somewhat smaller than the others, about 9 mm wide, 10 mm long, externally cupreо-fusco-hirsute, margins slightly wavy. Stamens 5, 3 fertile, 2 staminodial very minute, hirsute, scale-like; filaments hirsute. Ovary short-stalked, hirsute, style short, 7 mm long, stigma peltate.

Philippines (CUMING no. 1180).

This species is related to *Bauhinia Cumingiana* from which, however, it is readily distinguished by the more rotundate and thickly pubescent leaves.

11. **Bauhinia Pinchotiana** Perk. n. sp. A shrubby climber, branches subterete, soon glabrescent, tendrils circinate, compressed, thinly pubescent at the apex. Leaves roundish, shallowly cordate, bifid  $\frac{1}{2}$  down, sinus narrow, coriaceous, 2,5—4 cm long, always a little longer than broad, above glabrous, beneath thinly pilose; lobes acute; nerves 10—11; petiole 1,7—1 cm glabrous. Flowers in dense pyramidal racemes, 7—13 cm long; pedicels rusty-pubescent, erecto-patent, the lower 2 cm long, bracts ultimately deciduous, 1—2 mm long; buds 1,5—2 cm long, clavate, the slightly obliquely curved base much longer than the ovoid upper portion. Calyx rusty-pubescent splitting into 5 subequal lanceolate lobes, 1 cm long and 2 mm wide, tube narrowly infundibuliform, 1 cm long, 2 mm wide at the apex. Petals 5, broadly oblanceolate, rather long-clawed, 7 mm long and 3 mm wide, sparsely rusty-pubescent externally. Stamens 5, 3 fertile, 2 staminodial. Ovary small, not stalked, rusty-tomentose, style almost wanting, stigma peltate.

Philippines: CUMING no. 1119.

*Bauhinia Pinchotiana* Perk. and *Bauhinia Merrilliana* Perk. are related, but differ in the shape of the leaf-lobes, in the number of the nerves, and the texture of the leaves, and in the shape of the buds. CUMING's plant has been determined as *Bauhinia semibifida* Roxb., from which it differs by its acute leaf-lobes.

12. **Bauhinia Warburgii** Perk. n. sp. Shrubby, stout, glabrous. Leaves roundish, base shallowly cordate, bifid  $\frac{1}{3}$  down, sinus narrow, subcoriaceous, 5,5—8,5 cm long, rather longer than broad, shining and glabrous above, with short scattered brown hairs beneath; nerves 12—13; lobes round; petiole 2—2,5 cm long, glabrous; stipules broadly obovate, glabrous, 6 mm long, very deciduous. Flowers in lax terminal racemes, about 5 cm long, lower flowers deciduous; pedicel 3,5—4 cm long, aureo-fusco-pubescent. Calyx aureo-fusco-pubescent, limb splitting into 5 subequal, lanceolate lobes, 2—2,4 cm long, 5 mm wide, tube cylindrical, sulate, slightly tapering toward the base, 3—3,5 cm long. Petals 5, obovate, shortly clawed, externally rusty-silky, glabrous within, 3—3,5 cm long, 1—1,5 cm wide. Ovary small, shortly stalked, 6—7-ovuled, densely silky; style thick, silky, 1 cm long.

Luzon, Prov. Tayabas, Sampaloc (WARBURG no. 12823).

This plant is easily distinguished from *Bauhinia ferruginea* Roxb. by the shape and length of the calyx-tube, the externally thinly pubescent petals, and the leaves which are beneath pubescent.

#### Sect. V *Casparia*.

##### 13. *Bauhinia Kappleri* Sagot.

Middle Luzon, Arayat (WARBURG no. 13743).

URBAN in his extremely interesting morphological investigations in regard to the genus *Bauhinia* (in Ber. deutsch. bot. Ges. III [1885] p. 83), takes occasion to describe the peculiar species *Bauhinia Krugii*. He states that the specimens he had examined evidently came from cultivated shrubs. Later he discovered that SAGOT (in Ann. sc. nat. 6. sér. XIII [1882] p. 317), three years before, had described the same species from Guiana (cf. Urb. Symb. antill. I [1899] p. 315). Subsequently there came to the Berlin Herbarium a specimen of *Bauhinia* from the Calcutta Gardens, sent by Dr. PRAIN, under the name of *Bauhinia monandra* S. Kurz. *B. monandra* S. Kurz (in Journ. Asiat. Soc. Bengal. XLII, 2 [1873] p. 73) was based upon a plant which BRANDIS collected in Burma. Dr. HARMS informs me, that he is of the opinion, that very probably *Bauhinia monandra* S. Kurz was identical with *Bauhinia Krugii* Urban, but that the matter can only be definitely settled after a comparison has been made with the original. The description of KURZ answers very well for URBAN's species.

As in America the species only occurs in cultivation, the home of the plant may possibly be Burma. Unfortunately WARBURG, in the material he collected in the Philippines, does not mention if he found the plant in a wild or in a cultivated state. Very recently this species has been found by BUSSE in East Africa, near Dar-es-Salam, where it is cultivated on account of its beautiful flowers. In the Sandwich Islands it is also planted, as is proved by a specimen collected by HILLEBRAND bearing the label *Bauhinia variegata* (Hort. Honolulu). URBAN says, that the species is intermediate between sections *Casparia* and *Phanera*. It is placed by TAUBERT (Engl.-Prantl, Pflzfam. III, 3 p. 151) in the section *Casparia*.

The typical representatives of this section, especially distinguished by having only one fertile stamen, are without

exception American. What is the home of *Bauhinia Kappleri*, respectively *monandra* Kurz?

It is not at all impossible that the specimen described by KURZ was from a cultivated shrub.

This species must take an isolated position among the species known from the Philippines, on account of the presence of one fertile stamen, the others being reduced to subulate staminodia. The flower is peculiar, in that the superior petal (petalum superius) is distinguished from the others by purple spots. Among the many beautiful ornamental plants of the genus *Bauhinia*, this species is certainly the most beautiful. I wish particularly to call the attention of my countrymen in the Philippines to this plant. It is of great interest to ascertain if the species really is endemic in the Islands, or if it is only cultivated. If after a comparison with the original of KURZ (at present it is not accessible to me) the identity of *Bauhinia monandra* and *Bauhinia Krugii* is established, the name of KURZ, being the older, must be selected.

### **Cassia** Linn.

#### 1. **Cassia alata** Linn.

Luzon, Prov. Manila, Montalbán (WARBURG no. 12907; March 1888); Mindoro Island, Baco (MERRILL no. 1256; in flower in January 1903).

#### 2. **Cassia fistula** Linn.

North Luzon, Enrile (WARBURG no. 12431).

#### 3. **Cassia javanica** Linn.

Luzon, Prov. Tayabas, Guinayangan (MERRILL no. 2057); Prov. Rizal, Antipolo (MERRILL no. 1313; in flower in February 1903); Paragua Island, Point of Separation (MERRILL no. 809; in fruit in February 1903).

#### 4. **Cassia occidentalis** Linn.

Luzon Central, Bordeos (WARBURG no. 13751); Joló Island (WARBURG no. 14882; in fruit in August 1888).

#### 5. **Cassia Tora** Linn.

North Luzon, Enrile (WARBURG no. 12432); Prov. Manila (MERRILL no. 82; in flower in May 1902); Mindanao Island, Davao, Sibulan (WARBURG no. 14691; July 1888).

**Caesalpinia** Linn.

1. **Caesalpinia crista** Linn.

Paragua Island, S. Antonio Bay (MERRILL no. 842).

2. **Caesalpinia nuga** Ait.

Mindoro Island, Baco (MERRILL no. 1225, 1294; in flower in January 1903); Lubang Isl. (MERRILL no. 962); East Mindanao, Sea Coast (WARBURG no. 14883).

3. **Caesalpinia pulcherrima** Sw.

Luzon, Prov. Rozales, Pangasinan (MERRILL no. 267; in flower in May 1902).

4. **Caesalpinia Sappan** Linn.

Luzon, Prov. Tayabas, Laguimanoc (MERRILL no. 2131); Prov. Tayabas, Pagbilao (MERRILL no. 2420; in flower in April 1903); Mindoro Isl., Calapan (MERRILL no. 887, in fruit in April 1903).

**Mezoneurum** Desf.

1. **Mezoneurum glabrum** Desf.

North Luzon, Cagayan, Atalle (WARBURG no. 11736); Enrile (WARBURG no. 12425); Prov. Manila, Montalbán (WARBURG no. 12909); Luzon Central, Mariveles (WARBURG no. 12910); Prov. Rizal, Antipolo (MERRILL no. 1711; in fruit in March 1903); Prov. Pampanga, Arayat (MERRILL no. 1438; in flower in March 1903); Mindoro Isl., Palauan (MERRILL no. 956; in fruit in April 1903); Paragua Isl., Point of Separation (MERRILL no. 805).

**Papilionatae.****Ormosia** Jack.

1. **Ormosia calavensis** Blanco.

North Luzon, Malunu (WARBURG no. 12111).

**Sophora** Linn.

1. **Sophora tomentosa** Linn.

Middle Luzon (WARBURG no. 13717); Luzon, Prov. Camarines Sur, Pasacao (AHERN no. 213); Prov. Principe, Baler (MERRILL no. 1119; in flower a. 1903); Prov. Tayabas, Guinayangan (MERRILL no. 2034; in fruit a. 1903); Prov. Tayabas, Pagbalao (MERRILL no. 1971); Mindoro Isl., Pola (MERRILL no. 2384).

**Crotalaria** Linn.

1. **Crotalaria calycina** Schrek.

Mindanao Isl., Davao, Sibulan (WARBURG no. 14669; in flower in July 1888).

2. **Crotalaria incana** Linn.

Luzon, Manila (MERRILL no. 20; in flower in April 1902); Prov. Tayabas, Sampaloc (WARBURG no. 12805; in flower in March 1888); Mindoro Isl., Baco (MERRILL no. 1275; in flower in January 1903).

3. **Crotalaria quinquefolia** Linn.

Middle Luzon, Arayat (WARBURG no. 13716).

4. **Crotalaria retusa** Linn.

Mindanao Isl., Davao (WARBURG no. 14667; in flower in June 1888); Zamboanga (WARBURG no.?).

5. **Crotalaria striata** DC.

Panay Isl., Iloilo (MERRILL no. 2414; in flower in April 1903).

6. **Crotalaria verrucosa** Linn.

Mindoro Isl., Mansalay (MERRILL no. 911; in fruit in April 1903); Mindanao Isl., Dahomo, Davao (WARBURG no. 14668; in flower in June 1888); Jolo Isl. (WARBURG no. 14868).

**Indigofera** Linn.

1. **Indigofera hirsuta** Linn.

North Luzon, Pica blanca (WARBURG no. 12436).

2. **Indigofera Teysmanni** Miq.

Luzon, Prov. Camarines Sur, Pasacao (AHERN no. 234, 235).

3. **Indigofera tinctoria** Linn.

North Luzon, Cagayan (WARBURG no. 11739); Enrile (WARBURG no. 12435); Malunu (WARBURG no. 12097); Mindoro Isl., Calapan (MERRILL no. 872); Jolo Isl. (WARBURG no. 14876); Mindanao Isl., Davao (WARBURG no. 14673).

**Dalea** Linn.

1. **Dalea nigra** Mart. et Gal.

Luzon, Prov. Rizal, Antipolo (MERRILL no. 1349; in flower in February 1903); Middle Luzon, Mariveles (WARBURG no. 12882).

**Tephrosia** Pers.

1. **Tephrosia luzoniensis** Vogel.

Luzon, Manila (MERRILL no. 369; August 1902).

2. **Tephrosia purpurea** Pers.

Luzon, Prov. Zambales, Iba (MERRILL no. 327; in flower in June 1902).

**Gliricidia** H., B. et K.

1. **Gliricidia sepium** Steud.

North Luzon, San Fernando (WARBURG no. 11816); Prov. Manila, Montalbán (WARBURG no. 12892); Luzon, Prov. Bataan, Balagna (AHERN no. 309); Prov. Tayabas, Pagbalao (MERRILL no. 1913; in flower in April 1903); Mindoro Isl., Calapan (MERRILL no. 894).

This plant belongs to a group of species indigenous to America, which was brought from the Spanish colonies of the New World into those of the Eastern Hemisphere. The same is to be said of *Dalea nigra* Mart. et Gal. and of *Prosopis juliflora* DC. *Gliricidia sepium* has also been introduced into the Caroline Islands, where it has been collected by Prof. VOLKENS. The nomenclature of this tree is completely given by URBAN, in Symb. antill. vol. II, p. 288 (1900—1901). Formerly the plant was called *Gliricidia maculata* H.B.K.; but the oldest specific name is *Robinia sepium* Jacq. It is a well known coffee-shading tree and is figured by PREUSS, in Expedition nach Central- und Süd-Amerika (1899/1900), plate 10.

**Sesbania** Scop.

1. **Sesbania aculeata** Pers.

Luzon, Prov. Pampanga, Arayat (MERRILL no. 1444, in flower in March 1903).

2. **Sesbania grandiflora** Poir.

Luzon, Prov. Manila (MERRILL no. 647; in flower in January 1903); Prov. Tayabas, Pagbalao (MERRILL no. 1895; in flower in April 1903).

**Ormocarpum** Beauv.

1. **Ormocarpum sennoides** DC.

Luzon, Prov. Zambales, Batiucagaan (WARBURG no. 13719).

***Aeschynomene*** Linn.

1. ***Aeschynomene indica*** Linn.

Luzon, Prov. Tayabas, Sampoloc (WARBURG no. 12810).

***Smithia*** Ait.

1. ***Smithia sensitiva*** Ait.

Luzon, Prov. Nueva Viscaya, Bagabag (MERRILL no. 111; in flower in June 1902).

***Desmodium*** Desv.

1. ***Desmodium capitatum*** DC.

Luzon, Prov. Bataan, Dinalupihan (MERRILL no. 1559; a. 1903); Middle Luzon, Mariveles (WARBURG no. 12883).

2. ***Desmodium gangeticum*** DC.

North Luzon, Enrile (WARBURG no. 12443); Prov. Cagayan, Lallo (WARBURG no. 11513); Prov. Isabela, Digamai (WARBURG no. 12041); Prov. Manila (WARBURG no. 12884); Prov. Tayabas, Sampoloc (WARBURG no. 12811); Paragua Isl., San Antonio Bay (MERRILL no. 849); Joló Isl. (WARBURG no. 14866); Mindanao Isl., Davao, Taumu (WARBURG no. 14674).

3. ***Desmodium gyrans*** DC.

Mindanao Isl., Davao (WARBURG no. 14676).

4. ***Desmodium latifolium*** DC.

South Mindanao, Sibulan (WARBURG no. 14678).

5. ***Desmodium laxiflorum*** DC.

Luzon, Prov. Rizal, Antipolo (MERRILL no. 1348; in flower in February 1903).

6. ***Desmodium ormocarpoides*** DC.

Mindanao Isl., Davao, Sibulan, Mount Batagan (WARBURG no. 14680).

7. ***Desmodium polycarpum*** DC.

Mindanao Isl., Davao, Rozonal (WARBURG no. 14675); Tamine (WARBURG no. 14677).

8. ***Desmodium pulchellum*** Benth.

Luzon, Prov. Bataan, Dinalupihan (MERRILL no. 1589); Culión Isl. (MERRILL no. 438); Joló Isl. (WARBURG no. 14867).

9. ***Desmodium scorpiurus*** Desv.

North Luzon, Malunu (WARBURG no. 12103); Pica blanca (WARBURG no. 12445); Prov. Isabela, Digamai (WARBURG

no. 12043); Prov. Manila (MERRILL no. 385); Montalbán (WARBURG no. 12885).

10. **Desmodium spirale** DC.

Luzon, Manila (MERRILL no. 636).

11. **Desmodium triflorum** DC.

North Luzon, Malunu (WARBURG no. 12102); Prov. Manila (MERRILL no. 384); Montalbán (WARBURG no. 12642); Prov. Tayabas, Sampoloc (WARBURG no. 12812, 12813).

12. **Desmodium triquetrum** DC.

Culián Isl. (MERRILL no. 519).

13. **Desmodium umbellatum** DC.

Luzon, Prov. Camarines Sur, Pasacao (AHERN no. 222); Prov. Zambales, Subig and vicinity (MERRILL no. 2093); Middle Luzon, Binangonan (WARBURG no. 13728); Mindoro Isl., Pola (MERRILL no. 2257); Culián Isl. (MERRILL no. 550); Mindanao Isl., Surigao (AHERN no. 408); South Mindanao, Taumu (WARBURG no. 14681).

**Pycnospora** R. Br.

1. **Pycnospora hedysaroides** R. Br.

Culián Isl. (MERRILL no. 681).

**Alysicarpus** Neck.

1. **Alysicarpus vaginalis** DC.

North Luzon, Enrile (WARBURG no. 12440); Manila (MERRILL no. 65); Prov. Zambales, Iba (MERRILL no. 320).

**Uraria** Desv.

1. **Uraria lagopoides** A. DC.

North Luzon, Enrile (WARBURG no. 12455); Pica blanca (WARBURG no. 12454); Prov. Cagayan, Miala (WARBURG no. 11750); Mindoro Isl., Calapan (MERRILL no. 888); Joló Isl. (WARBURG no. 14870); Mindanao Isl. (WARBURG no. 14869); Davao, Sibulan (WARBURG no. 14670).

2. **Uraria picta** Desv.

Mindanao Isl., Davao, Sibulan (WARBURG no. 14671).

**Lourea** Neck.1. **Lourea obcordata** Desv.

North Luzon, Enrile (WARBURG no. 12457); Pica blanca (WARBURG no. 12456); Malunu (WARBURG no. 12104); Prov. Cagayan (WARBURG no. 11751).

**Phylacium** Benn.1. **Phylacium bracteosum** Benn.

North Luzon, Malunu (WARBURG no. 12105); Prov. Manila, Montalbán (WARBURG no. 12888); Mindanao Isl., Davao, Sibulan (WARBURG no. 14672).

**Pterocarpus** Linn.1. **Pterocarpus indicus** Linn.

Luzon, Prov. Cagayan (WARBURG no. 12458); Mindoro Isl., Calapan (MERRILL no. 2580); Mindanao Isl., Taumu (WARBURG no. 14660).

2. **Pterocarpus Vidalianus** Rolfe.

North Luzon, Malunu (WARBURG no. 12109); Middle Luzon, Binangunan (WARBURG no. 13714); Prov. Principe, Baler (MERRILL no. 1016); Prov. Tayabas, Pagbalao (MERRILL no. 1984); Prov. Tayabas, Guinayangan (MERRILL no. 2044, 2050); Mindoro Isl. Pola (MERRILL no. 2231; in flower in May 1903).

**Cianthus** Sol.1. **Cianthus Binnendyckianus** S. Kurz.

Mindanao Isl., Davao, Taumu (WARBURG no. 14663).

In the Berlin herbarium accompanying SARASIN's specimen of *Cianthus Binnendyckianus* S. Kurz I have found the following interesting notes, in the hand of Dr. H. HARMS.

"This species was described by KURZ in Journ. Asiat. Soc. Bengal. XL (1871), p. 51 and was founded upon a cultivated specimen, given to the author by BINNENDYCK, and supposed to have been introduced into the Buitenzorg Gardens from the Island of Ceram.

KOORDERS (in Mededeel. van's Lands Plantentuin [1898] p. 429) cites the plant as from Celebes. TAUBERT in Engl. Prantl, Pflzfam. III, 3 (1894), 279, under *Donia* G. Don, does not mention the species. KOORDERS thinks that TEYSMANN brought

the plant from Celebes to the Buitenzorg Gardens. I have not seen a type specimen of the species of KURZ. The description of KURZ agrees very well with the plant which the SARASIN Brothers collected in Celebes, Tomohon-Menado, no. 491, June 1894. KURZ has already emphasized the fact that his species differs from the original species of the genus *Clianthus*, the most important difference being the glabrous style. Apart from this consideration, the species of KURZ has much smaller flowers, narrower bracts, shorter calyx-teeth and other characters which give it an essentially different habitus. If this species is not made the type of a new genus, it must represent a subgenus, and consequently the genus *Clianthus* must be arranged in the following manner.

Subgen. I *Euelianthus* Harms. Style bearded on the upper side. — 2 Species. Australia.

Subgen. II *Pseudoclianthus* Harms. Style glabrous. *Clian-*  
*anthus Binnendyckianus*, S. Kurz. Ceram (?), Celebes,  
Mindanao."

### **Pongamia** Vent.

#### 1. **Pongamia glabra** Vent.

Middle Luzon, Binangonan (WARBURG no. 13735); Siniloan (WARBURG no. 13734); Prov. Camarines Sur, Pasacao (AHERN no. 206); Prov. Pampanga, Arayat (MERRILL no. 1368); Prov. Principe, Baler (MERRILL no. 1001); Prov. Tayabas, Guinayangan (MERRILL no. 2036); Prov. Zambales, Cahanyeana (WARBURG no. 13736); Mindanao Isl., Davao, Taumu (WARBURG no. 14659); Surigao (AHERN no. 496).

### **Inocarpus** Forst.

#### 1. **Inocarpus edulis** Forst.

Joló Isl. (WARBURG no. 14877).

(To be continued.)

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## Dipterocarpaceae

by

J. PERKINS.

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### **Dipterocarpus** Gaertn.

1. **Dipterocarpus lasiopodus** Perk. n. sp. Tree 30—40 m high (ex Merrill), young branches densely hirsuto-tomentose. Leaves coriaceous, elliptic, oblong or ovate-oblong, on the upper surface glabrous, on the lower surface glabrous except at the sparsely pubescent midrib, margins undulate, nerves on both sides very prominent, veins parallel at rightangles to the nerves, midrib depressed above, prominent beneath; length 12—23 cm, width 6—12 cm; petiole 3.5—4 cm long, densely hirsute, consisting of tufts of stellate hairs, some short some long. Stipules 4 cm long, 9 mm wide, externally densely hirsuto-tomentose. Fruit ovoid, wings 13 cm long, 2 cm wide; tube of the fruiting calyx with 5 protuberances in its upper portion.

Luzon, Prov. of Tayabas, Guinayangan, growing on sandy soil, sandstone (MERRILL no. 2031 with fruit in April), (MERRILL no. 2004).

The nearest ally of this is *Dipterocarpus Warburgii* Brandis, from which, however, it differs by having smaller fruit. In *D. lasiopodus* the densely hirsuto-pubescent petiole is most peculiar. MERRILL says that the wood of this tree is used for bancas (native canoes) and that the tree occurs frequently in forests.

2. **Dipterocarpus speciosus** Brandis.

Luzon, Prov. Principe, Baler (MERRILL no. 1149; a. 1903).

3. **Dipterocarpus velutinus** Vid.

Luzon, Prov. Bataan, Dinalupihan (MERRILL no. 1479; February 1903). Prov. Zambales, Subig (MERRILL no. 1754; April 1903).

### **Anisoptera** Korthals.

1. **Anisoptera calophylla** Perk. n. sp. A high forest tree (ex Warburg); branches slender at first with sparse, stellate hairs. Leaves oblong, ovate-oblong or elliptic, 10—22.5 cm long,

4,5—9 cm wide, chartaceous, long-acuminate, with obtuse apex, base rotund; main nerves 18—22, curved, ascending, on the upper surface obscure, on the lower prominent, midrib on the upper surface depressed, on the lower prominent and covered with scattered stellate hairs; petiole 2—3,5 cm long, thickened at the apex, glabrous. Fruit globose, 1,5 cm diam., calyx segments uniting below the apex of the fruit; wings 5, 7—8 cm long, 1,3 cm wide, obovate-lanceolate, on both surfaces pubescent; 2 segments of fruiting calyx much longer than the others, with 3 prominent longitudinal nerves joined by conspicuous transverse veins which are somewhat oblique.

Middle Luzon, Prov. Zambales (WARBURG no. 13429 with fruit in April); Luzon, Prov. of Bataan Dinalupihan (MERRILL no. 1518).

This is closely allied to *Anisoptera thurifera* Blume but has larger leaves with more numerous nerves, and the apex of the petiole is enlarged. *A. thurifera* has, moreover, on the lower surface of the leaves, on the inflorescence and on the petioles, minute, round scales which are wanting in this species.

2. ***Anisoptera Vidaliana* Brandis.**

Luzon, Prov. Manila (MERRILL without no. and date); Prov. Bataan (MERRILL no. 1475; Jan.-Febr. 1903); Prov. Rizal, Antipolo (MERRILL no. 1629; March 1903); Prov. Zambales, Subig (MERRILL no. 1763; April 1903).

***Shorea* Roxb.**

1. ***Shorea Guiso* Blume?**

Luzon, Prov. Principe, Baler (MERRILL no. 1004; a. 1903).

2. ***Shorea Warburgii* Gilg.**

Luzon, Prov. Bataan, Dinalupihan (MERRILL no. 1482; a. 1903); Prov. Camarines Sur, Pasacao (AHERN no. 129; a. 1902).

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## Anacardiaceae

by

J. PERKINS.

### **Buchanania** Spreng.

#### 1. **Buchanania florida** Schauer var. **arborescens** Engl.

North Luzon, Enrile (WARBURG no. 12379); Prov. Cagayan, Lallo (WARBURG no. 11506); Malayneg (WARBURG no. 11759); Prov. Isabela, Digamai (WARBURG no. 12006); Pica blanca (WARBURG no. 12378); Luzon, Prov. Camarines Sur (AHERN no. 36); Prov. Manila (WARBURG no. 13246); Prov. Principe, Baler (MERRILL no. 1022; in flower a. 1903); Prov. Rizal, Antipolo (MERRILL no. 1625); Prov. Tayabas, Guinayangan (MERRILL no. 2055, 2064; in flower a. 1903); Pagbalao (MERRILL no. 1987, 1997; in flower in April 1903); Pitoga (MERRILL no. 2118); Prov. Zambales, Candelaria (WARBURG no. 13288); Subig and vicinity (MERRILL no. 2107); Mindoro Isl., Abonabon (MERRILL no. 2180); Baco (MERRILL no. 1186; in flower in January 1903); Pinamalayan (MERRILL no. 2168); Pola (MERRILL no. 2223).

#### 2. **Buchanania microphylla** Engl.

Luzon, Prov. Zambales, Subig (MERRILL no. 1756).

#### 3. **Buchanania nitida** Engl.

Middle Luzon, Polille (WARBURG no. 13289).

#### 4. **Buchanania pseudoflorida** Perk. n. sp. Tree circ. 23 m high (ex Merrill); younger branches terete, fuscous-pubescent, later glabrescent. Leaves elliptic or oblong-elliptic, thickly coriaceous, entire, simple, alternate, narrowed from the lower third to the brown-pubescent petiole, acute or very shortly and bluntly acuminate, both surfaces glabrous, the 12—16 pairs of spreading and ascending main nerves on the upper surface inconspicuous, on the lower rather prominent, the reticulations when dry distinct; length 6—11 cm, width 3—4,5 cm; petiole 2,5—3 cm long, thickened at the base. Panicles axillary, crowded at the ends of the branches, erect, shortly pedunculate, with short, slender, few-flowered branches, upper branches glabrous, lower pubescent. Flowers 5 mm in diam., on slender

bracteolate pedicels longer than themselves. Sepals 5, orbicular, membranaceous, glabrous, undulate. Petals 5, much longer than the calyx, oblong, obtuse, membranous, glabrous on both surfaces. Stamens apparently 8 (material not sufficient); anthers narrow, elongated, bases sagittate; filaments equal to the anthers, subulate. Pistils 5. Drupe subglobular, glabrous, compressed, about 9 mm in diam. Disk membranous, striate.

Luzon, Prov. Tayabas, Guinayangan, very deep, brownish gray, sandy marl (MERRILL no. 2061).

This species differs from *Buchanania florida* in the size and shape of the leaves, and in the length of the petiole.

### **Mangifera** Burm.

#### 1. **Mangifera caesia** Jack.

Joló Isl. (WARBURG no. 14912; in flower in August 1888).

#### 2. **Mangifera indica** Linn.

Middle Luzon, Mariveles (WARBURG no. 13242). Luzon, Prov. Bataan, Dinalupihan (MERRILL no. 1539; in flower); Prov. Principe, Baler (MERRILL no. 1153); Prov. Zambales, Subig (MERRILL no. 1757); Mindoro Isl., Calapan (MERRILL no. 985; in flower in April 1903); Joló Isl. (WARBURG no. 14913; in flower in August 1888).

#### 3. **Mangifera lagenifera** Griff.

Philippines (CUMING no. 2330); Culión Isl. (MERRILL no. 610).

### **Anacardium** Linn.

#### 1. **Anacardium occidentale** Linn.

Luzon, Prov. Manila, Montalbán (WARBURG no. 12552, 13245; in flower in March 1888); Prov. Bataan, Dinalupihan (MERRILL no. 1501; in flower); Prov. Rizal, Antipolo (MERRILL no. 1305; in flower in February 1903); Mindoro Isl., Baco (MERRILL no. 1215; in flower in January 1903); Pola (MERRILL no. 2470); Paragua Isl., E-wi-ig River (MERRILL no. 790; in flower in February 1903).

### **Koordersiodendron** Engl.

#### 1. **Koordersiodendron celebicum** Engl.

Luzon, Prov. Camarines Sur, Pasacao (AHERN no. 121).

### **Dracontomelum** Blume.

#### 1. **Dracontomelum Cummingianum** Baill.

Luzon, Prov. Bataan, Morong (WARBURG no. 13286).

2. **Dracontomelum mangiferum** Bl.

Luzon, Prov. Principe, Baler (MERRILL no. 1082).

**Lannea** Rich.1. **Lannea speciosa** (Blume) Engl.

Prov. Tayabas, Pagbalao (MERRILL no. 1999; in flower in April 1903).

**Semecarpus** Linn.

1. **Semecarpus Elmeri** Perk. n. sp. Tree or shrub?; young branches stout, rough, lenticellate, with pale bark. Leaves simple, entire, alternate, obovate-oblong, coriaceous, apex shortly and acutely acuminate, gradually narrowed in the lower half to the short, stout petiole, upper surface glabrous, shining; the lower, glaucescent with a few scattered short hairs especially at the nerves and veins; main nerves 13—18, prominent, shining, broad and conspicuous on the lower surface, impressed on the upper; length 10—16 cm, width 4—5,5 cm; petiole 0,6—1 cm long. Panicles axillary or terminal, stoutly pedunculate, rusty-pubescent, shorter than the leaves. Flowers very young.

Island of Mindoro, Baco (MERRILL no. 1176 in bud in January 1902).

2. **Semecarpus gigantifolia** Vidal.

Luzon, Prov. Bataan, Lamao River, Mt. Marivales (MERRILL no. 2491).

3. **Semecarpus macrothyrsa** Perk. n. sp. Tree or shrub?; young branches stout, their bark pale. Leaves alternate, simple, entire, coriaceous, oblong or ovate-oblong, shortly and bluntly acuminate, base cuneate, glabrous on both surfaces; main nerves 12—14, slightly depressed on the upper surface, very prominent on the lower, spreading and interarching near the edge; length 7,5—11 cm, breadth 3,5—5 cm; petiole 0,8—1 cm long, stout. Panicles terminal and axillary, the main rachis stout; the branches slender, ascending, lax; ultimate branchlets spicate, slightly-pubescent. Male flowers 6 mm diam., much crowded in short sub-globular, sessile fascicles; calyx cupular, flat, with 5 broad triangular acute teeth, densely pubescent outside; petals 5, longer than the sepals, ovate, acute, densely brown-pubescent. Stamens 5, the filaments not as long as the petals. Disk convex, hirsuto-pilose.

Luzon, Tayabas, Malicboi (MERRILL no. 2447 in flower in April).

4. **Semecarpus Merrilliana** Perk. n. sp. Tree 10 m high (ex Merrill); young branches rather slender, with pale glabrous bark. Leaves simple, alternate, chartaceous, lanceolate-oblong or lanceolate, rather long acuminate, tapering from the middle to the very narrow base, upper surface shining, glabrous except the impressed pubescent midrib, beneath gray-brown, hirsuto-pilose, especially at the nerves; main nerves 12—18, above inconspicuous, beneath prominent, spreading, interarching near the edge; length 10—17,5 cm, breadth, 2,5—5 cm; petiole 1,5—2 cm long, glabrous. Racemes axillary, pedunculate, pubescent, shorter than the leaves; branches few. Flowers rather crowded, subsessile, globular in bud, about 3 mm in diam. when expanded. Male flowers calyx cupular, flat, with 5 ovate, acute, hirsuto-puberulous spreading teeth. Petals 5, ovate-oblong, obtuse, both surfaces sub-pilose, several times longer than the calyx; stamens 5, much longer than the petals, filaments flattened, glabrous. Disk in the middle pilose.

Island of Paragua, San Antonio Bay (MERRILL no. 851). This species is nearly related to *Semecarpus philippinensis* Engl. from which, however, it differs in its inflorescence, and in the shape and pubescence of its leaves.

5. **Semecarpus micrantha** Perk. n. sp. Tree 10 m high (ex Merrill); young branches rather stout, with pale glabrous bark. Leaves entire, simple, alternate, coriaceous, obovate or obovate-oblong, suddenly and very shortly acuminate, gradually narrowed in the lower half to the short, dilated petiole; the upper surface glabrous, brown when dry; the lower pale brown when dry, not shining, glaucous; main nerves 13—19, stout, shining, broad and conspicuous on the lower surface, thin and only slightly prominent on the upper, spreading, slightly ascending, interarching near the edge, length 9—13 cm, breadth 4—5,5 cm; petiole 1,5—2 cm long. Panicles terminal, pedunculate, longer than the leaves, rusty-puberulous; the branches slender, long, lax; the branchlets short and bearing the flowers in rather short fascicles. Male flowers 3 mm in diam.; calyx cupular, flat, with 5 spreading, minute, acute teeth, yellow-pubescent outside; petals 5 membranous, oblong, obtuse, externally thinly,

yellow-pubescent, inner surface glabrous. Stamens 5, filaments longer than the petals, very slender.

Island of Paragua, Ewiig River (MERRILL no. 20709, in flower in February 1903).

In habit this species resembles *Semecarpus macrothyrsa* Perk. very closely. The flowers are, however, about half as longe and quite different in the texture, form and pubescence of the petals and sepals.

6. **Semecarpus Perrottetii** March.

North Luzon, Bugney (WARBURG no. 12380); Prov. Cagayan, Mala (WARBURG no. 11760); S. Fernando (WARBURG no. 11824); Middle Luzon, Mariveles (WARBURG no. 13243); Prov. Manila, Montalbán (WARBURG no. 13244); Prov. Bataan, Dinalupihan (MERRILL no. 1484; in flower); Prov. Pampanga, Arayat (MERRILL no. 1376; in flower in March 1903); Prov. Rizal, Antipolo (MERRILL no. 1720; in flower in March 1903). Mindoro Isl., Bulalacao (MERRILL no. 923); Mindanao Isl., Zamboanga (AHERN no. 570).

7. **Semecarpus sideroxyloides** Perk. n. sp. Tree or shrub; young branches softly rufous-pubescent, the bark pale; lenticellate. Leaves thickly coriaceous, obovate-oblong or obovate-lanceolate, apex obtuse, rarely very slightly acuminate with an inconspicuous obtuse apex, narrowed from the middle or above it to the short, stout petiole, upper surface shining, with a few scattered hairs at the midrib otherwise glabrous, beneath pale brown, densely pubescent; main nerves 17—19, spreading, slightly ascending, interarching near the edge, very prominent, shining, stout, broad and conspicuous on the lower surface, very faint on the upper; length 9—13,5 cm, breadth 3,5—5,5 cm; petiole 0,6—1,25 cm long. Panicles terminal stoutly pedunculate, yellow-brown-tomentose.

Mindoro Isl., Pinamalayan (MERRILL no. 2160).

This species much resembles *Semecarpus Elmeri* Perk., but the leaves are covered on the under surface with long, soft hairs and are obtuse, rarely very slightly acuminate with an inconspicuous obtuse apex.

8. **Semecarpus Taftiana** Perk. n. sp. Tree 6,3 m high; young branches deciduously puberulous the bark pale. Leaves oblong, ovate-oblong or lanceolate, coriaceous, narrowed from the upper third to the thinly pubescent petiole, above shining, gla-

brous, beneath thinly pubescent at the nerves; main nerves 12—14, stout, shining, broad, conspicuous on the lower surface, thin and only slightly prominent on the upper surface, spreading and interarching near the edge; length 8—10 cm, breadth 2,5—4,5 cm; petiole 0,75—1,5 cm long. Panicles usually terminal, pedunculate, shorter than the leaves, puberulous; branches short. Female flowers 3 mm in diam., much crowded in short, subglobular, sessile fascicles; calyx cupular, 5-fid, rusty-tomentose; petals 5, externally rusty-pubescent, inner surface glabrous, ovate; stamens 5, rudimentary, with very small anthers. Ovary densely tomentose, conical; styles 4, radiating, horizontal or depressed, pubescent, bifid at the apex.

Island of Paragua, E-wi-ig River (MERRILL no. 734 in flower in February 1903).

This species resembles closely *Semecarpus Perrottetii* March., but has smaller leaves that are almost glabrous beneath. The flowers in *Semecarpus Tafliana* are nearly spicate in arrangement and are much larger than those of *Semecarpus philippinensis* Engl.

I have named this beautiful tree in honor of Gov. Taft, who has so identified himself with the interests of the Philippines.

9. **Semecarpus trachyphylla** Perk. n. sp. A large forest tree (ex Warburg), branches terete, glabrous. Leaves alternate, simple, entire coriaceous, oblong or obovate-oblong, shortly and bluntly acuminate, base cuneate or narrowed, upper surface glabrous, shining, lower surface pale brown, scabrous when dry, with scattered stellate hairs; main nerves 14—19, spreading, curving at the margins, slightly prominent on the upper surface, very conspicuous beneath and densely reticulate; length 13—22 cm long, width 5,5—7,5 cm; petiole 1—1,5 cm long, glabrous, thickened at the base. Panicles terminal, erect, shorter than the leaves, branching from near the base, main rachis stout; the branches ascending, angled, tawny-puberulous. Drupe (very young) obliquely obovoid, compressed, rusty-tomentose.

North Luzon, Malunu (WARBURG no. 11796). *Semecarpus trachyphylla* resembles *Semecarpus anacardium* L., but the scabrous indumentum of the leaves, caused by the small, stiff, adpressed hairs upon the lower surface, is a distinguishing character.

## Meliaceae

by

J. PERKINS.

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### *Xylocarpus* Koenig.

1. ***Xylocarpus obovatus*** (Blume) Juss.

Luzon, Prov. Principe, Baler (MERRILL no. 1085; in flower in a. 1903); Prov. Camarines Sur, Pasacao (AHERN no. 80; a. 1902); Island of Culián (MERRILL no. 551; December 1902).

### *Cipadessa* Bl.

1. ***Cipadessa Warburgii*** Perk. in Notizblatt des Königl. botan. Gartens und Museums zu Berlin No. 32 (30. Aug. 1903). Tree or shrub; branches subterete; branchlets yellow-pilose. Leaves unequally pinnate, 22—24 cm long, 4—5-jugate, common petiole yellow-pilose, about 5 cm long; leaflets opposite, petiolulate, with petiolule 5 mm long, membranaceous, entire, upper surface on the nerves and veins thinly, on the lower densely pilose, at the margins with yellow hairs; lower ones elliptic-ovate, 3—5 cm long, 2—3,75 cm wide, the base rounded or cuneate, unequal-sided, the rest oblong or obovate-oblong, 6,5—10 cm long, 3—4 cm wide, broadly acuminate, cuneate, terminal leaflet like the upper ones, nerves 7—9, spreading, curving. Inflorescence paniculate, axillary; 6,5—7,5 cm long, branches few. Calyx subobtuse, 5-toothed, externally yellow-pilose. Petals 2,5 mm long, 1 mm wide, externally densely pilose. Stamens 9—10, 1,5 mm long, 0,75 mm wide, united at the base forming a tube, filaments densely pilose, apex 2-toothed, between the teeth the anthers; anthers oblong. Ovary glabrous, globose; style very short; stigma three-lobed.

North-Luzon, Pica Blanca (WARBURG no. 12357).

### *Melia* Linn.

1. ***Melia Candollei*** Juss.

Luzon, Prov. Rizal, Bosoboso (MERRILL no. 1876; April 1903); Prov. Tayabas, Guinayangan (MERRILL no. 2019); Mindoro Isl., Pola (MERRILL no. 2214; May 1903).

**Sandoricum** Cav.

1. **Sandoricum Harmsianum** Perk. n. sp. Tree or shrub. Leaves 15—17 cm long; leaflets trifoliate, entire, broadly ovate or ovate-rotund, abruptly and bluntly acuminate, the base rounded or subcuneate, slightly unequal, coriaceous; main nerves 7—9 pairs, impressed on the upper, prominent on the lower surface (when dry), upper and lower surfaces glabrous; length 7,5—9,5 cm; breadth 4,5—6,5 cm; lateral petiole 1 cm long, terminal 2,5—3 cm long. Panicles several, scattered near the apices of the branches, 2,5—6 cm long, glabrous. Flowers 6 mm long, pedicel 4 mm long. Calyx minute, pilose, fleshy with 5 small teeth. Petals one and a half times as long as the calyx, fleshy, elliptic-obtuse, glabrous on both surfaces. Staminal-tube externally glabrous, inside pubescent, cylindrical, ridged, distinctly shorter than the petals; the mouth with ten minute teeth; anthers 10, oblong, fastened below the margin of the tube, but somewhat exserted; disk short, tube-like, surrounding the ovary and the base of the style, minutely toothed at the margin, membranaceous; stigmas 5, erect, fleshy, surrounded at the base by a fleshy ring. Ovary small, glabrous, tapering into the long style.

Luzon, Prov. of Rizal, Bosoboso (MERRILL no. 1824).

2. **Sandoricum indicum** Cav.

Luzon, Prov. Rizal, Bosoboso (MERRILL no. 1845; in flower in April 1903); Prov. Zambales, Subig (MERRILL no. 1980; April 1903); Luzon Central, Montalbán (WARBURG no. 12626); Mindoro Isl., Pola (MERRILL no. 2466; June 1903).

**Dysoxylum** Blume.

1. **Dysoxylum amoeroides** Miq.

Luzon, Prov. Isabela, Cauayan. Tree 26 m high, on the river bank (MERRILL no. 141; in flower in June 1902); Mindoro Isl., Pinamalyan (MERRILL no. 2140; in flower in May 1903).

2. **Dysoxylum cauliflorum** Hiern.

Luzon, Prov. Tayabas, Pagbalao (MERRILL no. 1938; April 1903); Laguimanoc (MERRILL no. 2124; April 1903).

3. **Dysoxylum Kunthianum** (Juss.) Miq.

Luzon Central, Prov. Tayabas, Sampaloc (WARBURG no. 13105; March 1888).

**Chisocheton** Blume.

1. **Chisocheton philippinum** (Turez.) Harms.

Luzon, Prov. Principe, Baler (MERRILL no. 1032; in flower a. 1903); Luzon Central, Siniloan (WARBURG no. 13353).

**Aglaia** Lour.

1. **Aglaia Aherniana** Perk. n. sp. Tree or shrub? Young shoots, petioles, rachises, petiolules more or less densely clothed with rusty or tawny pubescence. Leaves 15—34 cm long, unequally pinnate, petiole 4—14 cm long; leaflets 5—9-jugate, the pairs opposite, subopposite or alternate, coriaceous, oblong-lanceolate, rarely elliptic, all with long acuminate apices, the odd one the largest and much attenuate towards the base, the paired leaflets at the base cuneate or rotundate, both surfaces glabrous, the midrib always stellate-pubescent, 7—12-nerved, spreading, inconspicuous on the upper surface, somewhat prominent on the lower, length 3,5—13 cm, breadth 2,5—3,5 cm; petiolules 0,8—1,5 cm long. Panicles pyramidal, axillary, solitary, 16—20 cm long, the branches alternate, spreading, the ultimate branchlets shorter, spike-like. Flowers shortly pedicellate, 1,5 mm broad, 2 mm long. Calyx cupular, with 5 broad, blunt lobes with bright rusty stellate-hairy scales. Petals 5, longer than the calyx, dark-colored, obovate, concave, glabrous. Staminal-tube shorter than the petals, globose, the mouth 5-lobed, both surfaces glabrous; anthers 5, ovate, included. Ovary small, glabrous, with a large, glabrous, globose stigma. Fruit globular, 5 mm in diameter, with stellate hairs.

Luzon, Prov. Principe, Baler (MERRILL no. 1025; in flower in August); Dinágat Isl. (AHERN no. 481).

2. **Aglaia argentea** Bl.

Luzon, Prov. Pampanga, Arayat (MERRILL no. 1361; March 1903).

3. **Aglaia Harmsiana** Perk. in Notizblatt des Königl. Botan. Gartens u. Mus. zu Berlin No. 32 (30. Aug. 1903). Tree or shrub? Branches subterete, branchlets stellately brown-pilose. Leaves unequally pinnate, 2—3-jugate, 35 cm long; petiole 8 cm long, rather densely stellately brown-pilose; leaflets opposite, papyraceous, with petiolule 5 mm long, the upper ones obovate-lanceolate, 18—20 cm long, 6—7 cm wide, the lower ones obovate-oblong, 12—14 cm long, 5 cm wide, shortly cuspidate, the base long-cuneate or

cuneate, entire, the upper surface glabrous or at the nerves with a few scattered stellate hairs, on the lower surface nerves and veins densely stellate-pilose; nerves and veins faint on the upper surface and only slightly prominent beneath; main nerves alternate, 13—17, sub-ascending. Inflorescence large; panicles with numerous, many-flowered alternate branches, about as long as the leaves, stellately rusty-pilose. Flowers pedicellate; calyx with 5 obtuse teeth, externally densely stellately rusty-pilose, inner side glabrous. Petals 5, both surfaces glabrous, ovate, obtuse, papyraceous, 1,5 mm long, 0,5 mm wide; tube obovate-subcampanulate, obtusely crenulate or entire, both surfaces glabrous, papyraceous, 0,5 mm high; anthers 5, minute, ovate, inserted at the margin of the tube; ovary subglobose; style minute; stigma subglobose. Fruit ovate-globose, externally densely, stellately rusty-pilose, about 2 cm long.

Mindanao Isl., dist. Dávao, Sibulan, in the forest (WARBURG no. 14271 with flowers and fruit in July). Tinago Isl. (AHERN no. 422, a. 1902).

This species belongs to the *Hearnia* group and is closely related to *Aglaia Cumingiana* (Turcz.) = *Hearnia Cumingiana* (Turcz.) C. DC. It is readily distinguished by the brown pubescence of the leaves, stems and inflorescence.

4. ***Aglaia monophylla*** Perk. n. sp. Tree or shrub?; glabrous. Leaves 6,5—13 cm long, 3—5,5 cm wide, papyraceous or subcoriaceous, oblong or elliptic-oblong, rarely obovate, the apex acuminate, the bases cuneate, upper surface glabrous, pale green (when dry), except the puberulous midrib, the lower pale brown, glabrous, the midrib and nerves with scattered brown stellate-scale-like hairs; main nerves 7—10, slightly prominent on the lower surfaces, oblique, petiole 0,5—2 cm long, sometimes compressed. Panicles solitary, axillary, branching, many-flowered, 4—5 cm long. Flowers 1 mm in diam. globular, pedicels about as long as themselves, crowded, numerous, subsessile. Calyx cupular, 5-lobed, with brown scale-like hairs externally. Petals 5, oval, on both surfaces glabrous, concave. Staminal-tube globular, shorter than the petals, its mouth wide and shallowly lobed, glabrous externally, anthers 5, between the lobes, not included. Ovary small.

Luzon, Prov. Camarines Sur, Pasacao (AHERN no. 123); Tinago Island (AHERN no. 415).

Simple leaves occur very seldom in the genus *Aglaia*. VIDAL, Revision (1886) p. 84, describes a plant under the name of *Beddomea luxoniensis* which has simple leaves. In ENGLER and PRANTL, Pflzfam. III, 4 HARMS unites the genus *Beddomea* with *Aglaia*. HARMS gives a drawing of another *Aglaia* with simple leaves, *Aglaia simplicifolia*, in SCHUMANN and LAUTERBACH's Flora der deutsch.-Schutzgeb. (1900) p. 386. His species differs notably from our species in the size of the flowers and therefore need not be taken into consideration. KOORDERS (in Mede-deel. van's Lands Plantentuin XIX [1898] p. 635) describes an *Aglaia unifoliolata* from Celebes. VIDAL'S plant I have not seen, and it may after all prove, when compared with the original, that my species is identical with that of VIDAL'S. The description of VIDAL is so incomplete, that it is not possible to derive a correct conclusion from the diagnosis alone.

5. ***Aglaia odorata* Lour.**

Luzon, Prov. Manila, Makakai (WICHURA no. 1755; in flower in May 1861).

6. ***Aglaia palembanica* Miq.**

Luzon, Prov. Tayabas, Sampaloc (WARBURG no. 13104, 13107; in flower in March 1888); South Mindanao, Mount Batanyan (WARBURG no. 14292).

**Walsura Roxb.**

1. ***Walsura Aherniana* Perk. n. sp.** Tree or shrub? Young branches glabrous, lenticellate. Leaves 10—21 cm long, unequally pinnate; leaflets entire, usually 5, subcoriaceous, lanceolate, ovate-lanceolate or oblong, bluntly acuminate, the base cuneate or rounded; both surfaces glabrous, upper surface shining, the lower dull; main nerves 10—13 pairs, spreading, curving; length 8—13 cm, width 2,5—5 cm, petiolules 0,8—1 cm long, that of the terminal leaflet 2—2,5 cm long. Panicles crowded towards the ends of the branches, axillary, on peduncles 5,5—11 cm long. Flowers 3 mm long, subcampanulate, on pedicels somewhat longer than themselves. Calyx of 5 free, ovate, concave, very minute sepals, pubescent externally. Petals 5, much larger than the sepals, on both surfaces puberulous. Stamens 10, the filaments united into a tube in the lower half, pubescent, the alternate shorter, all inserted outside the thick glabrous,

annular disk. Anthers, attached to the apices of the filaments, broadly ovate, sparsely pubescent. Ovary pubescent, conical, surrounded by the disk. Style short, stigma globular. Fruit globular, about 1 cm in diameter.

Luzon, Prov. Camarines Sur, Pasacao (AHERN no. 108 and no. 264).

The species above described is recorded in Bulletin no. 1. Forestry Bureau, Department of the Interior p. 29 (1903) under the name of *Walsura robusta* Roxb. I find, however, that the flowers and the calyx are much larger in ROXBURGH's specimen, and that, moreover, in his plant the filaments are flattened and lanceolate and are free from each other, while, in my specimen, they are united into a tube in the lower half. Moreover, the disk of *Walsura robusta* is pubescent and subconcave, that of this plant is glabrous and annular.

The collector MERRILL, who has given an enumeration of AHERN's plants, was himself doubtful of this identification.

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## Pinaceae

by

J. PERKINS.

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### Pinus Linn.

#### 1. **Pinus insularis** Engl.

Luzon, Prov. Benguet (MERRILL no. 1160, 1161, 1162, 1163, 1164, 1165; January 1903).

#### 2. **Pinus insularis × Merkusii.**

Luzon, Prov. Zambales, Subig and vicinity (MERRILL no. 2116; April 1903).

#### 3. **Pinus Merkusii** Jungh.

Luzon, Prov. Zambales (MERRILL no. 1158; January 1903).

As there was no material of this species for comparison in the Berlin herbarium, I have accepted the determination of MERRILL.

**Agathis** Salisb.1. **Agathis philippinensis** Warb.

Island of Paragua, E-wi-ig River (MERRILL no. 749; in flower in February 1903).

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**Symplocaceae**

by

A. BRAND.

**Symplocos** Jacq.1. **Symplocos Elmeri** Brand n. sp.

Ramuli ferruginei. Folia coriacea, 12—14 cm longa, 4—6 cm lata, oblonga vel elliptica, integerrima subtus ubique ferrugineo-hirta, breviter apiculata, basi cuneata vel subrotundata; costa supra impressa. Petiolus circa 2 cm longus. Racemi compositi petiolo 4—6 plo longiores, pedicellis fructibus paulo brevioribus. Corolla ignota. Fructus circa 10 cm longus, ovoideus, superne paulum angustatus, brunneus, sub lente brevissime hirtellus, lobis calycinis rotundatis sericeis discum hirtellum subpatenter superantibus. Fructus vel 4- vel 1-locularis (in hoc semen abortivum curvatum, superne acuminatum; itaque embryo verisimiliter curvatus).

Luzon, Prov. of Rizal, Tanay (MERRILL no. 2356; May in fruit). Speciei *S. patenti* maxime affinis.

2. **Symplocos ferruginea** Roxb. var. salaccensis (Blume) Brand.

Dinágat Isl. (AHERN no. 440).

3. **Symplocos polyandra** (Blanco?) Brand.

Luzon, Prov. of Tayabas, Pagbalao (MERRILL no. 1949; with fruit in April 1903); Prov. Rizal, Antipolo (MERRILL no. 1697; with fruit in March 1903); Luzon Central (LOHER no. 5072).

## Notes on the synonymy of *Symplocos polyandra*

by

J. PERKINS.

The synonymy of this species being somewhat complicated, it seems desirable to say a few words in regard to it. BLANCO in ed. II, p. 500 of the Flora de Filipinas describes *Guettarda polyandra*. In ed. III, vol. 4, p. 127, nov. append. of this same work, we find *Guettarda polyandra* recorded as a synonym of the Indian species *Symplocos racemosa* Roxb. VIDAL in the Revision describes three new species: *S. Villarii*, *S. pseudospicata* and *S. montana*. The last is of no importance to us, as it belongs in another group of the genus. As a doubtful synonym of *S. Villarii*, *Guettarda polyandra* BLANCO is cited. The original of BLANCO not existing, it is apparent that VIDAL was not quite clear if *Guettarda polyandra* really belonged to *Symplocos*. *S. pseudospicata* VIDAL was based on a plant of which VIDAL, in his Sinopsis, on plate 64, has given a drawing, under the name *S. spicata* Roxb. BRAND unites the species of VIDAL in a single species and selects as the name for it, *Symplocos polyandra*. He too expresses a doubt of the identity of *Guettarda polyandra* Blanco, with the *Symplocos* species under consideration. Had it not been better perhaps, in this case, to have retained one of the two names of VIDAL for this species? in fact, the name *Villarii*? As BRAND himself says that BLANCO's description does not apply to his specimen, it were better if BLANCO's name had been set aside as a doubtful synonym. *Guettarda* is a well known genus of the *Rubiaceae*, and numerous stamens "Estam. pasan de veinte", stamens exceeding 10, never occur in the *Rubiaceae*. The question arises, to what family does *Guettarda polyandra* belong?

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## Acanthaceae

by

G. LINDAU.

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### **Elytraria** Vahl.

1. **Elytraria squamosa** (Jacq.) Lindau.

Luzon, Manila (MERRILL no. 641; January 1903).

### **Thunbergia** L.

1. **Thunbergia fragrans** Roxb.

Luzon Central, San Francisco del Monte (LOHER no. 4298; in flower in November 1892); Joló Isl. (WARBURG no. 15018; in flower in August).

2. **Thunbergia hastata** Dec.

Luzon, Prov. Tayabas, Sampaloc (WARBURG no. 13051; in flower in March 1888); North Luzon, Cagayan, Alvala (WARBURG no. 11726); Middle Luzon, Arayat (WARBURG no. 13754); Mariveles (WARBURG no. 13501); South Mindanao (WARBURG no. 15017).

### **Hygrophila** R. Br.

1. **Hygrophila corymbosa** (Bl.) Lindau.

Luzon, Prov. Pampanga, Arayat (MERRILL no. 1455; March 1903).

2. **Hygrophila phlomoides** (Wall.) Nees.

Luzon, Prov. Manila, Albay (WARBURG no. 13504; in flower in March 1888.)

3. **Hygrophila salicifolia** (Vahl) Nees.

Luzon, Manila (MERRILL no. 645; in flower in January 1903); Luzon Central, Manila (esleros) (LOHER no. 4296; in flower in November 1891); North Luzon, Bugney (WARBURG no. 12249).

### **Blechum** P. Br.

1. **Blechum Brownii** Juss.

