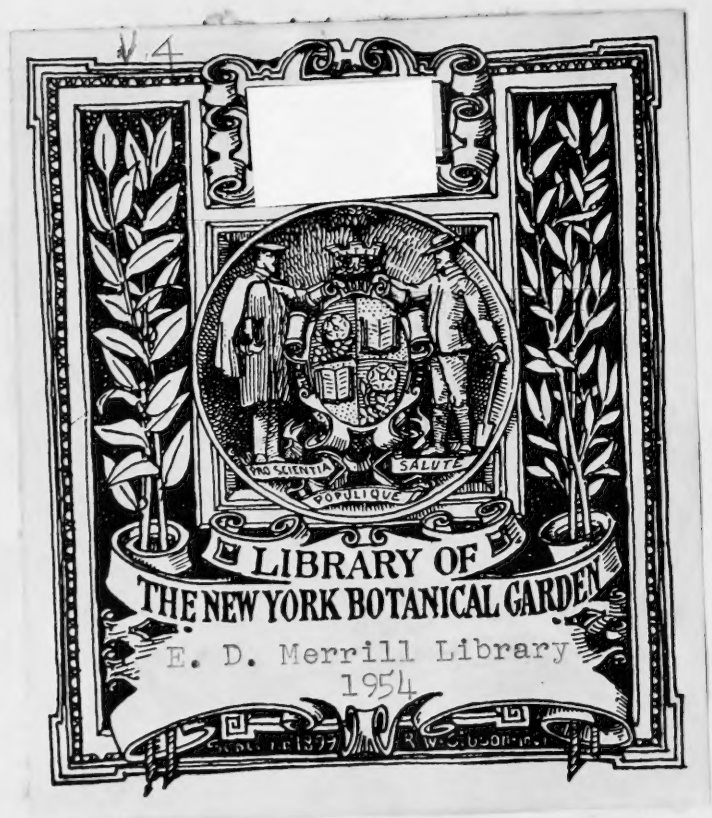


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THE PHILIPPINE
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VOL. I

AUGUST 15, 1906

SUPPLEMENT III

NEW OR NOTEWORTHY PHILIPPINE PLANTS, V.

By ELMER D. MERRILL.

(From the botanical section of the Biological Laboratory, Bureau of Science.)

INTRODUCTION.

The present article has been prepared as material and data became available, as was the case with the previous papers published under the above title.¹ Our receipts of Philippine botanical material from various sources approximate 5,000 numbers annually and the percentage of undescribed species and interesting forms is very large, as is to be expected in a region botanically so little known as is this Archipelago. In making the preliminary identifications, immediately after the receipt of the material in the herbarium, many of the interesting forms are detected and described, but in this paper, as in the preceding ones of the series, only a portion of these forms are considered. Practically no work in some groups can at present be done in Manila, owing to a lack of literature; in certain ones, all material is submitted to specialists for identification and report. Frequently, specific identifications can not be made at once, because of a lack of complete material, so that several hundred sheets, apparently representing undescribed species, remain in the herbarium of this Bureau and for one reason or another these will need to be considered at a later date. In general, it is not considered good policy to describe species based on a single specimen and many of the apparently undescribed plants at present in our herbarium have no corresponding duplicate material.

¹ *Publications of the Bureau of Government Laboratories* (1904-5), 6, 17, 29, 35.

In this paper a large number of genera which were previously unknown from the Philippines are for the first time reported, their representatives in some cases being species heretofore undescribed and, in others, well-known plants which for the first time have been encountered in the Archipelago.

Rolfe² makes it clear that the Philippine flora has distinct connections with that of the neighboring lands, but, at the time he wrote, comparatively little was known regarding this flora or that of the regions immediately to the north and south. In the past twenty years much work has been done by various authors; 1905 has seen the completion of Forbes and Hemsley's work on the flora of China,³ and in 1898 Koorders published his compilation of that of Celebes.⁴

Rolfe, in 1884, knew but three species common to the Philippines and Celebes and confined to these two regions and only about sixteen which he considered to represent northern or continental types; therefore it has been thought advisable here to enumerate some of the more striking representatives both of the southern connection with Celebes and of the northern one with Formosa, Japan, and the Asiatic Continent, especially as Usteri,⁵ publishing as recently as the year 1905, has added nothing to the twenty-year-old list of Rolfe.

The list of species confined to Celebes and the Philippines and common to both has been extended from the three mentioned in 1884 to about sixty given below, while many others extending from the Philippines through Celebes to neighboring islands, have been enumerated. The list, so far as Celebes is concerned, is based largely on Koorders' work, cited above. Koorders⁶ remarks that the relationship between the Philippine and Celebes flora is very prominent, but does not discuss the connections in detail.

In the following table the cross (+) indicates that the species is found in Luzon and Celebes and, unless noted to the contrary in the last column, that it is known only from the two regions. The dash (—) indicates that the Philippine species is represented in Celebes by a closely related one or a variety. The question mark indicates a Philippine species doubtfully credited to Celebes by Koorders. Where the range of the species is known to extend beyond Celebes, its distribution is given in the last column. Specimens of most of the species enumerated are in the herbarium of this Bureau.

² On the Flora of the Philippine Islands and Its Probable Derivation, *Journ. Linn. Soc. Bot.* (1884), **21**, 283–316.

³ An Enumeration of All the Plants Known from China Proper, Formosa, Hainan, Corea, the Luchu Archipelago, and the Island of Hongkong, etc., *Journ. Linn. Soc. Bot.* (1886–1905), **23**, **26**, **36**.

⁴ Verslag eener Botanische Dienstreis door de Minahasa, tevens eerste overzicht der Flora van N. O. Celebes, *Meded. 's Lands. Plant.* (1898), **19**.

⁵ *Beiträge zur Kenntnis der Philippinen und ihrer Vegetation* (1905), **3**.

⁶ *Loc. cit.*, 258.

Table showing floristic relationship between the Philippines and Celebes.

Species.	Philippines.	Celebes.	Other distribution.
POLYPODIACEÆ:			
<i>Polypodium angustatum</i> Blume	+	+	Java.
<i>Polypodium vulcanicum</i> Blume	+	+	Sunda Islands.
<i>Polypodium heracleum</i> Kunze	+	+	Java.
<i>Polypodium setosum</i> Blume	+	+	Java.
<i>Polypodium stenophyllum</i> Blume	+	+	Java.
<i>Polypodium decrescens</i> Christ	+	+	
<i>Lindsaya sarasinorum</i> Christ	+	+	
<i>Lindsaya retusa</i> Mett	+	+	New Guinea.
<i>Callipteris alismaefolia</i> J. Sm	+	+	
<i>Diplazium deltoideum</i> Christ	+	+	
<i>Athyrium sarasinorum</i> var. <i>philippinense</i> Christ	+	-	
<i>Pteris heteromorpha</i> Fée	+	+	
<i>Hymenolepis platyrhynchos</i> Kunze	+	+	
<i>Niphobolus sphaerostichus</i> Copel	+	+	
<i>Aspidium aculeatum</i> var. <i>batjanense</i> Christ	+	+	Batjan.
CYPERACEÆ:			
<i>Cyperus pubisquama</i> Steud	+	+	
ARACEÆ:			
<i>Epipremnum elegans</i> Engl	+	+	
<i>Pothodium lobbianum</i> Schott	+	+	Moluccas, Ternate.
<i>Scindapsus argyrea</i> Engl	+	+	
<i>Spathiphyllum commutatum</i> Schott	+	+	Amboina.
DIOSCOREACEÆ:			
<i>Dioscorea</i> n. sp	+	+	
MYRICACEÆ:			
<i>Myrica javanica</i> Blume	+	+	Java.
FAGACEÆ:			
<i>Quercus campanoana</i> Vid	+	+	
<i>Quercus blancoi</i> A. DC	+	+	
<i>Quercus celebica</i> Blume	+	+	
ULMACEÆ:			
<i>Celtis philippinensis</i> Blanco	+	(?)	
URTICACEÆ:			
<i>Ficus caulocarpa</i> Miq	+	+	Borneo.
<i>Ficus chrysolepis</i> Miq	+	+	
<i>Ficus clusioides</i> Miq	+	+	
<i>Ficus forstenii</i> Miq	+	+	Timor, Borneo.
<i>Ficus manillensis</i> Warb	+	-	
<i>Ficus minahassae</i> Miq	+	+	
PITTIOSPORACEÆ:			
<i>Pittosporum resiniferum</i> Hemsl	+	(?)	
LEGUMINOSÆ:			
<i>Clianthus binnendyckianus</i> S. Kurz	+	+	Ceram (?).
<i>Dalbergia minahassae</i> Prain	+	+	
<i>Gleditschia rolfei</i> Vid	+	+	
<i>Pithecolobium subacutum</i> Benth	+	+	
<i>Pterocarpus echinatus</i> Pers	+	+	
<i>Wallaceodendron celebicum</i> Koord	+	+	
RUTACEÆ:			
<i>Lunasia amara</i> Blanco	+	+	Java.
<i>Micromelum molle</i> Turcz	+	+	
<i>Micromelum tephrocarpum</i> Turcz	+	+	
<i>Evodia latifolia</i> DC	+	+	Halmaheira.

Table showing floristic relationship between the Philippines and Celebes—Continued.

Species.	Philippines.	Celebes.	Other distribution.
BURSERACEÆ:			
<i>Garuga abilo</i> (Blco.) Merr	+	+	Amboina, New Guinea, Samoa.
MELIACEÆ:			
<i>Reinwardtiodendron merrillii</i> Perk	+	—	
<i>Aglaia macrobotrys</i> Turcz	+	+	
<i>Aglaia argentea</i> Blume	+	+	Java.
<i>Aglaia monophylla</i> Perk	+	—	
MALPIGHIACEÆ:			
<i>Ryssopteris dealbata</i> Juss	+	+	
EUPHORBIACEÆ:			
<i>Actephila gigantea</i> Koord	+	+	
<i>Cleistanthus cupreus</i> Vid	+	+	
<i>Mallotus cumingii</i> Muell. Arg	+	+	
<i>Mallotus leucocalyx</i> Muell. Arg	+	+	
<i>Glochidion album</i> Boerl	+	+	
<i>Macaranga hispida</i> Muell. Arg	+	+	Moluccas.
ANACARDIACEÆ:			
<i>Semecarpus perrottetii</i> March	+	+	
<i>Koordersiodendron pinnatum</i> Merr	+	+	New Guinea.
SAPINDACEÆ:			
<i>Cubilia blancoi</i> Blume	+	+	Boeroe, Ceram.
<i>Tristira pubescens</i> Merr	+	—	
ELAEOCARPACEÆ:			
<i>Elaeocarpus cumingii</i> Turcz	+	+	
TILIACEÆ:			
<i>Columbia serratifolia</i> DC	+	+	
STERCULIACEÆ:			
<i>Sterculia oblongata</i> R. Br	+	+	
<i>Sterculia stipularis</i> R. Br	+	(?)	
THEACEÆ:			
<i>Ternstroemia toquian</i> F. -Vill	+	+	
MELASTOMATACEÆ:			
<i>Medinilla cumingii</i> Naud	+	+	
<i>Medinilla teysmannii</i> Miq	+	+	New Guinea.
<i>Astronia cumingiana</i> Vid	+	+	
<i>Memeylon preslianum</i> Triana	+	+	
ARALIACEÆ:			
<i>Tetraplasandra philippinensis</i> Merr	+	—	New Guinea (—).
<i>Anompanax philippinensis</i> Harms	+	—	
<i>Boerlagiodendron pulcherrimum</i> Harms	+	—	
ERICACEÆ:			
<i>Vaccinium microphyllum</i> Blume	+	+	
<i>Rhododendron apoanum</i> Stein	+	—	
MYRSINACEÆ:			
<i>Rapanea avenis</i> Mez	+	+	Java.
SAPOTACEÆ:			
<i>Palaquium celebicum</i> Burck	+	+	
LOGANIACEÆ:			
<i>Couthovia celebica</i> Koord	+	+	
<i>Fagraea plumeriaefolia</i> A. DC	+	+	
<i>Strychnos celebica</i> Koord	+	+	
APOCYNACEÆ:			
<i>Ichnocarpus ovatifolius</i> A. DC	+	+	
<i>Tabernaemontana cumingiana</i> A. DC	+	+	

Table showing floristic relationship between the Philippines and Celebes—Continued.

Species.	Philippines.	Celebes.	Other distribution.
ASCLEPIADACEÆ:			
<i>Dischidiopsis philippinensis</i> Sehltr.-----	+	—	New Guinea (—).
CONVOLVULACEÆ:			
<i>Bonamia semidigyna</i> var. <i>farinosa</i> Hallier..	+	+	Banca, Lepar.
VERBENACEÆ:			
<i>Geunsia cumingiana</i> Rolfe.-----	+	+	
<i>Premna cumingiana</i> Schauer.-----	+	+	
<i>Clerodendron blancoi</i> Naves.-----	+	—	
ACANTHACEÆ:			
<i>Eranthemum zollingerianum</i> Nees.-----	+	+	
<i>Hemigraphis cumingiana</i> Nees.-----	+	+	
<i>Hemigraphis rapifera</i> Hallier.-----	+	+	
<i>Hemigraphis primulifolia</i> F.-Vill.-----	+	+	New Guinea.
BIGNONIACEÆ:			
<i>Nycticalos euspidatum</i> Miq.-----	+	+	Moluccas.
CUCURBITACEÆ:			
<i>Momordica ovata</i> Cogn.-----	+	+	

Notes on the above table.—*Dioscorea* sp. nov. is the species enumerated by Koorders as *D. glabra* Roxb., but which is a distinct undescribed one according to Dr. Prain in lit. and which has also been found in the Philippines. *Gleditschia rolfei* Vid.; *G. celebica* Koord., is a synonym. *Pterocarpus echinatus* Pers. (*P. vidalianus* Rolfe) is also known from Salajar Island, south of Celebes.⁷ *Wallacedendron celebicum* Koord., a monotypic genus, first found in Celebes and later discovered in the central Philippines. *Reinwardtiendendron merrillii* Perk., a genus of two species, one Celebes and one Philippine. *Koordersiodendron pinnatum* (Blanco) Merr., a monotypic genus known from the Philippines, Celebes, and New Guinea. *Cubilia blancoi* Blume, a monotypic genus known from Luzon, Celebes, Boeroe, and Ceram, *Cubilia rumphii* Blume being a synonym. *Anompanax philippinensis* Harms., a genus comprising two species, one Celebes and one Philippine. *Vaccinium microphyllum* Blume, see page 221.

Whereas the Celebes connections are very strikingly shown in the above table, the semi-temperate or continental element in the highlands of northern Luzon is nearly as prominent, as is shown by the following one. The latter undoubtedly is far from complete and therefore, when more extensive collections are made and our present material has more thoroughly been worked over with reference to Asiatic types and compared with them, the number of species will undoubtedly be greatly enlarged.

The northern element in the Philippine flora.—In the following table, as in the preceding, the cross (+) indicates that the species is found in Luzon and in the region for which the sign is entered, whereas the dash (—) means that the Philippine species is represented by a closely related form in the region indicated, or, in the last column, that the general generic distribution is northern and not Malayan. The majority

⁷ Merrill: *Publications of Bureau of Government Laboratories* (1904), 17, 20.

of the genera so indicated are unknown from the Malayan region. Specimens of all the species enumerated are in the herbarium of this Bureau.

Table showing the northern element in the Philippine flora.

Species.	Luzon.	Formosa.	Japan.	China.	Northern India.	Europe.	North America.	Java, Sumatra, or Borneo.	Of general northern generic distribution.
POLYPODIACEÆ:									
<i>Cheilanthes argentea</i> Hook	+	—	+	+	+	—	—	—	—
<i>Aspidium fauriei</i> var. <i>elatius</i> Christ	+	—	—	—	—	—	—	—	—
<i>Polypodium mengsteense</i> Christ	+	—	—	+	—	—	—	—	—
<i>Polystichum varium</i> Presl	+	—	+	+	—	—	—	—	—
<i>Nephrodium erythrosorum</i> Hook	+	—	+	+	+	—	—	—	—
<i>Diplazium japonicum</i> Thunb	+	—	+	+	+	—	—	—	—
GLEICHENIACEÆ:									
<i>Gleichenia laevissima</i> Christ	+	—	—	+	—	—	—	—	—
PINACEÆ:									
<i>Pinus insularis</i> Endl	+	—	—	—	—	—	—	—	—
<i>Pinus merkusii</i> J. et DeVr	+	—	—	—	—	—	—	+	—
GRAMINEÆ:									
<i>Agrostis elmeri</i> Merr	+	—	—	—	—	—	—	—	—
<i>Calamagrostis filifolia</i> Merr	+	—	—	—	—	—	—	—	—
<i>Calamagrostis arundinacea</i> var. <i>nipponica</i> Hack	+	—	+	—	—	—	—	—	—
<i>Poa luzoniensis</i> Merr	+	—	—	—	—	—	—	—	—
<i>Pollinia quadrinervis</i> Hack	+	—	+	+	+	—	—	—	—
<i>Pollinia nuda</i> Trin	+	—	+	+	+	—	—	—	—
<i>Pollinia imberbis</i> var. <i>willdenowiana</i> Hack	+	—	—	—	+	—	—	—	—
<i>Arthraxon microphyllum</i> Hochst	+	—	—	—	+	—	—	—	—
<i>Eremochloa leersioides</i> Hack	+	—	—	+	—	—	—	—	—
<i>Brachypodium silvaticum</i> Beauv. var. <i>nov</i>	+	—	—	—	—	—	—	—	—
<i>Anthoxanthum luzoniense</i> Merr	+	—	—	—	—	—	—	—	—
<i>Coelachne hackeli</i> Merr	+	—	—	—	—	—	—	—	—
CYPERACEÆ:									
<i>Carex</i> , about 14 species	+	—	—	—	—	—	—	—	—
JUNCEÆ:									
<i>Juncus</i> , 2 species	+	—	—	—	—	—	—	—	—
LILIACEÆ:									
<i>Aletris spicata</i> Franch	+	+	+	+	—	—	—	—	—
<i>Disporum pullum</i> Salisb	+	+	+	+	+	—	+	—	—
<i>Ophiopogon japonicus</i> Salisb	+	+	+	+	—	—	—	—	—
<i>Lilium philippinense</i> Baker	+	—	—	—	—	—	—	—	—
PIPERACEÆ:									
<i>Saururus loureirii</i> Deene	+	+	—	+	—	—	—	—	—
SALICACEÆ:									
<i>Salix azaolana</i> Blanco	+	—	—	—	—	—	—	—	—
MYRICACEÆ:									
<i>Myrica rubra</i> S. & Z	+	+	+	+	+	—	—	+	—

Table showing the northern element in the Philippine flora—Continued.

Species.	Luzon.	Formosa.	Japan.	China.	Northern India.	Europe.	North America.	Java, Sumatra, or Borneo.	Of general northern generic distribution.
URTICACEÆ:									
<i>Chamabainia squamigera</i> Wedd	+				+				—
<i>Debregeasia longifolia</i> Wedd	+				+			+	—
CARYOPHYLLACEÆ:									
<i>Stellaria laxa</i> Merr	+		+	+	+			+	—
RANUNCULACEÆ:									
<i>Ranunculus</i> n. sp.	+								—
<i>Anemone luzoniensis</i> Rolfe	+								—
BERBERIDACEÆ:									
<i>Berberis barandana</i> Vidal	+								—
<i>Mahonia nepalensis</i> DC	+		+	+	+				—
CRUCIFERÆ:									
<i>Cardamine parviflora</i> Linn	+	+	+	+	+	+	+		—
CRASSULACEÆ:									
<i>Sedum australe</i> Merr	+								—
SAXIFRAGACEÆ:									
<i>Astilbe</i> n. sp. (<i>A. rivularis</i> Vid.)	+				—				—
<i>Deutzia pulchra</i> Vid	+								—
<i>Hydrangea lobbia</i> Maxim	+								—
<i>Itea macrophylla</i> Wall	+				+				—
<i>Dichroa febrifuga</i> Lour	+			+	+			+	—
ROSACEÆ:									
<i>Fragaria indica</i> Andr	+	+	+	+	+				—
<i>Rosa multiflora</i> Thunb	+	+	+	+	+				—
<i>Rubus tagallus</i> Cham. & Sch	+	+		+					—
<i>Rubus rosaeifolius</i> Sm	+			+					—
RUTACEÆ:									
<i>Boenninghausenia albiflora</i> Reichb.	+	+	+	+	+				—
<i>Skimmia japonica</i> Thunb	+	+	+	—					—
POLYGALACEÆ:									
<i>Polygala glomerata</i> Lour	+		+	+					—
CORIARIACEÆ:									
<i>Coriaria intermedia</i> Mats	+	+	—	—					—
ACERACEÆ:									
<i>Acer philippinum</i> Merr	+								—
<i>Acer</i> sp. indet	+								—
VIOLACEÆ:									
<i>Viola patricinii</i> DC	+		+	+	+				—
MELASTOMACEÆ:									
<i>Sarcopyramis</i> n. sp	+				—				—
OENOTHERACEÆ:									
<i>Epilobium</i> , 2 species	+								—
HALORRHAGACEÆ:									
<i>Halorrhagis scabra</i> , var. <i>elongata</i> Schindl	+			+	—				—
ARALIACEÆ:									
<i>Acanthopanax trifoliatum</i> (L.) Merr	+	+	+	+	+				—

Table showing the northern element in the Philippine flora—Continued.

Species.	Luzon.	Formosa.	Japan.	China.	Northern India.	Europe.	North America.	Java, Sumatra, or Borneo.	Of general northern generic distribution.
ERICACEÆ:									
Rhododendron, 14 species	+								—
Vaccinium, 10 species	+								—
Gaultheria, 3 species	+								—
MYRSINACEÆ:									
Amblyanthopsis n. sp	+				—				—
PRIMULACEÆ:									
Lysimachia microphylla Merr	+								—
Lysimachia ramosa Wall	+				+			+	—
Androsace saxifragifolia Bunge	+	+	+	+	+				—
SYMPLOCACEÆ:									
Symplocos lancifolia S. & Z	+			+					—
OLEACEÆ:									
Fraxinus philippinensis Merr	+								—
Ligustrum cumingianum Deene	+								—
GENTIANACEÆ:									
Gentiana, 3 species	+								—
Crawfordia luzonensis Vid	+								—
HYDROPHYLLACEÆ:									
Ellisiophyllum reptans Maxim	+		+						—
BORRAGINACEÆ:									
Bothriospermum tenellum F. & M.	+	+	+	+	+				—
Trigonotis philippinensis Merr	+								—
VERBENACEÆ:									
Callicarpa formosana Rolfe	+	+	+	—					—
LABIATÆ:									
Ajuga n. sp	+								—
Plectranthus diffusa Merr	+								—
Plectranthus sp.	+								—
Scutellaria luzonica Rolfe	+	+	—	—	—				—
SCROPHULARIACEÆ:									
Alectra dentata O. Ktze	+			+	+				—
Euphrasia borneensis Stapf	+							+	—
Sopubia trifida Ham	+			+	+				—
RUBIACEÆ:									
Galium philippinensis Merr	+								—
CAPRIFOLIACEÆ:									
Lonicera rehderi Merr	+								—
Lonicera philippinensis Merr	+								—
Viburnum luzonicum Rolfe	+								—
Viburnum odoratissimum Ker	+		+	+					—
Viburnum sinuatum Merr	+								—
CAMPANULACEÆ:									
Lobelia nicotianefolia Heyne	+				+				—
Pratia begoniaefolia Lindl	+	+	+	+				+	—
Peracarpa n. sp	+				—				—

Table showing the northern element in the Philippine flora—Continued.

Species.	Luzon.	Formosa.	Japan.	China.	Northern India.	Europe.	North America.	Java, Sumatra, or Borneo.	Of general northern generic distribution.
COMPOSITE:									
Aster, 2 species	+	—	—	—	—	—	—	—	—
Artemisia parviflora Roxb	+	—	—	—	+	—	—	—	—
Ainslaea reflexa Merr	+	—	—	—	—	—	—	—	—
Carpesium cernuum Linn	+	—	—	+	+	+	—	—	—
Cnicus wallichii Clarke	+	—	—	—	+	—	—	—	—
Dichrocephala chrysanthemifolia DC	+	—	—	+	+	—	—	—	—
Anaphalis cinnamomea Clarke	+	—	+	+	+	—	—	—	—
Gnaphalium, 3 species	+	—	—	—	—	—	—	—	—
Eupatorium lindleyanum DC	+	+	+	+	—	—	—	—	—
Lactuca thunbergiana Maxim	+	+	+	+	—	—	—	—	—
Lactuca brevirostris Champ	+	—	+	+	—	—	—	—	—
Myriactis humilis Merr	+	—	—	—	—	—	—	—	—
Senecio, 5 species	+	—	—	—	—	—	—	—	—
Solidago virgaurea L	+	+	+	+	+	+	+	—	—
Vernonia philippinensis Rolfe	+	—	—	—	—	—	—	—	—

Notes on the above table.—*Chamabainia squamigera*, a monotypic Asiatic genus. *Sedum australis* is the most southern species of the genus known in the Eastern Hemisphere. *Polygala glomerata*: This species is included, but the specimen referred to is from Mindanao, not as yet having been found in Luzon. Several other species of *Polygala* are known from the Philippines. *Viola patricinii*: Three other species of *Viola* are represented in material recently collected in northern Luzon, one of these has also been found in Mindanao. *Sarcopyramis* is a monotypic Himalayan genus, the Luzon plant apparently representing an undescribed form. *Epilobium*: One or both forms may be undescribed. *Rhododendron* and *Vaccinium* include the total species known from the Philippines. *Amblyanthopsis*, an Asiatic genus of two species from Bhotan and Assam, a third undescribed species in Luzon. *Ellisiophyllum reptans* is a monotypic genus previously known only from Japan. *Peracarpa*, an undescribed form, the genus previously containing but one Himalayan species. *Solidago virgaurea*: This is its most southern range in the Eastern Hemisphere.

PANDANACEÆ.

FREYCINETIA Gaudich.

Freycinetia rostrata Merrill sp. nov. § *Pleio stigma*.

A scandent, glabrous plant with terminal, globose heads, usually in threes, and broadly-lanceolate, somewhat acuminate leaves 6 to 11 cm. long, the margins with very few scattered small teeth. Branches brownish gray, 5 mm. or less in diameter, obscurely angled. Leaves 1.5 to 2.4 cm. wide, narrowed below to the short flattened petiole, the margins often

recurved, nearly or quite entire below, above with few small scattered teeth which are not spine-like. Heads about 1.5 cm. in diameter, globose, the peduncles from the apices of the branches 1 to 1.5 cm. long. Drupes many, but most of them aborted, narrowly ovoid, about 8 mm. long, narrowed above into a rostrate apex about 2 mm. long. Stigmas 4.

MINDANAO, Lake Lanao, Camp Keithley (475 *Mrs. Clemens*) April, 1906.

PANDANUS Linn.

Pandanus clementis Merrill sp. nov. § *Sussca*. (Pl. I.)

A tree about 10 m. high, branched above, with ovoid, 3 to 4.5 cm. long heads, arranged in terminal condensed spikes, about 8 heads in each spike, each head subtended by a large broadly-ovate to oblong-ovate, acute or very shortly abruptly acuminate bract, the drupes indefinite, 10 to 12 mm. long. Ultimate branches about 1.5 cm. in diameter. Leaves 60 cm. long or more, 2 to 2.5 cm. wide, the margins with small antrorse spines throughout, the midrib above glabrous, beneath at the base with a few retrorse spines and near the apex finely antrorsely denticulate, the apex short acuminate. Heads red when mature, ovoid, obtuse, obscurely obtusely 3-angled, 3 to 4.5 cm. long, 2.5 to 3 cm. in diameter, the bracts gradually smaller upwards, 4 to 6 cm. long, 3 to 4 cm. wide, acute or very shortly acuminate, serrulate on the keel and margins above. Drupes very many in each head, 10 to 12 mm. long, 3 to 4 mm. thick above, gradually narrowed below, somewhat angular, the apical portion convex, slightly ribbed. Stigma terminal, central, 1 to 1.5 mm. in diameter.

MINDANAO, Lake Lanao, Camp Keithley (*Mrs. Clemens*) March, 1906. Altitude about 800 m.

GRAMINEÆ.

ANTHOXANTHUM Linn.

Anthoxanthum luzoniense Merrill sp. nov.

Erect, glabrous, 40 to 60 cm. high, very fragrant in drying. Culms glabrous; nodes slightly pubescent with short appressed hairs; sheaths usually exceeding the internodes, often loose, the margins above slightly pubescent; ligule broad, ovate, obtuse, irregularly cleft or lacerate, hyaline, about 4 mm. long; blades 11 to 18 cm. long, 4 to 5 mm. wide, glabrous, smooth, flat or revolute when dry. Panicles exserted, rather dense, many flowered, 6 to 8 cm. long, 1 to 1.5 cm. in diameter, the lower branches about 3 cm. long, appressed-ascending, densely flowered. First glume hyaline except the median portion, ovate, acuminate, 3 to 4 mm. long, 1-nerved; second glume 5 to 6 mm. long, 3-nerved, glabrous, oblong ovate, abruptly subtruncate-acuminate. Flowering glumes 3, the first and second neuter, slightly pubescent, the first about 5 mm. long, 3-nerved, cleft at the apex for about $\frac{1}{4}$ its length, awned in the cleft, the awn scabrous, straight, about 1.2 mm. long; second flowering glume

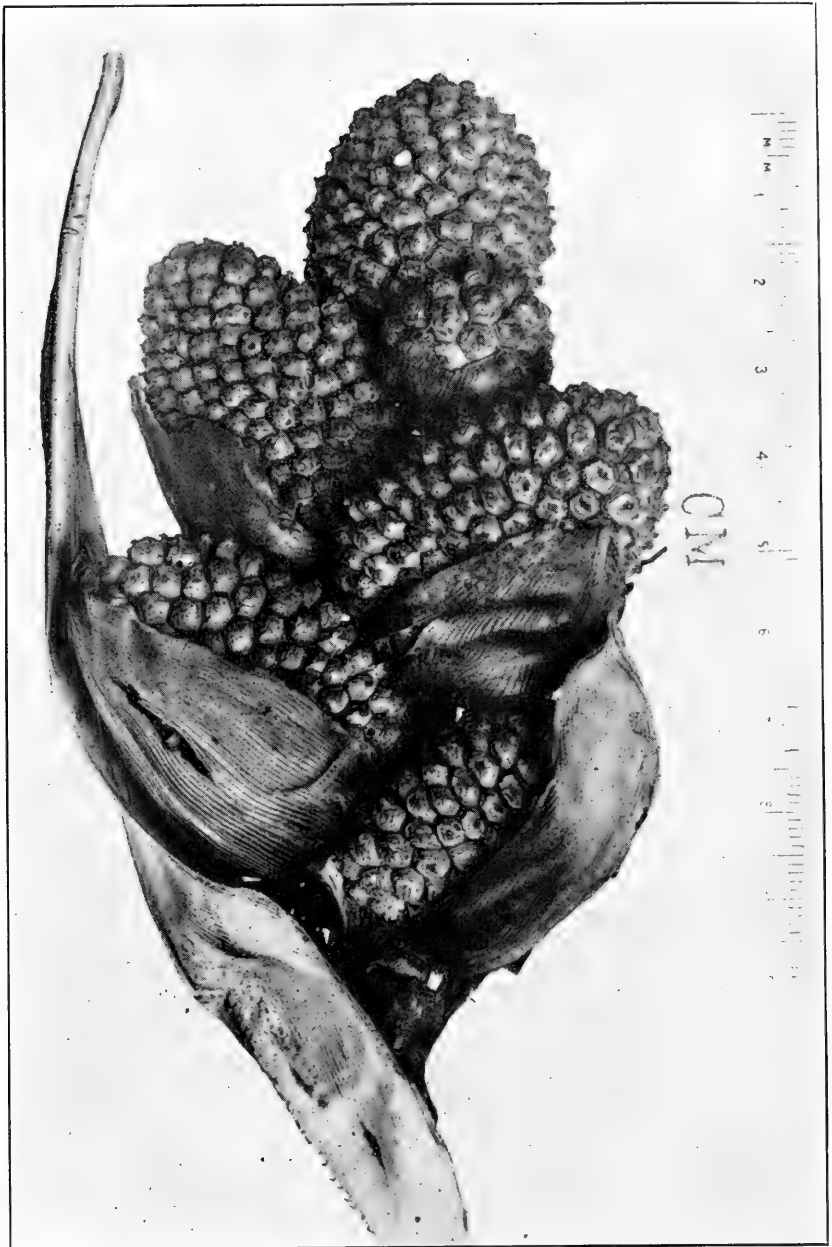


PLATE I. PANDANUS CLEMENTIS MERR.

about 4 mm. long, oblong, 1-nerved, cleft at the apex, awned from the back at the lower $\frac{1}{4}$, the awn straight, scabrous, about 6 mm. long; third flowering glume broadly-ovate, obtuse, hyaline, glabrous, nerveless or nearly so, hermaphrodite, inclosing a very narrow palea. Anthers narrowly oblong, about 2 mm. long.

LUZON, Province of Benguet, Pauai (4713 *Merrill*) November 8, 1905.

In the same locality and with the same associates as *Poa luzoniensis*, and like that species a very interesting northern type. Hackel, who has kindly examined specimens, states that this species is apparently related to the British Indian plant described by Hooker as *Hierochloa clarkei*, judging from the description. The present species differs from the well-known and widely distributed *Anthoxanthum odoratum* Linn., in its glabrous outer glumes and especially in the very short-awned first-flowering glume. It has the same characteristic odor and much the appearance of that species.

ARUNDINELLA Raddi.

Arundinella setosa Trin. Diss. 2 (1824) 63; Hook. f. Fl. Brit. Ind. 7 (1897) 70. *Danthonia luzoniensis* Steud. Syn. Pl. Gram. (1855) 245; Miq. Fl. Ind. Bat. 3 (1859) 427; Vidal, Phan. Cuming. Philip. (1885) 159; Rev. Pl. Vase. Filip. (1886) 282; Ceron Cat. Pl. Herb. (1892) 184; F.-Vill. Nov. App. (1883) 319.

PHILIPPINES (1415 *Cuming*) cotype of *Danthonia luzoniensis* Steud. LUZON, Province of Benguet, Pauai to Bagaio (4702 *Merrill*) November, 1905; Bued River (4271 *Merrill*) November, 1905.

British India to Cochin China, and southern China.

This species is enumerated here only to call attention to the reduction of *Danthonia luzoniensis* Steud. On receipt of a specimen of No. 1415 *Cuming*, from the British Museum, I found the number to be an *Arundinella* and not a *Danthonia*. A fragment was sent to Dr. Hackel, who pronounced it to be identical with *Arundinella setosa* Trin. The genus *Danthonia* can therefore be excluded from the Philippines.

CALAMAGROSTIS Adans.

Calamagrostis filifolia Merrill sp. nov. § *Deyeuxia*.

A densely tufted, erect grass 30 to 60 cm. high, with filiform leaves, and strict, densely flowered panicles. Culms glabrous, many in each tuft, erect, straight, glabrous; nodes dark, glabrous; sheaths, at least the lower ones, shorter than the internodes, the upper one often inclosing the immature panicles; ligule about 2 mm. long, subhyaline, irregularly cleft or lacerate; blades 10 to 20 cm. long, numerous at the base of the culms and on the innovations, erect, somewhat stiff, revolute, 1 mm. wide or less. Panicles at length exerted, pale green or slightly purplish, many flowered, the lower branches appressed, often 4 cm. long, forming a narrow somewhat spikelike, uninterrupted panicle. Empty glumes subequal, lanceolate, acuminate, about 6 mm. long, both 1-nerved, scabrous on the keel. Flowering glume lanceolate, 5 mm. long, minutely scabrous, 4-nerved, the nerves green, entire or very obscurely 2 to 3 toothed at the apex. Palea equaling the glume. Anthers 1.2 to 1.5 mm. long. Lodicules 1 mm. long. Callus hairs 1 mm. long or less; rhachilla about

1.2 mm. long, the hairs 2 mm. long or less. Awn of the flowering glume inserted at about the lower fourth, 7 mm. long, scabrid, somewhat geniculate and twisted below the geniculation.

Luzon, Province of Benguet, Mount Tonglon (4839 *Merrill*) November 12, 1905. In dry open soils at the summit of the mountain at about 2,250 m. Hackel states that this species is closely related only to *Calamagrostis nardifolia* (Griseb.) Hack. (*Agrostis nardifolia* Griseb.) of the Argentine Andes. A New Zealand species *Calamagrostis (Deyeuxia) setifolia* has similar leaves but quite other inflorescence and spikelets.

Hackel has suggested the name *Calamagrostis filifolia* forma *cleistogama* for specimens No. 4537 and 4715 *Merrill*, the former from Mount Dana, Lepanto, and the latter from Pauai, Benguet, the specimens differing from typical *C. filifolia* in having the 0.5 mm. long anthers persisting with the ripening fruit within the closed glumes and palea and lodicules 0.7 mm. long.

If we exclude *Deyeuxia quadriseta* Benth., credited to the Philippines by E. Villar, and undoubtedly not a Philippine plant, the identification apparently having been erroneous, then the above species is the first one of the genus to be reported from the Philippines, the genus in general being a northern one, or at least characteristic of the more temperate regions.

POA Linn.

***Poa luzoniensis* Merrill sp. nov.**

An erect perennial grass from long rootstocks, not at all tufted. Culms 30 to 40 cm. high, glabrous, smooth, geniculate below; nodes glabrous; sheaths equaling or shorter than the internodes, rather loose, the lower ones dry and brown; ligule short, truncate, cartilaginous; blades 8 to 14 cm. long, 1.5 to 2.5 mm. wide, flat, thin, glabrous, somewhat acuminate. Panicles lax, comparatively few flowered, slightly exerted, about 9 cm. long, the branches few, whorled, ascending or spreading-ascending, the longer ones 3 cm. or less, filiform, each bearing few spikelets. Spikelets about 3.5 mm. long, green or purplish, the pedicels 2 mm. long or less; first glume lanceolate, acuminate, about 2.1 mm. long, 1-nerved, slightly scabrous on the keel; second glume similar to the first but nearly 3 mm. long and 3-nerved. Flowering glumes 3, ovate, acute, 5-nerved, about 3 mm. long, slightly silky hairy on the keel below, otherwise glabrous, the paleas narrow, hyaline, about 2.5 mm. long, the rachilla glabrous.

Luzon, Province of Benguet, Pauai (4712 *Merrill*) November 8, 1905.

This species was found in a large, open, natural meadow along the borders of a cold stream at an altitude of about 2,100 m., being very rare in the locality, and associated with *Calamagrostis*, *Brachypodium*, *Bromus*, *Anthoxanthum luzoniense*, *Agrostis elmeri*, *Ranunculus* sp., *Viola* sp., various species of *Carex* and other northern types. Single, scattered specimens only were found, the rhizomes creeping rather extensively and generally rooting at the lower nodes. This decidedly northern type is an interesting addition to the known boreal element in the flora of northern Luzon, being the first native species of the genus to be reported from the Philippines. Dr. Hackel, to whom specimens were sent, states that it may be most closely related to the widely distributed *Poa pratensis* Linn.

Poa annua Linn. Sp. Pl. (1753) 68; F.-Vill. Nov. App. (1883) 322.

LUZON, Province of Benguet, Bued River (4288 *Merrill*) November 14, 1905, altitude 1,200 m.

This species was reported from the Philippines by F.-Villar, who states that he saw living specimens in Luzon and Panay. I have never seen specimens of this grass from regions at low elevations in the Philippines, and it is possible that F.-Villar's record was based on an erroneous identification. *Poa annua* was found along the new Benguet road near some of the construction camps, the seeds undoubtedly having been introduced in American hay, used for food for the horses and mules utilized in the construction work. It was well established, and will undoubtedly persist.

Among other weedy plants collected on the same trip which were certainly introduced by the same means are *Trifolium pratense* Linn., *T. repens* Linn., *Cerastium vulgatum* Linn., *Spergula arvensis* Linn., *Rumex acetosella* Linn., and *Rumex crispus* Linn. All of these plants were found in cultivated places or in waste lands near construction camps, and some of them will undoubtedly persist. With the exception of *Rumex acetosella* Linn., none of the above species have previously been reported from the Philippines. *Trifolium pratense* Linn., has also been collected in Mindanao, Camp Keithley (*Mrs. Clemens*), April, 1906.

FLAGELLARIACEÆ.

JOINVILLEA Gaudich.

Joinvillea malayana Ridley, Journ. Straights Branch Roy. As. Soc. 44 (1905) 199.

PALAWAN, Balsajan River (575 *Foxworthy*) March 3, 1906. In clearings in forests at an altitude of about 650 m. Malayan Peninsula and Borneo.

No species of this small genus has previously been discovered in the Philippines, the above specimen agreeing perfectly with authentic material of *Joinvillea malayana* in the Herbarium of this Bureau, received from the Botanic Garden, Singapore, collected at Perak. The species was described from material collected in Perak and Selangor, Malayan Peninsula, and Mount Matang, Sarawak, British North Borneo.

As noted by Ridley, this form is most closely related to one of the Hawaiian species, there being two of the genus known from Hawaii, and one from New Caledonia. For parallel distribution Ridley cites only the genus *Cyrtandra* of the *Gesneriaceæ*, which reaches its maximum development in the Sandwich Islands, extending to the Malayan Archipelago and Peninsula. For the Philippines a parallel case of distribution is represented by *Tetraplasandra philippinensis* Mer. of the *Araliaceæ* (see p. 219). In this very characteristic genus, one species is known from the Island of Palawan in the Philippines, one from New Guinea, one from Celebes, and six from the Hawaiian Islands. Another case is represented by the genus *Schistostegia* Hillebr., of the *Polypodiaceæ*, of its three known species, one being from Hawaii and two from the Island of Mindanao, southern Philippines.⁸ Rolfe⁹ cites *Asplenium persicifolium* J. Sm., as being confined to the Philippines and Hawaii, but this species is apparently endemic in the Philippines, as Hillebrand¹⁰ considers the Hawaiian form distinct from *A. persicifolium*.

⁸ Copeland: *Philip. Journ. Sci.* 1 (1906), *Suppl.* 155.

⁹ Rolfe: *Journ. Linn. Soc. Bot.* 21 (1884), 397.

¹⁰ Hillebrand: *Fl. Hawaiian Isl.* (1888), 591.

LILIACEÆ.

ALETRIS Linn.

Aletris spicata (Thunb.) Franch. Journ. de Bot. **10** (1896) 199. *Hypoxis spicata* Thunb. Fl. Jap. (1825) 136. *Aletris japonica* (non Thunb.) Lamb. Trans. Linn. Soc. **10** (1811) 407; C. H. Wright in Forbes & Hemsl. Journ. Linn. Soc. Bot. **36** (1903) 76.

LUZON, Province of Benguet, Bugias (4685 *Merrill*) October 28, 1905; Pauai to Baguio (4801 *Merrill*) November 9, 1905.

Widely distributed in the highlands of Benguet Province, but not abundant, growing on dry grassy slopes in thin pine forests 1,200 to 2,000 m. An interesting addition to our knowledge of the northern element in the Philippine flora. Japan and the Corean Archipelago to Central and Southern China and Formosa.

DISPORUM Salisb.

Disporum pullum Salisb. Trans. Hort. Soc. **1** (1812) 331; Wright in Forbes & Hemsl. Journ. Linn. Soc. Bot. **36** (1904) 142.

LUZON, District of Lepanto, Mount Data (4857 *Merrill*) November, 1904. No species of the genus has previously been reported from the Archipelago. It is an interesting addition to the northern element in the Philippine flora. Not abundant in the mossy forest at an altitude of about 2,200 m., the specimens in fruit only. Japan to Formosa, China and temperate Himalaya, Java and Sumatra.

SALICACEÆ.

SALIX Linn.

Salix azaolana Blanco, Fl. Filip. ed. 2 (1845) 539; ed. 3, **3** (1879) 188; Merr. Govt. Lab. Publ. **27** (1905) 81. *Salix tetrasperma* Llanos (non Roxb.?) Mem. Ac. Cienc. Mad. (1858); Fl. Filip. ed. 3, **4** (1880) 106; F-Vill. Nov. App. (1883) 210.

LUZON, Province of Rizal, Bosoboso (1987, 2139 *Ahern's collector*) November, December, 1904, the former with staminate flowers, the latter with mature fruits.

Blanco's description of this species is very short and imperfect, and a translation follows:

Salix (err. typ. *Salix*) **azaolana**, **Azaola's willow**. Leaves alternate, incised, serrate, attenuate at the apex, glabrous. Flowers dioecious. *Staminate flowers in aments. Calyx bifid. Stamens more than 12 (Azaola). Anthers globose. *Pistillate flowers. Calyx as in the male. Achene one. = *A tree, the trunk as thick as a man's body and which is found along the margins of rivers in Calumpit.* (Province of Bulacan, Luzon.) *Given to knowledge by P. Llanos.* *Tiam.

Llanos, followed by F-Villar, reduced this species to *Salix tetrasperma* Roxb., the latter adding that he had seen specimens sent to him by Llanos and also that he had seen living specimens at Quingua, Province of Bulacan, Luzon.

There is little doubt but that the specimens cited above represent Blanco's species, although his description is very imperfect; so far the only one of the genus known from the Philippines and one not previously collected except by Llanos and F-Villar, no material of these early collections being preserved. Although Blanco cites Calumpit as the locality from which his material came, it seems probable that it was only sent to him from that town, having been collected at some other locality. During a recent trip up the Pampanga River, a stop of several days was made at Calumpit, and a careful search failed to

reveal the plant and I could find no natives who knew the word "Tiamn" as a plant name. However, as the country for many miles about Calumpit is under rather close cultivation, it is apparent that the original vegetation of the region has almost entirely been removed.

MORACEÆ.

FICUS Linn.

Ficus anomala Merrill sp. nov. § *Palacomorphe*.

A tree about 10 m. high with elliptical-ovate, abruptly short acuminate scabrous leaves, the receptacles globose to obovoid, yellow, scabrous, in large fascicles on the trunk and larger branches. Branches brownish gray, glabrous, the branchlets also glabrous except at the slightly ciliate tips. Leaves submembranous, 10 to 16 cm. long, 6 to 11 cm. wide, slightly shining, harsh on both surfaces but not pubescent, the margins subentire or very obscurely undulate-crenate, the base broad, rounded, truncate or somewhat cordate, often somewhat inequilateral, the basal nerves 5 to 7, the outer ones short; primary lateral nerves about 7 on each side of the midrib, prominent, the reticulations distinct, lax, subparallel; petioles 3 to 7 cm. long. Receptacles very numerous, often nearly concealing the trunk and larger branches, in usually large fascicles of short, stout, congested 1 to 2 cm. long branchlets, yellow when mature, scabrous, nearly 2 cm. in diameter when fresh, considerably smaller when dry, the pedicels ebracteolate, 1 to 2 cm. long. Male flowers numerous near the ostiole, monandrous and with a rudimentary ovary, the perianth segments 4, free, enclosing and exceeding the stamen, oblong, about 2 mm. long, slightly ciliate above. Filament stout, about 1 mm. long; anther elliptical-ovoid, 1 mm. long. Rudimentary ovary less than 1 mm. long. Gall flowers numerous, the perianth lobes 4, free, linear, blunt, ciliate above, much exceeding the ovary which is elliptical ovoid, 1.5 mm. long, the style less than 1 mm. long, lateral. Fertile female flowers not seen.

Luzon, Province of Rizal, Montalban (5075 *Merrill*), March 10, 1906. A tree about 10 m. high and 30 cm. in diameter growing along small streams in thickets at an altitude of about 40 m. Anomalous for the section *Palacomorphe* in that the receptacles are not axillary but borne in large fascicles on the trunk and branches as in many species of the sections *Covellia* and *Neomorphe*.

PARATROPHIS Blume.

Paratrophis caudata Merrill sp. nov.

A small tree about 8 m. tall, the young branches puberulent or glabrous, green, slender. Leaves broadly oblong-lanceolate or oblong-oblan- ceolate, submembranous, glabrous, shining, the base obtuse, the apex abruptly caudate-acuminate, the acumen obtuse, above with scattered minute white glands, the margins irregularly crenate-serrate, 7 to 17 cm. long, 2 to 5.5 cm. wide; nerves 7 to 8 on both sides of the midrib, prominent beneath, anastomosing; petioles 1 to 2.5 mm. long. Staminate inflorescence axillary, solitary, spicate, amentiform, 4 to 6 cm. long,

white, densely many flowered, the rachis puberulent with minute hairs. Perianth 4-parted, the segments oblong-ovate, obtuse, about 1.5 mm. long. Stamens 4; filaments inflexed in bud, exerted in anthesis, 2 to 3 mm. long; anthers about 1 mm. long. Pistillate inflorescence axillary, spicate, short, 1 to 1.5 cm. long, few (about 8) flowered, the rachis puberulent. Perianth 4-parted, the segments imbricate, subequal, oblong-ovate, obtuse, 1.7 to 2 mm. long. Ovary sessile, oblong, exerted, 1-celled, glabrous; style 2 mm. long, bipartite for two-thirds its length.

MINDANAO, District of Davao (278 *DeVore & Hoover*), April, 1903. BASILAN (2446 *Hutchinson*) December, 1905. "Common in forests above 15 m." *Hutchinson*. Bagobo *Hulas*, in *Basilan Odis*.

A species characterized by its comparatively short inflorescence and caudate-acuminate leaves, the margins of which are entire below and more or less irregularly crenate-serrate above.

URTICACEÆ.

CHAMABAINIA Wight.

Chamabainia squamigera (Wall.) Wedd. in DC. Prodr. 16 (1869) 218. *C. cuspidata* Wight; Hook. f. Fl. Brit. Ind. 5 (1888) 580; C. H. Wright in Forbes & Hemsl. Journ. Linn. Soc. Bot. 26 (1899) 489.

LUZON, District of Lepanto, Mount Dana (4556 *Merrill*) November 4, 1905. In the mossy forest at about 2,250 m. Western China to Northern India south to Ceylon.

An interesting case of geographical distribution, no species of the genus having previously been reported from the Philippines. So far as I am able to determine from descriptions alone, the Philippine form is not distinct from the Asiatic species to which it is here referred.

LORANTHACEÆ.

LORANTHUS Linn.

Loranthus ahernianus Merrill sp. nov. § *Dendrophthoë*.

Shrubby, branched, glabrous except the somewhat furfuraceous inflorescence. Branches glabrous, rugose, lenticellate, reddish brown when dry, rather slender. Leaves opposite, glabrous, coriaceous, pale when dry, dull, ovate to oblong ovate, the base rather broad, rounded or obtuse, the apex acuminate, 6 to 10 cm. long, 2.5 to 5 cm. wide, the midrib prominent, the lateral nerves very irregular, obscure, petioles 1 cm. long. Inflorescence of solitary, axillary, lateral and terminal racemose panicles 6 to 8 cm. long, rather many flowered, the axis and short branches furfuraceous, the 1.5 to 2 cm. long peduncles subtended by a whorl of small imbricated bracts, the branches mostly above the middle, about 5 mm. long, each usually three flowered, the middle flower sessile, the two lateral ones pediceled. Flowers slender, tubular, about 3.5 cm. long, yellow, slightly enlarged below and at the apex, the subtending bracts ovate, that of the sessile flower acuminate, 4 mm. long, those of the lateral pediceled flowers smaller and often acute, the pedicels of the lateral flowers 3 to 4

mm. long. Calyx cylindrical, 4 mm. long, glabrous, the limb extended somewhat beyond the ovary, truncate or obscurely 6-toothed. Corolla about 3 cm. long, glabrous, the lobes linear, united for the lower 0.5 cm., the filaments inserted at about the middle, 9 mm. long, inappendiculate; anthers linear oblong about 5 mm. long.

LUZON, Province of Rizal, Bosoboso (2140 *Ahern's collector*) December 15, 1904. A species apparently related to *Loranthus viridis* Merr., but differing in many characters.

Loranthus cauliflorus Merrill sp. nov. § *Stemmatophyllum*, *Arthrostemma*.

Shrubby, glabrous throughout, the flowers arranged along one side of the branches below the leaves on very short usually trianthous peduncles. Branches dark brown, terete, glabrous, lenticellate. Leaves opposite, coriaceous, 18 to 25 cm. long, 6 to 8 cm. wide, oblong-ovate to ovate-lanceolate, dull, minutely densely wrinkled when dry, the base acute, the apex acuminate; nerves about 5 on each side of the midrib, ascending; petioles stout, 2 to 2.5 cm. long. Flowers rather numerous, red, the peduncles stout, 2 mm. long or less, each bearing three, sometimes but two or one, sessile flowers, each flower subtended by a broadly ovate basal bract about 2.5 mm. long. Calyx cylindrical, 3 mm. long, the limb short, truncate. Petals 5, free, 2 to 2.4 cm. long, linear, 2 mm. wide below, free; narrowed above, the recurved portion above the insertion of the stamen about 8 mm. long. Anthers about 7 mm. long, sessile or subsessile.

MINDANAO, Lake Lanao, Camp Keithley (55 *Mrs. Clemens*) January, 1906. A very characteristic species, at once recognizable by its peculiar inflorescence, the flowers being borne along one side of the branches below the leaves.

Loranthus clementis Merrill sp. nov. § *Dendrothoë*.

Shrubby, glabrous throughout except the slightly puberulent flowers and inflorescence. Branches brownish gray, stout, terete, with numerous small lenticels. Leaves coriaceous, ovate to oblong-ovate, alternate, the base acute, the apex obtuse, dull when dry, 8 to 12 cm. long, 4 to 6.5 cm. wide, with two pairs of stout nerves from near the base of the leaf, the upper pair extending nearly to the apex, the reticulations lax. Flowers slender, somewhat curved, 2.5 to 3 cm. long, 2 to 5 racemously disposed on each short peduncle, the peduncles numerous, fasciated in the axils of the leaves. Calyx cylindrical, nearly 3 mm. long, somewhat ferruginous puberulent, the limb produced above the ovary nearly 1 mm., 5-toothed, the basal bract narrowly ovate, acute, about 1.5 mm. long, the pedicel 1 to 2 mm. long. Corolla slender, somewhat curved, slightly inflated above, the tube long, red and yellow, grayish or brownish scurfy puberulent outside, the lobes 5, 10 to 12 mm. long, the reflexed portion above the insertion of the stamens linear, about 8 mm. long. Filaments 4 to 5 mm. long; anthers about 2 mm. long.

MINDANAO, Lake Lanao, Camp Keithley (*Mrs. Clemens*) March, 1906, altitude about 800 m.

Loranthus copelandi Merrill sp. nov. *Dendrophthoe* § *Eudendrophthoe*.

Glabrous except the inflorescence, with 11 to 18 cm. long lanceolate to oblong-lanceolate petioled leaves, and many flowered axillary fasciated racemes, the flowers red and yellow, about 4.5 cm. long. Branches brownish gray, glabrous, terete. Leaves subcoriaceous, glabrous, minutely wrinkled-rugose when dry, dull, 11 to 18 cm. long, 2.5 to 3.5 cm. wide, narrowed above to the blunt apex and below to the somewhat attenuate base, the midrib very stout, the lateral nerves 3 to 4 on each side of the midrib, long, ascending, the reticulations obscure; petioles stout, about 1 cm. long. Inflorescence slightly ferruginous pubescent, 3 to 5 racemes fasciated in each axil or in the axils of fallen leaves, 4 to 7 cm. long. Flowers slender, the buds slightly pubescent, becoming glabrous except the calyx, red below, yellow above, about 20 in each raceme. Pedicels about 1 mm. long, puberulent, the bract narrowly ovate, acute, 1.5 mm. long, puberulent. Calyx cylindrical, rather densely ferruginous puberulent, 3 mm. long, with 5 small teeth. Corolla slender, somewhat curved, slightly enlarged above, 4 to 4.5 cm. long, 5-lobed, the lobes linear, about 1 cm. long, becoming recurved. Anthers not narrowed below, 3 mm. long, apiculate-acuminate; filaments about 5 mm. long.

Luzon, Province of Benguet, Daklan to Kabayan (4407 Merrill) October 27, 1905. Parasitic on *Pittosporum pentandrum* (Blanco) Merr., in thickets at about 1,500 m. A species apparently closely related to *Loranthus curvatus* Blume, differing in its vegetative characters and fasciated racemes.

Loranthus mindanaensis Merrill sp. nov. § *Dendrophthoe*.

Shrubby, glabrous throughout. Branches terete, glabrous, light gray, the younger branchlets brownish to olivaceous, rather slender. Leaves coriaceous, glabrous, dull, ovate to oblong-ovate, 8 to 12 cm. long, 4 to 6 cm. wide, the base broad, usually rounded, the apex blunt-acute, the midrib stout; lateral nerves irregular, 3 to 4 on each side of the midrib, ascending, not prominent, the reticulations lax; petioles stout, about 3 mm. long. Inflorescence axillary, of solitary 3 to 5 cm. long racemose panicles, the flowers in groups of threes at the ends of the very short branchlets, the branchlets racemosely disposed, opposite, 2 to 3 mm. long. Flowers sessile, glabrous, the bracts broadly ovate, about 1.5 mm. long, obtuse. Calyx cylindrical, about 3.5 mm. long, the limb truncate, entire, slightly exceeding the ovary. Corolla red, tubular, not enlarged below, nearly 2 cm. long, the lobes 6, linear, united for the lower 2 mm. Filaments very short, less than 1 mm. long, inappendiculate, the anthers linear, about 3 mm. long, the portion of the petals above the insertion of the stamen about 5 mm. long, reflexed in anthesis.

MINDANAO, District of Davao, Davao (341 Copeland) March, 1904, on *Theobroma cacao* L., and *Antidesma ghesbreghtii* Gaertn.; Mount Apo (285 DeVore & Hoover) May, 1903. A species related to *Loranthus secundiflorus* Merr., and *L. subalternifolius* Merr., differing in vegetative characters from both.

Loranthus mirabilis Van Huerek et Muell. Arg. in Act. Soc. Helv. Sci. Nat. 55 (1872) 47. *Stemmatophyllum cumingii* Van Tiegh. Bull. Soc. Bot. Fr. 41 (1894) 505. *Loranthus cumingianus* Engl. Nat. Pflanzenfam. Nachträge (1897) 128, non *L. cumingii* Engl. l. c.

PHILIPPINES, without locality (1966 *Cuming*) 1836-1840, in Herb. Bureau of Science. BASILAN (3447 *Hutchinson*) December, 1905, parasitic on trees along the seashore. MINDANAO, DAVAO (376 *Copeland*) March, 1904; Lake Lanao, Camp Keithley (*Mrs. Clemens*) March, 1906.

The oldest name for this species is *Loranthus mirabilis* Van Huerek et Muell. Arg., the description being published in 1872 as above cited. The name is recorded in the first supplement to Index Kewensis, but the citation to the original publication is not given, the reference being to Van Tieghem, Bull. Soc. Bot. Fr. 41 (1894) 547, in obs. Van Tieghem l. c. states that he found this number of Cuming's Philippine collection in the herbaria of Van Huerek, DeCandolle, and Boissier under the name *L. mirabilis*. He did not, however, find a reference to the place of publication. Both *Loranthus mirabilis* and *Stemmatophyllum cumingii* (= *Loranthus cumingianus*) were based on the same number of Cuming's Philippine collection cited above. It was by chance only that I found a reference to the original publication of *Loranthus mirabilis*, in reading over the list of Mueller's publications given by Briquet,¹¹ and I am indebted to Dr. William Trelease, director of the Missouri Botanical Garden, for a copy of the rather long description and discussion of the species, the original publication not being available in Manila.

Loranthus secundiflorus Merrill sp. nov. § *Dendrophthoe*.

Shrubby, less than 1 m. high, glabrous throughout except the minutely puberulent inflorescence. Branches slender, terete, smooth, somewhat enlarged and compressed below the nodes, olive brown when dry. Leaves opposite, lanceolate, coriaceous, shining, sessile, 8 to 10 cm. long, 2 to 3 cm. wide, paler beneath, the base obtuse or subacute, gradually narrowed above to the slightly acuminate apex; lateral nerves obscure, irregular, 5 to 7 on each side of the midrib, the reticulations lax. Inflorescence solitary, axillary, of 4 to 8 cm. long racemose panicles, the flowers secund, the axis and branchlets minutely puberulent, the branches of the inflorescence opposite, very short, about 3 mm. long, racemosely disposed, each with 2 or 3 sessile flowers at the apex, the bracts orbicular-ovate, obtuse, about 2 mm. long. Calyx cylindrical, 4.5 mm. long, minutely puberulent or subglabrous, the limb extending beyond the ovary and rather prominently 6-toothed. Corolla glabrous, cylindrical, not enlarged, about 2 cm. long, red, the lobes 2 mm. wide below, united for the lower 2 mm., the portion above the insertion of the stamens reflexed in anthesis, 5 to 6 mm. long. Anthers sessile, linear, inappiculate, about 4.5 mm. long.

MINDANAO, Province of Surigao (237 *Bolster*) February 10, 1906. Parasitic on various trees in open lands at an altitude of about 15 m. above the sea. A species recognizable by its secund flowers and sessile anthers.

¹¹ *Bull. Herb. Boiss.* (1896), 4, 128.

Loranthus sessiliflorus Merrill sp. nov. § *Phoenicanthemum*.

Shrubby, entirely glabrous, with axillary solitary or fasciated spikes of small sessile flowers, the whole inflorescence glabrous, red. Branches dark reddish brown or nearly black when dry, terete. Leaves opposite, very coriaceous, broadly-ovate to suborbicular-ovate, dull and minutely wrinkled on both surfaces when dry, the apex broad, rounded or obtuse, rarely somewhat narrowed and acute, the base acute to subtruncate, 8 to 11 cm. long, 5 to 8 cm. wide, the nerves 4 to 5 on each side of the stout midrib, obscure; petioles stout, about 1 cm. long. Spikes 1 to 4 or 5 in each axil, usually 3, 4 to 7 cm. long, many flowered. Flowers red, sessile, about 7 mm. long, the subtending bract very thick, orbicular, nearly 1.5 mm. in diameter. Calyx glabrous, cylindrical, about 2 mm. long, the limb very slightly produced beyond the ovary, truncate. Petals 4, free to the base, linear, scarcely widened below, 5 mm. long, the upper half curved-reflexed from the insertion of the stamens. Filaments about 1 mm. long, slightly rugose-wrinkled near the insertion below, the anthers continuous, slightly wider than the filaments, oblong, 1.5 mm. long. Style glabrous, about 5 mm. long. Immature fruit small, ovoid.

Luzon, Province of Bataan, Mount Mariveles (1171 *Whitford*) March, 1905; Province of Benguet, Baguio (6057 *Elmer*) March, 1904. Mindoro, Baco River (4041 *Merrill*) March, 1905; (125 *McGregor*) March, 1905. Parasitic on various trees, sea level to an altitude of about 1,500 m.

Loranthus subalternifolius Merrill nom. nov. *Amylothecca cumingii* Van Tiegh.
Bull. Bot. Soc. France, 41 (1894) 264. *Loranthus cumingii* Engl. Nat.
Pflanzenfam. Nachtr. (1897) 128, non *L. cumingianus* Engl. l. c.

Glabrous throughout. Branches light gray, terete, the branchlets often olivaceous, somewhat thickened and compressed below the nodes, smooth. Leaves coriaceous, subalternate, or the upper ones opposite, oblong-ovate, usually pale when dry, somewhat shining 8 to 13 cm. long, 4 to 5.5 cm. wide, usually gradually narrowed above to the acute, rarely slightly acuminate apex, and more abruptly narrowed below to the acute, often decurrent base; nerves about 6 on each side of the midrib, obscure; petioles 1 to 1.5 cm. long. Inflorescence of solitary, axillary, racemose panicles 4 to 7 cm. long, the branches short, opposite, spreading, racemously disposed, about 3 mm. long, each bearing three sessile flowers at the apex, the bracts reniform, rounded, about 2 mm. long. Calyx cylindrical, about 5.5 mm. long, the limb strongly produced beyond the ovary, truncate, somewhat spreading. Corolla tubular, about 18 mm. long, golden yellow, somewhat inflated below, the lobes 6, linear, united for the lower 3 mm. Filaments very stout, about 2 mm. long; anthers linear, 2.5 mm. long, the portion of the petals above the insertion of the stamens thickened, nearly 6 mm. long, spreading or reflexed in anthesis.

PHILIPPINES (1969 *Cuming*) 1836-1840. Luzon, Province of Benguet, Sablan (6191 *Elmer*) April, 1904.

The above description is based on No. 6191 *Elmer*, my specimen of *Cuming's* plant a cotype of *Amylothecca cumingii* Van Tiegh. = *Loranthus cumingii* Engl.,

being fragmentary, but sufficient I believe to show the identity of the two specimens. Van Tieghem's description being very short and imperfect, it has been thought well to publish a longer one here.

Loranthus viridis Merrill sp. nov. § *Dendrophthoe*.

Coarse, more or less branched, shrubby, glabrous throughout. Leaves opposite, coriaceous, usually pale or yellowish when dry, elliptical-ovate, ovate or even obovate, 6 to 11 cm. long, 4 to 6 cm. wide, rounded or acute at the apex, narrowed below to the acute, slightly decurrent base, shining above, dull beneath, the midrib stout, the lateral nerves obscure; petioles stout, 2 to 3 cm. long. Cymes 5 cm. long or less, few flowered, glabrous, solitary in the upper axils and terminal, the branches few, three or four, whorled at the summit of the 1 to 2.5 cm. long peduncles the branches spreading, about 1 cm. long, each branchlet with two or three flowers the pedicels about 2 mm. long, the bract subtending the flower small, orbicular-ovate, rounded. Flowers pale green, about 3.5 cm. long, the buds somewhat clavate at the tips. Calyx cylindrical, glabrous, 5 to 6 mm. long, the limb truncate, or very obscurely 6 toothed, slightly exceeding the ovary. Corolla slightly swollen below, the lobes 6, united for the lower 0.5 cm., 3 mm. wide below, gradually narrowed upward and 1 mm. wide above, the upper 1 cm. reflexed from the insertion of the stamens, much thickened and deeply channeled on the inner surface. Stamens 8 mm. long, the antheriferous portion narrow, about 3.5 mm. long, inappendiculate. Fruit fleshy, glabrous, ellipsoidal, about 12 mm. long.

Luzon, Province of Bataan, Mount Mariveles (816, 1814, 2938 *Borden*) June, September, 1904, and March, 1905. No. 1953 *Cuming*, Philippines, without locality, of which a fragmentary specimen exists in our herbarium, appears to belong here.

PHRYGILANTHUS Eichl.

Phrygilanthus obtusifolius Merrill sp. nov.

Glabrous throughout. Shrubby, much branched, about 1 m. long, the branches slender, brown or yellowish when dry, rigid, terete, the younger branches often somewhat compressed below the nodes, the nodes prominent. Leaves opposite, oblong-obovate, 3 to 6 cm. long, 1 to 2.5 cm. wide, the apex broad, rounded, gradually narrowed below to the cuneate base, coriaceous, dull, finely wrinkled on both surfaces when dry, the nerves, including the midrib, obsolete or nearly so; petioles 3 to 5 mm. long. Cymes glabrous, axillary and terminal, few, usually 2-flowered, solitary or two or three from each node, the peduncles slender, 1 to 2 cm. long, the pedicels 3 mm. long. Flowers white about 1 cm. long the bract small, rounded, about 1 mm. long. Calyx glabrous, cylindrical, truncate, 3 mm. long, the limb slightly exceeding the ovary. Petals 5, free, slightly enlarged, and 2 mm. wide below, narrowed above, the upper three-fifths curved-reflexed from the insertion of the stamens. Filaments 6 mm. long; anthers oblong, obtuse, versatile. Style glabrous, about 12 mm.

long, slender. Fruit yellowish or bright red, glabrous, fleshy, ovoid, 6 to 7 mm. long.

Luzon, Province of Bataan, Lamao River, Mount Mariveles (1081, 134 *Whitford*) February, 1905, May, 1904; (1813 *Borden*) September, 1904. Parasitic on *Eugenia* and other trees in forests at about 600 m. about the sea.

The first species of the genus to be found in the Philippines, the other known species being mostly confined to tropical America and Australia. In gross characters and habit strongly resembling *Loranthus nodosus* (Van Tiegh.) Engl. *Loranthus* sp. Merr. Phil. Journ. Sci. Suppl. 1 (1906) 50.

OLACACEÆ.

XIMENIA Linn.

Ximenia americana Linn. Sp. Pl. (1753) 1193; Miq. Fl. Ind. Bat. 1 (1855) 786; Masters in Hook. f. Fl. Brit. Ind. 1 (1875) 574; F.-Vill. Nov. App. (1883) 45.

BASILAN (3467 *Hutchinson*) December, 1905. Along the seashore, common, Moro, *Pangungan*. PALAWAN, Malinao River (3799 *Curran*) February, 1906.

This widely distributed species has previously been reported from the Philippines only by Fernandez-Villar, who states that he saw living specimens in many localities in the Province of Iloilo, Panay. So far as is known, the specimens cited above are the only Philippine ones extant. Tropical shores of America, Africa, Asia, and Malaya.

BERBERIDACEÆ.

MAHONIA Linn.

Mahonia nepalensis DC. Syst. 22 (1821) 21; Prodr. 1 (1824) 109; Fedde in Engl. Bot. Jahrb. 31 (1901) 120. *Berberis nepalensis* Spreng. Syst. Veg. 2 (1825) 120; Hook. f. Fl. Brit. Ind. 1 (1872) 109; Forbes & Hemsl. Journ. Linn. Soc. Bot. 23 (1886) 31.

Luzon, Province of Benguet, Baguio (5929 *Elmer*) March, 1904; (18 *Topping*) February, 1903. An interesting addition to our knowledge of the Asiatic element in the Philippine flora, the species having previously been known from the mountains of British India, Java, China, and Japan. No. 5929 *Elmer* has been examined by *Schneider*, who has recently monographed the genus *Berberis*,¹² and who verifies the above identification, although stating that in the absence of flowers the determination can not be absolutely certain. *Topping's* specimen is with flowers, and offers no characters by which I am able to distinguish the Philippine form from the above species.

ANONACEÆ.

UNONA Linn.

Unona merrittii Merrill sp. nov. § *Stenopetalon*.

A free 20 to 25 m. high, glabrous throughout except the slightly puberulent flowers, the flowers greenish yellow, very fragrant, in fascicles from small tubercles on the branches below the leaves. Branches gray or grayish brown, quite glabrous throughout, striate when dry. Leaves

¹² *Bull. Herb. Boiss* (1905) 11: 5.

oblong-lanceolate to elliptical-lanceolate, glabrous, subcoriaceous, shining above, pale and somewhat glaucous beneath, 10 to 14 cm. long, 2 to 3 cm. wide, the base acute, slightly inequilateral, the apex acute or obscurely sharp acuminate; nerves about 15 on each side of the midrib, indistinct, scarcely more prominent than the secondary nerves and lax reticulations; petioles glabrous, 5 mm. long. Flowers in fascicles of 4 to 10 or more on the branches below the leaves, the pedicels slender, glabrous, 1.5 to 2.5 cm. long. Calyx pubescent, the lobes orbicular-reniform, rounded, about 1.2 mm. long, wider than long. Petals 6, 2-seriate, equal, narrowly oblong blunt, not or but slightly narrowed above, puberulent, 1.6 to 2 cm. long, 4 mm. wide. Stamens about 1 mm. long, nearly as wide, the connective very shortly produced, truncate, concealing the cells. Ovaries many, glabrous, oblong, 1 mm. long, the ovules 2, on the ventral suture; stigma elliptical-ovoid, equaling the ovary in size. Fruit unknown.

MINDORO, Bongabong River (1447 *Whitford*) February 23, 1906 (type); (3712 *M. L. Merritt*) March 20, 1906. Delta of the river slightly above sea level, in forests. A species apparently related to *Unona desmantha* Hook. f. et Th., but quite distinct from that species. The flowers have the same color and odor as *Canarium odoratum* Baill.

MYRISTICACEÆ.

MYRISTICA Linn.

Myristica nivea Merrill sp. nov.

A tree about 12 m. high, glabrous. Branches terete, striate, glabrous except the innovations. Leaves chartaceous, oblong, the base rounded, the apex acute, glabrous above and somewhat shining, beneath glabrous, white, the midvein thick; nerves 14 to 15 on each side of the midrib, prominent, curved, brown, anastomosing near the margin, the secondary and tertiary nerves indistinct, the reticulations lax; petioles glabrous, sulcate, rugose when dry, 1 to 3 cm. long. Staminate inflorescence axillary, few flowered, the peduncle very short, the pedicels 3 mm. long, ferruginous pubescent, shorter than the flowers. Flowers subovoid, 7 to 9 mm. long, fasciculate, outside rufous-pubescent, inside glabrous, three parted for the upper one-fourth or one-fifth, the basal bract broadly ovate, obtuse, pubescent outside. Anthers about 10, 3 to 4 mm. long, narrowly linear, connate, glabrous, the stipe shorter than the column. Fruit solitary, short and thickly pedicled, broadly ovoid, subtruncate or rounded at the base, rounded at the apex, densely rufous pubescent or puberulent, 3 cm. long, the pericarp thick, the aril lacinate nearly to the base, the areolae narrow.

BASILAN (3454 *Hutchinson*) December, 1905 (Staminate flowers). MINDANAO, District of Zamboanga, San Ramon (*Copeland*) March, 1905 (fruit).

A species apparently most closely related to *Myristica mindanaensis* Warb., of the known Philippine species of this genus, differing from it in its fewer nerved leaves, fasciculate, much larger flowers, and other characters. *Myristica nivea*

is well characterized by the very white under surface of its leaves and very obscure, almost obsolete, lax, not parallel reticulations. It is known to the natives of Basilan as *Nyatnyat*.

LAURACEÆ.

ACTINODAPHNE Nees.

Actinodaphne philippinensis Merrill sp. nov.

A tree 15 to 20 m. high, quite glabrous except the inflorescence, with penninerved oblong-ovate to elliptical-ovate, alternate, subcoriaceous leaves which are somewhat glaucous beneath, and short, axillary, racemose inflorescence, the clusters of flowers pediceled. Branches brown, glabrous, the younger ones nearly black when dry. Leaves 8 to 15 cm. long, 4 to 8 cm. wide, shining above, the base rounded or acute, rarely slightly inequilateral, the apex acute or obscurely acuminate; nerves about 10 on each side of the midrib, prominent beneath, scarcely anastomosing, the ultimate reticulations dense; petioles 2.5 to 4 cm. long. Racemes axillary or from the axils of fallen leaves, rather densely ferruginous puberulent, the axis 1 cm. long or less, the peduncles 1 cm. long or less, puberulent, the bracts 6, orbicular ovate, concave, rounded, 6 to 7 mm. long, veined, glabrous or slightly pubescent. Flowers about 7 in each cluster, yellow, the perianth segments 6, sometimes 5, lanceolate, acute or acuminate, about 4 mm. long, 1.5 mm. wide, somewhat pilose, the tube about 1 mm. long. Stamens 9, all fertile, the anthers 4-locellate, all introrse; filaments about 4 mm. long, pilose below, the inner three glandular at the base. Pistillate flowers and fruits not seen.

MINDORO, Bongabong River (1476, 1416 *Whitford*; 3667 *Merritt*) February, March, 1906, the former with mature flowers, the latter two with buds only. In forests, delta of the Bongabong River, slightly above sea level, the first species of the genus to be reported from the Philippines. T., *Bakan*.

CRYPTOCARYA R. Br.

Cryptocarya acuminata Merrill sp. nov.

A tree 8 to 12 m. high with alternate ovate-lanceolate to oblong-lanceolate, rather slenderly sharply acuminate penninerved leaves which are paler and glaucous beneath, and axillary and terminal panicles which are densely ferruginous pubescent with short shining hairs. Branches light brown, rather densely ferruginous puberulent. Leaves subcoriaceous, shining and glabrous above, beneath glabrous or minutely puberulent on the midrib and nerves when young, the base rounded or acute, gradually narrowed above to the slender acuminate apex; nerves 8 to 10 on each side of the midrib, prominent beneath, ascending, parallel, scarcely anastomosing, the reticulations indistinct; petioles ferruginous puberulent, 1 to 1.5 cm. long. Panicles 5 to 7 cm. long, the peduncles 3 to 4 cm. long. Perianth segments 6, elliptical ovate to oblong ovate,

acute or obtuse, subequal, densely ferruginous puberulent outside, about 2 mm. long, about equaling the tube. Fertile stamens 9, the filaments short, somewhat pubescent, the anthers 2-locellate, those of the first and second series introrse, those of the third series extrorse, the fourth series of large stipitate, cordate, acuminate, staminodes. Ovary narrowly ovoid, glabrous, narrowed above into the style. Fruit black when dry, glabrous, or slightly puberulent, shining, subglobose, about 7 mm. in diameter.

MINDORO, Bongabong River (3673 *Merritt*; 1425 *Whitford*) March, February, 1906. In forests near the river slightly above sea level.

DEHAASIA Blume.

Dehaasia triandra Merrill sp. nov.

A tree 10 to 15 m. high, glabrous, only the three inner stamens fertile, the outer series reduced to staminodes. Branches light gray, glabrous. Leaves ovate-lanceolate to oblong-ovate, glabrous, subcoriaceous, somewhat shining on both surfaces, 10 to 20 cm. long, 4 to 7 cm. wide, narrowed below to the acute base and above to the sharply acuminate apex; nerves 7 to 9 on each side of the midrib, curved ascending, rather distinct beneath, the reticulations rather obscure, lax; petioles 1.5 to 2 cm. long, nearly black when dry. Panicles several from the young portions of each branchlet, glabrous, black when dry, 4 to 10 cm. long, few flowered, the peduncles 5 cm. long or less, the branches usually spreading, the flowers usually in threes at the tips of the branchlets. Flowers small, hermaphrodite. Calyx segments 6, deciduous, broadly ovate, acute, the inner three about 1.5 mm. long, the outer three somewhat smaller, slightly ciliate on the margins. Fertile stamens 3 only, in the inner row, the filaments pubescent, glandular at the base, the anthers 2-celled, extrorse, the stamens of the outer series reduced to flattened pubescent staminodes. Ovary narrowly ovoid, glabrous, about 1 mm. long, narrowed above into the 1 mm. long style. Fruit elliptical to elliptical oblong, glabrous, 3 to 3.5 cm. long, 1.5 to 2 cm. thick, the pedicel when fresh 5 cm. long or less, at least as thick as the mature fruit, fleshy, bright red, when dry 2 to 5 cm. long, less than 1 cm. thick, black.

MINDORO, Bongabong River (3751 *Merritt*; 1459 *Whitford*) March, February, 1906. MASBATE (3068 *Merrill*) August, 1903. LUZON, Province of Rizal (2000 *Ahern's collector*) November, 1904.

An anomalous species, differing from *Dehaasia* as described in its 3, not 9, fertile stamens, but so evident are the fruit characters that I have not hesitated to refer it to the above genus. In connection with this species I have carefully studied the description of *Salgada laurifolia* Blanco, referred by F. Villar to *Eusideroxylon borneense*. The above specimens do not at all agree with Blanco's description, and to me it appears very doubtful if *Salgada* can be referred to *Eusideroxylon* with safety.

CRUCIFEREEÆ.

LEPIDIUM Linn.

Lepidium ruderale Linn. Sp. Pl. (1753) 645; Hook. f. & Andr. in Hook. f. Fl. Brit. Ind. 1 (1872) 160.

LUZON, Province of Cagayan, Tuguegarao (188 *Merrill*) June 8, 1902. In dry, open, waste places, a weed, apparently introduced, but well established. Not previously reported from the Philippines. Europe, Asia, North America, and Australia.

CARDAMINE Linn.

Cardamine parviflora Linn. Sp. Pl. ed. 2 (1763) 914; DC. Prodr. 1 (1824) 152; Forbes & Hems. Journ. Linn. Soc. Bot. 23 (1886) 44.

LUZON, District of Lepanto, Balili (4609 *Merrill*) November 5, 1905, in a coffee plantation, damp shaded soil at about 1,600 m.; Province of Benguet, Baguio (5846 *Elmer*) March, 1904, in open damp soil along streams at about 1,400 m.

The first species of the genus to be reported from the Philippines, apparently native, and not distinguishable from the widely distributed *Cardamine parviflora* Linn., which extends from North America to Europe, northern Africa, and temperate Asia southward to Formosa.

ROSACEÆ.

RUBUS Linn.

Rubus copelandi Merrill sp. nov.

An ascending plant 1 to 1.8 m. high, with trifoliolate leaves and solitary axillary white flowers, or sometimes two or more pedicels from the upper axils, the stems, petioles, and pedicels with usually slender, recurved spines, and slender spine-like capitellate hairs. Stems terete, greenish or reddish, not at all pubescent, the spines and intermixed capitellate hairs rather numerous. Leaves alternate, trifoliolate, the petioles about 3 cm. long, spiny and with capitellate stiff hairs, the stipules ovate-lanceolate to oblong ovate, acuminate, nearly 1 cm. long, foliaceous, capitellate hairy; leaflets ovate to elliptical-ovate, acuminate, firm, brittle when dry, glabrous on both surfaces, except the somewhat pubescent midrib above, paler beneath, 4 to 7 cm. long, 2 to 4 cm. wide, rather abruptly acuminate, the base broad, rounded, that of the lateral leaflets often inequilateral, the margins dentate or bidentate, the teeth small, mucronate acuminate; nerves about 10 on each side of the midrib, rather prominent, parallel, the midrib and often the lateral nerves with retrorse spines beneath, petiolules of the terminal leaflets about 1.5 cm. long, of the lateral ones 1 to 2 mm. Flowers white, 2.5 to 3 cm. in diameter, the pedicels 1 cm. long or less, spiny and with capitellate hairs. Calyx cinereous pubescent or puberulent, the lobes with few slender spines and capitellate hairs, ovate lanceolate, acuminate, often 1 cm. long, 5 mm. wide or less. Petals elliptical, rounded, somewhat narrowed below, about 12 mm. long, 8 mm. wide, distinctly veined. Stamens indefinite;

filaments 4 to 5 mm. long, glabrous; anthers 1 mm. Ovaries many, glabrous. Receptacle glabrous. Fruit red, ovoid about 1.5 cm. long, glabrous.

LUZON, Province of Benguet, Pauai (4810 *Merrill*) November 8, 1905. In thickets near border of the mossy forest at about 2,200 m. A species characterized by its trifoliate leaves, solitary large flowers, and peculiar capitellate, almost spine-like, hairs.

Rubus luzoniensis Merrill sp. nov.

A scandent shrub 5 to 6 m. high, with simple leaves, and terminal lax panicles, the branches, inflorescence, and under surface of the leaves densely pale ferruginous pubescent. Branches brown, terete, stiff, with scattered, small, usually somewhat retrorse spines, densely ferruginous pubescent. Leaves coriaceous, ovate to elliptical-ovate, 5 to 10 cm. long, 4 to 7 cm. wide, the base broad, truncate to slightly cordate, the apex acute or blunt, the margins rather finely dentate, not lobed, the upper surface dull or slightly shining, somewhat pilose on the midrib and nerves and also with few scattered long hairs on the lamina, becoming nearly glabrous, the under surface pale and very densely pubescent, the midrib and nerves also with scattered long hairs, the midrib with few scattered spines; nerves 6 to 7 on each side of the midrib, prominent, ascending, nearly straight, the reticulations prominent, subparallel; petioles 1 to 2.5 cm. long, densely pubescent and with small scattered spines. Inflorescence a terminal, rather lax panicle often 30 cm. long, the rhachis, branches and branchlets very densely ferruginous pubescent or pilose, and with scattered small spines, the branches irregular, distant, usually spreading, the lower ones often 15 cm. long, few flowered. Flowers white, short pediceled, about 1.6 cm. in diameter, the bracts ovate lanceolate, densely pubescent, 5 mm. long or less. Calyx very densely ferruginous pilose, the lobes ovate to oblong-ovate, acute, about 6 mm. long. Petals oblong obovate, gradually narrowed below, obtuse, 6 to 7 mm. long, 3 to 4 mm. wide. Stamens indefinite; filaments glabrous, about 5 mm. long; anthers 0.5 mm. long. Ovaries many, somewhat pilose on one side above or nearly glabrous, the receptacle pilose. Fruit unknown.

LUZON, District of Lepanto, Mount Dana (4596 *Merrill*) November 4, 1905. In the mossy forest at about 2,250 m. Sterile specimens of another species were collected in the same locality, strongly resembling the above, but the leaves quite glabrous or at least only slightly pilose beneath.

LEGUMINOSAE.

INDIGOFERA Linn.

Indigofera linifolia Retz. Obs. 4 (1779-1791) 29; Baker in Hook. f. Fl. Brit. Ind. 2 (1876) 92.

LUZON, Province of Benguet, Ambuklao to Daklan (4387 *Merrill*) October 25, 1905. On dry, rocky banks in open grass lands at an altitude of about 900 m. Not previously reported from the Philippines. Abyssinia to Afghanistan, British India, Malaya, and northern Australia.

MUCUNA Adans.

Mucuna acuminata Merrill sp. nov. § *Carpopogon*.

A long slender climber reaching a height of from 12 to 15 m. with slender glabrous branches, glabrous trifoliate leaves and short or long peduncled pendulous inflorescence, the flowers pale green or nearly white, 5 to 5.5 cm. long, the pods about 20 cm. long, rather strongly abruptly acuminate, without transverse plates and nearly glabrous, broadly winged down both sutures. Petioles 8 to 10 cm. long, glabrous or very slightly pubescent, the petiolules about 5 mm. long; leaflets ovate to elliptical ovate, 10 to 18 cm. long, 6 to 11 cm. wide, abruptly caudate-acuminate, the base rounded or subcordate, the terminal one regular, the lateral ones inequilateral glabrous, or when young with few appressed hairs; stipels subulate, nearly 5 mm. long. Peduncles slender, 20 to 60 cm. or more in length, the flowers paniculate at the apex, the branches 5 cm. long or less, the pedicels 1 to 1.5 cm. long, pubescent; bracts and bracteoles early deciduous. Calyx cup-shaped, 1 cm. long, about as broad, densely ferruginous and cinerous pubescent, but without stinging hairs, suboblique, the teeth short, broad. Keel and wings subequal, the former somewhat inflexed at the apex, the wings clawed, auricled at the base, pubescent on the margins below; standard about 2.5 cm. long, wider than long, retuse. Pod oblong, 18 to 21 cm. long, 5 to 5.5 cm. wide, 4 to 6 seeded, black when dry, shining, reticulate, but without plaits and stinging hairs, often somewhat pubescent below, the base acuminate; the apex abruptly apiculate-acuminate, the acumen 1.5 to 2 cm. long, the marginal wings about 1 cm. wide.

MINDORO, Baco River (4069 *Merrill*) March, 1905 (type); (220, 322 *McGregor*) April–May, 1905. In thickets along the river. Possibly No. 2955 *Ahern's collector*, from Bosoboso, Province of Rizal, Luzon, is the same, but the specimens are with immature flowers only.

A species closely related to *Mucuna gigantea* DC., differing from that species in its larger pods, which are without stinging hairs and which are rather long apiculate-acuminate, rather larger flowers and leaves, the leaflets also differing in shape and size. Differing from *M. longipedunculata* Merr., in its much smaller flowers.

Mucuna luzoniensis Merrill sp. nov. § *Stizolobium*.

Scandent, the trifoliate leaves 20 cm. long or less, the short peduncled racemes 15 to 40 cm. long, densely flowered, the flowers black-purple, about 3.5 cm. long, the pods flattened, scarcely turgid, not plaited or winged, straight, 9 cm. long, 1.5 cm. wide, densely covered with reddish-brown pungent stinging hairs. Petioles 8 to 10 cm. long, pubescent, the petiolules very densely pubescent, about 5 mm. long; terminal leaflet broadly ovate, rounded-truncate at the base, the apex rounded, apiculate, the lateral leaflets somewhat larger, 8 to 9 cm. long, 6 to 8 cm. wide, irregularly broadly truncate at the base, the apex rounded, apiculate,

beneath very densely grayish pubescent, above pubescent, especially on the nerves; nerves rather prominent, 6 to 7 pairs. Racemes densely cinereous pubescent and with brownish stinging hairs. Pedicels about 5 mm. long. Calyx about 1 cm. long, the teeth acute or acuminate, cinereous pubescent and with numerous long, brownish red, stinging hairs. Corolla black-purple, about 3.5 cm. long; standard about 2 cm. long; wings slightly shorter than the keel, the latter somewhat inflexed at the apex. Pod flat, straight, abruptly hooked at the apex, with about 5 seeds.

LUZON, Province of Union, Bauang (5999 *Elmer*) February, 1904, distributed as *Mucuna sericophylla* Perk., from which it differs in its apiculate, not retuse leaflets, somewhat smaller flowers, and much broader pods.

Mucuna lyonii Merrill sp. nov. § *Stizolobium*. *Negretia mitis* Blanco (non Beauv.) Fl. Filip. ed. 1 (1837) 588; ed. 2 (1845) 410; ed. 3, 2 (1878) 388; Naves, l. c. t. 405 bis. *Mucuna nivca* F.-Vill. (non DC.) Nov. App. (1883) 63.

A scandent annual vine with somewhat pubescent, with apiculate leaflets, axillary racemes 30 to 40 cm. long, of very pale green, nearly white flowers 4 to 4.5 cm. long and narrowly oblong pods 10 to 12 cm. long, 2 cm. wide, densely covered with brown or gray hairs, not plaited or winged. Stems striate, pubescent with appressed grayish hairs. Leaves 25 to 40 cm. long, the leaflets three, membranous, the terminal one broadly ovate, regular, the apex acute or obtuse, the base subtruncate-acute, 11 to 14 cm. long, 9 to 11 cm. wide, the lateral leaflets 20 cm. long and 12 cm. wide, or less, oblique-truncate at the base, much broader on one side of the midrib than on the other, the apex apiculate, glabrous and shining above, beneath paler and with scattered appressed rather long grayish hairs; petioles 30 cm. long or less, somewhat pubescent; petiolules nearly 1 cm. long, rather densely pubescent; stipels subulate, about 2 mm. long. Racemes 30 to 40 cm. long, many flowered, more or less appressed grayish pubescent. Flowers in groups of threes, the internodes 1.5 to 2 cm. long, the pedicels about 8 mm. long. Calyx pale green, rather densely appressed grayish pubescent, the upper tooth triangular-ovate, acute, 7 to 8 mm. long, the lower lanceolate, acuminate, 1 cm. long, the two lateral ones lanceolate, acute or acuminate, 5 mm. long. Standard broadly elliptical-ovate, 2.5 cm. long, 2 cm. wide, obtuse, minutely retuse; wings 4 cm. long, 1.5 cm. wide, obtuse, auriculate at the base, claw short; keel equalling the wings, the upper 1 cm. inflexed, auricled at the base, the claw short. Ovary hirsute. Pods slightly turgid, somewhat curved, mucronate at the apex, slightly compressed between the seeds; seeds about 6.

Description from plants raised in Manila by W. S. Lyon of the Bureau of Agriculture, the seeds from Pampanga Province, LUZON, known to the Pampangans as *Sabual*. Blanco gives only the Spanish names *Habas* and *Garbanzos*.

PTEROCARPUS Linn.

Pterocarpus klemmei Merrill sp. nov.

A large tree with glabrous shining leaves, terminal panicles and yellow flowers, the pods densely dark brown velvety pubescent when young and with many short soft spine-like processes in the central portion. Branches lenticellate, glabrous. Leaves alternate, about 20 cm. long, the rachis slightly and sparingly pubescent with very short hairs; leaflets alternate, about 10, thinly coriaceous or submembranous, ovate to oblong-ovate, acuminate, the base broad, rounded, 5 to 7 cm. long, 3 to 4 cm. wide, glabrous and shining on both surfaces; nerves about 8 on each side of the midrib, the reticulations close, distinct; petiolules 2 to 3 mm. long. Panicles about 20 cm. long. Flowers yellow, about 1.5 cm. long. Calyx about 9 mm. long, the lobes short, acute or acuminate, pubescent with few scattered short hairs. Pods (immature) oblong-ovate, about 3 cm. long, thin, the stipe short, the pedicel about 1 cm. long, the periphery of the pod from stipe to style nearly straight or slightly convex, the style subulate, both surfaces densely dark brown velvety pubescent, shining, the wings without spine-like processes, but the pod proper with numerous soft spine-like processes 2 mm. long or less.

LUZON, Province of Cagayan, Palanan (4275 W. *Klemme*) June, 1906.

A species in vegetative and floral characters resembling *Pterocarpus indicus* Willd., and *P. echinatus* Pers., differing from both in its densely velvety young pods, from the former in having soft, spine-like processes on the pods and from the latter in having fewer and shorter, soft, spine-like processes instead of numerous stiff spines. The fourth species of the genus to be found in the Philippines, possibly a fifth being represented by No. 1002 *Clark*, Masbate, this specimen having densely velvety young pods without spine-like processes.

SINDORA Miq.

Sindora supa Merrill sp. nov. *Sindora wallichii* var. *intermedia* F.-Vill. (non Bak.) Nov. App. (1880) 71. *Sindora wallichii* Vidal (non Benth.) Sinopsis, Atlas (1883) 24. t. 43. f. C.; Rev. Pl. Vasc. Filip. (1886) 118; Ceron Cat. Pl. Herb. (1892) 70; Ahern Import. Philip. Woods (1901) 80.

A tree reaching a height of 25 m. and a diameter of 140 cm. with equally pinnate leaves, coriaceous glabrous leaflets and densely pubescent calyx lobes which have a few straight or curved spines on the upper half. Branches and branchlets glabrous. Leaves with a glabrous rachis 6 to 7 cm. long; stipules foliaceous, 1 cm. long, acute, the base rounded or auriculate, glabrous or nearly so; leaflets 2, or mostly 3-jugate, the lower pair somewhat smaller than those above, oblong-ovate, 5 to 8 cm. long, 2.5 to 4 cm. wide, very coriaceous, entirely glabrous or with few scattered hairs on the under surface, especially on the midrib, the apex rounded, the base acute; nerves numerous, close, faint; petiolules 4 mm. long, glabrous. Flowers in rather dense axillary and terminal panicles 10 to 15 cm. long, the rachis densely pubescent; bracts 4 mm. long, acute, pubescent; pedicels 2 mm. long, each with two lanceolate acute pubescent

bracteoles 4 mm. long. Calyx tube short, the lobes four, thick, 1 cm. long, densely pubescent within with appressed yellowish hairs, outside densely cinereous puberulous and in the upper half with few straight or curved pubescent spines about 3 mm. long. Petal 1, as long as the calyx lobes, densely appressed pubescent on the margins below. Staminal sheath and filaments hairy. Ovary hirsute. Pod broadly ovate, flattened, rounded at the base, the apical beak very small or nearly obsolete. Valves dehiscent, woody, uniformly armed on the outside with strong straight spines 5 mm. long or less and more or less densely ferruginous pubescent, becoming quite glabrous in age. Seeds usually four, ovate, hard, black, with an arillate funicle.

Luzon, Province of Tayabas, Pagbilao (2611 *Merrill*) May, 1903; Lagumanoc (2596 *Merrill*) March, 1903; (23 *Ware*) September, 1903; (910 *Whitford*) September, 1904; (201 *Merrill*) *Decades Philip. Forest Flora*, coll. *Hunt*, May, 1903; Atimonan (859 *Bath*) June, 1904; Guinayangan (860 *Bath*) June 1, 1904; (2021 *Merrill*) April, 1903; Baler (1010 *Merrill*) August, 1902.

A species related to, and previously identified with *Sindora wallichii* Benth. (*S. wallichiana* Benth.) of the Malayan Peninsula, differing from that species in its glabrous leaves, and larger pods. Dr. Prain, director of the Royal Gardens, Kew, has examined some of the material cited above and informs me that this species is not identical with Bentham's *S. wallichiana*. I have accordingly described the Philippine plant as a distinct species, using for the specific name the Tagalog name "Supa," by which this important timber tree is universally known in the Philippines.

The timber of this tree is hard and of a yellowish or reddish color, being used in naval and general constructions, and is frequently substituted for the more valuable "Ipil" wood (*Intsia bijuga* O. Ktze.). From 1900 to 1904 supa ranked fourteenth in amount received in the local lumber markets, with a total of 177,189 feet B. M., its average price for sawed lumber being \$81.50, United States currency per 1,000 feet B. M.

In addition to being a valuable timber tree, supa also yields considerable quantities of straw-colored or light-yellow, somewhat fragrant oil which burns with a clear flame. This has been discussed by Clover¹³ sub *Sindora wallichii*.

From a report submitted to the Chief of the Forestry Bureau by Mr. Kobbe, forester, the following extracts are taken:

"This oil (supa) is secured from the trunk of the living tree and not from the fruit or dead wood. The tree is usually hacked with bolo cuts as high as a man can reach and the oil runs down the channels so formed, into some vessel so placed as to catch the product. The oil seems to be a product of the entire woody portion of the tree and does not flow from any particular portion such as the sap wood only. If an auger hole be bored into the heart of a living tree, as much as 10 liters of oil is frequently obtained from the one hole. When the trees are slashed for gathering the oil, the first that exudes is set on fire, the heat causing a great increase in the flow of oil."

"The oil is not widely used. There is a demand for it for the manufacture of paint, especially for use on ships, varnish for sailboats, etc., and as an illuminating oil."

Tagalog, *Supa*, in Baler also *Manapo*.

¹³ *Phil. Journ. Science* (1906), 1, 192.

RUTACEÆ.

ATALANTIA Correa.

Atalantia linearis (Blanco). *Limonia linearis* Blanco, Fl. Filip. ed. 1 (1837) 357. *Limonia monophylla* Blanco, l. c. ed. 2 (1845) 252; ed. 3, 2 (1878) 103; Merrill, Govt. Lab. Publ. 27 (1905) 28, non Linn. *Atalantia monophylla* F.-Vill. Nov. App. (1880) 27, non Correa.

A shrub 1 to 3 m. high. Branches light gray, glabrous, the young branchlets greenish, pubescent or puberulent, terete. Leaves alternate, linear to narrowly linear-oblong or linear-lanceolate, glabrous, shining, coriaceous, 2 to 7 cm. long, 3 to 10 mm. wide, the base acute, the apex blunt, retuse, entire, the margins often somewhat recurved, the midrib prominent, the lateral nerves numerous, scarcely more distinct than the dense reticulations; petioles glabrous or pubescent, 3 mm. long or less. Inflorescence of terminal and axillary panicles, 3 to 5 cm. long, pubescent, the branches short, few flowered. Flowers white, short pediceled, about 6.5 mm. long. Calyx short, regularly 5-lobed, the lobes imbricate, broadly suborbicular, rounded, about 2 mm. long, 2.5 mm. wide, pubescent, the margins ciliate. Petals 5, free, oblong, the apex rounded, 6 to 6.5 mm. long, about 3 mm. wide, somewhat narrowed at the base. Stamens 5; filaments broad, 4 mm. long; anthers about 1.4 mm. long. Ovary glabrous, 3-celled, sessile, the disk shallow. Fruit glabrous, globose, white, glandular-punctate, about 8 mm. in diameter.

Luzon, Province of Rizal, Montalban (3392 *Ahern's collector*) November 28, 1905; (5044 *Merrill*) March 8, 1906, the former in flower, the latter with mature fruit. On cliffs and boulders at an altitude of about 40 m. along the river, frequently in situations submerged at high water associated especially with *Eugenia mimica* Merr., and sometimes with *Homonoya riparia* Lour. T., *Dayana monti* (Blanco), *Aguhu* (*Ahern's collector*).

A species at once recognized by its very narrow leaves, which are retuse at the apex. Blanco's original description of this species is very short, his material being from the Island of Maricaban, Province of Batangas, Luzon, flowering in the month of July. In this description he states that the leaves are minutely serrate, probably from the fact that in specimens with recurved leaf margins, the slightly raised veins on the upper surface appear like minute teeth. The note following the description of the species in the first edition of the Flora de Filipinas is excluded in the second, this note referring to a similar form observed by Blanco in the Province of Bulacan, Luzon. I am of the opinion that the form here described is identical with Blanco's *Limonia linearis*, and accordingly his specific name is adopted and the species is redescribed under *Atalantia*.

Atalantia retusa Merrill sp. nov.

A shrub about 3 m. high, with oblong elliptical to elliptical-ovate, subcoriaceous, glabrous, strongly retuse leaves, racemose inflorescence and 5- to 7-merous flowers, the stamens 10 to 15, free, the ovary 1-celled. Branches brownish gray, glabrous, the branchlets green, glabrous. Leaves 5 to 9 cm. long, 2.5 to 4 cm. wide, shining, broad at both ends, scarcely narrowed above, the base rounded; nerves numerous, anastomosing;

petioles 8 mm. long or less, the spines short or wanting. Racemes in the upper axils, 1.5 cm. long in anthesis, densely flowered, puberulent. Calyx somewhat puberulent, the teeth 5 to 7, short, broad, regular, their margins ciliate, obtuse. Petals 5 to 7, glabrous, oblong, obtuse, 5 to 5.5 mm. long, 2.5 mm. wide. Stamens 10 to 15, unequal, the filaments free, 2.5 to 3.5 mm. long; anthers broadly ovate, slightly exceeding 1 mm. in length. Ovary oblong, glabrous, 1-celled, 1-ovuled; style much shorter than the ovary, including the stigma about 1 mm. long. Disk thickened, ring formed. Fruit (immature) ovoid, glabrous.

PALAWAN, Puerto Princesa (3609 *Curran*) January 30, 1906; (195 *Berméjos*) December, 1905. In old clearings and thickets, not common, at about 20 m. above sea level.

A species apparently related to *Atalantia disticha* (Blanco) Merr., differing from the latter in its leaves not being narrowed above, and in its flower characters. In some cases a very rudimentary second cell was observed in the ovary, showing that the species is perhaps sometimes with 2-celled ovaries. The very short style is another aberrant character, as well as the variable number of calyx teeth, petals, and stamens. In other species of the genus the ovary is from 2 to 5 celled, the petals and calyx teeth 3 to 5, and the style equaling or longer than the ovary.

SKIMMIA Thunb.

Skimmia japonica Thunb. Fl. Jap. (1784) 62; Skan in Curt. Bot. Mag. IV. 1 (1905) t. 8038.

LUZON, District of Lepanto, Mount Data (4552 *Merrill*) November, 1905.

This species is generally distributed, but not abundant, in the mossy forest above 2,200 m. on Mount Data, and along the high ridges between Loo and Pauai in Benguet Province, and will doubtless be found on most of the high mountains of northern Luzon. Vidal¹⁴ has reported an undetermined species of *Skimmia* from Lepanto, which is probably identical with the specimens here determined as *S. japonica*, while in a manuscript list of identifications of Loher's Philippine plants, made at Kew, No. 237 *Loher* is determined as *S. japonica*. From the material at hand I am unable to distinguish the Philippine form from *Skimmia japonica*, so well figured and described in Curtis's Botanical Magazine. The specimens available have immature flowers and mature fruits, the inflorescence being racemose and the flowers 5-merous. The discovery of *Skimmia* in the Philippines is a very interesting addition to the northern element in the Philippine flora, the present species being previously known only from Japan and Formosa.

POLYGALACEÆ.

POLYGALA Linn.

Polygala glomerata Lour. Fl. Cochinch. (1790) 426; DC. Prodr. 1 (1824) 326; Benth. Fl. Hongk. (1861) 44; A. W. Benn. in Hook. f. Fl. Brit. Ind. 1 (1872) 206; Forbes & Hemsl. Journ. Linn. Soc. Bot. 23 (1886) 60.

MINDANAO, Lake Lanao, Camp Keithley (36 *Mrs. Clemens*) February, 1906.

A species not previously reported from the Philippines, according to Bennett extending from the Eastern Himalayan region to the Eastern Archipelago and

¹⁴ Rev. Pl. Vasc. Filip. (1886), 75.

China, and according to Forbes and Hemsley from Southern China to the Eastern Himalayan region southward through the Malayan Peninsula. King,¹⁵ however, does not record the species from the Malayan Peninsula.

***Polygala luzoniensis* Merrill sp. nov.**

A perennial herb, prostrate, branched from the base, the branches slender, pubescent, 10 to 30 cm. long. Leaves oblong-ovate, acute, firm, 1 to 1.5 cm. long, 5 mm. wide or less, the base obtuse or rounded, rarely subacute, the petiole very short, margins somewhat recurved, the nerves 3 to 4 on each side of the midrib, not prominent, glabrous or slightly pubescent on the midrib on both surfaces. Flowers in short few flowered axillary racemes, the bracts small, caducous. Outer sepals subequal, 2 mm. long, oblong, obtuse, their margins with few hairs, the inner sepals petaloid, elliptical-oblong, hyaline, rounded, 5 mm. long, 3 mm. wide, 7-nerved from the base, the reticulations not anastomosing, glabrous, all persistent in fruit. Corolla about 5 mm. long, slightly pubescent below, the lateral petals connate for 2 mm., the free portions oblong, obtuse, 3 mm. long, 1 mm. wide. Keel calyptrate, quite entire, crested, the crest 1.5 mm. long, many cleft, purplish. Staminal tube, free portion, 1.5 mm. long, the filaments united throughout, the anthers sessile on the end of the tube, oblong, about 0.4 mm. long. Ovary glabrous; style curved, 2 mm. long, glabrous; stigma lateral. Fruit flattened, orbicular, 5 mm. in diameter, glabrous, membranous, reticulate-veined, somewhat emarginate, the wing 1 mm. wide. Seed obovoid, 2 mm. long, brown, uniformly but not densely villous, the strophiole with three hyaline appendages, one 2 mm. long, the other two about 1 mm. long.

Luzon, Province of Benguet, Baguio to Ambuklao (4368 *Merrill*) October, 1905. On dry banks in grass lands at an altitude of about 1,600 m.

***Polygala septemnervia* Merrill sp. nov.**

An erect or suberect much branched annual herb 20 to 30 cm. high, with small persistent bracts, and palmately 7-nerved, strongly reticulately veined orbicular-ovate to subelliptical inner sepals. Branches more or less pilose. Leaves lanceolate to oblong-lanceolate or linear-lanceolate, 2.5 to 6 cm. long, 3 to 7 mm. wide, membranous, the margins usually strongly revolute, apex and base acute, with few scattered hairs on the upper surface and margins, the lateral nerves obscure; petioles about 1 mm. long. Racemes axillary and terminal, few or many flowered, the flowers nodding, the axis slightly pubescent, the pedicels slender 2 to 3 mm. long, bracts persistent, lanceolate, acuminate, pubescent, about 1 mm. long. Sepals strongly reticulate-veined, the three outer ones somewhat unequal, oblong to elliptical ovate, obtuse, 2 to 2.5 mm. long, their margins minutely ciliate, the two inner ones petaloid, suborbicular ovate to subelliptical, rounded, 4 mm. long in anthesis, 5 to 7 mm. long in fruit, membranous, strongly palmately 7-nerved, the reticulations

¹⁵ Material for the Flora of the Malayan Peninsula (1889).

anastomosing, the margins slightly ciliate. Corolla about 4 mm. long, pale or purplish, the lateral lobes 2.3 mm. long, 1.3 mm. wide, obovate, obtuse, reticulate, the keel about 3 mm. long, crested, the crest purple, fimbriate, 1 to 1.3 mm. long. Filaments slender, about 1 mm. long; anthers oblong-obovoid, about 0.3 mm. long. Ovary sparingly ciliate, compressed; style glabrous, about 3 mm. long the stigma lateral. Capsule elliptical, flattened, membranous laxly reticulate veined, about 4.5 mm. long, with very narrow marginal wings which are sparingly ciliate. Seed elliptical or oblong elliptical, black, 3 mm. long, strophiolate, densely hirsute especially, above with, grayish or brownish hairs, the strophiole nearly white, about 0.8 mm. long, 3-appendiculate.

Luzon, Province of Benguet, Ambuklao to Daklan (4401 *Merrill*) October 25, 1905, in open grass lands at about 1,000 m.; Bued River (4263 *Merrill*) October 20, 1905, on open rock slopes at about 1,000 m.

SALOMONIA Lour.

Salomonium cylindrica Blume. *Epirhizanthe cylindrica* Blume; Miq. Fl. Ind. Bat. 1 (1859) 2: 128. t. 15.

Luzon, Province of Benguet, Sablan (6054 *Elmer*) April, 1904.

This species is here first credited to the Philippines, and is apparently rare, as Mr. Elmer found but three individuals, and no other collector has as yet detected it in the Philippines. It was previously known from Java and Sumatra. The Philippine specimens are evidently referable to Blume's species, rather than to the more widely distributed *Salomonium aphylla* Griff., which extends from China to Borneo, Malacca and Tenasserim.

EUPHORBIACEÆ.

BACCAUREA Lour.

Baccaurea gracilis Merrill sp. nov. § *Pierardia*.

A tree 6 to 10 m. high, quite glabrous throughout, with membranous oblong to oblong-lanceolate leaves, slender fascicled racemes of staminate flowers, the pistillate inflorescence short, racemose, both from the slender branches below the leaves and in the axils of the lower leaves. Branches light gray or brown, slender, terete, lenticellate, glabrous. Leaves shining on both surfaces, 10 to 16 cm. long, 3 to 5 cm. wide, short acuminate, the base acute, entire, glabrous; primary nerves 10 to 12 on each side of the midrib, spreading, distant, the secondary nerves and reticulations evident, rather lax; petioles rather stout, about 5 mm. long. Staminate inflorescence: Racemes slender, glabrous, 5 to 9 cm. long, 1 to 4 in the axils of the lower leaves or of fallen leaves, the flowers glomerate, about 10 in each glomerule, the glomerules scattered, bracts small, the pedicels very short. Sepals 5, imbricate, glabrous, orbicular, about 1.3 mm. long. Petals 0. Stamens 5, the filaments very short; anthers 1 mm. long. Rudimentary ovary present, glabrous, 2-cleft, the disk wanting. Pistillate inflorescence: Racemes 5 mm. long or less, sometimes reduced to fascicles in the axils of fallen leaves. Sepals 5. Ovary

glabrous, 3-celled, each cell 2-ovuled. Flowers one in each bract, subsessile. Fruit about 4 mm. long, somewhat flattened vertically, 6 mm. wide, obscurely 3-lobed, 3-celled, dehiscent, each cell 2-seeded, the pedicel in infrutescence slender, 1 to 1.5 cm. long.

PALAWAN, Puerto Princesa (218, 258 *Bermejós*) December, 1905; Panaean Point (3828 *Curran*) March, 1906. In forests near the seashore.

CLAOXYLON Juss.

Claoxylon elongatum Merrill sp. nov. § *Euclaoxylon*.

A tree about 10 m. high with oblong to oblong-lanceolate, acuminate leaves and slender elongated staminate inflorescence much exceeding the leaves. Branchlets slightly pubescent. Leaves membranous, rigid, 12 to 20 cm. long, 4 to 6 cm. wide, scabrous, the base acute, the apex rather slenderly acuminate, the margins distantly serrate, the upper surface glabrous, dull, scabrid with numerous densely disposed small white dots, the lower surface paler, slightly pubescent on the nerves, becoming nearly glabrous; lateral nerves prominent beneath, 5 to 6 on each side of the midrib, curved-ascending, the reticulations distinct; petioles 4 to 7 cm. long, slightly pubescent. Staminate inflorescence slender, axillary, solitary, 13 to 30 cm. long, many flowered, the axis rather densely hirsute pubescent. Flowers glomerate, white, sessile or short pedicel, 3 or 4 in the axil of each bract, the glomeruli scattered, the bracts densely pubescent, 1 to 1.5 mm. long. Sepals 3, oblong ovate, acute, glabrous or slightly ciliate on the margins, about 3 mm. long. Stamens about 25; filaments glabrous, about 1.5 mm. long; anther cells basifixed, about 0.5 mm. long. Disk glands scattered among the stamens, ovate to obovate, obtuse, densely ciliate above, about 0.8 mm. long. Pistillate flowers and fruits not seen.

Luzon, Province of Laguna, Mount Maquiling (5141 *Merrill*) March 17, 1906. In forests on steep slopes at about 150 m.

Claoxylon purpureum Merrill sp. nov. § *Euclaoxylon*.

A shrub about 5 m. high, with shining, few nerved, usually purplish, glabrous leaves and short, few flowered, axillary racemes, dioecious. Branches light gray, glabrous, the ultimate branchlets often slightly pubescent. Leaves oblong ovate to elliptical oblong, or obovate, submembranous, the apex short acuminate, often abruptly so, narrowed below to the acute base, the margins distantly sinuate crenate or dentate to subentire; nerves 5 to 6 on each side of the midrib, distant, prominent, curved-ascending, interarching, the reticulations prominent, lax; petioles 0.5 to 1.5 cm. long, glabrous or nearly so. Inflorescence slender, 4 cm. long or less, axillary, slightly pubescent. Female flowers few. Ovary 2-celled, each cell 1-ovuled; style cleft nearly to the base, the two arms recurved, about 2 mm. long. Male flowers: Sepals 3, valvate, elliptical, ovate, about 2 mm. long, acute. Petals 0. Stamens about 16; filaments about 1 mm. long; anther cells spreading or ascending, about 0.7 mm.

long; disk glands about 0.8 mm. long, among the filaments, slightly ciliate at the apex, the staminate flowers apparently but one in each bract. Fruit glabrous, purplish, 2-celled, each cell 1-seeded, about 6 mm. long.

Luzon, Province of Benguet, Suyoc to Pauai (4689 *Merrill*) November 7, 1905, staminate and pistillate flowers from different plants; Baguio (6307 *Elmer*) May, 1904; Mount Santo Tomas (6545, 6548 *Elmer*) June, 1904. Abundant in the mossy forests in the mountains and on high ridges above 2,000 m.

MACARANGA Thouars.

Macaranga dipterocarpifolia Merrill sp. nov. § *Mappa*.

A shrub or small tree reaching a height of about 7 m. Branches reddish brown, glabrous. Leaves ovate, glabrous, 13 to 20 cm. long, 8 to 12 cm. wide, subcoriaceous, glabrous, penninerved, the base broad, truncate, somewhat auriculate at the insertion of the petiole and with several large glands at the base on the upper surface, the margins irregularly repand-crenate, usually dull, the lower surface with numerous small glands, usually paler than the upper surface, 7 to 9 nerved from the base, the lower nerves short; lateral nerves prominent, spreading, subparallel, 10 to 13 on each side of the midrib, the lower pair (basal) sending stout branches toward the margins, the reticulations subparallel, distinct; petioles 5 to 10 cm. long, glabrous. Male inflorescence glabrous, paniculate, from the upper axils, 10 to 15 cm. long. Flowers numerous, yellowish, fasciculate in the axils of the bracts, the bracts linear, 5 to 7 mm. long or less, enlarged and with 1 to 3 or 4 large disk-like glands above, often somewhat enlarged below and with one or two lobes. Sepals 3, 1 to 1.2 mm. long, glabrous, elliptical-ovate, acute. Stamens 7 to 9; filaments 1 mm. long or less; anthers 4-celled. Pistillate flowers and fruit not seen.

Luzon, Province of Benguet, Sablan (6137 *Elmer*) April, 1904. Not common on dry open ridges.

A species resembling *Macaranga cumingii* Muell. Arg., but with much larger leaves and more numerous stamens, the shape and venation of the leaves resembling some species of *Dipterocarpus*, from which character the species is named. The same species has been collected (sterile) by *Whitford*, in the canyon of the Lamao River, Province of Bataan, Luzon, altitude 700 m.

CORIARIACEÆ.

CORIARIA Niss.

Coriaria intermedia Matsum. Bot. Mag. Tokyo 12 (1898) 62.

Luzon, Province of Benguet, Suyoc to Pauai (4800 *Merrill*) November 7, 1905. In ravines at about 2,000 m. Formosa.

Specimens of the above number were sent to Dr. J. Matsumura, of the Botanical Institute, Imperial University, Tokyo, Japan, for comparison with the type of his Formosan species, and after comparing the specimens, he expresses the opinion that the Luzon plant is identical with his *Coriaria intermedia*. Specimens collected in Benguet by Vidal, and recorded by him as "*C. sp.* (aff. *C. japonica*)

A. Gray)"³⁶ are undoubtedly referable to *Coriaria intermedia* Matsum. The thirteen known species of the genus have a peculiar geographical distribution, extending from the Mediterranean region to the mountains of British India, China, Japan and Formosa, and from New Guinea to New Zealand, Mexico, and South America. The presence of this Formosan species in Benguet adds another very characteristic species to the known northern element in the Philippine flora.

RHAMNACEÆ.

ZIZYPHUS Juss.

Zizyphus cumingiana Merrill sp. nov. *Zizyphus* aff. *Z. baclei* DC., Vidal, Phan. Cuming, Philip. (1885) 104.

A scandent shrub reaching a height of 10 m., with broadly-ovate to oblong-ovate, inequilateral, nearly glabrous, 3-nerved leaves, the lateral nerves branched, solitary spines and sessile or short-peduncled cymes about equaling the petioles. Branches dark brown, the older ones lenticellate, glabrous, the branchlets slender, more or less ferruginous pubescent, the spines stout, recurved, short. Leaves submembranous, shining, glabrous, or when young the nerves on both surfaces somewhat pubescent, the margins obscurely crenate or dentate, the teeth often apiculate, 4 to 6 cm. long, 2 to 3.5 cm. wide, the base rather strongly inequilateral, broad, rounded, sometimes subcordate, the apex acuminate, the acumen blunt, often obscurely apiculate; nerves 3, the lateral ones scarcely reaching the apex of the leaf and sending rather bold, curved-ascending branches toward the margin, the lower branches often simulating basal nerves, so that sometimes the leaves appear to be 4 or 5-nerved; petioles 6 to 8 mm. long, usually somewhat pubescent. Cymes about 8 mm. long, few flowered, slightly ferruginous-pubescent. Flowers greenish white, about 4 mm. in diameter, the pedicels 2 to 4 mm. long. Calyx glabrous or with very few hairs outside, the lobes ovate, acute, nearly 2 mm. long, keeled within. Petals about 1.5 mm. long, obovate-spatulate, cucullate, clawed. Disk glabrous, 10-crenate. Fruit obovoid, glabrous, black when dry, 1-celled, 1-seeded, 6 to 7 mm. long.

PHILIPPINES (453 *Cuming*) 1836-1840. LUZON, Province of Tayabas, Mount Banajao (994 *Whitford*) October, 1904. MINDORO, Bongabong River (3616 *Merrill*) February, 1906. PALAWAN (Paragua) Puerto Princesa (354 *Bermejos*) February, 1906; E-wi-ig River (690 *Merrill*) February, 1903. In forests and thickets from the sea level to 650 m. A species apparently related to *Zizyphus celtidifolius* DC., and *Z. timorensis* DC.

TILIACEÆ.

TRICHOSPERMUM Blume.

Trichospermum trivalvis Merrill sp. nov.

A small tree 6 to 8 m. high with oblong-ovate, cordate, often somewhat inequilateral serrate leaves and 3-valved triangular capsules. Branches nearly black when dry, glabrous, terete, the younger parts somewhat

³⁶ Rev. Pl. Vasc. Filip. (1886), 102.

ferruginous pubescent. Leaves 10 to 20 cm. long, 5 to 12 cm. wide, submembranous, the base broad, cordate, usually somewhat inequilateral, the apex acuminate, the margins rather finely irregularly serrate, pubescent on the nerves and midrib above, paler and rather densely stellate pubescent beneath, the base 5-nerved, the lateral nerves prominent, 5 to 6 on each side of the midrib, ascending, the reticulations rather lax; petioles 5 to 10 mm. long, densely pubescent. Inflorescence of axillary, peduncled cymes 4 to 7 cm. long, the peduncles, branches, pedicels, and calyces densely uniformly ferruginous stellate pubescent, the peduncles 1.5 to 3 cm. long. Pedicels about 5 mm. long. Sepals free, oblong, acute, 7 to 8 mm. long, about 2.5 mm. wide, densely stellate pubescent outside, glabrous inside. Petals 5, about 6 mm. long, 1.5 to 2 mm. wide, acute, glabrous except at the thickened base which is rather densely pubescent. Stamens indefinite, inserted on the inside of a short densely villous disk; filaments slender, glabrous, 3 to 4 mm. long; anthers broad, about 0.5 mm. long. Ovary sessile, oblong, densely villous, 3-celled, each cell many ovuled. Style about 1.5 mm. long, expanded upward into the broad somewhat cleft stigma. Capsule nearly 1 cm. long, triangular, 3-valved, the style persistent, the valves pale and glabrous inside, densely ferruginous villous outside. Seeds many, 1.5 to 2 mm. long, compressed, the hairs of the arillus long.

LUZON, Province of Rizal, Antipolo (398 *Ahern's collector*) February, 1904; Bosoboso (1161 *Ahern's collector*) June, 1904. MINDORO, Bongabong River (1391 *Whitford*) January, 1906.

The first species of the genus to be reported from the Philippines, differing from all other described ones in its 3-valved capsules. Of the three other known species of the genus one is found in Java, one in the Fiji Islands, and one in Perak and the Nicobar Islands.

MALVACEÆ.

ABELMOSCHUS Medik.

Abelmoschus luzoniensis Merrill sp. nov. *A. moschatus* Perk. Frag. Fl. Philip. (1904) 111, in part.

An erect, herbaceous, somewhat branched annual, the vegetative portions densely velutinous pubescent and with scattered simple or stellately disposed bristle-like hairs, the bracteoles 5 to 7, ovate-lanceolate. Branches terete, the pubescence and bristles cinereous to fulvous, the latter few or many. Leaves 9 to 15 cm. long, cordate, deeply palmately 5-lobed, rather densely pubescent on both surfaces and with few or many stellately disposed bristle-like hairs, the outer lobes short, the others 7 to 13 cm. long, lanceolate, rather coarsely lyrate-lobed, acuminate; petioles 8 cm. long or less, densely pubescent and with few bristles; stipules linear, about 7 mm. long. Flowers forming terminal racemes, yellow, the pedicels equaling the petioles, similarly pubescent. Bracteoles ovate lanceolate to oblong, 5 to 7, at length deciduous, 1 to 2.5 cm. long,

6 to 10 mm. wide, acute, densely pubescent outside and with few stellately disposed hairs inside. Calyx about 2 cm. long, cleft down one side, toothed at the apex, deciduous, densely pubescent outside, slightly so within. Corolla 6 cm. long or less, yellow. Capsule oblong ovoid, acute, 5-angled, 4 to 5 cm. long, about 2 cm. thick, the valves somewhat pubescent outside and beset with simple bristle-like hairs, inside slightly pilose. Seeds many, pubescent, about 3.5 mm. long.

LUZON, Province of Rizal, Tanay (2328 *Merrill*) May, 1903; Antipolo (1307 *Merrill*) February, 1903; Bosoboso (1864 *Aheru's collector*) September, 1904. Apparently a distinct species not at all closely related to *Abelmoschus moschatus* Moench., to which the first two numbers cited were referred by Perkins. Distinguished at once from the latter species by its broad bracteoles.

***Abelmoschus multilobatus* Merrill sp. nov.**

An erect branched herb 1 to 2 m. high, the vegetative portions beset with few or many simple bristle-like hairs each from a small papilla, otherwise glabrous, with deeply, narrowly palmately 7-lobed leaves, the lobes again coarsely irregularly lyrate lobed. Branches stout, terete, the bristles usually numerous. Leaves 12 to 20 cm. long, deeply cordate, the lobes narrow, lanceolate, acuminate, 9 to 17 cm. long, the lobules 3 cm. long or less, often coarsely irregularly toothed; petioles 18 cm. long or less, usually hispid; stipules linear, about 8 mm. long. Flowers yellow, their pedicels 10 cm. long or less. Bracteoles 6 to 8, lanceolate, about 1.5 cm. long, 5 mm. wide, acuminate, with few scattered hairs and bristles, becoming nearly glabrous. Calyx rather densely pubescent outside, somewhat pilose within, about 2 mm. long, deciduous, the apex rather coarsely toothed. Petals yellow, 6 to 8 cm. long. Ovary pubescent. Staminal column antheriferous throughout. Capsule (immature) ovoid, densely beset with simply disposed bristles, exceeding the bracteoles.

LUZON, Province of Bataan, Lamao River (1820, 1902 *Borden*) September, November, 1904; (6739 *Elmer*) November, 1904; Province of Union, Bauang (14 *Penix*) October, 1905. All the above were distributed as *Abelmoschus moschatus* Moench., and the material from the Province of Bataan was so enumerated by the author.¹⁷ The species is, however, very distinct from *A. moschatus* Moench.

DILLENIACEÆ.

SAURAUIA Willd.

***Saurauia clementis* Merrill sp. nov.**

A shrub or small tree, the branches, leaves, and inflorescence with numerous linear, subulate chaffy bristles. Branches terete, brown, the bristles many, short and long intermixed. Leaves membranous, slightly shining, elliptical-obovate to oblong-obovate, 10 to 16 cm. long, 4 to 7 cm. wide, rather dark above, paler beneath, somewhat narrowed below to the acute, rarely obtuse base, more abruptly narrowed above to the short acuminate apex, both surfaces with numerous subulate bristles

¹⁷ *Phil. Journ. Science Suppl.* (1906), 1: 92.

which are more numerous beneath, especially on the midrib and nerves, the margins subentire or bristly toothed above; nerves 7 to 8 on each side of the midrib, rather prominent beneath; petioles about 1 cm. long, densely bristly. Inflorescence axillary, peduncled, cymose, few flowered, 4 to 8 cm. long, densely bristly throughout, the bracts lanceolate, acuminate, 8 to 9 mm. long, about 2 mm. wide. Sepals 5, imbricate, ovate, acute or acuminate, about 8 mm. long, the exposed outer surfaces thickly beset with subulate dark purple bristles about 3 mm. long, the outer three sepals coriaceous, the inner two membranous. Corolla about 10 mm. long, the lobes obovate, rounded, strongly irregularly retuse. Stamens 20; anthers 3 mm. long. Ovary glabrous, 3-celled; styles 3, 6 mm. long, united for the lower 1 mm.

MINDANAO, Lake Lanao, Camp Keithley (57 Mrs. Clemens) January, 1906.

Saurauia longistyla Merrill sp. nov.

A tree about 10 m. high, nearly glabrous throughout, with oblong leaves and fasciculate or solitary flowers on the branches below the leaves, the ovary 3-celled, the styles 3, united below. Branches light gray, glabrous, striate, the tips with few appressed, pale, triangular to narrowly ovate scales. Leaves 20 to 28 cm. long, 6 to 9 cm. wide, glabrous above, paler and quite glabrous beneath or with few scattered appressed scales, firm, shining, narrowed below to the acute base, the apex short acuminate, the margins above serrate or spinulose-serrate, entire below; nerves about 14 on each side of the midrib, prominent beneath, scarcely anastomosing, the reticulations subparallel, distinct; petioles 1 to 2.5 cm. long, with few appressed scales, becoming glabrous or nearly so. Flowers solitary or two or three in a fascicle in the axils of fallen leaves, white or pink, about 2 cm. in diameter, the pedicels 0.5 to 2 cm. long, with few appressed scales, the bracts about 8 mm. long, 3 mm. wide, acute or obtuse, oblong, glabrous. Sepals 5, glabrous, concave, elliptical to obovate, 8 to 10 mm. long, 6 to 8 mm. wide, rounded at the apex, subequal. Corolla lobes oblong-obovate, 10 mm. long, 6 mm. wide, glabrous, irregularly retuse at the apex. Stamens about 30, inserted on the base of the corolla; filaments about 4 mm. long, anthers 2 mm. long, 1.5 mm. thick. Ovary glabrous, 3-celled; styles 3, united for the lower 2 to 3 mm., the free portions 7 to 8 mm. long.

PALAWAN (Paragua), San Antonio Bay (835 Merrill) February 18, 1903. In forests at about 500 m.

Saurauia luzoniensis Merrill sp. nov.

A shrub, the branches, inflorescence, calyx lobes and petioles, minutely ferruginous pubescent and beset with setiform scales or scale-like hairs, the cymes axillary, solitary, 1 to 3 cm. long, few, 3 to 5-flowered, the ovary cells and styles 3. Branches brown, the older ones becoming glabrous. Leaves oblong to broadly oblong-oblongolate, membranous, 10 to 17 cm. long, 3 to 6 cm. wide, somewhat shining when dry, paler beneath, the midrib, nerves and reticulations beneath with few scattered

appressed scale-like hairs, the upper surface quite glabrous or with few scales on the midrib, the margins spinulose serrate, often obscurely so, the apex short acuminate, narrowed below to the acute base; nerves about 13 on both sides of the midrib, distinct beneath, anastomosing, the reticulations netted, distinct; petioles 1 to 2 cm. long. Cymes few flowered, strigose, the bracts and bracteoles linear, acute or apiculate, 3 to 4 mm. long, 1 mm. wide. Flowers pink, about 13 mm. in diameter. Sepals 5, equal, oblong-ovate or oblong-obovate, 6 mm. long, 4 mm. wide, rounded at the apex, outside ferruginous pubescent or puberulent and beset with pale, strigose, awl-shaped, scale-like hairs 1 to 2 mm. long. Corolla glabrous, the lobes 5, oblong-ovate, irregularly retuse at the apex, about 7 mm. long, 4 to 5 mm. wide. Stamens 20; filaments more or less united, about 2.5 mm. long; anthers nearly 3 mm. long. Ovary minutely densely pubescent, 3-celled; styles 3, about 3 mm. long, slightly united at the base.

Luzon, Province of Rizal, Bosoboso (2902, 3101 *Ahern's collector*) March, May, 1905.

VIOLACEÆ.

RINOREA Aubl.

Rinorea palawanensis Merrill sp. nov. § *Prothesia*.

A shrub 2 to 4 m. high with membranous, nearly glabrous, oblong to obovate-oblong, acuminate leaves and few, axillary, fascieled or racemously disposed flowers, the anther cells with a short mucro, the connective with a large, ovate appendage. Branches gray, becoming glabrous, the younger ones somewhat pubescent. Leaves alternate, 15 to 27 cm. long, 6 to 9 cm. wide, irregularly erenate-dentate to subentire, shining, paler beneath, slightly pubescent on the nerves and midrib beneath, becoming quite glabrous, usually rather prominently acuminate, narrowed below to the rather abruptly acute, often somewhat inequilateral base; nerves 12 to 13 on each side of the midrib, distinct, distant 1.5 to 3 cm., anastomosing, the reticulations lax, distinct. Flowers fascieled or in short few flowered racemes, about 5 mm. long, greenish, the inflorescence pubescent, the pedicels 6 mm. long or less, the sepals and petals accrescent in fruit and persistent. Sepals narrowly ovate, acute, densely hirsute pubescent outside, less so within. Petals narrowly ovate, acute, 3 to 4 mm. long, somewhat pubescent outside. Stamens from the margin of the disk; anthers broadly ovate, 1.5 to 1.7 mm. long, each cell tipped with short mucro 0.3 mm. long or less, the connective with a broad, ovate, acute, subhyaline appendage from the middle, nearly 1.5 mm. long. Ovary somewhat ferruginous hirsute; style 2 mm. long, narrowed above. Capsule ovoid, 1 cm. long, obtusely obscurely 3-angled, glabrous or with few ferruginous hairs. Seeds few, glabrous, shining.

PALAWAN, Puerto Princesa (252 *Bernacios*) December, 1905; (3529 *Curran*) January, 1906. In forests.

LECYTHIDACEÆ.

BARRINGTONIA Forst.

Barringtonia curranii Merrill sp. nov. § *Stravidium*.

A tree 4 to 6 m. high, glabrous except the inflorescence, with large or very large oblanceolate leaves, elongated racemes, and 4-merous flowers which are about 7 cm. across when open, the fruits elliptical-obovoid, crowned by the calyx lobes, terete or very obscurely 4-angled, 7 cm. long, about 4 cm. thick. Branches thickened, light gray, the leaf scars rather large. Leaves alternate, crowded at the apices of the branchlets, subcoriaceous, rather pale when dry, shining, 20 to 60 cm. long, 6 to 12 cm. wide, the margins obscurely minutely but distantly toothed, the apex acuminate, gradually narrowed below to the attenuate base, the petiole stout, less than 1 cm. long; nerves 18 to 24 on each side of the midrib, very prominent, the reticulations evident. Racemes pendulous (1 m. long according to Bermejós) stout, ferruginous-puberulent. Flowers pink or red, sessile. Calyx tube about 8 mm. long, obscurely 4-angled, densely ferruginous mealy puberulent, the lobes 4, broadly ovate or orbicular-ovate, rounded, less than 1 cm. long, densely ferruginous mealy puberulent, the margins slightly ciliate. Petals 4, obovate, rounded, 3.5 cm. long, about 2 cm. wide. Stamens indefinite, the filaments 4 to 5 cm. long. Ovary 4-celled; style about 7 cm. long. Fruit wrinkled when dry, somewhat ferruginous puberulent, with a single large seed.

PALAWAN, near Puerto Princesa (3596 *Curran*) January 30, 1906; (225 *Bermejós*) December 14, 1905. In forests and old clearings 20 m. or more above the sea level.

Barringtonia revoluta Merrill sp. nov. § *Butonica*.

A tree about 12 m. high, quite glabrous, with oblong-lanceolate to oblong-oblanceolate entire leaves, the margins strongly revolute, elongated, slender, racemose inflorescence and 3-merous flowers, the calyx tube sharply 3-angled, the lobes and petals 3, and the ovary 3-celled. Branches slightly thickened, strongly rugose when dry, brown or grayish. Leaves alternate, crowded at the ends of the branchlets, subcoriaceous, pale and shining when dry, 15 to 24 cm. long, 3 to 6 cm. wide, the apex acute or slightly acuminate, gradually narrowed below to the attenuate base, the petiole proper stout, rugose, less than 1 cm. long; nerves about 14 on each side of the midrib, the reticulations rather lax, distinct. Racemes 40 to 50 cm. long or more, the flowers few, scattered, their pedicels about 1 cm. long. Flowers immature. Calyx tube narrowed below to the pedicel, sharply 3-angled, closed in bud, splitting into three broadly ovate, rounded lobes, which are sometimes minutely apiculate at the apex. Petals 3, free, elliptical ovate, rounded. Stamens indefinite; anthers 0.8 mm. long. Ovary 3-celled, each cell with 3 or 4 pendulous ovules from the upper inner angle. Fruit and mature flowers not seen.

PALAWAN, Iwahig Penal Settlement (3507 *Curran*) January 7, 1906. A tree not common along the river, slightly above sea level.

A very characteristic species, readily recognized by its entire strongly revolute leaves and 3-merous flowers.

COMBRETACEÆ.

COMBRETUM Linn.

Combretum sexalatum Merrill sp. nov.

A scandent shrub, nearly glabrous, with opposite, oblong-ovate leaves, terminal and axillary panicles, the flowers crowded at the ends of the panicle branches, 4-merous flowers and prominently membranously 6-winged fruits, apparently dehiscent. Branches glabrous, brownish or grayish, terete, the ultimate branchlets somewhat pubescent. Leaves membranous or chartaceous, shining, the base acute or rounded, the apex short broadly acuminate, entire, 8 to 10 cm. long, 4 to 7 cm. wide, when very young more or less glandular-lepidote, becoming quite glabrous, or the nerve axils beneath barbellate; nerves 7 to 8 on each side of the midrib, somewhat prominent, the reticulations distinct; petioles 1.5 to 2 cm. long. Panicles 8 to 13 cm. long, the axis and branches densely pubescent, the lower branches subtended by leaves, the flowers densely racemously disposed at the ends of the branchlets. Flowers yellow, obscurely glandular lepidote, the pedicels 4-angled, gradually merged into the calyx, the flower and pedicel about 12 mm. long, the buds acute. Calyx gradually wider upward, expanded above and villous at the throat within, the limb 4-lobed, the lobes reflexed, ovate, sharply acute, 3 mm. long. Petals 4, oblong, truncate, slightly exceeding 2 mm. in length. Stamens 8, exserted; filaments nearly 6 mm. long; anthers nearly 1 mm. long. Style 10 to 12 mm. long. Fruit apparently dehiscent, including the wings elliptical in outline, 3 to 5 cm. long, 2.5 to 4 cm. wide, the seed-bearing portion 1.3 cm. long or less, the back of each valve with a thin membranous wing about 1.5 cm. long, 0.5 mm. wide, the margins of the 3 valves expanded into membranous, reticulately veined wings quite surrounding each valve, 1.5 to 2 cm. wide, the free edges forming 6 longitudinal wings.

Luzon, Province of Rizal, Antipolo (3130 *Ahern's collector*) June, 1905 (flower); Bosoboso (1868, 3321 *Ahern's collector*) September, 1904, September, 1905 (fruit). The last number cited has much broader leaves and larger fruits than the others.

MYRTACEÆ.

EUGENIA Linn.

Eugenia mimica Merrill sp. nov. § *Jambosa*.

A glabrous shrub 1 to 3 m. high with subcoriaceous, lanceolate, oblanceolate or oblong-oblanceolate, acute or blunt leaves, terminal cymose panicles 6 cm. long or less, the flowers small, white, the buds narrowly

oblong-obovoid or club-shaped. Branches gray or brownish, terete, the branchlets sharply 4-angled. Leaves 4.5 to 9 cm. long, 1 to 1.5 cm. wide, shining above, paler and dull beneath, narrowed above to the acute or blunt apex and below to the narrow acute base, the margins somewhat recurved; primary nerves about 10 on each side of the midrib, distant, irregular, spreading, not prominent, anastomosing and forming a marginal nerve, the reticulations evident, netted; petioles 2 to 4 mm. long. Flowers usually in groups of threes at the tips of the branchlets of the inflorescence, the lower branches sometimes 3 to 4 cm. long, the flowers including the stamens 10 to 12 mm. long, narrow, the buds about 8 mm. long. Calyx truncate about 4 mm. in diameter at the mouth, cup-shaped, narrowed below into a 4 to 5 mm. long pseudostalk, glabrous. Petals 4, free, orbicular, 2.5 to 3 mm. in diameter, caducous. Stamens indefinite: filaments about 4 mm. long; anthers 0.3 mm. long. Fruit oblong-ovoid to ellipsoid, glabrous, dark purple when mature, about 1 cm. long, 7 to 8 mm. thick, crowned by the persistent calyx rim, with a single large seed, the pericarp thin, crustaceous when dry.

Luzon, Province of Rizal, Montalban (5034 *Merrill*) March 8, 1906; (3431 *Ahern's collector*) November, 1905.

A shrub growing on cliffs and boulders along the river at an altitude of about 40 m., associated with and simulating in habit *Atalantia linearis* (Blanco) Merr. Like *Atalantia linearis* and *Homonoya riparia*, this species is often found on ledges and boulders subject to overflow in times of high water, and like the former species is abundant along the river at Montalban in the limestone region, but is found only immediately bordering the stream. So close is the resemblance in habit and leaf characters between this species and *Atalantia linearis* that *Ahern's collector*, *Ramos*, brought in both under one number as being the same species.

MELASTOMATACEÆ.

ASTRONIA Blume.

Astronia lagunensis Merrill sp. nov.

A shrub 4 to 6 m. high, nearly glabrous throughout except the inflorescence, with oblong-elliptical, acuminate, 7-nerved leaves, and furfuraceous inflorescence, the orbicular petals about 5 mm. in diameter. Branches rather stout, obscurely 4-angled, brown, glabrous. Leaves subcoriaceous, glabrous and green on both surfaces, not furfuraceous, 14 to 18 cm. long, 4 to 8 cm. wide, equally narrowed below to the acute base and above to the acuminate apex, the transverse nerves numerous, prominent beneath; petioles stout, 3 to 6 cm. long, when young slightly furfuraceous, becoming quite glabrous. Panicles pyramidal, 5 to 7 cm. long, 5 to 8 cm. wide below, the axis and opposite branches brown furfuraceous, the lower branches spreading, 4 cm. long or less, the upper ones gradually shorter. Flowers yellowish white and red. Calyx broadly funnel-shaped, about 4 mm. long, 5 to 6 mm. in diameter above, slightly furfuraceous, with 5 broad acute teeth less than 1 mm. long. Petals 5,

orbicular, 5 mm. in diameter. Stamens 10; filaments strap-shaped, 4 mm. long, 1 mm. wide; anthers dolabriform, 2 mm. long. Style about 6 mm. long.

LUZON, Province of Laguna, Mount Maquiling (5144 *Merrill*) March 17, 1906. Rather common in the mossy forest at an altitude of about 1,100 m. A species apparently related to *Astronia macrophylla* Blume, differing from that species in its smaller leaves and much larger flowers.

MEDINILLA Gaudich.

Medinilla bolsteri Merrill sp. nov.

An erect glabrous shrub, 2 to 3 m. high, with opposite, petioled, 5-nerved leaves, the transverse nerves evident, and fascicled or solitary lax cymes 10 to 15 cm. long from tubercles on the trunk, the flowers 5-merous. Branches light gray or greenish, glabrous, terete. Leaves membranous or chartaceous, elliptical to oblong-elliptical, short acuminate, the base acute, 13 to 20 cm. long, 7 to 9 cm. wide, 5-nerved, the exterior submarginal nerves from the base, the inner pair from the midrib 2 to 3 cm. above the base, the transverse nerves somewhat prominent. Peduncles to the cymes slender, 4 to 5 cm. long, the branches slender, opposite or whorled, divaricate, the flowers mostly subumbellately disposed at the tips of the branchlets, the pedicels 0.5 to 1 cm. long, ebracteolate. Flowers pink. Calyx cup-shaped, 4 mm. long, subtruncate or with 5 shallow teeth. Petals 5, obtuse, irregularly obliquely oblong obovate, 8 to 9 mm. long, 3 to 3.5 mm. wide. Stamens 10, subequal; filaments 4 mm. long; anthers 3 mm. long, acuminate. Style slender, glabrous, 7 mm. long.

LUZON, Province of Rizal, Bosoboso (3262 *Ahern's collector*), August 21, 1905 (type): Province of Cagayan, Tabug (173 *F. H. Bolster*) August 15, 1905. In shaded thickets by streams at about 250 m.

Medinilla dolichophylla Merrill sp. nov.

A glabrous shrub 3 to 5 m. high with 4-merous flowers, terminal and lateral long peduncled inflorescence, and lanceolate leaves 20 to 35 cm. long, the lateral longitudinal nerves faint. Branches quadrangular, the younger ones strongly 4-winged, the wings not undulate. Leaves membranous to subcoriaceous, 4 to 5.5 cm. wide, pale, shining, gradually narrowed above to the somewhat acuminate apex, the base acute, decurrent; midrib stout, the lateral longitudinal nerves four, scarcely more prominent than the distant transverse nerves, the reticulations lax; petioles about 1.5 cm. long. Cymes pendulous, terminal and from the branches below the leaves, the peduncles 15 to 20 cm. long, few flowered, ebracteolate. Calyx 4 to 5 mm. long, truncate, cylindrical or subcampanulate. Petals 4, white, irregularly obovate, narrowed below, about 14 mm. long, 8 mm. wide. Stamens 8, subequal; filaments 6 mm. long; anthers 6 to 7 mm. long, linear, tips purplish, base white, the middle portion yellow, the dorsal basal spur 1 mm. long, anteriorly 2-tuberculate. Style about

12 mm. long. Fruit ovoid, about 1 cm. long. Seeds oblong, rounded at the apex, about 1.5 mm. long.

Luzon, Province of Benguet, Baguio (4332 *Merrill*) October 22, 1905; (44 *Topping*) February, 1903.

A shrub characterized by its elongated, faintly nerved leaves and pendulous inflorescence, growing in damp shaded ravines along small streams at an altitude of about 1,500 m.

Medinilla myriantha Merrill sp. nov.

A shrub 4 to 5 m. high, quite glabrous throughout, with opposite, 7 to 9-nerved sessile leaves and terminal many flowered panicles, the flowers 4-merous. Branches terete, rather slender, the younger ones obscurely angled, the nodes densely barbellate. Leaves subcoriaceous, elliptical ovate, 9 to 13 cm. long, 5.5 to 7 cm. wide, the apex abruptly short acuminate; the base cordate, often broadly so; nerves 7, prominent, sometimes with an additional pair of outer short nerves at the base. Panicles 10 to 20 cm. long, pink, many flowered, the branches verticillate, the lower ones about 9 cm. long, gradually shorter upwards, the bracts minute, subulate. Flowers numerous, pink. Calyx urceolate-cylindrical, 4 mm. long, truncate. Petals 4, oblique, about 8 mm. long. Stamens 8, subequal; filaments 4 mm. long; anthers nearly 5 mm. long, the spur less than 1 mm. long.

Luzon, Province of Laguna, Mount Maquiling (5129, 5133 *Merrill*) March 17, 1906. Abundant in the mossy forest 900 to 1,100 m. A species apparently related to *Medinilla intermedia* Blume, differing from that species in its more numerous nerved, sessile, cordate leaves and larger flowers.

Medinilla teysmanni Miq. Ann. Mus. Bot. Lugd. Bat. 1 (1864) 217; Cogn. in DC. Monog. Phan. 7 (1891) 593.

MINDANAO, Camp Keithley, Lake Lanao (1 *Mrs. Clemens*) December, 1905. A species previously known only from Celebes and New Guinea, the specimen cited above differing from the species, as described, in its somewhat larger flowers but in no essential characters so far as I can detect.

PACHYCENTRIA Blume.

Pachycentria formicaria Merrill sp. nov.

A glabrous or nearly glabrous epiphytic shrub 50 cm. high or less with 3-nerved leaves, the transverse nerves very obscure or obsolete, short petioles, and terminal corymbose inflorescence, the roots with oblong to ovoid thickened bulb-like swellings 1 to 3 cm. in diameter. Branches light gray to brownish, terete, glabrous or the younger branchlets minutely furfuraceous. Leaves coriaceous, oblong to elliptical or ovate oblong, pale when dry, dull, 6 to 12 cm. long, 1.5 to 4.5 cm. wide, entire, the base acute, the apex shortly acuminate, the lateral basal nerves slender, ascending, submarginal, not reaching the apex; petioles 3 to 10 mm. long. Corymbs about 5 cm. long, nearly as wide, many flowered, glabrous or nearly so, the bracteoles minute. Flowers pink. Calyx narrow, urceolate, about 4 mm. long, constricted above the ovary, the

limb nearly 2 mm. long, with 4 rounded teeth. Petals 4, ovate-lanceolate, about 5 mm. long, 2.2 mm. wide in the middle, narrowed below and to the acuminate apex. Stamens 8; filaments about 2 mm. long; anthers lanceolate, about 2 mm. long, rostrate, the basal dorsal spur about 0.5 mm. long. Ovary 4-celled; style 5 mm. long.

MINĐANAO, Lake Lanao, Camp Keithley (433, 361 *Mrs. Clemens*) March, 1906; (3920 *Hutchinson*) March, 1906.

A typical Malayan genus, of which no species has previously been reported from the Philippines, the present species being well characterized by its thickened bulb-like roots, which are inhabited by colonies of ants, in this respect resembling the symbiosis found in the rubiaceae genera *Hydnophytum* and *Myrmeccoides*.

HALORRHAGACEÆ.

HALORRHAGIS Forst.

In Schindler's recent monograph of this family¹⁸ no species of the genus *Halorrhagis* are credited to the Philippines. Schindler recognizes 59 species of *Halorrhagis*, of which 57 are confined to Australia and New Zealand, one to the Asiatic continent, and one extending over the entire range of the genus, from New Zealand and Australia to Japan, China, and Bengal. Three species of the genus are represented in our Philippine collections, one of which is apparently undescribed.

- | | |
|--|-------------------------------|
| 1. Calyx tube papillose-punctate, the ribs scabrous. | |
| 2. Stamens 6 to 8; inflorescence paniculate; leaves lanceolate,
about 1.5 cm. long..... | (1) <i>H. scabra elongata</i> |
| 2. Stamens 4; inflorescence racemose; leaves elliptical-oblong,
1 cm. long or less..... | (2) <i>H. philippinensis</i> |
| 1. Calyx tube quite glabrous, not papillose-punctate, the ribs not
scabrous | (3) <i>H. micrantha</i> |

(1) **Halorrhagis scabra** (Koenig) Benth., var. **elongata** Schindler in Engler's *Pflanzenreich* 23 (1905) 28.

CULIOX (459 *Merrill*) December 13, 1902. In damp deserted rice lands near the sea level.

This variety has previously been known only from southern China, Hongkong, and Amam, although another variety of the same species is found in the Khasia Mountains, British India. The Philippine plant here referred to, *Halorrhagis scabra*, agrees very closely with the description and with specimens from Hongkong kindly supplied me by the Director of the Hongkong Botanic Garden.

(2) **Halorrhagis philippinensis** Merrill sp. nov.

A scabrous herb 8 to 20 cm. high, erect or spreading, more or less branched from the base, with simple racemose inflorescence, the flowers solitary in the axils of the bracts, the calyx manifestly papillose-punctate, scabrous on the ribs but not parallel callose, the stamens four. Branches slender, appressed-pilose, 4-angled. Leaves elliptical-oblong, coriaceous, sparingly pilose, 5 to 10 cm. long, 2.5 to 5 cm. wide, short petioled or subsessile, mucronate acuminate or acute, the base acute, the margins

¹⁸ Engler's *Pflanzenreich* 23, 1905.

usually serrate, strongly cartilaginous. Racemes simple, the pedicels less than 1 mm. long; bracts foliaceous, ovate-lanceolate, 2 to 3 mm. long, sparingly scabrous-pilose; bracteoles 2, membranous, linear, sparingly pilose, 1 to 1.5 mm. long. Calyx 2 mm. long, the tube manifestly papillose-punctate, 8-ribbed, 1 mm. long, the ribs scabrous, the lobes 4, erect, ovate-lanceolate, acute, 1 mm. long, navicular, somewhat pilose on the keel. Stamens 4; anthers 1.2 mm. long. Fruit grayish, somewhat shining.

LUZON, Province of Benguet, Baguio to Ambuklao (4357 *Merrill*) October 24, 1905; District of Lepanto, Suyoc to Cervantes (4444 *Merrill*) October 30, 1905; Mount Data (4553 *Merrill*) November 4, 1904. On dry, open, grassy slopes in thin pine forests, 1,500 to 2,100 m.

(3) *Halorrhagis micrantha* (Thunb.) R. Br. Schindler l. c. 42.

NEGROS, Canlaon Volcano (*Banks*) March, 1902. MINDANAO, District of Davao, Mount Apo (1050 *Copeland*) April, 1904; (1436 *Copeland*) October, 1904, det. Rolfe. "Grows all over the summit but abundant only about pools, 2,600 to 3,000 m." Copeland.

A species not previously reported from the Philippines, extending from Bengal to Japan, Malaya, Australia, and New Zealand.

MYRIOPHYLLUM Linn.

Myriophyllum spicatum Linn. Schindler l. c. 90.

MINDANAO, Lake Lanao, Camp Keithley (450 *Mrs. Clemens*) April, 1906. Altitude about 800 m.

No species of the genus has previously been reported from the Philippines. Widely distributed in the tropical and temperate regions of the world, but not recorded by Schindler from the Malayan region.

ARALIACEÆ.

ACANTHOPANAX Deene. et Planch.

Acanthopanax trifoliatum (Linn.). *Zanthoxylum trifoliatum* Linn. Sp. Pl. (1753) 270. *Panax aculeatum* Ait. Hort. Kew. 3 (1789) 448. *Acanthopanax aculeatum* Seem. Journ. Bot. 5 (1867) 238; Forbes & Hemsl. Journ. Linn. Soc. Bot. 23 (1888) 229. *Aralia trifoliata* Meyen.

LUZON, Province of Benguet, Bugias (4661 *Merrill*) October 28, 1905. In thickets at an altitude of about 1,500 m.

An interesting addition to our knowledge of the relationship of the Philippine flora to that of the Asiatic continent. The above specimen agrees very closely with material of this species supplied me by the director of the Botanic Garden, Hongkong, with Formosan specimens received from the Imperial University, Tokyo, and with sterile specimens in Herb. Bureau of Science from a cultivated plant in the Botanical Garden at Buitenzorg, Java. The Philippine plant is, however, a scandent shrub, while in all the references to *Acanthopanax aculeatum* Seem. and synonyms of that species which I have been able to consult, the species is described as a shrub or small tree. However, I can not, from the descriptions and material available, find any other characters by which the Philippine plant can be distinguished, and have accordingly referred it to the above species, which extends from Japan and Formosa to China and Eastern India.

SCHEFFLERA Forst.

Schefflera luzoniensis Merrill sp. nov. § *Euschefflera*, *Heptapleurum*.

A scandent shrub, quite glabrous except the deciduously pubescent inflorescence, with 5-foliolate leaves, the leaflets caudate-acuminate, and terminal panicle branched from the base, the branches ascending, elongated, the flowers disposed in 3 to 5 flowered peduncled umbels. Branches light gray, glabrous. Petioles 6 to 8 cm. long, glabrous, slender; leaflets firm, shining, elliptical-lanceolate to narrowly obovate-lanceolate, abruptly long caudate-acuminate, the base acute, 4 to 6 cm. long, 1.5 to 2 cm. wide; primary nerves 6 to 7 on each side of the midrib, not prominent, the secondary nerves and reticulations nearly as evident, anastomosing and forming a marginal nerve, the leaf margin entire, recurved; petiolules 1.5 to 2 cm. long. Panicles 10 cm. long or less, branched from the base, the branches about 8 cm. long, more or less flocculose pubescent, becoming subglabrous, the bracts and bracteoles very caducous, the branchlets racemously disposed, 5 to 10 mm. long, each bearing 3 to 5 umbellately disposed flowers, the pedicels 3 to 4 mm. long. Calyx about 1.5 mm. long, truncate. Petals 5, oblong-ovate, 2 mm. long, acute, apex inflexed, free, falling separately. Stamens 5; filaments 2 mm. long; anthers broadly elliptical-ovate, about 0.8 mm. long. Ovary 5-celled; style 0. Fruit unknown.

Luzon, Province of Tayabas, Mount Banahao (928 *Whitford*) October 19, 1904. Scandent on trees in forests at about 1,100 m.

Schefflera microphylla Merrill sp. nov. § *Euschefflera*, *Heptapleurum*.

Subscandent, 2 to 3 m. high; glabrous throughout, with alternate, long petiolate, digitately 5 to 8-foliolate leaves, the leaflets lanceolate, acuminate, 5 cm. long or less, the flowers umbellately disposed in lax terminal panicles. Branches slender, terete, light gray or brownish. Petioles slender, 4 to 5 cm. long; leaflets entire, firm, shining, 3.5 to 5 cm. long, 4 to 6 mm. wide, gradually narrowed above to the long caudate-acuminate apex, the base acute; nerves few, not prominent; petiolules 5 to 8 mm. long. Panicles few branched from the base, 6 to 8 cm. long, the bracts and bracteoles wanting or very caducous, glabrous; branchlets spreading, few, slender, 1 to 1.5 cm. long, the flowers in 4 to 6 flowered umbels at the ends of the branchlets, the pedicels 4 to 6 mm. long. Calyx truncate or obscurely toothed, 1.5 mm. long or less. Petals 5, triangular-ovate, acute, 1.5 mm. long, adherent by their apices and falling as a whole. Stamens 5; filaments about 1 mm. long; anthers broadly ovate, nearly 1 mm. long. Ovary 5-celled; style not developed. Fruit elliptical-ovoid, glabrous, about 5 mm. long, 5-ridged.

Luzon, District of Lepanto, Mount Dana (4605 *Merrill*) November, 1905. A subscandent shrub growing on rotten trunks and mossy trees in the wet forest at about 2,200 m., characterized by its small lanceolate leaflets.

TETRAPLASANDRA A. Gray.

Tetraplasandra philippinensis Merrill sp. nov.

A tree 8 to 12 m. high, quite glabrous throughout, with 2 to 8 or more jugate leaves, the leaflets distantly obscurely crenate-serrate, and 7-merous flowers. Leaves alternate, the lower ones much larger than those near the apices of the branches, the latter often reduced to 20 cm. or less in length and 2 to 3 jugate, the former 80 cm. or more in length, 8 or more jugate, the common petiole stout, jointed. Leaflets oblong-ovate to oblong, glabrous and shining above, somewhat dull beneath, 10 to 16 cm. long, 4 to 8 cm. wide, the base rounded or acute, often inequilateral, the apex usually very abruptly short acuminate, the margins with few distant, scattered crenate-serrate, glandular teeth; nerves about 10 on each side of the midrib, irregular, the secondary nerves nearly as prominent; petiolules 1 to 1.5 cm. long. Flowers in peduncled umbels of 6 to 10 flowers each which are arranged in large racemose panicles, the peduncles about 2 cm. long in anthesis, 5 cm. long in infrutescence, whorled or alternate; pedicels 4 to 5 mm. long. Calyx cup-shaped or somewhat funnel-shaped, 2.5 to 3 mm. long, the limb slightly produced, truncate. Petals 7, lanceolate, acute, crested on the inside at the apex, about 3.5 mm. long, 1.2 mm. wide. Stamens about 28, several seriate, the inner much smaller; filaments 2 mm. long or less; anthers about 1 mm. long, the cells but slightly united. Ovary 7-celled; stigma sessile. Fruit ovoid, glabrous, about 8 mm. long, boldly 7 to 10 ridged.

PALAWAN, Casuarina Point (3809, 3844 *Curran*) March, 1906. Back of the beach and in forests along the seashore.

No species of the genus has previously been reported from the Philippines; of the 8 described species, one is from New Guinea, one from Celebes, and the remaining 6 are from the Hawaiian Islands. The species here described as new is apparently most closely related to the New Guinea species, *Tetraplasandra paucidens* Miq., but differs from the latter in many characters.

ERICACEAE.

DIPLYCOSIA Blume.

Diplycosia scandens Merrill sp. nov.

A scandent more or less hispid pseudo-epiphytic shrub reaching a height of 4 m., with ovate or narrowly-ovate, short acuminate or acute leaves and fasciated flowers. Branches slender, gray or brown, the younger ones rather strongly beset with long brown appressed bristly hairs. Leaves coriaceous 3 to 4.5 cm. long, 1.5 to 2.5 cm. wide, the base rounded, entire, gradually narrowed above, glabrous on the upper surface or with very few hairs, beneath paler and with scattered bristly hairs; petioles about 3 mm. long, densely bristly hairy; nerves 2 on each side of the midrib, both below the middle of the leaf. Flowers

axillary, 3 to 6 in each axil, the pedicels pubescent, about 4 mm. long, 2-bracteolate at the apex, the bracteoles 1 mm. long, broader than long, ciliate. Calyx teeth broad, ovate, obtuse, about 1 mm. long, ciliate. Corolla white, about 5 mm. long, 3.5 mm. in diameter, the lobes broadly ovate, acute, reflexed, nearly 2 mm. long. Stamens 10; filaments 2 mm. long, not dilated below, glabrous; anthers about 1.2 mm. long, not horned. Ovary superior, glabrous, globose, 5-celled, cells many ovuled; style about 2.2 mm. long.

Luzon, District of Lepanto, Mount Dana (4597 *Merrill*) November 4, 1905. Pseudo-epiphytic on mossy tree trunks in ravines, mossy forest at about 2,250 m. The first species of the genus to be reported from the Philippines, unless *Gaultheria* (*Diplycosia*) *luzonica* A. Gray, Proc. Am. Acad. 5 (1862) 324, proves to be a true *Diplycosia*. Gray's description is so short that I have been unable to locate his species, the type being from the collections made by members of the Wilke's U. S. Exploring Expedition from "Luzon, in the Majaijai Mountains" (Mount Banajao). Dr. B. L. Robinson informs me that the type is not in the Gray Herbarium. A second, apparently closely related but glabrous species, is represented by No. 5932 *Elmer*, Province of Benguet, Luzon, the specimens with fruit only.

RHODODENDRON Linn.

Rhododendron nortoniae Merrill sp. nov.

An epiphytic shrub with lanceolate to oblong-lanceolate, coriaceous, acuminate leaves which are densely brown lepidote beneath, and terminal umbellate-like fascicles of tubular crimson flowers about 4.5 cm. long. Branches terete, brown, the branchlets densely covered with round, dark-brown scales. Leaves 9 to 15 cm. long, 1.5 to 3.5 cm. wide, narrowed below to the acute base and above to the rather long slender apex, entire, the margins slightly recurved, glabrous and shining above, densely covered with small round dark-brown scales beneath; lateral nerves 5 to 6 on each side of the midrib, distant, indistinct; petioles densely lepidote, stout, 1 cm. long or less. Umbels terminal, about 12 flowered, the bud bracts coriaceous, glabrous except the slightly pubescent margins, ovate to oblong-ovate, acute, 1 to 1.7 cm. long. Pedicels 1.3 cm. long, glabrous, the bracts oblong to spatulate, the bracteoles filiform, caducous. Calyx a disk about 3 mm. in diameter, obscurely 3-toothed, the teeth rounded, small. Corolla 4.5 cm. long, scarlet, the tube cylindrical, about 3.5 cm. long, scarcely inflated or enlarged above, slightly curved, 6 to 7 mm. in diameter, the limb 5-lobed, the lobes broadly ovate to obovate, rounded, 1 cm. long. Stamens 10; anthers oblong, 3.5 mm. long. Ovary narrowly oblong, the style elongated filiform, densely brown lepidote.

MINDANAO, Lake Lanao, Camp Keithley (500 *Mrs. Clemens*) April, 1906. Altitude about 800 m. Epiphytic on a large tree, associated with an epiphytic *Vaccinium*.

At the collector's request this distinct species is named in honor of Miss Norton, of the Pacific Grove (Calif.) Museum, the collector's interest in botanical work having been largely inspired by her.

VACCINIUM Linn.

Vaccinium microphyllum Blume. Bijdr. (1826) 851; Miq. Fl. Ind. Bat. 2 (1856) 1063.

MINDANAO, District of Davao, Mount Apo (1037, 1417 *Copeland*) April, October, 1904. A terrestrial shrub on the wind-swept summit 2,600 to 3,000 m., the shoots not ascending more than 10 cm. from the ground except in the more sheltered places.

Vaccinium microphyllum Blume, was described from a specimen in Reinwardt's herbarium from the mountains of Celebes, the original description being very short, but applying closely to the specimens cited above. A specimen of No. 1417 *Copeland* was sent to Dr. Treub, director of the Botanical Garden at Buitenzorg, Java, for verification of the above identification. Dr. Valeton, who examined the material, states that there is no authentic specimen of *Vaccinium microphyllum* in the herbarium at Buitenzorg, but that there is a sterile specimen collected by Teysmann in Ternate and identified as *V. microphyllum* by Scheffer, with which the Mount Apo plant agrees, except that the leaves of the latter are somewhat smaller than in the Ternate plant. The Mount Apo plant is apparently quite different from the species described by Beccari¹⁹ and Clarke²⁰ as *Diplycosia microphylla* (Blume) Becc., and by King and Gamble²¹ as *Vaccinium microphyllum* Blume, but I am of the opinion that Blume's description applies more closely to the Mount Apo plant than to the descriptions of Malayan Peninsula and Bornean material by the authors cited above. According to Valeton, the specimen reported from Celebes by Koorders²² as *Vaccinium microphyllum* "Reinw.," is not Blume's species, the flowers being racemose in Koorders's specimens.

PRIMULACEÆ.

LYSIMACHIA Linn.

Lysimachia microphylla Merrill sp. nov. § *Lerouxia*.

A small ascending uniformly and rather strongly hirsute-pubescent annual 5 cm. high or less, with opposite, petioled, glandular-punctate, obtuse or rounded leaves and short pediceled yellow flowers. Stems slender, densely hirsute-pubescent with pale spreading hairs, simple or slightly branched from the base. Leaves opposite, orbicular-ovate to ovate, sometimes subreniform-orbicular, 5 to 7 mm. long, often nearly as wide, the apex rounded or blunt, the base subtruncate to acute, glandular punctate, uniformly hirsute-pubescent on both surfaces; petioles 1.5 to 2 mm. long, pubescent. Flowers solitary in the upper axils, the pedicels pubescent, about 2 mm. long. Calyx cleft nearly to the base, the lobes linear-lanceolate, slightly acuminate, about 3.5 mm. long, 1 mm. wide, glandular punctate, strigose pubescent outside. Corolla yellow, 3.5 mm. long, glabrous, the tube less than 1 mm. long, the lobes elliptical-ovate to elliptical-oblong, obtuse or acute, glandular punctate. Filaments 1.5

¹⁹ *Malesia* (1878), 1, 212.

²⁰ *Hook. f. Fl. Brit. Ind.* (1882), 3, 456.

²¹ *Mat. Fl. Mal. Penin.* (1905), 3, 273.

²² *Meded. 's Lands Plant.* (1898), 19, 514.

mm. long; anthers blunt, 1 mm. long. Capsule 4 to 5 mm. long, ovoid, somewhat hirsute above, regularly dehiscent by 5 valves. Seeds many, triangular, rugose, brown, nearly 1 mm. long.

LUZON, Province of Benguet, Bugias (4668 *Merrill*) October 28, 1905; Daklan to Kabayan (4405 *Merrill*) October 27, 1905. On damp banks along the trail in open grass lands and in thin pine forests.

A species well characterized by its small leaves, which are glandular punctate with round spots.

SAPOTACEÆ.

SIDEROXYLON Linn.

Sideroxylon luzoniense Merrill sp. nov.

A small tree about 5 m. high with oblong-ovate to broadly oblong-lanceolate or elliptical-oblong, acuminate leaves, beneath shining and rather densely ferruginous-pubescent, and axillary fasciated flowers, the staminodes elongated, entire. Branches dark brown or nearly black, lenticellate, glabrous, the young parts rather densely cinerous and ferruginous pubescent. Leaves 7 to 9 cm. long, 2 to 4 cm. wide, coriaceous, glabrous above, the apex short acuminate or acute, gradually narrowed below to the acute base; nerves somewhat prominent beneath, 6 to 7 on each side of the midrib, the reticulations obscure; petioles densely pubescent, 1 to 1.5 cm. long. Flowers in axillary fascicles of from 2 to 5, mostly on the young branchlets, numerous, sessile. Calyx cup-shaped, 1 mm. long, densely ferruginous pubescent, 5-toothed, the teeth blunt, broad, less than 1 mm. long. Corolla 5 mm. long, glabrous, 5-lobed, lobes oblong-ovate, truncate, about 3.5 mm. long, 2 mm. wide below. Staminodes linear or linear-lanceolate, entire, blunt, 2.5 to 3 mm. long, less than 1 mm. wide. Filaments 2 mm. long; anthers broadly ovoid, 1.3 mm. long. Ovary ferruginous-pubescent, 5-celled.

LUZON, Province of Rizal, Antipolo (127 *F. W. Foxworthy*) January 16, 1906. In forest on Mount Kaysipot, at about 700 m.

OLEACEÆ.

JASMINUM Linn.

Jasminum populifolium Blume, Mus. Bot. Lugd. Bat. 1 (1850) 276; Miq. Fl. Ind. Bat. 2 (1856) 538; F-Vill. Nov. App. (1883) 128; *J. luzoniense* Vidal, Phan. Cuming, Philip. (1885) 185; Rev. Pl. Vase. Filip. (1886) 180; Ceron, Cat. Pl. Herb. (1892) 111; Usteri, Beitr. Ken. Philip. Veg. (1905) 120.

Blume cites no collector in the original diagnosis of his species, simply giving the locality "In insulis Philippinis." It seems probable that he had before him the same number of Cuming's plant that Vidal later described as *Jasminum luzoniense*. His description applies very closely to a specimen of No. 1029 *Cuming* in our herbarium, on which number Vidal's species was based. I have accordingly reduced *J. luzoniense* to the much earlier *J. populifolium*.

Jasminum triphyllum Merrill sp. nov. § *Trifoliata*.

A scandent shrub, glabrous or nearly so throughout, with opposite or subopposite, trifoliolate leaves and axillary and terminal paniculate cymes. Branches slender, glabrous, the younger ones greenish-brown. Leaflets subcoriaceous, glabrous, ovate, slightly shining, short acuminate or merely acute, the base broad, rounded, the terminal one 6 to 9 cm. long, 3 to 4.5 cm. wide, the lateral ones somewhat smaller but similar in shape; nerves irregular, not prominent, about 6 on each side of the midrib, the base sub 5-nerved, the marginal pair often obscure; petioles 1.5 to 2 cm. long, the petiolule of the terminal leaflet 1.5 cm., of the lateral leaflets 1 cm. or less. Inflorescence equaling or exceeding the leaves, slightly pubescent, the peduncles 2 to 4 cm. long, the bracts small, ovate, the bracteoles minute. Flowers white. Calyx tube cup-shaped, about 2 mm. long, truncate or with very obscure teeth. Corolla slender, the tube 8 mm. long, slightly enlarged above, glabrous, the lobes 5, spreading, orbicular-ovate, obtuse, about 2.5 mm. in diameter. Filaments short; anthers oblong, slightly acuminate, about 2.3 mm. long. Stigma bifid, the lobes nearly 3 mm. long.

PALAWAN, Puerto Princesa (261 *Bermejos*) December, 1905. In forests.

A species apparently related to *Jasminum parviflorum* Deene., differing especially from the latter in its glabrous branches and orbicular-ovate, obtuse, not lanceolate, acuminate, corolla lobes.

GENTIANACEÆ.

COTYLANTHERA Blume.

Cotylanthera tenuis Blume. Bijl. 2 (1825) 707; Miq. Fl. Ind. Bat. 2 (1856) 735; Dunal, in DC. Prodr. 13 (1852) 674.

LUZON, Province of Laguna, Mount Maquilang (5149 *Merrill*) March 17, 1906. In forests at about 900 m.

The above identification is presumably correct, although the original and subsequent descriptions of the species, and the descriptions of *Eophylon lobbii* A. Gray, and *E. tenellum* A. Gray, the former at least being apparently a synonym of Blume's species, are all so short that absolute identification is impossible without comparison with the type material. The Philippine plant when fresh, is of a pale lavender color throughout, 4 to 6 cm. high, unbranched, or with at most one branch, with solitary flowers and 3 to 5 pairs of bracts.

GENTIANA Linn.

Gentiana apoensis Merrill sp. nov. § *Chondrophylla*.

A low, erect, often densely tufted, more or less branched perennial 2 cm. high or less, glabrous, the leaves all similar, distichous, imbricated. Leaves ovate-lanceolate, glabrous, acute or obscurely acuminate, 5 to 6 mm. long, about 2 mm. wide, sessile, crowded, the nerves obscure. Flowers solitary at the ends of the short branches. Calyx 5 mm. long including the teeth, the latter lanceolate, acuminate, apiculate, 2 to 2.5 mm. long. Corolla tubular, about 7 mm. long, 5-lobed, the lobes broadly

ovate, acute or obscurely acuminate, about 1.5 mm. long, the tube plaited, the teeth of the folds rounded or obtuse, entire or nearly so. Filaments 2 mm. long; anthers 0.9 mm. long. Capsule slightly exerted, stalked, the stalk about 5 mm. long, the capsule broadly ovoid, compressed, about 4 mm. long, the valves rather strongly 3-nerved.

