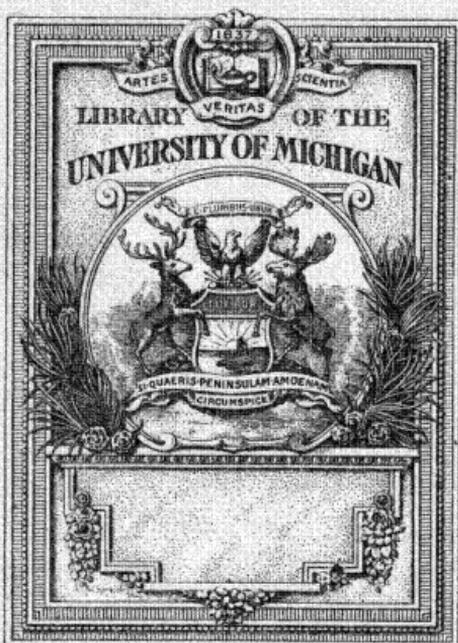


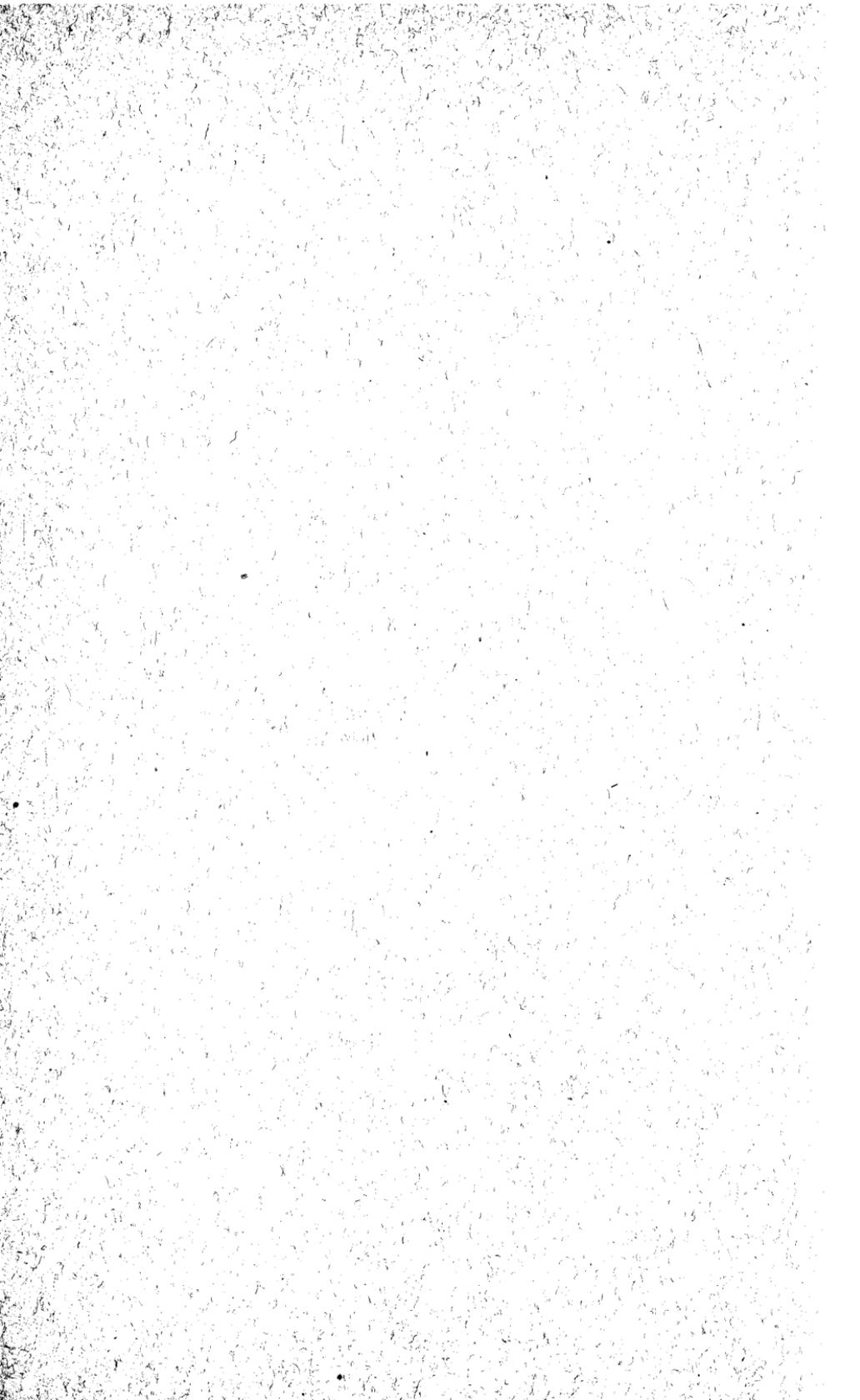
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No. 35.—December, 1905.

DEPARTMENT OF THE INTERIOR  
BUREAU OF GOVERNMENT LABORATORIES

I. NEW OR NOTEWORTHY PHILIPPINE  
PLANTS, IV

II. NOTES ON CUMING'S PHILIPPINE PLANTS  
IN THE HERBARIUM OF THE BUREAU  
OF GOVERNMENT LABORATORIES

By ELMER D. MERRILL

III. NOTES ON PHILIPPINE GRAMINEÆ

By E. HACKEL

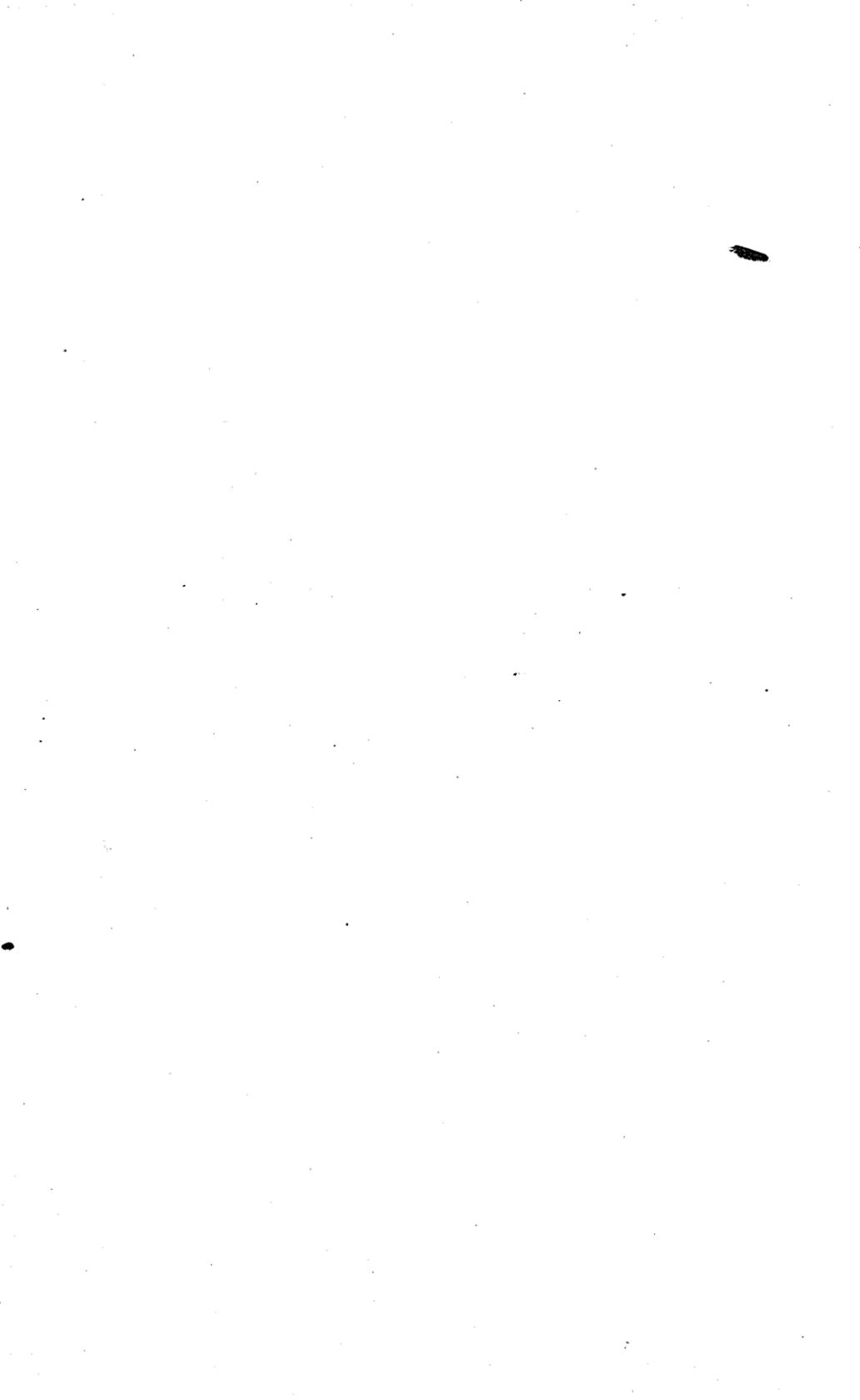
IV. SCITIMINEÆ PHILIPPINENSES

By H. N. RIDLEY

V. PHILIPPINE ACANTHACEÆ

By C. B. CLARKE

MANILA  
BUREAU OF PRINTING  
1905



## LETTER OF TRANSMITTAL.

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DEPARTMENT OF THE INTERIOR,  
BUREAU OF GOVERNMENT LABORATORIES,  
OFFICE OF THE SUPERINTENDENT OF LABORATORIES,

*Manila, P. I., August 30, 1905.*

SIR: I have the honor to transmit herewith, for publication in a bulletin of the Bureau of Government Laboratories, the following: "I. New or Noteworthy Philippine Plants, IV;" and "II. Notes on Cuming's Philippine Plants in the Herbarium of the Bureau of Government Laboratories," by Elmer D. Merrill, botanist; "III. Notes on Philippine Gramineæ," by E. Hackel; "IV. Scitimineæ Philippinenses," by H. N. Ridley; "V. Philippine Acanthaceæ," by C. B. Clarke.

I am, very respectfully,

PAUL C. FREER,  
*Superintendent of Laboratories.*

HON. DEAN C. WORCESTER,  
*Secretary of the Interior, Manila, P. I.*



# I. NEW OR NOTEWORTHY PHILIPPINE PLANTS, IV.

By ELMER D. MERRILL, *Botanist.*

## INTRODUCTION.

The present publication includes five papers, two by myself, the first a continuation of the series "New or Noteworthy Philippine Plants," the first three numbers having already been issued as previous publications of this Bureau, Nos. 7, 17, and 29; the second paper consists of notes on some of the more interesting plants of Cuming's Philippine collection, recently received from the British Museum; the remaining three have been submitted by the following botanists: Dr. E. Hackel, Graz, Austria, "Notes on Philippine Gramineæ"; H. N. Ridley, director of the Botanic Garden, Singapore, "Scitimineæ Philippinenses"; and C. B. Clarke, Kew, England, "Philippine Acanthaceæ." To these gentlemen I wish to extend my thanks for their kindness in examining the material sent to them and for preparing the accompanying papers.

## CYPERACEÆ.

*Carex rhynchachaenium* C. B. Clarke, sp. nova.

Hemiscaposa, innovationum foliis culmum superantibus, 3 ad 4 mm. latis. Spicis pluribus, remotis, terminali masculi, 8 mm. longa, 1 mm. lata; utriculis 5 ad 6 mm. longis, striis longitudinalibus 15, pilosis; nucce ellipsoidea trigona, rostro crasse cylindrico; stylo vix ullo, ramis 3, oblongis brevissimis. *C. ligata* Boott., affinis.

Luzon, Province of Bataan, Mount Mariveles; altitude 1,100 m. (6983 Elmer) November, 1904.

## COMMELINACEÆ

*Forrestia philippinensis* sp. nov.

A nearly glabrous, suberect plant about 1 m. high, with caudate-acuminate leaves which are narrowed below to the elongated petiole, axillary, dense,

capitate inflorescence, the flowers purple, the capsule shorter than the sepals. Stems simple, about 1 cm. thick, glabrous, prostrate below and rooting at the nodes. Leaves including the petioles 30 to 36 cm. long, 7 to 10 cm. wide, membranous, glabrous except the somewhat villous margin above, the young leaves slightly pubescent beneath, the apex slender caudate acuminate, narrowed below into the 6 cm. long glabrous or puberulous winged petiole; sheaths lax, 4 to 5 cm. long, glabrous or nearly so, except the ciliate villous margin. Inflorescence 3 to 4 cm. in diameter, many flowered; bracts broadly ovate, acute 6 mm. long. Sepals subequal, 12 mm. long, 5 to 6 mm. wide when spread, firm, purple, keeled, cucullate, the keel at the apex forming a small crest, slightly strigose pubescent or nearly glabrous. Petals membranous, equaling the sepals. Stamens 6, all fertile, the filaments glabrous; anthers 1.8 mm. long. Capsule ellipsoid, membranous, 9 mm. long, 6 mm. thick, somewhat trigonous, very slightly pubescent with short scattered hairs or nearly glabrous. Seeds 3.5 to 4 mm. long, 2.5 to 3 mm. thick, rugose.

Type specimen: Baco River, Mindoro (4051 Merrill), March 15, 1905; also, from the same locality (323 McGregor), May 9, 1905. A rare plant in very humid forests, found once only by the author and once by Mr. McGregor. No. 654 Whitford, Atimonan, Tayabas Province, Luzon, is the same, growing along streams in forests.

The first species of the genus to be reported from the Philippines, apparently related to *Forrestia marginata* Hassk., and *F. hispida* Less., differing from the former in its larger, nearly glabrous leaves, much larger flowers, and the capsule shorter than the sepals, and from the latter in its caudate acuminate leaves and other characters. *Forrestia mollis* Hassk., differs especially from the species here proposed in its smaller leaves and flowers, the leaves being villous beneath.

## JUGLANDACEÆ.

### *Englehardtia subsimplicifolia* sp. nov.

A small tree 8 or 9 m. high, with simple, or at most 1-jugate leaves, the leaflets entire, glandular on both surfaces. Branches gray or brown, glabrous, the young parts densely lepidote-glandular. Leaves alternate, the rachis lepidote glandular, 1.5 cm. long; leaflet solitary or a single terminal pair, subcoriaceous, oblong-ovate, acute, subacuminate or obtuse, the base narrowed, inequilateral, the upper surface dark, the lower surface pale, not at all pubescent, the glands numerous above, very numerous beneath; nerves 14 to 18 pairs, prominent beneath, the reticulations obscure; petiolules 1 to 2 mm. long. Male inflorescence axillary, simple or slightly branched, subpendulous, 1 to 1.5 cm. long, the rachis and bracts glandular-lepidote; anthers ovoid, about 1 mm. long. Female flowers not known, the racemes in fruit, including the peduncle, 8 to 12 cm. long, erect, the rachis glandular-lepidote, hirsute with scattered hairs, the bract 3-lobed, sparingly glandular-lepidote, the middle lobe 1.5 cm. long, 4 mm. wide, oblong-spatulate, acute or obtuse, the lateral lobes less than 1 cm. long.

Type specimens from Mount Mariveles, Province of Bataan, Luzon (3942 (male flowers) and 3951 (fruit) Merrill), March, 1905.

A small or medium sized tree growing in the forests and on exposed ridges from 700 to 1000 m. above the sea, readily distinguished from all described species of the genus by its simple or 1-jugate leaves.

## MAGNOLIACEÆ.

### TALAUMA.

1. Flowers 9 to 10 cm. long; pistils pubescent..... (1) *T. grandiflora*  
 1. Flowers 8 cm. long or less; pistils glabrous or nearly so.  
     2. Flowers 5 cm. long, broad, not contracted below, the leaves  
        broad, usually acute..... (2) *T. angatensis*  
     2. Flowers 6 to 8 cm. long, elongated, contracted below, the leaves  
        usually narrow, acuminate..... (3) *T. villariana*  
 1. Flowers unknown.  
     2. Fruit 15 to 18 cm. long; leaves 25 to 45 cm. long, the petioles 4 to  
        5 cm..... (4) *T. oblongata*  
     2. Fruit 10 cm. long; leaves 17 to 35 cm. long, the petioles 3 cm..... (5) *T. luzonensis*

(1) **Talauma grandiflora** Merrill, Govt. Lab. Publ. 29:13. 1905.  
 Guimaras Island, (314 Gammill) February, 1904.

(2) **Talauma angatensis** (Blanco) Vidal, Cat. Pl. Prov. Manila, 17,  
 November, 1880; Sinopsis, Atlas, t. 3. 1883; Rev. Pl. Vasc. Filip. 38.  
 1886; F.-Vill. Nov. App. 3, December, 1880, excl. syn. Hook. f. et  
 Th. *Magnolia angatensis* Blanco, Fl. Filip. ed. 1, 859. 1837; ed. 2,  
 328. 1845; ed. 3, 2:243.

This species, at least as interpreted by Vidal, is represented by a specimen from Bosoboso, Province of Rizal, Luzon (2880 Ahern's collector), March, 1905, the specimens referred to this species by Vidal (Nos. 912, 1099 Vidal) being from the same province and the latter from the same locality. No. 2880 is identical with the plant figured by Vidal, and, like Vidal's figure, differs from *Magnolia angatensis* as described by Blanco, in having but 6 petals instead of 9. Until other material is collected agreeing more closely with Blanco's description, it is believed that this form should be considered to represent his species. The form here referred to *Talauma angatensis* is doubtless the same as the one credited to the Philippines by F.-Villar as *Talauma gigantifolia* Miq.

(3) **Talauma villariana** Rolfe, Journ. Linn. Soc. Bot. 21:307. 1884;  
 Vidal, Rev. Pl. Vasc. Filip. 38. 1886; *Talauma mutabilis* F.-Vill.  
 Nov. App. 3. 1880; Naves, in Blanco Fl. Filip. ed. 3, pl. 148; Vidal,  
 Cat. Pl. Prov. Manila, 15. 1880, non Blume.

A small tree with lanceolate to broadly oblanceolate acuminate leaves 18 to 30 cm. long, 3 to 9 cm. wide, glabrous and shining, except for the usually pubescent midrib beneath. Flowers white, elongated, contracted below, 6 to 8 cm. long, very fragrant. Sepals 3. Petals 6, in two series. Pistils glabrous. Fruit 4 to 6 cm. long, the carpels few, glabrous, maculate.

Specimens examined: Luzon, Province of Bataan, Lamao River (668, 1746

Borden), April, August, 1904, the former in flower, the latter in fruit, from the same tree; (2506 Meyer) January, 1905 (flower); Dinalupihan (2512 Merrill), January, 1903 (flower): Antipolo (50 Merrill), Decades Philippine Forest Flora, a specimen with immature flowers, 5 cm. long, considerably smaller than those of the other specimens cited above.

This species is exceedingly variable in its vegetative characters, leaves from the same tree being from 3 to 9 cm. in width, without proportional variation in length. It was based in the plate cited above, and Nos. 942 and 1099 Vidal. The specimens under discussion agree well with the plate, except that the flowers are somewhat larger than they are represented to be in the figure, and are doubtless identical with the ones cited by Rolfe.

(4) ***Talauma oblongata***, sp. nov.

A tree with subcoriaceous, oblong-lanceolate, acute leaves, 25 to 45 cm. long and oblong, many carpelled fruit 15 to 18 cm. long. Branches thickened, annular, nearly glabrous. Leaves glabrous and shining above, when young, dull and sparingly pubescent beneath, becoming glabrous and shining with age, 25 to 45 cm. long, 6 to 11 cm. wide, the apex acute, the base acute or slightly decurrent-acuminate; nerves about 20 on each side of the midrib, the reticulations prominent on both surfaces; petioles stout, 4 to 5 cm. long, glabrous, thickened at the base, somewhat flattened above. Flowers unknown. Peduncle terminal, stout, appressed pubescent, annular, 4 to 5 cm. long. Fruit about 7 cm. thick, glabrous, the axis about 2 cm. thick, deeply pitted. Carpels numerous, the exposed portions glabrous, shining, somewhat roughened-maculate, grayish brown, 3 cm. long, somewhat acuminate at the apex. Seed dark brown, irregularly compressed, about 1 cm. in diameter.

Type specimen: Baler, Province of Principe, Luzon (1003 Merrill), August, 1902.

(5) ***Talauma luzonensis*** Warb. in Perk. Frag. Fl. Philip. 171. 1905.

The type of this species is No. 11767 Warburg, Malaueg, Province of Cagayan, Luzon. *T. grandiflora* Merrill may not be distinct.

F.-Villar<sup>1</sup> credits to the Philippines five species of *Talauma*, *T. mutabilis* Blume, *T. angatensis* (Blanco) Vidal, *T. pumila* Blume, *T. rumphii* Blume, and *T. gigantifolia* Miq. Of these five species two were certainly correctly identified, *T. angatensis* Vidal, considered above, and *T. pumila* Blume = *Magnolia pumila* Andr., the latter a species introduced from southern China, and occasionally cultivated for ornamental purposes. *Talauma mutabilis* F.-Vill., non Miquel, is *Talauma villariana* Rolfe. The remaining two species must for the present, at least, be excluded, and we can only surmise what species F.-Villar had in mind, as his botanical material no longer exists. It is probable that the species credited to the Philippines as *Talauma rumphii* is *Magnolia pumila* Andr., and the one enumerated as *Talauma gigantifolia* Miq., is either *Talauma angatensis* Vidal or *T. oblongata* Merrill.

<sup>1</sup> Nov. App. 3. 1880.

## ANONACEÆ.

**Alphonsea philippinensis** sp. nov.

A small or medium sized tree with lanceolate, glabrous leaves, axillary short peduncled, fasciculate inflorescence, globose flower buds, the small flowers with numerous stamens and a solitary pubescent 10 to 12 ovuled ovary. Branches nearly black, striate, glabrous, when young slightly ferruginous pubescent. Leaves 8 to 14 cm. long, 2 to 3 cm. wide, gradually narrowed upward to the obscurely acuminate apex, the base rather abruptly acute, subcoriaceous, shining, the midrib beneath with few hairs, becoming entirely glabrous; nerves very obscure, scarcely more prominent than the reticulations, 12 to 15 on each side of the midrib; petioles deeply channeled above, slightly pubescent, about 8 mm. long. Inflorescence densely fulvous pubescent throughout, of axillary, short peduncled, 3 to 5 flowered fascicles, the pedicels about 1 cm. long. Calyx pubescent, the lobes acute. Petals 6, in two series, pubescent, all valvate, the outer ones ovate, acute, 5 mm. long, the inner ones obovate, somewhat smaller than the outer. Stamens about 30, 2 mm. long, the filaments glabrous, 1 mm. long; anther cells large, contiguous, the connective apiculate, scarcely exceeding the anther cells and not at all concealing them. Ovary solitary, oblong-ovoid, pubescent, the ovules 10 or 12, in two rows, parietal; stigma subglobose, sessile.

Type specimen: Island of Masbate (3075 Merrill), August, 1903. A species apparently related to *Alphonsea lutea* Hook. f. et. Th., from Malacca. No species of this genus has previously been reported from the Philippines.

**Goniothalamus obtusifolius** sp. nov.

A medium-sized tree with subcoriaceous, glabrous, oblong-obovate, obtuse leaves and large, axillary, solitary flowers. Branches grayish brown, glabrous, striate. Leaves 15 to 18 cm. long, 6 to 8 cm. wide, shining, the apex broad, rounded-truncate, sometimes retuse, narrowed below to the cuneate base; primary nerves not prominent, about 13 pairs, scarcely more pronounced than the secondary nerves; petioles stout, rugose, glabrous. Flowers yellow, fragrant, about 5 cm. long, the pedicel 1 cm. long or less. Sepals suborbicular-ovate, acute or rounded, glabrous or nearly so, about 1 cm. long. Outer petals broadly ovate, acute, 5 cm. long, 3.5 cm. wide, membranous, glabrous, the base broad, rounded-truncate; inner petals oblong ovate, acute, 9 mm. long, arched, but not vaulted, connivent, more or less pubescent outside, densely hirsute-pubescent on the margins inside, the claw broad, short. Stamens many, 1.8 mm. long, the anther cells concealed by the overlapping truncate connectives. Ovaries glabrous, 2 mm. long, 1-ovuled; styles simple, elongated, 2.5 mm. long.

Type specimen: Bongabon, Mindoro (2183 Merrill), May, 1903. A medium-sized tree in the lower hill forests, reaching a diameter of about 45 cm. with rather smooth bark and white wood, known locally as *Amuyon*, but quite different from the species described by Blanco (*Uvaria amuyon* = *Unona cauliflora* Blanco = *Goniothalamus* sp.?) to which he applies this name.

**Goniothalamus trunciflorus** sp. nov.

A tree with oblong, short acuminate, glabrous leaves, and large flowers, solitary (or fascicled?) on the trunk, the outer petals ovate-lanceolate, 6.5 to 9 cm. long. Branches dark brown, the ultimate branchlets light colored, glabrous. Leaves subcoriaceous, shining on both surfaces, the apex short acuminate, the base acute, the margins recurved, 18 to 25 cm. long, 7 to 8 cm. wide; nerves distant, distinct beneath, 8 to 10 on each side of the midrib, very laxly anastomosing, the reticulations lax; petioles 1 to 1.5 cm. long, glabrous. Flowers red, the peduncles 3 cm. long, glabrous. Sepals subreniform to broadly ovate, acute, 1 cm. wide, slightly pubescent. Outer petals membranous, 9 cm. long or less, 2 to 3 cm. wide, tapering above to the long slender acuminate apex, both surfaces sparingly pubescent with short hairs; inner petals coriaceous, broadly ovate, acuminate, 2 cm. long and 1.5 cm. wide or smaller, arched, the margins cohering, the claw very short, broad, densely cinereous pubescent outside and also on the upper portion within. Stamens many, 2.5 mm. long, the anther cells obscured by the overlapping, rounded-truncate connectives. Ovaries many, pubescent, 2.5 mm. long, 1-ovuled; styles elongated 2-cleft at the apex. Fruit unknown.

Type specimen: Tinuan River, Province of Tayabas (Infanta), Luzon (774 Whitford), September 6, 1904. A tree growing in the hill forests at an altitude of about 120 m. above the sea, at once distinguished by its cauline inflorescence, the large flowers being borne near the base of the trunk. The only other described Philippine species that approaches this is *Uvaria amuyon* Blanco = *Unona cauliflora* Blanco. The latter species was referred by F. Villar to *Melodorum fulgens* Hook. f. et Th., to which Blanco's description does not all apply. Blanco's species is apparently represented by No. 775 Whitford, from the same locality as the above, but as the specimens are in fruit it is quite impossible to definitely determine just what *Unona cauliflora* Blanco may be. However, Blanco's description does not at all apply to the species here proposed.

**Mitrephora reflexa**, sp. nov.

A medium-sized tree with elliptical-ovate, nearly glabrous leaves 17 cm. long or less, and rather large leaf-opposed hermaphrodite flowers, the outer petals reflexed in anthesis, the inner very different from the outer, connivent, vaulted. Branches dark brown, glabrous, the ultimate branchlets slender, light gray, more or less ferruginous pubescent, the terminal buds densely so. Leaves 8 to 17 cm. long, 5 to 8 cm. wide, the apex acuminate, the base acute to somewhat rounded, glabrous and shining above, slightly ferruginous pubescent on the nerves and midrib beneath; nerves prominent beneath, about 12 pairs; petioles thickened, rugose, slightly pubescent, 1 cm. long. Flowers yellow, about 5 cm. in diameter when spread, on a short leaf-opposed axis, only one flower developing at a time, the peduncle stout, densely ferruginous-pubescent, about 6 mm. long. Sepals orbicular-ovate, about 6 mm. long, densely ferruginous pubescent. Outer petals broadly ovate, 2.5 cm. long, 1 cm. wide, subcoriaceous, acute, glabrous within, densely cinereous-ferruginous pubescent outside. Inner petals 1.5 cm.

long, vaulted, glabrous except the densely hirsute inner surface of the lamina, the limb 7 mm. long, 5 mm. wide above, gradually narrowed below, the lamina subrhomboidal, about 1 cm. wide. Stamens many, 1.5 mm. long, the anther cells concealed by the overlapping, truncate connectives. Ovaries many, as long as the stamens, more or less hirsute, 4-ovuled.

Type specimen: Bosoboso, Province of Rizal, Luzon (2882 Ahern's collector), March, 1905.

**Orophea maculata**, sp. nov.

A small tree about 10 m. high, with broadly lanceolate, acuminate leaves and solitary, axillary flowers 1.5 to 2 cm. in diameter. Branches brownish gray, striate, the young parts densely pubescent. Leaves 14 to 18 cm. long, 3.5 to 5.5 cm. wide, membranous, with numerous minute translucent glands, the base acute, the apex slender acuminate, the acumen blunt, upper surface glabrous except the somewhat pubescent midrib the under surface minutely glandular punctate, glabrous except for the pubescent midrib and slightly pubescent nerves; nerves about 15 on each side of the midrib, rather prominent beneath; petioles pubescent, thickened, 5 to 8 mm long. Flowers fragrant, creamy yellow, the pedicel 1 to 1.5 cm. long, densely pubescent. Sepals broadly ovate, obtuse or slightly acute, 2 mm. long, cinereous pubescent. Outer petals elliptical ovate, obtuse, 5.5 mm. long, 4.5 mm. wide, densely pubescent outside, the base narrowed to a broad short claw; inner petals vaulted, the margins cohering slightly above, 1.5 mm. long, pubescent outside, the claw slender, 6 mm. long, the blade rhomboidal, 1 cm. wide, the apex acute, the lateral angles obtuse, the inner surface of the vaulted petals with purple spots. Ovaries about 15, densely pubescent, 2 mm. long, each 4-ovuled, the disc pubescent. Staminate flowers not seen.

Type specimen: Lamao River, Province of Bataan, Luzon (2389 Borden), January, 1905; also No. 2418 Meyer same locality and date. Here should also be referred No. 745 Ahern Mariveles, Province of Bataan, Luzon, reported by the author<sup>1</sup> as *Mitrephora reticulata*.

A small tree reaching a diameter of from 12 to 18 cm. growing on forested slopes at an altitude of about 550 m. above the sea.

**Phaeanthus acuminatus**, sp. nov.

A shrub 6 m. high or less, with hirsute-pilose branchlets, membranous leaves, and solitary flowers 1 to 1.5 cm. long, the outer petals about twice as large as the sepals. Branches dark colored, striate, nearly glabrous, the younger branchlets rather densely pilose-hirsute with spreading fulvous hairs. Leaves elliptical-lanceolate, sharply acuminate, 12 to 20 cm. long, 4 to 6 cm. wide, the base somewhat rounded, the upper surface shining, glabrous except for the pilose midrib, the lower surface with scattered hairs and hirsute-pilose on the midrib and nerves; primary nerves about 10 on each side of the midrib, prominent beneath, interarching, the reticulations lax; petioles hirsute-pilose, about 2 mm. long. Inflorescence mostly leaf

<sup>1</sup> Forestry Bureau, Bul. 1:20, 1903.

opposed, one, rarely two pedicels from the same tubercle or minute branchlet, the pedicels slender, 2.5 to 3 cm. long, pubescent. Flowers salmon pink, odorless or nearly so. Calyx lobes sparingly pubescent, 3 to 3.5 mm. long, ovate, strongly acuminate. Petals sparingly pubescent, the outer ones similar in shape to the sepals but twice as large, the inner ones oblong, acute, 10 to 14 mm. long, about 4 mm. wide. Stamens many, about 1.5 mm. long, glabrous, the broad truncate connectives concealing the anther cells. Ovaries about 1.5 mm long, pubescent, about 5, each with 2 ovules; stigmas ovoid, pubescent. Ripe carpels subglobose, bright red, sparingly pubescent, 2-seeded, 1 cm. or less in diameter.

Type specimen: Baco River, Mindoro (4050 Merrill), March 14, 1905. A small shrub common in the humid river forests, apparently most closely related to *Phaeanthus malabaricus* Bedd.

***Polyalthia flava*, sp. nov. § *Monoon*.**

A small tree, about 12 m. high, with nearly glabrous, coriaceous oblong, acuminate leaves, and solitary axillary flowers about 5 cm. in diameter. Branches striate, dark gray, the branchlets densely ferruginous pubescent. Leaves 7 to 12 cm. long, 3 to 4.5 cm. wide, glabrous and shining above, beneath with very few scattered hairs on the lamina, the midrib sparingly pubescent, the apex rather sharp acuminate, the base rounded or subacute, somewhat inequilateral; nerves numerous, the primary ones scarcely more prominent than the secondary and reticulations; petioles ferruginous pubescent, 5 mm. long. Flowers solitary, bright yellow, odorless, the peduncles about 2 cm. long, ferruginous pubescent, with 2 or 3 small bracts near the base. Calyx lobes broadly ovate, ferruginous pubescent, acute, 4 mm. long. Petals, 6, in two series, subequal, elliptical ovate to elliptical obovate, obtuse, 2.5 cm. long, 1.5 to 1.8 cm. wide, glabrous except for the pubescent base and few scattered hairs on the outside. Stamens many, 1.8 mm. long or less, the connectives truncate. Ovaries many, pubescent, 1.3 mm. long, with a solitary basal ovule.

Type specimen: Bosoboso, Province of Rizal, Luzon (2135 Ahern's collector), December, 1904; also Lamao River, Province of Bataan, Luzon (3052 Borden), October, 1904. A small tree in the hill forests at 200 m. above the sea.

***Sageraea glabra*, sp. nov.**

A small tree about 15 m. high, with subcoriaceous, glabrous, elliptical oblong, acuminate leaves, and small hermaphrodite flowers in axillary fascicles. Branches black and grayish, glabrous, striate. Leaves 11 to 15 cm. long, 4 to 5 cm. wide, short acuminate, the base acute, shining on both surfaces, the margins slightly revolute; nerves obscure, about 8 on each side of the midrib, loosely anastomosing; petioles stout, rugose, channeled above, 5 to 6 mm. long. Fascicles axillary, rarely extra-axillary, about 3-flowered, the pedicels 1 cm. long or less, each with 3 or 4 small distichous bracts at the base. Flowers white, nearly odorless, about 1 cm. in diameter. Calyx lobes orbicular-ovate, subacute, 2 mm. long, the margins somewhat ciliate, otherwise glabrous. Petals glabrous, except the

slightly ciliate margins, the outer three broadly ovate, obtuse, 6 to 7 mm. long, rather strongly imbricate in bud, the inner three slightly imbricate, similar to the outer ones but somewhat smaller. Stamens 2.5 mm. long, glabrous, the anther cells not entirely obscured by the truncate connectives. Ovaries 3, oblong, glabrous, 2 mm. long, the ovules about 8, parietal in two rows.

Type specimen: Laguimanoc, Province of Tayabas, Luzon (4021 Merrill), March 12, 1905. A small tree rather common in the open hill forests, the first species of the genus to be found in the Philippines.