North Luzon, Malunu (WARBURG no. 11950); Luzon Central, Prov. Manila (MERRILL no. 15; April 1902); Montalbán (WARBURG no. 12536, 13506 in flower March 1888); Sampaloc (WARBURG no. 13050).

**Hemigraphis** Nees.

1. **Hemigraphis reptans** Engl. (sub *H. primulifolia* Nees).  
Joló Archipelago (WARBURG 15014; in flower in June 1888).

**Lepidagathis** Willd.

1. **Lepidagathis hyalina** Nees.  
Luzon, Prov. Manila, Montalbán (WARBURG no. 13508, in flower in March 1888); Prov. Benguet, Jilad (LOHER no. 4272); Island of Paragua, E-wi-ig River (MERRILL no. 728, February 1903); Point Separation (MERRILL no. 804; February 1903).
2. **Lepidagathis luzona** Nees.  
Luzon, Prov. Pampanga, Arayat (MERRILL no. 1452; March 1903); Luzon, Prov. Manila, Montalbán (WARBURG no. 12544, 13507, in flower in March 1888).

**Ruellia** Linn.

1. **Ruellia repens** Linn.  
Luzon, Manila (MERRILL no. 396; December 1902).

**Barleria** Linn.

1. **Barleria prionitis** Linn.  
Luzon Central, Manila (WARBURG no. 13510); Mariveles (WARBURG no. 13500); Mindoro Isl., Bulalacao (MERRILL no. 917; in flower in April 1903).

**Acanthus** Linn.

1. **Acanthus ilicifolius** Linn.  
Luzon, Manila (MERRILL no. 58, May 1902); Prov. Tayabas, Pagbil (MERRILL no. 2422; April 1903).

**Graptophyllum** Nees.

1. **Graptophyllum pictum** (Linn.) Griff.  
Luzon, Prov. Tayabas, Pagbil (MERRILL no. 2432, April 1903); Prov. Tayabas (WARBURG no. 13505; in flower in March 1888); Joló Isl. (WARBURG no. 14958).

**Pseuderanthemum** Radlk.

1. **Pseuderanthemum bicolor** (Schrk.) Radlk.  
North Luzon, Malunu (WARBURG no. 11951); Luzon Central, Manila (WARBURG no. 13513); Montalbán (WARBURG no. 12698;

in flower in March 1888); Sampaloc (WARBURG no. 13048); Island of Culión (MERRILL no. 552, 623 in flower in December 1902).

2. **Pseuderanthemum malaccense** (Clke.) Lindau.

Mindanao Isl., Davao, Sibulan (WARBURG no. 14380).

**Peristrophe** Nees.

1. **Peristrophe acuminata** Nees.

Joló Archipelago (WARBURG no. 15015; in flower in June 1888).

2. **Peristrophe tinctoria** (Roxb.) Nees.

Island of Paragua, San Antonio Bay (MERRILL no. 838; February 1903); Joló Isl. (WARBURG no. 15016).

**Rungia** Nees.

1. **Rungia repens** (Linn.) Nees.

Luzon, Prov. Nueva Viscaya, Quinangan (MERRILL no. 157; in flower in June 1902); Island of Culión (MERRILL no. 495; December 1902); Island of Paragua, E-wi-ig River (MERRILL no. 789; in flower in February 1903).

**Hypoestes** R. Br.

1. **Hypoestes malaccanus** Wight.

North Luzon, Prov. Cagayán, Alcalá (WARBURG no. 11725); Enrile (WARBURG no. 12248); Luzon Central, Mariveles (WARBURG no. 13499); Montalbán (WARBURG no. 12567, 13509); Prov. Rizal, Antipolo (MERRILL no. 1717; March 1903); Prov. Pampanga, Aráyat (MERRILL no. 1418, 1451; in flower in March 1903); Paragua Isl., Point of Separation (MERRILL no. 794; in flower in February 1903).

2. **Hypoestes purpurea** R. Br.

Paragua Isl., E-wi-ig River (MERRILL no. 745).

**Justicia** Linn.

1. **Justicia Gendarussa** Linn.

Luzon, Prov. Rizal, Antipolo (MERRILL no. 1310; in flower in February 1903); Luzon Central, Manila (WARBURG no. 13511); Mariveles (WARBURG no. 13512); Island of Culión (MERRILL

no. 514; December 1902); Island of Paragua, E-wi-ig River (MERRILL no. 791; flower in February 1903).

2. **Justicia procumbens** Nees.

Luzon Central (LOHER no. 4309).

3. **Justicia salicifolia** T. And.

North Luzon, Enrile (WARBURG no. 12250).

## Fagaceae

by

O. VON SEEMEN.

### **Quercus** Linn.

1. **Quercus Castellarnauiana** Vid.?

Island of Mindanao, Surigao (AHERN no. 527; 1902).

A determination is impossible on account of insufficient material.

2. **Quercus celebica** Miq.

Island of Mindanao, Surigao (AHERN no. 432; 1902).

This specimen was determined as *philippinensis* DC. *Quercus philippinensis* belongs according to WENZIG: "Die Eichen Ost- und Süd-Asiens" in Jahrb. Bot. Gart. Berlin IV (1886) p. 230 to the group Cyclobalanus and according to KING "The Indo-Malayan species of *Quercus* and *Castanopsis*," in Annals of the Roy. Bot. Gard. Calcutta II, 1889, p. 33 to the group Cyclobalanopsis. This specimen belongs, however, as the cup shows, to the group *Pasania* and is *Quercus celebica* Miq.

3. **Quercus concentrica** Blanco.

Luzon, Prov. Rizal, Tanay (MERRILL no. 2296; in flower in May 1903); Antipolo (MERRILL no. 1709; in flower in March 1903).

4. ***Quercus Havilandi*** Stapf.

Luzon, Prov. Benguet, Datá (LOHER no. 4873).

LOHER no. 4873 was determined as *Quercus Vidalii*, F. Vill. No material of this plant is in the Berlin herb., there are, however, specimens of *Quercus Havilandi* Stapf, with which LOHER no. 4873 is identical.

5. ***Quercus nitida*** Blume.

Luzon, Prov. Principe, Baler (MERRILL no. 1115; Aug.—Oct. 1903).

6. ***Quercus* sp.**

Luzon, Prov. Rizal, Tanay (MERRILL no. 2344; May 1903).

The bark and leaves of no. 2344 MERRILL resemble those of *Quercus induta* Blume, while the dense pubescence of the young branches suggests *Quercus celebica* Miq. The young, slightly developed, fruit might be that of either. For an exact determination the material is not sufficient.

## Typhaceae

by

P. GRAEBNER.

## Typha Linn.

1. ***Typha angustifolia*** Linn. var. *javanica* Schnizl.

Mindoro Isl., Calapan (MERRILL no. 895; April 1903).

# Orchidaceae

by

R. SCHLECHTER.

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## **Oberonia** Lindl.

**1. Oberonia anceps** Lindl.

Luzon, Prov. Tayabas, Pagbalao (MERRILL no. 1966; in flower in April 1903); Island of Culión (MERRILL no. 569; December 1902).

## **Spathoglottis** Blume.

**1. Spathoglottis plicata** Blume.

Luzon, Prov. Nueva Viscaya, Dupax (MERRILL no. 297; in flower in May 1902).

## **Cyrtopodium** R. Br.

**1. Cyrtopodium ensiforme** Vid.

Luzon, Prov. Nueva Viscaya, Dupax (MERRILL no. 298; in flower in May 1902).

## **Dendrobium** Sw.

**1. Dendrobium sinuatum** Lindl.

Island of Culión (MERRILL no. 592; December 1902).

## **Eria** Lindl.

**1. Eria ornata** Lindl.

Luzon, Prov. Rizal, Tanay (MERRILL no. 2361; in flower in May 1903).

## **Vanda** R. Br.

**1. Vanda lamellata** Lindl.

Luzon, Prov. Tayabas, Pagbilao (MERRILL no. 2426; in flower in April 1903); Island of Culión (MERRILL no. 595; December 1902).

## **Cleisostoma** Bl.

**1. Cleisostoma densum** Ridl.?

Island of Paragua, S. Antonio Bay (MERRILL no. 859; February 1903).

**Sarcochilus** R. Br.

1. **Sarcochilus** sp. (= *Thrixspermum* sp. in Engl. und Prantl, Pflfam. II, VI, p. 218).  
Luzon, Prov. Pampanga, Arayat (MERRILL no. 1416; March 1903).
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**Taxaceae**

by

J. PERKINS.

**Podocarpus** L'Hér.

1. **Podocarpus imbricatus** Blume var. **Cumingii** (Parl.) Pilger.  
Luzon Central (LOHER no. 4852).  
The variety *Cumingii* differs very slightly from *Podocarpus imbricatus* and can perhaps be united with it.
2. **Podocarpus nerifolius** Don.  
Luzon, Prov. Tayabas, Pagbalao (MERRILL no. 1992; in flower in April 1903).  
*Podocarpus nerifolius* Don is a widely distributed species, being found, according to PILGER, in Central Asia, China, Java, Sumatra, Celebes, Borneo, Moluccas and New Guinea. It has, however, never before been recorded from the Philippines, where, in April 1903, it was collected by Mr. MERRILL in Luzon, Prov. Tayabas, Pagbalao.

**Phyllocladus** Rich.

1. **Phyllocladus protractus** (Warb.) Pilger.  
Luzon (LOHER no. 5203).  
This plant from LOHER's collection (no. 5203) was determined as *Phyllocladus hypophylla* Hook. f. The two species resemble each other somewhat, but may be easily distinguished, as the leaves of *Phyllocladus protractus* are never of a bluish-white on the under surface.

**Taxus** Linn.

1. **Taxus baccata** Linn. subsp. **Wallichiana** (Zucc.) PILGER.  
Luzon Central, Mangilquiran (LOHER no. 4850).
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# P a l m a e

by

O. BECCARI.

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## Licuala Wurmb.

1. **Licuala spinosa** Wurmb.

Culión Isl. (MERRILL no. 543).

## Livistona R. Br.

1. **Livistoma Merrillii** Becc. — *Corypha minor* Blanco Fl. Filip. edit. 1<sup>a</sup>, p. 229; edit. Naves et Villar v. I, p. 290. — *Livistonae* sp. Naves et Villar Noviss. app. p. 281—282. — *Livistona* sp. Vidal Rev. plant. vasc. Filip. p. 279 no. 1943, 1952? — Truncus elatus. Frondium petiolus elongatus supra planiusculus, subtus obsolete angulatus, marginibus acutissimis inermibus; limbus flabellato-orbicularis in parte centrali ultra medium indivisus, 1—1,20 m diam., laciniis primariis medianis 5—6 cm latis, exterioribus angustioribus, omnibus profunde bipartitis, lobis sensim longissime acuminatis. Spadix metralis et ultra, pedunculo gracili elongato, spatha cylindracea arcte involuto, ramulis subulatis, fructibus globosis cerasi magnitudine.

Luzon Isl., Prov. Tayabas, Guinayangan (MERRILL no. 2071; January 1903, fructibus non rite maturis).

## Calamus Linn.

1. **Calamus inflatus** Warb.

Luzon Isl., Prov. Rizal, Bosoboso (MERRILL no. 1891); Antipolo (MERRILL no. 1641, 1643; February 1903).

2. **Calamus maximus** Blanco

Luzon Isl., Prov. Rizal, Bosoboso (MERRILL no. 1893; April 1903).

3. **Calamus microsphaerion** Becc. n. sp. Scandens gracilis; caudices vaginati circ. 19 mm diam., vaginis inermibus; frondes cirriferae, in parte pinnifera circ. 80 cm longae, cirro filiformi terminatae, petiolo brevi utrinque inermi, rachi inferne redundo-aculeata, supra nuda, segmentis numerosis valde inaequidistantibus in quovis latere 2—4 irregulariter approximato-fasciculatis, tenuibus, subherbaceis, utrinque viridibus, anguste lanceolatis valde acuminatis, tenuiter 3- sub 5-costulatis, nervis

omnibus utrinque et marginibus nudis; spadix ♀ simpliciter decompositus elongato-paniculatus, caudiculo inermi terminatus, spathis primariis arcte tubulosis, inflorescentiis partialibus 6 ovatis, spicis decrescentibus utrinque 7—8, perianthio fructifero pedicelliformi, fructibus sphaericis minutissimis. *C. ramuloso* accedit sed spadicibus ♀ simpliciter decompositis.

Culián Isl. (MERRILL no. 507; in December 1902).

4. **Calamus mollis** Blanco

Luzon Isl., Prov. Pampanga, Arayat (MERRILL no. 1411; March 1903); Prov. Rizal, Antipolo (MERRILL no. 1642; February 1902; no. 1743; March 1903).

5. **Calamus ramulosus** Becc. n. sp. Scandens, mediocris; caudices vaginati 2 cm diam.; vaginae spinis sparsis numerosis pallidis subulatis armatae; frondes cirriferae, in parte pinnifera metrales, cirro filiformi gracili terminatae; petiolo 0, rachi utrinque irregulariter spinosa, segmentis numerosis, in fasciculos plurimos 3—5 approximatis, tenuibus, subherbaceis, linearibus valde acuminatis unicostulatis, nervis utrinque nudis, marginibus minutissime spinulosis; spadix ♀ supra decompositus diffusus caudiculo filiformi inermi terminatus, spathis primariis tubulosis arcte vaginantibus, inflorescentiis partialibus patentibus, ramulis spicigeris horizontalibus numerosis utrinque onustis, spicis gracilibus, spathellis cylindraceis arctissime vaginantibus, involucro florali lateraliter affixo exacte cupulari, perianthio fructifero calyciformi, fructibus globoso-ovatis inter minoribus. — Affinis speciebus e congerie *C. siphonospathi* sed spathis arcte vaginantibus.

Luzon, Prov. Tayabas, Guinayangan (MERRILL no. 2070).

6. **Calamus trispermus** Becc. n. sp. Verisimiliter scandens et robustus; frondes (radicales?) non cirriferae, segmentis inaequidistantibus, in quavis latere geminato-approximatis majusculis oblanceolatis abrupte breviterque acuminatis, 5-costulatis, utrinque viridibus et nudis, marginibus minute et appresse spinulosis, venulis transversis nitidis cerebrimis. Spadix ♀ magnus paniculatus, inflorescentiis partialibus 40—45 cm longis, spicis utrinque 5—6 ad faucem spatharum insertis, 12—15 cm longis, spathellis breviter infundibuliformibus, perianthio fructifero explanato, fructibus (non rite maturis) ovoideis abrupte mucronatis, circ. 18 mm longis, 12—13 mm diam., squamis nitentibus longi-

tudinaliter sulcatis, basi stramineis, margine fusco-rubescenti cinctis, orthostichis 15; seminibus 3, albumine aequabili. *C. manillensi* valde proximus, differt fructibus ovoideis et squamis numerosioribus. Verisimiliter e congerie *C. palustris*, frondibus radicalibus pari-pinnatis, superioribus cirriferis.

Luzon Isl., Prov. Rizal, Antipolo (MERRILL no. 1645).

### **Daemonorops** Blume

**1. Daemonorops Gaudichaudii** Mart.

Luzon Isl., Prov. Bataan, Dinalupihan (MERRILL no. 1669; February 1903); Prov. Rizal, Antipolo (MERRILL no. 1644; February 1903).

**2. Daemonorops ochrolepis** Becc. n. sp. Caudicis vaginae circ. 5 cm diam., spiculis spadiceis numerosissimis seriatis armatae. Frondium petiolus brevis subbiconvexus marginibus acutis spinis brevibus armatis; segmenta numerosa aequidistantia elongato-lanceolata vel ensiformia-lanceolata, acuminata 39—40 cm longa, 3—3,5 cm lata, costa medio supra nuda, subtus remote setosa, marginibus appresse spinulosis. Spadix strictus, fructifer 75 cm longus, spatha extima coriacea oblongo-spathulata, basi (in parte pedicellari) et in carinis 2 dorsalibus spiculis spadiceis obsita; fructibus sphaericis in vertice conico-mammillatis, 17—18 mm diam., squamis pallide stramineis fere albescensibus margine vix fuscescenti, convexis nitentibus anguste longitudinaliter sulcatis; orthostichis 15; semine globoso. Cum *Daem. Gaudichaudii* (Sect. *Piptospathae*) consociandus sed vaginis et spathis crinitis nec non fructibus albescensibus facile distinguendus.

Luzon, Prov. Tayabas, Guinayangan (MERRILL no. 2069).

**3. Daemonorops virescens** Becc. n. sp. Caudicis vaginae spinis rectis validis seriatis vel solitariis armatae. Frondium petiolus elongatus supra planus, subtus convexus, utrinque spinosus; segmenta numerosa inaequidistantia in quovis latere saepe geminata vel terna ensiformia 45—50 cm longa, 2,5—3 cm lata, supra prope apicem in nervis tribus, subtus in costa media tantum remote spinuloso-setosa. Spadix nutans paniculatus, pedunculo elongato acute ancipiti inermi; fructibus ovoideo-ellipticis abrupte breviterque conico-mucronulatis 25 mm longis, 16—17 mm latis, squamis nitentibus pallide virentibus apice fusco-maculatis anguste longitudinaliter sulcatis; orthostichis 18; semine ovoideo-

elliptico. *C. longipede* proximus differt praecipue fructibus valde majoribus.

Paragua Isl., San Antonio Bay (MERRILL no. 868; February 1903).

**Caryota** Linn.

1. **Caryota Cummingii** Lodd.?

Luzon Isl., Prov. Pampangas, Arayat (MERRILL no. 1410; March 1903).

2. **Caryota majestica** Hort. Lind.

Luzon Isl., Prov. Rizal, Bosoboso (MERRILL no. 1892).

3. **Caryota Rumphiana** Mart. var.

Luzon Isl., Prov. Tayabas, Guinayangan (MERRILL no. 2006).

**Arenga** Labill.

1. **Arenga mindorensis** Becc. n. sp. Minor, caudice humili gracili 3 cm diam.; frondibus superioribus sessilibus brevibus (50—70 cm longis), inferioribus longe pedunculatis majoribus; ligula axillari fibroso-reticulata; segmentis angustis e basi usque ad apicem aequaliter late linearibus, exauriculatis, 20—30 cm longis, 13—18 mm latis, marginibus remotissime serrulatis, apice non attenuato, rotundato, argutissime serrulato-denticulato, utrinque glaberrimis, inferne vix pallidioribus; spadicibus diffusis, ramulis sub anthesi patentibus gracilibus, 40 cm longis; floribus masculis parvulis oblongis 4 mm diam.; staminibus circ. 35; floris ♀ calyce explanato 6 mm diam.

Mindoro Isl., Calapan (MERRILL no. 1790; April 1903).

2. **Arenga saccharifera** Labill.

Luzon Isl., Prov. Tayabas, Guinayangan (MERRILL no. 2043).

**Orania** Zipp.

1. **Orania philippinensis** Scheff.

Paragua Isl., Point Separation (MERRILL no. 869).

**Pinanga** Blume

1. **Pinanga maculata** Porte

Paragua Isl., E-wi-ig River (MERRILL no. 712; February 1903).

2. **Pinanga philippinensis** Becc.

(VIDAL no. 3950 and 4064 in Hb. Becc.)

# Myristicaceae

by

O. WARBURG.

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## Myristica Linn.

**1. *Myristica guatterifolia* A. DC.**

Luzon, Prov. Tayabas, Guinayangan (MERRILL no. 2052); Pagbalao (MERRILL no. 1917; 1924; April 1903); Pitoga (MERRILL no. 2117; April 1903); Prov. Camarines Sur, Pasacao (AHERN no. 20; 1902); Island of Culión (MERRILL no. 605; December 1902).

**2. *Myristica philippinensis* Lam.**

Luzon, Bosoboso, Distr. Morong (LOHER no. 5195; in flower in August 1891); Luzon, Prov. Bataan, Lameo River, Marivales (MERRILL no. 2533; June 1903); Prov. Principe, Baler (MERRILL no. 1023; in flower in August-October 1903).

## Horsfieldia Willd.

**1. *Horsfieldia Merrillii* Warb. n. sp.** Frutex 2—3 m altus, ramis ca. 5—6 mm latis glabris, cortice cinereo in sicco subsulcato obtectis haud lineis 2 elevatis longitudinaliter percursis; petiolis 1,5 cm longis, 1,5 mm latis glabris, foliis membranaceis glabris oblongis 18—25 cm longis, 6—8 cm latis basi acutis apice acumine haud acuto subacuminatis, in medio vel paullo infra vel supra latissimis, in sicco fuscescentibus subtus paullo pallidioribus, venis utrinque ca. 15 tenuibus subtus elevatis patulis fere strictis ante marginem arcuate conjunctis, nervis tertiaris et reticulatione subtus tantum et vix distinctis. Inflorescentiis ♂ axillaribus glabris quam folia paullo brevioribus pauci-ramosis, pedunculis 1,5—2 mm latis glabris, ramis ca. 10—12 cm longis, 1 mm latis glabris, ramulis 0,5—1 cm longis, 0,5 mm latis glabris apice 5—10 flores gerentibus; pedicellis 2—3 mm longis, 0,25 mm latis vix paullo puberulis, floribus subglobosis ca. 1 mm longis, in sicco brunneis vel nigris, perigonio trifido rare quadrifido, lobis rotundatis intus haud papillois, extus pilis minutis paucis inspersis, androceo vix stipitato, antheris 4 bilocularibus dorso tantum in columnam connatis apice haud stipitatis.

Species aff. *Horsfieldiae Iryae*, sed inflorescentiis majoribus minus ramosis, floribus longius pedicellatis haud confertis in sicco haud cyanescentibus, ramis haud bi-costatis diversa.

Mindoro Island, Pola (MERRILL no. 2233, 2370; May 1903).

## Pandanaceae

by

O. WARBURG.

1. **Pandanus Merrillii** Warb. n. sp. Frutex circa 3 m altus. Folio exstante 1,5 m longo usque 3,5 cm lato subtus pallidiore apice sensim in flagellum breve triquetrum exeunte, dentibus marginalibus in basi folii valde crassis 2 mm latis, 2,5 mm longis, in parte media et superiore ascendentibus et tenuibus, dentibus costae medianae limbi inferioris in basi valde crassis inflatis subrecurvatis, in parte superiore parvis et debilibus ascendentibus. Syncarpiis spicate dispositis ca. 6 in pedunculo 1 cm lato pallide brunneo paullo curvato bracteis coriaceis infra objecto sessilibus fere globosis ca. 6 cm in diametro; drupis ca. 2,5 cm longis usque 5 mm latis per 18 mm connatis apice 7 mm longo liberis, caverna superiore drupae haud medullosa endocarpio breviore 7 mm longa, 4 mm lata, parte libera pyramidata 5—6 gona stylo spinoso anguste pyramidali coronata; stigmate lineariter deorsum vergente.

Species sect. *Acrostigma* *Pandano ellipsoideo* Warb. affinis sed syncarpiis globosis differt.

Island of Paragua, San Antonio Bay, 300 m s. m. on dry slopes (MERRILL no. 840; in fruit in February 1903).

2. **Pandanus tectorius** Sol.

Island of Culion, Sea-shore (MERRILL n. 628; Jan. 2<sup>d</sup>, 1902). “Pandan” Tagalog, Visayan, Ilocano.

# Begoniaceae

by

O. WARBURG.

## I. Sect. **Sphenanthera**.

1. **Begonia pseudo-lateralis** Warb. n. sp. Caule omnino glabro ascendente haud valde crasso, petiolis 10—18 cm longis 1,5—2 mm latis glabris, foliis rotundo-ovatis transverse obliquis usque 20 cm longis 12 cm latis basi lato sinu haud profunde cordatis apice acutis, margine levissime vel vix sinuatis dentatis et in sinibus denticulatis glaberrimis 7—11-palmatinerviis, nervis interdum semel vel bis furcatis, stipulis caducis. Inflorescentia brevisimia contracta pseudolaterali bracteis involuta 2—3 cm longa et lata, floribus ♂ et ♀ intermixtis arcte confertis, florum ♂ sepalis late ellipticis, staminibus in toro vix elevato liberis, antheris oblongo-ovatis apice rotundatis quam filamenta brevioribus; floribus ♀ breviter pedicellati, ovario anguste alato, petalis 5 oblongis, stylis 3 bipartitis liberis, stigmatibus spiraliter dispositis, fructibus in pedicellis 1 cm longis globoso-ellipsoideis 8 mm longis, 6 mm latis haud dehiscentibus, valvis inflatis haud planis, anguste alatis, alis apice paullo latioribus, placentis bilamellatis, seminibus late ovatis punctato-sulcatis.

Luzon Isl., Prov. Isabela, Malunu (WARBURG no. 11792, 11793); Prov. Tayabas, Sampoloc (WARBURG n. 13086; JAGOR no. 814); Mindoro Isl., Baco River (MERRILL no. 991).

Species affinis *B. heteroclina* J. J. SMITH Minahassae, sed differt inflorescentiis magis contractis et pseudolateralibus, fructuum alis angustioribus, fructibus brevioribus.

## II. Sect. **Diploclinium**.

1. **Begonia colorata** Warb. n. sp. Herba parva repens, caule tenui stipulis persistentibus ochraceis ovatis longe appendiculatis 5—6 mm longis fere obtecto; petiolis glabris 2—4 cm longis, foliis ovatis acuminatis, basi valde obliquis cordatis lobis superpositis, margine vix sinuatis setosis utrinque glaberrimis, coloratis, palmati-(6-)nerviis, 7 cm longis, 4 cm latis. Inflorescentiis paucifloris ut videtur terminalibus, bracteis late ovatis 6 mm

longis cuspidatis, ♂ et ♀ separatis; floribus ♂ (nimis juvenilibus) sepalis 2 petalis ut videtur 0, staminibus multis pro parte certe liberis, antheris obtusis; fructu in pedunculo 3,5 mm longo unico 3-alato, 10 mm longo, 15 mm lato, prope alas dehiscente, alis vix distincter transverse venosis subaequalibus 5 mm latis rotundatis capsulam omnino circumdantibus; placentis bipartitis, seminibus late ovatis sulcatis.

Mindanao Isl., Sibulan (WARBURG no. 14633; July 1888).

Species foliis *B. rhombicarpa* similis inflorescentia et fructificatione valde differt.

2. ***Begonia longiscapa*** Warb. n. sp. Caule probabiliter repente, foliis longissime petiolatis, petiolo 20 cm longo fulvo-hirto-villosiusculo, folio 15 cm longo, 9 cm lato margine vix sinuato haud dentato apice subacuto basi sinu late subcordato, lobis rotundatis, palmati-(9-)nerviis, supra glabro, subtus in nervis parce piloso. Inflorescentiis 30—35 cm longis, pedunculo paullo piloso 27 cm longo, bracteis caducis, superioribus glabris navicularibus 2 mm longis, floribus ♂ et ♀ intermixtis, ♂ breviter (4 cm) pedicellatis, sepalis orbicularibus (6 mm in diametro), petalis 2 oblongis, staminibus basi in columnam brevem connatis, antheris obovatis apice subtruncatis quam filamenta brevioribus; floribus ♀ longius (1—2 cm) pedicellatis, petalis 4 inaequalibus, stylis 3 (ut videtur), bipartitis, stigmatibus spiraliter dispositis, capsulis 3-alatis prope alas dehiscentibus basi et apice retusis, alis rotundatis 6 mm latis subaequalibus transverse venosis, placentis bipartitis, seminibus late ovatis punctate sulcatis.

Leyte Isl. (JAGOR, without no. in 1861).

Species *B. manillensi* A. DC. affinis habitu valde robustiore et fructibus diversis differt.

3. ***Begonia luzonensis*** Warb. n. sp. Caule probabiliter repente, foliis longe petiolatis, petiolis usque 14 cm longis, longe sed distanter ferrugineo-villosis, foliis 12—16 cm longis, 7—10 cm latis rotundato-ovatis apice acutis basi profunde oblique cordatis (lobis sese attingentibus sed haud superpositis), margine sinuato dentatis vix denticulatis dense ferrugineo-villoso-ciliatis utrinque pilis in sicco appressis instructis palmati-8-nerviis. Inflorescentiis magnis 17—23 cm longis composite cymosis; pedunculo tenui 8—16 cm longo,

1 mm crasso distanter longe viloso, bracteis caducis, floribus ♂ et ♀ intermixtis, pedicellis florum ♂ filiformibus 2—3 mm longis, sepalis 2 quam petala majoribus, staminibus basi vix connatis, antheris oblongis obtusis haud appendiculatis quam filamenta vix brevioribus. Fructibus longe (2—2,5 cm) pedicellatis inaequaliter 3-alatis; alis 2 rotundatis 4 mm latis, ala tertia 11 mm lata in angulum fere acutum protracta nervosolineata; stylis saepe persistentibus 3 alte connatis vulgo bis bipartitis, stigmatibus spiraliter dispositis, placentis bipartitis; seminibus late ovatis punctato-sulcatis.

Luzon Isl.: Prov. Manila, Montalbán (WARBURG no. 13084).

Species *B. manillensi* A. DC. affinis foliis supra pilosis facile discernenda.

4. **Begonia Merrillii** Warb. n. sp. Herba parva repens in nodis radicans, caudice 2—3 mm crasso viloso, stipulis lanceolatis ca. 6 mm longis pubescentibus persistentibus, petiolis 4—11 cm longis 1,5—2 mm latis pubescentibus, foliis oblique ovato-acutis cordatis interdum vix acutis 4—5 cm longis, 5—7 cm latis palmati-7—8-nerviis margine vix vel haud profunde sinuatis supra glabris in margine rufo pubescentibus subtus in nervis pubescentibus in limbo dense et minute albo-punctulatis. Pedunculis tenuibus rubris pilis paucis inspersis ca. 14 cm longis, 1 mm latis apice tantum et brevissime ramosis, pedicellis tenuibus 4—6 cm longis, bracteis lanceolatis 4 mm longis; florum ♂ sepalis 2 quam petala minoribus, antheris late obovatis obtusis filamentis aequilongis in columna parva, florum ♀ ovario trialato, alis triangularibus acutis, stylis 3 bipartitis liberis, stigmatibus spiraliter dispositis.

Luzon Isl., Prov. Nueva Viscaya, Covdon (MERRILL no. 143, in flower in June 1902).

Species *B. manillensi* affinis foliis minoribus, alis haud rotundatis etc. diversa.

5. **Begonia rhombicarpa** A. DC.

Luzon Isl., Prov. of Rizal, Tanay (MERRILL no. 2843; May 1903).

6. **Begonia trichochila** Warb. n. sp. Caule probabiliter repente, petiolis junioribus longe ferrugineo-villosis demum glabris, foliis ovato-rotundatis apice vix acutis basi profunde cordatis (lobis vix superpositis), margine integris vel sub-undulatis pilis longissimis ferrugineis deciduis munitis utrinque glabris,

10 cm longis 7—8 cm latis, palmati-(9—11-)nerviis. Inflorescentiis quam folia longioribus multifloris glabris, pedunculo gracili 12—18 cm longo, floribus ♂ et ♀ intermixtis, ♂ breviter (8 mm) pedicellatis, sepalis 2 et petalis 2, late ovatis ca. 5 cm longis, staminibus fere liberis, basi vix connatis, antheris obovatis obtusis quam filamenta brevioribus. Fructibus longe (1,5—2 m) pedicellatis inaequaliter 3-alatis basi rotundatis apice subprotractis, petalis et sepalis 4, stylis 3 basi connatis apice breviter bipartitis, stigmatibus spiraliter dispositis; alis rotundatis capsulam vix superantibus, majore 4 mm, breviore 2 mm lata; placentis bilamellatis.

Luzon Isl., Prov. Manila, Montalbán (WARBURG no. 13260).

Species e descriptione *B. longovillosae* A. DC. affinis sed foliis majoribus haud crenatis differt.

### III. Sect. **Petermannia**.

1. **Begonia contracta** Warb. n. sp. Caule erecto subhispido, stipulis lanceolatis 7 mm longis, fere glabris deciduis, petiolis 1,5—3,5 cm longis hispidis, foliis late lanceolatis (12 cm longis 4 cm latis) basi cordatis (uno latere rotundato-auriculato) margine parce sinuoso dentatis haud denticulatis, pinni-palmati-(5—6-)nerviis, supra pilis paucis inspersis subtus glabris in nervis subhispidis. Inflorescentiis valde contractis 1—1,5 cm longis terminalibus (vel ex axillis superioribus) ♂ et ♀ intermixtis, floribus inferioribus 2 ♀, floribus superioribus ♂; bracteis 5 mm longis glabris persistentibus, floribus ♂ brevissime (2 mm) pedicellatis, sepalis 2 fere orbicularibus glabris, petalis 0, staminibus multis basi in columnam gracilem connatis, antheris linearis-oblengis subclavatis quam filamenta longioribus; fructibus breviter (3 mm) pedicellatis 3-alatis 11 mm longis et latis, alis fere aequalibus lineato-venosis apice truncatis angulo obtuso, placentis bilamellatis, seminibus late ovatis sulcatis.

Luzon Isl., Prov. Tayabas, Sampoloc (WARBURG no. 13085; in March. 1888).

Species foliis angustis inflorescentiis contractis insignis.

2. **Begonia Jagori** Warb. n. sp. Caule erecto fulvo hispido, innovationibus hispidissimis; petiolis brevissimis 2—4 mm longis hispidis, foliis late ovatis acuminatis basi oblique subcordatis valde inaequilateribus profunde dentato-lobatis sparsimque

denticulatis supra glabris subtus pallidis ad nervos fusco-scabridis usque 10 cm longis 5 cm latis pinni-palmati-(3—5-)nerviis; stipulis magnis (14 mm longis 5 mm latis) ovato-oblongis mucronatis persistentibus. Inflorescentiis ♂ terminalibus foliis subaequilongis cymosis hispidis; bractearum caducarum cicatricibus nodosis, sepalis 2 orbicularibus fere 8 mm in diametro petalis 0, staminibus superiore parte liberis, basi in columnam gracilem connatis, antheris late ovatis apice rotundatis. Inflorescentiis ♀ axillaribus (♂ juxtapositis iisque praecedentibus) brevibus (2 cm longis) hispidis 1 vel 2 floris breviter pedicellatis, ovario subacute 3-alato, petalis 5, stylis 3 bipartitis, stigmatibus spiraliter dispositis, placentis bilamellatis.

Luzon Isl. (JAGOR no. 889, 890; in 1861).

Species *B. Cumingianae* A. DC. affinis foliis latioribus, nervis compluribus crassioribusque et ramis magis pilosis differt.

3. **Begonia leucosticta** Warb. n. sp. Caule erecto glabro, petiolis 1—4 cm longis pilis paucis minutis parce inspersis; foliis lanceolatis (12—17 cm longis 4—5 cm latis acutis basi subcordatis valde obliquis uno latere fere cuneato, altero late rotundato-auriculatis, margine undulatis passim subdenticulatis pinni-palmati-(6—7-)nerviis utrinque glabris subtus cyanescentibus supra maculis magnis albidis inspersis. Inflorescentia ♂ terminali 3 cm longa composite cymosa, pedunculo tenui 1 cm longo, 1 mm lato, bractearum caducarum cicatricibus nodoso, pedicellis brevissimis 1—2 mm longis, sepalis 2 orbicularibus, staminibus basi in columnam gracilem connatis, antheris late ovatis apice emarginatis. Inflorescentia ♀ . . . , e cicatrice probabilitate axillari inflorescentiae ♂ juxta posita.

North Luzon, Prov. Isabela, Digamai (WARBURG no. 12004).

Species maculis albis magnis foliorum insignis in culturam introducenda est.

4. **Begonia mindanaensis** Warb. n. sp. Caule erecto pilis fulvis hispido, stipulis lanceolatis pilosis deciduis, petiolis brevibus (5 mm longis), hispidis, foliis lanceolatis (9 cm longis 2—3 cm latis) longe acuminatis basi obliquis cuneatis vix subcordatis margine eroso-lobato-dentatis, in intervallis

passim denticulatis, utrinque pilis punctiformibus parce inspersis, subtus in nervis pubescentibus, penninerviis, basi 2—3-nerviis. Inflorescentiis ♂ . . . , ♀ axillaribus brevissimis ut videtur paucifloris, pedunculis 2—3 mm longis, bracteis persistentibus 5 mm longis margine fulvo-hispidis anguste lanceolatis longe acuminatis; fructuum pedicellis 4 mm longis; capsula trialata, 13 mm longa et lata apice subprotracta, alis fere aequabilibus triangularibus lineato-nervosis apice truncatis angulo rotundato; capsula prope alas dehiscente, placentis bilamellatis.

Mindanao Isl., Davao, Mt. Dagatpan near Mt. Apo (WARBURG no. 14633, in June 1888).

Species *B. Cumingianae* A. DC. affinis foliis angustioribus grosse dentatis, stipulis angustis pilosis, praesertim autem inflorescentiis 3 brevissimis differt.

## Sapindaceae

by

L. RADLKOFER.

### *Cardiospermum* Linn.

1. ***Cardiospermum halieacabum*** Linn. var. ***microcarpum*** Blume.  
North Luzon, Buguey (WARBURG no. 12375); Prov. Isabela, Sta. Maria (MERRILL no. 183); Prov. Pampanga, Arayat (MERRILL no. 1429).

### *Allophylus* Linn.

1. ***Allophylus dimorphus*** Radlk.  
Luzon, Prov. Zambales (WARBURG no. 13337).
2. ***Allophylus grossedentatus*** F. Villar.  
Luzon (CUMING no. 640).  
In VIDAL'S Revis. (1886) p. 94, CUMING's (no. 640) is cited as belonging to *Allophylus Cobbe* Bl. var. *grossedentata* Vidal. (J. Perkins).
3. ***Allophylus macrostachys*** Radlk. n. sp. (*Schmidelia javensis* Bl. var.? Turecz. in Bull. Mosc. XXXI, 1, 1858, p. 401; *A. Cobbe*,

non alior., Vidal Phanerog. Cuming., 1885, p. 22, 104 et Revis., 1886, p. 94, partim): *Frutex* (?) *glaber*; rami teretes, juveniles subfuscii, mox albescentes; folia 3-foliolata, interdum permagna, breviter vel mediocriter petiolata; foliola intermedia e subrhombico longiuscule cuneata, supra medium latissima, acuminata, in petiolulos longiusculos sensim angustata, lateralia minora, ex ovali lanceolata, acuta vel subacuminata, breviter petiolulata, omnia remote denticulata vel subintegerrima, membranacea, nervis lateralibus remotis procurvis subtus prominentibus, utrinque glabra nec nisi in axillis nervorum subtus pilorum fasciculo obsita, supra fuscescentia nitida, subtus pallidiora nitidula, glandulis microscopicis curvatis adspersa, cellulis secretoriis et ad paginam inferiorem utriculis elongatis instructa, epidermide mucigera; thyrsi axillares, simplices, graciles, elongati, folia interdum dimidio superantes, saepius curvati, glabri, basi nudi, ceterum interrupte cincinnigeri, cincinnis sessilibus 5—7-floris; flores parvi, breviter pedicellati, albidi, glabri; fructus cocci globosi, mediocres, glabri.

Rami 3—4 mm crassi. Folia petiolo 2—8 cm longo adjecto 15—30 cm longa; foliola intermedia cum petiolulis 8—15 mm longis 12—22 cm longa, 4,5—8 cm lata. Thyrsi 12—30 cm longi. Alabastra diametro 1 mm. Sepala glabra; petala cochleariformia, lamina emarginata, ungue cuneato, supra unguem squama bifida dense villosa aucta; discus (in glandulas 4 tumens) glaber; stamna vix ima basi puberula; germinis (floris ♂) rudimentum bicoecum, glabrum. Fructus cocci (sicci) diametro 5 mm.

Luzon (CUMING no. 826; in flower); Prov. Nueva Ecija, Rosales (WARBURG no. 13343; in fruit); Prov. Pampanga, Arayat (WARBURG no. 13339, 13340; in flower).

(Valde affinis *A. filigero* Radlk., a quo differt glabritie, foliolis longius cuneatis, thyrsis non adeo elongatis.)

4. ***Allophylus quinatus* Radlk. n. sp. (*Tarrietia* sp.?) Turez. in Bull. Mosc. XXXI, 1, 1858, p. 408; *Schmidelia* sp. id. ibid. XXXVI, 1, 1863, p. 586; *A. Cobbe* var. *Blancoi*, non alior., Vidal Phanerog. Cuming., 1885, p. 52, 104 et Revis., 1886, p. 94, partim): *Frutex* (?) pubescens; rami teretes, ut et petioli thyrsique pube brevi molli induti, cortice subfusco; folia 5-foliolata, mediocria, longiuscule petiolata; foliola anguste lanceolata, fere quinques longiora quam latiora, acutissima, basi acuta petiolulis brevius-**

culis insidentia, subaequaliter subrepando-dentata, membranacea, nervis lateralibus crebris (utrinque ca. 15) rectiusculis oblique patentibus supra vix, subtus paullulum prominentibus, supra minutim puberula, subtus molliuscula, glandulis microscopicis curvatis obsita, utrinque opaca, cellulis secretoriis sat crebris minutim pellucide punctata, epidermide mucigera; thyrsi axillares, simplices, petiolos aequantes vel paullo superantes, stricti, a tertia vel quarta inferiore parte dense cincinnos sessiles 5—7-floros gerentes; flores mediocres, breviter pedicellati, albidi, glabriusculi.

Rami 3 mm crassi. Folia petiolo 4—7 cm longo adjecto 10—18 cm longa; foliola intermedia cum petiolulis 2—5 mm longis 6—12 cm longa, 1,5—2,5 cm lata, reliqua minora. Thyrsi 6—8 cm longi. Alabastra diametro 1,5 mm. Sepala glabra, vix ima basi puberula, margine glanduligera; petala spathulata, emarginata, ungue cuneato ciliolato, supra unguem squama bifida dense barbata aucta; discus (in glandulas 4 tumens) glaber; stamina basi pilosula; germinis (floris ♂) rudimentum bicoccum, pilosulum.

Samar Isl. (CUMING no. 1270, nec 1720, ut in schedis non-nullis nec non apud Turez. l. c. legitur).

(Proxime accedens ad *A. dimorphum* Radlk., attamen sat distincta foliis omnibus 5-foliolatis, foliolis angustius lanceolatis subaequaliter repando-dentatis, thyrsis strictis.)

5. ***Allophylus racemosus* Radlk.**

Luzon, Prov. Nueva Ecija, Rosales (WARBURG no. 13342).

6. ***Allophylus setulosus* Radlk. n. sp.** Frutex(?); rami teretes, juveniles ut et petioli thyrsi foliaque praesertim subtus in nervis pilis subsetaceis patulis vel reversis laxe adspersi, cortice viridi lenticeloso-punctato, mox albescente; folia 3-foliolata, majuscula, longiuscule petiolata; foliola intermedia magna, ex oblongo late lanceolata, acuminata, in petiolulos longiusculos cuneato-attenuata, lateralia fere dimidio minora, ovalia, obtusiuscula, breviter petiolulata, omnia remote arguto serrata, serraturis inferioribus patulis, superioribus porrectis, tenuissime membranacea, nervis lateralibus remotis (utrinque 5—8) procurvis subtus manifeste prominentibus, supra in nervis et inter nervos pilis subsetaceis rarior adspersa, insuper in nervo mediano pilis crispati densius obsita, subtus praesertim in nervo mediano patule

setulosa et in axillis nervorum barbulata ceterum pilis singulis tantum adspersa, supra sat viridia opaca, subtus pallidiora nitidula, glandulis microscopicis majusculis clavatis curvatis obsita, cellulis secretoriis utriculiformibus instructa, attamen vix pellucide punctata, staurenchymate perbrevi crystallorum concretionibus crebris persito, epidermidis cellulis praesertim paginae superioris majusculis margine sinuatis mucigeris; thyrsi axillares, simplices, graciles, foliis paullo breviores, a sexta inferiore parte cincinnos sessiles paucifloros sat dense gerentes; flores parvuli, breviter pedicellati, albidi, glabri.

Rami 2 mm crassi. Folia petiolo ca. 8 cm longo adjecto 23—28 cm longa; foliola intermedia cum petiolulis 1—1,5 cm longis 15—20 cm longa, 5—7 cm lata. Thyrsi ca. 18 cm longi. Alabastera diametro 1 mm. Sepala glabra, margine pilis minutis glandulisque ciliolata; petala cochleariformia, lamina crenulata, ungue longiore cuneato ciliato, supra unguem squama bifida villosula aucta; discus (in glandulas 4 tumens) glaber, aurantiacus; stamna infra medium pilosula; germen (floris ♂ rudimentarium tantum visum) bicoecum, glabrum.

Joló Isl. (WARBURG no. 14919).

7. **Allophylus ternatus** Radlk.

Luzon, Prov. Zambales, Candelaria (WARBURG no. 13338); Middle Luzon, Bordeos (WARBURG no. 13345); Polillo (WARBURG no. 13341); Mindoro Isl., Baco (MERRILL no. 1211; in flower in January 1902); Joló Isl., Tawi Tawi (WARBURG no. 14420); Mindanao Isl., Davao, Sibulan (WARBURG no. 14285).

8. **Allophylus timorensis** Blume emend.

North Luzon, Buguey (WARBURG no. 12373); Middle Luzon, Cabongenan (WARBURG no. 13344); Luzon, Prov. Zambales, Masinloc (WARBURG no. 13336).

On the label of one of the specimens in the Berlin herb. RADLK. has written the following identifications: *Allophylus timorensis* Bl. emend. (i. e. exclus. speciminibus Zippelianis ex parte, et Spanoghanianis), *Schmidelia timorensis* DC., *Allophylus littoralis* Bl.

**Sapindus Linn.**

1. **Sapindus Saponaria** Linn., forma 3 **microcarpus** Radlk. (?).

Luzon, Br. Bataan, Dinalupihan (MERRILL no. 1574); Prov. Manila, Montalbán (WARBURG no. 12563).

**Erioglossum** Blume.1. **Erioglossum rubiginosum** Blume.

Luzon, Prov. Camarines Sur, Pasacao (AHERN no. 135, 215); Prov. Tayabas, Malicboi (MERRILL no. 2445; in flower in April 1903); Mindoro Isl., Pola (MERRILL no. 2208; in flower in May 1903).

**Aphania** Blume.1. **Aphania philippinensis** Radlk. n. sp. Frutex(?); rami teretes, atro-fusci, dense lenticeloso-punctati, glabrati; folia 2—3juga, longiuscule petiolata, petiolo basi tumido; foliola subopposita, oblonga, utrinque subacuta, petiolulis mediocribus basi incrassatis suffulta, chartacea, nervis lateribus oblique patulis remotis ante marginem ± manifeste anastomosantibus subtus prominentibus, tenuiter reticulato-venosa, glabra, supra sublaevia nitida livescenti-viridia, subtus opaca, cellulis secretoriis raris instructa, crystallorum concretionibus prope paginam superiorem sat crebris, glandulis microscopicis basi paullum immersis rariss ornata, epidermide non mucigera; paniculae spurie terminales, sat amplae, pluriramosae vel abbreviatae pauciramosae, ramis thyrsoides sat dense cymalas subsessiles gerentibus minutim puberulis; alabastra subglobosa, pedicellata; sepala 5, minutim glanduloso-ciliolata; petala 5, oblonga, ciliolata, intus basi bisquamulata; stamina 6, filamentis basi villosis quam antherae glabrae acutae brevioribus; germen glabrum; fructus 2- (rarius 3-) vel abortu 1-coccus, cocci drupaceis divaricatis obovoideis parvis glabris, endocarpio tenui.

Rami ca. 4 mm crassi. Folia petiolo 5—9 cm longo adjecto ca. 40 cm longa; foliola 12—20 cm longa, 5,5—7,5 cm lata, petiolulis 5—15 mm longis. Panicula 10—25 cm longa. Alabastra diametro ca. 2,5 mm. Pedicelli ca. 2 mm longi, basi articulati. Fructus cocci (sicci) ca. 9 mm longi, 6 mm crassi.

Luzon, Prov. Camarines Sur, Pasacao (AHERN no. 216 part.; part. *Mischocarpus triquetus* Radlk.; in flower and fruit a. 1902); Joló Isl. (WARBUUG no. 14 597; in flower in August 1888).

**Lepisanthes** Blume.1. **Lepisanthes schizolepis** Radlk. (in Sapind. Holl.-Ind., 1877—78, p. 87), forma 2, *sphenolepis* Radlk.: A forma 1, *genuina* Radlk.

(petalorum squama profunde bifida) distincta petalorum squama integra, subtruncato-cuneata.

Luzon, Prov. Rizal, Tanay (MERRILL no. 2331; in flower in May 1903).

### **Otophora** Blume.

#### 1. **Otophora fruticosa** Blume.

North Luzon, Malunu (WARBURG no. 11674); Middle Luzon, Mariveles (WARBURG no. 13214); Luzon, Prov. Bataan, Bagac (WARBURG no. 13335); Manila (Chamisso without no.); WARBURG no. 13215); Prov. Pampanga, Arayat (MERRILL no. 1365); Prov. Tayabas (MERRILL no. 2127); Mindoro Isl., Pola (MERRILL no. 2239); Paragua Isl., Ewiig River (MERRILL no. 727).

### **Euphoria** Comm.

#### 1. **Euphoria cinerea** Radlk.

Luzon, Prov. Bataan, Dinalupihan (MERRILL no. 1531); Prov. Camarines Sur, Pasacao (AHERN no. 79; in flower, a. 1902); Prov. Pampanga, Arayat (MERRILL no. 1374; in flower in March 1903); Mindoro Isl., Pola (MERRILL no. 2203, 2399, 2468; in fruit in March and May 1903); Pinamalayan (MERRILL no. 2174; in flower in May 1903).

### **Nephelium** Linn.

#### 1. **Nephelium intermedium** Radlk. n. sp. Arbor (?); rami teretes, juniores sufferrugineo-pulverulent; folia 2—3-juga; foliola elliptica vel oblonga, subacuminata, breviter petiolulata, chartaceo-coriacea, nervis lateralibus utrinque 7—9 oblique adscendentibus subtus prominentibus, sat reticulato-venosa, utrinque glabra nec nisi pilis raris adpressis supra basin lateraliter affixis subtus adspersa, supra pallide subfuscata, subtus canescenti-glaucouscentia, cellulis secretoriis instructa, epidermide mucigera; paniculae ad apices ramorum axillares, pauciramosae, foliis breviore, pulverulento-puberulæ; flores apetali, breviter pedicellati; discus concavus puberulus; fructus cocci ex elliptico subgloboso, processibus primum brevibus contiguis prismaticis (fere ut in *N. mutabilis*) subtruncatis dein sat elongatis subulatis sulcatis rectiusculis (siccis) rigidis echinato-muricati (quasi intermedii inter *Nephelii chrysei* et *N. mutabilis* fructus).

Rami ca. 6 mm crassi. Folia petiolo 4—6 cm longo adjecto 15—24 cm longa; foliola cum petiolulis 3—8 mm longis 8—16 cm longa, 3,5—7 cm lata. Paniculae 6—10 cm longae. Calyx cupularis, coriaceus, 5—6-fidus, laciinis ovatis obtusis extus velutino-puberulis, intus et margine canescens-tomentellis. Stamina basi villosiuscula; antherae ovatae, obtusae, minutissime puberulæ. Germen floris ♂ rudimentarium villosum, floris ♀ (ut e fructu javenili concludere licet) 2-coccum; stylus profunde bifidus, cruribus recurvatis. Fructus cocci ca. 4 cm longi, 3,5 cm lati, processibus basalibus et apicalibus ca. 8 mm, intermediis 15 mm longis.

North Luzon, Malunu (WARBURG no. 11672; in fruit); Luzon Prov. Isabela, Digamai (WARBURG no. 12007; in fruit); Prov. Camarines Sur, Pasacao (AHERN no. 204; a. 1902); Prov. Tayabas, Sampaloc (WARBURG no. 13109; in flower in March 1888); Mindanao Isl., Davao Sibulan, M<sup>t</sup> Dagatpan, 4000 m alt. (WARBURG no. 14287; in fruit in March June 1888); Joló Isl. (WARBURG no. 14918; in flower).

### Guioa Cav.

1. **Guioa aptera** Radlk. n. sp. Frutex (?); rami teretes, glabriusculi, novelli puberuli; folia abrupte pinnata; foliola 6—8, subopposita, parva, sublanceolata, inaequilatera, subfalcata vel praesertim superiora sigmoideo-curvata, sensim acuminata, basi in petiolulos perbreves attenuata, integerrima, submembranacea, nervis lateralibus paucis (5—6) procurvis subtus interdum foveola basilari notatis, supra glabra, fusca, subtus pilis minutis adpressis laxe adspersa et minutim tuberculato-papillosa, inde opaca glaucescentia, impunctata, attamen cellulis secretoriis persita; rhachis foliorum nuda; inflorescentiae axillares, foliis breviores, pauciramosae, puberulæ; flores disco interrupto semi-lunari glabro; fructus late obcordatus, 3-alato-lobatus, apiculatus, in stipitem brevem coarctatus, extus et intus glaber.

Rami 2 mm cressi, cortice cinerascente. Folia petiolo 1,5—3 cm longo adjecto 10—16 cm longa; foliola cum petiolulis vix 2 mm longis 2,5—6 cm longa, 12—16 mm lata. Inflorescentiae 4—8 cm longae. Fruetus ca. 12 mm longus, 15 mm latus.

North Luzon, Prov. Cagayan, Lallo (WARBURG no. 11504); Luzon, Prov. Tayabas, Sampaloc (WARBURG no. 13108; in fruit in March 1888).

2. **Guioa diplopetala** Radlk.

Mindanao Isl., Surigao (AHERN no. 514).

3. **Guioa lasiothyrsa** Radlk. n. sp. Frutex(?); rami teretes petiolique thyrsique pilis sufferrugineis patulis subhirsuto-tomentosi; folia pari-pinnata; foliola 6—8, opposita, oblonga, subaequilatera, abruptius acuminata, basi subacuta petiolulis brevibus insidentia, integerrima, submembranacea, nervis lateralibus paucis (utrinque 5—6) elongatis curvato-adscendentibus, supra minutim puberula fusca, subtus pilis mollibus praesertim ad nervos patulis pubescentia et minutim tuberculato-papillosa, inde opaca glaucescentia, efoveolata, impunctata, attamen cellulis secretoriis persita; rhachis foliorum nuda; thyrsi axillares, pauciramosi, foliis multo brevioribus, dense cincinnos sessiles vel superne flores singulos gerentibus, pedicellis medio articulatis bracteisque subulatis hirsutis; flores disco interrupto semilunari glabro; fructus late obcordatus, 3-alato-lobatus, styli reliquiis coronatus, in stipitem brevem coarctatus, extus et intus glaber.

Rami 3 mm crassi, cortice fusco. Folia petiolo ca. 3 cm longo adjecto 16—26 cm longa; foliola cum petiolulis 2—3 mm longis, 6—12 cm longa, 2—4 cm lata. Thyrsi 4—8 cm longi; pedicelli 3—4 mm longi. Fructus ca. 12 mm longus, 15 mm latus.

Paragua Isl., San Antonio Bay (MERRILL no. 852; in fruit in February 1903).

4. **Guioa Perrottetii** Radlk.

North Luzon, Enrile (WARBURG no. 12369); Prov. Cagayan, Alcalá (WARBURG no. 11758); Malaueg (WARBURG no. 11757); Luzon, Prov. Manila, Montalbán (WARBURG no. 13219; all in fruit), Prov. Bataan, Dinalupihan (MERRILL no. 1478); Lamao River, M<sup>t</sup> Mariveles (MERRILL no. 2537; in fruit in June 1903); Prov. Camarines Sur, Pasacao (AHERN no. 212, 267); Prov. Rizal, Antipolo (MERRILL no. 1227 — in fruit —, no. 1351 — in flower — in February 1903); Prov. Tayabas, Guinayangan (MERRILL no. 2068); Laguimanoc (MERRILL no. 45, 2122); Malieboi (MERRILL no. 2439); Pagbalao (MERRILL no. 1953; in flower in April 1903); Prov. Zambales, Subig and vicinity (MERRILL no. 2109); Mindoro Isl., Baco (MERRILL no. 1224, 1293; in flower in January 1903); Mindanao Isl., Surigao (AHERN no. 433).

5. **Guioa pleuropteris** Radlk.

Paragua Isl., Ewiig River (MERRILL no. 762).