MINDANAO, District of Davao, Mount Apo (1161, 1432 *Copeland*) April, October, 1904; (371 *DeVore & Hoover*) May, 1903. "Occasional in turf, but inconspicuous, not common," *Copeland*. Summit of the mountain at about 3,000 m.

No species of this genus have previously been reported from the Philippines.

Gentiana diversifolia Merrill sp. nov. § *Chondrophylla*.

An erect annual 2 to 3 cm. high or less, fasciculately branched, the stems glabrous, single. Lower leaves orbicular-ovate to orbicular-obovate, 10 to 12 mm. long, 10 mm. wide, acute, apiculate, narrowed below, glabrous, the margins very minutely denticulate, the leaves of the branches narrowly lanceolate, acuminate, apiculate, 6 to 8 mm. long, about 2 mm. wide, hyaline margined, the margins ciliate. Branches with one or two flowers. Calyx including the teeth about 6 mm. long, the teeth narrowly lanceolate, acuminate, apiculate, the margins ciliate, about 3 mm. long. Corolla tubular 7 to 8 mm. long, the teeth 5, narrowly ovate, blunt, their margins incurved, 2 mm. long or less, the tube plaited between the teeth, the teeth of the folds less than 1 mm. long, narrowly ovate, entire, acute. Filaments about 1.5 mm. long; anthers 1 mm. long. Capsule stalked, slightly exerted, the stalk broad, about 5 mm. long, the capsule about 4 mm. long, orbicular-ovate, margined, compressed, obtuse. Seed subglobose to ovoid, brown, minute, about 0.2 mm. in diameter.

LUZON, Province of Benguet, Kabayan (4443 *Merrill*) October 27, 1905. On damp, rocky banks, in open lands. Rare, altitude about 1,300 m.

Gentiana luzoniensis Merrill sp. nov. § *Chondrophylla*.

An erect simple or slightly branched annual 3 cm. high or less, the leaves similar, not imbricated, the stem and branches glandular. Leaves sessile, elliptical-ovate, acute or obtuse, glabrous, 6 mm. long or less, 3.5 mm. wide or less, the nerves few, obscure. Flowers white, solitary at the ends of the branches. Calyx about 4.5 mm. long including the teeth, the teeth lanceolate, acuminate, about 1.5 mm. long. Corolla 8 mm. long, tubular-campanulate, 5-lobed, the lobes ovate, acuminate, 1.5 to 2 mm. long, the tube plaited between the lobes, the teeth of the folds ovate, often slightly toothed, 1 mm. long or less. Filaments 4 mm. long; anthers 0.8 mm. long. Stigmas 1 to 1.5 mm. long, recurved. Capsule slightly exerted, stalked, narrowly obovoid, compressed, margined, about 5 mm. long. Seeds narrowly ovoid, acute, minutely reticulate, about 0.5 mm. long.

LUZON, District of Lepanto, Mount Data (4558 *Merrill*) November 4, 1905. On dry, open, grassy slopes in thin pine forests at about 2,100 m., rare.

GESNERIACEÆ.

CYRTANDRA Forst.

Cyrtandra villosissima Merrill sp. nov.

A shrub very densely ferruginous villous throughout with long soft hairs, the pubescence felted on the younger branches, inflorescence, petioles and under surface of the leaves. Branches brown, terete, the older ones less densely villous than the ultimate branches. Leaves thick, oblong-ovate to ovate-lanceolate, 11 to 20 cm. long, 3.5 to 8 cm. wide, narrowed above to the rather slender acuminate apex, and below to the acute or acuminate strongly inequilateral base, densely softly ferruginous villous throughout, paler beneath, the upper surface less densely pubescent than the lower, the margins dentate above, densely ciliate villous; nerves 12 to 14 on each side of the midrib; petioles densely felted villous, 4 cm. long or less. Cymes axillary, several flowered, about 3 cm. long, the bracts linear, 1 cm. long or less, densely felted villous like the rest of the inflorescence. Calyx lobes linear, 1.5 cm. long, 1 mm. wide, persistent, densely villous. Corolla about 18 mm. long, somewhat hirsute outside, tubular, subequally 5-lobed, the lobes orbicular-ovate, about 4 mm. long, pilose outside. Stamens 2, inserted at about the middle of the tube, included; filaments about 2 mm. long; anthers 2.5 mm. Ovary oblong, densely pilose; style pilose, included, 2-cleft; stigmas broadly elliptical-ovate. Disk cup-shaped, glabrous, 1 mm. long. Capsule oblong, about 1 cm. long, 4.5 mm. thick, hirsute. Seeds indefinite, oblong, about 0.3 mm. long, glabrous, brown.

MINDANAO, Lake Lanao, Camp Keithley (51 Mrs. Clemens) January, 1906. A very characteristic species, recognizable by its very dense, felted, ferruginous soft, villous pubescence, perhaps most closely related to *Cyrtandra mollis* DeVriese.

MONOPHYLLEA R. Br.

Monophyllea lowei C. B. Clarke in DC. Monog. Phan. 5 (1883) 183.

MINDANAO, District of Zamboanga, San Ramon (1565 Copland) December 11, 1904. In rocky gorges in forests at about 160 m.

No species of this Malayan genus has previously been reported from the Philippines, the above specimens differing from *Monophyllea lowei* in its somewhat smaller leaves, but I am unable to separate it by other characters, the original description of Clarke's species being rather short. Borneo.

PARABOEIA Ridl.

Paraboeia luzoniensis Merrill sp. nov.

Stems stout, 5 to 7 cm. long, somewhat floccose, gray. Leaves many, crowded, long petioled, elliptical-ovate to elliptical-obovate, membranous, 7 to 11 cm. long, 4 to 7 cm. wide, subentire, the apex broad, rounded, rarely somewhat acute, the base acute or subtruncate, often oblique, the upper surface glabrous or nearly so, the lower surface paler, more or less densely floccose pubescent; nerves 6 to 8 on each side of the midrib,

ascending; petioles 2 to 7 cm. long, somewhat pubescent. Cymes many, axillary, long peduncled, lax, glabrous, the peduncles 12 cm. long or less, slender, dichotomously branched above, the bracts and bracteoles linear to lanceolate, 5 mm. long or less, the pedicels slender, 1 cm. long or less. Flowers pale blue, 1.5 cm. in diameter. Calyx 5-cleft nearly to the base, the lobes linear, 3 to 3.5 mm. long, less than 1 mm. wide, glabrous. Corolla 5-lobed, the lobes ovate, rounded, about 4 mm. long, the tube short, broad. Stamens 2; filaments 4 mm. long; anthers 2 mm. long, much broader than long. Ovary glabrous; style subcapitate. Capsule glabrous, linear, 2 to 2.5 cm. long, dehiscing into 4 straight valves. Seeds numerous, narrow, acute, brown, 0.4 mm. long.

Luzon. Province of Cavite, Maragondong (4178 *Merrill*) July 30, 1905. Abundant locally on cliffs in ravines 100 to 400 m.

I have followed Ridley²³ in retaining *Paraboca* as a genus distinct from *Didymocarpus* Clarke (*Roettlera* Vahl.).

TRICHOSPORUM Don.

Trichosporum littorale Merrill sp. nov.

A scandent epiphyte, glabrous except the slightly pubescent branches and inflorescence, with opposite, orbicular-ovate to elliptical-ovate leaves, 3 cm. long or less, and terminal flowers about 5 cm. long. Branches gray, slender, terete, somewhat pubescent. Leaves coriaceous, 2 to 3 cm. long, 1.5 to 2.5 cm. wide, entire, the base broad, rounded or slightly cordate, the apex acute or obtuse; nerves obsolete; petioles slightly pubescent, about 2 mm. long. Flowers purplish, several at the end of each branchlet, the pedicels 1.5 to 2 cm. long, slightly pubescent. Calyx nearly 3 cm. long, cylindrical, somewhat inflated, glabrous or slightly ciliate at the apex, 5-toothed, the teeth ovate, acute or obtuse, about 3 mm. long. Corolla about 5 cm. long, inflated at the base, then narrowed, and inflated again above. Capsule unknown.

MINDANAO, District of Davao, Malita (647 *Copeland*) March 26, 1904. Growing on tree trunks over the beach along the seashore, characterized by its short, broad, somewhat cordate leaves and relatively large calyx.

Trichosporum ovatum Merrill sp. nov.

A scandent plant, apparently an epiphyte, with opposite, glabrous, fleshy, coriaceous, ovate, acute leaves 3 cm. long or less, the flowers fasciated at the apices of the branches, 3 to 3.5 cm. long. Branches slender, gray, somewhat pubescent with weak scattered hairs, emitting rootlets. Leaves opposite, 1.5 to 3 cm. long, 1.5 to 2 cm. wide, very thick, fleshy when fresh, acute, the base broad, rounded, entire, the nerves obsolete; petioles about 2 mm. long, slightly ciliate. Flowers fasciated, 5 or 6 at the end of each branchlet, the pedicels, calyx, and corolla uniformly hirsute outside with scattered hairs, the pedicels slender, about 7 mm. long. Calyx glabrous inside, cylindrical, 1 cm. long, subequally 5-toothed.

the teeth short, broad, obtuse, 1.5 mm. long or less. Corolla apparently purple, tubular, curved, slightly inflated above, contracted somewhat at the throat, about 3 cm. long, the lobes ovate, rounded, 5 to 6 mm. long. Stamens 4, slightly exerted, the anthers 2.5 mm. long. Ovary glabrous; style slightly pubescent below the stigma. Fruit unknown.

MINDANAO, Lake Lanao. Camp Keithley (316 Mrs. Clemens) February, 1906. Altitude about 800 m. A species probably of the section *Holocalyx*.

***Trichosporum copelandi* Merrill sp. nov.**

A scandent epiphyte, glabrous except the inflorescence, with opposite, oblong leaves 5 to 7 cm. in length, and axillary and terminal inflorescence, the flowers quite the same as in *Trichosporum ovatum*. Branches slender, gray, glabrous. Leaves coriaceous, 1.5 to 2.5 cm. long, the base rounded or obtuse, the apex acute, pale, somewhat shining, the nerves obsolete; petioles rugose, 4 to 5 mm. long. Peduncles axillary and terminal, solitary or fascicled, somewhat pilose, two or more flowered. Flowers purple, in size, shape, and pubescence quite the same as in *Trichosporum ovatum*. Capsules linear, 10 cm. long. Seeds wanting.

MINDANAO, District of Zamboanga, San Ramon (1619 Copeland) February 5, 1905. An epiphytic vine in forests along the river at about 200 m. A species apparently closely related to the preceding, similar in floral characters, but differing in its much larger, very differently shaped leaves, longer petioles, and glabrous branches, the inflorescence being also lateral as well as terminal.

***Trichosporum rubrum* Merrill sp. nov.**

A scandent epiphyte reaching a length of from 4 to 6 m., rather strongly hirsute pilose with pale often appressed hairs, the leaves lanceolate to oblanceolate, the flowers red. Branches gray, the older ones glabrous, the younger branchlets densely appressed hirsute-pilose. Leaves subcoriaceous, 4 to 8 cm. long, 1.5 to 2 cm. wide, pale beneath, the upper surface rather densely appressed hirsute-pilose, the lower surface densely so on the midrib and nerves, gradually narrowed below to the slender acute base, more abruptly narrowed above to the acute apex, the margins entire, hirsute; nerves about 4 on each side of the midrib, ascending; petioles 1 to 4 cm. long, densely appressed hirsute. Flowers fascicled in the upper axils, the pedicels hirsute, 2 cm. long or less. Calyx hirsute, deeply 5-cleft nearly to the base, the lobes linear, about 6 mm. long, 1.5 mm. wide, blunt. Corolla nearly 3 cm. long, bright red, tubular, slightly curved, densely uniformly hirsute pilose with pale 2 mm. long hairs, the lobes elliptical-ovate, rounded, 4 to 5 mm. long. Filaments glabrous; anthers broad, 2 mm. long. Disk truncate or obscurely toothed, glabrous, cup-shaped, 2 mm. long. Ovary glabrous. Old capsules pale, glabrous, linear, 8 cm. long, the seeds not seen.

Luzon, District of Lepanto, Mount Data (4581 Merrill) November 4, 1905. On mossy tree trunks in ravines at about 2,200 m.

HYDROPHYLLACEÆ.

ELLISIOPHYLLUM Maxim.

Ellisiophyllum reptans Maxim. Bull. Acad. Pétersb. 16 (1871) 223.

LUZON, Province of Benguet, Pauai (4738 *Merrill*) November 8, 1905. In the mossy forest at about 2,200 m. Japan.

This monotypic genus has previously been known only from Japan, and the discovery of the species in the Philippines is of special interest, especially in connection with the now known, strong, northern floristic element in the highlands of Northern Luzon. The identification has been made from the generic descriptions in Bentham and Hooker, Genera Plantarum, and in Engler und Prantl, Natürlichen Pflanzenfamilien, as the original description of the genus and species is not available in Manila.

BORRAGINACEÆ.

BOTHRIOSPERMUM Bunge.

Bothriospermum tenellum (Hornem.) Fisch. & Mey. Ind. Sem. (1835) 24;

Clarke in Hook. f. Fl. Brit. Ind. 4 (1883) 167. *Anchusia tenella* Hornem. Hort. Hafn. 1 (1813-1815) 176.

LUZON, Province of Benguet, Baguio (5774 *Elmer*) March, 1904. In waste places about old rice lands. An interesting addition to our knowledge of the northern element in the Philippine flora, Northern India to Manchuria, China, Formosa, and Japan.

TRIGONOTIS Stev.

Trigonotis philippinensis Merrill sp. nov.

An erect or somewhat spreading few branched herb 25 cm. high or less, with oblong-elliptical short acuminate or apiculate leaves, white flowers in terminal ebracteolate racemes, and glabrous tetrahedral shining nutlets. Branches more or less appressed hispid pubescent. Leaves coriaceous, 1 to 1.8 cm. long, 8 mm. wide or less, appressed hispid pubescent on both surfaces with scattered white hairs, the petioles 1 cm. long or less, the nerves obsolete. Racemes terminal, solitary, about 10 cm. long, appressed hispid pubescent, ebracteolate, the pedicels short, elongated to 5 or 6 mm. in fruit. Calyx nearly 3 mm. long, 5-cleft, the lobes narrowly ovate, acute, hispid, nearly 2 mm. long. Corolla white, 4 mm. long, the tube nearly 2 mm. long, the 5 lobes spreading, broadly obovate, rounded, the throat with 5 rather broad scales. Stamens 5, included, the filaments very short, the anthers oblong, about 0.8 mm. long. Ovary glabrous; style simple, slender, about 1 mm. long. Carpels 1, with 4 acute edges, black, glabrous, shining, about 1 mm. long, the scar small, basal.

LUZON, Province of Benguet, Pauai to Baguio (4700 *Merrill*) November 9, 1905. Growing on damp mossy cliffs just below the limits of the mossy forest at an altitude of about 1,900 m., rare.

An interesting addition to our knowledge of the northern element in the Philippine flora, no species of the genus having previously been reported from the Philippines, all which had been known being confined to the Asiatic continent, Japan, and the Luchu Archipelago.

VERBENACEÆ.

PREMNA Linn.

In F.-Villar's Novissima Appendix to the third edition of Blanco's Flora de Filipinas, 11 species of *Premna* are enumerated. Of these eleven species, but two are here enumerated under the same names as those used by F.-Villar, *Premna adenosticta* Schauer and *P. cumingiana* Schauer. From synonymy and other sources I have been able satisfactorily to reduce five species, *P. foetida* F.-Vill., non Reinw.; *P. pubescens* F.-Vill., non Blume; *P. vestita* Schauer; *P. tomentosa* F.-Vill., non Willd., and *P. mucronata* F.-Vill., non Roxb., while judging from the native names cited the species enumerated as *Premna viburnoides* Wall., is *P. nauseosa* Blanco. *Premna philippinensis* Turcz. is a species of *Vitex*, *V. turczaninowii* Merr.²⁴ *Premna gaudichaudii* Schauer is enumerated by F.-Villar, but is not credited to the Philippines, this with *P. marianarum*, the remaining species of Villar's list, should be excluded from the Philippine flora, unless at some future time material is collected that agrees with the descriptions of these species.

1. Calyx equally or subequally 4-toothed.
 2. A tree; leaves long acuminate, pale; corymbs densely stellate pubescent (1) *P. adenosticta*
 2. Scandent shrubs; leaves acute or short acuminate, dark when dry; corymbs glabrous or pubescent, never stellate pubescent.
 3. Leaves broadly elliptical-ovate, 10 to 20 cm. long; inflorescence 12 to 14 cm. in diameter, crisped pubescent (2) *P. membranacea*
 3. Leaves oblong, 5 to 9 cm. long; inflorescence 4 to 6 cm. in diameter, ferruginous pubescent, the pubescence not stellate or crisped (3) *P. oblongifolia*
1. Calyx subequally 5-toothed, or bilabiate, one lip entire and the other 2-toothed, or one lip 2-toothed and the other 3-toothed.
 2. Leaves ample, rufous or ferruginous stellate pubescent..... (4) *P. cumingiana*
 2. Leaves glabrous or pubescent, never stellate pubescent.
 3. Scandent; leaves pubescent beneath..... (5) *P. subscandens*
 3. Erect trees or shrubs.
 4. Leaves uniformly and usually densely pubescent beneath.
 5. Leaves 6 cm. long or less; petioles 5 mm. long or less..... (6) *P. depauperata*
 5. Leaves 10 to 20 cm. long; petioles 2 to 6 cm. long (7) *P. odorata*
 4. Leaves glabrous, or if pubescent only so on the nerves and midrib.
 5. Leaves 6 to 9 cm. long.
 6. Leaves coriaceous; inflorescence dense (8) *P. congesta*
 6. Leaves membranous; inflorescence rather lax (9) *P. nauseosa*
 5. Leaves 9 to 18 cm. long; inflorescence more or less lax.
 6. Leaves usually oblong or oblong-ovate, acute or obtuse; nerves 4 to 5, glabrous, or at least pubescent only in the axils beneath..... (10) *P. integrifolia*

²⁴ Govt. Lab. Publ. (1906), 35, 77.

6. Leaves ovate, acuminate; nerves 5 to 6, pubescent on both surfaces; corolla 3 mm. long.....(11) *P. nitida*

6. Leaves usually broadly ovate, acuminate; nerves 6 to 7, glabrous, or pubescent on the upper surface or on both; corolla 5.5 to 6 mm. long..(12) *P. subglabra*

- (1) **Premna adenosticta** Schauer in DC. Prodr. 11 (1847) 630; Miq. Fl. Ind. Bat. 2 (1856) 892; F.-Vill. Nov. App. (1883) 159; Vid. Phan. Cuming. Philip. (1885) 134; Rev. Pl. Vase. Filip. (1886) 209; Ceron Cat. Pl. Herb. (1892) 131.

PHILIPPINES (1230 *Cuming*) 1836-1840, cotype. LUZON, Province of Rizal, Bosoboso (2863 *Ahern's collector*) March, 1905; San Mateo (1122 *Ahern's collector*) May, 1904; Antipolo (435 *Ahern's collector*) February, 1904; Province of Camarines, Pasacao (103 *Ahern*) March, 1902. Endemic.

- (2) **Premna membranacea** Merr. Govt. Lab. Publ. 35 (1906) 65.

LUZON, Province of Rizal, Bosoboso (1165, 3102 *Ahern's collector*) June, 1904, June, 1905. T., *Alamag*. Endemic.

- (3) **Premna oblongifolia** Merr. l. c. 29 (1905) 48.

LUZON, Province of Benguet, Baguio (5990 *Elmer*) March, 1904; Province of Tayabas (Infanta) (816 *Whitford*) September, 1904. Endemic.

- (4) **Premna cumingiana** Schauer in DC. Prodr. 11 (1847) 634; Vidal, Cat. Pl. Prov. Manila (1880) 39; Rev. Pl. Vase. Filip. (1886) 209; Phan. Cuming. Philip. (1885) 134; F.-Vill. Nov. App. (1883) 159; Miq. Fl. Ind. Bat. 2 (1856) 778; Koorders Meded. 's Lands Plantent. 19 (1898) 559. *Premna cordata* Blanco, Fl. Filip. ed. 1 (1837) 489, non R. Br. *Premna tomentosa* Blanco, l. c., ed. 2 (1845) 342; ed. 3, 2 (1878) 269; F.-Vill. Nov. App. (1883) 159, non Willd. *Premna cardiophylla* Schauer, l. c. 638; Miq. Fl. Ind. Bat. 2 (1856) 900.

PHILIPPINES (778, 1280 *Cuming*) 1836-1840, cotypes. LUZON, Province of Rizal, San Mateo (1850 *Ahern's collector*) September, 1904; (112 *Merrill*) Decades Philip. Forest. Fl. coll. *Ahern's collector*, May, 1904, distributed as *Geunsia cumingiana*; Bosoboso (2676 *Merrill*) June, 1903; (3133 *Ahern's collector*) June, 1905; Province of Camarines, Pasacao (803 *Ahern*) 1902. MINDANAO, District of Davao (689 *Ahern*) June, 1901; (109 *DeVore & Hoover*) April, 1903.

A species known only from the Philippines and Celebes. *Premna cordata* Blanco, non R. Br. = *Premna tomentosa* Blanco, non Willd., although very imperfectly described by Blanco, is certainly referable to Schauer's species. Blanco's short description applies well to the specimens above cited, especially his expression "El involucro *universal* de la umbela, el de la *parcial* y el de la florecita, dos hojuelas alednadas," by "involucro" Blanco meaning the bracts and bracteoles. *Premna cardiophylla* Schauer, is only a new name for Blanco's *Premna cordata*, and is included by the former in his monograph under doubtful or not sufficiently known species. T., *Maguilac*; according to Blanco, *Malaapi*.

- (5) **Premna subscandens** Merrill sp. nov.

A scandent shrub, the leaves, branchlets, and inflorescence more or less pubescent, with subequally 5-toothed or obscurely 2-lipped calyces, the corollas 4-lobed. Branches light gray or brown, glabrous, obscurely angled, the lenticels few, the younger branchlets pubescent, sometimes densely so. Leaves ovate, membranous, 6 to 10 cm. long, 3 to 7 cm.

wide, entire or distantly obscurely toothed above, acuminate, the base broad, rounded or cordate, sometimes acute, thinly pubescent on both surfaces, more densely so beneath, often densely pubescent on the nerves and midrib, except the latter sometimes becoming glabrous or nearly so, shining, usually dark colored when dry; nerves 5 on each side of the midrib, somewhat prominent, the reticulations somewhat lax; petioles 1 to 4 cm. long, pubescent. Cymes terminating the branches and short lateral branchlets, many flowered, somewhat dense, 5 to 14 cm. across, all parts except the corollas uniformly densely softly grayish brown pubescent, the linear bracts 5 to 7 mm. long, densely pubescent, the bracteoles similar but much smaller. Flowers white or greenish, fragrant. Calyx densely softly pubescent, cup-shaped, 3 mm. long, 5-toothed, the teeth subequal, rounded or acute, 1 mm. long or less, or sometimes obscurely 2-lipped, one lip 2-toothed, the other 3-toothed. Corolla 5 mm. long, glabrous outside, villous within, 2 lipped, one lip ovate, entire, nearly 2 mm. long, the other coarsely 3-lobed, the lobes nearly equaling the entire lip. Stamens 4, didynamous; filaments 4 to 5 mm. long, villous below; anthers about 0.4 mm. long. Ovary glabrous; style 5.5 mm. long.

Luzon, Province of Rizal, Antipolo (449, 443 *Ahern's collector*) April, 1904; Bosoboso (1874 *Merrill*) April, 1903. Ticao (1095 *Clark*) May, 1904. T., *Alagabaguin*, *Alagabaguin*. V., *Uradgao*.

(6) ***Premna depauperata*** Merrill sp. nov.

An undershrub, 1 m. high or less, with short petioled, coriaceous oblong-ovate to elliptical-ovate, small leaves, densely ferruginous pubescent inflorescence and 5-toothed calyx. Branches terete, light brown, mostly densely ferruginous pubescent, lenticellate. Leaves 3 to 6 cm. long, 2 to 3.5 cm. wide, shining above, entire, the margins recurved, acute, the base broad, rounded-cordate, the upper surface sparingly strigose pubescent, the lower surface somewhat densely pubescent, glandular; nerves 4 to 5 on each side of the midrib, distinct beneath, anastomosing; petioles densely pubescent, 5 mm. long or less. Corymbs terminal, 4 to 5 cm. long, nearly as wide, densely ferruginous pubescent throughout, densely flowered, the lower bracts small, foliaceous, the upper and bracteoles linear. Calyx cup-shaped, nearly 3 mm. long, sparingly strigose pubescent, subequally 5-toothed, or obscurely 2-lipped with one 2-toothed and one 3-toothed lip. Corolla 4 mm. long, pubescent outside, villous on the throat within, 4-lobed, one lobe lip-like, exceeding the others. Stamens not exceeding the corolla lobes; anthers 0.5 mm. long; filaments glabrous. Ovary glabrous, ovoid or globose; style 3.5 mm. long. Fruit glabrous, ovoid, about 4 mm. long.

CULION (603 *Merrill*) December, 1902. On dry open grassy hillsides 30 to 40 m. above the sea. A species well characterized by its small size, small leaves, which are cordate at the base, and short petioles.

- (7) *Premna odorata* Blanco Fl. Filip. ed. 1 (1837) 489; ed. 2 (1845) 341; ed. 3, 2 (1878) 268; Schauer in DC. Prodr. 11 (1847) 638; Miq. Fl. Ind. Bat. 2 (1856) 900; Merr. Govt. Lab. Publ. 27 (1905) 68; l. c. 35 (1906) 76. *Premna vestita* Schauer, l. c. 631; Miq. l. c. 892; F.-Vill. Nov. App. (1883) 159; Vidal, Phan. Cuming. Philip. (1885) 134; Rev. Pl. Vasc. Filip. (1886) 209; Sinopsis, Atlas (1883) t. 7, f. E.; Merr. Forest. Bur. Bull. 1 (1903) 51. *Premna serratifolia* Blanco l. c. ed. 2 (1845) 269; ed. 3, l. c. *Premna tomentosa* F.-Vill. l. c. ex syn. Blanco, non Blume. *Premna foetida* F.-Vill., l. c. non Reinw., ex syn. Blanco.

PHILIPPINES (599 *Cuming*) 1836-1840, cotype of *Premna vestita* Schauer. LUZON, Manila (22, 3421 *Merrill*) April, 1902; November, 1903; (718 *Ahern*) April, 1901: Province of Bataan, Dinalupihan (1514 *Merrill*) January, 1903; Lamao River (2590 *Meyer*) February, 1905; Mariveles (748, 780 *Ahern*) January, 1902: Province of Pampanga (37 *Parker*) May, 1904: Province of Rizal, Antipolo (24 *Merrill*) Decades Philip. Forest Fl., coll. *Ahern's collector*, February, 1904: Province of Tayabas, Lucena (2892 *Merrill*) June, 1903: Province of Union, Bauang (5561 *Elmer*) February, 1904: Province of Benguet, Sablan (6154 *Elmer*) April, 1904. MINDORO, Baco (1218 *Merrill*) January, 1903. GUMARAS (235 *Gammill*) January, 1904.

Premna vestita is placed by Schauer in the section with 4-toothed calyces, but in two specimens of *Cuming's* No. 599 in our herbarium, on which number the species was based, the calyces are distinctly 5-toothed. This is certainly the most abundant and widely distributed species of the genus in the Philippines, and is the one utilized by the natives as noted by Blanco. Blanco's description applies very closely, and I am of the opinion that there can be no doubt as to the correctness of the identification. *Premna serratifolia* Blanco is reduced to *P. odorata*, as Blanco states that the species can be distinguished from the latter only by the serrate leaves. Nos. 1218 and 3421 *Merrill* and No. 37 *Parker* show this character, but no other characters on which I am able to separate this form as a distinct species. As a result of the reduction of *Premna serratifolia* to *P. odorata*, I have also so reduced *P. foetida* F.-Vill., to which F.-Villar referred *P. serratifolia* Blanco. For the same reason F.-Villar's *Premna pubescens* is reduced, he having referred *Premna odorata* Blanco to Blume's species. From F.-Villar's remark, however, it is possible that he referred specimens of *Premna cumingiana* to *Premna pubescens*. Abundant and widely distributed in the Philippines. T., *Alagao*. V., *Adgao*.

- (8) *Premna congesta* Merrill sp. nov.

A shrub or small tree with small ovate to elliptical-ovate nearly glabrous leaves 2.5 to 7 cm. long, and densely flowered terminal cymes 3 to 5 cm. in diameter, the calyx 2-lipped, the corolla 4-lobed. Branches terete lenticellate, light gray or brownish, becoming quite glabrous, the younger parts with few scattered, weak hairs. Leaves subcoriaceous, 1.5 to 4.5 cm. wide, shining and glabrous above, or the nerves somewhat pubescent, paler beneath and minutely punctulate, glabrous, or the axils of the nerves barbellate, and sometimes the midrib somewhat pubescent, entire or somewhat crenate above, acute or obtuse, rarely very short acuminate, the base rounded: nerves about 4 on each side of the midrib, somewhat prominent; petioles slender, 1 cm. long or less, somewhat pubescent. Cymes pubescent with few weak, scattered hairs, the branches spreading or ascending, the bracts and bracteoles linear to lanceolate, 1.5 to 3 mm.

long, somewhat pubescent, the short pediceled flowers subtended by about 3 linear bracteoles. Calyx glabrous, cup-shaped, 2 mm. long, 2-lipped, one lip coarsely 2-toothed, the other truncate, subentire or minutely 2 to 3 toothed. Corolla 4 to 4.5 mm. long, tubular, 4-lobed, three lobes equal, ovate, about 1.5 mm. long, obtuse, the fourth somewhat larger, glabrous outside, villous within. Stamens 4, didynamous; anthers about 0.5 mm. long. Ovary glabrous; style slender, nearly 4 mm. long.

LUZON, Province of Rizal, Bosoboso (3281 *Ahern's collector*) August 6, 1905. T., *Alacaas*. According to the native collector, the flowers are reddish in color.

- (9) ***Premna nauseosa*** Blanco Fl. Filip. ed. 1 (1837) 489; Schauer in DC. Prodr. 11 (1847) 638; Miq. Fl. Ind. Bat. 2 (1856) 900; Vidal, Phan. Cuming. Philip. (1885) 134; Rev. Pl. Vasc. Filip. (1886) 209; Merrill, Govt. Lab. Publ. 27 (1905) 68. *Premna mucronata* F.-Vill. Nov. App. (1883) 159; Schauer, l. c. 635, in part; Miq. Fl. Ind. Bat. 2 (1856) 897, in part, with reference to No. 1367 *Cuming*. *Premna leucostoma* Naves, Fl. Filip. ed. 3, pl. 346, non Miq.

PHILIPPINES (1367 *Cuming*) 1836-1840, in Herb. Bureau of Science. LUZON, Province of Zambales, Subic (2191, 2915 *Merrill*) May, 1903; Province of Bataan, Mount Mariveles (387 *Whitford*) June; (6841 *Elmer*) November; (769, 1271, 1275, 1613 *Borden*) May to August, 1904; Province of Tarlac (705 *Ahern*) May, 1901; Province of Rizal, Antipolo (24 *Guerrero*) June, 1903; (1682 *Merrill*) March, 1903.

A species widely distributed in Luzon, usually somewhat pubescent, in which character Blanco's short and imperfect description does not apply. It is, however, the only species at present known to me that has a somewhat disagreeable odor, the character on which Blanco's specific name was based. This species is enumerated by Schauer as doubtful, or not sufficiently known. According to Vidal, Nos. 693 and 1353 *Cuming* also represent it, and it is possible that No. 1451 *Cuming* is also the same, a fragment of the latter number existing in our herbarium. From the native names cited, *Premna viburnoides* Vidal, Cat. Pl. Prov. Manila (1880) 134; F.-Vill. Nov. App. (1883) 159, non Wall., should be referred to this species, *Premna nauscosa* being quite universally known to the Tagalogs as *Molauain aso*, literally "dog molave," *Molauain* or *Molave* being the Tagalog name for the valuable timber trees of the genus *Vitex*, the timber of *Premna nauseosa* being considerably utilized for certain constructions, and somewhat resembling *Molave*.

- (10) ***Premna integrifolia*** Linn. Mant. (1767) 252; Clarke in Hook. f. Fl. Brit. Ind. 4 (1885) 574; Forbes & Hemsl. Journ. Linn. Soc. Bot. 26 (1890) 255; Schum. und Lauterb. Fl. Deutsch. Schutz. Südsee (1901) 523.

LUZON, Province of Camarines, Pasacao (141, 138, 801 *Ahern*) 1902; Province of Tayabas (Infanta) (760 *Whitford*) September, 1904; Province of Zambales, Subic (2199 *Merrill*) May, 1903; Province of Principe, Baler (1083 *Merrill*) October, 1902; Province of Bataan, Lamao River (2043 *Borden*) October, 1904. MINDORO, Calapan (899 *Merrill*) April, 1903; Baco (1173 *Merrill*) January. Apo Island, Mindoro Strait (427 *Merrill*) December, 1902. MINDANAO, District of Davao (350 *Copeland*) March, 1904; (138, 226 *DeVore & Hoover*) April, 1903.

A species apparently confined to the seashore or near it, widely distributed in the Philippines. Tropical Asia to Malaya, New Guinea and Polynesia. T., *Alaquo*, *Alaquo dagat*. (*Dagat* in Tagalog = ocean).

- (11) **Premna nitida** K. Sch. Fl. Kaiser Wilhelms Land (1889) 120; Sch. und Lauterb. Fl. Deutsch Schutz. Südsee (1901) 523; Usteri, Beitr. Kennt. Philip. Veg. (1905) 123.

This species is reported from Negros and Panay by Usteri, but I have seen no Philippine specimens to which Schumann's description applies. The species is known from New Guinea and doubtfully from Celebes.

- (12) **Premna subglabra** Merrill sp. nov.

A tree 7 to 12 m. high, becoming nearly glabrous, the slightly pubescent calyces obscurely 2-lipped, one lip entire or very obscurely 2 to 3 toothed, the other 2-toothed. Branches light gray or brown, glabrous, terete, the branchlets reddish brown, obscurely angled, deciduously short-pubescent, becoming glabrous or nearly so. Leaves ovate to oblong-ovate, chartaceous, entire, short acuminate, the base broad, rounded, subtruncate to somewhat cordate, or sometimes acute, shining, glabrous above except the somewhat pubescent midrib and nerves, paler beneath, obscurely minutely glandular punctate, glabrous, or the nerves and midrib very slightly pubescent, the axils sometimes barbellate; nerves prominent beneath, ascending, 6 to 7 on each side of the midrib, the reticulations distinct; petioles 2 to 7 cm. long, usually pubescent on the upper surface, otherwise glabrous. Corymbs terminal, spreading, many flowered, 9 to 14 cm. long, 10 to 20 cm. wide, more or less ferruginous pubescent throughout, the ultimate branchlets rather densely so, the bracts linear, 5 to 8 mm. long, the bracteoles similar but much smaller. Flowers greenish. Calyx slightly pubescent, becoming glabrous, cup-shaped, 2 mm. long. Corolla 5.5 to 6 mm. long, glabrous outside, villous within, 2-lipped, one lip short, entire or retuse, the other 3-lobed, the middle lobe much exceeding the lateral ones. Stamens slightly exceeding the corolla lobes; filaments villous below; anthers about 0.6 mm. long. Ovary glabrous; style 4 to 5 mm. long. Fruit globose, dark purple when mature, glabrous, about 3 mm. in diameter.

LUZON, Province of Tayabas, Atimonan (670, 671 *Whitford*) August 19, 1904. MINDORO, Pinamalayan (2165 *Merrill*) May, 1903; Pola (2243 *Merrill*) May, 1903. In forests along streams below 100 m. T., *Alagao*.

LABIATÆ.

COLEUS Lour.

Coleus macranthus Merrill sp. nov. § *Solenostemonoides*.

An erect branched herb 1 to 2 m. high, more or less glandular ferruginous puberulent, with long petioled, ovate to oblong-ovate, rather strongly dentate leaves, narrow many flowered panicles, the flowers pure white to purple, often 2 cm. long. Branches brown when dry, densely glandular puberulent to nearly glabrous. Leaves membranous, 4 to 15 cm. long, 3 to 7 cm. wide, the base often broad and subtruncate, sometimes acute, decurrent, the apex short acuminate, the margins entire

near the base, above prominently and regularly dentate, dull, the nerves and midrib on both surfaces usually puberulent, paler beneath and with numerous small punctate glands; nerves about 10 on each side of the midrib, prominent; petioles 2 to 7 cm. long. Panicles narrow, 15 to 25 cm. long, the branches verticillate, spreading, branched, glandular puberulent, 2 cm. long or less; bracts deciduous, ovate, acuminate, 7 to 8 mm. long. Calyx glabrous within, glandular puberulent outside, in fruit about 10 mm. long, the upper lip broadly ovate, acute or slightly acuminate, flat, about 4 mm. long, the lateral teeth ovate to elliptical, rounded, about 2.5 mm. long, the lower lobe oblong, 7 mm. long, 2 toothed, the teeth lanceolate or linear lanceolate, acuminate, about 1.5 mm. long. Corolla 1.5 to 2 cm. long, slightly puberulent, the lower lip nearly 1 cm. long, the upper short, 3-lobed. Nutlets ovoid, 1.7 mm. long, smooth, glabrous, shining.

Luzon, District of Lepanto, Mount Data (4502, 4483, 4505 *Merrill*) November, 1905. In the mossy forest at about 2,200 m., abundant.

Var. *crispipila*, n. var.

Similar to the species, flowers white, the inflorescence puberulent and with many crisped ferruginous hairs, the leaves also with few or many crisped hairs on both surfaces and margins.

Luzon, Province of Benguet, Suyoc to Pauai (4780 *Merrill*) November, 1905. On high ridges in the mossy forest at about 2,200 m.

PLECTRANTHUS L'Her.

***Plectranthus diffusus* Merrill sp. nov.**

A much branched, diffuse, lax herb 1.5 to 2.5 m. high with many flowered narrow lateral panicles forming large compound terminal leafy panicles, more or less pubescent throughout with pale or ferruginous hairs. Branches angled, gray or brownish, pubescent. Leaves ovate to oblong-ovate, 2 to 6 cm. long, 1 to 3 cm. wide, membranous, acuminate, the base acute, entire below, above rather prominently serrate-dentate, with scattered crisped hairs on both surfaces; nerves, 5 to 6 on each side of the midrib; petioles 1 cm. long or less. Branchlets of the inflorescence opposite, several flowered, 1.5 cm. long or less, the bracts foliaceous, gradually reduced upwards. Calyx somewhat hirsute, about 2 mm. long, subequally 5-toothed, the teeth acute, less than 0.5 mm. long. Corolla deep purplish blue, 5 to 6 mm. long, straight, somewhat pubescent outside, the limb gibbous, 2-lipped, the upper lip short, 3-lobed, the lower one entire about 3 mm. long. Stamens free, filaments very slightly pubescent below. Calyx in fruit scarcely accrescent, reflexed. Nutlets ovoid or elliptical, glabrous, smooth, about 1 mm. long.

Luzon, District of Lepanto, Mount Data (4554 *Merrill*) November 4, 1905. In damp shaded ravines along streams at about 2,000 m.

SOLANACEÆ.

SOLANUM Linn.

Solanum inaequilaterale Merrill sp. nov.

An unarmed, more or less stellate pubescent shrub 2 to 3 m. high, with alternate subentire or undulate leaves and extra-axillary cymes. Branches light gray, glabrous, the younger ones black when dry, more or less densely stellate pubescent. Leaves membranous or submembranous, oblong-ovate, acute or acuminate, the base acute or obtuse, inequilateral, the lamina on one side of the midrib extending somewhat down the petiole, the margins entire or somewhat undulate, glabrous above, more or less densely stellate pubescent beneath, the young leaves very densely so, the older ones subglabrous; nerves 5 to 6 on each side of the midrib; petioles 2 to 3 cm. long. Cymes peduncled, stellate pubescent, densely or laxly flowered, about 5 cm. long. Calyx densely stellate pubescent, about 4 mm. long, subtruncate or obscurely 5-toothed. Corolla pale purple, 11 mm. long, stellate pubescent outside, the tube 2 mm. long, the 5 lobes oblong to oblong-lanceolate, acute, about 3 mm. wide. Stamens 5, oblong, about 5 mm. long. Ovary 2-celled, glabrous or slightly pubescent at the apex, the style glabrous, about 6 mm. long. Fruit globose, glabrous, shining, bright red when mature, about 7 mm. in diameter, the calyx not enlarged. Seed 2 to 2.5 mm. in diameter. Inflorescence becoming nearly or quite glabrous in fruit.

LUZON, Province of Benguet, Suyoc to Pauai (4807 *Merrill*) November 7, 1905. Border of the mossy forest on high ridges at about 2,000 m. No. 6204 *Elmer*. from Sablan, the same province, appears to be a form of this species with thin, less pubescent leaves and longer, lax cymes.

SCROPHULARIACEÆ.

ALECTRA Thumb.

Alectra dentata (Benth.) O. Kuntze *Rev. Gen. Pl.* (1891) 458. *Hymenospermum dentatum* Benth. in Wall. *Cat.* 3963. *Alectra indica* Benth. in DC. *Prodr.* 10 (1846) 339; Hook. f. *Fl. Brit. Ind.* 4 (1884) 297; Forbes & Hemsl. *Journ. Linn. Soc. Bot.* 26 (1890) 201. *Melasma indica* Wettst. in Engl. und Prantl. *Nat. Pflanzenfam.* 4 (1891) 3B: 91.

LUZON, Province of Benguet, Baguio to Ambuklao (4350 *Merrill*) October 24, 1905. Dry open grass lands in thin pine forests at about 1,500 m. Not previously reported from the Philippines.

Southern China to the mountains of Burma, India, and Mauritius.

EUPHRASIA Linn.

Euphrasia borneensis Stapf, *Trans. Linn. Soc. Bot.* 11. 4 (1894) 210. *pl.* 16. f. 1-16.

LUZON, Province of Benguet, Suyoc to Pauai (4720, 4722 *Merrill*) November 7, 1905. On dry open grassy ridges at about 2,200 m.

No species of the genus has been previously reported from the Philippines. *Euphrasia borneensis* having previously been known only from the type locality, Mount Kanabalu, British North Borneo. The specimens cited above differ from *Euphrasia borneensis* as described by Stapf in some slight minor characters, but

these I believe are scarcely sufficient to warrant the distinguishing of the Philippine plant as a distinct species. *Gaultheria borneensis* Stapf, also originally described from Mount Kinabalu specimens, and later reported from the Philippines by Rendle,²⁵ was also found near Pauai (4796 *Merrill*).

SOPUBIA Hamilt.

Sopubia trifida Hamilt. in D. Don Prodr. Fl. Nepaul. (1802) 88; Hook. f. Fl. Brit. Ind. 4 (1884) 302; Benth. in DC. Prodr. 10 (1846) 522; Forbes & Hemsl. Journ. Linn. Soc. Bot. 26 (1890) 202.

LUZON, Province of Benguet, Baguio (6518 *Elmer*) June, 1904. On grassy hillsides in thin pine forests at an altitude of about 1,500 m. Flowers yellowish, the throat pink or purplish.

No representative of the genus has previously been reported from the Philippines, the above species extending from southern China to British India and Ceylon.

VANDELLIA Linn.

Vandellia grandiflora Merrill sp. nov.

An erect or spreading, simple or slightly branched, more or less hirsute herb 10 cm. high or less, the calyx teeth 5, equal, less than half as long as the calyx tube, the corolla about 12 mm. long. Branches, leaves, petioles, pedicels, and calyces sparingly hirsute with scattered white hairs. Leaves opposite, ovate to oblong-ovate, 0.5 to 1.5 cm. long, short petioled, acute, the base obtuse, the margins usually coarsely serrate. Flowers solitary, pediceled, axillary, the pedicels 1.5 to 2 cm. long. Calyx in anthesis oblong, 6 mm. long, not keeled or winged, reticulate, equally 5-toothed, the teeth lanceolate, acuminate, about 2.5 mm. long. Corolla pale blue or purplish, the tube cylindrical, enlarged above, upper lip broad, about 4 mm. long, cleft at the apex, the lower lip 6 to 7 mm. long, 3-lobed, the middle lobe the largest. Stamens 4, the two posterior included, the two anterior longer and prominently appendaged near the base of the filaments. Ovary and style glabrous. Fruiting calyx about 8 mm. long, oblong, the teeth scarcely longer than in anthesis. Capsule oblong, glabrous, tipped by the style, equaling or slightly shorter than the calyx. Seeds many, flattened, ovate, about 0.5 mm. in diameter.

LUZON, District of Lepanto, Mount Data (4572 *Merrill*) November 4, 1905: Province of Benguet, Baguio to Ambuklao (4359 *Merrill*) October 24, 1905; Suyooc to Pauai (4735 *Merrill*) November 7, 1905. On dry open grassy slopes in thin pine forests 1,600 to 2,000 m.

BIGNONIACEÆ.

NYCTICALOS Teysm. et Binn.

Nycticalos cuspidatum (Blume) Miq. Ann. Mus. Bot. Lugd. Bat. 3 (1867) 249, t. 8. f. B. *Tecoma cuspidata* Blume, Rumphia 4 (1848) 35.

PALAWAN, Puerto Princesa (254 *Bermejós*) December, 1905. In forests; flowers yellow. Celebes and the Moluccas.

An undetermined species of this genus has previously been reported from Luzon

²⁵ *Journ. Bot.* (1896) 34, 355.

by Ceron;²⁰ No. 3395 *Vidal*, but our specimen cited does not appear to be sufficiently distinct from Miquel's species. The Palawan specimens differ from *Nycticalos cuspidatum* as described by Miquel in having shorter petioles, and slightly larger calyces, while the leaves are acute, scarcely cuspidate.

RADERMACHERA Hassk.

Radermachera biternata Merrill sp. nov.

A small tree about 8 m. high, quite glabrous throughout, with bipinnate leaves, elliptical-ovate, usually obtuse leaflets and few flowered panicles much shorter than the leaves, the flowers about 5.5 cm. long. Branches gray or brownish, the younger parts black when dry. Leaves 20 cm. long or less, opposite, biternate; leaflets 5 to 9 cm. long, 2.5 to 5 cm. wide, subcoriaceous, shining, the apex rounded obtuse or broadly acute, the base acute, the margins revolute; primary nerves about 10 on each side of the midrib, rather distinct beneath, the reticulations netted, rather close; petiolules of the lateral leaflets 1.5 cm. long or less, of the terminal ones about 3 cm. long. Inflorescence much reduced, the rhachis 3 cm. long or less, the branches very short or none. Flowers few. Calyx about 1 cm. long, closed in bud, in anthesis unequally 3-lobed, the lobes short, acute. Corolla 5 to 5.5 cm. long, the tubular portion less than 1 cm. long, about 3.5 mm. in diameter, enlarged-ventricose above, the lobes about 1.5 cm. long, rounded, entire, glabrous pink or pale purple. Stamens about 2 cm. long. Style 2.5 cm. long. Fruit unknown.

CULION (568 *Merrill*) December 24, 1902. BUSUANGA (3491 *Curran*) December 31, 1905, both of these islands belonging to the Calamianes Group, between Mindoro and Palawan.

A species growing in open grassy valleys slightly above the sea level well characterized by its much reduced inflorescence and large flowers.

RUBIACEÆ.

GALIUM Linn.

Galium philippinense Merrill sp. nov. *G. ciliare* Elm. Leaf. Philip. Bot. (1906) 4, non Hook.

A tufted erect or diffuse, much branched perennial, more or less ciliate-pilose herb 10 to 30 cm. high, the leaves in whorls of fours, 3-nerved from the base, the cymes short, lateral, few flowered. Branches 4-angled, more or less pilose when young, but not hispid, becoming nearly glabrous. Leaves elliptical-ovate, sessile or nearly so, 5 to 8 mm. long, 2 to 4 mm. wide, acute at both ends, more or less ciliate-pilose with long scattered white hairs, 3-nerved. Cymes about 1 cm. long, mostly 5-flowered, the peduncles 1 cm. long or less, glabrous or nearly so, the bracts foliaceous, oblong-lanceolate, about 2 cm. long. Flowers white, corolla rotate, 0.8 mm. long, 4-lobed, the lobes ovate, obtuse. Calyx tube ovoid. Fruit about 1 mm. in diameter, glabrous or somewhat rugose when dry.

²⁰ *Cat. Pl. Herb.* (1892), 127.

LUZON, Province of Benguet, Mount Santo Tomas (6557 *Elmer*) June, 1904; District of Lepanto, Mount Data (4531 *Merrill*) November, 1905. On dry grassy slopes in thin pine forest above 2,000 m. A second Philippine species is represented by No. 6592 *Elmer* and No. 4414 *Merrill* from Benguet Province. From the descriptions available, and without access to authentic material, I am unable to separate these two numbers from the Australian *Galium gaudichaudii* DC., as determined by Mr. Elmer.

HEDYOTIS Linn.

Hedyotis microphylla Merrill sp. nov.

An erect glabrous shrub or undershrub 1 to 2 m. high, with small, obscurely nerved, usually ovate-lanceolate leaves 1 to 3 cm. long, and axillary and terminal peduncled, usually 3-flowered cymes, the capsules 2-celled, septicial. Branches slender light gray, quadrangular. Leaves submembranous dull or slightly shining, somewhat paler beneath, 5 to 8 mm. wide, the base acute, the apex acute or slightly acuminate, often blunt; nerves very obscure, nearly obsolete, about 3 on each side of the midrib; stipules short, 3-partite, the lobes narrow. Cymes 1 to 2 cm. long, the bracts foliaceous often 3 mm. long, the pedicels about 5 mm. long. Flowers white. Calyx 3 mm. long, the tube ovoid 1.5 mm. long, the lobes 4, persistent, oblong ovate, obtuse, about 1.5 mm. long. Corolla 5 mm. long, glabrous outside, the throat and base of the lobes villous inside, the tube broad, the lobes recurved, oblong ovate or ovate, acute, about 2 mm. long. Filaments nearly 2 mm. long; anthers narrowly oblong, 1.5 mm. Ovary 2-celled, each few ovuled; style 2.5 mm. long; stigma 2-cleft. Capsule elliptical-ovoid about 4 mm. long crowned by the calyx lobes, 2-celled, each cell with 2 or 3 flattened elliptical seeds about 1.5 mm. long, at length septicially dehiscent from the apex.

LUZON, Province of Benguet, Pauai to Baguio (4693 *Merrill*) November, 1905; Suyoc to Pauai (4736 *Merrill*) November, 1905. On high ridges in the mossy forest 2,000 to 2,300 m.

PAVETTA Linn.

Pavetta dolichostyla Merrill sp. nov.

A small shrub about 2 m. high with membranous slightly pubescent or nearly glabrous leaves and peduncled terminal cymes, the corolla tubes 3 cm. long, the exerted portion of the styles 4 to 4.5 cm. long. Branches greenish, glabrous, the stipules glabrous, narrowly ovate, 6 to 7 mm. long, acuminate, deciduous. Leaves 20 to 25 cm. long, 7 to 9 cm. wide, oblong oblanceolate to broadly oblong-lanceolate, gradually narrowed below to the acute or acuminate base, and above to the acuminate apex, shining above, beneath paler and puberulent on the midrib and lateral nerves; nerves 12 to 14 on each side of the midrib, curved, anastomosing, the reticulations lax; petioles 1 to 2.5 cm. long, pubescent. Cymes terminal, pubescent, about 3 from each branchlet, few flowered, the peduncles 1.5 cm. long, subtended by broad bracts, the upper bracts and bracteoles linear to linear-lanceolate. Pedicels pubescent, 3 to 4 mm. long. Calyx

cup-shaped, about 2.5 mm. long, pubescent with short spreading hairs, 4-toothed, the teeth acute, 0.5 mm. long. Corolla slender, glabrous, white, 3 cm. long, the lobes spreading, oblong-lanceolate to oblong-ob lanceolate, obtuse, 10 mm. long, 3 to 3.5 mm. wide. Anthers linear, 5 to 6 mm. long, spirally twisted when dry. Exserted portion of the style slender, glabrous 4 to 4.5 cm. long.

MINDORO, Bongabong River (3714 *Merritt*) March 21, 1906. In forests, river valley near sea level. A species well characterized by its long corolla tubes and very long exserted styles.

PSYCHOTRIA Linn.

Psychotria crispipila Merrill sp. nov.

A shrub 3 to 4 m. high with elliptical-ovate leaves which are prominently nerved and rather densely fulvous pubescent beneath with crisped hairs, the flowers crowded in dense subcapitate cymes on 2.5 to 4 cm. long terminal peduncles. Branches, petioles, and inflorescence also rather densely fulvous pubescent with crisped hairs. Leaves 7 to 10 cm. long, 3 to 5 cm. wide about equally narrowed to both the acute apex and base, coriaceous, glabrous above; nerves 9 to 11 on each side of the midrib, obscure above, prominent beneath, parallel, anastomosing near the margin, the reticulations obscure; petioles 1 to 1.5 cm. long; stipules caducous. Peduncles 2 or 3 from each branchlet. Flowers white, sessile or short pediceled. Calyx 3 to 4 mm. long obscurely 4-toothed or subtruncate, fulvous pubescent with crisped hairs especially on the margin. Corolla 5 mm. long glabrous outside, the throat villous within, 4-cleft to or below the middle, the lobes oblong-ovate, obtuse, 2 to 3 mm. long. Filaments and anthers each about 1 mm. long, the latter elliptical-oblong. Ovary 2-celled, each cell with one ascending ovule; style about 2 mm. long. Fruit unknown.

Luzon, District of Lepanto, Mount Dana (4490 *Merritt*) November, 1905. In the mossy forest at 2,200 m.

Related to *Psychotria bataanensis* Elmer, differing from that species in its elongated peduncles, densely crisped fulvous pubescent branches, petioles, under surface of its leaves and inflorescence. The leaves in the present species are always acute at the base, while in *P. bataanensis* they are narrowly cordate or auriculate.

CAPRIFOLIACEÆ.

LONICERA Linn.

Lonicera philippinensis Merrill sp. nov.

A scandent glabrous or nearly glabrous shrub 2 to 3 m. high, with 2-lipped corollas about 1.5 cm. long. Branches dark brown, glabrous, shining obscurely angled, slender, the young parts sparingly hirsute. Leaves narrowly oblong-ovate, entire, acute, the base broad, truncate or subcordate, 2.5 to 4 cm. long, 1 to 2 cm. wide, coriaceous, shining above, quite glabrous or sparingly hirsute on the midrib on both surfaces; nerves about 5 on each side of the midrib, the reticulations distinct;

petioles about 5 mm. long, rugose, sparingly hirsute, becoming glabrous. Flowers white, turning yellowish in age, faintly odorous, in pairs in the upper axils, nearly sessile. Calyx 4 mm. long, ovoid, glabrous, the teeth ovate, acute, 5 mm. long, slightly hirsute-ciliate, the bract linear, glabrous or nearly so, about 3 mm. long. Corolla glabrous outside, hirsute inside, the tube about 7 mm. long. Anthers oblong, 4 mm. long; filaments hirsute. Ovary 3-celled; style about 13 mm. long, slender, hirsute except just below the stigma. Fruit subglobose or ovoid, glabrous, black when mature, 5 to 6 mm. in diameter; seeds few, 2 or 3, about 4 mm. long.

Luzon, Province of Benguet, Pauai (4775 Merrill) November 8, 1905. In thickets, border of mossy forest at about 2,200 m.

A species of the § *Nintooa*, subsect. *Breviflorae*, apparently most closely related to *Lonicera glabrata* Wall., of the Himalayan region, and quite distinct from the only other known Philippine species of the genus, *L. rehderi* Merr., which is also known only from the same province as is the present species.

CUCURBITACEÆ.

ZANONIA Linn.

Zanonia philippinensis Merrill sp. nov.

Scandent in large trees reaching a height of from 30 to 50 m. Branches rather slender, striate, glabrous, grayish brown. Tendrils glabrous 8 to 10 cm. long or more. Leaves ovate, the base broad, somewhat cordate, coriaceous, glabrous, shining on both surfaces, paler beneath, the apex acute, 15 to 24 cm. long, 10 to 12 cm. wide, 3-nerved from the base, the lateral nerves prominent, few, distant; petioles 2 to 3.5 cm. long. Flowers unknown. Fruit subglobose, brown, glabrous, somewhat shining, the pericarp brittle when dry, about 20 cm. in diameter. Seeds indefinite, elliptical, flattened, 2.5 cm. long, 1.5 cm. wide, wings membranous, surrounding the seed, each about 6 cm. long, 4 cm. wide, the base entire, curved, the apex irregularly lobed or toothed.

MINDANAO, Lake Lanao, Camp Keithley (324 Mrs. Clemens) February, 1905. A species evidently related to the Malayan *Zanonia macrocarpa* Blume, differing from the latter in its cordate leaves, smaller seeds which have much wider and somewhat longer wings than in Blume's species. Of this genus, *Zanonia indica* Linn., has been reported from the Philippines by F. Villar, but his record has never been verified.

CAMPANULACEÆ.

PRATIA Gaud.

Pratia begonifolia Lindl. Bot. Reg. t. 1373; Clarke in Hook. f. Fl. Brit. Ind. 3 (1881) 422; Forbes & Hemsl. Journ. Linn. Soc. Bot. 26 (1889) 2.

Luzon, Province of Benguet, Sablan (6201 Elmer) April, 1904; Baguio to Ambuklao (4369 Merrill) October 24, 1905. Growing on steep damp banks in ravines. Japan to Central and Southern China, Formosa, Eastern India, and Malaya.

No species of the genus previously reported from the Philippines.

WAHLENBERGIA Schrad.

Wahlenbergia bivalvis Merrill sp. nov.

An erect, glabrous, lax, branched, annual herb 20 to 40 cm. high with linear or linear-lanceolate entire leaves and solitary, long peduncled, blue flowers, the capsule 2-celled, 2-valved at the apex inside the persistent calyx teeth. Branches slender, terete. Leaves 1.5 to 3 cm. long, 1 to 1.5 mm. wide, acuminate, sessile or the basal ones petioled and sometimes sparingly pilose, the margins thickened, the lateral nerves obsolete. Peduncles solitary, slender, 10 cm. long or less. Calyx glabrous, 5 mm. long, the tube 3 mm. long, oblong-ovoid, the lobes 5, erect, linear-lanceolate, acute, 2 mm. long. Corolla blue, campanulate, about 7 mm. long, 5-lobed, the tube nearly 3 mm. long, the lobes oblong, acute, about 2 mm. wide. Stamens free; anthers narrow, 2 mm. long. Ovary inferior, 2-celled; style nearly 4 mm. long; stigma broadly lobed. Capsule membranous, oblong, 6 mm. long, 3 mm. in diameter, 2-celled, 2-valved at the apex inside the persistent erect calyx teeth, the apex convex, subconical. Seeds indefinite, elliptical-oblong, glabrous, 0.5 mm. long.

Luzon, Province of Benguet, Mount Tonglon (Santo Tomas) (4811 *Merrill*) November 12, 1905; Baguio to Ambuklao (4361 *Merrill*) October 24, 1905; District of Lepanto, Mount Dana (4559 *Merrill*) November 4, 1905.

A species apparently distinct from *Wahlenbergia gracilis* A. DC., especially in its 2-celled, 2-valved capsules, growing on dry open grassy slopes in thin pine forests 1,600 to 2,100 m., widely distributed but not abundant.

COMPOSITE.

AINSLIAEA DC.

Ainsliaea reflexa Merrill sp. nov.

Erect, simple, the leaves mostly radical, long petioled, the petioles winged-margined, the inflorescence long, racemose, the heads 3-flowered, about 12 mm. long, solitary or in pairs. Stems glabrous, terete, simple, erect 20 to 60 cm. tall with few reduced linear-lanceolate leaves. Radical leaves membranous, glabrous or with few long hairs beneath and on the midrib above, the blade elliptical-oblong to oblong-ovate, 2.5 to 6 cm. long, 1 to 2 cm. wide, acute, with distant, short spinulose teeth the nerves 2 to 3 on each side of the midrib, rather abruptly contracted at the base; petioles narrowly winged, much exceeding the lamina 6 to 8 cm. long. Heads narrow, pedicellate, the pedicels 2 to 3 mm. long, pubescent, mostly reflexed, at least in anthesis. Involucral bracts sparingly pilose with scattered hairs, the lower ones 1.5 mm. long, ovate to lanceolate, acuminate, the inner ones linear-lanceolate to linear-oblancoolate, 12 mm. long, about 1.8 mm. wide. Achenes 4.5 to 5 mm. long, 10 ribbed, somewhat compressed, about 1 mm. thick above, pilose with scattered spreading white hairs; pappus brownish, the bristles about 30 on each achene, 6 to 7 mm. long, plumose-pilose with 1 mm. long hairs.

Luzon, District of Lepanto, Mount Data (4571 *Merrill*) November 4, 1905. Abundant in the mossy forests at about 2,200 m.

Another form of this species is apparently represented by No. 4824 *Merrill*, Mount Tonglon, Province of Benguet, Luzon, November 12, 1905, this number growing under similar conditions as the preceding, but with the petioles scarcely exceeding the leaf blade in length. No species of the genus has previously been reported from the Philippines, the present species being apparently related to *Ainsliaca pteropoda* DC.

CARPESIUM Linn.

Carpesium cernuum Linn. Sp. Pl. (1753) 859; Clarke in Hook. f. Fl. Brit. Ind. 3 (1881) 300; Forbes & Hemsl. Journ. Linn. Soc. Bot. 23 (1888) 430.

Luzon, Province of Benguet, Mount Tonglon (4832 *Merrill*) November 12, 1905; Suyoc to Pauai (4688 *Merrill*) November 7, 1905; District of Lepanto, Mount Data (4512 *Merrill*) November, 1905.

A decidedly interesting addition to our knowledge of the northern element in the Philippine flora, growing in the mossy forests on the higher mountains and ridges above 2,000 m., no species of the genus having been previously reported from the Philippines. The form here referred to *Carpesium cernuum* Linn. is apparently closest to the var. *glandulosum* Clarke in Hook. f. Fl. Brit. Ind. 3 (1881) 301.

This exceedingly variable species extends from France to the Caucasus, the temperate Himalayan region, Khasia and Nilgherry Mountains, China, and Japan, also according to Clarke to Java. I can find no record of its having been found in southern China or Formosa although another species, *C. abrotanoides* Linn., has been encountered in the latter place.

DICHROCEPHALA DC.

Dichrocephala chrysanthemifolia DC. Prodr. 5 (1836) 372; Hook. Fl. Brit. Ind. 3 (1881) 245; Forbes & Hemsl. Journ. Linn. Soc. Bot. 23 (1888) 406.

Luzon, District of Lepanto, Mount Data (4533 *Merrill*) November, 1905. On dry grassy slopes in thin pine forests at about 2,000 m., the second species of the genus to be found in the Philippines. China to British India and tropical Africa.

EMILIA Cass.

Emilia pinnatifida Merrill sp. nov.

An erect, simple or slightly branched herb 15 to 35 cm. high with glabrous or more or less pubescent usually finely lyrate-lobed leaves, the involucrel bracts much shorter than the flowers. Stems glabrous, finely channeled. Leaves various, the radical ones sessile or short petioled, 4 to 5 cm. long or less, 1 to 1.5 cm. wide, glabrous or with scattered weak hairs beneath, the lobes irregular, 2 to 4 mm. wide, often extending nearly to the midrib, their margins irregularly crenate, the terminal lobe usually larger than the lateral ones; cauline leaves similar to the radical, sessile, clasping, few, the lower ones as long as the radical leaves, the upper one much reduced. Peduncles 2 to 7 cm. long. Heads 1 cm. long, the flowers pink. Involucrel bracts glabrous, 1-seriate, 7 to 8 mm. long, about 5 mm. wide, oblong-lanceolate, acute or slightly acute, about 5-nerved. Achenes when mature nearly 3 mm. long, obscurely angled, finely pubescent; pappus copious, soft, white, about 6 mm. long, minutely scabrid. Corollas slender, 7 to 8 mm. long, 5-lobed, the

lobes lanceolate, acute or obtuse, about 2.5 mm. long. Style arms nearly 1.5 mm. long. Anthers slender, 3 mm. long or less.

Luzon, Province of Benguet, Bugias (4664 *Merrill*) October 28, 1905. The following specimens are apparently referable here: Benguet, Baguio (6599, 6606 *Elmer*) June, 1904; (4265 *Merrill*) October, 1905.

A species characteristic of the open, dry, grassy slopes in thin pine forests from 1,500 to 2,100 m., widely distributed in Benguet and Lepanto; abundant. The species here proposed differs from *Emilia sonchifolia* DC., in the involueral bracts being constantly much shorter than the flowers, in this character approaching *Emilia flamma* Cass. As in *Emilia sonchifolia*, the species is exceedingly variable, but is apparently distinct from all other previously described forms. *Emilia sonchifolia* *Elmer*, in herb.

GYNURA Cass.

Gynura clementis Merrill sp. nov.

Scandent, more or less pubescent with crisped hairs throughout. Branches dark brown, obscurely angled, ferruginous crisped pubescent with scattered hairs. Leaves alternate, elliptical-oblong to narrowly oblong-obovate, 5 to 8 cm. long, 1.5 to 3.5 cm. wide, coriaceous, acute at both ends, coarsely irregularly toothed, the teeth acute, the upper surface subscabrid, the lower rather densely ferruginous pubescent; nerves 5 to 6 on each side of the midrib; petioles 0.8 to 1.5 cm. long, pubescent, the stipules orbicular, often 1 cm. in diameter. Heads purplish, about 25-flowered, 1.5 cm. long or less, in few flowered axillary and terminal corymbs 10 cm. long or less. Involucre cylindrical or subcampanulate, the bracts 8, oblong-lanceolate, acute, 7 to 8 mm. long, 1.5 to 2.5 mm. wide, somewhat pubescent with crisped hairs, and with several short linear bracteoles at the base. Flowers homogamous, purplish, slender, about 12 mm. long including the achene, the tube 7 mm. long, the upper slightly expanded portion about 3 mm. long, the teeth 5, lanceolate, acute, 1.5 mm. long. Stamens 5; anthers 2 mm. long, lanceolate, the cells not produced at the base. Style arms 3 mm. long, slightly pubescent. Achenes oblong, 3 mm. long, brown, about 10-ribbed, sparingly hispid. Disk glabrous, pitted.

MINDANAO, Lake Lanao, Camp Keithley (49 *Mrs. Clemens*) January, 1906.

MYRIACTIS Less.

Myriactis humilis Merrill sp. nov.

An herb 20 cm. high or less, sparingly pilose or nearly glabrous, with long petioled deeply and coarsely pinnately lobed leaves and solitary long peduncled heads about 7 mm. in diameter. Branches few, terete, with few scattered weak hairs. Leaves membranous, 3 to 5 cm. long, 1.5 to 3 cm. wide, coarsely lyrate-lobed, the lobes entire or coarsely toothed, apiculate, both surfaces with few scattered weak hairs, the upper leaves much smaller, the uppermost entire and bract like; petioles 1 to 3 cm. long. Peduncles slender, 5 cm. long or less, solitary. Heads 5 mm. long, the ray flowers short, white, the disk flowers greenish yellow;

involucral bracts 2-seriate, narrowly oblong, obtuse or acute, sparingly pilose on the median portion, about 4 mm. long, 1 mm. wide. Ray flowers pistillate, ligulate, 2 or more seriate, the ligule oblong about 1.5 mm. long or less; style short, 2-cleft at the apex. Disk flowers greenish yellow, tubular, hermaphrodite. Corolla 1.5 mm. long, regularly 5-cleft, the lobes 1 mm. long, acute. Anthers oblong-ovate, acute, the base obtuse. Style equalling the corolla, 2-cleft at the apex. Achenes compressed, glabrous, oblong, the margins thickened, 3 mm. long, 1.2 mm. wide, tipped with a short somewhat glandular ring. Pappus 0.

Luzon, District of Lepanto, Mount Dana (4530 *Merrill*) November, 1905. Common in the damp, mossy forests at 2,100 m. and above. The first species of the genus to be reported from the Philippines.

SENECIO Linn.

Senecio luzoniensis Merrill sp. nov.

An erect, stout, glabrous, simple or sparingly branched herb about 1 m. high, with oblong-lanceolate, coriaceous, rather obscurely irregularly crenate leaves and terminal corymbose many flowered panicles, the heads about 1 to 1.3 cm. long, 1.5 cm. or more in diameter, including the rays. Stems terete, firm, glabrous, reddish brown. Leaves 10 to 15 cm. long, 1.5 to 2.5 cm. wide, glabrous, strongly reticulate veined, the upper ones sessile or subsessile, the lower ones petiolate, the petiole 1 cm. long, base acute, apex usually long acuminate. Panicles about 15 cm. long, nearly as wide, the branches ascending, the bracts and bracteoles linear, the primary branches subtended by linear 3 to 4 cm. long leaf-like bracts, the bracteoles usually about 2 or 3 mm. long. Heads about 25-flowered; involucral bracts about 13, 1-seriate, imbricate, free, oblong-lanceolate, 7 to 8 mm. long, 1.5 to 2 mm. wide, acute glabrous, membranous margined, a few short outer bracts at the base. Ray flowers about 6 in each head, yellow, the tube slender, 4 to 5 mm. long, the ligule oblong, 10 to 11 mm. long, 3.5 mm. wide, strongly 4-nerved, obtuse, the apex with three small blunt teeth. Disk flowers yellow, the corolla tubular, inflated above, about 8 mm. long, 5-lobed, the lobes about 1.3 mm. long, oblong, blunt. Anthers slender, about 3 mm. long, blunt at the base. Style 2-cleft, the arms about 1.5 mm. long, truncate. Achenes about 4 mm. long, less than 1 mm. thick obscurely 10-striate, glabrous, narrowly oblong. Disk paleaceous.

Luzon, Province of Benguet, Suyoc to Pauai (4791 *Merrill*) November 7, 1905. A stout erect herb growing in grass lands on high ridges near the lower limits of the mossy forest at about 2,150 m.

SOLIDAGO Linn.

Solidago virgaurea Linn. Sp. Pl. (1753), 880.

Luzon, Province of Benguet, Baguio to Ambuklao (4364 *Merrill*) October 24, 1905. Widely distributed in the region of *Pinus insularis* Endl., 1,500 to 2,000 m. North America, Europe, and temperate Asia south to Formosa.

SPILANTHES Linn.

***Spilanthes ovata* Merrill sp. nov.**

An erect or spreading slightly branched, nearly glabrous herb with opposite, short, broadly-ovate to triangular-ovate, irregularly and rather coarsely crenate-dentate acute leaves and solitary long peduncled radiate heads about 1.5 cm. in diameter. Branches purplish, somewhat angled or channeled, glabrous or sparingly pubescent. Leaves membranous or sub-membranous, 2.5 cm. long or less, 1.2 to 1.8 cm. wide, the base broad, truncate or slightly cordate, 3-nerved, paler beneath, the margins thickened, usually somewhat ciliate, the nerves rather prominent beneath, often with few scattered hairs, the reticulations distinct; petioles 3 to 4 mm. long. Peduncles about 7 cm. long. Heads yellow; involueral bracts sub 2-seriate, oblong-lanceolate, acute or acuminate, about 5 mm. long, the margins ciliate. Ray flowers about 10, the tube ciliate, about 2 mm. long, the ligule oblong-ovate, 10 mm. long, 4 mm. wide, 10-nerved, truncate, 3-toothed at the apex, the teeth short, rounded. Disk flowers tubular, the corolla 5-toothed, the teeth about 0.8 mm. long, acute. Anthers about 1 mm. long, the cells acute at the base. Style arms nearly 1 mm. long, truncate. Achenes 2 mm. long, flattened, 2-keeled, ciliate on the keels; pappus of 2 slender, scabrid, 1 mm. long bristles, the achenes of the ray flowers triquetrous. Pales 4 to 5 mm. long, keeled, or the inner ones flat or nearly so, 3-nerved, obtuse, irregularly minutely toothed at the apex, the keel minutely scabrid.

Luzon, District of Lepanto, Mount Dana (4573 *Merrill*) November 4, 1905. Rather common on dry grassy slopes in thin pine forests at about 2,100 m.

A species apparently closely related to *Spilanthes grandiflora* Turcz., differing from that species in its much shorter, very differently shaped leaves.





NEW OR NOTEWORTHY PHILIPPINE
PLANTS, VI

By ELMER D. MERRILL

(From the Botanical Section of the Biological Laboratory, Bureau of Science, Manila, P. I.)

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¹ Out of print.

² The first four bulletins in the ornithological series were published by the Ethnological Survey under the title "Bulletins of the Philippine Museum." Later ornithological publications of the Government appeared as publications of the Bureau of Government Laboratories.

NEW OR NOTEWORTHY PHILIPPINE PLANTS, VI.

By ELMER D. MERRILL.

(From the Botanical Section of the Biological Laboratory, Bureau of Science,
Manila, P. I.)

During the past five years approximately 1,000 new species have been described from the Philippines, the material on which they were based being for most part of recent collection. In spite of the large amount of work accomplished, the number of new forms that are constantly being found is surprising, and our herbarium to-day contains several hundred undescribed species, while additional ones are found in nearly every collection that is made, especially in those from previously unexplored regions.

In the present paper representatives of six genera previously not known from the Archipelago are recorded. Eight species, first described from extra-Philippine material, are also here listed for the first time from the Philippines, and about sixty species are described as new. One new genus, *Sagittipetalum*, of the *Rhizophoraceae*, is described.

GRAMINEÆ.

ORYZA L.

Oryza manilensis sp. nov.

Annua, erecta, 1 ad 1.3 m alta; foliis flaccidis, 10 ad 25 cm longis, 6 ad 7 mm latis; paniculis laxis, 10 ad 15 cm longis, flaccidis, paucifloris; spiculis 4 mm longis, arista 8 ad 10 mm longa.

An annual 1 to 1.3 m high. Culms slender, glabrous, the nodes 6 or 7, glabrous. Leaves flaccid, minutely scabrid when dry, 10 to 25 cm long, 6 to 7 mm wide; sheaths rather loose, shorter than the internodes, the ligules about 2.5 mm long. Panicles lax, 10 to 15 cm long, the branches slender, scabrid, usually drooping, few-flowered. Spikelets 4 mm long, the empty glumes narrowly lanceolate, acuminate, 1.5 mm long. Flowering glume oblong, granulate, spinescent-ciliate on the keel and ribs, its awn slender, straight, 8 to 10 mm long. Palea slightly exceeding the flowering glume, short-acuminate, spinescent on the keels.

LUZON, Province of Rizal, Antipolo, *Bur. Sci.* 2194 Ramos, March, 1907, growing in open wet places.

A species allied to *Oryza ridleyi* Hook. f., of the Malayan Peninsula and Borneo, differing from that species in its smaller spikelets, *vide* Hackel in lit.

CHLORIS Sw.

Chloris mearnsii sp. nov.

Caespitosa, perennis, usque ad 40 cm alta; culmis gracilibus, geniculatis; spicis 3, digitatis, gracilibus, longe exsertis; foliis linearibus, acuminate, 5 ad 8 cm longis; spiculis imbricatis, atropurpureis, 3.5 mm longis, arista 1 cm longa.

A tufted perennial 40 cm high or less. Culms very slender, glabrous, geniculate below, the inflorescence long-exserted. Leaves 5 to 8 cm long, 2 to 4 mm wide, minutely scabrid, the sheaths longer than the internodes, the ligule consisting of a few long white hairs. Spikes 3, digitate, slender, 5 to 7 cm long, the spikelets imbricate, dark-purple. Empty glumes hyaline, 1-nerved, scabrid on the nerves, the first 1.2 mm long, linear, the second 3 mm long, linear-lanceolate, mucronate-acuminate. Flowering glume lanceolate, dark-purple, 3.5 mm long, scabrid, the tip with a slender straight awn 1 cm long. Palea equaling the glume, scabrid. Seed narrowly oblong, 2.5 mm long. Callus pilose. Rachilla produced 1 to 1.2 mm and bearing a minute, 0.5 mm long, glume, the awn slender, scabrid, 3 to 4 mm long.

LUZON, Province of Ilocos Norte, *Bur. Sci.* 2294 *Mearns*, January, 1907.

A species allied to *Chloris cynodontoïdes* Bal., *vide* Hackel in lit., but that species has blunt leaves, while in the present species they are long-acuminate.

CYPERACEÆ.

CAREX Linn.

Carex cryptostachys Brongn. in Duperr. Voy. Bot. (1829) 152; Clarke in Hook. f. Fl. Brit. Ind. 6 (1894) 714.

LUZON, Province of Rizal, *Bur. Sci.* 1760 *Ramos*, January, 1907; Province of Sorsogon, Sorsogon, *Elmer* 7306, November, 1905.

Malay Peninsula to southern China, south to New Guinea; new to the Philippines.

The former number cited was compared by me with authentic material in Herb. Kew, and the identification has also been confirmed by Herr G. Kükenthal. Elmer's specimen is manifestly the same.

ARACEÆ.

ALOCASIA Neck.

Alocasia heterophylla (Presl) comb. nov.

Caladium heterophyllum Presl Rel. Haenk. 1 (1827) 148.

Alocasia warburgii Engl. Bot. Jahrb. 25 (1898) 25; Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 33.

Presl's type, preserved in the Prague herbarium, is identical with the type of *Alocasia warburgii*, direct comparison having been made by me in the Berlin herbarium, Dr. Engler concurring in the identity of the two species. Presl's name being the older is here retained.

MORACEÆ.

ARTOCARPUS Forst.

Artocarpus woodii sp. nov.

Arbor ca. 10 m alta, glabra; foliis anguste oblongo-obovatis, nitidis, 8 ad 15 cm longis, abrupte late acuminatis, basi cuneatis, integris, nervis utrinque 5 vel 6, prominentibus, anastomosantibus; fructibus axillaribus, pedunculatis, irregulariter 7-12-lobatis, 6 ad 9 cm diam., rugosis.

A tree about 10 m high, glabrous. Branches light-gray, the tips brown and with few appressed hairs. Leaves narrowly oblong-obovate, glabrous, shining, submembranaceous, entire, 8 to 15 cm long, 5 to 7 cm wide, the apex broadly and abruptly acuminate, the acumen retuse, narrowed below to the cuneate base; nerves 5 or 6 on each side of the midrib, prominent beneath, anastomosing near the margins, the reticulations lax; petioles 3 to 5 cm long, dark colored, pruinose. Fruit peduncled, the peduncles 5 to 7 cm long, solitary in the upper axils, subglobose, 6 to 9 cm in diameter, irregularly obscurely lobed, the lobes rounded, rugose, gray, the anthocarps truncate or depressed, 2 to 3 mm in diameter. Ripe seeds 6 to 12, about 2 cm long.

BUCAS (off the northeast coast of Mindanao), *Merrill 5259*, October 4, 1906.

Growing in ravines along the forest border at an altitude of about 10 m above the sea, well characterized by its shining narrowly oblong-obovate leaves, prominent nerves, lax reticulations, and solitary, peduncled, rugose fruits. Dedicated to Major-General Leonard Wood, to whom I am indebted for the opportunity to explore botanically many of the remote islands in the southern Philippines.

ANONACEÆ.

GONIOTHALAMUS Blume.

Goniothalamus dolichopetalus sp. nov.

Arbuscula glabra; foliis oblongo-lanceolatis vel lanceolatis, usque ad 20 cm longis, subcoriaceis, acuminatis, basi acutis, nervis obscuris; floribus axillaribus, solitariis, 10 ad 12 cm longis; pedicellis ca. 4 cm longis.

A shrub about 1 m high, glabrous throughout, the branches terete, slender, light-gray. Leaves lanceolate to oblong-lanceolate, rarely oblanceolate, 11 to 20 cm long, 2.5 to 5 cm wide, subcoriaceous, dull, apex acuminate, the acumen blunt, base acute; nerves about 12 on each side of the midrib, obscure, distant, irregular, anastomosing, the reticulations nearly obsolete; petioles about 5 mm long. Flowers solitary, axillary, their pedicels slender, about 4 cm long, slightly thickened upwards. Sepals 3, triangular-ovate, acuminate, slightly pubescent, about 3.5 mm long, 3 mm wide. Outer petals linear-lanceolate, 10 to 12 cm long, 1 cm wide, somewhat narrowed towards the base and gradually narrowed upwards, submembranaceous, glabrous, flat; inner petals oblong to oblong-lanceolate, about 13 mm long, 5 to 6 mm wide, connivent, acuminate.

glabrous, slightly clawed. Stamens many, 2.4 mm long, somewhat curved, their connectives short, triangular. Carpels indefinite, oblong, slightly pubescent, 1-ovuled; styles slender, 1.5 mm long.

MINDANAO, District of Zamboanga, Port Banga, *For. Bur.* 9268, 9261 *Whitford & Hutchinson*, January, 1908.

An undershrub in dipterocarp forests 30 to 60 m above sea level, a species well characterized by its very long flowers.

POLYALTHIA Blume.

Polyalthia venosa sp. nov.

Foliis oblongo-ellipticis, acuminatis, valde reticulato venosis, nervis utrinque ca. 9; floribus axillaribus et caulinis solitariis, pedicellatis; petalis elliptico-ovatis vel lanceolato-ovatis ca. 2 cm longis, pilosis.

A shrub or small tree 4 m high or less, the branches slender, terete, glabrous, brown, the branchlets densely ferruginous-pubescent. Leaves oblong-elliptical, 10 to 16 cm long, 3 to 6 cm wide, papyraceous, glabrous and shining on both surfaces except the midrib which is slightly pubescent, paler beneath, the base acute or rounded, apex sharply acuminate; nerves about 9 on each side of the midrib, distant, very prominent beneath, anastomosing, the reticulations very prominent; petioles about 3 mm long, densely pubescent. Flowers solitary, from the leaf-axils on the ultimate branchlets and from tubercles on the trunk, their pedicels slender, 1.5 to 3.5 cm long, densely ferruginous-pilose. Sepals 3, free, ovate, about 8 mm long, 6 mm wide, slightly narrowed below, apex acute, 7-nerved, pilose outside, glabrous within. Petals 6, elliptical-ovate to lanceolate-ovate, about 2 cm long, 6 to 11 mm wide, the inner three slightly narrower than the outer ones, somewhat narrowed below, apex acute, glabrous inside, rather densely pilose or pilose-hirsute outside. Stamens indefinite, 2 mm long, the anthers concealed by the truncate overlapping connectives. Carpels many, oblong, appressed-hirsute, 2 mm long; stigmas ellipsoid, pubescent; styles very short or none; ovules 2, subbasal. Fruit ellipsoid or ovoid, about 1 cm long, apiculate, slightly pubescent, each with two seeds.

MINDANAO, District of Zamboanga, Port Banga, *For. Bur.* 9108, 9232 *Whitford & Hutchinson*, December, 1907, in dipterocarp forests 15 to 30 m above sea level.

A species well characterized by its pilose flowers which are both axillary and cauline, and by its strongly nerved leaves.

Polyalthia elongata sp. nov.

Arbor glabra; foliis oblongis vel oblongo-lanceolatis, coriaceis, 30 ad 35 cm longis, basi cordatis, nervis utrinque ca. 16; petalis 4 ad 4.5 cm longis, oblongo-lanceolatis, glabris vel sparse pubescentibus.

A tree 16 m high, glabrous or nearly so throughout, the branches grayish-brown, rather slender, terete. Leaves 30 to 35 cm long, about 11 cm wide, coriaceous, shining, the base broad, cordate, the apex acuminate; nerves about 16 on each side of the midrib, very prominent

beneath, the reticulations fine, indistinct; petioles very stout, 5 mm long. Flowers lateral (?), nearly glabrous, pedicels about 4 cm long. Sepals 3, broadly ovate, united below, acute, slightly pubescent, about 3 mm long. Petals 6, flat, glabrous, or with few scattered hairs, oblong-lanceolate, acute, the three outer ones 4 to 4.5 cm long, 11 to 13 mm wide, the three inner ones slightly shorter and narrower. Stamens indefinite, 1.1 mm long, connectives truncate, overlapping. Carpels indefinite, somewhat pubescent.

MINDANAO, District of Zamboanga, Port Banga, *For. Bur. 9456 Whitford & Hutchinson*, February, 1908, in forests at 50 m above the sea.

A species well characterized by its very long, strongly nerved and cordate leaves, the attachment of the inflorescence not being indicated and the specimens not showing the same. A very similar species, in fruit, from the same locality is represented by *For. Bur. 9113 Whitford & Hutchinson*, but the leaves are relatively narrower, not cordate at the base and have about 25 pairs of lateral nerves.

MELODORUM Dunal.

Melodorum rufum (Presl) comb. nov.

Anona rufa Presl Rel. Haenk. 2 (1835) 75.

LUZON, without locality, *Haenke* in Herb. Prague, native name *Apnit*, ex Presl.

After examining Presl's type in Herb. Prague I do not hesitate to refer this species to *Melodorum*, it apparently being allied to *M. latifolium*, differing from that species in its glabrous, acuminate leaves. Index Kewensis gives the locality of the species as "Am. trop." but on what authority is not known, probably, however, on the assumption that Presl was correct in describing the species as *Anona*, the genus being largely developed in tropical America, and represented in the Malayan region only by introduced and cultivated species.

OROPHEA Blume.

Orophea bracteolata sp. nov.

Arbor parva: foliis oblongis, usque ad 12 cm longis, breviter acuminatis, nervis utrinque ca. 9, valde obliquis; floribus in cymis axillaribus congestis, petalis interioribus valde unguiculatis, laminis rhomboideis.

A small tree, about 9 m high, the branches terete, dark-reddish-brown, glabrous, lenticellate, the ultimate branchlets somewhat ferruginous-pubescent. Leaves oblong, subcoriaceous, 9 to 12 cm long, 3 to 4 cm wide, base acute or rounded, often slightly oblique, the apex short-acuminate, somewhat shining, glabrous on both sides, except on the midrib and nerves beneath which are appressed-pubescent; nerves about 9 on each side of the midrib, oblique, curved-ascending, very prominent beneath; petioles 2 to 3 mm long, pubescent. Cymes axillary, densely ferruginous-pubescent, densely flowered, 1.5 cm long or less, the pedicels about 5 mm long, pubescent, with a large ovate, strongly acuminate, pubescent bracteole about 3.5 mm long, at about the middle. Sepals 3, ovate, acute, pubescent, about 3 mm long. Outer three petals broadly ovate, acute or slightly acuminate, ferruginous-pubescent, 4 to 5 mm long,

5- to 7-nerved; inner three petals about 7 mm long, the claw 3 mm long, the blade rhomboidal, 4 mm long, free. Stamens about 12, 1 mm long, miliusoid. Carpels many, pubescent, 1 mm long, the style very short. Fruit unknown.

LUZON, Province of Cagayan, San Vicente, *For. Bur.* 7055 Klemme, May, 1907, in dense flat forests slightly above sea level, Cag., *Panganauin*.

A species resembling *Orophea cumingiana* and *O. enterocarpoidea* in gross characters but readily distinguished by its large bracteoles.

Orophea luzoniensis nom. nov.

Orophea maculata Merr. in Govt. Lab. Publ. (Philip.) 35 (1906) 11; Philip. Journ. Sci. 1 (1906) Suppl. 54, non Scort.

In publishing the species under the specific name *maculata*, the fact was overlooked that the same name had previously been used for a different species of the same genus.

UNONA Linn. f.

Unona rubra sp. nov.

Arbuseula 1.5 m alta; foliis lanceolatis vel late oblango-oblancoelatis, submembranaceis, acuminatis, basi inaequilateralibus, leviter auriculato-cordatis, subtus pallidis, glabris; floribus rubris, axillaribus, solitariis, ca. 2 cm longis.

A small shrub about 1.5 m high, the branches dark-gray, terete, slender, rather densely pubescent with short spreading hairs, especially the younger ones. Leaves lanceolate to broadly oblanceolate, about 20 cm long, 4 to 6 cm wide, pale, especially beneath, glabrous, submembranaceous, apex shortly acuminate, somewhat narrowed below to the inequilateral base which is auriculate-cordate; nerves about 15 on each side of the midrib, curved-ascending, anastomosing, distinct beneath, the reticulations obsolete or nearly so; petioles densely pubescent, about 3 mm long. Flowers few, red, solitary, in the upper axils, their pedicels, about 5 mm long, glabrous. Sepals 3, free, ovate, 7 mm long, 5 mm wide, acute, glabrous or with few hairs outside. Petals fleshy, coriaceous, oblong, obtuse or blunt, about 18 mm long, 4 to 5 mm wide, the sides parallel, nearly glabrous. Stamens indefinite, 2 mm long, connectives truncate, overlapping. Carpels about 15, oblong, 1.5 mm long, hirsute, each with 4 parietal ovules; styles ovoid, the stigmas minutely papillate.

BALABAC, *Bur. Sci.* 480 *Mangubat*, March 1, 1908, in forests.

A characteristic species, distinguishable by its glabrous pale leaves and solitary axillary red flowers.

POPOWIA Endl.

Popowia polyandra (Presl) comb. nov.

Bocagea polyandra Presl Rel. Haenk. 2 (1835) 77.

LUZON, Province of Sorsogon, *Haenke*, in Herb. Prague: Province of Batangas, 7724 *Curran & Merrill*, November, 1907. NEGROS, *For. Bur.* 4302, 5229, 5231, 7289 *Everett*, June, 1906, and September, 1907; Gimagaan River, *Whitford* 1561, May, 1906. MINDANAO, District of Zamboanga, *For. Bur.* 9275 *Whitford & Hutchinson*, January, 1908; Lake Lanao, *Mrs. Clemens* 1007, April, 1907, and without number July, 1907.

A widely distributed species in the Philippines, extending from central Luzon to southern Mindanao, the only representative of the genus known from the Archipelago. After an examination of Presl's type in Herb. Prague, I am able to affirm the identity of the above-cited specimens, and accordingly transfer the species to the genus in which it properly belongs.

PHAEANTHUS Hook. f. et Thoms.

Phaeanthus ebracteolatus (Presl) comb. nov.

Uvaria ebracteolata Presl Rel. Haenk. 2 (1835) 77.

Uvaria tripetala Blanco Fl. Filip. (1837) 465, non Roxb.

Unona tripetala Blanco l. c. ed. 2 (1845) 324; ed. 3, 2: 236.

Phaeanthus cumingii Miq. Fl. Ind. Bat. 2 (1859) 51; Vidal Phan. Cuming. Philip. (1885) 93; Rev. Pl. Vasc. Filip. (1886) 42; Ceron Cat. Pl. Herb. (1892) 11; Merr. in Forest. Bur. Bull. 1 (1903) 20; Philip. Journ. Sci. 1 (1906) Suppl. 54.

Phacanthus malabaricus Vid. Cat. Pl. Prov. Manila (1880) 16; F.-Vill. Nov. App. (1880) 7, non Bedd.

Phacanthus nutans F.-Vill. Nov. App. (1880) 6, non Hook. f. et Thoms.

A very common and widely distributed endemic species for which Presl's specific name is here adopted, being the oldest valid one. In January, 1908, I had opportunity to examine Presl's type, preserved in the Prague Herbarium, and consider it to be identical with Cuming's plant on which Miquel based his *Phacanthus cumingii*.

MONIMIACEÆ.

KIBARA Endl.

Kibara mollis sp. nov.

Omnibus partibus dense et molliter stramineo-fulvo-pilosis vel pubescentibus; foliis ellipticis vel elliptico-ovatis, membranaceis, 12 ad 16 cm longis, apice breviter acuminatis, nervis utrinque 5 vel 6; inflorescentiis paniculatis vel racemoso-paniculatis, paucifloris, solitariis, axillaribus, 6 ad 10 cm longis, ramis patentibus, inferioribus ca. 3 cm longis; receptaculis elliptico-ovatis, chartaceis, extus dense pilosis; carpellis ca. 20, pubescentibus; tepalis ovatis, glabris, acutis, ca. 0.5 mm longis.

A shrub or small tree very densely and softly pilose or pubescent throughout. Branches terete, slender. Leaves pale, elliptical or elliptical-ovate, densely pilose on both surfaces, membranaceous, 12 to 16 cm long, 4 to 8 cm wide, base acute, apex short-acuminate, the margins above unequally undulate-denticulate; nerves 5 or 6 on each side of the midrib; petiole 1.5 to 2 cm long. Inflorescence axillary, solitary, paniculate or racemose-paniculate, 6 to 10 cm long, densely pilose, the branches spreading, the lower ones about 3 cm long, the upper gradually shorter, each bearing 1 to 3 flowers. Flowers 3 to 4 mm long, their pedicels 1 to 2 cm long, the receptacle elliptical-ovate, chartaceous, externally densely pilose; carpels about 20, 2 mm long, pubescent; tepals ovate, glabrous, acute, about 0.5 mm long.

Luzon, Province of Rizal, Bosoboso, *Bur. Sci.* 1070 Ramos, July, 1906.

A very characteristic species, readily recognizable by its soft, dense, rather pale pubescence, which extends to all parts of the plant.

ROSACEÆ.

PYGEUM Gaertn.

Pygeum glandulosum sp. nov.

Arbor usque ad 18 m alta; foliis oblongo-lanceolatis vel ovato-lanceolatis, acuminatis, coriaceis, subtus utrinque ad basin glandulis prominentibus impressis; racemis axillaribus, dense ferrugineo-pubescentibus; floribus subsessilibus, 5-meris.

A tree 6 to 18 m high. Branches glabrous, dark-reddish-brown, lenticellate, terete, the branchlets slender, the younger ones usually more or less pubescent. Leaves 9 to 16 cm long, 3 to 6 cm wide, oblong-lanceolate or ovate-lanceolate, coriaceous, glabrous and shining above except the midrib which is somewhat pubescent, the lateral nerves sometimes pubescent also, on the lower surface glabrous or slightly pubescent, rather slenderly acuminate, the acumen blunt, often apiculate, base acute or cuneate, with two very prominent basal glands, one on each side of the midrib, these glands deeply impressed and protruding on the upper surface of the leaf; nerves 5 or 6 on each side of the midrib, prominent beneath, anastomosing; petioles pubescent, becoming glabrous or nearly so, 5 mm long. Racemes densely ferruginous-pubescent, axillary, solitary, 9 cm long or less. Flowers white, fragrant, subsessile or very shortly pedicellate, each subtended by a small densely villous bracteole about 2 mm long. Calyx funnel-shaped, about 3.5 mm long, ferruginous-pubescent, the lobes 5, oblong, obtuse, villous, 1.5 to 2 mm long. Petals 5, resembling the sepals but somewhat oblong-rhomboid. Stamens about 20, unequal, their filaments glabrous, 2 to 4 mm long; anthers 0.3 mm long. Ovary ovoid, villous; style glabrous, 4 mm long; stigma disciform. Fruit glabrous or with few scattered hairs, red, about 1 cm wide, slightly compressed, about 8 mm long; seeds with pronounced flavor like those of *Prunus*.

LUZON, Province of Rizal, Bosoboso, *For. Bur.* 3092 *Ahern's collector*, May, 1905, also from the same province, *For. Bur.* 1134, 3342 *Ahern's collector*; *For. Bur.* 10007, 10037 *Curran*, February, 1908; *Merrill* 1707, March, 1903; *Loher* 2223, November, 1892; Province of Zambales, *Bur. Sci.* 5029 *Ramos*, December, 1907; *Hallier*, January, 1904; *For. Bur.* 381 *Maule*, March, 1904; Province of Bataan, Lamao River, *Williams* 529, 642, January, March, 1904; *For. Bur.* 6317 *Curran*, February, 1907; *Whitford* 8, 84, April, 1904; *For. Bur.* 49 *Barnes*, August, 1903; *For. Bur.* 2064, 2366 *Borden*, 1905; *For. Bur.* 2629 *Meyer*, February, 1905; *Elmer* 6697, November, 1904; Dinalupijan, *Merrill* 1537, January, 1903; Province of Laguna, Santa Maria Mavitae, *For. Bur.* 10063 *Curran*, February, 1908; Province of Benguet, Sablan, *Elmer* 6110, April, 1904. MINDORO, *For. Bur.* 3719, 6898 *Merritt*, March, 1906, 1907. Without locality, *Cuming* 797, 1836-40.

A very common and widely distributed species in Luzon, confused with *Pygeum latifolium* Miq., and distributed as such, readily recognized, however, by its sessile flowers and very prominent glands at the base of the leaf, which strongly protrude on the upper surface. T., *Lago, Gupit*.

***Pygeum preslii* nom. nov.**

Germaria latifolia Presl Epim. Bot. (1849) 221; Miq. Fl. Ind. Bat. 1^a (1855) 401.

Pygeum latifolium Vidal Phan. Cuming. Philip. (1885) 111, Rev. Pl. Vasc. Filip. (1886) 122; Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 60 (in part), non *Pygeum latifolium* Miq. l. c. 361.

Pygeum arboreum F.-Vill. Nov. App. (1883) 76, excl. syn.; Vidal Sinopsis Atlas (1885) t. 46, f. B, non Endl.

This species is common and widely distributed in the Philippines, and is allied to the preceding, readily distinguished, however, by its rather long-pedicelled flowers and basal leaf glands which are not prominent and not impressed, being scarcely visible on the upper surface of the leaf and not at all protruding as in *Pygeum glandulosum* Merr. It has been considered as *Pygeum latifolium* Miq., but judging from the description of that species, the Philippine plant is different. Unfortunately both Presl and Miquel used the same specific name for what are apparently two distinct species, Miquel publishing his *Pygeum latifolium* without any reference to the earlier *Germaria latifolia* Presl, and not recognizing that Presl's species was in reality a true *Pygeum*. The use of the specific name *latifolium* under *Pygeum*, precludes the possibility of transferring Presl's earlier name, and accordingly the above new name for the Philippine plant is here proposed.

***Pygeum clementis* sp. nov.**

Arbor glabra; foliis oblongis, acuminatis, usque ad 20 cm longis, nervis utrinque ca. 10, subtus utrinque ad basin glandulis concavis impressis; fructibus subcompresso-globosis, 1.5 ad 2 cm diametro.

A tree, glabrous or nearly so throughout, 10 to 15 m high. Branches dark-reddish-brown, glabrous, terete, lenticellate. Leaves oblong, coriaceous, dull or slightly shining above, 12 to 20 cm long, 4.5 to 8 cm wide, entire, acuminate, base rounded or subacute, with a small but prominent gland on each side of the midrib at the base, protruding on the upper surface; nerves about 10 on each side of the midrib, prominent beneath, anastomosing; petioles 5 to 7 mm long. Flowers not seen. Racemes axillary, solitary, in fruit 4 to 5 cm long, glabrous. Fruit glabrous, subcompressed-globose, 1.5 to 2 cm wide, 1 to 1.3 cm long, the pedicels 7 to 10 mm long.

MINDANAO, Lake Lanao, Camp Keithley, Mrs. Clemens 760, 966, September, 1906, March, 1907, both specimens in fruit.

A species allied to *Pygeum preslii* Merr., and *P. glandulosum* Merr., differing from both in having twice as many lateral nerves, and in its much larger fruit.

LEGUMINOSÆ.

ADENANTHERA Linn.

Adenanthera intermedia nom. nov.

Mimosa virgata Blanco Fl. Filip. (1837) 737, non Linn.

Mimosa punctata Blanco l. c. ed. 2 (1845) 508; ed. 3, 3: 139, non Linn.

Adenanthera pavonina F.-Vill. Nov. App. (1883) 73; Vidal Sinopsis Atlas (1883) 24, t. 44, f. B; Rev. Pl. Vasc. Filip. (1886) 119; Phan. Cuming. Philip. (1885) 110; Perk. Frag. Fl. Philip. (1904) 7; Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 62, non Linn.

LUZON, Province of Isabela, *For. Bur. 6645 Klemme*, March, 1907: Province of Zambales, Subic, *Merrill 1977*, April, 1903; *For. Bur. 6086 Aguilar*, January, 1907: Province of Pangasinan, Libtong, *Alberto 51*, March, 1904: Province of Bataan, Lamao River, *Merrill 3863*, August, 1904; *For. Bur. 1496 Ahern's collector*, August, 1904; *For. Bur. 1599, 2345 Borden*, August, 1904, January, 1905: *Bur. Sci. 1617 Foxworthy*, October, 1906; *Williams 230*, November, 1903; *Whitford 1256, 1286*, May, 1905: Province of Rizal, *For. Bur. 3164 Ahern's collector*, June, 1905; Province of Sorsogon, *Elmer 7315*, November, 1905. MINDANAO, Lake Lanao, Camp Keithley, *Mrs. Clemens 336*, March, 1906.

A species widely distributed in the Philippines, previously confused with *Adenanthera pavonina* Linn., to which it is closely allied, differing constantly in its seeds being about half jet-black and half bright red as in *A. bicolor* Moon. The leaflets are quite different from those of *A. bicolor* Moon, obtuse, elliptical or oblong-elliptical, as in *A. pavonina* Linn. The species seems to have the vegetative characters of *Adenanthera pavonina* Linn., and the seed characters of *A. bicolor* Moon.

PITHECOLOBIUM Mart.

Pithecolobium scutiferum (Blanco) Benth. in Lond. Journ. Bot. 3 (1844) 211; Miq. Fl. Ind. Bat. 1^a (1855) 39.

Mimosa scutifera Blanco Fl. Filip. (1837) 735; ed. 2 (1845) 507; ed. 3, 3: 138.

Pithecolobium lobatum F.-Vill. Nov. App. (1883) 75; Merrill in *For. Bur. Bull. 1* (1903) 23; Philip. Journ. Sci. 1 (1906) Suppl. 62; Perk. Frag. Fl. Philip. (1904) 4; Vidal Phan. Cuming. Philip. (1885) 111; Rev. Pl. Vasc. Filip. (1886) 120; Ceron Cat. Pl. Herb. (1892) 72, in part, non Benth.

PHILIPPINES, without locality, *Cuming 475*. LUZON, Province of Cagayan, *For. Bur. 4294 Klemme*, June, 1906: Province of Bataan, Lamao River, *Whitford 1257*, May, 1905; *For. Bur. 726, 1687, 1933 Borden*, *For. Bur. 1441 Ahern's collector*, *For. Bur. 6366 Curran*: Province of Rizal, Bosoboso, *For. Bur. 2007 Ahern's collector*, November, 1904; San Mateo, no. 117, Decades Philip. For. Fl.: Province of Laguna, Los Baños, *Williams 2053*, January, 1905; *Elmer 8310*, April, 1906: Province of Tayabas, *For. Bur. 6069 Kobbe*, December, 1906; Guinayangan, *Merrill 2013*, April, 1903: Province of Albay, *Francisco s. n.*, 1901. MINDORO, *For. Bur. 4073, 4099, 6211, 8570 Merritt*; Pinamalayan, *Merrill 2153*, May, 1903; Puerto Galera, *Merrill 3321*, October, 1903; Pola, *Merrill 2212, 2376, 2474*, May-June, 1903; Bongabon River, *Whitford 1422*, February, 1906. TICAO, *For. Bur. 1067 Clark*, May, 1904. MASBATE, *Whitford 1685*, October, 1906. GUIMARAS, *For. Bur. 233 Gammill*, January, 1904.

A widely distributed endemic species, correctly identified by Benthham with Blanco's *Mimosa scutifera* and transferred by him to *Pithecolobium*, but later¹ considered by him to be the same as *Pithecolobium lobatum* Benth., and reduced to that species. It is, however, very distinct from *Pithecolobium lobatum* Benth., both in its very deeply lobed pods and in the venation of the leaflets. Universally known in the Philippines as *Anagap*.

Pithecolobium pauciflorum Benth. in Lond. Journ. Bot. 3 (1844) 212.

This species was based on flowering specimens, *Cuming 1854*, collected in the Philippines, without locality given, and like the preceding species later reduced by Benthham to *Pithecolobium lobatum* Benth. It does not, however, appear to be the same as that species. Cuming's specimen is well matched by *Bolster 286*, Surigao, Mindanao, April, 1906, in fruit. I have seen no typical *Pithecolobium lobatum* Benth. from the Philippines.

ENTADA Adans.

Entada parvifolia sp. nov.

Scandens, subglabra; foliis bipinnatis, pinnis 2-jugatis; foliolis utrinque 8, oblongis, mucronatis, ca. 1.5 cm longis, 3 ad 5 mm latis; spicis ca. 15 cm longis, plus minus hirsutis; leguminibus glabris, 10 ad 25 cm longis, 4 ad 5.5 cm latis, seminibus nitidis, 2 cm diam.

Scandent, the branches slender, terete, brownish, glabrous. Leaves bipinnate, the rachis about 6 cm long, slightly pubescent when young, the terminal tendril 6 cm long or more; pinnae 5 to 8 cm long, the rachis slightly pubescent; leaflets oblong, chartaceous, about 8 pairs, about 1.5 cm long, 3 to 5 mm wide, the apex obtuse, strongly mucronate, margins revolute, nerves obscure; petiolules very short. Spikes about 15 cm long, many flowered, the rachis somewhat ferruginous-hirsute, the bracteoles lanceolate, acuminate, about 1.5 mm long. Flowers subsessile, the calyx glabrous, small, campanulate, about 1.8 mm in diameter, obscurely 5-toothed. Petals 5, glabrous, oblong, equal, 3.5 mm long, 1 mm wide. Stamens 10; filaments about 5 mm long; anthers 0.8 mm long. Ovary glabrous, narrowly oblong, 2 mm long; style about 4 mm long. Pod narrowly oblong, compressed, 10 to 25 cm long, 4 to 5.5 cm wide, somewhat acuminate at both ends, the valves shining, firmly coriaceous, dark-brown, glabrous; seeds shining, round, compressed, about 2 cm in diameter.

LUZON, Province of Zambales, *Bur. Sci. 4810, 5067 Ramos*, December, 1907; *Hallier*, January, 1904.

A species well characterized by its small leaflets and comparatively small pods; very distinct from the widely distributed *Entada scandens* Benth. Like *Entada scandens* Benth., the stem of this species yields a substitute for soap which is used by the natives of Zambales. *Z., Hinaguí*.

¹Trans. Linn. Soc. 30 (1875) 575.

BAUHINIA Linn.

Bauhinia copelandii sp. nov. § *Phanera*.

Scandens; ramulis, subtus foliis, racemis, calycibusque plus minus pubescentibus; foliis ovatis vel oblongo-ovatis, integris, 5-nerviis, 7 ad 9 cm longis, basi cordatis, apice breviter acuminatis, acuminibus retusis; floribus racemosis; staminibus fertilibus 3, sterilibus 3.

Scandent, the branches and branchlets terete, slightly pubescent. Leaves ovate to oblong-ovate, 7 to 10 cm long, 4 to 6 cm wide, entire, not cleft, subcoriaceous, shining on both surfaces, glabrous above, beneath with few appressed hairs, the base broad, cordate, the apex shortly and broadly acuminate, the acumen retuse; nerves 5, prominent; petioles 1 cm long or less, glabrous or slightly pubescent. Racemes terminal, somewhat pubescent, the rachis 1.5 cm long or less, the pedicels slender, about 2.5 cm long. Calyx-tube cylindrical, about 7 mm long, 3 mm in diameter, pubescent, the lobes equal, lanceolate or oblong-lanceolate, shortly acuminate, pubescent outside, about 1 cm long, 3 mm wide. Petals obovate to oblong-obovate, slightly appressed-pubescent externally, about 1.5 cm long, 1.3 cm wide, short-clawed. Stamens 6, three fertile, three sterile. Ovary and style somewhat pubescent; stigma capitate. Fruit unknown.

MINDANAO, District of Davao, Todaya, *Copeland 1429*, October, 1904.

Among the Philippine species most closely allied to *Bauhinia leptopus* Perk., but with much larger flowers; apparently most closely allied to *Bauhinia cornifolia* Baker, of the Malayan Peninsula, but sufficiently distinct, ex descr.

Bauhinia subglabra sp. nov. § *Phanera*.

Scandens, glabra; ramulis pruinosis, nigricantibus nitidis; foliis subcoriaceis, glabris, 5 ad 7 longis, usque ad medium lobatis, lobis rotundatis; nervis ca. 11; racemis glabris; petalis oblongo-lanceolatis vel elliptico-lanceolatis, unguiculatis; staminibus fertilibus 3; ovario tomentoso.

Scandent, 3 to 5 m high, glabrous throughout except the tomentose ovary and style, and the petals which are slightly pubescent outside. Branches terete, lenticellate, gray, the branchlets terete, slender, blackish, somewhat shining. Leaves subcoriaceous, slightly shining, 5 to 7 cm long, 5.5 to 7 cm wide, suborbicular, the base cordate, cleft nearly to the middle, the sinus very narrow, the lobes rounded; nerves about 11, prominent; petioles slender, 4 to 5 cm long. Racemes terminal, glabrous, the rachis 3 to 6 cm long, black; pedicels 2 to 3 cm long; bracteoles none or caducous. Calyx cylindrical, about 1.4 cm long, 3 mm thick, the lobes glabrous, reflexed, narrowly oblong-lanceolate, about 2 cm long, 3 mm wide. Petals oblong-lanceolate to elliptical-lanceolate, nearly 3 cm long, long-clawed, slightly pubescent on the

back, acuminate. Stamens 3, fertile; anthers 12 mm long. Ovary and style densely brown-tomentose; stigma capitate. Fruit unknown.

PALAWAN, Iwahig, *Bur. Sci.* 821 *Foaworthy*, April 30, 1906.

A species well characterized by being entirely glabrous, except the ovary, styles and petals.

Bauhinia dolichocalyx sp. nov. § *Lysiphyllum*.

Arbor ca. 10 m alta; foliis ovatis, integris, basi cordatis, apice breviter acuteque acuminatis, 10 ad 14 cm longis, nervis 7; inflorescentiis terminalibus, densissime fusco-tomentosis; calycis segmentis anguste lanceolatis, 4 ad 5 cm longis; staminibus fertilibus 10; leguminibus ca. 20 cm longis, 7 cm latis, glabris; seminibus 2, compressis, 3.5 cm diam.

A tree about 10 m high. Branchlets terete, lenticellate, somewhat brown-pubescent. Leaves subcoriaceous, ovate, 10 to 14 cm long, 11 cm wide or less, entire, the base broad, usually prominently cordate, the apex shortly and sharply acuminate, glabrous and shining above, somewhat pubescent along the nerves beneath; nerves 7, prominent; petioles 2 to 3 cm long, pubescent. Inflorescence terminal, short, the flowers racemously disposed, densely brown-appressed-tomentose. Calyx tube and pedicels not differentiated, 7 to 8 cm long, gradually thickened upwards, densely brown-tomentose, the calyx lobes narrowly lanceolate or linear-lanceolate, 4 to 5 cm long, about 5 mm wide, densely brown-pubescent outside, subequal. Petals about 5 cm long, glabrous or nearly so, long-clawed. Fertile stamens 10. Ovary glabrous. Pods woody, about 20 cm long, 7 cm wide, glabrous, each with two rounded compressed shining seeds about 3.5 cm in diameter.

LUZON, Province of Batangas, *For. Bur.* 7756 *Curran & Merritt*, October 28, 1907.

A striking species, well characterized by its entire leaves, undifferentiated calyx tube and pedicel, very long calyx lobes, 10 fertile stamens, and rather large pods.

MUCUNA Adans.

Mucuna mindorensis nom. nov.

Mucuna acuminata Merr. *Philip. Journ. Sci.* 1 (1906) Suppl. 196, non Grah.

In describing the above species the fact was overlooked that the specific name *acuminata* had already been used. Accordingly the above new name is here proposed for the species.

GLYCINE Linn.

Glycine warburgii (Perk.) comb. nov.

Pueraria warburgii Perk. *Frag. Fl. Philip.* (1904) 87.

MINDANAO, Taumo, *Warburg 14664*, in *Herb. Berol.* (type); District of Davao, *DeVore & Hoover 368*, May, 1903; Santa Cruz, *Williams 2953*, June, 1905; Province of Surigao, Baganga, *Merrill 5430*, October 6, 1906.

The plant is apparently *Glycine* and not *Pueraria*, and seems to be allied to *G. javanica* Linn. I have examined the type of *Pueraria warburgii* in *Herb. Berol.*, and find that the other specimens here cited closely match it. According to Perkins l. c., a closely allied, if not identical form, is found in Celebes.

MEZONEURUM Desf.

Mezoneurum mindorense sp. nov.

Scandens; foliis bipinnatis, usque ad 35 cm longis, rhaehidibus postice aculeis geminis ternisve recurvis armatis; pinnis ca. 12, 8. ad 10 cm longis; foliolis 8- ad 12-jugatis, oblongo-ellipticis, glabris, 1 ad 1.5 cm longis; paniculis terminalibus; leguminibus brunneis, nitidis, ca. 7 cm longis, monospermis, alis 5 mm latis.

Scandent, nearly glabrous throughout, the branches terete, dark-reddish-brown, with scattered stout recurved spines about 2.5 mm long. Leaves 35 cm long or less, bipinnate, the rachis with short but stout recurved spines in pairs, rarely in threes at the insertion of the pinnae; pinnae 12 or less, 8 to 10 cm long, the rhachis slightly pubescent; leaflets 8 to 12 pairs, oblong-elliptical, glabrous, submembranaceous, 1 to 1.5 cm long, 5 to 7 mm wide, paler beneath, the apex rounded, minutely apiculate, rarely slightly emarginate, the base acute or obtuse; nerves obscure; petiolules very short. Panicles terminal, in fruit 30 cm long or more, the branches somewhat pubescent. Flowers unknown. Pods glabrous, shining, about 7 cm long, about 2.2 cm wide in the middle, coriaceous, brown, somewhat semilunar in outline, the winged margin nearly straight, the other regularly curved, giving nearly the outline of a sector of a circle, the wing 5 mm wide, base and apex acute; seed solitary, in the middle of the pod, flat, circular in outline, 7 mm in diameter (immature).

MINDORO, Pinamalayan, *For. Bur.* 5383 *Merritt*, October, 1906, in thickets near sea level.

Var. **inermis** var. nov.

Differt a typo foliorum rhaehidibus inermibus.

MINDORO, Bulalacao, *Bur. Sci.* 1514 *Bermejos*, August 30, 1906.

ERYTHROXYLACEÆ.

ERYTHROXYLUM P. Browne.

Erythroxylum cuneatum (Wall.) Kurz in Journ. As. Soc. Beng. 43² (1874) 35; Schulz in Pflanzenreich 29 (1907) 146.

Erythroxylum burmanicum Griff. Not. Pl. Asiat. 4 (1854) 468. t. 581, f. 3; Merrill in Forestry Bur. Bull. 1 (1903) 25.

LUZON, Province of Rizal, *Loher s. n.*, May, 1904; Bosoboso, *Bur. Sci.* 1023 *Ramos*, June, 1906; Province of Bulacan, *For. Bur.* 7158 *Curran*, June, 1907; Province of Camarines Sur, Pasacao, *Ahern* 292.

Tenasserim to the Malay Peninsula, Sumatra and Java. T., *Saling, Manambó.*

Erythroxylum platyphyllum sp. nov. § *Coelocarpus*.

Differt *E. cuneato* pedicellis brevioribus, ca. 2 mm longis, foliis majoribus, usque ad 11 cm longis, 6 cm latis.

A small tree, the branches terete, reddish-brown, glabrous. Leaves elliptical, submembranaceous, 6 to 11 cm long, 3 to 6 cm wide, the apex broad, rounded, the base acute, shining above, paler beneath, glabrous; nerves about 10 on each side of the midrib, not prominent; petioles 5 mm long or less; stipules 7 mm long, lanceolate, acuminate, two-keeled, puberulent on the keels. Flowers axillary, solitary or in pairs, their pedicels 2 mm long. Calyx lobes 1.2 mm long, ovate, acuminate. Petals oblong, obtuse, 3.5 mm long, 1.5 mm wide, the ligule nearly one-half as long as the petal. Staminal tube 1.5 mm long, the stamens 10, the filaments unequal, about 1.5 mm long; anthers 0.4 mm long. Ovary glabrous, the style about 3 mm long, cleft into three parts above (short styled flowers not seen). Fruit oblong, 8 mm long, 4.5 mm wide.

MINDANAO, District of Zamboanga, Port Banga, *For. Bur. 9285 Whitford & Hutchinson*, January 2, 1908, growing along the margins of mangrove swamps. The second species of the family for the Philippines.

RUTACEÆ.

LUVUNGA Ham.

Luvunga philippinensis sp. nov.

Scandens, inermis; foliolis oblongis vel oblongo-ellipticis, subcoriaceis, usque ad 25 cm longis, 10 cm latis; floribus in cymis racemosis paucifloris lateralibus dispositis; calycibus cupulatis, truncatis; petalis 3 vel 4, oblongis, ca. 1 cm longis, ovario 4-loculare.

A scandent shrub without spines, glabrous throughout, the branches gray or brownish. Petioles terete, 9 to 13 cm long, greenish; leaflets 3, their petiolules stout, 5 mm long or less, 15 to 25 cm long, 6 to 10 cm wide, subcoriaceous, shining, paler beneath, oblong to oblong-elliptical, the apex acuminate, the acumen blunt or retuse, base acute, margins entire; nerves 8 to 10 on each side of the midrib, irregular, somewhat prominent beneath, anastomosing. Inflorescence of small, usually 3-flowered, racemose cymes, borne on the branches below the leaves or in the leaf-axils, 1.5 cm long or less; pedicels 4 to 5 mm long. Flowers white, fragrant. Calyx cup-shaped, about 4 mm in diameter, truncate or very obscurely 5-toothed, its stipe 2 mm long. Petals 3 or 4, oblong, obtuse, imbricate, 9 to 10 mm long, 3.5 to 4.5 mm wide. Stamens 10, free; filaments stout, swollen, about 6 mm long; anthers erect, oblong, 3 mm long. Ovary oblong, 4-celled, quadrangular in cross section, about 3 mm long, 1.2 mm thick, scarcely narrowed into the stout style which is about as long as the ovary; stigma capitate. Fruit unknown.

MINDANAO, District of Zamboanga, Port Banga, *For. Bur. 9104, 9267 Whitford & Hutchinson*, December, 1907, in forests 30 to 40 m above sea level. The first representative of the genus to be found in the Philippines.

MELICOPE Forst.**Melicope curranii** sp. nov. § *Entoganum*.

Arbusecula glabra; foliis oblongo-obovatis vel oblongo-lanceolatis, acuminatis, simplicibus; paniculis axillaribus, usque ad 4 cm longis, paucifloris; floribus 4-meris, 2 ad 2.5 mm longis.

A shrub, glabrous throughout. Branches slender, brown, terete, the branchlets greenish. Leaves simple, membranaceous, oblong-obovate to oblong-lanceolate, apex acuminate, base cuneate, 11 to 17 cm long, 4 to 6 cm wide, shining; nerves 8 or 9 on each side of the midrib, irregular, somewhat prominent beneath, distant, anastomosing; petiolule about 1 cm long, the petiole 2 to 5 cm long, geniculate at the joint with the petiolule. Panicles small, axillary, peduncled, 4 cm long or less, the branches short, spreading. Flowers 4-merous, greenish-white, their pedicels 2 mm long. Calyx short, 4-toothed, the teeth acute. Petals oblong, acute, 2 to 2.5 mm long, 1 mm wide, valvate and with an appendage at the apex inside. Stamens 8, about 1 mm long. Ovary 4-lobed; style short; stigma 4-lobed.

Luzon, Province of Tayabas, *For. Bur. 9663 Curran*, March, 1908.

In general appearance resembling *Melicope luzoniensis* Engl., but characterized at once by its simple leaves. The same form has also been collected by Vidal (Herb. Kew).

CHISOCHETON Blume.**Chisocheton curranii** sp. nov. § *Euchisocheton, Paniculati*.

Foliis modice petiolatis, 2- vel 3-jugatis, petiolis rhachide petiululisque fulvo-olivaceo-pubescentibus; foliolis oppositis, elliptico-oblongis vel elliptico-ovatis, basi acutis, apice breviter acuminatis, costa nervisque utrinque hirsutis; paniculis axillaribus, angustis, 9 ad 15 cm longis, pauce breviter ramosis, dense pubescentibus; floribus breviter pedicellatis; petalis 5, pubescentibus, ca. 16 mm longis; tubo cylindrico, 5-laciniato; ovario 2-loculare.

A small tree about 5 m high, the branches appressed-brownish-pubescent. Leaves about 20 cm long, the rachis, petiolules, midribs, and nerves on both sides of the leaflets densely olivaceous-brownish-pubescent or hirsute; leaflets subcoriaceous, opposite, 2 or 3 pairs, 8 to 11 cm long, 3 to 4.5 cm wide, apex short acuminate, base acute, the nerves and midrib on both surfaces pubescent or hirsute; nerves about 7 on each side of the midrib, prominent, the reticulations distinct; petiolules 5 to 7 mm long. Panicles pubescent, axillary, narrow, 9 to 15 cm long, the branches very short, spreading or ascending, few, 1 to 2 cm long. Calyx pubescent, cup-shaped, 4 to 5 mm long, the teeth short, rounded. Petals yellowish-white, about 16 mm long, 2 mm wide, pubescent outside, glabrous within. Staminal tube 13 to 14 mm long, cylindrical, free, appressed-hirsute on both sides, the apex 5-lobed, the lobes

narrowly oblong, obtuse, 2.5 mm long, 0.7 mm wide. Stamens 5, the anthers sessile, 2.5 mm long, alternating with the teeth. Disk none. Ovary hirsute, narrow, 2-celled; style hirsute, about 10 mm long. Fruit globose, brown, 5 to 6 cm in diameter, the seeds 2.5 to 3 cm long.

Luzon, Province of Benguet, Baguio, *For. Bur.* 4865, 4923 Curran, August, 1906, in ravines in the limestone region at an altitude of about 1,500 m.

AGLAIA Lour.

Aglaia palawanensis sp. nov. § *Hearnia*.

Arbuseula ca. 5 m alta, ramis petiolis rhaëhide paniculisque dense ferrugineo-stellato-pubescentibus; foliis imparipinnatis, 2-jugatis, usque ad 20 cm longis; foliolis elliptico-ovatis, elliptico-lanceolatis vel ovato-lanceolatis, acuminatis, subcoriaceis, pallidis, utrinque glabris, costa subtus stellato-pubescente excepta; paniculis pyramidato-ramosis, multifloris, foliis subaequantibus; floribus pedicellatis; calycibus dense stellato-pubescentibus, profunde 5-dentatis; petalis 5.

A shrub or small tree about 5 m high, the branches, branchlets, petioles, rachis, petiolules, midrib of the leaflets beneath and the inflorescence rather densely stellate-ferruginous-pubescent. Branches slender, terete, brownish. Leaves 20 cm long or less, usually 2-jugate, the rachis, including the petiole, about 6 cm long; leaflets subcoriaceous, pale when dry, somewhat shining, opposite, the terminal one slightly larger than the lateral ones, elliptical-ovate to ovate-lanceolate, the apex acuminate, the base acute, 7 to 11 cm long, 2 to 3.5 cm wide; nerves about 9 on each side of the midrib, rather distinct beneath, the reticulations faint, petiolules 5 to 7 mm long, that of the terminal leaflet about 1 cm long. Panicles about as long as the leaves, the lower branches 5 to 8 cm long, the upper ones gradually shorter. Flowers white or pale-yellow, pedicellate. Calyx densely ferruginous-stellate-pubescent, 1 mm long, deeply 5-cleft, the lobes about 0.7 mm. long, narrowly ovate, acute. Petals 5, free, concave, glabrous, ovate, obtuse, about 1.2 mm long. Staminal tube truncate, broad, 0.5 mm long, glabrous. Anthers 5, inserted on the margin of the tube, exserted, broadly triangular-ovate, 0.3 mm long.

PALAWAN, Victoria Peak, *Bur. Sci.* 689 Foxworthy, March, 1906, on steep forested slopes along streams at an altitude of about 1,000 m.

Aglaia affinis sp. nov. § *Hearnia*.

Foliis breviter petiolatis, 2-jugatis; foliolis oppositis, elliptico-oblongis, pallidis, subcoriaceis, supra glabris, subtus leviter ferrugineo-lepidotis, apice acuminatis, nervis utrinque ca. 10; paniculis foliis subaequantibus, pyramidato-ramosis, dense ferrugineo-lepidotis; floribus subsessilibus; calycibus dense lepidotis.

A tree about 15 m high, the branches brownish, glabrous, striate, not lenticellate, the younger parts somewhat lepidote. Leaves 12 to 20 cm

long, the rachis and petiolules rather densely ferruginous-lepidote; leaflets subcoriaceous, 2-jugate, 7 to 10 cm long, 2.4 to 5 cm wide, elliptical-oblong, pale, glabrous above, beneath somewhat ferruginous-lepidote, base acute, equal, apex acuminate; nerves about 10 on each side of the midrib; petiolules 2 to 5 mm long. Panicles terminal, pyramidal, about as long as the leaves, densely ferruginous-lepidote throughout, branched from near the base, the lower branches about 7 cm long, the upper ones gradually shorter, the branchlets densely many-flowered. Flowers yellowish, fragrant, about 1 mm long, the buds globose, subsessile. Calyx 5-toothed, lepidote. Petals 5, glabrous, about 1 mm long. Staminal tube about 0.8 mm long, crenate, glabrous, bearing on its margin 5 sessile anthers.

BALABAC, *Bur. Sci.* 446 *Mangubat*, March, 1906.

A species apparently allied to *Aglaia cumingiana* Turcz., and to *A. harmsiana* Perk., differing from the former in its densely lepidote inflorescence, nearly sessile flowers which are densely disposed, and its acuminate leaflets, and from the latter by having only two pairs of shorter leaflets, shorter panicles, and different indumentum, the branches and leaves in the species above described not being at all stellate-tomentose-lepidote, the scales being appressed and entire or only very minutely ciliate.

EUPHORBIACEÆ.

OMPHALEA Linn.

Omphalea philippinensis sp. nov.

Scandens, inflorescentiis exceptis glabra; foliis coriaceis oblongo-lanceolatis, acuminatis, nitidis, basi supra 2-glandulosis; floribus pedicellatis, minutis; fructibus dehiscentibus, 2.5 ad 3 cm longis.

A large woody vine, glabrous except the inflorescence. Branches terete, somewhat rugose-striate when dry, glabrous, light-gray or yellowish. Leaves alternate, oblong-lanceolate, 12 to 22 cm long, 3 to 7 cm wide, coriaceous, glabrous, shining, pale in drying, the margins entire, somewhat recurved, apex rather abruptly acuminate, the acumen 1 cm long or less, blunt, the base acute or obtuse; nerves about 9 on each side of the midrib, prominent beneath, curved, the reticulations distinct on both surfaces; petioles stout, 1.5 to 3.5 cm long, with two prominent glands on the upper surface at the juncture with the leaf. Inflorescence axillary, paniculate, about 40 cm long (or longer?), somewhat ferruginous-hirsute, the branches stout, spreading, the flowers many, pedicelled, fasciculate, the pedicels slender, thickened upwards, 6 to 7 mm long. Buds globose, 1.5 to 2 mm in diameter. Sepals 5, imbricate, glabrous, obovate or orbicular, about 2 mm long. Petals wanting. Anthers sessile. Pistillate flowers not seen. Fruit dehiscent, 2.5 to 3 cm long, the valves twisting in dehiscence, firmly coriaceous, glabrous, gray, the seeds

glabrous, shining, ovoid, 1.5 to 2 cm long, somewhat flattened on the two inner sides, apparently three in each fruit.

Luzon, Province of Rizal, Antipolo, *Merrill 1716*, March, 1903; Santander, *Bur. Sci. 3270 Ramos*, June, 1907; Province of Tayabas (Infanta), *Whitford 821*, September, 1904. The same species is apparently represented by the following specimens in Herb. Kew: *Cuming 1468*; *Vidal 1712, 2380, 3875*, and *Loher 5213*, all from the Philippines.

The only representative of the genus known from the Philippines, about 12 species being known from tropical America, one from Queensland and one from Madagascar. The material available is not sufficient to draw up a complete diagnosis, flowers being immature and fruit opened, so that it is impossible to describe the entire fruit.

AQUIFOLIACEÆ.

ILEX Linn.

Ilex gracilipes sp. nov.

Arbor parva, 3 ad 4 m alta, glabra; foliis oblongo-ovatis vel elliptico-ovatis, membranaceis, acuminatis, margine apiculato-denticulatis; floribus 3- ad 5-meris, solitariis vel fasciculatis, axillaribus, longe pedunculatis; pedunculis ca. 1 cm longis, fructiferis longioribus.

A small tree 3 to 4 m high, glabrous, the branches and branchlets slender, terete, reddish-brown, lenticellate. Leaves oblong-ovate to elliptical-ovate, membranaceous, 2.5 to 5 cm long, 1 to 3 cm wide, opaque or obscurely minutely punctate, shining, base acute, the apex rather long-acuminate, the acumen apiculate, the margins regularly apiculate-denticulate; nerves 4 or 5 on each side of the midrib, not prominent, anastomosing; petioles slender, 5 mm long or less. Flowers solitary or in 2- to 4-flowered fascicles in the axils of the leaves, long-pedicelled, the pedicels about 1 cm long, much elongated in fruit. Calyx about 2 mm in diameter, 3- to 5-lobed, the lobes orbicular-reniform, 0.5 mm long the margins shortly obscurely ciliate. Corolla lobes 3 to 5, imbricate, orbicular, rounded, about 1.5 mm long, the tube 0.5 mm long. Stamens 3 to 5, inserted on the corolla and alternating with the lobes, the filaments and anthers each 0.8 mm long. Ovary usually 5-celled, with a single pendulous ovule in each cell; stigma capitate. Fruit subglobose or ovoid, 5 to 6 mm long, with about 15 longitudinal ridges, usually with 5 nutlets, the peduncles 2 to 3 cm long.

Luzon, Province of Benguet, *Williams 1047*, May, 1904; *Bur. Sci. 2839 Mearns*, April, 1907; *Elmer*; *Loher 5129*: Province of Zambales, Mount Tapulao, *For. Bur. 8060 Curran & Merritt*, December, 1907; Province of Bataan, Mount Mariveles, *Whitford 414*: Province of Rizal, Bosoboso, *Bur. Sci. 2115, 2677 Ramos*, February, May, 1907.

A very characteristic species readily recognizable by its solitary or fascicled, long-pedicelled flowers, very long-pedicelled fruits and membranaceous leaves which are apiculate-denticulate. The flowers are sometimes 3- to 5-merous on the same plants.

CELASTRACEÆ.

MICROTROPIS Wall.

Microtropis curranii sp. nov.

Arbor parva, glabra, 4 ad 9 m alta; foliis coriaceis, nitidis, subtus pallidis, elliptico-ovatis, 4 ad 7 cm longis, breviter obtuseque acuminatis, basi acutis, margine revolutis; cymis axillaribus, solitariis vel fasciculatis, ca. 1.5 cm longis, 3-floris; floribus 4-meris; fructibus cylindraceis, elongatis, 1 ad 1.5 cm longis.

A small tree, glabrous throughout, 4 to 9 m high, the branches and branchlets terete, dark-reddish-brown or nearly black when dry. Leaves coriaceous, shining, pale beneath, elliptical-ovate, 4 to 7 cm long, 1.5 to 4.5 cm wide, the apex short and bluntly acuminate, the base acute, margins entire, revolute; nerves 5 or 6 on each side of the midrib, not prominent, the reticulations indistinct; petioles 1 cm long or less. Cymes axillary, solitary or two or three in each axil, 1.5 cm long or less, the peduncles about 1 cm long, each cyme usually 3-flowered. Flowers 4-merous, the sepals orbicular, rounded, the two outer ones 2 mm long, the two inner ones somewhat petaloid, 3 mm long. Corolla lobes 4, obovate or elliptical-obovate, rounded, about 3 mm long, united below. Stamens 4, attached to the corolla and alternating with its lobes, the filaments short, the anthers 0.5 mm long, broader than long. Ovary ovoid, glabrous. Fruit cylindrical, elongated, yellow when fresh, dark-reddish-brown when dry, short-apiculate, 1 to 1.5 cm long, about 6 mm thick, 1-celled, dehiscent, the pericarp coriaceous.

Luzon, Province of Benguet, Mount Tonglon, *For. Bur.* 4966, 4970 Curran, August, 1906; *Williams* 1300, October, 1904: Province of Zambales, Mount Tapulao, *For. Bur.* 8071 Curran & Merritt, December, 1907; *Bur. Sci.* 4698, 5026 Ramos, December, 1907.

The first species of the genus to be found in the Philippines, about 9 species being previously known, extending from British India to Ceylon, Cochin China and Java. The species here described differs from all the others in the genus by its 4-merous flowers.

EUONYMUS Linn.

Euonymus philippinensis sp. nov.

Euonymus timorensis Turez. in Bull. Soc. Nat. Mosc. 31 (1858) 447; Lawson in Hook. f. Fl. Brit. Ind. 1 (1875) 610, saltem pro parte; F.-Vill. Nov. App. (1880) 46; Vidal Phan. Cuming. Philip. (1885) 103; Ceron Cat. Pl. Herb. (1892) 47, non Zipp.

Arbor parva, glabra, 3 ad 8 m alta; foliis subcoriaceis, nitidis, ellipticis, oblongo-ellipticis, vel anguste obovato-oblongis, basi acutis, apice acuminatis, integris vel versus apicem minute obscureque denticulatis; cymis axillaribus, laxe dichotomis, diffusis, 8 ad 10 cm longis; floribus 5-meris; sepalis petalisque fimbriatis.

A small tree, 3 to 8 m high, the branches reddish-brown or greenish,

slender, terete. Leaves subcoriaceous, shining, elliptical, oblong-elliptical or narrowly obovate-oblong, 7 to 13 cm long, 3 to 6 cm wide, entire or slightly and obscurely denticulate towards their apices, the base acute, the apex short acuminate, the acumen acute or blunt, rarely retuse; nerves 5 to 7 on each side of the midrib, not prominent, distant, irregular, anastomosing, the secondary nerves and lax reticulations nearly as prominent as the primary veins; petioles 5 to 7 mm long. Cymes axillary, dichotomous, diffuse, 8 to 10 cm long, the peduncles 3 to 5 cm long, the flowers numerous, white, 8 to 10 mm in diameter, the bracts and bracteoles linear or acicular, the former about 3 mm, the latter 1 mm long. Sepals 5, orbicular to reniform, the margins shortly fimbriate. Petals obovate, narrowed below, not clawed, 5 mm long, fimbriate. Filaments 2 mm long; anthers 0.5 mm long. Fruit glabrous, red, broadly obovoid or turbinate, nearly 1 cm long, 1.5 cm in diameter, 5-lobed, the lobes rounded.

MINDORO, *Cuming 1552*. LUZON, Province of Benguet, *Elmer 6462*, June, 1904; *Bur. Sci. 3551 Mearns*, July, 1907; *Williams 1024*, October, 1904; Province of Rizal, *Bur. Sci. 1037, 1443, 4612 Ramos*, July, August, 1906; August, 1907; Province of Tayabas, Lagumanoc, *Merrill 3356*, November, 1903. MASBATE, *Merrill 3064*, August, 1903.

A species previously confused with *Euonymus timorensis* Zipp., which is however a synonym of *Euonymus javanicus* Blume. Most closely allied to *E. attenuatus* Wall., of British India and to *E. gibber* Hance, of Hongkong, differing from the former in its shorter cymes, bracts and bracteoles and in the shape of its leaves, and from the latter in its longer leaves and cymes, the leaves of Hance's species being rounded and retuse at the apex. Lawson² admits *Euonymus timorensis* Zipp., as a distinct species, giving its range as from Tenasserim or the Andaman Islands to Pegu, Timor, and the Philippines, the Philippine distribution being undoubtedly based on Cuming's number cited above. The Andaman Island reference is probably erroneous, as King³ does not admit the species in his "Materials for a Flora of the Malayan Peninsula." Not having seen the other specimens examined by Lawson, I am unable to state whether or not they are identical with the Philippine plant, but it seems probable that they represent a different species, or that the Indian specimens are really the same as *Euonymus attenuatus* Wall.

SIPHONODON Griff.

Siphonodon celastrineus Griff. in *Calc. Journ. Nat. Hist.* 4 (1844) 247, *t. 14*; *Laws. in Hook. f. Fl. Brit. Ind.* 1 (1875) 629; *Miq. Fl. Ind. Bat.* 1² (1859) 629; *Koord. & Valet. Bijdr. Boomsort. Java* 7 (1900) 105.

LUZON, Province of Bataan, Lamao River, *Whitford 1284*, May, 1905; Province of Tarlac, *Garcia*, August, 1903; Province of Rizal, Bosoboso, *Bur. Sci. 1466 Ramos*, September, 1906. MINDORO, Bongabong River, *Whitford 1423*, February, 1906; *For. Bur. 4053 Merritt*, April, 1906. TICAO, *For. Bur. 1072 Clark*, June, 1904.

British India and Java.

² Hook. f. *Fl. Brit. Ind.* 1 (1875) 610.

³ *Journ. As. Soc. Beng.* 65² (1896) 343.

A peculiar genus, anomalous in the family, here reported from the Philippines for the first time; apparently widely distributed in the Archipelago, but variable. The genus contains the above species, *Siphonodon australe* Benth., and *S. pendulum* Bailey, of Australia, and the following species, which is evidently undescribed.

***Siphonodon pyriformis* sp. nov.**

Arbor parva, glabra, 5 ad 6 m alta; foliis coriaceis, nitidis, oblongo-ellipticis vel oblongo-lanceolatis, 7 ad 15 cm longis, basi acutis, margine obscure crenulatis; nervis utrinque 7 ad 10; fructibus pyriformibus, ca. 3 cm longis, crustaceo-carnosis, glabris.

A small tree, 5 to 6 m high, glabrous throughout. Branches and branchlets terete, dark-reddish-brown, lenticellate. Leaves alternate, coriaceous, glabrous, elliptical-oblong to oblong-lanceolate, rarely elliptical-ovate, 7 to 15 cm long, 3 to 6 cm wide, the base acute, apex shortly and obtusely acuminate or rather long acuminate, the margins obscurely crenulate; lateral nerves 7 to 10 on each side of the midrib, irregular, anastomosing, the secondary ones nearly as prominent; petioles 4 mm long or less. Fruit axillary, solitary, the peduncles 5 to 8 mm long, crustaceous-fleshy, glabrous, pyriform, about 3 cm long, 2 cm in diameter, shining; seeds scattered.

Luzon, Province of Benguet, *Elmer* 5985, March, 1904; *For. Bur.* 5141 *Curran*, August, 1906; *Bur. Sci.* 2875 *Mearns*, April, 1907.

A species allied to the preceding, readily distinguishable however by its pyriform fruits.

ICACINACEÆ.

STEMONURUS Blume.

***Stemonurus laxiflorus* (Miers) comb. nov.**

Platca laxiflora Miers in Ann. & Mag. Nat. Hist. II 10 (1852) 111.

Gomphandra laxiflora Vidal Rev. Pl. Vasc. Filip. (1885) 103.

Cissus flexuosa Turcz. in Bull. Soc. Nat. Mosc. 31¹ (1858) 415.

The species is enumerated here to call attention to the reduction of *Cissus flexuosa* Turcz., it being based on the same number of Cuming's collection as was *Platca laxiflora*. Turczaninow's description also applies to the specimens of Cuming 891 that we have seen. Miers' name having priority, is here retained, but is transferred to *Stenomurus*, where the species apparently belongs. Planchon in his monograph of the *Ampelideac*⁴ remarks concerning *Cissus flexuosa* "Est-ce bien un Ampélidée? Plus que douteux."

***Stemonurus merrittii* sp. nov.**

Arbor 10 ad 12 m alta, inflorescentiis ramulis petiolisque puberulis; foliis papyraceis, obovato-ellipticis vel obovato-oblongis, acuminatis, ca. 20 cm longis; cymis axillaribus, 1 ad 2 cm longis; floribus sessilibus, fasciculatis; filamentis brevibus, glabris; fructibus anguste oblongis, 2 ad 2.5 cm longis, plus minus triangulari-compressis, sulcatis.

⁴ DC. Monog. Phan. 5 (1887) 424.

A tree 10 to 12 m high, the branches terete, nearly black, the branchlets somewhat compressed, yellowish-gray, puberulent. Leaves obovate-elliptical to oblong-elliptical, papyraceous, about 20 cm long, 8 to 10 cm wide, slightly shining, glabrous, paler beneath, the apex short-acuminate, the base rounded or subacute, margins entire; nerves 8 to 10 on each side of the midrib, prominent beneath, somewhat ascending, parallel, the reticulations obscure, very lax; petioles puberulent, about 1 cm long. Cymes axillary, solitary, 1 to 2 cm long, puberulent, rather congested, sometimes branched from the base, but more often branched above only, the branches short. Flowers yellowish or cream-colored, sessile, fascicled at the ends of the branchlets. Calyx puberulent, shallow, about 2 mm in diameter; truncate or very obscurely toothed. Petals 5, free, valvate, oblong, about 2 mm long, 1 mm wide, acute, puberulent outside, glabrous and with an obscure keel within. Stamens 5; filaments very short, about 0.5 mm long; anthers 1.2 mm long, deeply cleft at the base. Ovary glabrous, oblong. Fruit narrowly oblong, glabrous, 2 to 2.5 cm long, about 7 mm thick, compressed, triangular in cross-section, sulcate on one side, the other two sides with a rib or keel.

MINDORO, Pinamalayan, in the mountains, altitude 100 m, *For. Bur.* 9916, 9915 *Merritt*, April 2, 1908.

IODES Blume.

Iodes philippinensis sp. nov.

Iodes ovalis Vidal *Phan. Cuming. Philip.* (1885) 103; *Rev. Pl. Vase. Filip.* (1886) 85, non Blume.

Ramis ramulis inflorescentiis foliisque plus minus ferrugineo-pubescentibus; foliis ovatis vel oblong-ovatis, membranaceis, usque ad 12 cm longis, basi late cordatis, apice acuminatis; floribus breviter pedicellatis, ca. 8 mm longis, plus minus hirsutis.

Scandent, the branches, branchlets, leaves, and inflorescence more or less softly ferruginous-pubescent, the stems yellowish- to reddish-brown, the ultimate branchlets very densely pubescent. Leaves opposite, ovate to oblong-ovate, rather strongly acuminate, base broad, cordate, membranaceous, pubescent on both surfaces, more densely so on the nerves and especially on the under surface, 5 to 12 cm long, 3 to 8 cm wide; nerves about 6 on each side of the midrib, very prominent beneath, the reticulations lax, distinct; petioles densely pubescent, 1 cm long or less. Cymes axillary and terminating the short lateral branches, pubescent, few-flowered, the peduncles short or elongated. Pedicels about 1 mm long, the calyx ovoid, 2 mm long, more or less hirsute, deeply 5-lobed, the lobes oblong-lanceolate, 1 mm long, acuminate. Corolla-tube cylindrical, more or less hirsute, about 7 mm long, the lobes 5, ovate-lanceolate, strongly acuminate, reflexed, about 3 mm long, 1 mm wide. Anthers about 1 mm long. Ovary narrowly obovoid, glabrous, about 1 mm long.

Fruit broadly oblong, somewhat compressed, 1.5 cm long, about 1 cm wide, somewhat hirsute, strongly reticulate.

PHILIPPINES, without locality, *Cuming 1532*. MINDORO, Calapan, *Merrill 987, 1287*, January, April, 1903; Pinamalayan, *For. Bur. 5407 Merritt*, October, 1906. ROMBLON, *Hallier*, January, 1904. MASBATE, *Merrill 3383*, November, 1903. CEBU, *Bur. Sci. 1709 McGregor*, September, 1906 (type). LEYTE, Palo, *Elmer 7108*, January, 1906. PALAWAN, *Bur. Sci. 729 Foxworthy*, March, 1906.

The specimen collected by Cuming, cited above, has been referred by Baillon² to *Iodes ovalis* Blume, but the Philippine plants appear to differ constantly from typical Javan material (Pl. Bogor. Exsicc. no. 27) in their differently shaped, more cordate and much more acuminate, thinner leaves, less dense pubescence, and very different inflorescence, in *Iodes ovalis* the inflorescence being about 20 cm long, and in *I. philippinensis* never more than 7 cm in length and usually much shorter.

URANDRA Thwaites.

Urandra luzoniensis sp. nov.

Arbor glabra, 12 ad 29 m alta; foliis alternis, ellipticis vel obovato-ellipticis, subcoriaceis, nitidis, usque ad 15 cm longis, breviter obtuseque acuminatis, basi attenuatis; cymis terminalibus 3 ad 6 cm longis; floribus 5-meris, ca. 5 mm longis; fructibus oblongo-ellipsoideis, 2 ad 2.5 cm longis.

A tree, glabrous throughout, except the inflorescence, 12 to 29 m high. Branches terete, light-gray, the ultimate branchlets usually reddish-brown. Leaves alternate, elliptical to obovate-elliptical, subcoriaceous, shining, paler beneath, glabrous, 7 to 15 cm long, 4 to 7.5 cm wide, the apex shortly and obtusely acuminate, sometimes obtuse, the base gradually narrowed and somewhat decurrent-acuminate; nerves about 5 on each side of the midrib, slender, distinct beneath, ascending, the reticulations very lax, nearly obsolete; petioles about 1 cm long. Cymes terminal, 3 to 6 cm long, dichotomous, the peduncles 1 to 3 cm long, the ultimate branches and pedicels more or less ferruginous-hirsute. Calyx short, cup-shaped, truncate or obscurely toothed, about 1.5 mm long and 1.7 mm in diameter. Petals 5, oblong-oblanccolate, acute, glabrous, 5 mm long, 1.5 mm wide, crested at the apex inside. Stamens 5; filaments 5 mm long, glabrous below, above on the inner side below the anther, and on the back opposite the anther covered with long weak hairs; anthers ovoid, 1.2 mm long. Ovary ovoid, glabrous; style conical. Fruit elliptical-oblong, glabrous, black when dry, 2 to 2.5 cm long, about 1 cm in diameter, slightly striate, the exocarp coriaceous, the seed similar in shape to the fruit, 1.5 cm long or less.

LUZON, Province of Bataan, Lamao River, *For. Bur. 711, 1926, 2949 Borden*, May, September, and March, 1904-05; *For. Bur. 562, 574 Barnes*, March, 1904; Province of Rizal, Bosoboso, *Merrill 2669*, June, 1903; *For. Bur. 2445, 2989 Ahern's collector*; Province of Cagayan, *For. Bur. 7077 Klemme*, May, 1907. MINDORO, *For. Bur. 6214 Merritt*, January, 1907.

² DC. Prodr. 17 (1873) 23.

Urandra pauciflora sp. nov.

Arbor parva, glabra; ramulis tenuibus, glabris, teretibus; foliis ovatis vel oblongo-ovatis, membranaceis, valde acuminatis, alternis, basi acutis vel rotundatis; cymis axillaribus, paucifloris, ca. 4 cm longis; floribus ca. 3, longe pedicellatis, 4-meris, 4 mm longis.

A small tree, glabrous throughout except the slightly puberulent inflorescence. Branches and branchlets slender, terete, gray or brownish. Leaves alternate, ovate to oblong-ovate, membranaceous, glabrous, somewhat shining, entire, base acute or somewhat rounded, apex slenderly long-acuminate; nerves 5 or 6 on each side of the midrib, not prominent, the reticulations very lax, nearly obsolete; petioles 5 to 8 mm long, slender. Cymes axillary, slender, 3-flowered, obscurely puberulent, the peduncles about 2 cm long, the pedicels 1 to 1.5 cm long. Calyx short, obscurely 4-toothed, less than 1 mm long. Petals 4, about 4 mm long, free, or united in bud. Stamens 4; filaments as long as the petals, flattened, with a few long hairs on the back opposite the anthers and along the margins just below the anthers; anthers 0.6 mm long. Ovary oblong, truncate, glabrous. Fruit unknown.

MINDORO, near Lake Naujan, and Mount Halcon, *For. Bur.* 6770, 4327 *Merritt*, April, 1907, and June, 1906.

A species characterized by its few-flowered very slender inflorescence and 4-merous flowers, the anthers with but few hairs.

GONOCARYUM Miq.

Gonocaryum calleryanum (Baill.) Becc. *Malesia* 1 (1877) 123.

Phlebocalymna calleryana Baill. in *Adansonia* 9 (1869) 147.

Gonocaryum tarlacense Vidal *Sinopsis Atlas* (1883) 20, t. 30, f. C.; *Rev. Pl. Vasc. Filip.* (1886) 86; *Ceron Cat. Pl. Herb.* (1892) 46; *Merr. in Philip. Journ. Sci.* 1 (1906) Suppl. 86.

Gonocaryum sp. *Merr.* in *For. Bur. Bull.* 1 (1892) 34.

CAMIGUIN, (Babuyan Islands), *Bur. Sci.* 2987 *Fenix*, June, 1907. LUZON, Province of Zambales, Botolan, *Merrill* 2983, June, 1903; Province of Pampanga, Arayat, *Merrill* 1406, March, 1903; Province of Principe, Baler, *Merrill* 1036, August, 1902; Province of Laguna, Los Baños, *Elmer* 8317, April, 1906; Province of Rizal, Bosoboso, *Merrill* 1862, 2816, April, July, 1903; *For. Bur.* 1989 *Ahern's collector*, November, 1904; *Bur. Sci.* 4601 *Ramos*, August, 1907; *Decades Philip. Forest Fl. no. 38*, March, 1904; Province of Bataan, Lamao River, *For. Bur.* 636, 831, 1366, 1803, 2106, 2744 *Borden*, April-December, 1904; *Elmer* 6884, 6887, November, 1904; *For. Bur.* 2199, 2643 *Mejer*, December, 1904; *Whitford* 475, 1212, April, July, 1904-05; *Williams* 493, January, 1904; *For. Bur.* 6355 *Curran*, March, 1907; Province of Tayabas, *For. Bur.* 7853 *Merritt & Curran*, November, 1907; Atimonan, *Whitford* 709, August, 1904; Lagumanoc, *Merrill* 3360, November, 1903; Pagbilao, *Merrill* 1928, April, 1903; Province of Camarines Sur, *Ahern* 86, March, 1902.

A species common and widely distributed in Luzon, the oldest specific name being here adopted. From the description given by Baillon, *Phlebocalymna calleryana* and *Gonocaryum tarlacense* are conspecific, but *Platea laxiflora* Miers, is a quite different species. The species seems to be very closely allied to the Malayan *Gonocaryum teysmannianum* Scheff.

ELAEOCARPACEÆ.

ELAEOCARPUS Linn.

Elaeocarpus foxworthyi sp. nov.

Arbor ca. 15 m alta; foliis elliptico-ovatis, ca 18 cm longis, coriaceis, obtusis, subtus ferrugineo-pubescentibus, nervis utrinque ca. 12, prominentibus, margine breviter obscureque denticulatis; fructibus ovoideis vel ellipsoideis, dense ferrugineo-pubescentibus, ca. 3.5 cm longis.

A tree about 15 m high, the branches, branchlets, petioles, leaves beneath, and above when young, panicles and fruits rather densely ferruginous-pubescent. Leaves elliptical-ovate, about 18 cm long, 10 to 13 cm wide, coriaceous, obtuse, rarely slightly and broadly acute, the base rounded to subacute, glabrous above when mature, except on the somewhat pubescent midrib and nerves, the margins minutely and distantly denticulate; nerves about 12 on each side of the midrib, very prominent, parallel, the reticulations very distinct beneath, subparallel; petioles 5 to 6 cm long. Flowers unknown. Infrutescence axillary, pubescent. Fruits ovoid or ellipsoid, about 3.5 cm long, 2.5 cm thick, very hard, obtuse, densely ferruginous-pubescent, with one mature seed.

PALAWAN, Iwahig, *Bur. Sci.* 858 *Foxworthy*, May, 1906; *For. Bur.* 4158 *Curran*, May, 1906.

A tree growing along the river, well characterized by its rather large, elliptical-ovate leaves, and hard, ferruginous, ellipsoid, rather large, fruits.

MALVACEÆ.

HIBISCUS Linn.

Hibiscus cannabinus Linn. Syst. ed. 10 (1759) 1149; Mast. in Hook. f. Fl. Brit. Ind. 1 (1874) 339; Hoehr. in Ann. Conserv. Jard. Bot. Genève. 4 (1900) 114.

LUZON, Manila, *Merrill* 3801, December, 1903: Province of Pangasinan, *Bur. Sci.* 4904 *Ramos*, December, 1907. MINDANAO, Province of Surigao, Baganga, *Merrill* 5434, October, 1906.

Widely distributed in the tropics, cultivated; not previously reported from the Philippines.

FLACOURTIACEÆ.

HOMALIUM Jacq.

Several species of *Homalium* occur in the Philippines, all endemic, so far as is known at the present time. Some of the species are important timber trees, but as there has been considerable confusion in the group, due to misinterpretation of some of the previously described species, the following key to the Philippine forms has been made. The types of F.-Villar's species are no longer extant, but those of Vidal are preserved in the Kew Herbarium, and these have been examined. There are some manifest errors in the descriptions of the former author, which

have given rise to much of the confusion in the Philippine representatives of the genus, and it is hoped that the following enumeration will clear up the doubtful points:

Stamens 1 opposite each petal (§ BLACKWELLIA).

Leaves softly pubescent beneath 1. *H. barandae* Vid.

Leaves entirely glabrous.

Flowers 5-6-merous; petals subspatulate, somewhat broader than the sepals, hirsute; leaves crenate 2. *H. loheri* Merr.

Flowers 6-7-merous; petals and sepals linear, equal, covered with very long spreading hairs; leaves entire 3. *H. panayanum* F.-Vill.

Stamens 2 or more opposite each petal (§ MYRIANTHEIA).

Petals spatulate, much exceeding the ovate-lanceolate sepals; flowers 4-5-merous 4. *H. bracteatum* Benth.

Petals and sepals subspatulate, equal or subequal; flowers 5-8-merous.

Flowers 5-6-merous; lateral nerves of the leaves about 6

5. *H. villarianum* Vid.

Flowers 7-8-merous; lateral nerves of the leaves 11 to 13.

6. *H. luzoniense* F.-Vill.

(1) **Homalium barandae** Vidal Cat. Pl. Prov. Manila (1880) 32; Sinopsis Atlas, (1883) 27, t. 53, f. A; Rev. Pl. Vasc. Filip. (1886) 141; Ceron Cat. Pl. Herb. (1892) 87; F.-Vill. Nov. App. (1883) 94, in part, excluding the description of the flowers.

LUZON, Province of Rizal, Bosoboso, *For. Bur.* 2959, 3377 *Ahera's collector*, April, September, 1905; Province of Batangas, *For. Bur.* 7749 *Curran & Merritt*, November, 1907.

The type of this species was from the Province of Manila (Rizal); and Vidal, in the original description, which is very short, speaks especially of the dense pubescence on the lower surface of the leaves, which is also very characteristic of the specimens above cited. It is the only Philippine species that has densely pubescent leaves. F.-Villar's description applies, at least in part, to an entirely different species, as he describes the flowers with fourteen stamens, which applies to the species of the section *Myriantheia*. The specimen cited by Vidal in his Revision can not be considered as the type. T., *Laing*.

(2) **Homalium loheri** sp. nov.

Arbor inflorescentiis exceptis glabra; foliis oblongo-ellipticis, subcoriaceis, breviter obtuseque acuminatis, 12 ad 17 cm longis, margine crenato-serratis, nervis utrinque 8 ad 10; inflorescentiis terminalibus, paniculatis, villosis, ramis elongatis; floribus fasciculatis, ebracteolatis, 5- vel 6-meris, pedicellatis; petalis subspatulatis, quam sepalis paullo longioribus; staminibus 5 vel 6; ovario villosa.

A tree, apparently of medium size. Branches terete, light-gray, lenticellate. Leaves alternate, subcoriaceous, shining, glabrous, oblong-elliptical, 12 to 17 cm long, 5 to 8 cm wide, the apex shortly and obtusely acuminate, the base acute, the margins crenate-serrate throughout; nerves 8 to 10 on each side of the midrib, prominent, anastomosing, the reticulations distinct; petioles about 5 mm long. Inflorescence terminal, villous, paniculate, the branches few, elongated, 12 to 20 cm long. Flowers in fascicles, the bracteoles, if any, very deciduous, the

pedicels pubescent, 3 to 4 mm long, jointed to the calyx. Calyx tube narrowly funnel-shaped, pubescent, about 2 mm long, the lobes 5 or 6, oblong, 2 mm long, pubescent. Petals 5 or 6, slightly exceeding the calyx lobes in length, subspatulate, pubescent. Stamens one opposite each petal. Ovary villous; styles 4 or 5.

LUZON, Province of Rizal, *Loher 2210*; Bosoboso, *Decades Philip. Forest Fl. no. 251*; *For. Bur. 1975 Aherm's collector*, November, 1905.

A species closely allied to *Homalium barandae* Vid., the type, *Loher 2210*, having been identified at Kew with Vidal's species. The plant above described is at once distinguished by its entirely glabrous leaves, even in young specimens. T., *Laing*.

(3) **Homalium panayanum** F.-Vill. Nov.-App. (1883) 94; Vidal Rev. Pl. Vasc. Filip. (1886) 141; Ceron Cat. Pl. Herb. (1892) 87.

Homalium grandiflorum Naves in Blanco Fl. Filip. ed. 3, pl. 443, non Benth.

GUIMARAS, *For. Bur. 262 Gammill*, January, 1904; *For. Bur. 4539 P. del Villar*, June, 1906. LUZON, Province of Zambales, *For. Bur. 8111, 8419 Curran & Merritt*, December, 1907; *Bar. Sci. 5051 Ramos*, December, 1907.

F.-Villar describes the species as having petals and sepals 10, stamens 10, rarely 20 or 30, while Vidal states that the petals do not appear to exceed 7 in number, the stamens two to three times as many as the petals. Our specimens show 6 to 7 petals and sepals, and an equal number of stamens, and I have accordingly included the species in the section *Blackwellia*. Vidal's statement, however, would place it in the section *Myriantheia*. The plate cited by F.-Villar, shows 7-merous flowers, and apparently 7 stamens, and our specimens agree perfectly with the figure. A species well characterized by its entire leaves and linear petals and sepals which are covered with long ciliate hairs. V., *Puyót*.

(4) **Homalium bracteatum** Benth. in Journ. Linn. Soc. Bot. 4 (1860) 37; Rolfe in Journ. Bot. 23 (1885) 213; Vidal Phan. Cuming. Philip. (1885) 115; Rev. Pl. Vasc. Filip. (1886) 142.

Homalium luzonense Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 99, non F.-Vill.

PHILIPPINES, without locality, *Cuming 1109* (cotype). LUZON, Province of Bataan, Lamao, *For. Bur. 2071 Borden*, October, 1904, *For. Bur. 5473 Curran*, November, 1906; Province of Bulacan, Angat, *For. Bur. 11165 Aguilar*, April, 1908; Province of Pampanga, Mount Arayat, *Merrill 4210*, September, 1905; Province of Camarines, Pasacao, *Aherm 24, 72*, January, March, 1902.

A species well characterized by its 4- or 5-merous flowers, and dissimilar sepals and petals, the former being ovate-lanceolate, reflexed and much shorter than the latter, which are spatulate and erect or spreading. T., *Aranga*.

(5) **Homalium villarianum** Vidal Rev. Pl. Vasc. Filip. (1886) 142; Ceron Cat. Pl. Herb. (1892) 87.

Homalium sorsogonense Elmer Leatl. Philip. Bot. 1 (1908) 325.

LUZON, Province of Camarines Norte, *Vidal 791*, type in Herb. Kew; Province of Sorsogon, *Elmer 7311*, November, 1905, type of *H. sorsogonense* Elm.

After a careful examination of the specimens and descriptions of these two species, I can find no characters by which they can be separated, and accordingly Elmer's recently described species is here reduced. On Vidal's specimen the flowers are 6-merous, and on Elmer's specimen they are 5-merous, but this character alone is not sufficient to distinguish them, as in many species of *Homalium* the floral parts vary in number even on the same plant.

(6) *Homalium luzoniense* F.-Vill. Nov. App. (1883) 94; Vidal Rev. Pl. Filip. (1886) 141; Sinopsis Atlas (1883) 27, t. 53, f. B.; Ceron Cat. Pl. Herb. (1892) 87.

Homalium aranga Vidal l. c., as syn.

LUZON, Province of Tayabas, *For. Bur.* 19, 24, Ware, September, 1903, *For. Bur.* 6037 *Kobbe*, December, 1906. ALABAT, *Vidal* 354.

A species well characterized by its 7- or 8-merous flowers, narrow sepals and spatulate petals. T., *Aranga*.

Homalium foetidum Benth., has been reported from the Philippines by F.-Villar, Nov. App. 94, and by Ceron, Cat. Pl. Herb. 87, but both are probably erroneous identifications. F.-Villar reduces *Gordonia polysperma* Blanco, to *Homalium foetidum* Benth., but this is certainly an error. I can not identify Blanco's species with any known form of *Homalium*, and it may apply to some plant of a very different genus.

RHIZOPHORACEÆ.

SAGITTIPETALUM gen. nov.

Calyx basi bracteolis liberis; tubus brevis, ovarii basi adnatus; limbus 6-partitus, lobis lanceolatis, acuminatis, coriaceis, valvatis. Petala 6, basi disci carnosius inserta, unguiculata, laminis oblongo-ovatis, margine irregulariter lacerato-fimbriatis, basi valde sagittatis. Stamina 12, alterna breviora; filamentis capillaribus. Ovarium inferum, 1-loculare; ovulis 12, collateralibus, in axillis interioribus superioribus affixis, pendulis. Stylus filiformis, stigma simplex, disciforme.

Sagittipetalum mindanaense sp. nov.

Arbor parva, glabra; ramulis teretibus, junioribus compressis; foliis oppositis, petiolatis, subcoriaceis, nitidis, ellipticis vel oblongo-ellipticis, acuminatis, basi acutis; cymis in axillis superioribus, ca. 3-floris, brevibus; floribus mediocris, 6-meris.

A small tree, about 10 m high, glabrous throughout. Branches slender, terete, the younger ones somewhat compressed, reddish-brown, the tips resinous. Leaves elliptical to oblong-elliptical, 7 to 10 cm long, 3 to 5.5 cm wide, the apex acuminate, the base acute, entire, shining, subcoriaceous; nerves 6 or 7 on each side of the midrib, irregular, inter-arching near the margin, not prominent, the reticulation rather lax, petioles 1 cm long or less; stipules caducous, lanceolate, 1.2 to 1.5 cm long. Cymes solitary in the upper axils only, short, usually 3-flowered, the peduncle about 5 mm long, compressed, the bracts ovate, acuminate, about 3 mm long; pedicels very short, the bracteoles two, similar to the bracts, not united. Flowers greenish, 1 cm long. Calyx ovoid, cleft to the middle, the lobes 6, lanceolate, acuminate, erect, 2 mm wide at the base. Petals 6, clawed, alternate with the sepals, 5.5 mm long, the claw 2 mm long, the blade oblong-ovate, strongly sagittate at the base, the apex acuminate, the margins irregularly lacerate-fimbriate, 3 mm wide below. Stamens 12, 6 opposite the petals with slender filaments

4.5 mm long, 6 opposite the sepals with filaments 3.5 mm long; anthers 0.7 mm long. Ovary inferior, 1-celled; ovules 12 on a central placenta, pendulous from the inner upper angle; style slender, 7 mm long; stigma small, disciform. Fruit unknown, but the calyx accrescent, in the immature specimens 1.7 cm long, when mature probably much longer.

MINDANAO, District of Zamboanga, Port Banga, *For. Bur. 9171 Whitford & Hutchinson*, December 9, 1907, in the dipterocarp forest at an altitude of about 20 m above the sea.

A curious genus well characterized by its strongly sagittate petals, from which the generic name is taken, these being long-clawed and irregularly lacerate-fimbriate, its 6-merous flowers, 12 stamens, of which the 6 opposite the petals are longer than the 6 opposite the sepals, and its 1-celled ovary with 12 pendulous ovules. It is apparently closely allied to *Carallia* but seems to be generically distinct.

MELASTOMATACEÆ.

MEMECLON Linn.

Memecylon densiflorum sp. nov.

Ramulis acute tetragonis, non alatis; foliis ovato-oblongis, coriaceis, nitidis, 4 ad 5.5 cm longis, 1-nerviis, nervulis transversalibus obsolete, apice breviter obscure acuminatis, acuminibus obtusis, basi cuneatis; cymis axillaribus, subsessilibus vel breviter pedunculatis, fasciculatis, subcapitatis, densis, ca. 1.3 cm diam.

Erect, glabrous; the branches brown or grayish, slender, terete, the branchlets 4-angled. Leaves coriaceous, shining, ovate-oblong, 4 to 5.5 cm long, 1.5 to 2.5 cm wide, base acute, apex shortly obscurely acuminate, the acumen blunt, sometimes subobtuse; midrib prominent, the lateral nerves obsolete; petioles slender, 5 mm long or less. Cymes axillary, fasciculate, subsessile or with peduncles 2 to 3 mm long densely many-flowered, forming subcapitate heads about 1.3 cm in diameter, the pedicels ebracteolate, about 2 mm long. Calyx funnel-shaped, 1.8 mm long and wide, truncate. Petals ovate, acuminate, about 2 mm long, 1.2 mm wide. Filaments 3 mm long; anthers 1.2 mm long.

MINDANAO, Province of Surigao, *Bolster 368*, October, 1906; *Ahern 515*, February-May, 1901, V., *Babagion*.

A species allied to *Memecylon cumingianum* Presl, but readily distinguished by its dense capitate inflorescence; apparently also allied to *M. pauciflorum* Blume.

MEDINILLA Blume.

Medinilla philippensis (Cham. & Schlecht.) comb. nov.

Acanthes philippensis Cham. & Schlecht. in *Linnaea* 4 (1829) 193.

LUZON, without locality given, but from Cavite Province between the town of Cavite and Taal Lake, *Chamisso*, in *Herb. Berol.* (type); Province of Cavite, Mendez Nuñez, *Bur. Sci. 1341 Mangubat*, August, 1906.

This interesting species was based on very fragmentary material, the type, which I have examined in the Berlin Herbarium, consisting of a single detached

leaf and a single detached fruit. It is exactly matched by the specimen collected by Mangubat, cited above, which came from the same general region as the original. Unfortunately the specimens collected by Mangubat are poorly prepared, but I am able to add the following to the original imperfect description:

Branches terete, light-gray, densely tomentose. Leaves 8 to 12 cm long, 4 to 8 cm wide, the nerves 3 or 4 on each side of the midrib, curved-ascending. Cymes lateral, 4 cm long or less, few-flowered, densely tomentose; bracts narrowly obovate, about 1 cm long. Calyx obscurely 4-toothed, the teeth short, broad. Petals 4, about 9 mm long. Stamens 8, subequal; anthers 5 mm long.

The species is most closely allied to *Medinilla lagunae* Vidal but has quite differently shaped leaves. It differs from *M. halconensis* Merr., in its 4-merous flowers and more numerous nerved leaves, which are pubescent beneath only, while in *M. halconensis* they are pubescent on both surfaces.

***Medinilla cogniauxii* sp. nov.**

Medinilla bracteata Cogn. in DC. Monog. Phan. 8 (1891) 601, in part (*Cuming* 1335, 1487; *Vidal*).

Differt *M. bracteatae* Blume foliis longioribus, inflorescentiis terminalibus, racemosis, multo longioribus, usque ad 20 cm longis, simplicibus.

A scandent or decumbent shrub 2 to 6 m high, the branches terete, slender, shining, glabrous, the branchlets densely stellate-plumose-tomentose. Leaves membranaceous, elliptical-lanceolate, acuminate, base narrowed, abruptly rounded and narrowly cordate, 7 to 12 cm long, 2 to 5 cm wide, glabrous above when mature, more or less stellate-tomentose on the nerves when young, beneath densely stellate-plumose-tomentose on the nerves and with scattered hairs on the lamina; nerves prominent beneath, two on each side of the midrib, the outer pair subbasal and extending to the middle of the leaf or above, the inner pair leaving the midrib some distance above the base and extending to the apex, rarely a third pair of short basal nerves present; petioles densely tomentose, 1 to 3 mm long. Racemes from the terminal axils only, 7 to 20 cm long, pendulous, slender, densely stellate-tomentose, the flowers usually arranged in whorls of threes, each node with three membranaceous, ovate, 5 to 8 mm long, 5-nerved, persistent bracts, which are somewhat stellate-tomentose; pedicels about 4 mm long. Calyx 4 to 5 mm long, truncate, ovoid, densely hirsute, the stiff hairs ciliate. Petals 5, narrowly obovate, obtuse, about 9 mm long, 4.5 mm wide. Stamens 10, subequal; anthers 3 mm long. Style 8 mm long. Each flower subtended by two persistent bracteoles, which are orbicular-ovate, obtuse, 7-nerved, membranaceous, about 12 mm long, somewhat tomentose. Fruit subglobose, setose, about 5 mm in diameter, enclosed by the persistent bracteoles.

Luzon, Province of Batangas, *Cuming* 1487, in Herb. Bur. Sci. MINDORO, Baco River, *Merrill* 4035, March, 1905; *McGregor* 183, 200, April, 1905.

A very characteristic species, confused by Cogniaux with *Medinilla bracteata* Blume, which is a quite different species. In January of the present year I

examined Blume's type in Herb. Leiden, and compared with it a specimen of *Cuming* 1487. Blume's specimen has an axillary and terminal somewhat branched inflorescence, much shorter than in the Philippine specimens referred here, shorter leaves and much smaller bracts. *Medinilla bracteata* Blume must be excluded from the known Philippine flora, as *Cuming* 1335, and *Vidal* 777, 778, 1390, are undoubtedly referable to the species above described, and not to *M. bracteata* Blume.

Var. **angustifolia** var. nov.

Differt typo foliis multo minoribus, lanceolatis, basi vix angustatis. Stellate-plumose-tomentose as in the type. Leaves 6 cm long or less, 8 to 14 mm wide, not gradually narrowed below, the base rather abruptly broad-cordate. Racemes axillary, shorter than in the type, the bracts, bracteoles and flowers as in *M. cogniauxii*.

MINDANAO, Province of Misamis, Mount Malindang, *For. Bur.* 4567 *Mearns & Hutchinson*, May, 1906.

Medinilla malindangensis sp. nov.

Frutex glabra; ramis teretibus, ramulis tetragonis; foliis verticillatis, quaternis, elliptico-ovatis, acuminatis, 5-nerviis, usque ad 5 cm longis; cymis axillaribus, paucifloris; floribus 5-meris.

A glabrous shrub. Branches terete, light-gray, the branchlets 4-angled, not winged, slender. Leaves whorled, 4 rarely 3 at each node, coriaceous, elliptical-ovate, 2.5 to 5 cm long, 1.5 to 2.5 cm wide, acuminate, base cuneate; nerves 5, rather prominent beneath, reticulations obsolete; petioles 2 to 3 mm long. Cymes lateral, 3 cm long or less, few-flowered, the rachis 1.5 cm long or less. Flowers unknown. Calyx in fruit cup-shaped, about 6 mm long, 5 mm in diameter, truncate, the limb somewhat produced, and with 5 very obscure teeth.