***Unona clusiflora*, sp. nov. § *Dasymaschalon*.**

A shrub or small tree, with oblong-elliptical, acute or short acuminate glabrous, glaucous leaves, and axillary 3-petaled flowers 3 to 6 cm. long. Branches dark reddish brown, glabrous. Leaves 11 to 15 cm. long, 3.5 to 5 cm. wide, submembranous, pale when dry, the base acute; nerves about 12 on each side of the midrib, not prominent; petioles glabrous, channeled above, nearly 1 cm. long. Flowers solitary, yellowish green. Sepals subreniform, rounded, 2 mm. long, 4 mm. wide, sparingly cinereous pubescent. Petals 3, ovate-lanceolate, 5 to 6 cm. long, about 2 cm. wide, concave at the base, but not at all narrowed below, tapering to the blunt apex, rather densely cinereous pubescent outside, glabrous inside, their margins cohering throughout. Stamens many, glabrous, 3 to 4 mm. long, the connectives subglobose, concealing the linear anther cells. Ovaries indefinite, densely fulvous-hirsute, linear-oblong, 1.5 mm. long, 2 to 3 ovuled; styles glabrous, rather slender, about 1 mm. long.

Type specimen: Lamao River, Province of Bataan, Luzon (2521 Merrill), June, 1903. A small tree growing in the open forests at an altitude of about 100 m. above the sea. Related to *Unona dasymaschala* Blume, but entirely glabrous, except the flowers, also differing from that species in its smaller flowers, longer styles, fewer ovules, and other characters.

## MONEMIACEÆ.

***Kibara depauperata*, sp. nov.**

A subscent shrub 2 to 3 m. high, with glabrous, elliptical ovate, acute, broadly obscurely acuminate or subobtuse leaves, 5 to 8 cm. long, cymose, axillary, pubescent inflorescence 2 to 3 cm. long, and oblong ellipsoid, glabrous, fruits 1.8 cm. long. Branches light gray, glabrous, the branchlets yellowish green, glabrous, or the very young branchlets pubescent. Leaves subcoriaceous, opposite, 5 to 8 cm. long, 2 to 4.5 cm. wide, the base acute, the margins entire; nerves 5 to 6 on each side of the midrib, irregular, anastomosing, the reticulations lax; petioles about 5 mm. long, glabrous, or pubescent when young. Cymes usually solitary, with few branches, few flowered, the peduncles, branches, pedicels, and receptacles uniformly but not densely cinereous strigose pubescent, the peduncles and branches 1 cm. long, the pedicels 6 to 10 mm. long. Receptacles coriaceous, ovoid or obovoid, 4 mm. long, becoming nearly glabrous. Tepals 6, small, less than 1 mm. long, acute, or somewhat obtuse. Carpels 14, pubescent, 1 to 1.5 mm. long. Fruits 1.8 cm. long, 1 cm. thick, glabrous, 6 to 8 sessile

on the much thickened, irregular, glabrous, yellow receptacle. Male flowers not known.

Type specimen: Baguio, Province of Benguet, Luzon (5959 Elmer), March, 1904. Not common in thickets on limestone outcroppings. A species manifestly related to *Kibara coriacea* (Blume) Tul., but differing in its small, fewer nerved leaves and other characters. No. 6151 Elmer, with fruits only, collected at Sablan, Province of Benguet, April, 1904, is an apparently closely related species, if not identical.

***Matthaea chartacea*, sp. nov.**

A shrub 3 to 4 m. high, with oblong ovate to lanceolate ovate, acuminate, glabrous, chartaceous leaves 15 to 25 cm. long, and axillary 3-flowered cymes about 1.5 cm. long, the receptacle fleshy, turbinate, truncate, nearly glabrous, gradually narrowed below into the pedicel, the receptacle and pedicel 1 cm. long. Branches light gray, glabrous, the terminal bud pubescent. Leaves opposite, 15 to 25 cm. long, 5 to 10 cm. wide, the base acute, the apex rather slender acuminate, the margins with distant, small teeth, or subentire, dark above, pale brown and shining beneath when dry; nerves about 14 on each side of the midrib, obscure above, somewhat prominent beneath, irregular, anastomosing and forming a marginal nerve, the reticulations lax; petioles 1.5 to 2 cm. long, glabrous. Inflorescence solitary or two or three peduncles from the same axil, the peduncles 5 to 7 mm. long, strigose pubescent, the bracts and bracteoles about 1 mm. long, pubescent, each peduncle with three flowers at the apex, the pedicels strigose pubescent, gradually merging into the nearly glabrous receptacle. Receptacles yellow, fleshy, 5 to 6 mm. long, turbinate, the apex truncate, somewhat depressed, about 5 mm. in diameter, glabrous or with very few scattered hairs. Tepals 4, small, obscure, obtuse. Stamens 4, free, the filaments very short, broad; anthers broadly ovoid, 1 mm. long, the cells subparallel, not confluent at the apex, the connective not at all produced. Female flowers and fruits not known.

Type specimen: Baco River, Mindoro (167 McGregor), April, 1905. A species growing in humid forests, apparently closely related to *Matthaea coriacea* Perk., ex description, differing from that species in its chartaceous, somewhat toothed leaves, longer peduncles and differently shaped receptacles. *Matthaea sancta* Blume, has been reported from the Philippines by Ceron<sup>1</sup> (3574 Vidal), Luzon, but no species of the entire family is credited to the Philippines in the recent monograph by Perkins and Gilg.<sup>2</sup>

## LAURACEÆ.

***Endiandra coriacea*, sp. nov.**

A large tree with coriaceous, glabrous, shining, alternate leaves 10 to 18 cm. long, axillary panicles shorter than the leaves and glabrous elliptical or elliptical-oblong fruits 2 to 2.5 cm. long. Branches brown, lenticellate, glabrous, the branchlets sparingly fulvous pubescent, becoming glabrous or nearly so. Leaves ovate, ovate-lanceolate or oblong-ovate, usually pale

<sup>1</sup> Cat. Pl. Herb., 141. 1891.

<sup>2</sup> Engler's Pflanzenreich 4. 1901.

brown when dry, 10 to 18 cm. long, 5 to 7.5 cm. wide, the base usually acute, somewhat decurrent, the apex blunt acuminate, both surfaces glabrous, shining, foveolate; nerves 5 to 7 on each side of the midrib, subprominent, irregular, curved upward, the primary reticulations lax, the ultimate reticulations relatively prominent, dense; petioles rugose, glabrous or nearly so, 1.5 to 2 cm. long, flattened or channeled above. Panicles 5 to 7 cm. long, more or less fulvous pubescent, the ultimate branches rather densely so, the longest branches not exceeding 2.5 cm. Flowers creamy white, fragrant, about 7 mm. in diameter, the tube short, campanulate, fulvous pubescent inside and out. Perianth segments 6, in two series, coriaceous, sparingly fulvous pubescent outside, glabrous inside except at the base which is very densely fulvous pubescent, oblong or elliptical oblong obtuse, the outer three 3 to 3.5 mm. long, 2.5 mm. wide, the inner three 2.5 to 3 mm. long, 1.5 to 2 mm. wide. Stamens 3, very thick, densely fulvous pubescent throughout, oblong-ovate, acute, erect, the margins approximate but free. Ovary free, globose, glabrous, the style very short. Fruit nearly black when dry, 2 to 2.5 cm. long, 1 to 1.5 cm. thick.

Specimens examined, all from Lamao River, Province of Bataan, Luzon: (3066 Borden) May, 1905 (flower); (126, 190 Barnes) January, 1904 (fruit); (3780 Merrill) January, 1904 (fruit). Apparently also No. 2200 Merrill, Subic, Province of Zambales, Luzon, May, 1903, is referable here, a specimen with immature flowers. A tree reaching a height of 25 m. growing in the lower hill forests at an altitude of about 100 m. This genus has not previously been reported from the Philippines.

## CAPPARIDACEÆ.

### *Capparis oblongata*, sp. nov.

A scandent shrub reaching a height of 20 m. and a diameter of 4 cm., with oblong, membranous, glabrous, shortly abruptly acuminate leaves 10 cm. long or less, and large white flowers in axillary racemes towards the ends of the branches, the whole inflorescence forming a terminal panicle, the leaves falling above. Branches glabrous, the thorns recurved, usually pubescent. Leaves bright green, 7 to 10 cm. long, 2.5 to 3.5 cm. wide, the base abruptly rounded-subcordate; nerves 9 or 10 on each side of the midrib, anastomosing, not prominent; petioles 1 cm. long or less, rusty pubescent. Panicles 20 to 25 cm. long, the lower racemes about 5 cm. long, glabrous or sparingly pubescent, spreading, 4 to 8 flowered, the flowers long pedicelled, the pedicels slender, glabrous, 2.5 to 3 cm. long. Flowers white, fragrant, including the stamens about 3 cm. long. Sepals four, 2-seriate, obovate, about 1 cm. long, membranous, the margins ciliate. Petals 4, about equaling the sepals, their margins strongly ciliate. Stamens indefinite, the filaments slender; anthers 2 mm. long. Gynophore 2.5 to 3 cm. long, slender, glabrous. Ovary elliptical-ovoid, glabrous, 1-celled, the ovules arranged on four parietal placentæ.

Type specimen: Mount Mariveles, Province of Bataan, Luzon (2632 Meyer), February, 1905. A scandent shrub in the hill forests at an altitude of about 500 m., not common.

## PITTOSPORACEÆ.

## PITTOSPORUM.

1. Leaves lanceolate or oblong lanceolate; fruit 8 mm. long or less..... (1) *P. pentandrum*  
 1. Leaves oblanceolate to obovate; fruit 1 to 3 cm. long.  
   2. Inflorescence terminal..... (2) *P. odoratum*  
   2. Inflorescence from the branches below the leaves; fruit very resinous.  
     3. Fruit oblong..... (3) *P. resiniferum*  
     3. Fruit orbicular..... (4) *P. resiniferum orbiculatum*

- (1) **Pittosporum pentandrum** (Blanco) Merrill, Govt. Lab. Publ. 27:19. 1905. *Aquilaria pentandra* Blanco, Fl. Filip. ed. 1, 373. 1837; *Limonia laureola* Blanco, l. c., ed. 2, 251. 1845; ed. 3, 2:101; Naves, l. c., ed. 3, pl. 128. *Pittosporum brachysepalum* Turcz. Bull. Soc. Nat. Mosc. 27:366. 1854; Rolfe, Journ. Bot. 23:210. 1885; Vidal, Phan. Cuming. Philip. 95. 1885; Rev. Pl. Vasc. Filip. 50. 1886; Ceron, Cat. Pl. Herb. 18. 1892. *Pittosporum fernandezii* Vidal, Cat. Pl. Prov. Manila, 17. 1880; Sinopsis, Atlas, t. 8. f. A. 1883; Rev. Pl. Vasc. Filip. 50. 1886; F.-Vill. Nov. App. 13. 1880; Ceron, Cat. Pl. Herb. 18. 1892. *Pittosporum floribundum* F.-Vill. Nov. App. 13. 1880, non W. et A.

Specimens examined: Philippines (1050, 1427 Cuming), 1836-40. Luzon, Province of Bataan, Lamao River (3177 Merrill), October, 1903; (1937, Borden), (2228 Meyer), December, 1904; Dinalupihan (1483 Merrill), January, 1903. Province of Zambales, Botolan (2951 Merrill), May, 1903. Province of Rizal, Bosoboso (1159 Ahern's collector), June, 1904; (2804 Merrill), July, 1903; Antipolo (1308 Merrill), February, 1903. Province of Benguet (6052 Elmer), March 1904. Culion Island (500 Merrill), December, 1902. Guimaras Island (219, 291 Gammill), January, 1904.

This species is very common and widely distributed in the Philippines, being characteristic of those localities which by the Tagalogs are called "Parang"—that is, land which was once forested but from which the valuable timber trees have been removed, so that it is now covered with thickets of shrubs and small trees. The species is universally known to the Tagalogs as *Mamates*, and to the Visayans to a greater or less extent as *Boloncoyon*. Vidal states that his *Pittosporum fernandezii* is very closely related to *P. brachysepalum*, and after a careful examination of the figures, descriptions, cotype of *P. brachysepalum*, and specimens cited above, it has been concluded that the two species are identical, and also identical with Blanco's *Aquilaria pentandra*, which being the earliest name, is here retained, there being absolutely no doubt as to the identity of Blanco's species. A species apparently closely related to *Pittosporum floribundum* W. et A., and undoubtedly the form credited to the Philippines by F.-Villar as the latter.

- (2) **Pittosporum odoratum**, sp. nov. *Pittosporum glabratum* Vidal, Sinopsis, Atlas, t. 8. f. B. 1883; F.-Vill. Nov. App. 13. 1880, non Lindl.

A small tree about 7 m. high, with oblanceolate to narrowly obovate

glabrous, acuminate leaves, and terminal, few flowered peduncled corymbs, the flowers white, about 12 mm. long. Branches light gray, glabrous, the young branchlets ferruginous pubescent, soon becoming glabrous. Leaves opposite, sometimes subverticillate at the upper nodes, subcoriaceous. 6 to 10 cm. long, 2 to 4 cm. wide, the very young ones slightly pubescent, especially on the midrib, soon becoming glabrous, tapering to the cuneate base, the apex rather abruptly short acuminate, the margins entire or slightly undulate, the upper surface shining, the lower surface paler, dull or slightly shining; nerves about 8 on each side of the midrib, obscure above, anastomosing, the reticulations beneath distinct, fine; petioles about 1 cm. long, at first ferruginous pubescent, soon becoming glabrous. Inflorescence terminal, the peduncle ferruginous pubescent, becoming glabrous, about 5 cm. long, the lower branches 1.5 cm. long, 3-flowered. Flowers white, fragrant, the pedicels slender, somewhat pubescent, 5 mm. long, the bracteoles about 2 mm. long, linear. Calyx 4.5 mm. long, slightly pubescent or nearly glabrous, the lobes acute or acuminate, ovate lanceolate. Petals 12 mm. long, 2.5 mm. wide, abruptly acute, glabrous, 3-nerved, somewhat united below forming a tube, spreading above. Anthers nearly 3 mm. long, dark brown. Ovary lanceolate-oblong, about 6 mm. long, many ovuled, densely pubescent, the style glabrous, about 4 mm. long. Fruit 2-valved, yellow, oblong, somewhat compressed, 3 cm. long, 15 to 18 mm. wide when mature, glabrous, rugose when dry, the base rounded or subcordate, the apex obtuse, short apiculate. Seeds many, oblong or rounded, flattened, red, 5 to 6 mm. in diameter.

Type specimens from Mount Mariveles, Province of Bataan, Luzon: (2616, 2795 Meyer), February, 1905 (flower); (6902 Elmer), November, 1904 (fruit). The following specimens are also referred here: Province of Benguet, Luzon (5832, 6372 Elmer), May, 1904; Province of Principe, Baler (1113 Merrill), October, 1902.

This is apparently a distinct species, and although no specimens of the plant identified by Vidal as *Pittosporum glabratum* are extant, and his drawing represents only the fruit, still the latter agrees well with that of the present species, and accordingly *Pittosporum glabratum* Vidal, non Lindl., is referred here. Vidal's drawing represents a 2-valved fruit, while according to the description, the fruit of *Pittosporum glabratum* is 3-valved. F.-Villar's record of *Pittosporum glabratum* from the Philippines was based on a specimen in the herbarium of Vidal, from Iloilo, Panay, evidently the same specimen from which Vidal's drawing was made. In his "Revision" Vidal cites no specimen of *Pittosporum* from Panay, and it is accordingly probable that the specimen from which the drawing was made was destroyed before the publication of the latter work.

This species reaches a diameter of about 10 cm. growing on Mount Mariveles on exposed ridges in the mossy forest at an altitude of about 900 m., and in Benguet in shaded ravines at an altitude of about 1,500 m.

(3) ***Pittosporum resiniferum*** Hemsl. Kew. Bull. 1894:344. 1894.

This species was based on No. 1136 Vidal, Province of Benguet, Luzon, and is also represented by Nos. 2009, 2010 Loher, according to a manuscript

list of identifications of the latter's Philippine plants made at Kew. It was originally described from fruiting specimens only, and as the flowers were previously unknown, they are accordingly described here. Flowers white, odorless, in fascicles of from 6 to 10 flowers each, axillary or extra-axillary on the branches below the leaves, the pedicels pubescent, 3 to 6 mm. long. Calyx cup shaped, glabrous, 5 mm. deep, the lobes broadly ovate, obtuse, about 2 mm. long. Petals linear, obtuse, about 14 mm. long, 2.5 mm. wide, fleshy, glabrous, their tips more or less spreading. Filaments 8 mm. long, the anthers 3 mm. long. Ovary oblong, 6 mm. long, densely hirsute pubescent, the style glabrous, 4 mm. long.

Specimens examined, all from Luzon: Province of Bataan, Mount Mariveles (3729 Merrill), January, 1904 (fruit); (6903 Elmer), November, 1904 (fruit); (2380 Borden); (2403 Meyer), January, 1904 (fruit); (2794 Meyer), March, 1905 (flower). Province of Benguet, Mount Santo Tomas, (5812 Elmer), March, 1904 (fruit).

This species is remarkable for the amount of resin in its leaves, twigs, and fruits; fresh fruits burn readily when a lighted match is applied to them.

It reaches a height of about 10 m., and is apparently entirely confined to the mossy forests of the higher mountains, being common on exposed ridges on Mount Mariveles above 800 m.

(4) *Pittosporum resiniferum*, var. *orbiculatum* var. nov.

A form apparently identical with the species except that the fruit instead of being oblong, is orbicular or nearly so, 2 to 2.8 cm. in diameter, compressed.

Mount Arayat, Province of Pampanga, Luzon (3919 Merrill), October, 1904. Not common, and apparently growing only near the summit of the mountain in the slightly developed mossy forest, at an altitude of 878 m. above the sea.

*Pittosporum ferrugineum* Ait.; F.-Vill. Nov. App. 13. 1880. *Bursaria inermis* Blanco, Fl. Filip. ed. 2, 124. 1845; ed. 3. 1:122?

No Philippine specimens of *Pittosporum ferrugineum* Ait. have been seen, although its range is given by King<sup>1</sup> as from Burmah to the Malayan Archipelago, Philippines, and Queensland. F.-Villar refers *Bursaria inermis* Blanco here without question, stating that he saw specimens from near Iloilo, Panay. Blanco's specimens were from Calauan, Province of Laguna, Luzon. The fruit of *Bursaria inermis* is described as being 4-seeded, which at once precludes the possibility of this species being referable to *Pittosporum resiniferum* or *P. odoratum*, although this character does not conflict with the description of *P. ferrugineum*. The description of *Bursaria inermis*, although very short, applies well to *Pittosporum pentandrum*, and the species which was seen and described by Azaola, and not by Blanco, might well be identical with *Limonia laurcola* Blanco, of the same work = *Pittosporum pentandrum*. Unless fairly typical specimens of *Pittosporum ferrugineum* Ait., are found in the Philippines, it will probably be best to refer *Bursaria inermis* to *Pittosporum pentandrum* (Blanco) Merrill.

<sup>1</sup> Journ. As. Soc. Beng., 58: 129. 1890.

## ROSACEÆ.

**Eriobotrya ambigua**, sp. nov.

A tree 8 to 10 m. high with oblong, glabrous, acute or short acuminate leaves 10 cm. long or less, the inflorescence a corymbose panicle, the petals imbricate in bud, the ovary 4 to 5 celled. Branches dark brown, glabrous, the branchlets densely ferruginous pubescent, becoming nearly glabrous. Leaves 6 to 10 cm. long, 2 to 3.5 cm. wide, shining on both surfaces, submembranous, glabrous except the midrib beneath which is somewhat pubescent in the lower part, the base acute the margins cartilaginous, slightly undulate-crenate above; nerves about 15 pairs, freely anastomosing, scarcely more prominent than the primary reticulations; petioles 1.5 cm. long, densely ferruginous pubescent, channeled above, the pubescence deciduous, the petioles becoming glabrous or nearly so. Panicles terminal, 4 to 7 cm. long, the entire inflorescence including the bracts and calyces densely ferruginous pubescent, becoming more or less glabrous in age, the lower branches 4 cm. long, ascending, corymbosely branched above the middle; bracts linear to linear lanceolate, 5 to 7 mm. long, pubescent, the bracteoles similar but smaller. Flowers white, fragrant, about 1 cm. in diameter. Calyx deciduously ferruginous pubescent, funnel shaped, about 3 mm. long, the teeth triangular, acute, erect. Petals glabrous, imbricate, broadly ovate, obtuse, about 4 mm. long. Stamens many. Ovary pubescent, 5-celled, or by abortion 4-celled, each cell with two basal ovules. Styles 5 or 4, about 4 mm. long, united for one-half their length.

Type specimen; Mount Mariveles, Province of Bataan, Luzon (2796 Meyer), March, 1905; also Nos. 1155, 1168, and 1307 Whitford same locality, March and June, 1905. A tree reaching a diameter of about 40 cm. growing on the forestal slopes and ridges at an altitude of about 1,000 m. above the sea. The second species of the genus to be found in the Philippines.

## CONNARACEÆ.

**Agelaea wallichii** Hook. f. Fl. Brit. Ind. 2:47. 1876; King, Journ. As. Soc. Beng. 66<sup>2</sup>:19. 1897.

This species is represented by the following specimens, all from Luzon: Province of Bataan, Lamao River (29 Whitford), April, 1904 (flower); (3025 Meyer), May, 1905 (flower); (6004 Leiberg), July, 1904 (fruit); Lucena, Province of Tayabas (2895 Merrill), June, 1903 (fruit). Specimens were sent to Dr. H. N. Ridley, Director of the Botanical Garden, Singapore, who kindly compared them with authentic material of *Agelaea wallichii*, Dr. Ridley verifying my identification. No species of the genus has previously been reported from the Philippines. Penang to Malacca, Singapore, and Sumatra.

## LEGUMINOSEÆ.

**Apalatoa blancoi** (Rolfe) *Crudia blancoi* Rolfe, Journ. Linn. Soc. Bot. 21:309. 1884; Vidal, Rev. Pl. Vasc. Filip. 118. 1886. *Crudia spicata* Blanco, Fl. Filip. ed. 2, 261. 1845; ed. 3, 2:121. t. 244; F.-Vill. Nov. App. 71. 1880; Vidal, Sinopsis, Atlas, t. 43. f. B. 1883, non Willd.

A medium-sized or large tree with nearly glabrous leaves and axillary racemes of white flowers, 10 to 15 cm. long. Branches grayish brown, glabrous. Leaves alternate, 15 to 20 cm. long, the rachis glabrous; leaflets lanceolate-ovate, acuminate, alternate, 5 to 9 cm. long, 2 to 3.5 cm. wide, the base inequilateral, on one side rounded, on the other acute, the apex blunt acuminate, glabrous above, sparingly pubescent beneath; nerves 8 or 10 on each side of the midrib, spreading, anastomosing, the reticulations lax; petiolules glabrous, 2 to 3 mm. long. Racemes rather densely flowered, the rachis and pedicels more or less pubescent, the latter 5 to 6 mm. long. Sepals 4, reflexed, ovate, acute, 4 mm. long, 2.5 to 3 mm. wide. Stamens 10, the filaments 7 mm. long. Ovary densely hirsute-pilose, 2-ovuled; style glabrous, 2 mm. long. Pod oblong, compressed, 3 to 4 cm. long, 1.5 to 2 cm. wide, densely ferruginous pubescent. Seed usually solitary, compressed, 4 mm. in diameter, dark, shining.

This species is represented by Nos. 2661 and 2968 Ahern's collector, Bosoboso, Province of Rizal, Luzon, February, 1905, and the above description is here given to supplement that of Blanco, which is the only description of the species previously published, and which is imperfect in many details.

**Desmodium quinquepetalum** (Blanco) *Cytisus quinquepetalus* Blanco, Fl. Filip. ed. 1, 598. 1837. *Cajanus quinquepetalus* Blanco, l. c., ed. 2, 417. 1845; ed. 3, 2:397. *Desmodium cephalotes* F.-Vill. Nov. App. 61. 1880; Merr. Govt. Lab. Publ. 27:38. 1905, non Wall. § *Dendrolobium*.

A shrub 2 to 4 m. high with trifoliolate leaves, the leaflets broadly lanceolate, acuminate, strongly veined beneath, axillary and terminal racemose panicles, the flowers disposed in small umbels at the apices of the short branches, and fulvous pubescent 6 to 7 jointed pods 3 to 4 cm. long. Branches slender, brown or light gray, glabrous, lenticellate, the branchlets somewhat pubescent. Leaves alternate, the rachis pubescent, becoming glabrous, the petiole 1 to 1.5 cm. long, swollen at the base; stipels lanceolate-subulate, about 2 mm. long; leaflets submembranous, 3 to 7 cm. long, 1 to 3 cm. wide, acuminate, narrowed somewhat below to the acute or rounded base, glabrous and shining above, paler beneath and pubescent with appressed or spreading soft white hairs, but not densely so; nerves rather obscure above, very prominent beneath, ascending, about 9 on each side of the midrib; petiolules pubescent, about 2 mm. long. Inflorescence of narrow, pubescent, racemose axillary and terminal panicles 5 to 7 cm. long, the branchlets very short, each terminated by from 3 to 8 flowers umbellately disposed. Flowers white, about 1.8 cm. long, the pedicels densely pubescent, 5 or 6 mm. long, the calyx subtended by two opposite, deciduous, ciliate, ovate, bracteoles about 2 mm. long. Calyx appressed fulvous pubescent, 4-lobed, the tube about 4.5 mm. long, scarcely narrowed below, the lobes reflexed, broadly lanceolate, subequal, short acuminate, 5 mm. long. Corolla white, the standard elliptical, the apex rounded, retuse, 1.7 cm. long, about 1 cm. wide, narrowed below to the slender claw; wings about as long as the standard, 5 mm. wide, the claws long, slender; keel about 14 mm. long, incurved above, nearly 1 cm. wide (when spread). Anthers

oblong, 1 mm. long. Ovary narrowly oblong, pubescent; style pubescent below. Pod 3 to 4 cm. long, 5 mm. wide, the joints 6 to 7, about 5 mm. long.

Specimens examined all from the Province of Rizal, Luzon: San Mateo (1841 Ahern's collector), September, 1904 (flower); Bosoboso (2154 Ahern's collector), December, 1904 (fruit); also a specimen collected by Rufino Marave, presumably from near Manila, December, 1895 (fruit). Sterile specimens were observed by the author along streams near Maragondon, Cavite Province, Luzon, July, 1905.

These specimens agree perfectly with Blanco's description of *Cytisus quinquepetalus*, and accordingly his specific name is retained for the species. His material was from Mandalayon, Province of Rizal, Luzon, flowering in May, from which it seems probable that the species flowers twice each year. *Desmodium cephalotes* Wall., to which F. Villar referred Blanco's species, and which identification was previously accepted by the author, is a British Indian species, which does not extend to the Philippines. Specimens of this interesting species were sent to Dr. D. Prain, Director of the Royal Botanic Garden, Calcutta, who states that it is a very distinct undescribed species of *Desmodium*, represented at Kew by Nos. 245, 246, 247, and 1063 Vidal, and Nos. 2368, 2389, and 2370 Loher, but although admitted at Kew as a distinct species, it had never received a name. T., *Paispis*.

***Ormosia paniculata*, sp. nov.**

A small tree with odd-pinnate leaves about 30 cm. long, the inflorescence an ample, terminal, densely ferruginous-pubescent panicle nearly as long as the leaves. Branches thickened, densely ferruginous pubescent. Leaves alternate, the leaflets 7, the rhachis, petiolules, and under surface of the leaflets ferruginous pubescent. Leaflets elliptical oblong, 9 to 13 cm. long, 3.5 to 5 cm. wide, the base acute, the apex prominently acuminate, the acumen apiculate, the upper surface with few scattered hairs, the midrib densely ferruginous pubescent; nerves about 11 pairs, ascending; petiolules densely ferruginous-pubescent, the leaf rhachis about 20 cm. long, extending beyond the terminal pair of leaflets. Panicles many flowered, the branches ascending, the longer primary ones 15 cm. in length. Flowers fragrant, creamy white, about 2 cm. long, the pedicels about 7 mm. long. Calyx campanulate, 1.5 cm. long, densely ferruginous-pubescent outside, the lobes also pubescent inside, ovate, acute, slightly longer than the tube, the two upper teeth somewhat larger than the three lower ones. Corolla exceeding the calyx, about 1.6 cm. long, the standard suborbicular, about 15 mm. across. Stamens 10, apparently all fertile, glabrous, unequal in length, the longer ones 1.5 cm. long; anthers 1.4 mm. long. Ovary pubescent, 2-ovuled, its pedicel 2 to 3 mm. long.

Type specimen: Lamao River, Province of Bataan, Luzon (2028 Borden), October, 1904.

A tree reaching a height of about 20 m. and a diameter of 30 cm. growing on forested slopes at an altitude of about 60 m. about the sea. The second species of the genus to be discovered in the Philippines, the other, *Ormosia calavensis* Blanco, being also endemic.

**Pterolobium membranulaceum** (Blanco) *Mimosa membranulacea* Blanco, Fl. Filip. ed. 1, 739. 1837; *Reichardia pentapetala* Blanco, l. c., ed. 2, 233. 1845; ed. 3, 2:71. *Pterolobium indicum* F.-Vill. Nov. App. 70. 1880; Vidal, Sinopsis, Atlas, t. 42. f. G. 1883; Rev. Pl. Vasc. Filip. 114. 1886; Merrill, Govt. Lab. Publ. 27:41. 1905, non A. Rich.

A scandent shrub with evenly bipinnate leaves 7 to 18 cm. long, with 6 to 10 jugate pinnæ, 6 to 8 jugate leaflets, and 20 to 60 flowered racemes arranged in terminal and axillary, lax panicles, the winged fruits 5 cm. long. Branches dark reddish brown or grayish, glabrous, or more or less pubescent when young. Leaves alternate, the common rachis densely ferruginous pubescent, becoming nearly glabrous, with a pair of retrorse spines at the attachment of each pair of pinnæ; pinnæ 4 to 5 cm. long, opposite, curved, spreading or reflexed, the rachis pubescent; leaflets 6 to 8 pairs, sessile, about 1 cm. long, 5 to 6 mm. wide, oblong, or the terminal pair obovate-cuneate, glabrous and shining on both surfaces, the base strongly inequilateral, the apex rounded or obtuse, often slightly retuse, the margins irregularly obscurely crenate. Panicles rather strongly ferruginous pubescent, slender, 15 to 20 cm. long, the branches few, 6 to 14 cm. long, the flowers scattered, the pedicels slightly pubescent, slender, 3 to 4 mm. long; bracteoles narrowly lanceolate, long acuminate, deciduous, 2.5 to 3 mm. long. Flowers about 4 mm. long. Calyx glabrous, the lobes oblong, acute, 3 to 4 mm. long. Petals similar to the calyx lobes and about as long. Stamens 10; filaments densely woolly at the base. Ovary glabrous. Pod glabrous, 5 cm. long including the wing, the seed-bearing portion ovate-rhomboidal, 1.5 cm. long, 1 cm. wide, the membranous wing 4 cm. long, 1.3 cm. wide.

Specimens examined, all from Rizal Province, Luzon: San Mateo (1837 Ahern's collector), September, 1904 (flower); Bosoboso (1984 Ahern's collector), November, 1904 (fruit).

A species apparently related to *Pterolobium indicum* A. Rich., with which it has previously been identified, but quite distinct from it in its inflorescence, fewer leaflets and shorter pods. The specimens on which Blanco based his species were from Tagudin and Ago, Province of Ilocos Sur, Luzon, and although he apparently erroneously describes it as having but five stamens, yet manifestly his description applies to the species as here redescribed. The reduction of *Mimosa membranulacea* Blanco to *Pterolobium indicum* A. Rich., was previously accepted by the author on the assumption that Vidal's identification of his Luzon material as *Pterolobium indicum* was correct. Dr. D. Prain, to whom specimens were sent, pronounced it a distinct species and accordingly Blanco's name is here adopted.

**Vigna pilosa** (Roxb.) Baker in Hook. f. Fl. Brit. Ind. 2:207. 1876; Prain in King, Journ. As. Soc. Beng. 66<sup>2</sup>:53. 1897. *Dolichos pilosus* Roxb.; *Phascolus difformis* Wall.

Caloocan, Province of Rizal, Luzon (3674 Merrill), November, 1903. A species not previously recorded from the Philippines, growing in bamboo thickets, the specimen identified by Prain. British India to Indo-China and the Andaman Islands.

## RUTACEÆ.

***Evodia semecarpifolia*, sp. nov.**

A shrub 3 to 5 m. high with trifoliolate glabrous leaves and axillary, short, narrow, inflorescence 3 to 5 cm. long, the flowers 4-merous. Branches light gray, striate, glabrous, the younger parts more or less fulvous pubescent. Leaves opposite, the petioles 3 to 8 cm. long, somewhat pubescent, becoming glabrous; leaflets usually pale when dry, subcoriaceous, glabrous throughout except the slightly pubescent midrib beneath, obovate to obovate oblong, obtuse or obscurely broadly acuminate, narrowed below to the cuneate base, 11 to 18 cm. long, 5 to 8 cm. wide; primary nerves prominent beneath, spreading-ascending, anastomosing, 9 to 11 on each side, the reticulations lax; petiolules of the lateral leaflets 3 to 4 mm. long, that of the terminal leaflet about 1 cm. long. Panicles axillary, the branches few, densely flowered, 1 cm. long or less, spreading, the axis and branches densely pubescent. Flowers about 2.5 mm. long. Calyx cinereous pubescent, the lobes ovate, acute, about 1 mm. long. Petals 4, elliptical ovate, 2 mm. long, 1.2 mm. wide, acute, glabrous. Stamens 4, glabrous, included; filaments 1 mm. long; anthers 0.4 mm. long. Ovary densely pubescent, 4-celled. Stigma 4-lobed. Cocci slightly pubescent, ovoid, slightly compressed, about 3 mm. in diameter.

Type specimen: Baguio, Province of Benguet, Luzon (5868 Elmer), March, 1904; also from the same locality, a specimen collected by Mrs. Pond, same date and No. 1168 Merrill January, 1903, with imperfect fruit.

A shrub in thickets in ravines and on bluffs near the river, the leaflets similar in appearance to the leaves of some Philippine species of *Semecarpus*.