6. **Guioa subapiculata** Radlk. n. sp. Frutex; rami teretes petiolique thyrsique molliter pubescentes; folia pari-pinnata; foliola 4, opposita, ovalia, subaequilatera, obtusa, minutim apiculata, rarius subacuta, in petiolulos breves complanatos basi incrassatos attenuata, integrerrima, submembranacea, nervis lateralibus paucis (utrinque 4—5) procurvis, supra praeter nervos puberulos glabriuscula, subfuscata, subtus pilis teneris adpressis adspersa et minutim tuberculato-papillosa, inde opaca glaucescentia, effoveolata, cellulis secretoriis dense minutim pellucido-punctata; rhachis foliorum nuda; thyrsi axillares et subterminales, graciles, folia subaequantes, a tercia vel media parte cincinnos subelongatos 4—5-floros bractea subulata suffultos bracteolisque ornatos gerentes; flores breviter pedicellati, pedicellis basi articulatis; sepala basi laxe puberula, margine glanduloso-ciliata; petala obovata, intus supra basin squamulis 2 linearibus cristatis villosiusculis aucta; discus interruptus, semilunaris, glaber; stamina infra medium villosa; pistillum pilis singulis tantum adspersum; fructus — (non suppetebat).

Frutex 6-pedalis (MERRILL in scheda). Rami 2 mm crassi, cortice subfusco. Folia petiolo ca. 1 cm longo adjecto, ca. 10 cm longa; foliola superiora 7—8 cm longa, 3—3,5 cm lata, inferiora fere dimidio minora. Thyrsi ca. 10 cm longi, cincinni 8—10 mm aequantes, pedicelli 2 mm vix superantes. Flores ca. 3 mm longi et lati, albi.

Culión Isl. (MERRILL no. 513; in flower in December 1902).

### **Arytera** Blume.

1. **Arytera litoralis** Bl.

North Luzon, Enrile (WARBURG no. 12370, 12372); Middle Luzon, Mariveles (WARBURG no. 13217, 13218); Prov. Manila (WARBURG no. 13216); Prov. Bataan, Bagac (WARBURG no. 13331); Pic de Morong (WARBURG no. 13330).

### **Mischocarpus** Blume.

1. **Mischocarpus salicifolius** Radlk. n. sp. Arbor(?); rami teretes, glabri; folia abrupte pinnata, petiolo teretiusculo, rhachi superne 2-sulcata; foliola 5—6, alterna, longiuscula oblongo-lanceolata, utrinque acuta, petiolulata, integrerrima, subcoriacea, glabra nec nisi glandulis microscopicis cylindricis subtus adspersa, nervo mediano subtus sat prominente, lateralibus obsoletis subtus quo-

que parum prominulis basi foveola urceolata notatis, supra laeviuscula, reti venarum angustissimo elegantissimo non nisi subtus prominulo, utrinque opaca, (sicca) e viridi subfuscata, impunctata, attamen cellulis secretoriis persita, epidermidis inferioris cellulis sparsim crystalla singula gerentibus; paniculae axillares et subterminales, pauciramosae, sat robustae, cymuligerae, cymulis breviter stipitatis; flores longius pedicellati, petaligeri (ut e cicatricibus sub disco fructigero obviis patet); discus glaber; fructus (stipite breviusculo excluso) globosus, apice retusus, brevissime apiculatus, glaber, mesocarpio crassiuscule resinoso-carnoso, endocarpio toto sclerenchymatico glabro; semina (immatura) ventre tantum arillo obtecta.

Rami 5 mm crassi. Folia petiolo 4—5 cm longo adjecto 16—22 cm longa; foliola cum petiolulis 6—8 mm longis 10—15 cm longae, 2,5—3 cm lata, margine subundulata. Paniculae ca. 18 cm longae; pedicelli 8 mm longi, ad tertiam inferiorem partem articulati. Fructus (stipite adjecto) 10—12 mm longus, rubro-fuscus, hic illie guttulis resinae exsudatae obsitus; stipes ca. 3 mm aequans.

Luzon, Prov. Rizal, Bosoboso (MERRILL no. 1842; in fruit in April 1903).

2. **Mischocarpus sundaicus** Blume.

North Luzon, Malunu (WARBURG no. 11676); Middle Luzon, Siniloan (WARBURG no. 13349).

3. **Mischocarpus triqueter** Radlk. n. sp. Arbor(?); rami teretes, sulcati, innovationes dense cano-pubescentes; folia abrupte pinnatae, petiolo supra plano, marginibus acutis, subtus convexo striato, basi valde incrassato; foliola 7—9, alterna vel subopposita, oblonga, subacuta, basi obtusiuscula vel rotundata, petiolata, integerrima, chartacea, glabra nec nisi pilis rarissim glandulisque microscopicis cylindricis subtus adspersa, nervis subtus prominentibus, reti venarum minus angusto supra subtusque prominente, (sicca) pallide viridia, cellulis secretoriis sat dense pellucido-punctata, epidermidis inferioris cellulis sparsim crystalla singula gerentibus; thyrsi (adjecti, verisimiliter e ramis vetustioribus enati, fructigeri) laxiflori; flores sat pedicellati, petaligeri, petalis (sub fructu relictis) lanceolatis sepala ovata membranacea puberula paullo superantibus; discus glaber; fructus triquetro-pyriformis, stipite quam pars seminifera plus dimidio

breviore, styli brevis in stigma 3-crure desinentis reliquiis apiculatus, glaber, endocarpio toto sclerenchymatico glabro; semina ellipsoidea, arillo obtecta.

Rami 6 mm crassi. Folia petiolo 5—8 cm longo adjecto 20—32 cm longa; foliola cum petiolulis 8—10 mm longis 10—16 cm longa, 3,5—5 cm lata. Thyrsi ca. 8 cm longi; pedicelli 4 mm longi, prope basin articulati. Sepala 2,5 mm longa. Fructus (stipite adjecto) 15—18 mm longus, ca. 1 cm latus, fusca; stipes 4—5 mm aequans; semen 7 mm longum, 5 mm latum.

Luzon, Prov. Camarines Sur, Pasacao (AHERN no. 262, 216 part. — The other part (cf. no. 216) belongs to *Aphania philippinensis* Radlk.).

### **Lepidopetalum** Blume.

#### 1. **Lepidopetalum Perrottetii** Blume.

North Luzon, Buguey (WARBURG no. 12374); Enrile (WARBURG no. 12372); Middle Luzon, Mariveles (WARBURG no. 13213, 13220); Prov. Bataan, Bagac (WARBURG no. 13332); Pie de Morong (WARBURG no. 13347); Prov. Pampanga, Arayat (MERRILL no. 1404, 1439; in flower in March 1903).

### **Dodonaea** Linn.

#### 1. **Dodonaea viscosa** Jacq. var. **vulgaris** Benth. f. 3. **Burmanniana** Radlk.

Middle Luzon, Siniloan (WARBURG no. 13334); Mindoro Isl., Caguray (MERRILL no. 934); Pola (MERRILL no. 2402); Mindanao Isl., Davas, Taumu (WARBURG no. 14286).

### **Harpullia** Roxb.

#### 1. **Harpullia arborea** Radlk.

North Luzon, Cagayan, Malaguey (WARBURG no. 11756); Enrile (WARBURG no. 12371); Middle Luzon, Prov. Pampanga, Arayat (WARBURG no. 13348); Prov. Bataan, Pie de Morong (WARBURG no. 13346); Prov. Camarines Sur (AHERN no. 43); Prov. Principe, Baler (MERRILL no. 1071); Prov. Rizal, Antipolo (MERRILL no. 1722).





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C O N T R I B U T I O N S  
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F L O R A O F T H E P H I L I P P I N E I S L A N D S

B Y

J. PERKINS, PH.D.

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Fasc. I issued March 12, 1904; Fasc. II issued June 30, 1904.



### III.

## Marantaceae of the Philippines.

With 3 plates and 31 figures.

By

J. PERKINS.

Flowers very irregular, hermaphrodite, with calyx and corolla. Sepals free, equal or subequal. Corolla-tube short, or more frequently long, rarely wanting; lobes colored or white, the exterior lobe usually larger and at the apex cucullate. Only one fertile stamen; anther 1-celled with a petaloid appendage. Inner pair of staminodia always present, the one cucullate and including the style before flowering, the other callose. Outer staminodia 1—2, petaloid. Ovary inferior 1—3-celled; cells 1-ovuled. Style simple, recurved at the point, inclosed in the cucullate-staminode, at flowering springing out and striking against the callose staminode. Fruit a loculicide capsule, or an indehiscent nut or berry. Seeds 1—3, arillate. — Perennial herbs sometimes high. Stem short or long. Leaves distichous. Inflorescence often large. Flowers almost always in pairs.

About 300 species in the Tropics of the whole world.

### Key to the genera.

A. Ovary always distinctly 3-celled, 2 of the cells apparently empty (ovules at first present, obvious)

Tribe I. *Phrynieae* Peters.

a) The outer staminodia 2.

1. Flowers in pairs; bracteoles small,  
incrassate; bracts caducous

1. *Donax* Lour.

2. Flowers solitary

2. *Monophrynum* K. Schum.

b) The outer staminodia solitary

(Flowers in pairs) 3. *Phaeolophrynum* K. Schum.

B. Ovary 1-celled

Tribe II. *Maranteae* Peters.

4. *Maranta* L.

### 1. *Donax* Lour.

*Donax* Lour. Fl. cochinch. p. 14 (1790); K. Schumann in Pflanzenreich, Lief. IV, p. 32 (1902).

*Clinogyne* Salisb. in Trans. Hortic. Soc. I, p. 276 (1812).

*Phrynum* Roxb. Fl. ind. I, p. 2 (1832).

Sepals ovate-lanceolate, relatively not large. Corolla-tube moderately long, with rather large, oblong lobes. Staminal-tube elongated; outer staminodia large, petaloid, obovate; cucullate-staminode not appendiculate; callose-staminode (lip) short; anthers with a large petal-like appendage. Ovary 3-celled, silky; cells 1-ovuled. Capsule subglobose. Seeds subglobose with dorsal transverse furrows and a basal aril. — Perennial herbs or undershrubs, erect. Stems below simple, above branched. Leaves shortly petioled; sheaths elongated; ligula short. Inflorescence in Philippine specimen simple; pairs of flowers solitary, pedunculate; bracteoles in pairs.

Species 2, in East India and Malay Archipelago.

### 1. *D. arundastrum* Lour.

*D. arundastrum* Lour. Fl. cochinch. p. 15 (1790); K. Schumann in Pflanzenreich, Lief. IV, p. 33 (1902).

*Phrynum dichotomum* Roxb. in Asiat. Research. XI, p. 324 (1810).

*Clinogyne dichotoma* Salisb. in Trans. Hortic. Soc. I, p. 276 (1812).

*Thalia dealbata* Hort. ex Link, Jahresber. I, p. 3, 21 (1820).

*Maranta dichotoma* Wall. Cat. no. 6615 (1828).

*Maranta arundinacea* Blanco, Fl. Filip. ed. I, p. 7 (1837), non L.

Stem about 3 m high; branches numerous, slender. Leaves oblong, acute or shortly acuminate, at the base rounded or acute, on both sides glabrous, usually 20 cm long and 6,5 cm wide, petiolate; petiole about 6 mm long, terete, callous, above minutely hairy; ligula short, glabrous. Raceme terminal, simple, about 17 cm long; bracts lanceolate, about 8, 4 cm long. Pairs of flowers solitary, peduncles about 2 cm long; terminal flowers with a pedicel 9 mm long; bracteoles 2, glandular, 3 mm long. Ovary silky. Sepals lanceolate-ovate, 6 mm long, glabrous. Corolla-tube white, 8 mm long; lobes lanceolate 2,5 cm long. Staminal-tube 12 mm long;

inner staminode 1.5 cm long; callose-staminode (lip) somewhat smaller, two-lobed; cucullate-staminode inappendiculate, 10 mm long. Capsule 2- or 3-lobed, 1 cm diam. Seeds arillate, subglobose, 7 mm diam., on the ventral-side keeled; on the dorsal side transversely furrowed, chestnut-brown, opaque. (Plate I, fig. G—J.)

Luzon (many collectors). I have examined the following specimens: (MEYEN), (CUMING no. 465); Manila, Makakai (WICHURA 1851); Caraballo sur Nueva Vizcaya (MERRILL no. 230, in flower May 1902); Mindoro Isl., Pola (MERRILL no. 2453, in flower May 1903); Culión Isl. (MERRILL no. 660, in flower Febr. 1903).

This species is easily recognized by the simple racemes and the large white flowers.

## 2. **Monophrynum** K. Schum.

*Monophrynum* K. Schumann in Pflanzenreich, Lief. IV, p. 68 (1902).

*Calathea* Presl, Reliq. Haenk. I, p. 108. pl. 16 fig. 1 (1830).

*Phrynum* Horan. Monogr. p. 11 (1862).

Sepals small, lanceolate. Corolla-tube almost as long as the sepals; lobes lanceolate, somewhat larger than the tube. Two outer staminodia obovate, scarcely longer than the corolla-lobes; callose-staminode petaloid; cucullate-staminode much shorter with an auriculate appendage. Ovary 3-celled; cells 1-ovuled. Capsule unknown.— Perennial herb, high. Leaves long-petioled. Panicles many, pedunculate and in the sheath of the leaves. Spikes narrow, densely imbricate, fascicled; bracts small. Flowers not in pairs, solitary in the axil of the bracts, with 2 bracteoles.

Species 1, as yet only found in the Philippine Islands.

## 1. **M. fasciculatum** (Presl) K. Schum.

*M. fasciculatum* (Presl) K. Schumann in Pflanzenreich, Lief. IV, p. 68 (1902).

*Calathea fasciculata* Presl, Reliq. Haenk. I, p. 108, pl. 16 fig. 1 (1830).

*Phrynum fasciculatum* Horan. Monogr. p. 11 (1862).

A stout shrub reaching a height of 2 m. Leaves of the stem oblong or subovate-lanceolate, attenuate-acuminate, rounded at the base, both sides glabrous, about 30 cm long, 8 cm wide; petiole about 20 cm long with the upper part flattened, glabrous, callous, 4 cm long; sheath glabrous, not auriculate. Panicles pedunculate or subsessile, in the sheath of the leaves, bearing narrow, elongated

racemes about 6 cm long; bracts about 10, imbricate, ovate-oblong, obtuse, glabrous, 9 mm long. Flowers solitary, after anthesis sessile on a subglobular cushion; dorsal bracts two-keeled. Ovary silky, 3-celled. Sepals lanceolate, 4 mm long. Corolla-tube 3.5 mm long; lobes lanceolate, 5 mm long. Outer staminodia two, resembling the callous-staminode; cucullate-staminode much shorter, with a lateral subauriculate lobe. (Plate I, fig. A—F.)

Luzon, no locality given (HAENKE, Type, herb. Prag.); Prov. Tayabas near Sampaloc (WARBURG no. 12921); Middle Luzon, near Cabungan (WARBURG no. 14068).

### 3. *Phacelophrynum* K. Schum.

*Phacelophrynum* K. Schumann in Pflanzenreich, Lief. IV, p. 120 (1902).  
*Phrynum* Blume, Enum. pl. Javae I, p. 37 pro parte minima (1827).

Sepals equal, subovate, not large. Corolla-tube short, lobes oblong. Outer staminode solitary, petal-like, spatulate or obovate; callous-staminode similar and slightly smaller, with an oblique villous callus; cucullate-staminode shorter, with a broad lateral appendage. Ovary 3-celled, cells often all fertile. Capsule 3-, rarely 2-seeded, triangular, three-valved. Seeds triangular, convex on the dorsal side, irregularly grooved, with a deeply two-lobed aril. — Perennial herbs, with basal leaves. Leaves large, petioles long. Inflorescence panicled, crowded or spreading, interrupted, often formed by fasciculated spikes; bracts distichous. Flowers geminate, pedicellate, common peduncle wanting.

Species 6, in the Malay Peninsula, the Sunda and Philippine Islands.

#### Key to the species.

- A. Panicles more than one, terminal, much elongated. Sepals 4 mm long. Corolla-tube very short; lobes a little longer than the calyx. 1. *P. interruptum*.
- B. Panicles solitary, congested. Sepals 10 mm or more long. Corolla longer than the calyx. 2. *P. bracteosum*.

#### 1. *Phacelophrynum interruptum* (Warb. ms.) K. Schumann.

*Phacelophrynum interruptum* (Warb. ms.) K. Schumann in Pflanzenreich, Lief. IV, p. 121 (1902).

*Phrynum interruptum* Warb. in Mons. ined.

Leaves petiolate, with the upper part of petiole 5,5 cm long, flattened, callous, glabrous, lanceolate, shortly acuminate, at the base acute, glabrous on both sides; sheath glabrous, membranaceous. Inflorescence erect, few (3), leafy, interruptedly panicled, with a compressed glabrous peduncle reaching a length of 20 cm; internodes about 8 cm long; racemes somewhat densely fascicled, about 4, 5 cm long; primary bracts oblong-lanceolate or ovate, about 4 cm long; flowering-bracts about 8, oblong, obtuse, when dried flesh-colored, 1,5 cm long. Flowers geminate, on a pedicel 5 mm long. Bracteoles keeled. Ovary triangularly pear-shaped, 3-celled, deeply furrowed, glabrous. Sepals ovate-oblong, acuminate, 4 mm long. Corolla-tube scarcely 2 mm long; lobes oblong, 4 mm long. Outer staminode 3 mm long, callous-staminode petal-like, with a villous callus; cucullate-staminode and fertile staminode equal. Capsule triangular, 3-seeded, pale-yellow, 9 mm long, at the top concave. Seed 6 mm long, transversely sulcate, shining, dark chestnut, with a large yellow, shortly two-lobed, pendulous aril. (Plate III, fig. F—O.)

Luzon, Prov. Manila on Montalbán (WARBURG no. 12495, in flower March 1888); North Luzon near Enrile (WARBURG no. 12160); Tanay, Prov. Rizal (MERRILL no. 2263, in flower May 1903). — Mindanao Island, near Davao on Mt. Dagatpan in a forest (WARBURG no. 14585).

This species resembles in habit *Monophrynum fasciculatum* (Presl) K. Schum., differs from it entirely, however, in the shape of the flowers and of the inflorescence.

## 2. *Phaeolophrynum bracteosum* (Warb.) K. Schum.

*Phaeolophrynum bracteosum* (Warb.) K. Schumann in Pflanzenreich, Lief. IV, p. 123 (1902).

*Phrynum bracteosum* Warb. in Mons. II. ined.

Leaves oblong, shortly acuminate, at the base acute, on both sides glabrous, about 27 cm long, 11 cm wide, petiolate; petiole reaching 4 cm long, the upper part callous, glabrous, terete; sheath glabrous. Inflorescence formed by 3—4 lax lateral or terminal spikes; peduncle reaching 30 cm in length, glabrous, subtending leaf wanting; spikes short; bracts 7—8, broad, linear-oblong, coriaceous, 3—4 cm long, pale-yellow. Pairs of flowers 4, sometimes with a rudiment of a fifth pair present, very shortly pedicellate. Ovary brown-villous, 3-celled. Sepals linear-lanceolate, 10 mm long. Corolla-tube 1,5 cm long, lobes . . . Staminodia . . . Capsule with

1,2 or 3 seeds, oblique, ellipsoid or roundly triangular, chestnut-brown, with adpressed short hairs. Seeds 7 mm long, smooth, pale-yellow with bilobed aril.

Luzon, Prov. Batangas (CUMING no. 1466); Prov. Albay, near Sorsogón (VIDAL no. 3976); Mindanao Isl., Mt. Dagatpan in mixed and in mountain forests, 500—1000 m above the level of the sea (WARBURG no. 14615); Leyte Isl. (CUMING no. 1756).

This species may be easily distinguished on account of the inflorescence, capsule and very smooth seed.

#### 4. **Maranta** L.

*Maranta* L. Gen. pl. ed. I, p. 331 (1737); K. Schumann in Pflanzenreich Lief. 4, p. 123 (1902).

Sepals 3, equal, lanceolate or lanceolate-oblong, often relatively large, striate, subpergamentaceous. Corolla-tube longer or shorter than the sepals, usually at the base broad or gibbous, often geniculate, very rarely elongated; lobes 3, subequal, at the apex shortly cucullate. Staminal-tube usually short; outer staminode petal-like, 2 usually obovate, large, the others usually somewhat shorter; cucullate-staminode with a lateral deflexed appendage; callose-staminode obovate with the apex often two-parted, longitudinally cristate, rarely not cristate. Stamens 1-celled, always, at least at the top, free, that is the petal-like appendage not cohering with the filament. Style thick, curved, deflexed toward the callose-staminode with an oblique two-lobed stigma. Ovary glabrous or sericeous, by abortion 1-celled. Fruit nutlike, indehiscent, with an adhering coriaceous epicarp, 1-seeded. Seed triangular, at the apex truncate or shortly pyramidal, grooved or furrowed, with a yellow or brownish-yellow, sublamellated aril. — Perennial herbs, high or low, stiff, erect or prostrate, branching, often spuriously dichotomous. Leaves homotropic, petiolate. Inflorescence racemose; racemes often panicled; bracts few, rarely numerous, usually sheathing the stem, caducous. Pairs of flowers many, pedunculate, bracteolate; terminal flowers usually longepedicellate, secondary ones subsessile.

24 species in warmer parts of America, of which one species is cultivated in all the warmer parts of the globe.

##### 1. **M. arundinacea** L.

*M. arundinacea* L. Spec. pl. ed. I, p. 2 (1753); K. Schumann in Pflanzenreich Lief. IV, p. 125 (1902).

For full synonymy see Schumann.

An erect branching shrub. Stem and rhizome fleshy, spindle-shaped, with sheath and often the leaves beneath pilose or glabrous. Leaves ovate-lanceolate or lanceolate, attenuate-acuminate, rounded or truncate at the base, about 22 cm long, 8 cm wide; the terete petiole the entire length callous, pilose above; ligula rounded, often conspicuous. Inflorescence racemose, terminal, about 15 cm long; peduncle 10 cm long; bracts linear-lanceolate, about 5 cm long; flowers in 3 pairs, peduncle 5 cm long; pedicel of terminal flower about 1 cm long. Ovary glabrous, moderately hairy. Sepals ovate-lanceolate, 1.5 cm long. Corolla-tube white, at the base wide, 1.3 cm long; lobes 8—10 mm long. Outer staminode 3—10 mm long.

Cultivated in the tropics of the whole world.

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#### Explanation of plates.

##### Plate I.

- A—F. *Monophrynum fasciculatum*. A. Habitus. B. Flower. C—E. Sepals. F. Petal.  
G—J. *Donax arundastrum*. G. Flower. H. Fruit. J. Transverse section of fruit.

##### Plate II.

- Maranta arundinacea*. A. Part of rhizome. B. Branch with leaves  
C. Flowering branch. D. Flower. E. Fruit. F. Transverse section of fruit.

##### Plate III.

- A—E. *Phacelophrynum bracteosum*. A. Inflorescence in fruit.  
B. Fruit. C. Longitudinal section of fruit. D. Transverse section of fruit. E. Seed.  
F—O. *Phacelophrynum interruptum*. F. Inflorescence in fruit.  
G—J. Flower prepared from bud. K—M. Fruit. N—O. Seed.
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IV.

Note on a Philippine species of Reinwardtiodendron

by

J. PERKINS.

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**Reinwardtiodendron Merrillii** Perk. n. sp. Tree 10 m high, 5 cm diam. (ex BARNES); branches terete, glabrous, gray-brown. Leaves oblong or lanceolate-oblong, long-acuminate, tapering from the lower third to the very narrow base, glabrous on both surfaces, papyraceous or subchartaceous, reticulate, entire; main-nerves 8—9 pairs, ascending, curved, faint on the upper, prominent on the lower surface when dry; length 11—20 cm, width 3,5—6,5 cm; petioles 1,5—2 cm long, jointed at the apex. Spikes axillary, solitary or in fascicles, much shorter than the leaves, glabrous. Flowers sessile, 4 mm long, yellow (ex BARNES), solitary, minutely bracteolate at the base. Calyx membranous, glabrous, with 5 rounded lobes. Petals longer than the calyx, subrotund, glabrous. Staminal-tube campanulate, the mouth with 5 shallow teeth, glabrous; anthers sessile, 10, in two rows, appendiculate especially those of the lower row, upper ones rarely slightly exserted. Disk minute, annular. Ovary small, 5-carpelled, brown-pubescent, cylindrical, 5-angled; style short, thick; stigma large 5-angled.

Fruits globular, woody, 2—3 cm in diam., yellow-brown, densely clothed with a white tomentum, rugose, 5-celled. Seeds usually only one, rarely two (the other ovules being abortive), ovoid, flat on one side, convex on the other, rounded at both ends, covered with a membranous thin testa; cotyledons very thick, fleshy, peltate, separated from each other by a slit running (somewhat irregularly) transversely to the longitudinal axis and dividing the seed into two subequal parts; radicula hairy, hidden between the cotyledons.

Luzon, Prov. Bataan, Lamao River, Mt. Mariveles, in hill forest, along the River, at 100 m (MERRILL no. 3149 in October 1903 in fruit); Lamao River (BARNES no. 59 in flower and in fruit October 1903).

BARNES remarks in his field notes communicated by MERRILL: "Tree 10 m high, 5 cm in diam., first branches at 6,5 m. The bark is gray, somewhat rough, with an odour of cedar. Wood white and hard. Tagalog: "malacamanga"."

In a letter received from Mr. MERRILL, he mentions this plant and remarks: "This species so far as the flowers are concerned appears to be *Lansium*, but the fruit is entirely different from other species in the same genus. I may be wrong in my interpretation of the form but have placed the name *Lansium monophyllum* tentatively on this form". KOORDERS, in Verslag eener Botan. Dienstr. door de Minahasa p. 389 (1898), has described, from Minahasa, a new genus, *Reinwardtiodendron*, which accords so fully with the characters of MERRILL's specimen that I have no doubt of the very close affinity of this plant with that of KOORDERS'. The original of KOORDERS' not being in the Berlin herbarium and it being impossible to determine MERRILL's specimen from the diagnosis, on account of the imperfect description of the leaves, it seemed advisable to describe the plant as new. I have called it *Reinwardtiodendron Merrillii*. In the appendiculate anthers, especially in those of the lower row, is to be found the most important difference between the genera *Reinwardtiodendron* and *Lansium*, a difference so slight, that perhaps later the genera will be united with *Lansium*. HARMS, in Nachtrag II, in Engler und Prantl's Pflanzenfam. p. 37 retains both genera. It is also worthy of notice that the *Reinwardtiodendron Merrillii* has simple leaves, a character, however, not of sufficient importance to separate it from *Lansium*. It must be taken into consideration that for instance, in *Aglaiia*, the species of which genus have pinnate leaves, there occur plants with simple leaves. In the preceding diagnosis I have given a description of the fruit of MERRILL's plant. An examination of the fruit of *Lansium domesticum*, from material brought by VOLKENS from Buitenzorg, gave the following results. The seeds are enveloped in a fleshy arillus that is manifestly wanting in *Reinwardtiodendron Merrillii*. The cotyledons lie one above the other, similarly to those in *Reinwardtiodendron*, and differ from each other considerably in size, at least the difference is decidedly more than in those of MERRILL's plant.

JACK, in Trans. Linn. Soc. XIV, p. 115 t. IV, gives the first good description of *Lansium domesticum* and his figures agree admirably with my observations. In the form of the fruit the two plants are remarkably alike, but the pericarp of *Reinwardtiodendron*

*Merrillii* is of a woody consistency, while that of *Lansium domesticum* is leathery. The fine pubescence of *Reinwardtiodendron* occurs also in *Lansium domesticum*. The fruit of the other species of *Lansium* seems to be unknown, so that perhaps the woody pericarp of *R. Merrillii* is a distinguishing character.

It is interesting to observe that all three of the new genera which Koorders has described from Celebes (curiously all ending in dendron) *Wallaceodendron*, *Koordersiodendron* and *Reinwardtiodendron*, occur in the Philippines. This furnishes still another evidence of the relation existing between the flora of the Philippines and that of Celebes.

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V.

Enumeration of some of the recently collected plants  
of

AHERN, JAGOR, LOHER, MERRILL, WARBURG AND OTHERS.

(Continued from fasc. I, p. 4.)

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Gonystylaceae

by

J. PERKINS.

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The discovery of the genus *Gonystylus* in the Philippine Islands by MERRILL affords the opportunity of giving the history and the most striking characters of this, in many respects, singular genus.

*Gonystylus* was established by TEYSMANN and BINNENDIJK in 1862, Botan. Zeitung p. 265 (Ueber Kaju Garu, ein wohlriechendes Holz in Indien. Mitgeteilt von Prof. MIQUEL) and was founded upon a plant from Java, which they named *Gonystylus Miquelianus*. At the end of the diagnosis, on page 266, is added the remark, that two species of *Aquilaria* (*A. macrophylla* and *A. bancana*), described by MIQUEL in his Fl. Ind. bat. Suppl. I, belong to this genus.

*Aquilaria* is a well known Malayan genus of *Thymelacaceae*, several species of which produce an odiferous wood Lignum Aloës, that is of some importance in the Malayan cult. The new genus, according to TEYSMANN and BINNENDIJK, is also distinguished for its fragrant wood, and it is perhaps for this reason that the authors believed that the plant discovered by them in Java was related to *Aquilaria*; from the following it will be seen that the view of the authors was incorrect, *Gonystylus* being in many respects entirely different, not only from *Aquilaria*, but from the whole family of the *Thymelacaceae*. A short time afterwards, MIQUEL published a more complete description accompanied by a plate, in Ann. Mus. bot. Lugd. Batav. I, p. 132 (1863). He too, without hesitation, referred the

genus to the *Thymelaeaceae*, subdivision *Gyrinopeac*. BAILLON, in Hist. des Plantes VI, p. 103 (1877) has classed it with the *Aquilariees*. Both MIQUEL and BAILLON state that the genus *Gonystylus* is distinguished by a very short, campanulate receptacle with 5 almost valvate sepals, petals wanting, very numerous (35) filiform squamae inserted on the edge of the receptacle, 10 stamens incurved in the bud, peltate, basifixt anthers, a 4—5-carpelled ovary with one suspended ovule in each carpel, a very long curved style and a very thinly fleshy drupe (the size of an orange) containing 4—5 large, exalbuminous seeds. In Genera Plantarum, III, p. 205, BENTHAM says, on the contrary, that the stamens are indefinite ("stamina plurima") and that the same are "in fundo calycis circa ovarium seriata". In order to make a statement so contrary to anything before recorded of the genus, it must be taken for granted that BENTHAM must have made careful investigation, especially as MIQUEL states "stamina ni fallor 10" and in his plate (fig. 3) gives a transverse section through the flower in which 9—10 anthers are easily recognizable. Moreover, HOOKER states that *Gonystylus Maingayi* Hook. f. has numerous stamens. This, GILG, after a careful examination of very abundant material, was able to confirm. VAN TIEGHAM in Ann. Sc. Nat. VII. ser. vol. XVII, p. 240 (1893), has studied the anatomy of *Gonystylus* and upon anatomical differences has separated the two genera *Asclerum* and *Amyxa*.

GILG, in Engl. Bot. Jahrb. XVIII, p. 517 (1894) was the first to exclude *Gonystylus* from the *Thymelaeaceae*. He says that, in the *Thymelaeaceae*, even in the whole tribe *Thymelaeales*, not a single case of indefinite flowering organs occurs, and that in the perfect flower we have, at most, two rows of stamens. Also that a typical receptacle is wanting, "stamina in fundo calycis circa ovarium seriata". Furthermore, according to SOLEREDER, Syst. Wert der Holzstructur p. 232, no intrahadromic leptom (bicollateral vascular bundles) occurs, this character distinguishing the *Thymelaeales* from many other families, and in the leaf no secreting cells are known. These morphological and anatomical differences make it apparent that *Gonystylus* must be excluded from the *Thymelaeaceae*. GILG writes that he is not certain to what family *Gonystylus* is related, but that on account of some of the above mentioned characters, he believes it may perhaps be ascribed to the *Tiliaceae*. Later, in Nachr. Engl. und Prantl, Pflanzenfm., p. 231 (1897), he bases upon the genus a new family (*Gonystylaceae*). At present GILG places the *Gony-*

*stylaceae* in the Series *Malvales*, between the *Elaeocarpaceae* and the *Tiliaceae*.

GILG gives 7 species as belonging to this family all being found in Asia or the Malay Archipelago. They are as follows:

*Gonystylus bancanus* (Miq.) Gilg (= *G. Miquelianus* T. and B.) in Java, Sumatra, Banca.

*Gonystylus affinis* Radlk. (= *G. Beccarianus* V. Tiegh.).

*Gonystylus borneensis* (V. Tiegh.) Gilg (= *Aselerum borneense* V. Tiegh.).

*Gonystylus pluricorvis* Radlk. (= *Amyxa kutcinensis* V. Tiegh.).

*Gonystylus calophyllus* Gilg, all in Borneo.

*Gonystylus Maingayi* Hook. f., Malacca.

*Gonystylus Forbesii* Gilg, Sumatra.

TEYSMANN and BINNENDIJK give an account of the use of the wood of the Javanese species. "Beside the Benzoë the Malays use a fragrant wood, Kaju Garu, as a medicament and as an incense to prevent excessive rain. In the markets this wood is sold in little pieces at a low price. It is obtained from the interior of the trunk of old trees which have fallen down, or from those that are felled for the purpose. The wood is filled with an oily substance, which when burned, diffuses an odor like rhubarb. This species is regarded as belonging to the less valuable of the odoriferous woods, see Rumph. Herb. Amb. II, p. 29; it appears to be closely related to the "*Bastard-Agel-Holz*", alluded to by the same author somewhat later. In Bengal there is another variety which seems to be derived from *Aquilaria Agallocha*. Pulverized and boiled in water, the oil comes to the surface. Apparently in Borneo, Sumatra and Banca this *Aq. Agallocha* also occurs; from the first mentioned island there are specimens in the Botanical Garden in Buitenzorg."

Similar notes in regard to the use of the Philippine plant did not accompany the specimen of MERRILL. I take the opportunity of calling the attention of my countrymen to this interesting plant. In the Philippines it is possible that the wood may be similarly used. It would be interesting also to ascertain the distribution of this probably high tree.

The synonymy is as follows:

***Gonystylus baneanus*** (Miq.) Gilg in Nachtr. Engl.-Prantl Pflzfam. p. 232 (1897).

*Aquilaria bancana* Miq. Fl. Ind. bat. Suppl. 141, 355 (1860).

*Aquilaria macrophylla* Miq. l. c. 356 (both species are founded on sterile specimens).

*Gonystylus Miquelianus* Teysm. et Binnend. in Bot. Zeitung p. 265 (1862).

Luzon, Prov. Principe, Baler (MERRILL no. 1078).

According to GILG *G. bancanus* has only been discovered in Java, Sumatra and Banca. I have some doubts about the Philippine specimen being identical with the type, as it would be unusual if absolutely the same species occurred in the western part of the Malay Archipelago and in the Philippines. MERRILL's specimen has only fruit, and I can see no difference between the type and the Luzon plant. Better material would probably enable me to settle the question.

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## Leguminosae

(concluded from fasc. I, p. 21)

by

J. PERKINS.

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### Papilionatae.

#### **Millettia** W. et Arn.

1. **Millettia longipes** Perk. n. sp. Tree or shrub; branches terete, pale-brown, the young ones brown-pubescent. Leaves 12—16 mm long; rachis glabrous; leaflets terminal and in 1—2 opposite pairs, shortly petioled, obovate-oblong or oblong, obtusely and long-acuminate, base cuneate or rotundate-cuneate, subcoriaceous, glabrous on both surfaces, entire; main nerves 7—8, above faint, beneath very slightly prominent, spreading, interarching near the edge, 6—9 cm long, 2,5—3,5 cm wide. Panicles very long, spreading, slender, axillary, toward the ends of the branches, 15—20 cm long, composed of lax, few-flowered racemes; pedicels 5—8 mm long, slender, rusty-pubescent as are the peduncles, main-rachis and minute, linear deciduous bracts. Calyx wide, campanulate, slightly pubescent externally, 4 mm deep, teeth unequal two upper broad and short, lower one triangular one third as long as tube and somewhat longer than the rotundate lateral ones. Corolla 8—1 cm long, standard-limb orbicular, entire, clawed, uniformly sparsely pub-

rulous externally. Vexillary filament united with the others as far as the middle, except at the base. Ovary pubescent. Pod linear, 6—9 cm long, 1,5 cm wide, flat, rather woody, tapering to both ends, surface smooth, with a short decurved point; seeds 3.

Luzon Isl., Prov. Isabela, Malunu (WARBURG no. 12094, 12095, 12112; in flower).

2. **Millettia Merrillii** Perk. n. sp. Shrub (ex WARBURG); branches terete, gray, glabrous, when young slightly puberulous. Leaves 10—18 cm long; rachis angled; leaflets terminal and in 4—5 opposite pairs, shortly and stoutly petioluled; lowest pair broadly ovate with rotundate base, the rest ovate, ovate-oblong, or ob-ovate, base cuneate, all obtusely acuminate, 3,5—5,5 cm long, 1—2,5 cm wide, papyraceous, entire, glabrous on both surfaces; lateral nerves 6—7, slightly but distinctly prominent above and beneath, nerves and veins finely reticulate, petiolules 4—5 mm long. Racemes axillary, slender, often united at the base into panicles, 5—10 cm long; the bracts minute, deciduous, puberulous, under the calyx; pedicels 5—7 mm long. Calyx wide, campanulate, slightly pubescent externally, nearly truncate, 2 mm deep. Corolla 1 cm long, standard orbicular, entire, very slightly clawed, 2-callose at base. Vexillary filament extending half way up the sheath or at length free on one side. Ovary pubescent, 4—5-seeded. Pod linear, 9 cm long, 1 cm wide, flat, rather woody, tapering to both ends, smooth, with a short decurved point.

Luzon Isl., Prov. Manila, Montalbán (WARBURG no. 12891; with flowers and fruit in March 1888; no. 12578 in flower); Prov. Pampanga, Arayat, with buds in March 1903 (MERRILL no. 1387); Prov. Rizal, Antipolo (MERRILL no. 1625; in flower in March 1903).

### Dalbergia L.

1. **Dalbergia Cumingiana** Benth.

North Luzon, Prov. Cagayan, Alcalá (WARBURG no. 11738); Enrile (WARBURG no. 12448); Pica blanca (WARBURG no. 12450); Bugney (WARBURG no. 12451).

2. **Dalbergia ferruginea** Roxb.

Luzon Isl., Prov. Manila (WARBURG no. 12895; MEYEN, without no.); Montalbán (WARBURG no. 12682, in flower in March

1888 —, 12894); Enrile (WARBURG no. 12449); Prov. Rizal, Antipolo (MERRILL no. 1693, in flower in March 1903); Prov. Tayabas, Pagbilao (MERRILL no. 2421, in flower in April 1903); Mindoro Isl., Pola (MERRILL no. 2205); Mindanao Isl., Cotabato (WARBURG no. 14879, in flower in June 1888); Samar Isl. (Jagor no. 945).

3. **Dalbergia monosperma** Dalz.

Mindoro Isl., Baco (MERRILL no. 1260).

4. **Dalbergia tamarindifolia** Roxb.

Luzon Isl., Prov. Rizal, Antipolo (MERRILL no. 1712, in flower in March 1903); Paragua Isl., Ewiig River (MERRILL no. 699).

**Derris** Lour.

1. **Derris Cumingii** Benth. (Journ. Linn. Soc. 1860, IV. Suppl. p. 104). Luzon Isl., Prov. Rizal, Antipolo (MERRILL no. 1867, in flower in April 1903).

2. **Derris micans** Perk. n. sp. Woody vine (ex MERRILL); branches at first brown-pubescent, at length glabrous, brown, lenticular. Leaves 15—20 cm long; leaflets odd-pinnate, 3—4 pairs, oblong or obovate-oblong, obtusely acuminate, base rounded or cuneate, coriaceous, entire, above shining and almost glabrous except at midrib, beneath clothed with yellow-brown very minute hairs; main nerves 7—9, spreading, ascending, interarching near the edge, faint above, slightly prominent beneath. Panicles axillary, toward the ends of the branches, 6—8 cm long, pedicels 6—8 mm long, rusty-puberulous as are the peduncles main-rachis and small lanceolate bracts. Calyx broadly campanulate, toothed, 2.5 mm deep, 4 mm wide, pubescent. Pods obovate-oblong or oblong, pale yellow-brown, flat, glabrous, 3—5 cm long, 1.5—2 cm wide, winged rather more widely along the upper suture than the lower, with a short, slender, soft, decurved point at the upper end; 1—2-seeded (seeds destroyed by insects).

Luzon Isl., Prov. Rizal, Tanay (MERRILL no. 2284; in fruit in May 1903).

3. **Derris mindorensis** Perk. n. sp. A vine 10 m high; branches terete, at first brown-puberulous, later glabrous, brown, lenticular. Leaves 8—15 cm long; stipules small, lanceolate, deciduous; leaflets odd-pinnate, 3—4 pairs, obovate-oblong or

oblong, obtusely acuminate, base cuneate or rotundate-cuneate, entire, subcoriaceous, on both surfaces clothed with minute adpressed yellow-brown hairs, 3.5—6.5 cm long, 1.5—2.5 cm wide, rachis brown-pubescent, petiolules 5 mm long, stout, pubescent; lateral nerves 6—8 pairs, spreading, ascending, like the midrib depressed above and prominent beneath. Flowers in ample terminal and axillary panicles 15—20 cm long, their branches 4—10 cm long, spreading, slender; branchlets forming few-flowered (3—6-fld.) short racemes; rachis pedicels and bracts pubescent; the pedicels 5—8 mm long, slender, bracteate at their base and with 2 small lanceolate bracteoles very near the base of calyx. Calyx campanulate, 3 mm long, 5 mm wide, brown-puberulous, shortly, broadly, but distinctly toothed. Corolla white, about 8 mm long, standard-limb orbicular, puberulent externally, 7 mm diam. Vexillary filament united with the others as far as the middle, except at the base. Ovary villous.

Mindoro Isl., Palauan, in dry thicket (MERRILL no. 953; in April in flower).

4. **Derris multiflora** Benth.

Luzon Isl., Prov. Tayabas, Pagbalao (MERRILL no. 1969, in flower in April 1903).

5. **Derris polyantha** Perk. n. sp. Flowers in long, copious, axillary, simple or compound racemes reaching 24 cm in length, sometimes produced into short branches, each bearing a cluster of unequal slender pedicels, sometimes the flowers in fascicles; the pedicels 2-bracteolate under the calyx, the bracteoles ovate, minute; pedicels, bracts rachis and peduncles densely clothed with long, spreading, hirsute, rusty hairs. Calyx 2.5 mm deep, widely campanulate, the upper side shorter than the lower, rusty-pubescent, the teeth unequal, the two upper shorter and broader than the lower, triangular. Corolla 7 mm long, glabrous, the standard-limb orbicular. Vexillary filament free. Ovary silky, 2—3 seeded.

Luzon Isl., Prov. Pampanga, Arayat (MERRILL no. 1457; in flower in March 1903); Prov. Rizal, Antipolo (MERRILL no. 1692; in flower in March 1903).

Very near *Derris scandens* Benth. It is, however, easily distinguished by the hirsute-pubescent calyx and rachis. The ovary is 2—3 seeded in *Derris polyantha* and KING gives 6—8 seeds for *D. scandens*.

6. **Derris scandens** Benth.

North Luzon, Enrile (WARBURG no. 12453); Luzon, Prov. Pangas, Arayat (WARBURG no. 13726); Prov. Zambales, Palauig (WARBURG no. 13724).

7. **Derris sinuata** Benth.

North Luzon, Prov. Isabela, Digamai (WARBURG no. 12040); Malunú (WARBURG no. 12108); Prov. Cagayán, Alcalá (WARBURG no. 11737); San Fernando (WARBURG no. 11805); Luzon, Prov. Rizal, Antipolo (MERRILL no. 1734; in flower in March 1903); Prov. Zambales, Subig (MERRILL no. 2189; in flower in May 1903); Prov. Bataan, Bagac (WARBURG no. 13721); Mariveles (WARBURG no. 12890; MERRILL no. 2561); P. de Morong (WARBURG no. 13722, 13725).

8. **Derris uliginosa** Benth.

Culión Isl., (MERRILL no. 666; in flower in Febr. 1903); Mindanao Isl., Davao, Taumo (WARBURG no. 14656, 14657).

**Abrus** (L.) Adans.1. **Abrus precatorius** L.

Luzon Isl., Prov. Pampanga, Arayat (MERRILL no. 1434); Joló Isls. (WARBURG no. 14864); Mindoro Isl., Calapan (MERRILL no. 902); all in fruit.

2. **Abrus pulchellus** Wall.

North Luzon, Enrile (WARBURG no. 12433); Malunú (WARBURG no. 12096); Buguey (WARBURG no. 12434); Middle Luzon, Prov. Manila, Montalbán (WARBURG no. 12587, 12627); Mariveles (WARBURG no. 12901).

**Clitoria** L.1. **Clitoria Ternatea** L.

North Luzon, Prov. Cagayán, Ataulu (WARBURG no. 11740); Luzon Isl., Prov. Bataan, Dinalupihan (MERRILL no. 1580, in fruit); Prov. Pampanga, Arayat (MERRILL no. 1430; in flower and fruit in March 1903).

**Teramnus** Sw.1. **Teramnus labialis** Spreng.

Luzon Isl., Prov. Bataan, Mariveles (WARBURG no. 12879); Prov. Manila, Montalbán (WARBURG no. 12540, 12878).

**Erythrina** L.1. **Erythrina indica** Lam.

Luzon Isl., Prov. Tayabas, Guinayangan (MERRILL no. 2039); Pagbalao (MERRILL no. 1904).

2. **Erythrina lithosperma** Blume.

Luzon Isl., Prov. Tayabas, Sampaloc (WARBURG no. 12815).

3. **Erythrina ovalifolia** Roxb.

Luzon Isl., Prov. Manila, Montalbán (WARBURG no. 12647, 12887; in fruit in March 1888).

**Strongylodon** Vog.1. **Strongylodon crassifolius** Perk. n. sp. A climber; stem firm, glabrous with long, stout, woody circinate tendrils. Leaves 24—27 cm long; common petiole 9 cm long, glabrous; leaflets 3, long ovate, very shortly and obtusely acuminate, rounded at the base, with petiolules 1 cm long, glabrous, coriaceous, entire; main nerves 7—9 pairs, ascending, interarching near the edge, above faint, beneath prominent; length 13,5—16,5 cm, width 6—7 cm. Inflorescence in copious long racemes with many 1—4-flld. fascicles of pedicellate flowers, arising from small produced nodes. Calyx glabrous, 7 mm deep, campanulate, teeth unequal, broad, short, rounded, the two lateral ones the largest, bracteolate at base; bracteoles caducous. Corolla 3,5 cm long, standard ovate-lanceolate callose at base of lamina, acute, the short, obtuse, wings closely attached to the lamina of the narrowly lanceolate, curved, keel. Vexillary filament free. Ovary glabrous, stalked, surrounded at the base by a slightly toothed discus, 1—2-ovuled; style filiform.

Luzon Isl., Prov. Bataán, Mariveles (WARBURG no. 12899).

2. **Strongylodon Warburgii** Perk. n. sp. A climber with glabrous, firm, stem. Leaflets probably 3, ovate or ovate-oblong, very shortly and obtusely acuminate, cuneate at the base, entire with petiolule 1 cm long, subcoriaceous, glabrous on both surfaces, 3-nerved at base, central nerve with 3 pairs of arching, lateral, nerves all visible beneath, densely reticulated. Inflorescence in long, many-flowered, axillary, racemes with peduncles 25 cm long. Flowers in fascicles arising from small produced nodes. Calyx tubular, glabrous, 1 cm long, margin waved. Corolla

blue-green (ex WARBURG), 8,5 cm long, standard lanceolate callose at base of lamina, acute; wings short, obtuse, attached firmly to lamina of narrowly lanceolate curved keel. Vexillary filament free. Ovary velvety, 8-seeded, stalked, surrounded at the base by a slightly toothed discus; style filiform.

Luzon Isl., Prov. Tayabas, Sampaloc (WARBURG no. 12809; in flower in March 1888).

A very distinct species, although near *S. ruber* Vog., from which it is distinguished by its subcoriaceous leaves and its green flowers. It resembles *S. macrobotrys* A. Gray, U. S. Exploring Expedition p. 448 (1854), t. 49 in having an ovary with several ovules, but differs from it in having larger flowers which are green.

### **Mucuna** Adans.

#### 1. **Mucuna gigantea** DC.

Luzon Isl., Prov. Zambales (WARBURG no. 13713); Mindanao Isl. on the sea coast (WARBURG no. 14878).

#### 2. **Mucuna pruriens** DC.

Luzon Isl., Mariveles (WARBURG no. 12897); Prov. Manila, Montalbán (WARBURG no. 12585); Prov. Zambales (WARBURG no. 12806).

#### 3. **Mucuna sericophylla** Perk. n. sp. A woody climber, with deciduous rusty pubescence on younger branches. Leaves about 15 cm long; leaflets 3, above slightly, beneath densely tomentose, chartaceous, transversely rotundate-elliptic (wider than long), the lateral pair very oblique and truncate at the base, emarginate at the apex; main nerves 7 pairs, veins and nerves on both surfaces slightly conspicuous; length 5—6 cm, width 6,5—8 cm; petiole 8 mm long. Inflorescence in short-peduncled racemes reaching 35 cm in length; rachis drooping, finely silky; pedicels short (5 mm) from lateral projecting nodes. Calyx 7 mm long, grey-tomentose with many red, pungent bristles, tube campanulate, about as long as the lower lanceolate tooth; lateral teeth ovate-lanceolate, much shorter than the calyx-tube, 2 upper teeth minute, united at the base. Corolla about 4 cm long. Pod 6—7 cm long, 8 mm wide, recurved in lower half and abruptly hooked at the tip, clothed with dense, extremely pungent, subsistent, red-brown bristles.

Luzon Isl., Prov. Cagayán, Enrile (WARBURG no. 12438).

This specimen belongs in the same section as *Mucuna pruriens* DC. from which species it differs in the size, shape and pubescence of the leaves and the form and size of the calyx teeth.

**Spatholobus** Hassk.

1. **Spatholobus gyrocarpus** Benth.

North Luzon, Malunú (WARBURG no. 12106, in flower).

**Dioclea** H. B. et K.

1. **Dioclea reflexa** Hook. f.

Luzon Isl., Prov. Rizal, Antipolo (MERRILL no. 1623, in fruit).

**Pueraria** DC.

1. **Pueraria phaseoloides** Benth.

North Luzon, Enrile (WARBURG no. 12437, in flower); Mindanao Isl., Davao (WARBURG no. 14646).

2. **Pueraria Warburgii** Perk. n. sp. A shrub; branches terete, slender, woody, clothed with scattered, adpressed, grayish-yellow hairs. Leaves contemporaneous with flowers, 16—18 cm long; leaflets 3, membranous, dull-green, thinly adpressed-pilose above, light greenish-gray and thinly velvety-tomentose beneath, ovate, acutely acuminate, base oblique, margin entire, 6—9-nerved, nerves and veins above faint, beneath prominent, 9—10 cm long, 4—4.5 cm wide; petiole 6.5—8 cm long, densely clothed with very long spreading yellowish hairs especially near the base of the leaflets; petiolules of terminal leaflets 2 cm long, of lateral ones 5 mm long. Inflorescence of long-peduncled axillary, simple and compound racemes of fascicled flowers; peduncle 2—7 cm long; rachis puberulous; racemes 11—13 cm long, fascicles 6 mm apart, 2—4-fld., pedicels 2 mm long, pubescent, bracts and bracteoles minute, clothed with yellow bristly hairs, the bracteoles persistent. Calyx campanulate, 4 mm long, clothed with adpressed yellow hairs; teeth unequal, upper broad, and lower sublanceolate and as long as tube and one-third larger than the lateral triangular. Corolla 7—8 mm long, standard-limb suborbicular, slightly auriculated.

Mindanao Isl., Taumo, in a thicket (WARBURG no. 14664; in flower in June 1888).

This species is evidently closely related to *Pueraria textilis* Laut. et K. Schum. Fl. deutsch. Schutzgeb. p. 368 (1900) which

differs in having the branches, petioles and peduncles clothed with very long, spreading, hirsute hairs. *Pueraria Warburgii* resembles a specimen of the SARASIN BROTHER'S from Celebes with which it may prove to be identical. We have here another illustration of the affinity existing between the flora of Celebes and that of the Philippines, as already noticed in the case of several other plants (cf. fasc. I, p. 5).

### **Canavalia DC.**

#### **1. *Canavalia ensiformis* DC.**

North Luzon, Tuguegarao (WARBURG no. 11813, in fruit); Luzon, Prov. Manila, Montalbán (WARBURG no. 12877); Mindoro Isl., Baco (MERRILL no. 1292); Joló Isls. (WARBURG no. 14875); Lubang Isl. (MERRILL no. 963).

#### **2. *Canavalia obtusifolia* DC.**

North Luzon, Buguey (WARBURG no. 12439); Luzon, Prov. Manila (MERRILL no. 379, in flower in August 1902); Prov. Pampanga, Arayat (MERRILL no. 1424); Prov. Zambales, Iba (MERRILL no. 341); Middle Luzon, Cabangan (WARBURG no. 13731); Mindanao Isl., Davao, Taumo (WARBURG no. 14654, 14874).

### **Cajanus DC.**

#### **1. *Cajanus indicus* Spreng.**

Middle Luzon, Binangonan (WARBURG no. 13715); Luzon, Prov. Manila, Montalbán (WARBURG no. 12593, in flower in March 1888); Mariveles (WARBURG no. 12900); Culión Isl. (MERRILL no. 452, in flower in December 1902).

### **Atylosia W. et Arn.**

#### **1. *Atylosia mollis* Benth.**

Luzon Isl., Prov. Manila (WARBURG no. 12896); Montalbán (WARBURG no. 12636); both in fruit.

#### **2. *Atylosia scarabaeoides* Benth.**

Luzon Isl., Prov. Pampanga, Arayat (MERRILL no. 1431); Mindanao Isl., Davao, Sibulan (WARBURG no. 14666).

### **Rhynchosia Lour.**

#### **1. *Rhynchosia calosperma* Warb.**

Luzon Isl., Prov. Pampanga, Arayat (MERRILL no. 1443, in fruit in March 1903).

**Flemingia** Roxb.1. **Flemingia congesta** Roxb.

North Luzon, Enrile (WARBURG no. 12444); Prov. Manila, Montalbán (WARBURG no. 12500, 12886, in flower in March 1888); Prov. Bataan, Dinalupihan (MERRILL no. 1601); Prov. Pampanga, Arayat (MERRILL no. 1454); Prov. Rizal, Antipolo (MERRILL no. 1324); Culión Isl. (MERRILL no. 687).

2. **Flemingia strobilifera** R. Br.

Luzon Isl., Prov. Manila, Montalbán (WARBURG no. 12652); Prov. Pampanga, Arayat (MERRILL no. 1425); Prov. Rizal, Antipolo (MERRILL no. 1335); Culión Isl. (MERRILL no. 439); Mindanao Isl., Davao (WARBURG no. 14682).

**Phaseolus** (Tourn.) L.1. **Phaseolus adenanthus** Mey.

Luzon Isl., Prov. Manila (MERRILL no. 632; WARBURG no. 12876); Mariveles (WARBURG no. 12881).

2. **Phaseolus lunatus** L.

North Luzon, Malunú (WARBURG no. 12099, 12114); Pica blanca (WARBURG no. 12441); Middle Luzon, Mariveles (WARBURG no. 12880); Mindanao Isl., Zamboanga (WARBURG no. 14871).

3. **Phaseolus Mungo** L.

Luzon Isl., Prov. Tayabas, Sampaloc (WARBURG no. 12816, 12817); Paragua Isl., Point of Separation (MERRILL no. 808); Mindanao Isl., Davao (WARBURG no. 14650).

4. **Phaseolus semirectus** L.

Luzon Isl., Manila (MERRILL no. 30).

**Vigna** Savi.1. **Vigna lutea** A. Gray.

Mindanao Isl., Zamboanga (WARBURG no. 14872).