MINDANAO, Province of Misamis, Mount Malindang, *For. Bur.* 4557 *Mearns & Hutchinson*, May, 1906.

A species apparently allied to *Medinilla crassinervia* Blume, but with very differently shaped leaves which are much smaller. Well characterized by its small, acuminate, 5-nerved, verticillate leaves.

Medinilla cephalophora sp. nov.

Glabra: ramis teretibus; foliis oppositis, papyraceis, oblongis, acuminatis, ca. 20 cm longis, 5-nerviis; inflorescentiis terminalibus (?); floribus 5-meris, in capitulis cylindraceutis, 8 ad 12 cm longis congestis; bracteolis spatulatis.

Scandent, 6 m high, glabrous. Branches terete, glabrous, gray. Leaves opposite, papyraceous, oblong, acuminate, about 20 cm long, 7 cm wide, 5-nerved from the base, the base subacute or somewhat rounded; petioles 1.5 to 2.5 cm long, rather stout. Inflorescence terminal (?), the flowers racemously disposed on the thickened rachis forming a rather dense cylindrical head 8 to 12 cm long, about 3 cm in diameter; rachis

5 to 7 mm thick, densely covered with pedicel- and bract-scars, setose; pedicels about 5 mm long, the bracteoles numerous, exceeding the flowers, about 18 mm long, spatulate, the limb elliptical-ovate, obtuse, 6 mm long, 5 mm wide. Calyx 4 mm in diameter, truncate. Petals 5, inequilaterally obovate, apex oblique-subtruncate, retuse-apiculate, 7 to 8 mm long, 5 mm wide. Stamens 10, subequal; filaments and anthers 4 mm long. Fruit ovoid, black, glabrous, about 1 cm in diameter, crowned by the persistent calyx.

NEGROS, Cadiz Nuevo, *For. Bur. 4223 Everett*, February, 1906. MINDANAO, Province of Surigao, *Bolster 290*, April, 1906.

A species quite different from any in the genus, characterized by its congested, cylindrical inflorescence. According to Everett the inflorescence is red and the flowers have an offensive odor when fresh.

***Medinilla congesta* sp. nov.**

Ramis teretibus, glabris; ramulis, foliis subtus, paniculisque plus minus dense setosis; foliis oppositis 3-nerviis, oblongo-ellipticis, acutis vel breviter acuminatis, coriaceis, ca. 12 cm longis, sessilibus; inflorescentiis ca. 18 cm longis, longe pedunculatis, pedunculis gracilibus, densissime setosis; floribus 4-meris, congestis, valde bracteatis, prope ad apices ramulorum umbellatis.

A shrub, the branches light-gray, terete, glabrous, the branchlets slightly setose, the nodes very densely setose with subulate chaffy scales 1 cm long or less. Leaves opposite, coriaceous, pale, shining, oblong-elliptical, 10 to 14 cm long, 4 to 6.5 cm wide, margins somewhat revolute, sessile or subsessile, the base somewhat clasping, strongly 3-nerved, rarely with a supplementary pair of faint marginal nerves, the apex acute or short-acuminate, glabrous above, beneath with numerous long setose hairs, especially on the nerves. Inflorescence axillary (?), the peduncle very densely setose, about 12 cm long, slender, the flowers crowded at the apex, forming an oblong, rather dense head, 6 cm long and 3 cm thick, its branches about 1 cm long, densely setose, each bearing at its apex two or three, obovoid, slightly setose bracts about 12 mm long, and 5 to 7 short-pedicelled flowers, each flower subtended by three narrowly obovoid 1 cm long bracteoles, the pedicels densely setose, about 3 mm long. Calyx urceolate, the tube ovoid, 2 mm long, the limb produced, 2 mm long, somewhat spreading, truncate, with 4 nerves corresponding to teeth. Petals 4, about 10 mm long, 5.5 mm wide, narrowly inequilaterally obovoid, apex obtuse, oblique. Stamens 4; anthers 5 mm long.

MINDORO, Mount Sablayan, *For. Bur. 9760 Merritt*, March, 1908, in forests on exposed ridges at 1,000 m alt.

A species well characterized by its long-pedunculate, dense inflorescence which is densely setose, 4-merous, 3-bracteolate flowers, and sessile, strongly 3-nerved, opposite leaves.

ARALIACEAE.

BOERLAGIODENDRON Harms.

Boerlagiodendron luzoniense sp. nov.

Arbusecula 1 ad 3 m alta; foliis palmatim 5- ad 7-lobatis, lobis oblongis vel obovato-oblongis, dentatis et grosse irregulariter sinuatis; umbellis plus minus dense castaneo-paleaceis; floribus 4-meris.

An erect shrub 1 to 3 m high. Branches somewhat thickened, light-gray, glabrous. Leaves submembranaceous, glabrous, suborbicular in outline, 15 to 25 cm long, palmately 5- to 7-lobed, truncate or cordate at the base, the lobes oblong to obovate-oblong, reaching to within 3 or 4 cm of the base, 5 to 7 cm wide, much narrowed below, apex short-acuminate, margins irregularly dentate and each lobe with two or three lobules, the lobules ovate or oblong-ovate, acuminate, 2 to 5 cm long, their sinuses round; petioles 10 to 30 cm long, rather slender, the basal portion with from 3 to 7 strong crests, their margins rarely slightly pectinate. Umbels terminal, compound, the peduncles 20 to 30, the whole inflorescence beset with numerous, dark-brown, narrow, paleaceous scales, the peduncles 2 to 3 cm long, subtended by numerous 1 cm long basal bracts, these bracts oblong, their margins somewhat fimbriate and their backs covered with narrow, brown, paleaceous scales, each peduncle bearing three branches, the middle one very short, the lateral ones 2.5 to 3 cm long, the bracts at the apex of the common peduncle and at the upper two-thirds of the lateral branches similar to the basal ones but smaller. Lateral heads about 1 cm in diameter, densely many-flowered, the flowers perfect, yellow, sessile, and subtended by numerous, dark-brown, chaffy bracteoles which are fimbriate and covered with setose scales. Calyx glabrous, obovoid, truncate, 2.5 to 3 mm long, 1.5 to 2 mm thick. Petals 4, ovate-elliptical, glabrous, united in bud, about 3 mm long, 2 mm wide. Stamens 4; anthers 1.5 mm long. Ovary 4-celled. Middle heads subsessile, the flowers sterile, pedicellate, the pedicels 5 to 6 mm long, the flowers glabrous, purplish, globose, 5 to 6 mm in diameter, 2-celled, rarely 3-celled.

LUZON, Province of Benguet, Baguio, *Elmer* 5928, March, 1904; *Williams* 1123, July, 1904; *For. Bur.* 5088 *Curran*, August, 1906; *Bur. Sci.* 2729 *Mearns*, April, 1907.

A species recognizable by its 4-merous flowers and dark-brown, densely paleaceous inflorescence, the specimens cited distributed as *B. pulcherrimum* (Vid.) Harms., to which species they do not seem to be closely allied.

Boerlagiodendron camiguinense sp. nov.

Differt a praecedente foliis 3-5-lobatis, lobis non sinuatis, usque ad dimidian partem laminae attingentibus, basi vix angustatis; floribus 3-meris.

Very similar to the preceding, the inflorescence with the same dense

covering of brown, paleaceous scales. Leaves palmately 3- to 5-lobed, 15 to 20 cm long, subcoriaceous, glabrous, the base truncate or rounded, the lobes oblong, acuminate, coarsely apiculate-dentate but not sinuate and but slightly or not at all narrowed below, reaching to about the middle of the leaf. Inflorescence similar to that of *Boerlagiodendron luzoniense*, the perfect and sterile flowers much the same but the former with only three petals and three stamens, the ovary 3-celled.

CAMIGUIN, (Babuyanes Islands) *Bur. Sci. 4135 Fenix*, July, 1907, a shrub 1 to 1.5 m high, on slopes along trails.

***Boerlagiodendron pectinatum* sp. nov.**

Arbor parva, glabra; foliis coriaceis, circiter 25 cm longis, usque ad medium palmatim 5-lobatis, petiolis ad basin seriatim manicato-cristatis, cristulis margine valde pectinatis; inflorescentiis glabris, ramulis omnibus aequalibus; floribus 5-meris.

A tree 7 to 8 m high, the branches glabrous. Leaves coriaceous, suborbicular in outline, about 25 cm long, base subtruncate, palmately 5-lobed, lobes reaching to about the middle of the lamina, oblong-ovate, acuminate, margins coarsely dentate, the sinuses narrow, obtuse at the base; petioles 13 to 15 cm long the base with a series of 3 or 4 crests which are strongly pectinate, their divisions being 6 to 10 mm long. Umbels compound, glabrous, primary branches about 25, subtended by numerous, coriaceous, ovate bracts about 3 mm long, the peduncles 1.5 to 2 cm long, each peduncle with a pair of narrowly ovate, acuminate bracts at the apex, each peduncle tripartite at the apex, its branches equal, or subequal, 1 to 1.5 cm long, the two lateral branches bearing heads of perfect flowers, the middle one with sterile flowers only; lateral heads 6 to 8 mm in diameter, densely many-flowered, flowers sessile, the basal bracteoles ovate, 1 to 1.5 mm long, their margins slightly fimbriate. Calyx oblong, truncate, 2 mm long, 1 mm thick, glabrous, slightly angular. Petals 5, oblong-ovate, in bud 2 mm long. Stamens 5; anthers 1 mm long. Ovary 5-celled. Flowers in the middle heads all pedicelled, pedicels 5 mm long, the flowers 3 mm long, their ovaries 3-celled.

BATAN (Batanes Islands), Mount Iraya, *Bur. Sci. 3775 Fenix*, June, 1907.

A species readily recognizable by its coriaceous leaves which are palmately lobed to the middle, the base of the petioles furnished with strongly pectinate crests, its 5-merous flowers and the secondary branches of the umbels being of the same length in both the lateral and middle heads.

***Boerlagiodendron lineare* sp. nov.**

Arbuscula ca. 3 m alta; foliis usque ad basin palmatim 4-6-divisis, lobis linearibus, 15 ad 20 cm longis, 1 ad 1.5 cm latis, basi attenuatis; floribus 5-meris.

An erect shrub about 3 m high, the stems light-gray, glabrous, shining, somewhat scurfy at the tips. Leaves crowded at the apices of

the branches, palmately cut into 4 to 6 linear segments which are free to the base, these segments glabrous, submembranaceous, 15 to 20 cm long, 1 to 1.5 cm wide, narrowed above to the acuminate apex, the base narrowly decurrent, the decurrent parts so narrow that the segments appear to be petiolulate, this portion 1 to 1.5 cm long, margins irregularly and slightly repand, the teeth minute, distant; nerves numerous, spreading; petioles 4 to 6 cm long, the base with 2 or 3 prominent crests. Umbels compound, with few, dark-brown, fimbriate scales, the peduncles about 10, 2 cm long, bracteate at the base and apex, each bearing at its apex a short-peduncled central head and two lateral branches, the central head composed of numerous, dark-brown, fimbriate-lacerate bracteoles (sterile flowers fallen), the lateral branches about 3 cm long, with a pair of bracts at about the middle, each bearing a terminal head of perfect flowers 1 cm in diameter or less, these heads also with numerous dark-brown lacerate-fimbriate bracteoles. Flowers sessile. Calyx more or less funnel-shaped, truncate, about 2 mm long, 1 mm in diameter. Petals and stamens not seen. Ovary 5-celled. Fruit ovoid, 5-ridged, 5-celled, about 3 mm long.

Luzon, Province of Pangasinan, *Bur. Sci. 4953 Ramos*, December, 1907.

A most characteristic species, at once recognizable by its 4 to 6 linear segments which are almost distinct enough to be considered as leaflets.

Boerlagiodendron pulcherrimum (Vidal) Harms in Engl. & Prantl Nat. Pflanzenfam. 3^s (1904) 32.

Osmoxylon pulcherrimum Vidal Sinopsis Atlas 18 (1883) t. 55, f. B.

This is an imperfectly known species, the type being no longer extant. The material on which it was based was from Binangonan de Lampon, Province of Principe, Luzon, and the description states that it is a plant with digitately 7- to 9-lobed leaves, the lamina being 1 m long and the petioles 40 to 50 cm long. The figure shows 5-merous flowers, with the central head of sterile flowers strongly peduncled. It is doubtless allied to *Boerlagiodendron mindanacense* above described, but is quite different from that species both in its leaves and in its peduncled central heads. A full description of the species can not be written until it is again discovered.

SCHEFFLERA Forst.

Schefflera foxworthyi sp. nov.

Glabra; foliis 7-foliolatis, foliolis ovato-lanceolatis vel oblongo-lanceolatis, apice sensim acuminatis, basi cuneatis, margine integris, revolutis; inflorescentiis terminalibus, ramis elongatis, rhachidibus brevibus; floribus 5-meris in imbellulis paucifloris dispositis.

Scandent, glabrous throughout, except some parts of the inflorescence, branches light-gray, somewhat thickened. Leaves 7-foliolate, the petioles 10 cm long, the stipule clasping; leaflets ovate-lanceolate to oblong-lanceolate, subcoriaceous, dull, 9 to 14 cm long, 3 to 5 cm wide, apex gradually acuminate, acumen sharp, base cuneate, margins entire, revolute; primary lateral nerves 5 or 6 on each side of the midrib, irregular,

distant, the secondary ones nearly as prominent, anastomosing and forming looped submarginal nerves; petiolules 1 to 2.5 cm long. Inflorescence terminal, the rachis 2 or 3 cm long, rather stout, the branches 4 to 6, crowded, ascending, 20 to 30 cm long, glabrous, each subtended by a persistent, coriaceous, lanceolate, acuminate bract 2 to 3 cm long, the bracts when young densely flocculose. Flowers numerous, 5-merous, borne in 3- to 6-flowered umbels which are arranged along the primary branches, the peduncles 3 to 4 mm long, each subtended by a small lanceolate bracteole, the pedicels about as long as the peduncles. Calyx disciform, about 1.5 mm in diameter. Ovary 5-celled. Fruit 3.5 mm long, oblong-ovoid, the ridges 5, not prominent.

PALAWAN, Iwahig, *Bur. Sci.* 796, 915 *Foxworthy*, April and May, 1906.

A species allied to *Schefflera caudata* (Vid.) Merr., *S. clementis* Merr., and *S. longifrutescens* Elm., but readily distinguishable from all by the shape and venation of its leaflets, and various other characters.

ERICACEÆ.

RHODODENDRON Linn.

Rhododendron curranii sp. nov.

Arbuscula 2 ad 2.5 m alta, ramis ramulis foliisque glabris; foliis coriaceis oblongo-obovatis vel oblongo-oblancoatis, acutis vel obtusis, basi sensim angustatis; pedicellis dense hirsuto-pilosis; floribus 2.5 ad 3 cm longis, purpureo-coccineis; staminibus 10, filamentis in parte inferiore plus minus hirsutis; ovario dense piloso.

A shrub 2 to 2.5 m high, the branches light-gray or brownish, glabrous, slender, terete, the ultimate ones 1.5 to 2 mm in diameter. Leaves whorled, 4 to 6 or 7 at each node, coriaceous, oblong-obovate to oblong-oblancoate, glabrous and shining on both surfaces, paler beneath and with scattered small glands, 2.5 to 5.5 cm long, 0.5 to 2 cm wide, apex blunt or acute, gradually narrowed towards the cuneate or somewhat decurrent base, the margins slightly revolute; nerves obscure, about 4 on each side of the midrib; petioles 2 to 4 mm long. Flowers crimson-purplish, in terminal sessile fascicles, three or four flowers at the apex of each branchlet, the bracts smooth, imbricate, deciduous; pedicels densely hirsute-pilose, 1.5 to 2 cm long. Calyx an obscurely toothed ring about 4 mm in diameter. Corolla 2.5 to 3 cm long, slightly pubescent on the outside, the tube rather broad, the lobes orbicular-obovoid, rounded or retuse, 1.3 mm long, 1.5 mm wide. Stamens 10; filaments 1.5 to 1.8 cm long, 5-celled, slightly enlarged and hirsute below, glabrous above. Ovary oblong, 5-celled, densely pilose, 5 mm long; style glabrous, about 9 mm long.

LUZON, Province of Zambales, Mount Tapulao, *For. Bur.* 8061 *Curran*, December, 1907, in thickets on ridges at 2,000 m alt., also from the same locality *Bur. Sci.* 4988 *Ramos*, December, 1907.

A species closely allied to *Rhododendron lussoniense* Rendle, differing somewhat in the shape of the leaves, shorter corolla-tube and lobes and different color of the flowers. Rendle speaks of the flowers of *R. lussoniense* as having been pink or tinged with pink, but Whitehead's note on the type in the Herbarium of the British Museum says "flowers pure white."

***Rhododendron malindangense* sp. nov.**

Arbor parva, ramis glabris, griseis, ramulis junioribus brunneis, puberulis; foliis coriaceis, pallidis, oblongo-ovatis, apice rotundatis vel emarginatis, basi cuneatis, utrinque squamulis glandulosis paucis notatis; bracteis ovatis, coriaceis, acutis, margine breviter ciliato excepto glabris; floribus solitariis, 2 cm longis, tubo cylindraceo; staminibus 10, inaequalibus, glabris; ovario 5-loculare, dense lepidoto.

A small tree about 7 m high, the branches terete, grayish, glabrous, the younger branchlets reddish-brown, puberulent. Leaves coriaceous, pale, oblong-ovate, the apex rounded or emarginate, the base cuneate, alternate or subverticillately arranged at the apices of the branchlets, glabrous except for the few scattered glandular scales on both surfaces, 1.5 to 3 cm long, 7 to 10 mm wide; nerves nearly obsolete; petioles 2 to 3 mm long. Bracts ovate, brown, rather thin, 6 mm long or less. Flowers red, solitary, few, the pedicels slender, 6 to 7 mm long, puberulent or pubescent. Calyx a small disk about 1.5 mm in diameter. Corolla 2 cm long, 4 to 5 mm in diameter, cylindrical, slightly lepidote, the lobes 5, ovate, rounded, 5 to 6 mm long, 4 to 5 mm wide, somewhat spreading. Stamens 10, unequal; filaments glabrous; anthers 1.4 mm long. Ovary oblong, 5-celled, about 3.5 mm long, densely lepidote; style glabrous, about 18 mm long.

MINDANAO, Province of Misamis, Mount Malindang, *For. Bur. 4705 Mearns & Hutchinson*, May, 1906. Common in forests at about 1,800 m. alt.

SAPOTACEÆ.

PALAUQUIUM Blanco.

***Palaquium retusum* sp. nov.**

Arbor ca. 10 m alta; foliis anguste oblongo-obovatis vel oblanceolatis, coriaceis, glabris, 20 ad 35 cm longis, 7 ad 12 cm latis, apice rotundatis, retusis, basi longe sensim angustatis; nervis utrinque 13, prominentibus, ascendentibus; stipulis oblongo-ovatis, coriaceis, 1 ad 1.5 cm longis, persistentibus; floribus pedicellatis, dense ferrugineo-pubescentibus; ovario 9- vel 10-loculare.

A tree about 10 m high. Branches thickened, rugose, glabrous. Leaves crowded at the apices of the branches, narrowly oblong-obovate or oblanceolate, 20 to 35 cm long, 7 to 12 cm wide, apex broad, rounded, retuse, gradually narrowed from the upper third to the acute base, coria-

ecous, glabrous, shining, the midrib very stout, the lateral nerves 13 on each side of the midrib, very prominent, ascending, the reticulations not prominent; petioles stout, 1 to 3 cm long; stipules persistent, covering the apices of the branchlets, grayish, glabrous, coriaceous, oblong-ovate, acute, or obtuse, strongly keeled, 1 to 1.5 cm long. Flowers in few-flowered fascicles on the branches below the leaves; pedicels about 1.5 cm long, densely ferruginous-pubescent. Outer three calyx lobes valvate, densely ferruginous-pubescent, broadly ovate, acute or obtuse, coriaceous, about 6 mm long, the inner three somewhat petaloid, imbricate, nearly glabrous, or pubescent only on the median portion of the back, suborbicular, rounded or retuse. Stamens about 20. Ovary glabrous, 9- or 10-celled; styles nearly 2 cm long.

Luzon, Province of Benguet, Baguio, *For. Bur.* 5095 Curran, August, 1906; *Elmer* 8523, March, 1907.

A species remarkable for its elongated retuse leaves, prominent, persistent stipules and 9- to 10-celled ovaries. In most species of *Palaquium* the ovary is 6-celled, so that the present species is anomalous in this respect as well as in its persistent stipules. In all other characters it is a true *Palaquium*, and is accordingly described as such.

***Palaquium elongatum* sp. nov.**

Arbor ca. 20 m alta; ramulis glabris; foliis lanceolatis vel anguste elongato-lanceolatis, acuminatis, coriaceis, supra glabris, subtus dense ferrugineo-pubescentibus nitidisque, 20 ad 25 cm longis, 4 ad 8 cm latis; nervis utrinque 14 ad 16, prominentibus; floribus axillaribus, solitariis, longe pedicellatis, dense ferrugineo-pubescentibus.

A tree about 20 m high, the branches thickened, gray, glabrous, the apices of the branchlets with numerous, narrowly lanceolate, about 1 cm long, coriaceous, glabrous stipules. Leaves lanceolate to narrowly oblong-lanceolate, coriaceous, 20 to 25 cm long, 4 to 8 cm wide, glabrous on the upper surface, beneath densely ferruginous-pubescent and shining, the midrib and lateral nerves glabrous or nearly so, apex short-acuminate, gradually narrowed below to the acute or slightly acuminate base; nerves on each side of the midrib 14 to 16, prominent, somewhat ascending, reticulations nearly obsolete; petioles about 4 cm long, glabrous or nearly so. Flowers in the leaf-axils, solitary, few, the pedicels ferruginous-pubescent, 5 cm long or less. Outer three calyx lobes ferruginous-pubescent, valvate, broadly triangular-ovate, acute, about 6 mm long, the inner three thinner, ovate, appressed-pubescent on the back. Corolla appressed-pubescent on the outside. Stamens about 20. Ovary ferruginous-pubescent, 6-celled; the style, in bud, glabrous, 4 mm long.

Luzon, Province of Tayabas, Mauban, *For. Bur.* 6620 Reyes, March, 1907.

A species well characterized by its narrow elongated leaves, and few, long-pedicelled flowers.

SIDEROXYLON Linn.

Sideroxylon stenophyllum sp. nov.

Arbor glabra, ca. 25 m alta; foliis anguste oblongo-lanceolatis, basi apiceque acuminatis, subcoriaceis, nitidis, usque ad 11 cm longis, 1.5 ad 2.5 cm latis; nervis utrinque 8 vel 9, prominentibus; fructibus ovoideis, glabris, ca. 5 cm longis; seminibus nitidis, 3.2 cm longis.

A tree about 25 m high, the branches terete, gray, glabrous, the terminal buds slightly pubescent. Leaves narrowly oblong-lanceolate, subcoriaceous, shining, glabrous, 7 to 11 cm long, 1.5 to 2.5 cm wide, the apex acuminate, the acumen blunt, the base decurrent-acuminate; nerves 8 or 9 on each side of the midrib, prominent, the reticulations obscure; petioles slender, 1 to 2 cm long. Fruit ovoid, glabrous, 5 cm long, apparently somewhat fleshy when fresh, but the pericarp brittle when dry, gray, shining, 5-celled, usually with but two matured seeds which are shining, brown, pointed at both ends, 3.2 cm long.

MINDORO, *For. Bur.* 8626 Merritt, January, 1908.

A very characteristic species, readily recognizable by its narrow few-nerved leaves and very large fruits; apparently allied to *Sideroxylon macranthum* Merr., but very different from that species.

OLEACEÆ.

JASMINUM Linn.

Jasminum macrocarpum sp. nov. § *Unifoliolata*.

Frutex scandens; ramis ramulisque brunneis, teretibus vel leviter compressis, gracilibus; foliis ovatis, simplicibus, subcoriaceis, supra nitidis, 8 to 10 cm longis, usque ad 7 cm latis, apice tenuiter acuminatis; petiolis articulatis; nervis utrinque ca. 9; paniculis axillaribus terminalibusque; fructibus nitidis, nigris, ca. 2 cm longis.

A scandent shrub, nearly glabrous throughout, the branches and branchlets terete or slightly compressed, slender, brownish, glabrous. Leaves simple, ovate, subcoriaceous, glabrous, shining on the upper surface, 8 to 10 cm long, 4 to 7 cm wide, the base rounded or acute, the apex slenderly and sharply acuminate; lateral primary nerves about 9 on each side of the midrib, not prominent, anastomosing, irregular; petioles 1 to 2 cm long, jointed at the middle or at the lower two-thirds. Flowers unknown. Panicles in fruit axillary and terminal, 10 cm long or less, slightly pubescent. Pedicels about 5 mm long. Calyx somewhat urceolate, 2 to 3 mm long, slightly pubescent, obscurely 6-toothed, in fruit much enlarged and thickened. Fruit ellipsoid or

obovoid, glabrous, fleshy, shining, black when dry, about 2 cm long, with a single large seed.

LUZON, Province of Rizal, Bosoboso, *For. Bur.* 3091 *Ahern's collector*, May, 1905, *Bur. Sci.* 1073 *Ramos*, July, 1906; Tanay, *Merrill* 2326, May, 1903: Province of Bataan, Lamao River, *Whitford* 394, June, 1904.

A very characteristic species, readily distinguished by its subcoriaceous, sharply acuminate and shining leaves, and very large fruits.

***Jasminum truncatum* sp. nov. § *Unifoliolata*.**

Subscandens, glabrum; foliis simplicibus, calycis limbo truncato, corollae tubo usque ad 1 cm longo, laciniis 7 ad 9, lanceolatis.

A subscandent shrub 2 to 3 m high, glabrous throughout. Branches slender, reddish-brown, terete. Leaves opposite, simple, ovate to oblong-ovate, the base broad, rounded, gradually narrowed above to the acuminate apex, 6 to 11 cm long, 3 to 6 cm wide; nerves about 11 on each side of the midrib; petioles 1 to 2 cm long, jointed at the lower fifth. Inflorescence terminal, lax, each ultimate branch bearing three flowers, the bracts subulate, about 2 mm long, the bracteoles smaller. Flowers white, fragrant. Calyx cup-shaped, 1.5 to 2 mm long, truncate, or with very minute obscure teeth. Corolla tube 1 cm long, the lobes 7 to 9, lanceolate, acute, nearly 1 cm long.

SIBUTU (Sulu Archipelago), *Merrill* 5286, October, 1906, in thickets along the seashore.

A species characterized by its truncate calyx.

LOGANIACEÆ.

GENIOSTOMA Forst.

***Geniostoma philippinense* sp. nov.**

Arbuscula 2 ad 4 m alta; ramulis, subtus foliis, petiolis pedicellisque plus minus pubescentibus vel puberulis; foliis oblongo-lanceolatis, elliptico-lanceolatis vel ovato-lanceolatis, submembranaceis, nitidis, acuminatis, 9 ad 13 cm longis; nervis utrinque 5 ad 7, subtus prominentibus; floribus axillaribus, fasciculatis; ovario glabro.

A shrub 2 to 4 m high. Branches terete, slender, light-gray or brown, ultimately glabrous, the branchlets rather densely pubescent or puberulent. Leaves oblong-lanceolate, elliptical-lanceolate or ovate-lanceolate, submembranaceous, 9 to 13 cm long, 3.5 to 5.5 cm wide, base rounded or acute, apex acuminate, the upper surface glabrous and shining, usually blackish in drying, beneath, especially on the midrib and nerves, more or less pubescent with very short rather stiff hairs; nerves rather prominent beneath, 5 to 7 on each side of the midrib, anastomosing, the reticulations lax; petioles 4 to 7 mm long, usually rather densely pubescent. Flowers in 5- to 10-flowered axillary fascicles, the pedicels slender, pubescent,

about 5 mm long. Calyx teeth triangular-ovate, acute. Corolla about 3 mm long, the lobes oblong-ovate, acute or acuminate, reflexed, about 1.5 mm long. Filaments short; anthers minutely puberulent, 1 mm long. Ovary glabrous. Fruit whitish, about 7 mm long; seeds numerous, 1.5 to 2 mm long.

Luzon, Province of Rizal, Bosoboso, *Merrill 1833*, April, 1903; *Bur. Sci. 2667 Ramos*, May, 1907; *Bur. Sci. 60 Foxworthy*, January, 1906; Montalban, *Loher 4105*; Province of Benguet, Twin Peaks, *Elmer 6451*, June, 1904, a more pubescent form, but apparently the same species.

The second species of the genus to be found in the Philippines, readily recognizable by its pubescence, its fascicled flowers and glabrous or nearly glabrous corolla-throat.

FAGRAEA Thumb.

Fagraea longiflora sp. nov.

Frutex scandens, glabra, pseudo-epiphytica; ramulis teretibus, crassiusculis; foliis ovato-ellipticis, subcoriaceis, 30 ad 40 cm longis, breviter acuminatis; nervis utrinque 8; floribus fasciculatis, terminalibus, sessilibus, congestis; corollae tubo cylindraco, 10 cm longo.

A scandent pseudo-epiphytic shrub, glabrous throughout. Branches terete, thickened, 1.5 to 2 cm thick. Leaves crowded at the ends of the branches, elliptical-ovate, 30 to 40 cm long, 20 cm wide or less, subcoriaceous, tough in texture and not brittle when dry, the apex short-acuminate, the base decurrent-acuminate; nerves 8 on each side of the midrib, prominent; petioles about 4 cm long; stipules large. Flowers large, crowded in terminal fascicles or in depauperate sessile cymes. Calyx about 4 cm long, 5-lobed, the lobes about 2 cm long, imbricate, oblong-ovate, blunt or subacute, the bracteoles 2.5 to 3 cm long. Corolla white, the tube 10 cm long, cylindrical, slightly enlarged upwards, somewhat villous within, the lobes 5, elliptical-ovate, about 4 cm long. Anthers about 7 mm long. Fruit unknown.

Luzon, Province of Laguna, Mount Banajao, *For. Bur. 8026, 8028 Curran & Merritt*, November, 1907, in forests at an altitude of about 700 m.

A very characteristic species, well distinguished by its long sessile or subsessile flowers which are densely crowded into terminal fascicles or depauperated cymes.

Fagraea auriculata Jaek in *Malay Miscel.* 2 (1822) 82; Blume *Rumphia* 2 (1836) 26, *t. 72*; Clarke in *Hook. f. Fl. Brit. Ind.* 4 (1883) 83.

PALAWAN, Mount Victoria, *Bur. Sci. 642 Foxworthy*, March, 1906.

British India to the Malay Peninsula and Archipelago; not previously reported from the Philippines.

MITREOLA Linn.

Mitreola oldenlandioides Wall. *Cat.* (1828) no. 4350; DC. *Prodr.* 9 (1845) 9; Clarke in *Hook. f. Fl. Brit. Ind.* 4 (1883) 79.

Luzon, Province of Pangasinan, *Bur. Sci. 4852 Ramos*, December, 1907; Province of Bulacan, near Norzagaray, *Yoder 126*, December, 1906.

British India to the Malay Archipelago, Australia and the Caroline Islands. The first representative of the genus to be found in the Philippines.

APOCYNACEÆ.

CARRUTHERSIA Seemann.

Carruthersia macgregori comb. nov.

Ellertonia macgregori Merrill in Govt. Lab. Publ. (Philip.) 35 (1906) 59.

A reëxamination of the type material, and study of additional specimens collected by Mrs. Clemens in Mindanao, no. 756, September, 1906, and without numbers, April and June, 1907, leads me to refer this species to *Carruthersia*, the second species of the genus to be found in the Philippines. It is closely allied to *Carruthersia pilosa* (A. DC.) F.-Vill., but is readily distinguished by its glabrous leaves. The stamens are very slightly united and the two lobes of the disk alternating with the carpels are present. The genus *Ellertonia* is thus to be excluded from the Philippine flora.

STROPHANTHUS DC.

Strophanthus erectus sp. nov.

Frutex erecta, 1 ad 2 m alta; foliis submembranaceis, elliptico-ovatis vel oblongo-ovatis, breviter acuminatis, nervis utrinque 5 vel 6; cymis paucifloris, bracteis et lobis calycinis lanceolatis, acuminatis, staminum aristis antheris 5-plo longioribus; corollae lobis ca. 13 cm longis.

A glabrous erect shrub 1 to 2 m high, the branches brown or reddish-brown, terete, lenticellate, the branchlets slightly compressed. Leaves elliptical-ovate to oblong-ovate, 8 to 13 cm long, 3 to 6 cm wide, submembranaceous, glabrous, dull or slightly shining, paler beneath, the apex short-acuminate, the base rounded to acute or somewhat acuminate, sometimes slightly inequilateral; nerves 5 or 6 on each side of the midrib, very prominent, anastomosing, the reticulations lax, distinct; petioles 1 cm long or less. Cymes terminal, glabrous, few-flowered, the bracts and calyx lobes lanceolate, long-acuminate, the latter 7 to 9 mm long. Corolla tube white, slightly yellow within, 2 cm long, about 8 mm in diameter, slightly constricted at the middle, enlarged above, the lobes about 8 mm wide at the base, attenuate into long, slender, drooping, yellowish tips, about 13 cm long; appendages about 1 cm long, cleft into two long, slender, acuminate parts. Anthers 3 mm long, sagittate at the base, the filaments very short, somewhat hirsute, the apical awn very slender, about 15 mm long. Ovary glabrous; style cylindrical, about 12 mm long. Follicle woody, oblong-ovoid, about 16 cm long, 7 mm wide; seeds lanceolate, 1.5 to 2 cm long.

PALAWAN, Puerto Princesa, *Merrill 695*, February, 1903; also specimens cultivated in Manila from seeds taken from this specimen, *Merrill 5176*, March, 1906, and *Cuzner*, February, 1908.

This species differs from *Strophanthus cumingii* DC., in its much longer petals and appendages to the anthers and in other characters; it appears to be more closely allied to *S. dichotomus* DC., than to *S. cumingii* DC.

VERBENACEÆ.

CALLICARPA Linn.

Callicarpa surigaensis sp. nov.

Arbor parva, ca. 8 m alta; ramis ramulis inflorescentiis foliisque plus minus dense ferrugineo-stellato-villosis hirsutisque; foliis oblongo-ovatis vel lanceolato-ovatis, caudato-acuminatis, basi acutis, 10 ad 15 cm longis, nervis utrinque ca. 7; cymis axillaribus, pedunculatis, usque ad 4 cm longis, dense ferrugineo-hirsutis; floribus ca. 5 mm longis.

A small tree, about 8 m high, the branches, branchlets, inflorescence and petioles densely ferruginous-stellate-tomentose and with numerous, long hirsute hairs. Leaves oblong-ovate to lanceolate-ovate, 10 to 15 cm long, 4 to 7 cm wide, subcoriaceous, base acute, apex gradually narrowed into a long, slender, caudate acumen, the upper surface rather densely hirsute on the midrib and nerves, with scattered hairs on the lamina, the lower surface paler, rather densely ferruginous-stellate-villous, and with scattered long hairs on the nerves and midrib; margins minutely denticulate; nerves about 7 on each side of the midrib, prominent beneath, the reticulations distinct; petioles densely hirsute, about 1 cm long. Cymes axillary, peduncled, 4 cm long or less, densely ferruginous-hirsute. Flowers red. Calyx about 3 mm long, densely villous, 4-toothed. Corolla glabrous, 5 mm long, 4-lobed, the lobes 2 mm long, obtuse. Stamens 4; filaments subequal, 4 mm long the anthers 2 mm long. Ovary glandular; style 7 mm long; stigma capitate.

MINDANAO, Province of Surigao, *W. B. Allen 168*, July, 1907; *Ahern 318*, May, 1901.

A species well characterized by its dense stellate-tomentose and hirsute, ferruginous indumentum.

Callicarpa ramiflora sp. nov.

Arbor parva, ca. 5 m alta; ramulis petiolisque densissime fulvo-vel ferrugineo-hirsutis; foliis elliptico-ovatis vel oblongo-ellipticis, usque ad 30 cm longis, subtus plus minus stellato-tomentosis; cymis brevibus, congestis, fasciculatis, in ramis vetustioribus; floribus ca. 5 mm longis, calyce plus minus stellato-tomentoso.

A small tree about 5 m high. Branches stout, terete, gray, glabrous, the branchlets densely ferruginous-hirsute. Leaves opposite, elliptical-ovate to oblong-elliptical, 30 cm long and 15 cm wide or less, subcoriaceous, apex short-acuminate, base acute, margins obscurely denticulate, glabrous on the upper surface except the ferruginous-pubescent midrib and nerves, beneath rather densely stellate-tomentose; nerves 12 to 14 on each side of the midrib, prominent beneath, the reticulations very distinct; petioles very densely ferruginous-hirsute, 1 to 2 cm long. Cymes about 1 cm long, fascicled, densely hirsute, congested, in the axils of branches or in the axils of fallen leaves on the older branches. Calyx slightly stellate-villous, 4 mm long, 4-toothed. Corolla 5 mm

long, the lobes 4, oblong, obtuse, 2 mm long. Stamens 4; filaments 4 mm long; anthers glandular, 2 mm long. Style 6 mm long; stigma capitate.

MINDANAO, Lake Lanao, Camp Keithley, *Mrs. Clemens 1167*, September, 1907, and without number, July, 1907.

A species well characterized by its large leaves, and fasciated, congested, short cymes which are from the branches below the leaves.

***Callicarpa basilanensis* sp. nov.**

Arbor parva, ca. 6 m alta; ramulis petiolisque densissime ferrugineo-hirsutis; foliis oblongo-ovatis vel oblongo-ellipticis, caudato-acuminatis, usque ad 25 cm longis, subtus stellato-tomentosis; cymis 2 ad 2.5 cm longis, fasciculatis, plus minus stellato-tomentosis, e axillis foliorum delapsorum; floribus glabris, ca. 8 mm longis, 4- rariter 5-meris.

A small tree about 6 m high, the branches stout, gray or brownish, glabrous, the branchlets densely ferruginous-hirsute. Leaves opposite, oblong-ovate to elliptical-oblong, 25 cm long and 12 cm wide or less, subcoriaceous, the apex rather slenderly caudate-acuminate, the base acute or rounded, the margins entire, the upper surface hirsute on the midrib and nerves, and more or less papillate-hirsute on the lamina, beneath rather densely stellate-villous and, along the nerves and midrib, somewhat hirsute; nerves 9 to 12 on each side of the midrib, prominent beneath; petioles densely hirsute, 1 to 2 cm long. Cymes 2 to 2.5 cm long, from the axils of fallen leaves, fasciated, more or less stellate-villous. Flowers fragrant, purplish, glabrous. Calyx 3 mm long, 2.5 mm in diameter, 4-toothed. Corolla 7 to 8 mm long, the lobes 4, rarely 5, oblong, obtuse, about 3 mm long. Stamens 4, rarely 5, subequal; filaments 5 mm long; anthers 3 to 3.5 mm long. Stigma obscurely 4-lobed. Pyrenes four, the fruit depressed-globose, 5 mm in diameter.

BASILAN, *For. Bur. 3974, 6124 Hutchinson*, January and July, 1906; *Hallier*, January, 1904.

A species well characterized by its large, acuminate, entire leaves, fasciated cymes from the axils of fallen leaves, and rather large glabrous flowers, which are rarely 5-merous, hence intermediate between *Callicarpa* and *Geunsia*.

RUBIACEÆ.

WENDLANDIA Bartl.

***Wendlandia nervosa* sp. nov.**

Arbuscula 2 m alta; ramulis, subtus foliis, paniculisque hirsutis; foliis subsessilibus, elliptico-ovatis vel oblongo-ellipticis, coriaceis, nitidis, 3 ad 6 cm longis, breviter acuminatis; nervis utrinque 6 ad 8, supra valde impressis, subtus prominentibus; paniculis terminalibus, 3 ad 4 cm longis, congestis, densissime ferrugineo-hirsutis; calycis lobis erectis, 2 mm longis.

A shrub about 2 m high, the branches rather stout, terete, brown, glabrous, the branchlets rather densely brown- or ferruginous-hirsute. Leaves opposite, coriaceous, elliptical-ovate or oblong-elliptical, 3 to 6 cm long, 1.5 to 2.5 cm wide, the upper surface shining, glabrous except the somewhat pubescent midrib, the nerves strongly impressed, the lower surface with scattered short hairs, the midrib and nerves hirsute, the apex shortly acuminate, the base acute or somewhat rounded; nerves 6 to 8 on each side of the midrib, very prominent; petioles stout, densely ferruginous-hirsute, 1 mm long or less; stipules ovate, hirsute, 2 to 3 mm long. Panicles terminal, congested, 3 to 4 cm long, very densely ferruginous-hirsute, the bracts narrowly oblong-lanceolate, hirsute, 4 mm long, the bracteoles similar but smaller. Calyx hirsute, 3 mm long, the tube 1 mm, the lobes narrowly lanceolate, erect, hirsute, 2 mm long. Fruit ovoid, about 2 mm in diameter.

LUZON, Province of Zambales, Mount Tapulao, *Bur. Sci. 5007 Ramos*, December, 1907.

A very characteristic species, readily recognizable by its small, subsessile, very strongly nerved leaves, congested inflorescence, and rather long erect calyx-teeth.

MUSSAENDA Linn.

Mussaenda philippinensis sp. nov.

Arbusecula 1 ad 3 m alta; ramis, ramulis, subtus foliis, paniculisque plus minus hirsutis; foliis membranaceis, oblongo-ellipticis, leviter falcatis, usque ad 25 cm longis, apice acuminatis, basi longe decurrentibus; nervis utrinque ca. 10; calycis segmentibus anguste lanceolatis, hirsutis, 1.5 cm longis, persistentibus, sepala foliacea alba.

A shrub 1 to 3 m high, more or less hirsute. Branches reddish-brown, terete, the younger ones grayish-brown, hirsute. Leaves membranaceous, oblong-elliptical, slightly falcate, 15 to 25 cm long, 6 to 10 cm wide, nearly glabrous above, except the slightly hirsute midrib and nerves, somewhat shining, the lower surface paler, hirsute on the midrib and nerves and with scattered hairs on the lamina, the apex rather strongly acuminate, the base long and narrowly decurrent-acuminate, equilateral; nerves about 10 on each side of the midrib, distinct; petioles 2.5 cm long or less; stipules 1 cm long, ovate, long-acuminate. Panicles terminal, hirsute, the bracts 1.5 to 1.8 cm long, hirsute, cleft into three long, acuminate, narrow segments. Calyx segments persistent, narrowly lanceolate, about 1.5 cm long, 2 to 3 mm wide, with long spreading hairs, one segment sometimes produced, foliaceous, white, its lamina narrowly elliptical-ovate, acuminate, 7 cm long. Corolla-tube slender, yellow, 2.5 cm long, hirsute with long hairs, its lobes ovate, acuminate, about 3 mm long. Fruit obovoid, 1 to 1.5 cm long, when young with few scattered long hairs.

SEMERARA, *Merrill 4139*, July, 1905, common in thickets at about 6 m above sea level.

A species well characterized by its elongated, narrow, persistent calyx-lobes; apparently allied to *Mussaenda wrayii* King, of the Malay Peninsula, but very different from that species.

LASIANTHUS Jack.

Lasianthus everettii sp. nov.

Arbor parva vel arbuscula; ramulis foliis stipulis bracteisque plus minus fusco- vel flavescenti-pilosis vel villosis; foliis lanceolatis vel oblanceolatis, ca. 20 cm longis, longe tenuiter acuminatis, basi acutis; nervis utrinque 9 vel 10; stipulis ovato-lanceolatis, 3 cm longis, dense villosis, longe caudato-acuminatis, submembranaceis; floribus axillaribus, solitariis vel fasciculatis, 5-meris; bracteis anguste lanceolatis, numerosis.

A small tree or shrub, the branches, leaves and stipules more or less densely covered with the rather long brown to yellowish-green hairs, the branchlets nearly black when dry. Leaves lanceolate or oblanceolate, about 20 cm long, 3 to 4.5 cm wide, submembranaceous, the apex long and slenderly acuminate, base acute, both surfaces with numerous long yellowish or brownish hairs; nerves 9 or 10 on each side of the midrib, prominent beneath, curved-ascending, anastomosing, the reticulations lax; petioles 1 cm long, densely villous; stipules prominent, ovate-lanceolate, long and slenderly acuminate, 3 cm long, 8 mm wide, densely yellowish-villous narrowed below towards the base, submembranaceous. Flowers axillary, two or three or more in each axil, sessile, the bracts many, lanceolate, slenderly acuminate, densely villous, about 2 cm long. Fruit about 5 mm long sparingly hirsute, crowned with a tuft of long brown hairs, 5-celled.

NEGROS, near Cadiz Nuevo, *For. Bur.* 5591 *Everett*, November, 1906.

A very characteristic species, distinguishable by its yellowish hairs, lanceolate long-acuminate leaves and very prominent stipules and bracts which are covered with long yellowish hairs.

RANDIA Houst.

Randia racemosa (Cav.) F.-Vill. Nov. App. (1883) 108; Maxim. in Bull. Acad. Pétersb. 29 (1884) 167; Forbes & Hemsl. in Journ. Linn. Soc. Bot. 23 (1888) 382.

Stylocoryna racemosa Cav. Icon. 4 (1797) 45, t. 368; DC. Prodr. 4 (1830) 377; Hook. & Arn. Bot. Beech. Voy. (1841) 264; Miq. Fl. Ind. Bat. 2 (1856) 205.

Remijia odorata Blanco Fl. Filip. ed. 2 (1845) 115; ed. 3 1: 205.

Randia densiflora Elm. Leaf. Philip. Bot. 1 (1906) 32; Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 130, non (?) Benth.

LUZON, Province of Bataan, Lamao River, *For. Bur.* 1472 *Ahern's collector*; *For. Bur.* 2047 *Borden*; *Elmer* 6873: Province of Batangas, *For. Bur.* 7631 *Curran & Merritt*, October, 1907: Province of Pangasinan, *For. Bur.* 8390 *Curran & Merritt*, December, 1907: Province of Rizal, Bosoboso, *Merrill* 2789, July, 1903; *Bur. Sci.* 1054 *Ramos*, July, 1906; San Mateo, *For. Bur.* 1844, 3166 *Ahern's collector*. September, 1904, June, 1905. MINDORO, Pola, *Merrill* 2219, May, 1903. MASPATE, *Merrill* 3054, August, 1903. MINDANAO, Lake Lanao, Camp Keithley, *Mrs. Clemens* 1193, September, 1907.

Widely distributed in the Philippines, and extending to the Riu Kiu Islands.

A species closely allied to and possibly identical with *Randia densiflora* (Wall.) Benth., the type of the genus *Stylocoryna* Cav. (not *Stylocoryne* Wight & Arn.). The transfer to *Randia* is usually credited to Maximowicz, but F. Villar's combination has priority. The type was from Cavite Province, collected by Née in 1793. The same form was also collected by Haenke, a colleague of Née, specimens of whose exist in the Prague Herbarium and in the Berlin Herbarium, both of which I have examined.

Randia wallichii Hook. f. Fl. Brit. Ind. 3 (1880) 113; Forbes & Hemsl. in Journ. Linn. Soc. Bot. 23 (1888) 382; Ceron Cat. Pl. Herb. (1892) 95.

Randia fitzalanii Elm. Leatl. Philip. Bot. 1 (1906) 31; Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 130, non F.-Muell.

This species was reported from the Philippines by Ceron, l. c., the identification of Vidal's specimen having been made by Rolfe. After an examination of the material representing this species in the Kew Herbarium, I can see no reason for distinguishing the Philippine form from the species described by Hooker f. The Australian *Randia fitzalanii* F. Muell., is different, and the Philippine form can not be referred to it. In addition to the numerous specimens from the Province of Bataan, cited by myself l. c., under *Randia fitzalanii*, and which must all be referred to *R. wallichii*, I have examined the following specimens:

LUZON, Province of Benguet, Baguio, *Elmer* 5927, 5994, March, 1904; Province of Ilocos Sur, *For. Bur.* 5664 *Klemme*, November, 1906; Province of Zambales, Subic, *Hallier*, January, 1904; Botolan, *Merrill* 2988, June, 1903; Province of Principe, Baler, *Merrill* 1103, September, 1902; Province of Batangas, *For. Bur.* 7635, 7751 *Curran & Merritt*, October, November, 1907; Province of Pangasinan, *Bur. Sci.* 4834 *Ramos*, December, 1907; *For. Bur.* 8327 *Curran & Merritt*, December, 1907; Province of Rizal, Bosoboso, *Merrill* 2632, June 1903; *For. Bur.* 3095 *Ahern's collector*, May, 1904.

British India to Yunnan and Java.

UNCARIA Schreb.

Uncaria velutina Havil. in Journ. Linn. Soc. Bot. 33 (1897) 84.

Nauclea canescens Bartl. in DC. Prodr. 4 (1830) 346, non *Uncaria canescens* Korth.

Nauclea claviseipala Elm. Leatl. Philip. Bot. 1 (1908) 350.

LUZON, without locality, *Haenke*, in Herb. Prague: Province of Camarines Sur, *Cuming* 1470: without locality, *Cuming* 1503: Province of Laguna, Los Baños, *Elmer* 8262, April, 1906 (type of *Uncaria claviseipala* Elm.). MABATE, *Vidal* 2952.

The type of this species is *Cuming* 1503, given by Haviland through error as no. 503. I have examined the specimens collected by Cuming and Vidal in Herb. Kew, and the specimen collected by Haenke, type of *Nauclea canescens* Bartl., in Herb. Prague, as well as *Elmer* 8262, a specimen of which is in our Herbarium, as is fragment of *Cuming* 1503. Elmer's specimen exactly matches Cuming's, except that the former is in flower and the later in fruit. Haviland states l. c., that he had not seen the type of *Nauclea canescens*, but that judging from the description, it appeared to be the same as *Uncaria velutina*. After an examination of Haenke's specimen I am able to affirm the identity of the two species. Bartling's specific name, although the earliest one, is untenable in *Uncaria* on account of the later use of the same name by Korthals, for a different species.

Endemic.

CUCURBITACEÆ.

GYNOSTEMMA Blume.

Gynostemma elongatum sp. nov.

Foliis pedatim 5-foliolatis; foliolis submembranaceis, integris, glabris, acuminatis, basi acutis inaequilateralibus; floribus albis, dioicis, femineis 8 ad 10 mm longis.

Scandent, glabrous throughout, except the inflorescence. Stems slender, brownish. Leaves pedately 5-foliolate, the petioles 2 cm long, petiolules about 5 mm long; leaflets elliptical-ovate, 4 to 6 cm long, 2 to 3.5 cm wide, submembranaceous, glabrous, entire, base inequilateral, acute, apex short acuminate and sharply apiculate; nerves about 4 on each side of the midrib, distant, curved, reticulations very few; tendrils simple, 10 cm long or more. Panicles about 15 cm long, narrow, the branchlets slightly pubescent. Pistillate flowers white, 8 to 10 mm long, the calyx tube narrowly oblong, densely ferruginous-puberulent, 2 mm thick, the lobes spreading, 1.5 mm long. Corolla rotate, the lobes ovate, acute, 2.5 mm long, veined. Ovary 3-celled; styles 3, free, cleft. Immature fruit oblong, 2 cm long, 4 mm thick, truncate. Staminate flowers not seen.

LUZON, Province of Bataan, near Lamao, *For. Bur.* 5474 Curran, November 23, 1906, climbing on trees in clearings.

A curious species, the leaves nearly identical with those of *Gynostemma integrifolium* Cogn., but well characterized by its elongated ovary; possibly a new genus, but difficult to determine this with certainty without staminate flowers and mature fruit.

Gynostemma pedatum Blume Bijdr. (1825) 23; Cogn. in DC. Monog. Phan. 3 (1881) 913.

LUZON, Province of Benguet, Baguio, *Elmer* 6033, March, 1904: Province of Bataan, Lamao River, *Whitford s. n.*, June, 1904. MINDANAO, Lake Lanao, Camp Keithley, *Mrs. Clemens s. n.*, November, 1906, and March, 1907.

British India to Japan to Sumatra, Borneo and Java; new to the Philippines.

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NEW OR NOTEWORTHY PHILIPPINE PLANTS, VII

By E. D. MERRILL

(From the Botanical Section of the Biological Laboratory, Bureau of Science, Manila, P. I.)

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NEW OR NOTEWORTHY PHILIPPINE PLANTS, VII.

By E. D. MERRILL.

(From the Botanical Section of the Biological Laboratory, Bureau of Science, Manila, P. I.)

The present contribution is, like the preceding papers of the series, composed of miscellaneous diagnoses of apparently previously undescribed species in various families, and records of various species previously described and now found for the first time in the Philippines. A number of nomenclatural changes are included, in accordance with the rules of priority, and notes are added on some previously obscure or little-known species. Four genera, *Embolanthera*, *Everettiodendron*, *Greeniopsis*, and *Ahernia* are proposed as new, while the representatives of no less than twenty-one genera, previously unrecorded from the Philippines are enumerated, *Boottia*, *Anacolosa*, *Illicium*, *Erythrophloeum*, *Kingiodendron*, *Azadirachta*, *Heynea*, *Blachia*, *Galearia*, *Microdesmis*, *Ostodes*, *Strophoblachia*, *Pleiogynium*, *Leptonychia*, *Trichadenia*, *Ochrosia*, *Willoughbya*, *Coptosapelta*, *Damnacanthus*, *Greenea*, and *Litosanthes*. Twenty-five species previously described by various authors from extra-Philippine material are here recorded from the Archipelago for the first time, while eighty-five species are described as new. On account of the rule adopted by the Vienna Botanical Congress, requiring Latin diagnoses of all species proposed after January 1, 1908, short diagnoses have been added, and in cases where it has been necessary to consider species proposed since that date, but which were without the required diagnosis, this has been added.

ALISMACEÆ.

BOOTTIA Wallich.

Boottia renifolia sp. nov.

Planta aquatica, glabra; foliis reniformibus, longe petiolatis, apice late rotundatis, basi cordatis, circiter 8 cm latis, nervis 7 ad 9; spathis unisexualibus, tubulosis; floribus masculinis vulgo binis, exsertis, antheris 9, pistilli rudimentiis pulviformibus; floribus femineis circiter 2.5 cm diametro, solitariis, pedicellatis; stylis 6, bifidis; staminodiis 9 quorum 6 linearibus, 3 capitatis.

An aquatic glabrous plant. Leaves tufted, their petioles 10 to 25 cm long, the blades reniform, 4.5 to 6 cm long, about 8 cm wide, papyraceous, the apex broadly rounded, the base cordate; primary nerves 7 to 9, the cross reticulations lax, indistinct. Male flowers one, or commonly two, from tubular, linear spathes which are very slightly cleft at the apex and not keeled or ribbed, exerted in anthesis, the pedicels very slender; sepals and petals as in the pistillate flowers; stamens 9, the filaments flattened, 1.5 to 2 mm long; anthers basifixed, oblong, 1.5 mm long; rudimentary pistil represented by a sessile, 1.5 mm long, cushion-like body, the styles none. Pistillate flowers white, solitary, their pedicels 5 cm long or less; sepals 3, elliptic-oblong, about 7 mm long, 3.5 to 4 mm wide, about 12-nerved; petals obovate, 12 mm long; styles 6, cleft two-thirds to the base, the arms glandular-hairy; staminodes of two kinds, 6 linear, 2.5 to 3 mm long, and 3 subsessile, capitate, 1 mm in diameter. Ovary several-celled, cylindric, smooth. Fruit unknown.

Luzon, Province of Camarines, Bicol River, Bula, *For. Bur.* 12274 Curran, June 5, 1908.

An interesting addition to our knowledge of the Philippine flora, the first representative of the genus to be found in the Philippines. It is allied to *Boottia cordata* Wall., of British India, but differs in many characters, notably in its reniform leaves, linear, tubular spathes which contain but one or two flowers, the staminate flowers without rudimentary styles, and the pistillate flowers with two kinds of staminodes, six linear and three capitate. The genus contains about 15 species, in tropical Africa and Asia.

GRAMINEÆ.

PANICUM Linn.

Panicum malabaricum (Linn.) comb. nov.

Poa malabarica Linn. Sp. Pl. (1753) 69.

Panicum arnottianum Nees in Steud. Syn. Pl. Gram. (1854) 59.

Panicum nodosum Hook. f. Fl. Brit. Ind. 7 (1897) 43, excl. syn., non Kunth.

Hooker f.¹ referred *Poa malabarica* Linn. to *Centotheca lappaeca* (Linn.) Desv., but gave no reason for this. Considering that he was correct I transferred the name to *Centotheca* as *C. malabarica* (Linn.) Merr. It seems, however, that Hooker f. was in error in citing *Poa malabarica* Linn. as a synonym of *Centotheca lappaeca*. Munro in his paper on the grasses of the Linnean herbarium states regarding *Poa malabarica* "*P(oa) malabarica* is *Panicum arnottianum* Nees. The reference to Rheede is correct; it is a very fair drawing."² Linnaeus' species is manifestly based on Tsjama-pullu of Rheede, Hortus Malabaricus 12:83, t. 45. Through the kindness of Mrs. Agnes Chase of the United States Department of Agriculture, I have received a tracing of the above plate, and although the plate is crude, it seems to be well matched by several specimens in our herbarium determined as *Panicum nodosum* Kunth. Three specimens from Singapore, collected by Ridley resemble it very closely.

¹ Fl. Brit. Ind. 7 (1897) 332. ² Journ. Linn. Soc. Bot. 6 (1862) 43.

Panicum nodosum Kunth, which is closely allied, differs mainly in being much smaller, with shorter, narrower leaves, and much smaller panicles. The type of Kunth's species was from the Philippines, *P. nodosum* being based on *P. multinode* Presl, non Lam. Balansa, apparently assuming the Indian form to be typical *Panicum nodosum* Kunth, has distinguished the smaller form, apparently typical *P. nodosum* Kunth, as *P. ouonbiense*.

I am disposed to refer to *Panicum malabaricum* (Linn.) Merr., two specimens from the Philippines, Palmas Island, *Merrill 5367*, and *For. Bur. 5349 Merritt*, from Mindoro. The former was previously referred by me to *P. nodosum* Kunth.

In a broad sense *Panicum malabaricum* might include *P. nodosum* Kunth, but I am disposed to consider the small form described by Kunth as worthy of specific rank.

Panicum cordatum Büse in *Miq. Pl. Jungh.* (1854) 376.

P. luxurians Merr. in *Philip. Journ. Sci.* 1 (1906) Suppl. 359, cum syn., non Willd.

LUZON, Province of Union, Bauang, *Elmer 5595*: Province of Bataan, Lamao River, *Williams 134*, *Elmer 6735*: Province of Bulacan, Norzagaray, *Yoder 1, 163*. CULION, *Merrill 554*.

This species was previously determined by me as *Panicum luxurians* Willd., but is apparently not that species. I have examined the material in the Willdenow Herbarium so named, there being two specimens, one marked "Klein Ind. 1799" which is apparently a form of *Panicum prostratum* Lam.=*P. reptans* Linn., the other from St. Vincent, collected by Bory, which may be the same as *P. caespitosum* Sw. Willdenow, *Enum.* 1 (1833) 109, gives as the only locality for the species "Luzonia," an apparent error on his part.

The specimens cited above closely resemble *Panicum montanum* Roxb., but can be readily distinguished from that species by the first glume being as long as the spikelet. The Philippine material differs from Javan *cordatum* in its relatively narrower and less prominently cordate leaves, but does not seem to be specifically distinct from that species.

Panicum reptans Linn. *Syst. Nat.* ed. 10, 2 (1759) 871; Hitchc. in *Contr. U. S. Nat. Herb.* 12 (1908) 119.

Panicum prostratum Lam., *Ill.* 1 (1791) 171; Kunth *Enum.* 1 (1833) 89; Steud. *Syn.* 1 (1854) 61; Hook. f. *Fl. Brit. Ind.* 7 (1897) 33; Merr. in *Philip. Journ. Sci.* 1 (1906) Suppl. 355.

The oldest name for this common and widely distributed species is *Panicum reptans* Linn., as shown by A. S. Hitchcock l. c., who has examined the type in the Linnean herbarium.

Panicum paludosum Roxb. *Hort. Beng.* (1814) 6, *nomen*; *Fl. Ind.* 1 (1820) 307.

Panicum proliferum Hook. f. *Fl. Brit. Ind.* 7 (1897) 50; Merr. in *Philip. Journ. Sci.* 1 (1906) Suppl. 359, non Lam.

Mr. A. S. Hitchcock has examined the type of Lamarck's *Panicum proliferum* in the Paris Herbarium, and finds it to be identical with *Panicum miliare* Lam.,³ and has accepted *P. dichotomiflorum* Michx. as the earliest valid name for the species, commonly identified by American authors as *P. prostratum* Lam. I am now of the opinion that the species of tropical Asia and Malaya is distinct from the American form, and have here adopted Roxburgh's specific name for the oriental form, as it seems to be the earliest valid one.

³ *Contr. U. S. Nat. Herb.* 12 (1908) 147.

NEYRAUDIA Hook. f.

NEYRAUDIA MADAGASCARENSIS (Kunth) Hook. f.; Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 381.

This species was admitted on the strength of identifications made by Vidal, and Ceron, based on *Cuming 623*, and *Vidal 4017*. I have examined both in the Kew Herbarium, and find them to be referable to *Phragmites karka* (Retz.) Trin. *Neyraudia madagascarensis* must therefore be excluded from the Philippine flora.

ANDROPOGON Linn.

Andropogon leptos Steud. Syn. 1 (1855) 397; Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 337.

Garnotiella philippinensis Stapf in Hook. Ic. Pl. IV 5 (1896) pl. 2494; Merr. l. c. 374.

Here enumerated to all attention to the reduction of the monotypic genus *Garnotiella*. The type of *Garnotiella philippinensis* in the Kew Herbarium, is identical with *Andropogon leptos*, and is a true *Andropogon*. Dr. Stapf, to whose attention I called the matter, concurs in this reduction. To be sure of the identity of the Philippine plant with *Andropogon leptos* Steud., I later examined the type of Steudel's species in the Berlin Herbarium, and found the determination to be correct.

CYPERACEÆ.

FIMBRISTYLIS Vahl.

FIMBRISTYLIS CYMOSA R. Br.; Clarke in Philip. Journ. Sci. 2 (1907) Bot. 97.

This species must be excluded from the Philippine flora, as the specimen in the Kew Herbarium, on which the record was based, bears a printed label with the date 1831, and is from Cuming's first collection from the southern Pacific, and not from the Philippines. Cuming's Philippine plants were distributed ten years later.

BURMANNIACEÆ.

BURMANNIA Linn.

B. coelestis D. Don Prodr. Fl. Nepal. (1802-03) 44; Ridley Materials Fl. Malay. Penin. 2 (1907) 71.

B. azurea Griff. Notul. 3 (1851) 236; Ic. Pl. As. t. 272, f. 1; Beech. Malesia 2 (1878) 242, t. 15, f. 1-3.

Luzon, Province of Pangasinan, Infanta, *Bur. Sci. 4913 Ramos*, December, 1907.

The fourth species of the genus to be found in the Philippines. Widely distributed from India to the Malay Peninsula, Borneo, Labuan and the Caroline Islands.

FAGACEÆ.

QUERCUS Linn.

Quercus obliquinervia sp. nov. § *Cyclobalanus*.

Arbor 20 m alta, cupulis exceptis glabra; ramis ramulisque griseis; foliis oblongo-lanceolatis vel late lanceolatis, integris, crasse coriaceis, usque ad 11 cm longis, valde acuminatis, nervis utrinque 8, valde obliquis, reticulis obscuris; cupulis 2 cm diametro, intus glabris, extus pubescen-

tibus; glandibus oblongo-ovoideis, 2.3 cm longis apice rotundatis, breviter apiculatis.

A tree about 20 m high, glabrous throughout, except the cups (inflorescence unknown), branches terete, lenticellate, light-gray. Leaves thickly coriaceous, oblong-lanceolate or broadly lanceolate, 7 to 11 cm long, 2.5 to 4 cm wide, entire, the apex strongly acuminate, acumen blunt, often slightly falcate, base decurrent-acuminate, both surfaces shining, the lower slightly paler than the upper; nerves 8 on each side of the midrib, oblique, rather distinct beneath, nearly straight, more or less curved near the margins, not anastomosing, the reticulations fine, indistinct; petioles 1.5 to 2 cm long. Flowers unknown. Cup including the stout stipe 1.5 cm high, inclosing only about the lower one-fourth of the glans, 2 cm in diameter, glabrous and shining inside, outside cinereous-pubescent, lamellae about 5 the lower ones distant, the upper close, denticulate. Glans oblong-ovoid, 2.3 cm long, about 1.8 cm in diameter, glabrous, apex rounded, apiculate.

Luzon, Province of Benguet, Pauai, *For. Bur.* 18380 *Alvarez*, January, 1909; Province of Abra, *For. Bur.* 14605 *Darling*, February, 1909, altitude 1,400 to 2,000 m. in forests; known in Benguet as *Ticlick*, and in Abra as *Bullioc*.

A species well characterized by its very obliquely nerved leaves, probably most closely allied to *Quercus merrittii* Merr., among the Philippine forms, but very different from that.

ULMACEÆ.

GIRONNIERA Gaudich.

Gironniera curranii sp. nov.

Arbor circiter 15 m alta, glabra; foliis ovato-lanceolatis vel elliptico-lanceolatis, glabris, nitidis, 8 ad 12 cm longis, basi rotundatis, apice caudato-acuminatis, margine integris vel superne paucè irregulariter serratis; nervis utrinque 13 ad 15, prominentibus; floribus femineis axillaribus, solitariis, longe pedicellatis, 5-meris.

A tree about 15 m high, glabrous throughout. Branches slender, terete, gray or brownish, the branchlets somewhat angled, sometimes with very few appressed hairs. Leaves ovate-lanceolate to elliptic-lanceolate, subcoriaceous, shining, 8 to 12 cm long, 3.5 to 5 cm wide, paler beneath, the base rounded, the apex caudate-acuminate, the acumen 2 cm long or less, 3 to 4 mm wide, abruptly acute or apiculate, margins entire, or with few prominent, irregular teeth at the apex just below the acumen; nerves 13 to 15 on each side of the midrib, prominent, curved-ascending; petioles 6 to 8 mm long. Pistillate flowers axillary, solitary, the calyx lobes (in fruit) 5, ovate, acute or obtuse, about 2 mm long, the margins somewhat ciliate, the fruit (immature) ovoid or elliptic-ovoid, 1.3 cm long, 9 mm thick, glabrous, shining; style arms 2, stout, about 3 mm long; pedicels about 1.5 cm long, slender.

LUZON, Province of Camarines, Mount Isarog, *For. Bur. 10498 Curran*, May 25, 1908, in forests on the lower slopes at an altitude of about 100 m.

A species well characterized by being glabrous throughout, and its smooth shining leaves which are entire or with but few irregular teeth at the apex only.

MORACEÆ.

FICUS Linn.

Ficus merrittii sp. nov. § *Covellia*.

Arbor usque ad 12 m alta, ramulis petiolis, foliis subtus et inflorescentiis plus minus ferrugineo-hirsutis; foliis obovato-oblongis vel obovatis, chartaceis, 18 ad 25 cm longis, integris vel obscure dentatis, apice breviter acuminatis, basi inaequilateraliter cordatis; nervis utrinque 8 ad 10, prominentibus; stipulis caducis, lanceolatis, acuminatis, brunneis, 2.5 ad 3 cm longis; inflorescentiis caulinis, 10 ad 25 cm longis, ramosis, plus minus ferrugineo-hirsutis; receptaculis obovoideis, 1.5 ad 2 cm longis; plus minus ferrugineo-hirsutis, basi 3-bracteolatis; pedunculis hirsutis; usque ad 2 cm longis; ovario oblongo-ovoideo; perigonibus nullis.

A tree 12 m high or less. Branches reddish-brown, terete, more or less ferruginous-hirsute. Leaves opposite, obovate to oblong-obovate, 18 to 25 cm long, 9 to 13 cm wide, chartaceous, somewhat shining, the midrib and nerves on both surfaces with few or many, long, pale or ferruginous hairs, the upper surface ultimately glabrous, margins entire or obscurely dentate, the apex shortly and abruptly acuminate, somewhat narrowed below to the slightly inequilateral and cordate base; the lower surface minutely punctate; nerves 8 to 10 on each side of the midrib, prominent, anastomosing, the reticulations lax, distinct; petioles ferruginous-hirsute, 6 cm long or less; stipules caducous, lanceolate, acuminate, brown, ferruginous-hirsute at the base only, otherwise glabrous, 2.5 to 3 cm long. Inflorescence from the trunk, few or many branched, 10 to 25 cm long, reddish-brown, more or less ferruginous-hirsute at the nodes and on the bracts and bracteoles, the bracts ovate, acuminate, 8 mm long or less, deciduous. Receptacles usually at the ends of the branchlets, few or many, obovoid, 1.5 to 2 cm long, brown, purplish or greenish, with few or many pale or ferruginous hairs, the base with three small narrowly-ovate bracteoles 2 to 3 mm long; peduncles more or less ferruginous-hirsute, 2 cm long or less. Staminate flowers not seen. Fertile female flowers pedicellate, glabrous, the ovaries ovoid to oblong-ovoid, about 1.5 mm long; styles slender, about 2 mm long. Perianth none, or present in very young flowers as minute scales.

MINDORO, *For. Bur. 11466 Merritt*, May, 1908 (type). Also represented by the two following specimens from the same Island *For. Bur. 6852, 11477 Merritt*, April, 1907 and May, 1908. N. v., *Tibig*.

A species closely allied to *Ficus nota* (Blanco) Merr., differing especially in the long ferruginous hairs on the leaves, petioles, inflorescence and receptacles.

SANTALACEÆ.

EXOCARPUS Lab.

Exocarpus rolfeanus (O. Kuntze) comb. nov.

Xylophyllus rolfeana O. Kuntze Rev. Gen. Pl. 1 (1891) 589, (*rolfsiana*).

PALAWAN, *Vidal 3647*, type in Herb. Kew.; Victoria Peak, *For. Bur. 3852 Curran*, March, 1906, altitude 300 m.

A curious endemic species, known only from the above two collections. Curran's specimen is sterile, and is described by him as a 3 m high shrub.

OLACACEÆ.

ANACOLOSA Blume.

Anacolosa luzoniensis sp. nov.

Arbor glabra, inflorescentiis exceptis, usque ad 15 m alta; foliis chartaceis vel subcoriaceis, ovato-oblongis, elliptico-oblongis, vel oblongis, 8 ad 12 cm longis, basi acutis, apice obtusis vel obscure acuminatis, nervis utrinque circiter 5; floribus axillaribus, congestis, griseo-puberulis, stipitatis, 6-meris; petalis intus in partibus inferioribus glabris, carinatis, supra crassis, subtrigonis, dense pubescentibus; filamentis latis, glabris, connectivo indumento denso coronato; ovario 2-loculare; fructibus ellipsoideis, 2 cm longis, disco accrescenti.

A tree reaching a height of 15 m, glabrous except the inflorescence. Branches slender, terete, reddish-brown. Leaves alternate, oblong, ovate-oblong, or elliptic-oblong, 8 to 12 cm long, 3 to 5 cm wide, chartaceous to subcoriaceous, dark or pale when dry, slightly shining, the base acute, the apex obtuse, rarely obscurely and broadly acuminate; nerves about 5 on each side of the midrib, anastomosing, the reticulations lax; petioles 5 to 8 mm long. Flowers pale-green, gray-puberulent, densely congested, axillary, the stipes 2 to 3 mm long. Calyx 3 mm in diameter, subtruncate and with 6 minute teeth. Petals 6, valvate, pubescent, lanceolate or oblong-lanceolate, 4 mm long, 1.8 mm wide, acute or somewhat acuminate, the lower half, inside, glabrous and keeled, the upper portion thickened, 3-sided, and densely pubescent in the central portion. Stamens 6, opposite the petals; filaments broad, about 1 mm long and broad, flattened, glabrous, the antheriferous portion as broad as the filament and crowned with copious hairs. Ovary superior, 2-celled, each cell with a single pendulous ovule; style narrowly conical, 1 to 1.5 mm long. Fruit fleshy, ellipsoid, about 2 cm long, 1-celled, entirely inclosed in the accrescent disk.

LUZON, Province of Bataan, Mount Mariveles, *For. Bur. 2830 Meyer*, March, 1905 (type), *For. Bur. 1199 Borden*, June, 1904, *For. Bur. 7222 Curran*, June, 1907, *Bur. Sci. 5165 Ramos*, February, 1908. MINDORO, *For. Bur. 8650, 11363 Merritt*, January, April, 1908. MASBATE, *For. Bur. 12601 Rosenbluth*, January, 1909.

The first representative of the genus to be found in the Philippines and apparently distinct from the few other species of the genus. On Mount Mariveles it is found at altitudes of from 700 to 850 m, but in Mindoro it occurs at lower elevations.

MAGNOLIACEÆ.

ILLICIUM Linn.

Illicium philippinense sp. nov.

Arbor parva vel arbuscula, glabra; foliis congestis, alternis vel subverticillatis, coriaceis, integris, acuminatis, oblongo-ellipticis vel elliptico-lanceolatis, 5 ad 8 cm longis, nervis lateralibus obsolete; floribus axillaribus, solitariis, albis; staminibus circiter 15; carpellis circiter 8, 3 mm longis.

A small tree or a shrub 4 m high or less, glabrous. Branches rather stout, dark-colored, wrinkled when dry, the branchlets somewhat olivaceous. Leaves crowded near the tips of the branchlets, alternate, subverticillate, coriaceous, oblong-elliptic or elliptic-lanceolate, 5 to 8 cm long, 1.5 to 3.5 cm wide, coriaceous, the upper surface shining, the lower dull, acuminate at both ends; lateral nerves obsolete, the midrib prominent; petioles 5 to 10 mm long. Flowers solitary, axillary, white, fragrant, about 1 cm long. Sepals four or five, elliptic-oblong, 10 mm long, 5.5 mm wide, obtuse, nerved. Petals 2-seriate, the inner ones narrower than the outer, as long as the sepals but much narrower, narrowly oblong, obtuse, 2.5 to 3 mm wide. Stamens about 15; filaments stout, swollen, 2 mm long; anthers about 1 mm long. Carpels about 8, glabrous; 3 mm long including the recurved style. Mature fruit about 2 cm in diameter, consisting of from 5 to 8 carpels which are narrowly ovate, rostrate, wrinkled when dry. Seed pale, shining.

LUZON, Province of Zambales, Mount Tapulao, *For. Bur.* 9515 Curran & Merritt (type); *Bur. Sci.* 5078 Ramos, December, 1907, on exposed mountain top in the elfinwood, altitude about 2,100 m. MINDORO, Mount Halcon, *For. Bur.* 4411 Merritt, June, 1906.

The only representative of the genus known from the Philippines, apparently well characterized by its small leaves which are without evident lateral nerves. It has previously been recorded by me from Mindoro as *Illicium* sp.⁴ It is probably most closely allied to *I. evnium* King, of the Malay Peninsula.

LAURACEÆ.

CRYPTOCARYA R. Br.

Cryptocarya lauriflora (Blanco) comb. nov.

Salgada lauriflora Blanco Fl. Filip. ed. 2 (1845) 221, ed. 3, 2:50; Merr. in Govt. Lab. Publ. (Philip.) 27 (1905) 73.

Eusideroxylon boracense F.-Vill. Nov. App. (1883) 179, non T. & B.

Cryptocarya luzoniensis Vidal Rev. Pl. Vasc. Filip. (1886) 222; Ceron Cat. Pl. Herb. (Manila) (1892) 141; Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 58.

⁴ Philip. Journ. Sci. 2 (1907) Bot. 272.

LUZON, Province of Rizal, Cardona, Vidal 1680 (type, of *C. luzoniensis*, in Herb. Kew.); Antipolo and Bosoboso, *For. Bur.* 401, 2663 *Ahern's collector*, February, 1904, and January, 1905: Province of Pampanga, Mount Arayat, *Vidal 1686*, in Herb. Kew.: Province of Bataan, Mount Mariveles *Whitford 1050, 1043*, January, 1905, December, 1904, *For. Bur.* 6264, 6274, 7372 *Curran*, February and July, 1907: Province of Camarines, Pasacao, *Ahern 32, 183*, January, February, 1902. MINDORO, *For. Bur.* 8609 *Merritt*, January, 1908.

Blanco's monotypic genus *Salgada*, has not previously been satisfactorily identified, although it was referred by Fernandez-Villar⁵ without question and without discussion, to the Bornean genus *Eusideroxylon* Teysm. & Binn., but a cursory examination of Blanco's description shows at once that his species can not be referred to *Eusideroxylon*. It does, however, apply closely to *Cryptocarya*, and moreover his specific description applies to *Cryptocarya luzoniensis* Vidal. I have accordingly here reduced *Salgada* to *Cryptocarya*, and in making this reduction, have adopted the earliest specific name for the species, reducing Vidal's *Cryptocarya luzoniensis*. Blanco's description very clearly states that his genus has nine fertile stamens, of which the outer six have introrse anthers, and the inner three have extrorse ones; moreover he describes the anthers as 1-celled, his expression "cuerpecillos laterales" certainly applying to the valves of the anther-cells. Blanco describes the ovary as inferior, probably because it is immersed in the calyx-tube, and later states that the fruit is inferior, the latter being apparently an error in his description, or due to a mixture of material. There seems to be absolutely no doubt as to the identity of *Salgada* with *Cryptocarya*, in spite of the above discrepancies in Blanco's description.

***Cryptocarya bicolor* sp. nov.**

Arbor circiter 25 m alta; foliis alternis, elliptico-oblongis vel late oblongo-lanceolatis, subcoriaceis, supra glabris, nitidis, subtus albo-glauciscentibus, 10 ad 20 cm longis, usque ad 7 cm latis, apice breviter obtuseque acuminatis, basi acutis; nervis utrinque circiter 10, subtus prominentibus, ferrugineo-pubescentibus, tenuiter anastomosantibus, reticulis densis, obscuris; paniculis pubescentibus, axillaribus terminalibusque, quam folia brevioribus; floribus sessilibus vel breviter pedicellatis, circiter 3 mm longis.

A tree about 25 m high, more or less pubescent. Branches slender, brown, terete, somewhat pubescent, the young branchlets rather densely pubescent. Leaves alternate, elliptic-oblong or broadly oblong-lanceolate, 10 to 20 cm long, 4 to 7 cm wide, subcoriaceous, the apex shortly acuminate, the acumen obtuse, the base acute, the upper surface glabrous, shining, somewhat olivaceous, the midrib sometimes pubescent, the lower surface very pale, glaucous, nearly white, sparingly pubescent, the midrib and lateral nerves ferruginous; nerves about 10 on each side of the midrib, obscure on the upper surface, very distinct on the lower, slightly curved, spreading-ascending, attenuate and obscurely anastomosing near the margins, the reticulations rather dense, not distinct; petioles pubescent, about 8 mm long. Panicles axillary and terminal, 10 cm long or less, pubescent, many-flowered, somewhat diffuse. Flowers yellow, fragrant,

⁵ Nov. App. (1880) 179.

about 3 mm long, sessile or short pedicellate, the bracteoles small. Calyx-tube about 1.5 mm long, pubescent, cylindric; perianth-lobes pubescent on the outside, subequal, oblong, about 2 mm long, acute or blunt. Stamens as in other species of the genus, the filaments short, glabrous. Staminodes 1.5 mm long, stipitate, acuminate. Fruit unknown.

MINDANAO, District of Zamboanga (?), *For. Bur.* 6548 *Hutchinson*, March, 1907. N. v., *Ducatan, Masagunadug*.

A species well characterized by its leaves which are shining and glabrous above, and nearly white beneath, the midrib and lateral veins ferruginous, the reticulations not distinct, and its panicles which are about one-half as long as the leaves. The timber is used for house-posts.

***Cryptocarya palawanensis* sp. nov.**

Arbuscula circiter 3 m alta; foliis chartaceis, oblongis, usque ad 35 cm longis, 10 cm latis, apice acuminatis, basi acutis, utrinque glabris, costa nervisque exceptis; nervis utrinque circiter 15; paniculis axillaribus, foliis multo brevioribus, pubescentibus; perianthiis segmentis subaequalibus, pubescentibus, 2.5 mm longis; fructibus ovoideis, 1.5 cm longis, nigris, nitidis, glabris.

A shrub about 3 m high. Branchlets ferruginous-pubescent. Leaves chartaceous, oblong, up to 35 cm long, 10 cm wide, the apex rather strongly acuminate, the base acute, somewhat shining and glabrous on both surfaces except the midrib and lateral nerves which are somewhat pubescent, the upper surface olivaceous, the lower brownish; nerves about 15 on each side of the midrib, beneath very distinct, obscurely anastomosing, the primary reticulations lax, the ultimate ones dense; petioles pubescent, about 1 cm long. Panicles axillary, pubescent, 8 to 10 cm long, the branches 3 cm long or less. Flowers pedicellate or sessile, pubescent, the tube cylindric, quickly inflated, somewhat longitudinally striate, the perianth-lobes 6, subequal, pubescent, 2.5 mm long. Fruit ovoid, black, shining, glabrous, 1.3 cm long.

PALAWAN, near the Iwahig Penal Settlement, *For. Bur.* 4441 *Curran*, April, 1906, along the banks of tidal streams.

A species characterized by its rather large leaves and comparatively short panicles.

***Cryptocarya pallida* sp. nov.**

Arbor vel arbuscula; ramis teretibus nigricantibus, glabris, ramulis plus minus pubescentibus; foliis ovatis vel elliptico-ovatis, chartaceis, 8 ad 11 cm longis, 3 ad 5 cm latis, apice acuminatis, basi acutis vel rotundatis, supra olivaceis, glabris, nitidis, subtus subalbidis, parce pubescentibus, costa nervis reticulisque brunneis; paniculis axillaribus, plus minus pubescentibus; fructibus ellipsoideis, 2.5 cm longis, 1.5 cm diametro, glabris, nitidis, utrinque apiculatis.

A shrub or tree, nearly glabrous. Branches terete, dark-colored, glabrous, the branchlets somewhat pubescent. Leaves alternate, chartaceous, ovate to elliptic-ovate, 8 to 11 cm long, 3 to 5 cm wide, the apex rather

sharply acuminate, the base acute or rounded, the upper surface olivaceous, glabrous, shining, the lower surface nearly white, slightly pubescent, the midrib nerves and primary reticulations brown; nerves 5 on each side of the midrib, distinct beneath, anastomosing, the reticulations lax; petioles about 5 mm long, slightly pubescent. Panicles axillary, in fruit 10 cm long or less, slightly pubescent. Flowers unknown. Fruits ellipsoid about 1.5 cm in diameter, 2.5 cm long, dark-colored, glabrous, shining, apiculate at both ends, obscurely longitudinally striate.

MINDANAO, District of Zamboanga, Tetuan, *Ahern* 594, 566, February to June, 1901, N. v., *Ponit*.

Characterized by its relatively large fruits which are apiculate at both ends, and by its leaves which are nearly white beneath.

***Cryptocarya everettii* sp. nov.**

Arbor, 10 ad 18 m alta; foliis alternis, oblongo-ellipticis, ellipticis, vel oblongo-lanceolatis, subcoriaceis, 10 ad 20 cm longis, acuminatis, supra nitidis, glabris, brunneis, subtus glaucescentibus, valde pulcherrime reticulato-venosis; paniculis pubescentibus, 8 ad 10 cm longis, axillaribus terminalibusque; floribus albis, circiter 4 mm longis, pedicellatis vel subsessilibus; fructibus oblongis, glabris, circiter 3 cm longis.

A tree 10 to 18 m high, nearly glabrous throughout except the inflorescence. Branches slender, light-gray, glabrous, the young branchlets somewhat pubescent. Leaves alternate, oblong-elliptic, elliptic or oblong-lanceolate, 10 to 20 cm long, 4 to 7 cm, rarely 9 cm wide, subcoriaceous, the upper surface glabrous, or sometimes slightly pubescent along the midrib, shining, brown, the lower surface glaucous, the nerves and reticulations prominent, brown, slightly pubescent, the apex abruptly and sharply acuminate, the base acute; nerves about 10 on each side of the midrib, beneath very prominent, anastomosing, the reticulations rather lax, very distinct, the brown midrib, nerves and reticulations in strong contrast to the glaucous under surface of the leaf; petioles 5 to 10 mm long, somewhat pubescent. Panicles axillary and terminal, 8 to 10 cm long, pubescent, the flowers white, pedicellate or subsessile, about 4 mm long, the bracteoles deciduous, about 2.5 mm long. Calyx-tube densely pubescent, 2 mm long, the perianth segments subequal, 2.5 mm long, elliptic-ovate, obtuse, pubescent. Fertile stamens 9, the filaments somewhat pubescent, the anthers of the outer two series introrse, those of the inner series extrorse; staminodes ovate, short-stipitate, somewhat pubescent, acute. Ovary narrowly oblong, glabrous; style 1.5 mm long. Fruit black when dry, glabrous, smooth, oblong or narrowly oblong, about 3 cm long, 1 cm thick, narrowed upwards, not striate.

NEGROS, *For. Bur.* 4236, 4311, 7288, 7311 *Everett*, April-June, 1906-07, *For. Bur.* 7409 *Danao*, June, 1907, *Whitford* 1614, May, 1906.

A species common in the dipterocarp forests in northern Negros, well characterized by its leaves being glaucous beneath, and strongly reticulate, the midrib, nerves, and reticulations on the lower surface of the leaf being brown, in sharp contrast to the glaucous surface. V., *Balit*, *Putian*.

Cryptocarya ampla sp. nov.

Arbor alta, inflorescentiis exceptis glabra; foliis oblongis, coriaceis, nitidis, 18 ad 25 cm longis, 5 ad 9 cm latis, apice late acuminatis, basi emneatis vel rotundatis, concoloribus vel subtus brunneis; nervis utrinque 8 ad 10, prominentibus, obscure anastomosantibus, reticulis validis, densis; paniculis axillaribus terminalibusque, foliis subaequalibus, pubescentibus; floribus numerosis, pedicellatis, 4 mm longis; fructibus ellipsoideis vel obovoideis, parce pubescentibus, longitudinaliter striatis, circiter 12 mm longis.

A tall tree, glabrous throughout except the inflorescence. Branches terete, lenticellate, brownish. Leaves alternate, oblong, 18 to 25 cm long, 5 to 9 cm wide, coriaceous, shining, the apex rather broadly acuminate, the base acute or rounded, about the same color on both surfaces; nerves 8 to 10 on each side of the midrib, rather prominent, curved-ascending, obscurely anastomosing, the reticulations beneath dense, distinct; petioles 1 to 1.5 cm long. Panicles axillary and terminal, about as long as the leaves, many flowered, the rachis and branches somewhat pubescent. Flowers white, 4 mm long, pedicellate, the pedicels pubescent, 1 to 2 mm long, with three small bracteoles at the apex. Calyx-tube cylindric, sulcate, pubescent, 1.5 to 2 mm long, the perianthlobes 6, subequal, pubescent, oblong-obovate, acute or obtuse, 2 mm long. Fertile stamens 9; anthers all 2-celled, those of the two outer series introrse, those of the inner series extrorse, the filaments short; staminodes acuminate, about 1 mm long. Style 1 mm long. Fruit ellipsoid or obovoid, obtuse, somewhat narrowed at both ends, slightly pubescent, longitudinally striate, about 12 mm long.

LUZON, Province of Rizal, Antipolo and Montalban, *For Bur.* 463, 397, 2438 *Ahern's collector*, February and April, 1904, and January, 1905. T., *Bagarilao*. A species well characterized by its large leaves and panicles.

Cryptocarya glauca sp. nov.

Arbor; foliis alternis, coriaceis, oblongo-ovatis vel elliptico-lanceolatis, usque ad 13 cm longis, 5 cm latis, supra brunneis, glabris, nitidis, subtus plus minus pubescentibus, glaucis; nervis subtus prominentibus, brunneis, circiter 8 utrinque; paniculis axillaribus terminalibusque, ferrugineo-pubescentibus, foliis aequalibus vel longioribus vel interdum brevioribus.

A tree, more or less pubescent. Branches terete, reddish-brown glabrous, lenticellate, the branchlets ferruginous-pubescent. Leaves alternate, coriaceous, oblong-ovate or elliptic-lanceolate, the apex shortly and obtusely acuminate, the base acute, 7 to 13 cm long, 2 to 5 cm wide, the upper surface dark- or pale-brown, glabrous, shining, the lower surface glaucous, somewhat ferruginous-pubescent, ultimately glabrous or nearly so; nerves prominent on the lower surface, brown, about 8 on each side of the midrib, obscurely anastomosing, the reticulations not very distinct, rather lax; petioles pubescent, 1 to 1.5 cm long. Panicles axillary and

terminal, ferruginous-pubescent, about as long as the leaves, sometimes longer, sometimes shorter. Flowers subsessile or shortly pedicellate, pubescent, 3 to 3.5 mm long, the bracteoles small, pubescent. Calyx-tube cylindric, 1.5 mm long. Perianth-lobes 6, equal, pubescent outside, elliptic-ovate, obtuse or acute, 2 to 2.5 mm long, 1 to 1.3 mm wide. Stamens as in other species of the genus.

Luzon, Province of Rizal, Bosoboso, *For. Bur. 2981 Aherm's collector*, April, 1905 (type). Apparently the same species, but with small panicles, is represented by *Merrill 2337*, from Tanay, the same Province.

Allied to *Cryptocarya lauriflora* (Blanco) Merr., but differing in many characters, notably in its leaves being very glaucous beneath.

LITSEA Lam.

Litsea bicolor sp. nov.

Arbor circiter 8 m alta; ramis griseis, teretibus, glabris, ramulis junioribus dense ferrugineo-pubescentibus; foliis verticillatis, elliptico-obovatis, usque ad 35 cm longis, coriaceis, supra glabris, brunneis, nitidis, subtus albo-glaucoscentibus, costa nervisque ferrugineis, plus minus tomentosus, apice breviter abrupteque acuminatis, basi acutis; fructibus fasciculatis, ellipsoideis, nigris, nitidis, circiter 2 cm longis, obtusis; calycibus auctis, disciformibus, circiter 1 cm diametro.

A tree about 8 m high. Branches terete, gray, glabrous, the young branchlets densely ferruginous-pubescent. Leaves verticillate, usually 5 in each whorl, elliptic-obovate, 25 to 35 cm long, 12 to 17 cm wide, the apex shortly and abruptly acuminate, the base acute, coriaceous, the upper surface glabrous, shining, dark-brown when dry, the lower surface pale, glaucous, nearly white, somewhat deciduous-tomentose, the nerves and midrib ferruginous-pubescent; nerves about 10 on each side of the midrib, very prominent beneath, curved-ascending, obscurely or not anastomosing, the reticulations lax; petioles ferruginous-pubescent, 3.5 cm long, stout. Flowers unknown. Fruit fascicled on the branches below the leaves, the pedicels stout, short, the calyx accrescent, disciform, about 1 cm in diameter, glabrous, the fruit ellipsoid, black, shining, glabrous, obtuse, about 2 cm long.

MINDANAO, Province of Surigao, Surigao, *Bolster 318*, April, 1906. N. v., *Hindang*.

A species will be characterized by its large, verticillate leaves, which are very pale beneath.

Litsea hutchinsonii sp. nov.

Arbor circiter 10 m alta; ramis teretibus, glabris, ramulis junioribus dense ferrugineo-tomentosis; foliis oppositis vel suboppositis, oblongis, coriaceis, 10 ad 20 cm longis, 5 ad 8 cm latis, concoloribus vel subtus brunneis, supra glabris, nitidis, subtus parce pubescentibus, nervis utrinque circiter 12; inflorescentiis axillaribus, fasciculatis vel glomeratis, floribus umbellulatis, involucreo biseriali, 4-phylo; staminibus fertilibus 9, antheris omnibus introrsis, 4-locellatis.

A tree about 10 m high, nearly glabrous except the young branchlets and inflorescence. Branches terete, reddish-brown, glabrous, the young branchlets rather densely ferruginous-tomentose. Leaves opposite or subopposite, oblong, 10 to 20 cm long, 5 to 8 cm wide, coriaceous, of the same color on both surfaces, or the lower surface brownish, the upper surface glabrous, shining, the lower very sparingly pubescent, the apex acute, obtuse, or very obscurely acuminate, the base acute; nerves about 12 on each side of the midrib, beneath very prominent, obscurely anastomosing; petioles subglabrous, about 1 cm long. Flowers umbellate, the umbels involucrate, crowded in the leaf-axils, sessile or short-pedunculate, the involucre scales 4, concave, orbicular or obovoid, 4 to 5 mm long, outside ferruginous-pubescent. Staminate flowers 3 in each umbel, sessile or subsessile, the tube very short, ferruginous-pubescent outside, the segments 6, oblong, obtuse, subequal, 3 to 3.5 mm long, 1.5 mm wide, glabrous or nearly so. Fertile stamens 9, the longer filaments 2.5 mm long, glabrous or nearly so; anthers all introrse, all 4-locellate.

MINDANAO, District of Zamboanga, Port Banga, *For. Bur. 9148 Whitford & Hutchinson*, January, 1908.

A species apparently allied to *Litsea luzonica* (Bl.) F-Vill., but with much larger, differently shaped leaves. As the genera in this group are defined in the *Nat. Pflanzenfamilien*, this species, having 9 fertile stamens, might be referred to *Actinodaphne*.

***Litsea philippinensis* sp. nov.**

Arbor usque ad 20 m alta; foliis alternis, coriaceis, nitidis, glabris vel subglabris, oblongo-ellipticis, 10 ad 20 cm longis, apice rotundatis vel acutis, basi acutis; nervis utrinque 12 ad 15, prominentibus, reticulis validis subparallelis; petiolis 1 ad 2.5 cm longis; floribus capitulatis, capitulis globosis, fasciculatis vel in racemis brevibus axillaribus dispositis; calycis lobis 6, pubescentibus; staminibus fertilibus 12, filamentis villosis; fructibus oblongo-ovoideis, glabris, obtusis, circiter 3.5 cm longis, tubis auctis, cupulatis, circiter 2 cm diametro.

A tree 15 to 20 m high. Branches terete, stout, brown, glabrous, the branchlets somewhat ferruginous-pubescent. Leaves alternate, elliptic-oblong, 10 to 20 cm long, 5 to 10 cm wide, coriaceous, somewhat shining, usually brownish when dry, at least the nerves, not at all glaucous, the upper surface glabrous, or the midrib sometimes pubescent, the lower surface glabrous or the midrib and nerves usually more or less pubescent, the apex rounded or acute, the base usually acute; nerves 12 to 15 on each side of the midrib, very prominent, parallel, obscurely anastomosing near the margin of the leaf, the reticulations very distinct, subparallel; petioles pubescent, 1 to 2.5 cm long. Flowers in heads, axillary, fascicled or in short racemes, mostly from the branches below the leaves, in the axils of fallen leaves, the rachis, when present, stout, not exceeding 1

cm in length. Involucral bracts 4 or 5, pubescent, concave, orbicular or obovoid, the inner ones thinner, their margins ciliate, strongly imbricate, 6 to 8 flowers in each head. Calyx-tube slender, tubular, 2 mm long, cylindric, the lobes 6, 3 mm long, pubescent. Fertile stamens 12, their filaments slender, 3 mm long, clothed with long weak hairs. Fruit oblong-ovoid, glabrous, obtuse, about 3.5 mm long, the calyx-tube accrescent, persistent, cup-shaped, about 2 cm in diameter.

LUZON, Province of Bataan, Lamao River, *For. Bur.* 7503 Curran, September, 1907 (type), *For. Bur.* 1363, 1794 Borden, July, September, 1904, Whitford 472, July, 1904, Williams 619, February, 1904: Province of Rizal, Bosoboso, *For. Bur.* 3171 Ahern's collector, July, 1905. MINDORO, Bongabong River, Whitford 1413, April, 1906; Balete, *For. Bur.* 6161 Merritt, January, 1907. MINDANAO, Lake Lanao, Camp Keithley, *Mrs. Clemens* 298, February, 1906.

This species is well represented in our herbarium, especially in material from the Mount Mariveles region, but the specimen collected by Curran in September, 1907, is the first one secured with mature flowers, thus allowing accurate generic identification. The specimen from Mindanao, *Clemens* 298, is immature, being much more pubescent than the type, and may possibly represent a different species. It is well characterized by its oblong-elliptic, usually obtuse, strongly nerved leaves. Apparently allied to *Litsea grandis* Hook. f.

NEOLITSEA (Benth.) Merr.

Neolitsea villosa (Blume) comb. nov.

Litsea villosa Blume Mus. Bot. Lugd. Bat. 1 (1851) 349; Vidal Rev. Pl. Vasc. Filip. (1886) 226; Ceron Cat. Pl. Herb. (Manila) (1892) 143; Rendle in Journ. Bot. 34 (1896) 355. Meissn. in DC. Prodr. 15 (1864) 221.

Neolitsea zeylanica Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 57; non *Litsea zeylanica* C. & Fr. Nees.

LUZON, Province of Benguet, Mount Santo Tomas, Williams 1986, November, 1904; Lohr 4521; Suyoc to Panai, Merrill 4761, November, 1905: Province of Rizal, Bosoboso, *For. Bur.* 2674 Ahern's collector, January, 1905: Province of Bataan, Mount Mariveles, Whitford 119, 458, May, July, 1904, Elmer 6806 November, 1904, Merrill 3204, October, 1903, *For. Bur.* 1337, 1586 Borden, 1503 Ahern's collector, 2617 Meyer, 6262 Curran: Province of Pampanga, Mount Abu. *Bur. Sci.* 1958, 1959 Foxworthy, December, 1906: Province of Zambales, Mount Tapulao, *For. Bur.* 8073 Curran; Candelaria, *For. Bur.* 8250 Curran & Merritt, December, 1907. MINDORO, Mount Halcon, *For. Bur.* 4369 Merritt, Merrill 5666; Mount Malasumbu, *For. Bur.* 8747 Merritt. MINDANAO, Province of Misamis, Mount Malindang, *For. Bur.* 4681, 4695 Mearns & Hutchinson, May, 1906.

This species is widely distributed in the Philippines, but is never found at low altitudes. It was previously confused by me with *Litsea zeylanica* C. & Fr. Nees, but appears not to be that species, but rather Blume's *L. villosa*, as identified by Vidal and Rendle. The specimens cited above show considerable variation, some of them having the leaves decidedly ferruginous-pilose beneath, but this indument is deciduous; pubescent and glabrous leaves can frequently be found on the same specimen. This densely villous form has been identified by Vidal as *Litsea cinnamomea* Blume, but whether correctly so or not, the Luzon form so named appears to me to be the same as *L. villosa*=*Neolitsea villosa*. This is doubtless the form approximately identified by Stepf. in his paper on the flora of Mount Kinabalu, as *Litsea zeylanica*, so far as his Philippine reference goes.

MACHILUS Nees.

Machilus nervosa sp. nov.

Arbor glabra circiter 6 m alta; foliis ovato-ellipticis, usque ad 12 cm longis, coriaceis, nitidis, subtus subglaucescentibus, grosse et pulcherrime reticulatis, nervis urtinque 6 vel 7, prominentibus, elevatis, anastomosantibus; paniculis axillaribus terminalibusque, circiter 7 cm longis; fructibus obovoideis, in sicco nigris, leviter angulatis, circiter 12 mm longis, perianthii lobis late ovatis, acutis, persistentibus, patulis.

A glabrous tree about 6 m high. Branches terete, lenticellate, grayish- or reddish-brown. Leaves ovate-elliptic, coriaceous, 7 to 12 cm long, 2.5 to 5 cm wide, base and apex acute, the upper surface shining, the lower, at least when young, subglaucescent, nerves 6 or 7 on each side of the midrib, beneath very prominent, elevated, darker-colored than the surface of the leaf, curved-ascending, anastomosing, the primary reticulations lax, distinct; petioles 2 to 3 cm long. Panicles axillary and glabrous in fruit, about 7 cm long. Flowers unknown. Fruit obovoid, red when fresh, black and shining when dry, about 12 mm long, somewhat keeled or angled and obscurely reticulate, the persistent perianth-lobes broadly ovate, acute, 1.5 mm long, glabrous or their margins slightly pubescent, spreading.

LUZON, Province of Benguet Mount Ugo, *For. Bur.* 10846 Curran, *For. Bur.* 18009 Merritt, December, 1908, in hardwood forests in ravines at an altitude of about 2,000 m.

PHOEBE Nees.

Phoebe sterculioides (Elmer) comb. nov. § *Euphoeba*.

Persca sterculioides Elmer Leaf. Philip. Bot. 1 (1908) 295.

Arbor 7 ad 18 m alta; foliis subcoriaceis, obovatis vel oblanceolatis, circiter 18 cm longis, 8 cm latis, integris, apice breviter acuminatis, rariter acutis, basi sensim angustatis, supra glabris, subtus plus minus glaucescentibus, ferrugineo-pubescentibus; nervis utrinque 9 ad 11; paniculis axillaribus, ferrugineo-pubescentibus, angustis, usque ad 20 cm longis; calycis lobis 6, subaequalibus vel exterioribus admodum minoribus, pubescentibus, plus minus accrescentibus, persistentibus, erectis; staminibus fertilibus 9, 3-seriatis, antheris 4-locellatis, ordinis primi et secundi introrsis, ordinis tertii extrorsis.

LUZON, Province of Tayabas, Lucban, *Elmer 9121* (cotype), May 1907. MINDORO, near Lake Naujan, *For. Bur.* 6793a, 6824, 6859 Merritt, March-April, 1907. NEGROS, 7273, 7287, 7327 Everett, May, 1907. MINDANAO, Lake Lanao, Camp Keithley Mrs. Clemens 518, April-May, 1906, and six sheets without numbers.

This species appears to be not uncommon in the Philippines, and extends from central Luzon to Mindanao. In Mindoro it is known as *Baticulin*, a name applied to many different species of *Lauraceae*, in various genera. Specimens of this plant with young fruit show accrescent, persistent, and appressed calyx segments, which throws the species into *Phoebe*, as defined by Pax in Engler & Prantl's

Natürlichen Pflanzenfamilien, although Bentham & Hooker reduce *Phoebe* to *Persea*. In the original description of the species the outer series of stamens are described as having extrorse anthers, and the other series to have introrse anthers. I have reëxamined the type number and the reverse seems to be the case, the outer two series having introrse anthers, and the inner series having extrorse anthers. Apparently allied to the Malayan *Phoebe opaca* Blume.

DROSERACEÆ.

DROSERA Linn.

Drosera burmanni Vahl Symb. 3 (1794) 50; Clarke in Hook. f. Fl. Brit. Ind. 2 (1878) 424; F.-Vill. Nov. App. (1880) 78, Diels in Pflanzenreich 26 (1906) 75.

Luzon, District of Bontoc, *For. Bur. 10995 Curran*, January, 1909, altitude about 700 m.

The fourth species of the genus for the Philippines, previously recorded from Panay by F.-Villar, but his record as to its occurring in the Archipelago not before verified.

India and Ceylon to southern Japan, south to Malaya and northern Australia.

HAMAMELIDACEÆ.

EMBOLANTHERA gen. nov.

Calycis tubus ovario adnatus, limbus irregulariter 2- vel 3-fidus, demum circumscisso-deciduus. Petala 5, lineari-elongata, basi utrinque valde auriculata vel alata. Stamina 5, petalis alternantia, filamentis brevissimis; antherae basifixae, loculis in valvis 2 verticaliter dehiscentibus, connectivo longe producto. Ovarium inferum, 2-loculare; styli 2, subulati, stigmatibus simplicibus; ovula in loculis solitaria, pendula. Arbor. Folia alterna, integra vel subintegra, persistentia, ovata vel oblonga, acuminata. Stipulae lanceolatae, membranaceae, deciduae, pectinatae. Flores in spicas terminales densissime dispositi, calyce stellato-pubescente.

Embolanthera spicata sp. nov.

Arbor circiter 10 m alta, glabra, inflorescentiis exceptis. Ramis ramulisque tenuibus, griseis vel brunneis; foliis alternis firmiter chartaceis, ovatis vel oblongis, usque ad 10 cm longis, apice breviter acuminatis, basi rotundatis, acutis vel acuminatis, leviter inaequilateralibus, nitidis. Spicis foliis aequantibus vel subaequantibus, densis; floribus albis, 5-meris; petalis circiter 2 cm longis, 2 mm latis, basi utrinque valde auriculatis vel alatis; staminibus 5, connectivo longe producto.

A tree about 10 m high, glabrous or nearly so except the inflorescence. Branches and branchlets terete, slender, gray or brown, slightly lenticellate. Leaves alternate, ovate to oblong, firmly chartaceous, shining, 7 to 10 cm long, 2 to 5 cm wide, gradually narrowed upward to the short-acuminate apex, the base rounded, acute, or slightly acuminate, usually somewhat inequilateral, the margins entire, recurved, sometimes slightly aculeate-denticulate near the apex; nerves 7 or 8 on

each side of the midrib, prominent beneath, anastomosing, the reticulations lax; petioles 5 to 10 mm long. Stipules deciduous, membranaceous, usually lanceolate, acuminate, 5 mm long or less, somewhat appressed-pubescent on the back, the margins below prominently pectinate, the tips of the teeth glandular. Spikes as long as the leaves or sometimes shorter, about 2.5 cm in diameter, densely many-flowered, the rachis somewhat pubescent, the bracteoles linear, pubescent, 1.5 mm long. Flowers white, sessile. Calyx-tube short, adnate to the ovary, pale-stellate-pubescent outside, the limb splitting irregularly into two or three ovate, acute or acuminate lobes, 4 to 5 mm long, membranaceous, somewhat reticulate-veined, stellate-pubescent outside, finally circumscissile and deciduous. Petals 5, about 2 cm long, 1.8 to 2 mm wide, the basal 3 mm strongly auricled, including the auricles 3 mm wide, narrowed above the auricles to 1 mm, incurved, and then linear-elongate, membranous, nerved, about 2 mm wide, acuminate. Staminodes none, unless represented by the auricles to the petals. Stamens 5, alternate with the petals, and inserted with them; filaments adnate to the corolla and falling with it, stout, about 1 mm long; anthers ovoid, about 1 mm long, the cells opening laterally each by two valves, the connective produced as a straight, 2 mm long, awn. Ovary inferior, 2-celled, each cell with a single pendulous ovule, the top of the ovary pubescent; styles 2, less than 1 mm long, slender; stignas minute. Fruit unknown.

PALAWAN, Victoria Peak, *Bur. Sci.* 739 Foxworthy, March 24, 1906. A spreading tree about 10 m high, with a trunk 15 to 20 cm in diameter growing on the river bank at an altitude of about 250 m above the sea.

The genus above proposed is allied to *Maingaya* Oliver, of Penang and Perak, and to *Loropetalum* R. Br., of India and China, differing from both in its spicate inflorescence, and in the strongly auriculate bases of the petals, from the former also in its different calyx and absence of staminodes, and from the latter also in its 4-merous flowers. It is apparently more closely allied to *Maingaya* than to *Loropetalum*, but seems to be distinct from both, and from all other hitherto described genera. But one genus of the family, *Sycopsis*, was previously known from the Philippines.

ROSACEÆ.

PARINARIUM Aubl.

Parinarium curranii nom. nov.

Parinarium racemosum Merr. in Govt. Lab. Publ. (Philip.) 17 (1904) 19; non Vidal Cat. Pl. Prov. Manila (1880) 29.

MASBATE, *Merrill* 2614, May, 1903 (type). LUZON, Province of Albay, *For. Bur.* 10575 *Curran*, June, 1908.

The original name of this species is invalidated by *Parinarium racemosum* Vidal, and accordingly the above new name is proposed for it. Vidal's species is not enumerated in Index Kewensis.

LEGUMINOSÆ.

ALBIZZIA Durazz.

Albizzia scandens sp. nov.

Frutex scandens, subglabra, usque ad 10 m alta; foliis bipinnatis, circiter 20 cm longis 4- vel 5-jugatis; foliolis oblongis vel elliptico-oblongis, 1 ad 2 cm longis, acutis vel apiculatis, leviter inequilateralibus; paniculis circiter 20 cm longis, parce pubescentibus; floribus sessilibus, capitulatis, extus parce pubescentibus; staminibus circiter 20, filamentis liberis.

A scandent shrub about 10 m high, subglabrous. Branches dark-colored when dry, terete, lenticellate. Leaves alternate, about 20 cm long, evenly 4- or 5-jugate, the common rachis slightly pubescent, 12 to 15 cm long, with a single large gland on the upper surface near the base, the stipules, if any, caducous, the base of the petiole subtended by a stout, somewhat recurved, thickened puvinus about 4 mm long; leaflets 8 to 12 pairs, crowded, oblong or elliptic-oblong, 1 to 2 cm long, 5 to 7 mm wide, chartaceous, somewhat inequilateral, the base broad, acute, the apex acute or apiculate, the lower surface paler than the upper, slightly pubescent. Panicles axillary and terminal, 20 cm long or less, slightly pubescent. Flowers white, sessile, in small capitate heads at the ends of the ultimate branchlets. Calyx about 1.5 mm long, slightly cinereous-pubescent outside, obscurely 5-toothed. Corolla slightly cinereous-pubescent outside, 4.5 mm long, the tube very slender below, widened above, the lobes oblong-ovate, acute, about 1.5 mm long, 1.2 mm wide. Stamens 20 or more; filaments about 12 mm long, free; anthers 0.2 mm long.

PALAWAN, Iwahig, *Bur. Sci.* 829 *Foxworthy*, May, 1906.

A species growing near the sea, climbing over *Xylocarpus*, allied to *Albizzia myriophylla* Roxb., of the Malay Peninsula, but with much fewer jugate leaves, less numerous and differently shaped leaflets, and free filaments.

BAUHINIA Linn.

Bauhinia monandra Kurz in Journ. As. Soc. Beng. 42² (1873) 73; Forest Fl. Brit. Burma 1 (1877) 395.

Bauhinia richardiana Wall. in Voigt. Hort. Suburb. Calcutt. (1845) 255, non DC. fide Prain.

Phanera maculata Rich. ex Teysm. & Binn. Cat. Hort. Bog. (1866) 268, non *Bauhinia maculata* Tenore.

Bauhinia krugii Urban in Ber. Deutsch. Bot. Ges. 3 (1885) 83.

Bauhinia kappleri Sagot in Ann. Sci. Nat. VI 13 (1882) 317; Urban Symb. Antill. 1 (1899) 83; Perk. Frag. Fl. Philip. (1904) 13; Merr. in Govt. Lab. Publ. (Philip.) 29 (1905) 17.

Luzon, Manila, *Merrill s. n.* November, 1903; Province of Pampanga, Arayat, *Warburg*, in Herb. Berol., *Merrill 393½*, October, 1904, *Bolster 51*, May, 1905:

Province of Rizal, *For. Bur.* 3248 *Ahern's collector*, August, 1905: Province of Bataan, Lamac, *For. Bur.* 7350 *Curran*, June, 1907. BOHOL, *Bur. Sci.* 1230 *McGregor*, May, 1906.

There is no doubt but that *Bauhinia monandra* Kurz is the oldest valid name for this widely distributed species, and it is accordingly here adopted. Material supplied me by Mr. Craib of the Royal Botanic Garden, Calcutta, as representing Kurz's species is unquestionably the same as our Philippine specimens. In order to verify this I wrote to Dr. Prain, Director of the Royal Botanic Gardens, Kew, who has kindly examined all the material in the Kew herbarium, and who informs me that *Bauhinia krugii*, and *B. kappleri* are unquestionably identical with *B. monandra* of Kurz, the reductions being also verified by Mr. W. B. Hemsley, and Mr. N. E. Brown. My reduction of *Phanera maculata* Rich., is based on a specimen so named received from Buitenzorg, taken from a tree in the botanic garden so labelled, and said to have been received from Bourbon under that name. I suspected that it might be the same as *B. maculata* Tenore, but this is not the case, as Tenore's description does not at all apply to the present species, although Dr. R. Pampanini of Florence, who kindly supplied me with a copy of the original description, informs me that Tenore's type does not appear to be extant. The species is now widely distributed in the tropics of the World, and is probably a native of tropical America; it is certainly an introduced species in the Philippines.

CYNOMETRA Linn.

Cynometra luzoniensis sp. nov.

Arbor glabra, circiter 15 m alta; foliis unifoliolatis, foliolis coriaceis vel subcoriaceis, in sicco brunneis, nitidis, oblongis, usque ad 12 cm longis, reticulatis, apice acute acuminatis, basi late rotundatis vel subcordatis; fructibus axillaribus, racemosis, compressis, brunneis, circiter 2 cm longis, verrucoso-lenticellatis, obtusis.

A glabrous tree about 15 m high. Branches light-brown, terete, lenticellate. Leaves alternate, unifoliolate, the petiole stout, rugose, 3 to 4 mm long, the single leaflet sessile, oblong, coriaceous or subcoriaceous, brown and shining when dry, 5 to 12 cm long, 2 to 4.5 cm wide, the apex sharply acuminate, the base rather broad, rounded or slightly cordate; primary nerves about 8 on each side of the midrib, anastomosing, the secondary ones and reticulations nearly as distinct, the latter netted, rather close, distinct on both surfaces. Flowers unknown. Infrutescence of axillary, solitary racemes, the rachis about 1 cm long, marked by numerous pedicel-scars, the pedicels about 8 mm in length. Fruits (immature) compressed, inequilateral, the dorsal suture nearly straight, the ventral semicircular, about 2 cm long, 11 to 13 mm wide, brown, lenticellate-verrucose, apex and base rounded.

Luzon, Province of Tayabas, Laguimanoc, *Merrill* 2128, April, 1903.

A species closely allied to *Cynometra simplicifolia* Harms, but with larger much more sharply acuminate leaves which are broad and rounded or subcordate at the base and with quite different, much more prominent venation and reticulation. The inflorescence of *C. simplicifolia* is fasciculate and the fruits are usually somewhat falcate, the dorsal suture being frequently incurved.

FLEMINGIA Roxb.

Flemingia lineata (Linn.) Roxb. Hort. Beng. (1814) 56; Fl. Ind. 3:341; Baker in Hook. f. Fl. Brit. Ind. 2 (1876) 228; F-Vill. Nov. App. (1880) 67.

Hedysarum lineatum Linn. Sp. Pl. (1753) 1054.

Flemingia blancoana Llanos Fragm. (1851) 80; Blanco Fl. Filip. ed. 3, 4⁺:62. Luzon, Province of Bulacan, near Malolos, Mrs. Templeton, February, 1909.

A species previously known from the Philippines only by F-Villar's record, and to which he reduced, and apparently correctly so, *Flemingia blancoana* Llanos. India to Siam, the Malay Archipelago and northern Australia.

DESMODIUM Desv.

Desmodium retroflexum (Linn.) DC. Prodr. 2 (1825) 336; Baker in Hook. f. Fl. Brit. Ind. 2 (1876) 170; Forbes & Hemsl. in Journ. Linn. Soc. Bot. 23 (1887) 176.

Luzon, Province of Nueva Ecija, Cabanatuan, Bur. Sci. 5278 McGregor, September, 1908.

Himalayan region to Tenasserim and southern China; new to the Philippines.

ERYTHROPHLOEUM Afzel.

Erythrophloeum densiflorum (Elm.) comb. nov.

Cynometra densiflora Elm. Leaf. Philip. Bot. 1 (1907) 222.

Arbor glabra, inflorescentiis exceptis, usque ad 25 m alta; foliis alternis abrupte bipinnatis, pinnis 1- vel 2-jugatis; foliolis oppositis, abrupte pinnatis, 3- ad 5-jugatis, subcoriaceis, nitidis, in sicco brunneis vel pallidis, usque ad 15 cm longis, valde acuminatis, basi rotundatis vel acutis, leviter inaequalibus; floribus parvis, spicatis, spicis pubescentibus, in paniculis terminalibus vel subterminalibus dispositis; petalis 5, imbricatis, circiter 4 mm longis; ovarium stipitatum, 4-ovulatum; leguminibus ligneis, oblongis vel anguste oblongo-obovatis, obtusis, compressis, basi angustatis, longitudinaliter laxe reticulato-striatis, rectis vel leviter falcatis, dehiscentibus, usque ad 18 cm longis, 4.5 cm latis; seminibus 1 ad 4, compressis, orbicularibus, circiter 3 cm diametro.

The type of this species was collected by Mr. Elmer No. 9013, near Lucban, Province of Tayabas, Luzon, in flower, and described by him as *Cynometra densiflora*. It is represented by the following additional material; Luzon, Province of Tayabas, Bulin, For. Bur. 10272 Curran, with nearly mature fruit; Guinayangan, For. Bur. 12507 Rosenbluth; Dugatan, For. Bur. 10215 Curran; Apad, For. Bur. 11513 Whitford. A sterile specimen from Mindanao, For. Bur. 9163 Whitford & Hutchinson, may be referable here. Locally known to the Tagalogs as *Camatog* or *Calamantao*.

A most interesting addition to our knowledge of the Philippine flora, the genus, up to the present time consisting of about six species, mostly in Africa and Madagascar, one in Australia and one in China.

KINGIODENDRON Harms.

Kingiodendron alternifolium (Elmer) Merrill & Rolfe, comb. nov.

Cynometra alternifolia Elmer Leaf. Philip. Bot. 1 (1907) 223.

Hardwickia alternifolia Elmer l. c. (1908) 362.

Arbor magna, glabra; foliis imparipinnatis, alternis, rariter oppositis,

foliolis 3 ad 5, coriaceis, elliptico-ovatis vel oblongo-ellipticis, alternis, valde glanduloso-punctatis, plus minus inaequilateralibus, apice acuminatis, basi acutis vel obtusis; paniculis axillaribus; calycibus 5-vel 4-meris, lobis valde imbricatis, glanduloso-punctatis; ovario sessile, dense villosa; fructibus suborbicularibus, ellipticis vel obovoideis, crassis, leviter compressis, brunneis, ligneis, 3 ad 4 cm longis, circiter 3 cm latis, 2.5 cm crassis, indehiscenibus; seminibus solitariis, albumine ruminato.

The type of this species is *Elmer 7366* from Leyte, the specimens with immature fruits and without flowers, which perhaps accounts for its originally being described as *Cynometra*. Later Mr. Elmer transferred it to *Hardwickia*, following the conception of that genus as defined by Bentham and Hooker. Harms has however proposed the new genus *Kingiodendron*, based on *Hardwickia pinnata* Roxb., to which the present species is allied. As we consider *Kingiodendron* to be a valid genus, the Philippine species is here transferred as the second species of the genus.

In addition to the type, cited above, the species is represented by the following specimens: LUZON, Province of Tayabas, Guinayangan, *Bath s. n.*, May, 1904 (fruit), Mulanaw and San Narciso, *For. Bur. 10327, 10354 Curran*, April, 1908 (fruit); Province of Camarines, *For. Bur. 10671 Curran* (sterile); Province of Sorsogon, *For. Bur. 10624 Curran* (sterile). MASBATE, *Merrill 2761*, June, 1903 (fruit), *Whitford 1679*, October, 1906 (sterile). Ticao, *For. Bur. 1084 Clark*, May, 1904 (fruit). PANAY, Miagao, *Vidal 2468* in Herb. Kew. MINDANAO, District of Zamboanga, *For. Bur. 6567 Hutchinson*, March, 1907 (immature fruit); Port Banga, *For. Bur. 9301, 9007, 11036 Whitford & Hutchinson* (in flower).

The present species is a timber tree of considerable importance, being commercially known as *Batete*. The wood structure has been considered by Foxworthy⁹ who states that it is much like that of *Sindora supa* Merr., in structure, but is darker and with a greater amount of oil. It is widely distributed in the central and southern Philippines, and is known by the following native names V., *Batete*; T., *Dangay*; B., *Salalangin*; in Zamboanga as *Palo Maria* and *Bitanhol*, but these two names belong properly to *Calophyllum*.

MEZONEURUM Desf.

Mezoneurum latisiliquum (Cav.) comb. nov.

Bauhinia ? *latisliqua* Cav. Icon. 5 (1799) 5, t. 408, in part, excluding description and figure of leaves.

Mezoneurum glabrum Desf. in Mém. Mus. Paris 4 (1818) 245, t. 10; DC. Prodr. 2 (1825) 484; Baker in Hook. f. Fl. Brit. Ind. 2 (1878) 258; F.-Vill. Nov. App. (1880) 70; Miq. Fl. Ind. Bat. 1^a (1855) 103; Vidal Phan. Cuming. Philip. (1885) 110, Rev. Pl. Vasc. Filip. (1886) 114; Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 64.

Caesalpinia torquata Blanco Fl. Filip. (1837) 336.

Mezoneurum procumbens Blanco l. c. ed. 2 (1845) 235, ed. 3, 2:73.

LUZON, Province of Pampanga, Arayat, *Merrill 1438*; Province of Rizal, *Merrill 1711*; Province of Bataan, *For. Bur. 5958 Curran*; *Whitford s. n.*; *Williams 701*; Province of Laguna, Los Baños, *Elmer*; *Bur. Sci. 6095 Robinson*. MINDORO, Paluan, *Merrill 956*; *For. Bur. 9748 Merritt*. NEGROS, *For. Bur. 7315 Everett*. BASILAN, *For. Bur. 3978 Hutchinson*; *Hallier*. MINDANAO, Province of

⁹ *This Journal*, 2 (1907) Botany 376.

Surigao, *Bolster 366*; Lake Lanao, Camp Keithley, *Mrs. Clemens 262*; District of Davao, *Copeland 470*.

A common and widely distributed species in the Philippines, for which the earliest specific name is here adopted. Cavanilles' *Bauhinia* ? *latisiliqua* is a mixture, the leaves being those of a true *Bauhinia*, but the fruit manifestly a *Mezoneurum*. It was based on material collected in the Philippines by Née, the fruit, at least, coming from the town of Cavinti in Laguna Province, Luzon. As the specific name was taken from fruit characters, and as the fruit as figured and described is manifestly *Mezoneurum*, I consider that *Bauhinia* ? *latisiliqua* is typified by the fruit, and that it should be considered as *Mezoneurum*. Local names, T., *Camut pusa*, *Camut cabag*, *Cabit cabag*, *Sagnit*, *Sapnit*; V., *Tugabang*, *Ugabang*, *Sampinit*; in Basilan *Sokit*, *Sampinit*.

Timor, and according to Baker, in Tenasserim.

SESBANIA Pers.

Sesbania roxburghii nom. nov.

Aeschynomene paludosa Roxb. Hort. Beng. (1814) 56, nomen, Fl. Ind. 3 (1832) 333.

Sesbania paludosa Prain in Journ. As. Soc. Beng. 6² (1897) 82, non Jacq., 1825.

Sesbania grandiflora Miq. Fl. Ind. Bat. 1¹ (1855) 333, non Pers.

Sesbania cochinchinensis Kurz in Journ. As. Soc. Beng. 45² (1876) 271, non DC.

Sesbania aculeata var. *paludosa* Baker in Hook. f. Fl. Brit. Ind. 2 (1876) 115, in part, and excluding the synonym *Aeschynomene uliginosa*.

Luzon, Province of Laguna, Siniloan, *Bur. Sci. 6530 Robinson*; Santa Maria Mavita, *For. Bur. 10098 Curran*, in shallow water in Lake Bay, T., *Balakla*.

Bengal to Burma, southern China and Java.

As there appears to be no valid specific name for this species, the above is here proposed.

RUTACEÆ.

EVODIA Forst.

Evodia monophylla sp. nov.

Arbuscula glabra circiter 3 m alta; foliis oppositis, unifoliolatis, foliolis 6 ad 13 cm longis, elliptico-lanceolatis, firmiter chartaceis, utrinque pallidis nitidisque, apice acuminatis, basi acutis; cymis pedunculatis, circiter 1 cm longis; floribus 4-meris, ovario obtuse 4-angulato.

A glabrous shrub about 3 m high. Branches terete, slender, grayish or grayish-brown, shining, striate when dry. Leaves opposite, unifoliate, the petiole 0.8 to 3 cm long, the petiolule short; leaflet firmly chartaceous, elliptic-lanceolate, pale and shining on both surfaces, 6 to 13 cm long, 2 to 4.5 cm wide, entire, glabrous, the apex acuminate, acumen blunt, the base acute; primary nerves 10 to 13 on each side of the midrib, rather distant, anastomosing, the secondary nerves and rather lax reticulations almost as prominent. Cymes axillary, solitary, peduncled, about 1 cm long, when young slightly puberulent. Pedicels about 2 mm long. Calyx-lobes 4, ovate, 1 mm long. Petals 4, oblong-elliptic, acute, punctate, 2.5 mm long, 1.3 mm wide. Stamens 4, alternating with the petals; filaments 1.7 mm long; anthers 0.8 mm long.

Disk prominent, obtusely 4-angled, somewhat undulate. Ovary with four obtuse lobes, sunk in the disk; style very short, simple. Immature carpels glabrous.

MINDORO, Mount Halcon, *Merrill 6169*, November 9, 1906, in forests at about 750 m altitude; flowers pink.

A species readily recognizable by its unifoliolate leaves, pale, shining, elliptic-lanceolate, acuminate leaflets, and very short axillary cymes.

MELIACEÆ.

AGLAIA Lour.

Aglaiia badia sp. nov. § *Euaglaia*.

Arbor 20 ad 25 m alta, ramulis paniculisque densissime badio-lepidotis, subnitentibus; foliis alternis, imparipinnatis, 4- vel 5-jugatis, 20 ad 25 cm longis; foliolis oppositis, in sicco brunneis, utrinque decidue brunneo-lepidotis; paniculis axillaribus, folia subaequantibus, pedunculatis; floribus racemoso-dispositis, minutis, 5-meris.

A tree 20 to 25 m high the branches, petioles and inflorescence somewhat shining, minutely and very densely brown-lepidote. Leaves alternate, odd-pinnate, 4- or 5-jugate, 20 to 25 cm long, the rachis and petiolules minutely and densely lepidote; leaflets opposite, brown when dry, chartaceous, oblong to elliptic-oblong, somewhat shining, deciduously lepidote on both surfaces, 5 to 10 cm long, 2.5 to 4.5 cm wide, the terminal one sometimes larger, equilateral, the lateral ones somewhat inequilateral; nerves 10 to 12 on each side of the midrib, not prominent, the reticulations fine, rather lax; petiolules 8 mm long or less. Panicles axillary, peduncled, nearly as long as the leaves, branched in the upper two-thirds, the rachis, branches, branchlets and calyces minutely and densely brown-lepidote, shining, the lower primary branches 7 cm long, the upper ones shorter. Flowers minute, racemosely arranged on the ultimate branchlets, their pedicels 1 to 2 mm long. Calyx about 1 mm long, densely lepidote, its teeth broad, rounded. Petals about 1 mm long, glabrous. Staminal tube 0.5 mm long, truncate or obscurely toothed free, glabrous; anthers 5, borne on the upper part of the tube, included.

Luzon, Province of Cagayan, San Vicente, *For. Bur. 7082, 11305 Klemme*, May, 1907, April, 1908, in dense flat- and hill-forests, altitude 5 to 30 m. Cag., *Salotoi*; Neg., *Masaleng*.

A species in the group with *Aglaiia hexandra* Turcz., but not closely allied to it, well characterized by its brownish color and densely disposed, minute, somewhat shining, lepidote scales.

Aglaiia bicolor sp. nov. § *Euaglaia*.

Arbor 15 ad 25 m alta, ramulis foliolis subtus inflorescentiisque densissime cupreo-lepidotis, nitidis; foliis alternis, imparipinnatis, 30 ad 45 cm longis, foliolis 9 ad 11, alternis firmiter chartaceis vel subcoriaceis, elliptico-oblongis vel oblongo-lanceolatis, utrinque acuminatis, base valde

inaequaliteralibus, supra glabris; paniculis folia subaequantibus, multifloris; floribus minutis, 5-meris, pedicellatis, in ramulis ultimis racemoso-dispositis; fructibus ellipsoideis vel anguste obovoideis, circiter 1.5 cm longis, 1-locellatis.

A tree 15 to 25 m high, the branchlets, inflorescence, rachis of the leaves, petiolules and under surfaces of the leaflets very densely cupreous-lepidote, shining. Branches rather stout, lepidote, brownish, striate, glabrous. Leaves alternate, odd-pinnate, 30 to 45 cm long, the petiole and rachis cupreous-lepidote, terete; leaflets 9 to 11, alternate, petiolate, firmly chartaceous or subcoriaceous, elliptic-oblong to oblong-lanceolate, 8 to 15 cm long, 3 to 6 cm wide, the apex rather abruptly acuminate, the base very strongly inequilateral, acuminate, the upper surface glabrous, rarely with very few scattered scales, shining, grayish-green when dry, the lower very densely cupreous-lepidote, also shining; nerves 10 to 12 on each side of the midrib, straight, rather distinct, obscurely anastomosing, the reticulations obsolete; petiolules 1 to 1.5 cm long. Panicles axillary, about as long as the leaves in anthesis, shorter in bud, all parts very densely cupreous-lepidote, shining, many-flowered, the lower primary branches often 20 cm in length. Flowers minute, pedicellate, racemously disposed on the ultimate branchlets, their pedicels 1 mm long or less. Calyx obscurely toothed, densely lepidote. Petals 5, orbicular, glabrous, 0.6 mm in diameter or less. Staminal tube obovoid, 0.7 mm long, glabrous, free from the petals, slightly toothed. Anthers 5, inserted near the apex of the tube, sessile, inflexed, 0.2 mm long. Fruits ellipsoid or narrowly obovoid, 1.5 cm long, densely cupreous-lepidote, shining, 1-celled, 1-seeded.

Luzon, Province of Cagayan, San Vicente, *For. Bur.* 4288 Klemme, June, 1906, (type): Province of Ilocos Sur, San Quintin, *For. Bur.* 7117 Klemme, April, 1907: Province of Rizal, Antipolo, *Merrill 1659*, March, 1903, *For. Bur.* 413 *Ahern's collector*, February, 1904.

A species manifestly allied to *Aglaiia denticulata* Turcz., but distinguished by its more numerous leaflets, which are very much more densely lepidote beneath, longer panicles and much smaller flowers. Tagalog (Rizal) *Salamonḡay*; Negrito (Cagayan) *Matanaota*; Ilocano, *Sal-lapugud*.

Aglaiia everettii sp. nov. § *Hearnia*.

Arbor 10 ad 20 m alta; foliis alternis, circiter 30 cm longis, imparipinnatis, 2-jugatis, glabris; foliolis oppositis, chartaceis vel submembranaceis, in sicco pallidis, nitidis, late ellipticis vel elliptico-obovatis, usque ad 20 cm longis, apice breviter acuminatis, basi rotundatis vel acutis, nervis utrinque 10 ad 14; paniculis axillaribus, foliis longioribus, multifloris, plus minus ferrugineo-lepidotis, pubescentibus; floribus 5-meris, pedicellatis, in ramulis ultimis dense racemose dispositis.

A tree 10 to 20 m high, glabrous except the inflorescence. Branches terete, light-gray, shining, lenticellate. Leaves alternate, about 30 cm

long, odd-pinnate, 2-jugate; leaflets opposite, chartaceous to submembranaceous, when dry pale and shining, glabrous, broadly elliptic to elliptic-obovate, 12 to 20 cm long, 7 to 10 cm wide; nerves 10 to 14 on each side of the midrib, distinct, anastomosing near the margin, the reticulations fine, distinct; petiolules stout, 1 to 1.4 cm long. Panicles axillary, equaling or longer than the leaves, 50 cm long or less, ferruginous-lepidote and somewhat ciliate-pubescent, the lower branches frequently 20 cm in length. Flowers rather densely racemously arranged on the ultimate branchlets, the pedicels about 1 mm long. Sepals 5, free or nearly so, orbicular-ovate, obtuse, 1 mm long, their margins ciliate. Petals 5, ovate or orbicular-ovate, glabrous, obtuse, 2 mm long. Staminal tube depressed-globose, glabrous, free from the petals, truncate. Stamens 5, inserted on the edge of the tube, inflexed. Fruit narrowly ellipsoid, rounded at the apex, brown, 3 to 4 cm long, 1- or 2-celled, each cell with a single seed.

NEGROS, Province of Negros Occidental, Painguión River, *For. Bur.* 7319 *Everett*, March, 1907 (type); Cadiz, *For. Bur.* 15035 *Danao*, March, 1908. CEBU, Mount Licos, *For. Bur.* 6352 *Everett*, February, 1907. Visayan *Bubua*, *Burguas*.

AZADIRACHTA A. Juss.

Azadirachta integrifoliola sp. nov.

Arbor glabra, circiter 30 m alta; foliolis 12 ad 16, inferioribus alternis, superioribus suboppositis, ovato-lanceolatis, integris, membranaceis, acuminate vel acutis, basi inaequilateralibus, rotundatis; paniculis foliis longioribus, anguste pyramidatis, circiter 45 cm longis; floribus pedicelatis, circiter 7 mm longis; ovario glabro, 3-loculari.

A tree about 30 m high, glabrous. Leaves equally pinnate, about 30 cm long, glabrous: leaflets 12 to 16, ovate-lanceolate, the lower ones alternate, the upper opposite or subopposite, membranaceous, glabrous, shining above, 6 to 9 cm long, 2.5 to 3.5 cm wide, entire, the apex acute or somewhat acuminate, the base rather strongly inequilateral, broad and rounded on one side of the midrib, narrower and usually acute on the other; nerves 6 to 8 on each side of the midrib, distinct beneath, obscurely anastomosing, the reticulations lax, obscure; petiolules very short, the leaflets almost sessile. Panicles longer than the leaves, about 45 cm long, glabrous, narrowly pyramidal, many flowered. Sepals ovate, acuminate, about 1 mm long, the margins slightly ciliate. Petals free, oblong-lanceolate, acute or obtuse, about 7 mm long, 1.8 to 2 mm wide, recurved, nearly glabrous outside, inside puberulent, the margins slightly puberulent-ciliate. Staminal tube cylindrical, 6 mm long, glabrous outside, slightly narrowed in the middle, somewhat hairy in the upper half inside, the apex with 10 small teeth. Stamens 10, inserted opposite the teeth, the anthers sessile, 0.8 mm long, their apices slightly exerted. Disk none. Ovary ovoid, glabrous, 3-celled, each cell with two collateral ovules; style 4 mm long; stigma slightly 3-lobed.

PALAWAN, Malcampo, *For. Bur. 11248 Manalo*, March, 1908, said by the collector to be common in old clearings, and locally known as *Marango*. The height is given as 30 m and the diameter of the trunk as 90 cm, while the timber is said to be used for construction purposes.

Azadirachta A. Juss. has previously been a monotypic genus, consisting of the one species *A. indica* A. Juss. extending from India to Java. The species above described can at once be distinguished by its entire leaflets, its panicles much longer than the leaves, not shorter as in *A. indica*, and its longer flowers.

HEYNEA Roxb.

Heynea sumatrana Miq. Ann. Mus. Bot. 4 (1868) 60; C. DC. Monog. Phan. 1 (1878) 714.

Scutinanthe engleri Elm. Leaf. Philip. Bot. 1 (1908) 298.

LUZON, Province of Tayabas, Lucban, *Elmer 9179*; Atimonan, *For. Bur. 6702 Kobbe*. BASILAN, *Hallier s. n.*

The first representative of the genus to be found in the Philippines, for *Trichilia rimosa* Blanco, although reduced to *Heynea trijuga* Roxb., by C. DeCandolle, is, I feel certain, not a *Heynea*. The type of *Scutinanthe engleri* Elm., is a specimen with very young fruits, mature fruits or flowers not present, and is manifestly referable to *Heynea* and not a *Burseraceous* plant, where it was placed by Mr. Elmer. The Philippine specimens agree closely with those of *H. sumatrana* Miq., taken from cultivated trees in the Buitenzorg Botanical Garden, and there seems to be little doubt as to their specific identity. Miquel's species has, however, been reduced by King to *Heynea trijuga* var. *multijuga* C. DC., but a specimen of *Wallich 1259* from Penang, the type number of this variety, is in our herbarium and does not agree with our material of *H. sumatrana*, nor with Miquel's description, and it seems that while *Heynea sumatrana* Miq., is not the same as *H. trijuga* var. *multijuga*, still it may not be specifically distinct from *H. trijuga* Roxb.

Sumatra.

DYSOXYLUM Blume.

Dysoxylum klemmei sp. nov. § *Eudysoxylum*.

Arbor subglabra, circiter 16 m alta; foliis alternis, imparipinnatis, 40 ad 45 cm longis, rhachidibus densissime ferrugineo-puberulis; foliolis circiter 15 cm longis, alternis vel suboppositis, circiter 17, glabris, nitidis, brunneis, apice acuminatis, basi acutis, valde inaequalateralibus, reticulis obsoletis; paniculis axillaribus folia subaequantibus, densissime ferrugineo-puberulis; floribus 4-meris, circiter 5 mm longis.

A tree, nearly glabrous except the petioles, young branches and inflorescence. Leaves alternate, 40 to 50 cm long, odd-pinnate, the leaflets about 17, the rachis densely ferruginous-puberulent; leaflets alternate or subopposite, oblong, about 15 cm long, 4 to 5 cm wide, subcoriaceous, shining, dark-brown when dry, glabrous, the apex acuminate, the base very strongly inequilateral, one side much narrower than the other and always acute or acuminate, the other side often rounded, sometimes acute and extending farther down the midrib; nerves 8 to 13 on each side of the midrib, not prominent, the reticulations obsolete; petiolules about 1 cm long, glabrous or somewhat puberulent. Panicles axillary, about as

long as the leaves, densely ferruginous-puberulent, peduncled, the lower branches about 7 cm long, the upper ones shorter. Flowers pedicelled, glabrous. Calyx about 2.5 mm in diameter, short, obscurely 4-toothed. Petals 4, oblong, 4 to 5 mm long, about 1.4 mm wide, glabrous. Staminal tube cylindric, 3 mm long, irregularly toothed at the apex; anthers 8, oblong, 1 mm long, borne at the top of the tube, included. Disk cylindric, 1 mm long, free, the apex densely ferruginous-hirsute. Ovary somewhat ferruginous-hirsute; style 2.5 mm long, glabrous.

LUZON, Province of Cagayan, San Vicente, *For. Bur. 7679 Klemme*, May, 1907, in dense hill-forests at an altitude of about 30 m. *Neg., Tibungao*.

A species in the group with *Dysoxylum thyrsoides* Hiern., but very different from that species and apparently also from all other allied forms.

EUPHORBIACEÆ.

AGROSTISTACHYS Dalz.

Agrostistachys pubescens sp. nov.

Arbor parva, ramulis, subtus foliis, inflorescentiisque plus minus pubescentibus; foliis oblongo-obovatis, membranaceis vel chartaceis, circiter 22 cm longis, apice acuminatis, basi angustatis, cuneatis, minute irregulariter glanduloso-serratis vel subintegris, supra glabris, subtus ad costam nervosque plus minus villosis; inflorescentiis foliis longioribus; fructibus dense pubescentibus.

A small tree, the branchlets, inflorescence and the under surface of the leaves more or less pubescent. Branches terete, grayish-brown, pubescent, sparingly lenticellate. Leaves membranaceous or chartaceous, 18 to 25 cm long, 9 to 11 cm wide, oblong-obovate, the apex rather abruptly acuminate, gradually narrowed from just below the middle to the cuneate base, subentire or slightly and distantly irregularly glandular-serrate, the upper surface glabrous, shining, the lower more or less villous on the midrib and lateral nerves; nerves prominent, parallel, 25 to 30 on each side of the midrib, the reticulations distinct, parallel; petioles stout, pubescent, less than 5 mm long. Inflorescence axillary, solitary, exceeding the leaves, incipient spikes very short, composed of numerous imbricate, ovate, acuminate, more or less pubescent bracts mostly less than 1 mm in length, not distichous; mature inflorescence slightly pubescent, the rachis 40 to 60 cm long. Flowers unknown. Fruits dry, subglobose, dehiscent, 3-celled, about 8 or 9 mm in diameter, outside densely olivaceous- or yellowish-pubescent; seeds subglobose, about 5 mm in diameter, shining.

LUZON, Province of Bataan, Mabayo, *For. Bur. 5940 Curran*, January, 1907, in bamboo thickets along streams.

A species readily recognizable in the genus by its pubescence, the second one to be found in the Philippines.

ANTIDESMA Burm.

Antidesma cordato-stipulaceum sp. nov.

Arbuseula glabra 2 ad 3 m alta; foliis oblongis, chartaceis vel subcoriaceis, nitidis, prominente acuminatis, apiculatis, usque ad 20 cm longis, nervis utrinque 12 ad 14; stipulis persistentibus, foliaceis, late ovatis vel suborbicularibus, basi cordatis, 1 ad 2.5 cm longis; floribus masculinis spicatis, 4- vel 3-meris, calycibus subtruncatis; staminibus 3, rariter 4; floribus femineis racemosis, calycibus breviter obscureque 5-dentatis, stigmatibus subterminalibus; fructibus in sicco compressis, 1 cm longis, basi rotundatis, apice obscure acuminatis.

A glabrous shrub 2 to 3 m high. Branches slender, terete, glabrous, light-gray. Leaves oblong, chartaceous or subcoriaceous, shining, 12 to 20 cm long, 4 to 8 cm wide, entire, the apex rather prominently acuminate, the acumen blunt, apiculate, base rounded or acute; nerves 12 to 14 on each side of the midrib, prominent beneath, curved-spreading, anastomosing; petioles about 1 cm long; stipules foliaceous, broadly ovate to suborbicular, 1 to 2.5 cm long, 1.5 cm wide or less, apex acute, rounded, or sometimes somewhat acuminate, base broad, cordate, usually clasping the stem. Staminate inflorescence very slender, of 5 to 10 cm long more or less fasciated spikes from the leaf axils, or from axils below the leaves; flowers minute, about 1.2 mm in diameter, glabrous, sessile, solitary, more or less scattered, the calyx somewhat saucer-shaped, subtruncate or very obscurely toothed; stamens usually 3, rarely 4, their filaments 0.5 mm long. Pistillate inflorescence of slender, axillary, solitary racemes, 15 cm long or less; flowers more or less scattered in the lower portion, somewhat crowded above, their pedicels 1 mm long or less, each subtended by a minute, oblong, 0.5 mm long bracteole; calyx somewhat cupshaped, obscurely 5-toothed, the margins minutely pubescent; ovary glabrous, ovoid; styles terminal or subterminal. Fruit, when dry, compressed, narrowly ovate, somewhat inequilateral, base rounded, apex somewhat acuminate, 1 cm long, reticulate, reddish, crowned by the somewhat falcate styles.

MINDORO, Baco River, *Merrill 1807, 4048*, the former with pistillate flowers, the latter with staminate ones, *McGregor 179, 311*, the former with pistillate flowers, the latter with fruits; Subaan, *For. Bur. 6794 Merrill*, with staminate flowers.

A very characteristic species, readily recognized by its comparatively large, persistent, ovate, cordate, foliaceous stipules, as well as by its very slender inflorescence, the staminate being spicate, and the pistillate racemose.

Antidesma subcordatum sp. nov.

Arbor 10 ad 15 m alta, ramulis, inflorescentiis, foliisque plus minus pubescentibus; foliis oblongis vel ovato-oblongis, usque ad 12 cm longis, membranaceis vel chartaceis, plus minus nitidis, utrinque dense molliterque pubescentibus, apice acuminatis, basi cordatis, subcordatis vel

rariter rotundatis, nervis utrinque circiter 8; inflorescentiis masculinis spicatis, spicis densis, densissime pubescentibus, solitariis vel fasciculatis, terminalibus, 3 ad 7 cm longis, circiter 3 mm diametro, floribus 5- rariter 6-meris, calycis lobis brevibus, densissime pubescentibus; inflorescentiis femineis spicatis, spicis terminalibus, solitariis; stigmatibus terminalibus.

A tree more or less pubescent in all parts, 10 to 15 m high. Branches terete, reddish- or grayish-brown, nearly glabrous, lenticellate, the younger branchlets densely and softly pubescent. Leaves oblong to ovate-oblong, 6 to 12 cm long, 3 to 6 cm wide, membranaceous or subchartaceous, more or less shining, in the typical form densely and softly pubescent on both surfaces, entire, the apex rather abruptly and somewhat broadly acuminate, the acumen apiculate, base rather broad, cordate or subcordate, sometimes rounded; nerves about 8 on each side of the midrib, distinct, somewhat ascending, laxly anastomosing; petioles softly pubescent, 5 to 10 mm long. Staminate inflorescence spicate, spikes solitary or fasciated, usually terminating the short lateral branchlets, very dense, cylindric, very densely pubescent, 3 to 7 cm long, about 3 mm in diameter; calyx lobes 5, short, narrowly ovate, acute or obtuse, about 0.6 mm long, very densely pubescent. Stamens 4 to 6; filaments glabrous, 1.5 to 2 mm long. Rudimentary ovary densely lanate. Pistillate inflorescence racemose, the racemes terminating the short lateral branches, solitary, 4 to 6 cm long, the rachis, calyces and bracteoles densely pubescent, the pedicels nearly glabrous; bracteoles narrowly ovate, more or less acuminate, 1 mm long; pedicels glabrous or nearly so, 1 to 1.5 mm long. Calyx cylindric-cupshaped, 1 mm in diameter, pubescent, obscurely 5-toothed. Ovary narrowly elliptic, equilateral, with few scattered hairs; styles terminal, each cleft, and the arms also cleft.

Luzon, Province of Rizal, Bosoboso, *Bur. Sci.* 1114, 4564 Ramos, the former with staminate, the latter with pistillate flowers; from the same province also Merrill 2813, and *For. Bur.* 3160 Ahern's collector.

A species well characterized by its very dense cylindric staminate spikes which are very densely pubescent, its more lax racemose pistillate spikes, and its softly pubescent leaves which are acuminate, the base cordate or subcordate and usually oblong or ovate-oblong. Probably as closely allied to *A. ghaesembilla* Gaertn., as to any other species, but very different in vegetative characters.

ACTEPHILA Blume.

Actephila dispersa (Elmer) comb. nov.

Pimelodendron dispersum Elmer Leaf. Philip. Bot. 1 (1908) 308.

Arbuseula glabra, circiter 3 m alta; foliis submembranaceis, oblongis vel obovatis, integris, nitidis, 15 ad 30 cm longis, apice acutis, vel obscure acuminatis, vel obtusis, basi subacutis vel abrupte obtusis, nervis utrinque 9 ad 13; petiolo 2 ad 4 cm longo; floribus ignotis; fructibus axillaribus, longe pedunculatis, pendulis, depresso-globosis, circiter 2 cm diametro, obscure trigonis, trilocularibus, loculidice dehiscentibus; seminibus in loculis 2.

LEYTE, Palo, *Elmer* 7245, January, 1906, type number.

This species was originally described by Mr. Elmer as a *Pimelodendron*, but the presence of two seeds in each cell of the mature fruit excludes it at once from that genus and all allied ones. It seems, however, to be referable to *Actephila*, and to be closely allied to *Actephila gigantifolia* Koorders of Celebes, but the latter species is described as having the leaves abruptly long-acuminate. The five small calyx-segments described by Mr. Elmer are the squamiform petals, the sepals and petals persisting on the mature fruit.

BACCAUREA Lour.

B. lanceolata (Miq.) Muell. Arg. in DC. Prodr. 15² (1862) 457.

Hedyearpus lanceolatus Miq. Fl. Ind. Bat. 1² (1859) 359.

PALAWAN, San Antonio Bay, *Merrill* 853, February, 1903.

Java and Borneo.

The above specimen has somewhat larger leaves than the plants described by Müller-Arg., but seems to be the same species. New to the Philippines.

BLACHIA Baill.

Blachia philippinensis sp. nov.

Arbor glabra, monoica, circiter 5 m alta; foliis alternis, chartaceis vel submembranaceis, oblongo-ovatis, usque ad 13 cm longis, acuminatis, basi acutis vel obtusis, nervis utrinque circiter 6; floribus umbellatis, umbellis axillaribus terminalibusque; petalis obovatis, hyalinis et glandulis aequilongis; staminibus 20, liberis; stylis revolutis.

A glabrous monoecious tree about 5 m high. Branches slender, terete, brownish, the branchlets reddish-brown. Leaves alternate, chartaceous or submembranaceous, oblong-ovate, 7 to 13 cm long, 2.5 to 4.5 cm wide, brown or greenish when dry, shining, the apex rather prominently acuminate, the base acute or obtuse; nerves about 6 on each side of the midrib, the reticulations lax; petioles 5 mm long or less. Inflorescence axillary and terminal, the staminate umbels long-peduncled, the peduncles slender, 2 to 3 cm long, each bearing about 12 flowers, the pedicels about 8 mm long. Sepals 5, obovate to elliptic-obovate, 2 mm long, thin, obtuse, imbricate. Petals 5, hyaline, obovate, 1 mm long, broadly rounded at the apex or slightly retuse, not longer than the disk-glands. Stamens 20; filaments 2 mm long, slender; anthers obovoid, 0.3 mm long. Disk-glands quadrangular, truncate. Pistillate flowers in subsessile umbels at the base of the staminate inflorescence. Sepals 5, free, lanceolate, somewhat acuminate, 2 mm long, more or less accrescent. Ovary narrow, subglabrous, 3-celled, each cell 1-ovuled; styles three, elongated, cleft, the style-arms revolute.

PALAWAN, near Puerto Princesa, *For. Bur.* 4128 *Curran*, April, 1906. LUZON, Province of Pangasinan, *For. Bur.* 8369 *Curran & Merritt*, December, 1907: Province of Ilocos Norte, Cape Bojeador, *For. Bur.* 13829 *Merritt & Darling*, November, 1908.

The first representative of the genus to be found in the Philippines, and apparently distinct from all previously described forms.

CROTON Linn.

Croton argyratus Blume Bidjdr. (1825) 602; Muell. Arg. in DC. Prodr. 15² (1862) 526.

MINDANAO. District of Zamboanga, Port Banga, *For. Bur. 9421 Whitford & Hutchinson*, February, 1908, in dipterocarp forests at 300 m altitude.

Burma to the Malay Peninsula, Java, Sumatra, and Borneo; new to the Philippines.

Croton ardisioides Hook. f. Fl. Brit. Ind. 5 (1887) 393.

PALAWAN, *For. Bur. 3831, 4159 Curran, Bur. Sci. 357 Foxworthy*, March and May, 1906.

Malay Peninsula and Borneo; new to the Philippines.

DIMORPHOCALYX Thwaites.

Dimorphocalyx denticulatus sp. nov.

Arbor parva, monoica, glabra; foliis oblongo-lanceolatis vel lanceolatis, utrinque angustatis, apice tenuiter gradatim acuminatis, usque ad 15 cm longis, margine glanduloso-denticulatis; inflorescentiis axillaribus, masculinis cymosis, cymis brevibus, congestis, floribus femineis solitariis vel fasciculatis, petalis sepalis brevioribus.

A small glabrous monoecious tree. Branches grayish-brown, terete, slender. Leaves alternate, firmly chartaceous or subcoriaceous, oblong-lanceolate to lanceolate, narrowed at both ends, 7 to 15 cm long, 2 to 4 cm wide, the apex gradually and slenderly acuminate, the base acute, the margins rather distantly and irregularly glandular-denticulate, grayish-brown when dry, shining; nerves 10 or 11 on each side of the midrib, spreading, anastomosing and forming a distinct, submarginal nerve, the secondary nerves rather distinct, the reticulations lax, obscure; petioles 2 to 3 mm long. Staminate inflorescence axillary, of short, dense, 1 to 2 cm long cymes, each subtended by two ovate-lanceolate, acuminate, 3.5 mm long bracts. Male flowers short-pedicelled. Calyx-lobes 5, elliptic, obtuse, imbricate, about 1.5 mm long. Petals elliptic, obtuse, glabrous, 3 mm long. Stamens about 15, the outer 5 larger than the others, the filaments short, the inner ones more or less united. Pistillate flowers on the same plant, axillary, solitary or fasciated, stipitate, and subtended by several, imbricate, ovate-lanceolate, acute or acuminate bracteoles. Calyx somewhat urceolate, the lobes elliptic, 6 mm long, 3 mm wide, obtuse, in bud much exceeding the petals. Petals, in bud, imbricate, glabrous, elliptic, 3 mm long, obtuse. Ovary ellipsoid or ovoid, obscurely 3-sulcate, glabrous, 3-celled, each cell 1-ovuled; styles 3, more or less united below, cleft, in bud recurved.

MINDANAO, District of Zamboanga, Port Banga, *For. Bur. 9033 Whitford & Hutchinson*, December, 1907, in dipterocarp forests at an altitude of about 30 m.

A species well characterized by its glandular-denticulate leaves.

EVERETTIODENDRON gen. nov.

Flores dioici, apetalii. Discus nullus. Fl. ♂ : Sepala 4, valvata Petala 0. Stamina 4, filamentia subnullis; antherae erectae, basifixae, minutae, subgloboosae, loculis longitudinaliter dehiscentibus. Ovarii rudimentum 0. Fl. ♀ : Ovarium 3-loculare, ovula in loculis geminata, angulo centrali loculorum affixa, collateralia, raphe ventrali; styli 3, erecti patentes vel curvati, incrassati, integri, a basi papilloso-stigmatosi. Fructus ovoideus vel depresso-globosus, exocarpio suberoso, endocarpio duro, fere osseo, 3-loculari, loculicide 3-valvato. Arbor ramulis inflorescentiis ovarioque dense ferrugineo-pubescentibus. Folia alterna, longe petiolata, penninervia, integra, coriacea. Inflorescentia axillaria, flores ♀ numerosi, paniculati, bracteolati, ♂ solitarii vel (?) racemosi, pauci.

Everettiodendron philippinense sp. nov.

Arbor 15 ad 20 m alta; foliis alternis, coriaceis, oblong-ovatis vel oblongo-lanceolatis, integris, coriaceis, usque ad 18 cm longis, in sicco brunneis, nitidis, glabris vel subtus ad nervos parce pubescentibus, nervis utrinque 5 ad 7, distinctis, ascendentibus, anastomosantibus, reticulis laxis; petiolo 2 ad 5 cm longo; floribus masculinis in paniculis angustis axillaribus dispositis, minutis, 4-meris, bracteolatis, congestis, dense ferrugineo-pubescentibus; floribus femineis ignotis, ut videtur solitariis vel breviter racemosis, ex fructibus immaturis ovario dense ferrugineo-pubescenti, 3-loculari, loculis 2-ovulatis; fructibus axillaribus, solitariis, ovoideis vel depresso-globosis, circiter 3 cm diametro.

A tree 15 to 20 m high, the young branches and inflorescence densely ferruginous-pubescent. Branches terete, brown or reddish-brown, glabrous. Leaves alternate, coriaceous, oblong-ovate to oblong-lanceolate, entire, coriaceous, 9 to 18 cm long, 4.5 to 8 cm wide, brown and shining when dry, entire, glabrous or somewhat pubescent on the midrib and lateral nerves beneath, the apex usually prominently and sharply acuminate, the acumen sometimes subfalcate, the base acute, rarely somewhat rounded; nerves 5 to 7 on each side of the midrib, prominent beneath, ascending, slightly curved, anastomosing near the margin, the reticulations lax; petioles often ferruginous-pubescent ultimately subglabrous, 3 to 5 cm long, slightly thickened at the apex and sometimes a little geniculate. Staminate inflorescence in the upper axils, of narrow, 3 to 5 cm long, racemose panicles, all parts of it densely ferruginous-pubescent, the branches short, each one subtended by an ovate bract about 3 mm long, the flowers minute, sessile, congested, subtended by bracteoles similar to but smaller than the bracts. Sepals 4, free, valvate, acute or slightly acuminate, ovate, pubescent, 2 mm long. Petals none. Stamens 4, in the center of the flower, with no staminodes and no disk; filaments very short or subobsolete; anthers globose, basifixed, minute, about 0.2 mm in

diameter, 2-celled, apparently longitudinally dehiscent. Rudimentary ovary none. Pistillate flowers unknown, but from the fruiting specimens axillary, solitary or (?) shortly racemose, the sepals from immature fruits lanceolate, acuminate, densely pubescent, 7 mm long, deciduous. Ovary ovoid, densely pubescent, 3-celled, each cell with two pendulous ovules in the upper inner angle; styles 3, simple, free or slightly united at the base, erect, spreading or incurved, thickened, their backs ferruginous-pubescent, their inner surfaces papillose-stigmatose from base to apex. Fruit, when young, ovoid, densely pubescent, when nearly mature depressed-globose, glabrous or nearly so, 3 cm in diameter, the exocarp corky, the endocarp hard, almost bone-like in texture, 3-celled, loculicidally 3-valved; seeds (immature) ellipsoid-ovoid, glabrous.

NEGROS, Himugaan River, *For. Bur.* 7282 *Everett*, May 22, 1907, with staminate flowers, in dense forests at 60 m altitude; same locality, *For. Bur.* 7316 *Everett*, March, 1907, sterile. LUZON, Province of Pangasinan, Salasa, *For. Bur.* 9633 *Zschokke*, December, 1907, in forested stream-depressions, sterile: Province of Zambales, Bolet River, near Santa Cruz, *For. Bur.* 8230 *Curran & Merrill*, December 4, 1907, with immature fruits, on forested slopes at an altitude of 270 m: Province of Cagayan, Calamaningan, *For. Bur.* 11311 *Klemme*, November 14, 1907, with nearly mature fruits, in forests at 15 m altitude. Local names, Pangasinan *Ebnel*; Cagayan *Maraculilem*.

Mr. Zschokke notes that the tree is cut for lumber; Messrs. Curran & Merrill that the tree has a very thin brick-red bark which is red inside, and that the tree is subject to heart-decay, while the native ranger accompanying Mr. Klemme states that the fruit is used as a condiment in the preparation of food.

The affinities of this new genus are not clear to me, although following Bentham and Hooker, and Pax in Engler and Prantl, it apparently falls in the *Phyllanthaceae* of the former, and in the *Platylobaceae-Phyllanthoideae-Brideliaceae* of the latter, except in the latter case the petals are wanting, and moreover the present genus does not resemble any of those placed here by Pax. The sepals are not in the least imbricate, so far as I can determine, but assuming that they are slightly so, or that the above form is anomalous in this respect, it would then fall into the *Platylobaceae-Phyllanthoideae-Phyllanthineae*, and under this into the *Drypetinae*, near *Putranjiva* Wall., and *Petalostigma* F. Müll.; it is however very different from both these genera, although its affinity may be here. There is a possibility that it does not really belong in the *Euphorbiaceae*, but I have been unable to place it elsewhere.

The above new genus is dedicated to Mr. H. D. Everett, one of the collectors, and formerly a forester in the Philippine Forestry Bureau, who lost his life at the hands of members of the wild tribe inhabiting the interior of southern Negros, while prosecuting field work there in May, 1908.

GALEARIA Zoll. & Mor.

Galearia filiformis (Blume) Boerl. *Handl. Fl. Nederl. Ind.* 3¹ (1899) 282.

Antidesma filiforme Blume *Bijdr.* (1826) 1124.

Bennettia filiformis Muell. *Arg.* in DC. *Prodr.* 15² (1862) 1038.

Bennettia javanica R. Br. *Pl. Jav. Rar.* (1852) 249, *pl.* 50.

MINDANAO, Lake Lanao, *Mrs. Clemens s. n.* May, June, 1906-7.

The Mindanao specimens do not agree perfectly with *Galearia filiformis* as described by Robert Brown and Mueller-Arg., but in the absence of authentic material for comparison, I can do no better, at the present time, than refer them here. The chief point of difference seems to be that the petals of the Philippine specimens are not strongly cucullate. Hooker f.⁷ states that the sections founded by Mueller-Arg. on the hooded petals are not tenable. The genus is new to the Philippines.

Java.

GELONIUM Roxb.

Gelonium racemosum sp. nov.

Arbusecula glabra circiter 1 m alta; foliis oblongis vel lanceolate-oblongis, pallidis, nitidis, glanduloso-punctatis, usque ad 20 cm longis, versus apicem grosse irregulariter repando-dentatis, basi acutis vel acuminate; inflorescentiis masculinis oppositifoliis, racemulis binis, paucifloris, brevibus, petiolo vix longioribus; sepalis obtusis, plus minus cucullatis; staminibus circiter 16; fructibus depresso-globosis, circiter 1 cm diametro, plus minus trigonis, loculicide dehiscentibus.

A shrub or undershrub about 1 m high, glabrous throughout. Branches grayish, slender, the ultimate ones slightly angled. Leaves alternate, glabrous, pale when dry, glandular-punctate, shining, oblong to lanceolate-oblong, 9 to 20 cm long, 2.5 to 4 cm wide, chartaceous, the apex acuminate, the apical portion very coarsely and irregularly repand-dentate, otherwise entire, the base acute or slightly acuminate; nerves about 12 on each side of the midrib, anastomosing, the reticulations distinct; petioles stout, 3 to 4 mm long. Staminate flowers racemose, leaf-opposed, the racemes in pairs, scarcely as long as the petioles, few-flowered, flowering from the base to the apex, the lower flowers opening first and falling, so that there is usually but two or three flowers on a raceme, the rachis slender, the pedicel-scars prominent. Sepals elliptic or elliptic-ovate, obtuse, 3 mm long, 2 mm wide, more or less cucullate, imbricate. Stamens about 16; filaments free, 2 mm long; anthers oblong, 0.8 mm long. Disk-glands small. Rudimentary ovary none. Pistillate flowers unknown, but the calyx, from the fruit, as in the staminate ones. Fruit depressed-globose, glabrous, about 1 cm in diameter, obtusely trigonous, 3-celled, loculicidally 3-valved, each cell 1-seeded; styles persistent, free, each shortly cleft, the arms very short, recurved.

MINDANAO, District of Zamboanga, Port Banga, *For. Bur.* 9260, 9349 Whitford & Hutchinson, January, 1908, in dipterocarp forests 20 to 30 m above sea level.

A species well characterized by its leaves being coarsely repand in the apical portion, and especially by its paired, short racemes, the staminate flowers of most species of the genus being glomerate.

⁷ Fl. Brit. Ind. 5 (1887) 377.

HOMALANTHUS A. Juss.

Homalanthus bicolor sp. nov.

Arbusecula glabra, circiter 2 m alta; foliis longissime petiolatis, cordato-ovatis, breviter acuminatis, basi latis, leviter cordatis, interdum leviter peltatis, glabris, chartaceis, supra olivaceis, subtus glauco-pallidis, nervis utrinque 11 ad 15, petiolo 8 ad 20 cm longo; floribus ignotis; fructibus in racemis congestis, obovoideis vel obovoideo-orbicularibus, compressis, griseo-brunneis, loculicide 2-valvatis.

A glabrous shrub about 2 m high. Young branches dark-brown, glabrous. Leaves alternate, very long-petioled, cordate-ovate or suborbicular-ovate, the base broad, cordate, the apex shortly acuminate, entire, 7 to 13 cm long and nearly as wide, chartaceous, glabrous, the upper surface olivaceous, the lower very pale, subglaucescent; petiole 8 to 20 cm long, glabrous, with two more or less prominent glands at the apex, sometimes peltately inserted about 5 mm from the margin of the leaf, more often marginally inserted; stipules caducous, thin, brown, lanceolate, sharply acuminate, about 7 cm long. Flowers unknown. Fruit crowded, racemose, the racemes about 4 cm long; pedicels spreading or somewhat reflexed, about 8 mm long; fruit obovoid or orbicular-obovoid, compressed, about 8 mm long, grayish-brown, 2-celled compressed at right angles to the dehiscence, loculicidally 2-valved, crowned by the style which is nearly as long, and which is cleft nearly to the base.

MINDANAO, Province of Misamis, Mount Malindang, *For. Bur. 4722 Mearns & Hutchinson*, altitude about 350 m. *Moro Topi*.

A species allied to *Homalanthus populneus* Pax, and to *H. fastuosus* F.-Vil., and somewhat intermediate between the two, distinguishable from the former by its much larger leaves and larger fruits, and from the latter by its non- or but slightly peltate leaves.

MACARANGA Thouars.

Macaranga congestiflora sp. nov. § *Pachystemon*.

Arbor parva circiter 4 m alta; foliis suborbicularibus, subintegris vel leviter trilobatis, apice breviter acuminatis, basi late peltatis, supra nitidis, subtus parce hirsutis, glandulosis, radiato 8-nerviis; petiolo 10 ad 15 cm longo; inflorescentiis axillaribus caulinisque, 1 ad 3 cm longis, femineis racemosis, masculinis breviter racemoso-paniculatis, congestis, bracteis pectinato-lacinatis, ceraceo-glandulosis, pubescentibus; ovario 2-4-loculare.

A small tree about 4 m high. Branches dark-brown, glabrous or more or less pubescent, the young branchlets slightly brownish-pubescent. Leaves alternate, long-petiolate, broadly peltate, suborbicular, subentire or slightly and broadly 3-lobed, the apex slightly acuminate, base rounded, 10 to 20 cm in diameter, subcoriaceous, rather pale when dry, the upper surface glabrous, shining, the lower somewhat hirsute, especially on the nerves, and with numerous scattered waxy glands; nerves radiate, the

basal ones 8, prominent; nerves leaving the midrib above the base about 6 on each side, the reticulations distinct; petioles 10 to 15 cm long, terete, pubescent. Inflorescence axillary and from the stems below the leaves, the staminate fasciculate, dense, of very short racemose panicles 2 cm long or less, their branches 1 cm long or less, gray-pubescent; bracteoles cuneate, pubescent, yellow-glandular, about 5 mm long, lacerate-pectinate; stamens few: pistillate inflorescence axillary and from the axils below the leaves, racemose, usually solitary 3 cm long or less, pubescent, each raceme few-flowered; pedicels stout, pubescent, 2 mm long; calyx pubescent, cup-shaped, truncate, about 2.5 mm long; ovary globose, densely yellowish waxy-glandular, 2- to 4-celled; styles recurved, more or less pectinate; bracts ovate or ovate-lanceolate, lacerate-pectinate, more or less pubescent, 6 to 8 mm long.

PALAWAN, near Puerto Princesa, *For. Bur.* 3590, 3591 *Curran*, January, 1906, in old clearings at about 20 m above sea level, the former with staminate flowers, the latter with pistillate ones.

This species probably belongs in the section *Pachystemon*, although 2-, 3-, and 4-celled ovaries were found on the same plant. It is well characterized by its suborbicular, nearly entire or slightly 3-lobed leaves, and especially by its short, congested, axillary and cauline inflorescences, the staminate being paniculate, and the pistillate racemose.

MALLOTUS Lour.

Mallotus korthalsii Muell. Arg. in DC. Prodr. 15² (1862) 976.

LUZON, Province of Cagayan, Aparri, *For. Bur.* 17072 *Curran*, February, 1909. MINDANAO, District of Zamboanga, Port Banga, *For. Bur.* 9017 *Whitford & Hutchinson*, November, 1907.

New to the Philippines; previously known only from Borneo and Celebes.

MICRODESMIS Planch.

Microdesmis caseariaefolia Planch. in Hook. Ic. Pl. (1844) sub. t. 758; Muell. Arg. in DC. Prodr. 15² (1862) 1041.

PALAWAN, near Puerto Princesa, *Bur. Sci.* 249 *Bermejos*, December, 1905; Mount Victoria, *For. Bur.* 4138 *Curran*, *Bur. Sci.* 732 *Foxworthy*, March, 1906. BALABAC, *Merrill* 5380, October, 1906.

Burma to southern China, the Malay Peninsula, and Borneo. The genus is new to the Philippines except for a single specimen collected in Palawan by Vidal and reported without specific name by Ceron;⁸ Vidal's specimen in the Kew herbarium, is apparently identical with the material here referred to Planchon's species.

OSTODES Blume.

Ostodes serrato-crenata sp. nov.

Arbor subglabra 8 ad 12 m alta; foliis chartaceis vel subcoriaceis, in sicco brunneis, nitidis, oblongis vel elliptico-oblongis, usque ad 30 cm longis, basi acutis vel acuminatis, apice breviter acuminatis, margine gross irregulariter crenato-serratis, dentibus glanduliferis; nervis utrinque

⁸ Cat. Pl. Herb. (Manila) (1892) 151.

circiter 17, prominentibus; inflorescentiis masculinis axillaribus vel pseudoterminalibus, elongatis, floribus in glomerulis congestis, plus minus stellato-ferrugineo-pubescentibus; staminibus circiter 12.

A subglabrous tree 8 to 12 m high. Branches light-gray or brownish-gray, glabrous, striate, lenticellate, the young branchlets ferruginous-stellate-pubescent. Leaves alternate, oblong or elliptic-oblong, 15 to 30 cm long, 6 to 13 cm wide, brownish and shining when dry, glabrous or with very few scattered stellate hairs beneath, the base acute or somewhat acuminate, the apex short-acuminate, margins coarsely and irregularly crenate-serrate, the teeth bearing glands at their apices; nerves about 17 on each side of the midrib, prominent, the primary reticulations rather distinct, the ultimate ones faint; petioles 4 to 7 cm long, glabrous or with few, scattered, stellate hairs, frequently slightly geniculate at the apex. Staminate inflorescence axillary and pseudoterminal, slender, elongated, 20 to 40 cm long, the branches few, short, the flowers densely crowded in reduced, scattered cymes, glomerate, the rachis and branches ultimately glabrous or nearly so, the younger parts more or less stellate- or furfuraceous-pubescent. Buds more or less trigonous; sepals (in bud) orbicular-ovate, obtuse, 3 mm long, strongly imbricate, the exposed portions densely stellate-pubescent. Petals similar but glabrous, and in bud somewhat smaller. Stamens about 12. Pistillate flowers and fruit unknown.

Luzon, Province of Cagayan, Aparri, *For. Bur.* 11271, April 1908; San Vicente, *For. Bur.* 7078 Klemme, May, 1907. In dense forests 20 to 65 m above sea-level, known to the Negritos as *Tagalipa* and *Aguindulong*.

The genus is new to the Philippines.

STROPHIOBLACHIA Boerl.

Strophoblachia fimbricalyx Boerl. *Handl. Fl. Nederl. Ind.* 3¹ (1900) 236.

PALAWAN, *For. Bur.* 4504, 7458 Curran, June, 1905, 1906, *Bur. Sci.* 241 Bernijos, near the seashore. MINDANAO, district of Zamboanga, *Mearns* 114, January, 1904.

An interesting addition to the Philippine flora, and especially to the long list of species known only from the Philippines and Celebes. A monotypic genus known previously only from Celebes.

ANACARDIACEÆ.

PLEIOGYNIUM Engl.

P. solanderi (Benth.) Engl. in DC. *Monog. Phan.* 4 (1883) 255.

Spondias solanderi Benth. *Fl. Austral.* 1 (1863) 492.