***Evodia dubia*, sp. nov.**

A shrub 2 to 3 m. high with opposite trifoliolate leaves, the leaflets subcoriaceous, 5 cm. long or less, and axillary, peduncled, few flowered cymes. Branches light gray, glabrous, striate, the ultimate branchlets densely cinereous-fulvous pubescent. Petioles 1 cm. long or less, pubescent, leaflets shining, glabrous above, sparingly pubescent beneath, at least on the midrib, becoming glabrous, lanceolate to elliptical lanceolate, the base acute, the apex broadly blunt acuminate, apiculate, rarely retuse, 3 to 5 cm. long, 1 to 1.5 cm. wide; primary nerves about 10 on each side of the midrib, obscure, scarcely more prominent than the reticulations; petiolules 1 to 2 mm. long, pubescent, becoming nearly glabrous. Cymes axillary, very few flowered, peduncled, cinereous pubescent, about 3 cm. long, the peduncle slender, 1 cm. long or longer. Flowers yellowish white, 2 mm. long. Calyx slightly pubescent, the lobes acute, about 1 mm. long. Petals 4, glabrous, ovate, acute, 2 mm. long. Stamens 4, glabrous, 1.5 mm. long, included. Disc large, fleshy, glabrous. Cocci 4 from each flower, coriaceous, reticulate, glabrous, compressed, 4 to 5 mm. long, 3 mm. wide, each with a single seed.

Baguio, Province of Benguet, Luzon (939 Barnes), May, 1904 (flower); (5992 Elmer), same locality, March, 1904 (fruit).

A species referred to *Evodia* with some doubt, as no trace of the ovary could be found in the flowers examined.

**Melicope luzonensis** Engler, in Engl. und Prantl, Nat. Pflanzenfam. 3<sup>4</sup>: 122. 1897. nomen; Perk. Frag. Fl. Philip. 161. 1905.

The following synonymy should be added: *Fagara octandra* Blanco, Fl. Filip. ed. 1, 67. 1837; ed. 2, 48. 1845; ed. 3, 1:90; Merrill, Govt. Lab. Publ. 27:27. 1905, non Linn. *Melicope ternata* Vid. Cat. Pl. Prov. Manila 21. 1880; Sinopsis, Atlas, t. 24. f. A. 1883; F.-Vill. Nov. App. 34. 1880, non Forst.

A specimen of Cuming's No. 1819 exists in our herbarium, and the species is also represented by the following material: Luzon, Province of Benguet (6282 Elmer), May, 1904; Province of Rizal, Bosoboso (2787 Merrill), July, 1903. Mindoro, Pola (2397 Merrill), May, 1903. Island of Ticao (1069 Clark), May, 1904. Blanco's description applies very closely to the above species, and specimens from the same province from which he received his material bear the same Tagalog name, *Matang arao*.

**Melicope obtusa**, sp. nov.

An entirely glabrous shrub or small tree with opposite trifoliate leaves, the small leaflets obtuse, retuse, the inflorescence axillary. Branches grayish brown, glabrous. Petioles 1 to 2 cm. long; leaflets subcoriaceous, obovate-elliptical to oblong elliptical, 3 to 6 cm. long, 1 to 2.5 cm. wide, usually three, or by abortion two, rarely only one, gradually narrowed to the acute base, the apex rounded or obtuse, usually more or less retuse; nerves 7 to 8 on each side of the midrib, not prominent, anastomosing, the reticulations lax; petiolules 3 to 4 mm. long, that of the terminal leaflet scarcely exceeding those of the lateral leaflets. Panicles racemose, 1 to 3 cm. long, the branches spreading, less than 1 cm. long, many flowered, the flowers yellowish white, 3.5 mm. long, their pedicels about 2 mm. long, fasciculate. Calyx glabrous, the lobes short, rounded. Petals 4, membranous, glabrous, oblong ovate, 3 mm. long, 1.5 mm. wide, acute or obtuse. Stamens 8, all fertile, unequal, four with filaments 3 mm. long, the alternating ones about 2 mm. long. Ovary subglobose, glabrous.

Type specimen: Baguio, Province of Benguet, Luzon (6370 Elmer). May, 1904.

**Paramigyna longipedunculata**, sp. nov.

A scandent shrub, unarmed or with few short axillary spines, with pubescent branches and axillary solitary or fascicled flowers about 2 cm. long, the peduncles densely pubescent, 2.5 to 3 cm. long. Branchlets dark green when dry, densely pubescent, the solitary spines, when present, stout, pubescent, about 5 mm. long. Leaves 7 to 10 cm. long, 5 to 7 cm. wide, 1-foliate, the joint obsolete or nearly so, elliptical-ovate, the apex abruptly acute or broadly short acuminate, the base rounded, the margins slightly crenate towards the apex, the upper surface glabrous, shining, the lower surface pubescent throughout, the midrib densely so; petioles 8 to 10 mm. long, densely pubescent. Flowers 1 to 3, fasciculate, white. Calyx cupular, densely pubescent, about 7 mm. in diameter, 5-lobed, the lobes erect, broadly ovate, 2.5 mm. long. Petals 5, linear-oblong, obtuse, 2 cm. long, 5 mm. wide, thick, pubescent on the outside. Stamens 10, the filaments pubescent, about 12 mm. long, the anthers 5 mm. long. Ovary 5-celled; style about 1.5 cm. long, densely pubescent.

Type specimen: Bosoboso, Province of Rizal, Luzon (2146 Ahern's collector), December, 1904. A species apparently closely related to *Parasmigyna monophylla* Wight, differing in its longer peduncles and other characters. This is undoubtedly the species credited to the Philippines by F.-Villar<sup>1</sup> and Vidal<sup>2</sup> as *P. monophylla*.

## SIMARUBACEÆ.

***Ailanthus philippinensis***, sp. nov. *Ailanthus pongelion* Blanco, Fl. Filip. ed. 1, 380. 1837; ed. 2, 286. 1845; ed. 3, 2:134, non Gmel.; *A. malabarica* F.-Vill. Nov. App. 349. 1883, non DC.; *A. moluccana* Merr. Forestry Bureau Bull. 1:27. 1903, non DC. § *Euailanthus*.

A large tree, reaching a height of about 40 m. with nearly glabrous, 12 to 16 jugate leaves, the leaflets falcate, oblong-lanceolate, the base strongly inequilateral, the apex acuminate, with a single prominent gland at the apex on the lower surface, the fertile panicles, in anthesis, shorter than the leaves, the samara 5 cm. long. Branches thickened, brown, the leaf scars large and prominent. Leaves alternate, odd pinnate, 50 to 70 cm. long, the rachis minutely pubescent or nearly glabrous, often somewhat pruinose; leaflets entire, opposite, or subopposite below, 9 to 15 cm. long, 2.5 to 4 cm. wide, usually slender acuminate, the tip of the acumen somewhat dilated by the prominent gland on the lower surface, base strongly inequilateral, the upper half rounded or cordate, the lower half acute, glabrous on both surfaces, or very sparingly pubescent on the midrib below, shining above, dull beneath; nerves 14 to 16 on each side of the midrib; petiolules slender, about 1 cm. long. Fertile panicles slender, in anthesis 25 cm. long or less, the rachis and branches more or less ferruginous pubescent, the latter spreading, 3 cm. long or less, the panicles much elongated in fruit, 40 cm. long or more. Fertile flowers yellow, odorless, 4 to 5 mm. long, their pedicels 3 to 4 mm. long. Calyx small, slightly pubescent, the teeth acute. Petals glabrous, lanceolate, acute, 4.5 mm. long, about 1.5 mm. wide, somewhat concave. Stamens included, 10: filaments 3 mm. long; anthers about 0.5 mm. long. Ovary glabrous, the carpels 3, free, flattened, oblong, obtuse, 2.5 mm. long; styles united, 1.5 mm. long; stigma 3-lobed. Samara flat, oblong, glabrous, 5 cm. long, 2.5 cm. wide, the wings thin, obtuse, the seed in the middle, circular.

Specimens examined, all from Luzon: Province of Bataan (2719 Borden), February, 1905 (flower); Province of Tayabas, Pitogo (2137 Merrill), April, 1903 (fruit); Province of Camarines Sur, Pasacao (93 Ahern), March, 1902 (fruit).

On securing flowering specimens of this plant and examining the same it was at once evident that the specimens were referable to neither *Ailanthus malabarica* as determined by F.-Villar, nor to *A. moluccana* as previously determined by the author. *Ailanthus philippinensis* is apparently most closely related to *A. glandulosa* Desf., the only species mentioned by Engler in his section *Euailanthus*.

<sup>1</sup> Nov. App., 37, 1880.

<sup>2</sup> Rev. Pl. Vasc. Filip., 77, 1886.

***Brucea luzonensis*** Vidal, Sinopsis, Atlas, 19 t. 21. f. B. 1883.

The original description of this species, which is not listed in Index Kewensis, nor in the first or second supplement to that work, is as follows: "Arbol. Hojas con 4 pares de hojuelas festoneado-aserradas, obliquas, pecioladas, finamente vellosas en el envés, 0.1 m. de longitud. Flores con cáliz y corola apenas empizarradas en la base; pétalos lineales, verdes, reflexos en el ápice; anteras rojas. Inflorescencia en racimos axillares, cortos. Afine á la *B. glabrata* Decne., de la cual difiere en número y tamaño de las hojuelas asi como en la inflorescencia. Hallada con flores en Enero." Vidal's specimens were from Mariveles, Province of Bataan, Luzon, but he does not mention the material in his Revision.

The validity of this species is very doubtful, it being apparently only a form of *Brucea sumatrana* Roxb. It is apparently represented by No. 987 Cuming, in Herb. Govt. Laboratory, and the following specimens, all from Luzon: Province of Bataan (181, 480, Whitford), May, July, 1904; (2608, 2799, 2800 Meyer), February, 1904, and March, 1905; (1766, 2750 Borden), August, 1904, and March, 1905; (6165 Leiberg), July, 1904; (6786 Elmer), November, 1904. Province of Rizal, Bosoboso (1151 Ahern's collector), June, 1904. This species is common at Mount Mariveles, growing in the forests at from 30 to 1,000 m. above the sea, the material cited above being exceedingly variable, especially in vegetative characters. No. 987 Cuming is cited by Turczaninow<sup>1</sup> as being very close to *Brucea sumatrana*, and half way between that species and *B. glabrata* Decne. Apparently typical *B. sumatrana* Roxb. is represented by No. 512 Ahern, Surigao, Mindanao, and No. 30 DeVore and Hoover, Island of Basilan, but *Brucea luzonensis* Vidal seems to gradually pass into the former species. If the Luzon form is to be retained as distinct, Vidal's specific name should be adopted, but I am of the opinion that abundant material will only more closely connect the species with *Brucea sumatrana* Roxb.

## BURSERACEÆ.

***Canarium perkinsæ***, sp. nov. *Canarium ovatum* Perk. Frag. Fl. Philip. 94. 1904, non Engl.

• A tree about 15 m. high, with 6 to 7 jugate, glabrous or nearly glabrous leaves, membranous, oblong, inequilateral, caudate acuminate leaflets, glabrous, long peduncled racemes 8 to 18 cm. long, and 3-merous, cylindrical flowers 10 to 11 mm. long. Branches grayish brown, striate, scarcely thickened, glabrous, the tips slightly pubescent with scattered ferruginous hairs. Leaves alternate, 20 to 28 cm. long, the rachis at first slightly pubescent, becoming glabrous, 15 to 20 cm. long, the internodes about 2 cm. long; leaflets opposite, glabrous, shining on both surfaces, oblong, abruptly caudate acuminate, the acumen slender, blunt, often 1.5 cm. long, the margins entire, the base strongly inequilateral, the lamina on one side of the midrib acute, on the other side much broader usually rounded, 7 to 9 cm. long, 2 to 3 cm. wide; nerves 9 to 12 on each side of the midrib,

<sup>1</sup> Bull. Soc. Nat. Mosc. 31: 445.

not very prominent; petiolules slender, glabrous, or slightly pubescent, about 5 mm. long. Racemes axillary, their peduncles often 10 cm. long, the flowers borne in fascicles of from 2 to 5, the pedicels about 3 mm. long, the bracteoles very small. Calyx glabrous, about 4 mm. long, 3-lobed, the lobes broadly ovate, obtuse, about 2 mm. long. Petals 3, imbricate, oblong, acute, glabrous, 10 to 11 mm. long, 4 mm. wide. Stamen 6, glabrous, the filaments 6 mm. long, slender, united below into a short 1 mm. long tube, which is outside of and entirely free from the disc; anthers oblong lanceolate, 2.5 mm long. Disc fleshy, 3.5 mm. long, channeled, truncate, irregularly toothed, pubescent outside, hirsute within and on the margin. Ovary rudimentary, pilose hirsute.

Specimens examined, all from Mindoro: Pola (2472 Merrill), June, 1903; Baco River (121 McGregor), May, 1905.

No. 2472 Merrill was identified by Dr. Perkins as *Canarium ovatum* Engler, but our specimen agrees with neither the description of the species nor with Cuming's No. 904, on which the species was based, a specimen of which is in the herbarium of this Bureau. *Canarium perkinsæ* is not at all closely related to *C. ovatum*, differing in its racemose, elongated, not paniculate inflorescence, very different flowers, much smaller and very differently shaped leaflets, shorter petiolules, and many other characters.

**Canarium villosum** (Blume) F.-Vill. Nov. App. 40. 1880; Vidal, Sinopsis, Atlas, 19. t. 28. f. A. 1883. *Pimela villosa* Blume, Mus. Bot. Lugd. Bat. 1:223. 1850. *Canariopsis villosa* Miq. Fl. Ind. Bat. 1<sup>2</sup>:652. 1859; Vidal, Cat. Pl. Prov. Manila. 22. 1880. *Canarium commune* Blanco, Fl. Filip. ed. 1, 791. 1837, non Linn. *Canarium pimela* Blanco, l. c., ed. 2, 545. 1845; ed. 3, 3: 201; Naves l. c., ed. 3, pl. 353. 1880, non Koen. *Canarium cumingii* Engler in DC. Monog. Phan. 4:132. 1883; Vidal, Phan. Cuming. Philip. 101. 1885; Rev. Pl. Vase. Filip. 79. 1886.

Luzon: Province of Zambales, Botolan (2936 Merrill), May, 1903, Z., *Dulit*; Subic (1767 Merrill), April, 1903, T., *Pagsainguin*; (858 Maule), May, 1904, T., *Palasanguin*. Province of Bataan, Lamao River, Mount Mariveles (125 Barnes), January, 1904, T., *Pagsainguin*; (2789 Meyer), February, 1905; (74, 376 Whitford), April, June, 1904, T., *Pagsainguin*; (2556 Merrill), June, 1903, T., *Pagsainguin*; 697, 1284, 1311, 1312, 1314, 1319, 1554, 1558, 1564, 1676 Borden), July, August, 1904, all T., *Pagsainguin*; Mariveles (788 Ahern), February, 1901, T., *Pagsainguin*. Province of Pangasinan, Balungao (2864 Merrill), July, 1903, H., *Anteng*. Rizal Province, Bosoboso (1145 Ahern's collector), June, 1904, T., *Pachaingen*; Antipolo (1731 Merrill), March, 1903, T., *Jatsahengin*. Negros, Tanhay (Jose Muñoz), 1904, V., *Lonay*. Masbate (3083 Merrill), August, 1903.

With view to the possible identification of *Canarium commune* Blanco, much material has been collected with reference to the native names cited by Blanco under this species, and the physical characters of the tree as described by him. Blanco's description, although imperfect, applies closely to the material cited above, the native names are the same or similar to those cited by him, and are almost invariably applied to this tree, which is very common in the lower hill forests of central Luzon, and which yields

all or nearly all the dark-colored, fragrant pitch mentioned by Blanco, used by the natives for torches and for calking boats.

The specific name *villosa* was adopted by Blume because the two names previously used by Blanco were untenable, he having erroneously identified the species, first with *Canarium commune* Linn., and later with *Canarium pimela* Koen., neither of these species extending to the Philippines. Miquel transferred Blume's specific name to *Canariopsis*, and F.-Villar first transferred the name to *Canarium*, and accordingly should be cited as the authority. Regarding the identity of *Canarium cumingii* Engl., with *Canarium villosum* (Blume) F.-Vill., there can be little doubt, and Engler in his monograph of the *Burseraceae*, judging from a single number of Cuming's collection, with no data as to the native names or physical properties of the tree, suggested that perhaps *Pimela villosa* Blume was referable to *Canarium cumingii*.

In working over the *Canarium* material in the Herbarium of this Bureau, it seems evident that it will be necessary to reduce several other species to *Canarium villosum*, a matter which can be determined by some future monographer. The species are mentioned below.

*Canarium luxurians* Eng. forma *monstrosa* Engl. in DC. Monog. Phan. 4:146.

This species and form was based on a single number of Cuming's Philippine collection, and is represented by the following specimens in the herbarium of this Bureau:

Philippines: No. 796 Cuming (cotype), Luzon, Province of Rizal, Boso-boso (2821 Merrill), July, 1903, T., *Pachainguin*; same locality (1861 Ahern's collector), September, 1904, T., *Palasahinguin*; Tanay (2348 Merrill), May, 1903, T., *Pachaingin*. Province of Tayabas, without locality. native collector, November, 1904, T., *Pagsanguin*. Guimaras Island (282 Gammill), January, 1904, V., *Salong*.

Engler has placed *Canarium luxurians monstrosa* in the section *Triandra*, while *C. cumingii* = *C. villosum*, is in the section *Eucanarium*. Perkins<sup>1</sup> under *Canarium carapifolium*, has suggested that the section *Triandra* must be abandoned, as she found flowers of *Canarium carapifolium* with 3, 4, and 6 stamens. It is here suggested that *Canarium luxurians monstrosa* is only a form of *Canarium villosum*, as the vegetative characters and native names are the same, and that the peculiar, dense, many branched inflorescence of the former may be due to the work of insects or to some parasitic fungus. I have found the same abnormal type of inflorescence on *Diospyros* (448 Ahern's collector; 1654 Merrill) Province of Rizal, Luzon. Normal flowers of *Canarium luxurians* forma *monstrosa* have not been found.

*Canarium juglandfolium* Perk. Frag. Fl. Philip. 93. 1904. The type of this species is No. 1974 Merrill, Subic, Province of Zambales, Luzon, T., *Pagsainguin*.

*Canarium thyrsoideum* Perk. l. c., 97. No. 2119 Merrill, Pitogo, Province of Tayabas, Luzon, April, 1903, T., *Anangi*. Pola, Mindoro (2256 Merrill), May, 1903, T., *Pasahinkin*.

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<sup>1</sup> Frag. Fl. Philip. 92.

*Canarium stachyanthum* Perk. l. c., 97. No. 1748 Merrill, Subic, Province of Zambales, Luzon, April, 1903, T., *Pagsainguin*. Abonabon, Mindoro (2177 Merrill), May, 1903, T., *Pagsainguin*.

The above three species are apparently merely forms of *Canarium villosum* (Blume) F.-Vill., as I have failed to find characters in the specimens or in the descriptions by which they can be satisfactorily distinguished from that species.

*Canarium villosum* (Blume) F.-Vill., as here interpreted, includes *Canarium commune* and *C. pimela* Blanco, *C. cumingii* Engl., and apparently also *C. luxurians monstrosa* Engl., *C. juglandifolium* Perk., *C. thyrsoideum* Perk., and *C. stachyanthum* Perk., should be referred to that species. Regarding the constancy of leading the Tagalog name of the species, *Palsahihin*, as cited by Blanco, and variations of it, such as *Pagsainguin*, *Pachanguin*, *Palsahinguin*, etc., I find them applied only to *Canarium villosum* (Blume) F.-Vill., and to the species mentioned above which I believe to be only synonyms of that species. This native name does not appear in any of its forms on any of the other specimens of *Canarium* representing other species than those discussed above (about 70 sheets), at present in the herbarium of this Bureau.

***Santiria nitida*, sp. nov.**

A tree 15 to 30 m. high, with entirely glabrous coriaceous, shining usually 3 jugate leaves, short cinereous-puberulous paniculate inflorescence, the flowers ovoid, 3 to 4 mm. long, the stamens free from the glabrous disc, not united in a tube. Branches light brown or grayish, glabrous. Leaves 20 to 30 cm. long, 3, rarely 4-jugate, the rachis glabrous, 10 to 17 cm. long; leaflets opposite, long petioled, elliptical ovate to elliptical lanceolate, coriaceous, glabrous and shining on both surfaces, 8 to 12 cm. long, 2.5 to 4.5 cm. wide, the apex rather strongly acuminate, the acumen blunt, the base more or less inequilateral, acute, the margins entire; nerves 9 to 12 on each side of the midrib, spreading, curved upwards, prominent, anastomosing, the reticulations distinct beneath; petiolules glabrous, 1 to 1.8 cm. long, that of the terminal leaflet often 3 cm. long. Panicles 5 to 7 cm. long, terminal, densely cinereous puberulous throughout, the primary branches 2 cm. long or less, the tertiary ones very short. Flowers white, very fragrant, their pedicels about 2 mm. long. Calyx densely cinereous puberulent, cup shaped, truncate or very obscurely 3-toothed, 1.5 mm. long. Petals cinereous puberulous outside, 3, free, broadly orbicular-ovate, 3 to 3.5 mm. long, 3 to 4 mm. wide, acute. Stamens 6, inserted outside the disc, free from the disc and from each other, the glabrous filaments 1.5 mm. long, the anther 0.8 mm. long. Disc glabrous, fleshy, about 10-lobed. Ovary pubescent, 3-celled, not exceeding the fleshy disc. Drupe (immature) ovoid or ellipsoid, 2 to 2.5 cm. long, 1.5 cm. thick, slightly compressed on one side but not triangular, rugose when dry, glaucous, glabrous, 1-celled.

Luzon: Province of Bataan, Lamao River, Mount Mariveles (2786 Meyer), February, 1905 (flower); (808 Borden) May, 1904 (fruit); also the following sterile numbers: (517, 519 Barnes), (638, 2912 Borden). Tayabas Province (Infanta), (768 Whitford) September, 1904 (fruit).

A tree growing in the hill forests, reaching a diameter of 45 cm., extending from an altitude of 100 m. to about 700 m. above the sea. The bark exuding a very small amount of resin when cut. T., *Alupag macsin*.

Two species of this genus, *Santiria maingayi*, and *S. laevigata* are credited to the Philippines by F.-Villar.<sup>1</sup> The former is *Canarium gracile*, according to Vidal<sup>2</sup> where he cites the Tayabas specimen, which Villar quotes as having seen in Vidal's herbarium. The latter is undeterminable, but F.-Villar's identification is undoubtedly erroneous.

## MELIACEÆ.

### *Aglaiia apoana*, sp. nov. § *Hearnia*.

A tree about 8 m. high, with unequally pinnate, 3-jugate leaves, the leaflets with a subprominent marginal nerve, and lax panicles about as long as the leaves, densely ferruginous-stellate pubescent. Branches densely stellate-ferruginous pubescent. Leaves alternate, about 30 cm. long, the petiole and rachis 12 cm. long, densely stellate-ferruginous pubescent; leaflets membranous, elliptical-oblong to broadly oblong-lanceolate, opposite, short acuminate, the nerves prominent beneath, anastomosing and forming a marginal nerve about as prominent as the lateral nerves, the reticulations lax, the midrib on both surfaces stellate-ferruginous pubescent, the lateral nerves and lamina with few scattered stellate hairs, becoming glabrous or nearly so; terminal leaflet 17 cm. long, 5 cm. wide, the base acute, nerves about 23 on each side of the midrib; lateral leaflets rounded or subcordate at the base, 3 to 3.5 cm. wide, the lower ones 5 to 6 cm. long, with about 12 pairs of nerves, the upper ones 13 cm. long, with about 18 pairs of nerves; petiolules stout, densely ferruginous-stellate pubescent, 3 to 4 mm. long. Panicles lax, about 30 cm. long, densely ferruginous-stellate pubescent, the branches spreading, the lower ones 15 cm. long, the branchlets densely flowered, 3 cm. long or less. Flowers small, the pedicels about 1 mm. long. Calyx 5-cleft, densely stellate pubescent, the teeth acute. Petals 5, free, glabrous, elliptical, obtuse, 1.3 mm. long. Staminal tube glabrous, the margin slightly crenate. Stamens 5, borne on the margin of the tube, the anthers 0.3 mm. long. Ovary stellate-pubescent.

Type specimen collected by E. B. Copeland, without number, Mount Apo, District of Davao, Mindanao, October, 1904. A species apparently related to the Bornean *A. villosa*, ex. description, but differing from that species in its 3-jugate leaves, smaller, membranous, more numerous nerved leaflets, and other characters.

### *Aglaiia glomerata*, sp. nov.

A tree about 15 m. high, with 3-jugate, more or less stellate-pubescent leaves and axillary panicles one-half to two-thirds as long as the leaves, the minute flowers glomerate on the panicle branchlets. Branches light gray, striate, glabrous, the younger parts densely rufous-stellate-pubescent.

<sup>1</sup> Nov. App. 40. 1880.

<sup>2</sup> Rev. Pl. Vasc. Filip. 80. 1886.

Leaves 15 to 20 cm. long, the rachis with the petiole 8 cm. long, densely stellate-rufous-pubescent like the younger branches and inflorescence; leaflets oblong to broadly oblanceolate, 7 to 12 cm. long, 2.5 to 4 cm. wide, sharp acuminate, the base acute or subobtuse, often inequilateral, the upper surface glabrous except for few stellate hairs on the midrib and nerves, the lower surface pale, uniformly, but not densely ferruginous-stellate-pubescent, the midrib more densely so; nerves 12 to 14 on each side of the midrib; petiolules densely rufous-stellate-pubescent, about 2 mm. long, that of the terminal leaflet about 5 mm. long. Panicles 10 cm. long, the lower branches 4 cm. long, the upper ones gradually shorter, the branchlets densely glomerate flowered throughout. Flowers short pedicelled yellowish brown, fragrant. Calyx stellate-pubescent, 5-cleft, the teeth acute. Petals glabrous, obovate to oblong-obovate, obtuse, 1 mm. long. Staminal tube somewhat shorter than the petals, obscurely 5-toothed, the stamens 5, inserted near the apex of the tube, included, the anthers about 0.2 mm. long.

Type specimen: Island of Masbate (2524 Clark), October, 1904. A species said by the collector to be common in the dense hill forests at an altitude of about 100 m. above the sea, apparently related to *Aglaia palembanica* Miq., which has been reported from the Philippines by Perkins,<sup>1</sup> but differing from that species in its 3-jugate leaves, larger leaflets, smaller panicles, and longer petals.

***Aglaia laevigata*, sp. nov.**

A small or medium sized, tree, nearly glabrous throughout, the leaves and inflorescence turning black when dry, with 5 to 6 jugate leaves, and long peduncled panicles nearly equaling the leaves, the flowers rather long pedicellate, spicately disposed. Branches brown or black, lenticellate, when young sparingly lepidote, becoming glabrous. Leaves 20 to 28 cm. long, the rachis with the petiole 12 to 18 cm. long, black, glabrous; leaflets lanceolate to ovate lanceolate, dark when dry, entirely glabrous, subopposite, the apex acuminate, the acumen blunt, the base strongly inequilateral, rounded on the upper half, acute on the lower, 5 to 9 cm. long, 2 to 3.5 cm. wide; nerves about 15 pairs, obscure; petiolules 2 to 3 mm. long. Panicles glabrous, 15 to 20 cm. long, the peduncle 5 to 7 cm. long, the branches ascending, the lower ones 5 to 7 cm. long. Flowers numerous, alternate, their pedicels 2 to 4 mm. long. Calyx shortly 5-toothed, the margins slightly ciliate. Petals glabrous, oblong, obtuse, 2.5 mm. long. Staminal tube about 1.6 mm. long, truncate, the anthers inserted below, included, large, ovate, 1 mm. long. Ovary slightly pubescent.

Type specimen: Bosoboso, Province of Rizal, Luzon (2818 Merrill), July, 1903.

***Aglaia pauciflora*, sp. nov. § *Hearnia*.**

A tree about 10 m. high, with alternate, 5-jugate leaves, the branches, petioles, petiolules, and midribs of the leaflets more or less densely ferruginous stellate pubescent, the inflorescence of stout, few branched, axillary

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<sup>1</sup>Frag. Fl. Philip., 34. 1904.

panicles, 10 to 15 cm. long. Leaves about 45 cm. long, the rachis 30 cm. long; leaflets thinly coriaceous, pale when dry, elliptical ovate to obovate, the base rounded or somewhat cordate or nearly acute, the apex obtuse to broadly obscurely blunt acuminate, 11 to 17 cm. long, 5 to 8 cm. wide; nerves about 15 pairs, spreading-ascending, the midrib and lower portions of the nerves more or less stellate ferruginous pubescent, the lamina frequently with scattered stellate hairs, becoming glabrous; petiolules stout, about 1 cm. long. Panicles densely ferruginous stellate pubescent, the few branches spreading or ascending, 1.5 to 3 cm. long. Flowers few, 2 mm. in diameter, nearly sessile. Calyx 5-lobed, ferruginous stellate pubescent. Petals orbicular, glabrous, about 1 mm. long. Staminal tube very short, 0.5 mm. long, slightly crenate, the 5 stamens borne on the margin of the tube. Fruit globose, orange yellow, rusty pubescent, about 3 cm. in diameter, 1-celled, 1-seeded, the pericarp crustaceous when dry.

Type specimen: Mount Mariveles, Province of Bataan, Luzon (6699 Elmer), November, 1904.

**Dysoxylum pauciflorum**, sp. nov.

A small or medium sized tree with alternate evenly pinnate 4 to 5 jugate leaves 20 to 30 cm. long, axillary lax, few flowered panicles 10 to 15 cm. long, appearing with the leaves, gamosepalus calyx and pubescent corolla. Branches light brown, densely pubescent. Leaves alternate, the petiole and rachis slender, densely pubescent, 15 to 20 cm. long, the petiole proper 2.5 to 3.5 cm. long; leaflets opposite, membranous, oblong, the upper ones gradually larger, 9 to 24 cm. long, 2 to 5 cm. wide, the apex abruptly acuminate, the base acute, often slightly inequilateral, the midrib above and beneath densely softly pubescent, the lower surface more or less pubescent with soft hairs; nerves about 12 pairs, spreading, freely anastomosing; petiolules densely pubescent, 1 to 2 mm. long. Panicles simple, slender, the rachis and branches densely pubescent, the latter scattered, few, almost filiform, spreading, 2 to 4 cm. long, each with but from 1 to 5 flowers, the pedicels about 5 mm. long. Calyx cup-shaped, about 3 mm. long, pubescent, coarsely 4-toothed. Corolla 15 mm. long, more or less united with the staminal tube below, the outside nearly glabrous below, densely pubescent above. Staminal tube cylindrical, glabrous outside, hirsute on the lower part within, irregularly toothed. Stamens 8, 1.5 mm. long. Disk cylindrical glabrous, 2.5 to 3 mm. long. Style equaling the staminal tube, glabrous above, densely hirsute below. Fruit subglobose, apiculate red when mature, slightly pubescent, about 2 cm. in diameter.

Type specimen: Montalban, Province of Rizal, Luzon (2430 Ahern's collector), January, 1904 (flower); also Bosoboso (3109 Ahern's collector), May, 1905 (fruit).

**Dysoxylum rubrum**, sp. nov. § *Eudysoxylum*.

A small or medium sized tree with alternate, glabrous, 3 to 4 jugate leaves, the panicles short, few flowered, in the leaf axils on the younger branchlets. Branches light brown, lenticellate, ferruginous pubescent or puberulent. Leaves 18 to 25 cm. long, unequally pinnate, the leaflets opposite, the rachis with petiole, 10 to 15 cm. long, glabrous or nearly

so, the petiole proper about 5 cm. long, prominently channeled above. Leaflets membranous, glabrous, usually reddish when dry, oblong-ovate to elliptical-ovate, 10 to 20 cm. long, 3 to 7 cm. wide, the apex usually abruptly short caudate-acuminate, the acumen blunt, the base acute, equal or slightly inequilateral; nerves about 8 on each side of the midrib, curved upwards, obscurely anastomosing, the reticulations lax, very faint; petiolules 3 to 5 mm. long. Panicles axillary, on the leaf-bearing branchlets, 8 cm. long or less, few flowered, slightly ferruginous furfuraceous-pubescent, the branches few, spreading, the lower ones about 2 cm. long. Flowers greenish white. Calyx with 5 obscure teeth, sparingly pubescent. Petals, 5 or sometimes 6, very slightly pubescent towards the apex with few scattered hairs, 10 to 11 mm. long, about 2.5 mm. wide. Staminal tube 8 to 9 mm. long, glabrous, free from the petals, the apex irregularly obscurely toothed. Stamens 10, sometimes 11, inserted near the apex of the tube, included; anthers 1 mm. long. Disk about 1.5 mm. long, only slightly exceeding the ovary. Ovary densely pubescent, 4-celled; style pubescent below; stigma discoid. Fruit subglobose, dehiscent, glabrous, red when mature, about 2.5 cm. in diameter; seeds usually 4, oblong, slightly compressed, nearly 2 cm. long.

Type specimen: Lamao River, Province of Bataan, Luzon (1293 Whitford), May 18, 1905 (flower), and also from the same locality (2013 Borden), October, 1904 (fruit). No. 871 Whitford, Gumaca, Province of Tayabas, Luzon, September, 1904, is also referred here, and No. 3108 Ahern's collector, Bosoboso, Province of Rizal, Luzon, May, 1905. A tree growing in the hill forests at altitudes of from 10 to 180 m. above the sea, reaching a height of about 20 m.

## MALPHIGIACEÆ.

### *Hiptage luzonica*, sp. nov.

A scandent shrub with ovate to lanceolate, acuminate, somewhat pubescent leaves 6 cm. long or less, pubescent racemes, and small fruits. Branches dark brown, lenticellate, glabrous, the young branchlets densely appressed fulvous-pubescent. Leaves subcoriaceous, 4 to 6 cm. long, 1 to 2.3 cm. wide, the base acute, the apex sharp or blunt acuminate, glabrous and shining above, beneath sparingly pubescent with scattered, appressed, shining, pale, or fulvous hairs; nerves not prominent, 5 to 6 pairs; petioles 3 to 4 mm. long, densely fulvous pubescent. Racemes densely appressed pubescent, 3 to 5 cm. long, the pedicels slender, about 1 cm. long. Flowers 1.5 cm. in diameter or less. Calyx 3 mm. long, densely cinereous-pubescent, with a single large gland, lobes obtuse. Petals densely sericeous pubescent outside, clawed. Fruit small, somewhat ferruginous pubescent, the wings glabrous or nearly so, the middle one about 1.5 cm. long, 5 mm. wide, the lateral ones less than 1 cm. long.

Type specimen: Mount Mariveles, Province of Bataan, Luzon (1148 Whitford), March 24, 1905. A scandent shrub clambering over low trees on exposed ridges at an altitude of 910 m. above the sea.