2. **Vigna luteola** Benth.

Mindanao Isl., Davao (WARBURG no. 14653).

3. **Vigna pilosa** Baker.

North Luzon, Prov. Cagayán, Lallo (WARBURG no. 11512).

4. **Vigna vexillata** A. Rich.

Mindanao Isl., Davao, Sibulan (WARBURG no. 14648).

**Pachyrrhizus** Rich.

1. **Pachyrrhizus angulatus** Rich.

Middle Luzon, Bordeos (WARBURG no. 13730).

**Dolichos** L.

1. **Dolichos Lablab** L.

North Luzon, Malunú (WARBURG no. 12098); Culión Isl. (MERRILL no. 522).

**Psophocarpus** Neck.

1. **Psophocarpus tetragonolobus** P. DC.

Luzon Isl., Manila (MERRILL no. 646); Mindanao Isl., Davao (WARBURG no. 14651).

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**Burseraceae**

by

J. PERKINS.

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**Canarium** (Rumph.).

1. **Canarium bersamifolium** Perk. n. sp. Tree; young branches stout, slightly rusty-pubescent. Leaves about 40 cm long, common-petiole glabrous and longitudinally furrowed, imparipinnate; leaflets about 21, oblong-lanceolate or lanceolate, shortly, acutely acuminate, at the base rounded, slightly oblique, chartaceous, glabrous on both surfaces. Main nerves 16—20 pairs, obscure above, bold beneath, curved, spreading, interarching near the edge, densely reticulate, veins prominent on both surfaces; length 9—11 cm, width 3.5—4 cm; petiole 4—5 mm long. Fruit in rather short axillary racemes; the drupe ovoid, sharply 3-angled, with a few scattered hairs on the outside, 2.5—3 cm long, 1.2—1.6 cm in diam., tapering to the top, the persistent calyx 3-lobed, woody, pubescent on both surfaces.

Luzon Isl., Prov. Zambales, Subic (MERRILL no. 1745 type in fruit, April 1903); Prov. Rizal, Tanay (MERRILL no. 2349 May 1903).

A species which comes near to *Canarium Vrieseanum* Engl. but differs notably in the number of leaflets and the glabrousity and form of the leaves.

2. **Canarium calophyllum** Perk. n. sp. Tree?; young branches stout, brown-pubescent, ultimately glabrous and gray. Leaves 18—21 cm long, common-petiole glabrous, imparipinnate; leaflets oblong or oblong-elliptic, shortly and bluntly acuminate, at the base cuneate or somewhat rounded, entire, shining above, pale-brown beneath (when dry), coriaceous, on both surfaces glabrous with distinct reticulations; main nerves 13—14 pairs, prominent, shining, broad and conspicuous on the lower surface, depressed on the upper, ascending, spreading, interarching very near the edge; length 8—10 cm, width 4—5 cm; petiolules stout, 1 cm long. Female flowers unknown; fruiting racemes about 10 cm long, peduncles stout. Fruit small, narrowly ovoid-ellipsoid, subtrigonous, 12—15 mm long, 8 mm diam, pubescent; the persistent calyx 3-angled, woody, pubescent; stone thick, bony.

Luzon Isl., Prov. Rizal, Bosoboso (MERRILL no. 1858; in fruit in April 1903).

This species is closely allied to *Canarium microcarpum* Willd., the chief differences being (1) that the persistent calyx is much larger and more deeply lobed than in *Canarium microcarpum* Willd.; and (2) that the leaves of this are coriaceous, with very stout petioles and petiolules.

3. **Canarium carapifolium** Perk. n. sp. Tree 20—25 m high; young branches stout, brown-pubescent. Leaves 27—40 cm long, common-petiole glabrous, imparipinnate; leaflets ovate, ovate-oblong or ovate-lanceolate, the base rounded, often slightly unequal-sided, acutely long-acuminate, chartaceous or sub-coriaceous, entire, the upper surface shining, glabrous, the lower glabrous except at the midrib and main nerves which are clothed with a few short hairs; main nerves 13—17 pairs, spreading, curving, interarching near the edge, beneath stout, shining, conspicuous (when dry), above slightly prominent, veins parallel, at right angles to the nerves; length 14—18 cm, width 4—7; petiolules about 1 cm long, the terminal one longer. Racemes axillary, clustered at the ends of the branches, 3—5 cm long, brown-pubescent, with a few short branches; the flowers few and in shortly pedicelled clusters with minute bracteoles beneath

the calyx. Calyx tubular, about as long as the petals, with 3 short triangular teeth, brown-pubescent outside. Petals 3 mm long, 1,5 mm wide, brown-pubescent outside. Stamens 3, 4, 6, shorter than the free, glabrous, filaments, which are inserted outside the pubescent, fleshy, deeply lobed disk. Ovary ovoid, densely brown-pubescent; style short and thick; stigma 3-lobed. Fruit ovoid-ellipsoid, apex acute, rounded, obtuse, glabrous, sometimes somewhat trigonous, 2,5—5 cm long, 1,5 cm in diam; the woody persistent calyx 3-angled, the stone bony.

Luzon Isl., Prov. Tayabas, Laguimanoc (MERRILL no. 2129; with flowers and fruit in April 1903); type Pitoga (MERRILL no. 2135; April 1903); Pagbalao (MERRILL no. 1898; no. 1894 April 1903); Prov. Camarines Sur, Pasacao (AHERN no. 63 a. 1902); Mindoro Pinamalayan (MERRILL no. 2146; May 1903).

Though closely related to *Canarium denticulatum* Bl., this is nevertheless easily distinguished by its entire leaflets and its larger fruit. Perhaps this widely distributed tree is identical with *Canarium album* Blanco and *Canarium luxonicum* Miq., but both are nomina nuda, absolutely insufficiently described. ENGLER has based a distinct section on a Philippine species of *Canarium*, characterized by only 3 stamens, while all other *Canarium* species have 6. I wish to draw attention to the fact, that in MERRILL's plant, described above as *Canarium carapisolum*, I found sometimes 3, 4 and 6 stamens. From *Canarium triandrum* our species differs in the nervation of the leaves. Perhaps this species is a transitional form and the Section *Triandra* must be abandoned.

4. ***Canarium connarifolium* Perk. n. sp.** Tree 20 m high; young branches, slender, drooping (ex MERRILL), rusty-puberulous, ultimately glabrous, lenticellate. Leaves 10—12 cm long, imparipinnate; leaflets 3, ovate or lanceolate-ovate, the base cuneate or sub-cuneate, narrowly and long-acuminate, coriaceous mucronate, entire, above shining, on both surfaces glabrous; main nerves 8—10 pairs, spreading, curving, interarching near the edge, rather prominent on both surfaces (when dry); length 6,5—8 cm, width 2—3,5 cm; petiolules 0,8—1 cm long, the terminal one longer. Male panicles axillary, 3—6 cm long, minutely rusty-puberulous; the flowers clustered at the apices of the branches; bracts minute, ovate-triangular, on the outside

puberulent. Flowers about 2 mm long, white (ex MERRILL) slightly pedicellate. Calyx somewhat shorter than the corolla, campanulate, deeply cut into 4 ovate, triangular lobes, 1 mm long, slightly pubescent on the outside, glabrous inside. Petals 4, slightly larger than the sepals, ovate, pubescent outside, glabrous inside. Stamens 8; anthers ovate, base cordate, about as long as the glabrous slightly dilated filaments which are inserted outside the glabrous, fleshy disk; rudimentary ovary very small, rusty-pubescent.

Paragua Isl., Ewiig River (MERRILL no. 787; in flower in Feb. 18, 1903).

5. **Canarium Cumingii** Engl.

Luzon Isl., Prov. Rizal, Antipolo (MERRILL no. 1731).

6. **Canarium gracile** Engl.

Mindanao Isl., Davao, Taumo (WARBURG no. 14272).

7. **Canarium juglandifolium** Perk. n. sp. Tree?; young branches slender, tawny-pubescent. Leaves about 7 cm long, rachises tawny-pubescent, stipules (if any) deciduous; leaflets 5—7, membranaceous, ovate, ovate-elliptic, shortly, abruptly and narrowly acuminate, the lower ones at the base rounded, oblique, the terminal at the base cuneate, entire, above glabrous, beneath minutely reticulate, thinly clothed with minute yellow hairs; main nerves 12—14 pairs, spreading, ascending, interarching at the edge, nerves and veins on both surfaces rather prominent especially beneath; length 4,5—7,5 cm, width 3—4 cm; lateral petiolules 1—1,5 cm long, terminal 2,5 cm long. Panicles 9—11 cm long, axillary, clustered at the ends of the branches. Flowers in peduncled or sessil fascicles, 4 mm long, with minute, deciduous bracteoles below the calyx. Calyx 2,5 mm long, campanulate, deeply cleft into 3 ovate, triangular lobes, tomentose outside, glabrous inside. Petals 3, slightly longer than the calyx, oblong, with a short inflexed apex, less tomentose on the outside, than the calyx, glabrous inside. Stamens 6; anthers oblong; filaments shorter than the anthers, flat, dilated at the base. Disk orbicular hairy. Ovary broadly ovoid, densely yellow-tomentose, narrowed into the thick pubescent style; stigma capitate, 3-lobed.

Luzon Isl., Prov. Zambales, Subic (MERRILL no. 1974; in flower in April 1903).

8. **Canarium lucidum** Perk. n. sp. Tree?; young branches thinly pubescent, ultimately glabrous, gray, lenticellate. Leaves 6—10 cm long, common-petiole glabrous; leaflets 3—5, coriaceous, oblong, apex rounded or acute, the base rounded or blunt, entire, smooth and shining above, dull beneath, on both surfaces glabrous; main nerves 6—9, pairs, spreading, ascending, interarching near the edge, beneath stout, conspicuous (when dry), above faint; length 4.5—6.5 cm, width 2—3 cm; petiolules 5 mm long. Stipules ovate-linear, thick, thinly pubescent, persistent, 2 mm long. Male panicles 5.5—7.5 cm long, axillary, clustered at the extremities of the branches, somewhat numerous; the lower flowers in bracteolate clusters, the upper solitary, sessile. Calyx campanulate, coriaceous, with 3 broad, ovate, triangular teeth, on both surfaces thinly rusty-pubescent, 2 mm long. Petals 3, longer than the calyx (4 mm), thinly pubescent outside except the glabrous edges, oblong, concave, glabrous inside. Stamens 5—6, the anthers oblong, slightly shorter than the filaments which are noticeably dilated in the lower half, and slightly united at the base into a very short tube inserted outside the rudimentary, fleshy disk; rudimentary ovary short, broad, glabrous.

Luzon Isl., Prov. Principe, Baler (MERRILL no. 1056 in flower in a. 1903).

9. **Canarium luxurians** Engl.

Luzon Isl., Prov. Bataan, Bagac (WARBURG no. 13293); Mt. Mari-veles (MERRILL without no.); Prov. Pampangas, Arayat (WARBURG no. 13291); Prov. Rizal, Tanay (MERRILL no. 2348, in flower in May 1903); Prov. Zambales, Palauig (WARBURG no. 13292); Culión Isl. (MERRILL no. 663).

10. **Canarium ovatum** Engl.

Mindoro Isl., Pola (MERRILL no. 2472).

11. **Canarium pachyphyllum** Perk. n. sp. Tree 13 m high; young branches stout, glabrous, lenticellate. Leaves 35—40 cm long, common-petiole glabrous and longitudinally furrowed, imparipinnate; leaflets 7—9, coriaceous, oval-oblong or oblong, sometimes oblong-lanceolate, abruptly acuminate, at the base rounded, very oblique, glabrous on both surfaces, shining above, nerves and midrib prominent on both surfaces, veins obsolete above, distinct below; main nerves 9—11 pairs, spreading, slightly ascending,

interarching near the edge; length 8—15 cm, width 3—6 cm, the lower leaflets the smallest; petiolules 1,5—2 cm, glabrous; stipules ovate-oblong, chartaceous, sometimes persistent. Panicles of male flowers terminal and axillary, numerous, 6—12 cm long, with large, ovate, glabrous, thick, persistent bracts at their base, the short branchlets bearing the flowers at their extremities in bracteate fascicles. Buds globular, 5 mm in diam., longer than the stout pedicels. Flowers 8 mm long; bracteoles broadly ovate, papyraceous, pubescent outside. Calyx narrowly campanulate, with 3 broad teeth which are densely brown-pubescent outside, and thinly pubescent inside, 5 mm long. Petals 3, fleshy, longer than the calyx, ovate-oblong, brown-pubescent outside. Stamens 6, filaments about as long as the anthers, free, attached outside the disk; rudimentary ovary almost glabrous. Panicles of female flowers about as long as the males, fewer-flowered, but the flowers 12 mm in length. Stamens 6, shorter than the pistil, and smaller than in the male flower. Ovary globular with a short, thick style; stigma large, capitate, 3-lobed. Drupe ovoid, yellow-pubescent, trigonous, 4,5—7 cm long, 2—2,5 cm diam., tapering to the top, the persistent thickened calyx forming an open, sub-entire cup at its base.

Island of Samar (JAGOR no. 977, ♀, type in flower a. 1861, no. 978, ♂, type, in flower a. 1861); Luzon, Prov. Morong, Binangonan (WARBURG no. 13290); Prov. Tayabas, Guinayangan (MERRILL no. 2067 in fruit a. 1903).

This species is best distinguished from *Canarium denticulatum* Bl. by its ovate, glabrous stipules, those of *C. denticulatum* being digitate. The flowers in our species are larger and the inflorescence much smaller than in BLUME'S plant.

12. **Canarium polyanthum** Perk. n. sp. Tree?; young branches stout, glabrous, brown. Leaves 30 cm long, imparipinnate; common-petiole longitudinally furrowed, thinly pubescent; leaflets 3—5 ovate-oblong or ovate-lanceolate, membranaceous or subpapyraceous, narrowly and acutely acuminate, at the base rounded, often slightly unequal-sided, sometimes cuneate, both surfaces glabrous, except the sparsely pubescent midrib, entire; main nerves 15—17 pairs, ascending, curving, interarching near the edge, above nerves and veins obscure, below slightly

prominent; length 10—16 cm, width 3,5—5 cm; petiolules 9—11 mm long. Male panicles axillary, clustered near the ends of the branches, 14—26 cm long, with many short, spreading branches; flowers numerous, 5 mm long, on clusters at the apices of the branches, shortly pedicelled. Calyx widely campanulate, 2 mm long, the mouth with 3 broad, rather shallow teeth, minutely rusty-pubescent outside, puberulent inside. Petals 3, longer than the calyx, ovate, acute, the base truncate, rusty-pubescent outside, glabrous inside. Stamens 6, the filaments shorter than the oblong anthers, flattened, dilated at the base, attached outside the truncate, pubescent rudimentary ovary.

Luzon Isl., Prov. Camarines Sur, Pasacao (AHERN no. 134).

This is allied to *Canarium Kadondon* A. W. BENN. but is readily distinguished from it by the form, size and consistency of the leaves. The flowers and inflorescence are also larger in this species than in *C. Kadondon*.

13. ***Canarium polyneurum*** Perk. n. sp. Tree 15 m high; young branches sparsely pubescent, ultimately glabrous and lenticillate. Leaves about 30 cm long; rachises glabrous; leaflets thinly coriaceous, lower ones ovate or ovate-oblong, the base rounded, slightly oblique, the rest oblong, the base cuneate or cuneate-rounded, all shortly, broadly, bluntly and somewhat abruptly acuminate, entire, shining above, glabrous on both surfaces, densely reticulate, veins prominent on both surfaces (when dry); main nerves 14—20 pairs, spreading, curving interarching very near the edge, faint above, prominent below; length 8—17 cm, width 4,5—6 cm; petiolules 1,25—1,75 cm long. Male panicles 6—12 cm long, axillary, clustered near the ends of the branches, with lateral bracteolate few-flowered fascicles. Flowers (in bud) about 2 mm long. Calyx thinly pubescent on the outside. Petals 3, oblong, thinly pubescent outside, glabrous inside with a short inflexed apex. Stamens 5—6, oblong, longer than the filaments; rudimentary ovary pubescent.

Paragua Isl., Ewiig River (MERRILL no. 723 in bud Feb. 1903).

Though closely related to *C. legitimum* Miq. it is nevertheless easily distinguished by its longer and thinner petiolules.

14. ***Canarium Radlkoferi*** Perk. n. sp. A tree 20 m high; young branches stout, brown-pubescent. Leaves 31—56 cm long,

common-petiole pubescent and longitudinally furrowed, imparipinnate; leaflets chartaceous or thinly coriaceous, oblong-lanceolate to elliptic-oblong, entire and sometimes slightly undulate, shortly and bluntly acuminate, the base rounded, slightly oblique, on both surfaces glabrous and shining; main nerves 10—14 pairs, slightly ascending, curving, interarching, reticulations and nerves distinct on both surfaces; length 9—13 cm, width 2,5—4,5 cm; petiolules 3—5 mm long. Male panicles axillary, clustered at the ends of the branches, 34 cm long, glabrous with many long spreading branches; the flowers numerous, in dense shortly pedicelled clusters. Calyx campanulate, about  $\frac{1}{3}$  as long as the corolla with 3 broad, rounded teeth, densely brown-tomentose outside, yellow-pubescent inside. Petals about 1 cm long, thick, concave, blunt, pubescent on both surfaces. Anthers 6, much shorter than the slender, pubescent filaments. Disk-lobes densely hairy. Female flowers not seen; the fruiting racemes 8—14 cm long. Drupe ovoid, clothed with long, stout, stiff hairs, 11 mm long, 7 mm in diam., peduncles stout; the persistent calyx 3-angled, woody.

Luzon Isl., Prov. Rizal, Bosoboso (MERRILL no. 1851; ♂, in flower in April 1903); Prov. Camarines Sur, Pasacao (AHERN no. 117, ♀, in fruit a. 1902); Island of Mindoro, Pola (MERRILL no. 2230, ♂, in flower May 1903).

The inflorescence, the flowers and the petiole of this species resemble very closely those of *Canarium hispidum* Blume. The leaves, however, of our plant are perfectly glabrous, while those of BLUME'S are hispid on the under surface.

15. **Canarium stachyanthum** Perk. n. sp. Tree?; young branches brown-pubescent. Leaves 18—40 cm long, rachises pubescent or subglabrous, imparipinnate; stipules lanceolate, deciduous; leaflets 4—6 pairs, papyraceous, opposite, ovate, ovate-oblong or oblong, abruptly narrowly, long-acuminate or caudate, the base rounded, often very oblique, undulate, shining and glabrous above, beneath glabrous or clothed with very minute, scattered hairs; main nerves 10—17 pairs, slightly ascending, curving, interarching near the edge, reticulations and nerves distinct on both surfaces; length 7—17,5 cm long, width 4—6 cm wide; petiolules 0,75—1,25 cm long. Male panicles axillary, crowded

at the extremities of the branches, rachis brown-pubescent, the lateral branches very short, the flowers in small, dense fascicles at their apices or sometimes solitary, sessile; bracts minute, ovate, brown-pubescent, deciduous. Calyx campanulate, 3 mm deep, with 3 ovate rather short teeth, brown-pubescent outside. Petals oblong, 5 mm long, outside brown-puberulous. Stamens 6, linear, shorter than the glabrous, flattened filaments which are united at the base for a short distance; rudimentary ovary large, somewhat pubescent.

Luzon, Manila (WARBURG no. 13240 type in flower); Prov. Zambales, Subic (MERRILL no. 1748, April 1903); Prov. Isabela Malunú (WARBURG no. 11675); Mindoro Isl., Abonabon (MERRILL no. 2177; in bud May 1903).

This is closely allied to *Canarium Cumingii* Engler and *Canarium Merrillii* Perk. but differs from both in the form of the leaf.

The specimen no. 13240 of WARBURG, being the most complete, I regard as the type of this species. MERRILLS no. 2177 differs in some respects from the type, the leaves being glabrous, but as the structure of the flower is the same in both specimens, I have not ventured to establish a new species upon it. Number 11675 of WARBURG is sterile, therefore, it is impossible to know if it really belongs to this species.

16. **Canarium thyrsoideum** Perk. n. sp. Tree 29 m high (ex MERRILL); young branches stout, tawny-pubescent. Leaves imparipinnate, 32—36 cm long; common-petiole with a few scattered hairs, longitudinally furrowed; leaflets about 11, ovate, ovate-oblong or oblong, broadly and abruptly acuminate, at the base rounded, oblique, papyraceous, entire, glabrous on both surfaces, shining above, reticulations minute and distinct on both surfaces when dry; main nerves 13—16 pairs, ascending, spreading, rather more prominent on the lower surface; length 6—12 cm, width 4—4.5 cm; lateral petiolules 1—1.5 cm long, terminal 3—3.5 cm long; stipules linear, tomentose, deciduous, 5 mm long. Panicles axillary, clustered at the extremities of the branches, 9—24 cm long. Flowers (very young) 2 mm long, in lateral fascicles that are peduncled or subsessile. Calyx thinly yellow-pubescent, on both surfaces. Petals 3, oblong with a short inflexed apex, slightly pubescent outside, glabrous

inside. Stamens 6; anthers oblong, longer than the glabrous filaments which are attached outside the glabrous corrugated disk; rudimentary ovary minute, pubescent. Female flowers about 3 mm long, in few-flowered panicles, 25—35 cm long. Calyx campanulate with 3 ovate, triangular lobes, thinly pubescent outside, 2,5 mm long. Stamens small; anthers as long as the filaments, ovate. Ovary yellow-pubescent. Disk-scales orbicular. Drupe young.

Luzon Isl., Prov. Tayabas, Pitoga, in sandy soil, on gentle slope (MERRILL no. 2119; with fruit and flowers April 1903); Mindoro Island, Polo (MERRILL no. 2256; ♂ in flower May 1903).

17. **Canarium euryphyllum** Perk. n. sp. Tree; young branches slender, glabrous, lenticellate. Leaves 10—15 cm long, common-petiole minutely pubescent; leaflets 7, chartaceous, opposite, obovate or obovate-lanceolate, gradually narrowed in the lower third to the short dilated petiole, narrowly abruptly and long-acuminate, shining and glabrous above, dull beneath, the reticulations minute and distinct below (when dry); main nerves 8—12 pairs, spreading, curving interarching near the edge, prominent beneath; length 4,5—8,5 cm, width 2—3 cm; petiolules 5 mm long. Inflorescence racemose, axillary, about 7 cm long, puberulent. Flowers about 5 mm long, few, shortly pedicellate. Calyx broadly campanulate, 2 mm long, cut for half its length into 3 ovate, triangular teeth, pubescent on both surfaces. Petals 3, longer than the calyx, oblong, thick, pubescent outside, glabrous inside, mucronate. Anthers ovate-linear one half as long as the slender filaments, the latter glabrous, flattened, dilated, and very slightly united at the base. Disk-scales orbicular, pubescent on the edges. Ovary ovoid, hirsute; stigma 3-grooved, glabrous. Fruit ovoid, 2 cm long, 1 cm wide, clothed with a few, scattered soft hairs, tapering to the top; persistent calyx small, 3-lobed, pubescent.

Luzon, Prov. Principe, Baler (MERRILL no. 1045, type, in flower in a. 1903 [MERRILL no. 1081 with fruit in a. 1903]).

18. **Canarium Warburgianum** Perk. n. sp. Tree? Leaves reaching 6 cm in length, common-petiole glabrous longitudinally furrowed, imparipinnate; leaflets numerous, chartaceous, oblong-lanceolate, narrowly and long-acuminate, at the base rounded,

slightly oblique, on both surfaces glabrous, entire; main nerves about 18 pairs, spreading, ascending, reticulations and nerves distinct on both surfaces; length 10—20 cm, width 4—5 cm, petiolules glabrous, 9—10 mm long. Female flowers not seen; fruiting panicle 25 cm long. Ripe drupe ovoid-ellipsoid, glabrous, trigonous, blunt at each end, style persistent 2.75 cm long, 1.5 cm in diam.; the pedicel stout, short, subglabrous; the 3-angled, pubescent, woody calyx and the pubescent disk scales persistent; stone bony.

Luzon, Isabela, Malunú (WARBURG no. 11795 with fruit).

The nearest ally of this is *Canarium altissimum* Bl. but that has much shorter, pubescent petiolules and leaves that are hairy on the under surface.

### **Garuga Roxb.**

1. **Garuga mollis** Turez.

Mindoro Isl., Pinamalayan (MERRILL no. 2167).

## **Elaeocarpaceae<sup>1</sup>**

by

J. PERKINS.

### **Elaeocarpus L.**

1. **Elaeocarpus floribundus** Blume.

Mindanao Isl., Surigao (AHERN no. 403).

2. **Elaeocarpus multiflorus** F. Vill.

Luzon Isl., Prov. Rizal, Antipolo (MERRILL no. 1719); Mindoro Isl., Pola (MERRILL no. 2400; both in flower March to May 1903).

3. **Elaeocarpus oblongus** Gaertn.

Middle Luzon, Siniloan (WARBURG no. 13465; Bordeos (WARBURG no. 13466); Mindanao Isl., Surigao (AHERN no. 352, 382; in flower, 1902); Mindoro Isl., Baco (MERRILL no. 1174; in flower in January 1903).

1) Several diagnoses of new species were kindly given me for publication by Prof. O. Warburg. — J. Perkins.

4. **Elaeocarpus philippensis** Warb. n. sp. Ramis tenuibus teretibus glabris striolatis, petiolis  $1\frac{1}{2}$ —2 cm longis in sicco nigrescentibus tenuibus apice incrassatis, foliis subpergamaceis ellipticis 8—10 cm longis  $2\frac{1}{2}$ —4 cm latis apice acuminatis basi acutis margine crenatis glabris in sicco fuscescentibus, venis utrinque 5 curvato-ascendentibus, nervis tertiaris reticulatis vix distinctis. Inflorescentiis axillaribus vel ex axillis defoliatis 6—7 cm longis, rachi subpuberula, pedicellis usque 1 cm longis puberulis, sepalis 5 lanceolatis 6 mm longis in sicco fuscescentibus extus vix puberulis, intus glabris margine tomentosis, petalis sepalis aequilongis basi angustioribus apice valde dilatatis usque ad  $\frac{2}{5}$  fimbriatis, intus fere omnino, extus in parte basali et laterali longe sericeo-villosis, staminibus ca. 12, antheris elongatis puberulis apice longe acuminatis et subbarbatis, disco, ovario et styli subulati parte basali villosis.

Philippines (CUMING without no.).

Die Art steht *E. multiflorus* (Turcz) F. Vill von den Philippinen (CUMING no. 873) sehr nahe, unterscheidet sich aber durch die nicht mit einer deutlichen Seta versehenen, sondern nur lang zugespitzten und gebärteten Antheren, auch sind die Petalen bei *E. multiflorus* nach oben verschmälert mit ganz kurzer Zerschlitzung.

5. **Elaeocarpus villosiusculus** Warb. n. sp. Ramis teretibus fuscis longe villosiusculis, petiolis tenuibus  $1\frac{1}{2}$ —2 cm longis, apice incrassatis villosis, foliis membranaceis 8—12 cm longis 4—6 cm latis ellipticis basi subacute apice breviter cuspidatis acutis margine crenulatis supra demum glabris, subtus in nervis villosiusculis in limbo vix pubescentibus, venis utrinque 6—8 subcurvatis, nervis tertiaris vix distinete subparallelis et reticulo subtus prominulis. Inflorescentiis axillaribus usque 10 cm longis villosiusculis, floribus immaturis extus dense griseo-sericeo-villosis, sepalis 5 intus glabris, petalis pro maxima parte apice glabris profunde fimbriatis, antheris acuminatis ut videtur pro parte barbatis.

Luzon, Prov. Tayabas, Sampaloc (WARBURG no. 13071).

Diese nur in jugendlichem Zustande der Blüten vorliegende Art unterscheidet sich von sämtlichen bisher bekannten *Elaeocarpus*-Arten der Philippinen durch die Behaarung; da sie spitz zulaufende Antheren besitzt, dürfte sie sich dem *E. philippensis* am nächsten anschließen.

**Muntingia L.**1. **Muntingia calabura** L.

Luzon Isl., Prov. Cagayan, Tuguegarao (MERRILL no. 193; in flower in June 1903); M. Luzon, Bordeos (WARBURG no. 13469); Manila, in a garden (WARBURG no. 13167); Montalbán (WARBURG no. 12542).

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**Tiliaceae**

by

J. PERKINS.

**Brownlowia Roxb.**

1. **Brownlowia suluensis** Warb. n. sp. Ramis teretibus mox glabris; petiolis brevibus crassis 1 cm longis; foliis ovatis vel late lanceolatis (usque 28 cm longis, 16 cm latis) apice acutis basi plus minus obliquis semi-cordatis vel cordatis trinerviis, margine integris, coriaceis, supra glabris, subtus dense lepidotis, nervis basalibus medium folium haud attingentibus, venis utrinque ca. 6 valde curvatis, nervis tertiaris et reticulatione subtus prominentibus. Inflorescentia paniculata terminali et ex axillis superemis divaricata ferrugineo-furfuraceo-tomentella; floribus breviter (2 mm) et crasse pedicellatis 6 mm longis 4 mm latis, calyce dense lepidoto-tomentello lobis triangularibus acutis 2 mm longis, petalis glabris spatulatis calycis lobos duplo superantibus, staminibus ♂ glabris, antheris sphaeroideis, staminodiis 5 filiformibus complanatis ovario dense tomentoso haud lobato nec sulcato, stylo filiformi apice haud incrassato 2 mm longo.

Sulu Isls., Joló (WARBURG no. 14927).

**Diplodiscus Turcz.**1. **Diplodiscus paniculatus** Turcz.

Luzon Isl., Prov. Camarines Sur, Pasacao (AHERN no. 10, in flower); Siniloan (WARBURG no. 13472); North Luzon, Malunú (WARBURG no. 11866); Piña blanca (WARBURG no. 12412); Mindanao Isl., Davao (WARBURG no. 14441).

**Corchorus L.****1. Corchorus acutangulus Lam.**

North Luzon, Enrile (WARBURG no. 12415); Mindanao Isl., (WARBURG no. 14926); Davao (WARBURG no. 14439).

**Grewia L.****1. Grewia acuminata Juss.**

Luzon Isl., Prov. Zambales (WARBURG no. 13467). — det. O. Warburg.

**2. Grewia asiatica L.**

North Luzon, Enrile (WARBURG no. 12409). — det. O. Warburg.

**3. Grewia asiatica L. var. vestita Mast.**

North Luzon, Enrile (WARBURG no. 12410); Malunú (WARBURG no. 11864); Buguey (WARBURG no. 12411). — det. O. Warburg.

**4. Grewia multiflora Juss.**

Luzon Isl., Manila (GAUDICHAUD, without no.); Prov. Bataan, Dinalupihan (MERRILL no. 1495, in fruit in February 1903); Prov. Pampanga, Arayat (MERRILL no. 1375, in fruit in March 1903); Prov. Camarines Sur, Pasacao (AHERN no. 214, in fruit); Mindoro Isl., Baco (MERRILL no. 1200, 1220, in fruit in January 1903); North Luzon, Piña Blanca (WARBURG no. 12408); Prov. Tayabas, Sampaloc (WARBURG no. 13073, 13074); Mindanao Isl., Davao (WARBURG no. 14443).

**5. Grewia orientalis L.**

Mindanao Isl., Davao, Taumo (WARBURG no. 14442). — det. O. Warburg.

**6. Grewia philippinensis Perk. n. sp.** Tree or shrub; young branches inflorescence and petioles densely clothed with yellowish-brown hispid tomentum. Leaves simple, oblong or obovate-oblong, apex acute, the base rounded rarely subcuneate, boldly 3-nerved, upper surface almost glabrous except at the minutely tomentose midrib and nerves, under surface sparsely clothed with simple and stellate yellowish-brown hispid hairs, entire, or slightly undulate, thinly coriaceous, broadly reticulate; 6—7 pairs of lateral nerves, ascending, rather straight, interarching at the edge, nerves and veins prominent beneath, inconspicuous above; length 13—19 cm, width 4—7 cm; petiole 7—10 mm long. Panicles axillary, branches short, spreading, 3—5 cm long, few-flowered; bracts of the involucre lanceolate, curved, on both surfaces

clothed with soft yellowish tomentum; peduncles short. Flowers 8 mm long with pedicels 3 mm long. Petals minute (1 mm) obovate-lanceolate, on the outside especially at the base clothed with stellate hairs, on the inside with hirsute edges. Sepals spreading, obovate-lanceolate, concave, very tomentose externally, the edges inflexed, sparsely pilose internally. Torus campanulate, glabrous with hirsute edges. Ovary ovoid-globose, densely yellow-tomentose; style long, filiform, puberulous. Ovary 3-celled.

Philippines (CUMING no. 1352).

This number of CUMING's was determined in the herb. of Berlin as *Grewia microcos* L. var. *Blumei* O. Ktze.; I cannot agree with this determination, because CUMING's no. 1352 is different from all the specimens of *Grewia paniculata* Roxb. of which, according to O. Ktze., Rev. gen. I (1891), p. 83, *Grewia microcos* L. is a synonym.

7. ***Grewia stylocarpa*** Warb. n. sp. Ramis teretibus flavidо-cinereis ruguloso-striatis; petiolis  $1\frac{1}{2}$ —2 cm longis rugulosis vix  $1\frac{1}{2}$  mm crassis, stipulis deciduis, foliis pergamaceis ellipticis vel lanceolatis basi acutis apice acuminatis margine integris 14—17 cm longis,  $5\frac{1}{2}$ —8 cm latis utrinque glabris trinerviis, nervis lateralibus medium folii vix attingentibus, venis lateralibus praeter basales 3—5 ascendentibus curvatis haud confluentibus, nervis tertiaris distanter subparallelis subitus prominulis in secco cum venis rubris, reticulo tenerrimo. Inflorescentiis axillaribus et terminalibus divaricatae paniculatis pilis stellatis luteo-cinereis tomentellis, pedicellis in fructibus 3 mm longis, 1 mm latis tomentellis, toro 1 mm longo,  $1\frac{1}{2}$  mm lato, apice in fructibus junioribus hirsuto, fructibus stipitatis complanato-obconicis primum pilis stellatis parce obtectis mox glabris, 2 cm longis, 1 cm latis, vulgo 1 spermis, exocarpio carnosо, mesocarpio fibroso.

North Luzon, Malunú (WARBURG no. 11870); Middle Luzon, Prov. Tayabas, Sampaloc (WARBURG no. 13072).

Eine durch die an der Basis in einen Stiel verschmälerten Früchte recht auffallende Art, die sich hierin und in der Blattform und Nervatur am meisten der *G. laurifolia* Hook. nähert, von der sie sich aber durch die nicht kugelige Frucht und die Kürze der Basal-Seitennerven der viel größeren und anders geformten Blätter unterscheidet.

8. **Grewia tiliaefolia** Vahl.

Luzon Isl., Prov. Zambales, Botolan (WARBURG no. 13468). — det. O. Warburg.

9. **Grewia umbellata** Roxb.

Mindanao Isl., Davao (WARBURG no. 14442); Apo Isl., Mindoro Straits (MERRILL no. 428).

**Diplophractum** Desf.1. **Diplophractum** sp.

Luzon Isl., Prov. Pampangas, Arayat (MERRILL no. 1389; without flowers or fruit March 1903).

MERRILL's specimen no. 1389 is probably a new species of *Diplophractum*. It differs from *D. philippinense* Vidal Rev. p. 71 (1886) which I have not seen, in having terete, hirsute branches, large, persistent stipules, long petioles and much larger and completely serrate leaves. Strangely enough both plants were collected in the same locality. — MERRILL's plant is closely related to one in the Berlin herbarium from Celebes, named by WARBURG (in manuscript) *Columbia inaequidentata*.

**Columbia** Pers.1. **Columbia Blancoi** Rolfe.

Luzon Isl., Prov. Rizal, Antipolo (MERRILL no. 1703).

In BLANCO's III edition of Fl. Filipin. etc. in vol. 4. Nov. Append. p. 30, is given as a Philippine species, *Columbia floribunda* WALLICH; the plant is figured under the same name on p. 312 of this work. ROLFE, in Journ. Linn. XXI, p. 308 (1884), has pointed out that the determination of the Philippine plant is incorrect. The plant of WALLICH differs principally in having 5 primary nerves while in the leaves of the figured plant there are only 3 primary nerves. MERRILL's plant, which is in fruit, agrees well with the plate, therefore I have no doubt about the identity of the plant of MERRILL with that of the plate alluded to above. In the Pflanzenfam. the name *Columbia* is accepted while MERRILL prefers, according to KUNTZE, the older name *Colona* (*Colona Blancoi* Merrill in Bull. 6. Dept. Inter. (1904) 17; *Colona serratifolia* Cav. var. *Blancoi* O. Ktze. Rev. Gen. I (1891) 82).

2. **Columbia hastata** Warb. n. sp. Ramulis teretibus pilis stellatis distantibus scabridis, petiolis 1— $1\frac{1}{2}$  cm longis apice subincrassatis, stipulis hastatis 10—15 mm longis acutis glabris persistentibus, foliis lanceolatis (12—15 cm longis, 4—5 cm latis) apice

euspidatis acutis basi rotundatis vel obtusis triplinerviis, margine serratis, supra glabris, subtus pilis tomentellis distantibus scaberulis; nervis fere basalibus  $\frac{1}{2}$  usque  $\frac{2}{3}$  limbi attingentibus, venis utrinque ca. 4 ascendentibus, nervis tertiaris parallelis subtus prominulis. Inflorescentiis terminalibus et ex axillis supremis, junioribus dense bracteatis, bracteis lanceolatis 6—8 mm longis parce pubescentibus, ramis inflorescentiae, pedicellis et sepalis dense cinereo-tomentellis, sepalis ut videtur glabris, antheris sphaeroideis.

Middle Luzon, Prov. Zambales, Balincaguin (WARBURG no. 13470); Cabangán (WARBURG n. 13471).

Eine durch die fast kahlen und etwas rauhen, nicht schiefen, lang zugespitzten Blätter und die bleibenden spießförmigen Stipeln gut charakterisierte und der *C. lanceolata* nahe stehende Art. Sollte das vielleicht die *Diplophractum philippinense* Vid. sein? Die Beschreibung stimmt in manchen Punkten.

3. ***Columbia hirsuta*** Warb. n. sp. Ramis teretibus pilis stellatis hirsutis, petiolis longissimis 3—6 cm longis hirsutis apice inerassatis, ibique luteo-pilosus, stipulis caducis lanceolatis 1 cm longis basi latissime auriculatis, foliis lanceolatis usque 20 cm longis, 6 cm latis, apice longe acuminatis acutis basi rotundatis trinerviis margine distanter serrate denticulatis supra fere glabris pilis appressis distantibus scabridis, subtus praecipue in nervis distanter stellato-pilosus; nervis basalibus vix medium limbum attingentibus, venis lateralibus ca. 5—6 curvatis, nervis tertiaris parallelis subtus prominulis.

South Mindanao, Davao, Taumo (WARBURG no. 14774 July 1888).

Im Habitus steht diese bisher leider nur steril gesammelte Art der *Columbia hastula* am nächsten, von der sie sich vor allem durch die breit geöhrten Stipeln, sowie die größeren, rauheren und viel länger gestreckten Blätter unterscheidet.

4. ***Columbia Jagori*** Warb. n. sp. Ramis teretibus junioribus luteo-ferrugineo-tomentosis, petiolis brevibus (10—12 mm longis) crassis tomentellis foliis subcoriaceis ellipticis 15—20 cm longis 8—9 cm latis apice breviter acuminatis basi obtusis vix obliquis trinerviis margine integris, supra glabris, subtus in costa et venis tomentellis, in nervis et reticulatione pilis stellatis paucis inspersis, nervis basalibus  $\frac{2}{5}$  folii attingentibus, venis ca. 7

utrinque apice subito curvatis superioribus arcuate conjunctis. Inflorescentia valde tomentosa paniculata, floribus pseudo-umbellatis, junioribus bracteis stellate dispositis extus pubescentibus late lanceolatis 5—6 mm longis basi connatis circumdatis, sepalis pubescentibus, petalis extus sparse pubescentibus intus basi annulo piloso instructis, staminibus multis glabris, antheris sphaeroideis, ovario valde piloso, in alabastro vix lobato, stylo filiformi apice haud incrassato.

Luzon Isl. (JAGOR without no.).

5. **Columbia lanceolata** Warb. n. sp. Ramulis teretibus griseo-tomentellis, petiolis 1,5—2 cm longis tomentellis, apice valde incrassatis, foliis lanceolatis (12—15 cm longis, 4—5 cm latis) apice longe cuspidatis basi rotundatis vel subcordatis haud obliquis trinerviis margine irregulariter serrato-denticulatis, supra in costa tomentellis, limbo pilisstellatis insperso subaspero, subtus pilisstellatis minutissimis griseo-sericeis; nervis basalibus  $\frac{1}{2}$ — $\frac{2}{3}$  limbi attingentibus, venis utrinque ca. 4 ascendentibus, nervis tertiaris parallelis subtus prominentibus, stipulis semi-hastatis acutis 12 mm longis demum deciduis. Inflorescentiis paniculatis axillaribus et terminalibus haud multifloris saepe bracteis foliaceis suffultis, florum pseudo-umbellis bracteis anguste lanceolatis 7 mm longis griseo-tomentellis mox deciduis involueratis, pedicellis griseo-tomentellis 2—4 mm longis, sepalis 6 mm longis lanceolatis tomentellis, petalis extus pilosis spatulatis basi intus annulo valde piloso instructis, staminibus glabris, antheris subsphaericis, ovario 5-lobato dense tomentoso, stylo piloso subulato apice vix incrassato.

Middle Luzon, Prov. Zambales (WARBURG no. 13475); Botolan (WARBURG no. 13476); Palauig (WARBURG no. 13477); Candelaria (WARBURG no. 13474).

Die Art steht der *C. subaequalis* nahe, unterscheidet sich aber durch die weiße, dichte und feinhaarige Bekleidung der weit schmäleren und länger gestielten Blätter, die größeren Blüten und den 5- (nicht 3-) lappigen Fruchtknoten.

6. **Columbia mindanaensis** Warb. n. sp. Ramulis teretibus tomentosis, petiolis 6 mm longis tomentosis, foliis lanceolatis (14 cm longis 5 cm latis) apice cuspidatis acutis, basi subinaequalibus vix subcordatis, trinerviis, margine distanter serratis supra in costa tomentellis, limbo pilisstellatis minimis distantibus

subhirtellis, subtus dense cinereo-sericeo-tomentellis, nervis basalibus vix medium limbum attingentibus, venis utrinque 6—7 ascendentibus, nervis tertiaris parallelis subtus prominentibus. Fructificationibus paniculatis terminalibus et ex axillis supremis tomentosis, bracteis pro parte foliaceis, minoribus tomentosis lanceolatis, pedicellis 7—8 mm longis, fructibus 3—4 alatis tomentosis alis rotundatis demum in coccis dehiscentibus.

South Mindanao, Davao, Sibulan (WARBURG no. 14440).

Die Art unterscheidet sich durch die stärkere Behaarung, die kurzen Blattstiele, die 3—4-Zahl der Fruchtfächer von *C. lanceolata* Warb.

7. ***Columbia mollis*** Warb. n. sp. Ramulis teretibus tomentosis, petiolis 1 cm longis 2 mm crassis supra subcomplanatis, foliis 14—16 cm longis 6—7 cm latis oblongo-ovatis apice acuminate vel cuspidatis basi valde obliquis, rotundatis, trinerviis, supra costa excepta glabris subtus molliter tomentosis, margine apice vix serrato excepto integris, nervis basalibus medium limbum vix superantibus, venis lateralibus 6—7 utrinque ascendentibus vix curvatis, nervis tertiaris parallelis. Inflorescentiis ex axillis supremis et terminalibus, tomentosis; pedicellis 6—7 mm longis, sepalis lanceolatis tomentosis 8 mm longis, staminibus multis glabris, antheris rotundatis parvis, stylo glabro subulato acuto; fructibus trialatis 2 cm longis et latis, alis rotundatis transverse venosis.

Middle Luzon, Prov. Nueva Ecija, Rosales (WARBURG no. 13473).

8. ***Columbia serratifolia*** DC.

*Colona serratifolia* Cav. Ic. IV, p. 47 t. 370 (1797); E. MERRILL Dept. Int. Forestry Bureau, Bulletin 1. Report on Investigations made in Java. II Plantae Aherniae p. 36 (1903); Bureau of Gov. Lab. I. New or Noteworthy Philippine Plants, p. 16 (1904).

Luzon Isl., Prov. Manila (MEYEN; WICHURA); (JAGOR no. 777); Prov. Rizal, Tanay (MERRILL no. 2360); Prov. Principe, Baler (MERRILL no. 1015); Prov. Camarines Sur, Pasacao (AHERN no. 90); Prov. Tayabas, Guinayangan (MERRILL no. 2005, 2056); Pagbalao (MERRILL no. 1998); Mindoro Isl., Calapan (MERRILL no. 2574); Pinamalayan (MERRILL no. 2154); Pola (MERRILL n. 2215, 2454); North Luzon, Malunú (WARBURG no. 11865); Enrile (WARBURG no. 12413, 12414); Cagayan Alcala (WARBURG no. 11761);

Central Luzon, Manila (WARBURG no. 13168); Bordeos (WARBURG no. 13478). Of the numbers cited by MERRILL I have only seen AHERN no. 90.

### **Triumfetta L.**

#### **1. *Triumfetta rhomboidea* Jacq.**

Luzon Isl., Manila (MERRILL no. 637; in flower in January 1903); Prov. Bataan, Dinalupihan (MERRILL no. 1587); Culión Isl. (MERRILL no. 625); Paragua Isl., Point of Separation (MERRILL no. 811; in fruit in February 1903).

#### **2. *Triumfetta pilosa* Benth.**

Mindanao Isl., Davao, Mt. Dagatpan 1000—1500 m alt. (WARBURG no. 14438).

#### **3. *Triumfetta semitriloba* L.**

Luzon Isl., Prov. Manila, Montalbán (WARBURG no. 12634).

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## **Malvaceae**

by

J. PERKINS.

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### **Sida L.**

#### **1. *Sida cordifolia* L.**

Mindoro Isl., Baco (MERRILL no. 1273); Calapan (MERRILL no. 874; both in flower a. 1903).

#### **2. *Sida rhombifolia* L.**

Luzon Isl., Prov. Manila (MERRILL no. 348; in flower in July 1902); Prov. Bataan, Dinalupihan (MERRILL no. 1558).

### **Urena L.**

#### **1. *Urena lobata* L.**

Luzon Isl., Prov. Tayabas, Malicboi (MERRILL no. 2440); Culión Isl. (MERRILL no. 457, 526, 670).

### **Hibiscus L.**

#### **1. *Hibiscus Rosa sinensis* L.**

Luzon Isl., Prov. Tayabas, Pagbilao (MERRILL no. 2433; in flower in April 1903).

2. **Hibiscus surattensis** L.

Luzon Isl., Prov. Rizal, Antipolo (MERRILL no. 1708); Culion Isl. (MERRILL no. 456); Paragua Isl., Point of Separation (MERRILL no. 818).

3. **Hibiscus tiliaceus** L.

Luzon Isl., Prov. Camarines Sur, Pasacao (AHERN no. 94); Prov. Zambales, Subic (MERRILL no. 2094).

**Bombycidendron** Zoll.

1. **Bombycidendron glabreseens** Warb. n. sp. Ramis teretibus brunneis glabris in siccо striolatis, petiolis tenuibus ca.  $1\frac{1}{2}$  cm longis puberulis, foliis oblongis 10—12 cm longis, 4—5 cm latis basi rotundatis apice acuminatis acutis margine integris supra glabris subtus pallidioribus junioribus tomentellis demum glabris, venis utrinque ca. 7 paulo curvatis ascendentibus haud confluentibus. Fructibus axillaribus, pedicellis 2 cm longis erassis, involucelli phyllis ca. 6 lanceolatis acutis 1 cm longis subtomentellis persistentibus, calyce in fructis persistente eique aequilongo, glabro, parte inferiore intus dense villosa, lobis lanceolatis acutis; capsula lignosa  $2\frac{1}{2}$ —3 cm longa late ovata 5-loculari septicida, loculis vix cuspidatis bilocellatis polyspermis, seminibus reniformibus pilis gossypinis luteo-albidis involutis.

North Luzon, Prov. Cagayán, Alcala (WARBURG no. 11764); Middle Luzon, Prov. Manila, Montalbán (WARBURG no. 12644).

Diese Art steht dem *Bombycidendron campylosiphon* Warb. (= *Hibiscus campylosiphon* Turez.; *Thespesia campylosiphon* Rolfe) nahe, unterscheidet sich aber durch die Kahlheit der Stengel, Blätter, Blütenstiele usw., auch sind die Blätter nicht lang zugespitzt und relativ breiter.

Die von ZOLLINGER und MORITZI für die nahe verwandte javanische Art *B. greciaefolium* aufgestellte Gattung *Bombycidendron* muß unbedingt bestehen bleiben, da die Früchte durch das fachspaltige Aufspringen und die Doppelfächer hervorragend gut charakterisiert sind.

2. **Bombycidendron parvifolium** Warb. n. sp. Ramis teretibus cinereis glabris striolatis, innovationibus tomentellis, stipulis anguste lanceolatis 5 mm longis acutis pilosis, petiolis 5—6 mm longis tomentellis, foliis late ovatis obtusis vel retusis 4—6 cm longis, 3—4 cm latis, supra glabrescentibus, subtus molliter subaureo-tomentellis, venis utrinque 5—6 tantum patulis; fructuum

pedunculis apice incrassatis 2 cm longis, involuci phyllis 6 ovatis apice vix acutis 13 mm longis, calyce intus villoso cum lobis lanceolatis capsula aequilongis, capsula lignosa ovate-globosa 2 $\frac{1}{2}$ —3 cm longa, 5-loculari septicida, loculis vix cuspidatis bilocellatis polyspermis, seminibus reniformibus pilis gossypinis luteis involutis.

North Luzon, Prov. Cagayan, Malaueg (WARBURG no. 11765).

Hauptsächlich durch die Kleinheit, Stumpfheit und wenigen Nerven der Blätter sowie die Kahlheit der Zweige von *B. campylosiphon* verschieden.

### **Abelmoschus** Medik.

#### 1. **Abelmoschus moschatus** Mnch.

Luzon Isl., Prov. Rizal, Antipolo (MERRILL no. 1307; in flower in April 1903); Tanay (MERRILL no. 2328); Paragua Isl., Point of Separation (MERRILL no. 795).

#### 2. **Abelmoschus mindanaensis** Warb. n. sp. Frutex ramulis crassis pilis stellatis sparsis hispidis, foliis magnis 3—5 digitato-lobatis, petiolis flavidо-vel aureo-tomentellis 4—8 cm longis, foliis 9—13 cm longis, lobis 7—9 cm longis, 2—3 cm latis, parte superiore irregulariter et distanter dentatis, supra pilis subappressis simplicibus, subtus pilis vulgo stellatis in nervis densius inspersis; stipulis anguste lanceolatis falcatis 1 cm longis 1 mm latis pilis appressis inspersis, floribus ex axillis superioribus et racemum terminalem formantibus stipulis suffultis, pedicellis 5 cm longis velutinis, involucelli phyllis 5 aequalibus late lanceolatis acutis pilis appressis inspersis 1 $\frac{1}{2}$ cm longis, 6 mm latis, calyce spathaceo 1 $\frac{1}{2}$ cm longo extus velutino intus piloso apice truncato vix dentato, petalis 5 cm longis luteis basi violaceis, ovario pilis erectis 3—4 mm longis flavidis dense obtecto.

South Mindanao, Davao, Sibulan (WARBURG no. 14449).

Die Art steht dem *A. pungens* (Roxb.) Warb. von Vorder-Indien nahe, doch besitzt letzterer viel dichter und stärker gezähnte Blattzipfel, und keine samartige sondern eine sehr rauhe abstehende Behaarung der Blatt- und Blütenstiele.

### **Thespesia** Corr.

#### 1. **Thespesia Lampas** (Benth. et Hook.) Dalz. et Gibbs.

Luzon Isl., Prov. Manila (WARBURG no. 13175; in fruit); Culión Isl. (MERRILL no. 464); Mindanao Isl., Davao, Sibulan (WARBURG no. 14453).

2. ***Thespesia populnea*** Corr.

Luzon Isl., Prov. Principe, Baler (MERRILL no. 1019, 1089); Prov. Camarines Sur, Pasacao (AHERN no. 209); Mindoro Isl., Pinamalayan (MERRILL no. 2175); Apo Isl., Mindoro Straits (MERRILL no. 417).

***Gossypium* L.**1. ***Gossypium herbaceum* L.**

Culión Isl. (MERRILL no. 562; in fruit in December 1902).

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**Bombacaceae**

by

J. PERKINS.

***Ceiba* Gaertn.**1. ***Ceiba pentandra* Gaertn.**

Mindoro Isl., Pinamalayan (MERRILL no. 2164; in fruit in May 1903).

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**Sterculiaceae**

by

J. PERKINS.

***Melochia* L.**1. ***Melochia arborea* Blanco.**

Luzon Isl., Prov. Bataan, Dinalupihan (MERRILL no. 1476); Prov. Rizal, Tanay (MERRILL no. 2286; in flower in May 1903); Culión Isl. (MERRILL no. 619).

This species, which I have designated for the present *Melochia arborea* BLANCO, is found in the Berlin herbarium under the name of *Melochia indica* (Houtt.) A. Gray (cf. K. SCHUMANN in Engler-Prantl, Pflanzenfam. III, 6, p. 81). The nomenclature

of the species is extremely complicated and as the name which K. SCHUMANN has chosen can probably not be maintained, I have selected BLANCO's. Later I propose to give the complete synonymy of this plant.

2. **Melochia corchorifolia** L.

Culián Isl. (MERRILL no. 537; in flower in December 1902).

**Waltheria** L.

1. **Waltheria indica** L.

Culián Isl. (MERRILL no. 437; in flower in December 1902).

**Commerçonia** Forst.

1. **Commerçonia platyphylla** Andr.

Luzon Isl., Prov. Rizal, Antipolo (MERRILL no. 1624; in flower and fruit in March 1903); Tanay (MERRILL no. 2359; in flower in May 1903); Culián Isl. (MERRILL no. 571); Mindoro Isl., Baco (MERRILL no. 1227).

**Abroma** L. fil.

1. **Abroma fastuosum** R. Br.

Luzon Isl. (JAGOR); Manila (GAUDICHAUD); Prov. Rizal, Tanay (MERRILL no. 2285; — all in fruit).

**Pterospermum** Schreb.

1. **Pterospermum diversifolium** Blume.

Luzon Isl., Prov. Pampanga, Arayat (MERRILL no. 1392); Prov. Tayabas, Guinayangan (MERRILL no. 2037; in fruit in a. 1903); Prov. Rizal, Tanay (MERRILL no. 2321; in flower in May 1903); Prov. Camarines Sur, Pasacao (AHERN no. 15).

2. **Pterospermum niveum** Vidal.

Luzon Isl., Prov. Bataan, Dinalupihan (MERRILL no. 1517); Mariveles (WARBURG no. 13174a); Prov. Pampanga, Arayat (MERRILL no. 1403); Prov. Camarines Sur, Pasacao (AHERN no. 66); Prov. Rizal, Antipolo (MERRILL no. 1316); Prov. Tayabas, Guinayangan (MERRILL no. 2011; in fruit in April 1903; no. 2040); Pagbalao (MERRILL no. 1931); Mindoro Isl., Baco (MERRILL no. 1223).

**Helicteres** L.

1. **Helicteres angustifolia** L.

Luzon Isl., Prov. Nueva Viscaya, Dupax (MERRILL no. 228; in flower in May 1902); Culián Isl. (MERRILL no. 517, 549).

2. ***Helicteres spicata*** Colebr.

Luzon Isl., Prov. Rizal, Antipolo (MERRILL no. 1330, 1342); Culión Isl. (MERRILL no. 506, 547).

***Kleinhofia* L.**

1. ***Kleinhofia hospita* L.**

Luzon Isl., Prov. Bataan, Dinalupihan (MERRILL no. 1493); Prov. Principe, Baler (MERRILL no. 1084; in flower in October 1903); Culión Isl. (MERRILL no. 525; in flower in December 1902); Mindanao Isl., Surigao (AHERN no. 328).