Spondias pleiogynna F. Muell. *Fragm.* 4:78.

Luzon, Province of Rizal, *For. Bur.* 2166, 3163 *Ahern's collector*, December, 1904, and June, 1905, the former, with mature fruits, from Tanay, the latter, with staminate flowers from Antipolo.

A monotypic genus, previously known only from northern Australia, and its

discovery in Luzon is a striking addition to the list of Australian types in the Philippine flora. The Philippine form was at first considered by me to be an undescribed species, but after a careful examination of the description, and comparison with material from the Port Jackson District, Australia, coll. J. H. Camfield, December, 1907, I am at loss to discover any character by which the Philippine plant can be distinguished from the Australian except the unscientific one of geographical distribution. It is possible that a revision of the genus will lead to the characterization of more than one species, for Bentham, in the original description, states that it is quite glabrous in all of its parts, while Engler describes the young branches and leaves as densely pilose, the Philippine specimens and the one Australian specimen before me agreeing with the latter.

ACERACEÆ.

ACER Linn.

Acer curranii sp. nov. § *Integrifolia*.

Arbor glabra usque ad 25 m alta; foliis concoloribus, nitidis, glabris, integris, coriaceis, reticulatis, ovatis vel elliptico-ovatis, breviter obtuse acuminatis, basi rotundatis vel obtusis, 3- vel 5-nerviis, usque ad 13 cm longis; floribus masculinis corymbosis, corymbis axillaribus, brevibus, glabris; fructibus 4 cm longis, alis angulo acuto divergentibus, paullo introssum falcatis.

A glabrous tree 25 m high or less, the trunk reaching a diameter of 110 cm. Branches terete, smooth, glabrous, reddish-brown, with few scattered lenticels. Leaves ovate to elliptic-ovate, coriaceous or subcoriaceous, shining, glabrous, of the same color on both surfaces, distinctly reticulate, 9 to 13 cm long, 5 to 6.5 cm wide, entire, the apex shortly and obtusely acuminate, the base usually broad and rounded, sometimes blunt, rarely acute; basal nerves one or two pairs, the outer pair, when present, short, the lateral nerves above the basal ones usually 4 on each side of the midrib, distant, very prominent, the primary reticulations very prominent, rather lax, the ultimate ones fine; petioles 2 to 5 cm long. Male inflorescence axillary, corymbose, about 2 cm long, glabrous, the branches few, short; pedicels 2 to 5 mm long. Sepals 4, free, oblong-ovate, 2 to 3.5 mm long, about 2 mm wide. Petals 4, similar to the sepals but narrower. Stamens 4 or 5, inserted in the disk on its outer side; filaments 2 to 3 mm long; anthers about 1 mm in length. Disk lobed, fleshy, glabrous, very thick; bracts subtending the inflorescence numerous, ovate, coriaceous, closely imbricated, 3 mm long, their upper margins pubescent, deciduous, leaving a thickened, rough base to the inflorescence 2 to 3 mm long and 2 thick, strongly and densely marked by the bract-scars. Pistillate flowers unknown. Infrutescence corymbose, 10 cm long or less, glabrous, with few branches, the fruit, including the wing, 4 cm long, the wings diverging at an acute angle, slightly falcate, 10 to 13 mm wide.

Luzon, Province of Bataan, Mount Mariveles, *For. Bur.* 625½ *Curran*, February, 1907, with nearly mature fruit, in forests at an altitude of about 550 m (type): Province of Benguet, Mount Ugo, *Bur. Sci.* 5708 *Ramos*, December, 1908, staminate flowers: Province of Abra, Tue, *For. Bur.* 14582 *Darling*, February, 1909, sterile, altitude 1,000 m. Known to the Igorots in Abra as *Baleag*.

A species manifestly allied to the Asiatic *Acer laevigatum* Wall., but with different leaves which are usually broad and rounded at the base, and with 4-merous staminate flowers. It is quite different from the only other species of the genus known from the Philippines, *A. philippinum* Merr., that species having the leaves very glaucous beneath, and the staminate inflorescence racemose. The latter species is a shrub or small tree, while the present one is a large tree.

A third species is possibly represented by sterile material, *For. Bur.* 10948 *Curran*, Mount Data, District of Lepanto, Luzon, the young leaves being densely tomentose beneath.

SABIACEÆ.

MELIOSMA Blume.

Meliosma monophylla sp. nov.

Arbor parva; foliis simplicibus, alternis, oblanceolatis, integris, brunneis, nitidis, usque ad 35 cm longis, 7 cm latis, apice acuminatis, basi sensim decurrento-acuminatis; nervis utrinque circiter 20, prominentibus, ascendentibus, anastomosantibus; paniculis terminalibus axillaribusque, dense ferrugineo-pubescentibus, 15 ad 20 cm longis; floribus numerosis, minutis, ad apices ramulorum congestis.

A small tree, more or less ferruginous-pubescent. Branches terete, lenticellate, somewhat ferruginous-pubescent. Leaves simple, oblanceolate, 20 to 35 m long, 5 to 7 cm wide, subcoriaceous, brownish when dry, shining, entire or with few irregular and obscure teeth above, the apex acuminate, the base long and slenderly decurrent-acuminate, glabrous on the upper surface, except on the somewhat pubescent midrib, beneath with scattered hairs especially on the midrib and lateral nerves; nerves about 20, prominent, ascending, anastomosing, the reticulations distinct; petioles pubescent, 2 to 2.5 cm long. Panicles terminal and in the upper axils, 15 to 20 cm long, densely ferruginous-pubescent, the lower branches spreading. Flowers small, crowded on the ultimate branchlets, sessile, the bracts more or less pubescent. Outer three petals orbicular, 1.5 to 1.8 mm long, the inner two linear, cleft, about 1 mm long. Stamens 2, about 1 mm long. Ovary compressed, glabrous, 2-celled, the style short, simple.

Luzon, Province of Rizal, Tanay, *Merrill* 2339, May, 1903; Antipolo, *For. Bur.* 431 *Ahern's collector*, February, 1904; Montalban, *For. Bur.* 3406 *Ahern's collector*, November, 1905, distributed as *Semecarpus perrottetii* March, which they remotely resemble. T., *Malaligas*.

The first simple leaved form to be found in the Philippines, manifestly allied to *Meliosma lancifolia* Hook. f., of the Malay Peninsula, but apparently sufficiently distinct.

RHAMNACEÆ.

VENTILAGO Gaertn.

Ventilago dichotoma (Blanco) Merr. in Govt. Lab. Publ. (Philip.) 27 (1905) 32, excl. syn. *V. luzoniensis* Vid.

Enrila dichotoma Blanco Fl. Filip. (1837) 709.

Ventilago monoica Blanco l. c. ed. 2 (1845) 124; ed. 3, 1:223.

Ventilago maderaspatana F.-Vill. Nov. App. (1880) 48, ex syn. Blanco, non Gaertn.

Kurrimia gracilis Vid. Rev. Pl. Vasc. Filip. (1886) 89.

Ventilago gracilis Merr. & Rolfe in Philip. Journ. Sci. 3 (1908) Bot. 110.

LUZON, Province of Rizal, San Mateo, *Vidal 1122* in *Herb. Kew.*, type of *Kurrimia gracilis* Vid.; Bosoboso, *For. Bur. 3073 Aheru's collector*, May, 1905, in flower; Pilea, *Bur. Sci. 3303 Ramos*, June, 1907, in fruit; Montalban, *Loher 4685, 4686*, in *Herb. Kew.* sub *Galearia*.

Endemic.

The type of Blanco's new genus and species, *Enrila dichotoma*, was from San Mateo, Province of Rizal, Luzon, and all the above specimens are from the same province, and agree with his description. The genus *Enrila* was placed by Bentham in the *Anacardiaceae*, as a doubtful one, but Blanco properly localized it, in the second edition of his *Flora de Filipinas*, although in reducing *Enrila* to *Ventilago*, he changed the specific name. It was reduced by F.-Villar to *Ventilago maderaspatana* Gaertn., which is certainly an error. Having only flowering specimens, Vidal redescribed the species as *Kurrimia gracilis*, of the *Celastraceae*, but failed to connect Blanco's species with it, and later in looking over Vidal's specimens in the Kew Herbarium, Mr. Rolfe and myself found Vidal's type to be a *Ventilago*, rather than a *Kurrimia*, and accordingly transferred the species to the former genus. In making the original transfer of *Ventilago dichotoma*, I cited as a synonym, *Ventilago luzoniensis* Vid., but this is an error, as an examination of Vidal's type shows that this species is quite distinct from the one here considered, and one to which Blanco's description does not apply.

Ventilago oblongifolia Blume Bijdr. (1826) 1144; Miq. Fl. Ind. Bat. 1^a (1855) 640.

PALAWAN, Puerto Princesa, *Bur. Sci. 264 Bermejos*, December, 1905. LUZON, Province of Bulacan, near Norzagaray, *Yoder 105*, December, 1906.

New to the Philippines; previously reported only from Java.

Ventilago luzoniensis Vid. Rev. Pl. Vasc. Filip. (1886) 90.

V. maderaspatana Vid. Synopsis Atlas (1883) t. 32, f. D., non Gaertn.

LUZON, Province of Tarlac, La Paz, *Vidal 198*, in *Herb. Kew.*

This endemic species somewhat resembles the preceding one, but is distinguishable by its much smaller leaves.

Ventilago lucens Miq. Fl. Ind. Bat. Suppl. (1860) 330.

LUZON, Province of Tayabas (Principe), Baler, *Merrill 1105*, August, 1902.

This species has previously not been reported from the Philippines, but so far as I can determine at present the specimens well represent Miquel's species, although I have not seen the type. King⁹ states that *Ventilago lucens* Miq. must be very near, if not identical with *V. leiocarpa* Benth., but the specimen above referred to *V. lucens* Miq., is quite distinct from material in our herbarium from Hongkong and from Singapore, supposedly representing Bentham's species.

Sumatra.

⁹ Journ. As. Soc. Beng. 65² (1896) 380.

ZIZYPHUS Juss.

Zizyphus hutchinsonii sp. nov.

Arbor glabra vel subglabra, inermis; foliis coriaceis vel subcoriaceis, ovatis vel oblongo-ovatis, acuminatis, minute crenulatis, basi valde inequilateralibus, supra nitidis, subtus plus minus glaucis, trinerviis, reticulis tenuibus, obscuris: fructibus globosis, circiter 1.5 cm diametro, carnosis, glabris, in sicco nigris.

A tree 15 to 25 m high, glabrous or nearly so throughout, spineless. Branches terete, slender, minutely lenticellate, black or nearly so when dry, glabrous, the growing parts sometimes slightly pubescent. Leaves ovate to oblong-ovate, coriaceous or subcoriaceous, 7 to 11 cm long, 3 to 5 cm wide, glabrous, the upper surface greenish or brownish when dry, shining, the lower surface more or less glaucous, the margins minutely crenulate, the apex slightly acuminate, acumen obtuse or acute, the base strongly inequilateral, rounded on both sides of the midrib, or rounded on one side and acute on the other; nerves three, prominent, the nervules and reticulations very fine, obscure, more prominent on the upper surface than on the lower; petioles 6 to 8 mm long, sometimes slightly pubescent. Flowers unknown. Fruits globose, glabrous, black and shining when dry, about 1.5 cm in diameter, the pericarp fleshy, the stone bony, two- or three-celled; seeds brown, shining, compressed, 5 mm long.

BASILAN, Matangal Point, *For. Bur.* 3444 *Hutchinson*, December, 1905, in forests at about 10 m altitude, said to be abundant locally and known to the Yacans as *Toneud langit*. It is also represented by *For. Bur.* 9265 *Whitford & Hutchinson*, from Port Banga, District of Zamboanga, Mindanao, January, 1908.

ELAEOCARPACEAE.

ELAEOCARPUS Linn.

Elaeocarpus curranii sp. nov. § *Dicera*.

Arbor 15 ad 30 m alta, ramulis inflorescentiisque exceptis, glabra: foliis anguste obovatis vel oblongo-obovatis, usque ad 10 cm longis, apice obtuse acuminatis apiculatisque, basi cuneatis, margine valde crenato-serratis; racemis numerosis e axillis defoliatis, folia subaequantibus vel brevioribus; petalis laceratis, basi agustatis, subglabris; staminibus circiter 12, cellulis antherae aequalibus obtusis; ovario glabro; fructibus ellipsoideis, circiter 2 cm longis, 1-locellatis.

A tree 15 to 30 m high glabrous or nearly so except the young branchlets and inflorescence. Branches terete, gray or brown, lenticellate, the young branchlets, as well as the petioles and sometimes the young leaves appressed-pubescent, obovate, rarely oblanceolate, 5 to 10 cm long, 1.5 to 4 cm wide, firmly chartaceous to subcoriaceous, usually brownish and somewhat shining when dry, the apex acuminate, acumen usually short, blunt, apiculate, sometimes minutely retuse, the base narrowed, cuneate, the margins strongly crenate-serrate, when young sometimes slightly

hairy, ultimately glabrous; nerves 6 on each side of the midrib, distinct, spreading-ascending, slightly curved, their axils not glandular, the reticulations indistinct; petioles 1 to 2 cm long, when young pubescent, ultimately glabrous. Racemes numerous, 5 to 7 cm long, on the branches below the leaves, the rachis and pedicels more or less pubescent, in fruit becoming quite glabrous; pedicels about 5 mm long. Sepals lanceolate, acuminate, 5 mm long, 1.2 mm wide, with very few scattered hairs on the back or glabrous, the margins densely pubescent. Petals as long as the sepals, the upper one-third or one-half lacerate, base narrowed, glabrous or with few scattered hairs on the back and especially at the base. Stamens about 12; anthers 1.8 mm long, cells equal, blunt, not apiculate or ciliate. Ovary ovoid, glabrous, 3-celled; style 2 mm long, glabrous. Disk pubescent. Fruit ellipsoid about 2 cm long, 1-celled, the endocarp osseous, rugose.

Luzon, Province of Cagayan, Aparri, *For. Bur.* 11314 Klemme, in flower, April, 1908; Province of Zambales, Subic, *For. Bur.* 847,918 Maule, April, June, 1904, in fruit: Province of Bataan, Lamao, *For. Bur.* 7506 Curran, September, 1907, in flower: Province of Tayabas, Lagumanoc, *For. Bur.* 4 Ware, in flower, September, 1903, (type): Province of Camarines, Sipocot, *For. Bur.* 705 Van Wickle, May, 1904, in fruit. Local names, Cagayan *Cumao*; Zambales *Tagatoy*, *Malacadios*; Tayabas *Camaysahan*; Camarines *Maloc-maloc*.

A species allied to *Elaeocarpus cumingii* Turze. but readily distinguished by its glabrous ovaries and vegetative characters.

Elaeocarpus luzonicus sp. nov. § *Monocera*.

Arbor circiter 15 m alta, glabra, racemis exceptis; foliis subcoriaceis, oblongo-lanceolatis, usque ad 7 cm longis, nitidis, apice acuminatis, basi cuneatis, margine crenatis, subtus in axillis glandulosis; racemis axillaribus, pubescentibus, folia aequantibus vel longioribus; petalis oblongo-oboventis, supra simpliciter fimbriatis, extus leviter argenteo-pubescentibus; staminibus circiter 24, cellulis antherae inaequalibus, posticis apiculatis, vix ciliatis; ovarium 2-loculare.

A tree about 15 m high, glabrous throughout except the inflorescence. Branches terete, brown or grayish, not or but obscurely lenticellate. Leaves subcoriaceous oblong-lanceolate, or sometimes elliptic-lanceolate, 5 to 7 cm long, 1.5 to 3 cm wide, shining, beneath sometimes subglaucous, the apex shortly, or sometimes rather long-acuminate, acumen obtuse, base cuneate, margins crenate; nerves about 6 on each side of the midrib, distinct, the axils beneath mostly prominently glandular; petioles 1 to 1.4 cm long. Racemes axillary, solitary, 6 to 8 cm long, the rachis and pedicels appressed-pubescent with pale, often shining hairs, the pedicels 5 to 6 mm long. Sepals lanceolate, 5 to 6 mm long, 1.5 mm wide, thin, sparingly appressed-silvery-pubescent outside, the keel within, and the margins white-villous. Petals thin, oblong-obovent the upper one-third simply fimbriate, 6 to 7 mm long, the back appressed-silvery-pubescent, the margins and lower part of the inner surface white-villous. Stamens about 24; anthers scabrid, 2 to 2.5 mm long, one cell slightly longer than

the other, apiculate, not ciliate. Ovary pubescent, ovoid, 2-celled; style glabrous, about 5 mm long. Disk pubescent.

Luzon, Province of Camarines, Mount Isarog, *For. Bur. 10488 Curran*, May, 1908, in forests at about 1,000 m altitude. A specimen collected by Rosenbluth, *For. Bur. 12220*, from either Mindoro or Lubang is possibly referable here, but it has more strongly acuminate leaves, and no axillary glands.

Probably most closely allied to *Elaeocarpus multiflorus* (Turez.) F.-Vill., but quite distinct from that species.

***Elaeocarpus subglobosus* sp. nov. § *Ganitrus*.**

Arbor 10 ad 20 m alta glabra, partibus junioribus inflorescentiisque exceptis; foliis oblongis, firmiter chartaceis, usque ad 12 cm longis, apice breviter obtuseque acuminatis, basi acutis, margine leviter crenatis, nervis utrinque 10 ad 12; racemis axillaribus, pubescentibus, foliis multo brevioribus; floribus 5-meris, petalis laciniatis; staminibus circiter 25; ovario 5-loculare; fructibus subglobosis 5- vel 4-locellatis, circiter 12 mm diametro.

A tree 10 to 20 m high. Branches terete, dark-grayish-brown, glabrous, the younger branchlets, petioles and young leaves rather densely pubescent with appressed, pale, often shining hairs. Leaves oblong, firmly chartaceous, 7 to 12 cm long, 3 to 4.5 cm wide, not or but slightly shining, glabrous except the very youngest ones, apex shortly and obtusely acuminate, base acute, margins slightly crenate; nerves, 10 to 12 on each side of the midrib, distinct, forked, obscurely anastomosing, the axils of the primary nerves and of the larger reticulations glandular; petioles 1 to 2 cm long, at first appressed-pubescent, ultimately glabrous. Racemes axillary, solitary, 2 to 4 cm long, appressed-pubescent, the pedicels about 5 mm. long. Sepals 5, lanceolate, acuminate, 6 mm. long, 1.5 mm wide, pubescent outside, keeled within. Petals as long as the sepals, lacinate to the middle, slightly hairy on the margins below. Stamens about 25; anthers linear, scabrid, one cell slightly longer than the other and ciliate at its apex. Ovary ovoid, pubescent, 5-celled; style 5 mm long, glabrous. Fruits purple, globose to obscurely globose-ellipsoid, about 12 mm in diameter, 5-rarely 4-celled, the endocarp bony.

Luzon, Province of Benguet, Baguio, *For. Bur. 38317 Alvarez*, December, 1908; *Williams 1036*, October, 1904.

Allied to *Elaeocarpus sphaericus* (Gaertn.) K. Sch., but quite distinct.

MALVACEÆ.

KOSTELETZKYA Presl.

Kosteletzkya batacensis (Blanco) F.-Vill. Nov. App. (1880) 24.

Hibiscus batacensis Blanco Fl. Filip. (1837) 544, ed. 2 (1845) 380, ed. 3, 2:334.

Luzon, Province of Ilocos Norte, *Bur. Sci. 3315 Mearns*, January, 1907; Province of Rizal, Pasay, *F. de la Llana*, February, 1908, Normal School distribution 327.

The rediscovery of *Hibiscus batacensis* is considered worthy of record, as the species has not otherwise been collected since Blanco's time. F.-Villar gives a

description in Latin, taken entirely from Blanco's original description, and states that he had seen no specimens. An examination of Blanco's description shows that it applies unmistakably to *Kosteletzkya*, and F.-Villar was quite correct in making the transfer to the latter genus. On studying the above specimens, I found that they agreed with none of the descriptions of the various species of *Kosteletzkya*, other than Blanco's but thinking that the species might be an introduced one here, I sent specimens to Kew for comparison, and received the following communication: "The specimen of *Kosteletzkya batacensis* does not match any of the species in the Kew Herbarium, from America or elsewhere, and in view of the wide distribution of the genus, America, Mediterranean region, Tropical Africa and Madagascar, the existence of an endemic Philippine species is not theoretically improbable." Blanco's type was from the town of Batac, Province of Ilocos Norte, Luzon, and the species is probably endemic in the Philippines.

STERCULIACEÆ.

LEPTONYCHIA Turcz.

Leptonychia banahaensis (Elmer) comb. nov.

Grewia banahaensis Elmer Leaf. Philip. Bot. 1 (1908) 319.

Arbuscula glabra vel subglabra, circiter 3 m alta; foliis alternis, glabris vel subglabris, lanceolatis vel oblongo-lanceolatis, 7 ad 13 cm longis, nitidis, membranaceis vel submembranaceis, apice caudato-acuminatis, basi obtusis vel subrotundatis, minute glanduloso-punctatis, subtus in axillis glandulosis; nervis utrinque 5, ascendentibus, prominentibus; floribus axillaribus, solitariis, pedicellatis; petalis orbicularibus vel ovato-orbicularibus, pubescentibus, circiter 2 mm longis, liberis; staminibus 10, 5-adelphis, basi in annulo connatis; staminoideis exterioribus nullis, interioribus 5, brevibus, phalangibus alternantibus; ovario 3-loculare; fructibus ovoideis vel obovoideis, glabris, rugosis, 3- vel abortu 2- vel 1-ocularibus, loculicide dehiscentibus, loculis 1-spermis; seminibus ovoideis, glabris, leviter compressis, nitidis, circiter 1.3 cm longis, arillatis.

Luzon, Province of Tayabas, Lueban, *Elmer 7569*, May, 1906, type number: Province of Laguna, Santa Maria Mavitac, *For. Bur. 10069 Curran*, February, 1908; Mabalucbaluc Pass, *Bur. Sci. 6044 Robinson*, March, 1908.

The first representative of the genus to be found in the Philippines, and erroneously described by Mr. Elmer as a *Grewia*, of the *Tilaceae*. The species strongly resembles the Malayan *Leptonychia heteroclita* (Roxb.) Kurz., but differs in the total absence of the external row of staminodes.

GUTTIFERÆ.

CALOPHYLLUM Linn.

Calophyllum auriculatum sp. nov. § *Apetalum*.

Arbor circiter 20 m alta, glabra, gemmis ferrugineo-puberulis exceptis, ramis teretibus, griseis, ramulis crassiusculis, in sicco valde angulatis sulcatisque; foliis subsessilibus vel breviter petiolatis, coriaceis, nitidis, oblongo-ellipticis vel oblongo-obovatis, apice obtusis vel rotundatis, rariter subacutis, basi distincte auriculatis. Inflorescentiis axillaribus, solitariis

vel binis, glabris, folia multo brevioribus, floribus paucis, umbellato-racemosis, longe pedicellatis; fructibus ellipsoideis vel ovoideis, circiter 2 cm longis, in sicco rugosis.

A tree about 20 m high, glabrous throughout except the terminal buds which are densely ferruginous-puberulent. Branches terete, light-gray, the branchlets stout, gray or yellowish, strongly angled and sulcate. Leaves sessile or very shortly petioled, coriaceous, shining, oblong-elliptic to oblong-obovate, 14 to 18 cm long, 4 to 7 cm wide, the apex obtuse, rounded, or rarely subacute, the base distinctly auricled, the lower surface paler than the upper, the midrib impressed on the upper surface, very prominent beneath, the lateral nerves very numerous, more distinct on the upper surface than on the lower; petioles none, or very stout and less than 3 mm long. Inflorescence axillary, solitary or in pairs, rarely more than 3-flowered, the flowers umbellately disposed at the apex of the peduncle which is 1 to 1.5 cm long or less, the pedicels slender, 1 to 2 cm long, elongated in fruit. Buds globose. Sepals 4. Petals none. Stamens indefinite. Fruit ovoid or ellipsoid, about 2 cm long, rugose when dry, the pedicels in fruit frequently 4 cm in length.

MINDANAO, District of Zamboanga, Sax River, *Williams 2339* (type), February 20, 1905, *Copeland 1617*, February, 1905: Lake Lanao, Camp Keithley, *Mrs. Clemens 1019*, May, 1907. *BASILAN, For. Bur. 6126 Hutchinson*, July, 1906.

A species much resembling *Catophyllum venulosum* Zoll. of Java, differing especially in its shorter petioles, the auriculate bases of the leaves, and the terminal buds only puberulent, not sericeous.

CRATOXYLON Blume.

1. Petals inapplicable § ANCI-STROLOBUS.
2. Flowers in axillary, short, few-flowered cymes..... 1. *C. chinense*
2. Flowers in terminal, often leafy panicles.
3. Leaves distinctly petioled, lanceolate or rarely oblong-lanceolate, gradually narrowed at both ends; panicles ample..... 2. *C. celebicum*
3. Leaves shortly petioled or sessile; oval to elliptic, or oblong-ovate, base usually broad, rounded, often subcordate; panicles usually small. 3. *C. blancoi*
1. Petals with a basal squamule; flowers in few-flowered, axillary cymes. § TRIDESMIS 4. *C. formosum*

1. *Cratoxylon chinense* (Retz.) comb. nov.

Hypericum chinense Retz. Obs. 5 (1789) 27.

Hypericum cochinchinense Lour. Fl. Cochinch. (1790) 472.

Hypericum biflorum Lam. Encycl. 4 (1797) 170.

Ancistrolobus ligustrinus Spach Suit. Buff. 5 (1836) 358.

Cratoxylon polyanthum Korth. Verhandl. Nat. Geschied. Bot. (1839-42) 175,

l. 36; Dyer in Hook. f. Fl. Brit. Ind. 1 (1874) 257; Miq. Fl. Ind. Bat. 1² (1859) 516; Forbes & Hemsl. in Journ. Linn. Soc. Bot. 23 (1886) 74.

Cratoxylon ligustrinum Blume Mus. Bot. Lugd.-Bat. 2 (1852) 16.

Cratoxylon biflorum Turcz. in Bull. Soc. Nat. Mosc. 36¹ (1863) 580.

CULION, Merrill 454.

Southern China to Burma, the Malay Peninsula and Archipelago.

This species is rather variable, and is apparently rare in the Philippines, although it has previously been reported from the Archipelago by both Vidal and F.-Villar. What is apparently the earliest valid name is here adopted, as Britten¹⁰ shows that the part of the volume of Lamack's work containing the description of *Hypericum biflorum* really appeared in the year 1797, and not in 1789, the date given on the title page.

2. *Cratoxylon celebicum* Blume Mus. Bot. Lugd.-Bat. 2 (1852) 16; Merr. in For. Bur. (Philip.) Bull. 1 (1903) 39.

Ancistrolobus floribundus Turcz. in Bull. Soc. Nat. Mosc. 31¹ (1858) 382.

Cratoxylon floribundum F.-Vill. Nov. App. (1880) 16; Vid. Phan. Cuming. Philip. (1885) 95, Rev. Pl. Vasc. Filip. (1886) 92; Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 96.

Cratoxylon polyanthum F.-Vill. Nov. App. (1880) 15, non Korth.

Cratoxylon sumatranum Naves in Blanco Fl. Filip. ed. 3, pl. 308, non Blume.

LUZON, Province of Cagayan, *For. Bur.* 5246, 11316, 11312, 12270 Klemme; Province of Ilocos Norte, *Cuming* 1221, type number of *Ancistrolobus floribundus* Turcz.; Province of Benguet, *Elmer* 6061; Province of Pangasinan, *Cuming* 965, *Merrill s. n.*; Province of Nueva Ecija, *For. Bur.* 8434 *Curran*; Province of Zambales, *Merrill* 2111, 2928, *Bur. Sci.* 2593 *Foxworthy*, *For. Bur.* 6922 *Curran*, *For. Bur.* 857 *Maulé*; Province of Laguna, *Hallier*, *Elmer*; Province of Rizal, *For. Bur.* 1157 *Ahern's collector*, *Merrill* 1689, 2823; Province of Bataan, *For. Bur.* 6292 *Curran*, *For. Bur.* 1601, 2713, 3035 *Borden*, *Whitford* 27, *Merrill* 3152, *Williams* 102; Province of Bulacan, *For. Bur.* 7183 *Curran*, *Voder* 209, *For. Bur.* 11173 *Aguilar*; Manila, *Ahern* 728; Province of Tayabas, *For. Bur.* 6039 *Kobbe*, *Merrill* 2609, *For. Bur.* 10744 *Curran*; Province of Albay, *For. Bur.* 10568 *Curran*, *MIXDORO*, *For. Bur.* 4071, 11390 *Merritt*. MINDANAO, District of Davao, *Williams* 2790, *DeVore & Hoover* 165, 169, *Copeland* 883; Province of Surigao, *Ahern* 358; Agusan Valley, *For. Bur.* 7594 *Hutchinson*.

A species widely distributed in the Philippines, and somewhat variable, in some forms approaching *Cratoxylon blancoi* Blume, but usually readily distinguished from that species by its much narrower, differently shaped leaves, and larger panicles. It is well represented by Naves' plate, cited above. *Cratoxylon floribundum* (Turcz.) F.-Vill., appears to be in all respects identical with *C. celebicum* Blume, and is accordingly here reduced. The wood is considerably utilized in the manufacture of charcoal, the common name for charcoal, *uling*, appearing in most of the native names. Common names: T., *Guyong-guyong*; Cag., *Uttu*; Zamb., *Panagulingon*; V. (Surigao), *Utingon*; Manobo (Agusan Valley), *Ulingun*.

Celebes.

3. *Cratoxylon blancoi* Blume Mus. Bot. Lugd.-Bat. 2 (1852) 17; Vid. Phan. Cuming. Philip. (1885) 95, Rev. Pl. Vasc. Filip. (1886) 51; Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 96.

Hypericum olympicum Blanco Fl. Filip. (1837) 613; ed. 2 (1845) 429; ed. 3, 2:416, non Linn.

Ancistrolobus micradenius Turcz. in Bull. Soc. Nat. Mosc. 31¹ (1858) 382.

Cratoxylon micradenium F.-Vill. Nov. App. (1880) 16.

Cratoxylon arborescens Vid. Cat. Pl. Prov. Manila (1880) 17, Sinopsis Atlas (1883) t. 10, f. A.; F.-Vill. Nov. App. (1880) 16, non Blume.

Cratoxylon sumatranum F.-Vill. Nov. App. (1880) 16, non Blume.

Cratoxylon hornschuchii Naves in Blanco Fl. Filip. ed. 3, pl. 254, non Korth.

¹⁰ Journ. Bot. 44 (1906) 319.

LUZON, Province of Ilocos Sur, *For. Bur.* 7107 *Klemm*: Province of Benguet, *Elmer* 6455: Province of Pangasinan, *Merrill* 2866, small form: Province of Bulacan, *For. Bur.* 7165 *Curran*: Province of Rizal, *For. Bur.* 5192 *Curran*: Province of Bataan, *For. Bur.* 1478 *Ahern's collector*: Province of Tayabas, *Cuming* 700: Province of Camarines, *Ahern* 31, 828, *For. Bur.* 10422: Province of Albay, *For. Bur.* 10582 *Curran*. BOHOL, *Cuming* 1822, type number of *Ancistrolobus micradenius* Turcz. MASBATE, *For. Bur.* 991 *Clark*. NEGROS, *For. Bur.* 12339 *Everett*. MINDANAO, District of Zamboanga, *Ahern* 655; Lake Lanao, *Mrs. Clemens* 464. BASILAN, *Hallier* s. n.

Like the preceding species widely distributed in the Philippines, and even more variable than that, approaching it in some forms. The extreme form can, however, be readily distinguished by its broader, differently shaped leaves, which are broad, rounded, and biauriculate at the base, and very short petioled. It is unquestionably the form described by Blanco as *Hypericum olympicum*, on which Blume based his *Cratoxylon blancoi*, although it is probable that Blanco included both this, and the more common *C. celebicum* in his species. *Cratoxylon blancoi* Blume is undoubtedly very closely allied to *C. hornschiekii* Blume. Common names: T., *Guyong-guyong*, *Cansilay*; Il., Pang., *Baringecoron*; B., *Saling-gogon*; V., *Oringon*, *Pagalingan*.

Endemic.

Var. **apiculatum** var. nov.

Differt a typo foliis minoribus, 4 ad 6 cm longis, anguste obovatis, basi angustatis, apice latis, abrupte breviter apiculato-acuminatis.

GUIMARAS, Buena Vista, *For. Bur.* 31 *Gammill*, August, 1903, V., *Cansilay*.

4. **Cratoxylon formosum** (Jack) Dyer in Hook. f. Fl. Brit. Ind. 1 (1874) 258; Vidal Phan. Cuming. Philip. (1885) 95, Rev. Pl. Vase. Filip. (1886) 52, Sinopsis Atlas (1883) t. 10, f. B; F. Vill. Nov. App. (1880) 16.

Elodea formosa Jack in Hook. Journ. Bot. 1 (1834) 374.

Tridesmis ochnoides Spach Suit. Buff. 5 (1836) 358.

Hypericum aegyptium Blanco Fl. Filip. (1837) 615; ed. 2 (1845) 430; ed. 3, 2:418, non Linn.

LUZON, Province of Zambales, *For. Bur.* 6959 *Curran*, *Merrill* 2115, 2950: Province of Bulacan, *For. Bur.* 11169 *Aguilar*: Province of Laguna, *Bur. Sci.* 2385 *Foxworthy*: Province of Rizal, *For. Bur.* 481, 2879 *Ahern's collector*, *Merrill* 1710, 2638: Province of Tayabas, *Elmer* 9109, *For. Bur.* 10276 *Curran*, *Merrill* 3997. CULION, *Merrill* 584. GUIMARAS, *For. Bur.* 283 *Gammill*. LEYTE, *Cuming* 1754. MINDANAO, District of Zamboanga, *For. Bur.* 9339 *Whitford & Hutchinson*.

Common names: T., *Aligogon*, *Banga*, *Apang*; Zamb., *Cayantol*; V., *Camontayo*.

Siam to the Malay Peninsula and Archipelago.

HYPERICUM Lim.

Hypericum loheri sp. nov.

Abuscula glabra circiter 1 m alta; foliis oblongis vel elliptico-oblongis, chartaceis vel subcoriaceis, circiter 3 cm longis, glanduloso-punctatis, subtus subglaucis, subsessilibus, apice acutis vel brevissime acuminatis, nervis tenuibus, utrinque 5 ad 7; floribus axillaribus solitariis, longe pedicellatis, circiter 2 cm diametro; stylis coalitis; ovario 5-loculare.

A glabrous shrub about 2 m high. Branches slender terete, reddish-

brown rarely somewhat grayish. Leaves opposite, oblong or elliptic-oblong, 2.5 to 3 cm long, 7 to 12 mm wide, firmly chartaceous or subcoriaceous, shining, narrowed and acute at both ends or the apex very shortly apiculate-acuminate, glandular-punctate, beneath slightly glaucous; nerves 5 to 7 on each side of the midrib, slender, obscure, the reticulations obsolete; petioles very short or none. Flowers white, axillary, solitary, about 2 cm in diameter, their pedicels about 1 cm long, with three or four pairs of short imbricate bracteoles at the base. Sepals ovate, acute or obscurely acuminate, 1.5 mm long. Petals oblong-obovate, inequilateral, 10 to 12 mm long, 6 to 7 mm wide, apex more or less obliquely subtruncate or rounded. Stamens 5-adelphous; filaments 5 to 9 mm long. Ovary and style 11 mm long, the former narrowly oblong-ovoid, 5-celled, the latter consisting of five entirely united styles. Capsules about 10 mm long, 3 mm in diameter, crowned by the style, septically 5-valved; seeds 1 mm long, thick-spindle-shaped.

Luzon, Province of Benguet, Ambuklao, *Loher 66* in Herb. Kew.; Mount Ugo, *Bur. Sci. 5716 Ramos*, December, 1908: Province of Zambales, Mount Pinatubo, *Bur. Sci. 2562 Foxworthy*, April, 1907.

A species apparently most closely allied to *Hypericum formosanum* Maxim., and *H. giraldii* Keller.

FLACOURTIACEÆ.

AHERNIA gen. nov.

Flores hermaphroditi. Sepala 4 vel 5, imbricata, in petala transeuntes. Petala 10 ad 15, sepalis consimilia sed interiora gradatim angustiora. Stamina indefinita, epipetala vel perigyna, filamentis filiformibus, elongatis; antherae parvae, abbreviatae, loculis longitudinaliter dehiscentibus. Ovarium ovoideum vel ellipsoideum, 1-loculare, placentae 5, ∞ -ovulatae; stylus simplex; stigmatum minuto, obscure 3-lobato vel subdisciforme. Fructus ovoideus vel ellipsoideus, ∞ -spermus, pericarpio crustaceo, obscure longitudinaliter sulcato, indehiscente. Semina obovoidea, plus minus compressa. Arbor subglabra. Folia alterna, chartacea vel submembranacea, acuminata, integra vel supra obscure repando-crenata, basi 5-nervia vel 5-plinervia, 2-glandulosa. Flores mediocres in racemis simplicibus axillaribus dispositi.

Ahernia glandulosa sp. nov.

Arbor subglabra 8 ad 15 m alta; foliis alternis, ovatis vel oblongo-ovatis, usque ad 15 cm longis, chartaceis vel submembranaceis, acuminatis, basi obtusis, rotundatis vel subtruncatis, 2-glandulosis, 5-nerviis vel 5-plinerviis; floribus circiter 1 cm longis, in racemis axillaribus solitariis dispositis, hermaphroditis.

A tree 8 to 15 m high, glabrous except the inflorescence and fruits. Branches terete, brownish-gray, glabrous, obscurely lenticellate. Leaves alternate, stipulate, ovate or oblong-ovate, chartaceous or submembranaceous, 9 to 15 cm long, 4 to 8 cm wide, glabrous, shining and nearly

the same color on both surfaces, entire or obscurely repand above, the apex rather abruptly acuminate, the base usually broad, rounded or subtruncate, and with two glands either on the margins at the juncture with the petiole, or on the petiole itself; basal nerves 5, the outer shorter pair from the very base of the leaf, the inner and longer more prominent pair leaving the midrib a short distance above the base and extending to beyond the middle, the lateral nerves above the basal ones two or three on each side of the midrib, ascending, prominent, anastomosing, the reticulations distinct, rather lax; petioles 2.5 to 4.5 cm long. Racemes in the upper axils, solitary, in flower 2.5 to 3.5 cm long, few-flowered, in fruit somewhat longer, densely gray-pubescent, the pedicels 5 to 8 mm long, longer in fruit. Petals and sepals scarcely distinct, and irregularly arranged, the sepals 4 or 5, ovate, acute or slightly acuminate, 10 mm long, 6 mm wide, densely pubescent outside, strongly imbricate, the outer two or three entirely free, the inner two or three more or less united with the petals and usually stamiferous; petals 10 to 15, similar to the sepals, and like them densely gray-pubescent, of equal length but narrower, gradually narrower inwards, the innermost ones linear and only 1 to 1.5 mm wide, all more or less imbricate and all connate below. Stamens indefinite, inserted on the base of the petals and on the inner sepals; filaments very slender, elongated, very slightly united at the base, 6 to 10 mm long; anthers minute, longitudinally dehiscent, less than 0.5 mm long. Ovary free, densely gray-pubescent, slightly stipitate, ovoid or ellipsoid, narrowed at both ends, 1-celled, with 5 parietal placentae, each bearing numerous ovules; style simple, terminal, glabrous or slightly pubescent at the base, 2 to 4 mm long; stigma minute, subdisciform or obscurely 3-lobed, not larger than the style. Fruit crustaceous, indehiscent, ovoid or ellipsoid, 1.5 to 2 cm long, apiculate, densely gray-pubescent, obscurely longitudinally ribbed; seeds many, obovoid, often irregularly compressed, black, shining, the testa crustaceous, the albumen fleshy. Rarely flowers are found with an imperfect ovary which is nearly glabrous, and contains no ovules.

LUZON, Province of Tayabas, Mount Banajao, *For. Bur. 8039 Curran & Merritt*, November, 1907, in forests at an altitude of about 600 m, in flower: Province of Rizal, Bosoboso, *For. Bur. 2005 Ahern's collector*, November, 1904, with nearly mature fruits: Province of Bataan, Lamao River, *Williams 531*, January, 1903, with mature fruits, in forests at an altitude of about 110 m.

This new genus is somewhat anomalous, but seems to be most closely allied to *Oncoba* Forsk., differing in its hermaphrodite flowers, its inner perianth lobes smaller than the outer ones, the stamens slightly united and inserted on the petals and sepals, its racemose inflorescence, etc. In its perianth characters it seems also to approach *Pyramidocarpus* Oliver, of Africa, but is quite different from that genus in other floral characters.

The above new genus is dedicated to Major George P. Ahern, Director of Forestry for the Philippine Islands, in commemoration of his active interest in, and strong support of botanical investigations in the Archipelago during the past nine years.

HOMALIUM Jacq.**Homalium curranii** sp. nov. § *Myriantheia*.

Arbor circiter 16 m alta, glabra, inflorescentiis exceptis; foliis oblongo-ellipticis, coriaceis, nitidis, usque ad 20 cm longis, acutis, margine leviter crenatis, nervis utrinque 8; inflorescentiis axillaribus terminalibusque, paniculatis, folia aequantibus, dense pubescentibus; floribus 4- vel 5-meris; sepalis anguste oblongis, 5 mm longis, pubescentibus; petalis sepalis aequilongis, oblongo-spatulatis; staminibus brevibus, 12 vel 15.

A tree about 16 m high, glabrous except the inflorescence. Branches brown, terete, lenticellate. Leaves oblong-elliptic, 18 to 20 cm long, 7 to 9 cm wide, coriaceous, shining, acute at both ends, margins slightly crenate; nerves 8 on each side of the midrib; rather distinct beneath, the reticulations rather close; petioles stout, rugose, 1 cm long. Panicles terminal and axillary, as long as the leaves, densely pale-pubescent, the branches scattered, spreading, few, the lowest ones often 10 to 12 cm long, bracts ovate to ovate-lanceolate, pubescent 4 to 5 mm long, the bracteoles similar but much smaller. Flowers greenish-white, very shortly pedicelled, racemously disposed, the buds densely pale-pubescent. Sepals four or five, narrowly oblong, obtuse, densely pubescent, 5 mm long, 1.5 mm wide. Petals as long as the sepals, less pubescent, oblongo-spatulate, obtuse, 1.8 mm wide, base narrowed. Stamens in groups of threes opposite each petal; filaments glabrous, about 1 mm long. Ovary villous; styles usually four, glabrous, short.

Luzon, Province of Benguet, near Twin Peaks, *For. Bur.* 10811 Curran, December, 1908, on river banks.

A species allied to *Homalium luzoniense* F.-Vill., and to *H. villarianum* Vid., but quite distinct from both in its floral characters.

HYDNOCARPUS Gaertn.**Hydnocarpus subfalcata** sp. nov.

Arbor subglabra 5 ad 15 m alta, dioica; foliis subcoriaceis vel coriaceis, oblongo-ovatis vel oblongo-lanceolatis rectis vel leviter subfalcatis, glabris, nitidis, valde caudato-acuminatis, basi acutis vel rariter obtusis, integris, nervis utrinque 5, obliquis, prominentibus; floribus axillaribus, femineis solitariis, pedicellatis, masculinis paniculato-racemosis, sepalis petalis staminibusque 5; fructibus pyriformibus, usque ad 6 cm longis, dense ferrugineo-pubescentibus, basi valde angustatis.

A subglabrous dioecious tree 5 to 15 m high. Branches terete, slender, gray, the younger branchlets often brown, the growing tips more or less ferruginous-pubescent. Leaves alternate, oblong-ovate to oblong-lanceolate or lanceolate, 8 to 15 cm long, 3 to 6 cm wide, coriaceous or subcoriaceous, straight or slightly subfalcate, shining, usually brownish when dry and paler beneath, the margins entire, the apex strongly caudate-acuminate usually falcate, the acumen blunt, the base acute, rarely

obtuse; nerves 5 on each side of the midrib, prominent, sharply ascending, slightly curved, obscurely anastomosing, usually brown when dry in contrast to the pale lower surface of the leaf, the reticulations fine, distinct; petioles 5 to 10 mm long, often slightly pubescent. Flowers small, 5-merous, the pistillate ones solitary, axillary, on 3 to 4 mm long pedicels; sepals free, imbricate, ovate, 2 to 4.5 mm long, the inner two much larger than the outer ones, pubescent; petals suborbicular, 3 mm in diameter, membranaceous, rounded, ciliate; ovary ovoid, 2 mm in diameter, densely pubescent, 1-celled with three parietal placentae, the ovules numerous; stigmas 3, spreading, flattened, 2 mm long. Staminate flowers small, in very short paniculate racemes, the inflorescence slightly pubescent, axillary, solitary, about as long as the petioles; sepals 5, free, ovate, acute or acuminate, the two inner ones larger than the outer, about 3 mm long in bud, outside ferruginous-pubescent; petals 5, ovate or rounded, membranaceous, ciliate, each with a large orbicular, ciliate scale at the base, about 1 mm in diameter; rudimentary ovary none; stamens 5; filaments stout, tapering upwards, 1 mm long, glabrous; anthers 1 mm long, about 0.6 mm long, the connective rather broad. Fruit pyriform, indehiscent, the pericarp crustaceous, rather brittle when dry, densely brown- or ferruginous-pubescent, when mature about 6 cm long, the base much narrowed; seeds about 8 in each fruit, ellipsoid to narrowly ovoid, often irregularly compressed, 1.5 to 2 cm long.

Luzon, Province of Zambales, *For. Bur.* 5906 (type), 5994 *Curran*, January, 1907, with staminate flowers and fruit, *For. Bur.* 379, 917 *Maule*, March, June, 1904, the former with pistillate flowers, the latter with fruit; *Merrill* 2934, *Hallier* s. n.: Province of Tayabas (Principe), Baler, *Merrill* 1006. Common names given in Zambales are *Mala usa*, *Dalinias*, *Binting dalaga*, and *Putian*; in Baler *Ngeret*.

This species is closely allied to *H. venenata* Gaertn. of Ceylon, but differs in its less numerously nerved and entire leaves, and in its fruit being strongly narrowed at the base, and pyriform in shape.

Although the Ceylon flora is not especially closely allied to that of the Philippines, and although the *Flacourtiaceae* is not strongly represented in either region, this family contains a striking series of species peculiar to the two, including the above which is manifestly closely allied to *Hydnocarpus venenata* Gaertn., a species confined to Ceylon; the genus *Osmelia* with but four known species, two closely allied ones confined to the Philippines, one in Celebes, and one in Ceylon; and the genus *Trichadenia*, previously a monotypic one and confined to Ceylon, but of which a second species has now been found in Luzon.

TRICHADENIA Thwaites.

Trichadenia philippinensis sp. nov.

Arbor dioica, subglabra, 15 ad 20 m alta; foliis longe petiolatis, coriaceis vel subcoriaceis, elliptico-oblongis vel oblongis, nitidis, glabris, 14 ad 30 cm longis, integris vel supra obscure repandis, acuminatis, basi rotundatis; nervis utrinque 10 ad 12, prominentibus; racemis axillaribus, solitariis, usque ad 10 cm longis, ferrugineo-puberulis, calycibus irregulariter 2- vel 3-lobatis.

A dioecious subglabrous tree 15 to 20 m high. Branches stout, brown or grayish, glabrous, terete, with very large leaf-scars, the ultimate branchlets densely ferruginous-pubescent; stipules linear-lanceolate, pubescent, deciduous, about 6 mm long. Leaves alternate, coriaceous or subcoriaceous, shining, elliptic-oblong or oblong, 14 to 30 cm long, 6 to 15 cm wide, glabrous, entire, or the margins in the upper portion slightly and obscurely repand, the apex rather abruptly and sharply acuminate, the base broad, rounded; nerves 10 to 12 on each side of the midrib, prominent, anastomosing, the reticulations distinct, rather lax; petioles 3 to 8 cm long, when young ferruginous-puberulent, ultimately glabrous. Flowers in axillary, solitary, ferruginous-puberulent racemes which are 10 cm long or less: pistillate flowers pedicillate, the calyx glabrous, splitting from the top into two or three irregular lobes; petals 5, free, ovate to elliptic-ovate, obtuse, about 4 mm long, 2.5 to 3 mm wide, glabrous except the oblong-lanceolate, densely pubescent scale on the inside, which is nearly 3 mm long; ovary ovoid, pubescent, 1-celled, with three parietal placentae, each with one ovule; styles three, short; stigmas three, thick, large, subpeltate, irregularly lobed: staminate flowers similar to the pistillate, the irregular calyx divisions reflexed in anthesis; stamens 5; filaments 2.5 mm long; anthers 2 mm long, 2-locellate. Fruit (immature) subglobose, glabrous, 2 cm in diameter, 1-seeded, the pericarp crustaceous when dry.

LUZON, Province of Rizal, Tanay, *Merrill 2280* pistillate flowers; *Bosoboso, For. Bur. 2982* *Ahern's collector*, staminate flowers, *Bur. Sci. 2649* *Ramos*, staminate flowers: Province of Laguna, Santa Maria Mavitac, *For. Bur. 10065* *Curran*, February, 1908, sterile: Province of Tayabas, Lagumanoc, *For. Bur. 9* *Ware*, immature fruit. MINDANAO, Lake Lanao, Camp Keithley, *Mrs. Clemens 695*, with detached fruit.

A species closely allied to *Trichadenia zeylanica* Thwaites, the type of the genus, but is readily distinguished by its more numerous nerved, entire or nearly entire, glabrous leaves, as well as by its smaller flowers, the calyx splitting irregularly from the top. A most interesting discovery, the genus previously consisting of the single species *T. zeylanica* Thwaites, confined to Ceylon. Local Tagalog names are given by *Ramos* as *Tadong* or *Tandong*, and by *Ware* as *Malapingan*.

LECYTHIDACEÆ.

BARRINGTONIA Forst.

Barringtonia balabacensis sp. nov. § *Stravidium*.

Arbor circiter 10 m alta, glabra; foliis chartaceis, oblongis, nitidis, 25 ad 40 cm longis, basi acuminatis, apice breviter abrupteque acuminatis, margine minute crenato-serratis, nervis utrinque 16 ad 18, prominentibus; spicis axillaribus, usque ad 40 cm longis; fructibus anguste oblongis, circiter 10 cm longis, 2.5 cm diametro, plus minus quadrangulatis.

A tree about 10 m high, glabrous throughout. Leaves oblong, chartaceous, shining, 25 to 40 cm long, 8 to 12 cm wide, the base somewhat

acuminate, the apex sharply and abruptly acuminate, the acumen about 1 cm long, the margins rather finely crenate-serrate or in the lower part subentire; petioles 3 to 6 cm long; nerves 16 to 18 on each side of the midrib, prominent beneath, anastomosing, the reticulations distinct. Spikes axillary, many-flowered, in anthesis 10 to 15 cm long, in fruit up to 40 cm in length and somewhat thickened. Flower-buds sessile, each subtended by three bracteoles, a lanceolate, acuminate middle one about 5 mm long, and two lateral, much smaller ones. Calyx-tube 5 mm long, somewhat quadrangular, the lobes three, one of which is sometimes split at the apex, ovate, obtuse, about 6 mm long. Petals 4, elliptic, 1.3 cm long. Mature flowers not seen. Fruit narrowly oblong, about 10 cm long, 2.5 cm thick, somewhat quadrangular, the angles rounded, the style persistent in young fruits, slender, 5 cm long.

BALABAC, Bur. Sci. 422 *Mangubat*, March, 1906.

A species said by the collector to be rare, growing in forests, and used by the natives to poison fish. N. v. (Moro), *Ulam*.

COMBRETACEÆ.

COMBRETUM Linn.

Combretum extensum Roxb. Hort. Beng. (1814) 28; Fl. Ind. 2 (1824) 229; King in Journ. As. Soc. beng. 66² (1897) 337.

PALAWAN, Mount Pulgar, Bur. Sci. 547 *Foxworthy*, March, 1906. MINDORO, Madrugó River, For. Bur. 4074 *Merritt*, April, 1906.

British India to the Malay Peninsula, Andaman Islands, and Java; new to the Philippines.

TERMINALIA Linn.

Terminalia comintana (Blanco) comb. nov.

Bucida comintana Blanco Fl. Filip. (1837) 856, ed. 2 (1845) 265, ed. 3, 2:48.

Terminalia chebula F.-Vill. Nov. App. (1880) 80, non Retz.

Terminalia multiflora Merr. in Govt. Lab. Publ. (Philip.) 17 (1904) 34.

Terminalia polyantha Presl Epim. Bot. (1851) 213?

LUZON, Province of Zambales, Canad, For. Bur. 5897 *Curran*; Province of Pangasinan, Cape Bolinao, For. Bur. 8381 *Curran & Merritt*; Province of Rizal, Bosoboso, *Merrill* 2796 (type of *Terminalia multiflora* Merr.), 2647, For. Bur. 2984, 2009 *Ahern's collector*, For. Bur. 10035 *Curran*, Bur. Sci. 3265 *Ramos*; Province of Batangas, San Jose, *Guerrero s. n.* (topotype of *Bucida comintana* Blanco); Province of Bataan, Mount Mariveles, *Elmer* 6990, *Whitford* 1257; Province of Tayabas (Infanta), Tinuan River, *Whitford* 767; Province of Camarines, Mount Isarog, For. Bur. 10448 *Curran*. MINDORO, For. Bur. 6193, 8708 *Merritt*, For. Bur. 12211 *Rosenbluth*. TICAO, For. Bur. 1030 *Clark*. MINDANAO, District of Zamboanga, For. Bur. 9063 *Whitford & Hutchinson*. Local names; Zambales *Bingas*, *Batitinan*; Pangasinan *Magtalapoi*; Rizal *Naghubo*, *Palauag*, *Saplungan*; Batangas *Dinglas*; Tayabas (Infanta) *Bangias*; Camarines *Tiroon*; Mindoro *Bangias*; Ticao *Batitinan-babaya*; Zamboanga *Malatagum*, *Batitinan*.

Blanco's *Bucida comintana* has previously been considered as a doubtful species, and I have expressed the opinion²¹ that it was referable to the genus *Calycopteris*, and that F.-Villar was wrong in transferring it to the genus *Terminalia*. While

²¹ Govt. Pub. Publ. (Philip.) 17 (1904) 34.

F.-Villar was certainly in error in transferring Blanco's species to *Terminalia chebula* Retz., I am now of the opinion that he was correct as to the genus, and that *Bucida comintana* Blanco is identical with the species previously described by me as *Terminalia multiflora*. Through the kindness of Dr. Leon Guerrero, member of the Philippine Assembly, we have been able to secure specimens of the tree locally known as *Dinglas* in the town of San Jose, Province of Batangas, which native name was cited by Blanco in his original description and from which town Blanco secured his specimens. A similar name occurs on specimens from Zambales, *Bingias*, while *Bingias* is applied to the same species in the Province of Tayabas, and in Mindoro. Blanco did not have mature fruits when he described the species, and apparently assumed that the calyx was persistent in ripe fruits; the calyx-rim is, however, very early deciduous. The specific name is from an old name of the Province of Batangas, according to Blanco.

Terminalia polyantha Presl is probably not specifically distinct from the above species, but there are slight differences in the leaves. I previously reduced Presl's species to *Terminalia catappa* Linn., from the abridged description given by Miquel, to which species it is not at all allied; a specimen of *Cuming 1516*, on which the species was based, is now in our herbarium.

A specimen from Celebes in the Kew Herbarium, collected by Beccari, is probably referable to *Terminalia comintana* (Blanco) Merr., which species is otherwise not known from outside of the Philippines.

***Terminalia quadrialata* sp. nov.**

Arbor glabra, 15 ad 35 m alta; foliis oblongo-obovatis vel elliptico-obovatis, subcoriaceis, nitidis, usque ad 20 cm longis, apice breviter acuminatis, basi sensim angustatis, decurrento-alatis, nervis utrinque 15 ad 20, distinctis, reticulis obscuris; paniculis terminalibus, ramis patulis; fructibus 2 ad 3 cm longis, apice retusis, regulariter 4-alatis, alis tenuiter coriaceis vel submembranaceis, 1 ad 1.3 cm latis.

A tree, glabrous throughout, 15 to 35 m high. Branches rather stout, grayish or reddish-brown, lenticellate. Leaves somewhat crowded towards the apices of the branches, oblong-obovate to elliptic-obovate, 15 to 25 cm long, 4 to 10 cm wide, subcoriaceous, shining, glabrous, of about the same color on both surfaces when dry, the apex shortly acuminate, rarely subobtuse, gradually narrowed towards the base which is somewhat decurrent; nerves 15 to 20 on each side of the midrib, distinct, parallel, anastomosing, the reticulations lax, obscure; petioles stout, usually 5 mm long or less, but the lamina sometimes decurrent to the branch, so that the leaves often appear to be sessile or subsessile. Flowers unknown. Fruiting panicles terminal, 20 cm long or less, the branches spreading, sometimes reflexed, the lower ones sometimes 8 cm long, with few secondary branches, or unbranched, the upper ones gradually shorter, scattered, more or less thickened towards their apices, and in the apical portions bearing many pedicel-scars. Fruit, including the wings, ellipsoid or suborbicular in outline, 2 to 3 cm long, nearly as wide, retuse at the apex, rounded at the base, the seed-bearing portion very narrow, thin-walled, usually but 5 mm thick; wings four, equal, thinly coriaceous or submembranaceous, 1 to 1.3 cm wide, transversely nerved; seeds oblong, 6 to 7 mm long.

LUZON, Province of Sorsogon, Sua, *For. Bur.* 4526 Zschokke. MASBATE, *For. Bur.* 12562, 12558 (type), 12583, 12597, 12814 Rosenbluth. SAMAR, *For. Bur.* 12617, 12874 Rosenbluth. In forests up to 100 m altitude.

A species well characterized by its four-winged fruits, the wings all the same width, very thin, and the seed-bearing portion very narrow. All the specimens cited bear the native name *Toog*.

MELASTOMATACEÆ.

MEDINILLA Gaudich.

Medinilla curranii sp. nov.

Frutex scandens, glabra; ramis ramulisque teretibus; foliis verticillatis, quaternis, elliptico-ovatis, acutis vel breviter acuminatis, circiter 14 cm longis, chartaceis vel subcoriaceis, 5-plinerviis, petiolatis; cymis axillaribus, brevibus, paucifloris; floribus 4-meris, circiter 3 cm longis.

A scandent shrub, glabrous throughout. Branches and branchlets terete, gray. Leaves verticillate, quaternate, elliptic-ovate, about 14 cm long, 6 to 7 cm wide, chartaceous, or subcoriaceous, shining, the base acute, the apex acute or very shortly acuminate; nerves 5, the middle one prominent, the lowest pair leaving the midrib near the base, the upper pair at 2 or 3 cm above the base, reticulations obsolete; petioles about 1.5 cm long. Cymes from the branches, in the axils of fallen leaves, usually solitary, few-flowered, the peduncles about 1 cm long. Flowers white and pink, nearly 3 cm long. Calyx cup-shaped, about 11 cm long, truncate. Petals 4, about 20 mm long, 9 mm wide above, narrowly obovate, narrowed below. Stamens 8, unequal; filaments about 7 mm long; four anthers about 18 mm long, and four 10 to 12 mm long, the anterior lobes two, about 1.5 mm long, the posterior one club-shaped, 2 to 3 mm long, the short anthers relatively stouter than the long ones. Style 11 mm long.

LUZON, Province of Camarines, Caramoan, *For. Bur.* 12289 Curran, June 27, 1908.

A species allied to *Medinilla verticillata* Merr., differing in its much larger and 4-merous flowers.

Medinilla mindorensis sp. nov.

Frutex scandens, glabra; ramis ramulisque tenuibus, teretibus; foliis oppositis, petiolatis, ovatis, ellipticis, vel obovatis, acuminatis, subcoriaceis, 7 ad 11 cm longis, 3- vel 5-plinerviis, reticulis obsolete; paniculis terminalibus, 15 ad 20 cm longis, diffusis, pedunculatis; floribus 4-meris; bracteis membranaceis, reticulatis, obovatis, 8 ad 10 mm longis, persistentibus.

A scandent shrub glabrous throughout. Branches and branchlets slender, terete, light-gray. Leaves opposite, ovate to elliptic, rarely obovate, 7 to 11 cm long, 3.5 to 6 cm wide, subcoriaceous, shining, the base acute or acuminate, the apex rather strongly acuminate; nerves three, sometimes five, the additional pair, if present, faint, the lateral ones

leaving the midrib slightly above the base of the leaf, reaching the apex, or evanescent, the reticulations obsolete; petioles 0.5 to 2 cm long. Panicles terminal, 15 to 20 cm long, rather diffuse, the peduncles 7 to 10 cm long, the lower branches 5 to 6 cm long, spreading, opposite, few-flowered. Pedicels slender, 3 to 10 mm long, the bracts persistent, obovate, about 1 cm long. Flowers 4-merous. Calyx urceolate, 3 mm long, truncate. Petals 4, broadly obovate, 4 mm long. Stamens 8, their anthers about 4 mm long, the filaments of four about 4 mm long, and of the other four 3 mm long, the spur and appendages small. Bracteoles persistent, obovate, reticulate, 8 to 10 mm long, white or pink, two for each flower.

MINDORO, Ibaló River, *For. Bur. 11489 Merritt*, May, 1908; Mount Halcon, *For. Bur. 4368 Merritt*, June, 1906.

Well characterized by its diffuse panicles, rather small flowers and prominent, persistent, reticulate bracts and bracteoles.

***Medinilla ovalis* sp. nov.**

Frutex erecta vel scandens, subglabra; ramis ramulisque teretibus, minute stellato-lepidotis; foliis oppositis, petiolatis, ovalibus, 5 ad 8 cm longis, subcoriaceis, apice breviter abrupteque acuminatis, basi obscure 5- vel 7-plinerviis; inflorescentiis terminalibus, paniculatis, pedunculatis, 10 ad 12 cm longis, minute stellato-lepidotis; floribus 4-meris, circiter 1 cm longis.

An erect or scandent shrub, the younger branchlets, petioles, midrib of the leaves on the lower surface, and panicles minutely brown-stellate-lepidote, the indumentum scarcely visible without a lens. Branches grayish-brown, terete, nearly glabrous, the branchlets sometimes slightly angled; nodes smooth. Leaves opposite, oval, subcoriaceous, 5 to 8 cm long, 3.5 to 6 cm wide, the base broad, rounded or subtruncate, the apex shortly and abruptly acuminate, shining on both surfaces, the lower one paler than the upper, the midrib prominent beneath, minutely lepidote, the surface with scattered, minute, obscure glands; nerves from near the base 5 or 7, obscure, except the midrib, reticulations obsolete; petioles 1 to 2 cm long. Panicles terminal, 10 to 12 cm long, branched above the middle, the branches verticillate, the lower ones about 3 cm long, the bracts oblong, about 6 mm long, the bracteoles minute. Flowers purplish, about 1 cm long, the pedicels 4 mm long or less. Calyx somewhat urceolate, truncate, 4 mm long. Petals 4, 5 mm long. Stamens 8, subequal, the filaments 4 mm long; anthers lanceolate, acuminate, 5 mm long.

LUZON, Province of Albay or Sorsogon, Adlumoy Hills, *For. Bur. 12387 Curran*, June 17, 1908.

A very characteristic species, readily distinguishable by its opposite, oval, obscurely nerved leaves, peduncled terminal panicles, and minute lepidote-stellate indumentum.

MEMECYLON Linn.

Memecylon oligoneuron Blume Mus. Bot. 1 (1851) 353; Miq. Fl. Ind. Bat. 1^a (1855) 574; Cogn. in DC. Monog. Phan. 7 (1891) 1132; King. in Journ. As. Soc. Beng. 69² (1900) 73.

Rhodamnia glabra Vidal Rev. Pl. Vasc. Filip. (1886) 129; Ceron Cat. Pl. Herb. (1892) 79.

LUZON, Province of Tayabas, Guinayangan, *Vidal* 782, in Herb. Kew (type of *Rhodamnia glabra* Vid.): Province of Rizal, *Bur. Sci.* 3314 *Ramos*, June, 1907; Province of Laguna, *For. Bur.* 10111 *Curran*, February, 1908.

Rhodamnia glabra Vid., was described from fruiting specimens, and in the absence of flowers was placed by Vidal in the *Myrtaceae*. Additional material shows it to be *Memecylon*, and identical with *M. oligoneuron* Blume. The genus *Rhodamnia* must therefore be excluded from the Philippines.

Perak, Penang, Java and Borneo; not previously reported from the Philippines under its correct name.

ERICACEÆ.

VACCINIUM Linn.

Vaccinium alvarezii sp. nov.

Abuscula glabra circiter 3 m alta; foliis oblongo-obovatis vel elliptico-oblongis, coriaceis nitidis, integris, usque ad 10 cm longis, breviter obtuse acuminatis, nervis utrinque 5 vel 6, ascendentibus, tenuibus; racemis axillaribus, solitariis vel binis, foliis beavioribus; corolla cylindracea, leviter inflata, circiter 1 cm longa; staminibus 10, antheris scaberulis, dorso vix aristatis, apice breviter productis appendicibus infundibuliformibus, divaricatis, poris apicaliter dehiscensibus.

A glabrous shrub about 3 m high. Branches reddish-brown, somewhat mottled with gray, terete. Leaves oblong-ovate to elliptic-oblong, 6 to 10 cm long, 2.5 to 5.5 cm wide, entire, the apex shortly and obtusely acuminate, the base acute, margins slightly recurved, shining on both surfaces; nerves 5 or 6 on each side of the midrib, slender, not prominent, ascending, anastomosing, the reticulations lax; petioles 4 to 6 mm long. Racemes axillary, solitary or in pairs, 3 to 5 cm long, the pedicels about 1.5 cm long, articulated with the calyx. Calyx-tube short, the lobes broadly ovate, obtuse, 1.5 to 2 mm long, each lobe gland-tipped. Corolla pink, cylindric, 10 to 11 mm long, about 5 mm. in diameter, slightly inflated in the middle, the lobes erect, ovate, obtuse, 1.5 to 2 mm long. Stamens 10; filaments 4 to 5 mm long, white-villous; anthers 3 mm long, scaberulous, not awned, the apex produced into two short, broad, funnel-shaped divergent tubes, opening by terminal, orbicular pores. Disk prominent crenate-undulate; style 1 cm long.

LUZON, Province of Cagayan, Dalisay River, *For. Bur.* 18466 *Alvarez*, March, 1909, in forests, altitude about 650 m.

Probably most closely allied to *Vaccinium barandanum* Vid, and *V. benquetense* Vid., but quite distinct from both.

EBENACEÆ.

DIOSPYROS Linn.

Diospyros ahernii sp. nov.

Arbor glabra inflorescentiis fructibusque exceptis; ramis pallidis, griseis vel brunneis; foliis subcoriaceis, oblongis, 16 ad 20 cm longis, apice acuminatis, basi acutis vel leviter acuminatis, in siccis brunneis, utrinque nitidis, nervis utrinque circiter 8, prominentibus, anastomosantibus, nervis reticulisque densis, validis; inflorescentiis femineis axillaribus, racemosis, pubescentibus; fructibus ut videtur globosis, circiter 5 cm diametro, obtusis vel apiculatis, extus densissime ferrugineo-velutinis vel pubescentibus, calycis lobis 4, accrescentibus, plus minus connatis, dense ferrugineo-pubescentibus, patulis vel reflexis, vix imbricatis, acuminatis, 1 ad 1.5 cm longis.

A tree, glabrous except the inflorescence. Branches usually pale, light-gray or brownish, glabrous, the ultimate branchlets sometimes somewhat ferruginous-pubescent. Leaves subcoriaceous, oblong, 16 to 20 cm long, 4.5 to 7 cm wide, glabrous and shining on both surfaces, usually brown when dry, the apex distinctly acuminate, base acute or somewhat acuminate; nerves about 8 on each side of the midrib, distinct, anastomosing, the secondary nerves and reticulations distinct, close. Flowers unknown, but the pistillate inflorescence axillary, racemose, densely pubescent, the racemes in fruit 1.5 to 3 cm long, usually bearing but one or two fruits, the pedicels stout, about 5 mm long. Fruit apparently globose, about 5 cm in diameter, rounded or apiculate, outside densely ferruginous-velvety when young, pubescent when old, about 5-celled. Calyx persistent, accrescent, spreading in young fruits, reflexed in mature ones, 3 to 4 cm in diameter, 4-lobed, the lobes united for the lower third, ovate, coriaceous, acuminate, 1 to 1.5 cm long, densely ferruginous-pubescent.

LUZON, Province of Rizal, Bosoboso, *For. Bur.* 3071 *Ahern's collector*, May, 1905; Pilea, *Bur. Sci.* 3298 *Ramos*, June, 1907, both with immature fruits: Province of Tayabas, Lueban, *Elmer* 9110, May, 1907, distributed as *Diospyros discolor* Willd.

A very distinct species, possibly allied to *D. discolor* Willd., but at once distinguished by its glabrous leaves and its connate acuminate calyx-lobes which are not at all imbricate but spreading or reflexed, while its general appearance is quite different from Willdenow's species. The specimen collected by Elmer probably had nearly mature fruits, but the sheet before me has only some fragments of the fruit, so that it is impossible to give a full description at the present time. It is known in Rizal Province as *Talong-gubat*.

Diospyros buxifolia (Blume) Hiern Monog. Eben. (1873) 218.

Leucoxyllum buxifolium Blume Bijdr. (1826) 1169; Choisy Mém. Ternstr. (1855) 43, t. 2; Miq. Fl. Ind. Bat. 2 (1858) 1050.

Diospyros microphylla Bedd. Ic. Pl. Ind. Or. (1871) 27, t. 133; Clarke in Hook. f. Fl. Brit. Ind. 3 (1882) 559; King & Gamble in Journ. As. Soc. Beng. 74² (1905) 210.

MINDANAO, District of Zamboanga, Port Banga, *For. Bur. 9435 Whitford & Hutchinson*, February, 1908.

The specimen is sterile but agrees closely with the description, with material from Java, and fairly well with specimens from Singapore. New to the Philippines.

Southern India to the Malay Peninsula, Andaman Islands, Sumatra, Java, and Borneo.

Diospyros curranii nom. nov. § *Paralea*.

Diospyros reticulata Elm. Leaf. Philip. Bot. 2 (1908) 506, non Willd. nec Sieber, nec Wall.

Arbor glabra vel subglabra, 7 ad 20 m alta; ramis teretibus, griseis vel brunneis, glabris, vel junioribus plus minus pubescentibus; foliis glabris, lanceolatis, elliptico-lanceolatis vel oblongo-lanceolatis, 10 ad 18 cm longis, 2.5 ad 5 cm latis, basi acutis vel acuminatis, apice acuminatis, subcoriaceis, nervis utrinque 9 ad 15, anastomosantibus, nervulis reticulisque prominentibus; floribus masculinis 4- rariter 5-meris, in cymulis brevibus axillaribus dispositis, staminibus circiter 18; floribus femineis axillaribus, solitariis vel fasciculatis, 4- meris, pubescentibus, calycis lobis ovatis, reflexis, accrescentibus; ovario 3- vel 4-loculare; fructibus ovoideis, 1.5 cm longis.

A tree 7 to 20 m high, glabrous or nearly so. Branches glabrous, terete, brownish or grayish, the branchlets sometimes somewhat ferruginous-pubescent. Leaves lanceolate to elliptic-lanceolate or oblong-lanceolate, 10 to 18 cm long, 2.5 to 5 cm wide, chartaceous to subcoriaceous, shining, pale, greenish or yellowish when dry, entire, the base acute or somewhat acuminate, eglandular, the apex acuminate; nerves 9 to 15 on each side of the midrib, anastomosing, rather distinct but scarcely more prominent than are the secondary nerves and rather dense reticulations; petioles 1.5 cm long or less, sometimes as short as 0.5 cm. Staminate flowers in short, axillary, solitary or fascicled, 1 to 2 cm long cymes, which are slightly pubescent. Calyx lobes 4, rarely 5, ovate to broadly ovate, acute or acuminate, about 1.5 mm long, with short, appressed, scattered, black hairs; stamens about 18, 2-seriate, inserted on the base of the corolla; filaments 1 to 1.5 mm long; anthers lanceolate, acuminate, glabrous, nearly 2 mm long; corolla (immature) 5 mm long, the outside with black appressed hairs. Pistillate flowers axillary, solitary or fascicled, shortly pedicellate, the pedicels and calyx somewhat ferruginous-pubescent: calyx-lobes 4, nearly free, ovate, about 7 mm long, 5 mm wide, obtuse, subfoliaceous, the margins reflexed, the base subcordate, somewhat accrescent and persistent in fruit; corolla about 6 mm long, the lobes ovate, 3 mm wide, slightly united below; staminodes about 10; ovary narrowly ovoid, ferruginous-pubescent; style short, 2-cleft. Fruit ovoid, 1.5 cm long, when young more or less ferruginous-pubescent, ultimately glabrous, the calyx-lobes somewhat accrescent, their margins reflexed.

LUZON, Province of Rizal, Bosoboso, *For. Bur. 10034 Curran*, February, 1908; Antipolo, *Merrill 1654, 2675* March, June, 1903, *For. Bur. 448 Ahern's collector*,

April, 1904, *Bur. Sci.* 2192 Ramos, March, 1907: Province of Tayabas, Guinayangan, *Merrill* 2029; Lucban, *Elmer* 9241 (type); Atimonan, *For. Bur.* 6623 Reyes, *For. Bur.* 10294, 10662 Curran: Province of Camarines, Mount Isarog, *For. Bur.* 10452 Curran: Province of Sorsogon, *For. Bur.* 5165 Bridges. MARINDUQUE, *For. Bur.* 12182 Rosenbluth. MINDANAO, Lake Lanao, Camp Keithley, *Mrs. Clemens*, June, 1906: District of Davao, Santa Cruz, *Williams* 2861.

In the above description the chief additions to that given by Mr. Elmer are of the staminate and pistillate flowers, as the type of the species, *Elmer* 9241, was with fruit only, although nearly all the above specimens have long been available for description. Many of the specimens cited above have abnormal, much-branched, often leafy inflorescences, probably due to the work of some insect: these abnormal inflorescences apparently never bear normal flowers. Similar ones are found in *Canarium*, the form of *C. villosum* described by Engler as *C. luxurians* var. *monstrosum*, and in some species of *Eugenia*.

Local names given for this species are *Malagaitmon*, *Alinao*, *Anang*, *Bolongeta*, *Panigilman*, and *Bagnito*, many of which are also applied to other species of the genus, although of the above, *Malagaitmon* seems to be rather consistently applied to the present species.

***Diospyros everettii* sp. nov.**

Arbor glabra vel subglabra; foliis oblongis vel oblongo-lanceolatis, subcoriaceis, in sicco brunneis, usque ad 15 cm longis, apice acuminatis, basi late rotundatis subcordatisque, nervis utrinque circiter 10, ascendentibus, anastomosantibus, reticulis laxis; floribus femineis fasciculatis, axillariibus, sessilibus, 4-meris, circiter 22 mm longis, calycis lobis lanceolatis; staminodeis glabris, 4; ovario dense hirsuto.

A tree glabrous or subglabrous. Branches dark-colored, glabrous. Leaves alternate, oblong or oblong-lanceolate, subcoriaceous, brownish when dry especially beneath, the upper surface dull, the lower slightly shining, glabrous, the apex acuminate, the base rather broad, rounded and subcordate, 8 to 15 cm long, 2.5 to 4.5 cm wide; nerves about 10 on each side of the midrib, ascending, attenuate-anastomosing, the reticulations lax; petioles stout, about 3 mm long. Pistillate flowers axillary, sessile, fascicled, just before opening 22 mm long. Calyx cleft nearly to the base into four, lanceolate, spreading, acute or acuminate lobes 7 to 8 mm long, 2.5 mm wide, their margins slightly ciliate. Corolla salver-shaped, the tube cylindric, 9 mm long, 4 mm thick below and slightly contracted above, inside glabrous, outside with very few long hairs; lobes 4, spreading, elliptic-oblong, 12 mm long, 6 mm wide. Stamines 4, their filaments 2.5 mm long, the anther-like portion 1.5 mm long, glabrous. Ovary densely covered with very stiff, 2 to 3 mm long, brownish hairs; style stout, cylindric, 6 mm long, pubescent, 4-cleft at the apex. The ovary is apparently 8- or 10-celled.

NEGROS, Mount Silay, *For. Bur.* 7261 *Everett*, May 9, 1907, in ridge forests at an altitude of about 650 m.

A species apparently belonging to the section *Ermelinus*, and is well characterized by its leaves being rounded and subcordate at the base, and by its comparatively large, axillary, fascicled, 4-merous flowers, and the very numerous, stiff, brown hairs that entirely cover the ovary.

***Diospyros foveo-reticulata* sp. nov.**

Arbor inflorescentiis fructibusque exceptis glabra, circiter 20 m alta: foliis subcoriaceis vel coriaceis, oblongis, elliptico-oblongis vel oblongo-lanceolatis, usque ad 30 cm longis, utrinque nitidis, dense foveo-reticulatis, subtus pallidioribus, basi 2-glandulosis, acuminatis, basi acutis, rariter rotundatis; fructibus axillaribus, solitariis, pedunculatis, ovoideis vel subglobois, 8- vel 10-locellatis junioribus 2 ad 2.5 cm diametro, pallidis, ferrugineo-pubescentibus, pericarpio coriaceo; calycis lobis 4, reflexis, ovatis, crassis, acutis vel obtusis, utrinque ferrugineo-pubescentibus, circiter 8 mm longis.

A glabrous tree, except the inflorescence and fruits, about 20 m high. Branches dark-colored, terete, the branchlets paler, sometimes yellowish, glabrous or minutely puberulent. Leaves alternate, subcoriaceous or coriaceous, oblong, elliptic-oblong, or oblong-lanceolate, rather pale when dry, frequently yellowish, 15 to 30 cm long, 4 to 9 cm wide, glabrous, shining on both surfaces and densely foveolate-reticulate, the apex short-acuminate, the base acute, sometimes rounded, the lower surface near the base with a rather prominent gland on each side of the midrib; primary lateral nerves 10 to 12 on each side of the midrib, indistinct, faintly anastomosing; petioles 1 to 1.5 cm long. Fruit (immature) axillary, solitary, ovoid or subglobose, 2 to 2.5 cm in diameter, pale, the pericarp crustaceous, thin, deciduously ferruginous-pubescent, 8- or 10-celled, the calyx persistent, accrescent, 4-lobed, the tube very short, the lobes very thick, crustaceo-coriaceous, ovate, reflexed, about 8 mm long and nearly as wide, acute or obtuse, densely ferruginous-pubescent on both sides.

LUZON, Province of Camarines, Pasacao, *Ahern* 29, 278. (type), 790, January to June, 1902, the last two with immature fruits; Lupi, *For. Bur.* 10780 *Curran*, July, 1908, sterile. MINDANAO, District of Zamboanga, Port Banga, *For. Bur.* 9062 *Whitford & Hutchinson*, December, 1907; San Ramon, *Hallier s. n.*, February, 1904, with immature fruits.

This species is well characterized by its densely foveolate-reticulate leaves which are prominently 2-glandular on the lower surface near the base, and by its thickened, ovate, reflexed, 4-lobed calyx which is densely ferruginous-pubescent, as are the young fruits. The plants under Ahern's name, cited above, were erroneously distributed as *Diospyros discolor*, to which the present species is not closely allied. It is known in the Camarines as *Alahan*, and at Port Banga as *Palo negro*. The section is undeterminable from the material available.

***Diospyros inclusa* sp. nov.**

Arbor glabra, circiter 15 m alta; foliis coriaceis vel subcoriaceis, oblongis vel elliptico-oblongis, glabris, nitidis, apice breviter obtuse acuminatis, basi acutis, circiter 9 cm longis, eglandulosis, nervis utrinque circiter 7, vix distinctis, reticulato-anastomosantibus; fructibus axillaribus, solitariis, pedunculatis, depresso-globois, nigris, apiculatis, glabris vel parce adpresso-hirsutis, 1 cm diametro, circiter 8-locellatis, calyce accrescente, ellipsoideo, crasso, lenticellato, nigro, glabro, breviter 4- vel 5-lobato inclusis.

A glabrous tree about 15 m high. Branches terete, light-gray, glabrous, shining, somewhat striate when dry, the branchlets dark-colored, their tips slightly pubescent. Leaves coriaceous or subcoriaceous, oblong or elliptic-oblong, glabrous, shining on both surfaces, 7 to 10 cm long, 3 to 4.5 cm wide, the apex shortly and obtusely acuminate, the base acute, eglandular; primary lateral nerves about 7 on each side of the midrib, not very distinct, irregular, anastomosing, the secondary ones and reticulations nearly as prominent; petioles black, glabrous, about 6 mm long. Flowers unknown. Fruits axillary, solitary, on stout, 3 to 4 mm long peduncles which are usually spreading, sometimes recurved, quite inclosed by the accrescent calyx, including the calyx ellipsoid or ovoid, 1.5 to 2 cm long. Calyx black, glabrous, shining, lenticellate, thickly crustaceous, inside pubescent, the apex shortly and obscurely 4- or 5-lobed, the opening at the top about 6 mm in diameter. Fruit free from the calyx except at the base, depressed-globose, black, shining, glabrous or with few appressed hairs, about 1 cm in diameter, apex apiculate, usually 8-celled.

MASBATE, Aroroy, *Whitford 1682*, October, 1906, on hillsides at an altitude of about 240 m. Locally known as *Bantolinao*.

A most characteristic species, recognizable by its accrescent, ellipsoid or ovoid, crustaceous, lenticellate calyx which entirely incloses the fruit, except for the small opening at the apex. The section is uncertain, as flowers are necessary to determine it.

Diospyros mindanaensis sp. nov. § *Melonia*.

Arbor glabra 15 ad 25 m alta; foliis oblongis vel oblongo-lanceolatis, coriaceis vel subcoriaceis, glabris, nitidis, apice acuminatis, basi rotundatis, acutis vel leviter acuminatis, usque ad 25 cm longis; floribus femineis racemosis, racemis axillaribus, paucifloris, calycibus breviter 4-dentatis; fructibus globosis, vel depresso-globosis, circiter 4 cm diametro, 4-locellatis, glabris, nitidis, calycibus accrescentibus persistentibus, crasse coriaceis, reflexis, tubo acuminate 4-angulato, breviter 4-dentato; seminibus osseis, albumine ruminato.

A glabrous or subglabrous tree, 15 to 25 m high. Branches terete, glabrous, dark-gray. Leaves alternate, coriaceous or subcoriaceous, oblong or oblong-lanceolate, 10 to 25 cm long, 4 to 8 cm wide, glabrous, the upper surface shining, the lower somewhat paler, dull, apex acuminate, base rounded, acute or sometimes slightly acuminate, eglandular; nerves 10 to 13 on each side of the midrib, rather distinct beneath, somewhat arched-ascending, anastomosing, the secondary nerves distinct, the reticulations fairly dense; petioles stout, 1 to 1.5 cm long. Pistillate flowers 4-merous, in axillary, solitary, few-flowered racemes, the racemes (when young), about 2 cm long, glabrous or with few, scattered, appressed hairs. Calyx cup-shaped, shortly 4-toothed. Fruit globose or depressed-globose, 3 to 4.5 cm in diameter, glabrous, shining, yellowish when mature, the pericarp crustaceous, thick, 8-celled, 8-seeded, the seeds ellipsoid, somewhat compressed, 2 cm long, 1.5 cm wide, brown outside,

the albumen bony, ruminant. The persistent calyx is accrescent, thickly coriaceous, glabrous, reflexed, forming an acuminate 4-angled tube 1 to 1.5 cm long, and diagonally 2 to 2.5 cm in diameter, with four short, acute or acuminate teeth, one at each corner. The side-walls of the calyx-tube are concave, so that the apex of the reflexed calyx-tube is formed of four lobes radiating from the center to the corners of the tube. The peduncle is about 2 cm long in mature fruits.

MINDANAO, District of Zamboanga, Port Banga, *For. Bur.* 9453 (type), 9175 *Whitford & Hutchinson*, January, February, 1908, with mature fruits. BASILAN, San Rafael, *For. Bur.* 6098 *Hutchinson*, January, 1907, with mature fruits. NEGROS, Gimagaan River, *For. Bur.* 4243, 4269 *Everett*, April, May, 1906, the former with abnormal inflorescence, the latter with immature flowers; Cadiz, *For. Bur.* 4309 *Everett*, *For. Bur.* 7407 *Danao*, June 1906, 1907, the former with abnormal inflorescence, the latter sterile. LUZON, Province of Tayabas, Guinayangang, *Merrill* 2007 March, 1903, with immature fruits.

This species is well characterized by its comparatively large, 8-celled, 8-seeded fruits, its ruminant albumen, and especially by its persistent calyx which forms an acuminate 4-angled, reflexed tube. It is apparently allied to the Bornean *Diospyros korthalsiana* Hiern, but has much larger leaves, and a quite different calyx-tube. In some respects it resembles *D. subrigida* Hoehr., but is quite distinct from that species. Like *D. curranii* Merr. this species frequently has an abnormal, densely much branched inflorescence, apparently due to the work of insects. It is known in Negros as *Ata-ata*, in Tayabas as *Anang*, and in Basilan as *Bolongita*.

Diospyros montana Roxb. Pl. Coromend. 1 (1795) 37, t. 48; Hiern Monog. Eben. (1873) 220.

LUZON, Province of Nueva Ecija, near Cabanatuan, *Bur. Sci.* 5266 *McGregor*, September, 1908.

A species not previously found in the Philippines, the above specimen agreeing rather closely with the form considered by Hiern as the variety *cordifolia*, except that the leaves are not cordate.

India to the Moluccas and northern Australia.

Var. ***parva*** var. nov.

Differt a typo foliis multo minoribus, 1 ad 2.5 cm longis, subtus dense molliter pubescentibus; fructibus globosis, junioribus 8 mm diametro, glabris, nigris, apiculatis, 8-locellatis; calycis lobis accrescentibus, retrorsis.

LUZON, Province of Ilocos Norte, Badoc, *For. Bur.* 13953 *Merritt & Darling*, November, 1908, on rocky hillsides at an altitude of about 65 m. II., *Antinagam*.

Well characterized by its small densely pubescent leaves; additional material may show it to be worthy of specific rank.

Diospyros phanerophlebia sp. nov.

Arbor 5 ad 10. m alta, glabra, inflorescentiis exceptiis; foliis crasse coriaceis, oblongis vel oblongo-lanceolatis, nitidis, basi acutis, subtus 2-glandulosis, apice obtusis vel leviter obtuso-acuminatis, usque ad 20 cm longis; nervis utrinque 8 ad 10, subtus prominentibus, elevatis,

curvato-ascendentibus, anastomosantibus, reticulis laxis, prominentibus, elevatis; petiolo crasso, 1 ad 1.5 cm longo; fructibus ovoideis vel depressoglobosis, solitariis vel binis in axillis defoliatis, in sicco nigris, glabris, nitidis, 1.5 ad 1.8 cm diametro, 8-locellatis, locellis monospermis.

A tree 5 to 10 m high, glabrous except the inflorescence. Branches terete, grayish, the younger ones slender, black, dark-brown, or olivaceous, smooth. Leaves thickly coriaceous, oblong, oblong-lanceolate, rarely lanceolate, 15 to 20 cm long, 4 to 8 cm wide, of about the same color on both surfaces or the lower slightly paler, the upper shining, the apex obtuse or slightly and obtusely acuminate, the base acute, margins often slightly revolute, the lower surface with a distinct gland at the base on each side of the petiole; primary nerves 8 to 10 on each side of the midrib, very prominent on the lower surface, elevated, curved-ascending, anastomosing, the primary reticulations lax, nearly as prominent as the nerves, the ultimate reticulations less distinct; petioles stout, black when dry, 1 to 1.5 cm long. Flowers unknown. Fruit solitary or in pairs in the axils of fallen leaves, sessile, numerous, ovoid or depressed-globose, 1.5 to 1.8 cm in diameter, black and shining when dry, glabrous, the apex slightly apiculate, 8-celled, each cell with a single seed. Calyx accrescent, closely appressed to the base of the fruit, more or less pubescent outside, densely so within, nearly square and subtruncate, or with four short, broad teeth, 1.2 to 1.5 cm wide at the top. Seeds about 8 mm long, 5 mm wide, compressed, brown, shining, smooth, the albumen not ruminated.

Type specimen collected by *H. M. Curran*, *For. Bur. 10993*, District of Bontoc, Luzon, January, 1909, locally known as *Aliuac*. I am disposed to refer to it also the following specimens, all from Luzon: Province of Bulacan, *For. Bur. 7172 Curran*, June, 1907; Province of Rizal, San Mateo, *For. Bur. 1847 Aherm's collector*; *Merrill 236*, *Decades Philippine Forest Flora*: Province of Laguna, Santa Maria Maviñac, *For. Bur. 10052 Curran*, locally known in the last three provinces as *Canomoi*.

A species well characterized by its very prominent veins and reticulations, manifestly allied to *Diospyros maritima* Blume, and to *D. canomoi* A. DC., differing especially from the former in its much thicker leaves and very prominent nerves, and from the latter in being nearly glabrous throughout.

***Diospyros whitfordii* sp. nov.**

Arbor circiter 18 m alta; ramulis junioribus densissime ferrugineo-pubescentibus; foliis coriaceis vel subcoriaceis, oblongis vel elliptico-oblongis, 8 ad 18 cm longis, breviter acuminatis, basi rotundatis vel obtusis, utrinque nitidis, supra glabris, subtus glabris vel ad costa pubescentibus; fructibus globoso-ovoides, 5 cm diametro, extus nigris, plus minus pruinosis, glabris, in sicco plus minus reticulato-rugosis, pericarpio osseo vel ligneo; calycibus persistentibus, accrescentibus, 5-lobatis, 4.5 ad 5 cm diametro, crasse coriaceis, lobis triangulari-ovatis, acutis, vix reflexis, utrinque densissime ferrugineo-pubescentibus.

A tree about 18 m high. Branches glabrous, grayish-brown, sometimes pruinose, the younger branchlets densely ferruginous-pubescent. Leaves coriaceous or subcoriaceous, oblong or elliptic-oblong, 8 to 18 cm long, 3 to 6 cm wide, the apex shortly acuminate, the base rounded or obtuse, both surfaces shining, the upper one glabrous, the lower glabrous or more or less pubescent on the midrib; nerves 6 to 8 on each side of the midrib, not very prominent, anastomosing, the secondary ones and the reticulations distinct on the lower surface, rather close; petioles 8 to 10 cm long, more or less pubescent. Fruit ovoid-globose, about 5 cm in diameter, the pericarp bony or woody, outside black, more or less pruinose, reticulate-rugose when dry, glabrous, the persistent, 5-lobed calyx appressed to the base of the fruit, 4.5 to 5 cm in diameter, the lobes united for half their length, triangular-ovate, spreading, acute, thickly coriaceous or almost woody, both sides densely ferruginous-pubescent. The central portion of the calyx is depressed, the depression extending along the median portions of the lobes, while there are five prominent protuberances at the juncture of the lobes.

MINDANAO, District of Zamboanga, Port Banga, *For. Bur.* 9019 Whitford, November, 1907, in fruit; Ayala, *For. Bur.* 4811 Hutchinson, July, 1906, sterile. On forested ridges at an altitude of about 30 m, locally known as *Camagon*. The fruit is immature and is described by Whitford as green.

OLACACEÆ.

LINOCIERA Swartz.

Linociera acuminatissima sp. nov.

Arbor glabra, circiter 9 m alta, ramis ramulisque teretibus, pallidis; foliis coriaceis, nitidis, oblongo-ellipticis, basi acuminatis, apice valde caudato-acuminatis, margine plus minus recurvatis; inflorescentiis racemosis, axillaribus, racemis solitariis, paucifloris, 2 ad 3 cm longis; floribus circiter 4 mm longis.

A tree, glabrous throughout, about 9 m high. Branches and branchlets slender, terete, pale-gray, sparingly lenticellate. Leaves opposite, coriaceous, somewhat shining, oblong-elliptic, 8 to 12 cm long, 2.5 to 4 cm wide, olivaceous above when dry, brownish and paler beneath, the base somewhat acuminate, the apex rather strongly caudate-acuminate, the acumen 1.5 to 2 cm long, slender, narrowed upward, blunt, the margins somewhat recurved; nerves about 7 on each side of the midrib, indistinct, distant, obscurely anastomosing, the reticulations obsolete; petioles 1 to 1.5 cm long. Racemes axillary, solitary, 2 to 3 cm long, few-flowered, the pedicels stout, 1 to 4 mm long, the bracteoles narrowly oblong or lanceolate, obtuse or rarely acuminate, about 2 mm long. Calyx-lobes broadly ovate, acute, 1 mm long. Corolla-lobes lanceolate, obtuse, 4 mm long, somewhat connate below. Stamens 2, the filaments broad, short; anthers elliptic, 1 mm long.

PALAWAN, Malampaya Bay, *For. Bur.* 4506, 7454 Curran, June 21, 1906.

Well characterized by its caudate-acuminate leaves.

***Linociera philippinensis* nom. nov.**

Mayepea pallida Merr. in Govt. Lab. Publ. (Philip.) 35 (1906) 58.

Linociera pallida Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 116, non K. Sch.

Olea sp. Vidal Phan. Cuming. Philip. (1885) 125; Rev. Pl. Vasc. Filip. (1886) 181.

The above change of name is necessitated because of the previous use of the name *pallida* for a different species of the same genus, by K. Schumann. I also include under this species the specimens referred by Vidal to *Olea* sp. in Phan. Cuming. Philip. (1885) 125; Rev. Pl. Vasc. Filip. (1886) 181, as the specimens cited appear to me to be *Linociera* and not *Olea*. *Linociera philippinensis* is represented by the following specimens:

LUZON, Province of Bataan, Mount Mariveles, *For. Bur. 2792 Meyer, For. Bur. 2939 Borden, Whitford 1142, Williams 569*: Province of Rizal, *Merrill 1835, 2670, For. Bur. 2874 Ahern's collector, Bur. Sci. 1457, 3356 Ramos*: Province of Camarines Sur, Pasacao, *Ahern 44*: Province of Zambales, *For. Bur. 6942 Curran*. MINDORO, Pola, *Merrill 2255*. GUIMARAS, *For. Bur. 267, 280, 309 Gammill*. Native names, T., *Anatao, Malabochoe, Pulat*; V., *Magubay, Cabating*.

APOCYNACEÆ.

ALIXIA Banks.

***Alyxia luzoniensis* sp. nov.**

Frutex scandens, glabra; foliis oppositis, ternis, vel rariter quarternis, oblongis, ovato-oblongis, vel elliptico-oblongis, coriaceis, nitidis, usque ad 5 cm longis, apice breviter obtuse acuminatis, basi acutis, nervis lateralibus subobsoletis; cymis axillaribus, paucifloris, pedunculatis; fructibus ellipsoideis, obtusis vel apiculatis, 1 ad 1.4 cm longis.

A scandent shrub, glabrous throughout. Branches terete or slightly angled, brownish, rather slender. Leaves opposite, mostly ternate, or rarely quaternate, oblong, ovate-oblong, or elliptic-oblong, coriaceous, shining, 2 to 5 cm long, 1 to 2 cm wide, the apex shortly and obscurely blunt-acuminate, the base acute, margins slightly recurved; midrib prominent, the lateral nerves nearly obsolete, very slender; petioles 1 to 2 mm long. Cymes axillary, solitary, few-flowered, the peduncles 1 to 1.5 cm long, the buds congested, calyx-segments about 1 mm long. Flowers unknown. Fruits ellipsoid, glabrous, obtuse or apiculate, 1 to 1.4 cm long, about 8 mm thick, very rarely the carpel is constricted in a moniliform manner, bearing above the constriction a second seed-bearing portion.

LUZON, Province of Ilocos Norte, Mount Piao, *For. Bur. 13977, 13988 Merritt & Darling*, altitude 1,000 m; Vintar, *For. Bur. 13945 Merritt & Darling*: District of Bontoc, *Bur. Sci. 7007 Ramos* (type): Province of Zambales, Mount Tapulao, *For. Bur. 8069 Curran & Merritt, Bur. Sci. 5107 Ramos*, altitude 2,000 m.

This species is apparently most closely allied to *Alyxia sinensis* Champ., of southern China, but seems to be quite distinct from that, as well as from the previously described Philippine forms. It is apparently also closely allied to *Alyxia parvifolia* (*Gynopogon parvifolia* Merr.), but has much larger and differently shaped leaves. It is at once distinguishable from *A. monilifera* Vidal by its very different fruit, and practically nerveless leaves. Like the other Philippine species of the genus dried specimens have a strong odor of cumarin.

CHONEMORPHA G. Don.

Chonemorpha elastica sp. nov.

Frutex alte scandens, ramis ramulisque rubro-brunneis, glabris; foliis membranaceis vel submembranaceis ovato-ellipticis vel obovato-ellipticis, 15 ad 20 cm longis, breviter acuminatis, basi rotundatis, subtus plus minus pilosis; floribus albis, 2.5 ad 3 cm diametro; calycibus 5-partitis.

A scandent shrub of large size. Branches and branchlets reddish-brown, glabrous, usually shining. Leaves opposite, membranaceous or submembranaceous, ovate-elliptic or obovate-elliptic, 15 to 20 cm long, 8 to 15 cm wide, entire, the base rather broad, rounded, the apex shortly acuminate, the upper surface glabrous, slightly shining, the lower surface slightly paler and somewhat pilose; petioles rather slender, 2.5 to 4 cm long; nerves about 10 on each side of the midrib, distinct on both surfaces, the reticulations very distinct beneath. Cymes terminal, few-flowered, about 6 cm long, glabrous or nearly so, the bracteoles more or less pubescent, about 3 mm long. Flowers white, fragrant, their pedicels slender, 1 cm long or less. Calyx 5-partite, the lobes oblong, somewhat acuminate, the margins above somewhat ciliate, about 5 mm long, 2 mm wide, united below. Corolla-tube 9 to 10 mm long, swollen and about 3 mm in diameter in the lower third, contracted above, glabrous outside, inside with reflexed hairs below the insertion of the stamens; lobes 5, obliquely obovate, spreading, about 15 cm long, 12 mm wide. Stamens 5, the filaments short, inserted at about the lower one-fourth of the tube; anthers narrowly-lanceolate, acuminate, 4 mm long, sagittate at the base. Disk entire, truncate, 1 mm high. Ovaries and style 4 mm long, the ovaries two, free, united by the style; ovules many. Fruit unknown.

MINDANAO, District of Zamboanga, Dumanquilas Bay, Tigbalubu, *For. Bur. 12351 Hutchinson*, May, 1908, in forests at an altitude of about 40 m; District of Davao, *H. S. Peabody*, July, 1906, leaves only. BASILAN, *P. L. Sherman*, July, 1903, leaves only; also reported from Mindanao and from Tawi-Tawi by Sherman.

So far as is known at present this is the most important rubber producing vine in the Philippines. It is one of the two species considered by P. L. Sherman in his paper on "Gutta-Percha and Rubber in the Philippine Islands,"¹² and an illustration is given by him, l. c. *fig. 33*, of leaf specimens collected on Basilan Island. This specimen, as well as the one collected by Mr. Peabody, cited above, were previously provisionally identified as *Chonemorpha*, but the determination could not be verified until flowering specimens were received. Mr. Sherman reports this vine from Mindanao, Basilan, and Tawi-Tawi, but states that only the natives of Tawi-Tawi understand the commercial value of the product, and that they gather the latex and mix it with gutta-percha. No information is at hand as to the amount exported, but it is probably very small. According to Mr. Sherman's notes, the vine attains a length of from 150 to 200 feet, and a diameter of from 6 to 8 inches.

Apparently allied to *Chonemorpha griffithii* Hook. f., of British India, especially in its deeply cleft calyx, but the branches not hispid. Without comparison with the type of Hooker's species, it is impossible to give other differential characters, as Hooker's description is too short and imperfect.

¹² *Publications of the Bureau of Government Laboratories*, 7 (1903), 36-39.

KICKXIA Blume.***Kickxia merrittii*** sp. nov.

Arbor glabra, 18 ad 20 m alta; foliis oppositis, subcoriaceis, oblongo-vel elliptico-lanceolatis, utrinque acuminatis, 7 ad 12 cm longis, usque ad 3.5 cm latis; floribus albis, axillaribus, solitariis vel binis, pedicellatis, 7 cm longis, corollae tubo 2.5 cm longo.

A tree 18 to 20 m high, glabrous throughout. Branches terete, lenticellate, dark-reddish-brown, the branchlets slightly compressed. Leaves opposite, subcoriaceous, oblong-lanceolate or elliptic-lanceolate, 7 to 12 cm long, 2 to 3.5 cm wide, entire, shining, the apex acuminate, acumen blunt, the base acuminate; nerves about 7 on each side of the midrib, beneath rather distinct and often reddish-brown; petioles 1 cm long or less. Flowers axillary, solitary or in pairs, white, about 7 cm long, the pedicels 2 cm long or less. Calyx-lobes oblong-ovate, acuminate, keeled, 5 mm long, 3 mm wide. Corolla-tube 2.5 cm long, narrow below, somewhat inflated above, the lobes 5, about 4 cm long, 1.3 cm wide. Anthers about 7 mm long. Disk 2 mm long, truncate. Ovaries elongated, united by the style, the latter 8 mm long. Follicles (immature) cylindrical, 8 cm long, about 2 cm thick, seeds spindle-shaped, long acuminate, about 4 cm long, the hairs brownish, 4 cm long.

MLNDORO, Ibaló River, *For. Bur. 11488 Merritt*, May 9, 1908, in mountain forests at 600 m altitude. Mang., *Ayete*.

The second species of the genus to be found in the Philippines, distinguished from *Kickxia blancoi* Rolfe by its elongated corolla tube, and more acuminate leaves.

OCHROSIA Juss.***Ochrosia littoralis*** sp. nov.

Arbor circiter 10 m alta, glabra; foliis ternis vel quaternis, membranaeis, late oblanceolatis, breviter obtuseque acuminatis, basi cuneatis, usque ad 8 cm longis; cymis axillaribus terminalibusque, 2 ad 3 cm longis; floribus circiter 1 cm longis; drupis 2.5 ad 4 cm longis, divergentibus, acuminatis, subcylindraceis, basi connatis.

A tree about 10 m high, glabrous throughout. Branches slender, terete, reddish-brown. Leaves usually ternate, rarely quaternate, membranaceous, broadly oblanceolate, 6 to 8 cm long, 2 to 2.5 cm wide, shining, the apex shortly and obtusely acuminate, the base cuneate; nerves very numerous, parallel, not prominent; petioles 4 to 5 mm long, sometimes shorter. Cymes axillary and terminal, 2 to 3 cm long, the bracts and bracteoles ovate, 1 to 1.5 mm long. Flowers mostly at the apices of the branchlets, usually crowded. Calyx-lobes ovate to oblong-ovate, obtuse or acute, imbricate, about 2 mm long. Corolla-tube cylindrical, slender, about 6 mm long, 1.5 mm in diameter, glabrous throughout, the lobes 5, narrow, about 4 mm long, overlapping to the right. Stamens inserted just above the middle of the tube; anthers lanceolate, acuminate, 1.3 mm long. Ovaries two, united at the base, and at the apex by the 2

mm long style; ovules 6 to 8 in each. Drupes united at the base, divaricate, the pericarp bony, the mesocarp corky, subcylindric, 2.5 to 4 cm long, 1 to 1.5 cm in diameter, somewhat acuminate; seeds 6 to 8 in each drupe, 3 or 4 on each side of the placenta, compressed, orbicular, 4 to 6 mm in diameter.

Luzon, Province of Batangas, Malabrigo, *For. Bur.* 7754, *Curran & Merritt*, November, 1907, along the seashore.

A species well characterized by its ternate leaves, short cymes, and subcylindric, somewhat acuminate drupes, which are not flattened on the inner surface, and by its unusually large number of seeds. The first species of the genus to be found in the Philippines.

RAUWOLFIA Linn.

Rauwolfia samarensis sp. nov.

Arbor glabra, circiter 8 m alta; foliis quarternis, oblongo-ellipticis, breviter acutaeque acuminatis vel acutis, chartaceis, circiter 20 cm longis, 6 cm latis, nervis utrinque 30 ad 35; pedunculis e axillis terminalibus, superne umbellatis; baccis ellipsoideis, atropurpureis, circiter 1.5 cm longis, pericarpio carnoso.

A tree about 8 m high, glabrous throughout. Branches light-gray, stout, the leaf-scars very prominent. Leaves in whorls of four, oblong-elliptic, 13 to 20 cm long, 4 to 7 cm wide, the apex shortly and sharply acuminate or acute, the base acute or slightly decurrent-acuminate, chartaceous, shining, the lower surface paler than the upper; primary nerves 30 to 35 on each side of the midrib, distinct, the intermediate secondary ones evident; petioles 1.5 to 3 cm long. Inflorescence from the terminal axils, the peduncles in anthesis about 5 cm long, in fruit elongated and the panicle ultimately about as long as the leaves, the branches umbellately arranged at the apex of the peduncle. Flowers white, umbellately disposed, the pedicels 1 to 2 mm long. Calyx 3 mm long, the lobes obtuse. Corolla 5 mm long, cylindric, the lobes orbicular-ovate, 2 mm long, the throat hirsute. Anthers lanceolate, 1.3 mm long. Style about 1.5 mm long. Fruit ellipsoid, dark-purple when mature, the pericarp fleshy.

SAMAR, Lanang, *Merrill* 5233, October 3, 1906, in thickets on bluffs along the seashore at an altitude of about 10 m.

A species allied to *Rauwolfia spectabilis* (Miq.) Boerl., *R. javanica* Koord. & Valet., and to *R. sumatrana* Jaek., of Malaya, but apparently distinct from all. Well characterized by its many-nerved leaves and rather fleshy fruits.

TABERNAEMONTANA Linn.

Tabernaemontana caudata sp. nov.

Arbuscula circiter 2 m alta, glabra; ramis ramulisque gracilibus, pallidis; foliis ovato-lanceolatis vel elliptico-ovatis, usque ad 4 cm longis, basi acutis vel acuminatis, apice valde caudato-acuminatis; floribus paucis axillaribus, cymosis, albis, circiter 12 mm longis, calycis lobis ovatis, 0.5 mm longis.

A shrub about 2 m high, glabrous throughout. Branches and branchlets slender, terete, pale-gray, somewhat shining. Leaves ovate-lanceolate to elliptic-lanceolate, 2.5 to 4 cm long, 1 to 1.5 cm wide, chartaceous or submembranaceous, shining, the base acute or acuminate, sometimes slightly inequilateral, the apex strongly caudate-acuminate, the acumen about one-third as long as the blade, blunt; nerves 6 to 8 on each side of the midrib, faint, spreading, anastomosing, the reticulations very obscure; petioles very slender, about 5 mm long. Flowers in few-flowered, axillary, solitary cymes, but two or three flowers in a cyme, the peduncles very short, the pedicels slender, 1 cm long. Calyx-teeth ovate, blunt, 0.5 mm long. Corolla-tube 12 mm long, slender, the lobes narrowly oblong, 7 mm long, 3 mm wide. Anthers 2 mm long. Carpels narrow, about 2 mm long; styles 10 mm in length. Fruit unknown.

LUZON, Province of Ilocos Sur, Mount Bulangao, *For. Bur. 14025 Merritt & Darling*, November, 1908, in forests at an altitude of about 1,150 m.

A species well characterized by its small, very strongly caudate-acuminate leaves, which do not exceed 4 cm in length, and its few-flowered cymes.

***Tabernaemontana linearifolia* sp. nov.**

Arbuscula glabra, circiter 4 m alta; foliis chartaceis, linearibus vel anguste lanceolato-linearibus, utrinque angustatis, apice gradatim acuminate, usque ad 7 cm longis, 5 ad 8 mm latis; floribus axillaribus, solitariis, longe pedicellatis; folliculis oblongis, utrinque angustatis acuminate, circiter 2.5 cm longis.

A glabrous shrub about 4 m high. Branches and branchlets slender, terete, gray, shining. Leaves linear or narrowly lanceolate-linear, 3 to 7 cm long, 5 to 8 mm wide, chartaceous, somewhat shining, olivaceous above when dry, the lower surface paler and somewhat brownish, narrowed at both ends, the apex gradually acuminate, the base acute; lateral nerves distant, indistinct, spreading, the reticulations obsolete; petioles 2 to 4 mm long. Flowers axillary, solitary, white, their peduncles often 3 cm long, frequently much shorter. Calyx-teeth ovate, acute or obtuse, 1.5 mm long. Corolla-tube 13 mm long, slender, the lobes oblique, acute, about 7 mm long, 3 mm wide. Carpels lanceolate, narrowed above, 3 mm long; styles 6 to 7 mm long. Follicle oblong, orange-yellow, nearly 2.5 cm long, 8 mm in diameter in the middle, acuminate narrowed at both ends, with three faint ridges extending the whole length, the apical portion with five faint ridges; seed solitary, narrowly ellipsoid, 8 mm long, the groove not prominent.

LUZON, District of Lepanto, Mancayan, *For. Bur. 10945 Curran*, January, 1909, in open grass-lands in thin pine forests, altitude 1,600 m.

A species well characterized by its very arrow, elongated, linear or linear-lanceolate leaves, its solitary, frequently long-pedicelled flowers, and its one-seeded follicles which are acuminate narrowed at both ends.

***Tabernaemontana megacarpa* sp. nov.**

Arbor circiter 10 m alta, glabra; foliis ellipticis, oblongo-ellipticis, vel obovato-ellipticis, apice rotundatis, basi acutis vel obtusis, 15 ad 35 cm longis, nervis utrinque 20 ad 24, prominentibus; paniculis terminalibus, circiter 20 cm longis; floribus circiter 3.5 cm diametro; fructibus carnosus, laevibus, rubris, in sicco rugosis, griseis, circiter 8 cm longis, 4 cm latis, vix costatis.

A tree about 10 m high, glabrous throughout. Branches and branchlets light-gray, glabrous, stout. Leaves opposite, firmly chartaceous to subcoriaceous, somewhat shining above, dull beneath, elliptic, oblong-elliptic or obovate-elliptic, 15 to 30 cm long, 9 to 15 cm wide, the apex broad, rounded, the base acute or obtuse; nerves 20 to 24 on each side of the midrib, very prominent, the reticulations obsolete or nearly so; petioles about 2 cm long, the base inflated and somewhat clasping the branches. Panicles terminal, about 20 cm long. Calyx-lobes broadly ovate, about 5 mm long. Corolla-tube 2 cm long, the limb spreading, 3 to 3.5 cm in diameter. Follicles smooth and red when fresh, fleshy, when dry strongly wrinkled, gray or brownish, somewhat curved, not costate, about 8 cm long, 4 to 5 cm wide and 3 cm thick. Seeds numerous, 10 to 12 mm long.

MINDANAO, Lake Lanao, Camp Keithley, *Mrs. Clemens s. n.*, June, April, and September, 1906: Province of Misamis, Mount Malindang, *For. Bur. 4781 Mearns & Hutchinson*, May, 1906: District of Zamboanga, *Copeland s. n.*, April, 1905; Sax River, *Williams 2179*, February, 1905. BASILAN, *For. Bur. 3964 Hutchinson*, January, 1906; *Hallier s. n.*, January, 1904.

This species is allied to *Vocanga plumeriaefolia* Elmer Leaf. Philip. Bot. 1 (1908) 333, but has relatively broader leaves, and more numerous nerves. The type of *Vocanga plumeriaefolia* Elm., is a fruiting specimen, and so far as I can determine from the material before me, is a *Tabernaemontana*, but flowers are necessary to determine exactly to which genus it really belongs.

***Tabernaemontana mucronata* sp. nov.**

Arbor parva, circiter 6 m alta, glabra; ramis griseis, teretibus, ramulis plus minus angulatis; foliis membranaceis, oblongo-ellipticis, apice acuminatis, acuminibus apiculatis, 6 ad 10 cm longis, 2 ad 4 cm latis, nervis utrinque 9 vel 10; cymis axillaribus, brevibus, solitariis vel fasciculatis, circiter 2 cm longis; floribus gracilibus, circiter 12 mm longis.

A small tree about 6 m high, glabrous throughout. Branches terete, gray, the branchlets somewhat angled. Leaves membranaceous, oblong-elliptic, 6 to 10 cm long, 2 to 4 cm wide, the apex rather prominently acuminate, the acumen apiculate, the base somewhat decurrent-acuminate, the upper surface brownish when dry, dull, the lower slightly paler; nerves 9 or 10 on each side of the midrib, not prominent, the reticulations lax, obscure; petioles about 3 mm long. Cymes axillary, solitary or several in each axil, short, rather congested, including the flowers 2 cm long or less, the peduncles very short, the pedicles about 5 mm long. Calyx-teeth acute, short. Corolla-tube cylindric, very slender,

1 mm or less in diameter, the lobes spreading, 3 or 4 mm long. Fruit unknown.

GUIMARAS, Nagaba, *For. Bur.* 304 *Gammill*, February, 1904 altitude about 80 m, in thickets and open places. V., *Alibutbut*.

A species with somewhat the appearance of *Tabernaemontana pandacaqui* Poir., but with quite different inflorescence. Readily recognizable by its very short cymes and slender flowers.

***Tabernaemontana puberula* sp. nov.**

Arbuseula vel arbor parva, ramulis petiolis foliis fructibusque plus minus dense puberulis vel pubescentibus; foliis 6 ad 9 cm longis, membranaceis, acuminatis, oblongo-ellipticis; folliculis rubris, ovoideis vel oblongis, 1 ad 2 cm longis, 3- ad 6-spermis.

A shrub or small tree, rather uniformly and softly puberulent or pubescent. Branches slender, terete, grayish-brown, glabrous, the branchlets puberulent. Leaves opposite, oblong-elliptic, puberulent on both surfaces, especially beneath, 6 to 9 cm long, 2.5 to 4 cm wide, membranaceous, the apex shortly acuminate, the base acute; nerves about 10 on each side of the midrib, distinct beneath, the reticulations lax; petioles pubescent, 5 mm long or less. Follicles red, ovoid or oblong, the apex acute, longitudinally 3-ribbed, 1 to 2 cm long, 1 cm wide or less, the pericarp coriaceous, somewhat pubescent. Seeds 3 to 6.

LUZON, Province of Rizal, Morong, *Bur. Sci.* 1440 *Ramos*, August, 1906, in thickets and open places; Malapadnabato, *Merrill* 2725, 2746, June, 1903.

A species with the general appearance of *Tabernaemontana pandacaqui* Poir., but readily recognizable by its uniform soft pubescence.

VOACANGA Thou.

***Voacanga globosa* (Blanco) comb. nov.**

Tabernaemontana globosa Blanco *Fl. Filip.* (1837) 116, ed. 2 (1845) 83, ed. 3, 1: 153; *Miq. Fl. Ind. Bot.* 2 (1856) 424.

Orchipeda foetida Vidal *Sinopsis Atlas* (1883) 32, t. 66, f. D; F-Vill. *Nov. App.* (1880) 130, non Blume.

Voacanga cumingiana Rolfe in *Journ. Linn. Soc. Bot.* 21 (1884) 313; Vidal *Phan. Cuming. Philip.* (1885) 126; *Rev. Pl. Vase. Filip.* (1886) 184; *Merr. in For. Bur. Bull.* 1 (1903) 49; *Philip. Journ. Sci.* 1 (1906) *Suppl.* 117.

LUZON, Province of Benguet, Sablan, *Elmer* 6165, April, 1904; Province of Bataan, Lamao River, Mount Mariveles, *Merrill* 3798, January, 1904, *Whitford* 1079, January, 1905, *For. Bur.* 684, 1521, 1755, 2331, *Borden*, May to December, 1904, *For. Bur.* 2282, 3014 *Meyer*, December, May, *For. Bur.* 5467 *Curran*, November, 1906, *Williams* 509, January, 1904; Province of Cavite, Mendez Nuñez, *Bur. Sci.* 1356 *Mangubat*, August, 1906; Province of Batangas, Lipa, *Marave* 16; Province of Laguna, Calauan, *Cuming* 476; Los Baños, *Elmer*, April, 1906, *Hallicr*, December, 1903; Pagsanjan, *Merrill* 2186, May 1903; Province of Tayabas, Lucena, *Merrill* 2887, June, 1903; Atimonan, *For. Bur.* 6704 *Kobbe*, April, 1907; *Gregory* 108, August, 1904; Mount Banajao, *Whitford* 992, October, 1904; Gumaca, *Whitford* 878, September, 1904; Binangonan, *Whitford* 829, September, 1904; Mauban, *For. Bur.* 10200 *Curran*, March, 1908. MINDORO, *Cuming* 1500; Bongabong River, *For. Bur.* 4075 *Merrill*. MASBATE, *Merrill* 3030. CEBU, *For. Bur.* 6415 *Espinosa*, September, 1906. LEYTE, *Elmer* 7103, January,

1906. MINDANAO, Province of Surigao, *Ahern 330*; District of Davao, *Williams 2941*.

A widely distributed endemic species, for which the earliest valid specific name is here adopted. The type of *Voacanga cumingiana* Rolf. was *Cuming 1806* from Negros, and while it has somewhat smaller leaves than most of the specimens cited above, I consider it to be identical with Blanco's species.

WILLOUGHBYA Roxb.

Willoughbya luzoniensis sp. nov.

Frutex alte scandens, glabra, ecirrhosa; foliis oppositis, firmiter membranaceis vel papyraceis, oblongo-ellipticis, nitidis, utrinque acuminatis, usque ad 9 cm longis, nervis primariis utrinque circiter 12; fructibus ovoideis vel ovoideo-ellipsoideis, glabris, nitidis, circiter 2.5 cm longis; seminibus circiter 1 cm longis.

A scandent shrub without tendrils, glabrous throughout, about 15 m high. Branches slender, terete, grayish-brown, lenticellate, the branchlets slender, somewhat olivaceous. Leaves opposite, oblong-elliptic, 6 to 9 cm long, 2 to 3.5 cm wide, the apex rather prominently acuminate, the base somewhat decurrent-acuminate, shining, firmly membranaceous or papyraceous, pale or brownish when dry; primary nerves about 12 on each side of the midrib, scarcely more distinct than are the secondary ones and the reticulations; petioles 5 mm long or less. Flowers unknown. Berry ovoid or ovoid-elliptical, about 2.5 cm long, and 2 cm in diameter, the pericarp crustaceous, pale, smooth, shining, the peduncle 1 to 1.5 cm long. Seeds irregular, 8 to 10 mm long, strongly and irregularly pitted, in this character sponge-like.

LUZON, Province of Camarines, Caramoan, *For. Bur. 12277 Curran*, June, 1908.

The first species of the genus to be found in the Philippines, characterized by its rather small fruits and its seeds which are sponge-like in appearance, but not in texture.

CONVOLVULACEÆ.

IPOMOEA Linn.

Ipomoea congesta R. Br. Prodr. (1810) 485; Choisy in DC. Prodr. 9 (1845) 369; Benth. Fl. Austr. 4 (1869) 417.

LUZON, Province of Cagayan, *For. Bur. 16622 Curren*, February, 1909. PALMAS (southeast of Mindanao), *Merrill 5353* October, 1906.

Queensland to Polynesia; new to the Philippines.

VERBENACEÆ.

VITEX Linn.

Vitex pentaphylla sp. nov.

Arbor 10 ad 20 m alta; foliis 5-foliolatis, foliolis chartaceis vel membranaceis, ovatis vel elliptico-ovatis, acuminatis, subtus plus minus pubescentibus, vix glandulosis; cymis axillaribus, solitariis, pedunculatis; floribus pubescentibus, calyce regulariter 5-dentato; fructibus nigris, glabris, oblongo-ovoides, circiter 1 cm longis.

A tree 10 to 20 m high. Branches brownish, glabrous, the young parts sometimes slightly pubescent. Leaves alternate, 5-foliolate, the common petiole 6 to 15 cm long, glabrous or somewhat pubescent: leaflets chartaceous or membranaceous, ovate to elliptic-ovate, petiolulate, 7 to 16 cm long, 4 to 8 cm wide, entire, base acute, apex acuminate, the upper surface glabrous and shining, or the midrib and nerves slightly pubescent, the lower surface slightly paler, more or less pubescent, or ultimately glabrous or nearly so, not at all glandular; nerves 15 to 20 on each side of the midrib, prominent, anastomosing; petiolules 5 to 15 mm long, those of the lateral leaflets the shortest. Cymes axillary, solitary, pedunculate, 10 to 15 cm long, in anthesis more or less pubescent, in fruit nearly glabrous. Flowers purplish, tinged with white, the bracteoles very small. Calyx cup-shaped, somewhat pubescent, about 4 mm long, regularly 5-toothed, the teeth less than 1 mm long, broadly ovate, acute or acuminate. Corolla about 11 mm long, somewhat pubescent outside, the tube 5 to 6 mm long, inflated upwards; middle lobe of the lower lip narrowly obovoid, rounded, crisped, 6 to 7 mm long, densely villous on the median portion inside, the lateral lobes and the upper lip 3 to 4 mm long. Filaments slightly villous below. Ovary ovoid, villous at the apex; style glabrous, 9 mm long. Fruit black when dry, glabrous, oblong-ovoid, rounded at the apex, about 1 cm long, the calyx persistent, accrescent, somewhat saucer-shaped, 6 to 7 mm in diameter.

MINDANAO, District of Zamboanga, Siocon River, *For. Bur. 9490 Whitford & Hutchinson*, February, 1908; *For. Bur. 11245 Hutchinson*, March, 1908. A specimen collected by R. S. Williams, *No. 2949*, in the District of Davao, Mindanao, is probably referable here; it is with mature fruits, and is entirely glabrous.

This species is most closely allied to *Vitex littoralis* Dene.; but is at once distinguishable by its five leaflets which are not at all glandular beneath. It is distinguished from *V. turczaninowii* Merr. by its purplish, not yellow flowers, non-glandular leaves and inflorescence, and other characters. It is locally known as *Malaun aso*, and to the Moros as *Calipapa aso*.

ACANTHACEÆ.

JUSTICIA Linn.

Justicia tenuis sp. nov.

Herba annua, suberecta, diffusa, vel procumbens, usque ad 20 cm alta; foliis membranaceis, ovatis, 1 ad 2 cm longis, acutis vel leviter acuminatis, ramis ramulisque angulatis, plus minus hirsutis; inflorescentiis spicatis, terminalibus axillaribusque, tenuibus; bracteis lanceolatis vel ovatis, acuminatis; calycis segmentis 5, anguste lanceolatis, acuminatis, hyalinis; corolla 2-lobata, lobis imbricatis; seminibus 4, verrucosis.

An annual, suberect, diffuse, or procumbent, rather weak herb, 20 cm high or less. Stems and branches slender, angled, more or less covered with weak white hairs, the leaves also with a few similar ones. Leaves ovate, 1 to 2 cm long, membranaceous, acute or slightly acuminate, the base broad, rounded; petioles very short. Spikes many, slender, short,

axillary, and terminating the branches, 1 to 3 cm long, few-flowered, the flowers distant or close, Flowers blue, the bracteoles paired, the lower pair 2.5 mm long, lanceolate, acuminate, slightly hairy, the upper pair larger, ovate to elliptic-ovate, abruptly acuminate, green with hyaline margins, 3 mm long, 2 mm wide. Sepals 5, free or nearly so, hyaline, lanceolate or narrowly lanceolate, narrowed at both ends, apex slenderly acuminate, more or less ciliate-hairy. Corolla about 5 mm long, blue, the tube short, 1 mm long, glabrous, 2-lobed, lobes imbricate, the larger, outer lobe inclosing the other in bud, 4 mm long, obovate, 3-lobed, the terminal lobe broad, retuse, the lateral ones ovate, blunt; the smaller, inner corolla-lobe ovate, entire, 3 mm long, 2.5 mm wide, blunt-acuminate. Stamens 2; filaments about 2 mm long; anthers 2-celled, one cell above the other, the lower cell spurred at the base, the spur rounded at its tip; pollen elliptic. Ovary glabrous, ovoid; style simple, 2.5 to 3 mm long. Fruit (immature) oblong, compressed, 3 mm long, 1.2 mm wide, hyaline, apiculate, containing four rounded, compressed, verrucose seeds.

Luzon, Province of Ilocos Norte, *Bur. Sci. 2312 Mearns*, February, 1907; Vintar, *For. Bur. 15509 Merritt & Darling*; Pasuquin, *For. Bur. 15536 Merritt & Darling*, November, 1908, in open grass-lands, etc., 100 to 400 m altitude.

Possibly most closely allied to *Justicia procumbens* Linn., which it resembles in habit, but is much more slender than any forms of that species known to me, differing in its very slender, continuous or interrupted spikes, five, instead of four sepals, its blue corolla, and many other characters.

STROBILANTHES Blume.

Strobilanthes mearnsii sp. nov.

Herba erecta, omnibus partibus plus minus hirsutis; foliis oblongo-lanceolatis, vel late ovato-lanceolatis, usque ad 15 cm longis, longe tenuiter acuminatis, denticulatis, in paribus inaequalibus; inflorescentiis laxis, paucifloris, pedunculis longis, hirsutis; floribus congestis, paucis; sepalis circiter 6 mm longis, anguste lanceolatis, hirsutis; corolla alba, usque ad 2.7 cm longa; staminibus 4; filamentis villosis.

An erect, branched herb, more or less villous or hirsute throughout, exceeding 60 cm in height. Branches terete, slender, dark-green or brownish, hirsute. Leaves opposite, in unequal pairs, oblong-lanceolate to broadly ovate-lanceolate, hirsute, membranaceous, the larger ones 8 to 15 cm long, 3 to 5 cm wide, the smaller ones of each pair half as large or smaller, acuminate at both ends, the apex slenderly so, dentate, the upper surface with numerous small raphides; nerves about 8 on each side of the midrib, distinct; petioles densely hirsute, 1 to 2 cm long. Inflorescence axillary, 7 to 10 cm long, few-flowered, hirsute, the flowers capitate at the ends of the few branches, 3 to 5 flowers in a head, the bracts foliaceous, deciduous. Calyx about 8 mm long, the lobes 6 mm long, narrowly lanceolate. Corolla white, about 2.7 cm long, the tube slender below, widened above, slightly hirsute outside, subequally 5-lobed. Stamens 4; filaments villous; anthers 1.3 mm long.

LUZON, Province of Benguet, Mount Tonglon, *Mearns s. n.*, December, 1906; Mount Ugo, *For. Bur. 15920 Bacani, Bur. Sci. 5727 Ramos*, December, 1908.

A species allied to *Strobilanthes pluriformis* Clarke, but distinguished from that and all other known Philippine forms in being strongly hirsute in all parts.

RUBIACEÆ.

COPTOSAPELTA Korth.

C. flavescens Korth. Ned. Kruid. Arch. 2 (1851) 113; Miq. Fl. Ind. Bat. 2 (1857) 155; Hook. f. Fl. Brit. Ind. 3 (1880) 35; King & Gamble in Journ. As. Soc. Beng. 72² (1903) 138.

Randia olaciformis Merr. in Philip. Journ. Sci. 3 (1908) Bot. 163.

Mindanao, Lake Lanao, Camp Keithley, *Mrs. Clemens 1220*.

Randia olaciformis Merr. must be reduced to *Coptosapelta flavescens* Korth., a species extending from Burma to the Malay Peninsula, Sumatra, Java, and Borneo, and the first representative of the genus to be found in the Philippines. Hooker f. gives *Webera macrophylla* Roxb. as a synonym of the above, which, if correctly reduced, would be the earliest specific name for the species. Roxburgh's description, however, does not seem to me to apply to *Coptosapelta flavescens* Korth.

DAMNACANTHUS Gaertn.

Damnacanthus indicus Gaertn. f. Fruct. 3 (1805) 18, t. 182; DC. Prodr. 4 (1830) 473; Hook. f. Fl. Brit. Ind. 3 (1880) 158; Forbes & Hemsl. in Journ. Linn. Soc. Bot. 23 (1888) 386.

LUZON, Province of Laguna, Mount Banajao, *For. Bur. 7856 Curran & Merritt*, November, 1907, *Bur. Sci. 2432 Foxworthy*, March, 1907, altitude 1,400-2,000 m.

The first representative of the genus for the Philippines, an interesting addition to the continental element in the Philippine flora; eastern Himalayan region to southern China and Japan.

GREENEA Wight & Arnott.

Greenea longiflora sp. nov.

Arbor parva, circiter 8 m alta, ramulis petiolis foliis cymisque hirsutis; foliis oblongo-ellipticis, papyraceis, 20 ad 30 cm longis, apice acutis vel obscure acuminatis, nervis utrinque circiter 15; cymis axillaribus, subscorpoideis, pauciramosis, usque ad 9 cm longis; floribus sessilibus, circiter 15 cm longis, 4-meris.

A small tree about 8 m high. Branches densely hirsute with long brownish hairs. Leaves papyraceous, oblong-elliptic, 20 to 30 cm long, 10 to 12 cm wide, very slightly shining, the lower surface somewhat paler than the upper, both surfaces with numerous spreading or appressed scattered hairs, those on the lower surface softer and paler than those on the upper; nerves about 15 on each side of the midrib, distinct, the reticulations rather lax; petioles densely hirsute, 2 to 4 cm long; stipules membranaceous, caducous, oblong, about 4 cm long and 1.5 cm wide, rounded or obtuse at the apex, hirsute. Cymes axillary, peduncled, 9 cm long or less, hirsute, the branches few. Flowers sessile, arranged

along one side of the branches. Calyx-tube very short, the limb membranaceous, 1 mm long, obscurely 4-toothed. Corolla-tube about 15 mm long, cylindric, 3 mm in diameter, the outside with very few short appressed hairs; lobes 4, spreading or recurved, imbricate, broadly elliptic-ovate, acute or blunt, 4 to 4.5 mm long. Stamens 4, the filaments very short, inserted above the middle of the tube; anthers linear, 6 mm long, included. Style in the male flowers about 4 mm long, 4-cleft, obscurely pubescent.

MINDANAO, District of Zamboanga, Tibucuy, *For. Bur. 9430 Whitford & Hutchinson*, February, 1908, in forests at an altitude of about 20 m.

The first species of the genus to be reported from the Philippines, allied to *Greenea corymbosa* (Jack) K. Sch., of Burma and the Malay Peninsula, but abundantly distinct.

GREENIOPSIS gen. nov.

Calycis tubus turbinatus; limbi lobi 5, subaequales, breves, subrotundati, corolla breviter infundibularis, fauce villosa; limbi lobi 5, breves, rotundati, in alabastro sinistrorsum contorto-imbricati. Stamina 5, fauci corollae inserta, inclusa, filamentis brevibus; antherae dorso supra basin affixae, ellipticae. Ovarium 2-loculare; stylus gracilis, lobis stigmatibus brevibus, crassis; ovula in loculis plurima, in placentis septo longitudinaliter adnatis conferta. Capsula oblonga vel ovoidea, 2-locularis, septicide 2-valvis, coriacea. Semina numerosissima, elongata praecipue in nucleo reticulato-areolata. Arbores. Folia opposita, chartacea vel subcoriacea, oblongo-obovata vel elliptico-obovata, petiolata. Stipulae amplae, deciduae, interpetiolares, acuminatae. Flores parvi. Inflorescentia terminalis, multiflora, cymis amplis, paniculatis, ramis ramulisque patulis.

This proposed new genus is allied to *Emmenopterys* of southern China and to *Mussaendiopsis* of the Malay Peninsula, Sumatra, and Borneo, but differs from both in none of its calyx lobes being accrescent, and from the latter also in its stamens inserted at the throat of the corolla-tube. It consists of two closely allied Philippine species, the following, the type of the genus, which has been previously referred to *Greenea*, species undetermined, and the plant described by Mr. Elmer as *Mussaendiopsis multiflora*.

Greeniopsis philippinensis sp. nov.

Arbor circiter 10 m alta; foliis oblongo-obovatis vel elliptico-obovatis, subchartaceis, nitidis, 20 ad 30 cm longis, apice breviter acuminatis, basi angustatis, decurrento-acuminatis, nervis utrinque 15 ad 18, prominentibus, glabris vel junioribus subtus minus hirsutis; paniculis terminalibus, amplis, ramis ramulisque patentibus, circiter 20 cm longis; floribus breviter pedicellatis, albis, 4 ad 5 mm longis; capsulis ellipsoideis, vel ovoideis, 4 mm longis, extus griseo-pubescentibus, septicide 2-valvatis, apice limbo persistente coronatis.

A tree about 10 m high. Branches terete, reddish-brown, rugose, the younger branches reddish-brown, smooth, glabrous or sometimes hirsute.

Leaves opposite, oblong-obovate to elliptic-obovate, 20 to 30 cm long, 7 to 12 cm wide, shining, glabrous, or when young somewhat hirsute beneath, subchartaceous, the apex rather abruptly short-acuminate; nerves 15 to 18 on each side of the midrib, prominent on both surfaces, the reticulations subparallel; petioles 1.5 to 2 cm long, glabrous, or when young somewhat hirsute; stipules interpetiolar, oblong-lanceolate, brown, glabrous or sometimes hirsute, 1 to 3 cm long, deciduous, acuminate, sometimes cleft. Panicles terminal, grayish-appressed-pubescent, ample, the branches and branchlets spreading, many flowered, the flowers mostly on the upper half of the branches alternate, not or rarely secund. Flowers white, short-pedicelled. Calyx turbinate, the tube short, about 1 mm long and nearly 2 mm wide, appressed-gray-pubescent outside, the limb 1.5 mm long, with 5 broad, short, rounded teeth which are slightly ciliate on the margins, none of them accrescent. Corolla-tube about 3 mm long, somewhat widened above, the limb with 5 rounded lobes about 1 mm long, in bud somewhat overlapping to the left, the throat densely villous within below the anthers. Stamens 5, alternate with the corolla-lobes, the filaments short, inserted on the throat of the tube; anthers elliptic, attached at the back above the base, about 1 mm long, obtuse, longitudinally 2-celled, included. Ovary 2-celled; ovules indefinite, on the central placenta which is adnate to the dissepiment; style 3 mm long, entire, crowned by the subcapitate or ellipsoid stigma which is about 1.2 mm long and somewhat cleft at the apex. Capsule coriaceous, appressed-gray-pubescent, ellipsoid or ovoid, about 4 mm long, 3 to 3.5 mm thick, crowned by the persistent calyx-limb, septicidal, 2-valved, 2-celled; seeds numerous, elongated, rather pointed at both ends, sometimes angular, 1 mm long, externally reticulate-areolate.

SAMAR, Borongan, *Merrill 5216* (type of the genus and species), October, 1906, in flower and fruit, growing along the border of a *Nipa* swamp; without definite locality, *Cuming 1713*, in fruit, in Herb. Kew. sub *Greenea*. LUZON, Province of Albay, Cabit, *Bur. Sci. 6402 Robinson*, August 31, 1908, near hot springs along the seashore, with flowers and fruits; Manito, *For. Bur. 10580 Curran*, June, 1908, along the seashore, in fruit.

In young specimens, such as the type, the branchlets, inflorescence, and the midrib and nerves on the under surface of the leaves are supplied with numerous long, brownish hairs, but these are deciduous, the mature specimens being glabrous or subglabrous with the exception of the more or less pubescent inflorescence.

Greeniopsis multiflora (Elmer) comb. nov.

Mussaendiopsis multiflora Elm. Leaf. Philip. Bot. 1 (1906) 14.

This differs from the above in having leaves with from 9 to 12 pairs of lateral nerves only, the fruits relatively longer and narrower (5 mm long, 2-2.5 mm thick), and which are secund on the ultimate branchlets of the infrutescence. In habit and general appearance it strongly resembles the preceding species, but can be distinguished by the above characters. The flowers are unknown.

DINAGAT, *Ahern 490*. (type) N. v., *Hamagos*.

LITOSANTHES Blume.

L. biflora Blume Cat. Gew. Buitenzorg (1823) 21; Bijdr. (1826) 994; Miq. Fl. Ind. Bat. 2 (1857) 314; DC. Prodr. 4 (1830) 465.

LUZON, Province of Sorsogon, Adlumay Hills, *For. Bur. 12383 Curran*, June, 1908. MINDORO, Mount Halcón, *Merrill 6172*, November, 1906; Mount Sablanga, *For. Bur. 11002 Merritt*, March, 1908; Mount Teluti, *For. Bur. 11478 Merritt*, May, 1908. NEGROS, *Elmer*.

The first representative of this small genus to be found in the Philippines; Java and Celebes.

Two species have been described from New Guinea.

NAUCLEA Linn.

Nauclea jagori sp. nov.

Arbor vel arbuscula glabra; foliis lanceolatis vel anguste lanceolatis, longe sensim acuminatis, 8 ad 20 cm longis, 9 ad 18 mm latis, basi angustatis, subcoriaceis, nitidis, nervis utrinque circiter 15; capitulis solitariis, circiter 3 cm diametro stylis exclusis; corolla glabra, 1 cm longa.

A shrub or tree, glabrous. Branches grayish-brown, terete, the branchlets somewhat compressed. Leaves lanceolate or narrowly lanceolate, 8 to 20 cm long, 9 to 18 mm wide, subcoriaceous, shining, brownish when dry, the base narrowed, acute, the apex long and gradually acuminate; nerves about 15 on each side of the midrib, not prominent, obscurely anastomosing, the reticulations indistinct; petioles 3 to 7 mm long; stipules oblong, obtuse, 12 to 15 mm long, 3 mm wide, slightly hirsute below, caducous. Heads solitary, the peduncles about 3 cm long, the bracts, if any, caducous, the heads, excluding the long exerted styles, about 3 cm in diameter. Corolla 1 cm long, glabrous, widened upward, the lobes oblong, obtuse, 2.5 mm long, 1 mm wide. Anthers 1.7 mm long. Style about 1.5 cm long; stigma about 2.5 mm long, swollen in the middle. Cocci 8 mm long; seeds, including the narrow, acuminate wings, 4 mm long, slightly pubescent.

SAMAR, *F. Jagor 987*, in Herb. Berol.

A very characteristic species, at once distinguished from most hitherto described ones in the genus by its very narrow leaves. It is apparently allied to *Nauclea angustifolia* Havil., of Borneo, and *N. chalmersii* F. Muell., of New Guinea, both of which have very narrow leaves, but the present species differs from these in its more numerous nerved leaves and larger flowers.

PLECTRONIA Linn.

Plectronia megacarpa sp. nov.

Arbor glabra circiter 15 m alta; foliis coriaceis, elliptico-ovatis vel obovato-ellipticis, circiter 20 cm longis, brunneis, nitidis, apice rotundatis vel late obscure acuminatis, basi cuneatis, nervis utrinque circiter 8, prominentibus, nervulis obscuris; fructibus axillaribus, pedicellatis, obovoideis, compressis vel trigonis, 2- vel 3-locellatis, 1.5 cm longis, apice truncatis vel retusis, basi acutis.

A glabrous tree about 15 m high. Branches brownish, terete or slightly compressed. Leaves coriaceous, elliptic-ovate or obovate-elliptic, about 20 cm long, 9 to 11 cm wide, the upper surface brown, shining, the lower paler, dull, margins somewhat recurved, apex broad, rounded, or broadly and obscurely blunt-acuminate, base cuneate, sometimes slightly acuminate; nerves about 8 on each side of the midrib, prominent, the nervules and reticulations obscure; petioles stout, 2 to 2.5 cm long; stipules deciduous, ovate, acuminate, less than 5 mm long. Flowers unknown. Infrutescence axillary, umbellate, the peduncle stout, about 5 mm long, the pedicels 1.5 to 3 cm long. Fruit yellow when fresh, 1.5 cm long, obovoid, trigonous and three-celled, or somewhat compressed and two-celled, nearly 1.5 cm thick above the middle, the apex truncate or retuse, the base acute.

LUZON, Province of Zambales, near Santa Cruz, altitude 100 m, *For. Bur.* 8232 *Curran & Merritt*, December, 1907.

A species apparently allied to *Plectronia glabra* (Blume) Kurz, but with different fruits and leaves.

TIMONIUS Rumph.

Timonius appendiculatus sp. nov.

Arbor parva, circiter 8 m alta, glabra; foliis coriaceis oblongis vel anguste elliptico-oblongis, usque ad 10 cm longis, basi plus minus decurrento-acuminatis, apice acutis vel obtusis, nervis lateralibus obscuris; cymis axillaribus, pauciramosis, foliis multo brevioribus; floribus 4-meris, unilateraliter spicatis, lobis corollae recurvatis, 3-appendiculatis; drupis globosis, obscure 12-sulcatis, polypyrenis.

A small tree glabrous throughout. Branches reddish-brown or grayish, terete, wrinkled when dry. Leaves coriaceous, oblong to narrowly elliptic-oblong, rather pale when dry, slightly shining, the apex acute or blunt, the base somewhat decurrent-acuminate, 6 to 10 cm long, 2 to 3 cm wide; lateral nerves few, obscure, and, with the reticulations, nearly obsolete; petioles less than 1 cm long; stipules annular, truncate, very short. Cymes in the upper axils, about 3 cm long, peduncled, with usually but two branches, the flowers spicately arranged on one side of the branches only, sessile, articulated with the rachis. Calyx cupular, about 3 mm long, 1.5 mm wide, truncate. Corolla about 9 mm long, tubular, the lobes 4, reflexed, narrowly ovate, acute, about 2 mm long, and with three retrorse appendages near the apex, the two lateral ones about 1 mm long, the terminal one shorter. Filaments short, inserted at the throat or just below it; anthers linear, nearly 5 mm long, their tips slightly exerted; style about 3 mm long. Fruit globose, shining, obscurely about 12-sulcate, crowned by the truncate calyx, about 5 mm in diameter, about 12-celled, and containing about 25 pyrenes.

LUZON, Province of Rizal, Bosoboso, *Bur. Sci.* 2164, 2651 *Ramos*, January, May, 1907, the former with staminate flowers, the latter with fruit. MINDORO, Mount Agong, *For. Bur.* 9867 *Merritt*.

A very characteristic species, differing from typical *Timonius* in its appendaged corolla-lobes, but in other characters typical, readily recognized by the above character, its few-branched cymes, 4-merous, sessile flowers in unilateral spikes, and its nearly nerveless leaves.

XANTHOPHYTUM Reinw.

Xanthophytum fruticosum Reinw. ex Blume Bidjr. (1826) 839; Miq. Fl. Ind. Bat. 2 (1857) 175.

Metabolus ferrugineus DC. Prodr. 4 (1830) 436.

Sclerococcus Bartl. l. c., as syn.

Xanthophytum villarii Vidal Rev. Pl. Vasc. Filip. (1886) 150.

Lasianthus pilosus F.-Vill. Nov. App. (1880) 112, non Wight.

Luzon, without locality, *Haenke* in Herb. Prague, type of *Metabolus ferrugineus* DC.; Province of Rizal, San Mateo, *Vidal* 392, in Herb. Kew, type of *X. villarii* Vidal.

I have examined both of the above specimens, and can see no reason for distinguishing one from the other, or either from Reinwardt's species. Vidal's specimen has smaller leaves than Haenke's, but in all essential characters they appear to be the same, and after a cursory examination of Javan specimens and a careful comparison of the Philippine material with the descriptions of *X. fruticosum* I do not hesitate to reduce both DeCandolle's and Vidal's species to Reinwardt's. Miquel l. c., had already reduced *Metabolus ferrugineus* to *Xanthophytum fruticosum*, without however giving the range of the species as extending to the Philippines. An interesting species known only from Java, Borneo, and Luzon.

CAPRIFOLIACEÆ.

VIBURNUM Linn.

Viburnum floribundum sp. nov. § *Euviburnum*, *Opulus*.

Frutex circiter 2 m alta, subglabra vel parce pubescenti; foliis ovatis, usque ad 7 cm longis, chartaceis, nitidis, supra glabris, subtus in axillis barbatis, apice acutis vel acuminatis, basi inequilateraliter rotundatis, margine serrato-dentatis, nervis utrinque 5, prominentibus; cymis terminalibus, umbellato-paniculatis, dense multifloris; corolla rotata.

A shrub about 2 m high. Branches and branchlets terete, grayish- or reddish-brown, rather stout, glabrous, the branchlets minutely puberulent and with few scattered long hairs. Leaves ovate, 4 to 7 cm long, 2 to 4 cm wide, chartaceous, shining on both surfaces, the apex acute or acuminate, the base somewhat narrowed, rounded, inequilateral, the margins especially in the upper half, rather strongly serrate-dentate, the upper surface glabrous, or the midrib sometimes slightly puberulent, the lower surface glabrous except the midrib and primary nerves which are often slightly pubescent, and the axils of the primary nerves which are barbate; nerves 5 on each side of the midrib, ascending, very prominent, the reticulations distinct; petioles about 5 mm long, somewhat pubescent. Inflorescence terminal, paniculate-umbellate, intermixed frequently with small leaves, rather dense, 5 to 7 cm in diameter, very many flowered,

the rachis, branches and pedicels puberulent and with intermixed longer hairs. Flowers small. Calyx-lobes narrowly ovate, less than 0.5 mm long, pubescent. Corolla rotate, 1.8 mm long, the tube short, the lobes elliptic, rounded. Ovary depressed-globose, glabrous. Fruit ovate, compressed, 5 mm long, 4 mm wide, not ribbed, or with an obscure rib on one side.

LUZON, Province of Abra, Mount Paraga, *Bur. Sci.* 7074 Ramos, February, 1909, the altitude given as about 600 m.

A species manifestly allied to *Viburnum luzonicum* Rolfe, but distinguished from that species by its nearly glabrous leaves which are less acuminate, more strongly toothed, rounded and inequilateral at the base, as well as by its dense inflorescence.

***Viburnum glaberrimum* sp. nov.** § *Euviburnum*, *Lantana* ?

Arbor parva, glabra, ramis ramulisque crassis, valde lenticellatis; foliis coriaceis, glabris, nitidis, obovatis, integris, apice rotundatis, obtusis, vel late obtuse acuminatis, basi obtusis vel leviter decurrenti-acuminatis, nervis utrinque 6 ad 8, prominentibus; inflorescentiis terminalibus, umbellato-corymbosis; corollae tubo cylindraco, lobis erectis.

A small tree, glabrous throughout. Branches and branchlets stout, terete, dark-reddish-brown, strongly lenticellate. Leaves coriaceous, shining, obovate, entire, the apex broad, rounded, obtuse, or sometimes broadly and obtusely acuminate, the base obtuse or slightly decurrent-acuminate, 8 to 14 cm long, 6 to 8 cm wide; nerves 6 to 8 on each side of the midrib, very prominent beneath, the reticulations not distinct; petioles stout, 3 to 4 cm long. Inflorescence terminal, about 5 peduncles at the tip of each branch, forming an umbellate corymb, the peduncles 4 to 5 cm long. Calyx-tube short, the teeth very small, rounded, about 0.4 mm long. Corolla cylindric, 5 mm long, thick, the tube 3 mm long, the erect, elliptic, obtuse lobes 2 mm long. Filaments about 5 mm long; anthers exerted, 2 mm in length. Ovary 1-celled. Fruit (immature) elliptic, compressed.

LUZON, Province of Pangasinan, near Imogen, *For. Bur.* 15848 Merritt, December, 1908, in forests 300 to 450 m altitude.

A species manifestly allied to *Viburnum coriaceum* Blume of the Indo-Malayan region, but at the same time very distinct, especially in its vegetative characters.

CUCURBITACEÆ.

GYNOSTEMMA Blume.

***Gynostemma simplicifolia* Blume** Bijdr. (1825) 23; Cogn. in DC. Monog. Phan. 3 (1881) 915.

MINDANAO, District of Zamboanga, Sax River, *Williams* 2119, February, 1905.

New to the Philippines and the fourth species of the genus for the Archipelago; previously known only from Java.

TRICHOSANTHES Linn.

Trichosanthes villosa Blume Bijdr. (1826) 934; Cogn. in DC. Monog. Phan. 3 (1881) 366.

Luzon, Province of Rizal, Bosoboso, *Bur. Sci. 1027 Ramos*, July, 1906, with staminate flowers. MINDANAO, District of Davao, Todaya, *Copeland 1301*, April, 1904, with mature fruit.

Previously known only from Java.

MELOTHRIA Linn.

Melothria scaberrima sq. nov. § *Eumelothria*.

Planta monoica, floribus masculinis solitariis vel binis, breviter pedicellatis; foliis lanceolatis vel oblongo-lanceolatis, chartaceis, apice acuminatis, basi hastatis, margine integris vel leviter denticulatis, utrinque scaberrimis, subtus ad nervos hispido-aculeatis, usque ad 9 cm longis; fructibus ovoideis vel oblongo-ovoideis, glabris, basi acutis, apice acuminato-rostratis.

Monococious. Branches slender, striate-sulcate, glabrous or nearly so. Leaves lanceolate or oblong-lanceolate, 4 to 9 cm long, 1 to 3.5 cm wide, chartaceous, the base hastate, truncate, the basal lobes short, spreading or slightly reflexed, the margins aculeate, entire, or in the lower part denticulate, gradually narrowed upward to the sharply acuminate apex, green or olivaceous when dry, of about the same color on both surfaces, the upper surface strongly white-glandular-scabrous, the midrib setose, the lower surface less scabrid than the upper, the midrib and nerves aculeate-hispid; basal nerves 5 to 7, the inner longer pair reaching at least to the middle of the leaf, ascending, anastomosing with the primary lateral nerves, the reticulations very lax, obscure; petioles 0.5 to 2 cm long, tendrils simple, leaf-opposed or from the axils below the leaves. Flowers white, solitary or two in an axil: staminate short-pedicelled, solitary or paired; calyx-lobes linear, 1 mm long; corolla lobes ovate, shorter; stamens 3, subsessile: pistillate flowers long-pedicelled; calyx teeth minute; corolla-lobes ovate, acuminate 3.5 mm long; stigma 2 mm in diameter. Fruit ovoid or oblong-ovoid, terete, glabrous, about 3 cm long, the base acute, the apex strongly acuminate-rostrate; seeds narrowly elliptic, compressed, 5 mm long, the base appendiculate-winged.

Luzon, Province of Benguet, *Elmer 5862; Williams 1055; Merrill 4657; Topping 83; Pond s. n.; For. Bur. 15979 Bacani*.

A species widely distributed in the pine region of Benguet Province, well characterized by its lanceolate, hastate, very scabrous leaves, and ovoid or oblong-ovoid rostrate fruits. Probably most closely allied to *Melothria zeylanica* Clarke, but very different from that species.

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By E. D. MERRILL

(From the Botanical Section of the Biological Laboratory, Bureau of Science, Manila, P. I.)

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NEW OR NOTEWORTHY PHILIPPINE PLANTS, VIII.

By E. D. MERRILL.

(From the Botanical Section of the Biological Laboratory, Bureau of Science,
Manila, P. I.)

The following paper is largely composed of the descriptions of about 100 new species of Philippine plants, that have been worked out from time to time during the past year. In the paper will also be found the descriptions of four proposed new genera, *Astrocalyx* and *Cephalomedi- nilla* of the *Melastomataceae*, *Curraniodendron* of the *Saxifragaceae*, and *Pygmaeopremna* of the *Verbenaceae*. A number of species previously described by various authors are here recorded from the Philippines for the first time, while several previously considered Philippine forms are admitted for the purpose of discussion, additional data being available. Following the rules of priority in nomenclature, a few new combinations have been made.

GRAMINEÆ.

ANDROPOGON Linn.

Andropogon citratus DC. Cat. Hort. Monsp. (1813) 78.

Cymbopogon citratus Stapf in Kew Bull. (1906) 322, 357, eum lamina.

Andropogon schoenanthus Blanco Fl. Filip. (1837) 39, ed. 2 (1845) 27, ed. 3, 1 (1877) 50; Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 339, non Linn.

This species is commonly cultivated in the Philippines, although not on a commercial scale. I have never seen it in flower, but chemical analysis of the oil extracted from it shows the species to be *Andropogon citratus* DC., and not *A. schoenanthus* Linn.

DIGITARIA Scop.

Digitaria ciliaris (Retz.) Pers. Syn. 1 (1805) 85.

Panicum ciliare Retz. Obs. 4 (1786) 16.

Paspalum sanguinale var. *ciliare* Hook. f. Fl. Brit. Ind. 7 (1897) 15.

LUZON, Province of Ilocos Norte, Bambam, *Bur. Sci.* 7661 Ramos, March, 1909: Province of Rizal, *Phil. Pl.* 147 Merrill.

Not previously reported from the Philippines; widely distributed in the Indo-Malayan region, extending to Polynesia.

PANICUM Linn.

Panicum psilopodium Trin. Gram. Panic. (1826) 217; Hook. f. Fl. Brit. Ind. 7 (1897) 46.

LUZON, Province of Benguet, Baguio, *Williams* 1182, *Elmer* 6589.

This species has previously been reported from the Philippines, but apparently on a wrong identification. The specimens here referred to Trinius' species are considerably smaller than the typical form.

India to Ceylon, Burma, and Malacca.

ISACHNE R. Br.

Isachne incrassata (Hack.) comb. nov.

Isachne debilis Rendle var. *incrassata* Hack. in *Philip. Journ. Sci.* 1 (1906) Suppl. 268; Merr. l. c. 350.

Tufted, erect, rather stiff, the culms simple or slightly branched, their lower nodes sometimes decumbent, glabrous. Leaves rigid, mostly spreading, lanceolate, sharply acuminate, 2.5 to 5 cm long, 2 to 4.5 mm wide, the lower surface puberulent or pubescent, the nerves obscure, the upper surface glabrous, minutely scabrid, the nerves distinct, close, about 20, margins thickened and cartilaginous, scabrid; sheaths subglabrous, or with few to rather many, long, white hairs, especially on the margins. Panicles exserted, peduncled, subpyramidal, 5 cm long or less, the branches spreading or ascending, slender, glabrous, 2 cm long or less, each branch with 8 spikelets or less, the pedicels 1 to 3.5 mm long, glabrous. Spikelets oblong-obovoid, usually dark-purple, sometimes pale, 1.2 to 1.5 mm long. Empty glumes glabrous, obscurely 5- to 7-nerved. First flowering glume elliptic-oblong, rounded, glabrous, sessile, inclosing a ♂ flower, the second minutely pedicelled, similar to the first but slightly smaller, inclosing a ♀ flower.

The type of Doctor Hackel's variety was a rather poor specimen collected in Mindanao, Mount Apo, *DeVore & Hoover* 358. Better material has been recently collected in Negros, *Merrill* 6977, Canlaon Volcano, on ledges in the Nahalin River, altitude about 1,260 m, and after studying this specimen I have concluded that the form is not closely allied to *Isachne debilis* Rendle, but that it is worthy of specific rank.

Isachne micrantha sp. nov.

Annua, debilis, parva, vix 10 cm alta, caulibus tenuibus, ramosis, glabris; foliis oblongis vel oblongo-lanceolatis, circiter 1 cm longis, leviter pilosis, vaginis quam internodia brevioribus; paniculis depauperatis, stric-

tis, compressis, paucifloris; spiculis obovoideis, 1 ad 1.2 mm longis, glumis sterilibus obscurissime 5-nerviis, subglabris, fertilibus densissime et breviter pubescentibus.

An annual, weak, ascending, loosely tufted plant, 10 cm or less in height. Stems very slender, glabrous, branched, the lower parts decumbent and often rooting at the nodes. Leaves oblong to oblong-lanceolate, about 1 cm long, often shorter, rarely 1.5 cm in length, 2 to 3.5 mm wide, the base rather broad, apex acuminate, both surfaces with scattered, white, rather soft hairs about 1 mm long, the nerves about 10, the margins minutely scabrid; sheaths shorter than the internodes, less than 1 cm long, with few, scattered, long, white hairs, especially on the margins; ligule of few white hairs. Panicles strict, narrow, glabrous, less than 1 cm long, the branches few, 4 mm long or less, each with from 1 to 3 or 4 spikelets, apparently never spreading, the pedicels 1 to 2 mm long, glabrous. Spikelets obovoid, pale or slightly purplish, 1 to 1.2 mm long, the empty glumes subglabrous, or at least with only a few scattered hairs in the upper part, very obscurely 5-nerved or nerveless. Flowering glumes densely and apparently softly pubescent with short hairs, 1 mm long, the second very minutely pedicelled; paleas slightly pubescent.

Luzon, Province of Cagayan, Mount Cueva, *For. Bur.* 16837, 16841 (type) Curran, March 9, 1909, altitude about 300 m.

A species well characterized by its small size, small leaves, contracted panicles, and densely pubescent flowering glumes. It is probably more closely allied to *Isachne debilis* Rendle, of Formosa, than any other Philippine form at present known, but seems to be distinguished by its contracted panicles, smaller leaves and smaller spikelets. Among the Philippine species it is perhaps most closely allied to *Isachne myosotis* Nees.

***Isachne vulcanica* sp. nov.**

Densissime caespitosa, perennis, rigida; culmis inferne ramosis, rigidis, vix 10 cm altis; foliis rigidis, lanceolatis, acuminatis, 1 ad 2.5 cm longis, 2 ad 5 mm latis, scabridis, margine incrassatis, vaginis quam internodia longioribus; paniculis oblongis, congestis, 1 ad 2 cm longis, usque ad 1 cm diametro; spiculis atropurpureis vel rariter pallidis, densissime dispositis, 2 mm longis; glumis exterioribus 7-nerviis, subglabris, fertilibus obscure sparseque pubescentibus.

A densely caespitose, rigid perennial, forming tufts a few centimeters in diameter or mats which are often 0.5 m in diameter. Culms rigid, much branched below, not exceeding 10 cm in height, often much shorter, the internodes short. Leaves rigid, lanceolate, acuminate, 1 to 2.5 cm long, 2 to 5 mm wide, the margins thickened, cartilaginous, scabrid, the upper surface prominently ribbed with about 18 nerves, scabrid, beneath slightly hispidulous; sheaths exceeding the internodes, imbricate, with scattered, long white hairs, the marginal hairs more numerous; ligule of few stiff, white hairs 2 to 3 mm long. Panicles slightly or not at all exserted, oblong, very dense, purple, 1 to 2 cm long, 0.5 to 1 cm in

diameter, the lower branches often 1 cm long, closely appressed, the rachis and branches glabrous, the pedicels 0.3 to 1.5 mm long. Spikelets numerous, ovate to oblong-ovate, 2 mm long, usually dark-purple, sometimes greenish. Empty glumes subequal, 7-nerved, glabrous except for few long hairs on the apical parts. Third glume elliptic-oblong, 1.8 mm long, with very few, obscure, short hairs, the margins obscurely ciliate, the palea as long as the glume, inclosing a ♂ flower. Fourth glume similar to the third, slightly shorter, containing a ♀ flower.

NEGROS, Canlaon Volcano, *Merrill 6975*, April, 1910.

Abundant in the old crater, on bare slopes and on debris washed down from the new cone, forming dense tufts or mats, altitude 1,800 to 2,100 m. A species well characterized by its dense panicles, short, rigid, densely caespitose habit, rigid, crowded leaves, and dark-purple spikelets.

MISCANTHUS Anderss.

Miscanthus depauperatus sp. nov.

Culmis erectis vel suberectis, usque ad 60 cm altis, densissime caespitosis, vix 3 mm diametro; foliis 3 ad 6 mm latis, margine scabridis; spiculis purpureis, 6 mm longis; paniculis laxis, racemis paucis, racemoso-dispositis, solitariis vel inferioribus binis, usque ad 15 cm longis.

A densely caespitose perennial, forming tufts up to 1 m in diameter, the culms erect or ascending, usually about 40 cm high, often shorter, rarely 60 cm in height, simple or very rarely branched, terete, 2 to 2.5 mm in diameter. Leaves numerous, those of the culm up to 30 cm long, 6 mm wide, the basal ones much shorter and usually narrower, scabrid on the margins, long- and slenderly acuminate; sheaths exceeding the internodes, the lower ones usually purplish; ligules broad, about 2 mm long, margins ciliate. Panicles exerted or not, glabrous, the rachis and branches angled, purple, minutely scabrid on the angles, the rachis always less than 5 cm in length, the branches rather slender, erect or somewhat spreading, solitary, or the lower ones in pairs, 3 or 4 to about 9 in number, 4 to 15 cm in length. Spikelets purple, lanceolate, acuminate, about 6 mm long, the shorter pedicels about 2 mm long, the longer ones 5 to 6 mm long, the involueral hairs slender, about as long as the spikelets, usually purplish, unequal in length, numerous. First two glumes lanceolate, sharply acuminate, equal, about 6 mm long, when spread 2.3 mm wide, purple, shining, glabrous, or the margins with very few ciliate hairs, the first obscurely 5-nerved, the second obscurely 3-nerved. Third glume oblong-lanceolate, hyaline, 5 mm long, 2 mm wide, acuminate, 1-nerved, margins slightly ciliate, empty. Fourth glume hyaline, lanceolate, acuminate, 4 mm long, 1 mm wide, apex cleft into two slender teeth and bearing between them a slender, scabrid, twisted awn about 1 cm in length. Palea ovate, hyaline, 1 mm long. Lodicules truncate, about 0.8 mm long. Anthers 3, 2.5 to 3 mm long.

NEGROS, Canlaon Volcano, common in open places in the old crater, altitude

about 1,800 m, ascending the new cone to an altitude of about 2,000 m, *Merrill*, April 12, 1910.

This species is manifestly allied to *Miscanthus sinensis* Andr., differing in its densely tufted habit of growth, very much smaller size, narrower leaves, rather lax, depauperate panicle, solitary or at most paired panicle-branches, and larger spikelets.

SPOROBOLUS R. Br.

Sporobolus virginicus (L.) Kunth Rev. Gram. (1829) 67; Enum. 1 (1833) 210; Hook. f. Fl. Brit. Ind. 7 (1897) 247.

Agrostis virginica Linn. Sp. Pl. (1753) 63.

Luzon, Province of Cagayan, *Bur. Sci.* 7881 *Ramos*, April, 1909; also collected by Loher at Navotas, Province of Rizal, nos. 1785, 1786 in Herb. Kew; Manila, *Merrill*, June, 1910.

Not previously reported from the Philippines; widely distributed in temperate and tropical parts of the world.

CYPERACEÆ.

CLADIUM Schrad.

Cladium philippinense sp. nov. § *Eucladium*.

Dense caespitosum, culmis gracilibus, teretibus, usque ad 2 m altis, 2 ad 3 mm diametro; foliis radicalibus nullis, caulinis 2 vel 3, brevibus, verticaliter compressis, 1 ad 5 cm longis, vix 3 mm latis; inflorescentiis laxis, 10 ad 15 cm longis, "zigzag"; spiculis brunneis, circiter 2 mm longis; fructibus ellipsoideis, teretibus, admodum nitidis, rugosis, apice truncatis.

A densely caespitose plant from creeping rhizomes, the culms rush-like, often nearly 2 m high, sometimes shorter, terete, glabrous, 2 to 3 mm in diameter, their bases covered with several short, imbricated bracts, leafless except for the 2 or 3 culm leaves which are much reduced or sometimes represented only by sheaths, or sometimes 5 cm long, always less than 3 mm wide, vertically compressed, glabrous. Panicles 10 to 15 cm long, interrupted, thyrsoïd, lax, both the primary and secondary rachises strongly zigzag, on the ultimate branches each group of two or three spikelets subtended by an ovate, keeled, brown, prominently acuminate bract about 3 mm long, the basal portion broad, 7- to 9-nerved, the spikelets sessile or shortly pedicelled, crowded. Spikelets brown, glabrous, 2 to 2.5 mm long, each bearing a single perfect flower, the glumes few, about four, ovate to oblong-ovate, somewhat acuminate, keeled, 2 mm long. Nutlet ellipsoid, terete, straw-colored, somewhat shining, about 1.8 mm long, wrinkled when dry, the base somewhat acute, the apex minutely puberulent, truncate or rounded; style filiform, elongated; the arms three.

MINDORO, southwest of Lake Naujan, altitude about 120 m, *For. Bur.* 6724 *Merritt*, April, 1907 (type). LUZON, Province of Zambales, along streams near Candalaria, *Bur. Sci.* 4729 *Ramos*, December, 1907. PALAWAN, Mount Victoria, on rocks at base of waterfall, *Bur. Sci.* 718 *Foxworthly*, March, 1906, altitude

about 600 m; Iwahig, in bed of mountain stream, altitude about 300 m, *Merrill* 758, February, 1903, specimen very young.

This species is probably most closely allied to *Cladium riparium* Benth., of Australia, and to the var. *crassum* (Thwaites) Clarke of India and Ceylon; it is, apparently, distinct from both forms. Among the Philippine species it is probably most closely allied to *Cladium distichum* Clarke but lacks the numerous imbricated glumes of that species.

Cladium filiforme sp. nov. § *Eucladium*.

Caespitosum, tenerum, circiter 40 cm altum; foliis angustis, planis, elongatis, in sicco plus minus plicatis, margine scabridis; paniculis laxis, angustis, thyrsoideis; spiculis paucis, lanceolatis, brunneis, circiter 5.5 mm longis, 1-floris; fructibus nitidis, ovoideis vel ellipticis, albidis, sessilibus, vix rostratis.

A caespitose perennial about 40 cm high, slender. Stems terete, about 1.5 mm in diameter. Leaves mostly basal, slender, about 20 cm long, 1.5 mm wide, scabrid, apparently plane when fresh, more or less folded when dry, the culm leaves two or three, similar to the basal ones. Panicles slender, thyrsoid, comparatively few-flowered, narrow, rather lax. Spikelets lanceolate; brown, 5 to 6 mm long, their pedicels slender, 2 to 8 mm in length, each group of three or four spikelets subtended by a setaceous, scabrid, leaf-like bract 1 cm long or less. First two glumes empty, lanceolate-ovate, acuminate, about 3 mm long. Third glume inclosing a perfect flower, narrowly oblong, acuminate, 3.5 mm long, thicker than the empty glumes. Stamens three; anthers linear, 2 mm long. Nutlet ovoid or ellipsoid, white and shining, sessile, not beaked, glabrous; style 5 mm long, divided to the middle into three arms. Fourth glume similar to the third, empty, the fifth smaller and thinner, also empty.

PALAWAN, Mount Victoria, *Bur. Sci.* 717 *Foxworthy*, March 24, 1906, on rocks at base of a waterfall, altitude about 600 m.

A species characterized by its slender habit, slender leaves and panicles, somewhat resembling *Cladium undulatum* Thwaites but smaller and with no traces of hypogynous bristles.

SCIRPUS Linn.

Scirpus lacustris Linn. *Sp. Pl.* (1753) 48; Clarke in *Hook. f. Fl. Brit. Ind.* 6 (1893) 658.

LUZON, Province of Cagayan, *Buguey, For. Bur.* 17290 *Curran*, March, 1909, a common and conspicuous plant in lagoons back of the town.

Frequent in fresh water nearly throughout the world, except South America and Malaya. Not previously reported from the Philippines.

XYRIDACEÆ.

XYRIS Linn.

Xyris anceps Lam. *Ill.* 1 (1791) 132; *Hook. f. Fl. Brit. Ind.* 6 (1892) 364.

LUZON, Province of Isabela, *Carig, Bur. Sci.* 8065 *Ramos*, May, 1909. SEME-HARA, *Merrill* 4151, June, 1905.

Not previously reported from the Philippines, and the second species definitely known to occur in the Archipelago; India to Burma, the Malay Peninsula and Archipelago.

LILIACEÆ.

SMILAX Linn.

Smilax verruculosa sp. nov. § *Eusmilax*.

Species *S. bracteatae* Presl valde affinis, differt ramis ramulisque dense verruculosis et spinis plus minus numerosis armatis.

Scandent, the branches and branchlets yellowish or brownish, rather slender, terete, or the latter slightly sulcate, densely verruculose and with numerous, straight or slightly curved, sharp spines 1 to 3 mm long. Leaves broadly ovate to elliptic-ovate, coriaceous, shining, 6 to 10 cm long, 4 to 7 cm wide, the base rounded or acute, the apex shortly and abruptly apiculate-acuminate, the acumen thickened; nerves 5, the outer pair faint, submarginal, the inner three stout, prominent, the inner pair leaving the middle one just above the base, the reticulations lax, prominent; petioles about 1 cm long, the lower half inflated, somewhat clasping the stem, some tendril-bearing at about the middle, others simply auriculate. Inflorescence axillary, solitary, the rachis emerging from between two, ovate, coriaceous, 4 to 5 mm long bracts, each inflorescence consisting of from 1 to 4 racemosely disposed, peduncled umbels, the peduncles to the umbels subtended by small bracts, solitary. Flowers 10 to 20 in each umbel, 3.5 to 4 mm long, the perianth-segments reflexed. Ovary-cells 1-ovuled. Fruit ovoid, about 3.5 long, 1-seeded.

LUZON, Province of Benguet, Baguio, *Topping 13* (type), *Elmer 5820, 8572, Williams 1046, Bur. Sci. 2810, 3378 Mearns, For. Bur. 15617 Curran*.

Most of the above specimens have been distributed as *Smilax bracteata* Presl, from which the present species is at once distinguished by its densely verruculose and more or less spiny branches and branchlets. The terminal undeveloped bud is sometimes present on the racemes, but more often absent, or developed into an umbel.

Smilax williamsii sp. nov. § *Eusmilax*.

Frutex alte scandens, ramis ramulisque teretibus vel leviter striatis, verruculosis, vix spinosis; foliis amplis, late elliptico-ovatis, chartaceis vel subcoriaceis, basi acutis vel subcordato-rotundatis, apice abrupte apiculatis, nervis 5 vel 7; inflorescentiis axillaribus, solitariis, umbellis 1 vel 2, racemoso-dispositis.

A scandent shrub, the branches and branchlets terete, or slightly striate, pale-brown, densely verruculose, not spiny. Leaves alternate, ample, broadly elliptic-ovate, chartaceous or subcoriaceous, 9 to 15 cm long, 5 to 11 cm wide, shining, base acute or subcordate-rounded, the apex shortly and abruptly apiculate; primary nerves 5, basal, prominent, with an additional pair of fainter submarginal nerves, the reticulations distinct; petiole 1.5 to 2 cm long, the lower half inflated, clasping the stem, auriculate or tendril-bearing at about the middle, curved. Racemes

axillary, solitary, the rachis emerging from between the petiole and an ovate, coriaceous, 5 to 7 mm long bract, the umbels 1 or 2, the terminal bud wanting, the peduncles to the umbels solitary, subtended by bracts, slender, 2.5 cm long. Staminate flowers 20 to 25 in each umbel, about 7 mm long, the perianth segments reflexed; stamens 6. Fruit globose, much wrinkled when dry, with from 1 to 3, more or less compressed, 4 mm long seeds.

MINDANAO, Lake Lanao, *Mrs. Olemens 751*, near streams, September, 1906: District of Davao, *Williams 2519*, March, 1905 (type).

A species manifestly allied to *Smilax bracteata* Presl, but distinguished at once by its verruculose, but not spiny stems, larger leaves with more numerous veins, and larger flowers.