## POLYGALACEÆ.

**Xanthophyllum glandulosum**, sp. nov.

A medium-sized tree with glabrous shining yellowish leaves, many flowered panicles equaling or somewhat exceeding the leaves, the ovary glabrous, 10 to 11 ovuled, the style pubescent. Branches yellowish brown, glabrous, shining, the branchlets pubescent. Leaves subcoriaceous, oblong ovate to elliptical ovate, 9 to 13 cm. long, 4 to 6.5 cm. wide, acuminate, the base acute, glabrous and shining on both surfaces, the lower surface slightly paler than the upper and with two or three large glands near the insertion of the petiole; primary nerves 5 to 6 on each side of the the midrib, somewhat prominent beneath, curved-ascending, irregular, the reticulations lax; petioles 3 to 4 mm. long, slightly pubescent. Panicles many flowered, axillary and terminal, 8 to 13 cm. long, densely cinereous pubescent. Flowers 7 to 8 mm. long, their pedicels 4 mm. long or less, the bracteoles 1 to 3 mm. long. Sepals unequal, ovate to elliptical, 3 to 4 mm. long, obtuse, densely puberulous. Petals glabrous, except the somewhat pubescent keel. Filaments somewhat thickened and pubescent below. Ovary glabrous, its stalk nearly 1 mm. long; style densely pubescent. Disk a thickened glabrous ring.

Type specimen: Bosoboso, Province of Rizal, Luzon (3107 Ahern's collector), May, 1905; also from the same province, Tanay (2335 Merrill), May, 1903; Bosoboso (2826 Merrill), July, 1903.

## DICHAPETALACEÆ.

**Dichapetalum monospermum**, sp. nov.

A shrub or slender tree 5 to 8 m. high, with broadly lanceolate to broadly oblanceolate, acuminate, membranous, glabrous leaves, axillary, almost sessile, fasciculate cymes shorter than the petioles and slightly falcate, rugose, 1-seeded drupes. Branches light gray, glabrous, striate, the branchlets more or less cinereous pubescent. Leaves alternate, 10 to 20 cm. long, 3.5 to 7 cm. wide, narrowed below to the acute, equilateral base, the apex rather abruptly acuminate; nerves 6 to 7 on each side of the midrib, somewhat prominent, curved ascending, the reticulations rather lax; petioles glabrous or nearly so, rugose, 5 to 10 mm. long. Cymes almost sessile, several in each axil, shorter than the petiole, the peduncle, pedicels, and calyces uniformly densely cinereous pubescent, the pedicels 2 to 3 mm. long, the flower buds subglobose. Flowers yellowish or greenish white, about 4 mm. long. Calyx lobes oblong ovate, acute, about 3 mm. long, glabrous inside, slightly united below. Petals narrowly oblong, glabrous, 4 mm. long, 1 mm. wide, free, slightly notched at the apex, the lobes sub-acute, 0.3 mm. long, the keel inside obscure. Stamens free, glabrous, slightly shorter than the petals, the anthers 0.6 mm. long. Disk scales opposite the petals, thick, glabrous, about 1 mm. long. Ovary free, densely cinereous pubescent, 1-celled, the cell 2-ovuled. Drupe yellow when mature, oblong, slightly falcate, rugose, more or less cinereous pubescent, about 1.7 cm.

long, 1 cm. thick, 1-celled, 1-seeded, the seed similar in shape to the drupe but much smaller, about 1 cm. long.

Specimens examined, all from Mindoro: Baco River (230 McGregor), April, 1905 (flowers and fruits); (1801 Merrill), April, 1903 (immature flowers), specimens growing in very humid river forest; Puerto Galera (3323 Merrill), October, 1903 (fruit), growing in the lower hill forests.

**Dichapetalum tricapsulare** (Blanco) *Riana tricapsularis* Blanco, Fl. Filip. ed. 1, 850. 1837; ed. 2, 126. 1845; ed. 3, 1:225. Merrill, Govt. Lab. Publ. 27:32. 1905. *Chailletia helferiana* F.-Vill. Nov. App. 45. 1880, non Kurz.

A small shrub 1 to 5 m. high, with lanceolate or oblong lanceolate, acuminate, somewhat inequilateral pubescent leaves, and axillary inflorescence, the entire inflorescence including the calyces densely villous pubescent. Branches densely villous pubescent, the older ones becoming glabrous and reddish brown. Leaves 8 to 12 cm. long, 1 to 3 cm. wide, blunt acuminate, the base acute, the margins entire, the midrib above villous pubescent, the lamina and margins with scattered hairs, also more or less villous pubescent beneath; nerves about 8 pairs, ascending; petioles densely villous pubescent, about 2 mm. long. Cymes very short, few flowered. Flowers (immature) with petals shorter than the sepals, cleft at the apex, glabrous, elliptical ovate, slightly exceeding 1 mm. in length. Anthers 1 mm. long. Fruit salmon pink, orbicular-ovoid somewhat triangular, densely cinereous pubescent, 3-valved, 3-celled, dehiscent, the cells 1-seeded, the seeds about 12 mm. long.

Specimens examined, all from Mount Mariveles, Province of Bataan. Luzon, where the species is rather common on wooded slopes above 800 m.: (3191 Merrill), October, 1903 (fruit); (145 Barnes), January, 1904 (fruit); (6642 Elmer), November, 1904 (fruit); (2842 Meyer), March 1905 (immature flowers). The above specimens agree very closely with Blanco's description, and certainly represent his *Riana tricapsularis*, which is apparently a very distinct species of *Dichapetalum*.

## EUPHORBIACEÆ.

**Endospermum peltatum**, sp. nov.

A large tree, 25 to 30 m. high, with thickened branchlets, the leaf scars large and prominent, and suborbicular to broadly ovate, acute, or obtuse, strongly peltate to deeply cordate leaves, 13 to 20 cm. long. Branchlets brownish gray, 1 to 1.5 cm. in diameter, densely pubescent, the numerous leaf scars about 1 cm. in diameter. Leaves crowded at the apices of the branchlets, 10 to 18 cm. wide, entire or somewhat repand above, the base truncate to deeply cordate, the petiole often inserted 3 or 4 cm. from the margin, palmately 7 to 9 nerved, the nerves rather prominent on both surfaces, dark colored and pubescent above, becoming nearly glabrous, beneath pale, densely pubescent, with two large glands at the insertion of the petiole, and with few smaller glands at the ramifications of the nerves

near the margins; petioles 10 to 15 cm. long, densely pubescent. Inflorescence axillary, densely pubescent. Male flowers whitish, numerous, paniculate, the panicles 10 to 20 cm. long, the longer branches about 5 cm. long. Calyx 2 mm. long, obovoid, truncate, or very obscurely 5-toothed, densely grayish pubescent, the pedicel 1 mm. long or less. Stamens about 10, the staminal column somewhat exerted. Female flowers in narrow few flowered panicles 8 to 14 cm. long, the branches few flowered, 1 to 2 cm. long. Calyx similar to that of the male flower, but somewhat larger. Ovary 4-celled, each cell with one ovule; styles connate, forming a 4-lobed disk. Fruit ovoid, entire, glabrous or nearly so, 1 cm. long, crowned by the persistent stigmas, the calyx also persistent, the epicarp somewhat fleshy, inclosing two indehiscent cocci about 7 mm. long.

Specimens examined, all from Luzon: Province of Bataan, Mount Mari-veles (716, 1669, 1672 Borden), May and August, 1904; Province of Rizal, Bosoboso (2700 Merrill), June, 1903 (female flowers); Province of Tayabas, Pagbilao (2603 Merrill), April, 1903. T., *Indang, Callucoy*.

No species of this genus has previously been reported from the Philippines, the species here proposed being apparently related to *Endospermum chinense* Benth., from Hongkong, *E. borneense* Muell. Arg., from Borneo and *E. formicarium* Becc., from New Guinea, but is apparently sufficiently distinct from all these species. A tree growing in the lower hill forests, with exceedingly variable leaves, strongly peltate and deeply cordate leaves being frequently found on the same branchlet.

**Macaranga hispida** (Blume.) Muell. Arg. in DC. Prodr. 15<sup>2</sup>:990. 1862.

*Mappa hispida* Blume.

This species, previously known only from the Moluccas, is apparently well represented by No. 202 McGregor, Baco River, Mindoro, April, 1905 (male flowers), and No. 316 Ahern, Surigao, Mindanao, 1901 (fruit).

## ACERACEÆ.

**Acer philippinum**, sp. nov. § *Integrifolia*.

A tree 8 to 12 m. high with simple, entire, acuminate, glabrous leaves which are glaucous beneath, and short axillary, glabrous racemes, the stamens long exerted. Branches glabrous, dark reddish brown, nearly black when dry. Leaves elliptical ovate, subcoriaceous, dark above when dry, very glaucous beneath, 7 to 11 cm. long, 3 to 5.5 cm. wide, the apex slender acuminate, the acumen blunt, the base cuneate, 3-nerved; lateral nerves 5 to 6 on each side of the midrib, irregular, ascending, prominent, the reticulations dense; petioles slender, glabrous, 2 to 5 cm. long. Racemes axillary, glabrous, 1 to 2 cm. long, contemporary with the leaves, with 4 to 6 imbricated, subdistichous bracts at the base. Male flowers greenish white, 3 to 4 mm. long including the stamens. Sepals 5, linear or oblong linear, 1.5 to 2 mm. long. Petals similar to and equaling the sepals. Stamens 8, the filaments slender, glabrous, 3 to 4 mm. long; anthers 0.7 mm. long. Ovary 2-lobed, densely pilose; style bipartite, the lobes divaricate, recurved. Fruit unknown.

Type specimen: Mount Mariveles, Province of Bataan, Luzon (3872 Merrill), August, 1904. A small tree rather common on exposed forested ridges at an altitude of about 1,000 m. Related to *Acer niveum* Blume and *A. oblongum* Wall., differing from both species in the cuneate base of the leaves, from *Acer niveum* also in its exserted stamens, and from *A. oblongum* in its racemose inflorescence.

No species of this family has previously been reported from the Philippines, although *Acer niveum* Blume is generally distributed in the Malayan region, and two species of the genus are known from Hongkong.

## RHAMNACEÆ.

### *Zizyphus inermis*, sp. nov.

A medium-sized tree with spineless branches, broadly lanceolate, oblong lanceolate to lanceolate, membranous, glabrous, equilateral, evenly 3-nerved leaves, and axillary short peduncled cymes but slightly longer than the petioles. Branches slender, glabrous, dark brown, lenticellate, the branchlets fulvous pubescent. Leaves 8 to 13 cm. long, 2.5 to 5 cm. wide, the base acute, regular, the apex acuminate, entirely glabrous except for the slightly pubescent nerves on the lower surface, strongly 3-nerved from the base, the nerves continuing to the apex, unbranched, and with a pair of faint submarginal nerves formed by the anastomosing of the transverse nerves, and not more prominent than the latter, the lateral nerves numerous, spreading, freely anastomosing, those outside the longitudinal nerves not more prominent than those between the midrib and the longitudinal nerves; petioles slightly pubescent, about 1 cm. long. Cymes densely fulvous pubescent, 5 to 15 flowered, 1 to 1.5 cm. long, the peduncle and pedicels about 2 mm. long. Flowers yellowish, 5 mm. across. Sepals spreading, ovate, acute, 2.5 mm. long, more or less fulvous pubescent outside. Petals oblong, 1.8 mm. long, less than 1 mm. wide, cucullate. Stamens 5, the filaments 1.5 mm. long. Disc glabrous, rugose. Ovary surrounded and inclosed by the disc but free, glabrous, 3-celled; styles short. Fruit unknown.

Type specimen: Bosoboso, Province of Rizal, Luzon (3075 Ahern's collector), May, 1905. A species characterized by its equilateral glabrous, membranous leaves and spineless branches.

## VITACEÆ.

### *Leea magnifolia*, sp. nov. § *Paucifoliolosae*.

A subsucculent shrub or suberect suffrutescent plant, with very large, simple, serrate leaves 40 to 80 cm. long, and axillary congested inflorescence not exceeding 7 cm. in length. Stems 1 to 2 cm. or more in diameter, brown, strongly sulcate when dry, more or less hirsute. Leaves alternate, membranous, glabrous or nearly so, glandular beneath, oblong-obovate, 40 to 80 cm. long, 20 to 40 cm. wide, the margins twice serrate, the larger somewhat repand teeth at the ends of the lateral nerves, the whole margin irregularly moderately serrate, apex short abruptly acuminate, gradually

narrowed below to the abruptly rounded-obtuse base, the basal portion 4 to 7 cm. wide below; nerves prominent, 16 to 18 on each side of the midrib, spreading-ascending, straight, often forked above, not anastomosing, the reticulations rather lax, somewhat prominent on the lower surface; petioles about 8 cm. long, 1 cm. thick, stout, striate, more or less ferruginous hirsute, deeply sulcate and wing margined on the upper side, the wings coriaceous, about 6 mm. wide. Cymes axillary, congested, the inflorescence 5 to 7 cm. long, the primary branches 2 to 3 cm. long, the flowers crowded in dense subglobose heads about 2 to 3 cm. in diameter. Flowers greenish white, their pedicels 3 to 4 mm. long. Calyx green, glabrous, membranous, punctate, about 4 mm. long, the four teeth about 1 mm. long, broadly triangular, acute. Corolla 7 mm. long, glabrous, 4-lobed, the lobes white, their tips somewhat lavender, reflexed, oblong ovate, acute, glabrous, 4 to 4.5 mm. long, 2.5 mm. wide. Staminal tube 4-lobed, the four anthers connate with and included in the tube. Ovary subglobose, 4-celled, glabrous, the style about 2 mm. long. Fruit subglobose, somewhat flattened, 3-celled, each cell 1-seeded, more or less sulcate between the cells when dry, glabrous, about 1.2 cm. wide.

Baco River, Mindoro (187 McGregor), April, 1905 (flower), suberect, suffrutescent, about 2 m. high, in very humid forests; (644 Whitford), Atimonan, Tayabas Province, Luzon, August, 1904 (fruit). A large vine along the beds of dry streams in forests, the stem more or less prostrate, rooting at the nodes when in contact with the ground, the branches erect.

## ELAEOCARPACEÆ.

### *Elaeocarpus macranthus*, sp. nov.

A large tree with oblong, acuminate, entire or somewhat crenate leaves, crowded with the inflorescence at the apices of the usually thickened branches, the racemes about equaling the leaves, the flowers 1.5 cm. long, 5-merous, the stamens indefinite, one cell of the anther short awned, the ovary 4 to 5 celled, cells many ovuled. Branches light gray, glabrous, the younger parts densely pubescent. Leaves 12 to 15 cm. long, 4 to 4.5 cm. wide, subcoriaceous, glabrous and shining above, sparingly pubescent beneath, the base somewhat rounded or abruptly acute; nerves about 10 on each side of the midrib; petioles 4 to 5 cm. long, the rhachis, pedicels, and calyces densely uniformly brownish pubescent. Flowers yellowish, their pedicels 1 to 1.5 cm. long. Sepals broadly lanceolate, 14 mm. long, 5 mm. wide, tapering to the acute apex, glabrous within. Petals slightly exceeding the sepals, densely appressed silky pubescent outside, 3-lobed at the apex, the lobes lacinate fringed. Stamens indefinite, the filaments 2 mm. long or less, the anthers 4 to 5 mm. long, minutely pubescent, one cell with a short apical awn 1 mm. long or less. Ovary pubescent; style glabrous, at least above, 3 to 4 mm. long. Drupe globose to ellipsoid-globose, pubescent, becoming nearly glabrous, 2 to 2.5 cm. in diameter, the stone vertically 10-grooved, 5-celled, usually but one cell with seed.

Specimens examined, all from the Province of Rizal, Luzon: (2688 and

2897 (type) Ahern's collector), February and March, 1905, the former with immature, the latter with mature flowers; (1883 and 2298 Merrill), April and May, 1903 (fruit).

### TILIACEÆ.

**Brownlowia lanceolata**, Benth. Journ. Linn. Soc. Bot. 5: Suppl. 2:27. 1861; Hook. f. Fl. Brit. Ind. 1:381. 1874; King. Journ. As. Soc. Beng. 60:97. 1891.

This tidal forest tree, previously known from Burma, Bengal and Malacca, has recently been collected in the Philippines, thus considerably extending the known range of the species. (No. 894 Whitford), Gumaca, Province of Tayabas, Luzon, September, 1904, a small tree growing in the "Nipa formation." The specimen is with immature fruit, but agrees perfectly with the description of the species and with specimens in the Herbarium of this Bureau collected by D. Prain at Malanchi, Sundribuns near Calcutta, August 5, 1902.

### MALVACEÆ.

**Hibiscus bicalyculatus**, sp. nov. § *Ketmia*.

A shrub or small tree with stellate pubescent, 3-lobed leaves, and large yellow flowers, the bracteoles connate for one-half their length, forming an inflated calyx-like involucre, the calyx inflated but not ventricose, about 5 cm. long. Branches densely cinereous pubescent, pale. Leaves 9 to 12 cm. long, nearly as wide, the base strongly cordate, the sinus usually narrow, 1.5 to 2.5 cm. deep, the basal lobes broad, rounded, the leaf above 3-lobed, the lobes broad, acuminate, upper surface scabrous, more or less stellate pubescent, especially on the nerves, the lower surface pale, very densely stellate pubescent throughout; basal nerves 7, distinct, the reticulations lax; petiole cinereous pubescent, 4 to 6 cm. long. Flower yellow, about 8 cm. long, axillary, solitary, the pedicel stellate pubescent, often 20 cm. long. Bracteoles 5, ovate, acute, about 1 cm. wide, connate and inflated below, free from the calyx, ultimately split down one side, subcoriaceous, yellowish brown, densely pubescent, 2.5 cm. long. Calyx 4.5 to 5 cm. long, about 2 cm. in diameter, inflated, yellowish gray when dry, very densely stellate pubescent outside, and with numerous long hispid hairs, glabrous inside, the lobes ovate-oblong, acute or acuminate, 1.5 to 2 cm. long, about 1 cm. wide. Petals about 8 cm. long, 3 cm. wide above, the apex rounded, much narrowed below and densely bearded on the inside at the insertion of the staminal tube. Staminal tube glabrous, about 9 cm. long, antheriferous for the upper 3 cm.; filaments 1 cm. long; anthers about 3 mm. long. Ovary oblong ovoid, 1 cm. long, glabrous, 5-celled, each cell many ovuled.

Montalban, Province of Rizal, Luzon (2450 Ahern's collector), January, 1905. A shrub or small tree growing in thickets and along borders of the forests, the connate bracteoles forming an involucre similar to and about one-half as long as the calyx.

## STERCULIACEÆ.

***Sterculia brevipetiolata*, sp. nov.**

A shrub or small tree 5 to 10 m. high, with membranous, short petioled, glabrous, narrowly to broadly lanceolate or oblanceolate leaves, slender, few flowered, drooping panicles 10 to 20 cm. long, the tips of the calyx lobes slightly coherent. Branches slender, brownish gray, glabrous, the tips usually densely ferruginous stellate pubescent. Leaves 10 to 22 cm. long, 2 to 5 cm. wide somewhat crowded at the apices of the branchlets, tapering below to the narrow, abruptly obtuse or slightly cordate base, the apex slender acuminate; nerves 10 to 12 pairs; petioles 4 to 7 cm. long, thickened, densely ferruginous stellate pubescent, the stipules persistent, 1 cm. long or less, subulate. Panicles slender, axillary, more or less ferruginous stellate pubescent, the branches filiform, 1 to 4 flowered, the pedicels 1 to 2 cm. long. Flowers dull yellow, 7 to 10 mm. long, sparingly stellate pubescent outside, the tube urceolate, about as long as the lobes, the lobes 5, lanceolate, subulate, villous within. Male flowers: staminal column slender, shorter than the calyx tube, slightly curved, bearing at its apex about 8 broad, sessile anthers. Hermaphrodite flowers: ovary villous, the anthers at the base, sessile or nearly so; style short, stout, pubescent. Follicles coriaceous, 2 to 4, sessile, oblong, slightly curved, the apex slightly acuminate, densely rusty pubescent outside, glabrous within, 5 to 7 cm. long, 2 cm. wide or less, the seeds 3 or 4, about 1.3 cm. long.

Specimens examined Luzon, Province of Bataan, Lamao River (1907 Borden), September, 1904; (200 Barnes), January, 1904 (fruit); (6829 Elmer), November 1904. Pasacao, Province of Camarines Sur (60 Ahern), February, 1902. Growing in hill forests at from 300 to 500 m. above the sea.

***Sterculia montana*, sp. nov.**

A tree about 10 m. high, with elliptical to obovate-elliptical, cordate, very abruptly short acuminate leaves, glabrous above, densely pale, velvety stellate pubescent beneath, and short, erect, few flowered panicles. Branches striate, dark grayish brown pubescent, the tips densely rusty pubescent. Leaves 9 to 13 cm. long, 6 to 8 cm. wide, subcoriaceous, shining above; nerves about 8 on each side of the midrib, prominent beneath, sparingly stellate pubescent, brown, in strong contrast to the pale surface of the lamina; petioles about 3 cm. long, sparingly ferruginous stellate-pubescent. Panicles 4 to 6 cm. long, slender, strict, narrow, erect, axillary, the axis, short branches, and pedicels more or less stellate pubescent, the branches 1 cm. long, few flowered, erect or ascending, mostly in the upper part of the panicle. Flowers about 1 cm. long, densely ferruginous pubescent, the tube urceolate, nearly as long as the lobes, the lobes 5, hirsute within, not coherent at their tips. Male flowers: staminal column very short, bearing numerous sessile anthers in a sessile mass. Hermaphrodite flowers: gynophore short; ovaries 5, pubescent; stigmas recurved; stamens numerous, sessile, surrounding the base of the ovaries. Follicle unknown.

Type specimen: Mount Mariveles, Province of Bataan, Luzon (6761 Elmer), November, 1904. A small or medium sized tree, apparently not common, on the exposed ridges at an altitude of about 1,200 m.

## DILLENiaceÆ.

### SAURAUIA.

1. Flowers in axillary, solitary, peduncled panicles about equalling or exceeding the leaves.
  2. Bracts large, foliaceous, broadly ovate, 2 to 3 cm. long.
    3. Inflorescence ample; styles 5; sepals lepidote..... (1) *S. latibracteata*
    3. Inflorescence few flowered; styles 3; sepals densely strigose-hirsute..... (2) *S. involocrata*
  2. Bracts small, linear or lanceolate ..... (3) *S. elegans*
1. Flowers in few-flowered, axillary, often fascicled cymes very much shorter than the leaves.
  2. Leaves densely brown pubescent beneath..... (4) *S. cinnamomea*
  2. Leaves not at all pubescent.
    3. Cells of the ovary and styles 3 ..... (5) *S. whitfordi*
    3. Cells of the ovary and styles 5 ..... (6) *S. subglabra*

- (1) *S. latibracteata* Choisy in Zoll. Syst. Verz. Ind. Archip. 148. 1854-55; Miq. Fl. Ind. Bat. 1<sup>o</sup>:479. 1859; Vidal, Sinopsis, Atlas, t. 13. f. B. 1883; Phan. Cuming. Philip. 96. 1885; Rev. Pl. Vasc. Filip. 56. 1886; Ceron, Cat. Pl. Herb. 23. 1892. *Saurauia cumingiana* De-Vriese, Pl. Ind. Bat. Or. 38. 1856-57.

Specimens examined: Philippines, without locality (1302 Cuming), 1836-1840, Luzon; Province of Laguna (455 Cuming), 1836-1840; Province of Albay (944 Cuming), 1836-1840; Province of Tayabas, Mount Banahao (887 Klemme), June, 1904; Atimonan (697 Whitford), August, 1904; Province of Rizal, Tanay (2295 Merrill), May, 1903.

- (2) *S. involocrata* Merrill, sp. nov.

A shrub about 5 m. high, with ovate-lanceolate, acuminate, strigose leaves, few flowered, axillary cymose, strongly bracteate inflorescence, the flowers with densely long-strigose-hirsute calyces, and glabrous 3-celled ovary. Branches brown, more or less strigose. Leaves membranous, 9 to 18 cm. long, 3 to 7 cm. wide, both surfaces beset with scattered, brown, strigose hairs, those beneath, especially on the nerves, longer than those above, the margins irregularly spinulose-serrate, the base acute, rounded or subcordate, the apex short acuminate; nerves about 12 on each side of the midrib, prominent beneath; petioles 1 to 1.5 cm. long, strigose. Inflorescence 4 to 8 cm. long, strigose, the peduncle 2 to 4 cm. long, the flowers subumbellate, few, 3 to 8, crowded, the branches, branchlets, and pedicels subtended by ovate to ovate-lanceolate bracts and bracteoles 1 to 2.5 cm. long, giving the appearance of an involucre subtending the flowers. Flowers white, odorless, about 1 cm. long. Sepals 8 mm. long, the three outer ones oblong-ovate, acute, densely strigose, the stiff bristle-like hairs 2.5 to 3.5 mm. long, the inner two oblanceolate, glabrous except for a few bristles on the median portion below. Petals 5, membranous, glabrous, obovate, irregularly, strongly sinuate-emarginate, undulate, 10

mm. long, 6 mm. wide, slightly united at the base. Stamens 20, the filaments 2 mm. long, the anthers 1.5 mm. long. Ovary ovoid, glabrous, 3-celled, 3 mm. long; styles 3, free, 4 mm. long.

Type specimen: Todaya, District of Davao, Mindanao (1273 Copeland), April, 1904.

A species growing in forests at an altitude of about 900 m. above the sea, resembling *Saurauia bracteosa* DC., in general appearance, but quite distinct from that species.

- (3) **S. elegans** (Choisy) F.-Vill. Nov. App. 19. 1880; *Scapha elegans* Choisy Mem. Ternst. 119. t. 1. 1855; *Saurauia rugosa* Turcz. Bull. Soc. Nat. Mosc. 31:245. 1858; F.-Vill. l. c., Vidal Phan. Cuming. Philip. 96. 1885, Rev. Pl. Vasc. Filip. 57. 1886; Ceron, Cat. Pl. Herb. 23. 1892. *Saurauia exasperata* De Vriese Pl. Ind. Bat. Or. 56. 1856; Miq. Fl. Ind. Bat. 1<sup>2</sup>:483. 1859; Vidal Il. cc., 96, 56; Ceron, l. c., 23; F.-Vill. l. c.

Specimens examined: Philippines (922 Cuming), 1836-1840 (cotype of *Saurauia rugosa* Turcz., and *Scapha elegans* Choisy); Province of Benguet, Baguio (5796 Elmer), March, 1904; (925 Barnes), May, 1904; (65 Topping), February, 1903; also a single specimen collected by Lardizabal, 1901.

*Saurauia rugosa* Turcz., and *S. elegans* Choisy, were both based on the same number of Cuming's Philippine collection, cited above, the latter name being the earlier is retained. Some doubt exists as to the exact identity of *Saurauia exasperata* DeVriese, the description given by Miquel apparently applying to the present species, but No. 455 Cuming, cited by Miquel in the description of the species, as represented in our herbarium, being identical with specimens of *Saurauia latibracteata* Choisy.

- (4) **S. cinnamomea** Merrill, sp. nov.

A shrub about 5 m. high, with oblong-ovate, sharply acuminate leaves, dark colored and nearly glabrous above, beneath densely pale brown pubescent, the inflorescence axillary, solitary or two or three peduncles from the same axil, each peduncle bearing about three flowers. Branches densely dark brown pubescent, more or less scaly, the older ones glabrous. Leaves 12 to 20 cm. long, 5 to 8 cm. wide, the margins finely spinulose-serrate, the base obtuse, often somewhat rounded, slightly inequilateral, the upper surface with few, scattered, scale like hairs, becoming glabrous or nearly so; nerves about 15 pairs; petioles densely brown pubescent, 1.5 to 2 cm. long. Whole inflorescence, including the sepals, densely dark brown scaly-pubescent, the peduncle 1 cm. long or less, bearing at the apex about three flowers, the pedicels 8 mm. long or less, the bracts very small. Flowers white. Sepals about 4 mm. long, ovate, obtuse. Petals ovate or obovate, about 5 mm. long, irregularly retuse. Stamens many. Ovary glabrous, 4-celled; styles 4, about 3 mm. long.

Type specimen: Tinauan River, Province of Tayabas (Infanta), Luzon (779 Whitford), September, 1904. A shrub growing in the forests at an elevation of about 80 m. above the sea. T., *Calap*.

- (5) **S. whitfordi** Merrill, sp. nov.

A shrub 3 to 4 m. high, with oblong-obovate to oblanceolate, nearly

glabrous leaves, the flowers in axillary solitary cymes 3 to 4 cm. long, the cells of the ovary and styles 3, rarely 4. Branches dark brown, nearly glabrous except for few scattered scales. Leaves 15 to 20 cm. long, 7 to 8 cm. wide, very short acuminate, narrowed below to the acute or slightly obtuse, somewhat inequilateral base, the margins spinulose-serrate, glabrous on both surfaces except for few scattered scales on the nerves beneath, the upper surface dark, the lower yellowish brown when dry, somewhat shiny; nerves about 12 pairs, prominent beneath; petioles 2 to 3 cm. long, more or less scaly. Cymes dichotomous, the peduncles, branches, pedicels, bracts, and calyx lobes scurfy-scaly, the peduncles 1.5 to 2 cm. long; bracts broadly ovate, nearly 1 cm. long, their margins spinulose-serrate. Flowers white. Calyx lobes ovate, obtuse, 5 to 6 mm. long, about 3.5 mm. wide. Petals obovate, about 8 mm. long. Stamens 20. Ovary glabrous, 3, rarely 4 celled. Fruit subglobose, 5 to 6 mm. in diameter, the seeds many, irregular, cuneate, nearly 1 mm. long.

Type specimen: Mount Banahao, Province of Tayabas, Luzon (1006 Whitford), October, 1904. A small shrub growing in the forests on the mountain slopes at an altitude of about 900 m. above the sea. A species related to the succeeding, but differing in its much larger bracts, smaller flowers, and 3, rarely 4 celled ovary.

(6) *S. subglabra* Merrill, sp. nov.

A shrub or small tree, 5 to 8 m. high, with oblong-ovate to oblong obovate, almost entirely glabrous leaves, the flowers nearly 2 cm. in diameter, in few flowered, axillary cymes 3 to 7 cm. long, the ovary-cells and styles 5. Branches brown, lenticellate, with few stiff scale like hairs and somewhat ferruginous lepidote, or nearly glabrous. Leaves 13 to 23 cm. long, 5 to 10 cm. wide, glabrous on both surfaces except for very few scattered appressed scales on the nerves beneath, the margins slightly undulate to obscurely serrate, the teeth with small hard scale like tips, the apex short acuminate or almost acute, the base somewhat obtuse or acute; nerves about 17 pairs, prominent beneath; petioles 2 to 3.5 cm. long, more or less brown lepidote and with few hard appressed scales. Inflorescence axillary, from 1 to 4 peduncles, from the same axil, each peduncle 1 to 4 flowered, the peduncles and pedicels slender, ferruginous-pubescent; bracts linear-oblong, 4 mm. long, 1 mm. wide, pubescent. Flowers white, odorless. Calyx 1.5 cm. in diameter, pubescent outside, 5-lobed, the lobes ovate, 5 to 6 mm. long, 4 to 5 mm. wide, obtuse. Petals obovate, retuse, about 1 cm. long, 8 mm. wide. Stamens many. Ovary glabrous, 5-celled; styles 5.

Type specimen: Lamao River, Mount Mariveles, Province of Bataan, Luzon (2767 Meyer). February, 1905; also from the same locality (268 Whitford), May, 1904. Apparently also belongs here, No. 6115 Elmer, Sablan, Province of Benguet, Luzon, April, 1904. A small tree growing on steep wooded slopes in cañons at an altitude of from 800 to 900 m. above the sea.

Doubtful and excluded species include the following: *Saurauia lanccolata* DC., a Javanese species credited to the Philippines by F.-Villar,<sup>1</sup> who

<sup>1</sup> Nov. App., 19. 1880.

states that he saw specimens in Vidal's herbarium from Angat, Province of Bulacan, Luzon. Vidal in his "Revision" mentions no specimens of *Saurauia* from this locality. F.-Villar's identification was undoubtedly erroneous and the species should be excluded. *Saurauia ferax* Korth., a Malayan species extending from Sumatra to Borneo is questionably extended to the Philippines by Stapf<sup>1</sup> No. 1712 Cuming, Samar, being referred to the above species. Complete material is necessary to determine definitely its occurrence in the Philippines. *Saurauia reinwardtiana* Blume, credited to the Philippines by the author,<sup>2</sup> should be excluded for the present at least, as the specimen referred to this species does not agree with sufficient closeness to the description. However, the material is too imperfect definitely to determine what the species may be.

### THEACEÆ.

**Thea montana** (Blanco) Merrill, Govt. Lab. Publ. 27:21. 1905; *Salceda montana* Blanco, Fl. Filip. ed. 2, 374. 1845; ed. 3, 2:327. 1878. *Camellia lanceolata* F.-Vill. Nov. App. 19. 1880, non Seem. *Pyrenaria camelliaeflora* Vidal, Sinopsis, Atlas, t. 13. f. D. 1883, non Kurz. *Pyrenaria* sp. Vidal, Rev. Pl. Vasc. Filip. 57. 1886.

A shrub or small tree 2 to 6 m. high, with oblong-ovate to broadly lanceolate, acuminate, serrate leaves which are densely glandular punctate beneath, and axillary, sessile white flowers about 1.5 cm. in diameter, the stamens borne on the margin and interior of a well defined staminal tube, few free. Branches light gray or brown, glabrous, the ultimate branches sometimes with few scattered hairs. Leaves 6 to 10 cm. long, 2 to 4 cm. wide, alternate, subcoriaceous, minutely wrinkled-reticulate when dry, glabrous except for few scattered hairs beneath, the base acute, the apex short acuminate, the margins serrate except near the base; nerves 9 or 10 on each side of the midrib, spreading, anastomosing, not prominent, the reticulations very lax; petioles glabrous or sparingly pilose, 5 to 10 mm. long. Flowers fragrant. Sepals imbricate, the outer two small, bract like, the inner three coriaceous, broadly ovate, 6 to 7 mm. long, their margins minutely ciliate. Petals free, glabrous, oblong-ovate, obtuse, 1 cm. long. Staminal tube cylindrical, glabrous, 6 mm. long, the margin irregularly dentate. Stamens numerous, mostly sessile or nearly so on and near the margin of the tube, few with well developed filaments scattered on the interior of the tube, and few, 3 to 5 (or more ?), entirely free from the tube, inserted at the base of the ovary. Ovary narrowly ovoid, densely hirsute, 3-celled, the ovules few in each cell, arranged in two axillary rows; styles thick, united throughout, 2 mm. long; stigmas 3. Fruit subglobose or somewhat compressed vertically, 3 to 4 cm. in diameter, woody. Seeds mostly 2 in each cell, irregularly angularly compressed, 1 to 1.5 cm. in diameter.

This species is apparently common on the mountains of Luzon, and is

<sup>1</sup> Trans. Linn. Soc. Bot. 4:134. 1894.

<sup>2</sup> Forest. Bureau Bull. 1:39. 1903.

represented by the following specimens: Province of Bataan, Mount Mariveles (304, 441 Whitford), May and July, 1904; (6787, 6977 Elmer), November, 1904; (1905, 2378 Borden) and (2402 Meyer), January, 1905. Province of Tayabas, Mount Banahao (1007 Whitford), October, 1904. Province of Benguet, Mount Santo Tomas (5808 Elmer), March, 1904.