***Sterculia* L.**

1. ***Sterculia cuneata* R. Br.**

North Luzon, Enrile (WARBURG no. 12405); Prov. Manila (RODBERTUS; WICHURA); Middle Luzon, Binangonan (WARBURG no. 13461); Bordeos (WARBURG no. 13462); Prov. Principe, Baler (MERRILL no. 1090); Prov. Rizal, Antipolo (MERRILL no. 1638); Bosoboso (MERRILL no. 1839); Prov. Tayabas, Sampaloc (WARBURG no. 13078); Culión Isl. (MERRILL no. 435); Mindoro Isl., Pola (MERRILL no. 2211).

2. ***Sterculia foetida* L.**

Luzon Isl., Prov. Bataan, Dinalupihan (MERRILL no. 1534); Prov. Rizal, Antipolo (MERRILL no. 1741); Prov. Tayabas, Sampaloc (WARBURG no. 13081); Panay Isl. (MERRILL no. 2412); Apo Isl., Mindoro Straits (MERRILL no. 418).

3. ***Sterculia graciliflora* Perk. n. sp.** Tree; young branches rusty-stellate - pubescent; ultimately gray, striate, glabrous. Leaves membranous or papyraceous, simple, entire, oblong, rarely obovate-oblong, the apex rather abruptly, shortly and bluntly acuminate; the base rounded rarely subcuneate, 3-nerved; both surfaces glabrous, upper surface shining; lateral nerves 6—7 pairs, spreading interarching near the edge, inconspicuous above, prominent beneath; length 8—12 cm, width 3,5—5 cm; petiole 2—3 cm long. Panicles solitary, axillary, clustered at the ends of the branches, 9—12 cm long; branches short, many flowered; rachis, peduncle, pedicel rusty-stellate-tomentose and very slender, pedicel 8—10 mm long. Male flowers: calyx 5—6 mm long, stellato-hispidulous everywhere except the tube which is inside glabrous, deeply divided into 5 linear-lanceolate lobes; the lobes about as long as the tube, connivent, cohering by

their tips, their edges incurved; staminal column shorter than the tube, recurved, glabrous, bearing at its apex 10 sessile sub-globose 2-celled anthers.

Mindoro Island, Baco (MERRILL no. 1177 in January with flowers).

4. **Sterculia Jagori** Warb. n. sp. Ramis crassis rubris glabris, stipulis persistentibus seariosis magnis (2 cm longis,  $\frac{1}{2}$  cm latis) lanceolatis lineatis; petiolis brevibus (vix 1 cm longis) crassis pubescentibus, foliis magnis (usque 30 cm longis 9 cm latis) oblanceolatis apice acuminatis acutis basi sensim angustatis sub-acutis adultis utrinque glaberrimis; venis utrinque 20 obliquis subcurvatis ad marginem arcuate confluentibus, nervis tertiaris subparallelis utrinque cum reticulatione prominulis. Inflorescentis ex axillis foliorum rudimentariorum stipulis magnis persistentibus obtectorum 15—30 cm longis parce et breviter ramosis subpuberulis; floribus breviter pedicellatis saepe nutantibus 8 mm longis pro rata latis extus vix velutinis, tubo late infundibuliformi, laciniis quam tubus brevioribus haud conniventibus triangularibus intus dense griseo-ferrugineo-pilosis.

Leyte Isl. (JAGOR no. 1004).

Diese im Herbar irrtümlich als *St. stipularis* R. Br. (diese besitzt an der Basis cordate und unterseits behaarte keilförmig-längliche Blätter) bestimmte Art zeigt wie *St. stipulata* Korth. die Rückbildung der obersten Blätter zugunsten der persistenten und großen Stipeln in noch weit ausgebildeterem Maße als *St. spatulata*.

5. **Sterculia Iuzonica** Warb. n. sp. Ramis crassis glabris cortice cinereo, petiolis 3—4 cm longis 2 mm latis, glabris, foliis 18—22 cm longis 10—11 cm latis, oblongo-ovatis, basi cordatis apice rotundatis oblique et obtuse apiculatis, margine integris, utrinque glabris, basi 5-nerviis, lateralibus exterioribus brevissimis interioribus medium folium haud attingentibus, venis utrinque ca. 6 oblique ascendentibus vix curvatis haud confluentibus, subtus prominentibus, venis tertiaris subparallelis. Inflorescentis ca. 9—10 cm longis glabris valde ramosis e ramorum apice ex axillis foliorum vulgo minorum crebris, pedicellis glabris brevibus, floribus late infundibuliformibus 7 mm longis 5 mm latis, glabris, lobis tubum vix aequantibus extus glabris intus pilosis late lanceolatis haud cohaerentibus.

Luzon Isl., Prov. Camarines Sur, Pasacao (AHERN no. 207); Middle Luzon, Cabongenan (WARBURG no. 13460 type); Apo Isl., Mindoro Straits (MERRILL no. 425); Mindoro Isl., Baco (MERRILL no. 1204).

Eine durch die breiten kurzzipfeligen, außen kahlen Blüten, sowie die langen herzförmigen Blätter leicht erkennbare Art.

6. **Stereulia oblongata** R. Br.

Middle-Luzon, Polillo (WARBURG no. 13458); Sulu Isls., Joló (WARBURG no. 14928; in fruit in August 1888).

7. **Stereulia spatulata** Warb. n. sp. Ramis crassis in secco sulcatis tomentellis glabrescentibus ferrugineis; petiolis brevissimis ( $\frac{1}{2}$  cm longis) crassis tomentellis, stipulis magnis ( $1\frac{1}{2}$  cm longis) persistentibus anguste lanceolatis acutis extus subpubescentibus, foliis magnis (27 cm longis 7 cm latis) spatulatis apice breviter subfalcate cuspidatis basi cuneatim angustatis demum rotundatis margine integris utrinque glabris, junioribus tantum subtus pilosiusculis; venis utrinque 12—15 majoribus (interpositis minoribus parallelis) curvatis vix distincte arcuate connexis, nervis tertiaris subparallelis et reticulatione utrinque prominulis. Inflorescentiis ferrugineo-tomentellis ex axillis foliorum minorum superiorum, in specimine unico brevibus et parce ramosis, floribus insectis deformatis breviter pedicellatis extus tomentellis, intus in laciniis sericeo-tomentosis.

Sulu Isls., Joló (WARBURG no. 14914).

**Tarrietia** Blume.

1. **Tarrietia sylvatica** (Vidal) Merrill.

Luzon Isl., Prov. Camarines Sur, Pasacao (AHERN no. 88 with flowers and fruit a. 1902).

In Forestry Bureau-Bulletin no. 1. Report of Investigations made in Java in the year 1902, p. 38 (1903) MERRILL states that he considers this specimen as identical with VIDAL'S *Heritiera sylvatica* (Rev. pl. Vasc. Filip. p. 66 [1886]) and that the proper genus of the plant is *Tarrietia* rather than *Heritiera*. In the above mentioned work, he also remarks that he has not seen the type material of VIDAL'S species. MR. ROLFE of Kew has kindly compared leaves flowers and fruit of the material of AHERN with VIDAL'S type, and has written me that the plants are identical.

**Pterocymbium** R. Br.1. **Pterocymbium javanicum** R. Br.

Luzon Isl., Prov. Camarines Sur, Pasacao (AHERN no. 124); Prov. Pampangas, Arayat (MERRILL no. 1405); Prov. Rizal, Bosoboso (MERRILL no. 1820); Prov. Tayabas, Guinayangan (MERRILL no. 2053); Pagbalao (MERRILL no. 1996); Prov. Zambales, Subic (MERRILL no. 1747, 1975); Mindoro Isl., Pinamalayan (MERRILL no. 2139).

2. **Pterocymbium macrocrater** Warb. n. sp. Foliis ignotis, inflorescentiis magnis compositis glabris in sicco nigris 10 vel plus cm longis, ramis patentibus 5—9 cm longis, pedicellis 10—15 mm longis, perianthio glabro pro rata magno et lato ( $3\frac{1}{2}$  cm longo, 3 cm lato), late infundibuliformi (lateralibus vix convexis) glabro, longitudinaliter 15 costato, basi breviter (1—2 mm) stipitato, sed haud supra stipitem ut *P. javanicum* truncato, usque  $\frac{2}{5}$  5-lobato lobis triangularibus acutis margine cinereo tomentellis. Columna gynandrophora 12 mm longa 1 mm lata glabra in sicco angulata, ♂ apice antheris ca. 8 dithecis late linearibus 4 mm longis plus quam 1 mm latis liberis nutantibus coronata; follicolorum pedicellis longis puberulis curvatis, alis naviculiformibus glabris ala superiore usque 10 cm longa apice rotundata brevissime vel vix mucronata longitudinaliter costata, ala inferiore triplo breviore rotundata; seminibus 12 mm longis late ellipticis nitescenibus vix distinctor puberulis.

North Luzon, Prov. Isabela, Malunú (WARBURG no. 11855 type); Enrile (WARBURG no. 12406).

Die reiferen Früchte von Enrile zeigen die Rippen des Kelches nur sehr undeutlich, auch sind die Flügel etwas schmäler und spitzer. Im übrigen ist die Form genau die gleiche. Durch den breiten, an der Basis nicht gestutzten längsrüppigen Kelch und die besonders großen Flügel leicht zu erkennen.

**Heritiera** Ait.1. **Heritiera littoralis** Dryand.

Luzon Isl., Prov. Principe, Baler (MERRILL no. 1026); Prov. Tayabas, Pagbalao (MERRILL no. 1901); Culión Isl. (MERRILL no. 582); Mindoro Isl., Calapan (MERRILL no. 2581); Pola (MERRILL no. 2365); Mindanao Isl., Surigao (AHERN no. 413)

# Rosaceae

by

J. PERKINS.

## **Rubus** L.

1. **Rubus fraxinifolius** Poir.

Mindoro Isl., Baco River (MERRILL no. 999, with fruit April 1, 1903).

2. **Rubus Moluccanus** L.

Luzon Isl., Prov. Rizal, Antipolo (MERRILL no. 1648, March 1903); Prov. Nueva Visccaya, Caraballo Sur, near Dupax (MERRILL no. 221 May 28. 1902).

## **Parinarium** Aubl.

1. **Parinarium Griffithianum** Benth.

North Luzon, Malunú (WARBURG no. 11581); Prov. Tayabas, Sampaloc (WARBURG no. 12792); Guinayangan (MERRILL no. 2002).

This species is closely allied to *Parinarium salicifolium* Miq. and I greatly doubt if the two should be kept separate. *Parinarium salicifolium* is described by PRESL at greath length, in Epimeliae Botanicae p. 193 (1849), as a new species of a new genus, *Grymania* (*Grymania salicifolia*), this genus consisting of only two species, the preceding and *G. polyandra* (H. B. K.) Presl. I have seen the authentic specimen from the Philippines, CUMING no. 1057. *Parinarium Griffithianum* Benth., on the other hand, is described by BENTHAM, in a few lines, in HOOKER's Niger Flora (1849) p. 334, note. BENTHAM'S specimen I have also seen and as far as I can judge the two plants agree absolutely.

In the Berlin herbarium there are specimens from the Aru Islands determined by WARBURG and one from New Guinea identified by SCHUMANN as *Parinarium Griffithianum*; this indicates that the area of distribution is very great.

In case the future monographer unites the species, the plant should be called *Griffithianum* as, although both species were described in 1849, PRESL did not place his in the proper genus.

MIQUEL in Fl. Ind. Batavae, vol. I (1885) p. 357 includes in his species *dubiae* *Parinarium salicifolium* Presl.

2. **Parinarium mindanaense** Perk. n. sp. Tree; branches dark-colored, glabrous, striate. Leaves coriaceous, oblong, rather bluntly acuminate, the base rounded, eglandular, densely reticulated, upper surface glabrous, shining, the lower slightly dull and paler, glabrous with a few scattered hairs on the midrib and nerves; main nerves about 15 pairs, spreading, interarching at the edge, prominent beneath; length 17—35 cm; width 8—10 cm; petiole 1 cm long, thickened. Spikes axillary, solitary or sometimes 2 together, 4—12 cm long, minutely rusty-tomentose, pedunculate; bracts 2 at the base of each flower, lanceolate, acute, 6 mm long, rusty-tomentose on both surfaces; the flowers about 1.5 cm long, sessile. Calyx-tube funnel-shaped, adpressed-tomentose outside, internally hirsute-pubescent with a broad belt of deflexed silky hair at the throat; lobes unequal, ovate or oblong, acute, adpressed-tomentose on both surfaces. Petals as long as the calyx-lobes, ovate or oblong, apex obtuse (flower young), not clawed, glabrous on both sides. Stamens about 18, all fertile, on one side of the calyx-tube, somewhat united at the dilated bases with a line of triangular glabrous processes on the opposite side; filaments slightly hairy at the base. Ovary densely woolly, obliquely inserted on one side the calyx-tube; style long, slender, glabrous.

Mindanao Island, Davao, Mt. Dagatpan, on the edge of the forest (WARBURG no. 14484).

## Asclepiadaceae<sup>1</sup>

by

R. SCHLECHTER AND O. WARBURG.

### **Streptocaulon** Wight et Arn.

1. **Streptocaulon Cumingii** F. Vill.

Luzon Isl., Prov. Rizal, Antipolo (MERRILL no. 1302; in flower in February 1903).

1) Several diagnoses of new species were kindly given me for publication by Prof. O. Warburg. — J. Perkins.

2. **Streptocaulon** sp.

Mindoro Isl., Calapan (MERRILL no. 890, in fruit in April 1903).

3. **Streptocaulon** sp.

Luzon Isl., Prov. Rizal, Antipolo (MERRILL no. 1332, in fruit in February 1903).

**Asclepias** L.1. **Asclepias curassavica** L.

Luzon Isl., Prov. Tayabas, Lucena (MERRILL no. 2418, in flower in April 1903); Rio de Montalbán (LOHER no. 4069, in flower in October 1890); Nueva Viscaya, Bayombong (MERRILL no. 168).

**Cynanchum** L.1. **Cynanchum carnosum** (R. Br.) Schltr.

Luzon central (LOHER no. 4040); Manila (CHAMISSO without number).

Die Pflanze wurde ursprünglich von R. BROWN als *Oxystelma* beschrieben, dann von BENTHAM zu *Vincetoxicum* gestellt, das ja bekanntlich mit *Cynanchum* vereinigt werden muß.

Sehr interessant ist die Verbreitung, die sich von Nord-Australien über Sumbawa nun bis in die Philippinen erstreckt. Wir haben hier also einen ganz ähnlichen Fall vor uns, wie bei *Ceropegia Cumingiana* Dene.

2. **Cynanchum Loheri** Schltr. n. sp. Volubile, alte scandens, gracillimum; ramis filiformibus, teretibus, tenuissime hispidulis, distanter foliatis; foliis graciliter petiolatis ovatis acuminatis, basi profunde cordatis, utrinque sparsim ac brevissime hispidulis, lamina 3,5—7 cm longa, supra basin 2—4,5 cm lata; racemis subaxillaribus plurifloris, folia vulgo excedentibus, pedunculo hispidulo, pedicellis hispidulis ca. 1 cm longis; floribus illis *C. capensis* L. f. fere aequimagnis; calycis segmentis lanceolatis acutis hispidulis, 0,1—0,2 cm longis; corollae rotatae lobis oblongis acutiusculis, 0,4 cm longis, medio 0,2 cm latis, utrinque glabris; coronae foliolis in tubum cylindricum alte connatis, apice trifidis, segmentis lanceolatis acutis intermedio majore, gynostegium excedentibus; antheris quadrato-oblongis, marginibus cartilagineis angustis, appendice hyalina ovata obtusa apice in stigmatis caput incurva; stigmatis capite pentagono depresso; folliculis fusiformibus rostratis tenuissime puberulis, maturis ca. 6 cm longis, infra medium vix 1 cm diametentibus.

Middle Luzon (LOHER no. 4053, type); Culión Isl. (MERRILL no. 532; in flower in December 1902).

Durch die tief herzförmigen Blätter und ihre Korona ist die vorliegende Art unter den anderen malayischen Arten der Gattung leicht zu erkennen. Es ist das erste von den Philippinen beschriebene *Cynanchum*, soweit mir bekannt.

3. ***Cynanchum physocarpum*** Schltr. n. sp. Volubilis, alte scandens, ramosa; ramulis teretibus glabris, remote foliatis; foliis patentibus patulisve ovato-lanceolatis acutis vel acuminatis, basi rotundatis vel subcordatis subtus vix pallidioribus, 3,5—6,5 cm longis, infra medium 1,5—3,7 cm latis, petiolo tenui, semitereti glabro, 1,5—2 cm longo; floribus in cymis subspicatis, extraaxillaribus alternantibus, plurifloris, folia aequantibus vel plus minusve excedentibus; pedunculo tereti glabro elongato, pedicellis brevibus tenuissime puberulis, 0,5 cm longis; calycis segmentis late oblongis obtusissimis, margine ciliatis, extus subpuberulis, corolla plus duplo brevioribus; corollae lobis oblongis obtusis extus glabris, intus dimidio superiore margine praesertim puberulis, vix 0,4 cm longis, medio fere 0,2 cm latis; coronae foliolis in annulum integerrimum gynostegio paulo breviorem connatis; antheris subquadratis marginibus cartilagineis crassiusculis, basin versus paulo dilatatis, oblique truncatis, appendice hyalina rotunda obtusissima in stigma inflexa, marginibus loculorum rotundato-emarginatis; polliniis suborbicularibus, caudiculis patulodivaricatis apicem versus paulo dilatatis, glandulae permagnae oblongae obtusae basi insertis; stigmatis capite breviter conico.

Middle Luzon, Binangonan (WARBURG no. 13766).

Eine gut gekennzeichnete Art aus der Sektion *Cyathella*, welche durch die ganzrandige Koronaröhre charakterisiert wird. Die Blätter sind ziemlich dünn, die weißen Blüten sitzen in einer Traube, welche gewöhnlich die Blätter überragt. Die Frucht ist stark aufgeblasen.

North Luzon, Prov. Cagayan, Enrile (WARBURG no. 12253), nur fruktifizierend vorliegend, gehört vielleicht auch zu dieser Art.

4. ***Cynanchum Schlechterianum*** Wärb. n. sp. Volubilis caulinibus teretibus striolatis in sicco stramineis 1— $1\frac{1}{2}$  mm crassis, petiolis 2 cm longis 1 mm crassis supra prope sulcum puberulis, foliis ovatis basi rotundatis apice apiculatis  $6\frac{1}{2}$  cm longis  $3\frac{1}{2}$  cm latis glabris tenuibus venis utrinque 7 petalis longe ante

marginem arcuate connexis; inflorescentiis intrafoliaceis longis 4—8 cm longis haud ramosis; pedunculo 3—7 cm longo 1 mm lato glabro, floribus in fasciculis paucifloris bracteis minutis 1 mm longis lanceolatis suffultis, pedicellis 4—5 mm longis subpuberulis, sepalis ovatis obtusis imbricatis appresse puberulis cum glandulis solitariis minutis alternantibus 1 mm longis, corolla rotata 3 mm alta profunde lobata, lobis lanceolatis obtusiusculis in margine intus subpuberulis; gynostegio breviter stipitato corona annuliformi erecta margine subundulata stigma subaequante circumdato, antheris basi sagittatis, appendiculis brevibus ad stigma incurvis, polliniis minimis in parte inferiore antherae, caudiculis minimis, translatoribus magnis oblongis, stigmate plano.

Luzon Isl., Prov. Tayabas, Sampaloc (WARBURG no. 13003).

Eine durch die langen unverzweigten Blütenstände gut ausgezeichnete Art.

5. **Cynanchum** sp.

Mindoro Isl., Baco (MERRILL no. 1239, in fruit in January 1903).

**Toxocarpus** K. Schum. (= Secamone R. Br.).

1. **Toxocarpus Loheri** Schltr. n. sp. Volubilis, alte scandens; ramis flexuosis, teretibus, juvenilibus pilis rubiginosis retrorsis tectis, demum glabratis, distanter foliatis; foliis patulis, oblongis acuminatis, utrinque glabratis, 4—6 cm longis, medio fere 2—3,5 cm latis, petiolo rubiginoso puberulo 0,7—1 cm longo; inflorescentiis corymbosis abbreviatis, foliis brevioribus, floribus illis *T. Griffithii* Dene. fere aequimagnis, brevissime pedicellatis; calycis segmentis ovato-oblongis obtusis ciliatis, vix 0,2 cm longis; corolla alte 5-fida, 0,4 cm longa, lobis oblongis obtusis tubo duplo longioribus, fauce intus minute puberulo; coronae foliolis lanceolatis acutis vel acuminatis, antheras paulo excedentibus; polliniis minutissimis oblongis; stigmatis capite cylindrico styliformi.

Middle Luzon (LOHER no. 4032; in flower in December 1892).

Von den beiden bisher bekannten *Toxocarpus*-Arten der Philippinen, *T. gracilis* Dene. und *T. glaucus* Dene., durch die kleineren Blätter und die kürzeren dichteren Infloreszenzen verschieden. Wohl am nächsten verwandt mit *T. Griffithii* Dene.

**Dorystephania** Warb. n. g.

Flores parvi, sepala ovata imbricata, cum glandulis parvis solitariis interdum binis alternantia corolla rotata profunde lobata, lobis lanceolatis patulis in alabastris dextrorse imbricatis; corona nulla; gynostegium breviter stipitatum; antherae breves, pollinia ceracea in parte superiore, in utroque loculo singula, pro rata magna, translatores et caudiculi magni, connectiva in appendiculas lanceolatas erectas stigma superantes producta, stigma convexum verruculosum. Follicula angusta, acuminata, laevia, semina plana, alata, apice breviter dense comosa.

Frutex erectus foliis linearibus sessilibus, inflorescentiae axillares breves, flores ad apicem pedunculi brevis fere umbellati.

1. **Dorystephania Luzonensis** Warb. n. sp. Ramulis erectis strictis lignosis tenuibus  $1\frac{1}{2}$  mm crassis cinereis appresse minute pubescentibus, foliis haud distinctor petiolatis 7—9 cm longis, 1—2 mm latis apice acutis utrinque glabris margine in sicco saltem revolutis, costa supra incisa subtus prominente, venis inconspicuis; inflorescentiis axillaribus 1—2 cm longis, pedunculo 5—8 mm longo  $\frac{2}{3}$  mm crasso minute appresse puberulo, bracteis minutis  $\frac{1}{2}$ —1 mm longis lanceolatis, pedicellis 5—7 mm longis, sepalis ovatis obtusis 2 mm longis, glabris vel margine minutissime ciliolatis, corolla 4—5 mm longa, petalis lanceolatis acutis, gynostegio cf. descriptionem generis, folliculis fusiformibus 5 cm longis, 5 mm latis, apice sensim acuminatis sparse appresse puberulis, seminibus 3 mm longis ovatis coma alba 4 mm longa.

Luzon Isl., Prov. Zambales, Balincaguin (WARBURG no. 13768).

Eine zu den *Marsdenieen* gehörige Gattung, die habituell am meisten an *Pentasacme* erinnert, aber durch das Fehlen der Korona sich von ihr unterscheidet; charakteristisch sind die aufrechten lanzettlichen den Griffel überragenden Antherenanhänge, worauf der Name (= Lanzen-Krone) hindeuten soll.

**Gymnema** R. Br.

1. **Gymnema Schlechterianum** Warb. n. sp. Volubilis, caulinibus tenuibus minute appresse puberulis teretibus, lenticellis rotundis parce inspersis, petiolis 5—12 mm longis,  $\frac{3}{4}$  mm latis appresse puberulis, foliis late ovatis 4—6 cm longis, 3—4 cm latis, glabris, in costae basi subglandulosis, in basi rotundatis vel obtusis,

apice acute acuminatis, venis utrinque ca. 5—6 longe ante marginem arcuate conjunctis. Inflorescentiis axillaribus vix ramosis, 1—1½ cm longis, pedunculo tenui puberulo 6—8 mm longo, floribus in apice pedunculi fasciculatis vel in ramis brevissimis, bracteis lanceolatis minutis, pedicellis 4 mm longis, vix puberulis, sepalis 2 mm longis obtusis imbricatis dorso minute appreso puberulis margine minute ciliolatis cum glandulis minimis alternantibus, corolla urceolata glabra, lobis 2 mm longis obtusis, squamis parvis coronae carnosis corollae fauci affixis, gynostegio stipitato, antheris a stigmate conico valde superatis, antherarum appendiculo rotundato, stigmati appreso, polliniis magnis caudiculis brevissimis cum translatore minuto connexis.

Middle Luzon, Sampaloc (WARBURG no. 13001).

Eine durch die Kahlheit der relativ breiten, in der unteren Hälfte am breitesten Blätter, sowie durch die kleinen Blütenstände und Blüten charakterisierte *G. sylvestre* Br. recht nahe stehende Art.

2. **Gymnema tingens** Wight et Arn.

Luzon Isl., Manila, Pineda (LOHER no. 4043, in flower in February 1892).

**Tylophora** R. Br.

1. **Tylophora angustifolia** Schltr. n. sp. Volubilis, alte scandens, gracillima, ramosa; ramulis filiformibus, teretibus glabris, remote foliatis; foliis erecto-patentibus patulisve coriaceis, linear-lanceolatis acutis, utrinque glabris, 5—6 cm longis, infra medium 1—1,3 cm latis, petiolo glabro c. 0,6 cm longo; racemis ramosis axillaribus alternantibus laxe paucifloris, foliis aequilongis vel paulo longioribus, pedicellis filiformibus puberulis, 0,3—0,5 cm longis; floribus in genere inter minimos; calycis segmentis lanceolatis acutis puberulis, corolla duplo fere brevioribus; corollae lobis oblongis obtusis utrinque glabris, 0,1 cm longis; coronae foliolis valde carnosis circuitu subtriangulis apice attenuatis obtusis, basi rotundatis, dorso basin versus in gibbus obtusum incrassatis, facie omnino tubo filamentorum adnatis, antherarum basin paulo excedentibus; antheris subquadratis marginibus cartilagineis basi haud dilatatis, appendice hyalina semiorbiculare obtusissima apice in stigma inflexa; polliniis erectis oblongis obtusis, caudiculis divaricatis brevibus, glandula oblonga obtusa polliniis multo minore; stigmatis capite subdepresso.

Middle Luzon, Prov. Manila, Montalbán (WARBURG no. 12656).

Am nächsten verwandt mit *T. tenuis* Bl., unterscheidet sich die vorliegende Art, von der ich leider nur einen kleinen Zweig besitze, durch die Infloreszenz und die schmalen Blätter, ganz abgesehen von den Merkmalen in der Blüte, ganz besonders den Pollinien.

2. ***Tylophora exilis*** Schltr. n. sp. Volubilis, alte scandens, gracillima, ramosa; ramulis teretibus glabris, remote foliatis; foliis lanceolatis acutis vel acuminatis, basi rotundatis, superne glabrescentibus lucidis, subtus glabris, 2—3,5 cm longis, 0,5—1,2 cm latis, petiolo glabro 0,3—0,6 cm longo; floribus in cymis laxe racemosis, gracillimis, subextraaxillaribus alternantibus, folia plus minusve excedentibus, pedunculo glabro, filiformi, pedicellis brevissimis, puberulis; calycis segmentis lanceolatis acutis puberulis, corolla duplo brevioribus; corolla subrotata, lobis ovato-oblongis obtusis, utrinque glabris, vix 0,1 cm excedentibus; coronae foliolis carnosis, tubo stamineo usque ad apicem adnatis, circuitu lanceolato-triangulis obtusis, loculorum basin attingentibus nec excedentibus; antheris subquadratis, marginibus cartilagineis basi truncatis, appendice hyalina semiorbiculares obtusissima, in stigma inflexa; polliniis late oblongis erectis, caudiculis divaricatis brevibus filiformibus, glandula anguste oblonga obtusa polliniis paulo breviore; stigmatis capite depresso; folliculis gracillimis, glabris longius rostratis.

Middle Luzon, Mariveles (WARBURG no. 13551).

Von *T. tenuis* Bl. und *T. lanceolata* Bl. durch die Infloreszenz und Blütencharaktere gut verschieden, sonst aber sehr ähnlich. Die Blüten der drei Arten sind anscheinend braunrot.

Middle Luzon, Prov. Manila, Montalbán (WARBURG no. 13552; mit Frucht), gehört wohl zur selben Art.

3. ***Tylophora hybostemma*** Warb. n. sp. Volubilis ramulis teretibus undique appresse incane pubescentibus, remote foliatis; foliis late ovatis basi cordatis apice apiculatis tenuibus supra pilis paucis inspersis, subtus densius puberulis, 4—7 cm longis, 3—4½ cm latis, venis utrinque ca. 4—5 oblique ascendentibus ante marginem arcuate conjunctis, petiolo 6—10 mm longe ferrugineo-pubescente; inflorescentiis axillaribus brevibus 3—4 cm longis pauci-ramosiss, pedunculis vix 1 cm longis tenuibus, ramulis

$\frac{1}{2}$  cm longis, bracteis subulatis ad apicem ramulorum confertis 2—3 mm longis puberulis, pedicellis pro rata longis (2 cm) tenuibus glabris, sepalis anguste lanceolatis 4 mm longis, 1 mm latis acutis parce puberulis, corolla rotata 7—8 mm in diametro, lobis ovatis 2 mm longis obtusis utrinque glabris, gynostegio sessili, coronae lobis distincte separatis ad basim gynostegii sessilibus crassis verrucosis, antheris brevibus subquadratis, appendice trianguli in stigma inflexo; polliniis erectis circuitu ovatis utrinque rotundatis, caudiculis brevibus filiformibus, stigmatis capite quinquangulari in medio umbo nato.

North Luzon, Prov. Zambales, Candelaria (WARBURG no. 13770).

Nach den buckelförmigen Koronaschuppen benannt.

*Tylophora hybostemma* Warb. var. *pilipes* Warb. Pedicellis quam in typo minoribus et pilosis. No. 17500 Amboina.

4. ***Tylophora joloensis*** Schltr. n. sp. Volubilis, alte scandens, glaberrima, ramosa; ramis gracilibus, teretibus, plus minusve remote foliatis; foliis patentibus ovatis vel ovato-lanceolatis acuminate, basi profundius cordatis 8—11 cm longis, infra medium 4,5—6 cm latis, petiolo gracili 3—4 cm longo; racemis ramosissimis illis *T. cissoides* simillimis, subextraaxillaribus alternantibus, laxis, multifloris, pedunculo petiolo nunc aequilongo, nunc breviore, pedicellis filiformibus tenuissime puberulis 0,5—0,7 cm longis; calycis segmentis ovato-lanceolatis acutis, extus puberulis, margine tenuiter ciliatis, corolla vix plus duplo brevioribus; corollae lobis erecto-patentibus ovato-oblongis obtusis 0,2 cm longis, medio fere 0,1 cm latis; coronae foliolis in genere pro magnitudine gynostegii magnis, carnosus circuitu oblongo-lanceolatis apice obtusis, medio fere constrictis, partitione inferiore subquadrata, partitione superiore ovata, antherarum basin vix excedentibus, facie tubo filamentorum omnino adnatis; antheris subquadratis, marginibus cartilagineis subfalcatis basi acutis, appendice hyalina semiorbiculari obtusissima apice in stigma inflexa; polliniis oblongis, erectis caudiculis brevissimis divaricatis, glandula oblonga pollinis 3—4-plo minore; stigmatis capite depresso.

Sulu Isls., Joló (WARBURG no. 14956).

Habituell besitzt *T. joloensis* eine solche Ähnlichkeit mit *T. cissoides* Bl. aus Java, daß beide Arten leicht verwechselt

werden können. Die Hauptunterschiede sind die folgenden: *T. joloensis* hat am Grunde herzförmige Blätter, *T. cissoides* Bl. stumpfe; *T. joloensis* besitzt größere Blüten und eine von allen anderen *Tylophoren* durch die in der Mitte eingeschnürten Schuppen abweichende Korona, während dieselben bei *T. cissoides* die typischen Koronaschuppen der kleinblütigen Arten sind, das heißt, spornartige, fleischige, blasig aufgeschwollene, nach oben hin sichtbar verjüngte Gebilde sind. *T. joloensis* und *T. cissoides* unterscheiden sich von allen anderen kleinblütigen Arten durch die großen auffallend dünnen Blätter auf den ersten Anblick.

5. ***Tylophora* sp.**

Culión Isl. (MERRILL no. 602, in fruit in December 1902).

***Dischidia* R. Br.**

1. ***Dischidia oiantha* Schltr. n. sp.** Ramis decumbentibus, elongatis, carnosiusculis, teretibus glabris, interdum radicantibus, remote foliatis; foliis patentibus, obovato-spathulatis obtusis carnosis, utrinque glaberrimis, basi in petiolum 0,5—1 cm longum attenuatis, petiolo incluso 2,5—4 cm longis, supra medium 1,5—2,2 cm latis, margine subundulatis (siccis tantum?); floribus minutis in fasciculis extraaxillaribus alternantibus paucifloris, niveis vel pallide roseis, pedicello filiformi glaberrimo, ca. 0,2 cm longo; calycis segmentis ovato-lanceolatis obtusis glabris, corolla duplo brevioribus, 0,1 cm longis; corolla ovoidea 0,2 cm longa, supra basin vix 0,1 cm diametro, extus glaberrima, apicibus liberis erectis deltoideo-lanceolatis obtusiusculis apice intus incrassatis, extus glaberrimis, intus infra apicem barbatis, annulo hyalino brevi in fauce corollae; coronae foliolis erectis ungue linearis, apice bifidis, lacinias linearis-lanceolatis acutis, pendulis, ungue subdupo brevioribus; antheris subdeltoideis, basin versus dilatatis marginibus cartilagineis angustis, apice acuto, brevi inflexo, marginibus loculorum subincrassatis; polliniis anguste oblongis utrinque obtusis.

North Luzon, Enrile (WARBURG no. 12252).

Ein zierliches kriechendes Gewächs mit sehr kurz gestielten kleinen rosenroten Blüten. Mit Ausnahme der Behaarung an der Spitze der Petalen ist die Pflanze vollständig kahl.

2. ***Dischidia saccata* Warb. n. sp.** Caule glabro epidermate albido-squamoso; petiolis brevissimis (1—1,5 mm longis) glabris foliis

carnosis fere orbicularibus 2 cm longis 1,8 cm latis basi et apice rotundatis glabris, venis ca. 4 utrinque brevibus vix distinetis, margine in secco vix revoluto; ascidiis late-ovatis basi et apice rotundatis haud angulatis, 4—5 cm longis 3 cm latis, extus pallidis, glabris.

Mindanao Isl., Davao, Taumo, auf einzelnstehenden Bäumen (WARBURG no. 14384).

Die ganz runden Blätter und vor allem die sackförmigen runden dicken und kurzen Schläuche sind für die Art charakteristisch.

### 3. *Dischidia* sp.

Luzon Isl., Prov. Bataan, Mariveles, Lamao River (MERRILL no. 2566); Prov. Rizal, Tanay (MERRILL no. 2362); Culión Isl. (MERRILL no. 591).

#### *Dischidiopsis* Schltr.

1. ***Dischidiopsis philippinensis*** Schltr. n. sp. Parasitica, flexuosa, ramosa; ramis carnosulis teretibus glabris, plus minusve laxe foliatis; foliis patentibus patulisve obovato-oblongis breviter acuminatis, basi in petiolum brevem angustatis, carnosis, utrinque glabris, petiolo inclusio 4—6 cm longis, medio fere 1,5—3 cm latis; inflorescentia extraaxillari, subsessili vel breviter pedunculata, congesta pluriflora, petiolo fere aequilonga vel breviore; floribus minutis, breviter pedicellatis, pedicello glabro; calycis segmentis ovato-oblongis ovatisve obtusis, glabris; corolla urceolari dimidio inferiore inflata extus glabra, 0,4 cm longa, lobis minutis erectis ovato-lanceolatis, subacutis, intus carnosoincrassatis, tubo intus pilis erectis longis ornato, parte inflata glabra, apice intus squamis 5 semi-orbicularibus glabris donato; antheris rhomboideis, marginibus cartilagineis basin versus ampliatis, appendice hyalina anguste oblonga acuta; polliniis compressis anguste oblongis, basin versus paulo angustatis erectis, translatoribus crassis perbrevibus, retinaculo anguste oblongo obtuso, polliniis duplo minore.

Lubang Isl. (MERRILL no. 972; in flower in April 1903).

Dieses ist nunmehr die dritte mir bekannte Art der Gattung *Dischidiopsis*, welche sich von *Dischidia* durch das Fehlen der Korona auszeichnet. Die erste mir bekannte Art ist *D. papuana* Schltr. (*Dischidia papuana* Warbg.) von Neu-Guinea,

die zweite wurde von den Gebrüdern SARASIN auf Celebes gesammelt.

### Hoya R. Br.

1. **Hoya camphorifolia** Warb. n. sp. Ramulis laevibus tenuibus lenticellis punctiformibus elevatis inspersis, pedicellis 7 mm longis 1,5 mm crassis, foliis pergamaceis glabris ovato-ellipticis vel ellipticis 6—8 cm longis 3—3,5 cm latis apice subacuminate acutis basi rotundatis, venis utrinque 2—3 ascendentibus (incl. 2—3 basalibus) apicem haud attingentibus, nervis tertiaris reticulatis distinctis. Inflorescentia juxtaaxillari 8 cm longa  $\frac{2}{3}$  mm crassa glabra, apice capitata incrassato florigera; pedicellis 12—13 mm longis capilliformibus ( $\frac{1}{8}$  mm crassis), sepalis 1 mm longis lanceolatis subacutis, corolla 6 mm in diametro extus glabra, intus papillosa, lobis lanceolato-triangularibus, coronae stamineae lobis patulis ellipticis navicularibus supra concavis, apice interno erecto acuto, apice externo haud recurvo obtuso.

Middle Luzon, Prov. Tayabas, Sampaloc (WARBURG without no.).

2. **Hoya diversifolia** Blume?

Culián Isl. (MERRILL no. 585).

3. **Hoya Fischeriana** Warb. n. sp. Folio crasse coriaceo late lanceolato 12—19 cm longo 4—7 cm lato basi et apice acuto glabro 5-nervio, nervis internis apicem fere attingentibus, reticulo nervorum distincto, petiolo 2—3,5 cm longo 2—3 mm crasso; pedunculo ca. 5 cm longo 2 mm crasso, dimidio superiore florigero cylindrico 3 mm crasso; pedicellis glabris capilliformibus ca. 1,5 cm longis, sepalis late lanceolatis 1 mm longis glabris, corolla 7 mm in diametro extus glabra intus subpapillosa profunde lobata, lobis rhomboideis, coronae stamineae lobis patulis late lanceolatis utrinque acutis, apice interno elevato, apice externo haud recurvo; fructum pedicellis 2 cm longis, fructibus 12 cm longis 4 mm latis, seminibus fulvis linearibus complanatis 4 mm longis  $\frac{3}{4}$  mm latis, coma fere 3 cm longa.

Nord Luzon, Prov. Isabela, Malunú (WARBURG no. 11955).

Diese mit *H. cinnamomifolia* Hook verwandte, aber durch viel kleinere Blüten und schmälere lanzettliche, beiderseits spitze Koronallappen ausgezeichnete Art habe ich zu Ehren des Tabak-

pflanzers Fischer benannt, der in Malunú mich in liebenswürdiger Weise beherbergt hat.

4. ***Hoya imbricata*** Dene.

Luzon Isl., Prov. Rizal, Tanay (MERRILL no. 2363).

5. ***Hoya incrassata*** Warb. n. sp. Ramulis crassis 5 mm in diametro glabris, lenticellis paucis punctiformibus elevatis inspersis, brunneocinereis, in nodis incrassatis, petiolis ca. 2 em longis valde incrassatis 5—6 mm latis, foliis crasse coriaceis ovatis vel oblongis 9—14 cm longis 5—6 cm latis basi rotundatis vel paulo subcordatis apice acuminatis acutis glabris supra nitidis, costa subtus valde prominente, venis utrinque 4—5 patulis ante marginem arcuate confluentibus. Pedunculis 8 cm longis, parte superiore 6 cm longa florifera 4 mm lata dense cicatricibus florum obtecta, pedicellis tenuiter filiformibus 15—17 mm longis, sepalis 1 mm longis minute ciliolatis, corolla 8—9 mm in diametro glabra, intus punctate papillosa in sicco obscuro-purpurea, coronae stamineae lobis tenuibus late ellipticis patulis navicularibus supra plane concavis utrinque subacutis fere 2 mm latis stramineis.

Middle Luzon, Prov. Tayabás, Sampaloc (WARBURG no. 12997, 12998).

Diese Art ähnelt der *Hoya crassipes* Turcz. von Java einigermaßen.

No. 14387, steril, von Mindanao dürfte eine der *H. incrassata* Warb. recht nahestehende Art sein, doch sind die Blätter breiter, fast rundlich oval.

6. ***Hoya luzonica*** Schltr. n. sp. Volubilis, scandens, ramosa; ramis teretibus glabris, carnosiusculis, remote foliatis; foliis patentibus oblongis obtusiusculis vel acutis, utrinque glaberrimis, coriaceo-carnosis, ca. 9—13 cm longis, medio fere 5—6 cm latis, petiolo carnosulo glabro 1,5—2 cm longo; floribus in umbellis plurifloris, axillaribus alternantibus, erectis, pedunculo carnosissimo tereti glaberrimo 0,8 cm longo, pedicellis erectis filiformibus glabris, 1—1,5 cm longis, post aestivationem incrassatis; calycis segmentis late ovato-oblongis obtusis, vel suborbicularibus, glabris, 0,3 cm longis, corolla duplo brevioribus; corolla subrotata 11 mm diametro, lobis late triangularibus, extus glabris, intus dense papillosis, 0,6 cm longis, basi connatis; coronae foliolis late ellipticis, patentibus e basi deltoideo-lanceolata, apicem versus attenuatis obtusis, antheris vix longioribus; antheris subquadratibus,

marginibus cartilagineis basi vix ampliatis obtusis, bene conspicuis, appendice hyalina late oblonga obtusa in stigma inflexa, marginibus loculorum incrassatis, breviter emarginatis. Capsulis 12 cm longis 7 mm latis, seminibus lanceolatis complanatis 6 mm longis 1,5 mm latis; coma alba 1,5 mm longa.

Luzon Isl., Prov. Bataan, Mt. Mariveles, Lamao River (MERRILL no. 2565); Prov. Zambales (WARBURG no. 13765, type).

Eine vollständig kahle Pflanze mit langgestielten aufrechten Blütendolden. Die Art ist durch den großen Kelch und die im Umkreise fast dreieckigen Koronaschuppen unschwer zu erkennen. Die Pollinien habe ich nicht finden können.

7. **Hoya Merrillii** Schltr. n. sp. Volubilis, scandens, epiphytica; ramis filiformibus teretibus, glabris, radicantibus, distanter foliatis, carnosulis; foliis patentibus patulisve, ovatis acuminatis, carnosis, utrinque glabris, siccis nervis 5 prominentibus donatis, 6—9 cm longis, infra medium 5—6,5 cm latis, petiolo brevi, carnosu, 1,5—2 cm longo; inflorescentia subaxillaris, umbellata, 20—30-flora; pedunculo crasso ca. 2 cm longo; rhachi incrassata abbreviata, bracteis minutis, dentiformibus; pedicellis filiformibus ca. 2 cm longis, glabris; calycis segmentis ovato-lanceolatis, obtusis, glabris, 0,1 cm longitudine vix excedentibus; corollae rotatae alte fissae lobis oblongis acutis, subtus glabris, superne minutissime puberulis, 0,4 cm longis, medio fere 0,2 cm latitudine paulo excedentibus; coronae foliolis adscendentibus carnosis, depressis, lanceolatis utrinque acuminatis, apice antica subrecta, longitudine 0,3 cm subattingentibus; antherarum appendice hyalina oblonga obtusa in stigmatis caput incurva; polliniis compressis oblique oblongis, translatoribus perbrevibus dilatis, retinaculo rhomboideo latius marginato; stigmatis capite depresso, medio callo brevi conico donato.

Mindoro Isl., Pola (MERRILL no. 2218; in flower in May 1903).

Habituell steht die Pflanze der *H. parasitica* Wall. von Hinterindien wohl am nächsten. Sie unterscheidet sich von ihr durch die innen sehr fein und kurz behaarten Blüten und die stark aufwärts strebenden Spitzen der Koronaschuppen.

8. **Hoya multiflora** Blume.

Luzon Isl., Prov. Rizal, Antipolo (MERRILL no. 1672, in flower in March 1903); Distr. Morong, Bosoboso (LOHER no. 4072); Mindoro Isl., Pola (MERRILL no. 1662).

9. **Hoya quinquenervia** Warb. n. sp. Folio unico exstante coriaceo glabro late ovato 6,5 cm longo 4 cm lato apice breviter acuminate acuto basi rotundato 5-nervis, nervio internis apicem fere attingentibus, reticulo nervorum subdistineto; petiolo 15 mm longo 3 mm crasso; pedunculo 2 cm longo 2 mm crasso, parte florigera 4 mm crassa cylindrica, pedicello 15 mm longo  $\frac{1}{3}$  mm crasso, glabro, sepalis 1 mm longis ovatis acutis glabris margine minutissime ciliolatis, corolla 7—8 mm in diametro extus glabra intus papillosa, coronae stamineae lobis patulis late lanceolatis concavis apice interno erecto acuto, apice externo haud recurvato acuminato.

North Luzon, Prov. Isabela, Malunú (WARBURG no. 11956).

Wohl verwandt hiermit ist no. 14386 aus Süd-Mindanao, Davao, eine Art mit gleichfalls 5nervigen, aber mehr elliptischen und nicht spitzen, sondern apikulaten Blättern, sowie etwa 10 cm langen und 1 mm dicken Blütenstandsstielen, leider sind die Blüten beim Trocknen abgefallen und verschwunden.

#### **Marsdenia** R. Br.

1. **Marsdenia pergulariiformis** Schltr. n. sp. Volubilis, alte scandens, ramosa; ramulis subteretibus glaberrimis remote foliatis; foliis tenuibus patentibus patulisve, graciliter petiolatis, ovato-lanceolatis apice attenuato-acuminatis, basi rotundatis, utrinque glabris, subtus vix pallidioribus, 7—9 cm longis, infra medium 4—5 cm latis, petiolo semitereti, glaberrimo, 3—4 cm longo; floribus in umbellis extraaxillaribus alternantibus, plurifloris, petiolum vix excedentibus, pedunculo erecto tereti glabro, 1,5—2 cm longo, pedicellis tenuissime puberulis, filiformibus 0,5—0,7 cm longis; calycis segmentis oblongis obtusis puberulis, 0,2 cm longis; corolla campanulata 0,4 cm longa, tubo cylindrico, lobis oblongis obtusis, tenuissime ciliatis; coronae foliolis oblongo-ligulatis erectis, apice attenuatis, subacuminatis, antheris alte adnatis, eisque subaequilongis; antheris oblongis, marginibus cartilagineis more generis angustissimis, appendice hyalina ampla, oblonga obtusa, stigmati appressa; polliniis oblongis utrinque obtusis, caudiculis divaricatis perbrevisbus filiformibus, glandulae minutissimae oblongae, polliniis permulto minori basi insertis.

Middle Luzon, Prov. Tayabas, Sampaloc (WARBURG no. 13002).

Die Pflanze besitzt mehr das Aussehen einer *Pergularia* als das einer *Marsdenia*, doch verweist das Fehlen der Ligula auf der inneren Seite der Korona und die sonstige Struktur sie zu *Marsdenia*. Außer der Form der Blüten sind die Charaktere der Art stumpfe behaarte Kelchzipfel, kahle am Rande sehr fein gewimperte Petalen, oblong-lanzettliche Koronaschuppen, die an der Spitze schnabelartig verjüngt sind, die Anthere kaum überragend. Die Art gehört zur Sektion *Macrocentrum* Hk.

2. ***Marsdenia philippinensis*** Schltr. n. sp. Volubilis, alte scandens, ramosa; ramulis teretibus glabrescentibus, remote foliatis; foliis graciliter petiolatis, patentibus patulisve, ovatis acuminatis, profundius cordatis, utrinque dense velutinis; ca. 9 cm longis, infra medium 6—7 cm latis, petiolo semitereti velutino; cymis extraaxillaribus alternantibus laxe multifloris ramosis, foliis brevioribus, pedunculo, petiolis breviore, pedicellis filiformibus velutinis 0,9 cm longis; calycis segmentis ovatis subacutis velutinis, corollae duplo brevioribus; corolla campanulata, extus velutina 0,6 cm longa, lobis oblongis obtusis, intus dimidio superiore glabris, tubo puberulis, 0,3 cm latis; gynostegio corollae tubo subaequilongo; coronae foliolis antheris alte adnatis oblongo-ligulatis obtusis, antheris aequilongis, dorso incrassato-carinatis; antheris oblongis marginibus cartilagineis angustis, appendice hyalina ovato-oblonga obtusa, stigmati appressa, marginibus loculorum incrassatis, breviter rotundato emarginatis; polliniis oblongis utrinque obtusis, caudiculis brevibus divaricatis, glandulae rhomboideae polliniis plus duplo minoribus basi insertis; stigmatis capite breviter conico obtuso.

Luzon Isl., Mariveles (WARBURG no. 13548).

Ebenfalls zur Sektion *Macrocentrum* gehörig, am nächsten verwandt mit *M. crocea* Hk. f. und der weiter unten beschriebenen *M. Warburgii* Schltr., besonders mit der letzteren. Von dieser zu erkennen durch größere Blüten, spitze Kelchzipfel und vor allen Dingen durch die Korona, welche bei *M. philippinensis* auf dem Rücken mit einem lamellenförmigen Kiele versehen, bei *M. Warburgii* aber gefurcht ist. Beide Arten kommen von den Philippinen.

3. ***Marsdenia Warburgii*** Schltr. n. sp. Volubilis, alte scandens, ramosissima; ramulis teretibus bifariam villosis plus minusve

remote foliatis; foliis patentibus patulive late ovato-cordatis acuminatis, superne glabrescentibus, subtus velutinis, reticulato-nervosis, 5—8 cm longis, infra medium 4—6 cm latis, petiolo semitereti gracili, tenuissime velutino, 3—4,5 cm longo; floribus in cymis laxis extraaxillaribus alternantibus, ramosis, multifloris, foliis brevioribus, pedunculo perbrevi velutino, pedicellis erectis filiformibus, 0,8 cm longis tenuissime velutinis; calycis segmentis oblongis obtusis, velutinis, vix 0,3 cm longis; corollae tubo brevi cylindrico, lobis patentibus oblongis obtusis extus puberulis, intus glabris, margine tenuiter ciliatis, tubo intus praesertim fauce piloso; gynostegio corollae tubo paulo breviore; coronae foliolis erectis dorso antherarum alte adnatis, lanceolato-ligulatis acutis dorso medio longitudinaliter sulcato-excavatis, antheris paululo brevioribus; antheris oblongis, marginibus cartilagineis angustis, appendice hyalina ampla, oblonga obtusa, stigmati appressa; polliniis oblongis utrinque obtusis, caudiculis divaricatis brevissimis, glandulae rhomboideo-oblongae minutissimae basi affixis; stigmatis capite breviter conico.

Mindanao Isl., Cotabato (WARBURG no. 15026).

Von der oben beschriebenen *M. philippinensis* durch kleinere Blüten, stumpfe Kelchzipfel, am Rande gewimperte Petalen, die Korona und durch Pollinien gut charakterisiert. Die Behaarung der Blätter ist bei dem Exemplare, welches ich besitze, bei *M. philippinensis*, bedeutend stärker, besonders auf der oberen Seite derselben, doch möchte ich auf einen derartigen Charakter in der Gattung nicht eher Gewicht legen, bis ich mehr Exemplare beider Arten gesehen habe.

### **Dregea** E. Mey.

#### 1. **Dregea viridiflora** Bth.

Lubang Isl. (MERRILL no. 959, in flower in April 1903).

### **Pergularia** L.

1. **Pergularia angustiloba** Warb. n. sp. Volubilis ramulis in sicco luteis demum brunneis vix puberulis teretibus vel subangulatis, petiolis 12—20 cm longis tenuibus ( $\frac{2}{3}$  mm crassis) puberulis, foliis subtus pallidis 6—7 cm longis  $2\frac{1}{2}$ — $3\frac{1}{2}$  cm latis ovatis basi obtusis apice acuminatis vel vulgo cuspidatis obtusis in nervis praesertim subtus puberulis, venis 4—6 ascendentibus

subcurvatis, supra in basi costae minute glandulosis. Inflorescentiis intra-petiolaribus 4—5 cm longis, dense cymosis vel pseudo-umbellatis, pedunculis  $1\frac{1}{2}$ —2 cm longis 1 cm latis vix puberulis apice brevissime bifidis, pedicellis 1— $1\frac{3}{4}$  cm longis  $\frac{2}{3}$  mm crassis subpuberulis, sepalis 3 mm longis obtusis margine ciliolatis, corolla  $1\frac{1}{2}$  mm alta, tubo 1 cm longo pilis paucis erectis insperso intus glabro in parte inferiore ventricoso, lobis fere 1 cm longis angustis  $1\frac{1}{2}$  mm latis apice subspatulatis margine ciliatis ceterum fere glabris, coronae stamineae ligula lanceolata antheras superante vix concava, coronae foliolo ligulae omnino adnato antherae forma eamque omnino obtegente, antherarum appendicibus lanceolatis stigma alte conicum obtegentibus, polliniis oblongis magnis, caudiculis brevissimis, translatoribus crassis quam pollinia minoribus.

Luzon Isl. (CUMING, WARBURG no. 1334).

In MIQUELS Flora Ind. Bat. zu der javanischen *P. accedens* Bl. gezogen, doch von ihr durch die kahlen Blattränder, durch die dicht fast doldig stehenden Blüten, die am Rande gewimperten Kelchblätter, die schmalen Kronblätter, die innere kahle Kronröhre usw. verschieden. Die der Ligula bis zur Spitze angewachsenen inneren Koronablättchen sind charakteristisch.

2. **Pergularia filipes** Schltr. n. sp. Volubilis, alte scandens, ramosa; ramulis teretibus glabrescentibus, remote foliatis; foliis patentibus vel erecto-patentibus, graciliter petiolatis, ovato-cordatis acuminatis, tenuibus, glabris, 6—10 cm longis, medio fere 3,5—5,5 cm latis, petiolo glabro semitereti 2—2,5 cm longo; floribus in cymis umbelliformibus, subextraaxillaribus, alternantibus plurifloris, petiolum paulo excedentibus, pedunculo tereti subglabro, pedicellis filiformibus glabris, 1,5 cm longis aequilongo; calycis segmentis corollae appressis, ovato-oblongis obtusis glabris, 0,3 cm longis; corolla extus glaberrima, tubo oblongo, fauce paulo contracto, 0,4 cm longo, lobis erecto-patentibus oblongis obtusis, intus pilis niveis praesertim fauce ornatis, 0,4 cm longis, 0,2 cm latis; gynostegio corollae tubo subaequilongo; coronae foliolis erectis, oblongo-ligulatis obtusis supra medium vix dilatatis, intus ligula anguste oblonga obtusa apice supra antheras paulo breviores incurva ornatis; antheris oblongis, marginibus cartilagineis angustis, appendice hyalina oblonga obtusa, marginibus loculorum rotundatis; stigmatis capite subconico obtuso, basi annulo incrassato cincto, breviter bifido.

Middle Luzon, Prov. Pampanga, Arayat (WARBURG no. 13767).

Die sehr schlanken, dünnen Blütenstiele zeichnen diese Art sofort von den anderen ostasiatischen Arten aus. Ihre nächste Verwandte *P. subpuberula* Miq. ist durch die Blätter, die Infloreszenz, Behaarung und durch die Korona von der vorliegenden erkennbar.