ULMACEÆ.

CELTIS Linn.

Celtis crenato-serrata sp. nov.

Arbor circiter 30 m alta, glabra, vel ramulis ultimis parce pubescentibus; foliis subcoriaceis, ovatis vel elliptico-ovatis, acuminatis, basi rotundatis, leviter inaequilateralibus, 3-nerviis, margine in tertia inferiore parte integris, supra valde crenato-serratis; fructibus ovatis, leviter compressis, circiter 1 cm longis.

A glabrous tree about 30 m high. Branches slender, terete, reddish-brown, distinctly lenticellate with small lenticels, the ultimate branchlets slightly pubescent. Leaves ovate to elliptic-ovate, 7 to 10 cm long, 3 to 5 cm wide, subcoriaceous, slightly shining, of the same color on both surfaces or slightly paler beneath, the base broad, somewhat inequilateral, rounded on one side of the midrib, subacute on the other side, the apex prominently acuminate, the acumen 1 to 1.5 cm long, apiculate, the margins in the lower one-third entire, above prominently crenate-serrate; basal nerves three, prominent, the two lateral ones extending nearly to the apex and above somewhat looped at the anastomoses of the lateral veins, the lateral ones slender, horizontal, about 10 to 12 on each side of the midrib, the reticulations lax, indistinct; petioles 5 to 7 mm long. Flowers unknown. Fruits ovate, slightly compressed, about 1 cm long, the pericarp thin, fleshy.

Luzon, Province of Bataan, Duale, *For. Bur. 20043 Topacio*, October 2, 1909, in forests along streams, altitude about 100 m, locally known as *malabatulan*.

A species well characterized by its prominently crenate-serrate leaves.

ARISTOLOCHIACEÆ.

ARISTOLOCHIA Linn.

Aristolochia macgregorii sp. nov. § *Diplolobus*.

Foliis subtus ad costam, ramulis inflorescentiis petiolisque plus minus breviter hirsuto-pubescentibus; foliis chartaceis, oblongis, basi subsagittato-cordatis, apice breviter acute acuminatis, petiolo vix 5 mm longo; racemis axillaribus, solitariis, floribus circiter 4 cm longis.

Apparently scandent. Branches terete, grayish, slightly striate, slightly zigzag, the leaf-bearing branchlets more or less densely pubescent with short brownish hairs. Leaves oblong, 11 to 17 cm long, 4.5 to 6.5 cm wide, chartaceous, shining when dry, above entirely glabrous, beneath somewhat hirsute-pubescent with short hairs on the midrib and primary nerves, the apex shortly and sharply acuminate or merely acute, the base sagittate-cordate, the auricles broad, rounded, the sinus somewhat obtuse, about 1 cm deep, the auricles somewhat surrounding the stems but free from them; basal nerves two or three pairs, the lower pair or pairs short, the upper pair reaching to about the middle of the leaf, the primary nerves above the basal ones 3 or 4 on each side of the midrib, anastomosing, the reticulations lax; petioles pubescent, less than 5 mm long. Inflorescence axillary, solitary, simply racemose, the rachis 1 to 1.5 cm long, pubescent, the pedicels about 3 mm in length, each opposed by an ovate-lanceolate, acuminate bract, the lower ones 6 mm long, the upper gradually shorter. Flowers 4 cm long, the basal 4 mm ovoid, narrowed and tubular above, the tube about 16 mm long, 2 to 2.5 mm in diameter, the upper portion expanded, the lip pubescent, lanceolate, acuminate, about 2 cm long, 3 mm wide. Column very obscurely lobed. Anthers 6, 1 mm long. Fruit (immature) obovoid, 1.5 cm long.

BABUYANES ISLANDS, Dalupiri, *Bur. Sci. 10656 McGregor*, August 20, 1909.

A species manifestly allied to *Aristolochia tagala* Cham., but at once distinguished by its differently shaped leaves, which are pubescent on the nerves beneath, very short petioles, dense racemes, and quite different flowers.

CHENOPODIACEÆ.

CHENOPODIUM Linn.

Chenopodium polyspermum Linn. Sp. Pl. (1753) 220.

Luzon, Province of Benguet, Baguio, *Leon Guerrero*, March, 1910.

In waste places, apparently of recent introduction; a widely dispersed European weed, introduced and now widely distributed in eastern North America.

NYCTAGINACEÆ.

PISONIA Linn.

Pisonia gammillii sp. nov.

Arbor glabra, inflorescentiis exceptis, circiter 10 m alta; foliis oblongo-ellipticis, in sicco chartaceis, nitidis, breviter acuminatis, basi inaequilateralibus, acuminatis, usque ad 20 cm longis; inflorescentiis laxis, terminalibus axillaribusque; floribus hermaphroditis; staminibus 12 vel 13, breviter exsertis.

A glabrous tree, except the inflorescence, unarmed, about 10 m high, the trunk 40 cm in diameter. Leaves mostly opposite, oblong-elliptic, ample, 17 to 20 cm long, 8 to 10.5 cm wide, when dry chartaceous and somewhat shining, apparently somewhat fleshy when fresh, entire, the apex shortly acuminate, the base acuminate-decurrent, inequilateral;

lateral nerves 8 or 9 on each side of the midrib, distant, rather distinct, anastomosing, the reticulations obsolete; petioles 1 to 2 cm long. Inflorescence axillary and terminal, the branches and branchlets umbellately arranged, ample, lax, nearly as long as the leaves, the axillary peduncles 1 or 2, the terminal ones about 5, the younger parts ferruginous-pubescent, the peduncles 9 to 11 cm long, with or without a single node; primary branches umbellately disposed, 4 or 5, 1.5 to 3 cm long, spreading, each bearing from 2 to 5 umbellately disposed secondary branches 6 to 12 mm in length. Flowers white, fragrant, 2 to 6 at the tips of the ultimate branchlets, the perianth 6 to 7 mm long, the pedicels 2 to 3 mm long, puberulent. Perianth urceolate, the throat up to 5 mm in diameter, the lobes 5, spreading or somewhat reflexed, 2 to 2.5 mm broad, about 1 mm long, apiculate. Ovary and style about 5 mm long; stigma fimbriate, about 2 mm in diameter. Stamens 12 or 13; filaments slender, glabrous, somewhat united below, unequal, 4 to 6 mm long, somewhat exserted; anthers 0.8 mm. long. Fruit unknown.

GUIMARAS, Nagaba, *For. Bur.* 288 *Gammill*, February 22, 1904, in upland valleys, altitude about 50 m, locally known as *anuring*.

A species well characterized by its ample leaves and very lax inflorescence. Its flowers are apparently all hermaphrodite. Manifestly allied to *Pisonia umbellifera* (Forst.) Seem. (*P. excelsa* Bl.), but with more numerous stamens, larger flowers, and quite different inflorescence.

MAGNOLIACEÆ.

KADSURA Juss.

Kadsura paucidenticulata sp. nov.

Frutex scandens, glaber; foliis ellipticis vel anguste obovato-ellipticis, acuminatis, chartaceis; floribus masculinis terminalibus, solitariis, circiter 2 cm diametro, pedicellis ebracteolatis, sepalis petalisque vix vel obscure puncticulatis.

A scandent glabrous shrub. Branches terete, with scattered large lenticels, dark-colored when dry. Leaves mostly on short lateral branchlets, elliptic or narrowly obovate-elliptic, chartaceous, 4 to 7 cm long, 2.5 to 3.5 cm wide, minutely glandular-punctulate, somewhat shining, the apex abruptly short-acuminate, the base acute, the margins in the upper half with few, scattered, small teeth; lateral nerves 5 to 7 on each side of the midrib, not prominent, not much more distinct than are the primary reticulations; petioles 0.4 to 0.7 mm long. Staminate flowers solitary, about 2 cm in diameter, terminating the stems and the short lateral branches, the pedicels about 12 mm long, ebracteolate. Sepals about 5, ovate to elliptic-ovate, obtuse or rounded, the outermost one 3 mm long and 2 mm wide, the inner ones gradually larger, the largest about 8 mm long, 6 mm wide, very obscurely or not glandular-punctate, margins minutely ciliate. Petals about 7, the outer four narrowly obovate

or oblong-obovate, thick, 10 mm long, 6 mm wide, broad and rounded at the apex, the margins glabrous, the inner three similar but smaller, 8 mm long or less. Stamens many, united into a rather dense, depressed-globose head, the connectives very broad, the anthers 0.8 mm long.

LUZON, Province of Benguet, Pauai, *Bur. Sci.* 8498 *McGregor*, June, 1909, altitude about 2,100 m.

A species allied to *Kadsura philippinensis* Elmer, differing especially in its terminal, comparatively short-pedicelled flowers and other minor characters.

***Kadsura macgregorii* sp. nov.**

Species praecedenti simillima et ut videtur valde affinis, sed differt floribus masculinis axillaribus, breviter pedicellatis, pedicellis basi bracteis imbricatis praeditis.

Scandent, glabrous, the branches dark-colored, lenticellate. Leaves similar in shape and size to those of the preceding species, membranaceous, rather densely and minutely glandular-punctate, the margins in the upper half with scattered, small teeth. Staminate flowers solitary, in the axils of leaves or of fallen leaves, their pedicels about 5 mm long, each subtended by several, densely imbricated, brown bracteoles about 1 mm long and longer than wide, and with a similar one at about the middle of the pedicel. Sepals about 5, orbicular or broadly orbicular-ovate, minutely and densely glandular-punctate, rounded, the outer one about 2 mm long, the inner gradually larger, the innermost about 8 mm long, their margins minutely ciliate. Petals about 5, somewhat larger than the inner sepals, distinctly and densely glandular-punctate. Stamens united in a globose mass, the connectives very broad.

LUZON, Province of Benguet, Pauai, *Bur. Sci.* 8340, *McGregor*, June, 1909, altitude about 2,100 m.

A species in general appearance quite similar to *Kadsura paucidenticulata*, but at once distinguished by its axillary, short-pedicelled staminate flowers, and by its pedicels subtended by several, small, imbricated bracts. It is apparently more closely allied to *Kadsura philippinensis* Elmer, than is the preceding species, judging from the attachment of the flowers, but its short-pedicelled flowers and denticulate leaves are sufficient to distinguish the two species.

SAXIFRAGACEÆ.

CURRANIODENDRON gen. nov.

Genus Dedeae Baill. valde affine, sed differt floribus 4-meris, ovulis numerosis, usque ad 16.

***Curraniodendron dedeacoides* sp. nov.**

Arbuscula glabra, dioica, 2 ad 3 m alta, ramulis foliisque junioribus plus minus resinosis; foliis alternis, oblongis vel oblongo-ellipticis, leviter acuminatis, chartaceis vel subcoriaceis, nitidis, subtus plus minus nigroglandulosus; racemis axillaribus, solitariis, floribus femineis parvis, 4-meris.

A glabrous dioecious shrub 2 to 3 m high, glabrous, the young branches and leaves more or less resinous, shining. Branches terete, slender, dark-colored and longitudinally striate when dry, with scattered lenticels, the young branchlets somewhat compressed and angular. Leaves alternate, oblong to oblong-elliptic, chartaceous or subcoriaceous, 6 to 11 cm long, 2 to 3.2 cm wide, entire, the apex shortly and not prominently acuminate, the base acute or somewhat decurrent-acuminate, shining, somewhat paler beneath when dry, and at least the older leaves with numerous, small, black glands on the under surface at the intersections of the ultimate reticulations; primary lateral nerves about 12 on each side of the midrib, not prominent, spreading, obscurely anastomosing, the secondary alternating ones often nearly as prominent, the ultimate reticulations rather dense, fine, the basal pair of nerves ascending, anastomosing with the other lateral nerves shortly above the base of the leaf; petioles 1 to 2 cm long; stipules none. Racemes axillary, solitary, 5 to 7 cm long, more or less resinous, as are the buds and young flowers. Pistillate flowers alternate, 4-merous, whitish, rather scattered, solitary or sometimes two in the axil of each bracteole, the bracteoles oblong-ovate, about 1.5 mm long, 1 mm wide, deciduous, the pedicels 2 to 3 mm long. Calyx-tube funnel-shaped, about 2 mm long and wide, bearing four broadly triangular-ovate, 0.5 mm long lobes. Petals 4, alternating with the calyx-lobes, oblong-ovate, obtuse, about 2 mm long, 1.3 mm wide, attached by a broad base, spreading or reflexed, in bud distinctly imbricate. Imperfect stamens 4, alternating with the petals, the filaments about 1 mm long; anthers 0.8 mm long, oblong-ovate, basifixed, bearing no pollen. Ovary half inferior, the free portion broadly conical, somewhat sulcate, glabrous, 1-celled, with 4 or 3 prominent parietal placentae; ovules 16 or 12, attached to the introflexed margins of the placentae, ascending, imbricate; styles 4 or 3, entirely connate into a sulcate, 1 mm long column, bearing 4 or 3 minutely papillate, depressed-hemispheric stigmas. Staminate flowers and fruits unknown.

NEGROS, Mount Marapara, *For. Bur. 1363*, Curran & Foxworthy, September 8, 1909, in the mossy forest of the summit, altitude about 1,300 m.

This proposed new genus is manifestly closely allied to *Dedea* Baill., a genus of two or possibly three species confined to New Caledonia. It differs from that genus in its 4-merous flowers and in its more numerous ovules, as well as in some other minor characters. It agrees with it not only in gross characters and general appearance, but especially in its 1-celled ovary, which is unusual in the family.

We are fortunate in having in this herbarium cotypes of the three species of *Dedea* proposed by Baillon, and the present species in facies is very similar to *D. minor* Baill., and *D. media* Baill. Distinguishing characters that at once strike the eye are the somewhat resinous younger parts of the Philippine plant and its older leaves distinctly glandular beneath with numerous, small, black glands, while all of Baillon's species are prominently lepidote, this character being absent in the form above described. In general appearance, however, *Curraniodendron dedecoides* is exceedingly similar to *Dedea minor* and *D. media*;

an examination of the pistillate flowers, however, shows sufficiently important differential characters to warrant the characterization of the Philippine plant as a distinct genus.

PITTOSPORACEÆ:

PITTOSPORUM Banks.

Pittosporum littorale sp. nov.

Arbor glabra usque ad 6 m alta; foliis anguste oblongo-obovatis, subcoriaceis, apice rotundatis, basi angustatis, decurrento-acuminatis vel acutis; fructibus aurantiacis, ovoideis, circiter 2 cm longis, 2-valvatis, apiculatis, in sicco rugosis; seminibus circiter 20, nigris.

A glabrous tree about 6 m high. Branches terete, light-gray, smooth. Leaves somewhat crowded toward the apices of the branchlets, subcoriaceous, narrowly oblong-obovate, 9 to 17 cm long, 3 to 5 cm wide, when dry somewhat shining, paler beneath, the apex rounded, broad, rarely somewhat acute, the base gradually narrowed, acute or decurrent-acuminate, the margins often somewhat recurved; nerves about 15 on each side of the midrib, not prominent; petioles 2 to 2.5 cm long. Flowers unknown. Fruiting racemes 2 to 3 cm long, in the upper axils. Fruits ovoid, about 2 cm long, 2-valved, valves ultimately recurved, orange-yellow when fresh, wrinkled when dry, the pericarp rather thick. Seeds about 20, black, shining.

MINDORO, *For. Bur.* 9845 Merritt, March, 1908, along the seashore. SQUIJOR, *For. Bur.* 16999 Everett, December, 1907, rocky point at Liloan, locally known as *ticala*.

A species quite different from any of the other Philippine form, readily distinguishable by the shape of its leaves.

Pittosporum megacarpum sp. nov.

Arbor vel arbuscula glabra, usque ad 8 m alta, ramis pallide griseis, teretibus; foliis chartaceis, oblongo-ellipticis vel obovato-ellipticis, basi acutis, apice abrupte acuminatis; nervis utrinque 8 ad 10, subtus prominentibus; fructibus ovoideis, in sicco valde rugosis, 4 cm longis.

A shrub or tree 3 to 8 m high, glabrous throughout. Branches terete, light-gray. Leaves chartaceous, oblong-elliptic to obovate-elliptic, 10 to 18 cm long, 4 to 7 cm wide, shining when dry, the apex abruptly and sharply acuminate, the acumen 1 cm long or less, the base acute; nerves 8 to 10 on each side of the midrib, prominent beneath, impressed on the upper surface, anastomosing; petioles 1 to 2 cm long. Flowers unknown. Fruits ovoid, 2-valved, yellow, densely wrinkled when dry, about 4 cm long, shortly apiculate, the pericarp thick. Seeds many, irregular, about 6 mm long, black, minutely wrinkled when dry.

MASBATE, Bulo River, *For. Bur.* 12557 Rosenbluth, January, 1909. MINDORO, Balete River, *For. Bur.* 5392 Merritt, October, 1906.

A species with larger fruits than any other known Philippine form. Among our species most closely allied to *Pittosporum odoratum* Merr.

***Pittosporum ramosii* sp. nov.**

Arbuscula vel arbor glabra, 3 ad 6 m alta; foliis elliptico-ovatis vel oblongo-ovatis, usque ad 6 cm longis, utrinque acuminatis, nervis tenuibus, vix distinctis; fructibus lateralibus, ovoideis, apiculatis, 1 ad 1.2 cm longis, 2-valvatis.

A shrub or tree 3 to 6 m high, glabrous. Branches terete, dark-gray or brownish. Leaves somewhat crowded at the apices of the branchlets, subcoriaceous, shining when dry, elliptic-ovate to oblong-ovate, 4 to 6 cm long, 2 to 2.5 cm wide, the apex sharply subcaudate-acuminate, the base decurrent-acuminate; nerves about 8 on each side of the midrib, slender, indistinct, the reticulations fine, close; petioles slender, about 1 cm long. Flowers unknown. Fruit from the branches below the leaves, axillary, solitary (the inflorescence apparently a short raceme), 2-valved, ovoid, smooth, yellow, apiculate, 1 to 1.2 cm long, the peduncles about 1 cm long; seeds few, 10 or less, black, shining, about 3 mm long.

LUZON, District of Lepanto, Balbalasan, *For. Bur.* 5683 Klemme, altitude 1,500 m: Province of Abra, Mount Bawagan, *Bur. Sci.* 7211 Ramos (type), February, 1909.

The fruits are very oily and with a strong odor of turpentine. Those that have been in the herbarium three years, when opened, were still wet with the aromatic oil characteristic of the genus. Similar in some respects to *P. pentandrum* Merr., but distinguished by its lateral inflorescence and by its leaves.

***Pittosporum ramiflorum* Zoll. ex Miq. Fl. Ind. Bat. 1² (1858) 122.**

Glyaspernum ramiflorum Zoll. & Mor. in *Nat. Gen. Arch. Neerl. Ind.* 2 (1845) 11.

Pittosporum clementis Merr. in *Philip. Journ. Sci.* 3 (1908) Bot. 137.

Additional study of the type material of *Pittosporum clementis* and comparison of the same with Javan material representing *Pittosporum ramiflorum* Zoll. has convinced me that the two species are identical and that *P. clementis* should be reduced to Zollinger's species. It is known from Java, Amboina, Celebes, Mindanao, and Negros (Canlaon Volcano, *Phil. Pl.* 228 Merrill, April, 1910). The name *Pittosporum ramiflorum* Zoll. is not listed in Index Kewensis or in any of the supplements of that work.

ROSACEÆ.

PRUNUS Linn.

***Prunus junghuhnianus* Miq. Fl. Ind. Bat. 1¹ (1855) 366.**

PALAWAN, Mount Victoria, *Bur. Sci.* 731 Foxworthy, March 24, 1906, in stream depressions, altitude about 250 m.

The specimen agrees well with Miquel's description, except that the racemes are nearly or quite glabrous, and also agrees perfectly in twig and leaf characters with sterile material received under the above name from Java.

New to the Philippines; previously definitely recorded only from Java.

RUTACEÆ.

CLAUSENA Burm.

***Clausena worcesteri* sp. nov.**

Arbor vel arbuscula glabra; foliis alternis, foliolis 2-3-jugatis, ovatis, nitidis, apice abrupte obtuse acuminatis; paniculis terminalibus, pauci-

floris, corymbosis; floribus 5-meris, petalis basi acutis; fructibus junioribus manifeste stipitatis.

An erect shrub or small tree glabrous throughout. Branches slender, terete, shining, nearly black when dry. Leaves simply pinnate, less than 20 cm long, 2- or 3-jugate, the petiole and rachis terete, slender. Leaflets ovate, firmly chartaceous, shining 5 to 7 cm long, 2.5 to 4 cm wide, entire, the base acute or rounded, sometimes inequilateral, apex rather prominently acuminate, acumen blunt or retuse, prominently glandular-punctate; nerves about 5 on each side of the midrib, distant, anastomosing, the reticulations lax; petiolules 3 to 5 mm long. Panicles terminal, comparatively few-flowered, corymbose or subcorymbose, the branches few. Flowers 5-merous, white. Sepals broadly ovate, acute or obtuse, about 1 mm long. Petals 5, oblong-ob lanceolate or oblanceolate, 5 to 5.5 mm long, 1.5 mm wide, the apex acute or slightly acuminate, narrowed below to the acute base, imbricate, somewhat coherent in the upper part. Stamens 10, the longer filaments 4 mm in length, abruptly narrowed from 1 mm below the anther, the alternating shorter filaments 3 mm long, abruptly narrowed just below the anther; anthers 1 mm long. Ovary oblong, cylindric, glabrous, about 2 mm long, 5-celled; styles thick, 2 mm long, slightly sulcate. Young fruits ovoid or ellipsoid, with a distinct, stout, 1 mm long stipe.

Luzon, Province of Cagayan, Apiao, near Tauti, *Bur. Sci. 10743 Worcester*, August, 1909.

This species is distinguished from all known Philippine forms by being quite glabrous. It is well characterized by its few leaflets, corymbose or subcorymbose, few-flowered panicles, its cylindric, glabrous ovary, and stipitate fruits. It is named in honor of its collector, Hon. Dean C. Worcester, Secretary of the Interior of the Philippine Government. When fresh the leaves are very aromatic.

Sterile material of what is manifestly the same species has been collected at the Mission River and on Mount Aluntang, both in the Province of Cagayan, *For. Bur. 17165, 17347 Curran*. Mr. Curran notes that the plant is used by the Negritos for ornamental purposes and for its odor.

***Clausena mollis* sp. nov.**

Arbuscula circiter 5 m alta, omnibus partibus plus minus dense mollior pubescens; foliis 20 ad 30 cm longis, foliolis alternis vel subalternis, 5 ad 8 utrinque, integris, valde inaequilateralibus; paniculis terminalibus, anguste pyramidatis, floribus 5-meris, sessilibus vel subsessilibus, subglomeratis; fructibus globosis, albidis vel albido-viridibus, 1-spermis.

A slender shrub about 5 m high. Branches and branchlets terete, grayish or brownish, the younger ones often greenish, and with the petioles densely and softly pubescent with short spreading hairs. Leaves alternate, 20 to 30 cm long, the leaflets alternate 5 to 8 on each side of the pubescent rachis, chartaceous, somewhat shining, rather pale when dry, oblong-ovate, entire, 5 to 9 cm long, 2.5 to 3.5 cm wide, the base rounded or acute, strongly inequilateral, the apex shortly acuminate or nearly blunt, prominently glandular-punctate, both surfaces softly pubes-

cent, especially on the nerves, or the upper surface pubescent only on the midrib; nerves about 8 on each side of the midrib; petiolules densely pubescent, about 2 mm long. Panicles terminal, narrowly pyramidal, about 20 cm long, the rachis, branches and branchlets densely and softly pubescent with pale spreading hairs, the lower branches 7 cm long or less, the upper ones gradually shorter, spreading or ascending. Flowers 5-merous, sessile or shortly pedicelled, subglomerate on the ultimate branchlets, the buds globose or obovoid. Sepals broadly ovate, 1.2 mm long, free, densely pubescent outside. Petals elliptic or broadly elliptic-oblong, concave, about 4 mm long, 2.5 mm wide, acute at both ends, imbricate, with few, rather large glands, the back in the upper third slightly pubescent. Stamens 10, the filaments broad, abruptly narrowed just below the insertion of the anthers, about 1 mm long; anthers 2 mm long. Ovary ovoid or ellipsoid, about 1.5 mm long, glabrous, prominently 5-sulcate, 5-celled, each cell with two superimposed ovules; style 1 mm long and thick, 5-sulcate. Fruit globose, white or greenish-white, 6 to 7 mm in diameter, the pericarp rather thick, glandular-punctate, containing a single somewhat compressed seed about 5 mm in diameter, surrounded by a gelatinous pulp, with a strong odor and taste of pine pitch; cotyledons flat, plano-convex.

Luzon, District of Bontoc, near Bontoc, *For. Bur. 16530 Curran* (type), January 21, 1909, altitude above 1,000 m: Province of Benguet, Twin Peaks, *Elmer 6352*, May, 1904. *Bur. Sci. 7863 Ramos* from Cagayan Province, Luzon, with immature fruits, is possibly referable here, while a specimen from Zamboanga, Mindanao, *Hallier s. n.*, has much the facies of the present species, but has 4-merous flowers and 2-seeded fruits. *Clausena mollis* is well characterized by its soft, rather dense pubescence.

MELICOPE Forst.

Melicope densiflora sp. nov.

Arbuscula glabra 3 ad 5 m alta; foliis trifoliolatis, foliolis chartaceis vel submembranaceis, oblongo-obovatis, apice late breviter acuminatis, acuminibus retusis, nervis utrinque circiter 8; inflorescentiis axillaribus, petiolo aequalibus vel longioribus; floribus 4-meris, filamentis pilosis.

A shrub 3 to 5 m high, glabrous throughout. Branches terete, light-gray, the branchlets pale-reddish-brown, rather stout. Leaves 3-foliolate, opposite, their petioles 2 to 5 cm long; leaflets oblong-obovate to elliptic-obovate, chartaceous or submembranaceous, somewhat shining, 7 to 11 cm long, 3 to 5 cm wide, the apex shortly and broadly acuminate, the acumen retuse, narrowed from about the middle to the cuneate base, the terminal leaflet equilateral, the lateral ones somewhat inequilateral; petioles 3 to 10 mm long; lateral nerves about 8 on each side of the midrib, anastomosing, the secondary ones often nearly as prominent. Inflorescence axillary, solitary, 5 to 6 cm long, narrowly pyramidal, the lower branches often 3.5 cm in length, rather densely flowered. Stamin-

ate flowers somewhat fascicled on the ultimate branchlets, their pedicels 1.5 to 2 mm long, glabrous. Sepals 4, ovate, acute, 0.8 mm long. Petals 4, oblong, 3 mm long, 1 to 1.3 mm wide, thin, obtuse, the apex appendiculate inside. Stamens 8, the filaments rather densely clothed with spreading hairs in the lower half, the longer four 3 mm, the shorter four 2 mm in length; anthers 0.8 mm long. Pistillate flowers similar to the staminate ones, the staminodes slightly pubescent. Ovary ovoid, glabrous, 1.2 mm long, glabrous, deeply longitudinally 4-sulcate, 4-celled, each cell 2-ovuled; style very short (less than 0.5 mm); stigma radiately 4-lobed.

BATANES ISLANDS, Batan, Santo Domingo de Basco, *Bur. Sci. 3235 Mearns*, *Bur. Sci. 3603 Félix*, *Bur. Sci. 10682 McGregor*, locally known as *idacacayo*: Sabtan, *Bur. Sci. 10676 McGregor*.

Some of these specimens were previously referred by me¹ to *Melicope luzonensis* Engl., but they are sufficiently distinct to warrant description as a separate species. *M. densiflora* is distinguished from *M. luzonensis* Engl. by its differently shaped and fewer nerved leaves, its dense inflorescence, and especially by its pilose filaments and staminodes. *Bur. Sci. 3215 Mearns* is possibly referable here, but its filaments seem to be quite glabrous.

EVODIA Forst.

Evodia acuminata sp. nov.

Arbor inflorescentiis exceptis glabra, circiter 10 m alta; foliis trifoliolatis vel aliis unifoliatis, foliolis subcoriaceis, oblongo-obovatis, nitidis, basi acuminatis, apice abrupte subcaudato-acuminatis, acuminibus circiter 1 cm longis; inflorescentiis axillaribus, pedunculatis, 6 ad 8 cm longis; floribus 4-meris, sepalis petalisque glanduloso-punctatis.

A tree about 10 m high, glabrous except the inflorescence, the ultimate branchlets, petioles and under surfaces of the leaves distinctly glandular-punctate, the branches terete, smooth, pale-brownish, the ultimate branchlets somewhat compressed. Leaves opposite, the petioles 6 to 9 cm long, or those of unifoliolate leaves only about 2 cm long; leaflets usually three, sometimes solitary, oblong-obovate, subcoriaceous, shining, paler beneath, 9 to 14 cm long, 4 to 6 cm wide, entire, the apex broad, abruptly subcaudate-acuminate, the acumen about 1 cm long, the base decurrent-acuminate, the lateral leaflets somewhat inequilateral; petioles 0.5 to 1.5 cm long; primary lateral nerves 8 or 9 on each side of the midrib, distant, irregular, anastomosing, the secondary ones often nearly as prominent. Cymes axillary, peduncled, the peduncles 3.5 to 5 cm long, solitary, glabrous, each cyme about 3 cm wide, the branches and branchlets cinerous-puberulent. Flowers white, somewhat crowded, their pedicels 3 to 4 mm long, puberulent, each subtended by two or three, ovate, 1 mm long bracteoles. Sepals 4, orbicular, imbricate, about 3 mm in diameter, rounded, glandular-punctate, margins minutely ciliate.

¹ *This Journal* 3 (1908) *Botany* 411.

Petals 4, oblong or oblong-ovate, about 5 mm long, 2.2 to 2.5 mm wide, apex acute, minutely appendaged inside. Stamens 4, the filaments stout, 2 mm long, bearing imperfect, oblong, 1 mm long anthers. Ovary pubescent, deeply 4-lobed, 4-celled, each cell 2-ovuled; style stout, 3 mm long, pubescent; stigma subcapitate. Staminate flowers and fruits unknown.

Luzon, Province of Sorsogon, Sorsogon, *For. Bur. 10520 Curran*, June 10, 1908, near abaca (*Musa textilis*) plantations, altitude about 200 m.

A species well characterized by its abruptly acuminate leaflets, 3-foliolate and 1-foliolate leaves occurring on the same branches, its rather small, rather long-peduncled cymes, and comparatively large flowers. It is apparently as closely allied to *Evodia glabra* Bl., as to any other species, but is quite different from that.

MELIACEÆ.

AGLAIA Lour.

Aglaiia lanceolata sp. nov. § *Euaglaia*.

Arbor parva vel arbuscula, ramulis foliis junioribus inflorescentiisque densissime brunneo-lepidotis; foliis alternis, imparipinnatis, foliolis 7 ad 11, anguste lanceolatis, membranaceis vel chartaceis, apice sensim acuminatis, basi inaequilateralibus, acutis vel acuminatis, in sicco pallidis, nitidis, utrinque praesertim subtus plus minus brunneo-lepidotis; paniculis axillaribus terminalibusque, foliis subaequalibus vel brevioribus, diffusis, multifloris; floribus minutis, 5-meris, racemose dispositis, breviter pedicellatis, tubo stamineo libero.

A small tree or shrub (2 m high according to the collector), all parts more or less brown-lepidote, the branchlets, inflorescence and young leaves densely so. Branches terete, gray or brownish, ultimately glabrous. Leaves alternate, 20 to 30 cm long, the rachis at first lepidote, ultimately glabrous or nearly so. Leaflets 7 to 11, alternate, or the upper ones opposite, narrowly lanceolate, 8 to 12 cm long, 1.5 to 2 cm wide, rather pale and somewhat shining when dry, the young ones densely brown-lepidote on both surfaces, the mature ones ultimately nearly glabrous, the apex narrowly and gradually acuminate, the base inequilateral, acute or acuminate; nerves 15 to 20 on each side of the midrib, indistinct; petiolules about 2 mm long. Panicles axillary and terminal, about 15 cm long, pyramidal, diffuse, branched from the base, all parts densely brown-lepidote. Flowers 5-merous, small, racemously disposed on the ultimate branchlets, very numerous, their pedicels about 1 mm long. Calyx-lobes lepidote, rounded, 0.5 mm long. Petals glabrous, orbicular or orbicular-elliptic, about 1 mm long. Staminal-tube globose, glabrous, free from the petals, crenate at the apex; stamens 5, inserted at about the middle of the tube, included:

Luzon, Province of Nueva Vizcaya, Amucuean, near Bayombong, *Bur. Sci. 8141 Ramos*, May 13, 1909, in forests along streams.

A species manifestly allied to *Aglaiia angustifolia* (Miq.) C. DC., but abundantly distinct, well characterized by its narrowly lanceolate leaves.

DYSOXYLUM Blume.

Dysoxylum venosum sp. nov. § *Eudysoxylum*.

Arbor, partibus junioribus subtus foliis inflorescentiisque molliter puberulis; foliis alternis, imparipinnatis, foliolis 11, oblongis vel elliptico-oblongis, acuminatis, nitidis, supra glabris, in sicco pallidis, nervis utrinque circiter 10, supra impressis, subtus prominentibus; inflorescentiis axillaribus, brevibus, spiciformibus; floribus 4-meris, tubo stamineo libero, ovario pubescente.

A tree of medium size, the branches terete, grayish, glabrous, the branchlets, inflorescence, rachis and under surface of the leaflets softly pale-olivaceous-puberulent. Leaves about 45 cm long, alternate; leaflets 11, the lower ones alternate, the upper opposite, oblong or elliptic-oblong, 10 to 17 cm long, 4.5 to 7 cm wide, rather pale when dry, shining, the upper surface glabrous; or the midrib often puberulent, apex acuminate, base acute; nerves about 10 on each side of the midrib, impressed above, beneath prominent, anastomosing, the reticulations lax, obscure; petioles puberulent, about 5 mm long. Inflorescences in the upper axils, and in the axils of fallen leaves, solitary, spiciform, unbranched, 4 cm long or less, the pedicels very short. Flower-buds globose, 4 mm in diameter, the calyx shortly 4-toothed, puberulent outside, the teeth triangular-ovate, 1 mm long or less. Petals 4, densely gray-puberulent outside, oblong or oblong-ovate, 4 mm long. Staminal-tube cylindric, free, glabrous, 3 mm long, minutely crenate. Anthers 8, included. Disk tubular, 1 mm long, obscurely denticulate, glabrous outside, pubescent within. Ovary ovoid, densely pubescent, 4-celled; style, including the stigma, about 2 mm long.

LUZON, Province of Cagayan, Mount Cura, *For. Bur. 16839 Curran*, March, 1909, altitude about 200 m.

A species much resembling *D. turczaninowii* C. DC., but distinguished by its very strongly veined leaves, most parts densely puberulent, and many other characters.

Dysoxylum biflorum sp. nov. § *Eudysoxylum*.

Arbor glabra vel subglabra, partibus junioribus exceptis; foliis alternis, abrupte pinnatis, 3-jugatis, foliolis elliptico-ovatis, subcaudato-acuminatis, basi acuminatis, subtus in venarum axillis glandulosis barbaticque; inflorescentiis axillaribus, depauperato-paniculatis, pedunculis bifloris; floribus longe pedicellatis, 4-meris; calycibus pyriformibus, breviter obscure crenatis; petalis 4, glabris, tubo stamineo libero; ovario glabro vel subglabro, 4-loculare.

A tree, nearly glabrous except the innovations which are somewhat pubescent. Branches terete, lenticellate, slender, brown. Leaves alternate, 20 cm long, equally pinnate, 3-jugate; leaflets opposite, elliptic-ovate to oblong-ovate, chartaceous or somewhat coriaceous, glabrous and shining on the upper surface, 6 to 10 cm long, 2.5 to 3.5 cm wide, the

apex rather abruptly subcaudate-acuminate, acumen about 1 cm long, blunt, base acuminate; nerves about 8 on each side of the midrib, prominent beneath, impressed above, anastomosing, the reticulations lax, obscure, with a barbate gland in the axil of each nerve where it leaves the midrib; petiolules 3 to 5 mm long. Inflorescences few, axillary, each consisting of a 5 to 6 cm long peduncle, bearing at its apex two long-pedicelled flowers, each pedicel subtended by a small bract about 2 mm long, and each calyx subtended by a smaller, but similar bracteole; pedicels 1 cm long. Calyx pear-shaped, 4 mm long, 3.5 mm in diameter above, the mouth with four broad, obscure, rounded teeth. Petals 4, in bud elliptic, 3 mm long. Staminal-tube free, about 2 mm long, cylindrical, denticulate; stamens 8, the anthers 1 mm long, included. Disk tubular, 1 mm long, free. Ovary ovoid, 4-celled, each cell 1-ovuled, glabrous or with few scattered hairs, including the short style 2 mm in length.

Luzon, Province of Isabela, Cabagan River, *For. Bur. 18563 Alvarez*, April 22, 1909, altitude about 100 m.

A species well characterized by its two-flowered inflorescences.

MALPIGHIACEÆ.

HIPTAGE Gaertn.

Leaves not gradually narrowed upward, obtuse or rounded; uniformly and distinctly reticulate on both surfaces; flowers small..... 1. *H. reticulata*

Leaves more or less gradually narrowed upward to the acuminate or acute apex.

Leaves pubescent, often densely so.

Carpels small, less than 1.5 cm long, including the wings; leaves less than 2.5 cm in width.

An erect tree or shrub; leaves glabrous on the upper surface, densely pubescent with pale hairs beneath; racemes many flowered.

2. *H. pubescens*

Scandent; leaves pubescent on both surfaces; racemes few-flowered.

3. *H. curranii*

Carpels large, including the wings reaching 4.5 cm in length; leaves 3.5 to 5 cm wide..... 4. *H. tetraptera*

Leaves glabrous.

Carpels large, including the wings reaching a length of 8 cm.

5. *H. macroptera*

Carpels small, including the wings not exceeding 2.5 cm in length.

Leaves broad, rather abruptly acuminate, the lateral nerves 4 or 5; central wing of the carpels 1 to 1.4 cm broad..... 6. *H. cumingii*

Leaves relatively narrow, gradually narrowed upward, the lateral nerves 6 or 7; central wing of the carpels less than 1 cm broad.

Leaves ample, usually exceeding 10 cm in length..... 7. *H. javanica*

Leaves small, 6 cm long or less..... 8. *H. luzonica*

1. *Hiptage reticulata* sp. nov.

Frutex scandens (?); foliis elliptico-oblongis, coriaceis, utrinque glabris, nitidis, reticulatis, obtusis vel rotundatis, nervis utrinque circiter 8; racemis circiter 8 cm longis, leviter pubescentibus, compositis; floribus vix 1 cm diametro.

An erect or scandent shrub or a tree. Leaves elliptic-oblong, coriaceous, glabrous, shining, about 6 cm long, 2.5 cm wide, abruptly narrowed at both base and apex which are obtuse or rounded; nerves about 8 on each side of the midrib, anastomosing, the reticulations rather close, distinct on both surfaces. Racemes compound, about 8 cm long, slightly pubescent, the pedicels about 10 mm long, scattered along the rachis, each subtended by a 1 mm long bracteole, and bearing at about the middle an additional bracteole subtending a sessile or shortly pedicelled bud. Calyx-gland very prominent, 1.5 to 2 mm long. Sepals 1.5 to 2 mm long, obtuse. Petals 3 to 4 mm long, rounded.

Luzon, Province of Zambales, *Vidal 2243* in Herb. Kew.

This form has as yet not been rediscovered in the Philippines, and is described from the single specimen preserved in the Kew herbarium. It is well characterized by its elliptic-oblong, glabrous, shining, reticulate, blunt leaves, and by its comparatively small flowers.

2. *Hiptage pubescens* sp. nov.

Arbor parva usque ad 5 m alta, ramulis, subtus foliis, inflorescentiisque dense pallide adpresse sericeo-pubescentibus; foliis coriaceis, elliptico-oblongis vel oblongo-lanceolatis, acuminatis, basi rotundatis vel acutis; racemis axillaribus foliis subaequalibus vel longioribus; carpellis vix 1.5 cm longis.

A small tree 4 to 5 m high (9 m according to Ramos). Branches brown or gray, terete, lenticellate, glabrous, the young branchlets densely and pale-silky-pubescent. Leaves opposite, coriaceous, elliptic-oblong to oblong-lanceolate, 5 to 8 cm long, 1.5 to 2.5 cm wide, glabrous and shining above, on the lower surface densely covered with pale, appressed, silky hairs; the base rounded or sometimes somewhat acute, the apex distinctly, often strongly and gradually acuminate; nerves 7 or 8 on each side of the midrib, not prominent, obscurely anastomosing, obscured on the lower surface by the pubescence, but the hairs sometimes rubbing off, the veins then appearing brown in contrast to the pale surface of the leaf; petioles 2 to 3 mm long, pubescent. Racemes axillary, solitary, about as long as the leaves, sometimes crowded in the upper axils and simulating a terminal inflorescence, many-flowered, densely silky-pubescent with pale appressed hairs, the pedicels 5 to 7 mm long. Flowers yellow or red, about 1 cm in diameter when open. Sepals obtuse, the gland prominent. Petals 5 to 6 mm long, obtuse, pubescent. Fruit of two carpels, somewhat pubescent, the central wing of each carpel 10 to 12 mm long, about 5 mm wide, rounded or obtuse, the two lateral ones similar but less than one-half as long, and truncate or rounded.

Luzon, Province of Abra, Mount Paraga, *Bur. Sci. 7257 Ramos*, February, 1909 (type): Lepanto-Bontoc, *For. Bur. 11263 Klemme*, February, 1908, altitude about 1,200 m: Province of Ilocos Norte, Mount Piao, *For. Bur. 13979 Merritt & Darling*, altitude about 1,000 m.

This species is readily recognizable by its comparatively small leaves and small

fruits, but especially by the dense, pale, appressed, silky pubescence on the inflorescence, branchlets and lower surfaces of the leaves. It is remarkable in the genus in that it is erect and arborescent, not scandent. The trunk-diameter is given by the various collectors as from 8 to 30 cm.

Var. *lanceolata* var. nov.

A typo differt foliis angustioribus, lanceolatis, circiter 1 cm latis.

LUZON, Province of Ilocos Norte, Badoc, *For. Bur. 13955 Merritt & Darling*, altitude about 65 m, locally known as *pangardisin*; near Vintar, altitude 700 m, *For. Bur. 13943 Merritt & Darling*; Province of Ilocos Sur, *For. Bur. 5632 Klemme*.

In general appearance, pubescence, flowers, etc., quite the same as the species, differing only in its narrower and lanceolate leaves. The fruits are unknown.

3. *Hiptage curranii* sp. nov.

Frutex scandens, omnibus partibus pubescens; foliis coriaceis, elliptico-oblongis vel late oblongo-lanceolatis, acuminatis, nervis utrinque circiter 5; racemis axillaribus, brevibus, paucifloris; carpellis circiter 1 cm longis.

A scandent shrub, reaching a height of 4 m, in vegetative characters similar to *Hiptage pubescens* Merr. Branches terete, slender, becoming glabrous, dark-colored, often nearly black, scarcely lenticellate, the branchlets densely pale-pubescent. Leaves opposite, oblong-elliptic to broadly oblong-lanceolate, coriaceous, 4 to 8 cm long, 1.5 to 2.5 cm wide, the base acute, rarely obtuse, the apex gradually and distinctly acuminate, the upper surface covered with short, yellowish-brown hairs, the lower surface very densely pubescent with pale appressed hairs; nerves about 5 on each side of the midrib, curved-ascending, anastomosing, not prominent; petioles densely pubescent, 3 to 4 mm long. Flowers unknown. Racemes in fruit 2.5 cm long or less, densely pubescent with pale hairs, few-flowered, often only three flowers in a raceme, or reduced to a single flower. Fruit of two carpels, more or less pubescent, the central wing of each carpel rather thin, 1 cm long, about 5 mm wide, the lateral ones similar but less than one-half as long.

LUZON, Province of Zambales, Baquilis River, *For. Bur. 6951 Curran*, May 9, 1907, in the dry river bed.

Similar in most respects to *H. pubescens*, differing in being scandent instead of erect, in its short, few-flowered racemes, and by its leaves being pubescent on both surfaces, mostly acute at the base, and with fewer lateral nerves.

4. *Hiptage tetraptera* sp. nov.

Frutex suberectus, vix scandens, omnibus partibus plus minus adpresse pubescens; foliis coriaceis, ovatis vel anguste ovatis, obscure late acuminatis, nervis utrinque 4 vel 5; racemis axillaribus, solitariis, simplicibus; carpellis 1 vel 2, alato-cristatis, crista 1 ad 1.5 cm longa.

A suberect shrub about 2 m high, scarcely scandent. Branches terete, pale, densely appressed-pubescent with short, pale hairs. Leaves opposite,

coriaceous, 6 to 8 cm long, 3.5 to 5 cm wide, the upper surface somewhat appressed-pubescent, especially on the nerves, later becoming subglabrous, the lower surface rather densely pubescent with short, pale, appressed hairs, the base rounded or subacute, the apex obscurely and broadly acuminate; nerves 4 or 5 on each side of the midrib, distinct, curved-ascending, the reticulations obscure; petioles pubescent, the apical glands prominent. Racemes axillary, solitary, 8 to 10 cm long, pubescent, the pedicels 1 to 2 cm long. Sepals pubescent, obtuse. Petals unknown. Carpels one or two, somewhat appressed-pubescent, about 8 mm long and wide, the crest prolonged into a narrow, oblong or oblong-lanceolate wing, 1 to 1.5 cm long and 3 to 4 mm wide; central wing 3.5 to 4.5 cm long, about 1.5 cm wide, rounded, the lateral ones similar and about one-half as large.

PALAWAN, Separation Point, *Merrill 1791*, February 18, 1903.

A species recognizable by its pubescent leaves, and especially by its carpel-crests being prolonged into a manifest wing, making the carpels appear as though they were four-winged, whence the specific name.

5. *Hiptage macroptera* sp. nov.

Frutex scandens, inflorescentiis exceptis glaber vel subglaber; foliis elliptico-oblongis vel ovato-ellipticis, acuminatis, nervis utrinque circiter 6; racemis densis, axillaribus; carpellis 1 vel 2, obscure late carinatis, vix cristatis, ala media usque ad 7 cm longa.

A scandent shrub, glabrous except the inflorescence. Branches terete, reddish-brown or grayish, somewhat lenticellate. Leaves chartaceous or subcoriaceous, elliptic-oblong to ovate-elliptic, 8 to 12 cm long, 3 to 5.5 cm wide, glabrous, shining, the base rounded, rarely subacute, the apex prominently and usually abruptly acuminate; nerves about 6 on each side of the midrib, prominent, curved upward, obscurely anastomosing, the reticulations not prominent; petioles about 7 mm long, the leaf-base with usually two distinct glands at the junction with the petiole. Racemes axillary, solitary, densely rather many-flowered, pubescent, in anthesis 4 to 5 cm long, longer in fruit. Flowers pinkish-white, their pedicels 10 to 12 mm long, longer in fruit. Sepals elliptic, rounded, about 4 mm long, 2.5 mm wide, pubescent. Petals 10 to 12 mm long, prominently fimbriate. Carpels one or two, slightly pubescent, with a broad low ridge along the top but scarcely crested, the central wing 6 to 7 cm long, usually about 1.5 cm wide, somewhat narrowed at both ends, apex obtuse, the lateral wings similar and about one-half as long.

MINDANAO, Lake Lanao, *Mrs. Clemens s. n.*, May, 1907, the specimen in fruit (type), and also *no. 1056*, same date, in flower.

This species grows in thickets and forests along the margin of the lake, the young leaves and rather prominent fruits being red in color. It is manifestly allied to *H. benghalensis* (L.) O. Ktze., differing especially in its much larger wings.

6. *Hiptage cumingii* sp. nov.

Hiptage madablota Vid. Phan. Cum. Philip. (1885) 99, non Gaertn.

Scandens, inflorescentiis exceptis glabra vel subglabra; foliis coriaceis, ovato-ellipticis vel oblongo-ovatis, usque ad 9 cm longis, basi acutis vel rotundatis, apice acuminatis, nervis utrinque 4 vel 5; racemis simplicibus, foliis subaequilongis; carpellis 2 vel 3, vix vel obscure cristatis, ala media 1.5 ad 2 cm longa.

A scandent shrub, glabrous or nearly glabrous except the inflorescence. Branches terete, lenticellate, rather slender, usually reddish-brown, the branchlets more or less pubescent soon becoming glabrous. Leaves coriaceous, ovate-elliptic to oblong-ovate, 5.5 to 9 cm long, 3 to 5 cm wide, shining above, the base acute or rounded, the apex distinctly and often abruptly acuminate; lateral nerves 4 or 5 on each side of the midrib, anastomosing, the reticulations not distinct; petioles 5 to 7 mm long. Racemes axillary, solitary, mostly in the upper axils and simulating a terminal inflorescence, 5 to 8 cm long, pubescent, the flowers numerous, the pedicels about 1 cm long, somewhat elongated in fruit, the bracteoles near the middle about 2 mm in length. Sepals oblong, rounded, about 3 mm long. Petals 6 to 7 mm long, pubescent. Carpels 2 or 3, somewhat appressed-pubescent, not or very obscurely crested, the central wing broadly oblong-elliptic or obovate-elliptic, 1.5 to 2 cm long, often nearly 1.4 cm wide, the lateral ones about one-half as long.

LUZON, Province of Pangasinan, *Cuming 971* (type).

I am also disposed to refer here *For. Bur. 6732 Merritt*, from near Pinamalayan, Mindoro, which differs from Cuming's specimen in having the leaves somewhat pubescent beneath, and in its very slightly smaller fruits, and *Bur. Sci. 753 Foxworthy* from Mount Victoria, Palawan, the latter very closely matching the type.

Hiptage cumingii is manifestly allied to *H. benghalensis* (L.) O. Ktze. (*H. madablota* Gaertn.), but differs especially in its smaller, fewer-nerved leaves, smaller flowers, its crestless carpels, and much smaller wings.

7. *Hiptage javanica* Bl. Bijdr. (1825) 224; Miq. Fl. Ind. Bat. 1² (1858) 586; Hoehr. Pl. Bogor. Exsicc. no. 32.

MINDANAO, District of Cotabato, near Fort Reina Regente, *For. Bur. 3944 Hutchinson*.

This specimen closely matches a very full series of specimens representing Blume's species, received from the Botanic Garden at Buitenzorg, differing in having some of the leaves slightly wider. The species has not previously been recorded otherwise than from Java.

There are in this herbarium four specimens, all with flowers, from the Province of Rizal, Luzon, that previously have been referred to *H. madablota* Gaertn., and the duplicates distributed under that name. This material is manifestly not specifically the same as Gaertner's species, and may possibly be referable to *H. javanica* Bl., although there are some manifest differences in vegetative characters, especially in the much more obscure reticulations. Otherwise the specimens very closely resemble *H. javanica* Bl., but in the absence of fruiting material, they are not at present definitely referred to that species. The specimens are

Merrill 1704, 5046, and For. Bur. 420, 2660 Aherm's collector. *H. madablota* Vid. Sinopsis Atlas (1883) t. 22, f. A. (non Gaertn.) manifestly represents the same form as the four specimens above mentioned.

8. *Hiptage luzonica* Merr. in Govt. Lab. Publ. (Philip.) 35 (1905) 33, Philip. Journ. Sci. 1 (1906) Suppl. 74.

LUZON, Province of Bataan, Mount Mariveles, Whitford 1148.

This species is known only from the original collection, and the type is possibly only a dwarfed state of the Rizal form discussed above under *H. javanica* Bl. A full series of specimens will be necessary definitely to settle this point. So far as our material goes, *H. luzonica* is distinguishable by its small leaves.

HIPTAGE MADABLOTA Gaertn. (= *H. benghalensis* (L.) O. Ktze.) has been credited to the Archipelago by various authors, but I have seen no Philippine material that I consider to be referable to that species. The plant so figured by Vidal in his "Sinopsis Atlas" unquestionably represents the Luzon form discussed under *H. javanica*, while the plant so identified by him in his "Phanerogamae Cumingianae Philippinarum" has above been made the type of a new species, *H. cumingii*. The form so credited to the Philippines by F.-Villar in the "Novissima Appendix" is doubtless, for most part, the same as that figured by Vidal, as the specimens F.-Villar examined came from the Province of Manila (= Rizal).

Triopteris jamaicensis Blanco Fl. Filip. (1837) 379, ed. 2 (1845) 207, non Linn., is manifestly *Hiptage*, although not *H. madablota* Gaertn., where it was referred by F.-Villar. It is probably the form figured by Vidal, mentioned above, as this is apparently the only species of the genus that is at all common in the region from which Blanco secured most of his material.

EUPHORBIACEÆ.

ACALYPHA Linn.

Acalypha grandibracteata sp. nov.

Species *A. stipulaceae* valde affinis, differt foliis latioribus, basi cordatis vel subcordatis, bracteis multo majoribus, usque ad 1 ad 2 cm longis.

A shrub or small tree, slightly puberulent or pubescent. Branches pale or reddish-brown, puberulent, sometimes stout and thickened. Leaves broadly ovate to oblong-ovate, chartaceous or submembranaceous, 12 to 20 cm long, 7 to 15 cm wide, with minute, scattered, white pustules on both surfaces, and with very few, scattered, long hairs, the margins regularly and rather finely crenate-serrate, the apex acuminate, the base broad and cordate or subcordate, palmately 7- or 9-nerved from the base; petioles 20 cm in length or less; stipules linear-lanceolate, long-acuminate, 1.5 to 2 cm long. Staminate and pistillate spikes on the same plant, or apparently more often on separate plants, the staminate ones dense, cylindrical, pubescent, often 20 cm long, about 3 mm in diameter, the flowers 3- or 4-merous. Pistillate spikes peduncled, stout, 20 cm long or less, about 2 cm in diameter, the bracts broadly ovate, acuminate, toothed, about 1 cm long, the lowermost ones sometimes 2 cm in length, more or less appressed-hirsute on the back, the pistillate flowers solitary in the axil of each bract. Ovary hirsute; styles nearly 3 mm long, split

into several, filiform, elongated lobes. Capsule about 2 mm long, hirsute, the seeds elliptic-oblong, 1.2 mm long, smooth and glabrous.

BATANES ISLANDS, Batan, Santo Domingo de Basco, *Bur. Sci. 3607 Fénix* (type), with staminate and pistillate spikes on the same branch, *Bur. Sci. 3206 Mcarns*, May, 1907, with pistillate spikes. A narrower-leaved form is apparently represented by *Bur. Sci. 4084 Fénix*, from Camiguin Island, Babuyan, locally known as *ajas*.

These specimens were previously referred by me to *Acalypha stipulacea* Klotz., which they closely resemble in many respects, differing especially in the points noted in the diagnosis above.

Acalypha australis Linn. Sp. Pl. (1753) 1004; Hemsl. in Journ. Linn. Soc. Bot. 26 (1894) 437.

LUZON, Province of Cagayan, *Bur. Sci. 7800, 7869 Ramos*, April, 1909.

Not previously reported from the Philippines; Manchuria and Japan to southern China.

ALCHORNEA Muell.-Arg.

Alchornea sicca (Blanco) comb. nov.

Excoecaria sicca Blanco Fl. Filip. (1837) 787, ed. 2 (1845) 542, ed. 3, 3:94; Naves l. c. ed. 3, pl. 307.

Stipellaria parviflora Benth. in Hook. Journ. Bot. & Kew. Miscel. 6 (1854) 4.

Alchornea parviflora Muell.-Arg. in Linnaea 34 (1865) 168, DC. Prodr. 15:902; Vid. Phan. Cuming. Philip. (1885) 144, Rev. Pl. Vasc. Filip. (1886) 244; F.-Vill. Nov. App. (1880) 194.

Alchornea mollis F.-Vill. l. c., non Muell.-Arg.

"*Acalypha tiliaefolia* Muell.-Arg.;" Vid. Rev. Pl. Vasc. Filip. (1886) 244.

LUZON, Province of Rizal, *Bur. Sci. 3334, 5220 Ramos, Vidal 592, 1710* (herb. Kew.), *Loher 4667*: Province of Laguna, *Elmer*: Province of Pampanga, *For. Bur. 18314 Curran*. NEGROS, *Cuming 1800*.

Blanco's description unmistakably applies to this species, and his name being the earliest one is here adopted. Cuming's specimen was from Negros according to his own list of localities. The enumeration of "*Acalypha tiliaefolia* Muell.-Arg." by Vidal seems to have been a slip for "*Alchornea tiliaefolia* Muell.-Arg." There is no such species as "*Acalypha tiliaefolia* Muell.-Arg."

DIMORPHOCALYX Thwaites.

Dimorphocalyx luzoniensis sp. nov.

Arbor glabra, dioica, circiter 12 m alta; foliis alternis, chartaceis, elliptico-ovatis, acuminatis, integris vel distanter obscureque denticulatis, nervis utrinque 10 ad 12; inflorescentiis axillaribus, racemoso-cymosis, quam folia brevioribus; floribus masculinis circiter 8 mm longis, staminibus 15, filamentis in columna connatis sed exterioribus elongatis, fere liberis; floribus femineis albis, 2.5 cm diametro, sepalis liberis, accrescentibus.

A glabrous dioecious tree about 12 m high. Branches slender, terete, grayish-brown, somewhat lenticellate. Leaves alternate, elliptic-ovate, chartaceous, grayish or brownish and somewhat shining when dry, 10 to 15 cm long, 4 to 7 cm wide, the base rounded or somewhat acute, the apex sharply acuminate, the margins entire or distantly denticulate with

very small subglandular teeth; petioles 1 to 3 cm long; lateral nerves 10 to 12 on each side of the midrib, rather distinct, the reticulations lax. Inflorescence axillary, shorter than the leaves, of racemously arranged cymes, the staminate and pistillate similar. Pistillate flowers white, ample, their pedicels 7 to 10 mm long. Calyx of five free sepals, imbricate, elliptic-ovate, rounded, often slightly retuse, glabrous, 1.2 to 2 cm long, 6 to 12 mm wide, reticulate, apparently persistent. Petals 5, imbricate, broadly elliptic-ovate, about 10 mm long, 8 mm wide, apex rounded, not reticulate or nerved. Disk small. Staminodes none. Ovary glabrous, longitudinally 3-sulcate, the lobes rounded, 3-celled, each cell with a single ovule; styles 3, free, about 5 mm long, each cleft half way to the base into two divergent arms. Staminate flowers smaller than the pistillate ones. Calyx 5 to 6 mm long, cleft into five elliptic-oblong, imbricate, obtuse lobes about 3 mm long and 2 to 2.5 mm wide. Petals 5, free, imbricate, oblong-elliptic, rounded, 7 to 8 mm long, 4 mm wide. Disk-glands 5, prominent, white, 1.5 to 2 mm long. Stamens 15, the filaments all more or less united into a column, the interior ones very short, the outer five longer and nearly free, these outer ones about 3.5 mm long, the free portions of the inner ones progressively shorter; anthers introrse. Rudimentary ovary none.

LUZON, Province of Laguna, Los Baños, *For. Bur. 11907 Tamesis*, January 22, 1910, pistillate flowers; same locality, *Bautista s. n.*, February 11, 1904, staminate flowers. Borders of clearings, altitude about 100 m.

AQUIFOLIACEÆ.

ILEX Linn.

Ilex foxworthyi sp. nov. § *Thyrsoprinus*, *Indico-Malaicae*.

Arbor inflorescentiis exceptis glabra, circiter 8 m alta; foliis ovatis vel elliptico-ovatis, coriaceis, usque ad 9 cm longis, nitidis, subtus obscure minutissime dense puncticulatis et punctis majoribus sparsis intermixtis, nervis utrinque circiter 7; racemis axillaribus, solitariis, in alabastro circiter 3 cm longis, puberulis, floribus femineis 5- vel 6-meris.

A tree about 8 m high, glabrous except the inflorescence. Branches gray, terete, wrinkled when dry, not lenticellate. Leaves ovate to elliptic-ovate, coriaceous, shining, brown or olivaceous when dry, and slightly paler beneath, the margins recurved, entire, 4 to 9 cm long, 2.5 to 5 cm wide, the lower surface very minutely, obscurely, and densely punctulate, and with scattered larger points, the latter not prominent, the apex shortly blunt-acuminate, base rather broad, acute; nerves about 7 on each side of the midrib, not prominent, slender, obscurely anastomosing, the reticulations lax, about as distinct on the upper surface as on the lower; petioles 1 cm long or somewhat less on the smaller leaves. Pistillate flowers racemose, the racemes axillary, solitary, simple, in bud 3 cm long or less, puberulent, some flowers also occurring solitary

or in pairs on the growing branchlets, the pedicels puberulent, 3 to 4 mm long, each subtended by a triangular-ovate, acute or acuminate, puberulent, 1 mm long bracteole. Pistillate flowers (in bud), 5- or 6-merous, the buds globose, the calyx-segments elliptic, rounded, puberulent, about 2 mm long, 1.2 mm wide, imbricate. Corolla (immature) nearly 3 mm long. Staminodes 1 mm long, bearing imperfect anthers. Ovary not compressed, subglobose, 5- or 6-celled, the stigma nearly as broad as the ovary, somewhat sulcate. Staminate flowers and fruits unknown.

LUZON, Province of Tayabas, Mount Banajao, *Bur. Sci.* 2416 Foxworthy, March 24, 1907, altitude about 1,450 m.

This species is apparently allied to *Hex malaccensis* Loesener, of the Malay Peninsula and Borneo, but its leaves with the lateral nerves distinctly visible on the upper surface, acute at the base, and its 5- or 6-celled ovaries are apparently sufficiently distinctive to warrant the description of the present form as new.

It is also allied to *Hex halconensis* Merr., but is distinguished at once by its puberulent racemes.

ICACINACEÆ.

URANDRA Thwaites.

Urandra hallieri sp. nov.

Arbor glabra vel subglabra, circiter 20 m alta; foliis alternis, coriaceis, oblongo-ellipticis vel oblongis, breviter obtuse acuminatis, in sicco pallidis, nitidis, nervis utrinque circiter 15, tenuibus, obscuris; cymis pedunculatis, axillaribus, solitariis, quam petiolus paullo longioribus, floribus 5-meris, calyce truncato, connectivo antherarum longe barbato.

A tree about 20 m high, glabrous, or the younger branchlets and inflorescence more or less puberulent. Branches terete, brownish or olivaceous, smooth or slightly wrinkled when dry. Leaves oblong-elliptic to elliptic, coriaceous, 10 to 16 cm long, 5 to 7 cm wide, pale and somewhat shining when dry, the apex shortly and abruptly blunt-acuminate, the base acute or slightly acuminate, the margins entire, often slightly revolute; midrib prominent, the lateral nerves about 15 on each side of the midrib, slender, obscure on both surfaces, the primary ones hardly more prominent than are the secondary ones, the reticulations faint on the upper surface, obsolete or subobsolete beneath; petioles about 2 cm long. Cymes axillary, solitary, peduncled, about 3 cm in diameter, the peduncles about as long as the petioles. Flowers sessile in fascicles of three each at the tips of the umbellately disposed primary branches, 4-merous. Calyx shallowly cup-shaped, slightly puberulent, truncate, about 2 mm long, 3 mm in diameter, slightly puberulent outside and on the margins, strongly wrinkled when dry. Petals 4, narrowly oblong, 5.5 mm long, 1.8 mm wide, valvate, near the base the margins slightly coherent, the apex acute or obtuse, appendaged

inside. Stamens 4, the filaments about 4.5 mm long, flattened, 1 mm wide and of about the same width throughout, the anterior face at the base of the anther bearded with long hairs; anthers about 1 mm long, the back and apex of the connective very densely bearded with numerous, pale, rather stout, soft hairs about 4 mm long, the tips of the hairs somewhat club-shaped. Disk prominent, truncate. Ovary conical, glabrous, strongly wrinkled, tipped by the very short style.

BASILAN, *Hallier s. n.*, January, 1904 (type). MINDANAO, District of Zamboanga, Port Banga, *For. Bur. 9176 Whitford & Hutchinson*, December 9, 1907, in dipterocarp forests at an altitude of about 20 m.

A species in gross characters very similar to *Urandra apicalis* Thwaites, of Ceylon, but distinguished at once by its truncate calyx.

***Urandra elliptica* sp. nov.**

Arbor glabra circiter 30 m alta; foliis coriaceis, ellipticis vel late ellipticis, utrinque late rotundatis vel apice abrupte brevissime acuminatis, coriaceis, nitidis, circiter 10 cm longis, nervis utrinque 4 vel 5; fructibus globosis, 1.5 cm diametro.

A glabrous tree about 30 m high, the trunk 90 cm in diameter. Branches terete, smooth, brown-olivaceous or reddish-brown. Leaves alternate, coriaceous, shining and of about the same color on both surfaces, elliptic or broadly elliptic, 8 to 11 cm long, 6 to 9 cm wide, equally and very broadly rounded at both ends, or the apex very abruptly and shortly acuminate; nerves 4 or 5 on each side of the midrib, distant, curved-ascending and faintly anastomosing, the reticulations lax, not prominent; petioles 1 to 1.5 cm long. Inflorescence (young) axillary, peduncled, of three or four spicately arranged, short branches, each branch with about 6 pairs of densely imbricated, distichous, broadly ovate, brown, 1 mm long bracteoles. Flowers unknown. Fruit globose, yellow and somewhat fleshy when fresh, about 1.5 cm in diameter, one or two developing from each branch of the inflorescence, the rachis slightly elongated, thickened, the peduncles of the fruits stout, 1 to 1.5 cm long.

LUZON, Province of Bataan, Duale, *For. Bur. 20003 Topacio*, September 14, 1909, in semi-open flat country, altitude about 100 m.

Well characterized by its broadly elliptic leaves.

SABIACEÆ.

MELIOSMA Blume.

***Meliosma reticulata* sp. nov.**

Arbor parva, circiter 4 m alta, ramulis, foliolis ad nervos, petiolis, paniculisque dense ferrugineo-villosis; foliis imparipinnatis, foliolis 5 ad 11, ellipticis vel oblongo-ellipticis, coriaceis, utrinque valde reticulatis, apice rotundatis vel abrupte brevissime acuminatis, margine distanter denticulatis, nervis utrinque 8 ad 10, prominentibus; paniculis terminalibus, foliis subaequalibus; floribus numerosis, subsessilibus.

A small tree about 4 m high. Ultimate branches rather stout, dark-brown, glabrous or nearly so, nearly 1 cm in diameter, the growing parts smaller and densely ferruginous-villous. Leaves alternate, 40 cm long or less, the petiole, rachis, petiolules, and midrib and nerves on both surfaces of the leaflets densely ferruginous-villous; leaflets 5 to 11, elliptic to oblong-elliptic, coriaceous, 6 to 11 cm long, 3 to 6.5 cm wide, the base broad, rounded, the apex also broad, rounded or very abruptly and shortly acuminate, the margins in the lower half entire, above with few, small, scattered teeth; nerves 8 to 10 on each side of the midrib, prominent, anastomosing, and with the rather lax primary reticulations impressed on the upper surface, prominent beneath; petiolules 12 mm long or less. Panicles terminal, as long as the leaves, the branches few, the lower ones often 15 to 20 cm long, all parts densely ferruginous-villous. Flowers white, subsessile, the bracteoles about 2 mm long. Calyx-segments 4 or 5, ovate to suborbicular, the outer ones smaller than the inner and more or less ferruginous-villous. Three larger petals orbicular, about 3 mm in diameter, the two smaller ones reduced to mere scales less than 1 mm long and adnate to the filaments. Fertile stamens 2, the filaments less than 1.3 mm long.

LUZON, Province of Benguet, Losod, *Bur. Sci.* 5594 *Ramos*, December, 1908. I am inclined to refer here also *For. Bur.* 15803 *Curran*, from the Kuyapa District in Benguet, but the specimen is with nearly mature fruit, and differs from the type in being very much less pubescent, possibly due to development. The fruits are narrowly obovoid, slightly compressed, and about 6 mm long. The two specimens in other characters than the pubescence are very similar.

The species is well characterized by its dense ferruginous pubescence which extends even to the nerves on both sides of the leaflets, and by its very strongly reticulate leaflets.

VITACEÆ.

LEEAE Linn.

Leea quadrifida sp. nov.

Arbusecula circiter 1 m alta; foliis pinnatis, foliolis circiter 10, oblongis, acuminatis, nervis utrinque circiter 12, subtus glandulis numerosis, brunneis, parvis sed prominentibus, conspersis; cymis brevibus, floribus congestis, 4-meris.

A shrub about 1 m high. Branches brown, somewhat pubescent. Leaves alternate, simply pinnate, 40 to 50 cm long, the rachis prominently longitudinally sulcate, the petiole not dilated at the base, when very young brown-puberulent. Leaflets oblong, firmly chartaceous, 14 to 20 cm long, 5 to 6 cm wide, the apex rather prominently acuminate, the base rounded, very slightly inequilateral, the margins obscurely and distantly crenulate or denticulate, the upper surface smooth, glabrous, grayish and somewhat shining when dry, the lower surface brown, pubescent or puberulent on the nerves and midrib, the whole surface with numerous, small, elevated, brown glands distinctly visible to the naked

eye; lateral nerves about 12 on each side of the midrib, prominent, somewhat ascending, nearly straight, anastomosing near the margin, the reticulations distinct on the lower surface; petiolules about 1 cm long. Inflorescence axillary, brown-pubescent, the stipe about 1 cm long, very stout, bearing about 4 primary branches 5 to 6 cm long, branched near the apex, and bearing numerous, subsessile, congested, white flowers. Calyx 4 to 5 mm long, slightly pubescent, brown when dry, 4-toothed, the teeth broadly ovate, 1.5 to 2 mm long, with few scattered glands. Corolla 6 mm long, the lobes 4, reflexed in anthesis, oblong, 3 mm long. Anthers 4, 2 mm long, connate, inflexed and included in the tube.

LUZON, Province of Laguna, Mount Maquiling, *For. Bur. 13309 Tamesis*, September 25, 1909, in forests, altitude about 700 m.

A most distinct species, well characterized by its prominently glandular leaflets, but especially by its 4-merous flowers, in the latter character differing from all species of the genus known to me.

MALVACEÆ.

ABUTILON Tourn.

Abutilon hirtum (Lam.) G. Don Gen. Syst. 1 (1831) 503.

Sida hirta Lam. Encycl. 1 (1783) 7.

Abutilon graveolens W. & A. var. *hirtum* Mast. in Hook. f. Fl. Brit. Ind. 1 (1874) 327.

MINDANAO, District of Zamboanga, *Mrs. Clemens 675, Hallier s. n.*

Widely distributed in the Tropics.

This is probably the form credited to the Philippines by F. Villar² as *A. graveolens* W. & A. If the forms described as *Abutilon graveolens* W. & A., and *A. hirtum* (Lam.) G. Don, are varietally distinct, as several authors consider them, it is believed that the specific name should be that of the one first described.

GUTTIFERÆ.

CALOPHYLLUM Linn.

Calophyllum gracilipes sp. nov. § *Microphyllum*.

Arbor glabra circiter 12 m alta, ramis tenuibus, teretibus; ramulis valde quadrangulatis, circiter 1.5 mm diametro; foliis oblongo-ellipticis, firmiter membranaceis vel subcoriaceis, usque ad 9 cm longis, nitidis, subtus pallidis, basi acutis, apice breviter obtuse acuminatis; inflorescentiis axillaribus, solitariis, racemis 3-floris, pedicellis tenuibus, 2 ad 3 cm longis, floribus 4-meris, circiter 1.5 cm diametro.

A tree about 12 m high, glabrous throughout except the short, brown-puberulent terminal buds. Branches slender, terete, brown or olivaceous, the branchlets strongly 4-angled, slender, about 1.5 mm in diameter. Leaves oblong-elliptic, 5 to 9 cm long, 2 to 3.5 cm wide, firmly membranaceous or subcoriaceous, shining when dry, the lower surface paler

² Nov. App. (1880) 23.

than the upper, the base acute, the apex shortly and bluntly acuminate; nerves very numerous, densely disposed, about as prominent on one surface as on the other; petioles 5 to 10 mm long. Racemes axillary, solitary, 3-flowered, the peduncles slender, about 1 cm long, the pedicels very slender, 2 to 3 cm long, umbellately arranged at the apex of the peduncle. Flowers white, the outer two sepals broadly ovate, obtuse, about 5 mm long, the inner two similar but petaloid. Petals 4, elliptic or elliptic-ovate, about 8 mm long. Stamens indefinite. Ovary glabrous, globose or ovoid; style 4 mm long.

MINDANAO, District of Zamboanga, Port Banga, *For. Bur.* 9405 Whitford & Hutchinson, February 3, 1908, in ridge forests at an altitude of about 600 m; also represented by *Williams* 2193, from the Sax River, same district, February 28, 1905.

A species similar in vegetative characters to *Calophyllum whitfordii* Merr., at once recognizable by its 3-flowered, solitary, axillary racemes, and very slender, elongated pedicels.

***Calophyllum racemosum* sp. nov. § *Inophyllum*.**

Arbor circiter 11 m alta, glabra, gemmis ferrugineo-puberulis exceptis; foliis coriaceis, oblongo-ellipticis, usque ad 25 cm longis, nitidis, basi acutis, apice acuminatis, margine distincte revolutis; racemis simplicibus, axillaribus, solitariis, usque ad 10 cm longis, floribus circiter 2 cm diametro.

A tree about 11 m high, glabrous except the ferruginous-puberulent terminal buds which are lanceolate and 1 to 1.5 cm long. Branches stout, terete, somewhat rugose, brown to olivaceous, the branchlets somewhat angled, sulcate. Leaves coriaceous, oblong-elliptic, 15 to 25 cm long, 4 to 7 cm wide, shining, when dry about the same color on both surfaces, or somewhat paler beneath, the apex distinctly and rather abruptly acuminate, the base acute, the margins rather strongly revolute; nerves very numerous, close, about equally distinct on both surfaces; petioles rather stout, 1 to 2 cm long. Racemes axillary, solitary, 10 cm long or less, simple, each with from 6 to 10 flowers, the pedicels 1 to 2 cm long, those of the lower flowers the longer. Sepals orbicular-ovate, 8 to 10 mm long. Petals 4. Stamens indefinite. Fruit (immature) ovoid, glaucous, smooth, 1 to 1.5 cm long, apiculate.

LEYTE, between Dolores and Ormoc, *For. Bur.* 12620 *Rosenbluth* (type), February 26, 1909, in forests, altitude about 100 m. I am disposed to refer here also the following specimens from Mindanao: Lake Lanao, Camp Keithley, *Mrs. Clemens* 1009, a luxuriant form, the racemes forming almost leafless, terminal panicles, and *Williams* 2124, 2346, with immature fruits, from the Sax River, District of Zamboanga.

A species well characterized by being entirely glabrous, except the terminal buds, the margins of the leaves distinctly revolute, and the flowers arranged in simple racemes. It is probably as closely allied to *Calophyllum blancoi* Pl. & Tr., as to any other species but is distinguished by the above characters.

Calophyllum amplexicaule Choisy ex Planch. & Triana in Ann. Sci. Nat. IV 15 (1861) 281; Vesque in DC. Monog. Phan. 8 (1893) 564; Vidal Phan. Cuming. Philip. (1885) 96, Rev. Pl. Vasc. Filip. (1886) 54.

Tovomita pentapetala Blanco Fl. Filip. (1837) 432, ed. 2 (1845) 301, ed. 3, 2:194.

Ochrocarpus pentapetalus F.-Vill. Nov. App. (1880) 17.

LUZON, Province of Ilocos Norte, *Cuming 1077* (type number): Province of Pangasinan, Salasa, *For. Bur. 9625 Zschokke*: Province of Zambales, *For. Bur. 8226, 8229, 8236 Curran & Merritt, Bur. Sci. 4755, 5100 Ramos*.

This species is here enumerated chiefly to call attention to the reduction of Blanco's *Tovomita pentapetala*, which was referred by F.-Villar to *Ochrocarpus*. Blanco's material was from the Provinces of Ilocos Norte and Sur, and he speaks of the plant as being common near the seashore, flowering in December, and locally known as *Pamitlain* and *Pamitlatin*. The specimen collected by Cuming, on which *Calophyllum amplexicaule* Choisy was based, was also from Ilocos Norte, according to Cuming's own list of localities, and not from Albay, as stated by Vesque; that the former is probably correct is borne out by the fact that the species is only known from northern Luzon, and has so far never been found in the south. Blanco's description applies absolutely to *Calophyllum amplexicaule* with the exception of the flowers, which he describes as having two sepals, and five petals. This was undoubtedly an error on his part, due to misconception of the parts of the flower. This is the only plant known to me that agrees with Blanco's description as to its resinous properties, sessile leaves, etc., and even to the axillary glands mentioned by him, these glands being really the axillary buds. The specimen from Pangasinan was received under the native name "*Pamitaoyon*."

Blanco's specific name is hence the oldest available one for the species, but I am loath to transfer it to *Calophyllum*, as it was apparently selected by him on a misconception of the floral parts, and in no way applies to any species of the genus, all the species of *Calophyllum* having 4-merous flowers.

GARCINIA Linn.

Garcinia cordata sp. nov. § *Eugarcinia*.

Arbor glabra circiter 8 m alta; foliis sessilibus vel subsessilibus, ovato-lanceolatis vel late lanceolatis, chartaceis vel subcoriaceis, nitidis, apice acutis vel obscure acuminatis, basi late rotundatis distincte cordatis, nervis utrinque 20 ad 25; floribus axillaribus, fasciculatis, pedicellatis, 4-meris, staminibus numerosis, in phalangibus 4 brevissime stipitatis vel subsessilibus dense congestis; pistilli rudimento fungiforme.

A glabrous tree about 8 m high. Branches brown, terete, the branchlets distinctly 4-angled, frequently olivaceous. Leaves opposite, sessile or subsessile, ovate-lanceolate to broadly ovate-lanceolate, 10 to 16 cm long, 3.5 to 6 cm wide, broadest in the lower part, chartaceous or subcoriaceous, shining, the apex acute or obscurely acuminate, the base broad, rounded, distinctly cordate; lateral nerves 20 to 25 on each side of the midrib, slender, irregular, the reticulations nearly obsolete. Flowers axillary, fascicled, white, 4-merous, 4 to 8 in each axil, their pedicels about 7 mm long. Outer two sepals elliptic-ovate, obtuse, 4 mm long, smaller than the inner two which are petaloid. Petals membranaceous,

elliptic-ovate, rounded, concave, 5 to 6 mm long. Stamens indefinite, arranged on both sides of four very slightly stipitate or sessile, narrowly obovoid phalanges. Rudimentary ovary fungiform, the stipe about 3 mm long, the stigma circular, 2 mm in diameter.

LUZON, Province of Cagayan, San Vicente, *For. Bur. 17236 Curran*, March 8, 1909, on river banks near sea level.

A species well characterized by its ovate-lanceolate or broadly lanceolate, sessile leaves which are broadest in the lower part and distinctly cordate at the base. Among the Philippine species apparently allied to *Garcinia dives* Pierre, and *G. eugeniaefolia* Wall., but very different from both.

KAYEA Wall.

Kayea brevipes sp. nov. § *Eukayea*.

Arbor glabra circiter 10 m alta; foliis anguste oblongo-ellipticis vel anguste oblongis, usque ad 23 cm longis, subcoriaceis, nitidis, basi acutis, apice acuminatis, nervis utrinque circiter 30, petiolo crasso, furfuraceo, 3 ad 4 mm longo; floribus axillaribus, solitariis, sessilibus vel brevissime pedicellatis, circiter 2.6 cm diametro.

A glabrous tree about 10 m high. Branches and branchlets terete, grayish-brown, rather slender. Leaves narrowly oblong-elliptic or narrowly oblong, 15 to 23 cm long, 2 to 4 cm wide, narrowed towards both ends, the base acute, the apex sharply acuminate, subcoriaceous, when dry shining and somewhat pale; primary nerves about 30 on each side of the midrib, not prominent, anastomosing, the alternating secondary nerves frequently nearly as distinct; petioles stout, furfuraceous, 3 to 4 mm long. Flowers yellow, solitary, axillary, sessile or subsessile, about 2.6 cm in diameter. Outer two sepals orbicular-ovate, 7 to 8 mm long, coriaceous, concave, obtuse, the inner two similar, thinner. Petals oblong-ovate, about 13 mm long, the apex broad, retuse. Stamens indefinite. Ovary glabrous, 1-celled, 8-ovulate.

LUZON, Province of Nueva Vizcaya, Amucuan, *For. Bur. 14846 Darling*, May 13, 1909, along streams at an altitude of about 500 m, locally known as *babac*.

A species allied to *Kayea navesii* (F.-Vill.) Vesque, differing especially in its much shorter petioles and larger flowers. It is probably the species identified by Vidal as "*Ochrocarpus longifolius* Thouars ?," and of which he figures a leaf only (*Sinopsis Atlas* (1883) t. 12, f. E.).

VIOLACEÆ.

VIOLA Linn.

Viola patrinii Ging. in DC. Prodr. 1 (1824) 293; Hook. f. & Thoms. in Hook. f. Fl. Brit. Ind. 1 (1872) 183; Forbes & Hemsl. in Journ. Linn. Soc. Bot. 23 (1886) 53.

LUZON, Province of Cagayan, *For. Bur. 17095 Curran*: District of Lepanto, Merrill 4452, 4499: Province of Benguet, *Bur. Sci. 5899, 5999 Ramos*, *For. Bur. 5097, 10940 Curran*, *Bur. Sci. 2472, 2767, 3554 Mearns*. MINDORO, *For. Bur. 9771 Merrill*. MINDANAO, Lake Lanao, *Mrs. Clemens 21*, and several unnumbered specimens: Bokidnon, Worcester.

Not previously reported from the Philippines; India to Amur and Manchuria, Japan, China and Formosa: reported also from Timor. As in China, the species is very variable in the Philippines.

Viola diffusa Ging in DC. Prodr. 1 (1824) 293; Forbes & Hemsl. l. c. 52.

Luzon, District of Lepanto, Balili, *Merrill 4612*, November, 1905, growing in crevices of rocks on terraces of coffee plantations.

Himalaya and Khasia Mountains to China and Formosa; not previously reported from the Philippines.

Viola mearnsii sp. nov.

Planta nana, glabra, acaulis, vix stolonifera, 2 ad 3 cm alta; foliis ovatis vel late cordato-ovatis, acutis vel obtusis, crenatis, membranaceis, 1 ad 1.5 cm longis, basi cordatis; stipulis lineari-lanceolatis, acuminatis, 4 ad 5 mm longis, parce setaceo-dentatis; bracteolis 2, linearibus, circiter 4 mm longis; floribus albis, circiter 6.5 mm longis, calcare saccato.

A small, glabrous, acaulescent, non-stoloniferous plant 2 to 3 cm high or less. Leaves membranaceous, ovate or broadly cordate-ovate, obtuse or acute, base strongly cordate, the lobes and sinus rounded, margins crenate, 1 to 1.5 cm long, nearly as wide; petioles slender 1 to 1.5 cm long; stipules linear-lanceolate, acuminate, 4 to 5 mm long, slightly setaceous-dentate. Peduncles about 3 cm long, often shorter, slender, glabrous, bearing above the middle a pair of linear bracts about 4 mm long. Flowers white, solitary, about 6.5 mm long. Sepals ovate-lanceolate, acuminate, glabrous, 3 mm long, 3-nerved. Spur ovoid, saccate, 2 mm long or less.

MINDANAO, Province of Misamis, Mount Malindang, *For. Bur. 4625 Mearns & Hutchinson* (type), May, 1906. Two specimens from Luzon are apparently referable here, *Copeland s. n.*, from Mount Banajao, Province of Laguna, and *Bur. Sci. 4310 Mearns* from Pauai, Province of Benguet.

RINOREA Aubl.

Rinorea acuminata sp. nov. § *Prothesia*.

Arbusecula circiter 2.5 m alta subglabra, ramulis junioribus inflorescentisque exceptis; foliis membranaceis vel chartaceis, nitidis, oblongis vel anguste oblongo-ellipticis, apice valde tenuiter acuminatis, basi acutis, nervis utrinque circiter 18, prominentibus; cymis axillaribus, brevibus, ferrugineo-pubescentibus; staminibus inclusis, antheris liberis.

A shrub about 2.5 m high, the branchlets and inflorescence rather densely ferruginous-pubescent, the branches gray, ultimately glabrous, lenticellate. Leaves membranaceous or chartaceous, oblong or narrowly oblong-elliptic, about 20 cm long, 7 to 8 cm wide, shining, glabrous, or when young with very few hairs beneath, especially on the midrib, the apex strongly and slenderly sharp-acuminate, base acute, margins subentire, very obscurely glandular-crenate, or very obscurely glandular-undulate; nerves about 18 on each side of the midrib, prominent, the reticulations subparallel; petioles pubescent or glabrous, 1 to 1.5 cm long. Cymes axillary, few-flowered, about as long as the petioles, fer-

ruginous-pubescent. Sepals orbicular or orbicular-ovate, rounded, pubescent externally, 5 mm in diameter. Petals glabrous, elliptic-oblong, glabrous, obtuse, 4.5 mm long, 3 mm wide. Disk 1 mm long, the stamens inserted on it, included, their filaments 1 mm long; appendage to the connective orbicular, rounded, 1 mm in diameter, membranaceous, the anther-cells tipped with a narrow appendage. Ovary pubescent; style glabrous, 2 mm long.

CEBU, Mount Licos, *For. Bur.* 6455 *Everett*, February, 1907, on steep rocky slopes, altitude 400 m. V., *Maupao*.

A species very closely allied to *Rinorea copelandii* Merr., differing especially in its nearly glabrous, very strongly acuminate leaves, fewer-flowered cymes, and somewhat larger flowers.

A specimen from the Catanduanes Islands, *For. Bur.* 6682 *Pray* is probably referable here, differing from the type in its nearly glabrous branchlets.

COMBRETACEÆ.

TERMINALIA Linn.

Terminalia darlingii sp. nov. § *Diptera*.

Arbor subglabra circiter 10 m alta; foliis coriaceis, ad apices ramulorum densissime dispositis, anguste oblongo-obovatis, nitidis, apice abrupte subtruncato-rotundatis, late breviter acuminatis, basi sensim angustatis, nervis utrinque 12 ad 14, petiolo 1 ad 1.5 cm longo; fructibus in spicis patulis vel reflexis dense dispositis, ellipticis, compressis, 3 cm longis, 2-alatis.

A tree about 10 m high, nearly glabrous throughout. Branches stout, the ultimate branchlets much thickened at the ends for the upper 6 to 8 cm and there up to 1.5 cm in diameter, strongly marked with the scars of fallen petioles. Leaves densely crowded at the apices of the branchlets, coriaceous, yellowish-brown and shining when dry, glabrous, narrowly obovate-oblong, about 20 cm long, about 7 cm wide near the apex, the tip abruptly subtruncate-rounded and shortly, broadly acuminate, gradually narrowed from the upper one-fourth or one-fifth to the narrow, cuneate base; midrib very prominent, the lateral nerves 12 to 14 on each side of the midrib, prominent, anastomosing; petioles stout, slightly pubescent with appressed hairs, 1 to 1.5 cm long. Flowers unknown. Fruiting spikes in the axils of the upper leaves, 3 to 5 or more on each branchlet, spreading or recurved, about 15 cm long, the peduncles 5 to 7 cm long, terete. Fruits very densely disposed, elliptic, about 3 cm long, 2 cm wide, strongly compressed, flattened or rounded on one side, triangular-keeled on the other, surrounded by a thin, straw-colored wing nearly 1 cm wide, rounded or acute at the base, apex more or less retuse.

LUZON, Province of Camarines, Mambulao, in forests, altitude about 100 m, *For. Bur.* 18735 *Darling*, April 6, 1910.

A very characteristic species, readily recognizable by its crowded leaves which are narrowly oblong-ovate and gradually narrowed from about the upper one-

fourth to the base, and especially by its strongly compressed, 2-winged fruits which are borne in dense, peduncled, spreading or reflexed spikes. Locally known to the Negritos as *pagatpagat*, and to the Tagalogs as *malaputat*.

MELASTOMATACEÆ.

ASTROCALYX gen. nov.

Calyx dense molliter furfuraceo-setaceus, tubus infundibuliformis; limbus 5-lobatus. Petala 5, elliptico-ovata, acuminata, imbricata. Stamina circiter 65, aequalia, filamentis filiformibus, elongatis; antherae anguste lineari-oblongae, teretae, rectae, basi angustatae; apice suboblique truncatae, 2-rimosae, connectivo basi nec elongato nec incrassato ecalcarato. Ovarium calyci adhaerens, 5-loculare; ovula plurima, placentis incrassatis angulo inferiore loculorum affixa; stylus elongatus, stigmate punctiformi. Arbor, ramulis, petiolis, subtus foliis ad nervos, inflorescentiisque dense molliter brunneo-furfuraceo-setaceis. Folia opposita, petiolata, integra, elliptica vel oblongo-elliptica, basi 5-plinervia, nervulis transversalibus numerosis, distinctis. Flores in paniculis terminalibus dispositi, mediocres, minute bibracteolati.

Astrocalyx pleiosandra sp. nov.

Arbor circiter 25 m alta; foliis subcoriaceis, 10 ad 20 cm longis, 3.5 ad 8 cm latis, breviter acuminatis, basi acutis.

A tree about 25 m high. Branches rather slender, terete, glabrous, light-gray or brownish, the growing parts densely covered with brown, rather soft, furfuraceous-setaceous indumentum, as are the petioles, inflorescences, and nerves on the under surfaces of the leaves. Leaves opposite, elliptic to oblong-elliptic, 10 to 20 cm long, 3.5 to 8 cm wide, subcoriaceous, entire, the base acute, the apex shortly and rather broadly blunt-acuminate, the upper surface green or olivaceous when dry, glabrous, dull or slightly shining, the lower surface of about the same color; longitudinal nerves 5, the two inner ones leaving the midrib at from 0.5 to 2 cm above the base, extending to the apex, nearly as prominent as the midrib, the outer pair near the margin, more slender, leaving the midrib almost at the base of the lamina, scarcely reaching the apex of the leaf, more or less looped by the anastomoses of the transverse veins; transverse veins about 20 between the midrib and the first longitudinal pair of nerves, distinct, parallel, spreading, alternating with similar nerves between the first and second pairs of longitudinal nerves; petioles 1 to 3 cm long. Inflorescence terminal, 8 to 15 cm long, branched at or above the base, the primary branches 3 to 5 cm long, the branches flower-bearing above the middle. Flowers red, borne in threes on the ultimate branchlets, the branchlets subtended by a pair of narrowly oblong, 4 mm long bracts, the flowers subtended by a pair of similar but much smaller bracteoles; pedicels 3 to 4 mm long. Calyx broadly funnel-shaped, the tube in anthesis 4 mm long, about 7 mm wide, the limb with 5,

lanœolate, thickened, acuminate, 3 mm long lobes or teeth, these teeth narrow and keeled on the inside. Petals 5, glabrous, in bud strongly rostrate, imbricate, elliptic-ovate to elliptic-oblong, slightly inequilateral, acuminate, about 9 mm long, 5 to 6 mm wide. Stamens about 65, 1-seriate, subequal, the filaments slender, more or less coherent below in five phalanges, some or all ultimately free or nearly so, 7 to 8 mm long, glabrous; anthers narrowly linear-oblong, terete, straight or nearly so, erect, in bud inflexed, gradually narrowed to the base, about 5 mm long, 0.5 mm in diameter, the connective not produced, appendages none, opening by two terminal slits, each cell prolonged into a 0.5 mm long, compressed tube, slightly obliquely truncate. Ovary adherent to the calyx, 5-celled, the ovules indefinite, on all sides of the thickened placenta which is attached in the lower inner angle; style elongated, rather stout, about 12 mm long; stigma 0.5 mm in diameter, punctiform. Fruit unknown.

Luzon, Province of Camarines, near Daet, *For. Bur. 14349 bis Aguilar*, July, 1909, in forests near the Maniba River (type): Province of Laguna, Dajican, *Bur. Sci. 8983 Foxworthy*, July, 1909, altitude about 300 m.

Aguilar states that the flowers are red, and his specimens bear open flowers; Foxworthy states that they are greenish-white, but on his specimen the flowers are not quite mature. The diameter of the trunk is given by Aguilar as 27 cm, and by Foxworthy as 25 cm.

This new genus belongs in the *Astronieae*, and is perhaps most closely allied to the Bornean monotypic genus *Plethiandra*. It is, however, very different from that genus and from all others in the tribe and family. Characteristic features are its prominently 5-lobed star-shaped calyx, and especially its very numerous stamens, the anthers being slender and gradually narrowed to the base, opening by two terminal slits, the cells being produced into very short, compressed tubes, the connectives not produced and in no way appendiculate.

In the entire family the only genera previously known in which numerous stamens are found are the Bornean *Plethiandra*, mentioned above, and the American ones *Calyptrella* and *Miconia*.

CEPHALOMEDINILLA gen. nov.

Flores 4-meri. Calycis tubus ovoideus, limbus valde 4-lobatus. Petala anguste oblongo-obovata, leviter inaequiliteralia, rotundata vel subacuta. Stamina petalorum numero dupla, aequalia; antherae lineari-lanceolatae, elongatae, apice 1-porosae, connectivo basi non producto, antice bilobo, postice minute 1-calcarato. Ovarium calycis tubo adhaerens, 4-loculare, vertice dense pilosum. Ovula in loculis numerosa, placentis prominulis angulo interiore loculi affixis; stylus elongatus, stigmatibus punctiformi. Bacca ignota. Frutex scandens, ramulis foliis junioribus inflorescentiisque plus minus dense simpliciter pilosis. Folia opposita, sessilia, valde inaequalia, integerrima, penninervia. Flores in capitulis axillaribus, sessilibus, multifloris dispositi, rosei; alabastro in bractea clausa incluso.

Cephalomedinilla anisophylla sp. nov.

Frutex scandens circiter 2 m altus; ramis teretibus, griseis, ramulis foliis junioribus inflorescentiisque plus minus dense pilosis, pilis simplicibus, albis; foliis oppositis, elliptico-oblongis, chartaceis vel submembranaceis, acuminatis, sessilibus, valde inaequalibus, majoribus usque ad 15 cm longis, minoribus vix 2.5 cm longis; nervis utrinque 4, curvato-ascendentibus; inflorescentiis capitatis, axillaribus, solitariis, 1.5 ad 2 cm diametro, dense multifloris, bracteis numerosis late ovatis involu-cratis; floribus 4-meris, subsessilibus vel brevissime pedicellatis.

A scandent shrub about 2 m high. Branches terete, rather slender, glabrous, light-gray, the younger branchlets densely pilose with long, simple, pale or brownish hairs. Leaves opposite, sessile, elliptic-oblong, chartaceous or submembranaceous, very unequal, the larger ones of each pair 12 to 15 cm long, 5 to 6 cm wide, the smaller ones less than 2.5 cm long and 1 cm wide, rather prominently acuminate, the base gradually narrowed, acute or obtuse, the younger ones more or less densely covered with pilose hairs, becoming quite glabrous; midrib prominent, the four pairs of lateral nerves leaving the midrib in the lower one-half of the leaf, the innermost two pairs reaching to the apex, curved-ascending, the reticulations transverse, distinct, subparallel. Heads solitary, sessile, in the leaf-axils or in the axils of fallen leaves, hemispheric, 1.5 to 2 cm in diameter, each with from 12 to 20 densely arranged subsessile flowers, each head subtended by about 10 broadly ovate, membranaceous, more or less pilose, somewhat acuminate, imbricate, pink or reddish bracts, 10 to 11 mm long, 8 to 9 mm wide. Flowers 4-merous, pink, each subtended by two bracteoles, one elliptic-ovate, flat, the other entirely inclosing the bud, at length splitting down one side and when spread suborbicular-ovate, about 9 mm in diameter, cleft to the middle into two elliptic-ovate lobes, the sinus acute, the lobes faintly 3- to 5-nerved, more or less pilose. Calyx 6 to 7 mm long, ovoid, somewhat narrowed to the base, very densely pilose with long, soft, simple, white hairs, the limb 4 mm long, cleft into four narrowly ovate, acute or acuminate, 2.5 to 3 mm long lobes, pilose on both sides. Petals 4, imbricate, thin, glabrous, 8 to 9 mm long, narrowly oblong-obovate or obovate-subspatulate, much narrowed in the lower one-half, about 4 mm wide, the apex somewhat inequilateral, rounded or subacute. Stamens 8, equal; filaments slender, 5 mm long; anthers lanceolate, 4 mm long, somewhat curved, acuminate, opening by a terminal pore, the connective not at all produced, the base in front with two short, more or less connate, somewhat curved, thick lobes less than 1 mm long, and with a small, 0.3 mm long spur behind. Ovary adherent to the calyx, 4-celled, the top densely pilose with long white hairs; ovules many, the placenta

attached to the lower inner angle of each cell; style slender, 9 mm long; stigma punctiform.

Luzon, Province of Laguna, Dajican, near Paete, *Bur. Sci.* 8986 Foxworthy, July 25, 1909, in forests, altitude not given.

This proposed new genus is manifestly closely allied to *Medinilla*, differing especially in its produced and prominently 4-lobed calyx-tube and densely pilose top of the ovary. It differs also from that genus in its dense, hemispherical, sessile, involucrate heads, and in its buds being entirely inclosed within one of the bracteoles, the bracteole later splitting and becoming 2-lobed; it also differs from most of the known species of *Medinilla* in its very unequal leaves.

MEDINILLA Gaudich.

Medinilla cardiophylla sp. nov.

Species *M. myrtiformi* simillima et valde affinis, differt foliis paulo majoribus, basi late rotundatis valde cordatis.

An epiphytic shrub about 1.5 m. high, glabrous throughout. Branches slender, terete, reddish-brown or grayish. Leaves ovate to ovate-lanceolate, opposite, subcoriaceous, 7 to 10 cm long, 3 to 4.5 cm wide, the base broad and rounded, rather strongly cordate, the apex long and rather slenderly acuminate, the acumen blunt, 5-plinerved, the interior pair prominent and reaching the apex of the leaf, the outside pair much fainter and reaching to about the middle of the leaf, the reticulations very faint or subobsolete; petiole about 1 mm long or almost wanting. Cymes axillary, solitary, slender, few-flowered, 3 to 5 cm long, the peduncles 3.5 cm long or less, the pedicels slender. Flowers 4-merous. Calyx somewhat campanulate, 3 to 3.5 mm long, base narrowed, limb produced about 1 mm and with four small, distant teeth. Petals 4, oblong-lanceolate, somewhat acuminate, about 6 mm long, 2.2 mm wide. Stamens 8, the four longer ones about 6 mm long, the four shorter ones 5 mm long; anthers 3 to 3.5 mm long, lanceolate, straight, the connective not produced, with a dorsal, stout, broad, 0.5 mm long spur, the front with two broad, rather obscure auricles. Ovary 4-celled; style about 6 mm long; stigma punctiform. Fruit scarlet, globose, 6 mm in diameter, crowned by the minute calyx-teeth.

MINDANAO, Lake Lanao, Camp Keithley, *Mrs. Clemens* 861, December, 1906, in fruit, *s.n.*, September, 1907, in flower (type). LUZON, Province of Albay, Mount Mayon, *Bur. Sci.* 6509 Robinson, September 6, 1908, on trees in stream depressions, altitude 400 m.

A species manifestly very closely allied to *Medinilla myrtiformis* Triana, differing in the points stated in the diagnosis. The present species with *M. myrtiformis* Triana and *M. ramiflora* Merr. form a group of closely allied forms which perhaps have as much the characters of *Anplectrum* as of *Medinilla*. *Medinilla ramiflora* Merr. may not prove to be specifically distinct from the Bornean *Anplectrum homoeandrum* Stapf.

***Medinilla cauliflora* sp. nov.**

Arbuscula circiter 3 m alta, foliis junioribus subtus ad nervos, ramulisque plus minus plumoso-stellato-tomentosis; foliis oppositis, membranaceis, acuminatis, elliptico-ovatis, basi angustatis, 5-plinerviis, breviter petiolatis; inflorescentiis caulifloris, densissime confertis; floribus 4-meris, bracteatis, calycibus obscure 4-angulatis, 4-lobatis, lobis 5-7-nerviis; staminibus 8, admodum inaequalibus, antheris postice longe calcaratis.

A shrub about 3 m high, the branchlets and the younger leaves on the midrib and nerves beneath more or less covered with soft, stellate-plumose hairs. Branches rather slender, grayish, terete or obscurely 4-angled, the upper axils more or less bearded. Leaves opposite, membranaceous, elliptic-ovate, 9 to 15 cm long, 4 to 7.5 cm wide, the apex shortly acuminate, the base narrowed and acute or slightly acuminate; nerves three on each side of the midrib, leaving it in the lower one-third, curved-ascending; the innermost pair reaching to the apex, distinct, the transverse reticulations slender, distant, not prominent; petioles 5 mm long or less, sometimes subobsolete. Inflorescence on the trunk below the leaves, of very short, congested branches, forming a compact mass 8 cm in diameter or less, the branches stout, each bearing many, subdistichous, oblong-ovate, crowded, 9 to 10 mm long bracts which are acute or obtuse, some empty, some subtending flowers. Flowers pink or red, 4-merous, glabrous, the pedicels stout, 4 mm long. Calyx obovoid, becoming more or less urceolate, obscurely 4-angled, 6 mm long, constricted below the limb, the limb produced, 2.5 to 3 mm long, cleft nearly to its base into four, broadly ovate, 5- to 7-nerved, apiculate lobes. Petals obovate, 7 to 8 mm long, 4 to 5 mm wide, the apex strongly inequilateral, obliquely truncate, base narrowed. Stamens 8, the filaments of four about 5 mm long, of the other four 5.5 mm in length; anthers equal, 3.5 mm long, oblong-lanceolate, slightly curved, opening by a single terminal pore, the base with a slender, curved, dorsal spur nearly 2 mm in length, in front with two stouter, curved auricles less than 1 mm long. Ovary 4-celled, the lower one-half adherent to the calyx, free above, the top more or less conical, glabrous; style joined with the ovary, at least 5 mm long; stigma punctiform. Berry globose, fleshy, pink, 7 to 8 mm in diameter; seeds indefinite, 0.7 to 0.8 mm long.

NEGROS, Canlaon Volcano, *For. Bur. 17397 Curran*, September, 1909, in forests at an altitude of about 1,200 m.

A species well characterized by its dense, cauline inflorescence and its 4-lobed calyx-limb, the lobes distinctly nerved. It is apparently not very closely allied to any described species.

***Medinilla clementis* sp. nov.**

Frutex glaber ut videtur scandens, ramulis angulatis, valde quadrialatis; foliis subcoriaceis, oppositis, petiolatis, oblongis, acuminatis, basi rotundatis vel leviter subcordatis, usque ad 28 cm longis, 7- vel 9-plinerviis; inflorescentiis terminalibus, elongatis, bracteis parvis; floribus 5-meris.

A shrub, apparently scandent, glabrous throughout. Branches stout, 4-angled, the angles winged, the wings 2 to 3 mm wide, the nodes setose. Leaves opposite, oblong, subcoriaceous, somewhat shining, 20 to 28 cm long, 7 to 11 cm wide, the apex acuminate, the base rather broad, rounded, often somewhat subcordate; nerves 7 or 9, the outer ones basal, the interior one or two pairs leaving the midrib shortly above the base and reaching the apex, the reticulations obsolete or nearly so; petioles 2.5 to 3 cm long. Inflorescence terminal, long-peduncled, slender, 25 to 40 cm long, the branches few, short, the bracts 5 to 7 mm long. Pedicels about 1 cm long. Calyx cup-shaped, about 4 mm long, the limb somewhat produced, truncate. Petals 5, pink, narrowly obovate, inequilateral, about 10 mm long, 5 mm wide. Stamens 10, equal, the filaments 6 mm long; anthers narrowly lanceolate, somewhat curved, 6 mm long, the basal dorsal spur slender, less than 5.5 mm long, the anterior two auricles stout, about 1 mm long. Style slender, 13 mm long.

MINDANAO, Lake Lanao, Sacred Mountain near Camp Keithley, *Mrs. Clemens s. n.*, July, 1907 (type), and between Camp Keithley and Malabang, *Mrs. Clemens s. n.*, November, 1906.

A species well characterized by the details given in the diagnosis; it is perhaps as closely allied to *Medinilla teysmanni* Miq. as to any other described form, but is quite different from Miquel's species.

***Medinilla obovata* sp. nov.**

Frutex epiphyticus, glaber, vel ramulis junioribus plus minus brunneofurfuraceis; foliis parvis, verticillatis, ternis vel quarternis, coriaceis, obovatis, petiolatis, apice late rotundatis vel leviter retusis, vix 3 cm longis, triplinerviis, reticulis obsolete; floribus ignotis, ut videtur 6-meris, longe pedicellatis, solitariis, vel in cymis paucifloris dispositis, axillaribus; fructibus urceolatis, limbo calycis producto truncato.

A glabrous epiphytic shrub, or the ultimate branchlets more or less brown-furfuraceous. Branches stout, grayish, terete, the branchlets somewhat quadrangular, the internodes short, mostly less than 1 cm in length, the nodes not barbellate. Leaves whorled, in threes or fours, coriaceous, obovate, less than 3 cm long, and less than 1 cm in width, the apex broadly rounded or somewhat retuse, narrowed below to the cuneate base, the margins sometimes recurved; nerves 3 only, the lateral pair leaving the midrib shortly above the base, the reticulations obsolete; petioles about 5 mm long. Flowers unknown. Infrutescence axillary, the peduncles solitary, axillary, about 1 cm long, each bearing a single pedicel as long

or longer than the peduncle, the fruits urceolate, about 8 mm long, 6 mm in diameter, the calyx-limb persistent, truncate, produced about 4 mm, 6-celled.

NEGROS, Mount Marapara, *For. Bur. 17353 Curran*, September 11, 1909, epiphytic on trees in forests, altitude about 500 m.

Although the specimen is without flowers I have no doubt but that it is referable to *Medinilla*, even though the fruits are distinctly 6-celled, indicating a 6-merous flower, a character uncommon in the genus. It is well characterized by its comparatively very small leaves which are whorled, petioled, and broadly obovate, the veins three only, and the reticulations obsolete. The fruits are solitary, but at the junction of the pedicels with the peduncles are found some minute scars indicating a few-flowered, probably cymose, or possibly umbellate inflorescence. *Medinilla obovata* has much smaller leaves than most of the other Philippine species of the genus.

Medinilla whitfordii Merr. in *Govt. Lab. Publ. (Philip.) 29 (1905) 37*.

Carionia triplinervia Rolfe in *Journ. Linn. Soc. Bot. 21 (1884) 310*; *Vid. Rev. Pl. Vasc. Filip. (1886) 136*; *Cogn. in DC. Monog. Phan. 7 (1891) 571*, non *Medinilla triplinervia* Cogn.

Luzon, District of Lepanto, Mount Data, *For. Bur. 10956 Curran*: Province of Benguet, Pauai, *Bur. Sci. 4478 Mearns*; Pauai to Baguio, *Merrill 4779*: Province of Zambales, Mount Pinatubo, *Bur. Sci. 2556 Foxworthy*, Provinces of Laguna and Tayabas, Mount Banajao, *Whitford 961* (type of *M. whitfordii*), *Bur. Sci. 6062 Robinson*, *Bur. Sci. 2388 Foxworthy*, *For. Bur. 7899 Curran & Merritt*: Province of Albay, Mount Mayon, *Vidal 779* in herb. Kew (type of *Carionia triplinervia* Rolfe), *Bur. Sci. 6504 Robinson*.

Reëxamination of the type of *Medinilla whitfordii* Merr. shows that its flowers are 6-merous instead of 5-merous as originally described, and comparison of our recently collected Philippine material with the type of *Carionia triplinervia* Rolfe at Kew has shown that *Medinilla whitfordii* Merr. is identical. The species is to me a *Medinilla* rather than a *Carionia*, in spite of its 6-merous flowers. *Carionia* is distinguished from *Medinilla* by its 6-merous flowers and its spreading 4 to 5 mm long calyx-teeth, but *Carionia triplinervia* has a truncate calyx with only very minute teeth, and in all other respects is a typical *Medinilla*; either it must be transferred to *Medinilla*, or the few species with 6-merous flowers now placed in *Medinilla* must be transferred to *Carionia*. *Medinilla* has 4- to 6-merous flowers, and it would be just as logical to segregate those species with 4-merous flowers in one genus, and those with 5-merous flowers into another, as it would be to refer species like the present with 6-merous flowers but with a truncate calyx to *Carionia*. The specific name selected by Mr. Rolfe is invalidated in *Medinilla*.

MEMECYLON Bl.

Memecylon sessilifolium sp. nov.

Arbor glabra circiter 16 m alta; ramulis acutè tetragonis, angustissime alatis, crassis; foliis sessilibus, coriaceis, nitidis, usque ad 12 cm longis, late obtuseque acuminatis, penninerviis, nervis vix distinctis. Fructibus fasciculatis vel solitariis, pedicellatis, 1 ad 1.5 cm diametro.

A glabrous tree about 16 m high. Branches stout, subterete, covered with a thin, grayish bark, the branchlets sharply 4-angled, very narrowly winged on the angles, the wings less than 0.5 mm wide. Leaves sessile,

oblong or narrowly obovate-oblong, firmly coriaceous, yellowish and shining when dry, 8 to 12 cm long, 3 to 5 cm wide, the apex broadly and obtusely acuminate, the base subacute, margins recurved; lateral nerves not distinct, about 25 on each side of the midrib, nearly obsolete beneath. Flowers unknown. Fruit axillary, solitary or fascicled, subglobose, 1 to 1.5 cm in diameter, their peduncles 3 to 4 mm long, 2-celled, 2-seeded.

LUZON, Province of Camarines, Mambulao, *For. Bur.* 18734 *Darling*, April 6, 1910, in forests, altitude about 100 m, locally known as *madadignay*.

A strongly characterized species, probably most closely allied to *Memeocylon wightii* Thwaites of India and Ceylon.

ARALIACEÆ.

SCHEFFLERA Forst.

Schefflera brevipes sp. nov.

Glabra, inflorescentiis sparse puberulis exceptis; foliis circiter 7, vel foliorum superiorum 3, oblongis, coriaceis, integris, apice subrotundatis, usque ad 20 longis; petiolo vix 1 cm longo; paniculis terminalibus, ramis racemoso-dispositis inferioribus usque ad 30 cm longis; umbellulis racemoso-dispositis, breviter pedunculatis, 8- ad 12-floris; floribus breviter pedicellatis, 5-meris.

A glabrous, erect or subscaudent shrub. Branches rather stout, the ultimate ones about 1 cm in diameter, glabrous. Leaves alternate, the petioles stout, very short, on the material available none exceeding 1 cm in length, inflated and clasping at the base; leaflets about 7, in the uppermost leaves sometimes only 3, oblong, coriaceous, 15 to 20 cm long, 6.5 to 8 cm wide, entire, upper surface shining, the lower dull, the apex mostly broad and rounded, rarely broadly and obtusely acuminate, the base acute or somewhat decurrent-acuminate; lateral nerves about 20, distinct, anastomosing, not much more prominent than are the secondary ones and the primary reticulations; petiolules 5 to 8 cm long. Panicles terminal, the common rachis about 30 cm long, all parts slightly puberulent, becoming glabrous or nearly so, the branches alternate, spreading or ascending, the lower ones 30 cm long. Umbels numerous, mostly scattered, racemosely arranged along the primary branches, each with from 8 to 12 flowers, the peduncles 3 to 4 mm long, puberulent, the pedicels usually about 2 mm long. Flowers 5-merous. Calyx obconic, truncate, about 2 mm long and the same diameter at the apex. Petals 5.2 mm long, base 2 mm wide, cohering by their apices and falling as a whole. Stamens 5; filaments 2.5 mm long; anthers 1 mm long. Ovary 5-celled.

LUZON, Province of Isabela, Cobojan River, *For. Bur.* 18545 *Alvarez*, March 21, 1909.

A species well characterized by its oblong, coriaceous, ample, entire leaflets,

and especially by its very short petioles. Similar in some respects to *Schefflera clementis* Merr., of Mindanao, but with more slender branches which are not covered with bracts, differently shaped leaflets, and short petioles.

***Schefflera leytensis* sp. nov.**

Glabra; foliis longe petiolatis, foliolis circiter 8, ellipticis vel oblongo-ellipticis, usque ad 14 cm longis, basi rotundatis, apice abrupte subcaudato-acuminatis, margine integris; floribus 5-meris, in umbellulis longe pedunculatis dispositis, umbellulis racemoso-dispositis; ovario 10-loculare.

Glabrous throughout. Stems unknown. Leaves long-petioled, the petioles at least 20 cm in length; leaflets about 8, elliptic or oblong-elliptic, coriaceous, glabrous, shining on both surfaces when dry, 10 to 14 cm long, 4.5 to 7 cm wide, entire, the margins reflexed, the apex abruptly subcaudate-acuminate, acumen 2 cm long or less, base rounded; nerves 10 to 12 on each side of the midrib, spreading, anastomosing, the reticulations lax; petiolules 4 to 5 cm long. Inflorescence (or partial inflorescence?) about 40 cm long, the rachis stout, dark-colored when dry, the umbels racemosely disposed, their peduncles about 4 cm long, about 30 on each inflorescence or branch. Flowers 5-merous, about 25 in each umbel, their pedicels 3 to 5 mm long. Calyx cup-shaped, 3 mm long, truncate. Petals 5, oblong-ovate, about 4 mm long, coherent by their apices and falling as a whole. Stamens 5; filaments 4 mm long; anthers 2 to 2.2 mm long. Ovary 10-celled; stigma conic, less than 1 mm long.

LEYTE, central divide, altitude about 1,150 m, *For. Bur. 1690*; *Rosenbluth*, February, 1909.

ERICACEÆ.

DIPLYCOSIA Blume.

***Diplycosia parvifolia* sp. nov.**

Frutex parvus epiphyticus vix 1 m altus, ramulis junioribus plus minus setosis; foliis coriaceis, nitidis, ellipticis vel elliptico-oblongis, basi acutis, apice acutis vel leviter acuminatis, 1 ad 2.5 cm longis, subtus glanduloso-punctatis, nervis lateralibus obsolete, basi interdum obscure triplinerviis; floribus paucis, axillaribus, solitariis, pedicellatis, calycis segmentis minute ciliatis.

A small, epiphytic, erect shrub less than 1 m high, diffusely branched, the branches slender, glabrous, brown, slightly striate, terete, the branchlets with scattered slender, brown, more or less appressed, setose hairs. Leaves coriaceous, elliptic to elliptic-oblong, 1 to 2.5 cm long, 1 cm wide or less, entire, the base acute, the apex acute or slightly acuminate, glabrous and shining when dry, but the margins of the younger leaves more or less ciliate-setose, the lower surface with scattered, dark-colored, small glands; midrib distinct, the lateral nerves and reticulations obsolete, the base sometimes very obscurely triplinerved; petioles about 2 mm long,

glabrous. Flowers axillary, solitary, few, their pedicels setose, up to 7 mm in length, the corolla unknown, basal bract minute, less than 1 mm long, the apex of the pedicel with two orbicular-ovate bracteoles about 1.5 mm in diameter. Calyx glabrous except the slightly ciliate margins of the lobes, accrescent, the lobes just after anthesis ovate, acuminate, about 2 mm long; style persistent, 2 mm long.

NEGROS, Canlaon Volcano, on mossy trunks in forests at an altitude of about 1,500 m, *Merrill 6995*, April, 1910.

A species well characterized by its comparatively small leaves, the lateral nerves obsolete except sometimes the very faint subbasal pair.

MYRSINACEÆ.

ARDISIA Sw.

Ardisia biflora sp. nov. § *Akosmos*.

Arbusecula glabra usque ad 3 m alta; foliis petiolatis, oblongis vel lanceolato-oblongis, integris, chartaceis, valde acuminatis, subtus valde glanduloso-punctatis, in sicco nitidis, pallidis; inflorescentiis axillaribus, solitariis, tenuibus, bifloris, quam folia multo brevioribus; sepalis petalisque valde glanduloso-punctatis.

A shrub 1 to 3 m high, glabrous; branches and branchlets slender, terete, gray or brownish. Leaves alternate, oblong to oblong-lanceolate, chartaceous, pale and shining when dry, entire, 4 to 8 cm long, 1 to 2.5 cm wide, the apex strongly acuminate, the base cuncate, the lower surface very strongly and densely glandular-punctate; nerves about 10 on each side of the midrib, not prominent, slender, anastomosing, the secondary ones nearly as prominent; petioles slender, about 5 mm long. Inflorescence axillary, solitary, slender, the peduncle 6 to 10 mm long, bearing at its apex two flowers, their pedicels 6 to 8 mm in length. Flowers greenish-white, tinged with pink, 5-merous, hermaphrodite. Sepals reniform-ovate, less than 1 mm long, united for the lower third, strongly glandular-punctate, scarcely overlapping, spreading, rounded, the margins minutely ciliate. Petals elliptic-ovate, acute, 3.5 to 4 mm long, prominently glandular-punctate throughout, the tube about 0.5 mm long. Anthers 2 mm long, oblong-ovoid, minutely apiculate, glandular on the back, the filaments very short. Ovary ovoid, apparently with few (one?) ovules; style 2 mm long. Fruit globose, glandular, about 5 mm in diameter.

Luzon, Province of Zambales, Mount Tapulao, in exposed ridge-forests, altitude about 1,400 m, *Bur. Sci. 5073 Ramos* (type), *For. Bur. 8110 Curran & Merritt*, December, 1907.

A species apparently belonging in the section *Akosmos*, strongly characterized by its slender, axillary, 2-flowered inflorescences; the apparently 1-ovuled ovary is suggestive of *Discocalyx*, but in all other characters the species is unmistakably an *Ardisia*.

Ardisia clementis Elm. Leaf. Philip. Bot. 2 (1910) 665. § *Tinopsis*.

Arbor vel arbuscula, inflorescentiis exceptis glabra; foliis elliptico-oblongis vel elliptico-ovatis, chartaceis vel subcoriaceis, acuminatis, glandulis manifestis destitutis, nervis utrinque circiter 14, subtus prominentibus; paniculis terminalibus quam folia brevioribus, bipinnatum compositis; floribus brevissime racemosis vel subumbellatis; sepalis imbricatis, integris, rotundatis, margine cillatis.

A tree or shrub, glabrous except the inflorescence which is somewhat brown-pubescent or puberulent. Branches terete, gray or brownish. Leaves alternate, elliptic-oblong to elliptic-ovate, chartaceous or subcoriaceous, 11 to 25 cm long, 4 to 9 cm wide, entire, the apex acute or acuminate, the base cuneate, dull or slightly shining when dry; nerves about 14 on each side of the midrib, beneath distinct, anastomosing, the reticulations rather fine; petioles stout, about 1 cm long. Panicles terminal, about 10 cm long, the lower branches about 4 cm long, usually spreading, the upper ones shorter, each branch bearing from 5 to 7 flowers near the apex, subumbellately arranged or in a short raceme the pedicels about 1 cm long, slightly accrescent in fruit. Calyx about 5 mm in diameter, the lobes broadly ovate, rounded, overlapping to the right, glandular-punctate, margins ciliate, united for the lower one-third. Petals elliptic-ovate, obtuse, about 7 mm long, 5 mm wide, slightly glandular-punctate in the upper one-half, the tube about 1 mm long. Anthers narrowly ovoid, slightly apiculate, 4 mm long, the median portion of the back with few, rather large glands. Ovary glabrous; style about 4.5 mm long, not exerted in bud. Fruit globose, slightly longitudinally striate when dry, about 6 mm in diameter.

MINDANAO, Lake Lanao, Camp Keithley, Mrs. Clemens 231, 889, and s. n. (type), February, 1906, March, 1907, and January, 1907.

Ardisia confertiflora sp. nov. § *Tinus*.

Arbor parva, usque ad 5 m alta, glabra; foliis ut videtur plus minus succulentis, in sicco chartaceis vel submembranaceis, oblongo-obovatis, vel obovatis, apice rotundatis, basi cuneatis, nervis lateralibus obscuris; inflorescentiis axillaribus, racemosis, floribus in tertia superiore parte plus minus dense dispositis; sepalis glandulosis, emarginatis, margine minute ciliatis.

A small tree reaching a height of 5 m, glabrous. Branches and branchlets rather stout, terete, brownish. Leaves somewhat crowded on the younger branchlets, when fresh apparently somewhat thick and succulent, when dry chartaceous or submembranaceous, dull or slightly shining, obovate or narrowly obovate, 6 to 10 cm long, 2.5 to 5 cm long, entire, the apex broad, rounded, narrowed from the upper one-third or one-half to the cuneate base, the lower surface minutely punctulate; nerves obscure, about 13 on each side of the midrib, very slender, some-

times nearly obsolete; petioles 5 mm long or less. Racemes in the upper axils, solitary, stout, 5 to 10 cm long, only the upper third flower-bearing, this portion of the rachis densely covered with scars and pedicels, the latter 1 to 2 cm long. Flowers pink or purplish, 5-merous, comparatively large. Calyx about 8 mm in diameter, the lobes united for the lower one-third or one-half, about 3 mm wide, elliptic-ovate or ovate, apex slightly emarginate, all parts densely glandular, the margins minutely ciliate. Corolla-tube about 2 mm long, the lobes ovate or broadly oblong-ovate, about 13 mm long, 7 mm wide, somewhat acuminate, the acumen obtuse, glandular-punctate. Anthers about 6.5 mm long, slightly apiculate-acuminate, with few large glands on the back, the cells not septate or rugose, the filaments about 2 mm long. Ovary ovoid; style about 1 cm long, obscurely glandular. Fruit globose or depressed-globose, about 8 mm in diameter, violet when mature, said to be edible.

BATANES ISLANDS, Batan, Santo Domingo de Basco, *Bur. Sci.* 3589 *Fénix* (type), *Bur. Sci.* 3214, 3216 *Mearns*. BABUYANES ISLANDS, Fuga, *Bur. Sci.* 3245 *Mearns*.

This species is manifestly allied to *Ardisia humilis* Vahl, *A. boissieri* A. DC., and *A. littoralis* Andr., but is at once distinguishable from all by its racemosely disposed flowers, these being crowded along the upper one-third of the racemes and not umbellately arranged at the ends of the branches. Other distinguishing characters are its comparatively large flowers and its emarginate sepals. The material on which the above species is based, was previously referred by me to *Ardisia humilis* Vahl.³ Local name *pain*.

***Ardisia curranii* sp. nov. § *Tinopsis*.**

Arbor glabra, circiter 15 m alta; foliis pseudoverticillatis, coriaceis, oblongis vel late oblongo-lanceolatis, breviter acuminatis, nervis numerosis, patulis, vix distinctis; paniculis terminalibus, quam folia multo longioribus; sepalis pubescentibus, punctatis, margine ciliatis; ovario puberulo.

A glabrous tree about 15 m high. Branches terete, striate, light-gray, rather stout. Leaves alternate, somewhat pseudo-verticillately crowded at the apices of the branchlets, oblong to broadly oblong-lanceolate, coriaceous, brown when dry, entire, 15 to 20 cm long, 5 to 7 cm wide, dull or slightly shining, the apex shortly and broadly acuminate, the base somewhat decurrent-acuminate, scarcely glandular-punctate, or very minutely and obscurely so; nerves 25 to 30 on each side of the midrib, obscure, spreading, scarcely anastomosing, the reticulations obsolete; petioles 2.5 to 3 cm long. Panicles terminal, about 30 cm long, somewhat narrowly pyramidal, the lower branches 15 cm in length, the flowers racemosely disposed on the ultimate branchlets, their pedicels 1 to 2 cm long. Calyx about 4.5 mm in diameter, ferruginous-pubescent outside,

³ *This Journal* 3 (1908) *Botany* 425.

glabrous within, the lobes ovate, rounded, united for about one-half their length, their margins ciliate, glandular-punctate. Petals ovate, 7 to 8 mm long, about 4 mm wide, glabrous, glandular-punctate, acuminate, the tube short. Anthers lanceolate-ovoid, 5 mm long, the apex long-apiculate-acuminate, the median portion of the back distinctly glandular, the filaments very short. Ovary ovoid, minutely ferruginous-puberulent; style about 4 mm long. Fruit globose or depressed-globose, 6 to 7 mm in diameter, glabrous, minutely apiculate.

LUZON, Province of Camarines, near Lupi, in forests, altitude about 100 m, *For. Bur. 10760 Curran*, July 11, 1908.

Ardisia darlingii sp. nov. § *Tinopsis*.

Arbor glabra circiter 20 m alta; foliis oblongis vel anguste oblongo-ovatis, chartaceis vel subcoriaceis, nitidis, minutissime obscureque punctulatis, apice rotundatis, obtusis vel obscure late acuminatis, basi cuneatis, margine recurvatis; inflorescentiis terminalibus axillaribusque, corymboso-paniculatis; sepalis glandulosis, margine ciliato-pubescentibus.

A tree about 20 m high, glabrous. Branches terete, grayish-brown, rather stout. Leaves alternate, somewhat crowded on the younger branchlets, oblong or narrowly oblong-ovate, entire, 7 to 11 cm long, 1.5 to 3.5 cm wide, shining, chartaceous or subcoriaceous, the apex rounded, obtuse, or broadly and obscurely acuminate, narrowed from about the middle to the cuneate base, the margins recurved, the lower surface very minutely and obscurely glandular-punctulate; nerves about 15 on each side of the midrib, not prominent, obscurely anastomosing, the reticulations lax, obscure or subobsolete; petioles about 1 cm long. Inflorescence terminal and in the upper axils, corymbose-paniculate 10 cm long or less, the lower branches of the terminal panicles about 5 cm long, the upper ones shorter, each branch bearing at its apex a congested raceme or umbel of from 5 to 10 flowers, the pedicels unequal in length, each subtended by an oblong or oblong-ovate, obtuse bracteole about 3.5 mm long, 2 mm wide, the pedicels 3 to 12 mm long. Sepals elliptic-ovate, about 3 mm long, 2.5 mm wide, rounded, entire, slightly united at the base, overlapping; distinctly glandular-punctate with small reddish glands, the margins ciliate-pubescent. Petals about 4.5 mm long, 3 mm wide, free or nearly so, acute or obscurely acuminate, obscurely glandular-punctate. Anthers oblong-ovate, apiculate-acuminate, 2.5 mm long, obscurely glandular on the back, the filaments very short. Ovary glabrous; style 2 mm long.

LUZON, Province of Abra, near Bacog, in mountain forests, altitude about 1,800 m, *For. Bur. 14611 Darling*, February 9, 1909 (type); Tue, altitude about 1,300 m, *For. Bur. 14601 Darling*.

Somewhat remotely allied to *Ardisia lanceolata* Roxb., but very different from that species.

***Ardisia diffusa* sp. nov. § *Acrardisia*.**

Arbuscula vel arbor glabra; foliis chartaceis vel subcoriaceis, acuminatis, brevissime petiolatis, integris, subtus prominente verrucoso-glandulosis; paniculis terminalibus, amplis, diffusis, quam folia multo longioribus, pyramidatis; floribus umbellatis, longissime pedicellatis, 5-meris, sepalis petalisque glandulosis.

An erect, glabrous shrub or tree, the branches terete, reddish-brown. Leaves alternate, scattered, elliptic-oblong, chartaceous or subcoriaceous, brown and somewhat shining when dry, entire, 7 to 9 cm long, 3 to 5 cm wide, the apex shortly and sharply acuminate, the base acute, the lower surface with numerous, scattered, verrucose glands; nerves 15 to 20 on each side of the midrib, not prominent, anastomosing, the reticulations lax; petiole stout, 2 to 3 mm long. Panicles terminal, pyramidal, reaching a length of 20 cm, the branches alternate, spreading, the lower ones 9 cm long, the upper ones gradually shorter, the secondary branches slender, 1.5 to 2.5 cm long, racemosely arranged on the primary ones, each bearing at its apex from 3 to 7 long-pedicelled, umbellately arranged flowers, the pedicels slender, 1 to 2 cm long. Calyx about 4 mm in diameter, the lobes 5, oblong or oblong-ovate, obtuse, entire, about 1.6 mm long, somewhat united at the base, spreading in anthesis, not at all imbricate, prominently glandular-punctate with large glands, the margins ciliate. Petals oblong-ovate, 6 to 7 mm long, about 3 mm wide, united for about the lower 1.5 mm, the apex prominently acuminate, with few large, scattered glands in the upper one-half. Anthers 4.5 mm long, prominently acuminate, cordate at the base, with few glands along the median portion of the back, the filaments 1.5 to 2 mm long. Ovary ovoid, glabrous; style about 5 mm long.

MINDANAO, Province of Misamis, Calagan, on the route to Mount Malindang, *For. Bur.* 4759 *Mearns & Hutchinson*, May, 1906.

A species most closely allied to *Ardisia gardneri*, *A. divergens*, and *A. ceylanica*, but abundantly distinct from all. It is well characterized by its ample, pyramidal, rather lax panicles, long-peduncled umbels and long-pedicelled flowers.

***Ardisia lanceolata* Roxb.** Hort. Beng. (1814) 85, nomen nudum, Fl. Ind. ed. Carey & Wall. 2 (1824) 275, ed. Carey 1 (1832) 583; Mez in Engl. Pflanzenreich 9 (1902) 122.

Ardisia purpurea Reinw. in Bl. Bijdr. (1826) 684.

MINDANAO, District of Zamboanga, Tetuan, *Ahern* 596.

Not previously reported from the Philippines; Malay Peninsula, Java, Sumatra, Borneo, and Celebes.

***Ardisia littoralis* Andr.** Repos. 10 (1811) t. 630; Gamble in Journ. As. Soc. Beng. 74² (1905), Extra Number, 135.

Ardisia humilis Mez in Engl. Pflanzenreich 9 (1902) 127, fig. 20, A-E, not of Vahl, or in part only.

LUBANG, *Merrill* 968. SEMERARA, *Merrill* 4160.

This species is apparently a coast shrub only, from 1 to 3 or 4 m in height. Mr. Gamble has kindly supplied me the following additional information regard-

ing the separation of this form from *Ardisia humilis*: "*Ardisia humilis* Vahl is a Ceylon coast shrub which is endemic there and does not extend to the Malay Peninsula. The figures A-E on page 128 of Mez's monograph are *Climacandra obovata*=*Ardisia littoralis* Andr. which has septate anthers, which *A. humilis* has not. The authors of the "Flora of British India" have mixed up *A. humilis* and *A. solanacea* Roxb., which is quite a different plant, almost a tree and of inland forests, and Mez has correctly separated them, but he has incorrectly put together *A. humilis*. Vahl and *A. littoralis* Andr."

Ardisia littoralis Andr. is apparently rare in the Philippines, but we have several very closely allied forms, at least one of which is abundant and widely distributed in the Archipelago.

Malay Peninsula and Archipelago, southern China, and the Philippines.

Ardisia boissieri A. DC. in DC. Prodr. 8 (1844) 129; Mez in Engl. Pflanzenreich 9 (1902) 129.

This species is very common and widely distributed in the Philippines, extending from northern Luzon to southern Mindanao, a tree of the hill forests at low and medium altitudes ascending to at least 600 m in some localities; it reaches a height of 15 m in some regions, and is not a seacoast plant. It is very similar in all superficial characters to *A. littoralis* Andr., but can usually be at once distinguished by its anthers being prominently glandular on the back, and not transversely septate. What I take to represent this species comprises about 80 specimens in this herbarium, from all parts of the Philippines, which have, for most part, been identified as *Ardisia humilis* Vahl, many of them so named by Doctor Mez. It is very probable that some of the extra-Philippine specimens cited by Mez under *Ardisia humilis*, should be referred to *A. boissieri*, and it is likewise very probable that this name will not prove to be the oldest one.

Ardisia pirifolia Mez l. c. 129.

This species, the type of which I have examined in the Berlin Herbarium, is distinguishable from *A. boissieri* only by the most trivial characters; in all respects except in having the sepals minutely emarginate, it is quite the same as *A. boissieri*. The type was from Polillo, not from Luzon, and the species is represented by *Bur. Sci.* 9292 *Robinson*, from the same island, *Merrill 1101*, from Baler, Province of Tayabas, Luzon, and apparently also by *Elmer 5645* from the Province of Union, Luzon, the latter so identified by Doctor Mez. The sepals are not always glabrous, but are usually more or less ciliate on the margins; the only character left for specific separation of this form from *A. boissieri* is the very trivial one of the emarginate (very slightly) sepals.

Ardisia verrucosa Presl Rel. Haenk. 2 (1835) 65; Mez l. c. 134.

This species is also manifestly closely allied to, and perhaps not specifically distinct from *Ardisia boissieri* A. DC. Mez distinguishes it especially by its 2-flowered umbels, but Presl describes it as having from 2- to 5-flowered umbels, and one of the original specimens, in the Prague Herbarium, which I have examined, shows at least 5 flowers. Doctor Mez examined the specimen of the original collection preserved in the Vienna Herbarium.

Ardisia macgregorii sp. nov. § *Tinus*.

Arbuscula glabra, circiter 1 m alta; foliis lanceolatis, obtusis, coriaceis, subtus minute dense puncticulatis, nervis reticulisque densis, obscuris; inflorescentiis axillaribus, solitariis, simplicibus, fructibus subumbellatim dispositis.

A glabrous shrub about 1 m high. Branches terete, brown, glabrous. Leaves coriaceous, brown and somewhat shining when dry, lanceolate, 8 to 10 cm long, 1 to 1.5 cm wide, gradually narrowed at both ends, the apex blunt, the base cuneate, the margins entire, somewhat recurved, the lower surface minutely and densely punctulate; nerves numerous, obscure, densely disposed, the reticulations also obscure; petioles 1 cm long or less. Inflorescence axillary, solitary, much shorter than the leaves, the peduncles about 2 cm long. Flowers unknown. Fruits umbellately disposed at the apices of the peduncles, their pedicels 1 to 1.5 cm long, 4 or 5 at the apex of each peduncle. Persistent calyx about 5 mm in diameter, the lobes ovate, rounded, glabrous or nearly so, glandular-punctate, united for about one-half their length. Fruit globose, about 5 mm in diameter.

CEBU, near Toledo, *Bur. Sci. 1722 McGregor*, October 28, 1906.

A species manifestly allied to *Ardisia humilis* Vahl, and *A. boissieri* A. DC. distinguishable by its narrow, lanceolate leaves.

***Ardisia mindorensis* sp. nov. § *Pyrgus*.**

Species *A. grandidentata* Mez similis, sed differt petiolo multo breviori, dentibus minoribus, a *A. serrata* (Cav.) A. DC. differt inflorescentiis plus minus dense ferrugineo-tomentosis, foliis subtus parce pubescentibus.

A shrub 3 to 5 m high. Branches terete, brown or grayish, striate, usually rather thick, glabrous, the branchlets often ferruginous-pubescent. Leaves pseudo-verticillately crowded at the apices of the branchlets, subtending the terminal panicles, elliptic-ovate to elliptic-lanceolate, chartaceous, 9 to 18 cm long, 3 to 6 cm wide, gradually narrowed towards both ends, the base acute, rarely somewhat obtuse, the apex rather prominently acuminate, margins distinctly and irregularly serrate-dentate, the teeth rather small, the upper surface glabrous and shining, or the midrib and nerves slightly puberulent, beneath also shining and distinctly ferruginous-tomentose on the midrib and primary nerves, obscurely glandular-punctate; nerves 12 to 15 on each side of the midrib, elevated and very prominent on the lower surface, curved-ascending, anastomosing, the reticulations rather distinct; petioles 3 to 7 mm long, ferruginous-tomentose, ultimately nearly glabrous. Panicles terminal, pyramidal, 6 to 13 cm long, the rachis, branches and branchlets densely ferruginous-tomentose, the primary branches spreading, the lower ones often 5 cm long, the upper ones shorter, the secondary branches mostly in the upper half of the primary ones, each bearing from 5 to 7 flowers arranged in a condensed raceme or subumbellate, the pedicels ferruginous-tomentose, 9 to 12 mm long. Calyx-lobes broadly triangular-ovate, acute, about 1.5 mm long and wide, imbricate, pubescent, the margins prominently ciliate, glandular-punctate. Petals ovate, 5 mm long, 3 mm wide, acute or

obscurely acuminate, with few, scattered, comparatively large glands. Anthers 2.5 mm long, apiculate, not glandular. Ovary ovoid, ferruginous-puberulent; style about 5 mm long. Fruit globose, black-purple when mature, somewhat fleshy, about 7 mm in diameter.

MINDORO, Mount Halcon, in forests, altitude about 1,800 m, *Merrill 5675, 5732, 6145* (type), November, 1906, *For. Bur. 4342 Merritt*; Mount Irauan, *For. Bur. 8728 Merritt*, January, 1908, altitude about 1,300 m; Mount Sablayan, *For. Bur. 11012 Merritt*, March, 1908, altitude about 970 m; mountains back of Abra de Ilog, *For. Bur. 8793 Merritt*, January, 1908, altitude 500 m.

As noted above, this species is closely allied to *Ardisia grossedentata* Mez, differing in its much shorter petioles. It bears much the same relationship to that species as does *A. curtipes* Merr. to *A. serrata* (Cav.) A. DC. It is distinguished from *H. serrata* var. *brevipetiolata* Merr. by its ferruginous tomentum and differently shaped leaf-bases.

***Ardisia oblongifolia* sp. nov. § *Stylardisia*.**

Arbor vel frutex erecta, ramulis, foliis junioribus subtus, inflorescentiisque minute brunneo-puberulis; foliis oblongis vel oblongo-lanceolatis, chartaceis, acuminatis, petiolatis, alternis; paniculis terminalibus, quam folia brevioribus, ramis divaricatis, paucis.

An erect shrub or tree. Branches terete, light-gray or brownish, the younger ones brown-puberulent. Leaves alternate, scattered, oblong to oblong-lanceolate, 11 to 18 cm long, 2.5 to 5 cm wide, chartaceous, entire, dull or slightly shining when dry, the apex rather gradually and sharply acuminate, the base acute, beneath, when young, somewhat ferruginous-puberulent becoming glabrous, not manifestly glandular-punctate; nerves up to 18 on each side of the midrib, not very prominent, often obscure; petioles 5 to 7 mm long. Panicles terminal, pyramidal, 10 cm long or less, the branches few, alternate, divaricately spreading, the lower ones 3 to 4 cm long, the rachis, branches and branchlets puberulent with dark-brown hairs. Flowers subumbellately disposed, the umbels peduncled and racemously arranged on the primary panicle-branches, the peduncles about 5 mm long, sometimes less, the pedicels slender, 2 to 3 mm long. Calyx about 3 mm in diameter, the five lobes ovate, obtuse, about 1.5 mm long, glandular-punctate, the margins minutely puberulent. Petals ovate, nearly free, acute, 3.5 mm long, 2.5 mm wide, not at all glandular-punctate. Anthers 3 mm long, not glandular. Ovary glabrous; style 3.5 to 5 mm long, often exerted before anthesis.

MINDANAO, Lake Lanao, *Mrs. Clemens 779* (type), from between Malabang and Camp Keithley, November, 1906, and three sheets without number from Camp Keithley.

Most of the flowers do not have the styles exerted, but a few of them on the type specimen have the styles decidedly exerted, hence the species is placed in the § *Stylardisia*. In might, with almost equal propriety, be placed in the § *Akosmos*.

***Ardisia palawanensis* sp. nov. § *Pyrgus*.**

Arbuscula circiter 1.5 m alta; foliis petiolatis, oblongo-oblancoelatis vel late oblongo-lanceolatis, chartaceis, irregulariter serratis, subtus ad costa plus minus pubescentibus, valde glanduloso-punctatis; floribus 5-meris, sepalis petalisque ferrugineo-villosis, plus minus punctatis; ovario villosa.

A shrub about 1.5 m high. Branches terete, brownish, pubescent. Leaves pseudo-verticillate at the nodes and subtending the inflorescence, normal leaves also subtending each, or most of the panicle-branches, oblong-oblancoelate or broadly oblong-lanceolate, chartaceous, shining when dry, 14 to 20 cm long, 3.5 to 7 cm wide, somewhat pubescent on the midrib on both surfaces, the apex obscurely and bluntly acuminate, the base gradually narrowed, cuneate, margins entire near the base, in the upper one-half or two-thirds irregularly serrate, the under surface distinctly and rather densely glandular-punctate; nerves 9 to 12 on each side of the midrib, beneath very distinct, anastomosing; petioles pubescent, 1 cm long or less. Inflorescence terminal, subtended by a whorl of leaves, the rachis about 15 cm long, and with the branches and pedicels more or less densely brown-pubescent, the branches alternate, spreading, simple, most of them subtended by a normal leaf, the lower ones 6 cm long, the upper gradually shorter, each bearing at the somewhat swollen apex from 2 to 5 subumbellately disposed flowers, and with numerous scars of fallen pedicels, each flower subtended by an oblong, pubescent bractcole about 5 mm in length. Pedicels about 1.5 cm long, ferruginous-villosa. Sepals 5, broadly ovate, acute or shortly acuminate, about 5 mm long, 3.5 mm wide, accrescent and 6 to 7 mm in length, densely ferruginous-villosa, margins strongly villosa-ciliate, glandular-punctate. Petals nearly free, elliptic-ovate, about 6 mm long, 4 mm wide, obtuse, slightly pubescent, glandular only in the median part of the upper one-half. Anthers 3.5 mm long, not glandular, apiculate-acuminate, their filaments nearly 2 mm long. Ovary globose, ferruginous-pubescent; style glabrous, 5 mm long. Immature fruits globose, somewhat ferruginous-pubescent, inclosed by the somewhat accrescent calyx-lobes.

PALAWAN, about 3 miles northeast of Puerto Princessa, *For. Bur. 3518 Curran*, January 19, 1906, an undershrub in flat forests.

As species undoubtedly belonging in the section *Pyrgus* in spite of the normal leaves subtending the panicle-branches, the whole inflorescence subtended by a whorl of leaves. It is apparently most closely allied to *Ardisia grandidens* Mez, but is very different from that species. The ferruginous-pubescent or villosa panicles, pedicels, sepals, petals, and immature fruits are characteristic.

***Ardisia reptans* sp. nov. § *Bladhia*.**

Suffruticosa, caulis reptans, ramulis foliiferis erectis vel ascendentibus, brevibus, densissime ferrugineo-tomentosis; foliis ternato-pseudoverticillatis, ellipticis vel ovato-ellipticis, membranaceis, acutis vel obtusis, basi rotundatis, obscure punctatis, margine prominente distanter serrulatis,

nervis utrinque circiter 5, subtus prominentibus; inflorescentiis axillaribus, solitariis, tenuibus, paucifloris, foliis subaequalibus vel brevioribus.

A suffrutescent plant, the stems creeping or prostrate, rooting, striate, glabrous or nearly so, slender, brown, the erect leaf-bearing branches densely pubescent with dark-brown, crisped hairs, these branches less than 20 cm high, often some roots appearing above the lowermost leaves. Leaves pseudo-verticillate, in threes, their petioles 5 mm long or less, densely crisped-tomentose, the lamina membranaceous, elliptic or elliptic-ovate, 3 to 4 cm long, 1.5 to 2.5 cm wide, with scattered, crisped, brown hairs on both surfaces, especially on the midrib and nerves, obscurely glandular, the apex acute or obtuse, base rounded, margins prominently and rather distantly denticulate; nerves about 5 on each side of the midrib, prominent beneath, obscurely anastomosing, the reticulations lax, obscure. Flowers unknown. Infrutescence axillary, solitary, very slender, brown-puberulent, with intermixed longer crisped hairs, the rachis 2 to 2.5 cm long, bearing near its apex few long-pedicelled fruits, the pedicels about 1 cm long, puberulent, each subtended by a narrowly lanceolate or linear, acuminate, 2.5 mm long bracteole. Sepals persistent, reflexed in fruit, lanceolate, gradually narrowed upward to the acuminate apex, about 3 mm long, united for the lower 0.5 mm, more or less brown-puberulent, margins obscurely ciliate, very obscurely glandular-punctate. Fruit fleshy, globose, 5 to 6 mm in diameter, red, glabrous, tipped with the slender, 3 mm long, persistent style; seed globose, 4 mm in diameter.

Luzon, Province of Pampanga, Mount Abu, *Bur. Sci.* 1933 Foxworthy, December 31, 1906, in forested ravines, altitude about 1,360 m.

A species of the section *Bladhia*, and apparently closely allied to *Ardisia pusilla* A. DC. (*A. villosa* Mez, non Roxb.) of Japan, and to *A. faberi* Hemsl. of China. All other species of the section, with one exception, *A. metallica* N. E. Br., of Sumatra, are confined to the Himalayan region, China, and Japan.

DISCOCALYX Mez.

Discocalyx insignis sp. nov.

Frutex glaber circiter 3 m altus; foliis alternis, vix pseudo-verticillatis, elliptico-oblongis, usque ad 40 cm longis, margine dense denticulatis, basi longe decurrento-acuminatis; petiolo 6 ad 9 cm longo; floribus dioicis, 5-meris, glabris.

An erect glabrous shrub about 3 m high, the ultimate branchlets stout, about 1 cm in diameter. Leaves alternate, not pseudo-verticillate, elliptic-oblong, 35 to 40 cm long, 10 to 14 cm wide, chartaceous or subcoriaceous, usually grayish when dry, shining, not glandular-punctate, the apex shortly and obscurely blunt-acuminate, the base long-decurrent-acuminate, the margins entire in the lower part of the leaf, but above the lower one-fourth densely denticulate; nerves about 20 on each side of the midrib, prominent, anastomosing, the reticulations distinct, rather lax; petiole stout, 6 to 9 cm long. Panicles fasciated at the ends of

special branches, these branches simple or branched near their apices, up to 18 cm long, the apical portions thickened, cylindric, marked by numerous scars, the panicles numerous, entirely glabrous, slender, 5 to 8 cm long, all parts marked with linear or punctate glands, the panicles 2-pinnate, the flowers racemosely arranged on the ultimate branchlets. Staminate flowers 5-merous, their pedicels 2 to 3 mm long. Calyx 1.6 mm in diameter, glandular-punctate, glabrous, the lobes ovate, obtuse, united for one-half their length. Corolla 3 mm in diameter, glandular-punctate, the lobes ovate, obtuse, united for one-half their length. Anthers less than 0.5 mm long, sessile. Rudimentary ovary wanting. Pistillate flowers and fruits unknown.

MINDANAO, Province of Surigao, in the valley of the Agusan River near Amparo, in forests at an altitude of about 130 m, *For. Bur. 7616 Hutchinson*, August 26, 1907 (type). NEGROS, Mount Marapara, *For. Bur. 13688 Curran*, with immature flowers.

A species similar in vegetative characters to *Discocalyx effusa* Mez, but with very much larger leaves and much longer petioles, the inflorescence also entirely different. It is apparently most closely allied to *D. montana* Elm., but is quite distinct from that species.

***Discocalyx macrophylla* sp. nov.**

Frutex erectus, glaber, circiter 2 m altus; foliis alternis, elliptico-ovatis vel elliptico-oblongis, subcoriaceis, in sicco nitidis, usque ad 31 cm longis, valde denticulatis, basi rotundatis, petiolo usque ad 15 cm longo; floribus in paniculis brevibus congestis, 5-meris, glabris.

An erect shrub about 2 m high, the ultimate branches very stout, brown, 1.5 to 2 cm in diameter. Leaves alternate, or somewhat crowded at the apices of the branchlets, elliptic-ovate to elliptic-oblong, about 30 cm long, 12 to 16 cm wide, glabrous, subcoriaceous, shining, the lower surface obscurely and minutely glandular-punctate, somewhat paler than the upper one, the apex very shortly and obscurely blunt-acuminate, the base broad, rounded, the margins strongly and densely denticulate except at the very base where they are entire; nerves 25 to 30 on each side of the midrib, very prominent, anastomosing, the reticulations distinct on both surfaces; petioles stout, dark-brown, about 15 cm long. Inflorescence on special, leafless (or with one very much reduced leaf) branches, 40 cm long or less, from just below the leaves, the apex thickened and bearing one or several short, dense panicles which doubtless become more or less diffuse in anthesis. Flowers (in bud, and immature), 5-merous, all parts glandular-punctate, glabrous, the anthers sessile. Immature fruit globose, 3 mm in diameter.

LUZON, Province of Cagayan, near San Vicente, in forests, at sea level, *For. Bur. 17237 Curran*, March 8, 1909.

A very characteristic species, distinguishable by its very large and long-petioled leaves, as well as by the very long, specialized branches that bear the inflorescences. It is unquestionably allied to *Discocalyx effusa* Mez, although quite different from

that species, and even more closely allied to *D. insignis* Merr., differing from the latter especially in its differently shaped leaves, which are broad and rounded at the base, not decurrent-acuminate, its much longer petioles, and more numerous leaf-veins.

EMBELIA Burm.

1. *Embelia coriacea* Wall. Cat. (1829) no. 2314; A. DC. Prodr. 8 (1844) 87; Mez in Engl. Pflanzenreich 9 (1902) 313.

MINDANAO, Lake Lanao, Camp Keithley, Mrs. Clemens 671, 1069, and three sheets without number, September-October, 1906, 1907. The specimens agree perfectly with *Maingay 1018*, and with 5056 Dr. King's Collector, from the Malay Peninsula, in our herbarium.

Penang and Malacca, Sumatra, Java, and Borneo; not previously reported from the Philippines.

OLEACEÆ.

JASMINUM Linn.

Jasminum cumingii sp. nov.

Frutex ut videtur scandens, glaber, inflorescentiis obscure puberulis exceptis; foliis oppositis unifoliolatis, ovatis, acuminatis, nitidis, basi late rotundatis, nervis utrinque 5 vel 6; inflorescentiis axillaribus, longe pedunculatis, 5-floris; calycis lobis 4 vel 5, subulatis, corollae lobis 6, oblongo-lanceolatis, acuminatis, quam tubus paullo brevioribus.

A shrub, apparently scandent, glabrous throughout except the obscurely puberulent inflorescence. Branches terete, brown, smooth. Leaves simple, opposite, ovate, 7 to 11 cm long, 4 to 7 cm wide, membranaceous, brown and shining when dry, the base broad, rounded; the apex rather sharply acuminate; nerves 5 or 6 on each side of the midrib, distinct, anastomosing, the reticulations very lax; petiole about 1.5 cm long, jointed. Cymes axillary, solitary, the peduncles rather slender, 3 to 7 cm long, each with 5 flowers near the apex, rarely with an additional pair of flowers at about the middle of the peduncle, the bracteoles setaceous, 3 to 5 mm long, the pedicels about 3 mm long. Calyx cup-shaped, about 4 mm long, 2.5 mm in diameter, slightly puberulent, with 4 or 5 setaceous, slender, 0.5 to 0.8 mm long teeth. Corolla-tube 1.5 cm long, the lobes 6, narrowly oblong or oblong-lanceolate, acuminate, about 12 mm long, 2.5 to 2.8 mm wide. Anthers 4 mm long. Style 11 mm long.

PHILIPPINES, without definite locality, *Cuming 1565*.

A species well characterized by its long-peduncled, axillary, solitary, few-flowered, slightly puberulent inflorescence, the corolla-lobes nearly as long as the corolla-tube. The form has not been rediscovered as yet in the Philippines.

Jasminum triplinervium sp. nov.

Frutex scandens glaber; foliis oppositis, simplicibus, chartaceis, oblongo-lanceolatis vel anguste oblongo-ovatis, usque ad 15 cm longis, apice rotundatis vel obtusis, rariter acutis, basi tenuiter triplinerviis;

inflorescentiis axillaribus, solitariis, pedunculatis, multifloris, foliis subaequilongis; calycis lobis 4 vel 5, setaceis, brevibus, corollae laciniis 5, ellipticis, rotundatis, quam tubus dimidio brevioribus.

A scandent glabrous shrub. Branches slender, terete, gray. Leaves opposite, simple, chartaceous, shining when dry and paler on the under surface, oblong-lanceolate to narrowly oblong-ovate, 12 to 15 cm long, 4 to 6 cm wide, the base acute, the apex narrowed, rounded, obtuse, or rarely acute, the base with a pair of slender lateral nerves leaving the midrib shortly above the insertion of the petiole, reaching at least to the middle of the leaf and anastomosing with the lateral nerves, these primary lateral nerves usually 5 or 6 pairs, distant, not prominent, scarcely more distinct than are the secondary ones; petioles jointed, 1.5 cm long. Cymes in the upper axils, solitary, about as long as the leaves, many-flowered, the peduncles about 5 cm long, the branches bearing from two to five flowers, the bracts and bracteoles minute, setaceous, 1 to 2 mm long. Pedicels 8 to 10 mm long. Calyx cup-shaped, glabrous, the tube 3 to 4 mm long, the teeth 4 or 5, unequal, 1 to 2.5 mm long, linear-lanceolate, acuminate, minutely scaberulous. Corolla white, the tube 2.4 cm long, the lobes 5, elliptic or oblong-elliptic, about 12 mm long, 8 mm wide, rounded at the apex, the base broad and minutely biauriculate. Anthers 6 to 7 mm long, acuminate.

NEGROS, Faraon, *For. Bur. 13557 Meyer & Foxworthy*, September 10, 1909, in forests, altitude not given.

A species well characterized by its slenderly triplinerved leaves, and its comparatively large flowers. There are from 20 to 25 flowers in each inflorescence.

APOCYNACEÆ.

ALSTONIA R. Br.

Alstonia paucinervia sp. nov.

Arbor glabra circiter 15 m alta; foliis chartaceis vel subcoriaceis, anguste oblongo-obovatis, usque ad 13 cm longis, basi angustatis, acutis, apice breviter latissime acuminatis vel obtusis, nervis utrinque circiter 15, patulis, conspicuis, distantibus; folliculis 20 ad 40 cm longis.

A glabrous tree about 15 m high. Ultimate branches terete, or the tips somewhat 4-angled, smooth, olivaceous. Leaves usually in whorls of 4, narrowly oblong-obovate, chartaceous or subcoriaceous, 9 to 13 cm long, 3.5 to 5 cm wide, the upper surface smooth and shining, the lower surface of about the same color but dull or very slightly shining, the apex very broadly and shortly acuminate or obtuse, gradually narrowed from about the middle to the acute base; nerves about 15 on each side of the midrib, spreading, distant, prominent, anastomosing close to the margin and forming a faint, somewhat looped, submarginal nerve, the reticulations lax, rather indistinct; petioles 1 to 1.5 cm long. Flowers unknown. Fruiting peduncles from the apical axils, 3 to 4 cm long,

simple or dichotomously branched at the apex, each bearing from 2 to 6 follicles. Follicles cylindric, glabrous, longitudinally striate, about 3 mm in diameter, 20 to 40 cm long, pendulous. Seeds flattened, oblong, 6 mm long, 1.5 mm wide, covered with short, brown hairs, both ends with numerous, long, brown hairs 7 mm in length or less.

Luzon, Province of Camarines, Paracale, *For. Bur. 18726 Darling*, March 19, 1910, in forests at an altitude of about 70 m, locally known as *batino*.

A species closely allied to *Alstonia macrophylla* Wall., but with smaller, somewhat differently shaped leaves which have fewer lateral nerves.

CONVOLVULACEÆ.

DICHONDRA Forst.

Dichondra repens Forst. Char. Gen. Pl. (1776) 39, t. 20; DC. Prodr. 9 (1855) 451.

Sibthorpia evolvulacea Linn. f. Suppl. (1781) 288.

Dichondra evolvulacea Britton in Mem. Torr. Bot. Club. 5 (1894) 268.

Luzon, District of Bontoc, Bauco, dry hillsides, altitude about 1,300 m, *Father M. Vanoverbergh 19*, January, 1910, locally known to the Ilocanos as *napalapayag*.

The genus is new to the Philippines, the present species being widely distributed in tropical, subtropical and subtemperate regions of the world.

VERBENACEÆ.

PYGMAEOPREMNA gen. nov.

Calyx parvus, anguste campanulatus sub anthesi regulariter 5-dentatus, sub fructu auctus, 2-lobatus, lobo altero 2-dentato; altero 3-dentato. Corollae tubus brevis, cylindræus, rectus, breviter exsertus; limbus distincte 2-labiatus, lobo minore exteriore, integro, lobo majore interiore, 3-lobato, fauce intus parce villosa. Stamina 4, subæqualia, tubo affixa, quam corolla breviora; antherae ovatae, loculis parallelis vix divergentibus. Ovarium 2-loculare, loculis 2-ovulatis; stylus apice brevissime 2-fidus. Drupa parva, calyce insidens, obovoidea, excentrica, exocarpio carnosio, tenui, endocarpio duro, indiviso, sæpissime 1-loculare vel rarius obscure 2-loculare. Semina oblonga, compressa, exalbuminosa. Suffruticosa, parva, erecta, parce ramosa, sparse pubescens. Folia opposita, simplicia, integra. Cymæ parvae, breves, terminales vel in axillis superioribus pedunculatae. Flores parvi, albi vel virido-albi.

Pygmaepremna humilis sp. nov.

Suffrutex erectus, usque ad 15 cm altus; foliis obovato-oblongis, oppositis, breviter petiolatis, membranaceis vel subchartaceis, acutis vel brevissime acuminatis, integris, basi acutis, subtus pallidioribus, nervis utrinque circiter 6, distantibus, distinctis; inflorescentiis terminalibus axillaribusque, usque ad 2 cm longis, puberulis; floribus parvis, circiter 4.5 mm longis.

An erect somewhat woody plant about 15 cm high, from stout, elongated, woody roots, the stems simple or dichotomously once branched, terete, slender, the branchlets pale or dark in color, puberulent. Leaves obovate-oblong, 8 to 12 cm long, 3 to 5 cm wide, membranaceous or subchartaceous, entire, the apex acute or very shortly acuminate, rather gradually narrowed from about the upper third to the acute base, the upper surface shining, with very few, scattered, short hairs, becoming glabrous or nearly so, the lower surface paler, eglandular, often shining, sometimes somewhat puberulent on the nerves; nerves about 6 on each side of the midrib, distant, distinct, anastomosing, the reticulations lax; petioles 2 to 4 mm long, puberulent. Inflorescence cymose, rather densely puberulent, terminating the stems and branches, or in the dichotomously branched plants terminating the main stem between the branches and also frequently terminating the branches, pedunculate, the peduncles about 1 cm long, the cymes in anthesis about 1 cm long and wide, somewhat larger in fruit, rather densely flowered, the pedicels about 2 mm long, subtended by small bracteoles. Calyx in anthesis about 2 mm long, puberulent outside, narrowly funnel-shaped, equally 5-toothed, the teeth obtuse, 0.5 mm long, as wide as long, accrescent and persistent, 2-lipped in fruit. Corolla white or greenish-white, slightly exserted, 4.5 mm long, the tube broad, cylindric, straight, glabrous outside, inside somewhat villous, about 1.5 mm long, the limb prominently 2-lipped, the smaller lip rounded, about 2 mm in diameter, entire, imbricately covering the larger lip in bud, the larger lip prominently 3-lobed, the middle lobe rounded, 1.6 mm in diameter, entire, the lateral lobes about 1 mm long and 1.5 mm wide, all lobes reflexed, or the middle lobe of the upper lip suberect. Stamens 4, inserted in the tube, the filaments 0.5 mm long; anthers ovate or broadly elliptic, 0.6 mm long, the cells parallel, not divergent. Ovary ovoid, glabrous, 2-celled, each cell 2-ovuled; style less than 1 mm long, minutely cleft at the apex. Fruit black, broadly obovoid, tipped by the remains of the style, about 5 mm long, 4 mm in diameter, somewhat inequilateral, the pericarp thin, fleshy, the endocarp bony, longitudinally rugose, 1-celled, containing a single seed, but frequently with indications of an additional cell, the second cell rarely developing a seed. Calyx accrescent, persistent, in fruit nearly 4 mm in diameter, distinctly 2-lipped, the larger lip with three, 0.5 mm long teeth, the smaller lobe with two similar but distant teeth. Seeds oblong, compressed, exalbuminous.

Luzon, Province of Cagayan, Piat, *Bur. Sci.* 7841 Ramos, April 2, 1909; Province of Isabela, Ilagan, *Bur. Sci.* 8124 Ramos, April 29, 1909, in open grassy plains.

This curious little plant apparently represents the type of a new genus allied to *Premna* and *Vitex*, but more especially to the former. It differs remarkably from all species of both genera in its habit and in its small size as well as in floral and fruit characters indicated in the diagnosis. The stout roots, much larger than the stems, reach a diameter of 5 mm. Striking characters of the genus, aside from the small size and habit of the plant are its 2-lipped corollas,

the smaller, exterior lip entire, the upper and inner lip strongly 3-lobed, and its calyx, which in anthesis is equally 5-toothed, but in fruit is accrescent and distinctly 2-lipped, one lip 3-toothed, the other 2-toothed.

VITEX Linn.

***Vitex longifolia* sp. nov.**

Arbor inflorescentiis exceptis glabra, circiter 12 m alta; foliis trifoliolatis, petiolo 5 ad 9 cm longo, foliolis oblongo-lanceolatis vel anguste oblongo-ovatis, longe subcaudato-acuminatis, basi acutis vel acuminatis, plus minus inaequalateralibus, usque ad 25 cm longis, subcoriaceis, nervis utrinque circiter 10, subtus prominentibus; paniculis terminalibus, pedunculatis, amplis, plus minusve pubescentibus; floribus fasciculatis.

A tree about 12 m high, glabrous except the inflorescence. Branches grayish, the ultimate ones somewhat compressed. Leaves 3-foliolate, the petioles terete, 5 to 9 cm long. Leaflets oblong-lanceolate to broadly ovate-lanceolate, subcoriaceous, somewhat shining when dry, brownish, paler beneath, 20 to 25 cm long, 5 to 7 cm wide, entire, the apex with a long, slender acumen, the base somewhat inequilateral, acute or acuminate; nerves about 10 on each side of the midrib, beneath prominent, curved-ascending, rather distant, anastomosing, the primary reticulations lax; petiolules of the lateral leaflets less than 1 cm long, of the middle leaflet nearly 2 cm in length. Panicles terminal, solitary, equaling the leaves, the peduncle 15 cm long, sometimes with a single branch from the base, most of the primary branches from above the middle, usually about four at each node, the ultimate branches and branchlets more or less brown-pubescent. Flowers in fascicles on the ultimate branchlets, usually in groups of one central slightly pedicelled flower and two lateral shortly peduncled groups of three flowers each, the bracts small, 2 mm long or less. Calyx pubescent, cup-shaped, 2 mm long and wide, with five, short, acute teeth less than 0.5 mm long. Corolla lilac, pubescent inside and outside, the tube cylindric, 5 to 6 mm long, the upper lip bifid, 5 to 6 mm long, the lobes narrowly obovate, rounded, the lower lip 3-cleft, the lobes oblong, acute or obtuse, 3 mm long. Filaments somewhat pubescent, the longer two about 8 mm, the shorter ones about 6 mm in length. Fruit unknown.

MINDANAO, Province of Surigao, in well-drained flat forests on the Gibon River, altitude about 55 m, *For. Bur.* 7574 *Hutchinson*, June, 1907, locally known to the Manobos as *manamu* and to the Visayans as *aticóco*.

A species in the group with *Vitex parviflora* Juss. (*V. littoralis* Dene.), but distinguishable by its quite different and much larger leaflets.

TECTONA Linn. f.

Tectona philippinensis Benth. & Hook. f. *Gen. Pl.* 2 (1876) 1152; F.-Vill. *Nov. App.* (1880) 158; Vidal Phan. *Cuming. Philip.* (1885) 134, *Rev. Pl. Vasc. Filip.* (1886) 209, (*nomen nudum* in all cases).

Tectona hamiltoniana Wall.; Schauer in DC. *Prodr.* 11 (1847) 629, pro parte (quoad pl. Philip.); F.-Vill. l. c.

Arbor usque ad 15 m alta; foliis elliptico-ovatis ad ovato-lanceolatis, acuminatis, 8 ad 15 cm longis, supra glabris vel subglabris, albidoverruculosis, subtus dense pallide stellato-puberulis; eymis terminalibus, densis; floribus circiter 8 mm longis; fructibus circiter 13 mm diametro, calycibus persistentibus vix inflatis.

A tree reaching a height of 15 m. Leaves elliptic-ovate to ovate-lanceolate, acuminate, 8 to 15 cm long, 3 to 6 cm wide, subcoriaceous, subentire or the margins above obscurely undulate-crenate, the upper surface glabrous or nearly so, rather densely white-verrucose, beneath paler and densely stellate-puberulent; nerves 5 to 7 on each side of the midrib, distinct beneath, the reticulations dense; petioles densely puberulent, 5 to 7 mm long. Cymes terminal, sometimes in the upper axils, in anthesis rather dense, becoming rather diffuse in fruit, densely puberulent. Flowers nearly 8 mm long and 10 mm in diameter. Calyx densely puberulent, funnel-shaped, 5 mm long, equally 5-toothed, the teeth triangular-ovate, 2 mm long. Corolla-tube for the lower 1 to 1.5 mm cylindric, about 5 mm in diameter, then abruptly enlarged, the lobes elliptic-ovate, obtuse, about 4 mm long, the throat villous inside. Filaments about 8 mm long, slender, somewhat exerted. Fruit about 13 mm long, 5 to 6 mm in diameter, the persistent calyx enclosing the drupe but not inflated, densely puberulent with pale-brownish indumentum, the drupe about 8 mm long.

LUZON, Province of Batangas, *Cuming 1432* (type number), *For. Bur.* 7746 *Curran & Merritt*, November, 1907, the latter growing in rather open brush lands at an altitude of about 50 m, locally known as *malapangit*.

As no description of the above species has ever been published, a short one has been given above. Cuming's specimen was referred by Schauer to *Tectona hamiltoniana* Wall., but Bentham & Hooker f. were undoubtedly right in specifically separating the Philippine plant from the Asiatic one. It is manifestly closely allied to Wallich's species, but differs remarkably in the nature of the indumentum, which in *T. hamiltoniana* Wall. is tomentose or stellately wooly, and in the present species minutely and very densely puberulent.

Cuming's plant has been localized from his own list of localities preserved in his correspondence with Sir William Hooker at Kew, and is undoubtedly correct.

LABIATÆ.

SALVIA Linn.

Salvia scaphiformis Hance in *Journ. Bot.* 23 (1885) 368; Forbes & Hemsl. in *Journ. Linn. Soc. Bot.* 26 (1890) 287.

LUZON, Province of Nueva Vizcaya, *Merrill 174*; Province of Abra, *Bur. Sci.* 7206 *Ramos*; Province of Benguet, *Elmer 5834, 8637*.

Not previously reported from the Philippines; Formosa, and Szechuen, China.

SCROPHULARIACEÆ.

BYTHOPHYTON Hook. f.

Bythophyton indicum (Hk. f. & Th.) Hk. f. Fl. Brit. Ind. 4 (1884) 286.

Micranthemum indicum Hk. f. & Th. in Journ. Bot. 9 (1857) 245, t. 7 (excl. fig. of anthers, fide Hooker f.)

Luzon, District of Lepanto, Mount Data, *Merrill 4519*, November, 1905, in shallow water of a small pond at the summit, altitude about 2,250 m.

A monotypic genus previously recorded only from the Nonkreem marshes, Khasia Mountains, India, altitude about 1,400 m. I am indebted to the director of the Royal Gardens, Kew, for the identification of the above specimen.

ACANTHACEÆ.

PERISTROPHE Nees.

Peristrophe lancifolia sp. nov.

Herba erecta vix vel parce ramosa, sparse strigosa; foliis membranaceis, anguste lanceolatis, acuminatis, usque ad 20 cm longis, 2.5 cm latis; foliis floralibus oblongis vel oblongo-lanceolatis, acuminatis; corolla alba, 5 cm longa.

An erect herb about 50 cm high or less, usually unbranched. Stems green, longitudinally sulcate, about 2 mm in diameter, glabrous, or the younger parts slightly appressed-strigose. Leaves lanceolate or narrowly lanceolate, 12 to 20 cm long, 1 to 2.5 cm wide, entire or very slightly undulate, gradually narrowed upward to the long, slender, acuminate apex, the base also narrowed, acute or acuminate, somewhat shining when dry, the upper surface dark-green, the lower surface pale-green, both surfaces with numerous, scattered, oblong cystoliths, the lower also minutely white-puncticulate and slightly appressed-strigose on the midrib and nerves; lateral nerves about 9 on each side of the midrib, ascending, anastomosing and forming a nearly straight submarginal nerve, the secondary nerves and reticulations lax; petioles 5 mm long or less, strigose. Peduncles few, 2.5 cm long or less, terminal and in the upper axils, strigose, few-flowered. Floral leaves 2, unequal, oblong to oblong-lanceolate, acuminate, 2.5 to 3.5 cm long, more or less strigose, especially on the margins. Flowers white, congested, each subtended by one or two linear-lanceolate, more or less hispid, long-acuminate bracts about 2 cm long, 2 mm wide, and by two or three similar but smaller bracteoles. Calyx-lobes similar to the bracteoles, subequal, about 8 mm long, hispid. Corolla 5 cm long, the tube slender, 2.5 cm in length, one lip entire, 1.5 cm broad, the other somewhat narrower and shortly 2-toothed at the apex. Filaments slightly hirsute; anthers 2-celled, the upper cell about 3.5 mm long, the lower 2 mm long, mucicous. Style minutely bifid.

Pod about 1.5 cm long, hirsute, long-stalked; seeds 4. Placenta persistent, not separating from the capsule in dehiscence.

LUZON, Province of Bataan, Balanga Mountains, *For. Bur. 19258 Curran*, January, 1910.

A species well characterized by its narrowly lanceolate, long leaves and by its large flowers.

RUBIACEÆ.

GREENIOPSIS Merr.

Greeniopsis pubescens sp. nov.

Arbor parva vel mediocris, omnibus partibus plus minus dense brunneo-pubescens; foliis oblongo-lanceolatis vel oblongo-oblancoelatis, usque ad 40 cm longis, longe acuminatis, basi angustatis, nervis utrinque circiter 20, stipulis 3 cm longis; capsulis 4 mm longis.

A small or medium-sized tree pubescent throughout. Branches stout, the ultimate ones about 8 mm in diameter, pubescent with short brownish hairs. Leaves oblong-lanceolate or oblong-oblancoelate, 20 to 40 cm long, 6 to 11 cm wide, subcoriaceous, shining when dry, both surfaces pubescent with rather short hairs, or the upper subglabrous, entire, the apex rather slenderly long-acuminate, narrowed to the base, the lamina decurrent practically to the base of the short petiole, so that the leaves are sessile; nerves about 20 on each side of the midrib, prominent, curved, anastomosing, the ultimate reticulations distinct; stipules oblong-lanceolate, chartaceous, 3 cm long, 1 cm wide at the base, acuminate, at first pubescent, becoming nearly glabrous, deciduous. Panicles terminal and in the upper axils, peduncled, nearly as long as the leaves, branched at or above the middle, the rachis, branches and branchlets densely brown-pubescent with short hairs, the branches flower-bearing only above the middle. Flowers white, pedicelled, the calyx pubescent, about 3 mm long, narrowly funnel-shaped, becoming somewhat inflated, the teeth 5, short, truncate, imbricate, broader than long. Corolla rather densely pubescent outside, the throat villous within, the tube about 2 mm long, rather abruptly enlarged above, the lobes 5, rounded, imbricate, about 1.5 mm long, 2.5 mm wide. Anthers 1.4 mm long. Capsules subsecund on the ultimate branchlets, oblong or oblong-ovoid, densely pubescent, 4 mm long, the persistent calyx-teeth oblong, pubescent on both surfaces.