It was with some hesitation that Blanco's *Salceda montana* was identified with the species here described, as in one detail his description does not agree with the plant here considered. Blanco described his species as having 13 free stamens, while in the specimens enumerated above I have not found more than 5 free stamens, and usually but three. As in all other characters our specimens agree so well with Blanco's description, it is considered that the specimens here cited represent his species, which is apparently very distinct from others in the genus. If in the future, however, specimens are secured from the vicinity of Angat, Province of Bulacan, Luzon, the type locality of *Salceda montana* Blanco, that agree more closely with Blanco's description than do our specimens from Mount Banahao and Mount Mariveles, then the species here described will have to receive a new name. The species here considered is certainly represented by the figure in Vidal's Synopsis, cited above, to which in his Revision, Vidal refers No. 61 of his collection, from Mount Banahao. According to a manuscript list of identifications of Loher's Philippine Plants, made at Kew, No. 80 Loher is identical with No. 61 Vidal.

## VIOLACEÆ.

### *Rinorea copelandi*, sp. nov. § *Prothesia*.

A small tree 6 to 7 m. high, with oblong-obovate, membranous leaves which are narrowed to the acute base, and axillary, hirsute-pubescent, short, fasciated, cymose inflorescence, the anther cells and connectives appendaged. Branches light gray, almost white, somewhat pubescent, becoming glabrous, the younger portions densely ferruginous-pubescent with spreading hairs. Leaves 18 to 22 cm. long, 9 to 12 cm. wide, dark, glabrous and somewhat shining above, pale, shining and somewhat pubescent, especially on the midrib beneath, the apex short acuminate, the base acute, the margins obscurely glandular dentate or crenate-dentate; nerves about 18 on each side of the midrib, prominent beneath, spreading-ascending, the reticulations subparallel; petioles 1.5 to 2 cm. long, pubescent. Inflorescence of short, few-flowered cymes, 2 cm. long or less, or merely fasciated, the axis, branches, bracts, and calyx lobes uniformly, but not densely hirsute-pubescent. Flowers about 6 mm. long, pedicellate. Calyx lobes oblong-ovate, 2 mm. wide, obtuse. Petals elliptical-oblong, thin, glabrous, obtuse, 5 mm. long, 2 to 2.5 mm. wide. Stamens 5, inserted on an annular disk, the anthers including the appendages, broadly ovate, 1.6 mm. long; filaments short, broad; appendage of the connective suborbicular, 1 mm. in diameter, of the anther cells subulate, 0.5 mm. long. Ovary oblong, 2 mm. long, somewhat pubescent; style 2 mm. long glabrous. Fruit unknown.

Type specimen: Catalonan, District of Davao, Mindanao (943 Copeland), April, 1904.

## FLACOURTIACEÆ.

**Casearia solida**, sp. nov.

A shrub or small tree 2 to 6 m. high, with glabrous, oblong-ovate to elliptic-oblong, entire, acuminate leaves, which are acute and equilateral at the base, five parted calyx, the fertile stamens 8. Branches light gray, glabrous. Leaves subcoriaceous, shining and reticulate on both surfaces, paler beneath, 10 to 18 cm. long, 4 to 9 cm. wide, obscurely punctate, the apex short acuminate, the acumen blunt or sharp; nerves 7 or 8 pairs, spreading-ascending, anastomosing; petioles glabrous, 5 to 10 mm. long. Inflorescence in small axillary or extra-axillary fascicles, few flowered, the bracts ovate, imbricate, pubescent. Flowers nearly white, fragrant, the pedicels very short. Sepals 5, elliptical-ovate, obtuse, concave, rather densely pubescent outside. Fertile stamens 8, the glabrous filaments 1.5 mm. long; anthers 0.5 mm. long, the alternating staminodes narrowly oblong, 0.5 mm. wide, equaling the stamens, the apex densely bearded. Ovary 1.5 mm. long, ovoid, the stigma capitate, subsessile. Fruit glabrous, ovoid, to oblong-ovoid, bright red when mature, somewhat triangular, 2.5 cm. long or less, dehiscent by 3 valves. Seeds about 6 mm. long, irregularly subcompressed angular ovoid, arillate.

Specimens examined: Luzon, Province of Bataan, Mount Mariveles (2810 Meyer), March, 1905 (type); (3722, 2499 Merrill), January, June, 1904; (192, 526 Whitford), May, July, 1904; (626, 670, 1230 Borden), April, June, 1904; Province of Benguet, Twin Peaks (6460 Elmer), June 1904.

A species growing on steep forested slopes, common on Mount Mariveles from an altitude of 75 m. to at least 700 m. above the sea. Apparently related to *Casearia esculenta* Roxb., and doubtless the form referred to this species by F.-Villar.<sup>1</sup>

Although F.-Villar credits 10 species of this genus to the Philippines, but 3 or 4 are definitely known from the Archipelago at the present time. Of the species definitely known, *Casearia fuliginosa* Blanco and *C. cinerea* Turcz. are well established, while of *C. luzonensis* Warb., no description has apparently been published, this name being mentioned by Warburg.<sup>2</sup> The species is not mentioned in the text, nor is it listed in the first or second supplement to Index Kewensis. Most of the species listed by F.-Villar probably do not extend to the Philippines.

## RHIZOPHORACEÆ.

**Gynotroches parvifolia**, sp. nov.

A small tree 8 to 10 m. high, with subcoriaceous, glabrous, shining leaves 5 to 7 cm. long, and perfect flowers. Branches dark brown, striate, entirely glabrous. Leaves elliptical to obovate, short blunt acuminate, tapering to the base, entire, 2.5 to 3.5 cm. wide; main nerves 6 pairs, anastomosing; petioles 5 to 8 mm. long. Flowers green, in axillary,

<sup>1</sup> Nov. App. 93. 1880.

<sup>2</sup> Engler und Prantl, Nat. Pflanzenfam. III. 6A:51. 1893, sub. Fig. 19.

6 to 10 flowered fascicles, the glabrous pedicels jointed in the middle, 3 mm. long. Calyx glabrous, 4-lobed, the lobes ovate, acute, 1.5 cm. long, with a minute tuft of hairs at the apex. Petals 4, obovate, glabrous, fimbriate, about 2 mm. long. Stamens 8, the filaments about 1 mm. long, the anthers 0.3 mm. long. Ovary subglobose, glabrous; style less than 1 mm. long; stigma obscurely lobed.

Type specimen Mount Mariveles, Province of Bataan, Luzon (1173 Whitford) March, 1905. A tree growing on exposed ridges in the mossy forest at an altitude of about 1,200 m., related to *Gynotroches axillaris* Blume, but differing from that species in its much smaller, few nerved leaves and perfect flowers.

**Pellacalyx pustulata**, sp. nov.

A small or medium sized tree with oblong nearly glabrous, acuminate leaves which are pustular-glandular beneath, and axillary, solitary, or fascicled, 5-merous flowers. Branches glabrous, light gray, the younger parts sparingly puberulous. Leaves 9 to 14 cm. long, 4 to 6 cm. wide, subcoriaceous, dark and shining above when dry, paler beneath and glabrous, or the midrib sparingly puberulous, the apex abruptly short blunt acuminate, the base acute, the margins entire or distantly, obscurely glandular toothed; nerves 9 to 10 on each side of the midrib, curved-ascending, prominent beneath; petioles stellate puberulous, 1 cm. long; stipules lanceolate, acuminate, 1 cm. long densely puberulous. Flowers white, fragrant, 1 to 5 in each axil, the pedicels slender, glabrous, 1 cm. long, minutely bracteate at the base, jointed at the base of the calyx. Calyx ebracteolate, glabrous outside, subcampanulate, 8 mm. long, pilose at the base inside, 5-lobed, the lobes reflexed in anthesis, broadly ovate, acute, 4 mm. long, densely puberulous inside. Petals 5, narrowly obovate, the base narrowed, entire, the apex subacute, fringed, glabrous inside, densely puberulous outside. Stamens 10, inflexed. Ovary inferior, 9-celled; ovules many in each cell, axillary, fascicled. Style 4 mm. long; stigma discoid, 2 mm. in diameter, 9 to 10 lobed.

Type specimen Lamao River, Province of Bataan, Luzon (3019 Meyer), May 12, 1905, (3040 Borden), same locality. A tree 12 m. high near the river, at an altitude of 300 m. above the sea, not common. Also collected by F. R. Alberto, near Los Baños, Province of Laguna, Luzon, May, 1905.

This genus has previously not been reported from the Philippines, the present species being the fourth proposed of the genus, *Pellacalyx axillaris* Korth., and *P. saccardianus* Schort., being found in the Malayan Peninsula, and *P. cristatus* Hemsl., in Borneo.

## MYRTACEÆ.

**Eugenia bordenii**, sp. nov. § *Jambosa*.

A tree reaching a height of 25 m. with elliptical-oblong, to oblanceolate, oblong or obovate, few nerved leaves, 13 cm. long or less, and terminal, rarely also axillary, dense, sessile or short peduncled panicles, the flowers including the stamens about 2 cm. long. Branches uniformly light gray, glabrous,

terete. Leaves 8 to 13 cm. long, 3 to 6 cm. wide, the base cuneate, the apex usually short, broad, blunt-acuminate, coriaceous, glabrous, shining, light brown above, pale and with few small scattered dark glands beneath; nerves obscure, 10 to 12 on each side of the midrib, irregular, anastomosing and forming a faint marginal nerve, the secondary nerves nearly as prominent as the primary; petioles stout, about 3 mm. long. Panicles 4 to 6 cm. long, densely flowered, the branches stout, spreading, the lower ones 3 cm. long or less. Flowers white, sessile or nearly so, the buds obovoid. Calyx funnel shaped, 1 cm. long, 5 to 6 mm. thick above, the lobes reniform, glandular punctate, 5 to 6 mm. long, spreading. Petals 4, free, broadly ovate, 8 to 9 mm. long, glandular-punctate. Stamens many, 1 cm. long, the anthers 0.7 mm. long. Style 1.5 cm. long. Fruit globose, 1.5 cm. in diameter, crowned by the calyx lobes.

Specimens examined, all from Luzon: Province of Bataan, Lamao River (633, 644, 690, 691, 1206, 1208, 1630, 1736 Borden), April to August, 1904; (328 (type), 492, 497, 540 Barnes, same locality; (362 Whitford), same locality; Province of Rizal (393, 2434 Ahern's collector).

A large tree with light gray bark, growing in the lower hill forests very common at Lamao River.

**Eugenia lobas** Blanco, Fl. Filip. ed. 1, 857. 1837. *Eugenia cauliflora* Blanco, ed. 2, 291. 1845 (err. typ. *canliflora*); ed. 3, 2:177; F.-Vill. Nov. App. 86. 1880, not *Jambosa cauliflora* DC. § *Jambosa*.

A tree reaching a height of 20 m., with elliptical-oblong to lanceolate-oblong few nerved leaves 10 cm. long or less, the flowers in 3 to 5 flowered cymes, arranged in small or very large fascicles on the trunk and larger branches. Branches light gray to grayish red, glabrous, leaves 7 to 10 cm. long, 2 to 5 cm. wide, pellucid-punctate, the apex acuminate, the base acute, glabrous and shining on both surfaces; nerves 6 to 8 on each side of the midrib, distant, rather prominent beneath, anastomosing and forming a rather prominent marginal nerve, the reticulations lax, not prominent; petioles glabrous, about 4 mm. long. Cymes 2 to 5 cm. long, glabrous, borne on nodules throughout the length of the trunk, the pedicels 6 mm. long or less. Flowers white or pink, the buds obovoid. Calyx funnel shaped, about 8 mm. long, the lobes spreading, reniform. Petals 4, free, not cohering, orbicular, about 5 mm. in diameter, strongly glandular punctate. Stamens many; filaments about 6 mm. long; anthers 0.4 mm. long. Fruit ovoid, about 4 cm. long, when mature, very fleshy, acid, crimson.

Specimens examined, Luzon: Province of Tayabas, Atimonan (3995 Merrill), March, 1905 (flower); Guinayangan (837 Hagger), May, 1904 (sterile). Province of Camarines, Pasacao (187 Ahern), January, 1902 (sterile). Province of Pampanga, Mount Arayat (112 Bolster), May, 1905 (fruit). Mindanao, District of Davao (504 Copeland), March, 1904 (flowers).

A very distinct species, there being no doubt as to the identity of Blanco's species with the form here described. It is well characterized by its cauline inflorescence, and rather large, crimson, very fleshy, acid fruits. Blanco states that he saw specimens cultivated in Manila, and that the natives called the tree *Lobas*. I have been unable to find it in the city and

have not encountered a native who knows a fruit by the above name. The tree is very common on Mount Arayat, and is common and widely distributed in Tayabas Province, while Mr. Bolster informs me that it is also common in the mountains of Cagayan Province, northern Luzon. Known to the Pampangans as *Bagabág*, and to the Tagalogs as *Midbit*, and, according to Blanco, *Lobas*.

***Eugenia congesta***, sp. nov. § *Syzygium*.

A small tree with obovate coriaceous, glabrous, obtuse or shortly abruptly blunt acuminate, densely veined leaves, and short terminal panicles, the flowers small, sessile in clusters at the apices of the branches, the corolla calyptrotrately deciduous. Branches reddish brown, glabrous, the branchlets much compressed. Leaves 4 to 6 cm. long, 2.5 to 4 cm. wide, the upper surface shining, the lower paler, pellucid-punctate, the margins rather strongly revolute, base acute; nerves very numerous, parallel, the midrib prominent beneath; petioles 6 to 8 mm. long. Panicles short, 2 to 3 cm. long, densely flowered, the rhachis and branches much compressed, glabrous, reddish brown. Flowers white, sessile, 6 to 8 mm. long including the stamens, the buds obovoid. Calyx funnel shaped, the mouth with 4 short, irregular teeth. Stamens numerous, 4 to 5 mm. long; anthers minute, 0.3 mm. long. Ovary 2-celled, each cell many ovuled. Fruit ovoid, glabrous, dark purple when mature, about 2 cm. long.

Type specimens: Mount Mariveles, Province of Bataan, Luzon (448, 150 Whitford), May and July, 1904. A small tree apparently related to *Eugenia descussata* Duthie, growing in the mossy forest on exposed ridges at an altitude of about 1,200 m.

***Eugenia whitfordii***, sp. nov. § *Jambosa*.

A tree reaching a height of 20 m., with small, elliptical-lanceolate, acuminate, few-nerved leaves, and 4-merous white flowers in few flowered cymes which are loosely fasciculate on the lower portion of the trunk. Branches light gray, glabrous, the branchlets slender, reddish. Leaves 5 to 8 cm. long, 1.5 to 3 cm. wide, mostly elliptical-lanceolate, but varying from lanceolate to oblanceolate, the base acute, the apex acuminate, glabrous, subcoriaceous, dark above, pale beneath when dry; nerves 5 to 6 on each side of the midrib, rather prominent beneath, anastomosing in a marginal nerve, the reticulations obscure; petioles reddish brown, 5 to 8 mm. long. Cymes 3 to 7 cm. long, 2 to 6 from each tubercle, 2 to 4 flowered, the rhachis 3 to 5 cm. long, the pedicels 5 to 10 mm. long. Flower buds obovoid. Calyx funnel shaped, about 1 cm. long, the lobes broader than long. Petals 4, deciduous, distinct, orbicular, 7 mm. in diameter. Filaments numerous, about 15 mm. long; anthers 1.5 mm. long.

Type specimen: Lamao River, Mount Mariveles, Province of Bataan, Luzon (468 Whitford), July, 1904; (1182 Borden), same locality and date.

A tree reaching a diameter of 40 cm., with pale bark, growing on forested slopes at an altitude of about 600 m. above the sea, well characterized by its cauline inflorescence.

***Eugenia longissima***, sp. nov. § *Jambosa*.

A lax shrub about 3 m. high, with very long, narrow lanceolate leaves, cordate at the base, and mostly solitary, pendulous, white flowers, 4 to 5 cm. in diameter, including the stamens, terminal and from the branches below the leaves. Branches 4-angled and narrowly wing-margined, slender, the older ones light gray, the young parts reddish brown. Leaves nearly sessile, 25 to 35 cm. long, 3 to 5 cm. wide, the base abruptly rounded, deeply cordate, the sinus narrow, gradually tapering above to the slender, scarcely acuminate apex, glabrous, shining, pale brown beneath; primary nerves 20 to 26 on each side of the midrib, distant, anastomosing and forming a marginal nerve, the secondary nerves nearly as prominent as the primary, the reticulations lax. Flowers terminal, 1 or 2 from the tips of the branchlets, or solitary on the branches below the leaves, pendulous, white, the pedicel slender, jointed, 4 cm. long. Calyx disk like, 2.5 cm. in diameter, the lobes reniform, spreading. Petals 4, broadly ovate, obtuse, about 1.5 cm. long. Stamens very many.

Type specimen: Sablan, Province of Benguet, Luzon (6218 Elmer), April, 1904. A lax shrub, not common, overhanging the banks of damp shaded ravines along streams, well characterized by its large, pendulous flowers, 4-angled branches and very long, narrow leaves strongly cordate at the base.

***Eugenia glaucicalyx***, sp. nov. § *Syzygium*.

A tree reaching a height of 30 m., with ovate-lanceolate to lanceolate, acuminate leaves, usually rounded at the base, pale beneath, the inflorescence axillary and terminal racemose panicles, the calyx oblong-obovate, strongly wrinkled, densely covered with a silvery gray, minutely crystalline bloom. Branches reddish brown, glabrous, terete, slender. Leaves 9 to 17 cm. long, 2 to 4.5 cm. wide, the base rather abruptly rounded, sometimes slightly cordate, rarely subacute, tapering above to the usually long, slender acuminate apex, shining above, pale and with few, minute, scattered, dark colored glands beneath, but not pellucid-punctate, glabrous; primary nerves about 20 on each side of the midrib, irregular, rather obscure, scarcely more prominent than the secondary nerves and reticulations; petioles rugose, about 3 mm. long. Inflorescence 7 to 14 cm. long, the rachis and branches pale, glabrous, or slightly whitish crystalline like the calyx, the branches spreading or ascending, few flowered, 2.5 cm. long or less. Flowers, including the stamens, about 2 cm. long, white, sessile. Calyx 8 to 9 cm. long, 3 to 4 mm. thick above, narrowed below to the short pseudostalk, strongly longitudinally rugose wrinkled when dry, densely covered with a crystalline silvery bloom, the lobes short. Petals 4, orbicular to broadly ovate, very strongly imbricate, 3 to 4 mm. long, with few pellucid glands, falling as a whole. Stamens many, about 1 cm. long, the anthers 0.7 mm. long. Style equaling the anthers.

Specimens examined, all from Mount Mariveles, Province of Bataan, Luzon: (2748 Borden), March, 1905 (flower); (817, 826, 1250 Borden), June, 1904 (all sterile); (3949 Merrill), March, 1905 (flower).

A large tree in the hill forests at an altitude of from 600 to 700 m. above the sea, distinguished by its peculiar rugose calyces which are covered with a silvery, minutely crystalline bloom.

***Tristania decorticata*, sp. nov. § *Eustristania*.**

A tree 15 to 20 m. high with alternate, glabrous, acuminate, petioled leaves, and axillary cymes shorter than the leaves, the pentadelphous stamens in groups of threes, opposite to and about as long as the petals, the bark shredding freely, giving the trunk a naked appearance. Branches grayish brown, the branchlets reddish brown, glabrous. Leaves 6 to 10 cm. long, 2 to 3 cm. wide, tapering at both base and apex, the latter slightly acuminate, the acumen blunt, both surfaces shining, the lower pale, sparingly and minutely glandular punctate, the margins reflexed; nerves numerous, obscure; petioles about 1 cm. long. Cymes glabrous or minutely puberulous, 4 to 6 cm. long, the pedicels 2 to 3 mm. long. Flowers white, about 4 mm. in diameter. Calyx obscurely 5-toothed, pubescent inside. Petals 5, orbicular, glabrous, not clawed. Stamens 15, in five groups of three each, the filaments slightly united below, the middle one of each group slightly longer than the lateral ones. Ovary densely pubescent, subglobose, more than  $\frac{1}{2}$  superior, 3-celled, each cell with many ovules.

Type specimen: Tinauan River, Province of Tayabas (Infanta), Luzon (787 Whitford), September, 1904. A tree growing in the hill forests along the river at altitude of from 100 to 200 m. above the sea, said by the collector to be common in the locality where the specimens were taken. No species of the genus, which is largely developed in Australia, has previously been found in the Philippines.

**MELASTOMATACEÆ.*****Astronia meyeri*, sp. nov.**

A tree about 8 m. high with elliptical-oblong, sub-5-nerved leaves, which are densely fulvous furfuraceous beneath, short densely flowered panicles, and 5-merous flowers. Branches terete, dark brown, glabrous, scarcely thickened. Leaves 10 to 20 cm. long, 6 to 8 cm wide, narrowed regularly to the acute base and apex, or the apex very slightly acuminate, green and glabrous above, beneath pale brown and densely covered with thin papery scales; nerves 5, the inner three prominent, the marginal ones not more prominent than the transverse nerves; petioles 3 to 5 cm. long, glabrous. Panicle bright red, densely fulvous furfuraceous, 6 cm. long, the branches stout, spreading or ascending, densely flowered, the lower ones 4 cm. long. Flowers red, odorless, subglobose, 3 to 4 mm. in diameter, the calyx teeth five, triangular, acute, regular, 1.5 mm. long. Petals 2 mm. long.

Type specimen: Mount Mariveles, Province of Bataan, Luzon (2840 Meyer), March, 1904. A very distinct species, reaching a height of 8 m. and a diameter of 15 cm., growing in forested ravines at an altitude of about 1,200 m. above the sea.

***Medinilla involucrata*, sp. nov.**

A scandent shrub, more or less stellate-plumose pubescent, with opposite 7-nerved leaves, short axillary few flowered racemose inflorescence 2 to 4 cm. long, the 5-merous flowers subtended by two large persistent bracts. Branches light gray, glabrous, the branchlets very densely ferruginous stellate-plumose pubescent. Leaves elliptical oblong to broadly lanceolate,

membranous, 7 to 10 cm. long, 3 to 5 cm. wide, the apex sharp acuminate, tapering below to the narrow obtuse base, glabrous above, nearly glabrous beneath except the rather densely stellate-plumose pubescent nerves and midrib; petiole very short or the leaves sessile. Racemes 2 to 5 flowered, the rachis and pedicels densely ferruginous stellate-plumose pubescent, the bracts with scattered stellate hairs; pedicels 2 to 3 mm. long, each subtended by a broadly ovate bract 5 to 6 mm. long, each flower subtended by two persistent, membranous, red, broadly ovate, acute bracts about 13 mm. long, and 10 mm. wide. Calyx urceolate, 4 mm. long, densely hirsute with spreading white hairs, the margin strongly 5-lobed, the teeth membranous, acute broadly ovate, about 2 mm. long. Petals 5, oblong or narrowly obovate oblong, regular, the apex rounded, 9 mm. long, 5 mm. wide. Stamens 10, subequal; filaments 5 mm. long; anthers 4 mm. long.

Type specimen: Baco River, Mindoro (328 McGregor), May 15, 1905, growing in very humid forests; also a specimen collected by Copeland at San Ramon, District of Zamboanga, Mindanao, January, 1905, growing near streams at an altitude of from 200 to 500 m. above the sea. A species apparently related to *Medinilla setigera* Miq., and *M. bracteata* Blume, but very distinct from those species.

***Medinilla copelandi*, sp. nov.**

A shrub about 3 m. high, with opposite, glabrous, petioled, 7-nerved leaves and lateral, cymose inflorescence. Branches slender, light gray, glabrous, terete or the ultimate branches somewhat angular. Leaves oblong-ovate, narrowed to the acute base, the apex short slender acuminate, 15 to 20 cm. long, 7 to 8.5 cm. wide. Inflorescence from the branches below the leaves, 5 to 7 cm. long, glabrous or very slightly furfuraceous, the peduncle 3 to 5 cm. long, the bracts about 3 mm. long, the bracteoles minute. Calyx cylindrical-campanulate, glabrous, truncate, 6 mm. long. Petals 4, 9 mm. long, very strongly subrhomboidal oblique. Stamens 8; filaments 4 mm. long; anthers 6 mm. long.

Type specimen collected by E. B. Copeland, without number, in the mountains near San Ramon, District of Zamboanga, Mindanao, April 7, 1905. A small shrub growing in forests along mountain streams at an altitude of about 800 m. above the sea.

***Memecylon affine* sp. nov. § *Eumemecylon*.**

A slender lax shrub 1 to 3 m. high, with hermaphrodite flowers, axillary and terminal cymose inflorescence, 3-nerved sessile leaves, the slender lateral nerves arched between the transverse nerves, the branches terete glabrous, brownish gray. Leaves triangular-ovate, ovate oblong, to triangular lanceolate, broadest near the rounded or cordate base, gradually narrowed above to the rather slender acute or slightly acuminate apex, 6 to 11 cm. long, 2.5 to 4.5 cm. wide, coriaceous, glabrous, pale beneath when dry, the nerves obscure above, and not prominent beneath, the transverse nerves straight, about 12 on each side of the midrib, about as prominent as the lateral nerves. Cymes 5 to 7 cm. long, minutely furfuraceous puberulent, the peduncle 2 to 3.5 cm. long, the branches verticillate, divaricate, the flowers at the apices of the branchlets in

capitulate umbels, pedicels 1 to 2 mm. long. Calyx about 2 mm. long, obscurely 5-toothed. Petals broadly orbicular-ovate. Fruit globose, 6 to 7 mm. in diameter.

Specimens examined, all from Mount Mariveles, Province of Bataan, Luzon: (3190 Merrill), October, 1903; (1336 Borden), July, 1904; (6059 Leiberg) July, 1904. An apparently narrow-leaved form is represented by No. 3184 Merrill.

A small, weak shrub growing on exposed forested ridges in the mossy forest at an altitude of about 1,000 m. Apparently most closely related to *Memecylon presliianum* Triana, however differing in its much smaller, differently shaped leaves and shorter inflorescence.

**Pogonanthera reflexa** Blume, *Flora*, 14: 521. 1831; Cogn. in DC. *Monog. Phan.* 7: 610. 1891.

This species is apparently well represented by a specimen from Baco River, Mindoro, (313 McGregor) May, 1905. The above specimen differs from the species as described, in its slightly larger leaves, which are rather prominently acuminate, and somewhat longer panicles, but is apparently referable to this species, which extends from Malacca to Sumatra, Java, and Borneo. *Pogonanthera reflexa* has been reduced by various authors to *P. pulverulenta* Blume, but our specimen agrees more closely with the description of the former species, which is here retained. A typical Malayan genus, of which no species have previously been reported from the Philippines.

## ARALIACEÆ.

**Schefflera angustifolia** sp. nov.

A scandent shrub with digitate leaves, the leaflets elongated, narrowly lanceolate, the flowers pedicellate in small umbels, the umbels racemously arranged on the elongated branches of the terminal panicle. Branches glabrous. Leaves alternate, glabrous; petiole 11 to 14 cm. long; stipules adnate to the petiole, prominent, about 1 cm. long; leaflets 6 to 9, membranous, narrowly lanceolate, 12 to 20 cm. long, 1.5 to 3 cm. wide, entire, the base acute, the apex sharp acuminate, margins revolute; primary nerves 13 to 15 on each side of the midrib, not more prominent than the secondary nerves and rather lax reticulations; petiolules 3 to 4 cm. long. Panicle terminal, the rhachis short, stout, 5 to 6 cm. long, densely white or rufous stellate pubescent, the branches 20 to 35 cm. long, more or less stellate pubescent at least below, becoming nearly glabrous, each subtended by a large ovate, acute, or acuminate, densely mealy pubescent bract 1 to 1.5 cm. long. Flowers disposed in 10 to 15 flowered umbels, the umbels racemously arranged on the long branches, the peduncles to the individual umbels slender, more or less stellate pubescent, 1 cm. long or less: male flowers white, 5-merous, the pedicels 4 to 5 mm. long, the calyx teeth very short. Petals oblong ovate, acute, 1.5 mm. long. Stamens 5; filaments 4 mm. long. Female flowers not seen.

Specimens examined, all from Rizal Province, Luzon: San Mateo (1117 Ahern's collector), May, 1904; Bosoboso (3111 Ahern's collector), May,

1905, (1889 Merrill), April, 1903; (1735 Merrill), Antipolo, is probably also referable here. T., *Sainit*.

A characteristic species recognized by its narrow elongated leaves, terminal panicle and very long panicle branches.

## CORNACEÆ.

### *Alangium meyeri* sp. nov. § *Marlea*.

A tree 20 m. or more in height, with oblong, acuminate, feather veined leaves, axillary, few flowered cymes, and fragrant flowers 12 to 14 mm. long, the ovary glabrous, 1-celled, 1-ovuled. Branches brownish gray, glabrous, the ultimate branchlets more or less puberulous. Leaves coriaceous, pale when dry, 10 to 18 cm. long, 4 to 7 cm. wide, the base rounded or obtuse; nerves about 10 on each side of the midrib, rather prominent beneath; petioles 6 to 8 mm. long, stout, puberulous, Cymes about 2 cm. long, 5 to 8 flowered, the axis, branches, calyx and corolla, finely, densely, cinereous pubescent. Flowers cream colored, very fragrant, the pedicels 3 to 4 mm. long. Calyx green, furrowed; 3 mm. long, almost truncate. Petals 7, coriaceous, about 14 mm. long, 2 mm. wide. Stamens 6 to 7; filaments thick, curved, 4 mm. long, slightly hairy on the inner side above; anthers 6 to 7 mm. long. Ovary glabrous, 1-celled, 1-ovuled. Style clavate, about 10 mm. long, sparingly appressed pubescent above.

Type specimen: Lamao River, Province of Bataan, Luzon (2284 Meyer), December, 1904, also No. 2334 Borden, same locality and date.

A tree reaching a height of 15 m. and a diameter of from 15 to 25 cm. not common in the hill forests at altitudes of from 15 to 100 m. above the sea.

## ERICACEÆ.

### *Vaccinium banksii* sp. nov.

An undershrub, 1 m. high or less, with lanceolate to elliptical lanceolate, acute or obtuse, short petioled leaves, 4 cm. long or less, and axillary, few flowered racemes about 3 cm. long. Branches striate, glabrous, black and light gray. Leaves coriaceous, 3 to 4 cm. long, 8 to 15 mm. wide, pale beneath, glandular, tapering to the cuneate base, the margins revolute, slightly undulate; nerves not prominent, ascending, 3 or 4 on each side of the midrib; petioles stout, 2 mm. long or less. Racemes very sparingly pubescent, becoming glabrous or nearly so, the pedicels 3 to 5 mm. long. Calyx sparingly pubescent, 5-toothed, the teeth acute, 1 mm. long. Corolla urceolate, glabrous, 7 mm. long, gradually smaller upwards, shortly 5-lobed, the lobes reflexed, about 1.5 mm. long, obtuse. Stamens 10; filaments about 1.5 mm. long; anthers oblong, 1 mm. long. Ovary glabrous, 5-celled; style stout, nearly 6 mm. long. Fruit unknown.

Type specimen collected by C. S. Banks, Canlaon Volcano, Negros, March, 1902, growing in rather open forests at an approximate altitude 1,300 m. A species related to *Vaccinium cumingianum* Vidal, but quite distinct. Mr. Banks's small collection is to our knowledge the only one ever made on Canlaon Volcano, he having ascended to the summit in March, 1902.

## SAPOTACEÆ.

***Palaquium whitfordii* sp. nov.**

A tree reaching a height of 25 m. with glabrous, obovate, obtuse, 7 to 9 nerved leaves, and very few, axillary, solitary flowers. Branches grayish brown, striate, glabrous, the ultimate branchlets appressed ferruginous pubescent. Leaves 6 to 10 cm. long, 4 to 6 cm. wide, coriaceous, pale when dry, tapering from above the middle to the cuneate base, the nerves spreading, 8 to 10 mm. apart; petioles slightly ferruginous pubescent, becoming glabrous, 1 to 2 cm. long. Flowers solitary in the upper axils, very few, usually but one on a branchlet, the pedicels and calyx appressed ferruginous pubescent, the former 5 mm. long. Calyx lobes broadly triangular ovate to suborbicular, acute or obtuse, 3 mm. long, the inner lobes much thinner than the outer. Corolla 5 mm. long, the lobes 2 mm. long, blunt. Stamens 4 mm. long. Ovary pubescent.

Type specimen: Lanao River, Province of Bataan, Luzon (1015 Whitford), December, 1904; also from the same locality (496 Barnes), November, 1903.

A species most closely related to *Palaquium bataanense* Merr., but distinguished from that species by its broadly obovate, fewer nerved leaves and few flowers. A careful examination of the tree from which Whitford secured his specimens in December yielded but three branchlets, each with a solitary flower, and on a second examination in January, 1905, no flowers were found. An inspection of the tree from which Barnes secured his specimens, in December, 1903, and again in December, 1904, yielded no flowers, those on the specimen collected in November, 1903, being immature. This tree grows in the hill forests at an altitude of about 100 m., reaching a height of 25 m. and a diameter of from 40 to 60 cm.

***Sideroxylon ahernianum* sp. nov.**

A small or medium sized tree, with glabrous, coriaceous, 9 to 11 nerved, narrowly oblong-ovate to elliptical-lanceolate leaves, and small, axillary, fasciculate flowers. Branches light gray, glabrous, striate, the ultimate branchlets more or less ferruginous pubescent. Leaves 9 to 12 cm. long, 3 to 5 cm. wide, the apex blunt, or nearly acute, below tapering to the somewhat decurrent base, the upper surface smooth and shining, pale beneath, the young leaves minutely silvery pubescent beneath, becoming entirely glabrous; nerves subprominent on both surfaces, anastomosing near the margin, the reticulations evident on both surfaces; petioles at first appressed pubescent, becoming glabrous, 2 to 2.5 cm. long. Flowers 4 mm. in diameter, in axillary 5 to 25 flowered fascicles, the pedicels and calyx densely silvery and ferruginous pubescent, the former 4 to 7 mm. long. Calyx lobes 5, broadly ovate, 3 mm. long. Corolla lobes 5, ovate, obtuse, 3 mm. long. Anthers 1.8 mm. long, the filaments short; staminodes entire, lanceolate, 1 to 1.5 mm. long. Ovary pubescent.

Type specimen: Bosoboso, Province of Rizal, Luzon (2165 Ahern's collector), December, 1904. A species apparently related to *Sideroxylon attenuatum* A. DC., but the leaves not ferruginous pubescent.