## Eriocaulaceae

by

W. RUHLAND.

### Eriocaulon L.

1. **Eriocaulon Merrillii** Ruhl. n. sp. Caule perbrevi; foliis caespitosis, subulato-linearibus, glabris, acutis, fenestrato-4—7-nerviis, 2—5 cm longis, medio 1—2 mm latis; pedunculis paucis (3—7), obsolete costatis, vix tortis, glabris, herbaceis, stramineo-virescentibus, 3—8 cm altis; vaginis oblique fassis, laxis, glabris, quam folia brevioribus, ca. 1—2,5 cm longis; capitulis pallide stramineis, obconico-subglobosis, glabrescentibus, 2—3 mm latis; bracteis involuerantibus oblongo-ovatis, acutiusculis, glabris; bracteis flores stipantibus similibus, acutis, pallidis, navicularibus; flos ♂: sepalis in spatham in lobos 2—3 solubilem connatis, glabris, superne nigrescentibus; petalis 3, perparvis, aequalibus, glanduligeris, parce piliferis; staminibus 6; antheris nigris; flos ♀: sepalis nullis; petalis 3, linearibus, apice minute glanduligeris, glabriusculis, albidis; germine trimero; stylo trifido.

Culián Isl. (MERRILL no. 572, Dec. 1902).

Nearly related to *E. redactum* Ruhl., from which it differs in the structure of the female flower.

# Gramineae

by

C. MEZ AND R. PILGER.<sup>1</sup>

## Maydeae.

### Coix L.

1. **Coix lachryma-jobi** L.

Luzon Isl., Prov. Manila (MERRILL no. 64; in fruit in May 1902); Prov. Rizal, Bosoboso (MERRILL no. 1853; in fruit in April 1903).

## Andropogoneae.

### Imperata Cyr.

1. **Imperata cylindrica** (L.) Pal. Beauv., var. **Koenigii** (Retz.) Benth. Luzon Isl., Prov. Manila (MERRILL no. 85; in flower in May 1902).
2. **Imperata exaltata** Brongn. Paragua Isl., Ewiig River (MERRILL no. 701; in flower in February 1903).

### Miscanthus L.

1. **Miscanthus japonicus** Anderss.

Luzon Isl., Prov. Principe, Baler (MERRILL no. 1125; in flower in October 1903).

### Saccharum L.

1. **Saccharum spontaneum** L., subsp. **indicum** Hack.

Luzon Isl., Prov. Manila (MERRILL no. 93; in flower in May 1902); Mindoro Isl., Calapan (MERRILL no. 896; in flower in April 1903).

### Erianthus Michx.

1. **Erianthus sp.**

Mindoro Isl., Baco River (MERRILL no. 1794).

1) The grasses belonging to the tribe of *Paniceae* have been determined by Prof. Dr. C. MEZ, those of the other tribes by Dr. R. PILGER.

**Pollinia** Trin.

1. **Pollinia argentea** Trin.  
Luzon Isl., Prov. Nueva Viscaya, Bagabag (MERRILL no. 108).
2. **Pollinia articulata** Trin., subsp. **fragilis** Hack., var. **setifolia** (Nees) Hack.  
Luzon Isl., Prov. Nueva Viscaya, Quinangan (MERRILL no. 317; in flower in June 1902).
3. **Pollinia Cumingii** Nees.  
Luzon Isl., Prov. Nueva Ecija, Carranglang (MERRILL no. 260; in flower in May 1902).
4. **Pollinia speciosa** (Deb.) Hack.  
Culián Isl. (MERRILL no. 472).
5. **Pollinia** sp.  
Luzon Isl., Prov. Nueva Viscaya, Quinangan (MERRILL no. 117).

**Polytrias** Hack.

1. **Polytrias praemorsa** Hack.  
Luzon Isl., Prov. Manila (MERRILL no. 386).

**Rottboellia** L.

1. **Rottboellia exaltata** L. f.  
Luzon Isl., Prov. Nueva Viscaya, Dupax (MERRILL no. 212); Mindoro Isl., Calapan (MERRILL no. 989).
2. **Rottboellia glandulosa** Trin.  
Culián Isl. (MERRILL no. 505).
3. **Rottboellia ophiuroides** Benth.  
Luzon Isl., Prov. Nueva Viscaya, Bagabag (MERRILL no. 121<sup>bis</sup>).  
The number 121 in MERRILL's collection occurs twice in the Berlin herbarium and I have designated one specimen, *Rottboellia ophiuroides* Benth., as 121<sup>bis</sup> (J. P.).

**Ophiurus** Gaertn.

1. **Ophiurus corymbosus** Gaertn.  
Luzon Isl., Prov. Nueva Viscaya, Bagabag (MERRILL no. 121).  
See also *Rottboellia ophiuroides*.

**Polygonatherum** Pal. Beauv.

1. **Polygonatherum saccharoideum** Pal. Beauv., var. **monandrum** (Roxb.) Hack.

Luzon Isl., Prov. Nueva Ecija, Carranglang (MERRILL no. 269); Paragua Isl., Ewiig River (MERRILL no. 708).

### **Ischaemum L.**

1. **Ischaemum aristatum** L., var. **gibbum** (Trin.) Hack.  
Luzon Isl., Prov. Isabela, Echague (MERRILL no. 135); Prov. Nueva Viscaya, Dupax (MERRILL no. 253); Culión Isl. (MERRILL no. 469, 677).
2. **Ischaemum intermedium** Brongn.  
Luzon Isl., Prov. Manila (MERRILL no. 68).
3. **Ischaemum rugosum** Salisb., var.  $\beta$  **segetum** (Trin.) Hack.  
Luzon Isl., Prov. Bataan, Dinalupihan (MERRILL no. 1550).
4. **Ischaemum muticum** L.  
Mindoro Isl., Bulalacao (MERRILL no. 915); Caguray (MERRILL no. 931).

### **Eremochloa Büse.**

1. **Eremochloa leersioides** (Munro) Hack.  
Luzon Isl., Prov. Isabela, Echague (MERRILL no. 138).

### **Apluda L.**

1. **Apluda varia** Hack., subsp. **mutica** (L.) Hack., var. **humilis** (Presl) Hack.  
Luzon Isl., Prov. Manila (MERRILL no. 629); Prov. Nueva Viscaya, Quinangan (MERRILL no. 110); Culión Isl. (MERRILL no. 685).

### **Arthraxon Pal. Beauv.**

1. **Arthraxon ciliaris** Pal. Beauv., subsp. **Langsdorffii** (Trin.) Hack.  
Luzon Isl., Prov. Nueva Viscaya, Quinangan (MERRILL no. 102).

### **Andropogon L.**

1. **Andropogon aciculatus** Retz.  
Luzon Isl., Prov. Manila (MERRILL no. 367); Prov. Rosales, Pangasinan (MERRILL no. 272).
2. **Andropogon brevifolius** Sw.  
Luzon Isl., Prov. Nueva Viscaya, Quinangan (MERRILL no. 103).
3. **Andropogon contortus** L., var. **hispidissimus** Hack.  
Luzon Isl., Prov. Manila (MERRILL no. 90); Prov. Nueva Ecija, Humingan (MERRILL no. 289).
4. **Andropogon intermedius** R. Br., var.  $\beta$  **Haenkei** (Presl) Hack.  
Luzon Isl., Prov. Nueva Viscaya, Dupax (MERRILL no. 313).

5. ***Andropogon mieranthus*** Kth.  
Luzon Isl., Prov. Nueva Viscaya, Bagabag (MERRILL no. 118).
6. ***Andropogon Nardus*** L., var. ***hamatus*** (Nees) Hack.  
Luzon Isl., Prov. Nueva Ecija, Carranglang (MERRILL no. 244).
7. ***Andropogon sericeus*** R. Br.  
Luzon Isl., Prov. Nueva Ecija, Carranglang (MERRILL no. 266).
8. ***Andropogon serratus*** Thunb., var. ***nitidus*** (Vahl) Hack.  
Luzon Isl., Pangasinan, Huminan (MERRILL no. 263); Mindoro Isl., Calapan (MERRILL no. 889).  
forma ***hirsuta***  
Luzon Isl., Prov. Isabela, Echague (MERRILL no. 137).
9. ***Andropogon Sorghum*** (L.) Brot., subsp. ***halepensis*** (L.) Hack., var. ***propinquus*** Hack.  
Luzon Isl., Prov. Nueva Ecija, Dupax (MERRILL no. 259); Prov. Pampanga, Arayat (MERRILL no. 1468).
10. ***Andropogon Sorghum*** (L.) Brot., subsp. ***sativus*** Hack.  
Culián Isl. (MERRILL no. 492; in fruit in December 1902).

**Themedae** Forsk.

1. ***Themedae*** ***Forskallii*** Hack.  
Luzon Isl., Prov. Nueva Ecija, Carranglang (MERRILL no. 265).
2. ***Themedae*** ***gigantea*** (Cav.) Hack., var. ***genuina*** Hack.  
Luzon Isl., Prov. Nueva Ecija, S. José (MERRILL no. 294); Prov. Rizal, Tanay (MERRILL no. 2314); Prov. Zambales, Subic (MERRILL no. 2086); Culián Isl. (MERRILL no. 442).  
forma var. ***vulpinae*** Hack. proxima  
Luzon Isl., Prov. Rosales, Pangasinan (MERRILL no. 262).

**Zoysiae.**

**Zoysia** Willd.

1. ***Zoysia pungens*** Willd.  
Luzon Isl., Prov. Manila (MERRILL no. 27).

**Tristegineae.**

**Arundinella** Raddi.

1. ***Arundinella setosa*** Trin., var. ***stricta*** (Nees).  
Luzon Isl., Prov. Isabela, Echague (MERRILL no. 129).
2. ***Arundinella*** sp. (an n. sp.?).  
Luzon Isl., Prov. Rizal, Tanay (MERRILL no. 2262).

**Thysanolaena** Nees.

1. **Thysanolaena maxima** O. Ktze. = **Th. acarifera** Arn. et Nees.  
Mindoro Isl., Baco River (MERRILL no. 1795; in flower in April 1903).

**Paniceae.****Paspalum** L.

1. **Paspalum conjugatum** Berg.  
Luzon Isl., Prov. Manila (MERRILL no. 34); Prov. Principe, Baler (MERRILL no. 1137).
2. **Paspalum longifolium** Roxb.  
Luzon Isl., Prov. Nueva Viscaya, Bagabag to Bayombong (MERRILL no. 140).
3. **Paspalum scrobiculatum** L.  
Luzon Isl., Prov. Nueva Ecija, Carranglang (MERRILL no. 235); Paragua Isl., Point of Separation (MERRILL no. 820).
4. **Paspalum Thunbergii** Kunth.  
Luzon Isl., Prov. Manila (MERRILL no. 8); Culión Isl. (MERRILL no. 479).

**Eriochloa** Kunth.

1. **Eriochloa annulata** Kth.  
Luzon Isl., Prov. Manila (MERRILL no. 7<sup>bis</sup>).

**Isachne** Brown.

1. **Isachne minutula** Kth.  
Luzon Isl., Prov. Nueva Viscaya, Quinangan (MERRILL no. 101); Prov. Manila (MEYEN a. 1831); Middle Luzon, Sampaloc (WARBURG no. 12717); Montalbán (WARBURG no. 12735); Culión Isl., wet, open soil (MERRILL no. 467 in Dec. 1902).
2. **Isachne pulchella** Roth.  
Luzon Isl., Mahahai (WICHURA no. 1894); Prov. Nueva Ecija, Caraballo Sur (MERRILL no. 211); Culión Isl. (MERRILL no. 462).

**Panicum** L.

1. **Panicum aeroanthum** Steud.  
Luzon Isl., Prov. Nueva Viscaya, Quinangan (MERRILL no. 123).
2. **Panicum ambiguum** Trin.  
Luzon Isl., Prov. Nueva Viscaya, Bagabag (MERRILL no. 120); Bayombong (MERRILL no. 307).

3. **Panicum auritum** Presl.  
Luzon Isl., Prov. Manila (MERRILL no. 37); Culión Isl. (MERRILL no. 476).
4. **Panicum brevifolium** L.  
Culión Isl. (MERRILL no. 458).
5. **Panicum caesium** Nees.  
Luzon Isl., Prov. Nueva Ecija, Carranglang (MERRILL no. 316).
6. **Panicum colonum** L.  
Luzon Isl., Prov. Manila (MERRILL no. 362); Prov. Pangasinan, Rosales (MERRILL no. 288); Prov. Bataan, Dinalupihan (MERRILL no. 1549); Prov. Príncipe, Baler (MERRILL no. 1143); Paragua Isl., Point of Separation (MERRILL no. 1793).
7. **Panicum Crus-galli** L.  
Luzon Isl., Prov. Manila (MERRILL no. 5, 39); Prov. Rizal, Tanay (MERRILL no. 2269).
8. **Panicum flavidum** Retz.  
Luzon Isl.; Prov. Manila (MERRILL no. 21, 355); Prov. Bataan, Dinalupihan (MERRILL no. 1526).
9. **Panicum indicum** L.  
Luzon Isl., Prov. Nueva Viscaya, Quinangan (MERRILL no. 315); Prov. Príncipe, Baler (MERRILL no. 1139).
10. **Panicum miliare** Lam.  
Luzon Isl., Prov. Manila (MERRILL no. 10).
11. **Panicum montanum** Roxb.  
Culión Isl. (MERRILL no. 512, 554).
12. **Panicum myosuroides** R. Br.  
(CUMING no. 1688).
13. **Panicum ouonbiense** Balansa.  
Luzon Isl., Prov. Nueva Viseaya, Quinangan (MERRILL no. 127); Caraballo Sur (MERRILL no. 255); Culión Isl. (MERRILL no. 527).
14. **Panicum patens** L.  
Luzon Isl., Prov. Nueva Viscaya, Dupax (MERRILL no. 254); Prov. Rizal, Antipolo (MERRILL no. 1322); Paragua Isl., Ewiig River (MERRILL no. 730).
15. **Panicum parvulum** Trin.  
Luzon Isl., Prov. Nueva Ecija, Carranglang (MERRILL no. 249); Prov. Zambales, Iba (MERRILL no. 331); Mahahai (WICHURA no. 1877).

16. **Panicum pilipes** Nees.  
Culián Isl. (MERRILL no. 496).
17. **Panicum plicatum** Lam.  
Luzon Isl., Prov. Nueva Viscaya, Quinangan (MERRILL no. 133); Paragua Isl., Point of Separation (MERRILL no. 815).
18. **Panicum proliferum** Lam.  
Luzon Isl., Prov. Manila (MERRILL no. 97).
19. **Panicum prostratum** Lam.  
Luzon Isl., Prov. Isabela, S. Maria (MERRILL no. 132); Prov. Nueva Viscaya, Bagabag (MERRILL no. 115).
20. **Panicum puberulum** Kth.  
Luzon Isl., Prov. Nueva Viscaya, Bagabag (MERRILL no. 105).
21. **Panicum radicans** Retz.  
Luzon Isl., Prov. Bataan, Dinalupihan (MERRILL no. 1520, 1576); Culián Isl. (MERRILL no. 477).
22. **Panicum ramosum** L.  
Luzon Isl., Prov. Manila (MERRILL no. 352); Prov. Zambales, Iba (MERRILL no. 332).
23. **Panicum repens** L.  
Apo Isl., Mindoro Straits (MERRILL no. 429).
24. **Panicum sanguinale** L. (**P. horizontale** Mey.).  
Luzon Isl., Prov. Isabela, Echague (MERRILL no. 128); Prov. Manila (MERRILL no. 40, 89); Prov. Zambales, Iba (MERRILL no. 330); Prov. Nueva Viscaya, Quinangan (MERRILL no. 104); Culián Isl. (MERRILL no. 483, 529).
25. **Panicum sarmentosum** Roxb.  
Luzon Isl., Prov. Bataan, Dinalupihan (MERRILL no. 1608); Paragua Isl., Point of Separation (MERRILL no. 825); Mindoro Isl., Baco (MERRILL no. 1668).
26. **Panicum trypheron** Schult.  
Culián Isl. (MERRILL no. 678).
27. **Panicum Warburgii** Mez n. sp. (**Panicum patens** var. **parvulum** Warb.). Perennis, late repens et e culmorum decumbentium, teretium, glabrorum nodis radices singulas subsimplices procreans; culmis florigeris adscendentibus, praeter nodos sueto pilosos glabris, subteretibus. Folia basi in vaginas praeter marginem praesertim prope apicem dense longeque pilosum nunc sueto glabras nunc rarius dissite pilosas dilatata; ligulis brevissimis,

rotundatis vel subtruncatis, tenuissimis, fere integris, glabris; laminis suberectis vel suberecto-patentibus, lanceolatis, apice sensim acutissimis, basi angustius latiusve subrotundatis, planis, submembranaceis, nervo medio tenuissimo praeditis, margine prope basin tuberculis nonnullis longe piligeris auctis cet. vix serrulatis, subglabris vel praesertim supra  $\pm$  dissite pilosis,  $\pm$  30 mm longis, 6 mm latis. Inflorescentia pauci- vel subpauciflora, erecta, quaquaversa, bene superans, culmo semper sat brevior, 3-pinnatim gracillime perlaxeque panniculata, evoluta late subpyramidalis,  $\pm$  50 mm longa, 35 mm diam. metiens; axibus tenuibus filiformibus, angulatis, glabris laevibusque, per anthesin suberecto-patentibus, leviter undulatis, omnibus fertilibus; spiculis valde a latere compressis ultimis lateralibus pedicellis aequilongis vel saepius sat longioribus stipitatis, ad insertionem non piligeris, erectis, breviter pilosis vel rarius subglabris, brunneo-purpurascensibus, valde asymmetricis, apice oblique obtusis,  $\pm$  1,5 mm longis, 0,9 mm latis; glumis 1—3 bene prominenti-venosis, prima spiculam medio aequante, acuminata, 3-nervi; secunda sequentem ad  $\frac{3}{4}$  aequante 3-nervi, sicut haec late rotundata; gluma tertia 5-nervi, sequentem paullo superante; gluma quarta rigida, lutescenti-straminea, laevi, nitida, bene 3-nervi, a latere visa valde rotundato-asymmetrica, paleam dorso rotundatam paullo superante.

Luzon Isl. (WARBURG no. 12737, 11632); Prov. Nueva Vis- caya, Bayombong (MERRILL no. 303); Mindanao Isl. (WARBURG no. 14542).

28. **Panicum** n. sp.? affinis **Panico trachyrhachidi** Benth.  
Paragua Isl., S. Antonio Bay (MERRILL no. 832).

#### **Urochloa** Kunth.

1. **Urochloa semialata** Kunth.

Luzon Isl., Prov. Nueva Ecija, Carranglang (MERRILL no. 213); Prov. Nueva Vis- caya, Quinangan (MERRILL no. 119).

#### **Oplismenus** Pal. Beauv.

1. **Oplismenus Burmanni** (Retz.) Pal. Beauv.

Paragua Isl., Point of Separation (MERRILL no. 826).

2. **Oplismenus compositus** (L) Pal. Beauv.

Luzon Isl., Prov. Nueva Vis- caya, Quinangan (MERRILL no. 125); Culión Isl. (MERRILL no. 468, 489).

**Setaria** Pal. Beauv.

1. **Setaria glauca** (L.) Pal. Beauv.

Luzon Isl., Prov. Principe, Baler (MERRILL no. 1140); Prov. Nueva Viscaya, Quinangan (MERRILL no. 113); Prov. Nueva Ecija, Carranglang (MERRILL no. 208).

2. **Setaria italica** (L.) Pal. Beauv.

Culián Isl. (MERRILL no. 491).

**Cenchrus** L.

1. **Cenchrus echinatus** L.

Luzon Isl., Prov. Manila (MERRILL no. 83, 366); Culián Isl. (MERRILL no. 493).

**Chamaeraphis** Brown.

1. **Chamaeraphis aspera** Nees.

Luzon Isl., Prov. Manila (MERRILL no. 375).

**Spinifex** L.

1. **Spinifex squarrosum** L.

Luzon Isl., Prov. Manila (CHAMISSO); Prov. Zambales, Iba (MERRILL no. 333); Apo Isl., Mindoro Straits (MERRILL no. 419).

**Oryzeae.****Oryza** L.

1. **Oryza Meyeriana** (Zoll. et Mor.) Bth.

Luzon Isl., Prov. Nueva Viscaya, Quinangan (MERRILL no. 116).

2. **Oryza sativa** L.

Middle Luzon (LOHER no. 5168, 5170, 5172, 5173, 5178, 5180).

**Leersia** Sw.

1. **Leersia hexandra** Sw.

Luzon Isl., Prov. Manila (MERRILL no. 41, 381).

**Agrostideae.****Aristida** L.

1. **Aristida culionensis** Pilger n. sp. Perennis, culmo elato, superne longissime exserto, nudo, glaberrimo, terete, ad 1,5 m alto, innovationibus intravaginalibus, foliis longis, angustissime involutis; foliis basin culmi versus approximatis, vaginis pro parte sese tegentibus; foliorum lamina elongata, 50—70 cm vel etiam ultra

longa, anguste linearis, 3—4 mm lata, glabra, involuta, vagina glabra, crassiuscula parum striata, ligula per brevi truncata, breviter ciliata; panicula ampla, elongata, 40 cm circ. longa, ambitu elliptica, rhachi stricta; ramis ad internodia compluribus arcte approximatis, capillaribus, sebris, imprimis inferioribus a basi plures divisus, adspectu fasciculatis, circ. 10—12 cm longis; spiculis longius tenuiter pedicellatis; glumis vacuis subulatis, longe attenuatis, acutissimis, inferiore parum supra 1 mm lata, 1-nervia praeter nervos 2 ad basin glumae tantum vix notatos, evanescentes, 9,5—10 mm longa, raro ex nervo longius acutata, 12 mm longa, nervo extus sebra, superiore paulo angustiore, breviter apice bipartita et breviter ex nervo acutata, 10—12 mm longa; gluma florifera callo brevi, acuto, breviter albido-barbato instructa, asperula, 12 mm longa, sine articulatione in aristam tripartitam transeunte, aristae ramis 2,2—2,9 cm longis, subaequilongis.

Culión Isl. (MERRILL no. 515, 471). Dry open grassy valley.

Die neue Art ist mit *A. cyanantha* (Nees) Steud. verwandt, unterscheidet sich aber besonders durch die Verzweigung der Rispe, ferner durch völlige Kahlheit der jungen Sprosse.

2. ***Aristida stipoides* R. Br. var. *tenuisetulosa*** Pilger n. var. Gluma vacua inferiore 19—22 mm longa, subulata, longe acutissime attenuata, 1-nervia praeter nervos 2 breves ad basin glumae, in medianum confluentes, dorso imprimis ad nervum sebro, superiore subulata, 24 mm longa, praeter nervum in setam excurrentem setulis 2 tenuissimis lateralibus instructa.

Luzon Isl., Prov. Zambales, Iba (MERRILL no. 329).

Die neue Varietät unterscheidet sich von der australischen Form durch die Natur der Hüllspelzen, deren Verschiedenheit aber wohl nicht zur Abtrennung einer eigenen Art berechtigt. Der Callus der Deckspelze ist spitz, 2 mm lang, weiß glänzend behaart; die Granne ist unterhalb der Verzweigungsstelle von ihrer Abbruchstelle gerechnet ungefähr 2,5 cm lang, mehrmals gedreht, die Äste der Granne sind 6—7,2 cm lang, wenig ungleich, rauh.

#### **Sporobolus** Brown.

1. ***Sporobolus diander* Pal. Beauv.**

Luzon Isl., Prov. Isabela, Echague (MERRILL no. 139); Prov. Manila (MERRILL no. 92).

**Eriachne** Brown.

1. **Eriachne pallescens** R. Br.

Culián Isl. (MERRILL no. 520).

2. **Eriachne triseta** Nees.

Culián Isl. (MERRILL no. 870).

**Chlorideae.****Cynodon** Pers.

1. **Cynodon dactylon** (L.) Pers.

Luzon Isl., Prov. Manila (MERRILL no. 24).

**Chloris** Sw.

1. **Chloris barbata** Sw.

Luzon Isl., Prov. Manila (MERRILL no. 33; in flower in May 1902).

**Eleusine** Gaertn.

1. **Eleusine indica** (L.) Gaertn.

Luzon Isl., Prov. Manila (MERRILL no. 42; in flower in May 1902); Prov. Bataan, Dinalupihan (MERRILL no. 1567).

**Dactyloctenium** Willd.

1. **Dactyloctenium aegyptiacum** Willd.

Luzon Isl., Prov. Manila (MERRILL no. 63; in flower in May 1902).

**Leptochloa** Pal. Beauv.

1. **Leptochloa chinensis** Nees.

Luzon Isl., Prov. Manila (MERRILL no. 9, 378; in flower 1902).

**Festuceae.****Phragmites** Trin.

1. **Phragmites vulgaris** (Lam.) Crép.

Luzon Isl., Prov. Manila (MERRILL no. 382); Prov. Príncipe, Baler (MERRILL no. 1123); Culián Isl. (MERRILL no. 465); Mindoro Isl., Baco (MERRILL no. 1252; in flower Jan. 1902).

**Eragrostis** Host.

1. **Eragrostis elegans** Steud.  
Luzon Isl., Prov. Nueva Ecija, Carranglang (MERRILL no. 245, 265); Prov. Nueva Viscaya, Quinangan (MERRILL no. 134); Culión Isl. (MERRILL no. 463).
2. **Eragrostis interrupta** Pal. Beauv.  
Luzon Isl., Prov. Nueva Viscaya, Bayombong (MERRILL no. 122); Paragua Isl., Ewiig River (MERRILL no. 1792).
3. **Eragrostis spartinaoides** Steud.  
Luzon Isl., Prov. Nueva Ecija, Carranglang (MERRILL no. 257).
4. **Eragrostis tenella** R. et Sch.  
Luzon Isl., Prov. Manila (MERRILL no. 6; in flower in April 1902); Prov. Cagayan, Aparti (MERRILL no. 130); Prov. Príncipe, Baler (MERRILL no. 1128).  
var. **viscosa** (Retz.) Stapf.  
Luzon Isl., Prov. Manila (MERRILL no. 371).
5. **Eragrostis zeylanica** Nees.  
Culión Isl. (MERRILL no. 686).

**Centotheca** Desv.

1. **Centotheca lappacea** Desv.  
Luzon Isl., Prov. Nueva Viscaya, Dupax (MERRILL no. 246); Prov. Príncipe, Baler (MERRILL no. 1126); Culión Isl. (MERRILL no. 494; in flower in Dec. 1902).

**Lophatherum** Brongn.

1. **Lophatherum gracile** Brongn.  
Luzon Isl., Prov. Nueva Ecija, Caraballo Sur (MERRILL no. 210).

**Bambuseae.****Dinochloa** Büse.

1. **Dinochloa Dielsiana** Pilger n. sp. Sarmentosa, 20—25 m alta, culmis solidis, ad 2,5 cm diametro metentibus; inflorescentia paniculata, 1—2 m longa, ramis brevibus novellis foliiferis apice parce floriferis interjectis vel ramis elongatis squarrose ramosis nudis floriferis; foliis ad ramulos illos novellos erecto-patentibus, lamina lanceolata, glabra, basi rotundato-angustata, petiolo crasso

perbrevi instructa, superne sensim attenuata acutissima, 15—20 cm circ. longa et ad fere 2 cm lata, margine et supra nonnunquam ad nervos marginales serrulato-scabra, supra et subtus crassiuscule dense striata, venulis transversis brevissimis crebris subtus conspicuis, vagina glabra, ore haud fimbriata, ligula perbrevi; spiculis ad ramulos glabros floriferos dense glomeratis, glomerulis 2—4 cm distantibus vel magis indistinctis et approximatis; spiculis 5 mm circ. longis, angustis, glumis 3 et palea instructis, gluma prima rotundata, 9-nervia, 2 mm longa, secunda rotundata, apiculata, 3 mm longa, tertia et palea arcte involutis, tertia forma secundae aequali, 4 mm longa, palea rotundato-ovata, parum 9-nervia, 6 mm longitudine superante; staminibus 6, filamentis liberis, antheris apice pilis nonnullis instructis; ovario iuniore tantum viso, cylindraceo, stilo e basi ovoideo longe attenuato, 4 mm longo in stigmata tria brevia diviso; lodiculis 0.

Island of Paragua, Ewiig River (MERRILL no. 711; February 1903, type); Luzon Isl., Prov. Bataan, Lamao River, Mt. Mariveles (MERRILL no. 2550; June 1903). — Here belongs also the following specimen: Luzon Isl., Prov. Pampanga, Arayat (MERRILL no. 1408; March 1903).

Die Art unterscheidet sich durch häufig scharf getrennte Köpfchen, durch größere Ährchen usw. von *D. tjankorreh*.

Ich ziehe zu der Art auch MERRILL no. 2550; diesem Exemplar lag ein steriler Zweig bei mit behaarten und gewimperten Scheiden, der wohl nicht dahin gehört; das Exemplar ist von besonderem Interesse, da es junge Früchte trägt; diese sind schwarz, ca. 4 mm lang, mit dickem fleischig-lederigen Pericarp versehen, von dem der Same frei ist; die heller gefärbte breite Griffelbasis, die der Frucht aufsitzt, verschmälert sich schnell in den 2 $\frac{1}{2}$  mm langen Griffelrest.

2. ***Dinochloa major*** Pilger n. sp. Ramulis sterilibus foliiferis, vaginis pro parte sese tegentibus dense obtectis; foliis approximatis, linear-lanceolatis, ± plicatis, basi breviter rotundato-angustatis, brevissime crasse petiolatis, superne sensim angustatis, setaceo-acutissimis, glabris, ad 25 cm longis, 1,5-fere 2 cm latis, margine et nonnunquam supra ad nervos marginales serrulato-scabris, nervis 9, subtus conspicuis, imprimis mediano subtus prominente, vagina glabra, compressa, ore longe fimbriata, fimbriis demum deciduis; inflorescentia efoliata, ramosa, spiculis densissime glomeratis, glomerulis saepe approximatis et confluentibus,

densissimis; spiculis angustis, acutis, 5—7 mm longis; glumis 3 et palea; gluma prima fere 2 mm longa, rotundata, apiculata, 5-nervia, secunda forma aequali, 7-nervia, 3 mm longa, tertia involuta, rotundato-ovata, acuta, 4,5, demum supra 5 mm longa, 9-nervia, palea involuta, aequiformi, 5 mm, demum ad 7 mm longa, 7-nervia; staminibus 6, filamentis liberis, ovario involuto tantum noto in stilum sensim attenuatum tripartitum transeunte.

Luzon Isl., Prov. of Bataan, Dinalupihan (MERRILL no. 1474; a. 1903).

Die neue Art ist vor der *D. Dielsiana* ausgezeichnet durch die mehrfach längsgefalteten Blätter, die an der Mündung lang gewimperte Scheide, die sehr dichten, genäherten, oft zusammenfließenden Ährchenköpfe. Der Blütenstand scheint weniger verzweigt und sparrig zu sein als bei der anderen Art.

3. **Dinochloa tjankorreh** (R. et Sch.) Büse.

Mindoro Isl., Pola; MERRILL no. 2224; in flower in May 1903).

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## Addenda.

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Additional Note on *Syphorema*. In a letter received from Mr. MERRILL he draws my attention to the fact that HASSKARL has described a species of this genus from the Philippines, *Syphorema glabrum*. This name escaped my notice when writing my notes on *Syphorema*, see Fragmenta fasc. I; it is mentioned in Kew Index where it is treated as a distinct species, but is omitted in BLANCO's 3<sup>d</sup> edition, and VIDAL does not refer to it in his Revision, his *Phanerogamae Cumingianae*, nor his *Flora Forestal*. The Catálogo de las Plantas del Herbario (1892) also does not include it. HASSKARL's article, in which this species of *Syphorema* is described, is entitled; "Ueber einige neue Pflanzen der Philippinen aus der Cumingschen Sammlung, von Dr. J. K. HASSKARL". It appeared in Flora XLVIII (1865) no. 26, p. 401—403 (ausgegeben den 31. Aug. 1865).

In this short communication he describes 3 new species from the Philippines: *Anredera Cumingii* Hassk. p. 401 (CUMING no. 703), *Syphorema glabrum* Hassk. p. 402 (CUMING absque no.), *Tribulus maeranthus* Hassk. p. 403 (CUMING no. 710). From HASSKARL's description and from his critical remarks, there can be little doubt that his name was founded on the same plant which three years earlier, in 1862, TURCZANINOW had named *Szegleeria luçoniensis*. HASSKARL says: "Dem *S. polyandrum* Rxb. (WIGHT, Ic. 363 et 1474, linke Ecke) zunächst stehend, von ihm durch geringere Zahl der Kronabschnitte und Staubfäden; sowie vorzüglich durch die wesentlich verschiedene Form der Blätter und deren Glätte leicht zu unterscheiden". These characters apply perfectly to *Syphorema luxonicum* (Blanco) Villar. In a note HASSKARL gives it as his opinion that the Philippine species, named by BLANCO (Fl. Filip. ed. I, p. 406) *Balibai* is identical with his plant; he adds a Latin translation of BLANCO's Spanish diagnose.

In a paper of LLANOS (Appendix sive tentamen aliud novi supplementi ad Floram Insularum Philippinarum etc.; the original published

in Anal. Acad. Real. Cienc. Madrid 1858; reprinted in BLANCO's Fl. Filip. ed. 3, IV, p. 105 (1880)), *Litsea luxonica* Blanco (= *Balibai* Blanco) is compared with *Sympcorema involucratum* Spr. From this we see, that HASSKARL as well as LLANOS place in the Verbenaceous genus *Sympcorema*, the species which BLANCO had referred to the Lauraceae; HASSKARL's remarks are a further confirmation of the correctness of the detailed explanation given in Fragm. Fl. Philip. fasc. I, p. 1. The name given by HASSKARL must, therefore, be considered as a synonym of *Sympcorema luxonicum* (Blanco) Vill.

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*Sandoricum Harmsianum* Perk. Fragm. Fl. Philip. fasc. I, p. 3 (issued March 12, 1904) is to be replaced by the older name *Sandoricum Vidalii* established by MERRILL in Bull. Dept. Int. Bureau Gov. Lab. no. 6, p. 8 (issued January 20, 1904).

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# **FRAGMENTA FLORAE PHILIPPINAE**

**CONTRIBUTIONS**

TO THE

**FLORA OF THE PHILIPPINE ISLANDS**

BY

**J. PERKINS, PH. D.**

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**FASCICULUS III**

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GEBRÜDER BORNTRAEGER  
1905**

**PARIS  
PAUL KLINCKSIECK**

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Fasc. III issued February 20, 1905



# Piperaceae<sup>1</sup>

by

C. DE CANDOLLE.

## Piper L.

1. **P. albidirameum** C. DC. n. sp., glabrum, foliis magnis breviter petiolatis ample subobovato-ellipticis, basi fere aequilatera sub-acutis, apice breviter et obtusiuscule acuminatis 7—9-plinerviis, nervo centrali fere ex  $\frac{1}{5}$  longitudinis suaे nervum utrinque unum mittente, aliis nervis e basi solutis quorum utrinque externus multo tenuior, petiolo basi ima vaginante, pedunculo quam petiolus paullo breviore, bractea lunulato-rotundata, bacca subglobosa.

Mindanao Isl., Prov. Davao, Taumo (WARB. no. 14751).

Ramuli in sicco albidi fere  $3\frac{1}{2}$  mm crassi collenchymatis fasciculis discretis libriformibus. Limbi in sicco rigidi pallidi et minute pellucido-punctulati ad 25 cm longi et ad 13 cm lati. Petioli in sicco albidi 23 mm longi. Bractea centro subsessili. Bacca fere  $2\frac{1}{2}$  mm longa.

2. **P. bathicarpum** C. DC. n. sp., foliis modice petiolatis ovato-lanceolatis basi leviter inaequilatera acutis, nervo centrali fere ad  $\frac{1}{10}$  longitudinis suaे nervos utrinque 3 adscendentibus mittente quorum infimi e basi orti, petiolo basi vaginante, pedunculo femineo petiolum fere duplo superante, amento submaturo quam folii limbus fere dimidio breviore, rhachi hirsuta, bractea glabra rotundato-reniformi apice emarginata rhachi late sessili, ovario rhachi profunde immerso.

Joló Isl. (WARB. no. 14844).

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1) The manuscript of the new species of *Piper* was originally intended for Warburg's „Monsunia“; Prof. WARBURG has very kindly given it to me for publication. J. Perkins.

Ramuli glabri tenues, amentiferi fere 1 mm crassi, collenchymate continuo sparsim et parce libriformi, fasciculis intramedullaribus 1-seriatis, canalibus vacuis pluribus inter systema periphericum et fasciculos intramedullares unoque centrali. Limbi in sieco rigidulo-membranacei inconspicue pellucido-punctulati ad 11 cm longi et ad  $5\frac{1}{2}$  cm lati. Petioli fere 1 cm longi. Amenta submatura fere 5 mm crassa in sieco rufescentia. Species *P. Chabae* Bl. proxima foliorum nervatione ac bractearum forma ab eo discepans.

3. ***P. dagatpanum*** C. DC. n. sp., foliis modice petiolatis ovato-oblongis basi leviter inaequilatera subrotundatis apice acuminatis utrinque glabris, nervo centrali fere usque ad  $\frac{1}{5}$  supra basin nervos utrinque 4 adscendentibus mittente quorum infimi tenues, petiolo fere usque ad medium vaginante pedunculoque eum sat superante glabris, amento quam folii limbus dimidio breviore, rhachi hirsuta, bractea oblongo-obovata rhachi sat late adnata et glabra, bacea matura globosa stipitem suum paullo superante.

Mindanao Isl., Prov. Davao, Mt. Dagatpan 4000' s. m. (WARB. no. 14739), Sibulan (WARB. no. 14738).

Ramuli glabri, amentiferi fere 2 mm crassi, collenchyma continuum sparse et parce libriforme, fasciculi intramedullares 1-seriati, canales vacui plures inter systema periphericum et fasciculos intramedullares unumque centrale. Limbi in sieco membranacei crebre pellucido-punctati ad 13 cm longi et ad 58 mm lati. Petioli ad 15 mm et pedunculi ad  $2\frac{1}{2}$  cm longi. Bacea matura circiter 4 mm longa. Stigmata 4 linearia.

4. ***P. davaoense*** C. DC. n. sp., glabrum foliis brevissime petiolatis ovatis basi levissime inaequilatera obtusis apice acuminatis 7-nerviis, nervis lateralibus ultimis tenuibus et brevibus, petiolo basi ima vaginante, pedunculo femineo petiolum amen-toque folium pluries superantibus, bractea oblonga.

Mindanao Isl., Prov. Davao, Mt. Dagatpan, in a mixed forest (WARB. no. 14740), Taumo (WARB. no. 14745).

Ramuli in sieco striati, amentiferi fere 1 mm crassi collenchymatis libriformis fasciculis discretis, fasciculis intramedullaribus 1-seriatis. Limbi in sieco membranacei crebre et conspicue pellucido-punctulati fere ad 9 cm longi et ad 47 mm lati. Petioli 5 mm longi. Pedunculi ad  $3\frac{1}{2}$  em longi. Stigmata 3—4 ovata et obtusa.

5. **P. glabrispica** C. DC. n. sp., glabrum, foliis breviter petiolatis oblongo-ellipticis, basi aequilatera acutis, apice acuminatis 7-plinerviis, nervis adsecentibus supremis fere 5 mm supra basin aliis e basi solutis quorum externi subtile, pedunculo femineo petiolum paullo superante, amento limbum fere aequante vel paullo superante.

Mindanao Isl., Prov. Davao, Taumo (WARB. no. 14748).

Ramuli in sieco subcinerascentes 2 mm crassi collenchymate continuo libriformi, fascieulis intramedullaribus 1-seriatis, canalibus vacuis inter sistema periphericum et fascieulos intramedullares pluribus unoque centrali. Limbi in sieco membranacei creberrime pellucido-punctulati, 10—11 cm longi, 4—4½ cm lati. Petioli fere 11 mm longi. Pedunculi 15 mm longi. Ovarium ovatum, stigmata plerumque 3 ovato-acuta.

6. **P. lividum** C. DC. n. sp., foliis modice petiolatis utrinque glabris 7-pli—9-plinerviis, apice sat longe acuminatis, inferioribus oblongis basi rotundatis et brevissime peltatis, superioribus elliptico-oblongis basi rotundatis et vix peltatis, nervo centrali fere ex ¼ longitudinis suae nervum utrinque unum mittente, ceteris nervis e basi solutis, petiolo glabro basi ima vaginante.

Luzon Isl., Prov. Isabela, Malunú (WARB. no. 11930).

Frutex scandens caule juvenili arborum truncis appresso, caulinis secundariis liberis. Ramuli minute puberuli in sieco canescentes fere 2 mm crassi zona cellularum sclerosarum subepidermidali, collenchymate haud continuo et haud libriformi, libero fascieolorum peripheriorum inter eos continuo, fascieulis intramedullaribus paucis 1-seriatis. Limbi in sieco canescentes pellucido-punctulati ad 16 cm longi et ad 6½ cm lati. Petioli circiter 12 mm longi.

7. **P. marivelesanum** C. DC. n. sp., foliis breviter petiolatis ovato-lanceolatis, basi subaequilatera cordulatis, apice acuminatis, supra junioribus ad nervum centralem puberulis deinde glabris, adultis subtus ad nervos parce hirtellis, petiolo pedunculoque eum multo superante subdense hirtellis, amento maturo quam pedunculus breviore, bacea globosa stipitem suum paullo superante.

Luzon Isl., Prov. Bataán, Mariveles (WARB. no. 13640).

Ramuli glabri nodis tumidulis, collenchymatis subcontinui zona interna partim libriformi, fascieulis intramedullaribus 1-seriatis. Limbi in sieco membranacei crebre et minute

pellucido-punctulati, 10—11 cm longi, 3—3½ cm lati. Petioli fere 6 mm et pedunculi fere 1½ cm longi. Amenti rhachis puberula. Bacea glabra fere 4 mm crassa stipite 2½ mm longo. Stigmata 4 linearia.

8. **P. parvispica** C. DC. n. sp., glabrum, foliis breviter petiolatis lanceolatis 7-plinerviis, nervo centrali fere ex 1½ cm supra basin nervum utrinque unum adscendentem mittente, aliis nervis e basi solutis adscendentibusque, petiolo basi ima vaginante, stirpis masc. pedunculo petiolum adultum aequante vel paullo superante, bractea fere orbiculari centro breviter pedicellata, stirpis femin. pedunculo petiolum paullo superante, amento submaturo breviter subovato-oblongo, bractea orbiculari centro subsessili, bacea rhachi immersis et cum ea coalitis.

Mindanao Isl., Prov. Davao, Mt. Dagatpan, 2000'—3000' (WARB. no. 14750), Taumo (WARB. no. 14747).

Ramuli amentiferi fere 1½ mm crassi, collenchymatis haud libriformis fasciculis discretis, fasciculis intramedullaribus 1-seriatis. Limbi in siccо membranacei minute pellucido-punctulati in mare ad 9½ em longi et ad 32 mm lati, in femina fere ad 7½ em longi et ad 22 mm lati. Petioli in mare ad 1 cm longi, in femina paullo breviores. Amenta masc. filiformia, florentia 3½ em longa et 2 mm crassa; femin. fere matura 1½ em longa et 1 cm crassa. Stigmata 3.

- β) **Sumbavianum**, amentis feminineis florentibus subglobosis fere 3 mm longis.

Sumbawa, in the forest (no. 16949 et ? no. 16950). Limbi in mare ad 9 cm longi et ad 42 mm lati, in femina breviores.

9. **P. paucinerve** C. DC. n. sp., foliis modice petiolatis lanceolatis basi aequilatera acutis utrinque glabris, nervo centrali paullo supra basin nervos utrinque 2 adscendentibus mittente, petiolo basi ima vaginante pedunculoque femineo fere aequilongo tenuibus glabris, amento maturo quam folii limbus triplo breviore, rhachi hirtella, bractea transverse elliptico-rotundata glabra fere centro brevissime pedicellata, bacea rotundato-elliptica stipitem suum superante.

North Luzon Isl., Prov. Isabela, Malunú (WARB. no. 11929).

Frutex. Ramuli glabri, amentiferi fere 1 mm crassi dein in specimine ad 2 mm crassi, zona peridermatis subepidermalis sat crassa, collenchymate haud continuo libriformi, cel-

Iulis sclerosis inter fasciculos liberis peripherici, fasciculis intra-medullaribus 1-seriatis. Limbi in sicco membranacei parce pellucido-punctulati,  $10\frac{1}{2}$  cm longi,  $3\frac{1}{2}$  cm lati. Petioli circiter 12 mm longi. Rhachis dense et molliter hirtella. Bractea in sicco membranacea. Ovarium ellipticum minutissime puberulum. Baccia glabra fere 4 mm longa.

10. **P. penninerve** C. DC. n. sp., glabrum, foliis breviter petiolatis amplis lanceolatis, basi aequilatera acutis, apice acuminatis, nervo centrali alte ultra medium suum nervos utrinque 9—10 adscendentibus mittente, petiolo basi ima vaginante, bractea orbiculari centro pedicellata.

Mindanao Isl., Prov. Davao, Mt. Dagatpan, in a mixed forest (WARB. no. 14744).

Ramuli glabri, amentiferi 3 mm crassi, collenchymate continuo haud libriformi cellulis fusca intermixto, fasciculis intra-medullaribus 1-seriatibus, canalibus vacuis pluribus inter sistema periphericum et fasciculos intramedullares unoque centrali. Limbi in sicco membranacei minute pellucido-punctulati circiter ad 20 cm longi et ad  $8\frac{1}{2}$  cm lati. Petioli ad 12 mm longi. Pedunculi in specimine juveniles quam petioli paullo breviores. Amenta juvenilia vix 1 cm longa verisimiliter mascula.

11. **P. retrofractum** Vahl.

Luzon Isl., Prov. Cagayan, Alcalá (WARB. no. 11713); Enrile (WARB. no. 12124), Prov. Nueva Ecija, Rosales (WARB. no. 13318).

- β) latifolium** C. DC. n. var., glabrum, foliis ellipticis vel oblongo-ovatis, basi aequilatera acutis vel rotundatis, apice acuminatis, nervo centrali ad 1 cm supra basin nervos utrinque 2 arcuato-adscendentibus sursumque ultra medium nervos 2 magis patulos nervulosque validos mittente, pedunculo femineo petiolum paullo superante, amento quam folii limbus pluries breviore cylindrico, baccis immersis.

Luzon Isl., Prov. Cagayan, Buguey (WARB. no. 12125).

Ramuli in sicco pallidi amentiferi 2 mm crassi, collenchymatis haud vel tantum zona interna parce libriformis fasciculis discretis, fasciculis intramedullaribus 1-seriatibus, libero peripherorum cellulis sclerosis interfascicularibus continuo, canalibus vacuis inter sistema periphericum et fasciculos intra-medullares pluribus unoque centrali. Limbi in sicco albescentes firmi ad 13 cm longi et ad 7 cm lati. Petioli 1 cm longi.

Pedunculus  $1\frac{1}{2}$  cm longus. Amentum maturum 3 cm longum 5 mm crassum.

Forsan species distincta.

12. **P. rubripunctulatum** C. DC. n. sp., glabrum, foliis brevissime petiolatis ovato-lanceolatis, basi aequilatera vel subaequilatera acutis, apice acuminate, nervo centrali nervos utrinque 3 adscendentibus mittente quorum supremi fere 1 cm supra basin infimique e basi ipsa soluti, petiolo basi ima vaginante, pedunculo masculo petiolum superante, amento florente limbi dimidium fere aequante, bractea rotundato-transverse-elliptica centro pedicellata, antheris late ovatis, filamenta fere aequantibus.

Mindanao Isl., Prov. Davao, Taumo, in a low forest with bushes (WARB. no. 14746).

Ramuli glabri punctulis rubris conspersi, amentiferi fere  $1\frac{1}{2}$  mm crassi, collenchymatis sparsim et parce libriformis fasciculis discretis, fasciculis intramedullaribus 1-seriatis, canali vacuo unico centrali. Limbi in secco membranacei rubropellucido-punctulati ad 11 cm longi et fere ad 5 cm lati. Petioli 5 mm longi. Pedunculi 1 cm longi. Bractea in secco rigida rubescens et margine flavicans.

13. **P. sibulanum** C. DC. n. sp., foliis modice petiolatis suboblique rotundato-ovatis, basi subaequilatera rotundatis, apice breviter acuminate, supra glabris, subtus ad nervos minutissime puberulis 9-ninerviis, nervo centrali fere ex  $\frac{1}{8}$  longitudinis nervum utrinque unum alternatim mittente, aliis nervis e basi solutis, petiolo minute puberulo basi ima vaginante, pedunculo masculo quam petiolus fere triplo breviore et glabro, amento quam limbi dimidium breviore, bractea orbiculari centro pedicellata, antheris minutis.

Mindanao Isl., Prov. Davao, Sibulan, forest on the coast (WARB. no. 14742 with fruit in July 1888).

Ramuli juniores minutissime puberuli dein glabri, amentiferi fere 2 mm crassi, collenchymatis haud libriformis fasciculis discretis, fasciculis intramedullaribus 1-seriatis. Limbi in secco membranacei conspicue pellucido-punctulati, 10—11 cm longi, 7—8 cm lati. Petioli 2 cm longi. Amenti rhachis glabra. Stamina 2, antheris filamenta eis paullo longiora terminantibus. In specimine amenta sparsim tumefacta tumoribus baccas globosas in secco flavicantes cellulis albis amyleum continentibus consistentes mire simulantibus.

14. **P. taumanum** C. DC. n. sp., foliis modice petiolatis ovato-acuminatis, basi aequilatera rotundatis et breviter peltatis, utrinque glabris, 5-plinerviis, nervo centrali fere 3 mm supra petioli insertionem trifido, petiolo glabro alte vaginante.

Mindanao Isl., Prov. Davao, Taumo (WARB. no. 14741).

Caulis repens aut scandens, fruticis verisimiliter tantum pars infera, glaber fere 2 mm crassus, collenchymatis haud libriformis fasciculis discretis, fasciculis intramedullaribus 6 1-seriatis. Limbi in secco rigiduli opaci et minute pellucido-punctulati, a petiolo fere 5 cm longi et 2 em lati. Petioli tenues fere 1 $\frac{1}{2}$  cm longi.

15. **P. tenuirameum** C. DC. n. sp., foliis breviter petiolatis ovato-lanceolatis, basi aequilatera cordulatis, apice longe et obtusiuscule acuminatis, utrinque nervo centrali excepto supra puberulo glabris, 5-plinerviis, nervo centrali paullo supra basin trifido, petiolo pedunculoque femineo eum fere duplo superante hirtellis, amento maturo quam folii limbus pluries breviore rhachi hirtella, bacca rotundato-ovata stipitem suum paullo superante.

Luzon Isl., Prov. Morong, Binangonan (WARB. no. 13317).

Ramuli juniores hirtelli amentiferi ad 1 $\frac{1}{2}$  mm crassi collenchymatis interrupti zona interna libriformi, fasciculis intramedullaribus 1-seriatis. Limbi in secco membranacei minute pellucido-punctulati ad 12 cm longi et ad 4 cm lati. Petioli fere 1 cm longi. Amentum bacciferum fere 2 cm longum. Bacca 5 mm longa glabra.

16. **P. Warburgii** C. DC. n. sp., foliis modice petiolatis ovato-acuminatis, basi inaequilatera in stirpe masculo utrinque acutis in femina altero latere subrotundatis altero subacutis, utrinque glabris, nervo centrali fere usque ad  $\frac{1}{2}$  longitudinis suae nervos utrinque 5 adscendentibus mittente quorum 3 inferiores basis proximi et magis patuli, petiolo basi ima vaginante pedunculoque femineo eo breviore glabris, amento fem. quam folii limbus pluries breviore densifloro, bracteae pelta triangulari carnosa glabra, pedicello claviformi villoso, bacca obovata glabra; amento masc. quam limbus fere triplo breviore, bracteae pelta triangulari glabra coriacea, pedicello ut in femina, filamento antheram paullo superante et connectivo ultra loculos carnose producto.

Luzon Isl., Prov. Tayabas, Sampáloc (WARB. no. 13115 ♀, 13116 ♂), Prov. Manila, Montalbán (WARB. no. 12662 ♂).

Frutex. Ramuli glabri, amentiferi circiter 2 mm crassi, collenchymate interrupto haud libriformi cellulis brunneis circumdato et parce intermixto, fasciculis intramedullaribus numerosis 2-sub 3-seriatis. Limbi in sicco membranacei pellucido-punctulati circiter 14—16 cm longi et 7½—9½ cm lati. Petiolus ad limbi latus longius 15 mm longus. Amentum masc. fere 4 mm crassum. Stigmata 3 linearia. Bacca 2 mm longa. Species bractearum forma praesertim in femina *Steffensiarum* sectionem referens, antheris *P. corylistachyo* proxima.

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## Rutaceae<sup>1</sup>

by

J. PERKINS.

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### Fagara L.

1. **Fagara Warburgii** Perk. n. sp. Frutex vel arbor; ramis subteretibus, junioribus parce pilosis, adultis glabratis; aculeis lateraliter compressis recurvis armatis; foliis alternis, imparipinnatis, 21—24 cm longis, rhachi inter foliola aculeis recurvatis instructa, 3-jugis, petiolo communi 6—7 cm longo, internodiis inter juga approximata 3—4 cm longis; foliolis ovatis vel ovato-oblongis, 9,5—10,5 cm longis, circa 4 cm latis, apice longe anguste acuminatis, apice ipso subineisis, basi rotundatis, margine integris, sessilibus vel brevissime petiolulatis, utrinque glabris, supra nitidis, coriaceis, nervis lateralibus 19—20 marginem potentibus, margine inter sese curvato-conjunctis, nervis utrinque prominentibus, nervo medio aculeis recurvatis instructis, venis supra vix, subtus manifeste prominentibus. Inflorescentiis axillaribus quam folia duplo vel triplo brevioribus, pedunculo tenuissime fusco-piloso; floribus breviter (5 mm) pedicellatis; fructibus subglobosis, 5—6 mm longis, pericarpiis in sicco rugulosis, brunneis, endocarpiis coriaceis adnatis aut

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1) In working up several families of Philippine plants belonging to the Royal Berlin Museum, I found the following new species of Rutaceae.

postea disseminationm solutis; seminibus reniformibus, leviter compressis, 4 mm longis, 3 mm latis, 2 mm crassis, funiculis filiformibus; testa crustacea, nitida, nigra.

Luzon Isl., Prov. Isabela, Malunú (WARB. n. 11784).

A species allied to *Fagara tetraspermum* Wight et Arn. but with differently shaped leaves.

ENGLER in Pflanz.-Fam. 3, IV (1897), p. 115 has separated the genus *Xanthoxylum* into *Fagara* and *Xanthoxylum* in a narrower sense, thus reestablishing the old Linnean genera. He gives as his reasons for so doing, that however variable the flowers of *Fagara* are as to the number of their parts, the sepals, petals and stamens always alternate. It is true that in *Xanthoxylum* also the stamens alternate with the parts of the perianth, but here the parts of the perianth belong to only one series of floral organs („Formation“) and cannot be considered on account of their alternation with the stamens as sepals that remain after the abortion of the petals. The flowers of the true *Xanthoxylum* represent, so far as the perianth is concerned, a very primitive type, which otherwise does not occur in the family and cannot be derived from the *Fagara* type. TURCZANINOFF Bull. Soc. Imp. de Moscou XXXVI (1863), p. 597 describes *Zanthoxylum? triplinerve* as having simple leaves, 5 sepals and 5 petals. Simple leaves not being found in this genus, the plant is not a *Xanthoxylum*. TURCZANINOFF's plant is evidently not yet accounted for. He writes l. c. „Insula Luçon, in provincia North Hows, CUMING coll. suppl. no. 2“. A province of this name does not exist in Luçon. May not the plant perhaps come from Lord Howe's Island? I am not aware that CUMING collected on this Island. The matter is therefore as yet entirely unexplained.