LUZON, Province of Isabela, Bicobian Bay, *Bur. Sci. 10659 McGregor*, August, 1909; Province of Cagayan, *Bur. Sci. 7407 Ramos*, March, 1909 (type).

In general appearance very similar to the other two species of the genus, but well characterized by its rather uniformly distributed pubescence, which consists of short, usually spreading and brownish hairs. The third species for the genus.

HEDYOTIS Linn.

Hedyotis cagayanensis sp. nov.

Frutex erectus, simplex, vix 1 m altus, glaber, partibus junioribus plus minus puberulis exceptis; caulibus teretibus, partibus junioribus quadrangulatis, pulcherrime undulato-crenato-alatis; foliis membranaceis, amplis, petiolatis, usque ad 18 cm longis, oblongo-obovatis vel elliptico-obovatis, nervis utrinque circiter 8; cymis axillaribus, in capitulis subglobosis dense congestis.

An erect undershrub about 60 cm high, unbranched, glabrous, or the younger parts more or less puberulent. Stem stout, brownish, about 6 mm in diameter, the basal part terete, the younger parts above 4-angled, each angle with a striking undulate-crenate wing 1 to 2 mm in width. Leaves oblong-obovate to elliptic-obovate, membranaceous, glabrous, somewhat shining, 13 to 18 cm long, 5 to 8 cm wide, the apex blunt, acute, or broadly acuminate, the base acute; nerves about 8 on each side of the midrib, distinct, ascending, the reticulations very obscure, lax; petioles 1.5 to 2 cm long; stipules ovate or oblong, about 12 mm long, cut into about 12 laciniae. Cymes axillary, glabrous, densely many-flowered, forming subglobose, axillary heads about 2 cm in diameter, the flowers 4-merous; pedicels 2 mm long or less, the bracts oblong, 2 to 3 mm long. Calyx-tube somewhat 4-angled, glabrous, 1.5 mm long, the lobes 1.8 mm in length. Capsule obovoid, 3 mm long.

Luzon, Province of Cagayan, Pamplona, *Bur. Sci.* 7502 Ramos, March 16, 1909, in forests along streams.

A species manifestly allied to *H. pilosissima* Merr., but in adult stage quite glabrous, but more especially characterized by its square, prominently 4-winged stems, the wings undulate-crenate.

Hedyotis macgregorii sp. nov.

Frutex erectus, ramulis foliis inflorescentiisque plus minus strigosopubescentibus; foliis elliptico-oblongis vel elliptico-lanceolatis, usque ad 5.5 cm longis; cymis parvis, axillaribus terminalibusque, subsessilibus vel breviter pedunculatis, densis, paucifloris; corolla circiter 6 mm longa.

An erect much-branched shrub. Branches terete, glabrous, grayish, the younger ones prominently 4-angled and rather densely pubescent. Leaves elliptic-oblong to elliptic-lanceolate, chartaceous or subcoriaceous, 2 to 5.5 cm long, 1 to 2 cm wide, the base acute, the apex blunt, acute or even slightly acuminate, the lower surface more or less strigose-pubescent with short hairs, especially on the midrib and nerves, the upper surface also more or less pubescent, ultimately becoming glabrous or nearly so; nerves about 5 on each side of the midrib, curved-ascending, anastomosing, the reticulations obsolete or nearly so; petioles densely

pubescent, 2 to 4 mm long; stipules pubescent, ovate, persistent, 3 to 4 mm long, cut into six or more linear laciniaë. Cymes terminal and in the upper axils, small, dense, comparatively few-flowered, subsessile or the axillary ones sometimes with peduncles up to 1.5 cm in length, all parts more or less pubescent, the bracts foliaceous, spatulate, 5 to 6 mm long, the pedicels usually about 1 mm in length. Calyx-tube ovoid, pubescent, 2 mm long, the lobes usually 4, lanceolate, acuminate, pubescent, 3 mm long. Corolla apparently white, 6 mm long, the tube 4 mm in length, cylindric, glabrous outside, villous within, usually with 4 lobes, rarely with 3 or 5, the lobes oblong, obtuse or acute, 2 mm long, reflexed in anthesis, slightly strigose on the back. Anthers 1.2 mm long. Style 3.5 mm long, cleft at the apex. Capsule ovoid, 3.5 mm long, somewhat strigose-pubescent, the seeds black, compressed, angular, irregular, 1.2 to 1.5 mm long.

Luzon, Province of Benguet, Pauai, *Bur. Sci.* 8490 *McGregor*, June, 1909 (type), *Bur. Sci.* 4473 *Mearns*, August, 1907.

Apparently a species of the mossy forest, allied to *Hedyotis benguetensis* Elm., and other species of that group, but well characterized by its strigose pubescence.

***Hedyotis pilosissima* sp. nov.**

Frutex vel suffrutex erectus, simplex, vix 1 m altus, omnibus partibus plus minus dense pilosus; foliis chartaceis vel submembranaceis, oblongo-lanceolatis vel oblongo-ellipticis, usque ad 16 cm longis, acuminatis, basi acutis, nervis 6 vel 7 utrinque, adscendentibus; stipulis amplis, laciniatis; cymis in axillis dense congestis, subcapitatis, dense multifloris.

An erect unbranched suffrutescent or decidedly woody undershrub less than 1 m high, the stems terete, about 6 mm in diameter, brownish or grayish, densely pilose. Leaves oblong-lanceolate to oblong-elliptic, 12 to 16 cm long, 3 to 5.5 cm wide, chartaceous or submembranaceous, greenish when dry, somewhat shining, the apex acuminate, base acute, both surfaces with numerous, long, white hairs, especially so on the midrib and nerves on the under surface; nerves 6 or 7 on each side of the midrib, distinct, ascending, not or obscurely anastomosing, the secondary nerves and the reticulations obsolete; petioles pilose, 1.5 to 2 cm long; stipules ample, green, somewhat pilose, up to 1.5 cm long, 1.2 cm wide, cut into about 12, narrowly lanceolate, acuminate laciniaë 3 to 5 mm in length, the middle one longer. Cymes axillary, more or less pilose, congested, forming subglobose or hemispherical inflorescences 1 to 2 cm in diameter. Flowers 4-merous, their pedicels up to 2 mm in length, sometimes wanting, the bracteoles lanceolate, acuminate, 2 mm long. Calyx-tube ovoid, glabrous, about 1.2 mm long, the lobes green, lanceolate, acuminate, 2 mm long, the margins ciliate with long white hairs. Corolla-tube 2 mm long, the lobes about the same length, oblong, recurved, usually acute. Anthers 1 mm long. Capsule globose or ovoid, glabrous except for the few hairs on the persistent calyx-lobes, about 2

mm in diameter; seeds numerous, angular, black, about 0.3 mm in diameter.

PANAY, Dumarao, in damp, shaded ravines along streams, at an altitude of about 100 m, *Merrill 6704*, March 25, 1910.

A species well characterized by its ample leaves and dense pubescence. A specimen from Maagnas, Province of Camarines, Luzon, *Bur. Sci. 6326 Robinson*, August, 1908, may be referable here, but in this plant the capsules are pilose, not glabrous.

IXORA Linn.

Ixora capitulifera sp. nov.

Arbor glabra circiter 10 m alta; foliis subcoriaceis, in sicco brunneis, nitidis, oblongis vel oblongo-obovatis, acuminatis, basi leviter rotundatis, breviter petiolatis; floribus circiter 1.5 cm longis, subsessilibus, in capitulis parvis, densis, longe pedunculatis dispositis; calycis dentibus quam tubus brevioribus.

A glabrous tree about 10 m high. Branches terete, stout, grayish. Leaves oblong or oblong-obovate, 4 to 11 cm long, 1.5 to 5 cm wide, subcoriaceous, brown and shining on both surfaces when dry, the apex shortly and usually bluntly acuminate, rarely nearly acute, the base narrowed, somewhat rounded, rarely subacute; nerves about 12 on each side of the midrib, slender, brown, distinct, anastomosing; petioles less than 2 mm long. Inflorescence terminal and axillary, the peduncles slender, 2 to 4 cm long, each subtended by from 2 to 4, distichous, broadly ovate, acuminate bracts about 2.5 mm long, 2 mm wide, usually with a pair of smaller, narrower bracts above the middle. Flowers 5 to 8 at the end of each peduncle, sessile, congested, the calyces forming a rather dense head less than 6 mm in diameter. Calyx 2 mm long, the teeth 4, triangular-ovate, acute or somewhat obtuse, small, the bracteoles 2, linear, about 1 mm long. Corolla-tube 13 mm long, 1 mm in diameter, the lobes four, elliptic, rounded or obtuse, about 4 mm long, 2.5 mm wide.

PALAWAN, Mount Victoria, in forests along streams at an altitude of about 1,050 m, *Bur. Sci. 686 Foxworthy*, March 23, 1906, the flowers said to be pinkish or whitish, with a faint wintergreen odor.

The species is a very characteristic one, readily recognizable by its slenderly peduncled capitate inflorescence.

Ixora crassifolia sp. nov.

Arbor parva usque ad 9 m alta, inflorescentiis puberulis exceptis glabra, foliis crassissime coriaceis, ellipticis vel oblongo-ellipticis, apice rotundatis vel leviter retusis, usque ad 34 cm longis, nitidis, utrinque in sicco dense minute rugosis, nervis utrinque circiter 10; inflorescentiis terminalibus, puberulis, circiter 9 cm longis, dense multifloris; floribus circiter 2.5 cm longis.

A small tree 9 m high or less, glabrous except the somewhat cinereous-puberulent inflorescence. Branches rather stout, brown or grayish. Leaves elliptic, broadly elliptic or oblong-elliptic, 14 to 24 cm long, 7

to 18 cm wide, very thickly coriaceous, somewhat shining, when dry minutely and densely rugose on both surfaces, the apex rather broadly rounded, sometimes slightly retuse, the base acute or somewhat acuminate, rarely broadly rounded; nerves about 10 on each side of the midrib, distinct, anastomosing, the reticulations lax; petioles stout, 1 to 2 cm long; stipules very broadly ovate, abruptly acuminate, 5 to 7 mm long, deciduous. Inflorescence terminal, puberulent, corymbose, subtended by one or two pairs of broadly ovate, abruptly acuminate bracts 8 mm long or less, with two lateral basal branches, the rachis short, trichotomously branched, the primary branches stout, 3 to 5 cm long, all subtrichotomously branched at their apices, forming a rather dense inflorescence about 9 cm long, and as wide or wider than long. Flowers white or greenish-white, rather densely crowded at the ends of the ultimate branchlets, their pedicels 1 to 2 mm long, ebracteolate. Calyx ovoid, puberulent, about 2 mm long, with 4 short, broadly ovate, acute teeth about 0.3 mm long. Corolla-tube rather slender, 2.4 cm long, 2 mm wide when more or less flattened out, the lobes 4, spreading or reflexed, oblong, rounded, 7 mm long, 4 mm wide. Anthers linear, 5 mm long, the filaments exerted about 3 mm. Style slender, exerted about 6 mm, the arms thickened, more or less flattened, about 2 mm long.

MINDANAO, District of Zamboanga, Port Banga, *For. Bur.* 9039, 9070, 9439 (type), 9479 Whitford & Hutchinson, December, 1907, and February, 1908, in dipterocarp forests at from 30 to 50 m above the sea.

A species well characterized by its unusually large, very coriaceous leaves, which, when dry, are rather pale and minutely, densely rugose on both surfaces.

Ixora ebracteolata sp. nov.

Ixora amboinica Elm. Leaf. Philip. Bot. 1 (1906) 9, non DC.

Arbuscula vel arbor parva, 3 ad 8 m alta, inflorescentiis exceptis glabra; foliis petiolatis, coriaceis vel subcoriaceis, in sicco brunneis, nitidis, oblongis vel oblongo-ellipticis, obtusis vel late brevissime acuminatis, basi acutis, nervis utrinque circiter 10, distinctis; cymis terminalibus, puberulis vel subglabris, pedunculatis, multifloris; floribus 9 ad 12 mm longis, ebracteolatis.

An erect shrub or tree 3 to 8 m high, glabrous except the inflorescence which is usually puberulent. Branches terete, gray, the younger ones usually reddish-brown. Leaves oblong to oblong-elliptic, 6 to 12 cm long, 2.5 to 5 cm wide, the base acute or decurrent-acuminate, the apex obtuse, rounded, or broadly and obtusely short-acuminate, brown and shining when dry, the lower surface paler than the upper; primary nerves about 10 on each side of the midrib, anastomosing, brown, distinct, the reticulations rather lax, distinct; petioles 5 to 10 mm long; stipules lanceolate-acuminate from an ovate base, 5 mm long or less. Inflorescence terminal, rather dense, 5 to 7 cm in diameter, usually puberulent, sometimes glabrous peduncled, many-flowered, the peduncles 3 to 5 cm long, the lower branches spreading, about 2 cm long. Flowers white, mostly in triads on

the ultimate branchlets, the middle one of each triad sessile or subsessile, the two lateral ones with pedicels 3 to 5 mm in length, the bracts and bracteoles wanting. Calyx glabrous, ovoid, about 3 mm long, the teeth broadly triangular-ovate, acute, 0.5 mm long. Corolla-tube 6 to 9 mm long, about 2 mm in diameter, the lobes 4, elliptic-oblong, acute or slightly acuminate, 6 mm long, 2.5 to 3 mm wide. Anthers 3.5 mm long, lanceolate, acuminate. Style slightly exerted; stigma cleft, 2 mm long. Fruit ovoid, smooth, somewhat fleshy when fresh, 8 mm long or less, dark-colored when dry.

LUZON, Province of Zambales, Mahumaling, *For. Bur.* 5845 Curran, January, 1907 (type), on dry cogon-covered slopes; other specimens from the same province are: *Bur. Sci.* 4798, 5038 Ramos, *For. Bur.* 375 Maule, Merrill 2953, 2985, 2080. Various local names are *pamutim*, *pilis*, *lumboy-manoc*, *talab*, and *tatanic*.

The species is entirely different from *Ixora amboinica* DC., to which Mr. Elmer referred several of the specimens above cited; it is distinguished from the majority of the species in the genus by the entire absence of bracts and bracteoles.

***Ixora longissima* sp. nov.**

Arbuscula erecta, glabra; foliis petiolatis, lanceolatis, usque ad 40 cm longis, crasse membranaceis, sensim longe acuminatis, margine minute crenato-undulatis; cymis terminalibus, diffusis, amplis, multifloris; floribus circiter 5 cm longis; calycis dentibus acutis, quam tubus brevioribus.

An erect glabrous shrub. Branches terete, pale-brown, smooth and shining. Leaves lanceolate, about 40 cm long, 5.5 cm wide, thickly chartaceous, shining when dry, the base acute or somewhat decurrent-acuminate, gradually narrowed upward into the long, slender, acuminate apex, the margins minutely crenate-undulate; nerves about 23 on each side of the midrib, slender, not very prominent, anastomosing, the reticulations lax; petioles stout, 1 to 1.5 cm long; stipules very broad, connate, abruptly acuminate, about 5 mm long. Cymes terminal, very large, trichotomously branched and rebranched, the peduncle stout, about 5 mm long, the primary branches about as long as the peduncle, spreading, the whole inflorescence, including the corollas, about 20 cm wide. Flowers apparently pink or reddish, numerous, in triads on the ultimate branchlets, the middle one of each triad sessile, the two lateral ones with pedicels 2 to 3 mm long, the bracts oblong-ovate, acuminate, 2 to 3 mm long, the bracteoles similar but smaller, 1 mm long. Calyx 2 mm long, the teeth ovate, acute, about 0.5 mm long. Corolla-tube slender, about 4.5 cm long, the lobes broadly ovate-lanceolate or elliptic-lanceolate, acuminate, thin, reticulate, about 10 mm long, 4 mm wide.

LEYTE, without definite locality, *For. Bur.* 16975 Rosenbluth, March, 1909.

A species well characterized by its very long leaves which are long and slenderly acuminate, as well as by its ample, diffuse panicles and very long flowers. It is probably most closely allied to *Ixora salicifolia* DC., but seems to be sufficiently distinct.

Ixora longistipula sp. nov.

Frutex glaber 1.5 ad 3 m altus; foliis petiolatis, oblongo-lanceolatis, chartaceis, acuminatis, basi acutis; stipulis setaceis, 1 ad 1.8 cm longis; inflorescentiis terminalibus longe pedunculatis, floribus circiter 2 cm longis in capitulis parvis dense confertis; calycis dentibus acutis, quam tubus brevioribus.

A glabrous shrub 1.5 to 3 m high. Branches terete, slender, reddish-brown. Leaves oblong-lanceolate, 10 to 20 cm long, 3 to 4.5 cm wide, chartaceous, usually firmly so, shining, narrowed at both ends, the base acute, the apex sharply acuminate; lateral nerves about 13 on each side of the midrib, distinct, anastomosing, the reticulations lax; petioles about 1 cm long; stipules setaceous, about 1 cm long, broadened at the base. Inflorescence terminal, solitary, the peduncles slender, 9 to 15 cm long, the flowers subsessile or shortly pedicelled, disposed in a terminal, simple, dense head, this head, excluding the corollas, less than 1 cm in diameter, usually about 25 flowers in each. Bracteoles narrowly lanceolate, acuminate, 1 to 2 mm long. Calyx narrowly campanulate, 2 to 2.5 mm long, the teeth ovate, acute, about 1 mm in length. Corolla slender, pink, the tube about 2 cm long, 1 mm in diameter, the lobes 4, broadly elliptic, spreading, rounded, 4 to 4.5 mm long, 3 to 3.5 mm in diameter. Anthers 3 mm long. Style slightly exerted, the arms flattened, 1.5 mm long. Fruit globose, fleshy, white to pink, about 1 cm in diameter, the seeds elliptic in outline, 7 mm long, 5 mm wide.

NEGROS, Mount Marapara, *For. Bur.* 13625 Curran & Foxworthy, September, 1909 (type), *For. Bur.* 13694 Curran; near Cadiz, *Bur. Sci.* 7327 Celestino, March, 1909. MINDORO, Mount Halcon, *Merrill* 5569, November, 1906.

A sylvan species ranging from 500 to 700 m above the sea, well characterized by its elongated, setaceous stipules, and its long-peduncled, capitulate inflorescence.

Ixora mearnsii sp. nov.

Arbuscula erecta glabra; foliis oblongis vel late oblongo-lanceolatis, chartaceis vel submembranaceis, acuminatis, basi acutis vel leviter rotundatis, petiolatis, usque ad 18 cm longis, in sicco nitidis, nervis utrinque circiter 11, distinctis; cymis terminalibus, multifloris, densis; floribus circiter 3 cm longis, calycis segmentis acutis, quam tubus brevioribus.

An erect glabrous shrub. Branches terete, or the younger ones obscurely angled, dark-reddish-brown, shining. Leaves oblong to broadly oblong-lanceolate, 12 to 18 cm long, 3 to 7 cm wide, chartaceous or submembranaceous, shining on both surfaces, when dry olivaceous above, paler beneath, the apex very sharply acuminate, the base acute or narrowed and slightly abruptly rounded; nerves about 11 on each side of the midrib, distinct on the lower surface, anastomosing, the reticulations lax; petioles about 1 cm long; stipules connate, subtruncate, abruptly and shortly apiculate-acuminate, the margins slightly ciliate, 2 to 3 mm long. Cymes terminal, shortly peduncled, including the flowers about 7

cm long, 10 cm wide, dense, many-flowered, the branches trichotomously branched. Flowers apparently pink, mostly in triads on the ultimate branchlets, the middle one of each triad sessile, the two lateral ones with pedicels 3 mm long or less; bracts subtending the branches small, ovate, acuminate, the bracteoles similar, ovate, acuminate, 1 to 1.2 mm long. Calyx 2 to 3 mm long, the teeth ovate, acuminate or acute, 1 mm long. Corolla-tube 26 mm long, 1 mm in diameter, the lobes elliptic to elliptic-oblong, reticulate, membranaceous, acute or minutely acuminate, 7 to 8 mm long, 4 to 5 mm wide. Anthers 3 mm long, abruptly caudate-apiculate. Stigma about 1 mm long, slightly exserted.

Luzon, Province of Tayabas, Casiguran, *Bur. Sci.* 2999 (type), 2976 Mearns, June 1, 1907. A specimen from Baler, Province of Tayabas, Luzon, *Bur. Sci.* 10672 McGregor, August, 1909, is similar but has a more lax inflorescence; longer flowers, the corolla-tube 3 cm in length, and the calyx-teeth are obtuse or rounded.

A species allied to *Ixora congesta* Roxb., but with thinner, fewer-nerved leaves, and more lax inflorescence.

Ixora mindanaensis sp. nov.

Arbuscula 2 ad 3 m alta, cymis parce puberulis exceptis glabra; foliis lanceolatis, oblongo-lanceolatis, vel oblongo-oblancoelatis, coriaceis vel subcoriaceis, petiolatis, usque ad 16 cm longis, basi acutis vel acuminatis, apice acuminatis, nervis utrinque 8 ad 10, distinctis, laxissime reticulatis vel reticulis subobsoletis; cymis terminalibus, e basi 3-ramosis; floribus circiter 11 mm longis, calycis dentibus parvis, obtusis, quam tubus brevioribus.

A shrub 2 to 3 m high, erect, branched, glabrous except the inflorescence. Branches terete, rather slender, light-gray. Leaves lanceolate, oblong-lanceolate, or oblong-oblancoelate, 8 to 16 cm long, 3 to 6 cm wide, coriaceous or subcoriaceous, when dry shining on both surfaces, brown, paler beneath, the apex rather sharply acuminate, the base gradually narrowed, acute or somewhat acuminate; nerves 8 to 10 on each side of the midrib, beneath distinct, usually brown, anastomosing, the reticulations very lax, often nearly obsolete; petioles about 5 mm long; stipules ovate to oblong-ovate, acuminate, about 5 mm long, deciduous. Cymes terminal, somewhat puberulent, branched from the base, the branches three, 2 cm long or less, each bearing at the apex from three to five short secondary branches, the flowers all sessile or subsessile, in groups of threes on the ultimate branchlets, densely disposed, the cymes 5 cm long or less; bracts very small, obscure, the bracteoles similar, minute, linear, 0.5 mm long. Calyx 2 to 2.5 mm long, puberulent, the teeth ovate, obtuse, 0.5 mm long. Corolla-tube white or pinkish, about 9 mm long, 1 mm in diameter, the lobes elliptic-oblong, 3.5 mm long, 1.5 to 1.8 mm wide, obtuse, 6-nerved, nerves mostly anastomosing. Anthers 3 mm long, acute or obtuse. Stigma slightly exserted, 2 mm long, cleft.

Fruit red, depressed-globose, somewhat compressed, about 1 cm wide, nearly as long, glabrous, smooth, somewhat longitudinally depressed between the seeds, crowned by the short calyx-rim.

MINDANAO, District of Zamboanga, Port Banga, *For. Bur. 9010* (type), 9034 *Whitford & Hutchinson*, November 29 and December 2, 1907; Sax River, *Williams 2192*, February 4, 1905; Province of Misamis, Malabug River, trail to Mount Malindang, *For. Bur. 4773 Mearns & Hutchinson*; Lake Lanao, Camp Keithley, *Mrs. Clemens s. n.*, May and November, 1906.

***Ixora palawanensis* sp. nov.**

Frutex erectus 2 ad 3 m altus, glaber; foliis subcoriaceis, nitidis, acuminatis, lanceolatis vel oblongo-lanceolatis, usque ad 15 cm longis, nervis utrinque circiter 14; cymis terminalibus, dense multifloris; floribus 3.3 ad 3.8 cm longis, bibracteolatis, bracteolis parvis; calycis segmentis ovatis, acutis, quam tubus brevioribus.

An erect shrub 2 to 3 m high, glabrous throughout. Branches terete or somewhat compressed, smooth, somewhat shining, reddish-brown. Leaves lanceolate to oblong-lanceolate, rarely oblanceolate, 7 to 15 cm long, 1.5 to 4.5 cm wide, subcoriaceous, somewhat pale when dry, shining on both surfaces, the base acute or acuminate, apex sharply acuminate; primary nerves 12 to 15 on each side of the midrib, not prominent, anastomosing, scarcely more distinct than are the alternating secondary ones, the reticulations obscure, lax; petioles 0.3 to 0.8 cm long; stipules 5 mm long or less, base broad, apex abruptly contracted, prominently acuminate. Cymes terminal, dense, 4 to 8 cm wide, the peduncles 1 cm long or less, the lower branches up to 5 cm in length, trichotomously branched, the lower bracts lanceolate, acuminate, about 1 cm long, the bracts of the secondary branches much smaller, ovate-oblong, acuminate, 2.2 mm long; bracteoles 2 at the base of each flower, similar to the upper bracts but only 1.5 mm long. Flowers salmon- to orange-colored, numerous, mostly in triads at the ends of the ultimate branchlets, the middle one of each triad sessile, the two lateral ones with pedicels 3 to 8 mm in length. Calyx 3 to 3.3 mm long, the lobes 4, ovate, acute, 1.5 mm in length. Corolla-tube 3 to 3.5 cm long, less than 1.5 mm in diameter, the lobes oblong-lanceolate, acuminate, reticulate, rather thin, about 11 mm long, 3.5 mm wide. Anthers 3 mm long. Style slightly exserted; stigma cleft. Fruits ovoid, about 1 cm long, dark-reddish-brown when dry, obtuse or slightly beaked.

PALAWAN, in forests about $1\frac{1}{2}$ miles northwest of Iwahig, *Bur. Sci. 793 Fow-worthy*, April 22, 1906, in forested ravines.

A species manifestly allied to *Ixora congesta* Roxb., but with relatively narrower, smaller leaves which are sharply acuminate, the veins not prominent, etc.

***Ixora philippinensis* sp. nov.**

Arbuscula vel arbor parva, 2 ad 7 m alta, inflorescentiis exceptis glabra; foliis subcoriaceis, subsessilibus, oblongo-ovatis, elliptico-ovatis, vel ovatis,

usque ad 15 cm longis, in sicco nitidis, plerumque brunneis, breviter acuminatis vel acutis, basi late rotundatis plerumque distincte cordatis; cymis puberulis, terminalibus, paucifloris, breviter pedunculatis, densis; floribus 1.8 ad 2.2 cm longis, calycis dentibus minutis, apiculato-acuminatis, quam tubus brevioribus.

A shrub or small tree 2 to 7 m high, glabrous except the usually puberulent inflorescence. Branches grayish to reddish-brown, terete. Leaves oblong-ovate to elliptic-ovate or ovate, shining when dry, usually brownish, paler beneath, subcoriaceous, 6 to 15 cm long, 2 to 6 cm wide, rarely wider, the apex shortly and broadly acuminate, acute, or rarely obtuse, usually minutely apiculate by the excurrent midrib, the base broadly rounded, usually distinctly cordate, the uppermost leaves sometimes somewhat surrounding the stems; petioles none or very short, rarely reaching a length of 3 mm; primary nerves about 11 on each side of the midrib, slender, usually brown and distinct beneath, anastomosing, the reticulations brown, slender, distinct; stipules lanceolate or ovate-lanceolate, prominently acuminate, 3 to 5 mm long. Cymes terminal, solitary, usually somewhat puberulent, their peduncles mostly 1 to 1.5 cm long, often subtended by a pair of reduced, ovate or suborbicular, cordate leaves 1 to 3 cm in length; bracts ovate-lanceolate, acuminate, 1.5 to 1.8 mm long. Flowers white to pale-pink, shortly pedicelled or sessile, crowded, forming a dense inflorescence which, excluding the corollas, is less than 1 cm in diameter, 10 or usually less flowers in each cyme, the branches very short. Calyx 2 mm long, slightly puberulent, the teeth very broad, minute, abruptly apiculate-acuminate, less than 0.3 mm long, the bracteoles lanceolate, acuminate, less than 1 mm long. Corolla-tube 1.8 to 2 cm long, usually slightly hairy outside, the lobes coriaceous, elliptic-oblong, rounded or obtuse, about 7 mm long, 3.5 mm wide. Anthers 3.5 mm long, apiculate. Stigma 2 mm long, cleft, slightly exerted. Fruit ovoid, apparently red when dry, the pericarp slightly fleshy, glabrous, slightly or distinctly beaked, nearly 1 cm long when mature, usually distinctly longitudinally depressed between the seeds.

The type of this species is *For. Bur. 2299 Meyer*, from the Lamao River, Province of Bataan, Luzon; other specimens from the same locality are *Whitford 1270*, *Leiberg 6118*, *Williams 378*, *For. Bur. 2024 Borden*, and *For. Bur. 1463 Aheru's collector*.

Ixora philippinensis includes most of the Philippine specimens that recently have been identified as *Ixora coccinea* Linn., and it appears to be one of the most widely distributed and abundant species in the Archipelago. Of our abundant material, for the most part distributed as *Ixora coccinea* Linn., I would refer to *Ixora philippinensis* specimens from the Batanes and Babuyan Islands, from the Provinces of Ilocos Norte, Zambales, Pangasinan, Nueva Ecija, Bulacan, Rizal, Tayabas, and Camarines in Luzon, and from the Islands of Mindoro, Lubang, Guimaras, Negros, Panay, Palawan, Balabac, and Mindanao.

Ixora philippinensis is manifestly closely allied to *Ixora coccinea* Linn., especially in its sessile or subsessile, cordate leaves and other vegetative characters.

but differs in its very short calyx-teeth, shorter and usually more slender corolla, which is white or pale-pink, and in its very small, congested, few-flowered cymes. In spite of its wide distribution in the Philippines I have been unable to refer it with any degree of satisfaction to any previously described species.

Var. *brevituba* var. nov.

A typo differt cymis sessilibus vel brevissime pedunculatis, corollae tubo vix 1 cm longo.

LUZON, Province of Ilocos Norte, Pasuquin, *For. Bur. 15527 Merritt & Darling*, November 3, 1908, on limestone formation, hillsides, altitude about 100 m.

Ixora coccinea Linn. apparently does not occur in the Philippines except as an introduced and cultivated plant.

Ixora littoralis sp. nov.

Arbusecula glabra, erecta; foliis coriaceis, breviter petiolatis, basi leviter cordatis, apice acutis vel acuminatis, ovatis vel oblongo-ovatis, usque ad 6 cm longis; cymis depauperatis, congestis, paucifloris, breviter pedunculatis, axillaribus terminalibusque; floribus sessilibus vel brevissime pedicellatis, 1.6 ad 1.8 cm longis, calycis lobis acutis, quam tubus brevioribus.

A glabrous shrub. Branches stout, terete, dark-gray. Leaves ovate to oblong-ovate, 2.5 to 6 cm long, 1 to 3 cm wide, subcoriaceous, brown and shining when dry, paler beneath, the base rather broad, rounded-subcordate, apex acute or obscurely acuminate, apiculate; nerves about 8 on each side of the midrib, slender, brown, distinct beneath, the reticulations rather lax, distinct; petioles about 1 mm long; stipules lanceolate-acuminate, 3 mm long or less. Cymes axillary and terminating short lateral branches, the peduncles 5 to 6 mm long, subtended by about three pairs of imbricated, distichous bracts about 2.5 mm long, their bases broad, abruptly caudate-acuminate, the bracts subtending the few branches ovate-lanceolate, acuminate, 2 mm long, the bracteoles linear, 1 mm long or less. Cymes few-flowered, congested, the branches only about 2 mm long. Flowers in triads, the middle one sessile or nearly so, the pedicels of the lateral ones 1 to 2 mm long. Calyx 3 mm long, the teeth broadly triangular-ovate, acute, 0.5 mm long. Corolla-tube 14 to 16 cm long, 1 mm in diameter, the lobes coriaceous, not reticulated, mottled, elliptic-ovate, 5 mm long, 3 mm wide, acute or obtuse. Anthers 3.5 mm long, apiculate. Style slightly exerted; stigma cleft.

BOHOL, Tagbilaran, on beach cliffs, *Bur. Sci. 1274 McGregor*, July, 1906; flowers white.

A species closely allied to *Ixora philippinensis* Merr., differing in its smaller leaves and flowers and frequently axillary inflorescence.

LASIANTHUS Jack.

Lasianthus cyanocarpus Jack in *Trans. Linn. Soc.* 14 (1823) 125; Hook. f. *Fl. Brit. Ind.* 3 (1880) 179; F.-Vill. *Nov. App.* (1880) 112; King in *Journ. As. Soc. Beng.* 73² (1904) 113.

LUZON, Province of Cagayan, *Bur. Sci. 7406 Ramos*, March, 1909.

The specimen agrees closely with the description and with the single specimen

available here for comparison; not previously reported from the Philippines except for the unverified record of F.-Villar; India to the Malay Peninsula and Archipelago.

LUCINAEA DC.

Lucinaea monocephala sp. nov.

Frutex vel arbor glaber; foliis oblongo-ellipticis, brunneis, nitidis, acuminatis, usque ad 8 cm longis, nervis utrinque circiter 10, tenuibus; capitulis axillaribus, solitariis, pedunculatis, circiter 2 cm diametro.

A shrub or tree, glabrous throughout. Branches terete, rugose, gray or brown. Leaves oblong-elliptic, brown and shining when dry, paler beneath, subcoriaceous or thickly chartaceous, 5 to 8 cm long, 1.5 to 3.5 cm wide, the base acute, the apex shortly acuminate, the lower surface covered with minute, obscure, whitish, lepidote scales; nerves about 10 on each side of the midrib, slender, not prominent, the reticulations nearly obsolete; petioles 1 to 1.5 cm long. Heads axillary, solitary, brown, the peduncles stout, 3 to 4 cm long, the heads globose, about 2 cm in diameter. Corolla at least 1 cm long, the petals valvate. Calyx-rim truncate or subtruncate.

Luzon, Province of Laguna, near Dahican, *Bur. Sci.* 10034 Ramos, July, 1909 (type). Negros, Faraon, *For. Bur.* 19074 Curran.

Apparently most closely allied to *Lucinaea ridleyi* King, of the Malay Peninsula and Borneo, but differing, according to the description of that species, in a number of characters.

MUSSAENDA Linn.

Mussaenda albiflora sp. nov.

Frutex erectus 2 ad 5 m altus, omnibus partibus plus minus dense hirsutis; foliis chartaceis, usque ad 30 cm longis, breviter petiolatis, acuminatis, nervis utrinque 11 ad 15; paniculis terminalibus, floribus ad apices ramulorum congestis, corollae tubo albo, circiter 2.5 cm longo.

An erect shrub 2 to 5 m high, all parts more or less densely hirsute with mostly long, spreading, pale or brownish hairs. Branches terete, reddish-brown or grayish, ultimately glabrous, the young branchlets densely hirsute. Leaves chartaceous, ovate to oblong-ovate, 11 to 30 cm long, 6 to 9 cm wide, the apex rather slenderly acuminate, the base more or less decurrent-acuminate and usually slightly inequilateral, both surfaces with scattered, spreading, long hairs, either pale or brownish, and especially dense on the midrib and primary nerves; petioles 1 to 1.5 cm long, densely hirsute; stipules lanceolate, acuminate, about 1 cm long, usually ultimately cleft. Panicles terminal, all parts more or less clothed with long or short, mostly spreading hairs, the flowers congested at the apices of the branchlets, the bracts acuminate, about 7 mm long, the bracteoles similar, more or less hirsute. Pedicels short, gradually merging into the slender, slightly hirsute calyx, the calyx-tube about 2 mm in diameter, the lobes linear-lanceolate, acuminate, hirsute, 6 to 7 mm long, about 1 mm wide at the base, gradually narrowed upward to the acuminate

apex. Corolla-tube very slender, 2.5 cm long, about 1 mm in diameter, the antheriferous portion near the apex slightly inflated and about 2 mm in diameter, this portion also densely bearded inside, the outside with scattered, short hairs, the lobes linear-lanceolate, 9 to 10 mm long, 2 mm wide at the base, gradually narrowed upward to the slenderly acuminate apex, more or less pubescent. Anthers 4 to 5 mm long. Style 4 to 5 mm long, cleft one-third to one-half into two arms. The persistent leaf-like, acerescens calyx-lobe is white, elliptic-ovate, ovate, or oblong-ovate, membranaceous, 6 to 9 cm long, 3 to 5.5 cm wide, 5- to 7-nerved from the base, the nerves more or less hirsute, the reticulations lax, the apex shortly and sharply acuminate, the base acute or rounded, the stipe about 2 cm long. Fruit fleshy, narrowly obovoid, about 1.3 mm long, black when dry, with few, long, scattered hairs, the calyx-lobes, other than the acerescens one, early deciduous.

NEGROS, Faraon, *For. Bur.* 17358 (type), 17359 Curran, September, 1909, and near the same locality, *For. Bur.* 5539 Everett, September, 1906, *For. Bur.* 5218 Danao & *Aspillera*, June, 1906, in thickets, stream depressions, etc., at low altitudes, locally known as *agboy*.

A species well characterized by its long, slender, corolla-tubes which are white instead of yellow, differing in these characters from all Philippine species known to me.

Mussaenda philippica A. Rich. in *Mém. Soc. Hist. Nat. Paris* 5 (1834) 245.

Calycophyllum grandiflorum Meyen *Reise* 2: 234; Walp. in *Nov. Act. Acad. Nat. Cur.* (1843) *Suppl.* 1: 356.

Mussaenda grandiflora Rolfe in *Journ. Linn. Soc. Bot.* 21 (1884) 311; *Vid. Rev. Pl. Vasc. Filip.* (1886) 152, non Benth. (1849).

Mussaenda frondosa Auct. Philip., non Linn.

There are at present about 60 sheets in the herbarium of the Bureau of Science that are apparently referable to a single variable species, or perhaps to several closely allied ones. The material has been identified at various times, some specimens as *Mussaenda frondosa* Linn., some as *M. grandiflora* Rolfe, and some as *M. glabra* Vahl. Rolfe in 1884 stated that he had seen no *Mussaenda frondosa* Linn., from the Philippines, and I can only agree with him in considering that the typical form of Linneus' species does not extend to the Archipelago. The type of *Mussaenda frondosa* Linn., was from Ceylon, and the Director of the Botanic Garden at Peradeniya has kindly supplied me with a full series of specimens representing the Ceylon plant, presumably some of which are typical *Mussaenda frondosa* Linn. None of this Ceylon material matches any of our Philippine specimens. Mr. Rolfe transferred *Calycophyllum grandiflorum* Meyen to *Mussaenda*, to supply a specific name for the Philippine plant, but overlooked the fact that the above specific name was invalidated in *Mussaenda* by the earlier *M. grandiflora* Benth. I have accordingly adopted for the Philippine species the name *Mussaenda philippica* A. Rich., which was based on material secured in the Philippines by Perrottet. Whether or not it is the oldest valid name for the species, I am unable to determine at the present time; some of our Philippine specimens apparently closely match some Javan and Caroline Islands material distributed as *M. frondosa* Linn., and *M. glabra* Vahl. *Mussaenda philippica* A. Rich. is an erect shrub or small tree, not at all scandent, and as at present interpreted, extends from northern Luzon to southern Mindanao, and will probably be found to extend to other parts of Malaya.

Mussaenda villosa Wall. Cat. (1832) no. 6254; Hook. f. Fl. Brit. Ind. 3 (1880) 91; King in Journ. As. Soc. Beng. 72² (1903) 184.

What is apparently this species has been collected at Camp Keithley, Lake Lanao, Mindanao, by Mrs. Clemens, no. 562, and two specimens without number. The material agrees with Wallich's species as interpreted by Sir George King l. c., except that the pubescence is pale rather than rusty. It is the only scandent species at present known from the Philippines; widely distributed in the Malay Peninsula.

OLDENLANDIA Linn.

Oldenlandia pterita (Bl.) Miq. Fl. Ind. Bat. 2 (1857) 193.

Hedyotis pterita Bl. Bijdr. (1826) 972.

Gonotheca blumci DC. Prodr. 4 (1830) 429.

Oldenlandia alata Hook. f. Fl. Brit. Ind. 3 (1880) 70; F-Vill. Nov. App. (1880) 107, non Koenig ex Roxb.

LUZON, Province of Cagayan, *Bur. Sci.* 7824 Ramos, April, 1909. NEGROS, Cabancalan, *Merrill* 6430, March, 1910. PALAWAN, Puerto Princesa, *Bur. Sci.* 213 Bermejós, December, 1905. MINDANAO, District of Davao, *DeVore & Hoover* 124, April, 1903, *Copeland* 596, March, 1904: District of Zamboanga, *Hallier s. n.*, February, 1904.

Previously credited to the Philippines by Hooker f., and by F-Villar. What is apparently the oldest valid specific name is adopted, for according to Hooker f., the species originally published by Roxburgh, ascribed to Koenig, is a synonym of *Oldenlandia paniculata* Linn.

Widely distributed, India to China, and Malaya.

PRISMATOMERIS Thwaites.

Prismatomeris tetrandra (Roxb.) K. Sch. in Engl. & Prantl. Nat. Pflanzenfam. 4⁴ (1891) 138.

Coffea tetrandra Roxb. Fl. Ind. 1 (1832) 538.

Prismatomeris albidiflora Thwaites in Hook. Kew Journ. 7 (1855) 268, t. 7; Hook. f. Fl. Brit. Ind. 3 (1880) 159; Trimen Fl. Ceyl. 2 (1894) 355; King in Journ. As. Soc. Beng. 73² (1904) 90; Valetton in Bull. Inst. Bot. Buitenzorg 8 (1901) 5.

LUZON, Province of Cagayan, *Bur. Sci.* 7365 Ramos, *For. Bur.* 13409 Bernardo, *For. Bur.* 16592, 17166, 17260 Curran, *For. Bur.* 14721, 14747 Darling, *For. Bur.* 18452 Alvarez, February, March, 1909, in forests at from 30 to 200 m altitude.

Some of the specimens cited above differ from the species as described in having somewhat larger flowers and larger leaves, while others are almost an exact match for a specimen of Thwaites' Ceylon plants no. 728 in our herbarium. All the Luzon material has 5-merous flowers and is much closer to the Ceylon plant than to several sheets in our herbarium from Perak, Penang, Singapore, and Java.

No representative of the genus has previously been reported from the Philippines; Ceylon, Burma, Khasia Mountains, Malay Peninsula and Archipelago.

PSYCHOTRIA Linn.

Psychotria phanerophlebia sp. nov.

Frutex erectus, ramulis, inflorescentiis, subtus foliis, plus minus dense castaneo- vel subrubiginoso-pubescentibus; foliis coriaceis, late oblongo-ob lanceolatis, usque ad 29 cm longis, nervis utrinque circiter 22, prominentibus; cymis dense congestis, pedunculatis.

An erect shrub. Branches terete, stout, very densely dark-brown-pubescent. Leaves broadly oblong-ob lanceolate, 23 to 29 cm long, 7 to 8 cm wide, the apex acute or very obscurely acuminate, gradually narrowed from about the middle to the acute base, margins recurved, coriaceous, reddish-brown when dry, glabrous and shining on the upper surface, beneath, especially on the midrib and lateral nerves, rather densely pubescent with short, dark-brown hairs; nerves about 22 on each side of the midrib, very prominent beneath, anastomosing very close to the margin, somewhat ascending, the primary reticulations subparallel; petioles densely pubescent, stout, about 3 cm long. Cymes in the upper axils, densely dark-brown-pubescent, three or more on each branchlet, their peduncles stout, about as long as the petioles, the branches short, crowded, the primary ones not exceeding 1 cm in length, the flowers densely congested, the inflorescence 3 cm or less in diameter. Flowers 5-merous, their pedicels stout, 1 to 3 mm long, densely pubescent, the bracts few, linear-lanceolate, acuminate, about 5 mm long. Calyx pubescent, the tube 4-angled, 4-sulcate, the rim above the ovary somewhat spreading, 3.5 to 4 mm long, the lobes 5, rarely 6, lanceolate, acuminate, 2 to 2.5 mm long. Corolla unknown.

Luzon, Province of Cagayan, near Pamplona, *Bur. Sci.* 7404 Ramos, March 17, 1909.

A species well characterized by its dark-brown pubescence, its congested cymes, and by its very prominently nerved, elongated leaves. It is quite different from all other Philippine forms known to me.

***Psychotria ramosii* sp. nov.**

Arbuscula circiter 2 m alta, glabra, partibus junioribus inflorescentiisque molliter sublanato-pubescentibus exceptis; foliis membranaceis, oblongo-ellipticis vel oblongo-obovatis, in sicco nitidis, pallidis, apice acuminatis, basi angustatis, nervis utrinque circiter 12; cymis axillaribus, pedunculatis, paucifloris, plus minus dense pallide sublanato-pubescentibus.

A shrub about 2 m high. Branches terete, glabrous, smooth, dark-colored. Leaves membranaceous, oblong-elliptic to oblong-obovate, 10 to 12 cm long, 4 to 5 cm wide, pale and shining when dry, the apex shortly and obtusely acuminate, the base gradually narrowed, acute or acuminate; nerves about 12 on each side of the midrib, prominent beneath, the midrib and lateral nerves with weak, scattered, crisped hairs; petioles about 2 cm long; stipules deciduous, broadly ovate, pubescent, about 5 mm long. Cymes in the upper axils, several from each branchlet, the peduncles slender, 2 to 3 cm long, all parts more or less densely covered with weak, soft, pale, somewhat woolly hairs. Flowers white, their pedicels 1 to 2 mm long, densely pubescent. Calyx 4 to 5 mm long, densely pubescent, the lobes 5, ovate, acute or acuminate, 2 mm

long. Corolla glabrous, the tube cylindric, 3 mm long, the lobes 5, more or less spreading, coriaceous, oblong-ovate, 3 mm long, acute or obtuse. Anthers about 1 mm long. Style and stigma together 2.5 mm long. Ovary 2-celled, each cell with a single ovule.

Luzon, Province of Cagayan, near Pamplona, *Bur. Sci.* 7499 Ramos, March 17, 1909.

A species differing from all Philippine forms known to me in its sublanate inflorescence.

RANDIA Linn.

Randia ticaensis sp. nov.

Arbor circiter 6 m alta, glabra; ramulis teretibus, foliis breviter petiolatis, oblongis vel oblongo-ovatis, chartaceis, acuminatis, basi angustatis, leviter cordatis, nervis utrinque circiter 9; floribus axillaribus, solitariis vel fasciculatis, calycis lobis sub fructu lanceolato-acuminatis, circiter 4 mm longis.

A glabrous tree about 6 m high. Branches terete, grayish, slender. Leaves oblong or oblong-ovate, chartaceous, brown and only slightly shining when dry, 10 to 13 cm long, 3 to 5.5 cm wide, the apex acuminate, the base somewhat narrowed and then abruptly rounded-subcordate; nerves about 9 on each side of the midrib, distinct, somewhat ascending, obscurely anastomosing, the reticulations faint, lax; petioles about 2 mm long; stipules setaceous or lanceolate-acuminate, 4 to 4.5 mm long. Flowers unknown, but the fruits axillary, solitary or two in an axil, very shortly pedicelled, black when dry, globose, about 11 mm in diameter (not quite mature), glabrous, the calyx-tube subsistent, cylindric, slightly puberulent, 3 mm long, with five spreading, lanceolate-acuminate, 4 mm long, 3-nerved lobes, the tube ultimately deciduous.

TICAO, Linadlaran Point, *For. Bur.* 12547 Rosenbluth, December 24, 1908, on steep hillsides at an altitude of about 30 m, locally known as *turutulang*. Allied to *R. cumingiana* Vid., but quite distinct.

Randia stenophylla sp. nov.

Frutex vel arbor parvus, plus minus puberulus; foliis lanceolatis vel anguste lanceolatis, subcoriaceis, basi acutis, apice acuminatis, usque ad 8 cm longis, 1.2 cm latis; cymis axillaribus, pedunculatis, vel floribus solitariis; floribus circiter 5 mm longis, 5-meris; fructibus carnosis, globosis vel ovoideis, circiter 1 cm diametro.

An erect shrub or small tree, the branches, leaves and inflorescence more or less grayish-puberulent. Branches slender, terete. Leaves lanceolate or narrowly lanceolate, 3.5 to 8 cm long, 0.5 to 1.2 cm wide, subcoriaceous, scarcely shining when dry, brown, ultimately glabrous or nearly so on the upper surface, base acute, apex acuminate; lateral nerves faint, about 13 on each side of the midrib, sometimes nearly obsolete; petioles puberulent, 1 to 2 mm long; stipules ovate, acuminate, puberu-

lent, 2 to 3 mm long. Flowers axillary, solitary, or two on a more or less elongated peduncle, the peduncle, when present, 12 mm long or less, puberulent, with 2, opposite, lanceolate-acuminate, puberulent, 3 mm long bracts at the apex, subtending two flowers. Flowers sessile or shortly pedicelled. Calyx puberulent, the tube funnel-shaped, about 2 mm long, the lobes more or less spreading, 5, ovate-oblong, acuminate, 2.5 mm long. Corolla-tube 3 mm long, villous within, the lobes oblong, 3 to 3.5 mm long, acute or acuminate, recurved or spreading. Anthers 2.5 mm long, scarcely exerted. Style 2 mm long, glabrous; stigma cleft, 2.5 to 3 mm long, densely villous. Fruit red, soft and fleshy, apparently globose or ovoid and about 1 cm in diameter, the seeds numerous, ovoid, about 3 mm long.

LUZON, Province of Bulacan, Norzagaray, on rocky river banks, *For. Bur.* 7170 *Curran*, June 16, 1907.

A species well characterized by its very narrow leaves and small, axillary, solitary or paired flowers, which may be sessile, or pedunculate; probably most closely allied to *Randia angatensis* F.-Vill., but quite different from that species.

TIMONIUS DC.

Timonius macrophyllus sp. nov.

Arbor circiter 10 m alta, partibus junioribus, subtus foliis, ramulis inflorescentiisque plus minus fulvo-hirsuto-villosis; foliis coriaceis, obovatis, usque ad 23 cm longis, apice rotundatis, basi acutis, nervis utrinque 8 vel 9, prominentibus; inflorescentiis brevibus, dense pubescentibus, floribus 4-meris, secundis, spicatis; fructibus subovoideis, circiter 7 mm longis, leviter longitudinaliter 4-sulcatis, pyrenis 25 ad 30.

A tree about 10 m high. Branches light-gray, subterete, rather stout, apical portions more or less compressed and pubescent. Leaves obovate, 17 to 23 cm long, 12 to 14 cm wide, the apex rounded, the base acute, coriaceous, brown and shining when dry, glabrous on the upper surface, beneath sparingly hirsute-villous, especially on the midrib and lateral nerves; nerves 8 or 9 on each side of the midrib, prominent, curved-anastomosing, the primary reticulations curved, subparallel, prominent; petioles stout, about 1 cm long. Inflorescence in the upper axils, at most 7 cm long, consisting of two or three branches 2 to 3 cm in length or less, densely fulvous-villous, the branches bearing numerous, crowded, sessile flowers along one side. Flowers 4-merous, cylindric. Calyx 3 mm long, the rim produced about 1.5 mm above the ovary, truncate, densely fulvous-villous outside. Corolla (in bud) 3.5 mm long, the four lobes oblong, obtuse, 3 mm long. Anthers 4, alternating with the corolla-lobes, 3 mm long. Style 4-angled, cleft into four arms about 2 mm in length, each arm again minutely cleft at the apex. Ovary 4-celled, each cell with from 5 to 7, rarely more locelli. Fruit subovoid, about 7 mm long, 6 mm in diameter, slightly hairy, with four rounded angles and

somewhat longitudinally 4-sulcate, 4-celled, each cell with from 5 to 7 or more pyrenes.

SAMAR, near Catbalogan, *For. Bur. 12856 Rosenbluth*, February 7, 1909, hillsides along streams at an altitude of about 200 m, locally known as *canilan*.

A species well characterized by its ample leaves, its secund spicate flowers and its pubescent younger parts, inflorescence, and leaves. In its foliage it is somewhat suggestive of *Timonius stipulosus* Val., but is very distinct from that species.

UROPHYLLUM Wall.

Urophyllum elliptifolium sp. nov.

Arbuscula erecta circiter 3 m alta, partibus junioribus plus minus furfuraceis exceptis glabra; foliis ellipticis vel oblongo-ellipticis, coriaceis, nitidis, basi acutis vel acuminatis, apice rotundatis vel breviter late acuminatis, nervis utrinque circiter 12, subtus prominentibus; umbellis axillaribus, solitariis, breviter pedunculatis; fructibus paucis, carnis, ovoideis, circiter 7 mm longis.

An erect shrub about 3 m high. Branches brownish or grayish, terete, or the younger ones somewhat compressed, the tips of the branches, leaf-axils, stipules, and petioles of the younger leaves with few to many, thin, small, ultimately deciduous, appressed, pale scales. Leaves elliptic to oblong-elliptic, coriaceous, shining, rather pale when dry, 8 to 12 cm long, 3.5 to 6 cm wide, the base acute or somewhat acuminate, the apex rounded or shortly and broadly acuminate; primary nerves about 12, prominent beneath, spreading, curved, anastomosing, the alternating secondary ones also prominent, the reticulations distinct; petioles 1.5 to 3 cm long; stipules oblong, rounded, 1.5 cm long, furfuraceous, deciduous. Flowers unknown. Fruit in solitary, axillary umbels, the peduncles about 8 mm long, with few small bracts at the apex, each peduncle bearing from three to five ovoid fruits about 7 mm long, 5 mm in diameter, glabrous, their pedicels about as long as the peduncles. Seeds very numerous, pale-brown, 0.5 mm long, densely and finely foveolate.

PALAWAN, Mount Pulgar, *For. Bur. 3871 Curran*, February, 1906, on forested slopes, altitude 700 to 1,300 m.

Possibly as closely allied to the Bornean *Urophyllum subaneurum* Stapf as to any other species, but quite distinct from that.

Urophyllum negrosense sp. nov.

Arbuscula erecta, ramulis foliis subtus ad nervos, stipulis bracteisque plus minus ciliato-hirsutis; foliis late oblongo-lanceolatis, submembranaceis, usque ad 18 cm longis, apice sensim subcaudato-acuminatis, basi acutis, nervis utrinque circiter 16; stipulis oblongis, membranaceis, usque ad 2.5 cm longis; floribus axillaribus, sessilibus, fasciculatis.

An erect shrub (*vide* Everett). Branches terete, brownish, glabrous or nearly so. Leaves broadly oblong-lanceolate, submembranaceous, 15 to

18 cm long, 4 to 5 cm wide, the apex gradually narrowed to the slender, subcaudate acumen, the base acute, rather pale when dry, shining on both surfaces, glabrous on the upper surface, beneath with numerous, pale, spreading or somewhat appressed ciliate hairs on the midrib and nerves, otherwise glabrous; nerves about 16 on each side of the midrib, prominent, curved-ascending, anastomosing near the margin, the primary reticulations distinct, subparallel; petioles 1 to 1.5 cm long, glabrous or slightly ciliate; stipules membranaceous, oblong, subsistent, 2 to 2.5 cm long, rather densely ciliate on the back. Flowers few, axillary, fascicled, apparently sessile. Fruit fleshy, ovoid, about 1.3 cm long, somewhat villous, crowned by the ovate, obtuse calyx-lobes which are more or less villous and 5 to 6 mm long.

NEGROS, Himugaan River, in ravines at an altitude of about 50 m, *For. Bur.* 5550 *Everett* (type), October 25, 1906, the fruit green when collected; said to be abundant locally; Faraon, *For. Bur.* 13574 *Meyer & Foxworthy*, August, 1909.

A species probably closely allied to *Urophyllum streptopodium* Wall., but with quite different leaves and much larger persistent calyx-lobes.

VILLARIA Rolfe.

Villaria acutifolia (Elmer) comb. nov.

Gardenia acutifolia Elmer Leaf. Philip. Bot. 1 (1906) 6.

MINDANAO, District of Davao, Davao, *Copeland* 437 (type); Padada, *Williams* 2975.

The original description of this species was based on two specimens, the first one cited being *Copeland* 437, which I assume to be the type of the species. The second specimen cited, *Ahern* 457, "457, Forestry Bureau, collected by J. F. Quardas," from Dinagat Island, is also a *Villaria*, and is probably referable to *V. philippinensis* Rolfe. The original description must be emended as follows: Leaves chartaceous; apex acuminate, base rounded or acute. Flowers mostly solitary, axillary, rarely in short, 3-flowered, cymes, the inflorescence and calyx puberulent (not glabrous), the peduncles in fruit not exceeding 2 cm in length, each subtended by two lanceolate, acuminate, puberulent bracts, no bracts or bracteoles above the base. Calyx puberulent, up to 1.5 cm long, sometimes 4-merous. The flowers were apparently described from immature buds, but the dissected material was not preserved, and there are no buds or open flowers left on the type sheet. Open flowers on Mr. Williams' specimen are white, the corolla tube cylindrical, 4 mm long, the lobes 4 or 5, elliptic, rounded, 4 mm long, 2.5 mm wide, the throat pubescent. Anthers 4 mm long, inserted on the throat, not exerted; style 2 mm long, glabrous; stigma oblong, 4 mm long, 1.5 mm wide, felted-pubescent. The description of the fruit must be excluded as it was based on *Ahern* 457, and refers to *Villaria philippinensis*.

The species is well characterized by its usually solitary flowers, the pedicels bibracteate at the base, the inflorescence more or less puberulent, and especially by the calyx-lobes exceeding the corolla in length.

The form described by Mr. Elmer, l. c., as *Gardenia elliptica* is exactly the same as *Villaria littoralis* Vidal.

GOODENOVIACEÆ.

SCAEVOLA Linn.

Scaevola acuminatissima sp. nov. § *Enantiophyllum*.

Scandens, glabra, vel inflorescentiis plus minus pubescentibus; foliis oppositis, ovato-lanceolatis vel late oblongo-lanceolatis, membranaceis, nitidis, leviter distanter denticulatis, basi acutis, apice longissime caudato-acuminatis, usque ad 11 cm longis; pedunculis axillaribus, brevibus, saepe trifloris; floribus aurantiacis, 5-meris, circiter 2.5 cm longis.

A scandent herbaceous vine, nearly glabrous throughout, the stems brownish, slightly striate, up to 3.5 mm in diameter, the branches and leaves opposite. Leaves ovate-lanceolate to broadly oblong-lanceolate, membranaceous, shining, entirely glabrous, 6 to 11 cm long, 2 to 3 cm wide, the base acute, the apex gradually narrowed into a long, slender, straight or somewhat falcate, caudate acumen, the margins entire or distantly and slightly denticulate; nerves about 6 on each side of the midrib, slender, anastomosing, the reticulations lax; petioles 5 mm long or less. Peduncles axillary, solitary, 5 to 10 mm long, more or less appressed-pubescent, the axils of the stems at the insertion of the peduncles also usually pubescent, each peduncle bearing 3, rarely 5 flowers, the pedicels 5 mm long or less, the bracts at the apex of the peduncles narrow, up to 4 mm in length. Flowers yellow. Calyx-tube oblong, glabrous or nearly so, in anthesis 2 to 3 mm long, the lobes 5, lanceolate, acuminate, about 3.5 mm long, 1 mm wide. Corolla 2 to 2.2 cm long, nearly glabrous outside or with very few, scattered, appressed hairs, villous within, the lobes 5, lanceolate or oblong-lanceolate, acuminate, 6 to 9 mm long, 1.8 to 2 mm wide, 3-nerved, the corolla-tube 15-nerved. Filaments slender, glabrous, 8 to 9 mm long; anthers about 2 mm in length. Style glabrous, 13 mm long, the stigma flattened, 2 to 2.5 mm wide, slightly horned at the upper corners, surrounded by a cup 2 to 2.5 mm in diameter which is densely ciliate on the margins. Fruits oblong-ellipsoid, about 9 mm long, 3.5 mm in diameter, somewhat longitudinally sulcate, black when dry, glabrous.

MINDORO, Arunay River, *For. Bur.* 12125 (type), 12133 Merritt, May 8, 1908, in forests at an altitude of about 600 m.

A species allied to the Philippine *Scaevola dajoensis* Merr., of Jolo, *S. minahassae* Koord., of Mindanao and Celebes, *S. similis* Hemsl., of Celebes, *S. novo-guineensis* K. Schum., of New Guinea, *S. oppositifolia* Roxb., of Ternate, and *S. amboinensis* Miq., of Amboina. Specimens sent to Kew for comparison were reported as "nearest *S. novo-guineensis*, differing from it in having larger flowers and an almost glabrous corolla." Among the Philippine species it is manifestly allied to *S. dajoensis* Merr., but differs in its much larger flowers.

Scaevola mindorensis sp. nov. § *Enantiophyllum*.

Species praecedenti valde affinis, differt foliis pro rata latioribus, margine distincte sinuato-dentatis, subtus plus minus pubescentibus, ramulis leviter pilosis, inflorescentiis floribusque dense pubescentibus.

A scandent herbaceous vine similar to *Scaevola acuminatissima*, differing in the points above indicated. Branches brown or grayish, striate, pilose, the younger ones rather densely so. Leaves ovate-oblong, membranaceous, 5 to 7 cm long, 2 to 3 cm wide, base acute, apex slenderly subcaudate-acuminate, margins distinctly sinuate-dentate, the lower surface with numerous, short, scattered, spreading hairs, the upper surface glabrous or with very few hairs. Peduncles axillary, solitary, 1 to 2 cm long, densely pubescent, each usually bearing three flowers, and also two much reduced leaves at the apex, the pedicels about 5 mm in length, the bracteoles 1.5 mm long. Flowers yellow, 5-merous. Calyx-tube 4 mm long, rather densely pubescent, the lobes 5, lanceolate, about 5 mm long, 1.2 to 1.4 mm wide, acuminate. Corolla outside rather strongly pubescent, villous within, 2.2 cm long, the lobes 8 mm long, 2 to 2.5 mm wide, 3-nerved, the tube 15-nerved. Filaments glabrous. Style glabrous, 13 mm long, the cup surrounding the stigma not only densely ciliate on the margins, but also with numerous long white cilia on the outside.

MINDORO, Mount Sablayan, *For. Bur.* 9756 Merritt, March 2, 1908, on the exposed cleared summit at an altitude of about 1,000 m.

Specimens sent to Kew for comparison were reported as "nearest *S. similis* Hemsl, but with longer peduncles." It differs also from that species, as described, in its 5-merous, not 4-merous, much larger flowers and its different calyx-teeth.

Scaevola sericea Forst. Prodr. (1786) 89; Presl Rel. Haenk. 2 (1830) 57; DC. Prodr. 7 (1839) 506.

LUZON, *Haenke* in Herb. Mus. Königr. Böhmen, Prague: Province of Hocos Sur, Salomague, *Merrill* 339.

This species is apparently much less common in the Philippines than is *S. koenigii* Vahl, and is to me sufficiently distinct from Vahl's species to warrant being given specific rank, although recent authors have treated it as a synonym of *S. koenigii* Vahl. It differs from *S. koenigii* in being pubescent throughout, the inflorescence very densely so. I have what is apparently the same form from Java, and from the Caroline Islands, Yap, *Volkens* 133, distributed as *S. koenigii* Vahl.

Scaevola micrantha Presl Rel. Haenk. 2 (1830) 59; Miq. Fl. Ind. Bat. 2 (1856) 582; F.-Vill. Nov. App. (1880) 121.

LUZON, Province of Albay, on barren rocky hills, altitude about 120 m, near Calanaga, Batan Island, *Bur. Sci.* 6289 *Robinson*, August 23, 1908. I have also examined the type in the herbarium of the Museum des Königreichs Böhmen, Prague, and find it to be quite the same as the specimen collected by Doctor Robinson. Haenke's specimen probably came from what is now the Province of Albay, or from Sorsogon.

The species is a very distinct one, as indicated by Presl. It is, perhaps, most closely allied to *S. plumieri* Vahl, but its flowers are less than 1 cm in length.

***Scaevola pedunculata* sp. nov.**

Species *S. micranthae* affinis, sed differt ramulis foliis inflorescentiisque glabris, axillis barbatis exceptis, foliis longioribus, cymis longe pedunculatis, floribus paulo longioribus.

A shrub 2 to 4 m high, erect, nearly glabrous, axils excepted. Branches terete, smooth, olivaceous, glabrous, the axils of the leaves and peduncles densely bearded with long white hairs. Leaves distant, scattered, chartaceous or submembranaceous, narrowly oblong-obovate or oblong-ob lanceolate, glabrous and shining on both surfaces, 6 to 10 cm long, 1.5 to 3 cm wide, the apex broad, rounded or very slightly and obscurely acuminate, gradually narrowed from the upper third to the base, the petiolar part about 1 cm long; nerves about 8 on each side of the midrib, indistinct. Cymes axillary, solitary, as long as the leaves, glabrous except the densely bearded axils of the branches and bracts, the peduncles about 5 cm long, each bearing at its apex two linear-lanceolate to subspatulate 1 to 1.5 cm long bracts, and four primary branches about 1.5 cm long, the branches in turn bracteate at their apices and bearing usually four shorter branchlets, the ultimate ones bearing usually three flowers, a central sessile one, and two lateral pedicellate ones, the bracteoles about 5 mm long. Flowers white. Calyx 2.5 mm long, glabrous, the five teeth broadly ovate, acute, about 1 mm long. Corolla 1 cm long, slightly curved, somewhat pubescent outside but not densely so, pilose inside, the lobes about 4 mm long, with broad, thin, infolded margins. Style slightly silky, the indusium surrounding the stigma densely ciliate. Drupe glabrous, obscurely costate, about 3 mm long.

PALAWAN, on rocky river banks, altitude about 175 m, Mount Victoria, *Bur. Sci. 744 Foxworthy*, March 25, 1906.

A species manifestly allied to *S. micrantha* Presl, but apparently sufficiently distinct, recognizable by its somewhat larger leaves, long peduncled cymes, the axils of the peduncles, leaves, bracts and bracteoles densely bearded with long white hairs, the plant otherwise glabrous or nearly so.

***Scaevola pedunculata* var. *mollis* var. nov.**

A typo differt omnibus partibus dense breviter pubescentibus.

PALAWAN, Mount Victoria, altitude about 1,000 m, *Bur. Sci. 700 Foxworthy*, March 23, 1906.

The specimen on which the above variety is based in all essential characters is the same as the type, differing in being softly and rather densely pubescent throughout with short grayish hairs. The flowers appear to be quite the same as in the species, but the fruits are slightly pubescent. Additional material may show this form to be worthy of specific rank, but it is considered best for the present to consider it as a variety only. It is apparently more closely allied to *S. micrantha* Presl than is the species, but differs from Presl's species in all the characters indicated for *S. pedunculata* except in its pubescence, and in this it is very decidedly more pubescent than is *S. micrantha* Presl. Logically, if *Scaevola sericea* Forst. is to be considered specifically distinct from *S. koenigii*

Vahl, then perhaps the present variety should be given specific rank. However, the material on which the species and the variety are based, came from the same region, although at different altitudes, and was collected on the same date, and the pubescence of the latter may be a character largely due to altitude.

COMPOSITÆ.

VERNONIA Schreb.

Vernonia elmeri sp. nov.

Gynura angulosa Elmer Leaf. Philip. Bot. 1 (1906) 146, excl. syn., non DC.

Herba scandens, usque ad 3 m alta, foliis subtus, ramulis, inflorescentiisque leviter pubescentibus; foliis alternis, petiolatis, oblongo-ovatis vel lanceolato-ovatis, valde acuminatis, margine distanter denticulatis; inflorescentiis terminalibus, corymboso-paniculatis, capitulis pedunculatis, circiter 1 cm longis; floribus purpureis.

A scandent herbaceous plant reaching a height of at least 3 m. Stems and branches terete, striate, appressed-pubescent with grayish hairs. Leaves alternate, oblong-ovate to lanceolate-ovate, or the upper ones nearly lanceolate, 4 to 8 cm long, 1 to 3 cm wide, the upper ones often smaller, chartaceous or submembranaceous, gradually narrowed into the sharply acuminate apex, the base acute or broad and rounded, the margins with distant, small teeth, somewhat pubescent with scattered hairs on both surfaces, or nearly glabrous above, glandular-punctate beneath; petioles 3 to 4 mm long, pubescent. Panicles terminal, corymbose, slightly pubescent. Heads comparatively few, about 1 cm long. Involucral bracts 5- or 6-seriate, the outer ones gradually smaller, and the outermost almost linear, 1 to 1.5 mm long, all pubescent, the innermost ones about 5 mm long, 1 to 1.3 mm wide, apiculate-acuminate, slightly keeled. Disk at first paleaceous with short scales, ultimately quite glabrous. Flowers all hermaphrodite, homogamous, tubular, purple. Achenes about 1 mm long, slightly pubescent, obscurely ribbed; pappus white, copious, about 6 mm long, with a few very short hairs in the outer series. Corolla about 9 mm long, cleft at the apex into 5, oblong-lanceolate, about 3 mm long lobes; style exerted, the arms 2 mm long; anthers 2.5 mm long, apex blunt or acute, hyaline, base shortly cleft.

PALAWAN, Separation Point, *Merrill 793*, February, 1903; San Antonio Bay, *Merrill 5256*, October, 1906; Mount Victoria, *Bur. Sci. 703 Foxworthy*, March, 1905. LUZON, Province of Nueva Vizeaya, *Bur. Sci. 8196 Ramos*, May, 1909, MINDANAO, Lake Lanao, *Mrs. Clemens 915*, January, 1907.

This species is apparently closely allied to *Vernonia cinerea* (L.) Less., but is at once distinguishable by its much larger size, scandent habit, and larger leaves and heads. In floral structure it is exceedingly similar to that species. It was referred by Mr. Elmer to *Gynura angulosa* DC., but does not remotely resemble that species, and is, moreover, not a member of the *Senecionaceae*. The structure of the involucre at once distinguishes it from *Gynura* and allied genera. More material is necessary to dispose of *Gynura sarmentosa* Elm., l. c. (non DC.), as the specimen referred to it by that author, *Copeland 1258*, is very similar to some

forms of the species above described, and is certainly cogeneric, if not conspecific with it; the specimen is, however, young, and additional material may show more marked points of differentiation.

Vernonia acrophila sp. nov. § *Strobocalyx*.

Arbor parva, circiter 5 m alta, subglabra; foliis coriaceis, oblongo-ovatis, acuminatis, circiter 3.5 cm longis; corymbis terminalibus, plus minus congestis, capitulis 3- vel 4-floris, squamis imbricatis, plus minus puberulis, margine obscure ciliatis; achenio 2 mm longo, glanduloso.

A small tree about 5 m high, the trunk 15 cm in diameter, subglabrous. Branches short, stiff, the ultimate ones more or less crowded, black or grayish, lenticellate, glabrous or nearly so. Leaves oblong-ovate, coriaceous, about 3.5 cm long, 1.2 to 1.5 cm wide, the apex shortly acuminate, acumen blunt, base acute or acuminate, the margins somewhat reflexed, glabrous, dark-colored when dry; nerves 5 or 6 on each side of the midrib, distant, anastomosing, distinct beneath; petioles slender, 4 to 6 mm long. Inflorescence terminal, somewhat congested, subglabrous. Involucral bracts several-seriate, the outer ones ovate, obtuse, 1 mm long or less, the inner ones gradually longer, the innermost oblong, 2.5 to 3 mm long and deciduous, all slightly puberulent or nearly glabrous, the margins obscurely ciliate. Achenes 3 or 4 in each involucre, 2 mm long, irregularly and obscurely angled, and with numerous, scattered, waxy glands; pappus-hairs stiff, scabrid, about 24, 4 mm long, with a number of shorter supplementary ones intermixed, these 1 mm long or less.

LUZON, Province of Zambales, Mount Tapulao, *For. Bur. 8057 Curran & Merritt*, October 13, 1907, in the elfinwood, exposed peaks, above an altitude of 2,000 m.

As *Vernonia arborea* Ham. is interpreted by Hooker f., perhaps the present form would be included, possibly as a variety or as a reduced form. It differs so strongly in its very much reduced leaves and in being nearly glabrous throughout, that it has been considered to be worthy of specific rank.

Vernonia lancifolia sp. nov. § *Strobocalyx*.

Vernonia arborea Merr. in *Philip. Journ. Sci.* 1 (1906) Suppl. 138, non Ham.

Arbor subglabra 4 ad 5 m alta; foliis lanceolatis, valde acuminatis, usque ad 12 cm longis, 2.5 cm latis, coriaceis vel subcoriaceis, glabris, subtus glandulosis, nervis utrinque 9 ad 12, distinctis; squamis puberulis; achenio 2 ad 2.4 mm longo.

A tree 4 to 5 m high, nearly glabrous throughout. Branches grayish to nearly black, terete, glabrous, the ultimate branchlets sometimes pubescent. Leaves coriaceous, lanceolate, 5 to 12 cm long, 1.5 to 2.5 cm wide, glabrous, somewhat shining above when dry, the apex sharply subcaudate-acuminate, the base acute or acuminate, the lower surface with numerous, minute, yellow, shining, waxy glands; nerves 9 to 12 on each side of the midrib, beneath distinct, anastomosing, the reticulations rather lax; petioles slender, 3 to 10 mm long. Inflorescence terminal, 6 to 12 cm in diameter, glabrous or nearly so, or the branchlets somewhat pubescent.

Outer involueral scales suborbicular, less than 1 mm long, pubescent, the inner ones gradually longer, the innermost less pubescent, deciduous, 2 to 2.5 mm long, obtuse. Achenes 3 or 4 in each involucre, when mature nearly terete, when young more distinctly angled, 2 to 2.4 mm long, sometimes distinctly waxy-glandular, at other times with very few, scattered, short hairs; pappus bristles stiff, about 30, 4 to 4.5 mm long, with numerous shorter ones less than 1 mm long intermixed.

Luzon, Province of Bataan, Mount Mariveles, *Merrill 3200, Williams 420* (type), *Elmer 6695, Whitford s. n.*, summit of the mountain, altitude about 1,400 m; Province of Tayabas, Mount Malaraya, *For. Bur. 7841, 7844 Curran & Merrill*, November, 1907, altitude about 1,000 m.

A species like the preceding allied to *Vernonia arborea* Ham., differing in being nearly glabrous and especially in its much narrower, smaller, lanceolate leaves which are glandular beneath. It is manifestly allied to the preceding species but has very much larger leaves.

BLUMEA DC.

Blumea confertiflora sp. nov.

Herba erecta, robusta, circiter 1 m alta; foliis sessilibus, basi angustatis, plus minus decurrentibus, oblongo-ellipticis vel oblongo-obovatis, usque ad 12 cm longis, subcoriaceis, breviter acuminatis, margine irregulariter sinuato-denticulatis; capitulis circiter 1 cm diametro, in ramulis ultimis densissime congestis, sessilibus vel breviter pedunculatis.

An erect, robust herb about 1 m high. Stems stout, dark-brown or purplish, longitudinally striate, more or less pubescent, apparently unbranched, except the inflorescence. Leaves sessile, oblong-elliptic to oblong-obovate, the apex shortly acuminate, the base gradually narrowed, the margins irregularly sinuate-denticulate with small teeth, not at all lobed, 6 to 12 cm long, 2.5 to 4 cm wide, coriaceous or subcoriaceous, slightly shining when dry, somewhat pubescent with short hairs on both surfaces, paler beneath; nerves about 9 on each side of the midrib; leaf-bases sometimes decurrent along the stem for 2 to 3 cm. Panicle-branches rather few, the lower ones up to 40 cm long and subtended by leaves, ascending, the secondary ones very short, mostly less than 1 cm long, pubescent, each bearing numerous, densely disposed heads which are sessile or shortly peduncled. Heads 8 to 9 mm long, about 1 cm in diameter. Involueral bracts many-seriate, the outer ones oblong-ovate to oblong-lanceolate, about 2 mm long, 1.2 mm wide, pubescent, the inner ones gradually longer, the innermost about 6 mm long, 0.5 to 1 mm wide, slightly hairy, acuminate, the margins toward the apex more or less ciliate. Flowers yellow, heterogamous, the outer ones indefinite (more than 100), pistillate; achenes 1 to 1.2 mm long, somewhat angled, slightly hairy; pappus hairs about 20, white, slender, scabrid, 5 mm long; corolla cylindric, slender, 5 mm long, minutely 3-toothed; style-arms slender, exerted, less than 1 mm long. Disk-flowers perfect, about 14 in each

head; corolla 5 mm long, enlarged above, the teeth 5, ovate, acute or obtuse, less than 0.5 mm long; anthers 2 mm long, the tails very slender, less than 0.55 mm in length; style-arms stout, blunt, 0.5 mm long. Disk pitted, glabrous or with very few, short, scattered hairs.

MINDORO, *For. Bur. 11027 Merritt*, March, 1908 (type), the specimen from the southwestern part of the island; also *For. Bur. 11016 Merritt* from Mount Sablayan, exposed summit of the mountain at edge of the forest, altitude about 970 m, March 2, 1908.

A species characterized by its comparatively large heads which are glomerate on the ultimate panicle-branches. Among the Philippine species it is probably most closely allied to *Blumea mindanaensis* Merr.

***Blumea longipes* sp. nov.**

Herba erecta ramosa, usque ad 80 cm alta; foliis oblongo-obovatis vel oblongo-oblancoelatis, submembranaceis, usque ad 10 cm longis, petiolatis, acutis vel rotundatis, basi sensim angustatis, plus minus repando-dentatis, vix lobatis; paniculis diffusis, ramis ramisque glandulosis, pedunculis solitariis, gracilibus, usque ad 2.5 cm longis; capitulis 0.8 cm longis.

An erect, much branched, aromatic herb about 80 cm in height. Stems stout, brownish or purplish, slightly striate, more or less puberulent, ultimately nearly glabrous, 5 mm in diameter or less. Leaves oblong-obovate to oblong-oblancoelate, submembranaceous, the apex rounded or acute, the base gradually narrowed, the margins somewhat repand-dentate but not lobed, those of the stem 7 to 10 cm long, 1.5 to 3 cm wide, those of the branches often much smaller and usually more pubescent. Panicles rather diffuse, the branches and branchlets slender, mostly densely glandular and often also somewhat pubescent, the peduncles solitary, 0.5 to 2.5 cm long, slender, glandular. Heads 7 to 8 mm long, about 1 cm in diameter. Involucral bracts many-seriate, the outer ones about 2 mm long, 0.5 mm wide, the inner gradually longer, the innermost 5 mm long and 0.5 mm wide, the outer ones usually prominently glandular, the innermost ones ciliate above and slightly glandular in the median portion. Flowers yellow, heterogamous, the outer ones pistillate, indefinite, many-seriate; achenes minute, 1 mm long, slightly angled, very obscurely pubescent with few, short, scattered hairs; pappus hairs slender, white, minutely scabrid, 3 mm long; corolla slender, cylindrical, 4 mm long, very obscurely 3-toothed; style exserted, the arms filiform, less than 1 mm long. Disk-flowers perfect, about 14; achene like that of the pistillate flowers but stouter; corolla enlarged above, 5-toothed, the teeth 0.5 mm long, acute, slightly glandular; stamens 2 mm long, the tails minute, less than 0.5 mm long; style-arms about 0.8 mm long, slender. Disk glabrous, pitted.

MINDANAO, Lake Lanao, Camp Keithley, *Mrs. Clemens 893* (type), January, 1907; also unnumbered specimens collected in May and June.

A species growing in the open grass lands about Lake Lanao, characterized by its very glandular inflorescence and by its long-peduncled heads.

***Blumea mindanaensis* sp. nov.**

Herba erecta vix vel parce ramosa, stricta, usque ad 1 m alta; foliis sessilibus, oblongis vel oblongo-obovatis, subcoriaceis, scabridis, plus minus pubescentibus, margine irregulariter denticulatis; capitulis in ramis plus minus congestis, circiter 1.7 cm diametro.

An erect stout herb about 1 m high, slightly or not at all branched, except the inflorescence. Stems stout, brown or purplish, striate, more or less pubescent, 5 to 7 mm in diameter. Leaves sessile, oblong to oblong-obovate, 6 to 12 cm long, 1.5 to 3.5 cm wide, subcoriaceous, somewhat shining when dry, scabrid, the upper surface often supplied with numerous, small, white dots, beneath somewhat pubescent, the apex acute or slightly acuminate, the base acute, the margins distantly and irregularly denticulate, not at all lobed or sinuate. Panicles about 40 cm long, the lower branches sometimes 15 cm in length, often much smaller, all parts rather densely brown-pubescent. Heads somewhat crowded, shortly peduncled, 10 to 12 mm long, 15 to 18 mm in diameter, the involueral bracts often purplish. Bracts several-seriate, the outer ones ovate-lanceolate, acuminate, about 2 mm long, rather strongly pubescent, the inner gradually larger, the innermost 8 mm long, 1 mm wide, ciliate on the margins toward the apex. Flowers yellow, heterogamous, the outer ones indefinite (more than 100), pistillate; achenes slender, 1 mm long, glabrous or with very few scattered hairs; pappus-hairs about 20, white, slender, minutely scabrid, 6 mm long; corolla cylindric, slender, 7 mm long, obscurely 3-toothed; style-arms exerted, slender, 1 mm long. Disk-flowers perfect, about 11; achenes like those of the pistillate flowers but stouter; corolla 6 mm long, enlarged above, 5-toothed, the teeth oblong-ovate, acute, 0.5 mm long; stamens 2 mm long, minutely tailed at the base; style slightly exerted, the arms 0.5 mm long, slender. Disk glabrous or with very few, short, scattered hairs, pitted.

MINDANAO, Lake Lanao, Camp Keithley, Mrs. Clemens 736 (type), November, 1906, and also unnumbered specimens collected in March, 1907, and in September, 1907.

A species well characterized by its comparatively large heads which are densely disposed, its erect, strict habit, and sessile, scabrid leaves. It is probably allied to *Blumea chinensis* Less., and among the Philippine species most closely allied to *B. ineisa* (Elm.) Merr., differing from the latter notably in its leaf characters.

***Blumea ramosii* sp. nov.**

Species *B. sericanti* Hook. f. affinis, sed differt foliis multo majoribus, usque ad 16 cm longis, late oblongo-obovatis, capitulis pedunculatis.

An erect, unbranched, suffrutescent plant at least 80 cm high, the stem stout, terete, pubescent, mostly covered with the persistent, densely arranged, petiole-bases, this part of the stem about 20 cm long, the leaves crowded above this naked portion, subtending the inflorescence. Leaves subcoriaceous, sessile, crowded, broadly oblong-obovate, 11 to 16 cm

long, 3.5 to 5 cm wide, the apex acute, the base gradually narrowed, slightly clasping, the margins rather finely denticulate, the upper surface with numerous, somewhat stiff hairs more or less thickened at the base, the lower surface very densely covered with long, grayish, silky hairs; nerves about 12 on each side of the midrib. Panicles terminal, about 40 cm long, the lower branches 10 cm long or more, often subtended by reduced leaves, the rachis and branches pilose. Heads somewhat racemously arranged, 9 to 10 mm long, about 12 mm in diameter, their peduncles 3 to 10 mm long. Involucral bracts many-seriate, the outer ones ovate to oblong, acuminate, 1 to 2 mm long, the inner gradually longer, the innermost ones linear-oblong, 6 to 7 mm long, 1 mm wide, the intermediate ones somewhat wider, all somewhat pubescent on the back, more or less 1-nerved, the margins, especially above, more or less ciliate. Receptacle glabrous, somewhat pitted. Flowers heterogamous, the outer ones pistillate, many-seriate, about 40 in each head, yellow, the achenes slender oblong, pubescent, obscurely angled, 1 to 1.2 mm long; pappus-hairs about 30, white, slender, scabrid, 4.5 mm long; corolla-tube slender, cylindric, 4 mm long, obscurely 3-toothed; style-arms exserted, slender, 1 to 1.5 mm long. Disk-flowers perfect, about 11 in each head; achenes like those of the pistillate flowers but stouter; corolla 5.5 mm long, enlarged above, 5-toothed, the teeth ovate, acute, nearly 1 mm long; anthers 2 mm long, apex appendiculate, base with two minute, slender, 0.5 mm long tails; style exserted, the arms 0.5 mm long, stout, truncate.

LUZON, Province of Zambales, Mount Tapulao, *Bur. Sci.* 5089 Ramos, December 14, 1907.

A species apparently closely allied to *Blumea sericans* Hook. f., and to *B. hieracifolia* DC., but so far as I can determine from the material and descriptions available here, distinct from both. It is characterized by its minutely toothed and very densely silky leaves, suffrutescent stems, the lower portion leafless and more or less covered with persistent petiole-bases. In many respects it appears to agree with *Inula* § *Cappa* as closely as with *Blumea*, and may eventually have to be referred to the former genus. The characters by which *Inula* § *Cappa* is separated from *Blumea* do not appear to me to be well defined.



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NEW OR NOTEWORTHY PHILIPPINE PLANTS, IX.

By E. D. MERRILL.

(From the Botanical Section of the Biological Laboratory, Bureau of Science,
and the Department of Botany, University of the Philippines,
Manila, P. I.)

The last paper published under this title appeared in the year 1910,¹ and the present contribution, like the preceding numbers of the series, is composed of descriptions of presumably new species, records of species previously described which have recently been discovered in the Philippines, notes on nomenclature, synonymy, etc. Two new genera are proposed, *Freeria*, of the *Icacinaceae*, and *Macgregorianthus*, of the *Thymelaeaceae*. Four genera, previously not reported from the Archipelago, are included, *Parishia*, *Suriana*, *Cansjera*, and *Vallaris*. One hundred presumably new species are described, all dicotyledons, while about 10 species, previously described from extra-Philippine material, are recorded from the Archipelago for the first time. As is the case with the preceding numbers of the series, all the material on which the present paper is based is preserved in the Herbarium of the Bureau of Science.

CHLORANTHACEAE.

CHLORANTHUS L.

CHLORANTHUS PHILIPPINENSIS sp. nov.

Species *C. henryi* Hemsl. ut videtur valde affinis, differt floribus multo minoribus, circiter 2.5 mm longis.

An erect, simple, glabrous herb about 40 cm high, from aro-

¹ This Journal, 5 (1910) Botany 167-257.

matic, woody rootstocks, the stems brown, angled and sulcate when dry, with about 5 nodes. Leaves 4, whorled at the apex of the stem, membranaceous, broadly obovate, 12 to 15 cm long, 8 to 9 cm wide, slightly shining, the lower surface paler than the upper one, the apex prominently and sharply acuminate, the base acute, margins sharply and rather finely serrate, the teeth more distant below, the basal margins quite entire; nerves about 9 on each side of the midrib; petioles about 1 cm long. Inflorescence terminal, about 15 cm long, slender, the peduncle about 7 cm long, the branches opposite, usually 4 in two pairs, the lower ones about 6 cm long, the internode 2 cm long or less. Anther-scale about 2.5 mm long, divided nearly to the base into three lobes, the lateral lobes a little shorter than the middle one, oblong, obtuse, the middle one with a 4-locellate anther, the lateral ones with 2-locellate anthers; anthers about 1 mm long, half as long as the lobes or less. Fruit unknown.

LUZON, Province of Cagayan, Abulug River, *Weber 1582*, January, 1912, growing in forests, altitude about 250 m, the roots said to be fragrant, and the fruits white, although none of the latter were preserved.

A species manifestly closely allied to *Chloranthus henryi* Hemsl., of China, apparently differing chiefly in its smaller flowers, which are about one-half as large as in Hemsley's species. In habit, general appearance, vegetative characters, etc., the Philippine plant very closely matches a specimen in the Herbarium of the Bureau of Science, representing *Chloranthus henryi* Hemsl., collected by *Farges* in Su-tchuen; the only difference appears to be in the flowers. I had at first determined the Luzon plant to be the same as *Chloranthus oldhami* Solms-Laub., a species known only from Formosa, and of which the flowers are unknown. That species, however, is described as having its leaves sessile, which does not apply to our plant, nor are the leaves of our species crenate-dentate throughout, the lower 2 to 4 cm of the margins being quite entire.

ULMACEAE.

TREMA Lour.

TREMA VULCANICA sp. nov.

Frutex circiter 2 m altus subtus foliis ramulisque villosis; foliis numerosis, confertis, oblongo-ovatis vel oblongis, usque ad 5 cm longis, acutis vel acuminatis, basi leviter cordatis, supra scabridis, petiolo circiter 2 mm longo; cymis brevissimis, vix 7 mm longis, floribus 5-meris.

A shrub about 2 m high, the branchlets, petioles, and the lower surface of the leaves, especially on the nerves, rather prominently villous with rather short, pale, spreading or somewhat appressed hairs, the older branches terete, glabrous or nearly

so, reddish-brown; branchlets somewhat crowded, leafless in their lower parts, the leaves rather crowded above the middle. Leaves subcoriaceous, brittle when dry, brownish, oblong-ovate or oblong, 2.5 to 5 cm long, 1 to 2 cm wide, acute or somewhat acuminate, base somewhat cordate, equilateral or subequilateral, the upper surface scabrid, usually with few hairs along the midrib, the lower surface of about the same color as the upper, prominently pubescent with pale hairs on the midrib, lateral nerves, and primary reticulations, the ultimate reticulations close, evident on both surfaces, margins closely and finely coriaceous-serrulate; lateral nerves about 5 on each side of the midrib, prominent, ascending, impressed on the upper surface; petioles densely pale-villous, about 2 mm long. Cymes axillary, few-flowered, pubescent, 4 to 7 mm long. Flowers 5-merous. Male flowers: Sepals 5, elliptic to elliptic-ovate, concave, about 1.8 mm long, imbricate, glabrous except the slightly ciliate margins. Stamens 5. Pistillode cylindric, truncate, 1 mm long, glabrous, except the distinctly ciliate base. Female flowers similar to the males, the style-arms 1 mm long. Fruit reddish, 2.5 mm long, ovoid, fleshy, glabrous, more or less wrinkled when dry, the seed subglobose, about 1.2 mm in diameter.

CAMIGUIN DE MINDANAO, in thickets on slopes of the old volcano, *Bur. Sci.* 14600 Ramos, April 27, 1912.

A species well characterized by its depauperate size, small crowded leaves, short petioles and cymes, and other characters. It resembles somewhat *Trema amboinensis* Blume, and is undoubtedly allied to that species, but is quite distinct in many essential characters.

LORANTHACEAE.

LORANTHUS L.

LORANTHUS CONFUSUS sp. nov. § *Cichlanthus*.

Frutex parasiticus, ramis elongatis, tenuibus, ramulis subtus foliis inflorescentiisque indumento stellato-leproso pallido dense oblecto; foliis oppositis, breviter petiolatis, oblongis ad anguste elliptico-oblongis, rotundatis vel acutis, usque ad 5.5 cm longis; racemis brevibus, paucifloris; floribus 4-meris, corolla 12 mm longa.

A slender parasitic shrub, the branches elongated, the branchlets terete, about 1 mm thick, these, the lower surfaces of the leaves and the inflorescence densely covered with a pale, stellate-leprose indumentum, the tips of the branchlets sometimes ferruginous. Leaves opposite, coriaceous, oblong to narrowly elliptic-oblong, 2 to 5.5 cm long, 8 to 20 mm wide, apex rounded

or acute, base narrowed, acute, the upper surface, when young, stellate-leprose, soon becoming quite glabrous; nerves 3 or 4 on each side of the midrib, slender, not prominent; petioles 2 mm long. Racemes axillary, short, solitary or fascicled, 2- to 5-flowered, the rachis about as long as the petiole. Flowers 4-merous, somewhat curved. Pedicels about 3 mm long, the bracteole ovate, concave, 0.5 mm long. Calyx 3.5 to 4 mm long, narrowed below into a pseudo-stalk, narrowly obovoid, truncate. Corolla 12 mm long, tube slightly inflated. Reflexed parts of the lobes above the insertion of the stamens 4 mm long, narrowly oblong to linear-oblong. Anther sessile, erect, 1 mm long. Fruit (immature) narrowly obovoid, 5 mm long, shortly stipitate densely stellate-leprose with a pale indumentum.

Luzon, without definite locality, *Cuming* 1959 (type): Province of Union, *Elmer* 5711, February, 1904, *Bur. Sci.* 12951 *Fénix*, December, 1910: Province of Pangasinan, *Bur. Sci.* 4977 *Ramos*, December, 1907, *Alberto* 35, May, 1904: Province of Tarlac, *Merrill s. n.*, July, 1903.

This form was previously considered by me² to be referable to *Loranthus sphenoideus* Blume, but I am now of the opinion that it is specifically distinct. It differs from the Philippine material that has been referred to *Loranthus sphenoideus* in its pale, not ferruginous indumentum, its relatively much narrower, differently shaped leaves, and its somewhat smaller flowers. It is manifestly very closely allied to Blume's species, but less closely allied to *Loranthus estipitatus* Stapf.

LORANTHUS SIMILIS sp. nov. § *Cichlanthus*. •

Species praecedente affinis, differt foliis majoribus, petiolo longioribus, indumento ferrugineo, floribusque longioribus, 1.8 cm longis.

A slender parasitic shrub, the branches terete, brown, lenticellate, the branchlets densely brown-stellate-leprose, as are the petioles, lower surfaces of the leaves, and the inflorescence. Leaves elliptic to oblong-elliptic, coriaceous, 5 to 7 cm long, 2 to 3 cm wide, rounded, base somewhat narrowed, rounded or subacute, brown when dry, the upper surface glabrous, somewhat shining, the lower surface densely brown-stellate-leprose; nerves 5 or 6 on each side of the midrib, rather distinct beneath, anastomosing; petioles 8 to 10 mm long. Racemes axillary, solitary or several at each node, few-flowered, the rachis about as long as the petioles, the pedicels 2 to 3 mm long, the bracteole concave, ovate, 1.3 mm long, all parts, including the outside of the flowers, densely stellate-leprose. Calyx subcylindric, 3 mm long, slightly or not narrowed toward the base. Corolla 18 mm long, slender,

² This Journal 4 (1909) Bot. 139.

slightly curved, very slightly inflated in the lower one-half, the lobes 4.

LUZON, Benguet Subprovince, Baguio, *Williams 984*, July, 1904.

A species allied to *Loranthus confusus* Merr., and to *L. sphenoides*, differing from both in its longer flowers, and from the former also in its ferruginous indumentum, larger leaves, and longer petioles. Like the preceding species, the type was previously referred by me to *L. sphenoides* Blume.

LORANTHUS SUBSESSILIS sp. nov. § *Dendrophthoë*.

Glaber, ramulis teretibus; foliis oppositis, oblongo-ovatis, acuminatis, petiolatis, coriaceis, usque ad 15 cm longis; floribus sessilibus vel subsessilibus, e axillis defoliatis, solitariis vel binis, 6-meris, magnis, miniatis, circiter 7 cm longis, corolla falcata.

A glabrous parasitic shrub, the branches up to 1 m in length, the branchlets terete, slender, grayish or reddish-brown, the ultimate ones 1 to 1.5 mm in diameter. Leaves opposite, the internodes 3 to 9 cm long, coriaceous, oblong-lanceolate, 8 to 15 cm long, 3 to 6 cm wide, acuminate, base narrowed, acute, rarely somewhat rounded, rather pale and somewhat shining when dry; nerves 6 to 8 on each side of the midrib, obscure, slender, often nearly or quite obsolete; petioles about 5 mm long. Flowers in the axils of fallen leaves, large, red, sessile or subsessile, solitary or in pairs, each subtended by two bracteoles, the outer one broadly ovate, slightly apiculate, about 5 mm long, the inner one similar but truncate. Calyx about 7 mm long, 4 mm thick, slightly enlarged upward, truncate. Corolla 6.5 to 7 cm long, distinctly curved, the tube 4 to 4.5 cm long, about 3 mm in diameter at the base, gradually enlarged upward and 7 mm in diameter at the throat, the lobes 6, 4 mm wide at the base, soon narrowed, the reflexed part above the insertion of the stamens 2 cm long, lanceolate, acuminate, about 3 mm wide, much thickened. Filaments 10 to 11 mm long, erect; anthers linear-lanceolate, continuous, about 6 mm long.

MINDANAO, District of Zamboanga, Sax River, *Merrill 8315*, (type), November 28, 1911, altitude about 900 m; *Williams 2425*, March 5, 1905, altitude about 600 m.

A species characterized by its large flowers which are sessile or subsessile in the axils of fallen leaves, solitary or in pairs. When in full flower the plant is a very showy and striking one in the forests where it occurs. Its flowers are larger than in any other known Philippine species.

LORANTHUS PUBIFLORUS sp. nov. § *Dendrophthoë*.

Frutex inflorescentiis exceptis glaber, ramis ramulisque teretibus, crassis; foliis crasse coriaceis, oblongis vel anguste oblongo-ovatis, usque ad 15 cm longis, verticillatis, petiolatis, acutis vel

acuminatis; floribus in triadibus fasciculatis in radicibus vel in ramulis specialibus, inflorescentiis brevibus, puberulis; floribus 4-meris, circiter 3 cm longis, tenuibus, extus puberulis.

A parasitic shrub glabrous except the inflorescence, the branches and branchlets smooth, grayish or brownish, terete, stout, smooth, the apparently specialized flower-bearing branches (roots?) with a brown scaly bark. Leaves in whorls of three or four, the internodes 10 to 12 cm long, petioled, usually brown when dry, scarcely shining, thickly coriaceous, brittle, oblong to narrowly oblong-ovate, acute or somewhat acuminate, 12 to 15 cm long, 4 to 8 cm wide; petioles stout, 1 to 1.5 cm long; lateral nerves 4 to 6 on each side of the midrib, not prominent, the reticulations obsolete. Flowers in fascicled triads, the fascicles scattered, brown-puberulent, the inflorescences, excluding the corollas, less than 1 cm long. Bracteoles oblong-ovate, obtuse, puberulent, about 1.5 mm long. Calyx urceolate-campanulate, brown-puberulent, about 3 mm long, the limb somewhat spreading, about 1 mm long, truncate. Corolla slender, about 28 mm long, outside slightly puberulent, the lobes united for the lower 2 to 3 mm into a short tube, the free parts slender, about 1.5 mm wide, the reflexed part above the insertion of the stamen narrowly oblong, about 5 mm long, 1.3 mm wide, acute or obtuse. Anthers erect, continuous, narrowly oblong, about 3 mm long, the filaments 2 mm long.

LUZON, Province of Laguna, near Paete, *For. Bur. 13086 Curran*, December 17, 1911, in forests.

A very characteristic species, distinguishable by its whorled, thickly coriaceous, petioled leaves, and its flowers puberulent externally and borne in fascicled short triads on the roots or on special leafless branches. In the scattered character of its inflorescences it resembles *Loranthus mirabilis* Muell.-Arg. & Van Huerck, but is not, however, at all allied to that species.

LORANTHUS CAPITULIFERUS sp. nov. § *Lepiostegeres*.

Ramulis brunneo-furfuraceis exceptis glaber; foliis oppositis vel suboppositis, oblongo-ellipticis ad oblongo-ovatis, coriaceis, utrinque angustatis, petiolatis, usque ad 12 cm longis; capitulis axillaribus, solitariis, sessilibus, paucifloris; floribus circiter 1.8 cm longis, 6-meris.

A glabrous parasitic shrub, the branches and branchlets stout, brown, the younger parts furfuraceous, more or less rugose when dry. Leaves opposite or subopposite, coriaceous, oblong-elliptic to oblong-ovate, olivaceous and slightly shining when dry, 7 to 12 cm long, 2.5 to 5 cm wide, obtuse, base narrowed,

acute or cuneate; lateral nerves 4 or 5 on each side of the midrib, indistinct, slender; petioles about 1 cm long. Heads axillary, solitary, sessile, but the flowers quite enclosed by imbricated bracts, forming a globose head. Flowers 6-merous, about 5 in each head, sessile. Calyx 2 mm long, truncate. Corolla 1.6 cm long, the lobes free nearly to the base, the reflexed part above the insertion of the stamens 4 mm long. Anther erect, sessile, 4 mm long.

MINDANAO, District of Zamboanga, Sax River Mountains back of San Ramon, *Merrill 8270*, November 28, 1911, parasitic on *Englehardtia*, altitude about 1100 m.

Allied to *Loranthus williamsii* Merr., but with much shorter flowers.

OLACACEAE.

CANSJERA Juss.

CANSJERA RHEEDII Gmel. Syst. Nat. 1 (1791) 280; Mast. in Hook. f. Fl. Brit. Ind. 1 (1875) 582.

Cansjera scandens Roxb. Pl. Coromandel 1 (1795) 582.

Cansjera malabarica Lam. Encycl. 3 (1791) 433.

SIBUTU ISLAND, Sulu Archipelago, *Merrill 5291*, October 13, 1906, in thickets along the seashore.

India to southern China, through Malaya to northern Australia; the genus new to the Philippines.

Gmelin's specific name is here retained as being the one in common use. Lamarck's *Cansjera malabarica* was, however, published during the same year, and it will be difficult if not impossible to determine which has priority.

The species has previously been reported from the Philippines by Meisner,³ but solely on Blanco's error in interpreting the species. The species Blanco referred here is an *Antidesma*.

MENISPERMACEAE.

STEPHANIA Lour.

STEPHANIA RAMOSII Diels sp. nov.

Caulis scandens glaber. Foliorum petiolus 4.5 ad 5 cm longus, lamina peltata, papyracea, supra fere lucida, subtus paulo pallidior, triangulari-ovata, apice acuta, acuminato-mucronulata, 8 ad 9 cm longa, 4 ad 5.5 cm lata. Inflorescentiae ♂ pseudoracemosae, 5 ad 7 cm longae; pedicelli 1.5 ad 2 mm longi. Sepala 6, 3 exteriora anguste spathulato-oblonga, 1.5 mm longa, 0.4 mm lata, 3 interiora latiora, elliptico-ovata, concava, circiter 1.2 mm longa, 0.8 mm lata. Petala 5 conchiformia vel

³ DC. Prodr. 14 (1857) 519.

fere orbicularia basi intus glandulosa, 0.7 ad 1 mm longa et lata. Synandrium 1 mm diametro.

LUZON, Benguet Subprovince, near Baguio, *Bur. Sci.* 13487 Ramos, May, 1911.

Sect. *Thamnothyrsa* Diels. Species nova foliis triangulari-ovatis *S. cato-sepalae* Diels eiusdem provinciae indigenae haud absimilis sepalis petalisque duplo minoribus haud deflexis conspicue differt.

PYCNARRHENA Miers.

PYCNARRHENA CELEBICA (Boerl.) Diels in Engl. Pflanzenreich 46 (1910) 53.

Cocculus celebicus Boerl. Cat. Pl. Bogor. (1899) 40.

LUZON, Province of Nueva Ecija, *For. Bur.* 22157 Alvarez, December, 1910. MINDANAO, District of Davao, Mount Apo, *Elmer* 12000, September, 1909.

Previously known only from Celebes, and from plants cultivated in the Botanical Garden at Buitenzorg; the Philippine specimens agree closely with specimens in our herbarium from Buitenzorg, and have, moreover, been determined by Doctor Diels.

LIMACIA Lour.

LIMACIA BLUMEI (Boerl.) Diels in Engl. Pflanzenreich 46 (1910) 215.

Cocculus blumei Boerl. Cat. Pl. Bogor. (1899) 40.

MINDANAO, District of Davao, Mati, *C. V. Piper* 427, May 15, 1911.

The specimen closely matches typical material in our herbarium taken from cultivated plants in the Botanical Garden at Buitenzorg, and has, moreover, been determined by Doctor Diels. Previously known only from specimens cultivated at Buitenzorg which originated in some part of the Malay Archipelago; new to the Philippines.

ANONACEAE.

MITREPHORA Hook. f. & Thoms.

MITREPHORA WEBERI sp. nov.

Arbor circiter 8 m alta partibus junioribus inflorescentiisque exceptis glabra; foliis ovatis vel oblongo-ovatis, subcoriaceis, nitidis, usque ad 18 cm longis, acuminatis, basi late rotundatis, nervis utrinque 8 ad 10; floribus hermaphroditis, circiter 4 cm diametro, petalis interioribus oblongis, acutis, extus pubescentibus, intus glabris, interioribus brevioribus, arcuatis, basi longe angustatis, glabris, laminibus densissime ciliato-villosis; ovario glabro, ovulis circiter 12.

A tree about 8 m high, glabrous except for the younger parts and the inflorescence. Branches slender, terete, grayish- or reddish-brown, lenticellate, glabrous, the buds and very young leaves densely ferruginous-pubescent. Leaves ovate to oblong-ovate,

subcoriaceous, shining, green and of about the same color on both surfaces, 10 to 18 cm long, 4 to 8 cm wide; lateral nerves 8 to 10 on each side of the midrib, prominent, curved upward, anastomosing, the reticulations lax; petioles 7 to 10 mm long. Flowers perfect, yellow and purple, extra-axillary or leaf-opposed, solitary, or at least but one flower opening at a time, the short rachis, the bracts, and the calyx externally densely ferruginous-pubescent. Sepals broadly ovate, acute or slightly acuminate, about 6 mm long. Outer three petals oblong, acute or somewhat obtuse, about 2 cm long, 8 mm wide, externally somewhat appressed-pubescent with brown hairs, inside glabrous, the inner three petals about 14 mm long, vaulted, conniving, their claws slender, glabrous, about 9 mm long, their limbs about 5 mm long, subrhombic, but when spread much wider than long, the inner surface very densely ciliate-villous with long, dark-brown hairs. Stamens indefinite, narrowly oblong, 1 to 1.2 mm long, their connectives truncate, overlapping. Ovaries 12 to 15, glabrous, 1 to 1.2 mm long, oblong; ovules about 12, 2-seriate; styles clavate-oblong. Fruits unknown.

BUSUANGA (Calamianes Islands), *C. M. Weber 1550bis*, February 25, 1911, in forests, limestone region, altitude about 30 meters.

Apparently a very characteristic species, distinguishable by the inner faces of the limbs of the interior petals being very densely ciliate-villous with long, dark-brown hairs, and by its outer petals being quite glabrous inside.

OXYMITRA Hook. f. & Thoms.

OXYMITRA PUBESCENS sp. nov.

Frutex scandens omnibus partibus plus minusve ferrugineo-pilosis, ramulis densissime pilosis; foliis oblongis vel anguste oblongo-obovatis, abrupte brevissime acuminatis, basi leviter cordatis, subcoriaceis vel chartaceis, usque ad 24 cm longis, nervis utrinque circiter 10, distantibus, distinctis; petiolo crasso, vix 6 mm longo; floribus ignotis; fructibus ovoideis vel ellipsoideis, circiter 8 cm longis, aurantiacis, ferrugineo-pilosis.

A scandent shrub, all parts more or less ferruginous-pilose, the branchlets very densely so, the older branches bearly black, lenticellate, becoming glabrous. Leaves subcoriaceous or firmly chartaceous, oblong or narrowly oblong-ovate, 14 to 24 cm long, 5.5 to 8.5 cm wide, usually widest above the middle, the apex shortly and abruptly acuminate, below usually more or less narrowed, the base rounded, somewhat cordate, both surfaces more or less pilose with ferruginous hairs, the upper surface in age becoming more or less glabrous, the lower surface slightly paler,

the nerves and reticulations especially pilose; lateral nerves 10 on each side of the midrib, prominent, somewhat ascending, anastomosing, the reticulations subparallel, distinct; petioles densely ferruginous-pilose, thickened, 6 mm long, or less. Flowers axillary, sessile or very shortly pedicelled, apparently solitary (not seen). Fruits umbellately arranged on stout, axillary, pubescent tubercles, 6 or more in each umbel, their pedicels pubescent, 5 to 8 mm long, the fruits yellow when fresh, dark-brown when dry, ovoid or ellipsoid, about 8 mm long, more or less ferruginous-pilose, the apex minutely apiculate.

LUZON, Province of Cagayan, Abulug River, *Bur. Sci.* 13870 Ramos, January 26, 1912, on trees in forests.

A species well characterized by its pilose, ferruginous indumentum and comparatively few, distant, lateral nerves.

POLYALTHIA Blume.

POLYALTHIA LOHERI sp. nov.

Species *P. lanceolatae* Vid. similis et affinis, differt foliis majoribus, tenuiter acuminatis, floribus majoribus, circiter 2 cm longis.

A tree 5 to 10 m high, nearly glabrous, the axils bearded with short, stiff, ferruginous hairs, the branchlets slender, terete, dark-colored when dry, usually lenticellate. Leaves chartaceous or subcoriaceous, glabrous, rather pale when dry, shining and of the same color on both surfaces, lanceolate to oblong-lanceolate, 15 to 25 cm long, 2 to 5 cm wide, gradually narrowed into a long and rather slender acumen, base rounded or narrowed, minutely cordate, often very slightly inequilateral; primary nerves about 19 on each side of the midrib, spreading, anastomosing, the secondary ones often nearly as prominent, the reticulations rather lax, evident; petioles 3 mm long or less. Flowers axillary, solitary, perfect, white, cream-colored, or yellow, the pedicels slender, somewhat thickened upward, 3 to 4 cm long. Sepals triangular-ovate, acute or slightly acuminate, 3 to 4 mm long. Petals 6, subequal, oblong to oblong-obovate, thick, coriaceous, somewhat pubescent especially along the margins toward their tips, obtuse or acute, somewhat united below, 2 to 2.5 cm long, 4 to 7 mm wide. Anthers numerous, the connectives truncate. Ovaries villous. Fruit ellipsoid, apparently red, about 2 cm long, glabrous or nearly so.

LUZON, Province of Cagayan, *Cuming* 1346; Culasing Mountain, *For. Bur.* 18437 Alvarez (type), February 22, 1909, in dipterocarp forests; Pamplona, *For. Bur.* 14780 Darling, March, 1909: Province of Rizal, San

Mateo, *For. Bur. 1103 Ahern's collector*, May, 1904, in fruit; Montalban, *Loher 5531*, January, 1906, with immature flowers: Province of Tayabas, Mauban, *For. Bur. 10191 Curran*, March, 1908.

The alliance of this species is manifestly with *Polyalthia lanceolata* Vid., and some of the material cited above has been distributed under that name. *P. loheri*, however, has much larger, differently shaped leaves, and much larger flowers, and is abundantly distinct.

Var. **CAGAYANENSIS** var. nov.

A typo differt ramulis pallidis, foliis majoribus, usque, ad 35 cm longis, venis magis distinctis.

LUZON, Province of Cagayan, Abulug River, near Dabba, *Bur. Sci. 13948 Ramos*, February 2, 1912, in forests, a tree about 5 m high with yellow flowers.

Additional material may show that this form is specifically distinct, or may merge it with *Polyalthia loheri*.

POLYALTHIA TENUIPES sp. nov.

Ut videtur arbor parva, ramulis junioribus exceptis glabra; foliis lanceolatis, sensim angustatis, acuminatis, basi angustatis, obtusis, minute cordatis, usque ad 12 cm longis, nervis utrinque 10 ad 12; floribus in axillis superioribus, solitariis, tenuiter pedicellatis, circiter 8 mm longis, pedicellis 2 ad 3 cm longis; petalis exterioribus triangulari-ovatis, interioribus lanceolatis quam exterioribus duplo longioribus.

Apparently a small tree, nearly glabrous, the growing shoots densely appressed ferruginous-pubescent, the branches slender, glabrous, dark-colored, terete. Leaves lanceolate, chartaceous, 9 to 12 cm long, 1.5 to 2.5 cm wide, gradually narrowed above to the slenderly acuminate apex, the base somewhat narrowed, obtuse, slightly cordate, of nearly the same color and shining on both surfaces when dry; primary nerves 10 to 12 on each side of the midrib, spreading, anastomosing, irregular, the secondary ones often nearly as prominent as the primary ones, the reticulations lax; petioles 2 mm long or less. Flowers solitary, perfect, axillary, in the upper axils, about 8 mm long, their pedicels very slender, 2 to 3 cm long, with a small oblong-lanceolate bracteole near the base. Sepals slightly pubescent, triangular-ovate, acute, about 2 mm long, united. Petals 6, in two series, dissimilar, the outer ones triangular-ovate, acute or somewhat acuminate, 5 mm long or less, the inner three lanceolate, somewhat acuminate, about 8 mm long.

LUZON, Province of Tayabas, Kabibihan, *Bur. Sci. 13472 Foxworthy & Ramos*, March, 1911.

A species with vegetative characters quite similar to those of *Polyalthia lanceolata* Vid., but sharply differentiated by its dissimilar petals.

CAPPARIDACEAE.

CAPPARIS L.

CAPPARIS LOHERI sp. nov.

Frutex scandens, armatus, subtus foliis ramulisque pubescentibus; foliis papyraceis, concoloribus, lanceolatis ad late lanceolatis, brevissime petiolatis, basi rotundatis, apice sensim angustatis, acuminatis, nervis utrinque circiter 11, distinctis, anastomosantibus; floribus longe pedicellatis, 4 ad 6 in umbellis axillaribus.

A scandent shrub, the nodes armed with short, sharp, straight spines 2 mm long or less, the branchlets terete, brownish, pubescent. Leaves lanceolate to broadly lanceolate, rarely ovate-lanceolate, chartaceous, 9 to 19 cm long, 2 to 4.5 cm wide, green and of about the same color on both surfaces when dry, slightly shining, the upper surface quite glabrous or the midrib slightly pubescent, the lower surface softly pubescent at least on the midrib and nerves, base rounded, gradually narrowed upward from about the middle to the long and slender acumen, sometimes slightly falcate; lateral nerves about 11 on each side of the midrib, spreading, prominent, looped-anastomosing, the reticulations lax, distinct; petioles pubescent, about 2 mm long. Umbels axillary, solitary, the peduncles pubescent, slender, 1 to 1.5 cm long, 4- to 6-flowered, the pedicels 2 to 3 cm in length, slender. Sepals 5 to 6 mm long, concave, orbicular-elliptic, rounded. Petals hyaline, thin, oblong, rounded, about 3.5 mm long, base truncate, margins ciliate. Stamens numerous, their filaments about 2 cm long; anthers narrowly oblong, 2 mm long. Gynophore slender, 3 cm in length in anthesis, elongated and 3.5 to 5 cm in length in fruit; ovary narrowly ovoid. Fruit (immature) ellipsoid, fleshy, 1.8 cm long.

LUZON, Province of Rizal, Montalban, *Loher 2016* August, 1890, in herb. Kew., 6787 (type), November, 1905.

A species well characterized by its long and slenderly acuminate pubescent leaves, its axillary, solitary, few-flowered umbels, its long-pedicelled flowers, and greatly elongated gynophore. It is allied to *Capparis lobbiana* Turcz., but is very different from that species in vegetative and many other characters.

CAPPARIS LITTORALIS sp. nov.

Species *C. lobbiana* Turcz., similis et affinis, differt omnibus partibus glabris, vix molliter pubescentibus.

An erect (or somewhat scandent?) shrub about 2 m high,

the branchlets terete, slightly pubescent, the nodes with very short sharp spines 1.5 mm long or less. Leaves ovate to oblong-ovate, 1.5 to 5 cm long, 1 to 2.5 cm wide, coriaceous, shining, glabrous, acute or very slightly apiculate-acuminate, base broad, cordate; nerves about 8 on each side of the midrib, very slender, not at all prominent; petioles 2 mm long or less. Flowers (not seen) in axillary, solitary, apparently few-flowered umbels, the peduncle in fruit 1.5 to 2 cm long, slender, glabrous, the pedicels (gynophore) 1.5 to 2.5 cm in length. Fruit ovoid or subglobose, about 8 mm in diameter, white when fresh, brown when dry, apparently fleshy, 2- or 3- seeded, the seeds 3 to 4 mm in length.

LUZON, Province of Tayabas, *For. Bur. 11111 Curran* (type), April, 1908, on sand dunes along the seashore: Province of Ilocos Norte, *Bur. Sci. 7602 Ramos*, March, 1909, in sandy places near the sea.

A species manifestly very closely allied to *Capparis lobbiana* Turcz., which it closely resembles, differing in having entirely glabrous, shining, coriaceous or subcoriaceous, not softly pubescent leaves.

SAXIFRAGACEAE.

POLYOSMA Blume.

POLYOSMA PIPERI sp. nov.

Frutex vel arbor parva; foliis anguste oblongo-obovatis vel late oblanceolatis, usque ad 16 cm longis, integris, apice acuminatis, basi angustatis, acutis, oppositis, chartaceis, subtus ad costa nervisque plus minusve hirsutis, nervis utrinque circiter 12, prominentibus; racemis terminalibus, pubescentibus, quam folia longioribus; floribus 4-meris, circiter 12 mm longis.

A shrub or a small tree, the branches terete, glabrous, the younger ones nearly black when dry and more or less pubescent with short, spreading, often fulvous hairs. Leaves opposite, narrowly oblong-obovate to broadly oblong-oblanceolate, chartaceous, 12 to 16 cm long, 3.5 to 5 cm wide, entire, the apex rather prominently acuminate, gradually narrowed from about the middle to the acute base, the upper surface glabrous or nearly so, the lower of about the same color, more or less fulvous or pale-pubescent along the midrib and lateral nerves; lateral nerves about 12 on each side of the midrib, prominent, curved, anastomosing, the reticulations rather lax; petioles 1.5 to 2.5 cm long, pubescent. Racemes terminal, more or less hirsute-pubescent with short, pale or grayish hairs, a little longer than the leaves, erect. Flowers numerous, about 12 mm long, their

pedicels 2 to 2.5 mm long, the bracteoles lanceolate, acuminate, pubescent, about 3 mm long. Calyx somewhat urceolate, about 2.5 mm long, slightly constricted at the apex, the 4 teeth spreading, triangular-ovate, acuminate, short. Petals 4, linear, obtuse, 10 to 11 mm long, to 1.5 mm wide, longitudinally 5- or 6-nerved, the nerves distinct, stout, dark-colored, outside more or less appressed-pubescent with short hairs, inside ciliate-pilose with white hairs. Filaments 6 mm long, ciliate-pilose; anther linear, 4 mm long. Fruit (rather immature) ovoid-ellipsoid, glabrous, somewhat longitudinally sulcate when dry, about 12 mm long, 6 to 7 mm wide, somewhat narrowed at both ends.

MINDANAO, Province of Surigao, Hinatuan, *C. V. Piper 519*, May 16, 1911.

A species distinguishable by its leaves being somewhat pubescent beneath, its long racemes, and relatively short flowers.

POLYOSMA VERTICILLATA sp. nov.

Arbor parva 4 ad 5 m alta, partibus junioribus inflorescentiisque parce pubescentibus; foliis oblongis, coriaceis, ternis, verticillatis vel subverticillatis, nitidis, acuminatis, 4 ad 10 cm longis, irregulariter glanduloso-dentatis; racemis axillaribus, multifloris; floribus purpureis, vix 1 cm longis.

A small tree 4 to 5 m high, nearly or quite glabrous except the sparingly pubescent inflorescence and younger parts. Leaves in whorls of threes, coriaceous, when young somewhat pubescent, when mature quite glabrous, shining, usually oblong, 4 to 10 cm long, 1.5 to 3.5 cm wide, rather coarsely and irregularly glandular-dentate, sometimes subentire, acuminate, base acute; nerves 15 to 20 on each side of the midrib, spreading at nearly right angles, slender, anastomosing; petioles 1 to 2.5 cm long. Racemes axillary, slightly pubescent, peduncled, 4 to 5 cm long. Flowers numerous, crowded in the upper one-half of the raceme, their pedicels 2 mm long, pubescent, with 3 oblong, acute, 1 mm long bracts at the apex subtending the calyx. Calyx pubescent, somewhat urceolate, 2.5 mm long, the lobes 4, triangular-ovate, acute, 1 mm long. Petals 4, narrowly oblong, 8 mm long, 1.5 mm wide, slightly appressed-pubescent with very short, scattered hairs. Fruit subglobose to ovoid, black when mature, about 8 mm long.

LUZON, Benguet Subprovince, Mount Tonglon (Santo Tomas), *Phil. Pl. 772 Merrill*, May, 1911 (type), *Williams 1526*, November, 1904, *Bur. Sci. 5411 Ramos*, December, 1908; Mount Ugo, *Bur. Sci. 5593 Ramos*; Mount Pulog, *For. Bur. 18148 Curran, Merritt, & Zschokke*; Baguio, *Elmer 8798*.

A very characteristic species, readily recognizable by its leaves being

in whorls of threes, not opposite as in most species of the genus; it differs from *Polyosma philippinensis* also in its considerably shorter and less pubescent flowers, as well as in its usually more prominently dentate leaves.

LEGUMINOSAE.

DESMODIUM Desv.

DESMODIUM TRIFOLIATRUM Miq. Fl. Ind. Bat. 1¹ (1855) 248.

MINDANAO, Province of Surigao, Hinatuan, C. V. Piper 549, May 16, 1911.

This species has not been reported from the Philippines previously, and, in fact, is definitely recorded only from Java. The species has been determined through the kindness of Sir D. Prain, director of the Royal Gardens, Kew, to whom a specimen was sent for comparison with the material in the Kew Herbarium.

DERRIS Lour.

DERRIS CEBUENSIS sp. nov. § *Dipteroderris*.

Frutex scandens, glaber; foliis 13 ad 20 cm longis, foliolis 7, nitidis, oblongis vel oblongo-ellipticis, in siccitate pallidis, utrinque concoloribus, 4 ad 8 cm longis, breviter obtuse acuminatis; floribus ignotis; leguminibus oblongis vel oblongo-lanceolatis, 6 ad 10 cm longis, planis, 2.5 ad 3 cm latis; seminibus 2 vel 3.

A scandent vine, glabrous throughout (flowers unknown), the stems brownish-olivaceous, prominently lenticellate, terete, the young branchlets smooth. Leaves odd-pinnate, 13 to 20 cm long, the common petiole and rachis 7 to 11 cm long. Leaflets 7, coriaceous or subcoriaceous, pale, shining and of the same color on both surfaces when dry, oblong to oblong-elliptic, 4 to 8 cm long, 2.5 to 3.5 cm wide, the base obtuse or rounded, apex shortly and obscurely blunt-acuminate, or sometimes obtuse; nerves slender, obscure, anastomosing, 7 to 10 on each side of the midrib; petiolules 3 to 8 mm long. Flowers unknown. Inflorescence axillary, paniculate, up to 25 cm long, entirely glabrous, the lower branches up to 8 cm long, the upper ones shorter. Persistent calyces shallowly cup-shaped, truncate, 5 mm in diameter. Pods thin, flat, oblong to oblong-lanceolate, pale when dry, 6 to 10 cm long, 2.5 to 3 cm wide, the base acute or acuminate, apex shortly and slightly falcately apiculate-acuminate, the wings thin, 3 to 7 mm wide, of the same width on both sides of the pod. Seeds 2 or 3, rarely only 1, thin, flat, 2 mm long.

CEBU, Bucacao, *Bur. Sci.* 11014 Ramos, March 19, 1912, on dry hills.

A species apparently most closely allied to *Derris mindorensis* Perk., and to *D. micans* Perk., but distinguishable by being entirely glabrous throughout.

MEDICAGO L.

MEDICAGO LUPULINA L. Sp. Pl. (1753) 779; Baker in Hook. f. Fl. Brit. Ind. 2 (1876) 90.

LUZON, Benguet Subprovince, Baguio, *Merrill 7762*, May, 1911, in waste places, open grassy slopes, altitude about 1500 m. Introduced and apparently established, as is *Medicago denticulata* Willd.

Widely distributed in Europe and Asia, introduced in North America.

SIMARUBACEAE.

SURIANA L.

SURIANA MARITIMA L. Sp. Pl. (1753) 284; A. Gray Bot. Wilkes U. S. Explor. Exped. (1854) 307.

LUMBUCAN ISLAND, Sulu Sea, *Phil. Pl. 403 Merrill*, September, 1910.
MANGSEE ISLAND, *Wilkes Expedition*.

This species has already been reported from the Philippines by A. Gray, specimens having been collected by the Wilkes Expedition on Mangsee Island, a short distance south of Lumbucan this record having been overlooked by me in my paper on the Philippine plants collected by the Wilkes Expedition.⁴ It is widely distributed in the tropics of the World, but its occurrence in the Old World is rather peculiar and apparently restricted. I have found no published record of its occurrence on the Asiatic continent, nor in Formosa. I have specimens collected on Pratas Island, in the China Sea between Hongkong and Luzon, sent to me by Mr. Kawakami of Taihoku, Formosa. Both Miquel and Boerlage record it as Malayan, but without citing any locality or localities for it. It is found in the Laccadive Islands, in German New Guinea, and on the islands off the north-east coast of Australia, while it seems to be widely distributed in southern Polynesia.

MELIACEAE.

AGLAIA Lour.

AGLAIA BRACHYBOTRYS sp. nov. § *Euaglaia*.

Arbor circiter 8 m alta, ramilis subtus foliis inflorescentiisque minute subferrugineo-ciliato-lepidotis; foliis alternis, circiter 40 cm longis, foliolis membranaceis, alternis, circiter 7, oblongo-ovatis vel oblongo-ellipticis, usque ad 17 cm longis; paniculis lateralibus, circiter 9 cm longis; floribus racemose dispositis, brevissime pedicellatis, 4-meris, tubo stamineo cum petalis distincte coalito.

A tree about 8 m high. Branches pale-brown, terete, densely covered with minute ciliate-lepidote scales. Leaves alternate, unequally pinnate, about 40 cm long, the petiole, rachis, and

⁴ This Journal 3 (1908) Bot. 73-84.

petiolules densely covered with pale-brown, lepidote, ciliate scales. Leaflets alternate, usually 7, membranaceous, ovate-oblong to oblong-elliptic, 12 to 17 cm long, 5.5 to 8 cm wide, slightly shining when dry, glabrous above, beneath of the same color and ciliate-lepidote on the nerves and midrib, and with scattered, small scales on the surface, the base of the lateral ones inequilateral, somewhat acuminate, of the terminal one equilateral, the apices somewhat acuminate; lateral nerves 8 to 12 on each side of the midrib, prominent; petiolules of the lateral leaflets 1 cm long, of the terminal one about twice as long. Panicles lateral, about 9 cm long, the peduncle less than 1 cm long, somewhat dichotomously branched, the branches spreading, all parts covered with small, pale-brown, ciliate-lepidote scales. Flowers about 3 mm long, racemosely rather densely arranged on the ultimate branchlets, their pedicels 0.5 mm long or less. Calyx ciliate-lepidote, when spread nearly 2 mm square, the teeth 4, rarely 5, broadly triangular, acute, less than 0.5 mm long. Petals 4, glabrous, elliptic-oblong or oblong-obovate, obtuse, about 3 mm long, 2 mm wide, adherent to the staminal-tube in the lower one-third. Staminal-tube 2.5 mm long, truncate, glabrous, bearing 7 or 8 stamens attached at or just above the middle, the anthers about 1 mm long, included. Ovary sessile, ovoid, minute, pubescent. Fruit unknown.

LUZON, Province of Cagayan, San Vicente, in dense forests at an altitude of about 15 m, *For. Bur. 15497 Bernardo*, April 15, 1910.

A species with somewhat the general appearance of *Aglaia hexandra* Turcz., but with fewer leaflets, much shorter panicles, and quite different flowers. According to DeCandolle's scheme of classification it is much more closely allied to *Aglaia turczaninowii* A. DC., but is entirely different from that species.

AGLAIA CAGAYANENSIS sp. nov. § *Euaglaia*.

Arbor circiter 7 m alta, partibus junioribus inflorescentiisque lepidotis, vetustioribus glabris; foliis usque ad 14 cm longis, 3- ad 5-foliolatis, foliolis anguste oblongo-ellipticis vel oblongo-ovatis, caudato-acuminatis; paniculis axillaribus, quam folia brevioribus, paucifloris; floribus racemose dispositis, longe pedicellatis, tubo stamineo liber.

A tree about 7 m high, the branchlets and inflorescence rather densely lepidote, the older parts entirely glabrous. Branches slender, terete, dark-colored when dry, the branchlets pale. Leaves 14 cm long or less, alternate, the rachis and petiole 3 to 5 cm long; leaflets subcoriaceous, brittle when dry, 3 to 5,

narrowly oblong-elliptic to narrowly oblong-ovate, 6 to 10 cm long, 1.5 to 3 cm wide, narrowed at both ends, the apex somewhat caudate-acuminate, base acute, both surfaces shining, the lower a little paler than the upper; nerves 6 to 8 on each side of the midrib, not prominent; petiolules 2 to 3 mm long. Panicles in the upper axils, 10 cm long or less, peduncled, with few branches, each branch with from 1 to 3 racemosely disposed flowers, the pedicels 3 to 10 mm long. Calyx cup-shaped, about 2 mm in diameter, shallowly 5-toothed. Petals glabrous, orbicular, concave, 2.5 to 3 mm in diameter. Staminal-tube globose, free from the petals, about 2 mm long. Anthers 5, 1.5 mm long, included.

LUZON, Province of Cagayan, Abulug River, *Bur. Sci. 13801 Ramos*, January, 1912.

A species well characterized by its lax, very few-flowered panicles, the flowers long-pedicelled.

AGLAIA CURRANII sp. nov. § *Euaglaia*.

Arbor circiter 8 m alta, ramulis petiolis inflorescentiisque plus minusve ciliato-lepidotis; foliis alternis, circiter 30 cm longis, imparipinnatis, foliolis utrinque 5, lanceolatis, subcoriaceis, usque ad 11 cm longis, acuminatis, basi valde inaequilateralibus, subtus ad costa plus minusve ciliato-lepidotis; paniculis axillaribus, circiter 12 cm longis; floribus 5-meris, sessilibus vel subsessilibus, spicatum dispositis; petalis liberis.

A tree about 8 m high. Branches terete, glabrous, lenticellate, brownish, the younger parts more or less covered with minute, ciliate, lepidote scales, pale-brownish in color. Leaves alternate, about 30 cm long, the petioles, rachis, and petiolules densely covered with small, brownish, lepidote-ciliate scales. Leaflets usually 11, lanceolate, subcoriaceous, rather pale and of about the same color on both surfaces when dry, slightly shining above, 9 to 11 cm long, 2 to 3 cm wide, the apex prominently acuminate, the acumen blunt, the base strongly inequilateral, acuminate; nerves about 12 on each side of the midrib, slender, not prominent; petiolules about 1 cm long, that of the terminal leaflet about 1.5 cm long. Panicles axillary, ciliate-lepidote, about 12 cm long, branched from just above the base, the primary branches up to 7 cm in length. Flowers spicately disposed on the ultimate branchlets, sessile or subsessile, not at all crowded. Calyx densely ciliate-lepidote, the teeth 5, ovate, obtuse, ciliate, less than 0.5 mm long. Petals 5, glabrous, free from the staminal tube, oblong, obtuse, 1.5 to 1.8 mm long (just before anthesis). Staminal tube very short, glabrous, 1 mm long or less, truncate.

Stamens 5, inserted on the base of the tube, included, the anthers 0.5 mm long. Fruit unknown.

LUZON, Province of Bataan, Limay Peak, Mariveles Mountain, *For. Bur.* 17580 *Curran*, November, 1909, on dry forested ridges at an altitude of about 700 m.

A species well characterized by its lanceolate leaflets, its small ciliate-lepidote scales on the inflorescence, petioles, etc., its spicately arranged, sessile or subsessile flowers, and very short staminal-tube. According to DeCandolle's scheme of classification it seems to be allied to *Aglaia llanosiana* C. DC., but in all respects is quite different from that species.

AGLAIA DIFFUSA sp. nov. § *Hearnia*.

Arbor circiter 25 m alta, inflorescentiis exceptis glabra; foliis alternis, imparipinnatis, 3-jugatis, vix 30 cm longis; foliolis lanceolatis vel elliptico-lanceolatis, utrinque acuminatis aequilateralibusque, usque ad 14 cm longis, nervis utrinque circiter 10; paniculis axillaribus, folia aequantibus, diffusis, multifloris, ramis primariis patulis, usque ad 15 cm longis, plus minusve lepidotis vel puberulis; floribus 5-meris, pedicellatis, racemose dispositis.

A tree about 25 m high, glabrous except the somewhat lepidote and puberulent inflorescence. Branches terete, brownish, glabrous, the ultimate ones 4 mm in diameter or less. Leaves alternate, less than 30 cm long, the petiole and rachis 10 to 13 cm long. Leaflets 7, the lateral ones opposite, lanceolate or elliptic-lanceolate, 9 to 14 cm long, 2 to 4 cm wide, narrowed and acuminate at both ends, rather pale and somewhat shining when dry, of about the same color on both surfaces, glabrous, or the midrib beneath with few, small scales; nerves about 10 on each side of the midrib, slender, not very prominent, the reticulations lax, subobsolete; petiolules 4 to 6 mm long. Panicles in the upper axils, usually but one on a branchlet, diffuse, about 30 cm long, the lower branches spreading, 15 cm long, very many flowered, the rachis somewhat brown-lepidote, the ultimate branchlets somewhat brown-puberulent. Flowers yellow, racemosely arranged on the ultimate branchlets, scattered, their pedicels 1 to 1.5 mm long. Calyx-teeth 5, broadly ovate, obtuse, 0.3 mm long, ciliate. Petals 5, glabrous, oblong-obovate to obovate, obtuse, 1.6 mm long, free from the staminal-tube. Staminal-tube broadly obovoid, truncate, about 1 mm long and 1.2 mm in diameter. Stamens 5, inserted on the edge of the staminal-tube, slightly inflexed, 0.25 mm long.

LUZON, Province of Tayabas, Guinayangan, *For. Bur.* 18684 *Darling*, November 21, 1909. In forests at an altitude of about 50 m, locally known as *malasaguin*.

A species of the section *Hearnia*, well characterized by being nearly

glabrous throughout, and by its very diffuse, ample, many-flowered panicles which are more or less lepidote and puberulent. It does not seem to me to be closely allied to any of the previously described species of the genus, although in many respects it resembles *Aglaiia harmsiana* Perk.

DYSOXYLUM Blume.

DYSOXYLUM LAXUM sp. nov. § *Eudysoxylum*.

Arbor circiter 10 m alta, partibus junioribus puberulis exceptis glabra; foliis alternis, abrupte pinnatis, circiter 30 cm longis, 4- vel 5-jugis, foliolis oblongo-ovatis ad late oblongo-lanceolatis, valde acuminatis, in siccitate pallidis; paniculis axillaribus, folia aequantibus, parce ramosis, paucifloribus; floribus 4-meris, circiter 1 cm longis, petalis supra puberulis.

A tree about 10 m high, glabrous except the somewhat puberulent younger parts. Branches terete, brownish, lenticellate, the growing parts grayish and somewhat puberulent. Leaves alternate, evenly pinnate, about 30 cm long, the rachis and petiole slender, more or less puberulent, about 15 cm long; leaflets 4 or 5 pairs, the uppermost ones opposite, the others subopposite or alternate, thinly chartaceous or membranaceous, pale when dry, concolorous, slightly shining, oblong-ovate to broadly oblong-lanceolate or somewhat elliptic-oblong-lanceolate, the lower ones inequilateral at the base, 4 to 5 cm long, the upper ones equilateral, gradually larger and up to 15 cm long and 4.5 cm wide, base acute, apex rather slenderly acuminate; lateral nerves about 10 pairs, slender; petiolules 2 to 5 mm long. Panicles axillary, slender, as long as the leaves, lax, each with very few spreading branches, the lower branches 6 cm long or less and each bearing 2 or 3 flowers, the slender pedicels up to 1.5 cm long. Flowers pinkish, 4-merous. Calyx narrowly funnel-shaped, narrowed below, about 5 mm long, puberulent, obscurely toothed. Petals narrowly oblong, obtuse, about 8 mm long, glabrous on the back except at the apex where they are somewhat puberulent. Staminal tube cylindric, free or nearly so, 6 mm long, somewhat toothed at the apex. Stamens 8, inserted at the top of the tube, included. Disk cylindric, 4-toothed, about 2.5 mm long, glabrous. Ovary hirsute; style 5 mm long, slender, glabrous. Young fruits obovoid or somewhat ellipsoid, 1.5 cm long, glabrous, apiculate at the apex.

CAMIGUIN DE MINDANAO, *Bur. Sci.* 14694 Ramos, March 28, 1912, in forests at Panaytayum.

A very distinct and characteristic species recognizable by its lax, very few-flowered panicles, long-pedicelled flowers, etc. It is probably most closely allied to *Dysoxylum pauciflorum* Merr., but is entirely distinct from that species.

TOONA Roemer.

TOONA PAUCIJUGA sp. nov.

Species ut videtur *T. calantas* Merr. & Rolfe valde affinis, differt foliis paucioribus, 7 vel 9, glabris, subtus in axillis venarum prominente glandulosis.

A tree reaching a height of about 10 m, glabrous throughout (inflorescence unknown). Branches brownish, glabrous, somewhat striate when dry. Leaves alternate, odd-pinnate, 30 to 35 cm long. Leaflets 7 or 9, oblong-ovate to elliptic-ovate, firmly chartaceous, brownish and of nearly the same color on both surfaces when dry, shining, the median ones 10 to 13 cm long, 5 to 6 cm wide, the lower ones somewhat smaller, opposite or subopposite, entire, the base inequilateral, rounded, or on one side of the lamina sometimes acute or acuminate, the apex distinctly acuminate, the acumen usually somewhat falcate, blunt; lateral nerves 10 to 12 on each side of the midrib, distinct, their axils on the lower surface with distinct glands; petiolules 1 cm long or less. Flowers unknown. Panicles terminal, in fruit about 12 cm long. Mature fruits quite similar to those of *Toona calantas*, about 3.5 cm long.

LEYTE, between Dolores and Ormoc, in forests at an altitude of about 100 m, *For. Bur. 12618 Rosenbluth*, February, 1909, locally known as *calantas*.

A species well characterized by its few leaflets which are prominently glandular in the axils of the veins on the lower surface.

DICHAPETALACEAE.

DICHAPETALUM Thou.

DICHAPETALUM CILIATUM sp. nov.

Frutex scandens, ramulis petiolis foliisque utrinque ad costa nervisque insigniter ciliatis; foliis oblongis vel oblongo-ellipticis, usque ad 14 cm longis, chartaceis, apice acuminatis, basi acutis vel subrotundatis, nervis utrinque circiter 8, prominentibus; cymis axillaribus, brevibus, petiolo subaequantibus; fructibus dense griseo-villosis, 14 mm longis, 2-locellatis.

A scandent shrub, prominently ciliate with long, spreading hairs. Branches slender, terete, reddish-brown when dry, the older ones nearly glabrous, the younger ones prominently ciliate with rather pale hairs. Leaves oblong to elliptic-oblong, 8 to 14 cm long, 3 to 6 cm wide, chartaceous, somewhat narrowed to the acute or subrounded base, the apex rather slenderly and sharply acuminate, the acumen 0.5 to 1.5 cm long, the margins and the midrib and nerves on both surfaces prominently ciliate with spreading, pale or somewhat brownish hairs, otherwise

glabrous, both surfaces shining, the lower of about the same color as, or a little paler than, the upper; lateral nerves about 8, very prominent on the lower surface, curved-ascending, anastomosing, the primary reticulations rather lax, prominent; petioles 5 to 10 mm long, prominently ciliate. Cymes axillary, small, sessile or subsessile, dense, not longer than the petioles, ciliate, many-flowered, the bracteoles lanceolate, 2 mm long or less. Sepals oblong, obtuse, 2 mm long, outside densely pubescent. Petals narrowly oblong-spatulate, the apex broad, retuse or slightly cleft, the cleft less than 0.5 mm deep, the base narrowed. Filaments about 2 mm long; anthers 1 mm long. Ovary pubescent. Fruit broadly ellipsoid, more or less compressed, densely gray-pubescent, about 1.5 cm long, divided longitudinally by deep lateral grooves and slightly retuse at the apex, 2-celled.

MINDANAO, District of Zamboanga, Port Banga, *For. Bur.* 9293 (type), 9294, 9234 Whitford & Hutchinson, December, 1907 and January, 1908, *Bur. Sci.* 11819 Robinson, July, 1910, in forests at low altitudes.

A species well characterized by its prominently ciliate branchlets, inflorescence, and leaves, the latter glabrous except for the ciliate midrib and lateral nerves on both surfaces and usually also the margins.

DICHAPETALUM ROBINSONII sp. nov.

Arbor parva, circiter 8 m alta, subtus foliis ramulis inflorescentiisque dense sericeo-villosis; foliis subcoriaceis, late ellipticis vel ovato-ellipticis, usque ad 15 cm longis, supra nitidis, parce pubescens, basi rotundatis, apice acutis, nervis utrinque circiter 9, prominentibus; petiolo crasso, circiter 4 mm longo; inflorescentiis in axillis superioribus vel subterminalibus, breviter pedunculatis, floribus congestis; fructibus obovoideis, dense breviter fulvo-villosis.

A small tree, reaching a height of 8 m, the branches terete, reddish-brown, somewhat pubescent, the younger branchlets densely covered with short, villous, fulvous hairs, as are the petioles, inflorescence, and lower surfaces of the leaves. Leaves subcoriaceous, broadly elliptic to ovate-elliptic, 10 to 14 cm long, 6 to 8 cm wide, the upper surface brownish-olivaceous when dry, shining, sparingly pubescent, the hairs more numerous on the midrib and nerves, the lower surface densely fulvous-pubescent with short hairs; petioles about 4 mm long; lateral nerves about 9, prominent, the primary reticulations rather lax, distinct. Inflorescence in the upper axils and subterminal, shortly peduncled, up to 4 cm long, all parts fulvous-villous, the bracteoles linear, 1 to 1.5 mm long. Sepals ovate-lanceolate, acute or somewhat acuminate, about 2 mm long, externally densely pubes-

cent. Petals glabrous, elliptic to obovate, cleft to the middle. Filaments as long as the sepals; anthers about 0.5 mm long. Fruit apparently obovoid (immature), 1 to 1.5 cm long, externally densely fulvous-pubescent, apparently 1-seeded.

MINDANAO, District of Zamboanga, Port Banga, *Bur. Sci. 11771 Robinson*, July 5, 1910, growing at the edge of the forest.

A species very similar in appearance *Dichapetalum luzoniense* Merr. & Rolfe, and distinguishable only by some minor characters. The leaves are quite different in shape, not narrowed to the base, acute, not at all acuminate, with a few more nerves and more densely pubescent on the lower surface than in the Luzon species. *D. luzoniense* Merr. & Rolfe is manifestly a woody vine, while *D. robinsonii* is described as a tree, reclining, and reaching a height of 8 m. The inflorescence is also subterminal, not strictly axillary, and not long-peduncled.

ANACARDIACEAE.

PARISHIA Hook. f.

PARISHIA MALABOG sp. nov.

Arbor alta, glabra, vel partibus junioribus inflorescentiisque minute puberulis; foliis 30 ad 40 cm longis, imparipinnatis; foliolis 11 ad 15, nitidis, crasse coriaceis, oblongis vel oblongo-ovatis, acuminatis, basi obliquis, valde inaequalateralibus, subacutis vel rotundatis, usque ad 14 cm longis; paniculis folia aequantibus, glabris vel obscure puberulis; floribus breviter pedicellatis, petalis quam sepalis vix longioribus, segmentis calycinis auctis, anguste oblongis, obtusis, usque ad 10 cm longis.

A tall tree, reaching a height of 25 m, glabrous or nearly so. Ultimate branches thickened, 1 to 1.5 cm thick, grayish or brownish, marked with large petiolar scars, glabrous, or the growing tip somewhat puberulent. Leaves somewhat crowded at the ends of the branchlets, 30 to 40 cm long, their petioles stout. Leaflets 11 to 15, oblong to oblong-ovate, thickly coriaceous, 8 to 15 cm long, 4 to 6 cm wide, shining, inequilateral, entire, the apex acuminate, the base oblique, one side of the lamina much broader than the other, usually broadly rounded, the narrower side usually acute; nerves about 14 on each side of the midrib, prominent, anastomosing, the reticulations distinct; petiolules about 8 mm long. Panicles in the upper axils, as long as the leaves, glabrous or very slightly puberulent, their rachises stout, straight, the branches rather few, scattered, the lower ones 10 cm long or less, the upper ones shorter. Flowers 4-merous, short-pedicelled. Calyx at anthesis slightly puberulent, 4-lobed, the lobes about 6 mm long, obtuse, somewhat spreading. Petals 4, triangular-ovate, obtuse, glabrous, reti-

culate, imbricate, about 4 mm long. Ovary ovoid, pubescent, 1-celled, with a single ovule pendulous from near the apex, tapering into the short style; style trifid, sometimes bifid; stigmas capitate; rudimentary stamens 4, inserted outside of the disk, the filaments 1 mm long, the anthers as long as the filaments. Male flowers not seen. Fruit densely villous, about 2 cm long, the accrescent calyx-tube about 2.5 cm in diameter, 1.5 cm long, the lobes when young reddish or reddish-brown, when mature brown, narrowly oblong, rounded, up to 10 cm long, 1 to 1.2 cm wide.

CEBU, Buacao, *Bur. Sci. 11109 Ramos*, March 19, 1912 (type), with leaves, immature fruits, and female flowers. TICAQ, *For. Bur. 12530, 12540 Rosenbluth*, December, 1908, sterile specimens. MASBATE, *For. Bur. 21030 Darling*, May, 1910, sterile, *Foxworthy*. NEGROS, *For. Bur. 17356 Curran*, September, 1909, seedlings and fallen fruits. TABLAS, *For. Bur. 19526 José*. MINDORO, *For. Bur. 9831 Merritt*.

This very characteristic species is most closely allied to *Parishia insignis* Hook. f. of Tenasserim and the Andaman Islands, and Penang, although quite different from that species. It is the first representative of the genus to be found in the Philippines.

Rosenbluth notes that it is the most common tree species on the Island of Ticao, especially abundant on dry rocky hills, and that the trunk has a clear length seldom exceeding 15 meters. He notes also that it has abundant white juice in the bark and leaves. In Ticao the lumber is not used by the natives, but in Masbate it is used for making *bancas*, that is, dugout canoes. Mr. Elmer has noted on two of the sheets of sterile specimens "*Anacardiaceae fide Radlkofer, see Elmer 12164.*" The inference is that *Elmer 12164*, a number apparently undistributed as yet, represents the same species. Our material shows conclusively that the plant is referable to *Parishia*, and the specific name is taken from its current Visayan name, *malábog*.

SEMECARPUS L.

SEMECARPUS ACUMINATISSIMA sp. nov.

Arbor parva (vel frutex?) inflorescentis exceptis glabra vel subglabra; foliis anguste oblongo-ellipticis ad oblongo-oblanco-latis, chartaceis vel subcoriaceis, usque ad 20 cm longis, basi angustatis, acutis, apice subcaudato-acuminatis, subtus pallidioribus haud glaucescentibus, nervis prominentibus, utrinque circiter 16; paniculis terminalibus, brevibus, angustis, quam folia multo brevioribus, parce pubescentibus vel puberulis, floribus masculinis parvis, 5-meris.

A small tree or a shrub, except the inflorescence nearly glabrous. Branches terete, slender, grayish. Leaves oblong-elliptic to oblong-oblanco-late or narrowly oblong-ovate, 13 to 20 cm long, 4.5 to 6 cm wide, chartaceous or subcoriaceous, narrowed from about the middle or below to the acute base,

the apex prominently and rather slenderly subcaudate-acuminate, the acumen straight or somewhat curved, 1 to 2 cm long, the upper surface glabrous, when dry somewhat olivaceous, shining, the lower surface pale but not glaucous, slightly shining, very minutely puberulent or nearly glabrous; lateral nerves about 16 on each side of the midrib, prominent, spreading, anastomosing, the reticulations distinct, the primary ones slender, leaving the nerves at about right angles and anastomosing with the secondary lateral nerves, the ultimate free ends of the nervules rather distinct; petioles 1 to 2 cm long. Panicles terminal, slender, narrowly pyramidal, about 7 cm long, the lower branches about 2 cm in length, puberulent or somewhat pubescent with grayish hairs, the branchlets more or less ferruginous. Male flowers somewhat crowded on the ultimate branchlets, their pedicels 1 to 1.5 mm long, the bracteoles lanceolate, acuminate, pubescent, 1 to 1.4 mm long. Calyx pubescent, 2.5 mm in diameter, 5-lobed, the lobes broadly ovate, obtuse, puberulent. Petals prominently punctate-striate, oblong-ovate, obtuse, 2 mm long. Disk 1 mm in diameter, ferruginous-pubescent. Anthers 1 mm long. Immature fruits with puberulent pedicels 5 to 8 mm long, the hypocarpium puberulent, when dry about 4 mm long and wide, the drupe obliquely ovoid, somewhat compressed, 5 to 6 mm long, very slightly pubescent, apparently becoming quite glabrous.

LUZON, Province of Tayabas, Kabibihan, *Bur. Sci.* 13241 Ramos, February 27, 1911, in forests along streams, ♂ flowers: Province of Zambales, *Bur. Sci.* 5058 Ramos, December, 1907, with immature fruits.

A species manifestly allied to *Semecarpus philippinensis* Engl., but distinguished by its short and slender panicles, and its differently shaped leaves which are prominently subcaudate-acuminate and usually obscurely puberulent beneath.

SEMECARPUS EUPHLEBIA sp. nov.

Arbor circiter 18 m alta, inflorescentiis puberulis exceptis glabra; foliis crassissime coriaceis, oblongis vel anguste oblongo-ovatis, apice obtusis, basi acutis, usque ad 20 cm longis, supra nitidis, subtus glaucescentibus, nervis utrinque circiter 20, valde prominentibus, petiolo 4 ad 5 cm longo; paniculis folia subaequantibus, anguste pyramidatis, puberulis, floribus 5-meris.

A tree about 18 m high, glabrous except the puberulent inflorescence. Branches stout, brownish, the ultimate ones about 8 mm in diameter. Leaves very thickly coriaceous, oblong to narrowly oblong-ovate, 16 to 20 cm long, about 6 cm wide, narrowed upward to the obtuse apex, and below to the acute

base, of about the same color on both surfaces when dry, rather pale, the upper one shining, the lower more or less glaucous, dull; nerves about 20 on each side of the midrib, very prominent on the lower surface, spreading, parallel, anastomosing near the margins, the primary reticulations leaving the veins at right angles and anastomosing with intermediate secondary veins, the ultimate reticulations not prominent; petioles stout, 4 to 5 cm long. Panicles terminal, about as long as the leaves, uniformly and somewhat olivaceous-puberulent, narrowly pyramidal, the lower branches 5 to 6 cm long. Flowers unknown, but the persistent sepals 5. Hypocarpium 5 to 6 mm long, 2 mm wide at the base, 4 mm wide at the apex, longitudinally obscurely sulcate, slightly puberulent. Drupe (very immature) 7 mm long, 5 mm in diameter, oblong-ovoid, slightly compressed, sparingly pubescent at the apex, apparently becoming entirely glabrous.

LUZON, Province of Tayabas, Quinatacutan River, *Bur. Sci. 13163 Foxworthy & Ramos*, March, 1911, in forests along the river.

Apparently a very characteristic species, its distinguishing features being its very coriaceous, glabrous, comparatively long-petioled, prominently nerved leaves, its narrowly pyramidal puberulent panicles, its hypocarpium much longer than wide, and its oblong-ovoid drupes.

SEMECARPUS LANCEOLATA sp. nov.

Arbor parva, glabra; foliis crasse coriaceis, lanceolatis, usque ad 30 cm longis, utrinque angustatis, apice obtusis, basi acutis, nervis utrinque circiter 22, haud prominentibus, in siccitate supra nitidis, subtus pallidioribus, vix glaucescentibus, petiolo 5 ad 7 cm longo; paniculis glabris, ramis inferioribus circiter 13 cm longis, drupis reniformibus, compressis, leviter carinatis, 2 cm latis.

A small tree, apparently glabrous throughout (inflorescence and flowers not seen.) Branches stout, the ultimate ones 1.5 cm in diameter, lenticellate, dark-brown, shining. Leaves lanceolate, 20 to 30 cm long, 4 to 7 cm wide, narrowed at both ends, the apex obtuse, base acute, thickly coriaceous, when dry shining, the upper surface rather pale, the lower one paler than the upper but not glaucous; lateral nerves about 22 on each side of the midrib, not prominent, spreading, faintly anastomosing, the reticulations very irregular, the ultimate ones dense, indistinct; petioles 5 to 7 cm long. Panicles terminal, in fruit quite glabrous, the lower branches about 12 cm long. Flowers unknown. Hypocarpium, when dry, about 1 cm long, 8 mm wide at the tip, narrowed below, apparently very much larger when fresh, the peduncle usually about 1 cm long. Drupe reniform,

compressed, about 2 cm wide, 1.3 cm long, somewhat keeled, nearly or quite smooth when dry.

LUZON, Abra Subprovince, Dolores, *Bur Sci. 7083 Ramos*, February, 1909, in forests, fruit red.

A very characteristic species, distinguishable by being entirely glabrous, by its lanceolate, elongated, coriaceous, long-petioled leaves, and by its comparatively large drupes which are reniform and distinctly keeled.

SEMECARPUS MAGABOTRYS sp. nov.

Arbor dioica ramulis subtus foliis inflorescentisque ferrugineo-vel pallide fulvo-villosis; foliis anguste oblongo-obovatis ad obovato-lanceolatis, crasse coriaceis, usque ad 22 cm longis, apice obtusis, acutis, vel rotundatis, basi angustatis, abrupte obtusis vel rotundatis, supra glabris, in siccitate nitidis, subtus pallidis; nervis primariis utrinque circiter 22, prominentibus; paniculis terminalibus, 40 ad 50 cm longis.

A dioecious tree probably of small or medium size. Branches stout, brownish, the younger ones rather prominently pubescent. Leaves narrowly oblong-obovate to obovate-lanceolate, thickly coriaceous, the apex acute, blunt, or rounded, the base narrowed and abruptly obtuse or rounded, 15 to 22 cm long, 5 to 8 cm wide, when dry the upper surface rather pale, shining, glabrous, the lower surface much paler than the upper one, more or less glaucous, and rather densely villous with pale-brownish hairs; lateral nerves about 22 on each side of the midrib, very prominent on the lower surface, spreading or somewhat ascending, the secondary ones subparallel, prominent, the ultimate reticulations distinct; petioles stout, pubescent, 1 to 1.5 cm long. Panicles pyramidal, terminal, 40 to 50 cm in length, ferruginous- or fulvous-villous, the flowers very numerous. Male flowers fascicled or glomerate at the nodes, the calyx 2 mm in diameter, pubescent, 5-toothed, the teeth short, triangular. Petals 5, oblong-ovate, acute, 2 mm long. Disk about 1.3 mm in diameter. Female flowers: Calyx pubescent, 3 mm in diameter. Petals 5, oblong-ovate, acute, 3 mm long. Ovary depressed, densely ferruginous-villous, about 2 mm in diameter. Young fruit with pedicels 1.5 to 2 cm in length, the hypocarpium rather densely ferruginous-villous, 4 mm long, about 5 mm wide when dry, the drupe somewhat compressed (immature), obovoid, about 7 mm long, with scattered, apparently deciduous, ferruginous hairs, apparently ultimately glabrous.

LUZON, Province of Nueva Vizcaya, *For. Bur. 22359 Alvarez*, January, 1911, one specimen with male flowers, one with female flowers (type), and one with immature fruits.

Probably as closely allied to *Semecarous perrottetii* March., as to any other species, but at once distinguished by its indumentum, its more or less pubescent fruits (at least the hypocarpium), and its very large panicles.

SEMECARPUS OBTUSIFOLIA sp. nov.

Arbor circiter 20 m alta, inflorescentiis exceptis glabra; foliis ellipticis, usque ad 13 cm longis, crasse coriaceis, apice late rotundatis, basi acutis, in siccitate supra subolivaceis, nitidis, subtus pallidis, glaucescentibus, nervis utrinque circiter 10, valde prominentibus; paniculis terminalibus pyramidatis, quam folia multo longioribus, plus minusve ferrugineo-hirsutis; floribus 5-meris.

A tree about 20 m high, the branches slender, terete, grayish, sparingly lenticellate. Leaves thickly coriaceous, elliptic or sub-elliptic, 7 to 13 cm long, 3.5 to 7 cm wide, the apex very broadly rounded, the base abruptly acute, glabrous, when dry the upper surface olivaceous, shining, the lower surface pale, glaucous; lateral nerves about 10 on each side of the midrib, prominent on the lower surface, spreading and somewhat ascending, curved, anastomosing, the primary reticulations lax, distinct, leaving the nerves at right angles, the ultimate ones indistinct; petioles 8 to 15 mm long. Panicles terminal, pyramidal, about 20 cm long, the branches scattered, the lower ones up to 12 cm in length, the younger parts rather prominently ferruginous-pubescent or hirsute. Flowers subglomerately arranged on the ultimate branchlets, sessile, 5-merous, numerous. Male flowers: Calyx 2 mm in diameter, 5-lobed, the lobes obtuse or rounded. Petals oblong-ovate, obtuse, 1.5 mm long. Disk ferruginous-pubescent. Anthers 0.8 mm long.

BALABAC, in forests, *Bur. Sci. 512 Mangubat*, March 4, 1906.

A species distinguishable at once by its elliptic, broadly rounded leaves which are olivaceous above and glaucous beneath.

SEMECARPUS PAUCINERVIA sp. nov.

Arbor parva circiter 10 m alta, inflorescentiis exceptis glabra; foliis anguste oblongo-obovatis vel oblongo-ellipticis, coriaceis, nitidis, apice late rotundatis, basi acutis, usque ad 9 cm longis, nervis utrinque circiter 8, arcuatis, subtus distinctis; paniculis leviter hirsutis, laxis, quam folia multo longioribus, multifloris, floribus ♂ in fasciculis racemosis, distincte pedicellatis, 5-meris.

A small tree about 10 m high. Branches terete, grayish, slightly lenticellate, shining, slender, glabrous, the growing parts slightly pubescent. Leaves narrowly oblong-obovate to oblong-elliptic, 5 to 9 cm long, 2 to 3 cm wide, coriaceous, the apex

broadly rounded, the base usually narrowed, acute, glabrous and shining on both surfaces, when dry the upper surface rather pale, the lower one much paler and somewhat glaucous; nerves about 8 on each side of the midrib, curved-ascending, anastomosing, distinct on the lower surface, the primary reticulations lax, leaving the nerves at right angles, the ultimate reticulations obscure; petioles 5 to 7 mm long. Panicles terminal and in the upper axils, sparingly hirsute with short, scattered, pale-brownish hairs, lax, pyramidal, 12 to 20 cm in length, the lower branches up to 10 cm in length. Male flowers in scattered fascicles which are racemously arranged on the ultimate branches, their pedicels slender, 1.5 to 2 mm long, the bracteoles ovate-lanceolate, 0.5 mm long. Calyx 1.5 mm in diameter, 5-lobed, the lobes ovate, obtuse, 0.5 mm long. Petals oblong-ovate, obtuse or acute, 1.8 mm long. Disk somewhat ferruginous-pubescent. Anthers 1 mm long.

PALAWAN, Mount Victoria, *Bur. Sci. 570 Foxworthy* March 25, 1906, on river banks, altitude about 180 meters.

A very distinct species, characterized by its small, few-nerved leaves which are broadly rounded at their apices, and by its lax panicles, the flowers being distinctly and slenderly pedicelled.

SEMECARPUS PILOSA sp. nov.

Arbor parva ut videtur *S. cuneiformis* affinis, differt foliis subtus densissime pilosis, paniculis ferrugineo-pilosis.

A tree apparently of small size, the branches stout, pubescent. Leaves more or less crowded at the ends of the branches, thickly coriaceous, oblong-obovate, 9 to 20 cm long, 4 to 8 cm wide, the apex broadly rounded, sometimes retuse, narrowed below to the abruptly obtuse, not at all decurrent base, the upper surface somewhat grayish when dry, shining, quite glabrous except for the more or less pubescent midrib, the lower surface densely pilose, paler than the upper one; lateral nerves 13 to 16 on each side of the midrib, very prominent, spreading, somewhat curved and anastomosing, the secondary nerves leaving them at right angles, subparallel, distinct; petioles stout, pubescent, 8 to 10 mm long. Panicles terminal, pyramidal, ferruginous-pilose, about 15 cm long, the branches spreading, the lower ones about 8 cm in length. Petals 5, ovate to oblong-ovate, somewhat acuminate, 2.5 mm long. Ovary ovoid, densely fulvous-villous. Hypocarpium, when fresh, orange-yellow, when dry about 4 mm long nearly as thick as the drupe, more or less ferruginous-pubescent, the drupe slightly compressed, obliquely ovoid, obtuse,

smooth, black, about 8 mm long, slightly pubescent externally, ultimately becoming glabrous or nearly so, the pericarp leathery.

LUZON, Province of Nueva Vizcaya, Dupax, *Bur. Sci.* 11435 *McGregor*, March, 1912, locally known as *baliunasoy*.

A species well characterized by its leaves being densely pilose on the lower surface. Like most or all the species in the genus, the pericarp of the fruit contains a black resin.

SEMECARPUS WHITFORDII sp. nov.

Species *S. cuneiformis* Blanco similis et ut videtur valde affinis, differt foliis distincte acuminatis, paniculis dense pallide fulvo-pilosis.

A small tree, the branches terete, brownish, slightly sulcate when dry, more or less pubescent. Leaves oblong-ob lanceolate, thinly coriaceous, 14 to 24 cm long, 3 to 7 cm wide, narrowed from above the base to the acute, and usually distinctly inequilateral base, the apex distinctly acuminate, the acumen rather sharp, less than 1 cm long, the upper surface pale and shining when dry, glabrous or very slightly pubescent along the midrib, the lower surface rather pale-fulvous-pilose, the hairs rather short, spreading, more dense on the midrib and lateral nerves; lateral nerves 15 to 17 on each side of the midrib, prominent, spreading, anastomosing, the reticulations rather close, distinct; petioles 1 to 2.5 cm long, somewhat pubescent. Panicles terminal, ample, diffuse, about 25 cm long, the lower branches up to 12 cm long, the upper ones shorter, spreading, all parts rather densely pilose with pale-fulvous, spreading hairs. Flowers very numerous, 5-merous, more or less glomerate on the ultimate branchlets, sessile or subsessile. Male flowers 4 mm in diameter in anthesis. Calyx villous externally, shallowly cup-shaped, the lobes orbicular-ovate, obtuse, 0.5 to 0.8 mm long, prominently striate-reticulate, the reticulations dark-colored. Petals oblong-ovate, acute, pubescent externally, reticulate-striate like the calyx. Disk glabrous, shallowly 5-crenate. Rudimentary ovary very small, densely fulvous-villous. Filaments filiform, 3 mm long; anthers ovoid, 0.8 mm long. Female flowers and fruits not seen.

MINDANAO, District of Cotabato, Lebak, *For. Bur.* 11774 *Whitford*, March 4, 1912, in dipterocarp forests at low altitudes.

A species similar to, and certainly closely allied to *Semecarpus cuneiformis* Blanco, from the typical form of which it differs in its distinctly acuminate leaves which are pale beneath but scarcely glaucous, and by its densely pilose panicles, the indumentum of a pale-fulvous color. It is apparently more closely allied to Blanco's species than to any of the numerous forms recently described by Doctor Perkins.

- SEMECARPUS CUNEIFORMIS** Blanco Fl. Filip. (1837) 220, ed. 2 (1845) 155, ed. 3, 1: 276, Naves l. c. ed. 3, pl. 75.
Semecarpus perrottetii March. Rév. Anac. (1869) 169; Engl. in DC. Monog. Phan. 4 (1883) 380; Vid. Rev. Pl. Vasc. Filip. (1886) 101; Perk. Frag. Fl. Philip. (1904) 28.
Semecarpus anacardium Blanco Fl. Filip. (1837) 217, ed. 2 (1845) 152, non L. f.
Semecarpus microcarpa F.-Vill. Novis. App. (1880) 55, non Wall.
Semecarpus pubescens F.-Vill. l. c., non Thwaites.
Semecarpus sideroxyloides Perk. Frag. Fl. Philip. (1904) 28.

This species is common and widely distributed in the Philippines, and is the most abundant one of the genus found in the Archipelago. There is no valid reason why Blanco's specific name, *cuneiformis*, should not be adopted for the species, although like many of Blanco's descriptions, that of *Semecarpus cuneiformis* is short and imperfect. The one distinctive character that he gives is that the leaves are retuse at the apex, which is true of a number of specimens manifestly referable to *Semecarpus perrottetii* March.

The type of *Semecarpus perrottetii* March. was collected by Perrottet in Luzon, and is preserved in the Herbarium of the Paris Museum of Natural History. Two sheets are so named by Marchand, one of which bears Perrottet's note "trés comun á Manille," indicating that the type was collected in Manila. The species is still very common in and about the city, and in essential characters is rather constant. There is considerable variation in the shape of the leaves, their apices varying from broadly rounded to retuse on the one hand, and to acute or shortly and broadly acuminate on the other. Perrottet's type has broadly rounded leaves, according to carbon rubbings kindly made for me by Dr. C. B. Robinson, and according to a carbon rubbing made by myself of the single leaf of Perrottet's plant preserved in the Berlin Herbarium.

Semecarpus anacardium Blanco, non L. f., is manifestly the same species, although, of course, Blanco may have included in it more than the common form. *Semecarpus anacardium* L. f. certainly does not extend to the Philippines.

Semecarpus microcarpa F.-Vill. is only a mis-identification of Blanco's *S. cuneiformis* on the part of F.-Villar., while *S. pubescens* F.-Vill., is a manifest mis-identification of Blanco's *S. anacardium*.

Semecarpus sideroxyloides Perk., is typical *S. perrottetii* March., = *S. cuneiformis* Blanco, and is accordingly reduced. A number of specimens referred by Doctor Perkins to *Semecarpus perrottetii* March.⁵ are not properly referable to that species.

I consider *Semecarpus cuneiformis* Blanco (*S. perrottetii* March.) to be well represented by the following specimens:

LUZON, Province of Cagayan, *For. Bur. 16983 Bacani, For. Bur. 18605 Klemme*: Province of Ilocos Norte, *Bur. Sci. 7676 Ramos*: Bontoc Sub-province, *For. Bur. 10981 Curran*: Province of Union, *Elmer 5562, 5637*: Province of Pangasinan, *Alberto 83*: Province of Zambales, *For. Bur. 6977 Curran, Merrill 3010, Sankuhl s. n., Hallier s. n.*: Province of Bulacan, *Mrs. Templeton s. n.* MANILA, *Perrottet* (type of *S. perrottetii* March.,

⁵ Frag. Fl. Philip. (1904) 28.

in herb. Paris.), *Malvar* 349, *Cuzner* 55, *Marave* 30, *Ahern* 716: Province of Rizal, Pasay, *For. Bur.* 15385 *Curran & Schneider*; Antipolo, *Merrill* 1720; Montalban, *Loher* 5850: Province of Bataan, *Merrill* 1484, *For. Bur.* 1305, 2720 *Borden*, *For. Bur.* 2513 *Meyer*, *Ahern* 769, *Williams* 646, 632: Province of Laguna, *Hallier s. n.* MINDORO, *For. Bur.* 8813 *Merritt*, *Merrill* 2160 (cotype of *Semecarpus sideroxyloides* Perk.). GUIMARAS, *For. Bur.* 6477 *Everett*. LEYTE, *Elmer* 7159. NEGROS, *Bur. Sci.* 7348 *Celestino*, *For. Bur.* 15159 *Tarrosa*.

The common Tagalog name is *ligas*, the Visayan *agas* and *anagas*, the Ilocano *camiring*, the Pampangan *caming*, and the Bontoc *pacan*.

This species is the most common and the best known contact-poison in the Philippines, its noxious properties being well known to the natives. As with the well known contact-poisons in the United States, such as *Rhus toxicodendron* L., and *R. venenata* DC. some persons are immune while others are very subject to it. The symptoms caused by contact with fresh leaves of *Semecarpus cuneiformis* Blanco, especially when the leaves are wet, are quite like those caused by the species of *Rhus* mentioned above, and the eruption is amenable to the same treatment.

SEMICARPUS MICRANTHA Perk. Frag. Fi. Philip. (1904) 27.

Semecarpus taftiana Perk. l. c. 28.

But a single species is represented, for which the name *micrantha* is retained, this having page priority. The type of *Semecarpus micrantha* Perk., is a specimen with staminate flowers, while the type of *S. taftiana* Perk., is a specimen with pistillate flowers. They are from the same locality, with the same habitat, and were collected at the same time, February 15, 1903. In inflorescence, twigs, indumentum, color, shape, and venation of the leaves the specimens are quite the same. The only evident difference is that the leaves of *Semecarpus taftiana* are somewhat smaller and relatively a little narrower than are those of *S. micrantha*.

PALAWAN, Iwahig River, *Merrill* 709, ♂ flowers, cotype of *Semecarpus micrantha* Perk., 734, ♀ flowers, cotype of *Semecarpus taftiana* Perk., both collected February 15, 1903.

SEMECARPUS PHILIPPINENSIS Engl. in DC. Monog. Phan. 4 (1883) 481.

Semecarpus perrottetii March. var. *glabra* March. Rév. Anac. (1869) 170.

This species is rather common and of wide distribution in the Philippines, and is decidedly variable in the shape of its leaves, although in essential characters quite constant. The type of the species and of *Semecarpus perrottetii* var. *glabra* March. is *Cuming* 1146, from the Province of Ilocos Sur, Luzon, two sheets of which are in the Herbarium of the Bureau of Science. Engler⁶ has referred to another Philippine specimen *Cuming* 1776, which was collected in Cebu, as apparently being referable to *Semecarpus albescens* Kurz. Specimens of this number are in the Herbarium of the Bureau of Science, and while they are not identical with the type number of *Semecarpus philippinensis*, I can, after examining a large series of specimens, showing numerous intermediate forms, detect no characters

⁶ L. c. 489.

that warrant the recognition of two distinct species, and accordingly refer *Cuming 1776* to *Semecarpus philippinensis* Engl. In degree of distinctness the ultimate reticulations in the two specimens differ considerably, and by Engler are accordingly placed in different sections in his key to the species. This character, however, is not at all constant, and all intergrades occur. I refer to *Semecarpus philippinensis* Engler the following material:

LUZON, Province of Abra, *Bur. Sci. 7209 Ramos* ♂ flowers: Province of Ilocos Sur, *Cuming 1146* ♂ flowers (cotype): Benguet Subprovince, *Elmer 6447*, in fruit: Province of Pampanga, *For. Bur. 17669 Curran*, ♂ flowers: Province of Bataan, Lamao River, *Williams 905* ♂ flowers, *For. Bur. 337 Barnes* ♂ flowers, *For. Bur. 674, 708, 1193 Borden*, all in fruit, *For. Bur. 2777 Meyer* ♀ flowers: Province of Tayabas, *For. Bur. 10332 Curran*. LEYTE, *Elmer 7117, Piper 601*. CEBU, *Cuming 1776*.