**Sideroxylon angustifolium** (*Palaquium angustifolium* Merrill, Govt. Lab. Publ. 17:43. 1904.)

Additional material of this species, in flower, has been collected from the same locality from which the type of *Palaquium angustifolium* was secured, from an examination of which a reëxamination of No. 3744 Merrill the species must go to *Sideroxylon*. Calyx 5-partite, not 6, as in the original description, the lobes ovate, acute, 5 mm. long, densely ferruginous pubescent. Corolla glabrous, 3 mm. long (immature) 5-lobed, the lobes oblong-obovate, truncate. Stamens 5, the filaments short, the anthers ovoid, nearly 1.5 mm. long; staminodes 2 to 2.5 mm. long, about 0.4 mm. wide, linear-oblong, truncate, obtuse or somewhat retuse, not lobed or lacerate. Ovary ferruginous pubescent, 5-celled; style glabrous, stout, channeled, 3 mm. long.

Mount Mariveles, Province of Bataan, Luzon (3744 Merrill), January, 1904 (fruit), type of *Palaquium angustifolium*; (1166 Whitford), same locality, March, 1905 (flower). This species was originally described from fruiting specimens, and the calyx erroneously characterized as 6 lobed instead of 5 lobed as it really is.

**Sideroxylon macranthum** sp. nov.

A large tree, reaching a height of 30 m., with oblong-obovate, long petioled, obtuse to somewhat acuminate leaves, which are more or less rusty tomentose when young, becoming glabrous, and numerous flowers about 5 mm. long, fasciculate in the axils of the leaves, the staminodes entire. Branches rather stout, brownish gray, striate, more or less ferruginous pubescent, becoming glabrous, the leaf scars rather prominent. Leaves subcoriaceous, 11 to 18 cm. long, 4 to 8 cm. wide, shining, the base acute, often somewhat decurrent; nerves 10 to 11 pairs, prominent, the secondary ones and reticulations rather obscure; petioles 2 to 4.5 cm. long, at first rusty tomentose, becoming glabrous. Flowers creamy white, in fascicles of from 3 to 5, crowded in the axils near the apices of the branchlets, the buds subglobose, obtuse, the pedicels 3 to 5 mm. long and with the sepals uniformly densely rusty pubescent. Sepals 5, imbricate, orbicular-ovate, obtuse, 5 mm. long. Corolla glabrous, cylindrical, equaling the sepals, 5-lobed, the lobes 2 mm. long, ovate, obtuse-truncate. Stamens 5, included, the anthers nearly 1 mm. long, obtuse; staminodes lanceolate, blunt, entire, about 1 mm. long. Ovary densely villous, 5-celled; style stout, about 1 mm. long. Fruit globose, about 3.5 cm. in diameter, deciduously ferruginous pubescent, 2 to 3 seeded.

Type specimens: (2741 (flower) and 1809 (fruit) Borden), Lamao River, Province of Bataan, Luzon, March, 1905, and September, 1904; (51 Barnes, same locality), October, 1903; also apparently No. 2608 Merrill, Pagbilao, Province of Tayabas, Luzon. This species was identified by the author, when received, as *Sideroxylon duclitan* Blanco, but is certainly not that species, and is apparently undescribed. The species previously described by the author as *Sideroxylon ramiflorum* is certainly a synonym of *Sideroxylon duclitan* Blanco.

## EBENACEÆ.

**Diospyros nitida** sp. nov.

A small tree 5 to 10 m. high, with alternate, lanceolate, acuminate leaves, very black and shining when dry, and axillary fascicled or short, dense, cymose inflorescence. Branches grayish, striate, more or less pubescent, the branchlets slender, black, usually rather densely pubescent. Leaves 5 to 8 cm. long, 1.5 to 3 cm. wide, submembranous, glabrous, very shiny above, rather dull and slightly pubescent beneath, especially on the midrib, the apex rather slender acuminate, the acumen blunt, the base acute; nerves obscure; petioles 4 to 5 mm. long, pubescent. Fascicles 4 to 8 flowered. Flowers 4-merous, white. Calyx 2 mm. long, slightly pubescent, 4-lobed, the lobes broadly ovate, 1 mm. long, the margins ciliate. Corolla 4 mm. long, urceolate, the lobes ovate, acute, 2 mm. long. Stamens 16, unequal, all on the receptacle or at the base of the corolla, glabrous or minutely puberulous, the anthers dehiscing by longitudinal slits. Ovary glabrous. Fruit somewhat fleshy, globose, black, shiny and more or less wrinkled when dry, 10 to 12 mm. in diameter, 4-celled, each cell with one seed. Seeds 6 mm. long, brown, reticulate, the albumen not ruminated, the fruiting calyx about 1 cm. in diameter, the lobes spreading, elliptical-ovate, rounded.

Specimens examined: Luzon, Province of Rizal, Antipolo (1737 Merrill), March 1903 (fruit); Province of Zambales, Botolan (2976 Merrill), June, 1903 (fruit); Province of Bataan, Mount Mariveles (6713 Elmer), November, 1904 (flower). Guimaras Island (230 Gammill), January, 1904 (fruit).

A small tree in open thickets. T., *Canalum*, *Catclana*; V., *Manogarom*.

## OLEACEÆ.

**Fraxinus philippinensis** sp. nov. § *Ornus*.

A small tree with 3 to 4 jugate leaves, the leaflets entire, 5 cm. long or less, and hermaphrodite flowers, the samara 3 cm. long, retuse. Branches gray, glabrous, the ultimate branchlets somewhat pubescent. Leaves 10 to 15 cm. long, the rhachis slightly pubescent, becoming glabrous; leaflets 7 to 9, glabrous, subcoriaceous, lanceolate to ovate lanceolate, 2 to 5 cm. long, 0.8 to 1.5 cm. wide, somewhat inequilateral, the base acute, tapering above to the acuminate apex; nerves obscure, 9 to 10 on each side of the midrib; petiolules 3 to 9 mm. long. Panicles terminal and axillary, numerous, many flowered, pubescent, 8 to 10 cm. long. Flowers white, 3.5 mm. long, the pedicels 2 to 3 mm. long, slender, the bracts lanceolate, 2 mm. long. Calyx cup shaped, 1 mm. long, obscurely toothed. Petals 4, free, narrowly oblong, obtuse, 3 mm. long, 1 mm. wide. Stamens 2, the anthers nearly 3 mm. long. Ovary small, glabrous. Style slender, short. Samara 3 cm. long, glandular below but not pubescent, the seed bearing portion 6 to 8 mm. long, terete, margined above by the decurrent wing, the wing 4 to 5 mm. wide, narrowed below and slightly above, the apex retuse.

Province of Rizal, Luzon, Tanay (2274 Merrill), May, 1903 (flower);

Bosoboso (3082 Ahern's collector), May, 1905 (flower); (3200 Ahern's collector), July, 1905 (fruit).

No species of this genus has previously been found in the Philippines, the present one being evidently closely related to the Hongkong *Fraxinus retusa* Champ.

**Mayepea pallida** sp. nov.

A tree 8 to 10 m. high with very thick, coriaceous, glabrous, pale, short stout petioled leaves, the nerves obscure, and axillary, usually many flowered panicles, 2 to 7 cm. long, the flowers yellowish green, small. Branches silvery gray, glabrous. Leaves lanceolate to elliptical lanceolate, tapering below to the acute base, the apex acute or short acuminate, shining; nerves obscure, about 7 on each side of the midrib, sometimes nearly obsolete; petioles very thick, glabrous, light gray, about 5 mm. long. Panicles many flowered, solitary, glabrous, each subtended by several imbricated, pale, ovate lanceolate, acuminate bracts, the branches short, 1 cm. long or less. Flowers yellowish green, the pedicels 2 mm. long or less. Calyx 1 mm. long, the lobes short, triangular acute, slightly ciliate. Corolla glabrous, 2 mm. long, the lobes slightly united below, elliptical, obtuse, concave. Anthers broad, less than 1 mm. long. Ovary ovoid, glabrous, slightly exceeding 1 mm. in length. Fruit oblong obovoid, nearly 1 cm. long, apiculate, dark colored and reticulate when dry.

Type specimens: Bosoboso, Province of Rizal (2874 Ahern's collector), March, 1905 (flower); also No. 2670 Merrill, same locality, June, 1903 (fruit), and No. 1835 Merrill April, 1903; Province of Bataan, Mount Mariveles (1142 Whitford), March, 1905; (2792 Meyer), same date; Province of Camarines, Pasacao (44 Ahern), 1902; Mindoro, Pola (2255 Merrill), May, 1903; Guimaras Island (267, 280, 309 Gammill), January-February, 1904.

A species well characterized by its very thick, coriaceous, pale short petioled leaves and small flowers. The leaves of young specimens are frequently sinuous spinescent toothed, simulating those of *Taxotrophis ilicifolia* Vidal, and some species of *Ilex*.

**Mayepea racemosa** sp. nov.

A shrub or small tree 5 to 7 m. high with glabrous subcoriaceous, pale, rather short petioled leaves, the yellowish white flowers in axillary racemes. Branches silvery gray, glabrous. Leaves elliptical ovate, rather prominently acuminate, the acumen blunt, the base acute or acuminate, glabrous and shining on both surfaces, 8 to 13 cm. long, 5 to 7 cm. wide; nerves 7 to 8 on each side of the midrib, not prominent, anastomosing, the reticulations very lax; petioles thick, light gray, glabrous, about 5 mm. long. Racemes glabrous, solitary or two or three in each axil, black when dry, the rachis slender, 2 or 3 cm. long. Flowers opposite, yellowish white, somewhat fragrant, each subtended by a broad subtruncate bracteole about as long as the pedicel, the pedicels 1 to 1.5 mm. long. Calyx 1.5 mm. long, glabrous, the lobes orbicular ovate, obtuse, occasionally retuse. Petals 4, free, 5 to 5.5 mm. long, 1.3 mm. wide, oblong obtuse, glabrous, the margins recurved. Anthers 1.5 mm. long. Ovary ovoid, glabrous 1 mm. long.

Type specimen: Lamao River, Province of Bataan, Luzon (3042 Borden), May, 1905. Apparently also No. 3079 Ahern's collector, Bosoboso, Province of Rizal, Luzon, May, 1905.

A species differing from all other Philippine ones of the genus in its short petioles.

## APOCYNACEÆ.

### *Alstonia parvifolia* sp. nov.

A shrub or small tree 3 to 6 m. high, with whorled, lanceolate, acuminate, distantly nerved leaves, the ultimate branches of the inflorescence and calyces densely mealy pubescent the corollas glabrous or nearly so. Branches dark gray, glabrous, the ultimate branchlets reddish brown. Leaves 6 to 13 cm. long, 1 to 3.5 cm. wide, subcoriaceous, tapering above to the usually slender, blunt acumen and below to the narrow, somewhat decurrent base, the margins revolute; nerves about 18 pairs, subprominent; petioles 1 to 2 cm. long. Cymes subumbellate in the upper axils, 7 cm. long or less, the peduncles glabrous, the ultimate branchlets, bracteoles, and calyces densely mealy pubescent. Flowers white, fragrant. Calyx campanulate, 4 mm. long the lobes short, obtuse. Corolla 8 mm. long, glabrous outside, the tube about 4 mm. long, slightly contracted at the mouth and sparingly villous inside. Stamens about 1 mm. long. Ovary ovoid, glabrous, 2-celled, many ovuled; style 2 mm. long. Follicles in pairs glabrous, 20 cm. long, about 3 mm. in diameter. Seeds oblong, 6 mm. long, pubescent with brownish hairs, the apices and margins above long pilose.

Type specimen: Mount Mariveles, Province of Bataan, Luzon (2209 Meyer), November, 1904 (flower). From the same locality: (6876 Elmer), November, 1904 (flower); (1164 Whitford), March, 1905 (fruit).

A species apparently closely related to *Alstonia macrophylla* Wall., differing from the latter in its much smaller, firmer, glabrous leaves, more congested inflorescence and very densely mealy-pubescent calyces and younger parts of the inflorescence. A small tree growing on exposed ridges in the mossy forest at an altitude of about 1,100 m. above the sea.

### *Ellertonia mcgregori* sp. nov.

A scandent, nearly glabrous shrub with opposite, ovate, acuminate, membranous, opposite leaves and many flowered cymose axillary panicles, the flowers, including the corolla lobes, about 1.5 cm. long. Branches twining, glabrous, brown. Leaves 8 to 20 cm. long, 5 to 10 cm. wide, the base broad, rounded or cordate, glabrous, except for few scattered hairs on the nerves and margins of the younger leaves; nerves prominent, 9 to 12 on each side of the midrib, spreading, strongly anastomosing the primary reticulations subparallel, the nerves and reticulations darker colored and in strong contrast to the surface of the leaves; petioles 1 to 2.5 cm. long, somewhat strigose pubescent, becoming glabrous. Inflorescence axillary, 15 to 18 cm. long, somewhat strigose ferruginous pubescent, especially the branchlets, many flowered. Flowers fragrant, the pedicels 3 to 4 mm. long, the bracteoles broadly triangular ovate, about 1 mm. long. Calyx eglanular, the lobes elliptical ovate, obtuse, about 1 mm. long, the margins somewhat ciliate. Corolla salver shaped, white, the lower part of the tube

pale yellow, the tube cylindrical, slender, swollen below, constricted above, glabrous outside, hirsute within, limb lobed, the lobes spreading, 6 mm. long, 3 mm. wide at about the middle, then abruptly narrowed on one side, the terminal portion about 1.5 mm. wide, subobtusate. Stamens included in about the lower third of the tube, the anthers in the swollen portion, free from the style; filaments about 0.5 mm. long, pubescent; anthers 1.5 mm. long, oblong lanceolate, apiculate, the lobes rounded at the base. Ovary of two distinct glabrous oblong carpels united by the style, the ovary and style 3.5 mm. long, the style slender, not reaching beyond the anthers, slightly swollen above, the stigma slightly 2-lobed; ovules many in each cell, 2 or more seriate. Follicle unknown.

Type specimen: Baco River, Mindoro (285 R. C. McGregor), April 23, 1905. A scandent shrub growing in very humid forests, reaching a height of about 20 m. A species perhaps most closely related to *Ellertonia rheedii* Wight, a species of British India, but very distinct from the latter. A genus not previously reported from the Philippines, of which one species is known from British India, and three from Madagascar.

## BORRAGINACEÆ.

### CORDIA.

1. Calyx prominently 10-striate, hirsute-pubescent.
  2. Leaves obtuse or subcordate at the base ----- (1) *C. cumingiana*
  2. Leaves acute at the base ----- (2) *C. propinqua*
1. Calyx glabrous or pubescent, not striate.
  2. Flowers small 5 to 7 mm. long, the corolla tube shorter than the calyx.
    3. Plant glabrous or nearly so.----- (3) *C. blancoi*
    3. Plant softly pubescent----- (4) *C. blancoi mollis*
  2. Flowers large 3 to 4 cm. long the corolla tube exceeding the calyx----- (5) *C. subcordata*

(1) *Cordia cumingiana* Vidal, Phan. Cum. Philip. 128, 187. 1885; Rev. Pl. Vasc. Filip. 192. 1886; Ceron, Cat. Pl. Herb. 120. 1892.

A distinct endemic species represented by No. 1181 Merrill, Mindoro; (1321 Merrill), Province of Rizal, Luzon, and No. 5663 Elmer, Province of Union, Luzon.

(2) *Cordia propinqua*, sp. nov.

A small tree with ovate-lanceolate, acuminate, irregularly serrate sparingly scabrous-pubescent leaves, and rather lax terminal and axillary corymbs, the sessile flowers glomerate at the ends of the branchlets, 5 mm. long, the tubular calyx densely hirsute, prominently 10-striate, 5-dentate. Branches brown, sparingly appressed hirsute. Leaves membranous, 9 to 16 cm. long, 4 to 7 cm. wide, widest at about the middle, narrowed below to the acute base, and above to the rather slender acuminate apex, the margins irregularly serrate above, entire below, both surfaces with few short scattered appressed hairs; nerves about 6 on each side of the midrib, sharply ascending; petioles 1.5 to 2.5 cm. long, sparingly appressed hirsute. Corymbs about 10 cm. long, dichotomously branched, appressed hirsute.

Flowers white. Calyx tubular, prominently 10-striate, densely short hirsute-pubescent, 5-toothed. Corolla tube nearly as long as the calyx, the 5 lobes about 1.5 mm. long spreading or reflexed, Stamens 5, included, about 3 mm. long; filaments glabrous; anthers 0.5 mm. long. Ovary ovoid, 1.5 mm. long, glabrous, 2-celled, each cell 2-ovuled. Style 3 mm. long, obscurely twice cleft at the apex, scarcely partite. Drupe 7 to 8 mm. in diameter, the putamen very hard, strongly rugose, the calyx in fruit cleft on one side, rotate 6 mm. in diameter.

Type specimen collected by E. B. Copeland, without number, Davao, District of Davao, Mindanao, March, 1904.

A species apparently closely related to *Cordia cumingiana* Vidal, differing from the latter in its narrower, differently shaped leaves, which are acute at the base, and obscurely cleft style.

- (3) ***Cordia blancoi*** Vidal, Rev. Pl. Vasc. Filip. 192. 1886; Ceron, Cat. Pl. Herb. 120. 1892; Merrill, Forestry Bureau Bull. 1: 50. 1903; *Cordia sebestena* Blanco, Fl. Filip. ed. 1, 121. 1837; ed. 2, 87; ed. 3, 1:158; Naves, ed. 3, pl. 43, excl. syn., non Linn.; *Cordia dichotoma* Blanco, l. c., ed. 1, 123; ed. 2, 88, ed. 3, 1: 159, non Forst. *Cordia myxa* F.-Vill. Nov. App. 137. 1880; Vidal, Cat. Pl. Prov. Manila, 37. 1880; Synopsis, Atlas, t. 70. f. D. 1883; Ceron, Cat. Pl. Herb. 121. 1892, non Linn.; *Cordia leschenaultiana* Vidal, Phan. Cuming. Philip. 128. 1885; Rev. Pl. Vasc. Filip. 193. 1886, non A. DC.

An endemic species apparently very closely related to *Cordia myxa* Linn., common throughout the Philippines, represented by the following specimens: Luzon, Province of Rizal (1872, 2625 Merrill), Province of Bataan (768, 1267, 1273 Borden), Province of Zambales (2912 Merrill), Province of Tayabas (22 Ritchie), Province of Camarines Sur (33, 84, 783, 791 Ahern). Guimaras Island (321 Gammill). Burias Island (983 Clark). Masbate (1008 Clark). Mindanao, District of Surigao (355 Ahern); District of Davao (342 Copeland).

*Cordia leschenaultiana* A. DC., has been credited to the Philippines by Vidal<sup>1</sup> based on No. 1612 of Cuming's Philippine collection, this number being also cited by A DeCandolle<sup>2</sup> in a footnote under the above as possibly representing the species. A specimen of Cuming's plant exists in our herbarium, and it is certainly only a young form of *Cordia blancoi* Vidal. The leaves of *Cordia blancoi* are exceedingly variable, being frequently acute, truncate or cordate at the base on the same specimen. In Cuming's specimen mentioned above, the leaves are all acute at the base, while no open flowers are with it, only young flower buds being present.

- (4) ***Cordia blancoi*** Vidal, var. *mollis* Merrill, var. nov.

Similar to the species, differing in its more densely flowered cymes, slightly smaller flowers, the young branches, petioles, leaves, inflorescence and calyces rather densely softly fulvous pubescent.

Type specimen: Antipolo, Province of Rizal, Luzon (455 Ahern's collector), April, 1904.

<sup>1</sup> Phan. Cuming. Philip. 128. 1885; Rev. Pl. Vasc. Filip. 193. 1886.

<sup>2</sup> Prodr., 9: 482. 1845.

- (5) ***Cordia subcordata*** Lam. Illustr. 2: 421. 1793; DC. Prodr. 9: 477 1845; Miq. Fl. Ind. Bat. 2: 915. 1856; Clarke in Hook. f. Fl. Brit. Ind. 4:140. 1883; F.-Vill. Nov. App. 137. 1883; Vidal, Synopsis, Atlas, 34. t. 70. f. E. 1883; Phan. Cum. Philip. 128. 1885; Rev. Pl. Vasc. Filip. 192. 1886; Ceron, Cat. Pl. Herb. 120. 1892; *Cordia banalo* Blanco, Fl. Filip. ed. 1, 124. 1837; *Cordia ignota* Blanco, l. c., ed. 2, 88. 1845, ed. 3, 1:160.

A species apparently common along the sea shore, at least in the southern Philippines, extending from Bengal to Australia, Polynesia, and the Sandwich Islands. Buriias Island (1733 Clark). Luzon, Province of Camarines Sur (84 Ahern). Mindanao, District of Davao (230 DeVore and Hoover) (620 Copeland).

#### EXCLUDED SPECIES.

*Cordia paniculata* Roth. This species is credited to the Philippines by F.-Villar.<sup>1</sup> It is a synonym of *Cordia myxa* Linn., a species not known from the Philippines, and the material cited by F.-Villar was undoubtedly a form of *Cordia blancoi* Vidal. An accurate identification of the plant F.-Villar had in mind when he credited this species to the Philippines is quite impossible at the present time, as his herbarium has been destroyed. The species should be excluded, or could be quite safely referred to *Cordia blancoi* Vidal. F.-Villar's specimens were from Negros, the native name *Agut-ut* being cited. This name appears on specimens of *Cordia subcordata* Lam., in our herbarium.

#### VERBENACEÆ.

***Clerodendron blancoi*** Naves, Fl. Filip. ed. 3, pl. 223. 1877; Vidal, Cat. Pl. Prov. Manila, 39. 1880; Rev. Pl. Vasc. Filip. 211. 1886; Ceron, Cat. Pl. Herb. 133. 1892. *Clerodendron fortunatum* Blanco, Fl. Filip. ed. 1, 508. 1837; ed. 2, 354. 1845; ed. 3, 2: 281, non Linn.: *Clerodendron infortunatum* F.-Vill. Nov. App. 161. 1882, non Linn. *Clerodendron minahassae* Merrill, Forestry Bureau, Bull. 1:52. 1903, non Teysm et Binn.

A shrub or small tree 2 to 7 m. high, glabrous or nearly so, with oblong ovate, acuminate leaves, terminal few flowered panicles, the calyces inflated, tubular, 2 to 2.5 cm. long, the corolla tube slender, 5 cm. long, slightly puberulent. Branches gray or brown, lenticillate, glabrous or nearly so. Leaves opposite, 9 to 20 cm. long, 5 to 11 cm. wide, the base rounded or obtuse, the apex short acuminate, the margins entire, glabrous or nearly so; nerves about 12 on each side of the midrib; petioles glabrous, 3 to 7 cm. long. Panicles few flowered, simple, glabrous or slightly pubescent, the branches few, 2 to 2.5 cm. long, each bearing three flowers. Flowers fragrant, white or cream colored. Calyx slightly pubescent, green, often tinged with purple, about 6 mm. in diameter, somewhat dilated in the middle, 5 cleft, the teeth oblong ovate, about 8 mm. long. Corolla tube slender, exserted, the limb spreading, 5-cleft, the lobes oblong 1.5 to 2 cm.

<sup>1</sup> Nov. App., 138. 1880.

long. Stamens equaling the lobes. Calyx in fruit cleft half way to the base, enlarged, green outside, red within, the fruit globose, about 1 cm. in diameter, deep blue.

Specimens examined: Luzon, Lamao River, Province of Bataan (1609, 1915 Borden) (3089, 3866 Merrill) (6012, 6115 Leiberg) (418 Whitford); Province of Rizal, Antipolo (13 Guerrero); Bosoboso (2707, 2838 Merrill) (1153 Ahern's collector); Province of Zambales (2938 Merrill). Mindanao, District of Zamboanga, Tetuan (586 Ahern).

Although above the name *Clerodendron blancoi* Naves, is published in the places cited above, without a description and without references to other species as synonyms, yet the plate so named by Naves, enables us at once to identify the species, and the reference by F.-Villar, of this plate, with *Clerodendron fortunatum* Blanco, to *Clerodendron infortunatum*, shows the species of Blanco, which Naves intended his plate to represent. This name was published before *Clerodendron blancoanum* F.-Vill., and although without a description, we are of the opinion that the citation of the name as a synonym, by F.-Villar, should be considered a valid publication, and the name retained rather than to adopt a new name for this common species. *Clerodendron blancoanum* F.-Vill., although well described by that author, is a synonym of *Clerodendron quadriloculare* Merrill (*C. navesianum* Vidal.)

**Clerodendron quadriloculare** (Blanco) *Ligustrum quadriloculare* Blanco, Fl. Filip. ed. 1, 10. 1837; ed. 2, 7. 1845; ed. 3, 1: 14. 1877: *Clerodendron longiflorum* Schauer, DC. Prodr. 11: 670. 1847, p.p., as to the Philippine specimens; F.-Vill., Nov. App. 161. 1882: *Clerodendron navesianum* Vidal, Cat. Pl. Prov. Manila. 39. 1880; Sinopsis, Atlas, t. 75. f. D. 1883; Rev. Pl. Vase. Filip. 210. 1886; Ceron, Cat. Pl. Herb. 133. 1892: *Clerodendron blancoanum* F.-Vill. Nov. App. 161. 1882: *Clerodendron longiflorum* Decne., var. *speciosa* Naves, Fl. Filip. ed. 3, pl. 224, without description.

This species is apparently closely related to *Clerodendron longiflorum* Decne., but as pointed out by Vidal,<sup>1</sup> is distinguished from that species by the form of the calyx, the setaceous glandular segments shorter than the tube, the tube of the corolla glandular tomentose, the stamens shorter than the lobes of the corolla, and the petioles glandular pubescent. Schauer<sup>2</sup> refers to *Clerodendron longiflorum* Decne., not only the type, which was collected in the Island of Timor, but also specimens collected in Manila by Gaudichaud and Perrottet. Although the author has had no opportunity to examine these specimens, it is with considerable confidence that they are referred to *Clerodendron quadriloculare*, rather than to *C. longiflorum*. As noted by Vidal<sup>3</sup> both Gaudichaud and Perrottet botanized only accidentally in the Philippines, and for a short time only, and it is exceedingly probable that their specimens of *Clerodendron*, referred by Schauer to *C. longiflorum*, were collected from cultivated specimens in the city of Manila. *Clerodendron quadriloculare* is commonly grown in Manila, and is not found growing

<sup>1</sup> Cat. Pl. Prov. Manila, 39. 1880.

<sup>2</sup> DC. Prodr., 11: 670.

<sup>3</sup> Rev. Pl. Vase. Filip., 12.

spontaneously in the vicinity of the city, moreover, no specimens have been seen which agree well with Decaisne's original description of the species. After a careful examination of the original description of *Clerodendron longiflorum*, Schauer's later characterization of the species, and the material in the herbarium cited below, the conclusion has been reached that *Clerodendron longiflorum* Decne., does not extend to the Philippines, and that Schauer erred in referring the Philippine specimens collected by Gaudichaud and Perrottet, to this species. A future monographer can definitely settle this point, but for the present we are of the opinion that *Clerodendron longiflorum* Decne., should be excluded from the Philippines, and that the Philippine specimens previously referred to that species, should be referred to the species here considered.

Although Blanco's diagnosis of *Ligustrum quadriloculare* is imperfect, and in some characters apparently erroneous, it is quite certain that the species here considered is the one he attempted to describe, and accordingly his name is here accepted, as being the earliest available one for the species.

*Clerodendron quadriloculare* is abundant and widely distributed in the hill forests of the Philippines, extending to an altitude (Benguet) of at least 1400 M. above the sea. As noted above, it is commonly cultivated in Manila, the shrub with its numerous, very long white flowers and its leaves, green above, always more or less purplish, frequently uniformly dark purple beneath, making it very strikingly ornamental. It is represented by the following specimens:

Manila (Merrill), January, 1904; (Garcia), 1901, from specimens cultivated in gardens: Luzon, Province of Rizal (1355, 2338 Merrill) (1881, Ahern's collector); Province of Bataan, Mount Mariveles (3746 Merrill) (339 Barnes) (6762, 6767 Elmer); Province of Zambales, Subig (Hallier), January, 1904; Province of Benguet, Sablan (6220 Elmer); Baguio (5964 Elmer). Island of Ticao (1057 Clark).

***Clerodendron simile* sp. nov. § *Siphonanthus*.**

A shrub with glabrous, membranous, lanceolate to ovate-lanceolate acuminate leaves, and slender elongated flowers about 3 cm. long, in crowded, terminal, many-flowered panicles. Branches light gray, glabrous. Leaves 13 to 20 cm. long, 3 to 8 cm. wide, the base acute, the apex short acuminate, 3-nerved from the base, the margins entire; nerves about 7 on each side of the midrib, rather prominent beneath; petioles 2 to 8 cm. long. Panicles minutely puberulous, the branchlets 3-flowered, the bracts and bracteoles subulate, 1 to 3 mm. long. Calyx minutely sparingly puberulent, funnel shaped, 5 mm. long, 5-toothed, the teeth acute, 1.5 mm. long. Corolla 3 cm. long, the tube very slender, puberulous below, the lobes spreading, oblong, acute or obtuse, 6 mm. long, 2 mm. wide. Stamens about equaling the corolla lobes, the anthers 2 mm. long. Ovary globose, glabrous.

Specimens examined: Baco, Mindoro (1192 (type), 1234 Merrill), January, 1903; also a specimen collected on Semirara Island (R. C. McGregor), November, 1904.

A species with the general appearance of *Clerodendron quadriloculare*, differing from the latter in its much shorter flowers.

**Prema membranacea** sp. nov.

A subsucculent shrub with rather large, very thin, more or less pubescent, broadly elliptical-ovate to suborbicular-obovate entire leaves, and small 4-merous flowers, the calyx equally 4-toothed, the corolla equally 4-lobed, the lobes reflexed. Branches light gray, glabrous, the young branchlets dark brown, rather strongly pubescent with weak crisped hairs. Leaves 11 to 20 cm. long, 9 to 14 cm. wide, shortly abruptly acuminate, the base broad, truncate-rounded, the margins obscurely undulate, the upper surface with few scattered weak spreading hairs, especially on the nerves and midrib, the pubescence of the lower surface similar but stronger; nerves very prominent on both surfaces, ascending, 6 to 7 on each side of the midrib, the primary reticulations subparallel, rather lax; petioles 5 to 7 cm. long, rather densely pubescent with somewhat crisped hairs. Inflorescence a terminal corymbose panicle 12 to 14 cm. long, and nearly as broad, the peduncle, branches and bracts uniformly, rather densely, crisped, somewhat ferruginous pubescent, the bracts subulate, about 5 mm. long. Flowers yellowish white, sessile or nearly so. Calyx oblong, slightly strigose pubescent, 2 mm. long, equally 4-toothed, the teeth small, rounded or subacute. Corolla evenly 4-lobed, the tube 3 mm. long, glabrous outside, the throat densely villous, lobes reflexed, oblong, rounded, about 1.5 mm. long, slightly more than 1 mm. wide. Stamens 4, didynamous; filaments glabrous, slender, two slightly exceeding 4 mm. in length, two slightly shorter; anthers 0.4 mm. long. Ovary ovoid, glabrous; style glabrous, about 4 mm. long, the style arms 1 mm. long.

Type specimen: Bosoboso, Province of Rizal, Luzon (1165 Ahern's collector), June, 1904; also from the same locality No. 3102, June, 1905.

## GESNERACEÆ.

**Boea swinhoii** Hance, Ann. Sc. Nat. V. 5: 231. 1866; Carke in DC. Monog. Phan. 5: 142. 1883; Forbes & Hemsley, Journ. Linn. Soc. Bot. 26: 234. 1890.

This species previously known only from Formosa and Borneo is represented by specimens from Mount Arayat, Province of Pampanga, Luzon (3928, 4209 Merrill), October, 1904, September, 1905, the specimen in fruit, agreeing well with one of *Boea swinhoii* (897a Henry), from Formosa (in Herb. Govt. Lab.).

## CAPRIFOLIACEÆ.

**Virburnum sinuatum** sp. nov. (*Euciburnum*, § *Opulus*.)

A shrub about 7 m. high or less, with oblong-ovate, coarsely sinuate-dentate, long-acuminate, nearly glabrous leaves, the petioles and inflorescence densely stellate pubescent, the fruit compressed, 1-celled, 1-seeded, the endocarp pitted but not ribbed, the albumen uniform. Branches slender, brown, glabrous, the branchlets more or less ferruginous pubescent. Leaves membranous, 6 to 8 cm. long, 2 to 5 cm. wide, the base rounded, broad, the apex long slender acuminate, the margins coarsely sinuate-dentate, the teeth subacuminate, entirely glabrous above, except the more or less pilose

midrib, paler beneath and glabrous except the somewhat pubescent midrib and veins, the axils of the veins densely pilose-bearded; nerves very oblique, 5 to 6 pairs, prominent beneath, not anastomosing, the reticulations fine, distinct; petioles about 1 cm. long, becoming glabrous. Cymes terminal, short peduncled, densely stellate pubescent, 3 to 4 cm. long, the primary branches about 1 cm. long. Flowers white, fragrant. Calyx stellate pubescent, its tube oblong-ovoid, 1 mm. long, the teeth spreading, short, triangular-acute. Corolla rotate, regular, 5 lobed, 5 mm. in diameter, the tube 1 mm. long, the lobes ovate, obtuse, nearly 2 mm. long. Filaments nearly 2 mm. long, the anthers 0.7 mm. long. Ovary 1-celled; style short, much thickened. Drupe deep purple, nearly black when ripe, ovoid, compressed, 7 mm. long, the pit rugose, 1-celled, 1-seeded, the seed much compressed, not concave or incurved, the albumen uniform.

Specimens examined, all from Mount Mariveles, Province of Bataan, Luzon: (3946 Merrill), March, 1905 (flower); (3875 Merrill), August, 1904 (fruit); (6904 Elmer), November, 1904 (fruit); (2618 Meyer), February, 1905 (flower); (120 Whitford), May, 1904 (fruit).

A shrub growing on exposed ridges in the mossy forest above an altitude of 1,000 m. The third species of the genus to be discovered in the Philippines.

## GOODENIACEÆ.

### BALINGAYUM Blanco.

*Balingayum*.—Calyx adherent, 5-lobed. Petals 5, the apices with two lateral appendages. Style 1. Stigmas 3, 2-lobed. Capsule crowned by the calyx, 6-seeded.

*Balingayum decumbens*.—Stem herbaceous, terete, procumbent. Leaves alternate, sessile, oblong, narrow, glabrous, with small remote teeth, and somewhat lobed at the base. Flowers solitary. Peduncles elongated. Calyx adnate, 5-parted, the lobes lanceolate. Corolla of 5 linear petals, each terminated by two lateral appendages which close, forming a hood. Stamens 5, inserted on the receptacle, shorter than the corolla. Anthers compressed, terminated by a beak. Style 1, short, thick. Stigmas 3 (the middle one shortest), very wide, each with two ciliate lobes. Capsule oval, 1-celled, with 6 compressed seeds.—A small glabrous plant reclining on the earth, rare. I saw it in Malinta (north of Manila), and it is not well known; it is found in very damp places. T., *Baglingaya*: This plant appears to form a new genus, although it approaches *Jussiaea* and *Oenothera*. I have given it the name by which it is known to the natives.