### Melicope Forst.

1. **Melicope luzonensis** Engl. mss. in herb. ex Engl. Prantl, nomen. 3, IV, p. 122 (1897). Frutex vel arbor; ramis glabris, subteretibus, 4—5 mm latis, foliis oppositis, 3-foliolatis, 9—20 cm longis, 2,5—8 cm longe petiolatis; foliolis oblongis vel obovato-oblongis, 7—13 cm longis, 3—4,5 cm latis, apice acuminatis vel longe acuminatis, apice ipso obtusiusculis, basi cuneatis vel in petiolulum a latere compressum sensim cuneato-angustatis,

papyraceis, vel membranaceis utrinque glabris, nervis venisque supra non vel vix, subtus manifeste prominentibus laxaque reticulatis, nervis lateralibus 14—17, marginem potentibus margine inter sese curvato-conjunctis. Inflorescentiis axillaribus, paniculatis, glabris, 6—9 cm longis, ramis numerosis gracilibus; bracteis bracteolisque minutis, membranaceis; floribus dioecis, polygamis, 4—5 mm diam., 4—5 mm longe pedicellatis; calyeis 4-fidi laciniis brevibus, ovatis, utrinque glabris, 1 mm longis; petalis quam calycis lacinia multo longioribus, 3,5 mm longis, 1,5 mm latis, oblongis, apice cuneatis, membranaceis, utrinque glabris, patentibus; floribus verosimiliter ♂, staminibus 8, petalis aequilongis, subaequalibus, filamentis gracilibus, basi minute pilosis, ovariis rudimentaris, florum fertilium ovario bene evoluto, 4-lobo, lobis lateraliter compressis, glabris, stylo centrali, stigmate peltato 4-lobo coronato, ovario aequilongo, staminodiis 8; formis transitoriis observatis; fructibus 3—4-coccis, coccis subglobosis, brunneis vel nigrescentibus, in secco rugulosis, endocarpio pallide brunneo, 3 mm diam., seminibus subglobosis 2,5 mm longis, 2 mm latis, funiculis filiformibus; testa crustacea, nitida, nigra.

Philippine Isl. (CUMING 1819); Luzon Isl. (JAGOR no. 732 in flower a. 1861; CHAMISSE without number); Prov. Isabela, Malunú (WARB. no. 11781), Prov. Cagayan, Enrile (WARB. no. 12343, 12344), Malaeug (WARB. no. 11755).

This plant belongs in the Sect. I. *Entogamum* Banks (as genus). Engl.-Prantl 3. IV, p. 122 (1897). CUMING's no. 1819 was determined as *Erodia triphylla* DC., the resemblance in habitus between *Melicope luxoniensis* Engl. and *Erodia triphylla* being very striking. SCHUMANN in a note which I found in the herbarium in Berlin, has written in regard to CUMING's no. 1819: "this certainly does not belong in the genus *Erodia*, for it has 8 stamens and is probably the stamine flower of CHAMISSE's Manila plant". In the material of the Berl. herb. occur stamine flowers with abortive ovary, pistillate flowers with staminodia, and many transitional forms.

#### **Clausena** Burm.

1. **Clausena Warburgii** Perk. n. sp. Frutex vel arbor, ramis glabris, subteretibus, 5 mm latis; foliis alternis, imparipinnatis, 15—30 cm longis, 2-jugis, petiolo communi 8—10 cm longo, internodiis

inter juga approximata 2—2,5 cm longis, parcissime griseo-pilosus; foliolis ovatis vel obovato-oblongis vel ovato-lanceolatis, 6,5—10 cm longis, 2,5—3 cm latis, apice longe angusteque acuminatis, apice ipso obtusis vel plerumque subincisis, basi obliquis, papyraceis, glabris, supra nervis venisque parce pilosis, subtus nervis parcissime vel vix pilosis, remote et indistincte et irregulariter serrulatis, nervis lateralibus 8—12, curvatis, marginem potentibus, 1—2 mm a margine inter sese curvato-conjunctis, nervis venisque supra indistincte, subtus manifeste prominentibus. Inflorescentiis terminalibus, paniculatis, 18—22 cm longis, ramis numerosis, parceissime pilosis, patentibus, iterum paniculatis, bracteis bracteolisque minutis, ovatis, parce pilosis; floribus 8 mm diam., 5—8 mm longe pedicellatis; calycis 5-fidi laciniis brevibus, ovatis, acuminatis, extus parceissime pilosis, 1 mm longis; petalis quam calycis laciniae multo longioribus, 5 mm longis, 2 mm latis, ovatis, membranaceis, utrinque glabris, patentibus vel postea recurvatis; staminibus 9, petalis aequilongis, filamento fere medio geniculatis, geniculo pubescente, discis minutis, planis; ovario stipitato, glabro, 5-gyno, 1 mm diam., stylo ovario aequilongo, stigmate sessili, 5-lobo.

Luzon Isl., Prov. Zambales, Batulan (WARB. no. 13370 type); Prov. Bataan, Mt. Mariveles, Lamao River (MERRILL no. 2509, in flower in June 1903).

This is near *Clausena excavata* Burm., but its ovary is glabrous and differently shaped from that in BURMAN's plant; its style is slender, and its leaves are glabrous and with fewer leaflets. The number 2509 has recently been determined by MERRILL as *Clausena anisum-olens* (Blanco) in Dept. Int. Bur. Gov. Lab. no. 17 p. 21 (1904).

### **Limonia** (Burm.) L.

1. **Limonia Engleriana** Perk. n. sp. Frutex vel arbor; ramis subteretibus junioribus griseo-pilosus, adultis glaberratis; foliis alternis 3-foliolatis, 4—12 cm longis, 0,8—2 cm longe petiolatis; foliolis oblongis vel ovato-oblongis, apice sub-cuneatis vel rotundatis, basi cuneatis, 3,5—9 cm longis, 2—4,5 cm latis, breviter petiolulatis vel subsessilibus, petiolulo saepe breviter alato, piloso instructis, papyraceis, utrinque glabris, nervis venisque supra indistincte, subtus manifeste prominentibus, integris, supra ni-

tidis, nervis lateralibus 6—8, curvatis, marginem petentibus. Inflorescentiis axillaribus, racemosis vel solitariis, 1,5—2 cm longis, paucifloris, 2—3-floris, griseo-pilosus; bracteolis pilosis, minutis; floribus 13 mm longis, circa 6 mm longe pedicellatis, petiolo piloso instructis; calyce 5-fido, lacinias brevibus, ovatis, apice rotundatis, utrinque pilosis, 3 mm longis, petalis 11 mm longis, 3 mm latis, lanceolatis, apice cuneatis, utrinque glabris, in alabastro imbricatis; staminibus 10, petalis subaequilongis; filamentis 5 mm longis, antheris linearibus, filamentis subaequilongis, apiculatis; disco minuto, piloso, annuliformi; ovario piloso, 9-loculari, 3 mm longo, 1,5 mm lato; stylo ovario aequilongo, glabro, stigmate capituliformi.

Luzon Isl., Prov. Bataan, Mariveles (WARB. no. 12864); Prov. Manila, Montalbán (WARB. no. 12689), Manila (WARB. no. 12865).

This new species in many respects resembles *Limonia alata* Wight et Arn., but differs in the shape of its calyx lobes and in the number of the cells of the ovary.

OLIVER in Journ. Linn. Soc. V. Suppl. II, p. 41 (1861), has expressed the opinion, that probably *Micromelum molle* Turcz. Bull. Soc. Imp. Nat. Moscou XXXI (1858) p. 380 and *Micromelum tephrocarpum* Turcz., l. c. 379 are to be united with the widely distributed *Micromelum pubescens* Bl.; the author divides the last mentioned species into many varieties and forms. I have not attempted to decide the question, leaving it to the future monographer. All three species are in the Berlin Herbarium.

## Ulmaceae<sup>1</sup>

by

O. WARBURG.

### *Celtis* L.

1. *Celtis Luzonica* Warb. Ramis glabris teretibus brunneo-cinereis, petiolis ca. 12 mm longis 2 mm latis, foliis glabris 14—17 cm longis 6—8 cm latis pergamaceis crassis in siccis nigrescentibus

1) The following diagnoses of new species were written several years ago for „Monsunia“. Prof. WARBURG has kindly given them to me for publication. Editor.

ovatis vel late ellipticis vix obliquis, basi subacutis apice sensim acuminatis vix acutis margine integris, trinerviis, nervis lateralibus ad  $\frac{2}{3}$  limbi fere evanescentibus, venis lateralibus ca. 2—3 utrinque valde arcuatis subtus prominentibus supra vix conspicuis. Fructificationibus axillaribus et terminalibus ramosis 8 cm longis; fructibus vix complanato-ovatis 16 mm longis 10—12 mm latis, apice acuminatis fere rostratis, endocarpio durissimo.

Luzon Isl., Prov. Isabela, Malunú (WARB. no. 11912).

Eine durch die großen, oben spitzen Früchte, die nicht bis zur Blattspitze reichenden Seitennerven und die ganzrandigen breiten kahlen Blätter auffallende Art.

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## Moraceae<sup>1</sup>

by

O. WARBURG.

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### Pseudotrophis Warb.

1. **Pseudotrophis mindanaensis** Warb. Ramis tenuibus teretibus cinereis in sicco substriatis, junioribus viridibus glabris, foliis late lanceolatis 7—12 cm longis  $2\frac{1}{2}$ —4 cm latis glabris pergamaceis brevissime (2—3 mm) petiolatis, basi obtusis apice (saepe subfalcate) acuminatis margine praecipue in parte superiore (saepe evanide) subarcuatis, venis utrinque ca. 8 paulo tantum prominulis ante marginem vix arcuate conjunctis. Inflorescentiis ♀ axillaribus racemosis brevibus ca. 2 cm longis, paucifloris (4—6), rhachi pilis minutis puberula, pedicellis ca. 2 mm longis, sepalis fere glabris margine subciliatis 2 exterioribus late rotundatis, interioribus 2 ovatis duplo longioribus demum 5 mm longis, stylo filiformi 5 mm longo ad medium usque bipartito.

Mindanao Isl., Prov. Davao on Mt. Dagatpan, in forest on a plain, principal underwood (WARB. no. 12130, 14717).

Die Art unterscheidet sich von der *P. laxiflora* Warb. der Key-Inseln durch die viel kürzeren Blütenstände und die länger und plötzlicher zugespitzten auch im allgemeinen schmä-

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1) For new species of *Ficus* see p. 194. — J. P.

leren Blätter, ferner ist der Griffel bei letzterer Art bis auf die Basis gespalten, und die Blüten sind festsitzend.

### Allaeanthus Thwait.

1. **Allaeanthus glaber** Warb. Ramis tenuibus glabris cortice cinereo lenticellis minimis rotundatis parce inspersis, foliis breviter (1 cm) et tenuiter petiolatis lanceolato-ovatis basi rotundatis apice cuspidatis acutis adultis omnino glabris 6—10 em longis 3—5 cm latis, venis utrinque ea. 12 subcurvato-ascendentibus in margine vix confluentibus. Inflorescentiis ♀ globosis cerasi magnitudine, pedunculo 2—10 mm longo, seminibus *Panic* magnitudine et forma.

Luzon Isl., Prov. Cagayan, Enrile (WARB. no. 12133).

Diese Art unterscheidet sich von dem ihr sehr nahe stehenden an den Zweigen und namentlich an der Blattunterseite sammtartig behaarten *A. luzonicus* fast ausschließlich durch die Kahlheit.

### Artocarpus Forst.

1. **Artocarpus rubrovenia** Warb. Ramulis teretibus 4 mm latis glabris in sieco nigrescentibus, stipulis parvis 2 mm longis late ovatis acutis sericeis, petiolis  $2\frac{1}{2}$  em longis 2 mm latis glabris, foliis pergamaceis glabris subtus pallidis oblongo-ellipticis apice breviter cuspidatis acutis basi vulgo inaequalibus obtusis saepe rotundatis, 18—23 cm longis 7—10 cm latis, venis 6—10 utrinque curvatis ad marginem vix confluentibus, subtus in sieco rubris, nervis tertiaris transversis et reticulatione utrinque distinctis subtus prominulis. Inflorescentiis axillaribus parvis cinereis ♂ et ♀ obovatis, squamis margine ciliolatis dense obtectis e pedunculis 5—6 mm longis  $1\frac{1}{2}$  mm latis tomentellis, ♂  $1\frac{1}{2}$  em latis vix 1 em altis, ♀ 1 em longis 6—7 mm latis, stylis crasse filiformibus saepe uncinatis stigmatibus haud incrassatis nec spatulatis.

Luzon Isl., Prov. Tayabas, Sampaloc (WARB. no. 12949).

Eine durch die kleinen morgensternförmigen ♀ Infloreszenzen und die kahlen großen an der Basis etwas unsymmetrischen rotnervigen Blätter charakteristische Art. Die mir nicht vorliegende *A. lanceolata* Trée. von Luzon hat sehr viel kleinere Blätter und spatulate Narben.

Die Comision de la Flora Forestal de Filipinas hat sub no. 1548 in San Mateo auf Luzon eine *Artocarpus* gesammelt,

die, wenn nicht identisch, doch nahe verwandt mit *A. rubrovenia* ist; die Blätter sind breit oval, an der Basis abgerundet, kaum schief, die Seitennerven sind etwas zahlreicher 8—9 jederseits, nicht rot, die tertären transversalen Nerven sind zahlreicher und mehr hervorragend; der ♂ Blütenstand ist kurz gestielt und obovat, doch ist der Stock an der Spitze etwas verbreitert.

**Conocephalus** Blume.

1. **Conocephalus canescens** Warb. Ramis crassis incane tomentosis, stipulis connatis maximis induplicato-falcatis 4 cm longis 14 mm latis dorso incanis bicarinatis; foliis magnis longe petiolatis subtus incano-tomentellis rotundato-ovatis, 20—25 cm longis, 18—22 em latis, apice subacutis basi late cordatis ca. 5-nerviis, venis lateralibus utrinque 5—6 obliquis fere strictis, nervis tertiaris transverse-parallelis subtus distinctis. Inflorescentiis ♂ divaricatis multoties dichotome ramosis ca. 10 cm longis et latis, pedunculo communi 15 mm longo 2 mm crasso, ramis ramulis pedicellis incano-tomentosis, pedicellis tenuibus 3 mm longis, capitulis subglobosis 4 mm in diametro metientibus, floribus dense confertis, perigonio 4-partito extus incano tomentello, staminibus 4.

Luzon Isl., Prov. Bataán, Mariveles (WARB. no. 12479).

2. **Conocephalus grandifolius** Warb. Ramis crassis glabris, cortice nitido flavo, stipulis connatis maximis valde falcatis navicularibus 4 cm longis obtusis dorso bicarinatis glabris, foliis glabris maximis usque 30 cm longis 25 cm latis, rotundato-ovatis, basi profunde cordatis et 7-nerviis, nervis lateralibus utrinque ca. 9 patulis fere strictis margine arcuate conjunctis, nervis tertiaris parallelis subtus prominentibus. Inflorescentiis ♂ multoties dichotomis 5 cm longis 7 cm latis ferrugineo-subpubescentibus, pedunculo communi 2 cm longo, capitulis dense confertis 4 mm in diametro metientibus, perigonio 4-partito, lobis glabris, cystolithis vix distinctis, staminibus 4.

Luzon Isl. (HAENKE without number).

Der vorigen Art nahe stehend, aber durch die Kahlheit die größere Anzahl von Blattnerven und durch den anderen Aufbau des Blütenstandes leicht zu unterscheiden.

# Urticaceae

by

O. WARBURG.

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## **Laportea** Gaudich.

1. **Laportea luzonensis** Warb. (*Laportea crenulata* Gaud. var. *luxonensis* Wedd.).

Mindanao Isl., Prov. Davao, Mt. Dagatpan, in a forest on a plain (WARB. no. 14701).

Diese Form kann man schon deshalb nicht zu *L. crenulata* ziehen, weil die weiblichen kurzen Stielchen der einzeln stehenden Früchte bei dem Originalexemplar von CUMING no. 522 nach oben zu stark verdickt sind, auch sprechen die kurzen axillären Blütenstände und die lang zugespitzte Lanzettform der ganzrandigen Blätter dagegen.

2. **Laportea Meyeniana** (Walp.) Warb. *Urtica Meyeniana* Walp. (1843) — *Laportea Gaudichaudiana* Wedd. (1856).

Luzon Isl., Prov. Manila, Montalbán (WARB. no. 12586).

3. **Laportea mindanaensis** Warb. Foliis glabris longe (5—6 cm) petiolatis ovatis basi obtusis apice breviter acuminatis acutis margine ad apicem versus crenulatis basi subintegris 15—20 cm longis 8—10 cm latis, venis utrinque ca. 8—10 oblique ascendenteribus vix arcuatis margine haud confluentibus. Inflorescentia ♀ valde ramosa prob. 30 cm longa, rhachibus tenuibus in sicco brunneis vix puberulis, floribus sessilibus capitatis, capitulis longe (5—6 mm) pedunculatis, stylis filiformibus quam flores 4-plo longioribus.

Mindanao Isl., Prov. Davao, Taumo, in a forest on a plain (WARB. no. 14702 arborescent).

## Balanophoraceæ

by

O. WARBURG.

### Balanophora Forst.

1. **Balanophora micrantha** Warb. Tuberibus ramosis fuscis minute tuberculatis, tuberculis minutissime papillosum hic illic 5—6 stellate dispositis prominentibus. Inflorescentiis monoecis ex orificio truncato vel irregulariter fisso 3—3½ cm longis, parte superiore 1—1½ cm longa clavata incrassata florigera, pedunculo 4 mm lato squamis ca. 3 imbricatis 1 cm longis erectis involuto, floribus ♂ paucis sessilibus annulum 4 mm altum formantibus rotundis 2 mm in diametro bracteolis minimis squamosis suffultis, sepalis 4 brevissimis latis truncatis, antheris 12—15 maeandrice apicem disci 1½ mm longi et lati obtegentibus.

Luzon Isl., in the mountains (LOHER).

Eine sehr kleine Form, die wohl eine besondere Abteilung bilden muß wegen der unregelmäßige Felder bildenden Antheren.

## Aristolochiaceæ

by

O. WARBURG.

### Aristolochia L.

1. **Aristolochia mindanaensis** Warb. Ramis pilis albidis parce inispersis flavidis sulcatis, petiolis 1½—2 cm longis flavidoferrugineo-pilosus, foliis ellipticis, oblongis vel oblongo-ellipticis membranaceis 14—18 cm longis, 5—8 cm latis, nervorum basi excepta glabris apice acuminatis acutis, basi profunde cordatis (lobis fere sese attingentibus) 5—7 pedato-nerviis, praeterea utrinque 2-veniis, venis curvatis arcuate confluentibus.

nervis tertiaris reticulatis utrinque distinctis. Inflorescentiis axillaribus racemosis axi 1 cm longo pubescente, bracteis squamiformibus  $1\frac{1}{2}$  mm longis dense ferrugineo-villosis, floribus brevissime (2 mm) pedicellatis, ovario 5 mm longo villoso, perigonio 4 cm longo, utriculo late ovato cum tubo angusto apice late ampliato villosiusculo, labio 2 cm longo linearis subpubescente apice acuto.

Mindanao Isl., Taumo (WARB. no. 14772).

Die der *A. tagala* nahe stehende Art ist durch die dichte rostgelbe Behaarung des Blattstiels und der Blütenstände leicht zu unterscheiden, auch ist die Kronröhre auffallend schmal und die Lippe besonders lang.

2. ***Aristolochia philippinensis*** Warb. Ramulis glabris sulcato-striatis brunneo-cinereis, petiolis brevissimis glabris 4 mm longis fere 2 mm latis, supra late canaliculatis, foliis subpergammaceis glabris lanceolatis basi truncato-rotundatis apice obtuse acuminatis 13—15 cm longis 4— $5\frac{1}{2}$  cm latis, venis utrinque 7—8 valde curvatis et arcuate confluentibus, nervis tertiaris reticulum grossum utrinque valde distinctum formantibus. Inflorescentiis brevibus racemosis, axi vix 1 em longo, bracteis anguste lanceolatis 2 mm longis pro parte persistentibus; fructibus breviter ( $\frac{1}{2}$  cm) pedicellatis vel fere sessilibus, parvis  $1\frac{1}{2}$ —2 cm longis; valvis laevibus haud transverse lineatis dorso costa alta longitudinali instructis; seminibus triangularibus subconcavis marginibus incurvis nec marginatis neque alatis 4 mm longis flavidis albido-punctatis.

North Luzon, Piña blanca (WARB. no. 12142).

Diese schon durch die Blattform von allen asiatischen Arten verschiedene Spezies ist durch die kleinen fast sitzenden Früchte, die glatten dickkieligen Kapselwände sowie durch die ungeflügelten dreieckigen großen gekörnten Samen leicht kenntlich.

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## Magnoliaceae

by

O. WARBURG.

### Talauma Juss.

1. **Talauma luzonensis** Warb. n. sp. Ramis crassis glabris, fructiferis 6—7 mm latis, petiolis glabris 3 cm longis 2 mm latis in sicco luteo-fuscescentibus basi incrassatis, antice in tertia parte suprema canaliculatis, parte inferiore applanatis; foliis 17—25 cm longis 5—8 cm latis lanceolatis basi cuneatis acutis apice subapiculatis obtusis erasse pergamaceis utrinque subnitidis, costa subtus valde prominente, venis utrinque 13—18 patulis utrinque prominentibus ante marginem commissura arcuata conjunctis, nervis tertiaris grösse et utrinque valde prominenter reticulatis; fructu terminali 10 cm longo, carpellis in dorso rhomboideis  $1\frac{1}{2}$ — $2\frac{1}{2}$  cm longis, brunneis albide marginatis et punctatis, infra apicem spina obtusa 2 mm longa instructis; seminibus (2 in quoque carpello) complanatis semiorbicularibus 8—10 mm longis basi funiculo longo lanoso insidentibus.

Luzon Isl., Prov. Cagayan, Malaueg (WARB. no. 11767).

Von einer anderen, wahrscheinlich neuen Art aus Süd-Mindanaö (Taumo, Ebenenwald) habe ich nur die Frucht sammeln können, die im Museum des Berliner Herbariums liegt. Die Frucht ist viel größer, 13 cm lang, die Carpelle sind länger und schmäler.

## Thymelaeaceae

by

O. WARBURG.

### Wikstroemia Endl.

1. **Wikstroemia Meyeniana** Warb. Ramulis tenuibus glabris brunneis in sicco vix striolatis; foliis breviter petiolatis lanceolatis basi cuneatis apice acutis vel subacuminatis membranaceis

subtus pallidis, venis ascendentibus curvatis arcuate confluentibus, reticulatione vix distincta. Inflorescentiis terminalibus brevibus tenuiter puberule pedunculatis, floribus racemosis dense confertis vel fere fasciculatis brevissime pedicellatis; perigonio extus subpuberulo, tubo cylindrico quam lobi obtusi multo longiore, ovario apice viloso, bacea ovata viridi (an immatura?) glabra apice tantum minime griseo-pilosa.

Die Zweige sind 1—2 mm dick, die Blätter sind 9—11 cm lang, 2—3½ cm breit; sie sitzen auf 2—3 mm langen Stielen. Der Blütenstandsstiel ist 1 cm lang, die Blüten sind etwa 7 mm lang und sitzen auf höchstens 1 mm langen Stielchen. Die Beeren sind etwa 5 mm lang, 4 mm breit, fast sitzend.

Luzon Isl., Manila (MEYEN).

Die Art gehört offenbar mit *W. ovata* C. A. Mey. von den Philippinen in die gleiche Gruppe, mit auf einem dünnen Stiel gebüschtel sitzenden Blüten, doch ist die Blattform total verschieden.

## Ericaceae

by

O. WARBURG.

### Rhododendron Planch.

1. **Rhododendron Schadenbergii** Warb. n. sp. Ramis teretibus glabris, petiolis crassis foliis crasse coriaceis oblongis basi et apice acutis supra glabris subtus squamulis inspersis, venis utrinque 6—12 semipatentibus apice curvatis supra prominulis subtus vix distinctis, interspersis interdum minoribus subparallelis, nervis tertiaris haud vel vix perspicuis. Inflorescentia terminali, pedunculo brevissimo valde crasso bractearum cicuticibus obtecto, pedicellis subumbellate dispositis longis quam flores brevioribus glabris, apice bracteolam membranaceam glabram lanceolatam vel lineari-lanceolatam gerentibus, calyce disciformi 5-angulato, disco annuliformi 10-nodoso, corolla glabra infundibuliformi campanulata ad medium fere 5-lobata, lobis apice rotundatis haud emarginatis, staminibus 10 filamentis in parte superiore pilosis, antheris magnis crassis oblongis, ovario

glabro oblongo, stylo crasso quam ovarium longiore apice disco lato stigmatifero capitato.

Die Blattstiele sind  $1\frac{1}{2}$  cm lang, 3 mm dick, die Blätter sind 8—11 cm lang,  $2\frac{1}{2}$ —4 cm breit, die größte Breite liegt in der Mitte, von wo sie sich nach beiden Seiten hin langsam verschmälern, nach der Basis zu langsam in den Blattstiel auslaufend, oberseits eine nicht abgesetzte Spitze bildend. Der gemeinsame Blütenstandsstiela ist 8 mm lang und 10 mm breit, die einzelnen Bracteennarben sind 1 mm hoch und 8 mm breit, die Blütenstielchen sind  $2\frac{1}{2}$  cm lang,  $1\frac{1}{2}$  mm dick, die Bracteole an der Spitze derselben ist  $\frac{1}{2}$ — $1\frac{1}{2}$  cm lang, und unten ca. 2 mm breit, der fünfeckige Kelch ist 5 mm breit und hat eine Höhe von 1 mm, die Corolla ist  $3\frac{1}{2}$ —4 cm lang, die einzelnen Lappen derselben sind  $1\frac{1}{2}$ —2 cm lang und fast ebenso breit; die Staubgefäß sind  $2\frac{1}{2}$  cm lang, am unteren Ende fast 1 mm breit, grau behaart; die Antheren sind 4 mm lang,  $1\frac{1}{4}$ — $1\frac{1}{2}$  mm breit; das Ovar ist 8—10 mm lang,  $3\frac{1}{2}$  mm breit, der Griffel ist 12—15 mm lang,  $\frac{3}{4}$ —1 mm breit, kahl, und erweitert sich oben zu einer 3 mm breiten Scheibe.

Luzon Isl., Prov. Abra, 1300 m. s. m. (SCHADENBERG).

Diese sehr schöne neue Art, deren Farbe leider in dem mir von dem Sammler freundlichst mitgeteilten Alkoholmaterial nicht mehr erkennbar war, steht dem *Rh. javanicum* und *Teysmanni* am nächsten, die dickere lederartige Konsistenz der nicht zugespitzten unten zerstreut mit Schuppen besetzten Blätter, das viel größere ganz kahle Ovar, der dickere kahle Griffel, die längeren Antheren sind die Hauptunterschiede.

### Vaccinium L.

1. **Vaccinium caudatum** Warb. Ramis teretibus cinereis striatis, lenticellis haud distinctis, ramulis angulose striatis in sicco cinebris; petiolis gracilibus 5—6 mm longis  $\frac{3}{4}$  mm latis, foliis subcoriaceis lanceolatis basi acutis apice longe et vulgo subcurvata vel acumine obtuso cuspidatis, 4—6 cm longis,  $1\frac{1}{2}$ —2 cm latis in sicco supra glauce fuscouscentibus, subtus fuscouscentibus, indistinctis quintuplinerviis, venis utrinque 4—5 vix, nervis tertiaris haud conspicuis. Racemis axillaribus et terminalibus quam folia sublongioribus, bracteis nullis (vel deciduis), pedicellis tenuibus 4 mm longis, floribus haud nutantibus, calyce late infundibuliformi apice 5-dentato, dentibus late triangula-

ribus breviter acuminatis; perigonio ureolato 5 mm longo 2—3 cm lato, ore subangustato, lobis latis recurvatis obtusis, filamentis brevibus glabris filiformibus, loculis parvis saccatis in tubulos rectos longissimos glabros productis; stylo columnari; fructu globoso infra apicem calyce coronato, in secco nigro.

Philippine Isl. (CUMING no. 905 with flowers); Luzon Isl., Prov. Laguna, Siniloan (WARB. no. 13753).

2. **Vaccinium Jagori** Warb. Frutex glaber, ramis rugulose striatis cinereis, lenticellis vix distinctis, ramulis striatis angulatis in secco fuscis, petiolis circa 3 mm longis  $1\frac{1}{2}$  mm latis, foliis coriaceis obovato-oblongis basi in petiolum angustatis, apice oblique et obtuse apiculatis, 4—5 cm longis 2— $2\frac{1}{2}$  em latis, in secco fuscescentibus, tri- vel indistincter quinquenerviis, venis utrinque 4—5 quam nervi tertiarii reticulati vix crassioribus. Racemis axillaribus et terminalibus quam folia sublongioribus, bracteis nullis (vel deciduis), floribus in pedicellis 4—5 mm longis saepe nutantibus, calyce late infundibuliformi 2 mm lato usque ad medium 5-dentato, dentibus triangulariter rotundatis margine minute ciliolatis; corolla cylindrica 8 mm longa,  $2\frac{1}{2}$ —3 mm lata, ore valde angustato, lobis 5 fere erectis rotundatis; filamentis longis filiformibus basi lanatis, loculis tubulosis linearibus haud productis poris terminalibus dehiscentibus; ovario glabro, stylo columnari, stigmate haud imbrassato.

Philippine Isl., Luzon (JAGOR no. 852) a. 1861.

Ein zweites von JAGOR gesammeltes *Vaccinium*-Exemplar ist steril, es hat breitere und größere deutlich quintuplinervie Blätter, die aber, was Form, Textur usw. betrifft, ähnlich sind; es ist vermutlich nur eine Form derselben Art.

3. **Vaccinium philippinense** Warb. Frutex glaber, ramis teretibus cinereis striatis minute lenticillatis; ramulis striatis angulatis, petiolis 5—7 mm longis canaliculatis in secco griseis; foliis glabris ellipticis vel ovato-ellipticis basi acutis apice longe et oblique abrupte acuminatis acutis 5—8 cm longis,  $2\frac{1}{2}$ — $3\frac{1}{4}$  cm latis, pergamaceis, integerrimis margine revolutis, supra nitidis, subtus pallidioribus in secco fuscescentibus, quintuplinerviis, venis 2—3 utrinque ascendenteribus, nervis tertiaris utrinque distincte prominulis reticulatis. Racemis axillaribus folia subaequantibus vel paullo longioribus glabris multifloris; bracteis

persistentibus late lanceolatis acutis glabris, 1— $1\frac{1}{2}$  cm longis, 3—5 mm latis; floribus in pedicellis crassis 6—8 mm longis saepe nutantibus, calyce hemisphaerico 3 mm lato apice breviter 5 dentato, dentibus latis brevissime acuminatis; corolla late campanulata fere globosa 5 mm in diametro, ore angusto, lobis 5 recurvatis obtusis; filamentis brevibus dense lanatis, antheris linearibus pendulis basi saccatis apice in tubulos breves productis, subitus ad filamenti apicem subulate biappendiculatis; stylo columnari apice subinerassato; bacea globosa infra apicem calyce coronata, in sicco nigro.

Philippine Isl. (CUMING no. 832).

## Ferns<sup>1</sup>

by

E. B. COPELAND.

With 3 figures.

### Aspidium Sw.

1. **Aspidium (Arepteryis) Bryanti** Copeland n. sp. Stipite 20—40 cm alto, valido, fusco, paleis sparsis patentibus vestito, alam integrum haud attenuatam basi truncatam ca. 1 cm latam utrinque ferente; fronde 30—50 cm longa, ovata, trifida cum lobis lateralibus proximis vel saepius quinquefida cum lobis inferioribus remotis; parte apicali grandi, 20—30 cm longa, ca. 10 cm lata, acuminata, integra vel subrepanda, papyracea, glabra; lobis lateralibus similibus, minoribus, 10—18 cm longis, 5—7 cm latis; venis primariis curvatis, fere marginem attingentibus,

1) The manuscript of the diagnoses of Philippine ferns here printed was sent by Mr. COPELAND to Geheimrat ENGLER for publication; as the plants in question were from the Philippines, and as the author desired a speedy appearance of his paper, Geheimrat ENGLER gave the manuscript to me. The originals of COPELAND's novelties I have not seen. The diagnoses and the annotations are printed exactly as they were given me, and the author, who desired that they should be published in the form in which they were sent, is alone responsible for them. For editorial reasons the Latin names of localities have been translated into English. The Editor.

venulis transversalibus arcuatis, conspicuis connexis; areolis majoribus regularibus in minores irregulares venulas liberas includentes divisis; soris praecipue in series dua inter venas primarias instructis; indusio nullo vel fugaci.

Negros Isl., near the Gimogon River, on the ground in the woods (COPELAND no. 82).

Cum *A. vasto* Blume nec non *Polypodium dilatato* Wall. similitudinem habet; in utroque genere species nova.

2. **Aspidium (Areypteris) lamaense** Copeland n. sp. Rhizomate adscendente; stipite 15—25 cm alto, recto, ad basin paleas lanceolatas parvas ferente, sursum costisque minute fibrillosis; fronde 15—25 cm longa, deltoidea, plerumque trifoliata; pinna apicali 10—15 cm longa, saepius deltoidea, profunde tripartita, parte mediale 2—3 cm lata, acuminata, integra, herbacea, glabra, segmentis lateralibus proximis, 6—10 cm longis; pinnis lateralibus brevi-petiolulatis, ea. 10 cm longis, furcatis, segmentis inferioribus distantibus; venis primariis marginem vix attingentibus; areolis venulas liberas includentibus; soris copiosis irregulariter dispersis, orbicularibus vel elongatis, nunquam indusiatis, laete rubris.

Luzon Isl., Prov. Bataán, near the Lamao River, on stones in a brook (COPELAND no. 223).

Ob colorem sororum egregium. Pinna apicalis rarius integra; vel inter eam et laterales furcata utrinque pinna integra interposita.

3. **Aspidium (Areypteris) Whitfordi** Copeland n. sp. Rhizomate suberecto, brevissimo, dense squamoso; stipite 20—30 cm alto, deorsum fuscō, paleis linearibus vestito, sursum stramineo-brunneo, glabro; fronde 30—40 cm longa, deltoidea, acuminata, papyracea, glabra, olivaceo colore, pagina superiore venulis albidis laete reticulata; parte apicali pinnatifida, segmentis late crenatis et obscure serratis; pinnis liberis utrinque ca. 6, erecto-patentibus, acuminatis, lanceolatis, plus minus  $\frac{1}{2}$  ad costam in lobis oblongis obtusis integris vel serratis pinnatifidis, inferioribus petiolulatis, infimis deltoideis cum pinnula una basiscopica libera 8 cm longa pinnae superiori simili; venulis laxe anastomosantibus, liberis inclusis carentibus; soris orbicularibus vel oblongis, irregulariter adspersis nec costae approximatis, exindusiatis.

Luzon Isl., Prov. Bataán, near the Lamao River, 500 m. s. m. (WHITFORD n. 201).

4. **Aspidium (Sagenia) persoriferum** Copeland n. sp. Rhizomate adscendente, brevi; stipite 40—60 cm alto, stramineo vel brunneo, deorsum paleis arcuatis, lanceolatis, acuminatis, 12 mm longis vestito, sursum rhachique glabro; fronde 30—50 cm longa, ovata, pinnata, sterili ampliore; parte apicali ca. 25 cm longa, 7 cm lata, acuminata, integra vel subrepanda, subcoriacea, glabra; pinnis lateralibus ca. 3-jugatis, sessilibus, erecto-patentibus, subarcuatis; lanceolatis, 15—20 cm longis; pinnis fertilibus minoribus, ca. 10 cm longis, 2 cm latis, obscure crenatis, infimis petiolulatis; venis primariis fere marginem attingentibus; areolis irregularibus, venulas liberas includentibus; soris magnis in series duas inter venas primarias instructis, totam paginam fere complentibus; indusio reniformi tenaci adhaerente.

Mindanao Isl., Prov. Davao, near Catalona (COPELAND no. 929).

Ab *A. siifolio* Mett. cui proximum differt margine haud lobata.

5. **Aspidium (Sagenia) heterodon** Copeland n. sp. Rhizomate erecto, lignoso; stipite 15—20 cm alto, glabrescente, utrinque alam sursum 5 mm latam deorsum attenuatam ferente; fronde 20—30 cm alta, tri- vel quinquepartita, herbacea, glabra; parte apicali oblanceolata, 4—5 cm lata, acuminata, in dentes informes 0—10 mm altos serrata; lobis lateralibus minoribus, erecto-patentibus, obscurius serratis; venis primariis marginem attingentibus; areolis irregularibus venulas liberas includentibus; soris magnis, secus venas primarias seriatis; indusio reniformi, persistente.

Mindanao Isl., Prov. Davao, near Catalona, on the ground in the woods (COPELAND no. 951).

Ab *A. decurrente* Presl, cui affine, differt statura minore, textura tenuiore, margine profunde serrata, praecipueque rhizomate erecto. An forma simplex *Aspidii pteropus*?

### Gymnopteris Bernh.

1. **Gymnopteris inconstans** Copeland n. sp. Rhizomate late repente, 1—3 mm crasso, squamuoso; stipite frondis sterilis 1—3 cm alto, tenui, viridi, squamuoso vel glabro, frondis fertilis 3—10 cm alto, erecto, filiformi, sursum glabro; fronde sterili

rarius simplici, plerumque pinnata, 4—8 (rarius ultra) cm longa, linearis, lanceolata, oblanceolata, vel ovata, lamina membranacea, glabra; pinna terminali vulgo valde producta, angusta, prolifera; pinnis lateralibus 2—6-jugatis, erecto-patentibus, vulgo obovatis, rarius orbicularibus vel lanceolatis, obtusis, integris vel rarius serratis, sessilibus, plus minus decurrentibus; venis inconspicuis, areolis parcis, venulis inclusis carentibus; fronde fertili linearis; pinnis 2—4-jugatis, remotis, infimis interdum petiolulatis, orbicularibus vel oblongis, integris, 1—4 mm longis; venulis parcis vel nullis; pagina tota sporangiis obtecta.

Luzon Isl., Prov. Bataán, Lamao River, on moist stones (COPELAND no. 251, MERRILL no. 3128).

This exceedingly variable fern is locally common, fruiting throughout the year. It completely covers boulders in the beds of the Lamao and its branches. Its small size and individually lax but collectively dense habit distinguish it well from all of its pinnate relatives.

#### **Arthropteris** J. Sm.

1. **Arthropteris glabra** Copeland n. sp. Rhizomate tenui, scandente, paleis nigris adpressis vel basibus earum sparse vestito; stipite brevissimo, 1—2 mm supra rhizoma articulato; fronde 20—30 cm alta, 5—7 cm lata; pinnis ea. 8 mm latis, obtusis vel superioribus subacutis, obscure crenatis, subauriculatis, papyraceis, glabris, siccis viridibus; soris orbicularibus a margine remotis; indusio sinu angusto affixo, diu persistente.

Palauan Isl., near Ewiig River, on the trunks of trees (MERRILL no. 740).

Filix a speciebus affinibus pinnis glabris et indusiis persistentibus valde distineta.

#### **Nephrolepis** Schott.

1. **Nephrolepis barbata** Copeland n. sp. Rhizomate brevi, suberecto, radiees suffulcantes multas emitte; stipitibus confertis suberectis, validis, 10—15 cm altis, deorsum squamulis lanceolatis fuscis hyalino-marginatis vestitis, sursum glabrescentibus; fronde linearis, 50 cm vel ultra longa, 8 cm lata, pinnata; rhachi brunnea, nitente, squamulis minutis deorsum patentibus sparse vestita; pinnis majoribus sterilibus 35×10 mm, acutis, integris, fertilibus 50×7 mm, acuminatis, apices versus

plerumque serratis, ambabus basi inferne rotundatis superne acute auriculatis, subarcuatis, glabris, subcoriaceis, deorsum diminutis et rotundatis; soris submarginalibus; indusio orbiculari, nigro laete brunneo-marginato, sinu lobis obtecto.

Mindanao Isl., Prov. Davao, Todaya, on the trunks of trees, 1100 m. s. m. (COPELAND no. 1286).

Near *N. rufescens*, from which it is distinguished by its slenderness better than by the usually absolutely glabrous pinnae.

### Oleandra Cav.

1. **Oleandra colubrina** (Blanco) Copeland. Rhizomate lignoso, 4—7 mm crasso, suberecto, ramoso, paleis squarrosis densissime obtecto quarum bases peltatae, atrae sed brunneo-marginatae, imbricatae, persistentes sunt, apices distantes vel recurvati, aciculares, 2—3 mm longi, decidui; stipite apud frondem ipsam articulato frondibus verticillatis, 15—20 cm longis, ca. 2 cm latis, sursum latioribus abrupte contractis et caudatis, deorsum sensim angustatis, integris, vix sub lente interdum cartilagineo-marginatis, papyraceis, pilis albidis ciliatis, eisdem laminis sparse, costis dense vestitis; soris irregulariter ordinatis; indusiis albido-marginatis, sinubus fere parentibus, parvis. *Blechnum Colubrinum* Blanco, Flora de Filipinas p. 834, 1837.

Luzon Isl., Prov. Bataán, Mt. Mariveles, 1000 m. s. m. (COPELAND no. 1381, MERRILL no. 3238, WHITFORD n. 248).

Because of the "Fructificaciones en dos líneas paralelas, y aproximadas á la costilla de la fronde", BLANCO ascribed this fern to *Blechnum*. His description is so vague I would not think of displacing another name for his, but as this species is new to science, and agrees with the few details in BLANCO's description, and we know that he had plants from Mt. Mariveles, I think it better to get rid of a lost name by rehabilitating his than to introduce a new one.

### Davallia Sm.

1. **Davallia (Prosaptia) contigua** Sw. var. **monosora** Copeland n. var. Rhizomate brevi, repente, paleis fusco-brunneis, lanceolatis, acutis, ciliatis vestito; frondibus caespitosis, pendentibus, linearibus, majoribus  $35 \times 3$  cm, pinnatis; stipite ca. 4 cm alto nigrescente, rhachique paleis minutis, fuscis, angustis vestitis; pinnis coriaceis, linearibus, medio 1, 2 mm latis, deorsum sen-

sim in dentes latos diminutis; costa simplici subsquamulosa, inconspicua; soro ad apicem pinnae solitario.

Mindanao Isl., Mt. Apo, 1600 m. s. m. on the mossy trunks of trees (COPELAND no. 1013).

This var. is more slender and the pinnae are decidedly finer and closer together than in the type. A pinna is very rarely found bearing two sori, but the var. and the type (*D. contigua*) seem to maintain their distinctness when growing in the forest side by side.

2. **Davallia (Prosaptia) exaltata** Copeland n. sp. Rhizomate brevi, ascendente, paleis brunneis, linearibus, 6 mm longis dense vestito; frondibus confertissimis, pendentibus, deorsum attenuatis, sessilibus, majoribus  $500 \times 9$  mm, parte tertia inferiore sterili, vix ad rhachin pinnatifidis; rhachi 0,8 mm lata, viridi, squamulis parvis, parcis, plerunque distantibus vestita; segmentis inaequilateraliter triangularibus, coriaceis, obtusis, planis, glabris, infra punctulatis; venis invisibilibus; soris ad apices segmentorum solitariis.

Mindanao Isl., Mt. Apo, 1800 m. s. m., on the mossy trunks of trees, in a moist forest (COPELAND no. 1006).

Young fronds are remarkably similar to *Polypodium cuniculatum*, which often grows in the same clusters, with the fronds mixed. The nearest relative is doubtless *D. Frederici et Pauli* Christ of the same formation on the mountains of Celebes, a much smaller fern, with rhachis beset with broad, appressed scales.

3. **Davallia Wagneriana** Copeland n. sp. Rhizomate late scandente, valido, paleis brunneis, lanceolatis, acuminatis, adpressis dense vestito; stipite valido, deorsum squamoso, sursum, rhachique crassa subalata glabris; fronde 20—25 cm alta, 10—15 cm lata, late lanceolata, glabra, coriacea, fertili quam sterilis tenuiore, subtripinnatifida; pinnis infimis sequentibus aequalibus, deorsum ad rhachin (ipsarum) in pinnulas distinctas pinnatifidas aequales divisis, sursum in segmenta acute dentata late linearia incisis; soris saepius altioribus quam latis marginem rarius attingentibus.

Mindanao Isl., Prov. Davao, Todaya, 1100 m. s. m., on high trees in the forest (COPELAND no. 1300).

This fern is nearest *D. Lobbiana* Moore, of Borneo, but is not at all deltoid, and the sori are usually deeper than wide.

**Lindsaya** Dry.

1. **Lindsaya Merrillii** Copeland n. sp. Rhizomate valido, scandente, rufo-brunneo, nitente, squamulis ferrugineis patentibus vestito vel subglabro; stipitibus 2—5 cm altis, validis, subsquamulosis, sursum rhachique stramineis; fronde ca.  $80 \times 4$  cm, pinnata; pinnis alternantibus rarius oppositis, inferioribus petiolatis, majoribus 22 mm latis, 9 mm altis (apud rhachin), dimidiatis, basibus valde attenuatis, apice saepius acuto, margine infra integra, supra inciso-crenata, membranaceis, glabris; venis liberis; soris lobos subterminantibus.

Mindoro Isl., Baco River, on the trunks of trees in a moist forest (MERRILL no. 1774 type); Luzon Isl., Prov. Benguet, Sablán (ELMER no. 6124).

2. **Lindsaya gracillima** Copeland n. sp. Rhizomate brevi, subterraneo; stipitibus dense fasciculatis, erectis, brunneis, subglabris, 5 cm altis; fronde pinnata anguste linearis, ca.  $320 \times 9$  mm, glabra; pinnis alternantibus, petiolatis, triangularibus vel rhomboideis, 4 mm latis, 3 mm altis, deorsum diminutis, infra rectis integris, supra rotundatis, integris vel sterilibus profunde crenatis, venis liberis, flabellatis; textura herbacea; soris continuis vel subinterruptis, marginalibus.

Luzon Isl., Caraballo Sur, on shady ground, 800 m. s. m. (MERRILL no. 287).

By far the most slender species.

3. **Lindsaya cultrata** Sw., var. **varia** Copeland n. var. A typo differt fronde stipiteque multo minoribus, textura membranacea, pinnarum formaque variabilissima.

Luzon Isl., Prov. Benguet, Baguio, growing on stones near brooks (ELMER no. 6003 type, TOPPING no. 191 and no. 198).

Different plants are exceedingly variable in the shape of the pinnae, which, as a rule, are strongly adscendent. One remarkable and not infrequent form has them falcate, with a single composite sorus occupying the concave, contracted upper edge, flanked at each side by a tooth. They are always broadest next the rachis. The color is pale, sometimes even yellowish. Beside entire pinnae, there are variously incised ones, sometimes suggesting *L. Loheriana* Christ, which they resemble in all respects, except that they are not deeply bifid. Infrequent, large forms intergrade insensibly with *L. cultrata*.

4. **Lindsaya apoensis** Copeland n. sp. Rhizomate scandente, ferrugineo, subglabro, 1 mm crasso; stipitibus rectis vel flexuosis, validis, 12—18 cm altis, deorsum fuscis, sursum rhachique viridibus, subglabris; fronde ca. 20 × 6 cm, apice decidua, pinnata; pinnis brevi-petiolatis, glabris herbaceis, majoribus 40 × 7 mm, infra areuatis, supra in lobos irregulares, ad apices pinnarum longiores plerumque lineares incisis; venis liberis vel in soris confluentibus; soris parvis, suborbicularibus, lobos subterminantibus. (Plate IV, Fig. A.)

Mindanao Isl., Mt. Apo, on the trunks of trees in a moist forest, 1600 m. s. m. (COPELAND no. 1181 type, DE VORE and HOOVER no. 365).

Near *L. (Odontoloma) repens*, but judging from the two independent collections of different years, from somewhere in the same great forest, the conspicuous differences are constant.

5. **Lindsaya montana** Copeland n. sp. Rhizomate brevissimo, repente, squamulis ferrugineis obtecto, stipitibus fasciculatis, 1—3 cm altis, tenuibus, flexuosis, deorsum rufo-fuscis, sursum rhachique stramineis, subglabris; fronde 3—6 cm alta, 1,5 cm lata, pinnata; pinnis petiolatis, 9 × 6 mm, inferioribus valde deflexis, semiorbicularis, infra reflexo-areuatis, supra rotundatis, integris vel incisis, pinnis superioribus adscendentibus, basibus acutis, membranaceo-coriaceis; venis liberis, flabellatis; soris plerumque continuis, submarginalibus.

Luzon Isl., Prov. Bataán, Mt. Mariveles, on the ground, 1100 m. s. m. (COPELAND no. 230).

Near *L. concinna*, but differs in the reflexed, firmer and much deeper pinnae, often deepest near their apex, and in the much shorter fronds.

#### **Loxogramme** Presl.

1. **Loxogramme parallela** Copeland n. sp. Rhizomate brevi, repente, paleis cinereo-fuscis, lanceolatis, acuminatis vestito; frondibus linearibus, ca. 15 cm altis, 6 mm latis, erectis, subrectis, acuminatis, integris, sensim ad bases subsessiles attenuatis, coriaceis, glabris; costa deorsum conspicua, venis immersis; soris oblongis, utrinque uniseriatis, costae approximatis et ei fere parallelis.

Luzon Isl., Prov. Benguet, Mt. Saneto Tomas (ELMER no. 6569).

### Hemionitis L.

1. **Hemionitis gymnopteroidea** Copeland n. sp. Caudice erecto, brevi, apice squamoso; fronde sterili sessili vel subsessili, 7—17 cm longa, 2,5—5 cm lata, oblanceolata, obtusa vel acuta, margine nimis ampla, repanda, basi lata vel angustata, papyraceo-herbacea, maculata, glabra vel costa squamulosa; venis primariis fere nec omnino marginem attingentibus, venulis liberis inclusis copiosis; stipite frondis fertilis 5—15 cm alto, deorsum vel ubique paleis lanceolatis subulatis distantibus vestito; fronde anguste linearis, 5—10 cm longa, 2—4 mm lata, interdum interrupta; venis soriferis utrinque 1—3, costae parallelis, subanastomosantibus; pagina tota mox sporangiis obtecta.

Luzon Isl., Prov. Bataán, near Lamao River, on the ground in a forest (COPELAND without number, type, MERRILL no. 3113, BARNES F. B. no. 166).

This fern is not, as our collections would indicate, at all local. It is very variable in stature, color of fronds and paleae, and form of sterile fronds, but is constant in the very narrow fertile frond and copious free veinlets in the sterile, which distinguish it from *H. Zollingeri*.

*Forma major*: stipite frondis sterilis 1—4 cm alto, squamoso; fronde 10—25 cm longa, basi attenuata.

Cum typo speciei (COPELAND no. 1398).

### Asplenium L.

1. **Asplenium subnormale** Copeland n. sp. Rhizomate brevi, reptante, uni- vel paucifoliato; stipite 1,5— (rarissime) 8 cm alto, atro-fusco, sursum glabro; rhachi sursum vel ubique viridi; fronde anguste ovata, acuta, glabra, pinnata; pinnis ca. 6-jugatis, inferioribus stipitatis, vulgo trapezoideis, membranaceis, obtusis vel subacutis, crenatis, parte basiscopica apud rhachin ad costam excisa, parte aeroscopica rhachi parallela; soris angustis. (Plate IV, Fig. B.)

Luzon Isl., Prov. Bataán, Lamao River, on wet earth (COPELAND no. 236, type, no. 1395).

In spite of the green rhachis, this is probably a representative of the polymorphous *Trichomanes* group. As is to be expected here, it resembles *A. normale* Don more than it

does typical *Trichomanes*. Most specimens are less than 10 cm high, including the stipe.

2. ***Asplenium Toppingianum*** Copeland n. sp. Rhizomate repente, squamis lanceolatis, tenuibus, brunneis vestito; stipite 3—8 cm alto, deorsum brunneolo-squamoso, sursum rhachique viridibus, glabrescentibus; fronde 10—15 cm alta, 2—2,5 cm lata, herbacea, glabra, acuminata, sursum ad rhachin late alatam incisa, deorsum pinnatam; pinnis auriculatis, serratis, oblongis, obtusis, inferioribus deflexis; soris rectis vel valde athyriiformibus.

Luzon Isl., Prov. Benguet, Baguio (TOPPING no. 284, type, ELMER no. 5787).

*A. Toppingianum* var. *mixtum* Copeland n. var. A typo differt statura majore, pinnis potius crenatis quam serratis, et praecipue pinnis infimis multo majoribus pinnatifidis.

Luzon Isl., Prov. Benguet, Baguio, with the type, (TOPPING no. 194).

The type and variety are very distinct in appearance, and I was at first inclined to regard them as different ferns; but ELMER's more recent collection connects them fully.

The relationship of this *Asplenium* is rather mixed. The half-green stipe and rhachis strongly suggests the "viride" group, and the shape of the pinnae points toward *Trichomanes*. Judging by the description, it differs from *A. Loherianum* Christ, from the same locality, in its larger size, more erect bearing, long stipe, auriculate pinnae and non-rooting apex.

Its most remarkable feature is the form of the sori, which are most often confined to the one side of the vein, but by no means infrequently are bent across it into the form of a broad horseshoe. But for the evident nearer affinity to *A. viride*, and the absence of near relatives in *Athyrium*, I would place it in the latter genus. The texture of the paleae furnishes no adequate or reliable basis for a generic differentiation, and the holding of *Athyrium* as a distinct genus seems to me more violent than practical.

3. ***Asplenium epiphyticum*** Copeland n. sp. Rhizomate scandente, squamulas minutas, parcas ferente; stipite distante, squamulis minutis, ferrugineis vestito, ea. 8 cm alto; fronde typica simplici, 20—30 cm alta, ea. 4 cm lata, membranacea, acuminata, basi obtusa vel acuta, margine crenato vel potius serrato; costa

valida, squamulosa; lamina glabra, venis conspicuis, plerisque furcatis, fere transversis; soris linearibus, nec costam nec marginem attingentibus. Sunt etiam frondes plantarum infantum<sup>1</sup> bi-vel tri-pinnati-dissectae, nec nonnullae mediae, sursum simplices, deorsum dissectae.

Mindanao Isl., Prov. Davao, Mungalaion, on the trunks of trees, in a forest near the sea (COPELAND no. 664).

This fern differs from *A. vittaeforme* Cav. in the thinner texture, many forked veins and chaffy stipe; and from *A. scolopendrioides* J. Sm. in the almost horizontal veins and toothed margin. WARBURG collected *A. vittaeforme* near Davao. And a fern collected by DE VORE and HOOVER no. 329, from Mt. Apo, probably at about 1800 m, is nearer to *A. scolopendrioides* but the indusium leaves no prominent line when it dehisces: this line is very evident on specimens collected by MERRILL in Mindoro.

4. ***Asplenium apoense*** Copeland sp. n. Rhizomate crasso, brevi, erecto; stipite 1—5 cm alto, valido, squamoso; fronde 20—35 cm alta, 1,5—2,5 cm lata, integra, acuta, deorsum sensim in stipitem attenuata, lamina coriacea, glabra; costa valida, squamosa; venis inconspicuis, erecto-patentibus, plerumque furcatis; soris linearibus, a costa  $\frac{2}{3}$  ad marginem extensis.

Mindanao Isl., Mt. Apo, epiphyte, 1800 m. s. m. (COPELAND no. 1108).

Differs from *A. ensiformis* Wall. of India in the scaly costa, non-acuminate apex, and linear sori, often touching the costa but not close to the margin.

5. ***Asplenium insigne*** Copeland n. sp. Rhizomate brevi, squamis brunneis, magnis dense vestito; stipite valido, fusco-vel atro-viridi, subglabro, 40—50 cm alto; fronde plusquam 60 cm alta, 30 cm lata, pinnata; pinnis plusquam 12-jugatis, stipitatis, ca. 20  $\times$  3,5 cm, lanceolatis, acuminatis, subserratis, coriaceo-herbaceis, cinereo-viridibus, glabris, subobliquis, parte basiscopica basi cuneata, aeroscopicā truncato-cuneata; venis obliquis, plerumque furcatis, haud inconspicuis; soris latis, prope costam, medio ad marginem extensis, satis regularibus.

Mindanao Isl., Prov. Davao, on the stones of the River Sibulan, 700 m. s. m. (COPELAND no. 983).

1) "juvenilium". Ed.

Near *A. persicifolium*, in spite of the grey and almost coriaceous fronds.

6. ***Asplenium hirtum*** Kaulf., var. ***repressum*** Copeland n. var. A typo differt frondibus minoribus, vix 20 cm altis, fere sessilibus, et pinnis obtusis.

Luzon Isl., Prov. Bataán, Mt. Mariveles, exposed to strong winds, 1200 m. s. m. (MERRILL no. 3212).