In this material the leaves vary in shape and size, the tip in the type being rounded or obtuse, in some leaves subacute, but in other specimens it varies to acute or acuminate.

HIPPOCRATEACEAE.

SALACIA L.

SALACIA PHILIPPINENSIS sp. nov.

Frutex scandens, glaber; foliis oppositis, oblongis, coriaceis, nitidis, usque ad 15 cm longis, basi acutis, apice obtusis vel late obscure acuminatis, margine subintegris vel leviter crenatis; inflorescentiis cymosis, dichotomis, pedunculis quam petiolo longioribus; floribus circiter 8 mm diametro.

A scandent shrub, glabrous, the branches slender, terete, dark-colored when dry, with numerous small lenticels, the younger ones somewhat compressed. Leaves opposite, oblong, coriaceous or subcoriaceous, 12 to 15 cm long, 5 to 6 cm wide, shining, when dry the lower surface a little paler than the upper one, the apex obtuse or shortly and broadly acuminate, the base acute, the margins entire or very obscurely and distantly crenate; lateral nerves 7 or 8 on each side of the midrib, curved-ascending, anastomosing, distinct; petioles jointed near the base, 5 to 8 mm long. Inflorescence axillary, solitary, cymose, dichotomous, the peduncles a little longer than the petioles, the cymes about 3 cm long and wide, rather many flowered. Flowers greenish-yellow, their pedicels about 4 mm long, subtended by very short, obscure bracteoles, apparently jointed to the inflorescence. Calyx about 3 mm in diameter, the lobes 5, rarely 4, orbicular-ovate, usually rounded, minutely ciliate on the margins. Petals 5, rarely 4, oblong, spreading, broadly rounded at the apex, about 4 mm long, 2 mm wide. Stamens 3; filaments about 1.2 mm long; anthers 0.5 mm in diameter. Ovary 3-celled; cells 2-ovuled,

narrowed above into the short narrowly conical style, the disk cylindrical, prominent. Fruit unknown.

LUBANG ISLAND, *Merrill 977*, April 8, 1903, a shrub about 3 m high sprawling or climbing in thickets near sea-level. CEBU, *Bur. Sci. 11095 Ramos*, March, 1912, in thickets.

This apparently undescribed species seems to be allied to *Salacia perakensis* King, and to *S. griffithii* Laws., but is entirely different from both. Mature fruits have not been seen, but they were sufficiently developed to show that the plant is a *Salacia* and not a *Hippocratea*.

ICACINACEAE.

FREERIA gen. nov.

Flores dioici, spicati. Perianthium 4-merum, simplex, lobi valvati, tubo brevi. Fl. ♂ Fl. ♀ : Ovarium sessile, 1-loculare; stigma sessile, crassum, truncatum; ovula 2, ex apice loculi pendula. Drupa oblonga leviter compressa, epicarpio carnoso, putamine crustaceo extus punctato, intus papillato. Semen pendulum; embryo albumine carnoso valde ruminato parum brevior, cotyledonibus planis, tenuiter foliaceis. Frutex alte scandens, ramis ramulisque tenuibus. Folia alterna, oblonga vel oblongo-lanceolata, glabra, repanda, glanduloso-dentata, acuminata, basi leviter cordata. Racemi supra-axillares, simplices. Flores pauci, parvi, sessiles, bracteolati.

FREERIA REPANDA sp. nov.

Frutex scandens subglaber, ramulis teretibus, tenuibus, minutissime verruculosus; foliis oblongis vel oblongo-lanceolatis, subcoriaceis, usque ad 14 cm longis, in siccitate pallidis, nitidis, subtus leviter asperulis, nervis utrinque 5 vel 6, prominentibus, distantibus, anastomosantibus, reticulis laxis, distinctis; spicis 2 ad 4 cm longis, pedunculatis, tenuibus; floribus paucis, circiter 2 mm longis, bracteolatis; fructibus oblongis, leviter compressis, circiter 1.8 cm longis.

A woody vine reaching a height of about 8 m (fide Ramos), nearly glabrous, the branches and branchlets slender, terete, 1 to 2 mm in diameter, very minutely verruculose, the growing parts minutely pubescent. Leaves alternate, subcoriaceous, oblong to oblong-lanceolate, 6 to 14 cm long, 1.5 to 4 cm wide, rather slenderly acuminate, base slightly narrowed, distinctly cordate, the margins more or less repand and with a short glandular tooth opposite the excurrent end of each primary lateral nerve, rather pale, shining, and of about the same color on both surfaces when dry, the upper surface smooth and glabrous, the

lower one minutely scabrid; lateral nerves 5 or 6 on each side of the midrib, prominent, distant, somewhat curved, anastomosing, the reticulations lax, distinct; petioles 0.5 to 1.5 cm long, minutely pubescent, becoming glabrous, usually strongly curved. Spikes supra-axillary, slender, minutely pubescent, 2 to 4 cm long, flower-bearing only in the upper one-fourth or one-fifth. Male flowers unknown. Female flowers few, 10 or less on each spike, sessile, scattered, each subtended by an oblong-lanceolate, acuminate, 0.4 mm long bracteole. Perianth simple, 1.8 to 2 mm long, the calyx represented by a very obscure disk, the tube very short, the lobes 4, valvate, oblong, obtuse, about 0.7 mm wide, pubescent externally. Stamines very minute, alternating with the perianth-lobes. Ovary ellipsoid, densely pubescent, about 1 mm long, 1-celled; ovules 2, pendulous; stigma sessile, truncate, round, minutely papillate. Drupe oblong, slightly compressed, glabrous, red or yellowish when mature, about 1.8 cm long, 1 cm wide, the pulp rather thin, fleshy. Seed about 1.5 long, 8 mm wide, about equally narrowed and acute at both ends, slightly compressed, the testa crustaceous, externally somewhat punctate, internally papillose, the papillae projecting into the interstices of the ruminant albumen. Albumen firm, deeply ruminant, yellow, oily, externally deeply pitted.

LUZON, Province of Tayabas, Kabibihan, climbing in tall trees in forests along the river, *Bur. Sci. 13289 Ramos*, March 3, 1911.

Apparently a very distinct generic type, possibly most closely allied to *Sarcostigma* Wight & Arnott, although differing from that genus in many essential characters, such as the absence of the calyx, or at least the calyx represented by a very obscure disk, the scattered, not fasciated, spicate flowers, the repand and glandular-toothed, not entire leaves, and in its albuminous seeds, the albumen being deeply pitted and ruminant.

Dedicated to the late Doctor Paul Caspar Freer, founder and director of the Bureau of Science from its inception as the Bureau of Government Laboratories in the year 1901, until his death in April, 1912.

PHYTOCRENE Wall.

PHYTOCRENE LOHERI sp. nov.

Frutex scandens, ramulis foliisque subglaber; ramulis teretibus, 3 ad 4 mm diametro, leviter longitudinaliter striatis, brunneis, parce breviter pubescentibus; foliis ovatis, coriaceis, integris, acuminatis, basi late rotundato-truncatis vel subcordatis, 5-nerviis, reticulis obscuris; capitulis ut videtur globosis, drupis numerosis, oblongis, 7 ad 8 cm longis, dense adpresse villosis.

A scandent shrub, nearly glabrous, the branchlets terete, dark-brown when dry, dull, slightly longitudinally striate, slightly pu-

bescent with scattered hairs. Leaves alternate or subopposite, ovate, coriaceous, brown and slightly shining when dry, entire, 8 to 10 cm long, 4 to 7 cm wide, apex shortly acuminate and minutely apiculate, base broadly rounded-truncate or subcordate, the upper surface glabrous, the lower surface at first sparingly pubescent especially along the nerves, ultimately becoming glabrous; basal nerves 5, the outer pair short, the inner pair curved-ascending, reaching nearly to the middle of the leaf, evanescent, the lateral nerves above the basal ones usually two on each side of the midrib, curved-ascending, evanescent or very obscurely anastomosing, the primary reticulations very lax, not prominent, the ultimate ones rather close but indistinct; petioles about 2 cm long. Heads apparently globose, of many drupes. Individual drupes oblong or narrowly oblong, 7 to 8 cm long, about 2 cm thick, longitudinally 5-ridged, more or less narrowed at both ends, densely covered with yellowish-brown or tawny, stiff, appressed, villous hairs.

LUZON, Province of Rizal, Montalban, *Loher 5769*, November, 1905.

A very distinct species, characterized by its comparatively small leaves, with few, distant nerves, and its obscure reticulations; in this latter character it is very different from the other Philippine forms.

SABIACEAE.

MELIOSMA Blume.

MELIOSMA MACROPHYLLA sp. nov.

Arbor 12 ad 15 m alta, subglabra, partibus junioribus plus minusve pubescentibus; foliis imparipinnatis, elongatis, usque ad 1 m longis; foliolis oppositis vel suboppositis, 15 ad 17, ovatis ad oblongis vel oblongo-ovatis, integris, acuminatis, basi inaequilateralibus, rotundatis, superioribus usque ad 27 cm longis, inferioribus minoribus; paniculis amplis, terminalibus axillari-busque; fructibus circiter 5 mm longis.

A tree 12 to 15 m high, ultimately glabrous or nearly so, the younger parts more or less ferruginous-pubescent. Leaves elongated, up to 1 m in length, odd-pinnate, the leaflets 15 to 17, opposite or the lower ones subopposite, ovate to oblong-ovate or oblong, coriaceous, puberulent on the midrib and nerves beneath, the upper ones up to 27 cm in length and 10 cm wide, entire, acuminate, somewhat falcate, base inequilateral, of the upper leaves acute or acuminate, of the lower ones broad and rounded, the lower leaves gradually smaller than the upper ones; nerves 9 to 13 on each side of the midrib. Panicles axillary and terminal, ample, diffuse, the axillary ones as long as the leaves or shorter.

Flowers unknown. Fruit ovoid to globose-obovoid, 5 to 6 mm long, glabrous.

LUZON, Benguet Subprovince, Sablan, *Phil. Pl.* 488 *Fénix*, November, 1910, on slopes along trails, locally known to the Igorots as *arocong*.

A species distinguishable from the other Philippine ones by its comparatively very large leaves, entire leaflets, and in being nearly glabrous, at least when mature.

ELAEOCARPACEAE.

ELAEOCARPUS L.

ELAEOCARPUS GRANDIFLORUS Sm. in Rees Cyclop. 12 (1802-20) no. 5; Pierre in Fl. Forest. Cochinch. pl. 142; Gagnepain in Lecomte Fl. Gén. Indo-Chine 1 (1910) 568.

BUSUANGA, Bintuan, *C. M. Weber 1554 bis*, March 3, 1912, common along streams in forests.

Not previously reported from the Philippines; Burma, Indo-China, and Java.

The Busuanga specimens appear to be quite typical, at least of the species as interpreted by Pierre and by Gagnepain. It agrees with Gagnepain's description in all essential details, and, so far as the specimens are comparable, with a Cochinchina collection by *Thorel*, in the Herbarium of the Bureau of Science. The Philippine material is in full flower and with a single nearly mature fruit, while our specimen of *Thorel's* collection has very immature fruits. A specimen from Java, *VI, C, 178* of the Botanical Garden at Buitenzorg, probably typical *Elaeocarpus lanceolatus* Blume, which is generally considered to be a synonym of *E. grandiflorus* Sm., seems to differ from the Philippine material more than does the Cochinchina material. Although the three specimens before me are not directly comparable, all being in different stages of development, they apparently represent a single species.

ELAEOCARPUS PUSTULATUS sp. nov. § *Euelaeocarpus*.

Arbor, foliis utrinque sepalisque extus pustulis minutis instructis; foliis lanceolatis vel anguste ovato-lanceolatis, acuminatis, usque ad 8 cm longis, glabris, longe acuminatis; racemis numerosis, e axillis defoliatis; floribus 5-meris, circiter 5 mm longis.

A tree, glabrous except the sparingly appressed-pubescent inflorescence, the branches smooth, terete, the branchlets usually reddish-brown. Leaves lanceolate to narrowly ovate-lanceolate, 5 to 8 cm long, 1.5 to 2.5 cm wide, subcoriaceous, the base acute, the apex slenderly acuminate, margins distantly and somewhat obscurely toothed, both surfaces with numerous small pustules, the lower one a little paler than the upper and with glands in the axils of the lateral nerves; nerves about 6 on each side of the midrib, not prominent; petioles about 7 mm long, often with a pair of small lateral glands at the apex. Racemes in the axils

of fallen leaves, numerous, solitary, rather slender, 5 to 7 cm long, sparingly appressed-pubescent, about 15-flowered. Flowers 5-merous, about 5 mm long, their pedicels 5 to 7 mm in length. Sepals externally sparingly appressed-pubescent, distinctly pustulate, lanceolate, narrowed upward to the acute or somewhat acuminate apex, 5 mm long, 1.2 mm wide, inside glabrous or nearly so. Petals equaling or a little longer than the sepals, up to 1.8 mm wide, externally glabrous except for very few hairs at the base, the margins densely villous-ciliate, inside prominently villous-ciliate in the lower one-half, the apical one-third split into 9 to 11 linear-filiform segments about 2 mm in length. Stamens about 20, their filaments 1 mm long or less; anthers linear, 2 mm long, cleft at the apex, the cells scabrid, one a little longer than the other and with a tuft of few short hairs at the tip. Ovary densely villous, 3-celled.

CAMIGUIN DE MINDANAO, in forests, Mount Mahinog, *Bur. Sci. 14635* Ramos, April 11, 1912.

A species manifestly allied to *Elaeocarpus verruculosus* Aug. DC., which it strongly resembles, differing especially in its much longer racemes, long and slender pedicels, and in its much shorter petioles.

TILIACEAE.

TRIUMFETTA L.

TRIUMFETTA PROCUMBENS Forst. f. Prodr. (1786) 35; Hemsl. in Journ. Bot. 28 (1890) 1, *fig. 1*; Sprague & Hutchinson in Journ. Linn. Soc. Bot. 39 (1909) 246; Gagnepain in Not. Syst. 1 (1910) 170, cum descr.

Triumfetta fabreana Gaudich. Voy. (1826) 478, *t. 102*.

COMIRAN ISLAND, Sulu Sea, *Phil. Pl. 410* Merrill, distributed as "*Triumfetta repens* Forst.," September, 1910, sandy seashore just above the limits of high tides, extending inland only a short distance.

The specimens previously reported from the Philippines by me as this species¹ were later found to represent the allied but quite distinct *Triumfetta repens* (Bl.) Merr. & Rolfe.²

Triumfetta procumbens Forst. is widely distributed in Polynesia, extending eastward to the islands off the north-east coast of Australia, Purdy Island, north of New Guinea, to the small islands in the Indian Ocean off the east coast of Africa, and the Keeling Islands. *Triumfetta repens* (Blume) Merr. & Rolfe, for which Gagnepain prefers the later name *T. radicans* Bojer (1843), extends from Madagascar and the Seychelles to the Keeling Islands, Java, Borneo, Indo-China, the islands in the Gulf of Siam, and to the small islands off the north-east coast of Australia.

¹ Govt. Lab. Publ. (Philip.) 6 (1904) 17.

² This Journal 3 (1908) Bot. 111.

COLUMBIA Pers.

COLUMBIA MACGREGORII sp. nov.

Arbor, ramulis petiolis inflorescentiisque fulvo-ciliatis; foliis oblongis vel ovato-oblongis, acuminatis, basi rotundatis vel obtusis, subaequalateralibus, 5-nerviis, margine irregulariter denticulatis; paniculis terminalibus, bracteolis trifidis, circiter 8 mm longis, dense ciliatis; sepalis extus dense stellato-pubescentibus, petalis, basi stellato-puberulis exceptis, glabris.

A large tree, fide McGregor, the younger parts and the inflorescence prominently fulvous-ciliate. Leaves chartaceous, oblong to oblong-ovate, shining, somewhat brownish when dry, of nearly the same color on both surfaces or the lower one a little paler, 14 to 20 cm long, 4.5 to 7.5 cm wide, the base rounded or obtuse, subequilateral, the apex acuminate, the margins irregularly denticulate, upper surface with few, scattered, ciliate hairs, the lower one very minutely stellate-puberulent; basal nerves 5, the lateral ones above the base about 7 on each side of the midrib, prominent, ascending; petioles prominently fulvous-ciliate, 1.5 to 2 cm long; stipules oblong, stellate-pubescent and ciliate, about 6 mm long. Panicles terminal, about 15 cm long, prominently fulvous-ciliate with spreading hairs and also fulvous-stellate-pubescent. Flowers numerous, yellowish with reddish spots, about 1.5 cm in diameter. Sepals narrowly oblong or oblong-lanceolate, about 8 mm long, 3 mm wide, narrowed to the acute base and the acuminate apex, externally densely fulvous-stellate-pubescent. Petals narrowly oblong-obovate or subspatulate, 6 to 7 mm long, 2.5 mm wide, the apex broadly rounded, narrowed below, glabrous except the basal part, which is stellate pubescent, and the slightly setose back, the basal gland about 1.5 mm in diameter. Ovary subglobose, 2 mm in diameter, 5-sulcate, 5-ridged, densely stellate-pubescent with fulvous hairs. Style 4 mm long, narrowed above and glabrous except near the base. Bracteoles involucrate, 8 to 10 mm long, usually 3-cleft or divided into three, lanceolate, acuminate lobes, their backs and margins ciliate with 1 to 1.5 mm long fulvous hairs.

LUZON, Province of Nueva Vizcaya, Dupax, *Bur. Sci.* 11492 McGregor, April 12, 1912.

A species distinguishable by its fulvous indumentum composed in part of short stellate hairs and in part of long slender, ciliate ones. It belongs in the group with the nearly equilateral leaves, allied to *Columbia subaequalis* Planch., but differs from Planchon's species, as well as from the numerous forms described by Warburg, in the character of its indumentum.

COLUMBIA MEGACARPA sp. nov.

Arbor (22 m alta fide Manalo); foliis oblongis, coriaceis, circiter 20 cm longis, rectis vel leviter falcatis, basi valde oblique cordatis, apice longe acuminatis, margine irregulariter repandodentatis, supra, nerviis exceptis, glabris vel subglabris, subtus dense molliter cinereo-pilosis; fructibus dense pubescentibus, 2 ad 3 cm longis, 3-alatis.

A tree, 10 m high or more. Branches terete, rather stout, brownish, strongly pubescent with long, spreading, yellowish-brown hairs. Leaves alternate, oblong, coriaceous, about 20 cm long, 5 to 8 cm wide, the apex rather long acuminate, the base strongly and obliquely cordate, both lobes rounded, but one much broader than the other, the margins irregularly repand-dentate, the upper surface brown, shining when dry, glabrous or nearly so except the somewhat pubescent nerves, the lower surface softly and densely stellate-pilose with cinereous hairs; petioles stout, densely pilose with spreading hairs; basal nerves reaching to or above the middle of the leaf. Flowers unknown. Panicles in fruit ample, terminal and in the upper axils, pilose with long, soft, spreading, yellowish-brown hairs. Fruits oblong-ovoid in outline, 3-winged, 2 to 3 cm long, nearly 2 cm wide, densely subcinereous-pubescent or puberulent throughout, the portions opposite the seed-bearing parts also densely pilose with long, spreading hairs.

PALAWAN, about one mile north-east of Tanabag, *For. Bur.* 7416 Manalo, December, 1906, in flat forests near sealevel, locally known as *anilao*.

A species manifestly allied to *Columbia serratifolia* (Cav.) DC., but distinguished at once by its very much larger fruits. The fruits are considerably larger than those of any other species of the genus known to me, and apparently dehisce tardily.

Imperfect material, possibly a mixture, collected in Palawan by Mr. Curran (*For. Bur.* 3587), may also be referable here.

GREWIA L.**GREWIA EDULIS** sp. nov. § *Omphacarpus*.

Arbor parva, ramulis subtus foliis inflorescentiisque simpliciter pilosis; foliis breviter petiolatis, oblongo-ovatis, subcoriaceis, usque ad 18 cm longis, acuminatis, aequilateralibus, integris; fructibus pyriformibus, carnosus, 2.5 ad 3 cm longis, puberulis.

A small tree, the branchlets, petioles, inflorescence, and lower surface of the leaves more or less pubescent with simple, not stellate, hairs. Branches terete, grayish-brown, glabrous, the branchlets rather densely pubescent with short, brownish, spreading hairs. Leaves oblong-ovate, equilateral, 15 to 18 cm long, 5

to 7 cm wide, rather pale when dry, shining, the base rounded, 3-nerved, the apex shortly acuminate, the acumen blunt, the margins entire, or very slightly undulate above, the upper surface pubescent only on the midrib and primary nerves, the lower surface pubescent also on the reticulations; basal nerves not extending above the middle of the leaf, the lateral ones above the basal pair 6 or 7, anastomosing, prominent, the reticulations prominent, lax; petioles very pubescent, stout, about 5 mm long. Inflorescence axillary, solitary, umbellate or subracemose, pubescent, the peduncles about 1 cm long, the pedicels in fruit about the same length. Flowers unknown. Fruit pyriform, obovoid, fleshy, 2.5 to 3 cm long, yellowish-green, the pericarp thin, slightly puberulent, the mesocarp fleshy, containing numerous fibers, the seed apparently solitary.

LUZON, Province of Nueva Ecija, Mataas na Cahoy, near Cabanatuan, *Bur. Sci.* 5292 *McGregor*, September, 1908.

A species manifestly allied to *Grewia stylocarpa* Warb., but well distinguished by its pubescence, and by its differently shaped fruits. The fruits are fleshy, yellowish-green when nearly mature, and have a pleasant acid flavor.

GREWIA OVATA sp. nov. § *Eugrewia*.

Frutex scandens, omnibus partibus plus minusve stellato-pubescentibus; foliis breviter petiolatis, ovatis, subcoriaceis, breviter acuminatis, basi cordatis, margine crenato-denticulatis, supra scabridis, plus minusve pubescentibus, subtus molliter stellato-pubescentibus; inflorescentiis terminalibus axillaribusque, umbellatis; floribus 2 cm longis; fructibus 4-lobatis, circiter 1.5 cm diametro, extus dense stellato-hirsutis, endocarpio osseo, 4-lobato, lobis 2-locellatis.

A scandent shrub. Branches terete, brownish, and with the branchlets densely covered with short, stellate, brownish-olivaceous hairs. Leaves ovate, subcoriaceous, 7 to 12 cm long, 4 to 8 cm wide, the upper surface scabrid when dry, brownish, distinctly stellate-pubescent, and on the nerves densely so, the lower surface paler, rather densely and uniformly stellate-pubescent, somewhat paler than the upper surface, the apex shortly acuminate, the base broad, rounded, distinctly cordate, the margins finely and rather uniformly crenate-denticulate; basal nerves reaching to or above the middle, the lateral ones above the basal pair 5 or 6 on each side of the midrib, prominent; petioles densely pubescent, less than 5 mm long; stipules lanceolate-acuminate, pubescent, 2 mm long. Inflorescence axillary and terminal, umbellate, densely stellate-pubescent with ferruginous hairs, the

peduncles 1 to 1.5 cm long, each with 4 to 6 flowers, subtended by a whorl of small, oblong-ovate to oblong-lanceolate, pubescent, 4 to 5 mm long bracteoles. Flowers yellow and white. Sepals 2 cm long, oblong-lanceolate, 3.5 mm wide at the base, somewhat narrowed upward, very densely ferruginous-stellate-pubescent outside, obtuse or subacute. Petals 5, thin, oblong, obtuse, 6 to 7 mm long, 2.5 mm wide, the basal gland large, prominent, ciliate-pubescent, coriaceous, truncate, about 3 mm long and wide. Stamens indefinite; filaments 6 to 11 mm long; anthers subglobose, 0.7 mm in diameter. Ovary densely villous with ferruginous hairs; style glabrous, 10 to 12 mm long; stigma 1.5 mm wide. Fruit depressed, 4-lobed, the lobes rounded, densely stellate-hirsute outside, about 1.5 cm in diameter, the endocarp bony, each lobe 2-celled, each cell with a single seed.

LUZON, Province of Rizal, San Mateo, *For. Bur. 1121 Ahern's collector*, May, 1904, *Decades Philip. Forest Flora 237 Ahern's collector*: Province of Bataan, Lamao River, *For. Bur. 1483 Ahern's collector*, July, 1904 (type).

A species manifestly allied to *Grewia acuminata* Juss. (*G. umbellata* Roxb.), characterized by its very different and more dense pubescence, its distinctly cordate leaves, etc.

GREWIA PALAWANENSIS sp. nov. § *Eugrewia*.

Frutex 2 ad 3 m altus, erectus vel subscandens; foliis chartaceis vel subcoriaceis, oblongis, acuminatis, basi rotundatis, margine denticulatis, usque ad 12 cm longis, utrinque, praesertim ad nervos, plus minusve stellato-pubescentibus; inflorescentiis axillaribus, umbellatis, umbellis solitariis vel fasciculatis, paucifloris; floribus circiter 5 mm longis; fructibus obovoideis, circiter 1 cm diametro, rugosis, parce hirsutis, 4-locellatis, vix lobatis.

An erect subscaudent shrub 2 to 3 m high. Branches terete, brownish or reddish-brown, lenticillate, ultimately glabrous, the younger ones rather densely stellate-puberulent. Leaves chartaceous or subcoriaceous, oblong, 6 to 12 cm long, 2 to 5 cm wide, the base equilateral, rounded, the apex shortly acuminate, the margins denticulate, the upper surface somewhat stellate-pubescent on the nerves and midrib, the lower surface with short, scattered, stellate hairs, more dense on the nerves; basal nerves 3, prominent, extending above the middle of the leaf, the lateral ones on each side of the midrib about 4, prominent; stipules not seen, apparently very early deciduous; petioles densely stellate-pubescent, 5 to 10 mm long. Umbels axillary, solitary or more usually fascicled, numerous, those in the uppermost axils sometimes simulating a terminal inflorescence, densely stellate-pube-

rulent, their peduncles 1 cm long or less. Flowers usually 3 in each umbel, subtended by a whorl of very early deciduous, linear-oblong, pubescent, 2 to 2.5 mm long bracteoles. Sepals 5, stellate-puberulent with grayish hairs, obtuse or acute, 5 mm long, 2 mm wide. Petals oblong, 2 mm long, obtuse, thin, glabrous except the large, basal gland which is 1 mm long and prominently ciliate-pubescent. Stamens indefinite; filaments 2 to 2.5 mm long. Ovary densely villous. Style 2 mm long, glabrous; stigma somewhat lobed, about 1 mm wide. Fruit depressed-obovoid, about 1 cm in diameter, prominently wrinkled when dry, brown, when immature prominently hirsute, when mature with few, scattered, long hairs, not at all lobed, the endocarp bony, 4-celled, each cell with a single seed.

PALAWAN, near Iwahig, *For. Bur. 3522 Curran*, January, 1906 (type), *Bur. Sci. 794, 864, 888 Foxworthy*, April to May, 1906.

A species with much the aspect of *Grewia acuminata* Juss., and manifestly allied to that species, differing especially in its very much smaller flowers.

GREWIA PARVA sp. nov. § *Eugrewia*.

Arbor parva circiter 4 m alta, ramulis subtus foliis inflorescentiisque parce stellato-pubescentibus; foliis oblongis, acuminatis, 3.5 ad 4.5 cm longis, aequilateralibus, apice acuminatis, basi acutis vel obtusis; inflorescentiis axillaribus, solitariis, umbellatis; fructibus subglabris, 2-lobatis, lobis 1- vel 2-locellatis, circiter 5 mm longis.

A small tree or a shrub about 4 m high. Branches slender, terete, brownish, prominently lenticellate, glabrous, the branchlets slightly pubescent with somewhat appressed, short, simple or stellate hairs. Leaves oblong, chartaceous, 3.5 to 4.5 cm long, 1.2 to 1.6 cm wide, somewhat brownish when dry, the upper surface shining, slightly pubescent on the midrib and lateral nerves, the lower surface slightly paler, rather uniformly pubescent with scattered, short, stellate hairs, the apex acuminate, the base obtuse or acute, the margins distinctly and uniformly crenate-serrate; base 3-nerved, the nerves not prominent, reaching the middle of the leaf or slightly above, the lateral nerves above the basal pair 3 or 4 on each side of the midrib, ascending, curved, slender; petioles pubescent, 2 to 3 mm long; stipules not seen, apparently very early deciduous. Flowers unknown. Infrutescence axillary, solitary, umbellate, somewhat pubescent, the peduncles less than 1 cm long, each bearing from 1 to 3 fruits. Fruits black when dry, nearly glabrous, or with

few, scattered, short hairs, 2-lobed, the lobes 5 mm long or less, 1- or 2-celled, each cell with a single seed.

LUZON, Province of Ilocos Sur, San Quintin, *For. Bur. 5627 Klemme*, October 18, 1906, on steep rocky slopes at an altitude of about 90 m. locally known to the Ilocanos as *duraring*.

A species manifestly allied to *Grewia laevigata* Vahl, *G. multiflora* Juss., and related forms, characterized, however, by its small, pubescent leaves.

GREWIA ROLFEI sp. nov. § *Eugrewia*.

Grewia tiliaefolia Rolfe in *Journ. Bot.* 23 (1885) 211, non Vahl.

Arbor parva 10 ad 15 m alta, ramulis inflorescentiis foliisque utrinque, praesertim ad nervos, griseo-stellato-puberulis; foliis chartaceis, oblongo-ovatis, acuminatis, basi rotundatis, leviter inaequilateralibus, margine denticulatis; stipulis linearis, acuminatis; umbellis axillaribus, solitariis vel binis, 3-floris; floribus parvis, circiter 7 mm longis.

A small tree 10 to 15 m high, sometimes less. Branches slender, terete, glabrous, reddish-brown to nearly black when dry, lenticellate, the branchlets rather densely stellate-puberulent with grayish or sometimes brownish hairs. Leaves oblong-ovate, chartaceous, 5 to 12 cm long, 3 to 5 cm wide, of nearly the same color on both surfaces when dry, slightly shining, the base rounded, usually somewhat inequilateral, the margins denticulate except at the base which is entire, the apex rather slenderly acuminate, the acumen 1 to 2 cm long, denticulate, both surfaces rather densely gray-stellate-puberulent on the midrib and lateral nerves, and with scattered, minute, stellate hairs on the surface, the veins pale in contrast to the darker color of the leaf; basal nerves reaching above the middle of the leaf, the lateral ones above the basal pair 3 on each side of the midrib; petioles 5 to 10 mm long, rather densely stellate-puberulent; stipules linear, acuminate, pubescent, nearly 1 cm long. Umbels 3-flowered, numerous, axillary, solitary or paired, puberulent, their peduncles 5 to 10 mm long, the pedicels shorter, subtended by a whorl of three or four, oblong, obtuse or acute, 5 to 6 mm long and 2 mm wide, pubescent bracteoles. Sepals narrowly oblong or narrowly oblong-obovate, acute or obtuse, pubescent, spreading or reflexed in anthesis, 7 mm long, 2 to 2.5 mm wide. Petals 5, membranaceous, glabrous, narrowly oblong-obovate, apex rounded or retuse, about 3 mm long, 1 mm wide, the basal glands very minute or wanting. Stamens indefinite; filaments 3 to 4 mm long; anthers 0.25 mm in diameter. Ovary densely

villous; style glabrous, 3 mm long; stigma broad, somewhat cleft. Very young fruit obovoid, densely pale-puberulent and with longer pale hairs intermixed.

LUZON, Province of Cagayan, *Cuming 1319* (type): Province of Bataan, Lamao River, *For. Bur. 3048 Borden*, May, 1905, *For. Bur. 1489 Ahern's collector*, July, 1904, *Whitford 1288*, May, 1905: Province of Pampanga, Turo, *For. Bur. 19290 Curran*, March, 1910; Mount Arayat, *For. Bur. 9616 Zschokke*, October, 1907: Province of Tayabas, San Narciso, *For. Bur. 14970 Darling*, October, 1909.

This form has been referred by recent authors, following Rolfe, to the Asiatic *Grewia tiliaefolia* Vahl. It does not appear to me to be referable to Vahl's species, and is accordingly here described as new. Hooker f. states that *Grewia tiliaefolia* Vahl is best distinguished by its auricled, falcate stipules, a character that does not at all apply to the specimens cited above.

GREWIA RIZALENSIS sp. nov. § *Eugrewia*.

Species *G. rolfei* simillima et valde affinis, differt foliis subtus densissime ubique griseo-stellato-puberulis.

A small tree. Branches terete, slender, black when dry, glabrous, slightly lenticellate, the branchlets densely and uniformly stellate-puberulent with cinereous or sometimes ferruginous hairs. Leaves ovate to oblong-ovate, chartaceous, 5 to 10 cm long, 2 to 4 cm wide, base rounded, slightly inequilateral, apex acuminate, margins denticulate except in the basal portions which are entire, the upper surface dark-colored when dry, slightly stellate-puberulent, especially on the nerves, the lower surface densely and uniformly covered with grayish, stellate, very short hairs; petioles stellate-puberulent, 1 cm long or less; stipules lanceolate, acuminate, pubescent, deciduous, about 5 mm long. Umbels numerous, axillary, solitary or fascicled, similar to those of *G. rolfei*. Sepals lanceolate, acuminate, or acute, pubescent, 7 mm long, 2 mm wide. Petals membranaceous, glabrous, oblong, 2.5 to 3 mm long, 1 mm wide, obtuse or retuse. Ovary densely villous; style glabrous, 3 mm long. Very young fruits densely cinereous-pubescent.

LUZON, Province of Rizal, San Mateo, *For. Bur. 1132 Ahern's collector*, May, 1904 (type); Antipolo, *For. Bur. 3139 Ahern's collector*, June, 1905, *Phil. Pl. 265 Ramos*, June, 1910; Bosoboso, *Merrill 2679*, June, 1903, small leaved form.

A species manifestly very closely allied to *Grewia rolfei* Merr., and perhaps not specifically distinct, although differing in its uniform, dense, grayish indumentum on the lower surfaces of the leaves, while *G. rolfei* is densely puberulent on the nerves only, and with scattered hairs on the surface otherwise, that do not conceal the epidermis of the leaf.

STERCULIACEAE.

PTEROSPERMUM Schreb.

PTEROSPERMUM ELMERI sp. nov.

Arbor plus minusve stellato-pubescentis; foliis obliquis, ovatis vel oblongo-ovatis, subcoriaceis, 7 ad 10 cm longis, basi rotundatis, subpeltatis, apice breviter acute acuminatis, in siccitate supra nigricantibus, glabrescentibus, subtus densissime fuscostellato-pubescentibus; floribus racemosis, bracteolis profunde tripartitis, segmentis lineari-lanceolatis; sepalis circiter 3 cm longis.

A tree, all parts more or less stellate-pubescent, the branchlets, inflorescence, sepals, and lower surface of the leaves very densely so. Branches reddish-brown, terete, ultimately glabrous, the younger ones densely brown-stellate-pubescent. Leaves subcoriaceous, entire, strongly oblique, ovate to oblong-ovate, 7 to 10 cm long, 3.5 to 4.5 cm. wide, the wider side of the leaf more than twice wider than the narrower one, the base rounded, subpeltate, the petiole inserted 2 to 4 mm from the margin, the apex shortly and sharply acuminate, upper surface, when dry, black or nearly so, somewhat covered with deciduous, brown, stellate hairs, ultimately glabrous or nearly so, the lower surface very densely brown-stellate-pubescent; lateral nerves 4 or 5 on each side of the midrib; petioles densely pubescent, about 3 mm long. Racemes terminal and in the upper axils, few-flowered, short; pedicels 2.5 cm long or less, each with several bracteoles which are cleft nearly to the base into three linear, acuminate, 8 to 12 mm long lobes. Sepals 3 cm long, about 3 mm wide, externally densely stellate-pubescent with brown hairs, internally densely grayish-pubescent. Petals about 3 cm long, 8 mm wide. Sterile stamens 2 cm long, the fertile ones, including the linear 7 mm long anthers, 2 cm in length. Ovary densely brown-stellate-pubescent.

MINDANAO, District of Davao, Todaya (Mount Apo) *Elmer 11928*, October, 1909, distributed as *Pterospermum obliquum* Blanco.

A species manifestly very closely allied to *P. subpeltatum* Merr., differing in its somewhat smaller, fewer nerved leaves and in its shorter sepals.

PTEROSPERMUM LONGIPES sp. nov.

Arbor circiter 10 m alta, ramulis subtus foliis inflorescentiisque dense albido- vel subfusco-tomentosis; foliis oblongo-ovatis, subcoriaceis, leviter obliquis, usque ad 8 cm longis, integris, acuminatis, basi rotundatis vel subtruncatis vix cordatis, supra glabris, subtus albido- vel subfusco-tomentosis; floribus paniculatis, long pedicellatis, sepalis circiter 5 cm longis.

A tree about 10 m high, more or less densely tomentose, the branches terete, reddish-brown, the younger ones covered with a somewhat deciduous, white or somewhat brownish tomentum. Leaves oblong-ovate, often subrhomboidal, subcoriaceous, 5 to 8 cm long, 3 to 5 cm long, entire, somewhat inequilateral, the base broad, rounded or subtruncate, not cordate or auriculate, the apex shortly and sharply acuminate, the upper surface glabrous, shining, the lower surface densely white-tomentose, or the tomentum somewhat brownish; lateral nerves distinct, ascending, 3 or 4 on each side of the midrib; petioles 5 mm long or less, tomentose. Flowers terminal and in the upper axils, forming a distinct and rather many-flowered panicle, their pedicels, or pedicels and the ultimate branchlets, 2 to 5 cm long, each with several scattered bracteoles which are lanceolate, acuminate, about 6 mm long, and somewhat sagittate at the base by a pair of prominent, rounded auricles. Buds densely brown-stellate-pubescent externally, cylindric, oblong. Sepals about 5.5 cm long, 5 mm wide, acuminate, inside appressed pubescent with grayish hairs. Petals thin, about 4 cm long, 7 mm wide. Sterile stamens five, 3.5 to 4 cm long, the fertile ones 15, including the 8 mm long linear anthers, 2.5 cm in length. Ovary pubescent; style 3.5 cm long. Immature capsules cylindric, glabrous, narrowly oblong, about 4 cm long.

CAMIGUIN DE MINDANAO, *Bur. Sci. 14632 Ramos*, April 9, 1912, in forests, Mount Mahinog, flowers yellow, fragrant.

A species manifestly closely allied to *Pterospermum niveum* Vid., which it greatly resembles, differing in its somewhat smaller leaves which are not at all cordate or auriculate at the base, but are rounded or subtruncate and much less inequilateral than in Vidal's species, and in its paniculate, long-pedicelled flowers.

DILLENIACEAE.

DILLENIA L.

DILLENIA BOLSTERI sp. nov. § *Wormia* ?

Arbor circiter 10 m alta, foliis junioribus ramulis inflorescentiisque plus minusve pilosis; foliis ellipticis vel oblongo-ellipticis, acute acuminatis, basi acutis vel rotundatis, margine serratis, usque ad 25 cm longis, nervis utrinque circiter 17; inflorescentiis in axillis superioribus terminalibusque, 2 ad 5-floris; floribus albidis, circiter 6 cm diametro; stylis 8 vel 10.

A tree about 10 m high. Branches terete, reddish-brown, glabrous, the branchlets appressed-pilose, rarely nearly glabrous. Leaves alternate, elliptic to oblong-elliptic, subcoriaceous, 10 to 25 cm long, 4 to 10 cm wide, more or less pilose when young,

becoming nearly glabrous, the apex sharply and rather abruptly acuminate, the acumen about 1 cm long, the base acute or somewhat rounded; nerves about 17 on each side of the midrib, prominent; petioles 2 to 3 cm long, when young somewhat pilose, becoming glabrous, at first with the membranaceous stipules adherent to and bordering the petioles, these soon deciduous. Inflorescence more or less pilose, in the upper axils and terminal, solitary, 2- to 5-flowered. Flowers white, about 6 cm in diameter. Petals ovate, obtuse, about 1.5 cm long. Petals elliptic, obtuse, 3 cm long. Stamens very numerous. Styles 8 or 10, spreading. Fruit unknown.

MINDANAO, Province of Surigao, Surigao, *Bolster 311*, April, 1906 (type), in forests, altitude about 65 m, *Piper 224*, April, 1911; Hinatuan, *Piper 515*, April 1911.

This species was indicated in the herbarium as new in 1906, but was not described on account of paucity of material. The additional specimens collected by Mr. Piper show that the characters of the species are constant and that it is apparently distinct. Its venation and shape of the leaves distinguish it from other Philippine forms. Specimens from Leyte distributed by Mr. Elmer (*No. 7149*) under this name certainly do not represent the species, but are probably referable to *Dillenia philippinensis* Rolfe.

SAURAUIA Willd.

SAURAUIA MACGREGORII sp. nov.

Arbor circiter 10 m alta, novellis setae 1.5 ad 3.5 mm longae dense obtectis; foliis oblongis, coriaceis, usque ad 35 cm longis, subtus parce setosis; inflorescentiis caulifloris, fasciculatis, vix 4 cm longis, setosis, paniculatis; floribus circiter 1.5 cm diametro, ovario 5-loculare.

A tree about 10 m high, the young parts very densely covered with brownish, slender, spreading, 1.5 to 3.5 mm long setae, these setae less numerous on the petioles and midribs of the leaves and on the older parts. Leaves oblong, coriaceous, shining, the lower surface considerably paler than the upper, 15 to 35 cm long, 5 to 10 cm wide, the apex shortly acuminate, the base obtuse or rounded, the margins distantly glandular-denticulate, each small tooth bearing a long ciliate seta; lateral nerves 11 to 13, prominent on the lower surface, anastomosing, the reticulations prominent, the midrib, nerves, and reticulations with scattered setae; petioles 2.5 to 3.5 cm long, setiferous. Inflorescence fascicled on the trunk, paniculate, less than 4 cm long, rather densely brownish pubescent and with scattered short setae, the bracts narrowly oblong, 4 to 5 mm long, thick. Flowers white, 5-merous, about 1.5 cm in diameter. Outer two sepals elliptic-ovate, rounded, concave, slightly setose externally, 5 to

6 mm long, thicker than the three somewhat petaloid inner ones which are broadly ovate, rounded or retuse, somewhat longer than outer two and with thin margins. Petals 8 mm long, about 6 mm wide, glabrous, elliptic-obovate, more or less retuse. Stamens about 25; filaments stout, 3 mm long; anthers narrowly oblong, as long as the filaments. Ovary depressed, glabrous, somewhat 5-sulcate, 5-celled. Style 2 mm long, divided into 5, slender, 4 mm long arms.

LUZON, Province of Nueva Vizcaya, Campote, *Bur. Sci. 11407 McGregor*, March, 1912.

A species at once distinguishable by its dense indumentum on the younger parts, composed of long, slender, spreading, setae-like hairs. In this character it differs from all the known Philippine forms. Another distinctive character is its cauliflory, although this is by no means uncommon in the genus.

GUTTIFORAE.

CALOPHYLLUM L.

CALOPHYLLUM KUNSTLERI King. in Journ. As. Soc. Beng. 59² (1890) 174; Vesque in DC. Monog. Phan. 8 (1893) 607.

LUZON, Province of Nueva Ecija, *For. Bur. 22182 Alvarez*, December, 1910; Province of Laguna, San Antonio, *For. Bur. 13197 Curran*, March, 1912.

Not previously reported from the Philippines; Malay Peninsula and Borneo.

My conception of *Calophyllum kunstleri* King is based on the original description by King, and the later one by Vesque, together with a cotype (*King's collector 5328*) preserved in the herbarium of the Bureau of Science. While the Philippine form shows some very slight differences, it appears to me to agree with King's species in all essential characters. A specimen from Borneo, Sarawak, *Foxworthy 302*, appears also to be referable to the same species.

GARCINIA L.

GARCINIA RAMOSII sp. nov. § *Cambogia*.

Arbor parva, ramis teretibus, ramulis tenuibus, obscure quadrangularis; foliis subcoriaceis, anguste oblongo-obovatis, obtusis vel acutis, basi angustatis usque ad 6 cm longis, nervis obscuris, utrinque circiter 10, subtus lineis longitudinalibus undulatis tenuibus nigris vel purpureis notatis; floribus axillaribus, sessilibus, fasciculatis ad nodos incrassatis, 4-meris; staminibus 14; ovario rudimento nullo.

A small tree, quite glabrous, the branches terete, dark-colored, the branchlets obscurely 4-angled, slender, often olivaceous. Leaves opposite, small, subcoriaceous, when dry rather pale, shining and of the same color on both surfaces, 4 to 6 cm long, 1 to 2 cm wide, narrowly oblong-obovate or oblong, apex acute

or obtuse, base narrowed, acute; lateral nerves very obscure, about 10 on each side of the midrib, the lower surface marked with slender, more or less undulate, not prominent, longitudinal, purplish lines; petioles 2 to 3 mm long. Flowers fascicled at the thickened nodes, axillary, sessile, mostly in the axils of fallen leaves, 4-merous. Male flowers: Sepals 4, orbicular, rounded, 2 mm in diameter. Petals oblong, in mature bud 3 to 3.5 mm long, thick. Stamens 14, obscurely 2-seriate, covering the slightly raised torus, oblong-obovate, about 1.2 mm long, the anthers opening by introrse slits. Rudimentary ovary none.

LUZON, Province of Cagayan, Abulug River, *Bur. Sci. 13919 Ramos*, January, 1912, in forests on slopes.

A species well characterized by its small leaves with the faint, longitudinal, purplish lines on the under surface.

BEGONIACEAE.

BEGONIA L.

BEGONIA AFFINIS sp. nov. § *Petermannia*.

Species *B. agusanensis* valde affinis differt ramulis dense longe ciliato-setosis, capsulis majoribus, circiter 1.5 cm longis.

An erect, somewhat branched, suffrutescent herb 50 cm high or less, the stems sparingly long-ciliate, the branchlets densely covered with long, brown, ciliate hairs. Leaves glabrous, membranaceous, inequilaterally oblong-obovate to oblong-oblancheolate, rarely merely oblong, 9 to 15 cm long, 1.5 to 3.5 cm wide, apex slenderly acuminate, gradually narrowed below the middle to the rather narrow, laterally cordate base, the margins irregularly and rather coarsely toothed above the middle, the lower one-half entire or subentire, the base usually less than 1 cm wide, one side rounded, the narrower side acute; petioles prominently ciliate, about 3 mm long; stipules oblong-lanceolate, with a long and slender, ciliate, flagellate acumen. Panicles terminal, glabrous, 4 to 7 cm long, the peduncles slender, the branches dichotomous, few, slender; bracts lanceolate, acuminate, 5 to 7 mm long, the bracteoles similar, smaller. Flowers pink. Male flowers: Pedicels 4 to 5 mm long. Sepals 2, elliptic, obtuse, about 6 mm long, 3 to 3.5 mm wide, 6-nerved. Petals 2, oblong, obtuse, 4 to 5 mm long, 1.5 to 2 mm wide. Stamens about 25; anthers oblong-obovoid, retuse, 1.5 mm long, the filaments shorter. Female flowers solitary at the base of the male panicle, their pedicels slender, 1 to 1.5 cm long. Perianth segments 5, the outer two oblong-elliptic, somewhat narrowed to the obtuse apex, about 12 mm long, 5 to 5.5 mm wide, slenderly 9-nerved,

the inner three as long as the outer ones, about 4 mm wide, slenderly 5-nerved. Styles 3, forked, 4 mm long; stigmas spirally arranged. Capsules about 1.5 cm long, 1.5 to 2 cm wide, equally 3-winged, somewhat depressed-rhomboid in outline, the wings subequally rounded at their tips.

MINDANAO, District of Zamboanga, Sax River Mountains back of San Ramon, *Merrill 8251* (type), *8248*, November 27, 1911, in damp ravines, altitude about 900 m.

A species manifestly closely allied to *Begonia agusanensis* Merr., distinguished chiefly by its larger capsules and its densely ciliate branchlets.

BEGONIA ELATOSTEMATOIDES sp. nov. § *Petermannia*.

Species *B. ciliiferae* affinis, differt foliis minoribus, integris vel subintegris.

An erect or ascending, simple or slightly branched suffrutescent herb, the stems often prostrate below, 20 to 40 cm high, the stems, petioles, and lower surfaces of the leaves, at least on the veins, prominently ciliate with brown hairs. Leaves green above, red beneath when fresh, membranaceous, oblong to narrowly oblong-obovate, often subequally narrowed at both ends, 3.5 to 7 cm long, 1 to 2.5 cm wide, slightly acuminate, entire, base slightly inequilateral and slightly cordate, the upper surface with very few, short, scattered, brown hairs or nearly glabrous, the lower surface prominently ciliate with brown hairs on the nerves, and with scattered shorter hairs on the surface; nerves pinnately arranged, 3 or 4 on each side of the midrib, ascending; stipules lanceolate, acuminate, brown-ciliate, about 1 mm long; petioles 1 to 3 mm long. Flowers pink and white, in axillary fascicles, but one or two opening at a time. Male flowers: Pedicels slender, 4 to 5 mm long, subtended by several, lanceolate, long-acuminate, brown-ciliate bracts about 2 mm wide, 5 to 7 mm long, their margins prominently fimbriate-ciliate. Sepals 2, broadly ovate, acute, 8 to 9 mm long, 5 to 6 mm wide, slenderly 7-nerved, outside with few, scattered, short hairs. Petals 2, oblong, obtuse, about 6 mm long, 2 mm wide. Stamens about 30, the torus somewhat elongated; filaments about 0.5 mm long; anthers oblong-obovate, retuse, about 1 mm long. Capsules broadly subrhomboid-obovate, truncate, about 8 mm long, 1 cm wide, equally 3-winged, the outer upper angles of the wings subacute, base narrowed and acute.

MINDANAO, District of Zamboanga, Sax River Mountains back of San Ramon, *Merrill 8232*, November 27, 1911, in damp shaded ravines, and on forested slopes, altitude 800 to 1000 m.

A species manifestly closely allied to *Begonia ciliifera* Merr., a species also known only from the Zamboanga Peninsula. The present species

differs especially in its smaller size, and in its smaller entire leaves which are nearly glabrous on the upper surface, not prominently ciliate with long hairs. In habit and general appearance it approximates some species of *Elatostema*, from which the specific name.

BEGONIA OBLONGATA sp. nov. § *Petermannia*.

Species *B. contractae* Warb. affinis, differt foliis angustioribus, valde oblique cordatis, capsulis majoribus, circiter 15 mm longis.

An erect, glabrous, sparingly branched, succulent herb up to 60 cm in height, the stems often somewhat prostrate below, the nodes sometimes emitting rootlets. Leaves membranaceous, green, oblong to oblong-lanceolate, 8 to 12 cm long, 1.2 to 3 cm wide, often somewhat falcate, gradually narrowed above and slenderly acuminate, the base very strongly inequilateral, cordate, the sinus lateral, the lower lobe very much larger than the upper one, usually about 2 cm wide, rounded-angular, the upper lobe acute or slightly rounded, about 5 mm wide, the sinus narrow, acute, the lobes not overlapping; basal nerves 1 or 2 in the narrow lobe, 4 or 5 in the broader one, radiate, the lateral ones above the base 2 to 4, ascending, anastomosing, the margins rather prominently but irregularly toothed; petioles 1.5 to 3 cm long; stipules membranaceous, oblong-lanceolate, acuminate, about 1 cm long. Inflorescence terminal, slender, 6 cm long or less, divaricately branched, few-flowered, the basal flower female, the upper ones male. Male flowers: Sepals 2, suborbicular, pink, rounded, about 4 mm in diameter, slenderly 7-nerved. Petals none. Stamens 30 to 35; anthers obovoid, slightly retuse, 0.8 to 1 mm long, the filaments less than 1 mm in length. Female flowers not seen. Capsules ovoid, truncate, about 15 mm long, 15 to 17 mm wide, equally 3-winged, the outer angles of the wings subacute, the base broadly rounded.

MINDANAO, District of Zamboanga, mountains back of Zamboanga, *Merrill 8166* (type) *8175*, December 6, 1911, in damp shaded ravines, altitude 100 m and above.

A species manifestly allied to *Begonia contracta* Warb., but differing in a number of characters, especially in its relatively narrow leaves and its much larger capsules.

BEGONIA MACGREGORII sp. nov. § *Petermannia*.

Species ut videtur *B. cumingii* A. Gray affinis, differt floribus masculinis multo minoribus, partibus junioribus ramisque longe ciliato-setosis.

An erect or ascending sparingly branched plant 20 to 100 cm high, the stems with numerous, long, slender, brownish, ciliate-

setose, spreading hairs 5 mm long or less. Leaves oblong, when fresh dark-green on the upper surface and often blotched with gray, the lower surface deep red, chartaceous or membranaceous, 15 to 20 cm long, 6 to 7 cm wide, not narrowed at the base but very strongly obliquely cordate, the broad lobe rounded, the narrow one subacute or obtuse, the apex rather slenderly acuminate, margins shallowly, distantly, and irregularly sinuate-toothed or lobed, ciliate-denticulate, the upper surface glabrous, the lower one brownish-pubescent and ciliate-setose on the nerves; basal nerves radiate, about 8, prominent; petioles prominently ciliate-setose with long hairs, 1 to 3 cm long; inflorescence axillary, few-flowered, 4 cm long or less, sparingly branched. Male flowers: Sepals 2, ovate, obtuse, about 8 mm long. Petals none. Stamens about 30; anthers narrowly oblong-obovate, obtuse, 2 mm long, the filaments very short or none. Bracteoles lanceolate, acuminate, 3 mm long, deciduous. Female flowers on separate plants. Sepals 5, thin, reticulate, broadly lanceolate to ovate-lanceolate, acuminate, at anthesis about 8 mm long, 4 to 5 mm wide, accrescent and up to 13 mm long before falling. Styles 2 mm long; stigmas forked, spirally twisted, about 2 mm long. Mature capsules 2 to 2.5 cm long, about 2 cm wide, truncate at the apex, the outer upper angles acute, subequally 3-winged, one wing rounded and broader at its base than are the other two which are narrowed and acute at the base.

LUZON, Province of Nueva Vizcaya, Dupax, *Bur. Sci. 11334 McGregor*, March, 1912, in forests along small streams.

This distinct species is probably most closely allied to *Begonia cumingii* A. Gray, from which it is at once distinguished by its long and slender ciliate-setose hairs and by its small male flowers. It somewhat resembles *Begonia crispipila* Elmer, but lacks the prominently bracteate inflorescence of that species, and has very different capsules.

BEGONIA QUERCIFOLIA A. DC. in *Ann. Sci. Nat.* IV 11 (1859) 129, *Prodr.* 15¹ (1864) 320; F.-Vill. *Novis. App.* (1880) 99; Vid. *Phan. Cuming. Philip.* (1885) 116, *Rev. Pl. Vasc. Filip.* (1886) 143.

Begonia leytensis Elm. *Leafl. Philip. Bot.* 2 (1910) 739; Merr. in *Philipp. Journ. Sci.* 6 (1911) Bot. 384.

This species was wrongly interpreted by me in my recent paper of Philippine *Begonia*^o, for all the recently collected material I rather tentatively referred to DeCandolle's species, represents a quite different form. After a careful study of the available material and the descriptions I am confident that *Begonia leytensis* Elm. is an exact synonym of *B. quercifolia* A. DC., and it is accordingly here reduced. So far as known *B. quercifolia* A. DC.

^o This Journal 6 (1911) Bot. 387.

is represented only by the type collection from Samar, *Cuming 1696*, of which I have examined a specimen preserved in the Kew Herbarium, and of which I have a carbon rubbing representing the leaf-outline and venation, and *Elmer 7255* from the neighboring island of Leyte, type collection of *Begonia leytenensis* Elm. The material I referred to *B. quercifolia* may prove to be only a luxuriant form of *B. contracta*, but it seems advisable to wait for more material before definitely deciding this point.

THYMELAEACEAE.

MACGREGORIANTHUS gen. nov.

Flores hermaphroditii. Perianthii tubus elongatus, cylindricus, lobi 5, patentes, fauce intus nuda. Stamina 10, tubo 2-seriatim inclusa, filamentis brevissimis; antherae oblongae, parvae. Discus annularis, brevissimis, obscurissimis, lobatis. Ovarium sessile, villosissimum, 1-loculare, in stylum desinens, stigmatibus obovoideo, papilloso. Fructus ignotus. Frutex ut videtur scandens. Folia opposita, plana, margine cartilaginacea. Flores in paniculis axillaribus terminalibusque laxis elongatis dispositis. Perianthia extus puberula.

MACGREGORIANTHUS PANICULATUS sp. nov.

Frutex inflorescentiis exceptis glaber; foliis coriaceis, ovato-ellipticis ad oblongo-ellipticis, usque ad 9 cm longis, obtusis vel obscure brevissime late acuminatis, nervis utrinque circiter 13; paniculis elongatis, paucifloris, griseo-puberulis, 12 at 25 cm longis; floribus ad apices ramulorum fasciculatis, circiter 8 mm longis.

A shrub, climbing (*vide* McGregor), glabrous except the inflorescence. Branches reddish-brown, terete, slender, the younger ones often somewhat puberulent, soon becoming quite glabrous, wrinkled when dry. Leaves opposite, coriaceous, olivaceous and slightly shining when dry, the lower surface somewhat paler than the upper, ovate-elliptic to oblong-elliptic, 6 to 9 cm long, 3 to 5.5 cm wide, base rounded or subacute, apex obtuse or very broadly, shortly, and bluntly acuminate, the margins entire, cartilaginous; nerves about 13 on each side of the midrib, spreading-ascending, anastomosing directly with the cartilaginous leaf-margin, the reticulations obscure; petioles reddish-brown when dry, about 1 cm long. Panicles terminal and in the upper axils, elongated, lax, few-flowered, all parts densely and uniformly gray-puberulent, and with scattered, reduced, linear bracts 5 mm long or less. Flowers pale-green, 5-merous, 9 mm long, fascicled at the ends of the ultimate branchlets, their pedicels 5 mm long or less.

Perianth-tube cylindric, about 1.5 mm in diameter, inside glabrous, outside gray-puberulent, the lobes 5, elliptic, spreading, 2.5 to 3 mm long, rounded, imbricate, densely gray-pubescent on the inner surface. Stamens 10, alternate in two series, inserted just at the apex of the perianth-tube but included, the anthers oblong, about 1 mm long; filaments of the upper row about 1 mm long, those of the lower row shorter. Ovary sessile, densely villous, oblong-ovoid, about 3 mm long, 1-celled, narrowed above; style slender, glabrous, about 1.5 mm long; stigma obovoid, papillose, about 0.5 mm long. Fruit unknown.

LUZON, Province of Laguna, Calauan, *Bur. Sci. 12360 McGregor*, December 12, 1910, a vine in hill-side forests.

The genus here proposed is dedicated to Mr. R. C. McGregor of the Bureau of Science by whom it was collected, and who has made extensive botanical collections in the Philippines and in Guam during the past eight years.

Macgregorianthus is manifestly allied to *Wikstroemia* Endl., differing especially in its 5-merous flowers, as well as in its habit. All known species of *Wikstroemia* have a 4-parted perianth, and 8 stamens. Mr. McGregor notes that the plant is a vine which is presumably correct, although this is a most unusual character in the *Thymelaeaceae*. The cartilaginous leaf-margin, with which the lateral nerves anastomose direct, is a striking character of the proposed genus.

GYRINOPSIS Decne.

GYRINOPSIS BRACHYANTHA sp. nov.

Arbor parva, glabra; foliis chartaceis vel subcoriaceis, nitidis, oblongis, usque ad 16 cm longis, acuminatis, basi acutis vel obtusis; floribus axillaribus, solitariis vel fasciculatis, 4 mm longis, perianthio campanulato, capsulis anguste obovoideis, leviter compressis, 1.2 ad 1.5 cm longis.

A small tree, or according to Ramos a shrub 2 m high, glabrous, the branches slender, terete, brownish when dry, the growing tips usually pubescent. Leaves oblong, chartaceous or subcoriaceous, oblong, 8 to 16 cm long, 2 to 4.5 cm wide, shining on both surfaces, the base acute or obtuse, the apex acuminate, margins recurved; midrib very prominent, the nerves exceedingly numerous, spreading, parallel, very dense, slender; petioles about 5 mm long. Flowers greenish, axillary, solitary or several in a fascicle on a short axis, the pedicels about 3 mm long. Perianth campanulate, 4 mm long, in bud distinctly pubescent externally, becoming nearly glabrous, the lobes 5, oblong, or ovate-oblong, pubescent internally, as long as the perianth-tube. Stamens 10, five opposite the perianth-lobes, their anthers about 0.7 mm long,

with longer filaments than the five alternate with the lobes, all inserted with the scales, not below them, the scales 10, oblong, ciliate, alternating with the filaments, about 1 mm long. Ovary ovoid, 2-celled, slightly pubescent; style 1 mm long. Capsule narrowly obovoid, 2-valved, more or less compressed, 1.2 to 1.5 cm long, the seed pubescent, including the projecting ends, about 1 cm long.

LUZON, Province of Cagayan, Abulug River, *Bur. Sci. 13862 Ramos* (type), *For. Bur. 19562 Curran*, January, 1912; Pamplona, *Bur. Sci. 7489 Ramos*, March, 1909, distributed as *G. cumingiana* Decne.

A species in vegetative characters closely resembling *Gyrinopsis cumingiana* Decne., but with entirely different flowers. In floral characters it approaches the genus *Aquilaria*, and appears to be more or less intermediate between *Gyrinopsis* and *Aquilaria*. In consideration of its axillary inflorescence, and in its having 10 scales at the throat instead of five, I have referred it to the former genus. In structure the flower appears to differ a little from both genera cited above in that the stamens are inserted with and alternate with the scales, not below them.

MYRTACEÆ.

EUGENIA L.

EUGENIA CAMIGUINENSIS sp. nov. § *Syzygium*.

Species *E. densinerviae* Merr. simillima et valde affinis, differt foliis minoribus, floribus brevioribus.

A glabrous tree about 8 m high, the branches terete, light-gray, the ultimate ones 3 to 4 mm thick. Leaves elliptic to elliptic-obovate, thickly coriaceous, 8 to 11 cm long, 5 to 7 cm wide, somewhat shining when dry, the lower surface glandular-punctate, a little paler than the upper one, the apex broad, rounded or very broadly and obtusely acuminate, the base acute; nerves dense, slender, indistinct, parallel, 25 to 30 on each side of the midrib, anastomosing into a very obscure submarginal nerve; petioles stout, 5 to 7 mm long. Inflorescence terminal, corymbose, many flowered, peduncled, or branched from the base, the branches trichotomous, the whole inflorescence up to 8 cm long, 7 to 13 cm in diameter. Ultimate branchlets short, densely arranged, the flowers in threes, subsessile, each subtended by a pair of ovate, concave, stiff, rounded bracteoles 1.5 mm long, the bracts similar, a little larger. Buds 6 to 7 mm long, narrowly obovoid to broadly club-shaped. Calyx about 5 mm long, 3 mm wide at the apex, obscurely 4-toothed. Petals calyptrate.

CAMIGUIN DE MINDANAO, in forests near the summit of Mount Mahinog, *Phil. Pl. 1175 Ramos*, April, 1912.

EUGENIA CILIATO-SETOSA sp. nov. § *Syzygium* ?

Arbor parva 2 ad 5 m alta, ramulis foliis subtus ad nervos inflorescentiisque insigniter ciliato-setosis; foliis oblongo-lanceolatis, usque ad 20 cm longis, acuminatis, basi cordatis, brevissime petiolatis, nervis lateralibus marginalibusque subtus prominentibus; inflorescentiis terminalibus, paniculatis, ut videtur paucifloris, fructibus inaequilateraliter obovoideis, 1.5 ad 2 cm longis.

A small tree or a shrub 2 to 5 m high, the branches, nerves on the lower surfaces of the leaves, especially the midribs, and the inflorescence prominently ciliate-setose. Branches terete, grayish, slender. Leaves opposite, oblong-lanceolate, 14 to 20 cm long, 3 to 6 cm wide, chartaceous, the upper surface glabrous, olivaceous, shining, the lower paler, the midrib prominently, the lateral nerves sparingly ciliate-setose, apex sharply and slenderly acuminate, the base rather abruptly rounded-cordate; nerves very prominent on the lower surface, 20 to 25 on each side of the midrib, anastomosing in nearly straight marginal nerves as prominent as the lateral ones; petioles ciliate-setose, about 2 mm long. Inflorescence terminal, ciliate-setose, paniculate, 10 to 15 cm long including the elongated peduncle, the branches few, spreading, apparently few-flowered. Immature buds obovoid, about 4 mm long. Fruits inequilaterally obovoid, 1.5 to 2 cm long, nearly smooth, green when fresh.

LUZON, Province of Cagayan, Abulug River, *Bur. Sci.* 13974 *Ramos* (type), with immature buds and fruits, *For. Bur.* 11590, 13974 *Curran*, with fruits, all collected in January, 1912, in dipterocarp forests 30 to 50 meters above sea-level.

A most striking species, differing from all the Philippine forms, and from most or quite all of the previously described species in the genus by its prominently ciliate-setose branches, leaves, and inflorescence.

EUGENIA PROPINQUA sp. nov. § *Syzygium*.

Species *E. pauciveniae* C. B. Rob., simillima et affinis, differt foliis minoribus, distincte petiolatis, floribus ut videtur minoribus.

A tree (*vide Ramos*), 10 m high, glabrous, the branches terete, somewhat grayish and reddish-brown, the young branchlets slightly compressed, slender. Leaves numerous, crowded, coriaceous, shining on both surfaces, oblong-elliptic to obovate, the base acute, the apex rounded, usually broadly so, 3 to 5 cm long, 1.5 to 3 cm wide; nerves about 10 on each side of the midrib, indistinct, irregular, very obscurely anastomosing; petioles 3 to 4 mm long. Inflorescence terminal, many-flowered, 3 to 4 cm

long, 5 to 6 cm wide, corymbose, 3-branched from the base, the branches trichotomous, the ultimate branchlets bearing from 3 to 5 sessile flowers, the nearly mature buds oblong-ellipsoid or narrowly obovoid-ellipsoid, about 5 mm long.

LUZON, Province of Cagayan, Abulug River, *Bur. Sci.* 13911 Ramos, January, 1912, in forests.

A species manifestly very closely allied to *Eugenia paucivenia* C. B. Rob., differing in its smaller, differently shaped, distinctly petioled leaves which are acute at the base, its more densely flowered inflorescence, and its apparently somewhat smaller flowers.

EUGENIA TENUIPES sp. nov. § *Jambosa*.

Species *E. bataanensis* simillima et valde affinis, differt pedicellis tenuibus, valde elongatis, usque ad 12 cm longis.

A small tree, quite glabrous, the branches terete, grayish or reddish, slender, the ultimate branchlets 1 to 1.5 mm in diameter. Leaves opposite, shortly petioled, chartaceous, oblong-ovate to ovate-lanceolate, 5 to 12 cm long, 1.5 to 3.5 cm wide, rather pale and somewhat shining when dry, the lower surface paler than the upper, narrowed to the acute or rarely somewhat rounded base, the apex slenderly and sharply acuminate, the acumen usually about 1 cm long; nerves irregular, distant, about 6 on each side of the midrib, anastomosing and forming an undulate submarginal nerve about as prominent as the primary lateral ones; petioles about 2 mm long. Flowers axillary and terminal, solitary, white, their pedicels very slender, elongated, 4 to 12 cm long, with 2 minute bracteoles in the lower one-fifth or one-sixth. Calyx jointed to the pedicel, funnel-shaped in anthesis, about 2 cm long, narrowed below to the slender stalk, about 1.8 cm wide, the lobes distinct, rounded, in fruit becoming ovoid and about 2 cm long and wide. Petals free. Stamens very numerous.

LUZON, Province of Cagayan, Abulug River, *For. Bur.* 19608 Curran (type), January, 1912, *Bur. Sci.* 13963 Ramos. I refer here also *Bur. Sci.* 7367 Ramos, from Claveria, Cagayan Province, previously considered by Doctor Robinson in his treatment of the Philippine *Myrtaceae*¹⁰ as *Eugenia bataanensis* Merr. Doctor Robinson notes that this Cagayan specimen differs from the typical form of *Eugenia bataanensis* Merr., in its leaves being acute at the base. Additional material shows that the peculiar character of the inflorescence, the very long and slender pedicel, is constant, and hence the form is described as new. Unquestionably closely allied to *Euge-*

¹⁰ This Journal 4 (1909) Bot. 348.

nia bataanensis Merr., differing especially in its leaves being usually acute at the base, and in its flowers always being long and slenderly pedicelled.

TRISTANIA R. Br.

TRISTANIA LITTORALIS sp. nov. § *Eustristania*.

Species *T. obovatae* R. Br. similis et affinis, differt foliis brevissime petiolatis vel subsessilibus, basi distincte auriculatis, petalis integris, vix denticulatis.

A tree with hard wood, quite glabrous except the puberulent inflorescence. Branches terete, light-gray, slender, the branchlets reddish-brown as are the panicles and midribs of the leaves when dry. Leaves alternate, coriaceous, narrowly obovate-oblong to obovate-elliptic, 9 to 22 cm long, 4 to 10 cm wide, shining when dry, the lower surface distinctly paler than the upper one, the apex obtuse, acute, or distinctly and shortly acuminate, narrowed below to the distinctly auriculate base, the margins recurved; lateral nerves slender, 8 to 10 on the smaller leaves, up to 30 on the larger ones, usually 5 to 8 mm apart, spreading, straight or nearly so, anastomosing and forming a continuous, slender, submarginal nerve; petioles stout, 2 to 3 mm long, wider than long, or wanting and the leaves sessile. Inflorescence axillary, peduncled, cymose, somewhat puberulent, 2 to 9 cm long. Flowers sessile or nearly so, the calyx funnel-shaped, about 3 mm long, 3 mm wide at the throat, with 5 broadly triangular teeth which are acute or obtuse. Petals 5, glabrous, rounded, obovate, 1.2 mm long. Stamens 15, in five groups of three each opposite the petals, the middle filament of each group 1 to 1.2 mm long, the two lateral ones a little shorter, the anthers very small. Ovary globose, slightly gray-pubescent; style slender, 1 mm long. Capsules obovoid-ellipsoid, 4 mm long, the three valves coriaceous, slightly pubescent, ultimately glabrous or nearly so. Seeds thin, flat, narrowly obovoid, including the wings about 4 mm long.

MINDANAO, District of Zamboanga, Taligbao River, *For. Bur. 13534 Foxworthy, De Mesa, & Villamil*, June 17, 1912, common here, occurring just back of the mangrove on dry land, and on a low ridge running back from the edge of the swamp. The same species is represented by a sterile specimen, *For. Bur. 11246 Hutchinson*, from Santa Maria, Zamboanga. It is known to the Moros as *taba*.

The wood is hard and is said to be very durable. The species is the second one of the genus to be recorded from the Archipelago, but apparently one or two additional distinct forms are represented by sterile material from different parts of the Philippines.

ARALIACEAE.

SCHEFFLERA Forst.

SCHEFFLERA STELLULATA sp. nov. § *Heptapleurum*.

Arbor parva, inflorescentiis stellato-furfuraceis exceptis glabra; foliis longe petiolatis, palmatim 6- ad 9-foliolatis, foliolis subcoriaceis, oblongis, brevissime abrupte acuminatis, usque ad 25 cm longis; inflorescentiis terminalibus, ramis paucis, elongatis, racemosis; floribus 5-meris, capitato-umbellatis, umbellis pedunculatis, racemosis.

A small tree (*vide* McGregor), glabrous except the inflorescence which is minutely stellate-furfuraceous throughout with a somewhat brownish or grayish indumentum. Branches terete, gray, marked with the annular scars of fallen petioles. Leaves palmately 6- to 9-foliolate, their petioles about 28 cm long. Leaflets oblong, subcoriaceous, somewhat shining, of about the same color on both surfaces when dry, 15 to 25 cm long, 6 to 7 cm wide, the apex very shortly and abruptly acuminate or merely acute, the base usually rounded, sometimes subacute; primary nerves 10 to 12 on each side of the midrib, rather distinct, anastomosing; petioles 5 to 8 cm long. Inflorescence terminal, paniculate, peduncled, the peduncle and rachis about 30 cm long, each panicle with about 6, slender, elongated, racemosely arranged primary branches 25 to 35 cm in length, all parts stellate-furfuraceous, each primary branch with about 30 peduncled, racemosely arranged subcapitate umbels, the umbels with from 15 to 20 flowers, the lower umbels with peduncles 10 to 12 mm in length, the upper ones gradually shorter, the umbels 1 cm in diameter or less. Flowers greenish-yellow, 5-merous, their pedicels 1 to 1.5 mm long, in fruit up to 4 mm long. Calyx funnel-shaped, subtruncate, about 2 mm in diameter. Petals 5, ovate, free, acute or obtuse, 2 mm long, marked with small brownish-yellow dots and dashes. Stamens 5; filaments slender, 3 to 4 mm long; anthers about 1 mm long. Ovary 5-celled. Fruit turbinate, 2.5 mm in diameter, the apex convex, grayish, rugose.

LUZON, Province of Nueva Vizcaya, Dupax, *Bur. Sci.* 11251 McGregor, April 15, 1912.

A characteristic species, distinguishable by its stellate-furfuraceous inflorescence, its capitate-umbellate flowers, the umbels being racemosely disposed on the elongated branches of the inflorescence, and by its oblong leaflets.

ALANGIACEAE.

ALANGIUM Lam.

ALANGIUM BRACHYANTHUM sp. nov. § *Eualangium*.

Arbor circiter 7 m alta; floribus in ramis defoliatis, axillaribus, fasciculatis, brevissime pedicellatis, petalis 6, 1.5 cm longis, pubescentibus; staminibus 15, basi vix curvato-geniculatis.

A tree about 7 m high. Branches and branchlets light-gray or somewhat reddish, slender, glabrous. Flowers yellowish-white, very fragrant, numerous, appearing before the leaves, axillary, fasciculate, several at each node, the fascicles rather congested; pedicels very short, pubescent. Calyx 2 mm long, 3 mm in diameter, pubescent, obscurely 6-toothed. Petals 6, 1.5 cm long, about 1 mm wide, appressed-pubescent externally. Stamens 15; filaments slender, 7 to 8 mm long, not inflexed or geniculate at the base, somewhat villous at about the middle; anthers 6 to 7 mm long; style as long as the petals; stigma globose.

LUZON, Province of Tayabas, Pagsalam, *For. Bur. 10341 Curran*, April 9, 1908, in beach forests, altitude about 5 m, locally known as *malatapay*.

I have refrained from describing the leaves of this apparently very distinct species, as Mr. Curran notes that they were picked up on the ground from under the tree, there being no leaves on the tree at the time it was found in flower. The species is manifestly allied to *Alangium salviifolium* (L. f.) Wangerin, but differs remarkably in its much smaller flowers and in its fewer stamens. The detached leaves with the specimen, which however may belong to a different plant, are penninerved, not at all 3-nerved from the base.

ALANGIUM LONGIFLORUM sp. nov. § *Eualangium*.

Species *A. salviifolio* (L.) Wangerin affinis, differt floribus 5-meris, multo longioribus, staminibus paucioribus, 16 vel 17, petalis usque ad 4.5 cm longis.

A deciduous tree 7 to 10 m high. Branches terete, grayish-brown, glabrous, the ultimate ones softly pubescent with short, pale-brown or olivaceous hairs. Leaves appearing after the flowers, oblong to obovate-oblong, membranaceous or chartaceous, ultimately glabrous on both surfaces, when young slightly pubescent on the nerves beneath, 10 to 15 cm long, 4 to 7 cm wide, entire, equilateral, the base rather abruptly rounded or obtuse, distinctly 3-nerved, the apex prominently acuminate; lateral nerves above the basal pair 4 or 5 on each side of the

midrib, as prominent as the basal ones, somewhat ascending, anastomosing, the reticulations distinct; petioles 5 to 8 mm long, pubescent when young, ultimately glabrous. Flowers on defoliated branches, axillary, several in each axil, white, the pedicels densely pubescent, stout, 3 to 4 mm long. Calyx obconic, about 5 mm long, 4 mm in diameter, the limb produced 1.5 to 2 mm above the ovary, very broadly and obscurely 5-toothed. Petals 5 (rarely 4), on the type 4.5 cm long (on other specimens referred here 3.5 to 4 cm in length), 2 mm wide below, free, narrowed above, cinereous-pubescent. Stamens 16 or 17, as long as the petals; filaments villous in the lower one-half or one-third, not curved-geniculate; anthers 10 mm long. Style glabrous, as long as the petals; stigma globose, 2 mm in diameter. Fruit ovoid or ellipsoid, cinereous-puberulent, nearly 2 cm long.

LUZON, Province of Cagayan, Malueg, *For. Bur. 14773 Darling*, April 16, 1909, on slopes along streams, altitude about 60 m (type); Casambalangan, *For. Bur. 13112 Bernardo*, May, 1909; Province of Laguna, Los Baños, *Elmer*, April, 1906, *Alberto*, May, 1905; Santa Maria Mavitac, *For. Bur. 10084 Curran*, February, 1908; Province of Camarines, Caramoan, *For. Bur. 10576 Curran*, June, 1908; Mount Isarog, *For. Bur. 10501 Curran*, May, 1908; Province of Tayabas, *For. Bur. 10388 Curran*.

A species manifestly allied to *Alangium salviifolium* (L. f.) Wangerin, differing in its very much longer, 5-merous flowers, fewer stamens, and in its filaments which are not curved-geniculate near the base, but which are more or less pilose for the lower one-third or one-half, and very much longer than in *A. salviifolium*.

I do not hesitate to refer here *Cuming 1716* from Samar, which is cited by Wangerin¹¹ under *Alangium salviifolium* (L. f.) Wangerin, subsp. *hexapetalum* (Lam.) Wangerin. Our specimen of Cuming's plant has 5-merous flowers with the petals 4 cm in length, characters by which I have distinguished the species above described. *Alangium salviifolium* var. *hexapetalum*, as described by Wangerin, has 6-merous flowers and petals 2 to 2.5 cm in length.

In Cagayan Province the species is known as *apitan*; in Camarines as *bunglas* and *malatapay*.

This form has previously been considered by Philippine botanists to represent *Alangium octopetalum* Llanos, F.-Villar and Vidal reducing that species to *Alangium lamarckii* Thwaites. In working over the identifications of the species described by Blanco, I followed F.-Villar in referring *A. octopetalum* to *A. lamarckii*. The description of *Alangium octopetalum* Llanos, for Blanco definitely states that it was described by Llanos, is very short and incomplete, but a careful examination of it shows conclusively that it can not be the same as *Alangium salviifolium*, or *A. longiflorum*. The description calls for a plant with 8 petals and from 9 to 11 stamens, with no style or stigma; if Llanos correctly described his plant, then the last character would exclude *Alangium octopetalum* from the genus.

¹¹ Engl. Pflanzenreich 41' (1910) 11.

ALANGIUM SALVIIFOLIUM (L. f.) Wangerin, subsp. **HEXAPETALUM** (Lam.) Wangerin in Engl. Pflanzenreich 41³ (1910) 9.

MINDANAO, Lake Lanao, Camp Keithley, Mrs. Clemens 594, and several sheets without number.

The above specimens seem to agree fairly well with Wangerin's conception of this species, as expressed in his description. The flowers have 6 petals, which vary from 2.5 to 3.3 cm in length, hence averaging considerably longer than indicated for *Alangium salviifolium*. The stamens are usually about 22, and as long as the petals, glabrous below, then villous on the inside for from 5 to 7 mm, and glabrous above.

A specimen from Balabac Island, Bur. Sci. 400 *Mangubat*, may represent still another form. In vegetative characters it is very similar to *A. salviifolium* var. *hexapetalum*, the petals are 6 in number, about 2.2 cm long, while the stamens vary from 15 to 17, the filaments near the base supplied with a prominent, internal, densely villous appendage.

ALANGIUM MEYERI Merr. in Govt. Lab. Publ. (Philip.) 35 (1905) 54; Wangerin l. c. 15.

Additional material of this endemic species is as follows: LUZON, Province of Cagayan, San Vicente, For. Bur. 11301 *Klemme*: Province of Laguna, Los Baños, Elmer 8308: Province of Camarines, Mount Isarog, For. Bur. 10437 *Curran*; Dalupaon, Ahern 120. POLILLO, Bur. Sci. 10413 *McGregor*. MINDORO, For. Bur. 12902 *Rosenbluth*, Whitford 1444, For. Bur. 3643, 3682, 6136 *Merritt*. NEGROS, For. Bur. 4334 *Everett*, For. Bur. 15016 *Danao*.

Native names: *Angatuan* (Cagayan: Negrito); *putian* (Negros, Mindoro: Visayan); *malatapay*, *paang daraga* (Camarines: Bicol); *maragabulo* (Tayabas: Tagalog).

ERICACEAE.

VACCINIUM L.

VACCINIUM CAMIGUINENSE sp. nov.

Species *V. jagori* Warb. affinis et similimis, differt foliis obtusis vel rotundatis, vix acuminatis vel apiculatis, calycis lobis ciliatis.

A species very similar to and apparently closely allied to *Vaccinium jagori* Warb. A small glabrous tree, the branches terete, olivaceous or brownish, smooth. Leaves thickly coriaceous, subsessile, oblong-obovate to narrowly oblong-obovate, 3.5 to 8 cm long, 1.5 to 3 cm wide, somewhat brownish when dry, shining, the lower surface a little paler than the upper one, somewhat glandular, the apex rounded or obtuse, base narrowed to the very short petiole, subacute or abruptly obtuse, margins slightly recurved; midrib prominent, the lateral nerves sharply ascending, slender, obscure, 2 or 3 basal pairs and one or two additional pairs leaving the midrib below the middle; petioles stout, very short or none. Flowers unknown. Racemes axillary, solitary, 5 to 6 cm long, glabrous. Nearly mature fruits sub-

globose, glabrous, about 5 mm in diameter, their pedicels 5 to 10 mm long, 10 to 20 in a raceme. Persistent calyx lobes triangular-ovate, acute or somewhat acuminate, 2 mm long, their margins above distinctly ciliate.

CAMIGUIN DE MINDANAO, *Bur. Sci.* 14622 (type), 14680 Ramos, April 9, 1912, in forests near the summit of Mount Mahinog.

A species similar to and manifestly allied to *Vaccinium jagori* Warb., from which it differs chiefly in its obtuse or rounded, not acuminate or apiculate leaves. Among the extra-Philippine species it appears to be allied to *Vaccinium bancanum* Miq., from which it also differs in its vegetative characters.

VACCINIUM EPIPHYTICUM sp. nov.

Frutex epiphyticus, 2 ad 3 m altus, glaber; foliis ovatis vel oblongo-ovatis, coriaceis, nitidis, acute acuminatis, basi rotundatis vel acutis, usque ad 12 cm longis, 7-plinerviis; petiolo 5 mm longo; racemis axillaribus, solitariis, quam folia brevioribus; floribus circiter 14 mm longis, cylindraceo-campanulatis, fauce vix contractis.

An epiphytic shrub, manifestly closely allied to *Vaccinium barandanum* Vid., glabrous or nearly so, 2 to 3 m high. Branches terete, smooth, grayish, the younger ones somewhat wrinkled or angular when dry, slender. Leaves alternate, ovate to oblong-ovate, coriaceous, shining, 8 to 12 cm long, 3.5 to 6.5 cm wide, the base broad and rounded or acute, 7-plinerved, the apex sharply and rather slenderly acuminate, margin entire; outer two pairs of nerves leaving the base of the leaf, the outermost ones not reaching the middle of the leaf, the next inner pair extending above the middle, the innermost pair leaving the midrib 5 to 10 mm above the base, more prominent than the others, extending nearly to the apex, the primary lateral nerves above these basal ones about 5 on each side of the midrib, ascending, not prominent, reticulations distinct; petioles 5 mm long. Racemes axillary, solitary, about 5 cm long, comparatively few-flowered, glabrous or very slightly pubescent. Bracteoles lanceolate-oblong, acuminate, membranaceous, about 11 mm long, 4 mm wide; pedicels about 12 mm long. Flowers pink. Calyx-tube globose-ovoid, about 2 mm long, not contracted, the teeth 5, oblong-ovate, acute, about 2 mm long, margins minutely pubescent. Corolla about 12 mm long (10 mm wide when flattened), glabrous, or with very few scattered hairs, tubular, not contracted above, the lobes broadly ovate, obtuse, reflexed, about 2 mm long. Stamens 10; filaments 5 mm long, sparingly ciliate;

anthers 4 to 4.5 mm long, the terminal tubes 2 mm long, opening by pores. Style 12 mm long, pubescent.

MINDANAO, District of Zamboanga, Sax River Mountains, back of San Ramon, *Merrill 8087*, November 30, 1911, altitude about 900 m.

A species closely allied to *Vaccinium barandanum* Vidal, of Luzon and Mindoro (*V. hutchinsonii* Merr.), which it closely resembles, differing in its somewhat smaller flowers, shorter petioles, its epiphytic habit, and its pubescent, not glabrous styles.

VACCINIUM LOHERI sp. nov.

Frutex parvus, epiphyticus, glaber; foliis crasse coriaceis, ellipticis, in siccitate pallidis, nitidis, 1.5 ad 2 cm longis, integris, apice rotundatis, basi obscure triplinerviis, acutis, 2-glandulosis, petiolo vix 2 mm longo; floribus solitariis, axillaribus, pedicellatis.

A small, epiphytic, glabrous shrub, the branches terete, grayish, the younger ones reddish-brown, wrinkled when dry. Leaves numerous, crowded, elliptic, 1.5 to 2 cm long, thickly coriaceous, when dry rather pale and shining, the apex rounded, the base acute, with two prominent glands near the juncture with the petiole, the margins thickened, somewhat recurved, base obscurely 3-plinerved, the lateral nerves nearly as prominent as the midrib, nearly or quite reaching the apex, the reticulations obsolete or nearly so; petioles 1 to 2 mm long. Flowers white, according to the collector (corolla not seen). Pedicels solitary, axillary, slender, about 6 mm long, somewhat curved, the basal bracteoles ovate, about 0.5 mm long. Calyx 2 mm long, broadly urceolate, the tube ovoid, globose, about 1.5 mm in diameter, the limb somewhat spreading, 5-toothed, the teeth broadly triangular-ovate, acute or slightly acuminate, 0.5 mm long.

LUZON, Province of Rizal, Montalban; that is, in the mountains back of Montalban, *Loher 6187*, April 18, 1905.

Although my specimen is imperfect, the corolla being lacking, I have not hesitated to describe this distinct form. It is well characterized by its small, crowded, entire, obtuse, obscurely nerved leaves which are rounded at the apex, acute and 2-glandular at the base, and by its solitary, axillary flowers. Among the Philippine species it is most closely allied to *Vaccinium microphyllum* Blume (*V. mindorense* Rendle), but is very different from that species.

MYRSINACEAE.

ARDISIA Sw.

ARDISIA CAGAYANENSIS sp. nov. § *Acrardisia*.

Species A. scabridae Mez affinis, differt foliis majoribus, usque ad 16 cm longis, obscure crenato-dentatis, nervis magis numerosis, 25 ad 30 utrinque.

A shrub or small tree, the branches brown, smooth, somewhat shining, the branchlets distinctly ferruginous-furfuraceous, slender. Leaves oblong-elliptic to broadly oblong-oblongate, chartaceous, 10 to 16 cm long, 3 to 4.5 cm wide, subequally narrowed at both ends, the base acute or decurrent-acuminate, the apex sharply acuminate, the margins subentire or obscurely serrate-crenate, the upper surface slightly shining, the lower of about the same color, with very numerous, dark-brown glands; nerves slender, 25 to 30 on each side of the midrib; petioles about 1 cm long. Inflorescence terminal or subterminal, much shorter than the leaves, usually leaf-opposed with the uppermost leaf on the branchlet, more or less glandular-furfuraceous with brown glands, the branches few, the flowers umbellately arranged on the ultimate branchlets, about 6 in an umbel, the pedicels glandular, 5 to 7 mm long. Flowers about 8 mm in diameter. Calyx about 3.5 mm in diameter, the lobes spreading, triangular-ovate, glandular, acute, about 1 mm long. Corolla-lobes ovate, imbricate, acuminate, about 3.5 mm long, glandular-punctate. Anthers narrowly ovoid, 2 mm long, sharply acuminate, somewhat glandular in the median part of the back, subsessile. Ovary ovoid, glandular, style 4 mm long. Fruit globose, apparently fleshy when fresh, black when dry, about 7 mm in diameter.

LUZON, Province of Cagayan, Abulug River, *For. Bur.* 19620 Curran, January, 1912.

A species of the section *Acrardisia*, manifestly allied to *Ardisia scabrada* Mez, but differing from that species in very many characters.

ARDISIA RAMOSII sp. nov. § *Crispardisia*.

Frutex circiter 1 m altus, glaber; foliis anguste oblong-ellipticis, membranaceis, utrinque subaequaliter angustatis, acute acuminatis, subtus pallidioribus, minute vel haud puncticulatis, subintegris vel obscurissime undulatis, usque ad 20 cm longis, nervis utrinque 15 ad 20; floribus ignotis; fructibus globosis, valde glandulosis, glabris, sepalis oblongis, obtusis, glandulosis, vix ciliatis, circiter 2.5 mm longis.

A shrub about 1 m high, quite glabrous, the branches pale-brownish. Leaves narrowly elliptic-oblong, membranaceous, 15 to 20 cm long, 4 to 7 cm wide, subequally narrowed at both ends, the base acute or cuneate, the apex slenderly and sharply acuminate, the margin subentire or very obscurely undulate, with distant glands, when dry slightly shining or dull, the lower surface a little paler than the upper, beneath eglandular or with small, scattered glands which are not more numerous toward

the margins; nerves 15 to 20 on each side of the midrib, rather distinct on the lower surface, anastomosing and forming sub-marginal nerves very close to the edges of the leaf; petioles 8 to 12 mm long. Flowers unknown. Infrutescence leaf-opposed or subterminal, always at the tips of the branchlets, the peduncle 5 mm long or less, bearing usually about 4 or 5 umbellately arranged primary branchlets 1 to 1.5 cm in length, the branchlets in turn bearing usually two umbellately arranged fruits, the pedicels as long as the peduncles. Fruit globose, about 8 mm in diameter, very prominently marked with round and elongated glands, the persistent calyx about 7 mm in diameter, prominently glandular-punctate, the lobes oblong, obtuse, about 2.6 mm long, not at all ciliate.

LUZON, Province of Cagayan, Abulug River, *For. Bur. 19613 Curran, Bur. Sci. 13968 Ramos* (type), January, 1912, in forests.

A species probably most closely allied to *Ardisia jagori* Mez, but very distinct in vegetative and other characters.

DISCOCALYX Mez.

DISCOCALYX LONGIFOLIA sp. nov.

Frutex glaber 2.5 m altus; foliis oblanceolatis, circiter 55 cm longis, coriaceis, acutis vel acuminatis, basi angustatis, acutis, margine supra distincte dentatis; inflorescentiis bipinnatim paniculatis, tenuibus, paniculis fasciculatis, in ramis specialibus dispositis; floribus 0.3 mm diametro, prominente glanduloso-punctatis.

A glabrous, dioecious shrub about 2.5 m high. Leaves apparently crowded at the apices of the branches, coriaceous, oblanceolate, about 55 cm long, 11 cm wide at the upper two-thirds, from there gradually narrowed to the acute or cuneate base, the apex acute or acuminate, the margins in the upper two-thirds distinctly and regularly dentate, the lower surface obscurely glandular-punctate; nerves 40 or more on each side of the midrib, rather distinct, anastomosing, the ultimate reticulations indistinct, petioles stout, about 4 cm long. Inflorescence of slender, bipinnately paniculate panicles 10 cm long or less, which are fascicled near the apices of stout, specialized branches, these branches about 4 mm thick, more or less thickened at their apices and marked with scars of fallen bracts. Male flowers crimson, about 3 mm in diameter, the calyx rotate, very prominently glandular-punctate, the glands black, the lobes oblong, obtuse, about 1.3 mm long, their margins thin, subhyaline. Corolla of the same diameter as the calyx, prominently and densely glandular-punctate with black glands, the lobes oblong-ovate,

obtuse. Rudimentary ovary narrowly club-shaped, 1 mm long. Anthers broadly ovoid, 0.5 mm long.

LUZON, Province of Tayabas, Quinacatucan, *Bur. Sci. 13181 Foxworthy & Ramos*, March, 1911.

A characteristic and strongly marked species, distinguished by its unusually long, oblanceolate, denticulate leaves, and by its rotate flowers, the calyx of the same size as the corolla, and both calyx and corolla very densely glandular-punctate with black glands. Its allies are *Discocalyx insignis* Merr., and *D. macrophylla* Merr.

DISCOCALYX MACULATA sp. nov.

Frutex parvus, circiter 4 m altus, glaber; foliis oblongis, coriaceis, utrinque angustatis, acutis vel acuminatis, nitidis, usque ad 25 cm longis, subtus parce glanduloso-punctatis et maculis purpureis notatis, nervis utrinque 12 ad 15, distinctis; inflorescentiis bipinnatim paniculatis, paniculis tenuibus, glanduloso-punctatis, in ramis specialibus dispositis; floribus ♂ minutis, 5-meris.

A small tree or a shrub, 4 m high (*vide* Ramos), dioecious, glabrous. Leaves oblong, coriaceous, entire, 15 to 25 cm long, 4 to 8 cm wide, subequally narrowed at both ends, shining, the apex acuminate, base acute, the lower surface somewhat paler than the upper, with minute, scattered glands and with numerous, scattered, purplish spots 1 to 1.3 mm in diameter; primary lateral nerves 12 to 15 on each side of the midrib, distinct, anastomosing, the secondary ones sometimes nearly as distinct, the reticulations rather lax; petioles 2 to 3 cm long. Special branches bearing the inflorescence up to 18 cm long, slightly branched, the upper one-half often much thickened and marked with the scars of fallen bracts, the panicles more or less fascicled at the ends of the branches, slender, bipinnately paniculate, more or less glandular-punctate, 3 to 8 cm or more in length. Male flowers 5-merous, small, nearly mature buds about 1 mm in diameter, the calyx and corolla glandular-punctate.

LUZON, Province of Cagayan, Abulug River, *Bur. Sci. 13967 Ramos*, February, 1912, in forests.

A species apparently most closely allied to *Discocalyx montana* Elm., which it rather closely resembles, distinguished, however, by its small flowers and by its leaves being prominently maculate on the lower surface.

EMBELIA Burm. f.

EMBELIA NIGRO-PUNCTATA sp. nov. § *Choripetalum*.

Species ut videtur *E. viridiflorae* (A. DC.) Scheff., affinis, differt floribus majoribus, sessilibus vel subsessilibus, petalis acutis vel acuminatis.

An erect (or scandent?) shrub, glabrous throughout, the

branches terete, smooth, gray. Leaves coriaceous, oblong to oblong-obovate, usually brown when dry, somewhat shining, 8 to 16 cm long, 3.5 to 7 cm wide, the base acute, apex obtuse, acute, or very obscurely and broadly acuminate, both surfaces, but especially the lower one, with rather large, scattered, black glands; primary lateral nerves 8 to 10 on each side of the midrib, not very prominent, the secondary ones nearly as distinct, the reticulations rather close; petioles 1.5 to 3 cm long. Inflorescence spicate or subracemose, from the axils of fallen leaves, solitary, 2.5 to 4 cm long, the base subtended by numerous, small, imbricate bracts. Flowers 4-merous, sessile or subsessile, whitish, the bracteoles lanceolate, acute or acuminate, 2 mm long, 0.6 mm wide, with black glands. Calyx 2.5 mm long, black-glandular, the lobes ovate, acuminate, nearly 2 mm long. Petals 4, free, oblong-ovate, acute or acuminate, 3.5 mm long, 1.7 mm wide, black-glandular. Filaments slender, 3 mm long; anthers oblong, 1.5 mm long, the connective black-glandular. Ovary ovoid, tapering into the style. Fruit ovoid, apiculate, 8 to 10 mm long, smooth.

MINDORO, near Calapan, *Bur. Sci. 938 Mangubat*, June, 1906, said by the collector to be a common shrub in thickets. Probably referable here is *Bur. Sci. 1068 Ramos* (distributed as *Antidesma*), from Bosoboso, Province of Rizal, Luzon, the specimen in fruit.

The species is manifestly allied to *Embelia viridiflora* (A. DC.) Scheff., but differs in the size of its flowers which are sessile or subsessile, acute or acuminate petals, and in its leaves being punctate with decidedly scattered but prominent black glands.

MAESA Forsk.

MAESA FERRUGINEA sp. nov. § *Eumaesa*.

Arbuscula circiter 1 m alta, ramulis foliis inflorescentiisque plus minusve ferrugineo-pilosis; foliis oblongo-ovatis, crenatodentatis, usque ad 12 cm longis, nervis utrinque circiter 6; racemis axillaribus, solitariis, densis, petiolo subaequantibus vel brevioribus; sepalis extus dense tomentosis.

A shrub about 1 m high, all parts rather densely and softly ferruginous-pilose. Branches dark-brown, pilose, with small scattered lenticels. Leaves chartaceous, oblong-ovate, 7 to 12 cm long, 2.5 to 5.5 cm wide, both surfaces pilose with soft scattered hairs, base rounded or subacute, apex acute or slightly acuminate, margins distinctly crenate-serrate; petioles very densely ferruginous-pilose, about 2 cm long; nerves 5 to 7 pairs, prominent, reticulations indistinct. Inflorescence racemose, densely pilose, very rarely in depauperate panicles, the racemes dense, many-flowered, usually about as long as the petioles; pedi-

cels 1 to 1.5 mm long; bracts lanceolate, acuminate, 1 mm long. Calyx about 2 mm long, the lobes ovate, obtuse or acute, about 8 mm long, marked with longitudinal lines, obscurely glandular, the tube and lobes densely pilose. Corolla about 1.8 mm long, the lobes suborbicular, rounded, slightly glandular-punctate, about one-half as long as the corolla. Anthers 0.5 mm long, exceeding the filaments. Ovary wholly inferior, the apex quite glabrous. Fruit unknown.

LUZON, Province of Abra, Mount Paraga, *Bur. Sci. 7109 Ramos*, February 7, 1909, said to grow in forests at an altitude of about 300 m.

A species allied to *Maesa manillensis* Mez, but very distinct from that species; it is well characterized by its rather dense, soft, ferruginous tomentum.

MAESA PACHYPHYLLA sp. nov. § *Eumaesa*.

Species ut videtur *M. ramentaceae* affinis, differt foliis minoribus, crasse coriaceis, inflorescentiis axillaribus terminalibusque puberulis.

Apparently a scandent shrub, glabrous except the inflorescence, the branches terete, lenticellate, the reddish-brown slender branchlets terete, with few scattered lenticels. Leaves ovate to elliptic-ovate, thickly coriaceous, pale and shining when dry, of about the same color on both surfaces, 5 to 8 cm long, 2 to 4 cm wide, the base rounded or acute, the apex obtuse or very broadly and shortly acuminate, margins entire; lateral nerves 5 or 6 on each side of the midrib, curved-ascending, the reticulations obscure; petioles 1 to 1.5 cm long. Inflorescence puberulent, axillary, solitary, narrow, bipinnately-paniculate, by the reduction of the upper leaves forming terminal panicles, the lower ones 10 cm long or less, their branches less than 1 cm in length, the upper ones much shortened, the upper reduced leaves about 1 cm long, narrowly oblong. Flowers unknown, racemously arranged. Bracts oblong-lanceolate, puberulent, acuminate, about 1.5 mm long, the pedicels about 1.2 mm long, with two, ovate, acuminate, 1 mm long bracteoles immediately below the fruit. Fruit globose, glabrous, about 2 mm in diameter, the persistent calyx-lobes reniform-ovate, about 0.5 mm long, not punctate, their margins minutely ciliate.

CEBU, hills back of the City of Cebu, *Bur. Sci. 11030 Ramos*, March, 1912.

A species apparently closely allied to *Maesa ramentacea* Wall., from which it differs in its smaller, much thicker leaves, and its puberulent inflorescence. It is distinguishable among the Philippine species by its very thick, entire, glabrous leaves in conjunction with its puberulent axillary and pseudo-terminal inflorescence.

OLEACEAE.

LIGUSTRUM Linn.

LIGUSTRUM PUBINERVE Blume Mus. Bot. Lugd. Bat. 1 (1850) 314.

Visiania pubinervis Miq. Fl. Ind. Bat. 2 (1856) 548.

Ligustrum cumingianum Decne. in Nouv. Arch. Mus. Paris II 2 (1879) 28; Rolfe in Journ. Bot. 23 (1885) 214; Vid. Phan. Cuming. Philip. (1885) 125; Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 116.

There seems to be but a single species represented in the Philippines, although there is some variation in the material before me. The type of Blume's species was from the Philippines, collector not indicated, and the leaves are described as "in nervo medio subtus pubescentibus." Most of our material has the leaves entirely glabrous, but a few specimens from northern Luzon agree with Blume's description as to the pubescent midrib: *Elmer 6031*, *Vanoverbergh 78*, *Bur. Sci. 5998 Ramos*, and *For. Bur. 15993 Bacani*. Eighteen other specimens from northern and central Luzon, and from Mindoro, agree with the above specimens in all essential characters, but have entirely glabrous leaves. Unless distinctions are exceedingly finely drawn, but a single species is represented. It is with no hesitation that I reduce *Ligustrum cumingianum* Decne. (1879), to *L. pubinerve* Blume (1851). It is very closely allied to some species of southern China (*Henry 7879 E*), and of India; in fact Miquel has queried if it is not the same as *Ligustrum pubescens* DC.

Doctor H. Hallier has kindly examined the type of Blume's species in the Rijks Herbarium, Leiden, which is indicated as "ex herb. Delessert," no collector given, and considers that *Ligustrum cumingianum* Decne. is only a more glabrous variety of *L. pubinerve*, the type of the latter and cotype of the former differing only in the pubescent midribs of the leaves of *L. pubinerve*.

LOGANIACEAE.

GENIOSTOMA Forst.

GENIOSTOMA STENOPHYLLUM sp. nov.

Frutex vel arbor parva usque ad 4 m altus, glaber vel ramulis junioribus petiolisque minute pubescentibus; foliis anguste elliptico-oblongis vel lanceolatis, chartaceis, acuminatis, basi acutis, 2 ad 6 cm longis, nervis lateralibus utrinque 5 vel 6, subtus prominentibus, anastomosantibus; floribus axillaribus, solitariis, breviter pedicellatis; fructibus ovoideo-ellipticis, circiter 8 mm longis.

A shrub or small tree reaching a height of 4 m, glabrous except the slightly pubescent young branchlets and petioles. Branches pale-gray, the branchlets slender. Leaves chartaceous, narrowly elliptic-oblong to lanceolate, 2 to 6 cm long, 0.5 to 2 cm wide, slightly falcate, acuminate, base acute, pale when dry, not turning blackish, shining; lateral nerves 5 or 6 on each side of the midrib, prominent on the lower surface, anastomosing in a distinct, looped,

submarginal vein; petioles 1.3 to 3 mm long. Flowers greenish-white, axillary, solitary, rarely 2 in an axil, the pedicels about 2 mm long, the base with two or three, ovate, 0.5 mm long bracts, a similar bracteole subtending the flower. Calyx-lobes ovate, acute, 1 mm long. Corolla broadly campanulate, about 3 mm long, 4 mm in diameter, the throat hairy, the lobes reflexed, ovate, obtuse, about 2 mm long. Anthers nearly 1 mm long. Ovary subglobose, 1 mm in diameter; style stout, 2 mm long; stigma globose. Fruit ovoid-elliptic, about 8 mm long, red when mature. Seeds numerous, oblong-ellipsoid, brown, about 8 mm long.

LUZON, Benguet Subprovince, Mount Santo Tomas, *Williams 1127* (type), 1068, 923, June and September, 1904; San Fernando Trail, *Phil. Pl. 725 Merrill*, May, 1911.

A species allied to *Geniostoma cunningianum* Benth., differing in its relatively much narrower leaves which are pale, not at all blackish when dry, its more prominent nerves which anastomose to form distinct submarginal veins, and in its solitary, short-pedicelled flowers.

APOCYNACEAE.

ALYXIA Banks.

ALYXIA BLANCOI sp. nov.

Brabejum lucidum Blanco Fl. Filip. ed. 2 (1845) 40, non *Alyxia lucida* Wall.

Frutex scandens, glaber, ramis teretibus, ramulis 4-angulatis; foliis lanceolatis vel oblanceolatis, coriaceis, nitidis, 3.5 ad 5 cm longis, verticillatis, obtusis, breviter petiolatis; fructibus ovoideis vel subglobois, 1 cm longis, crasse apiculatis.

A scandent glabrous shrub, aromatic in drying. Branches slender, terete, grayish or brownish, the branchlets distinctly 4-angled, the internodes on the branchlets 5 to 12 mm long. Leaves whorled, 3, rarely 4 at each node, lanceolate or oblanceolate, coriaceous, shining, 3.5 to 5 cm long, 6 to 10 mm wide, the margins recurved, base acute, apex obtuse or subacute; lateral nerves very obscure; petioles 1.5 to 2.5 mm long. Flowers unknown. Fruit ovoid or subglobose, not moniliform, about 1 cm long, with a thick apiculate point, yellow when fresh.

CEBU, in thickets on dry hills back of the City of Cebu, *Bur. Sci. 11118 Ramos*, March, 1912.

F. Villar reduced Blanco's species to *Alyxia stellata* R. & S., which was undoubtedly an error. Vidal referred *Alyxia stellata* F.-Vill. to his *A. monilifera*, but correctly excluded the reference to Blanco. In my paper on the determination of Blanco's species¹² I followed F.-Villar in his reduction

¹² Govt. Lab. Publ. (Philip.) 27 (1905) 58.

of *Brabejum lucidum*, but erroneously carried the reduction still further to *Alyxia monilifera* Vid. Now that I have specimens from Cebu, from which island Blanco received his material, which agree perfectly with his short description, I have no hesitation in redescribing it under the above specific name, for Blanco's name, *lucida*, is invalid in *Alyxia*.

Alyxia blancoi is allied to *A. parvifolia* Merr., and to *A. luzoniensis* Merr., but its leaves are shaped very differently from those of either of the above species.

ANODENDRON A. DC.

ANODENDRON AXILLARE sp. nov.

Frutex scandens subglaber; foliis oblongis, nitidis, usque ad 15 cm longis, apice breviter acuminatis, basi acutis vel subrotundatis, nervis patulis, tenuibus, utrinque circiter 13; inflorescentiis axillaribus, cymosis, vix 2 cm longis, brevissime pedunculatis, alabastro 8 mm longo.

A scandent woody vine, the branches, when dry, reddish-brown, slender, minutely and densely brownish-lepidote or punctate. Leaves opposite, oblong, subcoriaceous or firmly chartaceous, 12 to 15 cm long, 5 to 6 cm wide, shining and of about the same color on both surfaces when dry, the upper surface entirely glabrous, the lower one with minute, scattered, brown, lepidote spots, base subacute or rounded, apex abruptly short-acuminate; nerves distant, spreading, not prominent, anastomosing near the margin, about 13 on each side of the midrib, the secondary ones nearly as distinct as the primary ones; petioles 8 to 10 mm long. Inflorescence axillary, cymose, short, many-flowered, the peduncle 2 to 3 mm long. Flowers greenish to yellowish-white, in nearly mature bud about 8 mm long, the pedicels 2 to 3 mm long, each subtended by two or three, ovate, 1 mm long bracteoles. Sepals 5, ovate, acute, imbricate, 2 mm long, eglandular. Corolla apparently salver-shaped, the tube cylindric, not inflated, about 5 mm long, 1.5 mm in diameter, the lobes twisted to the left, oblong-ovate, acute, somewhat falcate, about 6 mm long, 2.5 mm wide. Stamens inserted at the base of the tube, conniving in a cone around the stigma, united to it by projections from the connective; anthers oblong-ovate, sessile or subsessile, base sagittate by prolongation of the cells, apex acuminate or acute, about 1.5 mm long. Disk cup-shaped, about 0.5 mm high, crenate. Carpels 2, free, united by their backs to the disk, enclosed, that is, not exceeding the disk; ovules many. Stigma narrowly top-shaped, 1 mm long.

NEGROS, Faraon, *For. Bur. 13572 Meyer & Foxworthy*, August 25, 1909.

A species apparently allied to *Anodendron pauciflorum* Hook. f., of the Malay Peninsula, but judging from the description quite distinct.

ANODENDRON LOHERI sp. nov.

Frutex alte scandens glaber; foliis lanceolatis ad anguste elliptico-lanceolatis, utrinque acutis vel leviter acuminatis, usque ad 10 cm longis, nervis utrinque circiter 9, obscuris; paniculis terminalibus, parvis, pedunculatis, multifloris; corollae tubo intus villosus, 4 ad 5 mm longus.

A glabrous scandent shrub reaching a height of 10 m or more, the branches slender, reddish-brown when dry. Leaves lanceolate to narrowly elliptic-lanceolate, narrowed about equally at both ends and acute or slightly acuminate, 5 to 10 cm long, 1.5 to 3 cm wide, shining when dry, the lower surface paler than the upper; nerves about 9 on each side of the midrib, slender, indistinct, distant, faintly anastomosing, the reticulations obsolete or nearly so; petioles 1 to 1.5 cm long. Panicles terminal, including the peduncle 4 to 9 cm long, usually many-flowered, trichotomous, the peduncles 2 to 5 cm long. Flowers numerous, cream-colored or yellowish, fragrant, somewhat crowded on the ultimate branchlets of the inflorescence, the bracts ovate, 1.3 to 1.7 mm long. Sepals oblong-ovate, acute, imbricate, 2 to 2.5 mm long. Corolla-tube cylindric, 4 to 5 mm long, about 2 mm in diameter, villous inside, the lobes oblong-lanceolate, obtuse, falcate, about 6 mm long, 1.5 mm wide, villous on the inner surface, spreading, in bud twisted to the left. Anthers sessile on the bottom of the tube, lanceolate, acuminate, 2 mm long, surrounding the stigma and adherent to it. Stigma about 1 mm long, top-shaped. Disk cupular, about 0.5 mm long. Follicles unknown.

LUZON, Province of Zambales, Mount Pinatubo, *Loher 6494* (type), February, 1906: Province of Bataan, Lamao River, Mount Mariveles, *For. Bur. 2607 Meyer*, February, 1905, *For. Bur. 6256 Curran*, February, 1907, *Whitford s. n.*, 1905, month not indicated.

This new species is allied to *Anodendron paniculatum* A. DC., and to *A. candolleianum* Wight, and one of the specimens from Bataan Province was identified as the former species²³, all duplicates having been distributed as *A. paniculatum* A. DC. *Anodendron loheri* differs from *A. paniculatum* especially in its very much smaller leaves and fewer nerves; it is apparently much more closely allied to *A. candolleianum* Wight, differing not only in its smaller leaves but in the corolle-tube and lobes being prominently villous.

A specimen from Rizal Province, Montalban, *For. Bur. 2452 Ahern's collector*, distributed as *Anodendron paniculatum* A. DC., is probably referable to *A. loheri*, but the leaves are a little larger than in the type, and the nerves are decidedly prominent, in fact nearly as prominent as in typical *A. paniculatum*.

²³ This Journal 1 (1906) Suppl. 117.

ANODENDRON MANUBRIATUM (Wall.) comb. nov.

Echites manubriata Wall. Cat. (1829) No. 1663.

Echites paniculata Roxb. Fl. Ind. ed. 2, 2 (1832) 17, non Poir.

Anodendron paniculatum A. DC. Prodr. 8 (1844) 444; King & Gamble in Journ. As. Soc. Beng. 74² (1907) extra number 486; Rolfe in Journ. Bot. 23 (1885) 214; Vid. Rev. Pl. Vasc. Filip. (1886) 187.

Echites coriacea Wall. 1. c. no. 1586, non Blume.

This species was first reported from the Philippines by Rolfe, *Cuming 1176*, from the Province of Ilocos Sur, Luzon. It is apparently also represented by the following specimens: LUZON, Province of Union, Mount Tonglon, *Loher 6482*, April, 1906. PALAWAN, Puerto Princesa, *Bur. Sci. 352 Bermejós*, January, 1906. The specimens agree closely with the descriptions, and with a specimen in our herbarium from a plant cultivated in the Royal Botanic Garden at Calcutta.

Echites paniculata Roxb., being invalidated by the earlier *E. paniculata* Poir., it is not clear how the specific name can be retained under *Anodendron*. *Echites manubriata* Wall. apparently supplies the earliest name that is tenable, although originally only a *nomen nudum*.

India to Ceylon, through the Malay Peninsula to the Malay Archipelago and the Philippines.

ICHNOCARPUS R. Br.

ICHNOCARPUS OVATIFOLIUS A. DC. Prodr. 8 (1844) 435; Vid. Rev. Pl. Vasc. Filip. (1886) 116; Hook. f. Fl. Brit. Ind. 3 (1882) 670; King & Gamble in Journ. As. Soc. Beng. 74² (1907) extra number 494.

Echites caudata Blanco Fl. Filip. (1837) 106, ed. 2 (1845) 77, non Burm.

Springia indica Muell.-Arg. & Van Huerck Plant. Nov. (1871) 143.

Ichnocarpus frutescens F.-Vill. Novis. App. (1880) 131; Vid. Sinopsis Atlas (1883) t. 67, f. E.: Naves in Blanco Fl. Filip. ed. 3, pl. 97, non R. Br.

Ichnocarpus navesii Rolfe in Journ. Linn. Soc. Bot. 21 (1884) 313.

BATANES ISLANDS, Dalupiri, *Bur. Sci. 10647 McGregor*. LUZON, Province of Ilocos Norte, *For. Bur. 13892 Merritt & Darling*; Benguet Subprovince, *Elmer 6610*; Province of Nueva Ecija, *For. Bur. 8499 Curran*, *For. Bur. 22131 Alvarez*; Province of Pangasinan, *Merrill 2871*; Province of Panganga, *Merrill 4214*; Province of Bataan, *For. Bur. 1464 Ahern's collector*, *Leiberg 6013*; Manila, *Didrichsen, Galathea Expedition 3192, Loher 3884*; Province of Bulacan, *Bur. Sci. 6118 Robinson & Merritt*; Province of Rizal, *Guerrero 36*, *Bur. Sci. 13536 Ramos*, *For. Bur. 3125, Merrill 2629, Loher 3889, 6527*; Province of Cavite, *Bur. Sci. 1320 Mangubat*; Province of Laguna, *Hallier, Elmer*. MINDORO, *Cuming 1547, 1572*, *Bur. Sci. 10869 Celestino*, *For. Bur. 5385 Merritt*. PALAWAN, *Bur. Sci. 206 Bermejós*, *Bur. Sci. 690 Foxworthy*. MASEBATE, *Merrill 3080*. CEBU, *Cuming 1770*. NEGROS *Bur. Sci. 9924 Robinson, Cuming 1809* (cotype). MINDANAO, Lake Lanao, *Mrs. Clemens 665*; District of Davao, *Piper 476*. BASILAN, *For. Bur. 6569 Hutchinson*.

India, Malay Peninsula, Sumatra, Borneo, Celebes, and Timor.

This species is common and widely distributed at low altitudes in the Philippines, but I can see no reason for considering that more than

one species is represented. There is some variation in the shape of the leaves, and in the pubescence, sometimes the leaves being quite glabrous, sometimes villous on the midrib beneath.

Echites affinis R. & S. Syst. 4 (1819) 393 (*E. caryophyllata* Roth Nov. Sp. Pl. (1821) 133, non Roxb.) would supply the oldest specific name for this species were Hooker f. correct in the reduction of *Echites affinis* to *Ichnocarpus ovatifolius* A. DC.¹⁴ Finding, however, that the description given by Roemer & Schultes did not agree at all well with specimens of De Candolle's species, I asked Herr J. Martin, director of the Natural History Museum at Oldenburg, Germany, to examine Roth's specimen, the type both of *Echites affinis* R. & S., and of *E. caryophyllata* Roth. This he has kindly done and informs me that *Ichnocarpus ovatifolius* A. DC. is certainly not the same as *E. caryophyllata* Roth (*E. affinis* R. & S.) in Roth's herbarium. The sketch he has kindly supplied me shows *Echites affinis* to have broadly ovate or ovate-elliptic leaves with but two pairs of lateral nerves, the latter character entirely at variance with *Ichnocarpus ovatifolius* A. DC.

Ichnocarpus frutescens R. Br., has been reported from the Philippines by several authors, but I have seen no material from the Archipelago that I would refer to that species. *Ichnocarpus navesii* Rolfe is typified by plate 97 of the third edition of Blanco's "Flora de Filipinas;" in fact the species was based solely on the plate. The figure is manifestly a very poor representation of *I. ovatifolius*, and hence *I. navesii* Rolfe is reduced.

Three species enumerated by F.-Villar¹⁵ under this genus are not species of *Ichnocarpus*, but *I. velutinus* F.-Vill. is *Aganosma velutina* A. DC., *I. acuminatus* F.-Vill. is *Aganosma acuminata* G. Don, and *I. macrocarpus* F.-Vill. is a synonym of *A. acuminata* G. Don.

MICRECHITES Miq.

MICRECHITES SCHRIECKII (Huerck & Muell.-Arg.) Rolfe in Journ. Bot. 23 (1885) 214; Vid. Phan. Cuming. Philip. (1885) 126.

Ecdysanthera schrieckii Huerck & Muell.-Arg. Obs. Bot. 191.

Trachelospermum sp. Merrill in Forestry Bureau (Philip.) Bull. 1 (1903) 49.

Trachelospermum philippinense Elm. Leaf. Philip. Bot. 2 (1908) 488.

LUZON, Province of Tayabas, Lucban, *Elmer 9135* (cotype of *Trachelospermum philippinense* Elm.), in flower, May, 1907: Province of Camarines Sur, Pasacao, *Ahern 300*, January, 1902, in fruit: Province of Albay, *Cuming 910* (cotype of *Ecdysanthera schrieckii* Huerck & Muell.-Arg.). NEGROS, Gimagaan River, *For. Bur. 4250 Everett*, April, 1906, in fruit. MINDANAO, District of Zamboanga, Dumanquilas Bay, *For. Bur. 12360 Hutchinson*, previously determined as *Ichnocarpus ovatifolius* A. DC. Locally known in Camarines as *bayacto*.

The cotypes of *Trachelospermum philippinense* Elm., and *Micrechites schrieckii* Rolfe, both in flower, are identical in all respects, hence the necessity of reducing the former species.

Endemic.

¹⁴ Fl. Brit. Ind. 3 (1882) 670.

¹⁵ Novis. App. (1880) 131.

PARSONSIA R. Br.

PARSONSIA OBLANCIFOLIA sp. nov.

Frutex scandens, glaber; foliis oblanceolatis ad anguste oblongo-obovatis, usque ad 12 cm longis, apice acuminatis, basi angustatis, acutis, nervis utrinque 8 ad 10; cymis terminalibus, pedunculatis, multifloris, floribus circiter 1 cm longis, filamentis inter se spiraliter dextrorsum contortis.

A scandent, glabrous, woody vine, the branches pale-brown or somewhat grayish, very minutely pustulate, the younger ones dark-brown. Leaves chartaceous, oblanceolate to narrowly oblong-obovate, 7 to 12 cm long, 2 to 3.5 cm wide, slightly shining when dry, the lower surface paler than the upper one, apex shortly but sharply acuminate, base narrowed, acute; nerves 8 to 10 on each side of the midrib, distant, anastomosing, the reticulations very lax, faint or often nearly obsolete; petioles 1 to 1.5 cm long. Cymes terminal, many-flowered, 5 to 6 cm long, sometimes slightly pubescent, usually trichotomous, the peduncle 1.5 cm long or less, the branches again trichotomous, the flowers crowded on the ultimate branchlets. Bracteoles oblong-ovate, acute, 1 to 1.5 mm long, the pedicels 5 to 8 mm long. Sepals oblong, acute or obtuse, about 3 mm long, slightly imbricate in bud. Corolla-tube about 3.5 mm long and 3 mm in diameter in the middle, more or less inflated, glabrous on both sides, the throat glabrous, not bearded, the lobes oblong-lanceolate, obtuse, 6 to 7 mm long, about 1.5 mm wide, base a little wider. Filaments about 5 mm long, somewhat villous, strongly twisted about the style; anthers lanceolate, 4 mm long.

LUZON, Province of Zambales, Candelaria, *Bur. Sci.* 4723 Ramos, December 7, 1907.

A species manifestly allied to *Parsonsia confusa* Merr., and *P. cumingiana* A. DC., of the Philippines, and *P. spiralis* Wall., of India and Malaya, but quite different in vegetative characters. It is probably most closely allied to *P. cumingiana* A. DC., but is at once distinguished from that species by its oblong-lanceolate to oblong-ovate, more numerous veined leaves; from *P. confusa* it differs in its leaf characters and its glabrous or nearly glabrous inflorescence.

VALLARIS Burm.

VALLARIS ANGUSTIFOLIA sp. nov.

Arbor parva, 6 ad 10 m alta, glabra; foliis lanceolatis, coriaceis vel subcoriaceis, utrinque angustatis acuminatisque, usque ad 8 cm longis, 0.7 ad 1.5 cm latis; floribus axillaribus, fasciculatis, circiter 13 mm diametro, corollae tubo apice constricto.

A small glabrous tree 6 to 10 m high, the branches slender, terete, dark-reddish-brown, often nearly black when dry. Leaves lanceolate, coriaceous or subcoriaceous, narrowed and more or less acuminate at both ends, shining when dry, the lower surface paler than the upper one, 5 to 8 cm long, 0.7 to 1.5 cm wide; nerves 6 or 7 on each side of the midrib, slender, distant, spreading, anastomosing, not glandular in the axils, the reticulations obsolete or nearly so; petioles 5 to 10 mm long. Flowers white or yellowish, fragrant, axillary, fascicled, few to many in an axil, or sometimes in a very dense, fascicle-like, reduced and very shortly peduncled cyme, the pedicels slender, 5 to 8 mm long. Sepals slightly pubescent, triangular-ovate, acute, about 1.5 mm long, imbricate. Corolla-tube 5 mm long, inflated below, narrowed above and constricted at the apex, the lobes spreading, oblong-ovate, obtuse, falcate, 6 to 7 mm long, about 3.5 mm wide, somewhat villous on the inner surface. Stamens lanceolate, acuminate, slightly hairy on the back, the base of the connective with a rather large gland. Style slender, 5 mm long.

LUZON, Province of Sorsogon, Sorsogon, *For. Bur. 10507 Curran*, June, 1908, in thickets, altitude about 300 m; near Pilar, *For. Bur. 15077 Rosenbluth* (type), April 15, 1909, in flat lands not far back of the limits of high tide, locally known as *lanete*.

A species well characterized by its small lanceolate leaves, probably most closely allied to *Vallaris lancifolia* Hook. f., of the Malay Peninsula, but very different from that species. The first representative of the genus to be reported from the Philippines other than an undetermined form, *Vidal 3278*, from the Province of Albay, reported as *Vallaris* sp. by Ceron.¹⁶

VOACANGA Thouars.

VOACANGA MEGACARPA sp. nov.

Arbor glabra usque ad 10 m alta; foliis oblongis vel anguste oblongo-obovatis, breviter acuminatis, basi acutis, petiolatis, 15 ad 30 cm longis, nervis utrinque 10 ad 14; paniculis axillaribus, longe pedunculatis, dichotomis, paucifloris; calycibus 2 ad 3 cm longis, profunde 5-lobatis; corolla alba, tubo circiter 3 cm longo, contorto, lobis late oblique ovatis, usque ad 4 cm longis; fructibus globosis, usque ad 10 cm diametro.

A glabrous tree 5 to 10 m high, the branches pale-gray. Leaves oblong to narrowly oblong-obovate, 15 to 30 cm long, 6 to 12 cm wide, entire, apex shortly and rather abruptly acuminate, base narrowed, cuneate; nerves 10 to 14 on each side

¹⁶ Cat. Pl. Herb. (Manila) (1892) 115.

of the midrib, distant, prominent, the reticulations very faint, lax; petioles 1 to 2.5 cm long, the base somewhat inflated and clasping the stems. Inflorescence paniculate, axillary, lenticellate, the peduncles about 15 cm long, dichotomously branched, the flowers somewhat crowded at the ends of the branches, the two elongated primary branches frequently equaling the peduncles in length, marked with numerous scars of fallen flowers or branchlets. Flowers large, white, fragrant. Calyx 2 to 3 cm long, split nearly to the base into 5, narrowly oblong, erect, obtuse lobes. Corolla-tube about 3 cm long, somewhat contracted above, distinctly twisted at and above the insertion of the anthers; lobes spreading, obtuse, obliquely and broadly ovate, up to 3.5 cm long and 4 cm wide. Anthers narrowly lanceolate, acuminate, base sagittate, about 7 mm long. Ovary of 2 distinct carpels united by the style, surrounded by the fleshy disk. Fruit in pairs, sessile, globose, when fresh smooth, up to 10 cm in diameter, when dry much smaller, wrinkled. Seeds very numerous, rugose, 8 to 10 mm long.

LUZON, Province of Tayabas, Tununi River, along streams, *Bur. Sci.* 12324 *Foxworthy*, February, 1911 (type); Binangonan, *Whitford* 829, September, 1904; Baler, *Bur. Sci.* 10668 *McGregor*, August, 1909; Province of Camarines, Tinambuc, *For. Bur.* 14256 *Aguilar*, April, 1909.

A very characteristic species, readily distinguished from the others in the genus by its large flowers and fruits, and especially by its calyx being split nearly to the base into 5, long, narrow lobes.

TABERNAEMONTANA L.

TABERNAEMONTANA CORDATA sp. nov.

Frutex circiter 2 m altus, fructibus immaturis exceptis glaber; foliis oblongis, usque ad 14 cm longis, acute acuminatis, sessilibus, basi late cordatis; cymis axillaribus, paucifloris; folliculis maturis glabris, junioribus griseo-puberulis, rubris, oblongis, falcatis, longitudinaliter 5-carinatis; seminibus circiter 15.

An erect shrub about 2 m high. Branches slender, terete, light-gray. Leaves oblong, sessile, base broad, cordate, apex sharply acuminate, 2 to 4 cm wide, 6 to 14 cm long, chartaceous, glabrous, one of each pair somewhat smaller than the other; nerves 9 or 10 on each side of the midrib. Cymes in the upper axils, short, few-flowered, the flowers often only 2 or 3, apparently white, the pedicels slender, about 1.5 cm long. Calyx-tube short, the lobes ovate, acute, about 1.5 mm long. Corolla-tube about 1.4 cm long, 1.5 mm in diameter in the middle, the lobes narrowly oblong, falcate, rounded, about 9 mm long, 2.5 to 3 mm wide. Calyx-teeth oblong-ovate, acute. Follicles

red, oblong, when young gray-puberulent, soon becoming quite glabrous, 2 to 3.5 cm long, 1.2 to 1.5 cm wide, curved, slightly keeled down the back, rather distinctly winged or broadly keeled down the suture, with two intermediate keels along the sides. Seeds about 15, irregularly triangular-ovoid, not or but very slightly sulcate.

MINDANAO, Butuan Subprovince, Cabadbaran, *Weber*, April, 1911 (type), in clearings, altitude about 15 m, *Piper* 287, 345, April, 1911.

A species strongly characterized by its sessile leaves which are broad and cordate at the base.

VERBENACEAE.

CALLICARPA L.

CALLICARPA ELEGANS Hayek in Just's Bot. Jahresb. 33 (1905) 8.

This species was based on *Cuming* 1460, a specimen of which is in the herbarium of the Bureau of Science; according to Cuming's own list of localities, the above number was collected in the Province of Camarines Sur, Luzon. The species appears to be quite widely distributed in the northern Philippines, and is also represented by the following specimens:

Luzon, Province of Abra, Mount Paraga, *Bur. Sci.* 7054 Ramos, February, 1909; Province of Ilocos Norte, Mount Piao, *For. Bur.* 13994 Merritt & Darling; Province of Zambales, Subic, *Hallier*, January, 1904; Candelaria, *Bur. Sci.* 4815 Ramos, December, 1907; Cabluagan, *For. Bur.* 7018 Curran, May, 1907; Province of Bataan, Lamao River, *Williams* 340, December, 1903. MINDORO, south-west of Lake Naujan, *For. Bur.* 6725 Merritt, April, 1907.

Endemic.

CALLICARPA CAULIFLORA sp. nov.

Arbor parva, ramulis quadrangularibus stellato-plumoso-pilosis glandulosisque; foliis amplis, chartaceis, oblongo-ellipticis, acuminatis, usque ad 35 cm longis, leviter irregulariter denticulatis vel subintegris, supra glabris, subtus glandulosis, ad costa nervosque plus minusve stellato-pilosis; inflorescentiis fasciculatis, caulifloris; floribus 4-meris, pedicellatis; corolla circiter 7 mm longa.

A small tree, the branchlets quadrangular, rather stout, rather densely covered with brownish plumose-stellate hairs and also yellow-glandular. Leaves chartaceous, oblong-elliptic, 30 to 35 cm long, 9 to 13 cm wide, the apex slenderly and sharply acuminate, the base gradually narrowed, margins distantly and irregularly denticulate or subentire, the upper surface glabrous, the lower one somewhat paler, yellow-glandular, sparingly stellate-pilose on the midrib, nerves, and reticulations, the hairs often plumose; primary nerves about 14 on each side of the midrib, prominent beneath, anastomosing, the reticulations prom-

inent, rather lax; petioles stout, densely stellate-pubescent, 1 to 2 cm long. Inflorescences on the trunk, of sessile, hemispherical, rather dense fascicles 2 to 3 cm in diameter, slightly hirsute, the pedicels 3 to 5 mm long, the bracteoles linear-lanceolate, 1 to 2 mm long. Calyx oblong-ovoid, about 3 mm long, 1.8 mm diameter, equally 4-toothed, the teeth narrowly ovate, acute, 0.5 mm long. Corolla dark-red, about 7 mm long, cylindrical, 4-lobed, slightly glandular and pubescent externally. Anthers oblong, 3 mm long, glandular on the back. Fruit globose, the lower one-half enclosed in the calyx, about 4 mm in diameter, containing 4 pyrenes.

MINDANAO, District of Zamboanga, Port Banga, in canyons in forests, altitude about 20 m, *For. Bur. 9321 Whitford & Hutchinson*, January 13, 1908.

A species well characterized by its cauline, fascicled inflorescence, in this character differing from all the other species of the genus known to me. Allied to *C. ramiflora* Merr., but with a quite different indumentum.

CALLICARPA DOLICHOPHYLLA sp. nov.

Arbor parva, glabra, vel partibus junioribus pilis simplicibus, non stellatis, munita; foliis lanceolatis, chartaceis, 15 ad 30 cm longis, 2.5 ad 7 cm latis, subtus glandulosis, apice tenuiter acuminatis, basi acutis vel acuminatis; nervis utrinque 13 ad 16; cymis axillaribus, solitariis, laxis, usque ad 6 cm longis, pedunculis quam petioli longioribus.

A small tree, entirely glabrous, or the younger parts more or less pubescent with simple, not stellately arranged hairs, a few hairs sometimes persistent on the leaves, especially beneath. Branches terete or somewhat compressed, smooth, brown, glabrous or somewhat pubescent when young. Leaves lanceolate, chartaceous, 15 to 30 cm long, 2.5 to 7 cm wide, mostly entirely glabrous except the younger ones which are sometimes puberulent or pubescent, the base acute or acuminate, the apex rather slenderly acuminate, the margins crenate-denticulate or subentire, the lower surface distinctly yellow-glandular, the glands in minute pits; petioles 1 to 2.5 cm long; nerves 13 to 16, distinct, curved-ascending, anastomosing, the reticulations subparallel. Cymes axillary, solitary, lax, glabrous or somewhat pubescent with simple hairs, 6 cm long or less, often as wide as long, the peduncles longer than the petioles. Flowers apparently reddish. Calyx cup-shaped or somewhat funnel-shaped, 1 to 1.5 mm long, with 4 obscure, short teeth. Corolla somewhat exserted, 2.5 to 3 mm long, glabrous, the tube somewhat enlarged upward.

Stamens exerted; anthers 0.6 mm long. Fruit (immature), globose, small, containing 4 pyrenes.

LUZON, Province of Cagayan, *Cuming 1330* (type): Province of Nueva Vizcaya, Mount Umugum, *Bur. Sci. 8268 Ramos*, May, 1909: Province of Rizal, Bosoboso, *Bur. Sci. 1063 Ramos*, July, 1906.

Cuming's specimen has been referred by Schauer to *Callicarpa longifolia* Lam., var. *subglabra* Schauer, in conjunction with other specimens from India, Java, and Japan. The description does not apply particularly well to the Philippine plant, which to me does not appear to be very closely allied to Lamarck's species. It is well characterized by lax cymes and its entirely glabrous vegetative parts, or if pubescent at all, then with simple, not stellate hairs, in this last character differing from most, if not all, other species of the genus. Two specimens of Cuming's No. 1330 are in the Herbarium of the Bureau of Science, one with rather narrow, somewhat pubescent leaves, and with pubescent stems and inflorescence, quite manifestly a young stage of the plant, the other with larger, glabrous leaves and inflorescence; this latter I have made the type sheet.

CALLICARPA RIVULARIS sp. nov.

Species *C. angustae* Schauer simillima et valde affinis, differt foliis paulo majoribus, nervis lateralibus paucioribus, indumento plus minusve stellato-plumosis, antheris majoribus.

A shrub, apparently sometimes subscaudent, 2 to 5 m high. Branches terete, or the ultimate ones somewhat compressed, very densely covered with a whitish or yellowish-white indumentum composed of short, stellate hairs, with some stellate-plumose ones intermixed, the inflorescences, petioles, and lower surface of the leaves with a similar indumentum. Leaves narrowly lanceolate or narrowly oblanceolate, chartaceous, 10 to 18 cm long, 1.5 to 3.5 cm wide, the upper surface dark-colored when dry, quite glabrous, or with few stellate hairs along the midrib, the lower surface with a dense, whitish or yellowish-white indumentum, about equally narrowed at both ends, the apex slenderly acuminate, the margins in the lower one-half entire, above slightly and irregularly denticulate; petioles about 1 cm long; nerves about 9 on each side of the midrib, curved-ascending, anastomosing, prominent beneath. Cymes axillary, solitary, the peduncles about as long as the petioles, dichotomously branched, the cymes rather lax, comparatively few-flowered, 3 cm in diameter or less. Calyx somewhat funnel-shaped, about 2 mm long, slightly 4-toothed, externally densely white- or grayish-puberulent. Corolla-tube scarcely exerted, the corolla white, about 3 mm long, 4-lobed, slightly pubescent externally. Anthers 1.3 mm long, glandular on the back. Fruit globose, glabrous, about 3 mm in diameter, containing 4 pyrenes.

PALAWAN, Mount Victoria, on rocky river banks at an altitude of about 1,150 m, *Bur. Sci. 660 Foxworthy* (type), March 23, 1906, also from the same locality, at an altitude of 60 m, on large boulders in the river bed, *Bur. Sci. 719 Foxworthy*, March 24, 1906.

A species manifestly very closely allied to *Callicarpa angusta* Schauer, differing especially in its indumentum.

CALLICARPA ANGUSTA Schauer in DC. Prodr. 11 (1847) 642.

LUZON, Province of Nueva Ecija, *Cuming 1425* (cotype): Province of Zambales, Subic, *Hallier s. n.*: Province of Rizal, Bosoboso, *Bur. Sci. 1030 Ramos, For. Bur. 1888 Ahern's collector*. MINDORO, Tubili, *For. Bur. 8878 Merritt*, January, 1908.

Endemic.

CLERODENDRON L.

CLERODENDRON ELLIPTIFOLIUM sp. nov.

Arbor parva, circiter 3 m alta, inflorescentiis exceptis glabra; foliis ellipticis vel ovato-ellipticis, chartaceis, usque ad 15 cm longis, basi rotundatis, apice breviter acuminatis, margine leviter subundulatis, nervis utrinque circiter 6, distinctis; inflorescentiis terminalibus, subsessilibus, densis, multifloris, circiter 10 cm diametro, bracteolis aciculatis; floribus circiter 2.5 cm longis.

A small tree or a shrub about 3 m high, glabrous except the inflorescence. Branches terete or obscurely angled, the younger ones olivaceous, lenticellate. Leaves elliptic to elliptic-ovate, chartaceous or submembranaceous, olivaceous when dry, the upper surface shining, the lower one of about the same color, dull, 12 to 15 cm long, 7 to 11 cm wide, the base rather broadly rounded, sometimes very obscurely cordate, the apex shortly and stoutly acuminate, the margins obscurely subundulate, the incipient teeth 1 to 1.5 cm apart; lateral nerves 5 or 6 on each side of the midrib, prominent, curved, anastomosing, the reticulations lax; petioles 3 to 3.5 cm long. Inflorescence terminal, dense, many-flowered, subsessile or at least branched from the base, cymose, sparingly pubescent with short, scattered hairs, the bracteoles acicular, pubescent, 1 to 2.3 mm long, the inflorescence about 10 cm in diameter. Flowers numerous, white or nearly so. Calyx narrowly funnel-shaped or somewhat cup-shaped, about 6 mm long, the apex truncate, obscurely 5-toothed, 3.5 mm in diameter, narrowed below to the acute base, externally sparingly pubescent with very short hairs. Corolla-tube slender, cylindric, glabrous, about 18 mm long, the limb spreading, about 12 mm in diameter, the lobes ovate or broadly oblong-ovate, rounded. Ovary glabrous.

CAMIGUIN DE MINDANAO, Panatayum, in thickets, *Bur. Sci. 14463 Ramos*, March 20, 1912.

A characteristic species not, apparently, very closely allied to the other Philippine forms, although manifestly in the same group with *Clerodendron quadriloculare* Merr., *C. mindorensis* Merr., and *C. klemmei* Elm. It is distinguishable by its elliptic, obscurely undulate leaves, and its dense, terminal, many-flowered, cymose panicles.

CLERODENDRON VILLOSUM Blume Bijdr. (1826) 811; Schauer in DC. Prodr. 11 (1847) 667; Clarke in Hook. f. Fl. Brit. Ind. 4 (1885) 589; F.-Vill. Novis. App. (1880) 161; Gamble in Journ. As. Soc. Beng. 74² (1909) Extra Number 836.

CULION, Halsey Harbor, *Merrill 761*, February, 1903.

Burma to the Malay Peninsula, Java, and Sumatra.

The specimen agrees closely with the description and with Singapore specimens in our herbarium.

CLERODENDRON MINDORENSE nom. nov.

Clerodendron simile Merr. in Govt. Lab. Publ. (Philip.) 35 (1906) 64, non Pearson (1901).

A new name is necessary for the Philippine plant, as the one previously selected by me was preoccupied.

GEUNZIA Blume.

GEUNZIA HOOKERI sp. nov.

Callicarpa pentandra Schauer in DC. Prodr. 11 (1847) pro parte, quoad *Cuming 1773*.

Species *G. farinosae* Bl., et *G. cumingiana*e (Schauer) Rolfe similis et affinis, differt foliis subtus parce pubescentibus, vetustioribus subglabrescentibus.

A shrub or a small tree, the young branches, petioles, leaves, and inflorescence more or less stellate-pubescent with brown hairs, the older parts becoming glabrous or nearly so. Branches terete, or the younger ones somewhat compressed, ultimately glabrous. Leaves opposite and alternate, ovate to oblong-ovate, chartaceous, entire, the base abruptly acuminate, the apex long and slenderly subcaudate-acuminate, 9 to 17 cm long, 5 to 9 cm wide, brownish when dry, of about the same color on both surfaces, the upper surface slightly stellate-pubescent, the hairs more numerous on the midrib and lateral nerves, ultimately nearly glabrous, the lower surface slightly pubescent, and with numerous, small, yellow, glands; nerves about 8 on each side of the midrib, the reticulations subparallel, distinct; petioles 2 to 4 cm long. Cymes axillary, solitary, 10 cm long or less, rather densely brown-stellate-pubescent, the peduncles about as long as the petioles, mostly dichotomously branched, the cymes 10 cm wide or less. Pedicels 1 to 2 mm long. Calyx cup-shaped, 2 mm long, somewhat pubescent externally, with 5, short, broad, rather sharp teeth. Corolla 5 mm long, glandular exter-

nally, the tube somewhat enlarged upward, the lobes 5, oblong, blunt, about 2 mm long. Filaments exerted; anthers 2 mm long, more or less glandular.

CEBU, *Cuming 1773*.

Duplicates of the above number were referred by Schauer to *Callicarpa pentandra* Roxb. = *Geunsia farinosa* Blume, but Sir Joseph Hooker in his "Flora of British India" under *Geunsia farinosa* Blume, says "Cuming's No. 1773, reduced to *G. farinosa* by Schauer, is probably, as stated in Gen. Pl. 2, p. 1150, a good species."

It seems to me to be much more distinct from Blume's species than is *Geunsia cumingiana* (Schauer) Rolfe, which Hooker thinks is perhaps not distinct from *G. farinosa* Blume. In this genus, as in *Callicarpa*, the amount of pubescence on different forms seems to vary considerably, but *Geunsia hookeri*, above described, is distinguished from the previously described forms especially by its very scanty pubescence, which by no means covers the lower surface of the leaf, as in *G. farinosa*, and in *G. cumingiana*.

GEUNSID CUMINGIANA (Schauer) Rolfe in Journ. Linn. Soc. Bot. 21 (1884) 315.

SAMAR, *Cuming 1707* (cotype). NEGROS, Cadiz, *For. Bur. 12444 Danao*, March, 1908. LEYTE, Palo, *Elmer 7368*, January, 1906. MINDANAO, District of Zamboanga, Tetuan, *Ahern 378*: Province of Misamis, Mount Malindang, *For. Bur. 4712 Mearns & Hutchinson*, May, 1906.

Endemic.

VITEX L.

VITEX NITIDA sp. nov.

Arbor circiter 5 m alta, partibus junioribus floribusque plus minusve pubescentibus; foliis tri- vel quinquemfoliolatis, foliolis nitidis, elliptico-ovatis, obtusis vel obscure acuminatis, usque ad 10 cm longis, 2 basilaribus multo minoribus; cymis pedunculatis, axillaribus, folia subaequantibus; floribus ut videtur albidis, calycibus truncatis, subglabris, corolla extus dense pubescente.

A tree about 5 m high, the branches light-gray, smooth, somewhat 4-angled, the growing parts black when dry, more or less fulvous-pubescent, becoming glabrous or nearly so. Leaves 3- and 5-foliolate on the same branches, their petioles 5 to 7 cm long. Leaflets elliptic-ovate, dark-colored when dry, shining, glabrous or nearly so, entire, base acute or acuminate, apex obtuse or shortly and broadly acuminate, the central one 7 to 10 cm long, the two next below somewhat smaller, the basal pair, when present, much reduced, 2 to 3.5 cm long, all petiolulate. Cymes axillary, solitary, in the upper axils, forming a terminal leafy inflorescence, a little shorter than the leaves, their peduncles 2 to 6 cm long, very slightly pubescent or glabrous, dichotomous, eventually rather lax, comparatively few-flowered. Flowers white, according to the collector, in triads on the ulti-

mate branchlets, the middle one of each triad sessile or subsessile, the two lateral ones pedicelled; bracts triangular-ovate, acute, 1.5 mm long, deciduous. Calyx cup-shaped, about 2.5 mm long, very slightly appressed-pubescent, truncate or very obscurely 5-toothed. Corolla-tube about 6 mm long, villous within, outside densely brown-pubescent above, the upper lip 2-lobed, the lobes oblong-ovate, 3.5 to 4 mm long, the lower lip much larger, 3-lobed, the middle lobe orbicular, 5 mm in diameter, the two lateral ones oblong-ovate, obtuse, 3 mm long, both lips densely brown-pubescent on both surfaces. Filaments villous below. Style 10 mm long.

MINDANAO, Province of Misamis, Tangob, *For. Bur. 19546 Klemme*, May 7, 1911, growing near the mountains, locally known to the Visayans as *tugaspan* or *sasalit*.

A species well characterized by its 3- and 5-foliolate leaves, the lower two leaflets, when present, much reduced, its axillary, peduncled cymes, truncate calyx, and densely pubescent corolla. It is most closely allied to *Vitex pentaphylla* Merr., but is apparently sufficiently distinct from that species.

LABIATAE.

COLEUS Lour.

COLEUS AMBOINICUS Lour. Fl. Cochinch. (1790) 372.

Marrubium album Amboinicum Rumph. Herb. Amboin. 5 (1747) 294, t. 102, f. 2.

Coleus aromaticus Benth. in Wall. Pl. As. Rar. 2 (1831) 15, Lab. Gen. Sp. (1832-36) 51, DC. Prodr. 12 (1848) 72; Hook. f. Fl. Brit. Ind. 4 (1885) 635; F.-Vill. Novis. App. (1880) 163.

Coleus suganda Blanco Fl. Filip. (1837) 483, ed. 2 (1845) 337; Miq. Fl. Ind. Bat. 2 (1856) 948.

LUZON, Manila, *Merrill 7568*, sterile specimen.

This species is found in the Philippines only in cultivation, and is locally known by the Tagalog name *suganda*, and the Spanish name *orégano*. Its probable origin is the Malayan region, and it is certainly of prehistoric introduction in the Philippines. The species very rarely produces flowers in the Philippines, a fact already noted by Blanco. Although this species has been known to me many years I have never seen a flowering specimen and hence have hesitated in considering it. Material of the above number was sent to Kew for comparison, eliciting the statement that the leaf specimens supplied agree with Ceylon material of *Coleus amboinicus*, and with the figure given by Rumphius. Although no Philippine flowering material is available I consider the specimens certainly to represent Blanco's *Coleus suganda*, which species is identical with *Coleus aromaticus* Benth.= *Coleus amboinicus* Lour., a reduction already made by F.-Villar. *Coleus amboinicus* Lour. was based in part on botanical material from plants cultivated in Cochichina, and on several references to pre-Linnean literature including the description and plate given by Rumphius, which he erroneously cites as *l. 8 c. 75. tab. 72*, the reference apparently taken from

the index in the last volume of Rumphius' work. So far as sterile material is comparable with the figure, I consider Rumphius' delineation to be an excellent representation of the Philippine plant. *Coleus amboinicus* Lour. is the type of the genus.

MESONA Blume.

MESONA CLAUSA sp. nov.

Herba erecta, stricta, vix ramosa, circiter 30 cm alta, caulibus foliis inflorescentiisque plus minusve dense pallide fulvo-villosis; foliis petiolatis, oblongis, usque ad 6 cm longis, obtusis vel acutis; inflorescentiis interruptis circiter 15 cm longis, verticillis densis, subglobosis; calycibus sub fructu plus minusve inflatis, 8 mm longis, 2-labiatis, labiis integris, inferioribus orbicularibus os calycis claudentibus, superioribus oblongis.

An erect unbranched herb about 30 cm high. Stems rather stout, obscurely angled, rather densely covered with pale-fulvous, villous hairs. Leaves oblong or narrowly oblong, 5.5 to 6 cm long, 1 to 1.5 cm wide, apex acute or obtuse, base acute, the margins somewhat crenulate, both surfaces more or less villous, especially on the nerves and midrib; nerves ascending, about 8 on each side of the midrib; petioles 5 to 10 mm long, those of the basal leaves sometimes 2 cm in length. Inflorescence interrupted, about 15 cm long, the whorls dense, globose, 2 to 2.5 cm apart, the upper ones closer, about 1.5 cm in diameter, the rachis densely villous, the bracts subtending the whorls oblong-ovate, brown, reflexed, more or less villous, acuminate, 0.8 to 1.5 cm long, the lowermost ones subfoliaceous. Calyx just after anthesis 3 mm long, densely villous, in fruit accrescent, 8 mm long, slightly inflated in the middle, the mouth oblique, closed by the orbicular lower lip which is 2 mm in diameter and villous on the outside, entire, the upper lip oblong, 1.5 mm long, obtuse, not at all lobed or toothed, villous on the outside. Corolla unknown.

CULION, in damp, open grass lands, *Merrill 460*, December 13, 1902.

A species well characterized by its entire calyx-lips, the lower one orbicular, appressed to and quite closing the mouth of the calyx-tube. I have found on the specimen a single badly withered corolla showing the four stamens, the upper two filaments appressed at the base, characteristic of the genus.

POGOSTEMON Desf.

POGOSTEMON CABLIN (Blanco) Benth. in DC. Prodr. 12 (1848) 156; Mip. Fl. Ind. Bat. 2 (1856) 964; F.-Vill. Novis. App. (1880) 164; Vid. Rev. Pl. Vasc. Filip. (1886) 213; Prain in Journ. As. Soc. Beng. 74² (1907) Extra Number 708, Kew Bull. (1908) 78.
Mentha cablin Blanco Fl. Filip. (1837) 472.

Pogostemon patchouly Pellet. in Mém. Soc. Sc. Orléans 5 (1845) 277, t. 7.

Mentha auricularia Blanco l. c. ed. 2 (1845) 329, non Linn.

Pogostemon suavis Ten. in Giorn. Bot. Ital. 2 (1847) 56.

Pogostemon patchouli Hook. Kew Journ. Bot. 1 (1849) 328, t. 11.

Pogostemon patchouli var. *suavis* Hook. f. Fl. Brit. Ind. 4 (1885) 634.

Pogostemon heyneanus Merr. in Philip. Journ. Sci. 2 (1907) Bot. 426, non Benth.

The above is the nomenclatural history of this interesting plant, which is represented by the following Philippine specimens: LUZON, Province of Cagayan, *For. Bur. 16470 Bacani*, January, 1909: Bontoc Subprovince, Bauco, *Vanoverbergh 1057*, December, 1910, in gardens, Ilocano "cablin": Province of Pampanga, Mount Arayat, *Merrill 5025*, on dry, steep, talus slopes, altitude about 400 m, February, 1906: Province of Laguna, *Vidal 505* in Herb. Kew.: Province of Rizal, Bosoboso, *Bur. Sci. 2060 Ramos*, February, 1907; Montalban, *For. Bur. 2442 Ahern's collector*, January, 1905; Antipolo, *Bur. Sci. 5199 Ramos*, June, 1908, in gardens, Tagalog "cading": Manila, *Bur. Sci. 299 Merrill*, February, 1910, in gardens: without definite locality, *Loher 4211*.

Doctor Prain has recently shown¹⁷ that the patchouli of commerce is the product of *Pogostemon cablin* (Blanco) Benth. (*P. patchouli* Pellet., non *P. patchowli* Dalz. & Gibs), and that the specific name given to the plant by Blanco has priority over the other proposed ones, and is hence the proper one for the species. I had previously confused it with *Pogostemon heyneanus* Benth., and recorded it from the Philippines under the latter name.¹⁸

Pogostemon cablin (Blanco) Benth., is of wide distribution in the Philippines, more commonly in cultivation only, but occasionally found growing wild (Mount Arayat, Bosoboso, and Montalban). There is no evidence that it is a native of the Philippines, but it has unquestionably been introduced, although probably in prehistoric times. Whatever its origin it has found favorable conditions for growth and reproduction in the Philippines, for here it flowers freely and has become spontaneous in some regions. In contrast to this, in India and in the Malay Peninsula, where it is extensively cultivated, it very rarely produces flowers. In the Philippines the plant is not now, and apparently never has been, cultivated on a commercial scale, but as a cultivated plant one finds only scattered individuals in native gardens. Dr. Leon Guerrero informs me that it is claimed that if a few leaves of this plant be enclosed in a book, the small beetles whose larvae are frequently so destructive to bindings in tropical countries will not attack bindings of volumes so protected.

POGOSTEMON HEYNEANUS Benth. in Wall. Pl. As. Rar. 2 (1831) 16; DC. Prodr. 12 (1848) 153; Wight Icon. t. 1440; Prain in Journ. As. Soc. Beng. 74² (1907) Extra Number 707.

Pogostemon patchowli Dalz. & Gibs. Bomb. Fl. Addend. (1861) 66, non *patchouly* Pellet.

Pogostemon patchouli Hook. f. Fl. Brit. Ind. 4 (1885) 633, non *P. patchouly* Pellet.

¹⁷ Journ. As. Soc. Beng. 74² (1907) Extra Number 708, Kew Bull. (1908) 78.

¹⁸ This Journal 2 (1907) Bot. 426.

MINDANAO, District of Zamboanga, near Zamboanga, *Merrill 5467*, October 1906, in coconut groves along small streams; Basagan, *Merrill 8238*, December, 1911, in waste places near houses. PALAWAN, near Puerto Princesa, *Bur. Sci. 287 Bermejos*, January, 1905, locally known as *cadlum*.

This species, like the preceding, is certainly not a native of the Philippines, but has been introduced from some other part of Malaya. It appears to be less common than *Pogostemon cablin*, or at any rate more restricted in its distribution. It is found in waste places in and near settlements, and is thoroughly naturalized; it is doubtless also cultivated, but I have seen no cultivated specimens.

POGOSTEMON NEPETOIDES Stapf in *Kew Bull.* (1908) 116.

This species was described from a specimen collected by Micholitz in the Philippines, no definite locality being given. Dr. C. B. Robinson, who has kindly examined the type in the Kew Herbarium informs me that it seems to be well matched by a specimen collected in Ilocos Norte, Luzon, by Merritt and Darling, *For. Bur. 12479*, although the specimens were not quite comparable, the type being more mature. So far as the specimen goes, *For. Bur. 12479 Merritt & Darling* agrees with Stapf's description, and doubtless represents his species. It has much the appearance of *Pogostemon cablin* Benth., but differs in being less pubescent, its leaves scarcely lobed, and its panicked spikes much more numerous and smaller than in Bentham's species.

Var. **GLANDULOSUS** var. nov.

A typo differt calycibus minoribus, 3.5 ad 4 mm longis, glandulosis.

LUZON, Province of Rizal, Bosoboso (San Isidro), *Bur. Sci. 1849, 2130, 18406* (type) *Ramos*, January, 1907, February, 1911, the specimens indicated as growing in forests.

This form may eventually prove to be a distinct species, but it appears to be closely allied to Stapf's *Pogostemon nepetoides*, which it closely resembles. It differs at least in that its calyces are shorter, 3.5 to 4 mm long, and distinctly glandular with waxy glands. The plant is aromatic, with about the odor of *Pogostemon cablin* Benth., but much weaker. No native names are recorded.

POGOSTEMON MEMBRANACEUS sp. nov.

Herba erecta, ramosa, erecta, 50 cm alta vel ultra, subglabra vel plus minusve puberula; foliis membranaceis, ovatis, nitidis, basi rotundatis, apice acuminatis, margine distincte crenato-serratis, usque ad 9 cm longis, subtus glandulosis, ad costa nervisque puberulis; inflorescentiis terminalibus, solitariis, cylindraceis, usque ad 15 cm longis, 1.5 ad 2 cm diametro, anguste paniculatis, spiciformibus; verticillastris subapproximatis, internodiis 5 ad 10 mm longis; floribus 5-meris, calycibus circiter 6.5 mm longis.

An erect branched herb 50 cm high or more, subglabrous, or more or less puberulent. Branches subterete or slightly

angled, brownish, slightly pubescent or puberulent. Leaves ovate, membranaceous, 5 to 9 cm long, 2.5 to 5 cm wide, shining, nearly glabrous, the base rounded or subacute, the apex acuminate, margins distinctly and usually doubly crenate-serrate, the lower surface distinctly glandular-punctate, somewhat puberulent on the midrib and nerves, the nerves distinct, the reticulations lax, not prominent; petioles 1 to 3 cm long, puberulent. Inflorescence a terminal, solitary, cylindric, spiciform panicle 6 to 15 cm long, 1.5 to 2 cm in diameter, somewhat pubescent with short hairs, the verticels subapproximate, 5 to 10 mm apart, each with from 12 to 25 flowers racemosely arranged on the short spreading branches, the bracts none or very early deciduous. Calyx shortly pedicelled, oblong, acute at both ends, 5-angled, sparingly pubescent, glandular-punctate, 6 to 7 cm long, the teeth 5, lanceolate, slenderly acuminate, 1.5 mm long. Corolla slender, glabrous, 10 mm long, the tube very slender below, 6 to 7 mm long, more or less funnel-shaped above; lower lip lanceolate, acuminate, entire, about 3 mm long, 1 mm wide, 3-nerved; upper lip much larger, 3 mm wide, 3-lobed, the middle lobe oblong, obtuse, about 1.8 mm long, 0.8 mm wide, 3-nerved, the two lateral ones broadly ovate, rounded, about 1.2 mm long and wide, usually 4-nerved. Filaments slender, exerted, bearded below the middle. Nutlets oblong-ovoid, black, shining, smooth, obscurely 3-angled, 0.8 mm long.

LUZON, Province of Laguna, Capuan, *Bur. Sci 16419 Ramos*, August 20, 1910, near streams, flowers pink.

Distinct from all other known Philippine forms, characterized by its thin, nearly glabrous leaves and its spiciform narrow panicles.

POGOSTEMON RETICULATUS sp. nov.

Herba erecta, aromatica, ramosa, 50 cm alta vel ultra, ciliata; foliis membranaceis, late ovatis, usque ad 12 cm longis, obtusis vel late breviter obtuse acuminatis, basi distincte cordatis, margine grosse irregulariter crenatis, subtus nervis reticulisque laxis prominentibus; inflorescentiis terminalibus, spiciformibus, verticillastris inferioribus remotis, superioribus approximatis; calycibus 6 mm longis, 5-dentatis, minute puberulis, parcissime ciliatis, bracteis filiformibus.

An erect, branched, apparently annual herb 50 cm or more in height, all parts distinctly ciliate with long, weak, scattered, spreading, white hairs, and also more or less puberulent. Branches obscurely angled, dark-colored when dry. Leaves opposite, long-petioled, broadly ovate, membranaceous, 5 to 12 cm long, 3.5 to 9 cm wide, obtuse or very shortly and obtusely

acuminate, the base broadly rounded, prominently cordate, the sinus 1 to 1.5 cm deep, the margins coarsely and irregularly crenate, both surfaces ciliate, the hairs on the upper surface scattered, those on the lower surfaces mostly on the midrib and nerves; nerves and reticulations lax, prominent, dark-colored in contrast to the grayish lower surface of the leaf; petioles 5 to 8 cm long. Inflorescence of terminal, solitary, long-peduncled, spiciform racemes, these, when young, and including the peduncles, 6 to 14 cm long, apparently much longer when mature, the verticels with from 6 to 8 flowers, the lower ones distant, the internodes up to 2 cm in length, the upper ones approximate, the bracteoles filiform, 2 mm long, puberulent, very sparingly ciliate. Flowers 5-merous, subsessile or shortly pedicelled. Calyx 6 mm long, 5-angled, minutely puberulent and very sparingly ciliate toward the upper end, narrowed at both ends, 5-toothed, the teeth oblong-lanceolate, acuminate, margins minutely ciliate. Mature corollas not seen, but from buds with the characteristic lobing and with the characteristic stamens of the genus.

LUZON, Province of Rizal, Montalban, *For. Bur. 3395 Ahern's collector* (type), November, 1905. Apparently also represented by *Loher 3395* from Angat, Province of Bulacan, Luzon, in the Kew Herbarium.

This species has the characteristic odor of *Pogostemon cablin* Benth., and bears the same native name as that species. It is, however, not at all closely allied, being entirely different in its vegetative characters, its indumentum, and in its inflorescence. It is well characterized by its thin, coarsely crenate, broadly ovate leaves which are prominently and laxly reticulate, and by all parts being sparingly ciliate and more or less minutely puberulent.

SCUTELLARIA L.

SCUTELLARIA COPELANDII sp. nov. § *Stachymachris*.

Herba usque ad 30 cm alta, plus minusve puberula vel leviter pubescens; foliis ovatis, obtusis, usque ad 4 cm longis, basi late rotundatis, truncatis, vel leviter cordatis, margine crenatis; racemis terminalibus, brevibus; floribus oppositis, circiter 13 mm longis.

A perennial herb, slightly branched, the stems slender, terete or obscurely angled, often prostrate below, puberulent or slightly pubescent, pale when dry. Leaves ovate, 1 to 4 cm long, 1 to 2.7 cm wide, membranaceous, of about the same color on both surfaces when dry, the apex obtuse, base broadly rounded, subtruncate, or somewhat cordate, both surfaces minutely puberulent or the lower one somewhat ciliate-pubescent on the nerves, the lower surface minutely glandular, the margins crenate; pe-

tioles puberulent, slender, 1 to 2 cm long. Racemes terminal, puberulent, comparatively few-flowered, 2 to 5 cm long. Flowers opposite, pale-blue; pedicels puberulent, 2 to 3 mm long; bracteoles oblong-spatulate, obtuse, about 2 mm long. Calyx slightly puberulent, the lips rounded, about 2.2 mm long, the appendage convex, nearly 2 mm in diameter, accrescent and in fruit 5 to 6 mm in diameter. Corolla 12 to 13 mm long, enlarged upward, slightly curved, slightly ciliate on the outside. Nutlets about 1.6 mm long, minutely verruculose.

MINDANAO, District of Cotabato, *Weber 1512* (type), August, 1911, on damp rocky banks of streams, altitude about 135 m: District of Zamboanga, Sax River, *Copeland 1597*, February, 1905, *Merrill 8210*, November, 1911, on cliffs and boulders along streams, altitude 100 to 150 m.

A species manifestly allied to *Scutellaria indica* Linn., differing especially in its stems, leaves, etc. being slightly puberulent, not villous, and its somewhat smaller flowers.

SOLANACEAE.

SOLANUM L.

SOLANUM EPIPHYTICUM sp. nov.

Frutex epiphyticus, glaber vel subglaber, simplex vel leviter ramosis, ramis griseis, nitidis, teretibus, in siccitate plus minusve sulcatis vel angulatis; foliis membranaceis, geminis, altero oblongo, acuminato, usque ad 17 cm longo, altero ovato, haud 5 cm longo; floribus 5-meris, axillaribus, 1 ad 5 fasciculatis, pedicellis 1 ad 2 cm longis; calycis truncatis; fructibus globosis, seminibus 2 vel 3, obovatis, minute rugosis.

An epiphytic glabrous or subglabrous, simple or slightly branched shrub usually less than 1 m in length. Stem pale-gray, somewhat shining, stout, when dry somewhat striate or angled, often a little zigzag, in life somewhat fleshy. Leaves membranaceous, shining, in pairs at each node, one very much larger and of different shape than the other: Larger leaves of each pair oblong, 10 to 17 cm long, often slightly falcate, acuminate, base strongly inequilateral, acute or acuminate; nerves 5 to 8 on each side of the midrib, curved-ascending, anastomosing, the reticulations indistinct; petioles 1 to 1.5 cm long. Smaller leaves of each pair ovate, 2 to 5 cm long, shortly and abruptly acuminate, acute, or obtuse, base usually rounded, subequilateral; petioles 2 to 5 mm long. Flowers axillary, solitary, or in fascicles of from 2 to 5, pedicelled, the pedicels 1 to 2 cm long, slender, slightly thickened upward. Calyx cup-shaped, truncate, not at all toothed, about 2 mm long. Corolla white, 6 to 7 mm long, the tube short,

the lobes oblong-lanceolate, acute or somewhat obtuse, about 4 mm long. Stamens 5, equal; anthers 2 mm long. Style 5 mm long. Berry globose, fleshy, at first white, becoming orange or red when mature, 5 to 6 mm in diameter, containing but 2, rarely 3 seeds, the seeds obovate, somewhat compressed, about 5 mm long, pale, minutely pitted-rugose.

LUZON, Province of Albay, *Cuming 873* (type): Province of Cagayan, *Bur. Sci. 7482 Ramos*: Province of Tayabas, Lucban, *Elmer 7494*. MINDORO, Alag River, *Merrill 6157*; South of Lake Naujan, *For. Bur. 6895 Merritt*. MINDANAO, Butuan Subprovince, *Merrill 7307, Weber 1207*: District of Davao, *Copeland 329*: Lake Lanao, *Mrs. Clemens 428, s. n.*

This species is well characterized by its epiphytic habit, its pale-gray, more or less thickened stems, its leaves in very unequal pairs, its solitary or fascicled, pedicelled, 5-merous flowers with truncate calyces, and its 2- or 3-seeded berries. It has been determined at times as *Solanum blumei* Nees, and at other times as *S. parasiticum* Blume. It is, from its habit, a very different plant from *Solanum blumei* Nees, and is at once distinguished from *S. parasiticum* Bl. by its geminate, not solitary leaves.

SOLANUM PHILIPPINENSE sp. nov.

Herba annua, erecta, glabra, dichotoma, inermis, ramis teretibus, in siccitate plus minusve sulcatis; foliis geminis, membranaceis, acuminatis, basi decurrento-acuminatis, ovatis vel oblongo-ovatis, altero subdimidio minore; pedunculis filiformibus, unifloris, axillaribus, solitariis geminis ternisve; calycis truncatis, integerrimis.

An annual, erect, glabrous, dichotomously branched herb 1 m high or less, the branches terete, more or less sulcate when dry. Leaves membranaceous, entire, in pairs at each node, the smaller of each pair half as large as the other or smaller, of the same shape, acuminate, base decurrent-acuminate, the larger ones 7 to 12 cm long, 3.5 to 6 cm wide, their petioles up to 2 cm in length, the smaller ones of each pair 2 to 5 cm long, short-petioled. Pedicels axillary, slender, solitary, in pairs, or in threes, 1.5 to 3 cm long, somewhat thickened upward, 1-flowered. Flowers pale-yellowish. Calyx cup-shaped, about 3 mm long, 3 mm in diameter, truncate, not at all toothed. Corolla 6 to 7 mm long, the lobes ovate, 2 to 3 mm long, acute or somewhat obtuse. Stamens equal; anthers broadly ovoid, about 1.2 mm long. Fruit globose, fleshy, red when mature, about 7 mm in diameter. Seeds numerous, pale, somewhat translucent, orbicular-elliptic, flattened, smooth, about 1.2 mm long.

LUZON, Benguet Subprovince, Mount Tonglon (Santo Tomas), *Elmer 6561*, June, 1904, *Williams 1275* (type) July 1, 1904, *Bur. Sci. 5406 Ramos*, December, 1908, *Merrill 8003*, May, 1911. MINDANAO, Sax River Mountains back of San Ramon, *Merrill 8164*, November, 1911.

This species is common along the trail through the mossy forest on Mount Tonglon, above an altitude of 1,700 m; in Mindanao it grows along small streams in very damp shaded ravines at an altitude of about 800 m.

It is allied to *Solanum blumei* Nees, and some of the specimens cited above have been determined as that species, and the duplicates so distributed. Among other characters it differs in its habit, being an erect, dichotomously branched herb, not a suffrutescent or woody plant, with longer petioles than in Nees' species. It is not certain that the plant described as *Solanum blumei* by Prain in Journ. As. Soc. Beng. 74² (1905), Extra Number 330, is the same as *S. blumei* Nees, as Nees describes the calyx as entire and truncate, while Prain describes it as subtruncate, with 5 subulate and 5 intervening minute teeth.

BIGNONIACEAE.

RADERMACHERA Hassk.

RADERMACHERA WHITFORDII sp. nov.

Arbor parva, glabra, novellis resinosis; foliis pinnatis, usque ad 35 cm longis, foliolis 5 vel 7, subcoriaceis, oblongo-ellipticis, acuminatis, basi acutis, 11 ad 15 cm longis; paniculis quam folia longioribus, diffusis, floribus 2.5 cm longis.

A small tree, glabrous throughout, the young parts more or less resinous. Ultimate branches somewhat compressed, with few, large, scattered lenticels. Leaves simply pinnate, 25 to 35 cm long, the basal part of the petiole more or less lenticellate. Leaflets 5 to 7, oblong-elliptic, subcoriaceous, subequally narrowed at both ends, the base acute, apex acuminate, 11 to 15 cm long, 3.5 to 6 cm wide; lateral nerves spreading, about 12 on each side, the reticulations lax; petiolules of the lower leaflets 1.5 to 2 cm long, of the upper ones half as long or shorter. Panicles longer than the leaves, up to 40 cm in length, rather lax, open, the branches distant, spreading, the lower ones up to 15 cm long. Flowers rather few, 2.5 cm long, the corolla slightly pubescent externally in the upper part. Calyx not ribbed. Immature follicles 25 cm long, 4 mm wide, somewhat compressed.

MINDANAO, District of Cotabato, Lebak, *For. Bur. 11817 Whitford*, March 7, 1912, in dry river bottoms at low altitudes.

Well characterized by its simply pinnate leaves; among the Philippine species most closely allied to *Radermachera elliptica* Merr., but with very different leaves and inflorescence, and smaller flowers.

CUCURBITACEAE.

ALSOMITRA Roem.

ALSOMITRA SARCOPHYLLA (Wall.) Roem. Syn. 2 (1846) 118; Cogn. in DC. Monog. Phan. 3 (1881) 929.

Zanonia sarcophylla Wall. Cat. (1831) no. 3724, nomen, Pl. As. Rar. 2 (1831) 28, t. 133.

LUZON, Province of Bataan, Lamao River, *Copeland 255*, January, 1904.

Not previously reported from the Philippines: Siam, Burma, and Timor.

The specimen collected by Doctor Copeland has staminate flowers, and while it agrees with the description of *Alsomitra sarcophylla* Roem., very closely, still with the lack of pistillate flowers and fruits the identity of the Philippine form with the above species can not be considered to be certain.

ALSMITRA INTEGRIFOLIOLA (Cogn.) Hayata in Journ. Col. Sci. Tokyo 30¹ (1911) 121.

Gynostemma integrifoliolum Cogn. in DC. Monog. Phan. 3 (1881) 916.

Alsomitra clavigera F.-Vill. Novis. App. (1880) 98 (probably), non Hook. f.

Gynostemma elongatum Merr. in Philip. Journ. Sci. 3 (1908) Bot. 267.

LUZON, Benguet Subprovince, Bued River, Merrill 4312, with staminate flowers; Sablan, *Bur. Sci.* 12675 *Fénix*, with staminate flowers, *Phil. Pl.* 453 *Fénix*, with mature fruits: Province of Rizal, Bosoboso and Montalban, *For. Bur.* 1897, 3409 *Ahern's collector*, with staminate flowers: Province of Bataan, *Elmer* 6694, *Merrill* 1527, *For. Bur.* 2425 *Meyer*, all with staminate flowers, *For. Bur.* 5474 *Curran* (type of *Gynostemma elongatum* Merr.), with pistillate flowers: Province of Laguna, Calauan, *Bur. Sci.* 12460 *McGregor*, with staminate flowers: Province of Tayabas, *Cuming* 767 (cotype of *Gynostemma integrifoliolum* Cogn.), with staminate flowers.

I concur with Hayata in the transfer of *Gynostemma integrifoliolum* Cogn. to *Alsomitra*, for the mature fruits of *Gynostemma elongatum* Merr., which is certainly conspecific with *G. integrifoliolum* Cogn., are typical of *Alsomitra*, not of *Gynostemma*.