The above is a translation of the description of the genus and species as given by Blanco, *Flora de Filipinas*, edition 1, page 187. 1837.

This genus has previously been known only from Blanco's description, although several attempts have been made to identify it. Mr. A. Loher some years ago identified it with *Calogyne*, and recently indicated this identification to the author. From a careful comparison of the descriptions of *Calogyne* and *Balingayum* and a study of specimens of *Calogyne*, from near the locality from which Blanco secured his material on which the

description of *Balingayum* was based, it is evident that Mr. Loher was correct in his identification of the genus. Planchon<sup>1</sup> has suggested that *Balingayum* might be referred to *Erythropalum*, of the *Olacaceæ*, this reference being accepted with doubt by Bentham and Hooker<sup>2</sup> and Engler.<sup>3</sup> F.-Villar<sup>4</sup> considers *Balingayum* to be a distinct genus of the *Onagraceæ*. It is evident that F.-Villar had specimens of the plant in question, as he adds some data to the description given by Blanco, but although he rediscovered Blanco's *Balingayum decumbens*, he failed to identify it with *Calogyne*. Below are given parallel descriptions of *Balingayum decumbens* Blanco and *Calogyne pilosa* R. Br., to which species Blanco's plant is evidently referable:

**Balingayum decumbens** Blanco.

A small prostrate herb, the stems terete, glabrous.

Leaves alternate, sessile, oblong, narrow, glabrous, with small remote teeth and somewhat lobed at the base.

Calyx adnate, 5-lobed, the lobes lanceolate.

Corolla of 5 linear petals, each terminated by 2 lateral appendages which close, forming a hood.

Stamens 5, inserted on the receptacle; anthers terminated by a beak.

Style 1, short, thick; stigmas 3, the middle one shortest.

Capsule oval, 1-celled, 6-seeded; seeds compressed.

**Calogyne pilosa** R. Br.

An erect or branching and diffuse annual,  $\frac{1}{2}$  to 1 ft. long, more or less hispid.

Leaves sessile or the lower ones petiolate, the upper stem-clasping, lanceolate or almost linear, marked with few distant teeth, and the floral ones usually with 1 or 2 lobes on each side at the base.

Calyx adnate, 5-lobed, the lobes lanceolate, leafy, hirsute.

Corolla 5-lobed, the upper lobes unequally winged, with an inflexed, concave auricle; the lower lobes equally winged.

Stamens 5; anthers mucronate-acuminate.

Style divided to near the base into 2 branches, and a third shorter intervening one.

Capsule nearly globular; seeds compressed (number not given in description available, but presumably 6, as the ovary is described as 6 ovuled).

A comparison of the above descriptions will, it is believed, settle without doubt the status of *Balingayum* so far as the genus is concerned. Regarding the species, judging from Philippine material only and descriptions

<sup>1</sup> Ann. Sc. Nat. IV., 2:260.

<sup>2</sup> Gen. Pl., 1:384. 1862.

<sup>3</sup> Engler und Prantl Nat. Pflanzenfam. III., 1:236. 1894.

<sup>4</sup> Nov. App., 93. 1880.

of the various species of *Calogyne*, it seems probable that our plant is identical with *Calogyne pilosa* R. Br., an Australian species, although it may be more closely related to *Calogyne chinensis* Benth., a species of southern China, and the only one previously known from outside of Australia. Bentham<sup>1</sup> expresses doubt as to the validity of *Calogyne chinensis* as a distinct species and suggests that it may prove to be only a variety of *Calogyne pilosa* R. Br., although it is retained as a distinct species by Forbes and Hemsley.<sup>2</sup> If our identification of Blanco's species is correct, the synonymy should be as follows:

**Calogyne pilosa** R. Br. Prodr. 1:579. 1810; Benth. Fl. Austr. 4:81. 1869.  
*Goodenia dubia* Spreng. Syst. 1: 721. 1825. *Balingayum decumbens*  
 Blanco, Fl. Filip. ed. 1, 187. 1837; ed. 2, 132. 1845; ed. 3, 1:237;  
 F.-Vill. Nov. App. 93. 1880; Merrill, Govt. Lab. Publ. 27:48. 1905.

Specimens examined, Caloocan, Province of Rizal, Luzon (3669 Merrill), November, 1903; also specimens collected by Hallier, same locality and date. Manila, Balicbalic (173 Rufino Marave), January, 1895.

A procumbent, more or less pubescent plant, not common in damp places in open grass lands, banks of rice paddies, etc.

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<sup>1</sup> Fl. Austr., 4:80. 1869.    <sup>2</sup> Journ. Linn. Soc. Bot., 26:1. 1889.

## II. NOTES ON CUMING'S PHILIPPINE PLANTS IN THE HERBARIUM OF THE BUREAU OF GOVERNMENT LABORATORIES.

By ELMER D. MERRILL, *Botanist.*

Through the kindness of Dr. J. Britten, director of the botanical department of the British Museum, this office has been enabled to secure by exchange a very interesting series of duplicates of Cuming's Philippine plants, consisting of 880 numbers, received in April, 1905. Cuming collected in the Philippines during the years 1836-1840, and we are especially fortunate to be able to secure at this late date so many duplicates from his valuable collection.

Previously some material of Cuming's collection was sent to Manila, but these specimens were destroyed by fire in September, 1897.<sup>1</sup> Vidal<sup>2</sup> states that nearly all the specimens of Cuming's plants which he received from the British Museum were *Rubiaceæ*, *Gramineæ*, and *Ficus*. Later<sup>3</sup> he states that in all he obtained about 210 specimens of this valuable collection.

In the material recently received certain families of plants are well represented, in some cases containing nearly a complete representation of all the species collected by Cuming, while other families, of which Cuming secured much material, are represented by only a few specimens. The following larger families are well represented: *Anacardiaceæ*, 8 numbers; *Apocinaceæ*, 18 numbers; *Asclepiadaceæ*, 14 numbers; *Anonaceæ*, 35 numbers; *Amarantaceæ*, 10 numbers; *Acanthaceæ*, 18 numbers; *Borraginaceæ*, 10 numbers; *Capparidaceæ*, 8 numbers; *Compositæ*, 12 numbers; *Combretaceæ*, 8 numbers; *Convolvulaceæ*, 9 numbers; *Euphorbiaceæ*, 38 numbers; *Filices*, 195 numbers; *Gramineæ*, 53 numbers; *Labiataeæ*, 17 numbers;

<sup>1</sup>Merrill, Bureau of Agriculture Bull., 3:20. 1903.

<sup>2</sup>Phan. Cuming Philip., XIV. 1885.

<sup>3</sup>Rev. Pl. Vasc. Filip., 30. 1886.

*Lauraceæ*, 8 numbers; *Loranthaceæ*, 28 numbers; *Myristicaceæ*, 8 numbers; *Myrtaceæ*, 22 numbers; *Meliaceæ*, 12 numbers; *Piperaceæ*, 12 numbers; *Rutaceæ*, 12 numbers; *Sapindaceæ*, 21 numbers; *Sterculiaceæ*, 14 numbers; *Scrophulariaceæ*, 13 numbers; *Tiliaceæ*, 18 numbers; *Urticaceæ*, 21 numbers; *Verbenaceæ*, 34 numbers.

Although Cuming collected his material more than sixty years ago, and the duplicates were for most part widely distributed to botanical institutions in Europe and America at an early date, still many of his specimens have never been identified, especially in such families as the *Myrtaceæ* and *Anonaceæ*. In the material recently received are duplicate types of such recently described species as *Cynometra simplicifolia* Harms; *Allophylus quinatus* Radlk.; *Grewia philippinensis* Perk.; *Melicope philippinensis* Engl.; and *Vaccinium caudatum* Warb., these species, with the exception of the first, having been described within the past year wholly or in part from specimens of Cuming's collection. In the material received from the British Museum are the co-types of no less than 350 species, while a very large proportion of the remaining numbers have been cited by authors as representing various species. The following notes have been prepared from specimens in the herbarium of this Bureau:

### MAGNOLIACEÆ.

#### *Michelia parviflora* sp. nov.

A medium-sized tree with membranous, glabrous, oblong-lanceolate or oblanceolate acuminate leaves and fragrant white flowers 2 cm. in diameter. Branches brownish gray, the branchlets sparingly appressed ferruginous pubescent. Leaves 8 to 12 cm. long, 2.5 to 4 cm. wide, glabrous or nearly so, the midrib beneath with few short ferruginous hairs, both surfaces shining, the lower pale when dry, the apex prominently acuminate, the acumen blunt, the base cuneate; primary nerves 11 to 13 on each side of the midrib, about equally prominent on both surfaces and but slightly more prominent than the secondary nerves and reticulations; petioles about 1 cm. long, with few ferruginous hairs. Peduncles solitary, axillary, stout, about 3 mm. long, and with the deciduous bracts densely appressed ferruginous pubescent. Sepals oblong, obtuse, 10 mm. long, 3.5 mm. wide. Petals 7 or 8, in two series, similar to the sepals but somewhat smaller. Stamens about 20, 3 to 4 mm. long. Stalk of the gynophore 2.5 mm. long, ferruginous pubescent. Pistils about 8. Ovaries pubescent, each 2-ovuled, the ovules superposed.

Type specimen: Province of Tayabas, Luzon (783 Cuming), 1836-1840. Bosoboso, also Province of Rizal, Luzon (2155 Ahern's collector), December, 1904.

## ANONACEÆ.

***Polyalthia cumingiana*** sp. nov. § *Monoon*.

A shrub or tree with lanceolate, acuminate, nearly glabrous leaves 20 cm. long or less, and solitary, axillary flowers, the petals of the mature flowers 5 cm. long. Branches slender, brownish black, striate, lenticellate, very slightly ferruginous pubescent when young, becoming glabrous. Leaves 10 to 20 cm. long, 3 to 6 cm. wide, submembranous, shining and glabrous above, duller beneath, but not pale, and very slightly pubescent on the midnerve and lateral nerves, tapering above to the acuminate apex, the base rather abruptly acute; nerves 5 to 8 on each side of the midrib, curving-ascending, distant, rather prominent beneath, the reticulations lax, rather obscure; petioles 2 to 3 mm. long, slightly pubescent. Pedicels 1 to 1.5 cm. long, axillary, solitary, densely ferruginous pubescent. Calyx densely ferruginous pubescent outside, the sepals ovate, obtuse, about 3 mm. long. Petals all similar, subequal, when mature oblong lanceolate, obtuse, 4.5 to 5 cm. long, 1 to 1.5 cm. wide, more or less densely ferruginous-puberulous throughout, especially near the base outside. Stamens many, 1 to 1.5 mm. long, the connectives oblique, overlapping. Ovaries many, 1.5 mm. long, or less, densely pubescent, 1-ovuled; style ovoid. Fruit unknown.

Type specimen: Province of Tayabas, Luzon (827 Cuming), 1836-1840.

***Goniothalamus elmeri*** Merr. Govt. Lab. Publ., 29:13. 1905.

(793, 1684, Cuming.) These two numbers have previously been referred to *Goniothalamus giganteus* Hook. f. et Th., but do not at all agree with the description of that species or with the figure given by King.<sup>1</sup> They do, however, agree with the above species, recently described by the author.

***Orophea glabra*** Merr. l. c., 14.

(1277 Cuming.) This specimen is apparently referable to this species, although the material of this number in our herbarium is without flowers, rendering absolute identification impossible.

***Mitrephora lanotan*** (Blanco) *Uvaria lanotan* Blanco, Fl. Filip. ed. 1, 464. 1837. *Unona latifolia* Blanco, l. c., ed. 2, 324. 1845; ed. 3, 2: 235, non DC. *Goniothalamus giganteus* F.-Vill. Nov. App. 6. 1880, at least with reference to synonymy of Blanco, non Hook. f. et Th. *Mitrephora ferruginea* Merrill, Govt. Lab. Publ. 17: 16. 1904, in part (610 Borden).

A tree 6 to 10 m. high with oblong-ovate to ovate-lanceolate acuminate, nearly glabrous leaves, and subglobose or ovoid densely ferruginous pubescent fruits 1.5 to 2 cm. long. Branches dark brown, striate, more or less pubescent, the younger branchlets densely ferruginous pubescent. Leaves 9 to 16 cm. long, 3 to 5 cm. wide, entire, short acuminate, the base acute, upper surface glabrous and shining except for the ferruginous pubescent midrib, the under surface shining, more or less ferruginous pubescent on the midrib and nerves and often with few scattered hairs on the lamina, or nearly glabrous; nerves 9 to 10 on each side of the midrib, prominent beneath, curved-ascending; petioles thickened, densely ferruginous pubescent,

<sup>1</sup>Ann. Bot. Gard. Calcutta, 4: pl. 130. 1894.

3 to 5 mm. long. Flowers hermaphrodite, odorless, on short extra-axillary peduncles, solitary, or at least only one flower developing at a time, greenish brown or yellowish, 3 to 4 cm. in diameter, the pedicel densely ferruginous pubescent, 5 mm. long, and with three small, ovate, pubescent bracts at about the middle. Sepals very broadly triangular ovate, acute, 3 mm. long, 3.5 mm. wide, densely ferruginous pubescent on the outside. Petals creamy white, greenish at the base, the three outer ones spreading, narrowly ovate or somewhat obovate, 2 cm. long, 8 mm. wide above, the apex abruptly but bluntly acuminate, densely ferruginous pubescent on the outside, glabrous on the inside except for few scattered hairs near the base, the 3 inner petals about 1.5 cm. long, vaulted, connivent above, and with long slender claws, more or less ferruginous pubescent on the outside. Stamens numerous, yellow, slightly exceeding 1 mm. in length, the anther cells concealed by the overlapping connectives. Ovaries few, pubescent, 1 mm. long, 8-ovuled. Carpels ovoid to subglobose, densely ferruginous pubescent, 1.5 to 2 cm. long.

Nos. 773 and 1588 Cuming, and apparently also Nos. 1079 and 1135 Cuming, of which fragments with immature flowers exist in Herb. Govt. Laboratory. Also the following specimens, all from the Lamao River region, Province of Bataan, Luzon, where the species is common in the hill forests. (610, 763, 2364, and 2924 Borden) (2230 and 3016 Meyer) (1033 and 1250 Whitford) (1447 Ahern's collector) (6087 Leiberg). Flowering March to May.

While there will always be some doubt as to the exact identity of Blanco's *Uvaria lanotan*, still his description applies with sufficient closeness to the present species, and his name has been adopted rather than to describe the latter under an entirely new one. The native name, *Lanotan*, is very loosely applied to many arborescent species of *Anonaceæ*, and accordingly does not aid in the identification of Blanco's species. Blanco's description applies very closely to the above species, the time of flowering agrees, and the tree is common in the regions from which Blanco received most of his material. This species was included by the author in *Mitrephora ferruginea* as noted above, but is sufficiently distinct from that species, being distinguished by its usually smaller much less pubescent, fewer nerved leaves the pubescence not at all stellate, and much smaller fruits.

## CAPPARIDACEÆ.

**Stixis philippinensis** (Turcz.) (*Roydsia philippinensis* Turcz. Bull. Soc. Nat. Mose. 27:229. 1854; Vidal, Sinopsis, Atlas, t. 6. f. B. 1883; Phan. Cuming. Philip. 94. 1885; Rev. Pl. Vasc. Filip. 48. 1886; Ceron, Cat. Pl. Herb. 16. 1892. *R. floribunda* Planch. ex Mast. in Hook. f. Fl. Brit. Ind. 1:409. 1874. *Stixis floribunda* Pierre, Bull. Soc. Linn. Paris, 1:655. 1887.)

*Roydsia philippinensis* Turcz., and *R. floribunda* Planch., were both based on the same number of Cuming's Philippine collection (No. 541), and the former name being the earlier should be retained. Turczaninow's diagnosis is very complete, while that of Planchon is very incomplete, the species being mentioned by Masters in a note only.

(541 Cuming, cotype). Luzon, Province of Bataan, Lamao River (2263 Meyer) (2326 Borden), December, 1904. A scandent shrub in tall trees in the hill forests at an altitude of about 100 m. reaching a diameter of 6 to 8 cm. Flowers yellow, fragrant.

### BURSERACEÆ.

**Garuga abilo** (Blanco) *Guaiacum abilo* Blanco, Fl. Filip. ed. 1, 364. 1837.  
*Icica abilo* Blanco, l. c., ed. 2, 256. 1845; ed. 3, 2:113. *Garuga mollis* Turcz. Bull. Soc. Nat. Mosc. 31<sup>1</sup>: 475. 1858; Engler in DC. Monog. Phan. 4:6. 1883; Rolfe, Journ. Bot. 23:211. 1885; Vidal, Phan. Cuming. Philip. 101. 1885; Perk. Frag. Fl. Philip. 100. 1904.  
*Garuga floribunda* F.-Vill. Nov. App. 40. 1880, non Deene.

(Cuming 960, 1235); also the following specimens: Luzon, Province of Rizal, Bosoboso (2815 Merrill), July, 1903; (2964 Ahern's collector), April, 1905; Tanay (2322 Merrill), May, 1903; Province of Tayabas, Guinayangan (2018 Merrill), April, 1903. Mindoro, Pinamalayan (2167 Merrill), May, 1903. The native names appearing on the above are the following: *Abilo*, *Bagulibas*, and *Mala-acle*.

F.-Villar reduces this species as described by Blanco in the first edition of the Flora de Filipinas, to *Garuga pinnata* Roxb., and as described in the second edition, to *G. floribunda* Deene., the latter identification being previously accepted by the author.<sup>1</sup> From a careful examination of the material cited above and Blanco's descriptions, it is evident that in the two editions they apply to the same species, and that this is identical with *Garuga mollis* Turcz., and not the same as *G. floribunda* Deene. Blanco's name being the earlier, should be retained.

### MELIACEÆ.

**Aglaia turczaninowii** C. DC. Monog. Phan. 1:456. 1878. *Nemedra?* sp.  
 Turcz. Bull. Soc. Nat. Mosc. 31:412. 1858. *Amoora lepidota* Merrill, Govt. Lab. Publ. 17:23. 1904.

(772 Cuming, cotype.) A common and widely distributed endemic species to which *Amoora lepidota* Merrill must be referred. Anthers in many specimens 10, in others varying from 6 to 10.

### ANACARDIACEÆ.

**Koordersiodendron pinnatum** (Blanco) Merrill, Forest. Bureau Bull. 1:33. 1903. *Helicteres pinnata* Blanco, Fl. Filip. ed. 1, 384. 1837.  
*Cyrtocarpa quinquestila* Blanco, l. c., ed. 2, 269. 1845, ed. 3, 2: 135.  
*Odina speciosa* Blume, Mus. Bot. Lugd. Bat. 1:206. 1849-51; Engler in DC. Monog. Phan. 4:274. 1883; F.-Vill. Nov. App. 55. 1880; Miq. Fl. Ind. Bat. 1<sup>2</sup>:623. 1859; Vidal, Phan. Cuming. Philip. 106.

<sup>1</sup> Govt. Lab. Publ., 27: 30. 1905.

1885. *Odina multijuga* Vid. Sinopsis, Atlas, 22. t. 37. f. A. 1883. *Odina speciosa* var. *multijuga* Vid. Rev. Pl. Vasc. Filip. 101. 1886; Ceron, Cat. Pl. Herb. 57. 1892. *Odina wodier* F.-Vill. Nov. App. 55. 1880; Tavera, Pl. Med. Filip. 100. 1892, English ed. 86. 1901?, non Roxb. *Calesium speciosum* O. Kuntze, Rev. Gen. Pl. 151. 1891. *Lanea speciosa* Engl. in Perk. Frag. Fl. Philip. 26. 1904. *Koordersiodendron celebicum* Engl. Mededeel. 's Lands Plant. 19:410. 1898; Boerlage in Icon. Bogor. 1:55. pl. 94-95. 1901; Perk. Frag. Fl. Philip. 25. 1904.

Philippines (1032 Cuming). Also the following specimens: Luzon, Province of Bataan, Lamao River, Mount Mariveles (353, 515, 557, 576, 602, 608 Barnes), March, 1904; (649, 1611, 1618, 1646, 1664, 1678 Borden), April to August, 1904; (358 Whitford), June, 1904; (2575 Meyer), February, 1905; Dinalupihan (1472 Merrill), January, 1903. Province of Tayabas, Malicboi (J. W. Ritchie), April, 1903; Pagbilao, (1919, 2853 Merrill), April, 1903. Province of Rizal, Antipolo (438 Ahern's collector), April, 1904; (1 Merrill), Decades Philippine Forest Flora, February, 1904. Province of Camarines Sur, Pasacao (121 Ahern). Mindoro, Pola (2467 Merrill), June, 1903. Island of Ticao (1025 Cark), June, 1904.

A well-known timber tree in the Philippines, ranking seventeenth in amount of timber received in the Manila market in the year 1903, being much used for purposes of general construction. Common and widely distributed in the hill forests throughout the Philippines, flowering February to April, and also known from Celebes and New Guinea. T., *Amuguis*, *Amoguis*, *Muguis*. V., *Calumanog*, *Sambuluan*, *Sambabaluan*.

A very complete description and discussion of this species, with two plates, is given by Boerlage in Icones Bogoriensis, cited above, where the identity of *Odina speciosa* Blume and *Koordersiodendron celebicum* is shown.

Inasmuch as Blanco's description, sub *Helicteres pinnata*, is much the earlier, and there being no doubt whatever as to the identity of his species, his name should be retained. *Cyrtocarpa quinquestila* of Blanco's second edition is only a new name for *Helicteres pinnata* of the first edition. *Odina wodier* of F.-Villar and Tavera, cited above is probably referable here, although the description given by the latter was evidently taken, at least in part, from Hooker's Flora of British India. Perkins enumerates this species under two names, *Lanea speciosa* Engl. (No. 1999 Merrill, flower) and *Koordersiodendron celebicum* Engl. (No. 121 Ahern, fruit). These two numbers certainly represent the same species, and are *Koordersiodendron pinnatum*. The above is the only published record I have been able to find of the transfer of *Odina speciosa* to *Lanea*.

**Buchanania florida** Schauer, var. *cumingii* Engl., in DC. Monog. Phan. 4:190. 1883.

(1115 Cuming), cotype of the variety. I am unable to separate from this variety, the species proposed by Perkins<sup>1</sup> *Buchanania pseudoflorida* (2061 Merrill), Guinayangan, Province of Tayabas, Luzon, April, 1903.

<sup>1</sup> Frag. Fl. Philip., 24. 1904.

**Semecarpus philippinensis** Engler in DC. Monog. Phan. 4:481. 1883.

(1146 Cuming, cotype.) This is undoubtedly the form described by Blanco as *Semecarpus cuneiformis*, a much earlier name, and considered by the author<sup>1</sup> to be a form of *S. perrottetii* March. I am unable to distinguish from this species *Semecarpus elmeri* Perk. (l. c. 26). (1176 Merrill), Baco, Mindoro, January, 1902). An undeveloped specimen in bud only.

## GUTTIFERÆ.

**Garcinia binucao** (Blanco) Choisy Guttif. Ind. 34; Panch. et Triana Mem. Guttif. 205; Pierre, Fl. Forest. Cochinch., Enum. 28; Vesque in DC. Monog. Phan. 8:454. *Cambodia binucao* Blanco, Fl. Filip. ed. 1, 434. 1837; ed. 2, 302. 1845; ed. 3, 2:196. *Garcinia cambogia* F.-Vill. Nov. App. 16. 1880, non Desrouss. *Garcinia duodecandra* Pierre, Fl. Forest. Cochinch. t. 64. f. 7, 10, 11; Vesque, Epharm. 2: tt. 124, 125; DC. Monog. Phan. 8:442.

(Cuming, 1509.) This specimen is identical with Nos. 612, 713, 783 Borden, from the Province of Bataan, Luzon, which certainly represent Blanco's species, agreeing with his description, being common in the forests of central Luzon, the fruits being acid and edible, the tree being universally known to the Tagalogs as *Binucao* or *Bilucao*. *Garcinia binucao* has previously been a doubtful species, known only from Blanco's description and Pierre distinguished his *Garcinia duodecandra* from *G. binucao* only by the petioles, Blanco describing the petioles of *G. binucao* only by the relative term, "very short."

## SAPOTACEÆ.

**Sideroxylon duclitan** Blanco, Fl. Filip. ed. 1, 129. 1837; ed. 2, 92. 1845; ed. 3, 1:168; A. DC. in DC. Prodr. 8:185. 1844; F.-Vill. Nov. App. 124. 1882; Vidal, Phan. Cuming. Philip. 124. 1885; Rev. Pl. Vasc. Filip. 176. 1886. *Sideroxylon ramiflorum* Merrill, Govt. Lab. Publ. 17:43. 1904.

(770 Cuming); also represented by the following specimens: Luzon, Manila (3412 Merrill), October, 1903; Province of Rizal, Bosoboso (2793 Merrill), July, 1903; Province of Bataan, Lamao River (77 Barnes), November, 1903 (2308 Meyer), December, 1904; (2353 Borden), January, 1905. Mindanao, District of Zamboanga, San Ramon (Hallier), February, 1904.

The above specimens are all apparently identical with Cuming's specimen, and agree very closely with Blanco's description of the species, and accordingly *Sideroxylon ramiflorum* should be reduced as a synonym of *S. duclitan*. The species erroneously identified by the author as *Sideroxylon duclitan* Blanco, is apparently a new species (see page 56). Blanco states that this tree was well known to the natives by the name *Duclitan*, but our specimens bear the Tagalog names *Bancalande*, *Malapaho* and *Nato*. *Sideroxylon balitbitan* Blanco, described as differing from *S. duclitan* only in its wider leaves, is probably not specifically distinct from the above species.

<sup>1</sup> Govt. Lab. Publ., 27:36. 1905.

## OLEACEÆ.

**Jasminum aculeatum** (Blanco) *Mogorium aculeatum* Blanco, Fl. Filip. ed. 1, 9. 1837; ed. 2, 7. 1845; ed. 3, 1:13. *Jasminum marianum* F.-Vill. Nov. App. 128. 1883, excl. syn. Naves, non DC. *Jasminum* sp. Vidal, Phan. Cuming. Philip. 125. 1885.

A scandent shrub 4 to 6 m. high with membranous, glabrous, ovate leaves and terminal paniculate inflorescence. Branches slender, glabrous, light gray; branchlets opposite, brown, puberulous, subtended by the hardened, truncate, persistent bases of the petioles (described by Blanco as the branchlet representing the rhachis of a compound leaf with two hard stipule-like truncate spines at the base). Leaves entirely glabrous, thinly membranous, broadly ovate, acute or acuminate, the base broad, truncate, rounded or slightly cordate, rarely somewhat acute, 4 to 7 cm. long, 2 to 5 cm. wide; nerves about 8 on each side of the midrib; petioles 1 to 1.5 cm. long, jointed below, the base becoming hardened and persistent on the branches. Panicles terminal, spreading. Flowers, white, fragrant, 2 cm. long. Calyx oblong, glabrous, small, with 6 minute teeth. Corolla tube slender, glabrous, 14 mm. long, the limb spreading, 6 to 8 cleft, the lobes lanceolate, acute or acuminate, 10 mm. long, 2 to 2.5 mm. wide. Anthers 2, 3 mm. long. Fruit ovoid or subglobose, glabrous, shining, about 8 mm. long.

(1211 Cuming); also the following specimens: Luzon, Province of Rizal, Bosoboso (1868 Merrill), April, 1903; Province of Tarlac (C. L. Hall), 1903; Province of Zambales, Subic (2100 Merrill), April, 1903. Mindoro, Bulalacao (921 Merrill), April, 1903; Pola (2449 Merrill), May, 1903. A scandent shrub rather common in open thickets and apparently widely distributed in the Philippines.

## VERBENACEÆ.

**Clerodendron blancoi** Naves.

(1573, 1644.) These numbers of Cuming's collection have not previously been identified, but certainly represent Naves's species, for a discussion and full synonymy of which see page 62.

**Premna odorata** Blanco, Fl. Filip. ed. 1, 489. 1837; 1. c., ed. 2, 341. 1845; ed. 3, 2:268; Miq. Fl. Ind. Bat. 2:900. 1856; Schauer in DC. Prodr. 11:638. 1847. *Premna vestita* Schauer, 1. c., 631; Miq. 1. c., 892; Vidal, Phan. Cum. Philip. 134. 1885; Synopsis, Atlas, t. 74. f. E. 1883; Rev. Pl. Vasc. Filip. 209. 1886; F.-Vill. Nov. App. 159. 1883; Merrill Forest. Bureau Bull. 1:51. 1903. *Premna pubescens* F.-Vill. 1. c., non Blume.

(599 Cuming, cotype, *Premna vestita* Schauer.) Blanco's name is the proper one for this species as determined by the author<sup>1</sup> *Premna vestita* Schauer being certainly identical with *P. odorata*. The most common and

<sup>1</sup> Govt. Lab. Publ., 27:68. 1905.

widely distributed species of the genus in the Philippines, especially common about towns and dwellings and in thickets in cultivated regions generally, well known to the natives by the names *Alagao* and *Adgao* which are almost invariably applied to it.

***Vitex turczaninowii***, nom. nov. *Premna philippinensis* Turcz. Bull. Soc. Nat. Mosc. 36:215. 1863; F.-Vill. Nov. App. 159. 1883, non *Vitex philippinensis* Merr. Forest. Bureau, Bull. 1:52. 1903.

This species which belongs in *Vitex*, rather than in *Premna*, was based on Nos. 1172 and 1294 of Cuming's Philippine collection, both these numbers being represented in the herbarium of this Bureau. *Premna philippinensis* Turcz., is not mentioned by Vidal<sup>1</sup> but No. 1172 is referred by him to *Rourea multiflora* Planch., and No. 1294 to *Vitex* sp. indet. Turczaninow evidently described it from fragmentary material, as his diagnosis leads one to infer that the leaves are simple. As his diagnosis in other respects applies exactly to the above numbers of Cuming's collection in our herbarium, it seems evident that he had only specimens with detached leaflets. The following should be added to the description of the leaf characters. Leaves 5, rarely 4 or 3 foliolate; petioles glabrous, 8 to 10 cm. long; petiolules 1 to 2 cm. long. Flowers yellow.

In addition to the two numbers of Cuming's Philippine collection referred by Turczaninow to this species, it is apparently well represented also by No. 1173 Cuming, and the following specimens of more recent collection: Luzon, Province of Bataan, Lamao River (1335 Whitford) (3059 Borden), May, 1905; Province of Rizal, Bosoboso (2951 Ahern's collector), April, 1905; San Mateo (1127 Ahern's collector), May, 1904; Province of Tayabas, Pagbilao (2852 Merrill), April, 1903. Island of Ticao (1096 Clark), May, 1904.

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<sup>1</sup>(Phan. Cuming. Philip. 1885.)



### III. NOTES ON PHILIPPINE GRAMINEÆ.

By E. HACKEL.

Some time ago a small collection of critical Philippine grasses was sent to Dr. E. Hackel, Graz, Austria, for identification, who kindly examined the same and submitted copious notes with his identifications. These notes have been amplified and are here presented. The diagnoses of the new species, in Latin, are published as submitted by Dr. Hackel.—(E. D. M.)

**Pollinia argentea** Trin., var. **lagopus** Hack., nov. var.

Differt a typo vaginis in basi culmo sitis fulvo-tomentosis (in typo glabris).

Mount Arayat, Province of Pampanga, Luzon (3902 Merrill), October, 1904. In a small area of open dry grass land at the summit of the mountain, altitude 870 m. above the sea.

**Pollinia quadrinervis** Hack. in DC. Monog. Phan., 6:158. 1889.

This species, not previously reported from the Philippines, is represented by a specimen from Baguio, Province of Benguet, Luzon (5783 Elmer), March, 1904, it growing in small tufts in the pine forests. The specimens are not quite typical, in some respects approaching *Pollinia villosa* Spreng., without being quite intermediate. China to subtropical Himalaya.

**Isachne Beneckeï** Hack. in Oesterr. Bot. Zeitsch., 51:459. 1901.

This species is represented by No. 464 Whitford and No. 3201 Merrill, Mount Mariveles, Province of Bataan, Luzon, July, 1904, growing on recently burned places on exposed ridges at an altitude of about 1,200 m. above the sea. Java.

**Isachne monticolor** Büse in Miq. Pl. Jungh. 379, 1855; Fl. Ind. Bat., 3:461, 1859. *Isachne debilis* Rendle, Journ. Linn. Soc. Bot., 36:322. 1904.

Mount Mariveles, Province of Bataan, Luzon (264 Whitford) (3245 Merrill); Baguio, Province of Benguet (5821 Elmer), March, 1904. A species originally described from Javan material, with the description of which the material cited above obviously agrees. *Isachne debilis* Rendle is apparently a synonym.

**Isachne pauciflora** Hack. nov. spec.

Perennis. Culmi natantes vel in solo valde uliginoso radicanes, humifusi, ramosi, ramis floriferis glaberrimis, apice longiuscule nudis. Vaginæ laxæ, internodiis breviores, hirsutæ, ad nodos barbatae, ore longe ciliatæ. Ligula brevissima, truncata, pilis stipata. Laminae ovato-lanceolatae, acutæ, 1-1.4 cm. longæ, circiter 4 mm. latæ, rigidulæ, virides, utrinque (præsertim supra) setulis adpersæ, margine vix incrassato, scabræ, tenuinervis. Panicula paupera, 1-1.5 cm. longa, stricta, contracta, rhachi ramisque lævibus rigidulis, his alternis, 3-4, brevibus, suberectis, inferioribus 2-3 spiculatis, superioribus 1-spiculatis. Spiculæ pedicellis quam ipsæ paullo longioribus vel eas subæquantibus, lævibus, apice haud incrassatis fultæ, subglobosæ, 2 mm. longæ, sordide virides. Glumæ sterilis spiculam æquantes, inter se æquales, late ovales vel obovato-ovales, obtusæ vel II obtuse apiculata, versus apicem parce setulosæ, ad 2 mm. longæ, 7-nerves. Glumæ fertiles inter se longitudine structuraque æquales, 1.8 mm. longæ, late ovales, obtusissimæ, albo viridulæ, punctato-scabræ et dense puberulæ, flore atraque fertili. Palea glumæ similis, sed planiuscula.

Baguio, Benguet, Luzon (6486 Elmer), June 1904, natans vel in solo valde uliginoso.

Videtur affinis *I. myosoti* Nees, quæ (ex descr.) differt foliis vaginisque e tuberculatis hirsutis, spiculis minimis (vix magnitudin sem. Papaveris) glumæ sterilibus oblongis patentissimis.

**Panicum caudiglume** Hack. Oesterr. Bot. Zeitsch., 51:428. 1901. (*Panicum* n. sp. ? affinis *Panico trachyrhachidi* Benth., Mez. in Perk. Frag. Fl. Philip., 144. 1904.)