### Diplazium Sw.

1. ***Diplazium palauanense*** Copeland n. sp. Stipite valido, 30—40 cm alto, pedem versus nigro nigroque-squamoso, sursum stramineo vel brunneo, rhachique glabris; fronde 30—60 cm alta, pinnata, pinna apicali lateralibus simili; pinnis alternantibus, remotis, ca. 6-jugatis, majoribus 30 cm longis, 25—30 mm latis, acutis, obscure serratis, coriaceis, glabris, inferioribus in stipites breves subsymmetrice contractis, superioribus rhachi adnatis; venis 2—3-furcatis; soris linearibus, a margine remotis.

Palauan Isl., on the ground in the forest, 500 m. s. m. (MERRILL no. 746).

Nearest *D. bantamense* Blume, but larger, with more numerous, narrower, and not entire pinnae, and a space between the margin and the ends of the sori.

### Callipteris.

1. ***Callipteris pariens*** Copeland n. sp. Caudice valido erecto, nigro, paleis lanceolatis, 8 mm longis, fuscis vestito; frondibus confertis; stipite canaliculato, ca. 35 cm alto, deorsum subsquamoso, nigrescente, sursum viridi; rhachi squamulis minutis vestita; pinnis brevi-pedicellatis, ca. 2-jugatis, deorsum majoribus, ovatis, acuminatis, ad bases rotundatis, integris, subcoriaceis, glabris; pinna terminali lateralibus simili; axillis sursum viviparo-bulbiferis; venis satis distinctis, prope costam 1-furcatis, extra soros anastomosantibus; soris diplazoideis, linearibus, rectis, a costa  $\frac{2}{3}$  ad marginem extensis.

Mindanao Isl., Prov. Davao, Todaya, on the ground in the woods (COPELAND no. 1287).

The young plants cling in the axils of the pinnae even after they have five well grown simple leaves and numerous roots, all free from the ground. Fronds about 5 dm high by 2 dm wide.

**Blechnum L.**

1. **Blechnum egregium** Copeland n. sp. Stipitibus nidiformi-confertis, 10—20 cm altis, validis, brunneis, pedibus nigris, paleis atris 20—25 mm longis, 0,5 mm latis dense praecipue deorsum vestitis; fronde ea. 1 m alta, 30 cm lata, pinnata, subbiforme, glabra; pinnis acuminatis, serratis, sursum confluentibus, medio rhachi late adnatis sed vero distinctis, deorsum ad auriculas subremotas sensim diminutis, fertilibus coriaceis, 15 cm longis, ad rachin 15—20 mm latis, linearis- vel caudiformi-contractis, patentibus vel recurvatis, sterilibus tenuioribus, 15 mm latis; venula unaquaque in dentem acutum percurrente; soris continuis costalibus, apices angustatas pinnarum versus paginas totas fere complentibus; indusiis coriaceis persistentibus.

Mindanao Isl., Prov. Davao, Sibulan River, on shady ground near brooks, 500 m s. m. (COPELAND no. 1314).

Sterile fronds of this elegant fern are common along creeks near Todaya, but fruiting fronds were encountered but once. It is quite intermediate between the old genera *Blechnum* and *Lomaria* (*Stegania* R. Br.), and amply supports DIELS' judgment in combining them. The young fronds remain a long time red.

**Drymoglossum Presl.**

1. **Drymoglossum confertum** Copeland n. sp. Rhizomate tenui, repente, intricato, squamulis parvis, tenuissimis, brunneis, lanceolatis, acuminatis vestito; frondibus brevi-stipitatis, confertis; fronde sterili elliptica, crassa, glabra, integra, cordata, apice rotundata, venis anastomosantibus areolas parcas sufficientibus, venuis liberis inclusis nullis; fronde fertili linearis-oblanceolata, in stipitem attenuata, apice rotundata, soris in medio disco lateris inter costam et marginem, superficialibus, sursum postremo totam paginam complentibus, paraphysibus invisis.

Mindanao Isl., Prov. Davao, Catalona, on the trunks of trees, in moist forests (COPELAND no. 942).

Stipe 1—7 mm long; sterile fronds at most 18×13 mm, fertile 25×3,5 mm. The dense layer of small leaves entirely covers the trunk and the network of rhizomes. This seems very distinct from any *Drymoglossum* hitherto known.

**Christopteris** Copeland n. gen.

Rhizomate repente, stipitibus ab eo articulatis; frondibus valde biformibus, sterilibus isosceli-triangularibus amplis, fertilibus in segmenta linearia tripartitis; venis ubique anastomosantibus, venis liberis inclusis; soris linearibus costis proximis parallelis, paginas totas postremo complentibus, paraphysibus carentibus.

This genus is founded on a plant collected on Mt. Mariveles by Dr. WHITFORD and myself, which I believe to be identical with that described by CHRIST from sterile material, of LOHER's Benguet collection, as *Polypodium (Phymatodes) Sagitta*. The resemblance of the sterile fronds to *P. spectrum* Kaulf. is indeed very close, but the character of the fertile frond shows that the real place of the fern is in the *Taenitiidae*, with *Drymoglossum* and *Platytaenia*. The triangular frond is pteridioid in aspect, and the margin of very young fronds is occasionally inflexed, but not normally so. The genus dedicated to Dr. H. CHRIST, in appreciation of his valuable and extensive work on the ferns of this region.

1. **Christopteris sagitta** (Christ, Bull. Herb. Boissier 6. (1898), 199)  
Copeland. Planta vegetativa ut a Christ descripta, sed vero paleis rhizomatis ca. 8 mm longis; fronde fertili ad basin in segmenta erecto-patentia tria divisa, segmento medio 8—15 cm alto, ea. 3 mm lato, lateralibus paulo brevioribus.

Luzon Isl., Prov. Benguet, La Trinidad on calcareous stones (LOHER without number), Prov. Bataán, Mt. Mariveles (COPELAND), on the mossy trunks of trees (WHITFORD no. 321).

**Polypodium** L.

1. **Polypodium Merrillii** Copeland n. sp. Rhizomate brevi, erecto, paleis parvis brunneis vestito; fronde minuta, sessili vel in stipitem brevem attenuata, linearis-oblanceolata, obtusa, integra, coriacea, pilis sparsis brevibus, cinnamomeis, praecipue ad paginam superiorem marginemque vestita; costa conspicua, venis simplicibus immersis; soris superficialibus, costalibus, orbicularibus, magnis, quam media lamina latioribus, igitur in seriem unam sinuosam instructis, ad frondem unam quamque ca. 6.

Paragua Isl., on stones by a brook (MERRILL no. 754).

This is the smallest *Polypodium*. The largest fronds are 23 mm long and less than 2 mm broad. The caudices are less than 5 mm high, and, including the leaf-bases, 1,5 mm thick.

- 2. *Polypodium pleiosoroides*** Copeland n. sp. Caudice brevi, repente, squamulis late lanceolatis acuminatis, stramineis vestito; stipite tenui, 2—4 cm longo, pilis stramineis 0,4 mm longis, divergentibus dense vestito; fronde lanceolata, 10—15 cm alta, 10—15 mm lata, utrinque attenuata, coriacea, ambabus faciebus glabra, margine praecipue deorsum sinuato, pilos breves, parvissimos ferente; nervis lateralibus (totis) liberis, immersis, inconspicuis, pinnatis vel ca. 4-furcatis; soris rotundis, magnis, superficialibus, vix confluentibus, in 1—3 lineas irregulares instructis vel potius sparsis, receptaculis oblongis.

Mindanao Isl., Mt. Apo, on the mossy trunks of trees, 1800 m. s. m. (COPELAND no. 1011).

A *P. pleiosoro* Mett., in Tahiti et Ulaitea lecto, cui affine, squamis rhizomatis latioribus, fronde oculo nudo ubique glabra et soris magnis satis distinctum.

- 3. *Polypodium gracillimum*** Copeland n. sp. Rhizome repente vel adscendente, paleis minutis, fuscis, lanceolatis vestito; frondibus confertissimis, ubique glabris, in segmentis minutis, acutis remotis, erecto-patentibus, decurrentibus, alternantibus fere ad rhachin pinnatifidis; rhachi viridi utrinque alata; soro in uno quoque segmento uno, medio dorsali; lamina segmenti conduplicata, parte inferiore sorum protegente.

Mindanao Isl., Mt. Apo, on the mossy trunks of trees, in a moist forest, 1800 m. s. m. (COPELAND no. 1007).

Larger fronds 12 cm long, 4 mm wide, almost sessile. The very small and widely separated segments give the frond the aspect of a leafy liverwort. It grows with its nearest relative, *P. cucullatum* Nees.

- 4. *Polypodium maerum*** Copeland n. sp. Rhizome brevi, erecto, radicibus, basibus frondium emortuarum squamulisque fuscis densissime obtecto; frondibus confertis, brevi-stipitatis, linearilanceolatis, curvis, acutis, pinnatis; stipite fusco-nigro, pilis concoloribus 1 mm longis vestito, rhachi eosdem sparsius ferente, lamina glabriuscula; pennis angustis, subacute, undulatis, subfalcatis, decurrentibus, sursum confluentibus, deorsum remotis, minusculis; soris ellipticis vel subrotundis, ad

apices venularum simplicium, margini quam costae propioribus.

Mindanao Isl., near Mt. Apo, on mossy trees, 1650 m. s. m. (COPELAND no. 1016).

The larger fronds  $25 \times 2.5$  cm, stipes 1—2.5 cm. This fern is very near BLUME's *P. subfalcatum* and *P. minutum*: except for this affinity, and the apparent propriety of keeping all three species with the other pinnate *Eupolypodiums* of similar habit, the clothing of the rhizome with the irregularly broken bases of old stipes would remove it from the genus.

5. ***Polypodium (Goniophlebium) mollieulum*** Copeland n. sp.  
 Rhizomate late repente, paleis parvis, subulatis, ferrugineis vestito; stipite ca. 10 cm alto, subrecto, glabrescente; fronde 15—20 cm alta, 8 cm lata, pinnata; pinnis anguste lanceolatis, 6—8 mm latis, acutis, serratis vel basin versus crenatis, breviauriculatis, plus minus truncatis, sessilibus nec usquam adnatis, herbaceis, brevi-sericeis; venis extra seriem costalem areolarum liberis; soris vix immersis.

Luzon Isl., Prov. Benguet, Baguio, epiphyte on pine trees (ELMER no. 6506).

Nearest to *P. Beddomei* Baker, of Burmah, a much larger fern, with several rows of areolae, and the upper pinnae adnate to the rachis.

6. ***Polypodium (Phymatodes) rudimentum*** Copeland n. sp. Rhizomate late repente, tenui, paleis linearis-subulatis ferrugineo-brunnescentibus vestito; stipitibus 15—25 mm altis, erectis, rectis, filiformibus, glabris, stramineis; fronde orbiculari vel fertili saepius ovata, 10—20 mm longa, utrinque rotundata, integra vel tenuissime serrulata, glaberrima, coriacea; costa sub apice evanescente; venis occultis, irregulariter anastomosantibus vel interdum liberis sed hamatis; soris parcis, subimmersis, orbicularibus, utrinque uniseriatis, costae quam margini propioribus.

Luzon Isl., Prov. Benguet, Baguio, on moist stones (ELMER no. 6022).

This has the superficial aspect of an immature form of some larger and better differentiated fern: but I have been quite at a loss to find any larger species of which it could be imagined to represent a stage; and the absence of any

hint of a disposition to become larger or less amorphous in the considerable amount of fertile material collected by Mr. ELMER speaks for its specific distinctness. It suggests *P. nummularium* in its shape and size, but even when the veins are free their mode of branching marks it unmistakably as a *Phymatodes*.

7. **Polypodium (Phymatodes) validum** Copeland n. sp. Rhizomate brevi, crasso, paleis ovatis, adpressis, fuscis, obtusis, cordatis vel peltatis vestito; frondibus caespitosis, fere sessilibus, integris, carnosso-coriaceis, fragilibus, lanceolatis, subacutis, deorsum in stipitem alatum attenuatis; venis lateralibus primariis fere ad marginem manifestis, itemque venuulis majoribus, arcuatis, costae parallelis; areolis primariis ca. 7-seriatis, venuulas liberas utrinque inclientibus, divisis; soris copiosis irregulatiter dispersis.

Mindanao Isl., Prov. Davao, Sibulan River, on the stones of river banks, 500 m. s. m. (COPELAND no. 973).

Large fronds are 7 dm long and more than 1 dm wide; about  $\frac{1}{3}$  of the length is usually the winged stipe. The Bagobo name is "borane", applied to all ferns of similar shape and texture, terrestrial and epiphytic. The nearest species to this is probably *P. punctatum* L., which is smaller, thinner and linear, and usually epiphytic. Broad ferns from Prov. Bataan, somewhat intermediate, are doubtfully referred to *P. punctatum*.

8. **Polypodium (Selliguea) Elmeri** Copeland n. sp. Rhizomate repente, valido, 5 mm crasso; paleis 6 mm longis, ovatis, acuminatis, marginibus scariosis, basibus peltatis nigro-maculatis; stipitibus validis, glabris, fuscis vel atrescentibus, frondis sterilis 3—6 cm alto, fertilis 15—20 cm alto; fronde sterili ovato-trianguli, ca. 10 cm alta, 6—8 cm lata, obtusa, integra vel subsinuata, ad basin truncata, glabra, rigidissime coriacea; venis parallelis conspicuis, marginem attingentibus, venuulis occultis; fronde fertili 10 cm alta, 4 cm lata, acuta, subintegra, deorsum cuneata, coriacea; soris continuis, costam marginemque attingentibus, angustis.

Luzon Isl., Prov. Benguet, Mt. Saneto Tomas, epiphyte on pine trees (ELMER no. 6547).

This species is nearer *P. vulcanicum* Bl. than it is to *P. caudiforme* Bl., agreeing with the former in the dimorphous,

rather obtuse, broad fronds, and broad paleae; but it is a much larger fern in all parts, and differs also in the exceedingly rigid sterile fronds and continuous but low and compact sori.

### **Adiantum L.**

1. **Adiantum alatum** Copeland n. sp. Rhizomate erecto, brevi; stipite ca. 10 cm alto, ad basin ipsam paleas parcas angustas ferente, sursum rhachique petiolulisque fusco-atris, glabris, nitentibus, alam membranaceam 0,5 mm latam ubique feren-tibus; fronde 15—25 cm longa, vel saepius apice nuda elon-gata et radicante, ca. 5 cm lata, pinnata; pinnis plerumque horizontalibus, 2—2,5 cm longis, 1—1,5 cm latis, glabris, papyra-ceis; margine inferiore integra, fere recta, margine acroscopica inferiori parallela, exterioreque rotundata incisis, soriferis, margine rhachiscopica plerumque rhachi parallela; venis per-conspicuis liberis; soris 5—10, angustis, rectis vel subcurvatis, latitudinem loborum aequantibus.

Luzon Isl., "Ad Reservationem silvestrem lamaoensem" 100 m. s. m. (COPELAND no. 1399, type, no. 243); Culion Isl. (MERRILL no. 482).

This plant is very near to *A. philippense*, but differs in the shape of the pinnae, usually right-angled at the base, in their rather shorter petiolules, and very prominent venation, as well as in the winged stipe, rachis and petiolules. As far as I know, no description of *A. pteropus* R. Br., based on S. African material, has ever been published, and I do not know how completely it may resemble this plant.

### **Cheilanthes Sw.**

1. **Cheilanthes Boltoni** Copeland n. sp. Stipitibus densissime caes-pitosis, atro-fuseis, pilos concoloris sparsos ubique ferentibus, 1,5—3 cm altis; frondibus linearis-ob lanceolatis, majoribus 16×1,5 cm, bipinnatis; rhachi atro-fusca, subglabra, semi-cylindrica vel supra concava, angustissime alata; pinnis sub-sessilibus, remotis, membranaceo-eoriaceis, glabris, humidis planis, sursum ubi majoribus 8×6 mm, deorsum sensim dimini-nutis; pinnulis 1—5-jugatis, ovatis, minutis, crenulatis; soris marginalibus; indusiis interruptis.

Mindanao Isl., Prov. Davao, Malálag, on stones near the sea (COPELAND no. 616).

This *Cheilanthes* has the dry, aspect of many species of the arid southwest of the United States. The frond is widest  $\frac{3}{4}$  of the way to the top. It bears the name of Governor BOLTON of Davao, in acknowledgment of his great assistance to my work in his district.

**Histiopteris** Agardh.

1. **Histiopteris montana** Copeland n. sp. Rhizomate late repente, 4 mm crasso, squamulis minutis fuscis obtecto; stipite 10—20 cm alto, erecto, subrecto, atro-brunneo, deorsum squamuoso, sursum rhachique glabris, validis; fronde deltoidea, 15—30 cm alta, interdum quam alta latiore; pinnis infimis vel inferioribus pinnatis; pinnulis sinuatis vel pinnatifidis, infimis rhachi approximatis nec ei adnatis; segmentis ultimis plerumque triangulari-ovatis, obtusis, integris, valde coriaceis, glabris, infra glaucis; venulis supra et infra exstantibus, conspicuis, anastomosantibus, marginem versus liberis; soris latis, continuis vel interruptis; segmentis ob marginem ubique inflexam vulgo lomarioideis.

Mindanao Isl., Mt. Apo (COPELAND no. 1049 type, DE VORE and HOOVER no. 332).

Different from *H. incisa* in stature, in the pinnae decreasing in size uniformly from the lowest upward, in texture, in the raised venation, and in the very broad sori.

**Dicranopteris** Bernh.

1. **Dicranopteris dolosa** Copeland n. sp. Rhizomate repente, ca. 10 mm crasso, paleis fuscis, lanceolatis, subulatis, squarrosis vestito; stipite erecto, 1—2 m alto, tereti, deorsum 10 mm vel ultra crasso, squamoso, sursum glabrescente, atro-brunneo, rigidissimo; fronde ca. 1 m alta, deltoidea, pinnata, ad apicem pseudo-dichotoma; pinnis 3—5-jugatis, infimis bipinnatis; ramis ordinis 3 partis inferioris frondis, ordinis 1 partis apicalis, iterum iterumque pseudo-dichotomis, flexilibus; divisionibus insequentibus pinnatis; pinnulis supra furcaturam ultimam utrinque 30—80, nec non infra eam multis, proximis, 10—12 mm longis, 2 mm latis, obtusis, integris, basibus vix confluentibus, coriaceis, glabris vel glabrescentibus, infra glauco-azureis; rhachibus omnibus paleis brunneis vel albidis distantibus vestitis; venulis simplicibus vel furcatis; sporangiis 3—5, caducis. (Plate IV, Fig. C.)

Luzon Isl., Prov. Bataán, Mt. Mariveles, 1400 m. s. m.  
(COPELAND no. 212 type, MERRILL no. 3237, WHITFORD no. 249).

The stipe is so stiff it stings the hands to break it, making it a fit component of the dense, practically impenetrable brush over which the drooping ends of the fronds are gracefully deceptive. The upper part of the frond continues to grow while the lower is in fruit.

This species represents a new section of the genus, which may be called *Protogleichenia*. It represents an earlier stage in the development of dichotomy from a pinnate structure than any of the sections proposed by DIELS in Engl. u. Prantl. Natürl. Pflanz.-Fam. The accompanying diagram shows the plan of the frond.

#### Explanation of Plate IV.

- A. *Lindsaya apoense* Copel.
- B. *Asplenium subnormale* Copel. Habitus.
- C. *Dicranopteris dolosa* Copel. Diagram.

## Ficus

by

O. WARBURG.

#### Sect. I. **Palaemorpha** King.

1. ***Ficus caudatifolia*** Warb. n. sp. Ramis teretibus 2—3 mm crassis glabris in sicco rufescentibus, innovationibus asperis, stipulis parvis 4 mm longis caducis, petiolis 6—8 cm longis,  $1\frac{1}{2}$  mm latis lepidosis, foliis subergamaceis lanceolatis fere symmetricis apice longe cuspidatis basi subacute marginis integris 15—20 cm longis, 4—6 cm latis, utrinque glabris supra in sicco rufescentibus subtus pallidioribus, venis utrinque 4—5, basalibus  $\frac{1}{3}$ — $\frac{1}{2}$  folii attingentibus, lateralibus valde elevatis curvatis et ante marginem confluentibus, nervis interspersis

horizontalibus vix debilioribus, reticulatione valde distincta et prominula, receptaculis axillaribus, pedunculis 8—10 mm longis vix 1 mm latis pilis parvis densis asperis, bracteatis, receptaculis globosis 8—10 mm in diametro subasperis, ostiolo haud prominente neque immerso; perigonii laciniis glabris in floribus cecidioferis linear-lanceolatis, in fl. ♂ latioribus; fl. ♂ praeter stamen rudimentum ovarii continentibus vel rarius diandris.

Middle Luzon, Polillo (WARB. no. 14038).

Die Art steht *F. urophylla* Wall. sehr nahe, unterscheidet sich aber durch viel größere und längere Blätter, sowie durch die weit größeren Rezeptakeln.

2. **Ficus mindanaensis** Warb. n. sp. Ramis teretibus in sicco sultatis 2—3 mm crassis junioribus dense pilosis mox glabris rufescentibus, stipulis 8 mm longis lanceolatis deciduis tomentosis, petiolis 4—5 mm longis,  $1\frac{1}{2}$ —2 mm latis tomentosis, foliis pergamaceis late lanceolatis vix obliquis 10—16 cm longis, 4—7 cm latis apice longe mucronatis basi rotundatis margine integris supra glabris nitidis in sicco fuscescentibus subtus pallidioribus ferrugineo-tomentosis venis basalibus brevibus, lateralibus ca. 6 horizontalibus ad marginem arcuate conjunctis subtus valde prominentibus minoribus vix debilioribus intermixtis, reticulatione subtus prominula; receptaculis axillaribus, pedunculo ca. 5 mm longo pilis aculeiformibus densis hispido, receptaculis globosis 11—12 mm in diametro extus subasperis, ostiolo haud prominente neque impresso, florum ♀ perigonii laciniis glabris linearibus, stylo glabro, stigmate capitato.

Mindanao Isl., Cotabato, on the beach (WARB. no. 14860).

Eine vermutlich der *F. caudatifolia* Warb. nahestehende, wahrscheinlich zur Sektion *Palaeomorpha* gehörige Art, durch die Behaarung der Blattunterseite leicht erkennbar.

## Sect. II. **Urostigma** Gasparini.

1. **Ficus Haenkei** Warb. n. sp. Ramis teretibus 4 mm latis in sicco fusco-cinereis glabris, stipulis persistentibus triangularibus acutis 15 mm longis in sicco nigrescentibus glabris, foliis chartaceis fere sessilibus oblanceolatis ca. 20 cm longis 4 cm latis, apice acutis basi longe cuneatis demum truncatis vel subcordatis margine sinuatis vel undulate dentatis omnino glabris, supra in sicco nigrescentibus, subtus fuscis, venis utrinque ca. 12 parvis patulis vel curvatis ad marginem arcuate connexis.

Receptaculis axillaribus vulgo binis breviter (3 mm) et tenuiter (1 mm) pedunculatis pyriformibus 7—10 mm longis, 5—7 mm latis basi bracteis 3 squamiformibus 2 mm longis laxe circumdatis, glabris, ostiolo subprominente, florum ♀ perigonii lacinias lanceolatis glabris.

Luzon Isl., Prov. Laguna (HÄENKE without number).

Eine wahrscheinlich der *F. theophrastioides* Seem. nahestehende Art.

No. 12470 meiner Sammlung, bei Manila in Montalbán gesammelt, mit ähnlichen, aber viel größeren und beim Trocknen grün gebliebenen Blättern, gehört wahrscheinlich zu derselben Art, die Früchte sollen essbar sein.

2. ***Ficus malunuensis*** Warb. n. sp. Ramis glabris 5—6 mm crassis, medullosis in sicco subsulcatis, stipulis caducis 1—1½ cm longis lanceolatis griseo- vel subaureo-appresse tomentosis, petiolis 3—8 cm longis, 2—3 mm latis, foliis coriaceis magnis glabris in sicco viridibus oblongo-ovatis basi rotundatis vel subtruncatis apice rotundatis vel obtusis margine integris supra lucidis laevibus, subtus subasperis, 16—26 cm longis, 8—14 cm latis, venis utrinque 9—12 obliquis strictis ante marginem areuate confluentibus, basi subtri- vel quinquenerviis, nervis tertiaris reticulatis subtus valde distinctis. Receptaculis axillaribus longissime pedunculatis, pedunculis 3—4 cm longis, 1—1½ cm latis puberulis, apice incrassatis, 6—8 mm infra apicem bracteis 3 squamiformibus pubescentibus basi in annulum connatis circumdatis, receptaculis late ellipsoideis 2½ cm longis, 2 cm latis extus puberulis, ostiolo minuto vix prominulo, floribus ♂ monandris perigonii lacinias cucullatis glabris et floribus ♀ et cecidioferis in eisdem receptaculis, perigonii lacinias late lanceolatis apice obtusis vel rotundatis, stylis in floribus ♀ longissimis, stigmate vix incrassato longo papilloso.

Luzon Isl., Prov. Isabela, Malunu (WARB. no. 11925).

Eine durch die großen Blätter und die sehr lang gestielten, etwas länglichen Früchte sehr auffällige *Urostigma*-Art.

3. ***Ficus arayatensis*** Warb. n. sp. Ramulis teretibus 2—3 mm latis glabris in sicco vix sulcatis cinereis, stipulis late ovatis 3 mm longis glabris, petiolis tenuibus 1½—3½ cm longis, 1 mm latis basi crassioribus glabris, foliis pergamentaceis oblanceolatis vel lanceolatis apice breviter apiculatis obtusis basi cuneatis acutis

utrinque glabris laevibus supra nitidis 7—9 cm longis, 3—4 cm latis, venis utrinque 12—14 tenuibus obliquis strictis ante marginem arcuate conjunctis, basalibus haud diversis, interspersis minoribus parallelis, nervis tertiaris reticulatis utrinque praesertim supra distinctis. Receptaculis axillaribus geminis piriformibus, pedunculis  $1\frac{1}{2}$ —2 mm longis,  $\frac{2}{3}$  mm crassis puberulis ad apicem minute bracteatis, receptaculis globosis in sicco luteis 4—5 mm in diametro, ostiolo subprominente; floribus ♂ ignotis, ♀ et cecidioferis in iisdem receptaculis, perigonii lobis late lanceolatis glabris subacutis basi connatis, stylo brevi apice papilloso.

Luzon Isl., Prov. Pampanga, Mt. Arayat (WARB. no. 14035, 14036 and 14037).

Eine zur *F. indica*-Gruppe gehörige Form, aber durch die behaarten Rezeptakelstiele, die langen Blattstiele, die schmale Blattform sehr leicht kenntlich.

4. ***Ficus Vidaliana*** Warb. n. sp. Ramis teretibus glabris 4 mm in diametro in sicco brunneis plane sulcatis, petiolis 3—5 cm longis,  $1\frac{1}{2}$  mm latis, foliis subcoriaceis glabris oblanceolatis apice apiculatis basi cuneatis demum subacutis vel rotundatis margine integris in sicco fuscescentibus subtus pallidioribus 12—17 cm longis, 4—7 cm latis, costa et venis subtus flavidis prominentibus, venis utrinque ca. 8 patulis ante marginem arcuate conjunctis, nervis tertiaris reticulatis subtus prominulis. Receptaculis geminis in axillis sessilibus ebracteatis sed basi pilis ferrugineis minutis annulate circumdatis, globose-ellipticis glabris, 2 cm longis,  $1\frac{1}{2}$  cm latis, ostiolo minute haud prominulo neque impresso, floribus ♂ monandris perigonii laciniis cucullatis et floribus ♀ et cecidioferis in iisdem receptaculis, perigonii laciniis late lanceolatis obtusis, stylis in floribus ♀ longis, stigmate longo papilloso haud incrassato.

Luzon Isl., Prov. Bataán, Morón (WARB. no. 14033).

Eine *Urostigma*-Art, die der *F. Forstenii* Miq. vielleicht am nächsten steht, charakteristisch ist bei den sitzenden Rezeptakeln das Fehlen der Brakteen sowie der Haarring an der Basis der Rezeptakeln.

### Sect. III. ***Sytidium*** King.

1. ***Ficus blepharostoma*** Warb. n. sp. Ramulis fistulosis 3—4 mm crassis asperis, foliis alternantibus, stipulis deciduis lanceolatis

acutis 7 mm longis extus puberulis, petiolis 1—2 cm longis, 1—2 mm latis asperis, foliis membranaceis utrinque valde asperis oblongis usque ovatis apice acuminatis vel cuspidatis acutis basi rotundatis vel subcordatis margine remote dentatis 13—21 cm longis, 5—10 cm latis, venis utrinque 5—6 obliquis paulo tantum curvatis, basalibus medium folium vix aequantibus; nervis tertiaris transversis vix prominulis. Receptaculis axillaribus, in pedunculis 4 mm longis, 1 mm latis, subasperis haud bracteatis, globosis ca. 1 cm in diametro, ostioli bracteis prominentibus lanceolatis ciliatis, floribus ♂ et eecidioferis in iisdem receptaculis, ♂ pro parte 1 stamen, pro parte praeterea ovarii rudimentum continentibus, perigonii laciniis 3—5 glabris, florum eecidioferorum laciniis lanceolatis, stylo brevi glabro.

Luzon Isl., Prov. Tajabas, Sampaloc (WARB. no. 1295).

No. 16208 von den Sangir-Inseln ist sehr ähnlich, hat aber völlig herzförmige breitere und stumpfere Blätter.

Die Art unterscheidet sich von *F. heteropoda* Miq. durch die abwechselnden Blätter und axillären Rezeptakeln. Es ist wegen der Inkonsistenz des Ovarrudimentes in den männlichen Blüten ein Beispiel dafür, daß die Sektion *Palaeomorpha* nicht aufrecht zu erhalten ist.

2. ***Ficus decussata*** Warb. n. sp. Ramis crassis 5—6 mm latis cavis glabris junioribus sebris; foliis oppositis, stipulis caducis lanceolatis 5—6 mm longis hispidis, petiolis 3—7 cm longis, 2 mm latis, foliis late ovatis basi subcordatis apice obtuse acuminatis utrinque seberrimis glabris 16—21 cm longis, 10—13 cm latis, 5—7 nerviis, venis lateralibus 5 utrinque patulis vix curvatis. Receptaculis e ligno vetere in tuberculis ramosis fasciculatis, pedunculis 1½—2 cm longis, 1 mm latis subscabris, prope apicem minute squamose bracteatis, receptaculis subdepresso-globosis ca. 1 cm in diametro vix sebris, ostiolo distinete prominente; perigonii laciniis florum ♀ oblanceolatis obtusis prope apicem fimbriatis, stylo apice subinerassato haud bilobo infra apicem puberulo; floribus ♂ et eecidioferis in receptaculis exstantibus deficientibus.

Luzon Isl., Prov. Cagayan, Malaueg (WARB. no. 11789).

Eine durch die gegenständigen sehr rauhen, aber sonst kahlen, breiten und 5—7nervigen Blätter, die hohen Stengel und die kleinen apicudat-kugeligen Rezeptakeln leicht erkennbare Art. Der Habitus spricht für eine *Ficus hispida* nahe-

stehende *Covellia*, doch haben die ♀ Blüten ein tief geteiltes Perigon.

3. **Ficus manilensis** Warb. n. sp. Ramulis 3—4 mm crassis albido-cinereis; innovationibus pilis parvis seabridis mox glabris, petiolis ca. 2 cm longis, 7 mm crassis, foliis oblongis 13—18 cm longis, 5—8 cm latis basi rotundatis apice cuspidatis utrinque seabridis ceterum glabris, margine integris haud sinuatis, ad basim subcuneatis, basi trinerviis, nervis basalibus limbi medium attingentibus, venis lateralibus utrinque ca. 4 subcurvate ascendentibus ad marginem haud confluentibus, nervis tertiaris subtus prominulis. Receptaculis in axillis defoliatis binis vel in tuberculis fasciculatis globosis (4 mm in diametro) longe pedunculatis seabridis, pedunculis pilis minutis seaberulis 10—14 mm longis,  $\frac{1}{2}$  mm crassis, supra vel infra medium bracteis minimis instructis; florum ♀ perigonii laciinis 3—4 albido-marginatis vix acutis, floribus ♂ monandris.

Luzon Isl., Prov. Manila, Montalbán (WARB. no. 12562).

CUMING No. 1934 gehört offenbar auch zu dieser Art, und nicht zu *F. copiosa* Steud., wie in den Plantae Cumingianae steht. Die Art steht offenbar der *F. rufa* Miq. von Celebes sehr nahe, unterscheidet sich aber leicht durch die geringe Behaarung, die Ganzrandigkeit der Blätter, die grauweiße Rinde der jungen Zweige.

4. **Ficus mierosphaera** Warb. n. sp. Seandens radicans, ramulis teretibus 2 mm latis glabris, foliis subdistichis, stipulis caducis lanceolatis glabris 5 mm longis, petiolis 3—4 mm longis, foliis membranaceis in sicco viridibus ellipticis apice cuspidatis basi suboblique subacutis margine integris 8—15 cm longis, 4—6 cm latis, supra glabris, subtus vix seabridis, venis utrinque 6—8 curvatis ad marginem vix confluentibus supra vix distinctis subtus flavidis prominentibus, nervis tertiaris reticulatis subtus distinctis. Receptaculis axillaribus vel ex axillis defoliolatis solitariis vel fasciculatis parvis, globosis, in sicco rubescentibus, fere glabris, ♀ fertilibus paullo majoribus (5 mm in diametro metentibus), receptacula flores ♂ et cecidioferos continentibus minoribus (3 mm in diametro metentibus), pedunculis 2—4 mm longis seabridis bracteola parva ad vel infra medium instructis, ostiolo minuto, floribus ♂ monandris, florum ♀ perigonii laciinis linearibus, stylo glabro stigmate clavato.

Mindanao Isl., Prov. Davao, Mt. Dagatpan, in a mixed forest 1000'—2000' s. m. (WARB. no. 14698).

Eine sehr eigenümliche, keiner mir bekannten Art nahestehende, nach der Blütenverteilung wohl zu *Sycedium* gehörende Art.

Sect. IV. **Covellia** Gasp.

1. **Ficus endothrix** Warb. n. sp. Ramis teretibus 4—6 mm crassis in sicco fulvis junioribus fulvo-hispidis, petiolis ca.  $1\frac{1}{2}$  cm longis hispidis, foliis pergamaceis ellipticis utrinque acutis 12—25 cm longis, 5—10 cm latis, utrinque subasperis subtus in nervis et parenchymate pubescentibus, venis utrinque 6—8 ascendentibus supra vix distinctis. Receptaculis in ramis magnis compositis specialibus e ramulis 3—5 cm longis; pedunculis  $1\frac{1}{2}$  cm longis, 1— $1\frac{1}{2}$  mm latis glabris ad apicem bracteis squamiformibus divaricatis instructis; receptaculis depresso-globosis 2 cm latis,  $1\frac{1}{2}$  cm longis extus glabris intus aureopilosus, perigonio flororum cecidioferorum tubulosus apice truncato.

Mindanao Isl., Prov. Davao, Mt. Dagatpan (WARB. no. 14694, in a mixed forest on a plain).

Eine der *Ficus conora* Krug nahestehende *Covellia*-Art. Sie unterscheidet sich durch die stärkere bräunliche Behaarung, die dickeren Blätter und die an Kurztrieben in größerer Anzahl stehenden Rezeptakeln.

2. **Ficus didymophylla** Warb. n. sp. Ramulis in sicco angulosis 3—4 mm crassis glabris fulvis vel flavidis, haud fistulosis, stipulis caducis, petiolis 12—18 mm longis,  $1\frac{1}{2}$ —2 mm latis glabris squamosis, foliis vulgo geminis in nodis sed haud oppositis, pergamaceis ellipticis vel ovato-ellipticis vel oblongis apice subacutis vel obtusiusculis basi obtusis subobliquis margine integris 8—15 cm longis,  $3\frac{1}{2}$ — $7\frac{1}{2}$  cm latis, venis utrinque 8—9 patentibus vix curvatis apice arcuate connexis, nervis tertiaris tesselata reticulatis subtus saepe vix distinctis. Receptaculis geminis vel solitariis axillaribus breviter pedunculatis, pedunculis 4—5 mm longis,  $1\frac{1}{2}$  mm latis, apice bracteis squamiformibus subrecurvatis latis rotundatis glabris instructis, receptaculis depressis 10 mm longis, 14 mm latis, extus in sicco rugoso albido-maculatis haud costatis, ostiolo haud prominente; floribus ♀ tantum extantibus, perigonio brevi truncato vel

bilobo stipitem tantum plus minus circumdante, stylo praecipue apice minute puberulo, stigmate clavato papilloso.

Luzon Isl., Prov. Bataán, Mariveles (WARB. no. 12473 and 12474).

Diese zur Sektion *Covellia* gehörige Art steht der *F. tristipula* Warb. msc. am nächsten, die viel breiteren anders geformten Blätter mit spreizenden Nerven, die nicht bleibenden Stiel, die flachen gefleckten Rezeptakel und die Behaarung der Griffel bilden die haupsächlichsten Merkmale.

#### Sect. V. **Eusyce** Gasp.

1. **Ficus gerontocarpa** Warb. n. sp. Ramulis crassis glabris fulvis 4—5 mm latis medullosis, stipulis caducis late lanceolatis 1 cm longis griseo-pilosiusculis, petiolis  $2\frac{1}{2}$ —5 cm longis, 2 mm latis, glabris in sicco fulvis, foliis membranaceis late ovatis apice anguste cuspidatis acutis basi truncatis vel subcordatis margine integris, supra glabris subtus pallidis albide pubescentibus 17—19 em longis, 10—12 em latis, basi trinerviis, nervis basalibus medium folium attingentibus, venis lateraliibus parallelis 5—6 utrinque vix curvatis ad marginem arcute connexis, nervis tertiaris transversis subtus prominulis, reticulatione minutissima subtus distineta. Receptaculis e ligno vetere in ramis compositis arcte nodosis, in pedunculis supra griseo-pilosis, 6 mm longis, 2 mm latis, ad medium ca. bracteis squamiformibus circumdati; receptaculis ipsis subdepresso-globosis  $1\frac{1}{2}$  em longis, 17 mm latis, extus griseo-tomentellis, intus pilis albidis floribus interspersis; floribus ♀ tantum exstantibus, perigonii lobis ovatis vel lanceolatis apice obtusis vel rotundatis, nigrescentibus, seminibus valde rugosis.

Luzon Isl., Prov. Tayabas, Sampaloc (WARB. no. 12950, with flowers March a. 1888).

Eine durch die unterseits behaarten schmal zugespitzten Blätter und die grau behaarten Früchte leicht unter den wenigen Arten mit behaarter Innenseite des Receptaculum erkennbar wohl zu *Eusyce* gehörend.

2. **Ficus trichantha** Warb. n. sp. Ramulis teretibus albido-cineris, innovationibus appresse albido-pubescentibus, stipulis caducis anguste lanceolatis acutis appresse albido-pubescentibus 1 em longis, petiolis 10—12 mm longis, 1 mm crassis, appresse albido-puberulis, foliis membranaceis obovatis apice breviter

acuminatis acutis basi subacutis margine integris 8—15 cm longis, 3—6 cm latis, supra pilis minutis paucis appressis inispersis, subtus appresse puberulis in nervis appresse pubescentibus, venis utrinque 6—7 obliquis vix curvatis ad marginem vix distinctor arcuate conjunctis, nervis tertiaris transversis subtus prominulis, reticulatione vix distincta. Receptaculis in ramis defoliatis vel afoliatis virgatis e nodis ca. 2—4 cm inter se distantibus fere fasciculatis, nodis 1—4 mm longis, pedunculis 8—12 mm longis,  $\frac{3}{4}$  mm latis, vix puberulis apice bracteis divaricatis squamiformibus cinctis, receptaculis late pyriformibus, immaturis 6 mm longis, 5 mm latis, intus pilis albidis dense obtectis, floribus ♀ tantum exstantibus nudis, stylo glabro, stigmate oblongo vix incrassato.

Luzon Isl., Prov. Tayabas, Sampaloc (WARB. no. 12959).

Eine durch die langgestielten birnförmigen innen dicht behaarten Rezeptakeln und die nackten ♀ Blüten sehr gut charakterisierte, wahrscheinlich zu *Eusyce* gehörige Art.

### Corrections.

- P. 26. The plant given as *Lannea speciosa* (Blume) Engl. (Merrill no. 1999) belongs to *Koordersiodendron celebicum* Engl.
- P. 35. Read *Pinus insularis* + *Merkusii*. Merrill's specimen had two plants on the same sheet.
- P. 43. Erase *Cyrtopodium* and read *Eulophia* R. Br. Remove *Cyrtopodium ensiforme* Vid. and insert *Eulophia ensiforme*(Vid.) Schltr.
- P. 98. Erase *Canarium Merrillii* Perk., as it is a misprint.
- P. 122. Erase *Toxocarpus* K. Schum. = *Secamone* R. Br. and read *Toxocarpus* W. et Arn.

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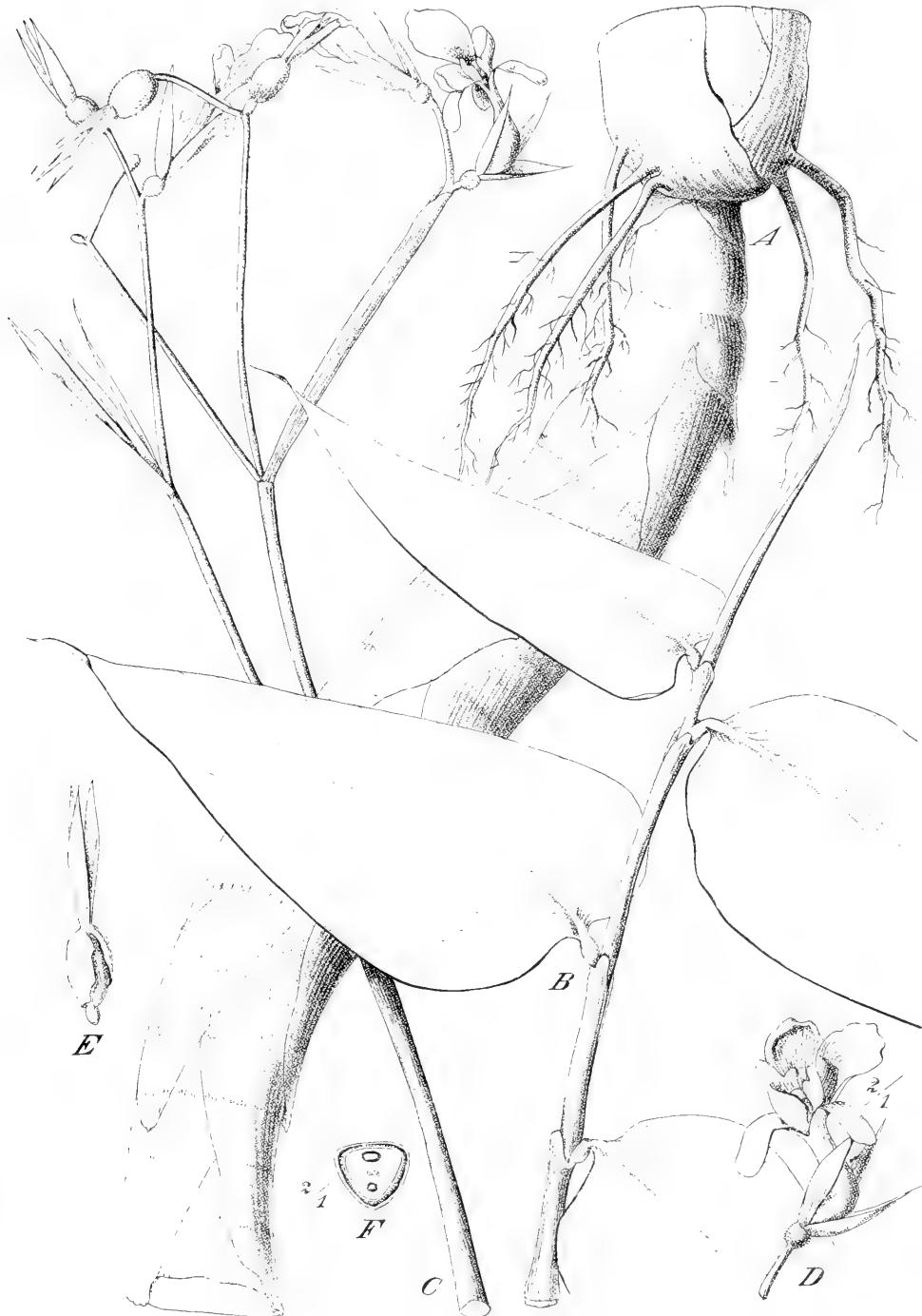
*Note.* The plates accompanying Fasciculus II were drawn by Fräulein G. BARTUSCH.



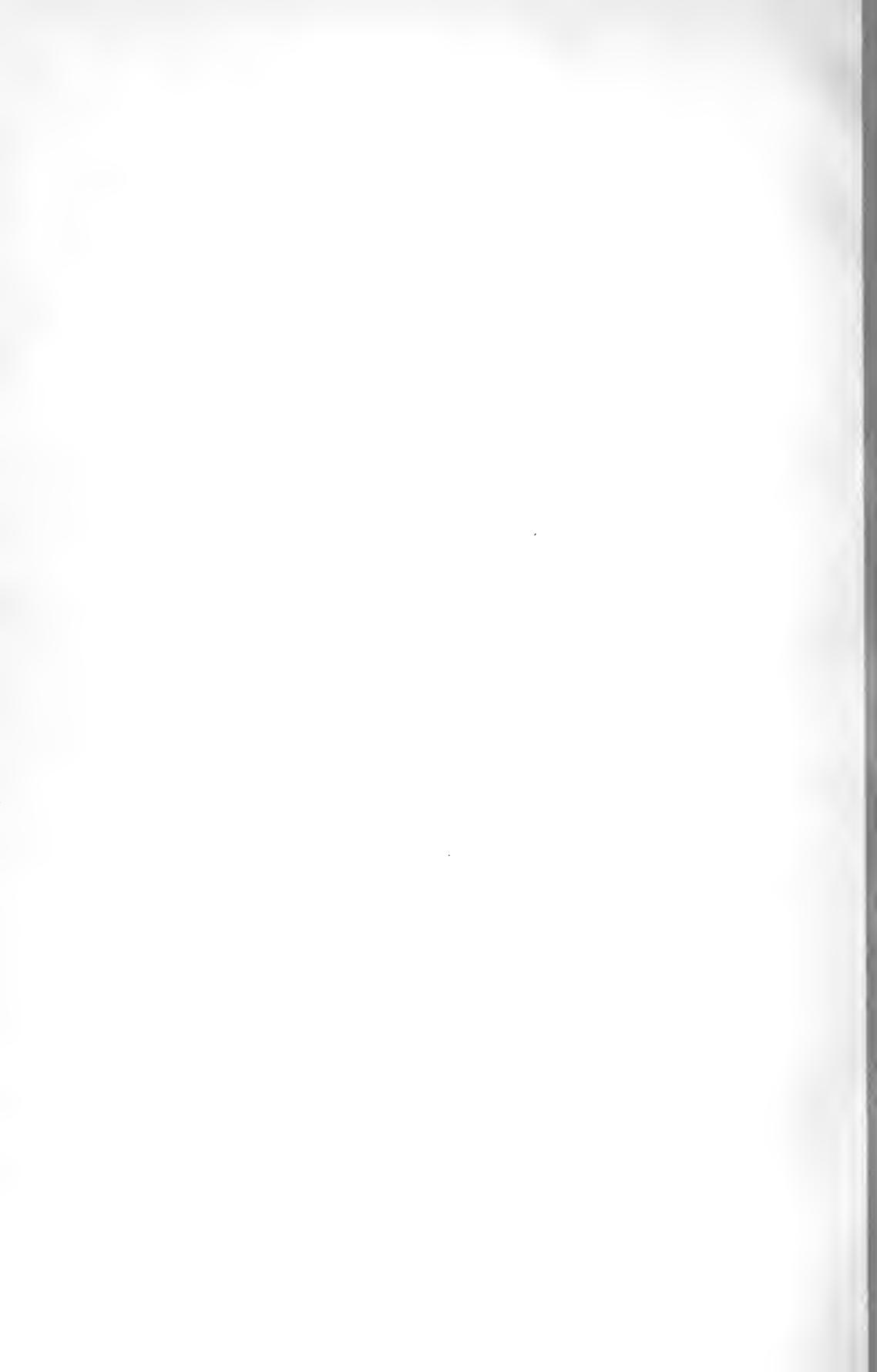
A—F *Monophrynum fasciculatum* (Presl) K. Sch.

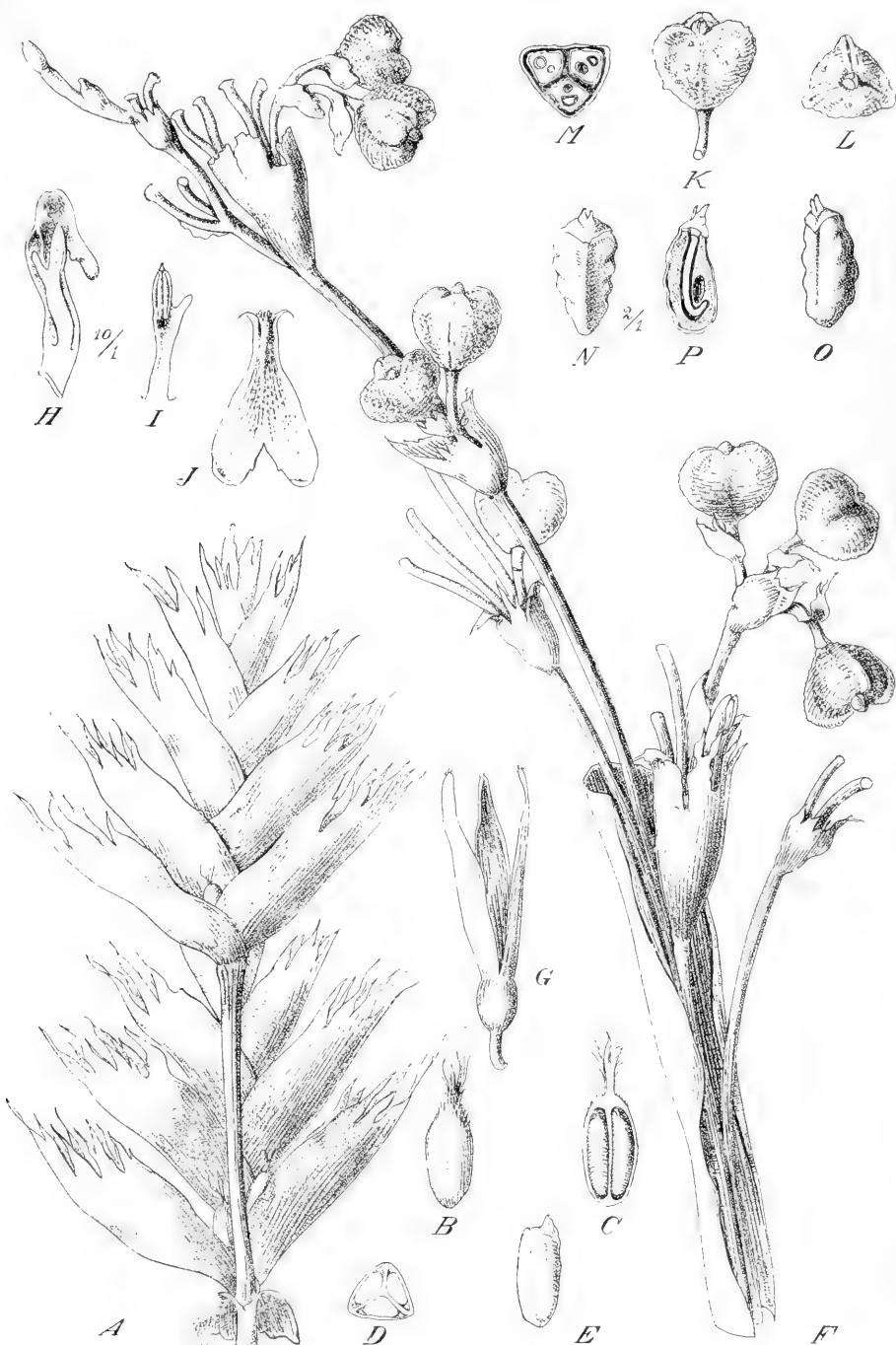
G—J *Donax arundastrum* Lour.





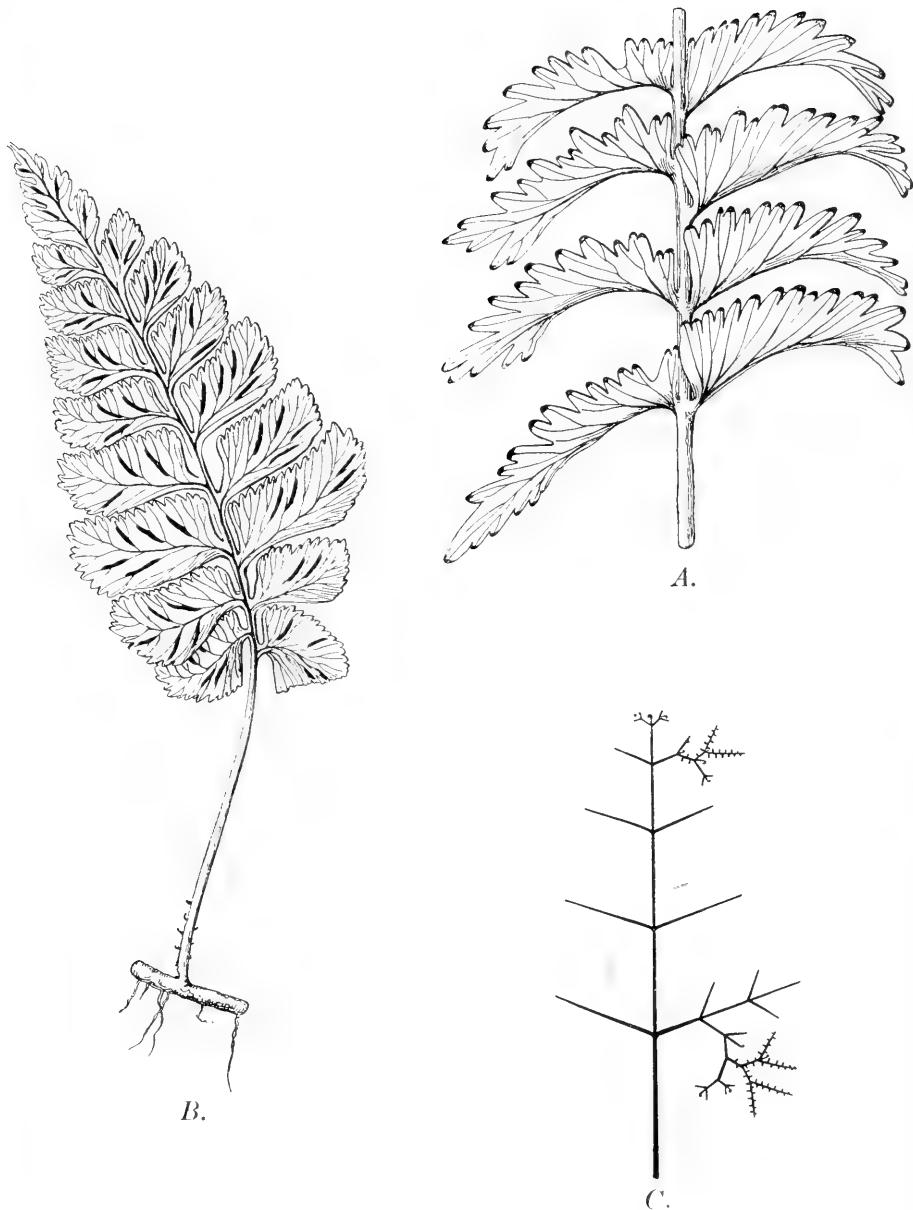
*Maranta arundinacea* L.





*A—E* *Phacelophrymum bracteosum* (Warb.) K. Sch.  
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A. *Lindsaya apoensis* Copel.  
B. *Asplenium subnormale* Copel.  
C. *Dicranopteris dolosa* Copel.













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