This species is represented by No. 832 Merrill, San Antonio Bay, Paragua, February, 1903, specimens old and in poor condition, and No. 3307 Merrill, Lamao River, Province of Bataan, Luzon, October, 1904. The former number in sandy open soil on the seashore, the latter rather common in the borders of dry thickets. Java.

**Panicum humile** Nees in Steud. Syn. Gram., 84, 1855; Hook. f. Fl. Brit. Ind., 7:48, 1897.

A species not previously known from the Philippines, represented by No. 3623 Merrill, Concepcion, Province of Tarlac, Luzon, November, 1904. Distribution, Borneo to Ceylon, Punjab, Assam, Bangal, Sikkim, etc.

**Panicum didactylum** Kunth, Rev. Gram., 1:33. 1835. § *Digitaria*.

This species, reduced by many authors to *Panicum sanguinale* Linn., is represented by No. 5634 Elmer, Bauang, Province of Union, Luzon, February, 1904. Said by the collector to be common in waste places.

**Ichnanthus pallens** (Sw.) Munro, in Benth. Fl. Hongk. 414. 1861. (*Panicum pallens* Sw.; *Panicum nitens* Merr., Govt. Lab. Publ. 17:8. 1904.)

This widely distributed species has not previously been reported from the Philippines, *Panicum nitens* Merr., being identical with *Ichnanthus pallens* Munro, the genus *Ichnanthus* being distinguished from *Panicum* only by the appendaged base of the flowering glume. Mount Mariveles, Province of Bataan, Luzon (3221 and 2756 Merrill).

**Oplismenus compositus** Beauv., var. **lasiorhachis** Hack., nov. var.

Foliis subsericeo-villosis, culmo superne pubescente, rhachis communi et spicarum speciali villosa a reliquis formis hujus speciei diversa (*Oplismenus burmanni* Mez in Perk. Frag. Fl. Philip. 144. 1904, non Beauv.)

Separation Point, Paragua (826 Merrill), February 18, 1903. In open dry places along trails.

Hooker<sup>1</sup> enumerates and describes several forms of *Oplismenus compositus*, without names. The variety here described does not correspond with any of these forms, but comes nearest to No. 1. *Oplismenus burmanni* Beauv., is well represented by No. 3290 Merrill, Lamao River, Province of Bataan, Luzon, October, 1903. A species very different from No. 826 Merrill, the type of the present variety, which was referred by Mez to that species.

**Oplismenus minus** Merr. Govt. Lab. Publ. 17:9. 1904.

This species is not sufficiently distinct from *Oplismenus undulatifolius* Beauv. var. *imbecillis* (Kunth) Hack., and should be reduced to this variety.

Mount Mariveles, Province of Bataan, Luzon (3203 Merrill), October, 1903.

**Leptaspis cochleata** Thw. ? Enum. Pl. Zeyl. 357. 1864; Trimen, Handbook Fl. Ceylon 5:191. 1900; Hook. f. Fl. Brit. Ind. 7:95. 1897.

Davao, District of Davao, Mindanao (703 Copeland), March, 1904. This species is known only from the Island of Ceylon, and the material here doubtfully referred to *Leptaspis cochleata* is too imperfect for accurate identification. It is quite distinct from *Leptaspis urceolata* R. Br., and *L. banksii* R. Br. The specimen here referred to *L. cochleata* differs from that species in its much longer leaf stalks, but the hooked hairs of the oblique flowering glume point strongly to that species.

**Monerma repens** (Forst.) Beauv. Agrost. 117. 1812; *Lepturus repens* R. Br. Prodr. 207. 1810.

This widely distributed grass has not previously been reported from the Philippines, and is represented by No. 606 Merrill, Culion Island, December, 1902, and No. 3331 Merrill, Puerto Galera, Mindoro, October, 1903. Seashores from Ceylon through the Malayan region to Australia and Polynesia.

**Eragrostis distans** Hack. nov. spec.

Annual. Culmi erecti, gracillimi, ad 30 cm. alti, compressi, glaberrimi, 3-nodes, simplices. Vaginae arcatae, internodiis breviores, compressae, praeter os parce barbaturum (raro glabrum) glaberrimae; ligula brevissima, truncata, ciliolata; laminae angustae lineares, sensim tenuiterque acuminatae, 12-20 cm. longae, circiter 1.5 mm. latae, planae vel complicatae, flaccidae, erectae, glabrae vel basi parce ciliatae, virides, tenuinerves. Panicula ovata, patens, laxissima, 20-25 cm. longa, rhachi stricta, gracili, teretiuscula, laevi, ramis paucis (5-8) solitariis, distantibus, tenuibus, strictis patentibus, teretiusculis, laevibus vel superne scaberulis in circ.  $\frac{1}{4}$  inferiore nudis

<sup>1</sup> Fl. Brit. Ind., 7:67. 1897.

dein spiculas secus ramos distichas distantes (interstitiis quam spicula longioribus) in superiore rami parte solitarias, in inferiore 2-3-nas, pedicellis scabris, spicula 2-5-plo brevioribus fultas gerentibus. Spiculæ lineares, acutiusculæ, compressæ, dense 10-18-floræ, floribus sese ad  $\frac{2}{3}$  usque tegantibus, 6 to 9 mm. longæ, 2 mm. latae pallide viridulæ, rhachilla tenace. Glumæ steriles subaequales, lineari-lanceolatae, acutæ, fere 2 mm. longæ, 1-nervis, carina scabræ, fertiles superpositas subaequantas. Glumæ fertiles ovato-lanceolatae obtusiusculæ vel acutiusculæ, 2-2.5 mm. longæ, pallidæ, utrinque nervo viridi valido notatæ, punctulato-scabræ, carina superne aculeato-scabra, caducæ. Palea gluma  $\frac{1}{3}$  brevior, lineari-obovata, curvula, carinis spinuloso-ciliolata, persistens. Antheræ 3, perpusillæ (0.2 mm. longæ) ovali-oblongæ.

Kias, Benguet, Luzon (6608 Elmer), June, 1904. Affinis *E. elegantula* Steud., quæ differt radice perenni, palea caduca, antheris (ex Hook.) circ. 0.7 mm. longis, nervis glumarum fertilium tenuibus. *E. luzoniensis* Steud., quam Hook. f., ad *E. elegantulam* ducet, differt a nostra, paniculæ contractæ, radiis fasciculatis, spiculis longe pedicellatis.

#### IV. SCITIMINEÆ PHILIPPINENSES.

By HENRY N. RIDLEY.

The present paper was prepared by H. N. Ridley, director of the Botanic Garden, Singapore, to whom the material was sent for identification. (E. D. M.)

**Globba Barthei** Gagnepain.

Bosoboso, Province of Rizal, Luzon (2844 Merrill), July, 1904.

**Globba ectobolus** K. Schum.

San Mateo, Province of Rizal, Luzon (1846 Ahern's collector).

**Globba campsophylla** K. Schum.

Lamao River, Mount Mariveles, Province of Bataan, Luzon (1461 Ahern's collector); Kias, Province of Benguet, Luzon (6465 Elmer) (flowers white); District of Zamboanga, Mindanao (Copeland). This plant is apparently what Schumann intended by his *Globba campsophylla*, but the leaves, though narrow, are lanceolate caudate and not linear. The calyx teeth are ovate, acute, and subequal. Corolla lobes oblong, rounded. Stamines narrower, and lip broad and short broadly bilobed and the flowers appear to have been white. Fruit globose, glabrous.

**Globba Merrilli** Ridley, n. sp.

Whole plant a little over 2 feet tall, glabrous. Leaves lanceolate, acuminate, base rounded, 6 inches long, 1 inch wide, thin, very shortly petioled. Panicle lax, 4 inches long, slender, branches remote, 1 inch long or less. Bracts lanceolate, acute,  $\frac{1}{4}$  inch long, pale, caducous. Calyx tube cylindrical, tubiform, teeth short, distinct, equal. Corolla white, lobes oblong, obovate. Stamines smaller. Lip entire, linear oblong, rounded at tip, spoon shaped, limb short. Filament short and broad; anther elliptic; appendages one on each side extending the whole length of the anther, elongate triangular, longer than the anther.

Lamao River, Mount Mariveles, Province of Bataan, Luzon (581 Whitford) (1598 Borden) (3869 Merrill); District of Zamboanga, Mindanao (Copeland).

**Globba parviflora** Presl.

Bosoboso, Province of Rizal, Luzon (2782, 2783 Merrill).

**Leptosolenia insignis** Ridley, n. sp.

Stem 3 to 7 feet tall. Leaves linear, acuminate, glabrous, narrowed to the base, 12 inches long, half inch wide, midrib stout; sheaths 6 inches long, with an erect pair of auricles one-fourth inch long, oblong, rounded at the tip. Bracts 3, terminal, papery, lanceolate, caudate, 6 inches long, half inch wide. Panicle  $3\frac{1}{2}$  inches long, many-flowered, the branches  $1\frac{1}{2}$  inch long, ribbed, 3-flowered. Flowers sessile, white. Calyx tubular,  $3\frac{1}{2}$  inches long, bilobed, lobes short, ovate, tube split on one side. Corolla tube slender, 5 to 6 inches long, the lobes linear oblong obtuse, 1 inch long one-fourth inch wide. Staminodes linear oblong, shorter and narrower. Lip fleshy, elongate, 1 inch long, rolled up when withered. Stamen short; anther oblong, the crest broader, large, rounded, entire. Style longer. Stigma cup-shaped, hairy.

On gravelly landslides, Twin Peaks, Province of Benguet, Luzon (6428 Elmer).

**Costus speciosus** L. var. **argyrophyllus**.

Davao, Mindanao (448 Copeland).

**Curcuma zeodaria** L.

Malapadnabato, Province of Rizal, Luzon (2713 Merrill); Guimaras Island (26 Gammill).

**Zingiber cassuminaar** Roxb.

Sablán, Province of Benguet, Luzon (6255 Elmer); flowers white.

**Amomum elegans** Ridley, n. sp.

Rhizome long, slender, covered with oblong sheathing, brown and papery bracts half an inch long. Stem slender, 18 inches tall. Leaves few, linear lanceolate, acuminate, 6 to 7 inches long, one-half to three-fourths an inch wide, glabrous above, beneath paler and silky hairy; petiole one-fourth inch long, pubescent-hairy; sheaths 2 inches long, hairy. Inflorescence half an inch long, obconic, almost sessile. Bracts oblong, obtuse, pubescent, with about 10 elevated nerves. Bracteole tubular, silky-hairy. Calyx tube tubular silky-hairy, one-half inch long, lobes 2 (2 being connate) lanceolate, acuminate, silky-hairy, as long as the tube. Corolla tube not longer than the calyx, pubescent, lobes linear oblong, obtuse glabrous, three-fourths an inch long. Staminodes subulate, one-fourth an inch long. Lip an inch long, base narrow, limb broad, obovate, rounded, an inch across, entire. Stamen three-fourths an inch long; filament slender; anther narrowly oblong, crest trifid, central lobe oblong, small, lateral lobes from the upper angle of the anther, longer, linear, obtuse, recurved. Style very slender; ovary silky-hairy.

Lamao River, Mount Mariveles, Province of Bataan, Luzon (300, 207 Whitford); flowers white.

**Amomum propinquum** Ridley, n. sp.

Foliage not seen. Capitulum obconic. Peduncle 3 inches long, stout. Pedicel pubescent, short. Lower bract ovate, pubescent, one-fifth inch long. Bracteole tubular, mouth not split, half an inch long, pubescent, trifid, two lobes connate nearly to the tips. Calyx tube one-half inch long, glabrous, lobes three, two-connate for most their length, mucronate, keeled at the tips

and setulose. Corolla tube trumpet-shaped, pubescent, lobes oblong, obtuse, rounded, one-half inch long. Staminodes very short, subulate. Lip obovate, 1 inch long, wide, central bar elevate papillose. Anther oblong, setose on the edges. Connective trilobed, upper lobe rounded, lateral lobes large, recurved, broad, oblong, obtuse. Filament broadly linear, thin. Style very slender; stigma capitate.

Baguio, Province of Benguet, Luzon (6284 Elmer). "Flowers yellowish, sepals 3, petals 2, reddish spotted and yellow on the middle inside." Davao, Mindanao (843 Copeland).

Allied to *A. flavum* Ridl. I have little doubt that the Davao plant, also leafless, is the same as the Benguet plant. It has unripe fruit, showing signs of stout processes covering them.

**Amomum trilobum** Ridley, n. sp.

Rhizome slender, long, creeping, covered with loose sheaths half an inch long. Stems 4 to 7 feet tall. Leaves narrow lanceolate, acuminate caudate, 9 inches long, an inch wide, glabrous, closely ribbed, narrowed at the base into a petiole one-fourth of an inch long; sheath narrow, edge and short bifid ligule silky pubescent. Inflorescence obconic, three-fourths of an inch long on a short (half inch) peduncle. Bracts ovate, obtuse, ribbed, glabrous. Calyx tubular, tube as long as the corolla tube, lobes linear oblong, obtuse, half an inch long, 3-nerved. Staminodes linear, obtuse, fleshy, nearly as long as the filaments. Lip obovate, rounded, three-eighths of an inch long, three-fourths inch wide, white with a yellow central bar, tip undulate, 3-lobed, the side lobes rounded, midlobe bifid, narrow. Filament linear, fleshy, grooved; anther linear, glabrous, the crest with two lateral fleshy linear subacute curved arms from the side, and a thin, flat, oblong, quadrate, median lobe, obscurely bilobed in the center.

Mount Arayat, Province of Pampanga, Luzon (67 F. H. Bolster), May, 1905.

Closely allied to *A. elegans* Ridl., but differs in its quite glabrous leaves and bracts, larger fleshy staminodes, and trilobed lip.

**Plagiostachys**, sp.?

Province of Benguet, Luzon (947 Barnes). Plant 2.5 m. high, growing at an altitude of 1,600 m.

This is in fruit only. It appears to be a species of *Plagiostachys*, of which genus none are recorded from the Philippines.

**Hornstedtia (Nicolaia) paradoxa** Ridley, n. sp.

Plant 10 feet high. Leaf narrow, lanceolate, acuminate at both ends, glabrous, 16 inches long, 1 inch wide, subcoriaceous. Ligule entire, truncate. Flowering stem leafy, 3 feet tall, rather slender. Capitulum globose, 2 inches across, purple-red. Bracts 1 inch long, oblong ovate, obtuse, margins hairy. Bracteole oblong, rounded, edges hairy. Inner bracteole oblong, thinner, glabrous. Calyx tubular, spathaceous, thin, glabrous, lobes 3, acuminate. Corolla tube half as long again as the lobes which are oblong, obtuse, one-fourth inch long. Lip fleshy (incomplete). Anther oblong, crestless.

Mount Santo Tomas, Province of Benguet, Luzon (6629 Elmer). Altitude, 5,500 feet.

This specimen is unfortunately incomplete, the flowers being in poor condition. It is an interesting plant and differs in several points from the normal *Hornstedtia*s but may belong to that genus.

***Hornstedtia philippinensis* Ridley, n. sp.**

Stems 2 m. tall. Leaves oblong lanceolate, caudate, glabrous, narrowed to the base, 10 inches long, 2 inches wide, paler beneath. Ligule bilobed, oblong, obtuse, one-fourth inch long. Inflorescence 2 inches long, bracts thin, lanceolate, ribbed, hairy at the tip, the largest about an inch long. Flowers scarlet, 3 inches long. Bracteole oblong lanceolate, strongly nerved, three-fourths inch long, margins ciliate. Calyx tubular, 1½ inches long, the trifid lobes acute, one-fourth inch long. Corolla tube 2 inches long, slender, lobes linear oblong, narrow, obtuse, one-fourth inch long. Lip 1 inch long, fleshy, linear oblong, obtuse, entire, narrow. Stamens crestless, one-fourth inch long, apex retuse. Fruit on a peduncle one-half inch long, stout, elliptic, obtuse, 1 inch long, covered with short simple and forked processes.

Island of Masbate (1704 Clark); Davao, Mindanao (416 Copeland).

This species is remarkable for the fruit which resembles more that of *Amomum*. Fruit edible, "Tugis."

***Kolowratia elegans* Presl.**

Lamao River, Mount Mariveles, Province of Bataan, Luzon (73 Whitford); 6 to 8 feet high. An unripe fruit over an inch long, glabrous, elliptic, narrowed upwards and terminated by the withered flower is with the specimen. This plant is referred to the genus *Alpinia* by Schumann, a suggestion I am unable to endorse.

***Alpinia Haenkei* Presl.**

Plant 2 m. tall. Leaves oblong, acuminate, 25 inches long, 5 inches wide, glabrous on both surfaces except on the edges and at the base which are pubescent silky, base narrowed; petiole 4 inches long, pubescent; ligule oblong, half an inch long, pubescent. Peduncle stout, 7 inches long, pubescent. Bract large, spathaceous, three-fourths of an inch long, scabrid pubescent. Calyx spathaceous urn-shaped, cleft on one side, irregularly toothed, as long as the corolla tube, half of an inch long. Corolla tube broad, lobes white silky, broad, oblong, obtuse, white, three-fourths of an inch long, one-fourth inch wide. Lip 1¼ inches long, broad, apex narrowed (apparently bifid) yellow with purple spots.

Baco River, Mindoro (4047 Merrill), March, 1905. In very humid forest; fragrant.

I take this to be Presl's *Alpinia Haenkei*, which he first referred to *A. malaccensis*. There is indeed but little difference between the two species. The original *A. malaccensis* Roscoe is a native of India and does not occur wild in Malacca so far as is known, nor in the Malay archipelago.

***Alpinia philippinensis* Ridley, n. sp.**

Plant 12 feet tall, leaves lanceolate linear, 19 inches long, 2½ inches wide, acuminate caudate, hairy on both surfaces, hairs longer and scantier on edge and upper surface; petiole 1 inch long, hairy; ligule bifid, hairy. Raceme 2 feet long, rachis fairly stout, densely rufous hairy with rather bristly white hairs. Pedicels one-half inch long, scattered to base of raceme.

Flowers "yellow." Bracts oblong, apex trifid, lobes rounded, minutely scabrid, one-fourth inch long. Calyx spathaceous, trifid, lobes rounded, one-fourth inch long, hairy, as long as the corolla tube. Corolla lobes oblong, three-fourths inch long, blunt, silky hairy. Lip an inch long, yellow, spotted and streaked with purple, tip prolonged, bilobed. Fruit globose, three-fourths inch long, pale, covered with long hairs.

Lamao River, Province of Bataan, Luzon (144 Barnes), January, 1904; (1203 Borden), June, 1904. Sablan, Province of Benguet, Luzon (6089 Elmer), April, 1904.

This species differs from what I take to be *Alpinia Haenkei* in its much smaller flowers, narrower leaves, smaller bract and 3-lobed calyx.

**Alpinia** sp.

Leaves broad, blade oblong, glabrous above, finely pubescent beneath, 18 inches long, 5 inches across, petiole 3 inches. Panicle stout, hairy, peduncle 3 inches long, infrutescence 8 inches. Fruit globose, three-fourths of an inch long, sparsely hairy, on pedicels half inch long. Seeds numerous, pale, angled.

Davao, Mindanao (417 Copeland). Growing in a damp thicket, 7 feet high, in fruit only, the material insufficient for definite identification.

**Alpinia (Hellenia) pubiflora** Presl.

Mount Santo Tomas, Province of Benguet, Luzon (6268 Elmer); Guimaras Island (34 Ritchie); Davao, Mindanao (319 Copeland).

This appears to be *A. pubiflora*, but I have found no trace of any anther crest.

**Alpinia brevilabris** Presl.

Lamao River, Mount Mariveles, Province of Bataan, Luzon (58 Whitford); 2 to 3 m. high, in river bottom; also No. 239 Whitford, same locality, at altitudes of from 1,800 to 2,700 feet. Island of Masbate (1703 Clark). Schumann does not mention in his description of this species that the leaves are armed with minute thorn-like processes near the tip.

**Alpinia (Hellenia) sp.**

Lamao River, Mount Mariveles, Province of Bataan, Luzon (1202 Borden); Atimonan, Province of Tayabas, Luzon (655 Whitford). Six feet high, along streams at an altitude of 250 feet. Fruit yellowish brown. These are in fruit only and may be *A. brevilabris* Presl.



## V. PHILIPPINE ACANTHACEÆ.

By C. B. CLARKE.

The following Latin diagnoses of new species of Acanthaceæ, are submitted for publication as prepared by Mr. C. B. Clarke, Kew, England, and transmitted by him to this office, the material cited, other than the numbers of Cuming's, Vidal's, and Loher's collections, having been submitted to Mr. Clarke from this office. Additional notes in English have been added by myself. The types are at Kew.—(E. D. M.)

“*Eranthemum curtatum* C. B. Clarke, MS.

“(Cuming No. 1658). Foliis usque ad 27 cm. longis, 8 cm. latis, basi longe attenuatis, apice breviter acutatis; panicula in pseudoapicam continuum, 18 cm. longam, contracta; corollae tubo 3 cm. longo, usque ad apicem lineari; cetero ut *E. racemosum* Hassk.

“*Eranthemum malabaricum* Vid. Rev. Pl. Vasc. Filip. 205. 1886, non Hook. f.; *E. crenulatum* Nees, MS., non Lindley; *E. Andersoni* Herb. Kew, partim.” C. B. Clarke in lit.

An erect simple or slightly branched suffrutescent plant 0.7 to 1.5 m. high. Stem light gray, glabrous, striate, angular, the younger parts somewhat ferruginous furfuraceous. Leaves membranous, glabrous or nearly so; nerves 6 to 9 on each side of the midrib, rather prominent; petioles 1 to 3 cm. long, more or less ferruginous furfuraceous, becoming glabrous or nearly so. Calyx lobes linear-lanceolate, acuminate, 4 to 5 mm. long, slightly pubescent. Corolla white, becoming yellowish white with age, more or less hirsute pubescent, the lobes about 11 mm. long. Capsule glabrous, 2.5 cm. long.

Luzon, Province of Bataan, Mount Mariveles (3952 Merrill), March, 1905; Province of Benguet, Sablan (6122 Elmer), April, 1904. Mindoro, Baco River (1779 Merrill), April, 1903. Ticao Island (1046 Clark), May, 1904. Rather common in forests, but scattered, extending to an altitude of about 200 m. on Mount Mariveles.

“*Hypoestes cinerea* C. B. Clarke, MS.

“(Vidal Nos. 340, 482; Loher, Nos. 4277, 4278.) Puberula, foliis 1 dm. longis, ovati-lanceolatis; paniculis compositis, pro magna parte terminalibus; involucris 7 to 8 mm. longis, puberulis, lobis apice oblongis, vix acutis;

capsula in dimidia parte superiore pilosa. *H. purpurea* Vidal, Rev. Pl. Vasc. Filip. 201. 1886, non R. Br." C. B. Clarke in lit.

Herbaceous, 1 m. high or less, the branches divaricate. Stems glabrous or slightly pubescent, nearly black when dry. Leaves ovate to ovate-lanceolate, 6 cm. wide or less, membranous, nearly glabrous, or somewhat cinereous puberulent beneath, the base equilateral, acuminate, the apex slightly acuminate, or acute; nerves 7 to 8 on each side of the midrib; petioles 1 to 3 cm. long, usually somewhat pubescent. Panicles 4 to 7 cm. long, more or less cinereous puberulent, the spikes rather densely flowered, 4 cm. long or less. Corolla 1.5 to 2 cm. long, more or less pubescent, white, pale pink inside. Stamens 2; anthers yellow. Capsule less than 1 cm. long.

Luzon, Province of Pampanga, Arayat (1418, 1451 Merrill), March, 1903; Province of Rizal, Antipolo (1717 Merrill), March, 1903; Province of Bataan, Lamao River (2292 Meyer), December, 1904.

Nos. 1418, 1451, 1717 Merrill, were identified by Lindau<sup>1</sup> as *Hypoestes malaccanus* Wight.

**"*Hypoestes subcapitata*, C. B. Clarke, sp. nova.**

"Minute pubescente, foliis inaequalibus, alternis, majoris lamina 1 dm. longa, 4 cm. lata, utrinque brevius acuminate; petiolo 2 cm. longo; involucri in capus terminale sessile fere congestis, 12 mm. longis, perangustis, villosis; bracteis alte coalitis, lobis 2, lineari-lanceolatis, acutis, fere mucronatis; corolla 25 mm. longa; staminibus 2, antheris 1-ocularibus." C. B. Clarke in lit.

Herbaceous, 80 cm. high or less, erect, the branches more or less ferruginous or cinereous pubescent or puberulent. Leaves ovate-lanceolate to elliptical-lanceolate, membranous, minutely ferruginous or cinereous pubescent on the midrib beneath, and slightly so on the lamina, 4 to 10 cm. long, 2 to 4 cm. wide; nerves 5 to 6 on each side of the midrib, curved-ascending; petioles pubescent. Inflorescence 2 to 3 cm. long, dense. Flowers odorless. Corolla pink.

Lamao River, Mount Mariveles, Province of Bataan, Luzon (2367, 2561 Borden), January, February, 1905; (721 Borden), May, 1904; (2288 Meyer), December, 1904; (173 Barnes), January, 1904.

Growing in open forests and in recent clearings at from 100 to 275 m. above the sea.

**"*Hypoestes Vidalii* C. B. Clarke, MS.**

"(Vidal, No. 3407.) Foliorum laminis 18 cm. longis, 5 cm. latis, utrinque anguste triangularibus, fere glabratis; paniculis terminalibus, 5 to 12 cm. longis, densis, hirsutis, involucri 13 mm. longis, lobis 2, tubo longioribus, apice fere rotundatis; capsula pilosa.

"This species is closely allied to *H. cinerea* and to another undescribed Philippine species." C. B. Clarke in lit.

Erect herbaceous, the stem glabrous, the branches somewhat ferruginous pubescent. Leaves opposite, membranous, narrowly ovate to elliptical ovate; nerves 6 to 7 on each side of the midrib, curved-ascending; petioles

<sup>1</sup> Perk. Frag. Fl. Philip., 40. 1904.

2 to 4 cm. long, somewhat ferruginous pubescent. Corolla more or less pilose, pale purple or pink, 2.5 cm. long.

Luzon, Province of Rizal, Bosoboso (2156 Ahern's collector), December, 1904.

**Hygrophila phlomoides** Nees, var. **roxburghii** Hook. f. Fl. Brit. Ind. 4:408.

Manila (3941 Merrill), January, 1905; Province of Rizal, Montalban (2453 Ahern's collector), January, 1905.

*Antirrhinum molle* Blanco, non Linn., Fl. Filip. ed. 1, 503, 1837; ed. 2, 353. 1845; ed. 3, 2: 258; Merrill, Govt. Lab. Publ. 27:66. 1905, and *Hygrophila undulata* F.-Vill. Nov. App. 153. 1883, non Blume, should be cited as synonyms of the above species, Blanco's description of *Antirrhinum molle*, although very short, applying to the above specimens, the habitat, time of flowering, etc., also being the same.

(The above specimens were identified by Mr. Clarke, who states that the variety extends to the Malayan Peninsula and Java. E. D. M.)

**"Justicia Loheri** C. B. Clarke, MS.

"(Loher Nos. 4245, 4246.) Fruticulus glaber, divaricatim ramosus, foliis distantibus, anguste oblongis, 2 cm. longis; floribus axillaribus, 1-3-nis fasciculatis; sepalis 4 mm. longis, linearibus; corolla 7-8 mm. longa; capsula 6 mm. longa, oblonga, glabra, basi vix stipitata; seminibus 4, complanatis, verrucoso-tuberculatis." C. B. Clarke in lit.

A prostrate suffrutescent plant, shrubby at the base, the spreading branches forming dense mats. Branches slender, somewhat pubescent at the nodes. Leaves subcoriaceous, 3 to 5 mm. wide, blunt or acute, the margins revolute; nerves 4 on each side of the midrib, obscure, anastomosing; petioles very short. Corolla 9 mm. long, white, the lobes equal in length, the broader one 3-lobed, the narrower ones entire or notched. Stamens 2. Ovary glabrous the style slightly hirsute.

Luzon, Province of Benguet, Mount Santo Tomas (6530 Elmer), June, 1904.

**"Justicia luzonensis** C. B. Clarke, sp. nova.

"Foliis oppositis, aequalibus, fere glabris; lamina usque ad 2 dm. longa, 1 dm. lata, ovata, acuminata; petiolo 3-5 cm. longo; panicula laxa, terminali, pubescente, 18 cm. longa, 8 cm. lata, bracteis inconspicuis; corolla vix 1 cm. longa; staminibus 2, antheræ loculis altero paullo inferiore, basi albi-mucronato; capsula 20-25 mm. longa, in parte inferiore lineari-cylindrica, apice clavata, 4-sperma, a basi usque ad apicem 4-sperma." C. B. Clarke in lit.

Erect, herbaceous, usually about 1 m. high, simple or branched above. Leaves membranous, the base acute or acuminate; nerves 8 to 10 on each side of the midrib, curved-ascending, or the lower ones spreading. Corolla green or greenish yellow, with dull purple or reddish lines and spots. Capsule pubescent with scattered spreading hairs.

Luzon, Province of Bataan, Mount Mariveles (3252 Merrill), October, 1903; (2363 Borden), January 1905; (6151 Leiberg), July, 1904; (6727 Elmer), November, 1904; Province of Tayabas, Binangonan (381 Whitford),

September, 1904. Mindoro, Baco River, (1778 Merrill), April, 1903. A species growing on exposed ridges and slopes on Mount Mariveles at an altitude of 1,300 m., extending below to an altitude of 50 m., in damp shaded ravines along streams.

**"Lepidagathis tenuis** C. B. Clarke, sp. nova.

"Tenuis; repens, radicans, ramosa, 10-15 cm. longa, obscure ramosa; foliis oppositis, inaequalibus, petiolatis, 1-4 cm. longis, ovatis; spicis terminalibus 1-3-nis, anguste oblongis, 1-2 cm. longis, laxiusculis; calyce 3-4 mm. longo." C. B. Clarke in lit.

A small plant 10 cm. long or less, the branches with few scattered hairs. Leaves membranous, acute, the base broad, abruptly more or less acuminate; nerves 4 to 5 on each side of the midrib, rather prominent beneath; petioles 2 to 10 mm. long. Calyx lobes lanceolate, long slender acuminate, clothed with few scattered long white hairs.

Luzon, Province of Benguet, Sablan (6212 Elmer), April, 1904. On moist moss-covered rocks in ravines. Mindanao, District of Davao, (623 Copeland), March, 1904. A species closely related to several Malayan forms, differing in the rather loose, not densely packed, one-sided spikes.

**"Rungia philippinensis** C. B. Clarke, MS.

"(Cuming No. 1276, Loher No. 4283.) Foliis linearibus; spicis terminalibus, strobilatis; foliis floralibus arcte imbricatis, apice rotundatis, imo in margine scariosis, fere glabris.

"*R. longifolia* Nees in DC. Prodr. V. p. 471, partim.

"*Rungia* sp. a *R. longifolia* Nees et Arn. (sp. *Zeylanica*) diversa. Hook. f. Fl. Brit. Ind. IV. p. 547." C. B. Clarke in lit.

A weak, slender, unbranched, suberect herb 20 to 30 cm. high. Leaves 2 to 4 cm. long, 4 to 6 mm. wide, membranous, glabrous, the base acute, the apex blunt or acute; nerves 3 to 4 on each side of the midrib, ascending, anastomosing, the reticulations lax; petioles 2 to 3 mm. long. Spikes subglobose or ovoid, about 1 cm. long, the bracts obovate, cleft at the apex, the margins broad, membranous. Calyx lobes linear lanceolate, pale, glabrous, long slender acuminate, 2.5 mm. long.

Luzon, Province of Benguet, Baguio (6,000 Elmer), March, 1904.

**"Strobilanthes Merrillii** C. B. Clarke, sp. nova.

"Glabra, ramis exalatis, foliis oppositis, inaequalibus, usque ad 15 cm. longis, 5 cm. latis, late oblanceolatis; spicis 5-15 cm. longis; bracteis in paribus distantibus, inferioribus ovatis, usque ad 3 cm. longis, 2 cm. latis; sepalis 7 mm. longis, oblongis; corolla 25 mm. longa, alba; staminibus 4, filamentis glabris, polline ellipsoideo, longitudinaliter multi-striato; stylo longe hirsuto." C. B. Clarke in lit.

An erect branched shrub 1 to 2 m. high the branches nearly black when dry, glabrous. Leaves firmly membranous, subentire or obscurely irregularly distantly crenate, the base acuminate or acute, the apex slender acuminate, the acumen blunt; nerves 8 to 9 on each side of the midrib, ascending, prominent beneath; petioles 0.5 to 1 cm. long.

Mount Mariveles, Province of Bataan, Luzon (3713 Merrill), January, 1904; (1581, 2094 Borden), August and September, 1904; (6815 Elmer),

November, 1904. No. 4248 Loher, in Herb. Kew, is the same, according to Clarke.

Common on exposed ridges and slopes at from 1,200 to 1,300 m. above the sea, at once recognizable by its elongated spikes and numerous leaf-like bracts.

**"*Strobilanthes pluriformis* C. B. Clarke, MS., in Herb. Kew.**

"*Hirta* vel fere glabrata, foliis oppositis non raro inaequalibus, lamina 6 ad 10 cm. longa, lanceolata aut elliptico-lanceolata, utrinque angustata; fasciulis paucifloris laxius paniculatis aut densius cymulosis; bracteis usque ad 1 cm. longis, lineari-oblongis, hirsutis, aut puberulis, caducis; sepalis 5 ad 8 mm. longis, lineari-oblongis; corolla 22 mm. longa, tenera, alba, paullo purpureo-maculata; filamentis a pilis longis ornatis; staminibus 4, polline ellipsoideo, longitudinaliter multi-striato; stylo a pilis paucis insperso vel densissime piloso; capsula 13 mm. longa, spathulato-ellipsoidæ hirta-pubescente vel fere glabrata; seminibus 4, hirtulis aut sericeis, parum hygroscopice villosis.

"Luzon, Vidal, Nos. 1630, 1633, 3406; Loher, Nos. 4254, 4255, 4256, 4264, 4265, 4266." C. B. Clarke in lit.

A much-branched shrub 1 to 3 m. high. Leaves serrate or crenate-serrate, 2 to 4 cm. wide, long acuminate, the acumen blunt, the base acute or acuminate; nerves 8 to 10 on each side of the midrib, prominent, ascending.

Luzon, Province of Benguet (5921 Elmer), March, 1904; (38 Topping), January, 1903; Province of Tayabas, Mount Banahao (877 Klemme), June, 1904; (954 Whitford), October, 1904; Mount Mariveles, Province of Bataan, Luzon (3956 Merrill), March, 1905; (1092 Whitford), February, 1905.

Common on exposed ridges and slopes, growing with *S. Merrillii* on Mount Mariveles at an altitude of from 1,200 to 1,300 m. above the sea.



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[Synonyms are in italics.]

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