Cogniaux, as noted by Hayata, has described the fruits of *Gynostemma integrifoliolum* as brown, glabrous or slightly puberulent, 7 to 8 mm thick. On several of our specimens are what I had previously taken to represent immature fruits of Cogniaux's species. These organs are ovoid or subglobose, 1 cm long or less, and closely simulate very immature fruits. An examination of them, however, shows that they are globose or ovoid galls, crowned by the calyx, and usually also the stamens of the pistillate flowers; they usually contain numerous larvae. It is strongly suspected that Cogniaux saw similar galls on one of Cuming's specimens examined by him, and mistook them for immature fruits.

Alsomitra integrifoliola Hayata is closely allied to *A. clavigera* Hook. f., but has smaller fruits, in our specimens 4 to 5 cm long and about 1 cm in diameter, and the seeds are quite glabrous, not at all muricate.

A species known only from Luzon and Formosa.

GOODENOVIACEAE.

SCAEVOLA L.

SCAEVOLA FRUTESCENS (Mill.) Krause in Engl. Pflanzenreich 54 (1912) 125.

Lobelia frutescens Mill. Gard. Dict. ed. 8 (1768) No. 1, p. p.

Whether or not Doctor Krause is correct in his interpretation of *Lobelia frutescens* Mill., it is probably best to follow him and accept the above specific name for this common and widely distributed species. Miller's *Lobelia frutescens* was a mixture, based on two references, *Fl. zeyl.* 313, which is the same as *Scaevola koenigii* Vahl¹⁹, and *Lobelia frutescens por-*

¹⁹ Trimen Fl. Ceyl. 3 (1895) 54.

tulacae folio Plum. Nov. Gen. 21, which is manifestly *Scaevola plumieri* (L.) Vahl, where it is referred by Krause. The seeds mentioned by Miller as having been sent to England from the Bahamas by Mr. Catesby must have been of the latter species, *S. plumieri*, not of *S. koenigii* Vahl, for *S. koenigii* Vahl is not found in the western hemisphere. If the first reference be taken as the type, then Krause is correct in adopting Miller's specific name for the present species; if on the other hand the first reference to a figure be taken as the type, then *Lobelia frutescens* Mill., is a synonym of *Scaevola plumieri* Vahl.

W. F. Wight²⁰ in applying the principle of generic types has decided that the plants referred by botanists generally to *Scaevola* should be referred to *Lobelia*, as the type of the genus *Lobelia* is a *Scaevola*. While this may be the logical outcome of the application of the principle in this case, yet the nomenclatural confusion that this course of procedure entails is so great that it is not considered probable that Mr. Wight's proposition will receive the support of any considerable number of botanists.

Scaevola frutescens (Mill.) Krause is represented by the following Philippine material:

BABUYANES ISLANDS, Camaguin, *Bur. Sci.* 4100 *Fénix*; BATANES ISLANDS, Batan, *Bur. Sci.* 3643 *Fénix*. LUZON, Province of Zambales, *Merrill* 2095: Province of Pangasinan, *For. Bur.* 8364 *Curran & Merritt*: Province of Tayabas, *Whitford* 897, *For. Bur.* 3208 *Hagger*: Province of Camarines, *Ahern* 229. APO ISLAND, Mindoro Strait, *Merrill* 416. BUSUANGA, *Phil. Pl.* 405 *Merrill*. POLILLO, *Bur. Sci.* 6950 *Robinson*. PALAWAN, *Bur. Sci.* 617 *Foxworthy*. BALABAC, *Bur. Sci.* 384 *Mangubat*. MASBATE, *Merrill* 3043. BASILAN, *For. Bur.* 3997 *Hutchinson*. MINDANAO, District of Davao, *Elmer* 12033.

The above form is the most common one in the Philippines and has glabrous or only slightly pubescent leaves. The corolla externally and the fruits are quite glabrous.

A form with nearly or quite glabrous leaves, the corolla, externally, and the fruits more or less hirsute is less common and is represented by the following specimens:

LUZON, Province of Zambales, *Sandkuhl*, November, 1909: Province of Pangasinan, *Bur. Sci.* 4897 *Ramos*. PALAWAN, *For. Bur.* 3774 *Curran*. MINDANAO, District of Davao, *Piper* 405, *Copeland* 674.

This form appears to be intermediate between the glabrous plant, which I take to be typical *Scaevola frutescens* as interpreted by Krause, that is, the Ceylon form, and *Scaevola sericea* Forst., which Krause has sunk with numerous other synonyms under *Scaevola frutescens*. I consider that Forster's plant is at least worthy of varietal rank.

Var. **SERICEA** (Forst) comb. nov.

Scaevola sericea Forst. Prodr. (1786) 504.

LUZON, without definite locality, *Haenke* in Herb. Prague: Province of Ilocos Sur, *Merrill* 339, June, 1912. *Volkens* 133, from the Island of Yap, Carolines, is identical.

This variety is distinguished from the more common and nearly glabrous form by its leaves being uniformly and rather softly pubescent on both surfaces, the inflorescences, flowers externally, and the fruits also pubescent.

²⁰ Contr. U. S. Nat. Herb. 9 (1905) 310.

COMPOSITAE.

GYNURA Cass.

GYNURA PIPERI sp. nov.

Species *G. sarmentosae* DC. simillima et ut videtur valde affinis, differt foliis utrinque ramulis inflorescentiisque plus minusve dense crispato-pubescentibus.

A scandent herbaceous vine the ultimate branches 2 to 3 mm in diameter, reddish-brown, slightly striate, glabrous, the younger parts sparingly crisped-pubescent with short, weak hairs. Leaves chartaceous or subcoriaceous, oblong to oblong-lanceolate, entire or rarely distantly and irregularly toothed, oblong to oblong-lanceolate, acuminate, base obtuse or acute, 3 to 9 cm long, 1.5 to 2.5 cm wide, the upper ones much reduced, the uppermost scarcely 2 cm in length and bract-like, both surfaces rather densely and uniformly pubescent with short, rather pale or brownish, weak, crisped hairs; lateral nerves about 3 on each side of the midrib, obscure; petioles 3 to 6 mm long, densely pubescent. Inflorescence terminal, peduncled, lax, crisped-pubescent, the heads 7 to 10, slenderly peduncled, oblong, in anthesis about 14 mm long. Involucral bracts linear, about 10 mm long, acute, sparingly pubescent on the back.

SIQUIJOR, *C. V. Piper* 384, May 9, 1911.

A species manifestly closely allied to *Gynura sarmentosa* DC., but distinguished at once by its entire or subentire leaves and by its characteristic indumentum.

EUPATORIUM L.

EUPATORIUM JAPONICUM Thunb. Fl. Jap. (1784) 308; Forbes & Hemsl. in Journ. Linn. Soc. Bot. 23 (1888) 403.

BATANES ISLANDS, Batan, Santo Domingo de Basco, *Bur. Sci.* 3177 *Mearns*, May 27, 1907.

The specimen here referred to *Eupatorium japonicum* Thunb. has leaves up to 12 cm in length and divided quite to the base into three segments, even the upper leaves subtending the branches of the inflorescence being deeply divided. It may be referable to some other species, but from the material available here for comparison, and from the descriptions, I can see no reason for separating it from Thunberg's species.

Japan to Formosa and southern China. A distinct northern type in the Philippine flora.

EUPATORIUM CAMIGUINENSE sp. nov. § *Eximbricata*.

Herba scandens, caulibus teretibus, leviter pubescentibus; foliis ovatis vel late oblong-ovatis, submembranaceis, usque ad 13 cm longis, basi late rotundatis, apice longe tenuiter acuminatis, margine argute serrato-dentatis, utrinque leviter glandulosis, ad costa nervisque pubescentibus; inflorescentiis terminalibus,

corymboso-paniculatis; capitulis numerosis, 5-floris, squamis circiter 12, 6 interioribus 6 mm longis, acuminatis, glabris, exterioribus brevioribus, extus leviter pubescentibus.

A scandent herb, the stems brownish when dry, striate, terete, slightly brownish-pubescent with short hairs, the younger parts more densely so. Leaves opposite, ovate to broadly oblong-ovate, submembranaceous, 9 to 13 cm long, 4 to 6 cm wide, the base broadly rounded, the apex long and slenderly subcaudate-acuminate, the margins rather coarsely serrate-dentate except at the base and along the sides of the acumen which are entire, both surfaces somewhat shining when dry, the upper one olivaceous, the lower somewhat paler, both with scattered minute glands, and shortly pubescent on the midrib and nerves; lateral nerves about 5 on each side of the midrib, slender, distinct, anastomosing; petioles densely pubescent, 1.5 to 2 cm long. Inflorescence terminal, corymbosely paniculate, about 15 cm long, the branches few, distant, spreading, opposite, the lower ones up to 12 cm long, all parts densely brown-pubescent with short hairs. Heads rather crowded on the ultimate branchlets, greenish-white, their pedicels 1 to 3 mm long. Involucral bracts about 12, the outer 6 slightly pubescent externally, oblong-ovate to oblong, obtuse, the outermost ones 1.5 to 2 mm long, the others longer, the inner six oblong-linear, 6 mm long, 1 mm wide, glabrous, acuminate, 3-nerved. Flowers 5 in each head. Corolla white, 3.6 mm long, the teeth 5, oblong-ovate, acute, 0.5 mm long. Style-arms exerted, 3 mm long. Achenes 1.8 mm long. Pappus white, about as long as the corolla.

CAMIGUIN DE MINDANAO, Mount Mahinog, in forests, *Bur. Sci.* 14688 Ramos, April 11, 1912.

A species manifestly allied to the Luzon forms, *Eupatorium sambucifolium* Elm., *E. toppingianum* Elm., and *E. benguetense* C. B. Rob., and nearer the first than to either of the others. It is distinguished from all by its much larger leaves which are differently shaped and with a different venation.

BLUMEA DC.

BLUMEA BICOLOR sp. nov.

Herba erecta, simplex vel parce ramosa, omnibus partibus leviter adpresse pilosis; foliis alternis, usque ad 16 cm longis, chartaceis vel membranaceis, oblongo-ellipticis, apice acute acuminatis, margine irregulariter denticulatis, basi longe decurrente acuminatis, supra subglabra, subtus leviter adpresse pilosis, purpurascens; paniculis circiter 15 cm longis, pedunculatis; capitulis circiter 8 mm longis.

An erect, simple or sparingly branched herb 80 cm high or less, the lower part of the stem naked, leafless. Stems terete, brownish when dry, sparingly appressed-pilose. Leaves mostly in the middle of the stem, somewhat crowded, alternate, oblong-elliptic, 8 to 16 cm long, 3 to 6 cm wide, chartaceous or membranaceous, the apex sharply acuminate, the base long-decurrent-acuminate, margins irregularly and sharply denticulate, not at all lobed; nerves 8 to 11 on each side of the midrib, curved-ascending; upper surface of the leaf green, sparingly pubescent, becoming glabrous or nearly so, the lower surface uniformly and rather dark-purple, sparingly appressed-pilose. Panicles peduncled, about 15 cm long, rather lax, pilose, the branches few, the lower ones 7 cm long or less, the upper ones gradually shorter. Heads rather few, somewhat scattered, peduncled, about 8 mm long; peduncles slender, pubescent, 5 to 8 mm long, the bracteoles few, scattered, linear. Involucral-bracts appressed-pubescent, the outer few linear-lanceolate, acuminate, 1.5 to 2 mm long, the inner ones gradually longer, the innermost up to 7.5 mm long, about 0.5 mm wide. Disk glabrous, pitted. Outer female flowers numerous, yellow, their achenes slender, about 1 mm long, slightly ciliate-hirsute; pappus copious, white, minutely scabrid, about 5 mm long; corolla-tube very slender, cylindric, about 5 mm long. Perfect flowers few, usually 5 or 6 in each head, their achenes stouter than those of the female flowers, 0.8 to 1 mm long, sparingly ciliate. Corolla 5.5 to 6 mm long, slightly enlarged upward, equally 5-toothed. Anthers 2.5 mm long.

MINDANAO, District of Zamboanga, Sax River Mountains back of San Ramon, *Merrill 8080*, November 28, 1911, on boulders and banks in dense damp forests, altitude 900 to 1,000 m, very rare.

A species characterized by its simple stems, its leaves mostly in the median portion, not at all lobed but sharply and irregularly denticulate, sharply acuminate, base decurrent and their lower surfaces uniformly purple.

REVIEW.

Koorders, S. H. *Exkursionsflora von Java umfassend die Blütenpflanzen mit besonderer Berücksichtigung der im hochgebirge wildwachsende Arten.* 1 (1911), pp. XXIV + 413 (Monocotyledonen); 2 (1911), pp. 742 (Dicotyledonen Archichlamydeae); 3 (1912), pp. VIII + 498 (Dicotyledonen Metachlamydeae). Jena: Gustav Fischer.

Java is botanically better known than is any other island of the Malay Archipelago, and its rich and varied flora has long been studied and by many botanists. Up to the present time, on account of the very numerous articles dealing with the subject, it has been quite impossible for the working botanist to gain any comprehensive idea of the flora of the island as a whole, the total number of genera and species, habitats and ranges of the latter, and other data of interest. Doctor Koorders has undertaken to compile a complete list of Javan flowering plants, but his work is immensely more valuable than a mere enumeration of genera and species, on account of the included keys, references, and other data. With his extensive knowledge of the subject, based on long residence in Java, very comprehensive botanical exploration, and critical study of all available material, Doctor Koorders has succeeded in completing an exceedingly valuable and apparently eminently usable work. He has included analytical keys to the families, genera, and species, the key to families alone occupying 48 pages of text. This extensive treatment is largely due to the necessity of frequently including the same family under two or more heads on account of exceptional characters in various genera or species. An excellent glossary of technical terms is included.

The arrangement of families and genera is that of Engler and Prantl's "Natürlichen Pflanzenfamilien," and it is the first work of great importance on the Malayan flora that has been published after this system. As practically all recent works on the floras of tropical Asia and Malaya have followed the sequence of Bentham & Hooker's "Genera Plantarum," an alphabetical list of families has been given with their equivalents in the latter

system. In nomenclature the Vienna Code is followed rather closely, but, as to accepted specific names, not invariably. No attempt seems to have been made critically to study the various cases of synonymy, and few new combinations are made. A strict interpretation of the Vienna Code would necessitate the acceptance of different specific names in an appreciable percentage of cases. Very few new forms are described.

The work is unequal in its treatment of various groups. In some cases the species are simply enumerated under their proper genera in the form of analytical keys, while in others more critical enumerations are included, with literature references, synonyms, native names, and other data. Where recent monographs were available these have been followed closely as to the Javan forms. In most families, however, no recent monographs are available, and the data given under these of necessity have been compiled by the author. However, he has had the assistance of many eminent European specialists in working up the material in various families. Special attention is given to the mountain flora throughout the work.

The "Exkursionsflora von Java" should prove to be of the very greatest value to residents of Java who are at all interested in the rich vegetation of that island, but it has a much wider application. It will, in fact, prove to be of great assistance to students of the entire Malayan-Polynesian flora, in the vast area extending from the Malay Peninsula to Polynesia and including the Philippines. As to the Philippines practically every family found in the Archipelago should be determinable by the use of the analytical key given by Doctor Koorders, as well as approximately 90 per cent of the genera found in the Islands. As to species, with an endemic element in the Philippines averaging about 40 per cent, comparatively few of our forms can be determined to the species, by this work, excepting in the case of the low country flora. In the settled areas the great majority of the species are of very wide distribution, and of these at least 50 per cent should be determinable by the keys given by Doctor Koorders. Approximately the same figures will apply to the Malay Peninsula and to most of the islands in the Malay Archipelago.

Including introduced and cultivated forms, a total of about 4,930 species are considered, distributed into about 1,560 genera, in 194 families, which gives botanists additional definite data for comparisons of temperate and tropical floras of restricted areas. In this connection it is of interest to note that in the

entire Philippine Archipelago, a region much larger than the Island of Java, we now know approximately 5,500 species, in about 1,350 genera, representing 183 families.

The work is illustrated by a total of 19 plates, 139 text figures, most of the former and some of the latter original, and 4 charts. It must be considered to be one of the most important publications dealing with the Malayan flora that has been issued in recent years and the most important single publication dealing with the flora of the Netherlands East Indies that has appeared since the publication of Miquel's "Florae Indiae Batavae" over fifty years ago.

E. D. MERRILL.

Vol. VII, No. 4, including pages 209 to 258, was issued September 30, 1912.

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*(From the Botanical Section of the Biological Laboratory, Bureau of Science,
Manila, P. I.)*

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GRAMINEAE

ISACHNE R. Brown

ISACHNE CONFERTA sp. nov.

Planta parva, prostrata, ramosa, ramis floriferis erectis vel suberectis, 6 ad 8 cm longis; foliis numerosis, lanceolatis, acuminatis, circiter 2 cm longis, subtus leviter pilosis, supra scabridis; paniculis exsertis, angustis, 1 ad 2 cm longis, vix 5 mm latis, ramis paucis, erectis, 4-1-floris; spiculis confertis, circiter 1.8 mm longis, plus minusve purpureis; glumis sterilibus tenuiter 7- vel 9-nerviis, supra leviter hispida; glumis fertilibus ellipsoideis vel elliptico-oblongis, inferioribus glabris, 1.6 mm longis, superioribus $\frac{1}{3}$ brevioribus, apice minute ciliatis.

A small, slender, prostrate, branched plant, rooting at the nodes, the flowering branches erect or suberect, 6 to 8 cm long. Sheaths rather lax, longer than the internodes, glabrous; ligule a ring of short white hairs. Leaves lanceolate, about 2 cm long, 2.5 to 3 mm wide, narrowed to the acute base and the acuminate

¹ Associate Professor of Botany, University of the Philippines.

² *Philip. Journ. Sci.* 7 (1912) *Bot.* 259-357.

apex, the lower surface somewhat pilose with scattered white hairs, the hairs arising from minute papillae, the upper surface at first papillate and sparingly pilose, becoming scabrid. Panicles exserted above the upper leaves, the peduncles 1.5 cm long or less, narrow, 1 to 2 cm long, less than 5 mm wide, the branches appressed, the lower ones 6 mm long or less and usually 4-flowered, the upper ones shorter, the uppermost usually bearing solitary spikelets. Spikelets crowded, about 1.8 mm long, more or less tinged with purple. Empty glumes about 1.8 mm long, slenderly 7- or 9-nerved, slightly hispid externally in the upper part, obtuse. Flowering glumes two, the lower one elliptic-oblong, obtuse, quite glabrous, 1.6 mm long, the upper one ellipsoid, slightly ciliate near the apex, usually about one-third shorter than the lower one.

LUZON, Province of Laguna, Dahican River back of San Antonio, *Bur. Sci.* 14914 Ramos, June, 1912, on stones along the river.

A rather characteristic species, distinguishable by its very narrow, dense panicles. It is perhaps most closely allied to *Isachne pauciflora* Hack., but is distinguished by its narrow leaves and glabrous flowering glumes.

DIMERIA R. Brown

DIMERIA CILIATA sp. nov.

Caespitosa, erecta, vaginis foliisque pilis longis albis mollibus instructis; racemis digitatis vel subfasciculatis, 4 ad 6, tenuibus, usque ad 12 cm longis, rhachibus circiter 0.7 mm latis, triangularibus, glabris vel leviter pubescentibus; spiculis 4 mm longis, glumis I et II carinatis, carinis longe ciliato-pilosis.

A densely tufted, erect, perennial grass 50 to 80 cm high, the culms slender, the sheaths and leaves rather densely clothed with long, soft, white hairs, some longer (5 mm) and somewhat stiffer ones intermixed with the shorter and softer ones, the nodes bearded. Leaves linear-lanceolate, acuminate, base slightly or not narrowed, 8 to 15 cm long, 3 to 4 mm wide, softly ciliate-pilose on both surfaces; ligule about 1 mm long, truncate. Inflorescence long-exserted, of 4 to 6 digitate or fasciculately arranged racemes, the racemes slender, 7 to 12 cm long, at first pale, soon turning pale-brownish, the rachis 3-angled and somewhat flattened, about 0.7 mm wide, glabrous or slightly pubescent, the internodes 2 to 4 mm long. Spikelets 4 mm long; first glume somewhat boat-shaped, keeled, 4 mm long, acute or obtuse, prominently ciliate-pilose with long white hairs on the keel; second glume similar but lanceolate, and also prominently ciliate-pilose on the keel; third glume shorter, hyaline, the awn slender, about 10 mm long.

PALAWAN, Taytay, in open swampy places at sea level, Merrill 9320, May 28, 1913.

A species allied both to *Dimeria chloridiformis* K. Schum. & Lauterb., of the Marianne Islands, and to the Indian *Dimeria fuscescens* Trin., differing from the former in its smaller spikelets and narrower, not ciliate rachises, and from the latter in its prominently ciliate-pilose sheaths and leaves and its prominently ciliate-pilose keels of the empty glumes.

ISCHAEMUM Linnaeus

ISCHAEMUM GLAUDESCENS sp. nov. § *Euischaemum*.

Species *I. aristato* affinis, differt planta majoribus, 1 ad 3 m longis, plus minusve glaucescens, racemis usque ad 15 cm longis, spiculis majoribus, 8 mm longis, glumis I spiculae sessilis in $\frac{1}{2}$ inferiore prominente transverse rugosis, rugis 4 vel 5, elevatis.

A rather coarse, wiry, perennial grass reaching a height of from 1 to 1.5 m, the stems long-prostrate, scarcely or only slightly branched, reaching a total length of from 2 to 3 m, about 5 mm in diameter, hard, more or less glaucous under the sheaths. Leaves narrowly lanceolate to linear-lanceolate, glabrous, 15 to 20 cm long, about 1 cm wide, acuminate, base gradually narrowed, acute or obtuse, not at all cordate; sheaths about as long as the internodes, rather loose; ligule truncate, 2 to 3 mm long. Racemes two, closely appressed, 12 to 15 cm long, long-exserted, the joints of the rachis about 6 mm long, 3-angled, bearded on the outer angle. Sessile spikelets about 8 mm long, lanceolate; first glume coriaceous, 8 mm long, 2 mm wide, glabrous, somewhat glaucous, acuminate, margins incurved throughout, borders in upper part minutely scabrid, the dorsal part in the lower one-half with 4 or 5 prominent transverse ridges; second glume coriaceous, lanceolate, acuminate, keeled, 7 mm long; third glume hyaline, lanceolate, acuminate, 7 mm long; fourth glume similar to the third, a little shorter, cleft to the middle, bearing in the cleft a twisted, geniculate, 12 to 13 mm long awn. Anthers 3 mm long. Pedicellate spikelets dimidiate, their pedicels 2.5 mm long, stout, 3-angled, bearded on the outer angle, the first glume lanceolate, 8 mm long, 3 mm wide, acute or acuminate, coriaceous, one side rather broadly winged, the wing short ciliate-toothed; second glume somewhat lanceolate, 6 to 7 mm long, acuminate, the remaining ones somewhat shorter, hyaline.

PALAWAN, Lake Manguao, Merrill 9453, April 23, 1913, gregarious along the more or less swampy grassy borders of the lake in the openings of narrow valleys, with or without streams of water, areas submerged during periods of high water in the lake, altitude about 50 meters. The grass is abundant in suitable habitats, and is utilized by the crocodiles in build-

ing their nests. One nest examined by members of our party, containing numerous eggs, consisted of a large mound made entirely of sand and this grass very closely packed.

The species is manifestly allied to *Ischaemum aristatum* Linn., but differs in so many characters that it has been considered advisable to treat it as a distinct form.

ISCHAEMUM PUBESCENS sp. nov. § *Euischaemum*.

Species *I. aristato* affinis, differt foliis pilosis, spiculis paullo minoribus, glumis 1 spiculae sessilibus utrinque nodulis 2 obscuris praeditis, dorso parce piloso.

An erect perennial grass about 1 m high, the sheaths and leaves rather softly pilose with long white or pale hairs, the nodes rather densely ciliate-bearded, the internodes, under the sheaths, somewhat glaucous, about 3 mm in diameter. Leaves narrowly lanceolate, 10 to 18 cm long, 8 to 12 mm wide, acuminate, base of the upper ones truncate, of the lower ones narrowed, margins scabrid, both surfaces softly pilose with scattered, long hairs; sheaths rather lax, pilose; ligule brown, cleft, somewhat pubescent, 2 to 3 mm long. Racemes binate, closely appressed, 8 to 10 cm long, long-exserted, rather prominently white-ciliate, the joints 3-angled, bearded on all angles, 4 mm long. Sessile spikelets oblong, obtuse, about 5 mm long, 1.8 mm wide, the callus bearded; first glume coriaceous, obtuse, margins inflexed throughout, with two, broad, obscure undulations (scarcely nodules) near each side in the lower part, the back usually with very few, scattered, ciliate hairs; second glume lanceolate, acuminate, somewhat keeled, 5 mm long; third and fourth glumes hyaline, the fourth cleft to the middle, bearing in the cleft a geniculate, somewhat twisted, scabrid awn about 13 mm long. Pedicellate spikelets dimidiate, 5 to 6 mm long, the pedicels stout, 2 mm long, bearded; first glume widely winged on one side, springly ciliate-pilose on the back, smooth, the wing obscurely denticulate.

DUMARAN, *Bur. Sci. 21639 Escritor*, August, 1913.

Similar to *Ischaemum aristatum* Linn., and manifestly allied to that species. It is characterized, however, by its prominently pilose leaves and sheaths, its white-ciliate racemes, and the first glume of the sessile spikelets with very obscure marginal undulations which can scarcely be called nodules; the very short rachis-joints, and the bearded callus is also characteristic.

CYPERACEAE

ELEOCHARIS R. Br.

ELEOCHARIS ACICULARIS (L.) R. & S. Syst. 2 (1817) 154; Clarke in Hook. f. Fl. Brit. Ind. 6 (1893) 628, et in Journ. Linn. Soc. Bot. 36 (1903) 225.

LUZON, Benguet Subprovince, Baguio, Merrill 7665, May, 1909, on seepage slopes about rice paddies, altitude about 1,450 m.

Not previously reported from the Philippines, an additional distinct northern type in the flora of northern Luzon. Widely distributed in North America, throughout Europe and northern Asia, extending southward only in China.

FIMBRISTYLIS Vahl

FIMBRISTYLIS CAPITULIFERA sp. nov. § *Trichelostylis*.

Planta perennis glabra, subrigida, usque ad 40 cm alta; foliis numerosis, angustis, culmo brevioribus; spiculis omnibus sessilibus, capitato-congestis, capitulis umbellato-dispositis; glumis numerosis, 5-nerviis, oblongis, subobtusis, marginibus latis, scariosis; nucibus compressis vel plano-convexis, minutissime striatis, circiter 0.7 mm longis; stylo trifido.

A glabrous, somewhat rigid, apparently densely caespitose, glabrous, perennial plant 20 to 40 cm high. Leaves very numerous, sheathing the bases of the stems, subrigid, flat or nearly so, 1 to 2 mm wide, 8 to 18 cm long. Culms terete, striate, exserted, rather slender. Inflorescence umbellate, consisting of a central sessile head and from 3 to 6 peduncled ones, each head with from 10 to 20 sessile, densely disposed spikelets 3 to 6 mm in length. Glumes numerous, oblong, about 2 mm long, somewhat keeled, closely 5-nerved in the median portion, with broad, somewhat scarious and thin margins, apex somewhat obtuse, usually apiculate. Nut obovate, brown, about 0.7 mm long, somewhat compressed or plano-convex, not trigonous, minutely striate; style glabrous, slender, about 2 mm long, 3-fid.

BATANES ISLANDS, Batan, *Bur. Sci.* 3575 *Fénix*, *Bur. Sci.* 10203 *McGregor*, *Bur. Sci.* 3171, 3172, 3173 *Mearns*. BABUYANES ISLANDS, Babuyan Islands, *Bur. Sci.* 3926 *Fénix*. Camiguin Island, *Bur. Sci.* 4042 *Fénix* (type).

This species was previously recorded by me under the name of *Fimbristylis spathacea* Vahl, to which it does not seem to be closely allied. It is well characterized by its spikelets being all sessile and disposed in dense heads, the central head sessile, the others peduncled; the rays of the umbel vary from 1 to 4 cm in length. The species belongs in the section *Trichelostylis*, and is probably as closely allied to *Fimbristylis junciformis* Kunth as to any other species. It differs from Kunth's species in its much smaller umbels, the spikelets much more numerous in each head, none of them being solitary, and in the style being quite glabrous, not villous below the fork.

FIMBRISTYLIS PALUDOSA sp. nov. § *Trichelostylis*.

Densissime caespitosa, erecta, glabra, efoliosa, 60 ad 100 cm alta, culmis distincte 3- vel 4-angularibus; umbellis decompositis, 2 ad 4 cm longis; spiculis numerosis, ovoideis, 2.5 ad 3.5 mm longis, brunneis, glumis usque ad 10, ovatis, acutis vel obtusis,

obscure carinatis; nucibus obovoideis, triangularibus, laevibus vel obscurissime transverse lineatis; stylo 3-fido.

A densely caespitose, leafless, perennial plant 0.6 to 1 m high from stout rhizomes, the lower parts of the culms with 3 or 4 rather loose, imbricate sheaths, the lower ones ovate to oblong-ovate, 1 to 2 cm long, the upper one up to 10 cm long, the mouth oblique, with a broad, brown, membranaceous margin. Culms prominently 3- or 4-angled, rather stiff. Inflorescence terminal, 2 to 4 cm long, open, umbellately decompound, subtended by one or two, lanceolate, acuminate, leaf-like, 1 cm long bracts. Spikelets numerous, not fascicled, usually one sessile median one and two lateral pedicelled ones on each ultimate branchlet, 2.5 to 3.5 mm long, brown, ovoid, the pedicels scabrid; glumes 10 or fewer, brown, ovate, acute or obtuse, obscurely keeled. Stamens 3. Nut obovoid, 3-angled, white, 0.8 to 1 mm long, smooth or very obscurely transversely lineate; style-arms 3.

LUZON, Benguet Subprovince, Baguio, *Williams 1239* (type), May, 1904, *Elmer 6497*, June, 1904, *Phil. Pl. 551 Merrill*, June, 1911.

Apparently a very characteristic species allied to *Fimbristylis miliacea* Vahl, *F. quinquangularis* Kunth, etc., but differing in its leafless stems, large rhizomes, smooth or nearly smooth nuts, and other characters.

FIMBRISTYLIS PINETORUM sp. nov. § *Trichelostylis*.

Erecta, glabra, culmis e rhizomate crasso, solitariis, gracilibus, 20 ad 40 cm altis, basi foliosis; foliis paucis, subsetaceis, usque ad 13 cm longis; inflorescentiis simpliciter umbellatis; spiculis paucis, 3 ad 7, brunneis, oblongo-ovoideis, 6 ad 11 mm. longis; nucibus obovoideis, verruculosus, albidis, 1 ad 1.2 mm longis, obscure triangularibus; stylo trifido.

A solitary, erect, slender, perennial plant from stout, woody rhizomes, the rhizomes clothed with membranaceous, lanceolate, usually brownish scales or sheaths, usually about 1 cm long. Culms striate, 20 to 40 cm high, the base with several imbricate leafless sheaths, and at or near the base 2 to 4 leaf-bearing sheaths, the sheaths oblique, their margins membranaceous, the leaves linear or setaceous, involute when dry, 1 to 1.5 mm wide, 4 to 13 cm long. Inflorescence usually a simple umbel, rarely compound, 2 to 3 cm long, the subtending bract lanceolate, acuminate, usually less than 1 cm long. Spikelets oblong-ovoid, brown, many-flowered, 6 to 11 mm long, 3 to 7, one sessile, the others mostly slenderly pedicelled, the pedicels 1 to 2 cm long. Glumes ovate, concave, keeled, glabrous, acute to obtuse, often retuse, the margins thinner and paler. Stamens 3. Nut white, obovoid, 1 to 1.2 mm long, obscurely 3-angled, apex broadly

rounded or subtruncate, verruculose, not at all reticulate. Style-arms 3.

LUZON, Benguet Subprovince, Baguio, *Merrill 7664* (type), *Phil. Pl.*, 558 *Merrill*, June, 1911, scattered on slopes among various grasses in thin pine forests, altitude about 1,550 m.

A species apparently well characterized by its solitary, not at all caespitose stems, woody rhizomes, narrow leaves, usually simple inflorescence of few spikelets, and verrucose, not at all reticulate, white, obscurely triangular nuts. It is allied to *Fimbristylis monticola* Steud., and to *F. pierotii* Miq., of India, the latter extending to Japan.

MAPANIA Aublet

MAPANIA PALUSTRIS (Hassk.) F.-Vill. Novis. App. (1882) 309; C. B. Clarke in Hook. f. *Fl. Brit. Ind.* 6 (1894) 681.

Pandanophyllum palustre Hassk. in *Tijdschr. Nat. Vereen. Ned. Ind.* 10 (1843) 119; Boeck. in *Linnaea* 37: 138; Kurz in *Journ. As. Soc. Beng* 38:² 78.

Lepironia palustris Miq. *Ill. Fl. Archip. Ind.* (1871) 63, t. 25.

MINDANAO, Agusan Subprovince, Waloe, in muddy places along small streams in forests, *Merrill 7298*, October, 1910.

Except for F.-Villar's previously unverified record, not before reported from the Philippines; Malay Peninsula and Archipelago.

There is some doubt as to the proper specific name for this plant, for Clarke, *l. c.*, states that Hasskarl's description calls for a bifid style and 3 to 5 spikelets, which does not apply to *Mapania palustris*; however, these statements may have been based in part on erroneous observations. Miquel definitely states that the number of spikelets in a head is variable, and his drawing shows a 2-cleft style. It is not clear, that in case *Mapania palustris* is distinct from *Pandanophyllum palustre* Hassk., why the specific name is retained, for if not based on Hasskarl's description, then it was based on a later one under the same name by Boeckler or Kurz. It seems only reasonable to suppose that Boeckler and Miquel were familiar with type or typical material of Hasskarl's *Pandanophyllum palustre*, and under the circumstances it seems best to retain the specific name *palustris*, at least until opportunity is had to examine Hasskarl's type. Incidentally Clarke credits Bentham with authorship of the combination *Mapania palustris*; this is incorrect, for Bentham did not make the actual transfer, but only indicated *Pandanophyllum* to be a synonym of *Mapania*. F.-Villar appears to be the first to make the actual transfer of the species.

MAPANIA GRACILLIMA Kükenthal & Merrill sp. nov.

Rhizoma breve, lignosum, crassum. Culmi laterales scapiformes, 5-10 cm alti, gracillimi, obtusanguli, striati, asperi, basi vaginis nonnullis lanceolatis fuscis nervosis tecti et in medio vagina unica aequali obsiti. Folia culmos longe superantia, 4-5 mm lata, plane utrinque attenuata, marginibus aculeato-scabra, coriacea, glaucescentia. Spica parva, primo lineari-ellipsoidea demum ovata, densa, 5 mm longa, 4 mm lata, bractee squamiformes. Spiculae haud numerosae oblongae. Squamae late

ovatae, apice rotundatae, rufae. Squamellae 4 squama longiores, 2 exteriores navicularis in carina valde setulosae. Nux ellipsoideo-lageniformis, 2 mm longa, medio turgidula, straminea, laevis, sessilis, erostrata. Stylus brevissimus. Stigmata 3 vel 4.

MINDANAO, District of Zamboanga, Sax River Mountains back of San Ramon, *Merrill 8205*.

Omnium *Mapaniarum* gracillima, foliis pro ratione angustissimis spicaque minima ab omnibus affnibus bene distinguenda. Squamellas non nisi 4 observari, sed forsitan 6 adsunt, quarum duae jam elapsae.

SCHOENUS Linnaeus

SCHOENUS FALCATUS R. Br. Prodr. (1810) 232; Benth. Fl. Austral. 7 (1878) 372; Clarke ex Hemsl. in Journ. Linn. Soc. Bot. 36 (1903) 261.

LUZON, Province of Zambales, *Bur. Sci. 5036 Ramos*, December, 1907.

Not previously reported from the Philippines; tropical Australia and Queensland, Borneo, and Formosa.

The specimens differ from the species, as described by Bentham, in having somewhat smaller panicles, and in some of the flowering-glumes being distinctly retuse. A distinct Australian type, the fifth species of the genus to be found in the Philippines.

SCIRPIODENDRON Zippel

SCIRPIODENDRON GHAERI (Gaertn. f.) comb. nov.

Chionanthus ghaeri Gaertn. f. Fruct. 1 (1788) 190, t. 29, fig. a-e; Boerl. in Journ. Linn. Soc. Bot. 31 (1896) 246.

Scirpiodendron costatum Kurz in Journ. As. Soc. Beng. 38² (1869) 85; Clarke in Hook. f. Fl. Brit. Ind. 6 (1904) 684; Merr. in Philip. Journ. Sci. 2 (9107) Bot. 422.

Scirpiodendron sulcatum Miq. Ill. Fl. Archip. Ind. (1871) 65, pl. 28.

LUZON, Province of Cagayan, Abulug River, *For. Bur. 19612 Curran*, January, 1911. POLILLO, *Bur. Sci. 10249 McGregor*, October, 1909. PALAWAN, San Antonio Bay, *Merrill 5257*, October, 1906; Taytay, *Phil. Pl. 1295 Merrill*. MINDANAO, District of Zamboanga, Malasugat, *Merrill 8114*, December, 1911.

Chionanthus ghaeri Gaertn. f., which was described and figured from detached fruits alone, remained a doubtful species until the year 1896, when Boerlage was able to determine its identity from examination of the original material used by Gaertner in describing and figuring it. Gaertner's name is by far the earliest one for the species, and there is no reason why it should not be adopted.

MORACEAE

ARTOCARPUS Forster

ARTOCARPUS OVATIFOLIA sp. nov.

Arbor circiter 40 m alta, stipulis parce brevissime pubescentibus exceptis glabra; foliis coriaceis, ovatis, integris, usque ad 30 cm longis, acutis vel breviter acute acuminatis, basi acutis

vel subrotundatis, nervis prominentibus, utrinque circiter 8; stipulis membranaceis, caducis, lanceolatis, 10 cm longis; fructibus globosis vel subglobosis, circiter 6 cm diametro (immaturis), anthocarpiis numerosissimis, apicibus subovoideis, obtusis, vix 2 mm longis, dense ceraceo-furfuraceis.

A tree about 40 m high, glabrous or nearly so. Branches dark reddish-brown, smooth, the ultimate ones nearly 1 cm in diameter, marked with slender annular rings less than 1 cm apart. Leaves ovate, coriaceous, glabrous, 10 to 30 cm long, 7 to 20 cm wide, entire, the apex acute or very shortly and acutely acuminate, or apiculate-acuminate, base acute or somewhat rounded, both surfaces slightly shining, of about the same color and somewhat brownish when dry; lateral nerves about 8 on each side of the midrib, prominent, spreading, curved only near their tips, the ultimate reticulations slender, subparallel; petioles 3 to 5 cm long; stipules caducous, lanceolate, acuminate, membranaceous, 10 cm long, outside sparingly pubescent with very short, somewhat appressed hairs. Flowers unknown. Immature fruits globose or subglobose, about 6 cm in diameter (immature), composed of very numerous, slender anthocarps, the projecting tips of the anthocarps ovoid or subovoid, about 2 mm long, rounded or obtuse, about 2 mm in diameter, densely covered with waxy-furfuraceous scales.

LUZON, Province of Laguna, San Antonio, in forests, *Bur. Sci.* 15040 (type), 20530 Ramos, June, 1912, February, 1913, fruits yellow.

A very characteristic species, manifestly, however, in the same group as *Artocarpus communis* Forst. In texture and venation the leaves resemble those of Forster's species, but are always quite entire. In being almost glabrous the present species differs also from *Artocarpus communis* Forst. The waxy-furfuraceous tips of the anthocarps is characteristic.

FICUS Linnaeus

FICUS CAMARINENSIS sp. nov. § *Urostigma*.

Arbor alta, glabra, ramis ramulisque rugosis; foliis alternis, oblongo-ellipticis, subcoriaceis, nitidis, laevis, usque ad 23 cm longis, integris, apice abrupte tenuiter acute acuminatis, basi rotundatis, 3-plinerviis, nervis lateralibus utrinque 10 ad 12, subpatulis, prominentibus, anastomosantibus; petiolo 2.5 cm longo; receptaculis axillaribus, solitariis, sessilibus, ellipsoideis, in siccitate brunneis, 3 ad 3.5 cm longis, bracteis 3, reniformibus, 3 mm longis, 5 mm latis.

A tall tree, quite glabrous except the bud-scales which are appressed-hirsute. Branches and branchlets prominently rugose when dry, somewhat lenticellate, with distinct stipular scars, the latter 5 to 6 mm in diameter. Leaves alternate, subcoriaceous,

brown and shining when dry, smooth, oblong-elliptic, 14 to 23 cm long, 7 to 11 cm wide, entire, 3-plinerved, base rounded, apex abruptly and usually slenderly acutely acuminate, the acumen 1.5 to 2 cm long; primary lateral nerves prominent, spreading, straight, 10 to 12 on each side of the midrib, anastomosing near the margin, the reticulations rather lax, anastomosing between each two lateral nerves into less distinct secondary nervs; petioles 2.5 cm long; bud-scales lanceolate, acuminate, 1.5 cm long, appressed-hirsute. Receptacles axillary, solitary, sessile, ellipsoid, brown when dry, smooth or somewhat warted, 3 to 3.5 cm long, 2 to 2.5 cm in diameter, the apex rounded, the umbilicus distinct. Basal bracts 3, reniform, brown, coriaceous, 3 mm long, 5 mm wide. Gall flowers numerous, their perianth segments usually 3, about 2 mm long. Male flowers few and chiefly near the orifice, anthers 1 mm long.

LUZON, Province of Camarines, Niog, *Phil. Pl.* 1547 Ramos, December 17, 1913, locally known as *balete*.

A species well characterized by its large, ellipsoid, sessile, solitary, axillary receptacles. Its alliance is apparently with *Ficus forstenii* Miq. (*F. vidaliana* Warb.) from which it differs in its much larger receptacles and larger leaves.

FICUS PRODUCTA sp. nov. § *Sycidium*.

Frutex erectus, circiter 2 m altus, foliis utrinque ramulisque scaberulis; foliis alternis, subcoriaceis, usque ad 18 cm longis, oblongis ad oblongo-obovatis vel ovato-ellipticis, aequilateralibus, basi 3-nerviis, acutis vel obtusis, apice longe tenuiter caudato-acuminatis, margine irregulariter grosse dentatis vel dentato-serratis, haud lobatis, in siccitate subviridis, nervis utrinque circiter 8, subtus cum reticulis valde prominentibus; receptaculis axillaribus, solitariis vel in paribus dispositis, subglobosis vel leviter obovoideis, scabridis, pedunculatis, 8 ad 10 mm diametro.

An erect shrub about 2 m high, scabrid. Branches terete, slender, pale-brownish when dry, glabrous, the branchlets scabrid. Leaves alternate, rather prominently scabrid in both surfaces, otherwise glabrous, oblong to oblong-obovate or even ovate-elliptic, 12 to 18 cm long, 4 to 7 cm wide, equilateral, the base shortly 3-nerved, acute or obtuse, the apex rather abruptly long and slenderly caudate-acuminate, the acumen 2 to 3.5 cm long, narrow at the base, entire, acute or apiculate, the margins rather coarsely dentate or dentate-serrate, not lobed, the teeth irregular, mostly 5 mm apart or more, both surfaces when dry somewhat greenish, shining, scabrid, the lower very slightly paler than the upper; lateral nerves about 8 on each side of the midrib, very prominent on the lower surface, anastomosing, the reticula-

tions very prominent, the lower surface more or less punctulate; petioles about 1 cm long, scabrid. Receptacles orange-red, scabrid, solitary or in pairs, axillary, subglobose to somewhat obovoid, 8 to 10 mm in diameter, their peduncles 5 to 7 mm long, scabrid, the apical bracts small, ovate, about 1 mm long, the wall of the receptacle ciliate-hispid inside. Perfect female flowers numerous, the perianth-segments narrowly lanceolate, obtuse or acute, membranaceous, about 2 mm long, prominently ciliate-hispid in the upper part, one about twice as broad as the other three and cleft to about the middle, the narrower three often somewhat spatulate. Ovary ovoid-ellipsoid, obtuse, subequilateral, about 1.2 mm long, the styles distinctly lateral, 1.2 to 1.8 mm long.

MINDANAO, Subprovince of Butuan, Veruela, *C. M. Weber 1132* (type), June 19, 1911, in thickets; Talacogon, *Bur. Sci. 1131 Weber*, July 20, 1911, among *abacá* plants.

A species in the *ulmifolia* group, but with equilateral leaves which are abruptly, long and slenderly caudate-acuminate, and with somewhat smaller receptacles than in *F. ulmifolia* Lam., under which name the specimens were distributed. Its closest ally is *Ficus euphlebica* Merr., which has less prominently acuminate, more distinctly and closely toothed leaves which are acute or merely obtuse at the base, not rounded; in the present species the interior of the receptacle and the perianth-segments are also prominently ciliate-hispid with stiff white hairs.

FICUS GRANDIDENS sp. nov. § *Covellia*.

Arbor circiter 6 m alta, ramulis adpresso-hirsutis exceptis glabra; foliis oblongis vel late oblongis, subcoriaceis vel chartaceis, usque ad 23 cm longis, glabris, laevis, nitidis, acuminatis, basi acutis, margine grosse irregulariter sinuato-lobato-dentatis, dentibus vel lobis 1 vel 2 utrinque; receptaculis obovoideis, pedunculatis, in fasciculis densis hemisphericis caulinis dispositis.

A tree 5 to 6 m high, quite glabrous except the appressed-hirsute younger branchlets. Branches terete, smooth, grayish-brown, the ultimate ones about 4 mm in diameter. Leaves oblong or broadly oblong, subcoriaceous or chartaceous, glabrous, smooth, 14 to 23 cm long, 5 to 11 cm wide, narrowed more or less at both ends, apex acuminate, base acute, the margins very coarsely sinuate-lobed or -toothed, the lobes or teeth 1 or 2 on each side, obtuse or acute, the upper surface shining, dark-colored when dry, the lower surface slightly shining, paler; nerves 5 or 6 on each side of the midrib, prominent, usually brownish when dry, anastomosing, the reticulations distinct, rather slender; petioles 1 to 2 cm long; stipules lanceolate, acuminate, 10 to 12 mm long, subpersistent. Fruits fascicled on stout protuberances on the

trunk, forming very dense, hemispheric masses 8 to 10 cm in diameter. Receptacles obovoid, often more or less compressed-angular by pressure of contiguous ones, 10 to 12 mm in diameter, green, glabrous or nearly so, the umbilicus about 3 mm in diameter; peduncles slender, 1.5 to 2 cm long, with three small bracteoles at the apex. Fertile female flowers numerous, their pedicels up to 1.5 mm in length; perianth short, sheathing the pedicel below, truncate, about 1 mm long. Ovary ovoid, 1.5 mm in diameter; style lateral.

MINDANAO, District of Zamboanga, Sax River Mountains back of San Ramon, *Merrill 8089*, November 28, 1911, in forests, altitude about 800 m.

A species manifestly closely allied to *Ficus rubrovenia* Merr., and very similar to that species, differing in its somewhat appressed-hirsute, not glabrous, branchlets, and its very coarsely lobed-toothed, not merely undulate leaves.

FICUS RIVULARIS sp. nov. § *Eusyce*.

Frutex circiter 4 m altus ramulis minute puberulis exceptis glaber; foliis alternis, lanceolatis vel anguste lanceolatis, leviter falcatis, usque ad 25 cm longis, utrinque angustatis, apice longe tenuiter caudato-acuminatis, basi acutis, integris, subcoriaceis, laevis, subtus albido-punctatis, nervis utrinque circiter 20; receptaculis axillaribus, solitariis, obovoideis, 1 ad 1.5 cm diametro, pedunculatis, bracteis circiter 2 mm longis.

An erect, nearly glabrous shrub about 4 m high. Branches terete, slender, reddish-brown, glabrous, the younger branchlets somewhat puberulent. Leaves alternate, subcoriaceous, lanceolate to narrowly lanceolate, 12 to 25 cm long, 1.5 to 3 cm wide, somewhat falcate, narrowed at both ends, the apex very slenderly caudate-acuminate, the acumen up to 4 cm in length, minutely apiculate, the base equilateral, usually acute, rarely slightly obtuse, minutely cucullate on the upper surface, the margins quite entire, somewhat revolute, the upper surface smooth, glabrous, shining, rather pale or somewhat olivaceous when dry, the lower surface somewhat paler, or brownish, distinctly white-punctulate under a lens; lateral nerves about 20 on each side of the midrib, rather distinct, anastomosing, the ultimate reticulations distinct, angular, about 1 mm in diameter; petioles 5 to 10 mm long; membranaceous, deciduous, linear-lanceolate or narrowly lanceolate, acuminate, 1.5 to 2 cm long. Receptacles axillary, solitary, obovoid, 1 to 1.5 cm in diameter, glabrous, somewhat narrowed at the base into a very short pseudo-stalk, their peduncles slender, 5 to 10 mm long, with three, ovate, obtuse, 2 mm long bracts at the summit. Gall flowers very numerous, in general obovoid, sessile or shortly pedicelled, about 2.5

mm long, the perianth brown, chartaceous or coriaceous, irregularly 3-lobed, the lobes short, the perianth itself glabrous, about 2 mm in diameter.

LUZON, Province of Cagayan, *For. Bur. 17806 Curran* (type), January, 1912, *Bur. Sci. 7399 Ramos*, March, 1909: Province of Tayabas, Piapi, *For. Bur. 10134 Curran*, March, 1908, all the specimens indicated as growing on the banks of rivers, and from their "stenophyllous" leaves, apparently in places subject to submergence in times of floods or high water.

The specimens have been previously referred to *Ficus linearifolia* Elmer, with which they have very little relationship, except some resemblance in leaf-form, and manifestly the present species belongs in an entirely different section from Elmer's species. The very narrow, entire, slenderly caudate-acuminate, somewhat falcate leaves which are white-punctulate beneath are characteristic.

FICUS LAGUNENSIS sp. nov. § *Eusyce*.

Frutex scandens, glaber, vel ramulis parcissime ciliato-hirsutus; foliis alternis, ovatis vel oblongo-ovatis, coriaceis, in siccitate plus minusve brunneis, usque ad 20 cm longis, acuminatis, basi late cordatis, integris; nervis utrinque circiter 7, subtus cum reticulisque valde prominentibus; receptaculis axillaribus, solitariis vel fasciculatis, obovoideis, glabris, pedunculatis, circiter 7 mm diametro.

A scandent shrub, the young branchlets sometimes emitting rootlets, glabrous or nearly so. Branches terete, brown, wrinkled when dry, glabrous or with few scattered long hairs. Leaves alternate, coriaceous, ovate to oblong-ovate, 10 to 20 cm long, 5 to 10 cm wide, entire, the apex acuminate, the base broadly rounded, cordate, the upper surface glabrous, shining, the nerves impressed, the lower surface very prominently reticulate, glabrous or with very scattered hairs along the midrib and primary nerves; lateral nerves 7 on each side of the midrib, very prominent, the anastomosing, primary reticulations subparallel; petioles 1.5 to 3 cm long, somewhat ciliate-pubescent or glabrous; stipules lanceolate, acuminate, deciduous, about 1.5 cm long. Receptacles axillary, solitary or fascicled, obovoid, glabrous, smooth, about 7 mm in diameter, their peduncles 5 to 8 mm in length.

LUZON, Province of Laguna, Dahican River, back of San Antonio, *Phil. Pl. 1123 Ramos*, September 17, 1912, in forests.

A species very similar to and manifestly closely allied to *Ficus propinqua* Merr., and to *Ficus villosa* Bl., perhaps even too closely allied to the former to be distinguished as a true species. Its glabrous receptacles and leaves distinguish it from Blume's species, while from the Philippine *F. propinqua* it is distinguishable by its longer peduncled, obovoid, not globose receptacles, its glabrous or nearly glabrous leaves, and its only slightly hirsute branchlets.

FICUS WEBERI sp. nov. § *Sycidium*.

Frutex circiter 4 m altus, ramulis stipulis et subtus foliis ad nervos plus minusve brunneo-hirsutis; foliis alternis oppositisque, oblongo-ovatis ad obovato-oblongis, chartaceis, 10 ad 20 cm longis, acuminatis, basi acutis, truncatis, vel leviter cordatis, subaequalateralibus vel leviter inaequalateralibus, nervis utrinque circiter 10; stipulis anguste lanceolatis, acuminatis, usque ad 3 cm longis; receptaculis axillaribus, sessilibus, ovoideis, subglabris, circiter 1.5 cm longis, basi 3-bracteatis.

An erect shrub about 4 m high. Branches terete, brown, hirsute with spreading brownish hairs. Leaves alternate, a few also opposite, chartaceous, brown and slightly shining when dry, paler beneath, oblong-ovate to obovate-oblong, 10 to 20 cm long, 6 to 10 cm wide, the upper surface smooth and glabrous, the lower hirsute with spreading, scattered, brown or pale hairs along the midrib and lateral nerves, apex rather slenderly and abruptly acuminate, base acute but more often truncate or slightly cordate, usually somewhat inequilateral, one side sometimes acute and the other rounded, margins slightly crenulate; nerves about 10 on each side of the midrib, prominent, the reticulations rather lax; petioles hirsute, 1 to 3 cm long; stipules narrowly lanceolate, long-acuminate, 2 to 3 cm long, hirsute on the back, subpersistent. Receptacles green, axillary, sessile, ovoid, about 1.5 cm long, glabrous or nearly so, the base with three, triangular-ovate to ovate-lanceolate, acuminate, 3 to 5 mm long bracts. Male flowers not seen.

MINDANAO, Butuan Subprovince, Veruela, *Weber 1002*, in second growth forests, June 19, 1911.

A species probably most closely allied to *Ficus carpenteriana* Elm., but differing from that species in its much broader leaves, nearly glabrous receptacles, and other characters.

FICUS WORCESTERI sp. nov. § *Sycidium*.

Arbor parva, erecta, glabra, circiter 4 m alta, ramulis teretibus; foliis alternis, circiter 20 cm longis, chartaceis, in siccitate pallidis, utrinque leviter scabridis vel laevis, concoloribus, equilateralibus, apice abrupte subcaudato-acuminatis, basi acutis vel obtusis, 3-nerviis, margine integris vel leviter obscure undulatis, nervis utrinque circiter 10, distinctis; petiolo 1.5 ad 4 cm longo; receptaculis axillaribus, solitariis vel fasciculatis, pedunculatis, subglobosis, aurantiacis, 1 cm diametro.

A small, erect, glabrous tree about 4 m high, the branches terete, smooth, somewhat straw-colored. Leaves alternate, chartaceous, very slightly scabrid on both surfaces or smooth, slightly

shining, of the same color on both surfaces when dry, and rather pale-yellowish-green, about 20 cm long, 8 to 10 cm wide, oblong, the apex rather abruptly subcaudate-acuminate, the acumen 1 cm long, the base equilateral, acute or obtuse, shortly 3-nerved, the margins entire or slightly and obscurely undulate; lateral nerves about 10 on each side of the midrib, prominent, straight, somewhat anastomosing, the reticulations subparallel, distinct, rather lax; petioles 1.5 to 4 cm long. Receptacles axillary, solitary or somewhat fascicled, orange-red when mature, globose, about 1 cm in diameter, their peduncles 8 to 10 mm long, ebracteolate or with small bracteoles near the base.

CAVILLI ISLAND, Sulu Sea, Merrill 7178, September 24, 1911.

Common in thickets near the sea on both Cavilli Island, and the neighboring smaller islet known as Arena Island. Apparently allied to *Ficus ulmifolia* Lam., *F. blepharostoma* Warb., and similar forms, distinguishable at once by its smooth or nearly smooth leaves. Dedicated to the Honorable Dean C. Worcester, formerly Secretary of the Interior of the Philippine Government, to whom I am indebted for opportunity botanically to explore Cavilli Island.

FICUS HEMICARDIA sp. nov. § *Sycidium*.

Arbor parva, erecta; foliis oblongis, brevissime petiolatis, scabris, inaequilateralibus, 10 ad 30 cm longis, valde oblique cordatis, uno latere angustatis altero latissime rotundatis; receptaculis ovoideis vel subglobosis, circiter 11 mm diametro, hispidis, pedunculatis, solitariis vel binis in axillis foliorum vel in ramis vel caulis fasciculatis.

An erect tree, apparently of small size. Branches terete, light-gray, glabrous. Leaves varying greatly in size, 10 to 30 cm long, 3 to 11 cm wide, oblong, very harsh and scabrous on both surfaces, not pubescent, somewhat shining when dry, oblong, strongly inequilateral, margins coarsely dentate, apex rather prominently acuminate, base very strongly obliquely cordate, one side very much narrower than the other, narrowly rounded, the other broadly rounded, the sinus narrow; petioles stout, 5 mm long or less; lateral nerves very prominent as are the coarse reticulations, 6 or 7 on each side of the midrib above the base, the basal nerves radiating, the narrow side of the leaf usually with one, the broad side with four. Receptacles ovoid or subglobose, about 11 mm in diameter, hispid with scattered, spreading, white, bristle-like hairs, solitary or in pairs in the axils of the leaves, or solitary or fascicled on the larger branches and on the trunk near its base, the peduncles hispid, about 4 mm long, with 2 or 3, ovate, acute, 1.5 mm long bracts near the apex. Male flowers not seen. Fertile female flowers pedicelled, the

perianth lobes hyaline, equaling or a little longer than the ovary which is about 1.1 mm in length; style sublateral, 1.5 mm long.

MINDANAO, Butuan Subprovince, Mount Hilong-Hilong, *Weber 1001*, March 11, 1911, altitude about 130 m, on rocky slopes near streams.

The species is allied to *Ficus fiskei* Elm., differing in its short-petioled, differently shaped leaves and hispid fruits, and also to *F. odorata* Merr., differing from that species especially in its smaller fruits that are not densely hirsute. It is one of the most strongly marked species of the genus known from the Philippines, well characterized by its harsh, inequilateral, prominently and obliquely cordate, subsessile leaves. The receptacles are borne in the axils of the leaves on the ultimate branches, on the large branches below the leaves, and on the trunk of the tree near its base, a varied distribution that is quite unusual in the genus, although occasionally one finds the allied *Ficus odorata* Merr. with most of its receptacles in the leaf-axils, and a few supplementary ones near the base of the trunk.

FICUS CAMIGUINENSIS sp. nov.

Species *F. paucinerviae* Merr. similis et ut videtur affinis, differt foliis majoribus, receptaculis minoribus glabris.

A small tree about 6 m high. Branches terete, wrinkled and brownish when dry, the ultimate ones about 5 mm thick. Leaves alternate, somewhat crowded at the ends of the branchlets, chartaceous or thinly coriaceous, subelliptic or elliptic-ovate, greenish and shining when dry, narrowed to the acute or obtuse base, the apex shortly and slenderly caudate-acuminate, the acumen 1 cm long or less, 14 to 22 cm long, 8 to 13 cm wide, entire, the upper surface glabrous, the lower one more or less white-ciliate on the nerves and reticulations; basal nerves a single pair, extending to about the middle of the leaf, straight, prominent; lateral nerves above the basal pair 4 or 5 on each side of the midrib, ascending, straight, prominent, the reticulations distinct, subparallel; petioles ciliate-pubescent, 3 to 4.5 cm long; stipules caducous, ovate or ovate-lanceolate, 5 to 8 mm long, densely appressed-pubescent, the stipular scars prominent. Receptacles mostly in pairs in the axils of fallen leaves, sometimes solitary, sometimes somewhat fasciculate, numerous, their peduncles 4 to 8 mm long, with three prominent bracts at the apex or somewhat below the apex, glabrous, yellow, globose, about 8 mm in diameter.

CAMIGUIN DE MINDANAO, in mossy forests probably above an altitude of 1,200 m, *Phil. Pl. 1197 Ramos*, March 24, 1912.

Apparently a distinct species, at least not matched in our extensive collections. I have also been unable to refer it to any of the numerous Malayan species of which the descriptions are available here. It is similar to *Ficus paucinervia* Merr. (*F. integrifolia* Elm.), apparently closely allied to it, and certainly belongs to the same section of the genus.

LORANTHACEAE

LORANTHIS Linnaeus

LORANTHUS LUCIDUS sp. nov. § *Dendrophthoe*.

Frutex parasiticus, subscandens, glaber, ramis ramulisque teretibus; foliis oppositis vel suboppositis, usque ad 12 cm longis, breviter petiolatis, oblongo-ovatis ad lanceolatis, utrinque valde nitidis, longe acute acuminatis, basi late rotundatis cordatisque rariter subobtusis; inflorescentiis terminalibus et in axillis superioribus, 5 ad 10 cm longis, floribus 6-meris, circiter 1.6 cm longis, in triadibus dispositis, lateralibus pedicellatis, intermedio sessile, triadibus racemose dispositis.

A parasitic shrub, apparently somewhat scandent along its host, glabrous, the branches stout, terete, gray, slightly lenticellate, the younger ones somewhat reddish-brown, smooth. Leaves opposite or subopposite, coriaceous, oblong-ovate to lanceolate, normally 8 to 12 cm long, 3.5 to 5 cm wide, broadly rounded and prominently cordate at the base, exceptionally lanceolate, 1.5 to 3 cm wide, and subobtusate at the base, prominently shining on both surfaces, gradually narrowed upward to the long and sharply acuminate apex; lateral nerves 6 to 8 on each side of the midrib, slender, indistinct; petioles 3 to 7 mm long. Inflorescence terminal and in the uppermost axils, 5 to 10 cm long, the axis and lateral branches gray, obscurely furfuraceous, composed of racemosely disposed triads. Lateral branches of the panicles (peduncles of the triads), spreading, 1 cm long or less, each bearing a central sessile fertile flower, and two lateral flowers, each flower subtended by a broadly ovate, acute or acuminate bracteole as long as the calyx, the pedicels of the lateral flowers 4 to 5 mm long. Flowers 6-merous. Calyx subcylindric, 3 mm long, truncate, the rim not produced, very minutely and obscurely 6-denticulate. Corolla about 1.3 cm long, the basal part somewhat inflated, about 3 mm in diameter, the lobes united for the lower 2 mm, narrow, very slender upward, the reflexed part above the insertion of the stamen spatulate, 5 mm long. Filament very slender, 3 mm long; anther narrowly oblong, continuous, 2 mm long. Fruit very soft and fleshy, ovoid, about 8 mm long.

LUZON, Province of Laguna, San Antonio (Dahican River), *Bur. Sci.* 16647 Ramos, September 16, 1912, parasitic on *Worcesteranthus*, in forests.

A species in the same group with *Loranthus ahernianus*, *L. acuminatissimus*, *L. saccatus*, and *L. ovatifolius*, differing from the first three in its very much smaller flowers, and other characters, and from the latter in its very different vegetative and floral characters.

LORANTHUS FRAGILIS sp. nov. § *Dendrophthoë*.

Frutex parasiticus, glaber, ramis ramulisque crassis, teretibus, fragilis; foliis late ovatis, crasse coriaceis, nitidis, usque ad 15 cm longis, ovatis, sessilibus vel subsessilibus, obtusis, basi late rotundatis vel leviter cordatis; inflorescentiis in axillis superioribus, floribus omnibus sessilibus, 6-meris, pallide flavidis, circiter 2.4 cm longis, in triadibus brevissime pedunculatis racemose dispositis.

A species in the alliance with *Loranthus secundiflorus* Merr., and *L. mindanaensis* Merr., distinguished at once by its sessile or subsessile, broadly rounded or subcordate leaves. Branches up to 1 m in length, stout, terete, smooth and shining when dry, grayish-brown, very brittle when fresh, branches 1 cm in diameter breaking very readily. Leaves ovate, subopposite, thickly coriaceous, pale greenish-olivaceous when dry, shining, 9 to 15 cm long, 5.5 to 9 cm wide, apex rounded or obtuse, base broadly rounded or somewhat cordate, sessile or subsessile, the lateral nerves not prominent, 6 or 7 on each side of the midrib. Inflorescence in the upper axils, usually fascicled, about 4 cm long, the flowers 6-merous, all sessile in triads on very short peduncles which are racemously disposed. Flowers pale-yellow, their subtending bracts broadly ovate, obtuse, 1 mm long, the peduncles bearing the triads of flowers very stout, about 2 mm long. Calyx oblong-ovoid, truncate, 3.5 to 4 mm long. Corolla about 2 cm long, the petals 6, united for the lower 2 to 3 mm, the reflexed parts of the petals above the insertion of the anthers 5 mm long. Filaments 1.5 long; anthers continuous, linear, 2.5 mm long.

PALAWAN, Taytay, on *Vernonia* in forests at sea level, May 31, 1913, Merrill 9248.

A species well characterized by its brittle stems, its thickly coriaceous leaves, which are almost fleshy and very brittle when fresh, and which are sessile or subsessile, broadly rounded or somewhat cordate at the base. Its inflorescence is of the type found in *Loranthus secundiflorus* Merr., and *L. mindanaensis* Merr., that is, the flowers sessile in triads, the triads shortly peduncled and racemously disposed.

LORANTHUS LEYTENSIS sp. nov. § *Dendrophthoë*.

Frutex parasiticus, inflorescentiis puberulis exceptis glaber; foliis oppositis, alternis, vel subverticillatis, petiolatis, crassissime coriaceis, oblongis, usque ad 6 cm longis, acutis, nervis lateralibus obsolete. Inflorescentiis axillaribus, pedunculatis, floribus 5-meris, circiter 3.3 cm longis, in triadibus umbellatim dispositis.

A stiff, parasitic shrub, glabrous except the inflorescence, the branches stout, reddish-brown or grayish, terete, the ultimate branchlets about 3 mm in diameter, the nodes often thickened,

the internodes not elongated. Leaves opposite, alternate, or somewhat whorled at the lower nodes, thickly coriaceous, opaque, oblong, 4 to 6 cm long, 1.5 to 3 cm wide, acute, the base rounded, obtuse, or acute, usually brownish when dry, slightly or not at all shining, the lateral nerves obsolete; petioles about 1 cm long. Inflorescence axillary, solitary, umbellate, the peduncles about 2 cm long, all parts more or less gray-puberulent, each peduncle bearing about 8, umbellately arranged, 5 mm long, primary branches, each branch bearing at its apex a triad of one middle sessile flower and two lateral, very shortly pedicelled flowers, each flower subtended by a broadly ovate, concave, obtuse, 1 to 1.5 mm long bracteole, the pedicels of the lateral flowers 2 mm long or less. Flowers 5-merous, reddish or yellowish, about 3.3 cm long. Calyx 3 mm long, puberulent, truncate, the limb scarcely produced. Corolla cylindric in bud, the lobes quite united below, forming a 4 mm long tube, the reflexed parts of the lobes above the insertion of the stamens narrowly oblong, obtuse, 5 to 6 mm long, 1 mm wide. Filaments 4 mm long; anthers continuous, oblong, 1.5 mm long.

LEYTE, Mount Ibuni back of Dagami, *Bur. Sci. 15243 Ramos*, August 22, 1912, growing in the tops of trees.

A species in the same group with *Loranthus haenkeanus* Presl, and manifestly closely allied to that species. It is distinguishable by its very much smaller, differently shaped leaves.

LORANTHUS HOPEAE sp. nov. § *Dendrophthoë*.

Frutex inflorescentiis minute puberulis exceptis glaber; ramis ramulisque teretibus, bi- vel trichotomis, rigidis; foliis oppositis, crasse coriaceis, sessilibus, ovatis, in siccitate pallidis, nitidis, usque ad 9 cm longis, apice rotundatis, basi late cordatis; inflorescentiis axillaribus, solitariis, brevibus, paucifloris; floribus extus puberulis, 5-meris, circiter 17 mm longis.

A parasitic shrub usually less than 50 cm in length, glabrous except the minutely grayish-puberulent inflorescence. Branches and branchlets terete, stiff, brownish or grayish, smooth, di- or trichotomously branched, more or less divaricate, the ultimate branchlets about 2 mm in diameter. Leaves opposite, sessile, ovate, thickly coriaceous, pale and equally shining on both surfaces when dry, smooth, 5 to 9 cm long, 4 to 6 cm wide, apex broadly rounded, base broadly cordate, often prominently so; lateral nerves 5 or 6 on each side of the midrib, very obscure or nearly obsolete. Inflorescence solitary, axillary and at the nodes, minutely puberulent, 2.5 cm long or less, with few, usually 4, lateral branches which are less than 1 cm in length, each bearing at its apex 2 or 3 sessile flowers, the bracteoles puber-

ulent, reniform, about 2.5 mm wide, 1.5 mm long, rounded. Flowers 5-merous, orange, the tips of the petals glaucous. Calyx cylindric, 5 mm long, puberulent, the limb slightly produced, very obscurely crenulate or entire. Corolla 12 mm long, puberulent externally, slightly inflated, cylindric, the lobes united for the basal 3 to 4 mm, forming a tube, the reflexed part above the insertion of the anthers oblong, obtuse, 2.5 mm long. Anther lanceolate, sessile, 2 mm long.

MINDANAO, District of Zamboanga, coast opposite Olutanga Island, *For. Bur. 13297 Foxworthy, De Mesa, & Villamil*, May 18, 1912, on *Hopea* sp., altitude about 20 meters.

A very characteristic species, recognizable by its opposite, sessile, coriaceous leaves which are rounded at the apex and cordate at the base, its few-flowered, axillary, puberulent inflorescences, and puberulent flowers. In leaf-form it is quite similar to *Loranthus merrillii* Elm., but is entirely different in its inflorescence.

LORANTHUS DEMESAE sp. nov. § *Dendrophthoë*.

Frutex glaber, ramis ramulisque teretibus; foliis oppositis, sessilibus, coriaceis, nitidis, usque ad 10 cm longis, ovatis vel late elliptico-ovatis, apice acutis vel leviter acuminatis, basi rotundatis, reticulatis; nervis utrinque circiter 10, tenuibus; inflorescentiis axillaribus, solitariis, brevibus, paucifloris; floribus circiter 2 cm longis 6-meris; corolla inflata, infra cylindrica, supra acute 6-angulata.

A glabrous parasitic shrub the branches and branchlets terete, brownish or somewhat grayish, smooth. Leaves opposite, sessile, coriaceous, shining when dry, brownish-olivaceous, of about the same color on both surfaces, 6 to 10 cm long, 4 to 6 cm wide, the apex acute or somewhat acuminate, the base rounded; lateral nerves about 10 on each side of the midrib, slender, not prominent, the reticulations rather fine, the lateral nerves anastomosing near the margin. Inflorescence axillary, solitary, few-flowered, the rachis 5 mm long or less, the flowers 2 or 3 (rarely more?). Calyx oblong-cylindric, truncate, 3 mm long, 1.8 mm in diameter. Corolla red, about 18 mm long, much inflated, 6 mm in diameter, the lower one-half cylindric, the upper part sharply and prominently 6-angled, the tube two-thirds to three-fourths as long as the corolla, the lobes about 4 mm wide at the base, narrowed to the insertion of the anthers and there 2 mm wide, thence gradually narrowed to the acute or obtuse apex, the reflexed portion above the insertion of the anthers 5 to 6 mm long, lanceolate. Anthers oblong, 2 mm long, much more slender than are the thick, cylindric, 2.5 mm long filaments.

MINDANAO, District of Zamboanga, Talisay, on tall trees, altitude 40 to 50 meters, *For. Bur. 13788 Foxworthy, DeMesa, & Villamil*, June 19, 1912.

A species well characterized by its ovate, sessile leaves which are acute or acuminate at the apex and rounded at the base, by its axillary, very short, few-flowered inflorescences, and its much inflated corollas which are cylindrical below and sharply and prominently 6-angled above.

LORANTHUS LAGUNENSIS sp. nov. § *Dendrophthoë*.

Frutex glaber; foliis coriaceis, ovatis vel oblongo-ovatis, brunneis, oppositis, breviter petiolatis, usque ad 11 cm longis; floribus 6-meris, sessilibus, circiter 1.7 cm longis, in fasciculis axillaribus vel lateralibus dense confertis, fasciculis vix involu-
cratis, circiter 8-floris.

A glabrous shrub, the branches very stout, rough, brownish or grayish, the ultimate ones about 5 mm in diameter, lenticellate. Leaves opposite, thickly coriaceous, ovate to oblong-ovate, 6 to 11 cm long, 3.5 to 6.5 cm wide, brown when dry and somewhat shining on both surfaces, the lower a little paler than the upper, the apex obtuse, the base usually acute; lateral nerves about 7, very obscure or subobsolete, the reticulations entirely obsolete; petioles stout, about 5 mm long. Inflorescence of solitary, sessile, axillary or at the nodes, very dense, non-involucrate fascicles, about 8 flowers in each fascicle. Flowers sessile, subtended by a solitary bracteole which is reniform, rounded, about 2 mm wide and 1.5 to 2 mm long. Calyx globose or ovoid, 2 mm long, truncate. Corolla about 1.5 cm long, the tube 1.5 mm long, the lobes 6, linear, narrow, the reflexed part above the insertion of the stamens thick, obtuse, 4 mm long. Anthers linear-lanceolate, acuminate, sessile, 3.5 mm long.

LUZON, Province of Laguna, Dahican River back of San Antonio, *Bur. Sci. 15064 Ramos*, June, 1912, host not indicated.

A species apparently in the group with *Loranthus haenkeanus* Presl, in spite of the differences in the characters of the inflorescence in the species. If the fascicles were involu-
crate the species might well be placed in the section *Lepiostegeres*, but there is quite no indication of an involu-
crate in the material examined.

LORANTHUS FENICIS sp. nov. § *Dendrophthoë*.

Frutex parasiticus, inflorescentiis exceptis glaber, ramis ramulisque teretibus; foliis alternis, ovatis, opacis, crasse coriaceis, usque ad 10 cm longis, acutis vel acuminatis, basi late rotundatis, nervis utrinque circiter 5, obscuris vel obsolete; pedunculis solitariis, axillaribus, floribus umbellatim dispositis; floribus 5-meris, circiter 3.3 cm longis, extus puberulis, in triadibus dispositis, omnibus sessilibus.

A species manifestly allied to *Loranthus haenkeanus*, differing

in its few-flowered umbels and in its flowers all being sessile, the lateral ones of each triad not pedicelled. Branches stout, terete, grayish or reddish-brown, the branchlets grayish-brown, terete, rather slender, the internodes 1 to 3 cm long. Leaves alternate, thickly coriaceous, opaque and rather pale or brownish when dry, ovate, 5 to 10 cm long, 3.5 to 6 cm wide, the apex acute or acuminate, the base broadly rounded; lateral nerves usually about 5 on each side of the midrib, obscure, sometimes obsolete; petioles about 8 mm long. Umbels solitary, in the axils of leaves on the larger branches, gray-puberulent, the peduncles about 1.5 cm long, the primary umbellately arranged branches few, about 6 mm long, each bearing at its apex a triad of three sessile flowers, the subtending bracteoles triangular-ovate, acute, 2.5 mm long, puberulent. Calyx pubescent, narrowly obovoid, 4 mm long, the limb slightly produced, obscurely and broadly 5-toothed. Corolla puberulent, in bud cylindric, the tube about 6 mm long, the lobes 5, about 1.5 mm wide, the part above the insertion of the stamens narrowly oblong, 6 to 7 mm long, 1.5 mm wide, acute. Filaments 4 to 5 mm long; anthers continuous, oblong, obtuse, 2 to 2.5 mm in length.

MINDANAO, District of Davao, Baganga, *Bur. Sci.* 15852 *Fénix*, August 20, 1912, the flowers green and purplish.

LORANTHUS MARITIMUS sp. nov. § *Dendrophthoë*.

Frutex epiphyticus inflorescentiis exceptis glaber; ramis ramulisque teretibus; foliis alternis oppositisque, oblongis, in siccitate pallidis, utrinque concoloribus, opacis, usque ad 8 cm longis, petiolatis, nervis obsoletis vel subobsoletis; inflorescentiis e ramis vetustioribus, pedunculatis, umbellato-subcapitatis, pedunculatis; floribus circiter 3.3 cm longis, 5-meris.

A parasitic shrub glabrous except the inflorescence. Branches stout, terete, reddish-brown, the branchlets terete, slender, grayish, the ultimate internodes 2 mm in diameter or less, up to 3 cm in length, frequently much shorter. Leaves oblong, alternate, opposite or subopposite, coriaceous, uniformly pale when dry, opaque, 5 to 8 cm long, 1.5 to 3 cm wide, the apex rounded or obtuse, the base acute; midrib prominent below, frequently evanescent below the apex, the lateral nerves entirely obsolete or very faint and about 3 on each side of the midrib, ascending; petioles about 5 mm long. Inflorescence from the larger branches, lateral, not axillary, scattered along the internodes, the peduncles 1.5 to 2 cm long, all parts gray-puberulent. Primary branches umbellately arranged at the apex of the pedun-

cle, 3 mm long or less, stout, rather numerous, each bearing a terminal triad of 3 sessile flowers, the three bracteoles broadly ovate, obtuse, 1.5 mm long, connate below, the persistent calyces after the fall of the corollas appearing like a rather lax globose head. Calyx puberulent, narrowly obovoid, truncate, 3.5 mm long, the limb very slightly produced. Corolla cylindric in bud, 3 cm long, purplish and green, puberulent externally, the lobes 5, united below and forming a cylindric tube about 6 mm long, the lobes about 1 mm wide below, the reflexed part above the insertion of the stamens linear-oblong, obtuse, 7 mm long, 1 mm wide. Filaments 6 mm long; anthers continuous, oblong, obtuse, 2.4 mm long.

MINDANAO, Province of Surigao, Tamano, *Bur. Sci.* 15824 *Fénix*, August 16, 1912, on trees along the seashore.

A species manifestly in the same group with *Loranthus haenkeanus* Presl, but only distantly allied to that species. It is characterized by its inflorescences being scattered along the older branches, not axillary, rather dense, and its flowers all sessile, the two lateral ones not at all pedicelled as in most of the forms in this group.

LORANTHUS ALTERNIFOLIUS sp. nov. § *Lepiostegeres*?

Frutex glaber, ramis ramulisque teretibus, tenuibus, brunneis, internodiis elongatis; foliis alternis, usque ad 11 cm longis, anguste oblongis ad oblongo-lanceolatis, subcoriaceis, nitidis, petiolatis, apice obtusis, basi acutis; floribus 6-meris, axillaribus, fasciculatis, sessilibus, 2 cm longis, fasciculis in alabastro in bractea solitaria inclusis.

A glabrous shrub, the branches elongated, slender, terete, smooth or somewhat striate, dark-brown when dry, the internodes 3 to 9 cm long, the ultimate branchlets 1.5 mm in diameter. Leaves subcoriaceous, brittle when dry, olivaceous, of about the same color and shining on both surfaces, 7 to 11 cm long, 2 to 3 cm wide, narrowly oblong to oblong-lanceolate, the apex rounded, the base gradually narrowed, acute; lateral nerves very slender, obscure or subobsolete, 6 or 7 on each side of the midrib; petioles 1 to 1.5 cm long. Flowers in sessile, axillary, solitary fascicles at the nodes, 9 sessile flowers in each fascicle, in bud entirely enveloped by a single, brown, coriaceous or subcoriaceous bract, which bursts irregularly and falls at anthesis. Bracteoles subtending the flowers one to each calyx, orbicular or reniform, about 2 mm long. Calyx 2 mm long and about 2.5 mm in diameter, truncate. Corolla yellow, 6-merous, 18 mm long, cylindric, slightly gibbous, more or less inflated, the lobes united below forming a 5 mm long tube, the free portions 2 mm wide

below, gradually narrowed upwards to the acute apex, the parts above the insertion of the anthers lanceolate, 5 mm long. Anther sessile, linear-lanceolate, acuminate, 4 mm long.

MINDANAO, District of Zamboanga opposite the Island of Olutanga, in forests, altitude 30 meters, *For. Bur. 13295 Foxworthy, DeMesa, & Villamil*, May 17, 1912.

A characteristic species probably belonging in the section *Lepiostegeres*, although the involucre enclosing the buds is composed of a single bract. Its comparatively narrow leaves which are rounded or obtuse at the apex and acute at the base, as well as its 9-flowered, axillary, sessile fascicles are its distinguishing features.

LORANTHUS WORCESTERI sp. nov. § *Macrosolen*.

Glaber, ramis ramulisque teretibus, griseis; foliis oppositis, sessilibus, anguste oblongis ad late ovatis, nitidis, obtusis, basi obtusis, late rotundatis, vel distincte late cordatis, nervis utrinque 4 ad 8, laxis, irregularis, tenuibus; inflorescentiis axillaribus, pedunculis solitariis (vel fasciculatis), 3 ad 5 mm longis, 2-floris, floribus sessilibus, 6-meris, circiter 2 cm longis.

A glabrous, parasitic shrub, the branches and branchlets terete, glabrous, light-gray, the bark slightly wrinkled when dry. Leaves opposite, sessile, exceedingly variable in size, narrowly oblong to broadly ovate, 6 to 11 cm long, 2 to 7 cm wide, pale when dry, shining on both surfaces, the apex obtuse or rounded, the base obtuse, broadly rounded, or broadly and distinctly cordate; nerves 4 to 8 on each side of the midrib, slender, irregular, anastomosing, the reticulations lax. Peduncles axillary, solitary or few in each axil, 3 to 5 mm long, each bearing at its apex two sessile flowers, each flower subtended by an ovate, obtuse, 3 mm long bract and two similar but smaller, free, orbicular, 1.5 mm long bracteoles. Calyx cylindric, about 7 mm long, the limb produced about 1.5 mm, slightly spreading, thin, truncate. Corolla pink and yellow, the lobes 6, very slightly united below, the buds cylindric, in anthesis more or less swollen above the base, lobes 6, about 1.5 cm long, 2.5 mm wide above the base, then narrowed to 1.5 mm at the insertion of the anthers, the produced part above the anthers narrowly oblong, obtuse or acute, very thick, 6 to 7 mm long, about 1.8 mm wide and thick. Anthers sessile, linear, 5 mm long.

MINDANAO, Bukidnon Subprovince, near Sumilao, *Bur. Sci. 15673 Fénix*, August, 1912.

A species with much the floral and inflorescence characters of *Loranthus geminatus* Merr., but not closely allied to that species, being at once distinguishable by its very diversely shaped sessile leaves. Named in honor of the Honorable Dean C. Worcester, formerly Secretary of the Interior of the Phil-

ippine Government, through whose invitation I was able to send a collector with him on his southern trip of inspection in 1912.

LORANTHUS ELMERI sp. nov. § *Macrosolen*.

Frutex parasiticus, glaber, ramis ramulisque teretibus; foliis oblongo-ovatis, crassissime coriaceis, oppositis, breviter petiolatis, usque ad 14 cm longis, sursum angustatis, obtusis vel obscure acuminatis, basi acutis, nervis lateralibus obscuris, utrinque circiter 7; racemis brevissimis, paucifloris, axillaribus, solitariis vel fasciculatis, haud 1 cm longis; floribus 6-meris, circiter 1.8 cm longis, basi bracteis bracteolisque 2 ornatis, pedicellis circiter 1.5 mm longis.

A parasitic shrub, quite glabrous, the branches and branchlets gray or grayish-brown, stout, terete. Leaves opposite, very thickly coriaceous, oblong-ovate, 8 to 15 cm long, 3.5 to 5 cm wide, brownish-olivaceous when dry, the upper surface shining, narrowed upward to the acute or obscurely acuminate apex, the base acute; lateral nerves very faint, about 6 on each side of the midrib; petioles stout, 4 to 8 mm long. Inflorescence of axillary, solitary and fascicled, very short, few-flowered racemes, the racemes 1 cm long or less. Flowers 6-merous, their pedicels 1 to 1.5 mm long, each bearing at its apex one, broadly ovate, acute, 1.5 mm long bract and two smaller but similar bracteoles which are usually more or less connate. Calyx ovoid, about 3 mm long, truncate. Corolla 1.5 cm long, the tube about 6 mm long, 3.5 mm in diameter, somewhat inflated and obscurely angled, the lobes 6, rather abruptly narrowed, about 1 mm wide below the insertion of the stamen, the reflexed parts thickened upward, 7 mm long, acute or obtuse; filament about 3.5 mm long; anther continuous, 2 mm long.

PALAWAN, Mount Pulgar, *Elmer 12749* (type), 13138, March and May, 1911, both distributed as *Loranthus mirabilis* Huerk & Muell.-Arg., a species that is quite different and which belongs in an entirely different section.

The alliance of *Loranthus elmeri* is with *L. ampullaceus* Roxb. It is readily distinguished, however, by its very short racemes.

LORANTHUS SERIATUS sp. nov. § *Heteranthus*.

Frutex parasiticus glaber, ramis ramulisque teretibus, internodiis elongatis; foliis oppositis, breviter petiolatis, oblongo-ovatis, coriaceis, opacis, usque ad 12 cm longis, apice breviter obtuseque acuminatis, basi acutis, nervis lateralibus obscuris, circiter 6 utrinque, subobsoletis; floribus 5-meris, circiter 2.5 cm longis, in triadibus breviter pedunculatis dispositis, triadibus

in ramis seriatim dispositis et ad nodos fasciculatis; petalis intus ad basim ligulatis.

A parasitic glabrous shrub, the branches and branchlets terete, reddish-brown, smooth except where the flowers are borne, the internodes 10 to 15 cm long, the ultimate branchlets about 2 mm in diameter. Leaves opposite, coriaceous, oblong-ovate, 8 to 12 cm long, about 5 cm wide, greenish-olivaceous on both surfaces when dry, not shining, the apex shortly and obtusely acuminate, the base acute, sometime a little decurrent; lateral nerves slender, very obscure, nearly obsolete, about 6 on each side of the midrib; petioles 3 to 5 mm long. Flowers red, 5-merous, the peduncles of the double triads stout, 2 mm long, fasciated at the nodes and also numerous ones seriatly arranged, along one side of the branches along the internodes. Flowers 6 on each peduncle, sessile in two triads, each flower subtended by a reniform-orbicular, rounded, obscurely pubescent, 2 mm long bracteole. Calyx cylindric, 3.5 to 4 mm long, the limb produced about 1 mm, truncate, minutely ciliate-pubescent. Buds cylindric. Petals 5, free, 1.8 mm wide below, 1.5 mm wide above, 2 to 2.2 cm long, the reflexed part above the insertion of the stamens 6 to 7 mm long, each petal with a membranaceous, reflexed, ovate, obtuse, 1 mm long, ligule-like organ on the inner side attached about 3 mm above the base. Filaments about 2 mm long; anthers continuous, linear, 3 to 4 mm long.

MINDANAO, District of Zamboanga, Mount Pulongbato, *Bur. Sci.* 16424 Reillo, September 28, 1912.

A very characteristic species, distinguishable by its peculiarly arranged flowers, the flowers sessile in double triads on very short peduncles which are fasciated at the nodes and serially arranged along one side of the internodes. The peculiar ligule-like growth on the inner surface of the petals shortly above the base is characteristic, both of the present species and of the very similar and closely allied *Loranthus cauliflorus* Merr. *Loranthus seriatus* is distinguished from *L. cauliflorus* by its very obscurely veined leaves and its flowers in double triads, that is, 6 flowers in two triads sessile at the apex of each peduncle, not with three flowers only as in the latter species.

LORANTHUS FALCATIFOLIUS sp. nov. § *Heteranthus*.

Frutex scandens, glaber, ramulis teretibus; foliis oppositis, usque ad 16 cm longis, brevissime petiolatis, oblongo-lanceolatis, leviter falcatis, coriaceis, opacis, acuminatis, basi acutis vel obtusis, nervis utrinque circiter 8, obscuris, subobsoletis; floribus 5-meris, ad nodos fasciculatis, sessilibus, circiter 2.5 cm longis, alabastro cylindraco.

A scandent, parasitic, glabrous shrub, the stems long-climbing on the host, the branches and branchlets terete, the latter reddish-

brown or grayish, 3 mm in diameter or less, the internodes 5 to 8 cm long. Leaves opposite, subsessile or very shortly petioled, oblong-lanceolate, 10 to 16 cm long, 3 to 6 cm wide, somewhat falcate, not shining, coriaceous, the apex acuminate, the base obtuse or acute, brownish or greenish when dry; lateral nerves subobsolete, about 8 on each side of the midrib, very obscure; petioles 2 mm long or less. Flowers 5-merous, axillary, sessile, fascicled, 12 or less at each node, red below, yellow above, the buds rather slender, cylindric, outside very obscurely pubescent with very short scattered hairs. Calyx 3.5 to 4 mm long, straight or somewhat curved, the limb produced about 2 mm, membranaceous, somewhat spreading, truncate, margins minutely ciliate-pubescent. Petals 5, quite free, 1.5 mm wide below, very slightly narrowed upward, the apex obtuse, the reflexed portion above the insertion on the stamens linear-oblong, about 8 mm long, 1 mm wide. Filaments 4 mm long; anthers continuous, linear, 2 mm long.

MINDANAO, Bukidnon Subprovince, Sumilao, on trees in forests, *Bur. Sci.* 15746 *Fénix*, August 3, 1912.

A species well characterized by its scandent habit, its opposite, subsessile, subfalcate, obscurely nerved, coriaceous leaves, and its quite sessile, axillary, fascicled flowers. It is perhaps as closely allied to *Loranthus cuernosensis* Elm. as to any other species, but is very different from that form.

LORANTHUS MEDINILICOLA sp. nov. § *Heteranthus*.

Frutex scandens, parasiticus, inflorescentiis exceptis glaber; ramulis teretibus, tenuibus; foliis verticillatis, lanceolatis vel ovato-lanceolatis, coriaceis, acuminatis, usque ad 10 cm longis, nervis utrinque 4 vel 5, obscuris; inflorescentiis axillaribus, solitariis, pedunculatis, subumbellatis, paucifloris; floribus 4-meris, circiter 3 cm longis.

A slender, nearly glabrous, scandent, parasitic shrub, the branches and branchlets rather slender, terete, light-gray or brownish, mostly smooth, the ultimate branchlets 2 mm in diameter or less. Leaves whorled, usually 4 at each node, the internodes 4 to 8 cm long, the leaf-blades coriaceous, lanceolate or oblong-lanceolate, 6 to 10 cm long, 1 to 3.4 cm wide, narrowed below to the acute base and above to the rather slenderly acuminate apex, rather dull when dry; lateral nerves 4 or 5 on each side of the midrib, slender, obscure, ascending; petioles 4 to 8 mm long. Inflorescence axillary, solitary, the peduncle slender, 1.5 to 2 cm long, sparingly pubescent, bearing at its apex 4 or more subumbellately arranged branchlets, each branchlet bearing two, spicately arranged, sessile flowers, the branchlets pubescent, about 4 mm long. Flowers sessile, 4-merous, bright yellow

above, reddish toward the base, about 3 cm long, the basal bracteole narrowly ovate, 1 mm long or less. Calyx narrowly funnel-shaped, pubescent, about 3 mm long, the throat about 2.5 mm wide, the limb produced, truncate, obscurely 4-toothed. Petals 4, entirely free, about 2.8 cm long, 2 mm wide, pubescent externally. Filaments 5 to 6 mm long; anthers continuous, narrowly oblong, obtuse, 3.5 mm long. Fruit not seen, said by the collector to be white.

LUZON, Subprovince of Ifugao, Mount Polis, *Bur. Sci. 19842 McGregor*, February 10, 1913, on *Medinilla*.

Apparently most closely allied to *Loranthus acutus* Engl., but with much larger flowers than that species. It also resembles *L. polillensis* C. B. Rob., in some respects, but has smaller leaves, and more numerous, pubescent flowers.

OLACACEAE

WORCESTERIANTHUS genus novum

Flores unisexuales. Calyx parvus, 5-dentatus, vix auctus. Petala 5, angusta, puberula. Fl. ♂ : Petala valvata. Stamina petala duplopluria, alternatim inaequalia, filamentis gracilibus; antherae orbiculari-ovoidae, rimis intus dehiscentibus. Ovarium rudimentum cylindricum, elongatum, puberulum. Fl. ♀ : Petala imbricata. Stamina vel staminodia nulla. Ovarium ovoideum, glabrum vel basi pubescens, 2-loculare, loculis 1-ovulatis, ovula pendula. Stigma sessile, breviter 2-lobata. Drupa ovoidea vel subovoidea, 2-locellata, carne crasse coriacea vel sublignosa, putamine crustaceo. Arbor dioica, parva, glabra vel subglabra. Folia alterna, ovata vel oblongo-ovata, penninervia, integerrima. Flores parvi, axillari, breviter pedicellati, ♂ numerosi, ♀ subsolitari.

WORCESTERIANTHUS CASEARIOIDES sp. nov.

Arbor parva, usque ad 12 m alta, partibus junioribus floribusque exceptis glabra; foliis alternis, glabris, ovatis ad oblongo-ovatis, chartaceis, in siccitate nitidis, pallidis, usque ad 15 cm longis, basi acutis vel subrotundatis, apice acuminatis, nervis utrinque circiter 5, distantibus, laxe anastomosantibus, prominentibus; floribus parvis, 5-meris, ♂ circiter 3 mm longis ♀ paullo longioribus; fructibus solitariis, glabris, circiter 1.5 cm longis, acutis.

A small tree reaching a height of about 12 m, glabrous except the young branchlets and the flowers, dioecious. Branches gray, terete, slender, the young ones very obscurely angled, the growing tips finely grayish-puberulent. Leaves alternate, exstipulate.

ovate to oblong-ovate, chartaceous, 9 to 15 cm long, 4 to 7 cm wide, entire, the base slightly inequilateral, acute or somewhat rounded, the apex blunt-acuminate, the acumens broad, short, both surfaces shining when dry, rather pale and of about the same color, or the upper surface somewhat olivaceous; lateral nerves about 5 on each side of the midrib, very prominent on the lower surface, curved or curved-ascending, distant, prominently looped-anastomosing, the reticulations fine, distinct; petioles about 5 mm long. Flowers greenish-white, small, axillary, shortly pedicelled, the males numerous fascicled, the females solitary or subsolitary. Male flowers: Calyx shallowly cup-shaped, about 1.3 mm long, somewhat pubescent, shallowly and acutely 5-toothed, the teeth broad. Petals 5, free, valvate, alternating with the calyx-teeth, narrowly oblong, puberulent on both surfaces, acute or obtuse, about 3 mm long, 1.2 mm wide. Stamens 10, all fertile, 5 long ones alternating with 5 short ones, inserted in a single row on the rather obscure, ferruginous-pubescent disk; longer filaments 2.3 mm long, the shorter ones 1.5 mm long, glabrous, slender; anthers broadly ovoid or orbicular-ovoid, 0.5 mm long. Rudimentary ovary stout, cylindrical, puberulent, 2.5 mm long, truncate. Female flowers 5-merous, solitary or subsolitary, their pedicels 2 mm long. Calyx about as in the males. Petals lanceolate, puberulent, imbricate, acute or somewhat acuminate, about 4 mm long, 1.6 mm wide. Rudimentary stamens or staminodes wanting. Ovary ovoid or narrowly ovoid, glabrous except the ferruginous-pubescent base, narrowed above to the sessile stigma, 2-celled, each cell with a solitary apical ovule. Stigma 2-lobed, curved or spreading, sessile, about 2 mm long. Fruit ovoid, acute, about 1.5 cm long, glabrous, the pericarp thick, very coriaceous or almost woody, the putamen crustaceous, 2-celled, cells 1-seeded. Mature seeds not seen.

LUZON, Province of Laguna, between San Antonio and Paete, *Bur. Sci.* 14943 (type), 16541 Ramos, the former with male flowers, June, 1912, the latter with nearly mature fruits and few female flowers, September, 1912: Province of Cagayan, *For. Bur.* 18436 Alvarez, February, 1909, in fruit.

This apparently represents a very distinct generic type, and one previously not described. It belongs in the Tribe *Olaceae*, and apparently near *Ximenia* Plum., and *Scorodocarpus* Becc., although not at all closely allied to either. The alternate leaves, dioecious flowers, the males fascicled and the females solitary, the 10 stamens, 5 short ones alternating with 5 longer ones, and the absence of staminodes or reduced stamens in the female flowers are distinguishing characters.

The first specimen received, in fruit, was tentatively referred by me to the *Olaceae*, but later was transferred to the *Flacourtiaceae*, but with no further attempt to determine it, on account of the similarity of its

leaves to a specimen named *Erythrospermum phytolaccoides* Gardn., in the Herbarium of the Bureau of Science. The next collection received, with male flowers, that I have made the type, was hurriedly determined and erroneously referred to *Casearia solida* Merr., which in leaf-characters and in the position and size of its flowers it rather closely resembles; the duplicates of this number were distributed as *Casearia solida* Merr. The next collection yielded female flowers and nearly full grown, but immature, fruits, and a study of all the available specimens shows that it is well worthy of being described as a new genus. There appears to be nothing in the *Olacaceae* that very closely approaches it, although there is no doubt whatever in my mind but that it properly belongs in this group.

The genus is dedicated to the Honorable Dean C. Worcester, for many years Secretary of the Interior of the Philippine Government, in recognition of his interest in and great services to the advancement of the scientific work in the Philippines.

HERNANDIACEAE

HERNANDIA Linnaeus

HERNANDIA OVIGERA Linn. Amoen. Acad. 4 (1757) 125; Meissn. in DC. Prodr. 15¹ (1864) 262; F.-Vill. Novis. App. (1880) 182.

MINDANAO, District of Zamboanga, Mount Pulongbato, *Bur. Sci.* 16442 Reillo, Sept. 20, 1912. CAMIGUIN DE MINDANAO, *Bur. Sci.* 17424 Ramos, April, 1912.

This species was based on *Arbor ovigera* Rumph. Herb. Amboin. 3: 103, pl. 123, and is characterized by its leaves not being peltate. In other respects it is very similar indeed to *Hernandia peltata* Meissn., and it seems to be doubtful whether or not the two are really distinct. In the Philippines *Hernandia peltata* Meissn., is common and widely distributed along the seashore, and this seashore form apparently always has peltate leaves, although sometimes but slightly so, as in *Copeland 1331* from the strand at Tagalaya, Davao, Mindanao. At any rate, if the type of *Hernandia sonora* L. be interpreted as the American species, which seems to be the logical course to follow, *H. ovigera* L. is the oldest name for the oriental form, should *H. peltata* Meissn. and *H. ovigera* L. be united. *Hernandia ovigera* L. has already been reported from the Philippines by F.-Villar, but the record has not previously been verified.

Both specimens cited above are from the interior forests, not from the coast; *Hernandia peltata* Meissn. is confined to the beach forests.

Malay Archipelago, Java to Amboina.

ILLIGERA Blume

ILLIGERA MEGAPTERA sp. nov.

Frutex scandens, inflorescentiis exceptis glaber; foliis 3-foliolatis, foliolis oblongo-ovatis ad ovato-ellipticis, coriaceis, nitidis, usque ad 15 cm longis, breviter acuminatis, basi late rotundatis, integris, nervis utrinque 5 vel 6, prominentibus; fructibus 3.5 cm longis, cum alis 10 ad 12 cm latis.

Scandent, glabrous except the inflorescence, the stems terete, at least 5 mm diameter, dark-colored when dry, striate.

Leaves 3-foliolate, their petioles 9 to 12 cm long. Leaflets oblong-ovate to elliptic-ovate, coriaceous, entire, 13 to 15 cm long, 8 to 9 cm wide, apex shortly acuminate, base broadly rounded, pale-olivaceous when dry, both surfaces equally shining; lateral nerves 5 or 6 on each side of the midrib, prominent, the reticulations distinct; petiolules 1.5 to 2 cm long. Flowers not seen, the infructescence at least 20 cm long, subferruginous-pubescent, the mature fruits 3.5 cm long, including the wings 10 to 12 cm wide, the wings brown, shining, elliptic-ovate, broadly rounded, firmly chartaceous to subcoriaceous, 3.5 to 4 cm wide.

MINDANAO, Butuan Subprovince, *Bur. Sci.* 21511 *Escritor*, August, 1913, locally known as *cabacaba*.

Very characteristic on account of its relatively large leaflets and its very large fruits, the broad long wings being rather remarkable.

ILLIGERA RETICULATA sp. nov.

Frutex scandens, subglaber; foliis 3-foliolatis, foliolis coriaceis, late ovatis, acuminatis, basi rotundatis vel leviter cordatis, usque ad 11 cm longis, nervis utrinque 5 vel 6, subtus cum reticulis prominentibus; fructibus 3.5 cm longis, 3-alatis, alis lateralibus coriaceis, nitidis, late ovatis, rotundatis, circiter 4 cm longis, altero 1 ad 1.5 cm longis latisque.

A scandent shrub, nearly glabrous (flowers unknown). Leaves 3-foliolate, the petioles about 8 cm long; leaflets broadly ovate, coriaceous, about 11 cm long, slightly acuminate, entire, base rounded or somewhat cordate, pale when dry, the lower surface bearded in the axils; lateral nerves 5 or 6 on each side of the midrib, prominent, the reticulations lax, also prominent; petiolules 2 cm long. Panicles ample, in fruit glabrous. Fruits about 3.5 cm long, 3-winged, the lateral wings broadly ovate, coriaceous, rounded, shining, about 3.5 cm long and 3 cm wide, the other one much reduced, 1 to 1.5 cm long and wide and confined to the lower one-half of the fruit, the opposite side with a mere keel, not at all winged.

LUZON, Province of Laguna, Mount Maquiling, *For. Bur.* 7761 *Curran & Merritt*, October 24, 1907, on trees, open cogon slopes, altitude 160 meters.

A species well characterized by its prominently reticulate leaves and its comparatively large, 3-winged fruits, the lateral wings very large, the other very much reduced, and the fourth represented by a mere ridge or keel.

ILLIGERA ELLIPTIFOLIA sp. nov.

Frutex scandens inflorescentiis exceptis glaber; foliis trifoliolatis, foliolis ellipticis, 7 ad 13 cm longis, utrinque rotundatis, in siccitate pallidis, nitidis, nervis utrinque circiter 6; infructescentiis laxis, amplis, circiter 20 cm longis, dense olivaceo- vel

subferrugineo-pubescentibus; fructibus junioribus circiter 3 cm longis, bialatis, alis chartaceis, circiter 2 cm longis, ovatis, rotundatis.

A scandent shrub, glabrous except the inflorescence. Stems terete, about 5 mm in diameter, nearly black when dry. Leaves 3-foliolate, the petioles up to 12 cm long; leaflets entire, subcoriaceous, elliptic, 7 to 13 cm long, 4 to 7.5 cm wide, rounded at both ends, pale and somewhat shining when dry, the petiolules 1 to 2.5 cm long; lateral nerves about 6 on each side of the midrib. Inflorescence lax, subpyramidal, about 20 cm long, the branches few, scattered, the lower ones up to 9 cm long, all parts rather densely olivaceous- or subferruginous-pubescent with short hairs. Flowers unknown. Fruits (immature) about 3 cm long, 2-winged, the wings rather thin, ovate, rounded, about 2 cm long.

MINDANAO, Agusan Subprovince, in forests along streams southeast of Nasipit, altitud about 20 meters, *For. Bur.* 20571 *Miranda*, September, 1913.

Well characterized by its lax, rather densely pubescent panicles, its two-winged fruits, and its elliptic leaflets.

ILLIGERA CARDIOPHYLLA sp. nov.

Frutex scandens, glaber (floribus ignotis); foliis 3-foliolatis, foliolis late ovatis, coriaceis, 9 ad 12 cm longis, base late rotundatis cordatisque, apice late, abrupte, obtuse acuminatis; fructibus 3 cm longis, 4-alatis, alis coriaceis, late rotundatis, glabris, lateralibus 3.5 cm longis, ceteris triplo brevioribus.

A scandent glabrous shrub (flowers unknown). Branches terete, black when dry, 4 to 5 mm in diameter. Leaves 3-foliolate, the petioles 8 to 10 cm long; leaflets broadly ovate, coriaceous, 9 to 12 cm long, nearly or quite as wide, olivaceous and somewhat shining when dry, base broadly rounded, rather prominently cordate, apex abruptly, shortly, and obtusely acuminate; lateral nerves 5 to 6 on each side of the midrib, the reticulations lax, not prominent; petiolules 1.5 to 2 cm long. Panicles in fruit 15 cm long, glabrous or nearly so; fruits glabrous, 4-winged, about 3 cm long, the lateral wings coriaceous, rounded, broadly ovate, about 3.5 cm long, the other two about one-third as long as the lateral, ones.

BABUYANES ISLANDS, Camiguin, *Bur. Sci.* 4082 *Fénix*, June 28, 1907, in thickets near old clearings.

The characteristic features of this species are its broadly ovate, rather prominently cordate leaves and its comparatively large, 4-winged fruits.

(To be concluded)

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NEW OR NOTEWORTHY PHILIPPINE PLANTS, X

By E. D. MERRILL*

(From the Botanical Section of the Biological Laboratory, Bureau of Science, Manila, P. I.)

(Concluded)

RUTACEAE

ATALANTIA Correa

ATALANTIA MARITIMA sp. nov.

Species *A. distichae* (Blanco) Merr. affinis, differt foliis ellipticis haud prominente acuminatis, margine leviter crenulatis vix integris.

An unarmed shrub or small tree 2 to 6 m in height, glabrous except the inflorescence, or the younger branchlets sometimes slightly pubescent. Branches terete, slender, usually reddish-brown when dry, the branchlets greenish or straw-colored and more or less angled or compressed near the nodes. Leaves alternate, subcoriaceous or coriaceous, elliptic to ovate-elliptic, shining, rather pale when dry and of nearly the same color on both surfaces, 5 to 10 cm long, 2.5 to 6 cm wide, subequally narrowed at both ends, the base acute, the apex obtuse and distinctly retuse, not gradually narrowed to an acumen, the margins above distinctly but distantly crenulate, not entire, glandular-punctate beneath; lateral nerves very numerous, close; petioles 5 to 10 mm long. Panicles axillary and terminal, 3 to 6 cm long, pubescent, many-flowered, narrow, the lower branches 2 cm long or less, the panicles usually larger in fruit and up to 11 cm in length. Flowers 5-merous. Calyx pubescent, cup-shaped, about

* Associate Professor of Botany, University of the Philippines, Manila, P. I.

3 mm in diameter, 5-lobed, the lobes orbicular-reniform, rounded, about 2 mm long and somewhat wider than long, pubescent. Petals 5, about 6 mm long, glandular-punctate, oblong-obovate, rounded. Stamens 10, 2-seriate; filaments flattened, free, the longer ones about 5 mm long, the shorter 4 mm in length; anthers ovoid, rounded at both ends, 1.3 mm long. Disk annular, surrounding the base of the ovary. Ovary glabrous, ovoid or globose; style thick, cylindrical. Fruit globose, yellow, glabrous, about 8 mm in diameter, fleshy, with a single seed.

APO ISLAND, Mindoro Strait, *Bur. Sci. 178 Bermejos* (type), November, 1905. TICA0, *For. Bur. 1060 Clark*, May, 1904. PANAY, Capiz, *Copeland 107*, January, 1904. BOHOL, Tagbilaran, *Bur. Sci. 1278 McGregor*, July, 1906. MINDANAO, District of Zamboanga, Port Banga, *For. Bur. 9469, 9270 Withford & Hutchinson*, February, 1908. PALAWAN, *For. Bur. 3796 Curran*, February, 1906, *Bur. Sci. 623 Foxworthy*, March, 1906.

The species is manifestly closely allied to *Atalantia disticha* (Blanco) Merr., from which it may be easily distinguished by its very differently shaped leaves which are not gradually narrowed upward to an acuminate apex and which are distinctly crenulate, not entire. All the specimens are indicated as growing in thickets or forests at the edge of the beach, on beach-cliffs, or near mangrove swamps. The Visayan name in Ticao is indicated by Clark as *carucabagao*.

CLAUSENA Burmann

CLAUSENA GRANDIFOLIA sp. nov.

Frutex 2 ad 3 m altus, vix aromaticus, glaber vel subglaber; foliis usque ad 40 cm longis, foliolis 11 ad 15, chartaceis vel subcoriaceis, 9 ad 15 cm longis, oblongo-ovatis ad oblongis, inaequilateralibus, acuminatis; paniculis circiter 20 cm longis angustis, leviter pubescentibus; floribus parvis, 5-meris; fructibus globosis, carnosius, 7 ad 10 mm diametro.

A shrub 2 to 3 m high, glabrous except the slightly puberulent younger parts and the inflorescence, not aromatic. Branches terete, stout, brownish-gray. Leaves alternate, 25 to 40 cm long, the petioles and rachis minutely puberulent, becoming glabrous; leaflets 11 to 15, alternate, oblong-ovate to oblong, the larger ones up to 15 cm long and 6 cm wide, the smaller ones about 10 cm long and 3 to 4 cm wide, those in the upper part of the rachis longer than the lower ones, chartaceous to subcoriaceous, strongly inequilateral, entire, acuminate, base rounded to acute, rather pale, shining, and of about the same color on both surfaces when dry; lateral nerves 7 to 9 on each side of the midrib, prominent, distant, irregular, anastomosing, the reticulations lax; petiolules about 3 mm long. Panicle terminal, narrowly pyramidal, about 20 cm long, somewhat puberulent, the lower

branches 7 cm long or less, the upper gradually shorter. Flowers apparently numerous, somewhat crowded at the apices of the branchlets, 5-merous, the pedicels very short. Calyx shallow, 1.5 mm in diameter, 5-lobed, lobes broadly ovate, acute. Petals 5, imbricate, elliptic-ovate, 2.5 mm long, glandular, glabrous. Stamens 10, somewhat 2-seriate; anthers oblong, 1 to 1.2 mm long, much longer than the filaments which are somewhat enlarged below. Ovary cylindrical, prominently rugose, glabrous, 5-celled. Fruit globose, fleshy, up to 1 cm in diameter, with from 1 to 3 seeds; seeds about 7 mm long, the cotyledons thick, plano-convex.

PALAWAN, Mount Capoas, *Merrill 9544*, April 21, 1913, on talus slopes, steep forested ridge, altitude about 800 meters.

A species well characterized by its unusually large leaves and leaflets.

EVODIA Forster

EVODIA LAXIRETA sp. nov.

Frutex vel arbor parva, glabra; foliis 3-foliolatis, foliolis coriaceis vel subcoriaceis, nitidis, anguste oblongo-obovatis, usque ad 12 cm longis, 3 ad 5 cm latis, obtusis, basi sensim angustatis, cuneatis; nervis lateralibus utrinque circiter 10, prominentibus, reticulis laxis, distinctis; inflorescentiis in axillis superioribus, anguste paniculatis, circiter 5 cm longis; cocci 1 vel 2, ovoideis vel ellipsoideis, circiter 4 mm longis.

A shrub or small tree, quite glabrous (flowers not seen); branches terete, pale-brownish, shining, rather stout, wrinkled when dry. Leaves 3-foliolate, the petioles 2.5 to 5 cm long; leaflets narrowly oblong-obovate, coriaceous or subcoriaceous, when dry prominently shining and of about the same color on both surfaces, 9 to 12 cm long, 3 to 5 cm wide, entire, the apex obtuse, below gradually narrowed to the acute or cuneate base; lateral nerves about 10 on each side of the midrib, prominent, anastomosing, the reticulations lax, the nerves and reticulations about equally prominent on both surfaces; petioles about 1.5 cm long. Panicles solitary, in the upper axils, narrowly pyramidal, about 5 cm long, shortly peduncled, the branches few, the lower ones 1.5 cm long or less. Fruit of 1 or 2 cocci, the cocci ovoid to ellipsoid, rounded, about 4 mm long.

MINDANAO, Bukidnon Subprovince, *Bur. Sci. 21407 Escritor*, July 27, 1913, locally known as *pamintang gubat*.

Thus species may prove to belong to the genus *Melicope* when the flowers are known. In general it resembles *Melicope triphylla* (Lam.) Merr., but differs in its thicker leaves which are prominently and laxly reticulate on both surfaces.

EVODIA CAMIGUINENSIS sp. nov.

Arbor parva partibus junioribus inflorescentiisque villosis; foliis trifoliolatis, foliolis anguste oblongis, anguste oblongo-obovatis, vel oblongo-oblancoelatis, utrinque angustatis, apice acuminatis, usque ad 9 cm longis, nitidis, glabris, vel subtus ad costa parce villosis; inflorescentiis axillaribus, paniculatis, pallide subdense villosis, quam folia multo brevioribus.

A small tree, the branches light-gray, shining, glabrous, subterete or very obscurely 4-angled, the younger parts slightly villous. Leaves 3-foliolate, their petioles 1 to 3.5 cm long, sparingly villous, becoming nearly glabrous, glandular; leaflets narrowly oblong, narrowly oblong-obovate or oblong-oblancoelate, chartaceous or submembranaceous, green and shining when dry, of nearly the same color on both surfaces, 6 to 9 cm long, 1.5 to 3 cm wide, narrowed at both ends, the apex rather distinctly acuminate, the base acute, the upper surface quite glabrous, the lower one glabrous or slightly villous along the midrib, prominently glandular-punctate with very numerous, small, dark-colored glands; petiolules 3 to 5 mm long; lateral nerves about 12 on each side of the midrib, very slender, anastomosing, distinct but not prominent. Panicles axillary, narrowly pyramidal, rather prominently villous-pubescent with pale hairs, 5 to 7 cm long, open, rather lax, the branches spreading, the lower ones 2 cm long or less, the upper ones gradually shorter. Female flowers: Pedicels 1.5 to 2 mm long, pubescent. Sepals 4, oblong-ovate obtuse, pubescent, about 1.2 mm long. Petals 4, oblong, obtuse, about 2.4 mm long, 1.2 wide. Stamens 4, very slender, 1 mm long. Ovary densely villous; style slender, 1.5 mm long, villous below. Male flowers and fruits not seen.

CAMIGUIN DE MINDANAO, *Bur. Sci. 14664 Ramos*, April, 1912.

A species distinguishable by its rather narrow leaflets, but more especially by its open, narrowly pyramidal panicles which are prominently villous with pale hairs. It has somewhat the appearance of the Asiatic *Evodia pteleaefolia* (Champ.) Merr., but is quite distinct from that species.

EVODIA VILLAMILII sp. nov.

Arbor alta, glabra, gemmis inflorescentiisque exceptis glabra; foliis 3-foliolatis, foliolis subcoriaceis, oblongis ad oblongo-ellipticis, usque ad 22 cm longis, in siccitate pallidis, breviter acuminatis, basi angustatis, plus minusve decurrento-acuminatis, subsessilibus vel brevissime petiolulatis, nervis utrinque circiter 20, prominentibus; inflorescentiis axillaribus, 5 ad 8 cm longis, breviter pedunculatis, dense multifloris, floribus rosaceis, 4-meris, circiter 5 mm longis.

A tree about 20 m high, glabrous except the buds and the inflorescence. Branches stout, olivaceous. Leaves opposite, their petioles 5 to 10 cm long, the leaflets 3, oblong to oblong-elliptic, or sometimes narrowly elliptic-obovate, subcoriaceous, pale and somewhat shining when dry, 15 to 22 cm long, 6 to 12 cm wide, the apex somewhat acuminate, the acumen short, the base narrowed, usually somewhat decurrent-acuminate, sessile or the petiolules very short; lateral nerves about 20 on each side of the midrib, prominent. Inflorescence of solitary, axillary, densely many flowered, peduncled, somewhat pubescent cymes 5 to 8 cm long, 6 to 11 cm in diameter, all parts more or less gray-pubescent. Flowers pink, their pedicels pubescent, 5 mm long. Sepals 4, orbicular-reniform, rounded, 1.5 mm in diameter. Petals 4, pink, ovate to ovate-elliptic, acute, 5 mm long, 3 mm wide, appressed-pubescent inside. Stamens 4; filaments 6 to 7 mm long, glabrous, the upper 1 mm much narrowed and abruptly inflexed; anthers versatile, oblong, 2 mm long. Ovary deeply 4-lobed, densely villous, the cells 2-ovuled; style glabrous, 6 mm long; stigma punctiform. Cymes in fruit about 7 cm in diameter, rather dense, the cocci cartilaginous, about 5 mm long, the seeds jet black, shining, ellipsoid, about 3 mm long.

LUZON, Province of Laguna, Mount Maquiling, *For. Bur.* 20653 (type), 20880 Villamil, October, 1913, February, 1914, in forests, altitude 300 to 350 meters, the former in flower, the latter in fruit and from the same tree; also *C. F. Baker* 449, November, 1912, detached inflorescence only.

A very striking species not closely allied to any other known Philippine form, readily recognizable by its short, dense, hemispheric, many flowered, short-peduncled cymes, the flowers retaining their pink color long after being dried.

EVODIA TERNATA (Blanco) comb. nov.

Orixa ternata Blanco Fl. Filip. (1837) 62, ed. 2 (1845) 45, ed. 3, 1: 84.

Evodia robusta F.-Vill. Novis. App. (1880) 34, non Hook. f.

Evodia triphylla Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 68, non DC.

For this Philippine form that has been confused with two different species, *Evodia robusta* Hook. f. and *E. triphylla* DC., it appears necessary to establish a new name, for it is apparently a distinct and valid species. I have rather arbitrarily typified the species by Blanco's *Orixa ternata*, transferring his specific name to the proper genus. It is, however, impossible definitely to determine whether or not the material referred here, and below described, is really the species Blanco described, due to his imperfect description. So far as his description goes, it applies, not only in the characters ascribed by him to the species, but also in its time of flowering. It is, moreover, the only form known to me to which Blanco's *Orixa ternata* can be referred. F.-Villar's reduction of *Orixa ternata* to *Evodia robusta* Hook. f. is manifestly incorrect, for the latter species does not occur in the Philippines. The following description is typified by *Leiberg* 6133.

A shrub or small tree 2 to 4 m high, glabrous except the inflorescence and the younger parts. Branches rather stout, smooth, more or less compressed, usually brownish when dry, the growing tips more or less pubescent. Leaves opposite, 3-foliolate, their petioles 4 to 9 cm long; leaflets chartaceous, 10 to 18 cm long, 5 to 9 cm wide, elliptic, oblong, or oblong-obovate, of about the same color on both surfaces, shining when dry, olivaceous or yellowish-brown, the apex distinctly acuminate, the base acute; lateral nerves about 15 on each side of the midrib, rather slender, distinct, anastomosing; petiolules 3 to 8 mm long. Panicles axillary, narrowly pyramidal, slightly pubescent, about 9 cm long, the branches distant, spreading, the lower ones about 2 cm long on staminate inflorescences, on female ones, in fruit, the panicles up to 15 cm long, and the lower branches 5 cm in length. Male flowers: Pedicels short. Sepals 4, slightly pubescent, orbicular-ovate, obtuse, about 1 mm long. Petals 4, elliptic-oblong, acute, 2.5 mm long, about 1.5 mm wide, glabrous. Stamens 4; filaments 2.5 to 3 mm long; anthers elliptic-oblong, 1.2 mm long. Rudimentary ovary densely villous. Female flowers not seen. Cocci subellipsoid, 5 mm long, the shining black seeds 2.5 to 3 mm in diameter.

LUZON, Province of Bataan, Mount Mariveles, *Leiberg 6133*, July, 1904, with ♂ flowers, *For. Bur. 2055 Borden*, *For. Bur. 1474 Ahern's collector*, both in fruit, August, 1904: Province of Rizal, *Bur. Sci. 13601 Ramos*, August, 1911, in fruit: Province of Cagayan, Claveria, *Bur. Sci. 10732 McGregor*, August, 1909, with immature ♂ flowers.

The species is perhaps as closely allied to *Evodia glabra* Blume as to any other, but has quite different leaves and venation. It resembles quite closely the Asiatic material referred to *Evodia pteleaefolia* (Champ.) Merr., but is specifically distinct.

EVODIA SUBCAUDATA sp. nov.

Species quoad foliis inflorescentiisque *E. ternatae* (Blanco) Merr. simillima differt foliolis subcaudato-acuminatis, nervis lateralibus magis numerosis, floribus hermaphroditis.

A shrub or small tree the branches, branchlets, inflorescences, petioles and lower surfaces of the leaflets on the midribs and lateral nerves rather softly pubescent with short grayish hairs. Branches and branchlets terete, or the tips of the latter a little compressed. Leaves opposite, 3-foliolate, their petioles 4 to 9 cm long, those of the same pair of leaves unequal in length. Leaflets membranaceous, oblong to oblong-elliptic, or obovate-elliptic, subequally narrowed to the acute base and to the slenderly subcaudate-acuminate apex, the acumen 1 to 1.5 cm long, the terminal leaflet up to 15 cm long and 6 cm wide, the lateral ones

somewhat smaller, all entire, the upper surfaces smooth, glabrous, shining, the lower slightly paler, pubescent on the midrib and lateral nerves, minutely glandular-punctate; lateral nerves 17 to 20 on each side of the midrib, prominent, anastomosing, the reticulations slender, rather lax; petiolules 2 to 3 mm long. Panicles axillary, pubescent, solitary, about 8 cm long, narrowly pyramidal, the lower branches 2.5 cm long or less, densely many flowered. Flowers 4-merous, perfect, their pedicels 1 to 1.2 mm long, the bracteoles less than 0.5 mm in length. Sepals ovate, acute, pubescent, about 0.8 mm long. Petals oblong, obtuse or acute by the inflexed tips, 2 mm long. Stamens 4; filaments 2 mm long, the oblong anthers 1 mm in length. Ovary depressed-globose, 4-lobed, minutely pubescent, the cells 1-ovuled; style 2 mm long.

MINDANAO, Butuan Subprovince, *Bur. Sci.* 15922 *Fénix*, August, 1912.

A species quite similar in general appearance to the Philippine *Evodia ternata* (Blanco) Merr., redescribed above, and probably most closely allied to that form, differing in some vegetative details, much more pubescent, more slenderly acuminate leaflets with more numerous nerves, and especially in its perfect, not dioecious flowers. As to the Asiatic forms it is apparently most closely allied to *Evodia pteleaefolia* (Champ.) Merr., but is abundantly distinct.

LUNASIA Blanco

LUNASIA MOLLIS sp. nov.

Species *L. amarae* affinis, differt partibus junioribus inflorescentiis foliisque subtus molliter stellato-pubescentibus.

A shrub or small tree, the branchlets stout, yellowish-brown, densely stellate-pubescent with short, yellowish-brown hairs, the same type of indumentum on the inflorescence, petioles, and lower surfaces of the leaves. Leaves oblong-obovate, subcoriaceous, 18 to 24 cm long, 6 to 10 cm wide, entire, the upper surface green, shining, glabrous except for the more or less stellate-pubescent midrib, the lower surface pale, rather densely stellate-pubescent, prominently glandular-punctate, the apex rounded, obtuse, or very obscurely, broadly, and obtusely acuminate, narrowed below to the abruptly rounded base; lateral nerves 15 to 17 on each side of the midrib, prominent, spreading, anastomosing, the reticulations rather lax; petioles 4 to 5 cm long; inflorescence a very narrow panicle, solitary, axillary, densely stellate-pubescent, 7 to 15 cm long, none of the branches (in young bud) exceeding 1 cm in length, but perhaps longer in age. Young buds densely stellate-pubescent, globose. Open flowers and fruits not seen.

CEBU, Limusan, *Bur. Sci.* 11026 *Ramos*, on dry hills, March 14, 1912.

This proposed new species, although represented by immature material, certainly belongs in the genus *Lunasia*, and is so different from our common

and variable *Lunasia amara* Blanco, that I have no hesitation whatever in describing it as new. *Lunasia amara* Blanco is distinctly lepidote, not at all stellate-pubescent. *L. mollis* may be more closely allied to *L. babuyanica* than to *L. amara*, for *L. babuyanica* is more or less stellate-pubescent, although not all to the degree of *L. mollis*; there are also vegetative differences.

LUNASIA OBTUSIFOLIA sp. nov.

Species *L. amarae* affinis differt foliis apice late rotundatis vel obtusis, vix acuminatis, baseque distinct cordatis vix acutis.

A shrub, the young branches, petioles, and inflorescence densely pale-lepidote. Leaves oblong-obovate, membranaceous, shining, of nearly the same color on both surfaces or the lower one a little paler than the upper when dry, 8 to 17 cm long, 4 to 8 cm wide, entire or the upper part very obscurely undulate, the apex broadly rounded or obtuse, narrowed from about the middle or somewhat above to the distinctly cordate base, the base 1 to 1.5 cm wide, the lobes rounded, the sinus narrow, shallow, both surfaces with few, scattered, pale, lepidote scales when young, in age glabrous or nearly so, glandular-punctate; lateral nerves up to 15 on each side of the midrib, spreading, prominent, slenderly anastomosing, the reticulations slender, lax, not prominent; petioles 3 to 6 cm long. Male panicles up to 30 cm in length, narrow, their branches few, the lower ones up to 3 cm in length, the flowers straw-yellow, in scattered, small, globose heads. Sepals about 0.5 mm long. Petals oblong-ovate, acute or acuminate, about 2 mm long. Filaments about 0.5 mm long. Female flowers and fruits not seen.

BOHOL, Tagbilaran, on beach cliffs, *Bur. Sci.* 1273 McGregor, July 12, 1906.

A species decidedly similar to and manifestly very closely allied to *Lunasia amara* Blanco, differing in its broadly rounded or obtuse, not acuminate leaves which are also distinctly cordate and not acute at the base; another distinguishing character is its elongated male panicles, some of which greatly exceed the leaves in length, while in *Lunasia amara* Blanco the panicles are shorter than the leaves.

LUNASIA MACROPHYLLA sp. nov.

Species *L. amarae* affinis, differt foliis multo majoribus, usque ad 45 cm longis, coriaceis, integerrimis, nervis usque ad 45 utrinque.

A shrub about 2 m high, the younger parts, petioles, and inflorescence densely pale-lepidote. Leaves pale when dry, coriaceous, shining and of about the same color on both surfaces, the upper surface glabrous, minutely and obscurely beaded along the reticulations, the lower surface very sparingly lepidote, the apex

prominently acuminate, narrowed from the upper two-thirds to the acute or abruptly obtuse base, the margins quite entire; lateral nerves, at least on larger leaves, up to 45 on each side of the midrib, very prominent, faintly anastomosing near the margins, the reticulations slender, not very prominent; petioles stout, thickened at their apices, about 10 cm long. Male panicles axillary, in young bud narrow, spike-like, the linear bracts about 5 mm long. Open flowers and fruits not seen.

MINDANAO, District of Zamboanga, Port Banga, *For. Bur. 9299 Whitford & Hutchinson*, January 7, 1908, in dipterocarp forests, altitude about 50 meters.

A species distinguishable by its very large, quite entire, coriaceous leaves which have about 45 pairs of very prominent lateral nerves.

LUNASIA NIGROPUNCTATA sp. nov.

Species *L. amarae* simillima et affinis, differt foliis subtus valde nigro-punctatis, capsulis vix rostratis.

A shrub about 4 m high, the branches, branchlets, petioles, and inflorescences densely pale-lepidote, somewhat shining. Leaves subcoriaceous, oblong-oblancoate to narrowly obovate-oblancoate, 22 to 25 cm long, 5.5 to 6.5 cm wide, rather gradually narrowed from above the middle to the acute or somewhat obtuse base, the apex broadly blunt-acuminate, the margins irregularly undulate or slightly repand, the upper surface dark-olivaceous when dry, shining, glabrous, or with scattered lepidote scales along the midrib, the lower surface much paler, with scattered lepidote scales, and with numerous, black, shining, round glands which are distinct to the naked eye, 1 to 4 glands to each ultimate reticulation; lateral nerves about 25 on each side of the midrib, prominent, anastomosing; petioles 5 to 6 cm long. Inflorescences axillary, solitary, apparently narrowly paniculate, in fruit 6 cm long or less. Capsules usually of three cocci, by abortion sometimes reduced to two, rarely to one, densely lepidote, pale, shining, the individual cocci obovoid, base rounded, apex truncate, about 12 mm long, 9 to 10 mm wide across the top, concentrically wrinkled when dry, the outer corner scarcely rostrate, or very shortly so.

LUZON, Province of Tayabas, Baler, *Bur. Sci. 21188 Escritor*, June, 1913.

A species manifestly closely allied to *Lunasia amara* Blanco which it strongly resembles, but from which it differs in its rather remarkable black glandular-punctate leaves and in its scarcely rostrate capsules. In *Lunasia amara*, while the leaves are glandular-punctate, the glands are never black and shining as in the present species, while the capsules are very prominently rostrate on the upper outer angle of each coccus.

LUNASIA AMARA Blanco Fl. Filip. (1837) 783.

This species is common in forests and of very wide distribution in the Philippines. It is exceedingly variable in its vegetative characters, but seems to be decidedly constant in floral and fruit characters. The normal form has nearly entire leaves, usually distinctly, often prominently, acuminate. In his original description Blanco describes the leaves as "serpenteadas," which is best translated as undulate, and many of our specimens show this character. The extreme repand form, however, is so distinct, that were no intergrades present most botanists would not hesitate to describe it as new. I had even written up a diagnosis of the form as a new species, but distinct intergrades being present, and no characters other than vegetative ones being detected by which to distinguish the forms, I have considered it best to indicate the repand-leaved type as a variety.

Var. **REPANDA** var. nov.

A typo differt foliis prominente undulato-repandis vel repandis.

LUZON, Province of Cagayan, *Bur. Sci.* 7828 Ramos: Province of Nueva Vizcaya, *Bur. Sci.* 11264, 11184 McGregor, *For. Bur.* 14876 Darling, *For. Bur.* 15825 Curran & Merritt. MINDANAO, District of Davao, *Bur. Sci.* 15842 Fénix, August, 1912 (type).

The first two specimens cited have very large leaves, up to 45 cm in length, but the others have medium-sized or small leaves, those on the type being less than 15 cm in length.

LUVUNGA Hamilton

LUVUNGA SCANDENS (Roxb.) Hamilt. in Wall. Cat. (1832) no. 6382.

Limonia scandens Roxb. Fl. Ind. 2 (1832) 380.

PALAWAN, Malampaya Bay, Binaloan, *Merrill* 9405, May, 1913, forested slopes, altitude 20 meters.

India to the Malay Peninsula and Indo-China; new to the Philippines.

MELIACEAE

AGLAIA Loureiro

AGLAIA BERNARDOI sp. nov. § *Euaglaia*.

Arbor alta partibus junioribus subtus foliolis inflorescentiisque dense stellato-pubescentibus; foliis circiter 70 cm longis; foliolis circiter 15, oblongis, membranaceis vel chartaceis, acuminatis, basi cordatis, usque ad 15 cm longis, supra glabris, subtus densissime brunneo-stellato-pubescentibus; paniculis juvenilibus quam folia multo brevioribus, floribus numerosis, sessilibus, in ramulis glomeratim dispositis.

A tree reaching a height of 20 meters, the younger parts, inflorescence, petioles, rachis, and lower surfaces of the leaves densely stellate-pubescent with pale-brownish hairs, or sometimes ferruginous in color. Ultimate branches terete, 8 to 10 mm in diameter. Leaves alternate, about 70 cm long, the leaflets about 15, oblong, membranaceous or chartaceous, 10 to 15 cm

long, 3.5 to 5 cm wide, acuminate, base cordate, the upper surface brown when dry, strongly shining, glabrous or slightly stellate-pubescent along the midrib; lateral nerves straight, parallel, distinct, 20 to 27 on each side of the midrib; petiolules pubescent, about 3 mm long. Panicles axillary, when young less than one-half as long as the leaves, peduncled, stellate-pubescent, about 25 cm long, the primary branches less than 4 cm long, densely many flowered, the flowers glomerate. Flowers 5-merous, sessile, the buds globose, 1.5 mm in diameter, the calyx densely stellate-pubescent externally. Petals 5, orbicular, glabrous, rounded, about 1 mm long. Staminal tube depressed-globose, free from the petals, truncate, the anthers inserted at the base, reaching the orifice but hardly protruding, 0.6 mm long.

LUZON, Province of Cagayan, Gattaran, in open forests, altitude about 20 meters, *For. Bur.* 15205 *Bernardo*, May 27, 1912.

A species manifestly belonging in the group with *Aglaia argentea* Blume, but entirely distinct from that species in its floral, vegetative, and indumentum characters.

AGLAIA TRUNCIFLORA sp. nov. § *Euaglaia*?

Arbor circiter 18 m alta ramulis inflorescentiis petiolis subtus foliisque ad costa dense stellato-tomentosis; foliis imparipinnatis, foliolis 7, ellipticis vel oblongo-ellipticis, usque ad 25 cm longis, subcoriaceis, basi obtusis vel subrotundatis, apice abrupte subcaudato-acuminatis, nervis utrinque circiter 17; paniculis caulinis, circiter 25 cm longis, fructibus ellipsoideis, circiter 2 cm longis.

A tree about 18 m high, the branches, branchlets, inflorescence, petioles, rachis, petiolules, and midribs on the lower surfaces of the leaflets densely stellate-tomentose with brown hairs, not at all lepidote. Branches terete, the ultimate ones about 4 mm in diameter. Leaves alternate, rather distant, about 45 cm long; leaflets 7, the lower pair less than one-half as large as the upper ones, ovate, the others elliptic to oblong-elliptic, up to 25 cm long, and 10 cm wide, rather pale-brownish when dry, the upper surface glabrous and slightly shining, the lower surface of the same color, nearly glabrous except for the stellate-tomentose midribs, the base obtuse or rounded, the apex abruptly subcaudate-acuminate, the acumen narrow, blunt, about 1.5 cm long; lateral nerves about 17 on each side of the midrib, very prominent on the lower surface, obscurely anastomosing, the reticulations lax, indistinct; petiolules stout, about 8 mm long. Panicles from the trunk, stellate-tomentose, 20 to 25 cm long. Flowers not seen (5-merous). Fruit ellipsoid, brown when dry, minutely

stellate-tomentose with brown hairs, rounded at both ends, about 2 cm long, the persistent calyx with 5 short teeth.

LEYTE, Dagami, in forests along streams, Mount Ibuni, *Bur. Sci.* 15232 Ramos, August 21, 1912.

A species probably allied to *Aglaia cauliflora* Koord., of Celebes, which is inadequately described. The Philippine form agrees with Koorders's species in the peculiar character of its cauline inflorescence, which although not uncommon in other genera of the *Meliaceae*, is exceedingly rare in *Aglaia*. It differs in its stellate-tomentose, not lepidote, indumentum, its smaller leaves, 7 instead of 5 leaflets, and slightly larger fruits.

DYSOXYLUM Blume

DYSOXYLUM ROSTRATUM sp. nov. § *Eudysoxylum*.

Arbor alta, partibus junioribus inflorescentiisque brunneo-puberulis exceptis glabra; foliis alternis, circiter 40 cm longis; foliolis 10, alternis, oblongis, coriaceis, nitidis, rectis, subaequalateralibus, acuminatis, in siccitate brunneis, nervis utrinque 8 ad 11, subtus valde prominentibus, reticulis obscuris, tenuibus, laxis; inflorescentiis brunneo-puberulis, paniculatis, multifloris, in axillis superioribus, circiter 20 cm longis; floribus 4-meris, circiter 7 mm longis, petalis glabris, liberis; tubo utrinque villosa; ovario pubescente; fructibus 1-ocularibus, ad 4 cm longis, valde inaequalateralibus, apice lateraliter rostratis.

A tall tree, the younger parts and the panicles appressed brown-puberulent, otherwise glabrous. Branchlets less than 1 cm in diameter, brown, wrinkled, the older parts glabrous. Leaves alternate, about 40 cm long, the rachis at first puberulent, soon entirely glabrous; leaflets 10, alternate or subalternate, oblong, coriaceous, brown when dry, straight, subequilateral or entirely equilateral, the apex rather prominently acuminate, the acumen blunt, the base rounded to acute or somewhat decurrent, the upper surface shining when dry, the lower slightly paler, also shining; lateral nerves 8 to 11 on each side of the midrib, prominent on the lower surface, impressed on the upper surface, not anastomosing, the reticulations very slender, lax, obscure, often nearly obsolete; petiolules 1.5 to 2 cm long, when young grayish-puberulent. Panicles in the upper axils, forming a subterminal inflorescence, all parts brown-puberulent, about 20 cm long, oblong in outline, the lower branches 5 to 7 cm in length, the flowers numerous, white, racemosely arranged on the ultimate branchlets, 4-merous, their pedicels 2.5 to 4 mm long. Calyx disk-shaped or shallowly saucer-shaped, about 3 mm in diameter, irregularly but often rather prominently 4-toothed, some of the teeth often apiculate-acuminate. Petals 4, entirely free, glabrous, about 7 mm long, 2.5 mm wide, obtuse. Staminal-tube

somewhat villous on both surfaces, cylindric, 6 mm long, 10-toothed, the teeth distinct, short. Anthers 10, sessile, included, about 1 mm long. Disk cup-shaped, villous, about 1.5 mm high. Ovary ovoid, somewhat pubescent, the style glabrous, about 2.5 mm long. Fruit in general obovoid, falcate, 3 to 4 cm long, 2 to 2.5 cm in diameter, 1-celled, with a single large seed, the tip of the fruit projecting laterally as a stout, more or less strongly recurved beak 1 to 1.5 cm long.

LUZON, Province of Laguna, Papot, near San Antonio, *Phil. Pl.* 1473 Ramos (type), February 26, 1913, in forests; Dahican River, *Bur. Sci.* 16552 Ramos, September, 1912, in fruit.

Apparently in the same group with *Dysoxylum alliaceum* Blume. The inequilateral, 1-seeded, rostrate fruit is very characteristic.

DYSOXYLUM EUPHLEBIUM sp. nov. § *Eudysoxylum*.

Arbor alta, glabra, ramulis crassis, 1 ad 1.5 cm diametro; foliis 20 ad 40 cm longis, circiter 7-jugis, alternis, foliolis alternis vel suppositis, coriaceis, nitidis, oblongo-ovatis, late obtuse-que acuminatis, inaequilateralibus, plus minusve falcatis, usque ad 12 cm longis, nervis utrinque circiter 9, valde prominentibus, reticulis obsoletis; paniculis ramosis, anguste pyramidatis, dense multifloris, folia subaequantibus, terminalibus; floribus 4-meris, circiter 8 mm longis, petalis glabris, tubo libero, utrinque villosa, ovario pubescente.

A tall tree, entirely glabrous except the staminal tube and the ovary. Branchlets stout, terete, brownish, much wrinkled, 1 to 1.5 cm in diameter, marked with very large petiolar scars. Leaves alternate, 20 to 40 cm long, about 7-jugate, the rachis and petiole brown and somewhat longitudinally rugose when dry. Leaflets thickly coriaceous, oblong-ovate, more or less falcate, inequilateral, 8 to 12 cm long, 3 to 6 cm wide, apex shortly and bluntly broad-acuminate, base rounded to acute, brownish-olivaceous when dry, the upper surface very strongly shining, the lower of about the same color but dull; lateral nerves about 9 on each side of the midrib, very prominent on the lower surface, not anastomosing, the reticulations obsolete; petiolules about 5 mm long. Panicles in the uppermost axils forming a terminal inflorescence, the individual ones narrowly pyramidal, often as long as the leaves, the branches spreading, the lower ones about 8 cm long, densely many-flowered, the flowers crowded, shortly pedicelled or subsessile, 4-merous. Calyx disk-like or shallowly saucer-shaped, obscurely toothed, about 3 mm in diameter. Petals 4, oblong, obtuse, 8 mm long, 3 mm wide, glabrous, quite free. Staminal-tube cylindric, 7 to 8 mm long, somewhat villous inside and outside, truncate. Anthers 10, sessile, 0.8 mm long,

included. Disk cylindrical, truncate, about 1.5 mm high, villous. Ovary sparingly appressed-pubescent; style glabrous, 7 mm long. Fruit (immature) globose or obovoid, about 3 cm in diameter.

LUZON, Province of Laguna, Gumihan, near San Antonio, *Phil. Pl.* 1404 Ramos (type), February 27, 1913, in forests; between San Antonio and Paete, *Bur. Sci.* 15102 Ramos, June, 1912.

A species manifestly in the group with the Malayan *Dysoxylum allia-ceum* Blume, but differing from that and allied forms in many characters. The strongly shining leaves, with prominent primary nerves and entirely obsolete reticulations, and the densely flowered panicles are characteristic. The dried flowering specimens have a strong, very disagreeable odor that is characteristic of various parts of many species in the genus.

TURRAEA Linnaeus

TURRAEA MEMBRANACEA sp. nov. § *Euturraea*.

Arbor parva, circiter 5 m alta; foliis membranaceis, ovatis vel oblongo-ovatis, utrinque angustatis, acuminatis, usque ad 9 cm longis, nervis utrinque circiter 7, vetustioribus glabris vel subglabris; racemis axillaribus, brevissimis, paucifloris; floribus 5-meris, circiter 2.5 cm longis, tubo apice 10-laciniato, ovario glabro, 5-loculare; fructibus 5-locellatis, valvis valde recurvatis, crassissime coriaceis, 12 mm longis.

A small tree 4 to 5 m high, deciduous, the branchlets, young leaves, and inflorescence more or less pubescent, in age nearly glabrous. Branches slender, terete, glabrous, brown or reddish-brown, the branchlets gray-pubescent. Leaves simple, alternate, membranaceous, ovate to oblong-ovate, subequally narrowed to the acute base and to the acuminate apex, 5 to 10 cm long, 2 to 4 cm wide, when young slightly pubescent on both surfaces, at least on the midrib and nerves, in age nearly or quite glabrous, slightly shining; lateral nerves about 7 on each side of the midrib, prominent; petioles about 1 cm long, pubescent. Racemes axillary, very short, pubescent, few-flowered, the flowers appearing with the new leaves, the rachis of the racemes 5 mm long or less. Flowers yellowish-white, their pedicels slender, 2 cm long. Calyx cup-shaped, about 3 mm long, pubescent, 5-toothed, the teeth ovate-acute, about 1.5 mm long. Petals 5, free to the base, 2 to 2.3 cm long, linear, above somewhat narrowly spatulate, below 1 mm wide, near the apex 3 to 3.5 mm wide, glabrous. Staminal-tube glabrous, slender, 2.5 cm long, laciniate-lobed at the apex, the lobes thin, linear, acuminate, about 2 mm long, alternating with the anthers; anthers subsessile, attached apparently at the very apex of the tube, 1.8 mm long. Ovary ovoid, 5-celled; cells 2-ovuled; style slender, exerted 6 to 7 mm beyond the end of the staminal-tube; stigma about 2 mm in diameter.

Fruit before dehiscence apparently ovoid, glabrous, splitting into 5 valves, the valves strongly recurved, very thickly coriaceous, almost woody, ovate to oblong-ovate, acute or acuminate, about 1.2 cm long, longitudinally keeled along the inside and grooved along the back. Seeds obovoid, black and shining when dry, about 6 mm long.

LUZON, Province of Rizal, Bosoboso, *Bur. Sci.* 977 Ramos (type), June, 1906, in flower: Province of Pampanga, Mount Arayat, *Merrill* 3913, October, 1904, *For. Bur.* 9619 Zschokke, October, 1907, both in fruit.

This is in all probability the form that has been credited to the Philippines by several authors as *Turraea pubescens* Hellen. The Philippine record was based on *Vidal 1654* from Marinduque, which I have examined in the Kew Herbarium, and which I have noted as being matched by two of the specimens cited above as well as by *Loher 4643* from Arayat. At the time the Kew material was examined it was noted that the Philippine material differed from *T. pubescens* Hellen., in its differently shaped leaves, glabrous ovary, and larger, quite different fruit. I now have a specimen of *Turraea pubescens* in the herbarium of the Bureau of Science, Cochinchina, *Pierre 2772*, which confirms the above notes. The fruits are remarkably different both in texture and in shape, the valves being merely coriaceous and not reflexed. It is quite evident from the material at present available that the Philippine form is specifically very distinct from the one found in southeastern Asia, and that *Turraea pubescens* Hellen. does not extend to the Philippines.

TURRAEA PALAWANENSIS sp. nov. § *Euturraea*.

Suffrutex parvus, circiter 20 cm altus, erectus, partibus junioribus pubescentibus; foliis membranaceis, oblongis, usque ad 10 cm longis, irregulariter lobatis vel undulato-lobatis, costa nervisque subtus pubescentibus; racemis paucifloris; floribus 4 ad 4.5 cm longis.

A species similar and allied to *Turraea humilis* (Blanco) Merr., and *T. pumila* Benn. An undershrub about 20 cm high, the woody parts slender, reddish-brown, glabrous or slightly pubescent, not or but sparingly branched, the growing parts gray-pubescent. Leaves alternate, oblong in general outline, membranaceous, 5 to 10 cm long, 2 to 4.5 cm wide, the apex obtuse, the base decurrent-acuminate, the margins irregularly lobed or undulate lobed, the lobes usually 3 on each side, the upper surface glabrous or nearly so, the lower one very slightly paler than the upper and more or less pubescent on the midrib and lateral nerves; lateral nerves 4 or 5 on each side of the midrib, prominent, usually forked, the reticulations very lax; petioles 2 cm long or less, pubescent. Racemes axillary, solitary, 3-flowered or less, pubescent. Flowers white, 4 to 4.5 cm long, the bracts linear, 2 to 3 mm long. Calyx pubescent, the lobes 5, linear, acuminate, pubescent, 6 to 8 mm long, about 1 mm

wide. Corolla slender and tube-like below, the tube-like portion about 3 cm long and 2 mm in diameter, the lobes 5, oblong, narrowed at both ends, about 1.5 cm long, 6 mm wide, acute, narrowed below into the long and slender claws that make up the tube-like part. Staminal tube slender, glabrous, exerted from the tube-like part of the corolla about 1.5 cm, the reflexed laciniae at its apex 9 or 10, linear, acuminate, 4 mm long. Filaments filiform, inserted inside the tube, the oblong anthers sparingly hispid, just exerted, about 1.5 mm long, blunt at both ends, the apex obliquely apiculate. Ovary ovoid, pubescent, 5-celled; ovules 2 in each cell; stigma depressed-globose, 0.5 mm in diameter.

PALAWAN, San Miguel, near the seashore, *Bur. Sci.* 15563 *Fénix*, July 10, 1912.

A species very similar to and manifestly allied to both *Turraea humilis* (Blanco) Merr., and to *T. pumila* Benn., differing from both in its larger flowers. The latter species was described from Javan specimens, and is at present unknown outside of that island unless the Philippine *T. humilis* proves to be identical. Both F.-Villar and myself have considered the Philippine and Javan plants to be identical, the former reducing Blanco's *Plagianthus humilis* to *Turraea pumila* Benn., while I retained Blanco's specific name as the valid one, it being the older. It seems, judging from Bennett's description of *T. pumila*, that his species is not the same as the Philippine one described by Blanco as *Plagianthus humilis* and which I have transferred to *Turraea* as a valid species. *Turraea humilis* (Blanco) Merr. is known only from Luzon, and it is exceedingly local and rare. It is represented by the following specimens:

LUZON, Province of Rizal, San Juan del Monte, near Manila, *Merrill* 6232, June, 1908: Province of Laguna, San Antonio, *Bur. Sci.* 14994 *Ramos*, June, 1912.

The leaves are 3 to 6 cm long, ovate or elliptic-ovate, undulate but not lobed, and the flowers are 3 to 3.5 cm in length.

WALSURA Roxburgh

WALSURA VILLAMILII sp. nov.

Species distinctissima ap omnibus adhuc cognitarum differt filamentis haud $\frac{1}{4}$ connatis, foliis 7-foliolatis.

A tree about 13 m in height, nearly glabrous, or the inflorescence and younger parts very sparingly pubescent, the growing parts distinctly brownish-puberulent. Branches glabrous, brownish-olivaceous, lenticellate. Leaves 7-foliolate, about 50 cm long, the petiole 10 to 15 cm in length, brown when dry. Leaflets oblong to oblong-lanceolate, coriaceous, entire, glabrous, 15 to 20 cm long, 3 to 5.5 cm wide, the apex slenderly subcaudate-acuminate, the base acute, the upper surface, when dry, pale-greenish-olivaceous, shining, the lower one glaucescent, the

prominent nerves and slender reticulations brown; lateral nerves about 16 on each side of the midrib, very prominent on the lower surface, somewhat curved, anastomosing near the margins; petiolules 2 to 5 mm long. Panicles terminal and in the upper axils, brown when dry, very slightly pubescent, in fruit up to 40 cm long. Immature fruits obovoid, 1 to 1.5 cm long, externally densely covered with a short, dense, brownish-purple indumentum, the persistent petals oblong, pubescent, 4 mm long. Staminal tube very short, 0.5 mm long or less, the filaments flattened, ciliate-pubescent, about 1.5 mm long, obtuse, the anthers 0.5 mm in length.

MINDANAO, District of Zamboanga, near Margosatubig, in hill forests, *For. Bur.* 13764 *Foxworthy, DeMesa, & Villamil*, May 11, 1912, altitude about 120 meters, and locally known to the Moros as *sasá*.

A very distinct and characteristic species, readily distinguished from all previously described ones by its 7-foliolate leaves and its short staminal tubes.

BUXACEAE

BUXUS Linnaeus

BUXUS RIVULARIS sp. nov. § *Eubuxus*.

Frutex circiter 1 m altus, glaber; foliis coriaceis vel subcoriaceis, lanceolatis, usque ad 5 cm longis, utrinque subaequaliter angustatis, apice acute acuminatis, basi acutis; racemis axillaribus, solitariis, 1 ad 2 cm longis.

A shrub about 1 m high, glabrous, the branches slender, light-gray, terete, the branchlets distinctly angled. Leaves lanceolate, 2.5 to 5 cm long, 5 to 12 mm wide, rather pale when dry, of about the same color and slightly shining on both surfaces, subequally narrowed to the acute base and to the sharply acuminate apex, subsessile or very shortly petioled, often a little falcate; nerves very faint, anastomosing in a distinct marginal nerve. Racemes axillary, solitary, 1 to 2 cm long, glabrous, male flowers below, the terminal flower usually female, the pedicels about 3 mm long, the bracteoles ovate, acute, 1 mm long. Male flowers: Outer two sepals lanceolate, acuminate, about 2.2 mm long, 1 mm wide, the inner two as long but ovate or oblong-ovate, acute, 1.5 mm wide. Filaments about 2.5 mm long. Rudimentary ovary depressed-globose, entire. Female flowers at the end of the raceme bearing the male flowers. Bracteoles linear-lanceolate, the outer 2 sepals ovate, a little longer than the inner four which are broadly ovate, acute, 2.2 mm long, slightly ciliate-pubescent, all slightly accrescent in fruit, persistent, and about 3 mm long. Ovary glabrous. Young fruit ovoid, glabrous, 5

to 6 mm long, crowned by the prominent styles and recurved stigmas.

LUZON, Province of Tayabas, Guinatacutan, *Bur. Sci.* 19169 Foxworthy & Ramos, March, 1911, on rocks along the river, altitude 75 to 100 meters, the flowers white and greenish.

A most characteristic species, recognizable by its small size and its lanceolate, sharply acuminate leaves. The narrow leaves have doubtless been developed to meet the exigencies of its habitat, for the plant undoubtedly grows in situations subject to overflow during heavy rains. It has almost exactly the habit and appearance of *Atalantia linearis* (Blanco) Merr., and *Eugenia mimica* Merr., which grow in similar habitats, and in fact in making the preliminary identifications of the Guinatacutan collection, the specimens were referred to *Atalantia linearis*.

Stenophylly, due to habitat, is not as highly developed in the Philippines as in the neighboring Island of Borneo, and aside from the widely distributed *Homonium riparia* Lour., we have the endemic species *Atalantia linearis* Merr., *Eugenia mimica* Merr., *Buxus rivularis* Merr., and *Ficus rivularis* Merr., and doubtless others remain to be noted. The rather numerous Bornean forms have been considered by Beccari.²

BUXUS PACHYPHYLLA sp. nov.

Arbor glabra; foliis crassissime coriaceis, nitidis, oblongis, usque ad 11 cm longis, 3 ad 5.5 cm latis, basi acutis vel acuminatis, apice acute acuminatis, margine valde revolutis; capsulis axillaribus, solitariis, breviter pedunculatis, ovoideis, circiter 1 cm longis.

A glabrous tree, size not indicated. Branches terete, pale-olivaceous, the branchlets slender, somewhat sulcate on two sides. Leaves oblong, very thickly coriaceous, 9 to 11 cm long, 3 to 5.5 cm wide, narrowed below to the acute or somewhat acuminate base and above to the sharply acuminate apex, the margins strongly recurved, both surfaces shining, the lower usually a little paler than the upper; lateral nerves slender, up to 30 on each side of the midrib, irregular, sometimes rather indistinct and confused with the secondary ones and the reticulations; petioles 5 to 7 mm long. Peduncles solitary, axillary, in fruit 5 mm long or less, with numerous, spreading bracteoles, the lower ones smaller than the upper. Flowers not seen. Capsules ovoid, about 1 cm long, solitary, smooth, somewhat glaucous-purple when dry.

LUZON, Province of Tayabas, Mount Cadig near Guinayangan, *Bur. Sci.* 20328 Escritor, March 9, 1913.

Well characterized by its very thickly coriaceous leaves, and its solitary, few, short-peduncled fruits.

² Nelle Foreste di Borneo (1902) 524.

BUXUS LOHERI sp. nov.

Arbor glabra; foliis lanceolatis, coriaceis, usque ad 6 cm longis, utrinque angustatis acuminatisque, in siccitate brunneis, nitidis, margine revolutis, nervis primariis utrinque 15 ad 20, tenuibus, obscuris; capsulis terminalis axillaribusque, solitariis vel binis, circiter 1 cm longis; pedunculo circiter 1 cm longo.

A glabrous tree, size not indicated. Branches terete, pale-gray or somewhat brownish, the younger branchlets slender, dark reddish-brown, somewhat angled or sulcate. Leaves lanceolate, thickly coriaceous, 4.5 to 6 cm long, 1.5 to 2 cm wide, when dry brownish and shining on both surfaces, the lower surface usually a little paler than the upper, about equally narrowed and acuminate at both ends, the margins strongly revolute; lateral nerves slender, not prominent, in fact often indistinct, 15 to 20 on each side of the midrib, irregular, usually more or less confused by the secondary ones. Flowers unknown. Capsules ovoid, about 1 cm long, solitary or in pairs, terminal and in the leaf-axils, the peduncles about 1 cm long, each with several scattered bracteoles, the calyx, in fruit, about 7 mm in diameter, the lobes 5, broadly ovate.

LUZON, Province of Rizal, Montalban, *Loher 6857*, February, 1905.

A species probably as closely allied to *Buxus rolfei* Vid. as to any other species, but distinguished by its narrow, brown, lanceolate, much smaller, obscurely nerved leaves.

CELASTRACEAE

GYMNOSPORA Bentham & Hooker

GYMNOSPORA NITIDA sp. nov.

Frutex vel arbor parva, glabra, inermis; foliis ellipticis ad oblongo-obovatis, coriaceis, supra valde nitidis, usque ad 7 cm longis, apice obtusis vel rotundatis, basi acutis, margine crenulatis; capsulis anguste obovoideis vel oblongo-ellipsoideis, circiter 1.5 cm longis, valvis crassissimis.

A shrub or small tree, quite glabrous, unarmed. Branches pale-gray, slender, somewhat wrinkled and shining when dry. Leaves rather thickly coriaceous, elliptic to oblong-obovate, 4 to 7 cm long, 2 to 3.5 cm wide, the upper surface strongly shining when dry, the lower much duller, apex obtuse or rounded, base acute, margins crenulate; lateral nerves about 8 on each side of the midrib, slender, not prominent, rather laxly anastomosing; petioles 8 to 10 mm long. Inflorescence axillary, apparently cymose, in fruit up to 3 cm long. Flowers unknown. Capsules

narrowly obovoid to oblong-ellipsoid, about 1.5 cm long, 8 to 10 mm in diameter, rounded at the apex, the valves 3, very thick.

LUZON, Province of Pangasinan, Salasa, *For. Bur. 11836 Domingo*, November 20, 1912.

Well characterized by its strongly shining leaves and its very thick capsule-valves. Not closely allied to *Gymnosporia spinosa* Merr. & Rolfe, the only other known Philippine species.

EUONYMUS Linnaeus

EUONYMUS VIBURNIFOLIUS (Juss.) comb. nov.

Aegiphila viburnifolia Juss. in Ann. Mus. Paris 7 (1806) 76; Walp. Repert. 4 (1844-48) 124; Schauer in DC. Prodr. 11 (1847) 655.

Euonymus philippinensis Merr. in Philip. Journ. Sci. 3 (1908) Bot. 238.

Jussieu's species has long been a doubtful one, for manifestly it could not belong in the genus *Aegiphila* which is confined to tropical America. The type, *Commerson*, in Herb. Mus. Paris, was from the Philippines. The original specimen was examined and photographed by the late Dr. C. B. Robinson in November, 1911, and from an examination of the photograph and notes I am now able definitely to refer the species to the *Celastraceae*, and very definitely to the species I described a few years ago as *Euonymus philippinensis*.

ICACINACEAE

MIQUELIA Meissner

MIQUELIA RETICULATA sp. nov.

Scandens, partibus junioribus subtus foliis inflorescentiisque leviter breviter hirsutis; foliis oblongis, chartaceis, usque ad 17 cm longis, in siccitate pallidis, nitidis, apice tenuiter acuminatis, basi rotundatis leviter cordatisque, nervis lateralibus circiter 6, subtus cum reticulis laxis valde prominentibus; floribus ♀ umbellatis, 4-meris, 3.5 mm longis.

A scandent, apparently woody plant, the branchlets terete, pale when dry, slender, sparingly hirsute with short hairs. Leaves oblong, entire, 14 to 17 cm long, 4 to 6 cm wide, pale and somewhat shining when dry, the upper surface smooth and glabrous, the lower prominently reticulate and sparingly hirsute, the apex slenderly and prominently acuminate, somewhat narrowed below to the rounded and slightly cordate base; basal nerves 3 pairs, the lower two pairs very short, the lateral nerves above the base 5 or 6 on each side of the midrib, anastomosing, very prominent on the lower surface, the reticulations lax, prominent; petioles pale, 1.5 to 8 cm long, very sparingly hirsute. Female flowers umbellate, on slender, axillary, simple peduncles at anthesis about 3 cm long, elongated in fruit, about 10 in each umbel, the pedicels sparingly pubescent, slender, 6 to 8 mm long. Calyx very minute or nearly obsolete. Petals 4,

oblong, 3.5 mm long, 1.2 mm wide, slightly pubescent outside, apex acute or obtuse, more or less inflexed. Staminodes none. Ovary oblong-ovoid, somewhat hirsute, 2 mm long; stigma shallowly cup-shaped, about 1.3 mm in diameter. Fruit narrowly ovoid, somewhat compressed, about 2 cm long, 1.3 cm wide, wrinkled when dry, the pseudostipe about 8 mm long, the persistent petals recurved, pulp scanty, the endocarp crustaceous, coarsely foveolate.

CAMIGUIN DE MINDANAO, Panatayuan, *Bur. Sci.* 14674 Ramos, March 28, 1912, in forests, the flowers greenish-yellow.

Quite distinct from our other Philippine species, *Miquelia cumingii* Baill., and readily recognizable by its prominently reticulate leaves and its sparse pubescence of short, pale, hirsute hairs.

PLATEA Blume

PLATEA PHILIPPINENSIS sp. nov.

Platea latifolia Merr. in *Philip. Journ. Sci.* 1 (1906) Suppl. 58, non Blume.

Species *P. latifoliae* Bl. affinis, differt foliis minoribus, basi acutis, partibus junioribus inflorescentiisque ferrugineo-lepidotis, vix tomentosis, fructibus minoribus.

A dioecious tree 8 to 20 m high, the branches terete, nearly black when dry, glabrous, the branchlets densely lepidote, the scales minute, older ones pale, the younger ones ferrugineous. Leaves oblong-ovate, coriaceous 7 to 12 cm long, 2.5 to 6.5 cm wide, the apex rather prominently acuminate, the base acute, the upper surface dark-colored when dry, glabrous, somewhat shining, the lower pale, densely lepidote; lateral nerves 10 to 12 on each side of the midrib, prominent on the lower surface, darker colored than the surface itself, usually anastomosing; petioles 2 to 3 cm long, more or less lepidote. Male panicles 3 to 6 cm long, narrow, interrupted, the rachis, branches, and calyces ferruginous-lepidote, the scales somewhat ciliate, not tomentose, the lower branches 2 cm long or less, the upper ones reduced to fascicles of flowers. Flowers sessile, glomerate, numerous, the buds globose or depressed-globose. Calyx about 2 mm in diameter, the sepals nearly free, ovate, acute, about 1 mm long. Petals narrowly ovate or ovate-lanceolate, slightly united at the base, glabrous, 2.5 to 3 mm long. Anthers broadly elliptic, about 1.2 mm long. Male racemes axillary, solitary, about 2 cm long, 3- to 5-flowered, ferruginous-lepidote, the pedicels very stout, 2 to 3 mm long. Calyx somewhat cup-shaped, the lobes very broadly ovate or orbicular-ovate, about 2.5 mm long, 3 mm wide. Ovary densely stellate-lepidote, the

thick and short style as broad as the ovary, glabrous. Fruit narrowly ovoid, gradually narrowed upward to the acute or obtuse apex, 2.5 to 3 cm long, apparently black when mature, the pulp scanty, the endocarp hard, deeply longitudinally pitted and sulcate.

LUZON, Province of Bataan, Mount Mariveles, *Elmer 6835*, November, 1904, in fruit; *For. Bur. 2098 Borden*, November, 1904, in fruit; *Whitford 1202* (type), March, 1905, with pistillate flowers. LEYTE, Dagami, *Bur. Sci. 15242 Ramos*, August, 1912, in fruit. CAMIGUIN DE MINDANAO, *Bur. Sci. 14651 Ramos*, March, 1912, with staminate flowers. NEGROS, Cuernos Mountains, *Elmer 9777*, March, 1908, with staminate flowers.

The material from Mount Mariveles, consisting of specimens with pistillate flowers and fruits, was originally referred by me to the Javan *Platea latifolia* Blume, to which the Philippine form is manifestly closely allied. On receipt of staminate material all the specimens were reexamined with the result that it has been considered advisable to describe our local form as a distinct species. The original description of *Platea latifolia* Blume Bijdr. (1826) 647 is quite inadequate, and the later one by Miquel Fl. Ind. Bat. 1:1 793 is also too short. Koorders,⁴ however, gives an excellent and detailed description of the Javan species of the genus, on which my conception of *Platea latifolia* Blume is based. Sterile specimens from Java are also in the herbarium of the Bureau of Science. *Platea philippinensis* grows in forests at and above an altitude of 900 meters.

STERCULIACEAE

FIRMIANA Marsigli

FIRMIANA MERRITTII sp. nov.

Arbor alta; foliis orbiculari-ovatis vel late ovatis, acuminatis, integris, basi latissime rotundatis, profunde et anguste cordatis, vetustioribus glabris, usque ad 18 cm longis; folliculis 8 ad 9 cm longis, circiter 4 cm latis, inflatis, chartaceis, laxe reticulatis, tarde dehiscentibus.

A large tree, reaching a height of 30 m and a trunk diameter of 90 cm, deciduous. Leaves broadly ovate to orbicular-ovate, coriaceous or thickly chartaceous, in maturity glabrous, up to 18 cm long and about as wide, entire, the apex acuminate, the base very broadly rounded, deeply and narrowly cordate, palmately 7- or 9-nerved, the reticulations distinct; petioles 20 cm long. Follicles inflated, tardily dehiscent, narrowly oblong-ovate, base acute, apex obtuse, 8 to 9 cm long, 4 cm wide, the valves laxly reticulate, glabrous or nearly so, thickly chartaceous, not membranaceous or coriaceous, each containing 1 or 2 seeds.

MINDORO, Igsoro River, west coast, *For. Bur. 8555 Merritt*, February 4, 1908, in forested river flats, altitude about 10 meters.

⁴ Meded. 's Lands Plantent. 33 (1900) 156.

The first species of the genus to be found in the Philippines, and remarkable among the few members of the genus in its very tardily dehiscent follicles. In my material, which consists of fallen leaves and follicles, the seeds are nearly mature, yet the follicles scarcely show a sign of opening.

MELOCHIA Dillenius

MELOCHIA UMBELLATA (Houtt.) comb. nov.

Visenia umbellata Houtt. Handl. 8 (1777) 309.

Wisenia indica Gmel. Syst. 2 (1791) 515.

Melochia arborea Blanco Fl. Filip. (1837) 524.

Melochia indica A. Gray ex F.-Vill. Novis. App. (1880) 29; K. Sch. in Engl. Bot. Jahrb. 9 (1887) 209.

This widely distributed and much-named plant has a peculiarly complicated synonymy, and for the last twenty years has been considered by many botanists, after K. Schumann, under a specific name that was neither published by the original author Houttuyn under *Visenia*, as *V. indica*, and was never transferred to *Melochia*, as *M. indica*, by A. Gray until the transfer was made by F.-Villar and K. Schumann and wrongly credited to Gray. Houttuyn in 1777 published the species as *Visenia umbellata*, and this is apparently the oldest valid specific name. Gmelin seems to have made the first use of the specific name *indica*, for he publishes it as *Wisenia indica* with a reference to Christmann and Panzer's German edition of Houttuyn's work Vol. 6 (1780), where, however, the species appears as *Visenia umbellata*. Gmelin, then, simply proposed a new specific name, *indica*, to replace that proposed by Houttuyn. Hasskarl⁵ seems to have been the first author to credit the combination *Visenia indica* to Houttuyn, which he later repeated in his *Platae Javanicae Rariores*, from whence it passed into Miquel's *Flora Indiae Batavae* and other works. K. Schumann manifestly took up the specific name from Miquel.

Asa Gray never published the combination "*Melochia indica* (Houtt.) A. Gray" in the *Botany of the Wilkes Expedition* as credited to him by K. Schumann⁶ but simply indicates that: "*Visenia* cannot be generically distinguished from *Melochia*." K. Schumann was, hence, in error both in taking up the specific name *indica*, and in crediting its transfer to *Melochia* to A. Gray. *Visenia umbellata* Houtt. seems to supply the correct specific name, under *Melochia*, for this very common and widely distributed species, and is accordingly here taken up.

Fernandez-Villar is the first author actually to make the combination *Melochia indica*, but his publication of the combination has been entirely overlooked by later authors, and does not appear in *Index Kewensis*. In the *Novissima Appendix* to the third edition of Blanco's *Flora de Filipinas* (1880) 29 the name *Melochia indica* appears, but is erroneously credited to A. Gray on the authority of Bentham & Hooker f. *Gen. Pl.* 1 (1862) 224. Bentham & Hooker f., however, do not make the transfer, but simply state: "Cetera omnia *Riedleiae* conveniunt et monente Grayo *Viseniam* pro sectione *Melochiae* potius quam genere proprio habemus."

Other synonyms of this species are: *Visenia tomentosa* Miq., *Riedleia tiliaefolia* DC., *R. velutina* DC., *Glossospermum velutinum* Wall., *G. cor-*

⁵ Tijdschr. Nat. Gesch. 12 (1845) 122.

⁶ Engl. Bot. Jahrb. 9 (1887) 209.

datum Wall., *Aleurodendron album* Reinw., *Melochia velutina* Bedd., and *Hypericum pentandrum* Blanco.

I am indebted to Sir D. Prain, director, Royal Gardens, Kew, for references from the publications of Houttuyn and Gmelin, which are not available in Manila, and for a memorandum covering the case as to the oldest specific name for the species.

BUETTNERIA Linnaeus

BUETTNERIA ECHINATA Wall. Cat. (1829) no. 1149; Gagnep. in Lecomte Fl. Gén. Indo-China 1 (1911) 520.

MINDORO, near Calapan, *Bur. Sci. 21268 Escritor*, July, 1913.

The identification has been made after Gagnepain, the Mindoro specimen agreeing well with *Pierre 3746* from Tay-ninh, Cochin China, so named by Gagnepain, and with his description of the species. Masters refers the Wallichian species with doubt to *Buettneria crenulata* Wall., while Gagnepain cites the latter as a synonym of *B. echinata*. The genus is new to the Philippines.

Nepal and Burma to Indo-China.

THEACEAE

ADINANDRA Jack

ADINANDRA ROSTRATA sp. nov.

Arbor circiter 30 m alta partibus junioribus exceptis glabra; foliis subcoriaceis, nitidis, oblongo-ovatis vel oblongo-ellipticis, integris, usque ad 14 cm longis, utrinque angustatis, apice acuminatis, basi acutis vel decurrento-acuminatis, nervis utrinque circiter 14, tenuibus; fructibus axillaribus, solitariis, longe pedunculatis, ovoideis, 1.5 cm longis, longe caudato-rostratis.

A tree about 30 m high, glabrous except the branchlets (flowers not seen). Branches terete, brownish, glabrous, the branchlets sparingly pilose, the tips rather densely so. Leaves entire, subcoriaceous, the younger ones thinner, oblong-ovate to oblong-elliptic, 8 to 14 cm long, 3.5 to 6.5 cm wide, narrowed at both ends, the apex acuminate, the base acute or decurrent-acuminate, shining, of about the same color on both surfaces and somewhat yellowish when dry; lateral primary nerves about 14 on each side of the midrib, slender, anastomosing, the reticulations rather lax; petioles 5 to 10 mm long. Flowers not seen. Fruits axillary, solitary, their peduncles 4 cm long, the persistent sepals suborbicular to subreniform, coriaceous, glabrous, rounded, about 8 mm wide, the outer ones somewhat smaller than the inner, the fruit ovoid, about 1.5 cm long, 1.2 to 1.4 mm thick, glabrous, prominently caudate-rostrate, the beak 1 to 1.4 cm long, 3-celled, the pericarp thick. Seeds two or three in each cell, about 6

mm long, flattened, reddish-brown, obovate, shining, the cotyledons hippocrepiform.

LUZON, Province of Laguna, Dahican River, *Phil.* 1567 Ramos, September 13, 1912, in forests.

A species characterized by its few, comparatively large seeds, in which it differs from most species in the genus. It is possible that when flowers are known it will be necessary to transfer the species to some other genus, but in general appearance and in all characters, perhaps other than the seed, it is apparently an *Adinandra*.

ADINANDRA MAQUILINGENSIS sp. nov.

Arbor parva, ramulis foliisque junioribus pilosis, vetustioribus glabris vel subglabris; foliis coriaceis, 3.5 ad 6 cm longis, nitidis, oblongo-ellipticis ad oblongo-obovatis breviter acuminatis, basi acutis, margine in $\frac{1}{2}$ superiore crenulato-denticulatis, nervis utrinque circiter 12, tenuibus; sepalis 5, subaequalibus, oblongo-ovatis, obtusis, 8 mm longis; ovario leviter piloso, 5-loculare.

A tree about 12 m high, the very young branchlets and young leaves rather softly pilose with appressed hairs, the older parts glabrous or nearly so. Branches terete, very dark-gray or nearly black, rather smooth, the branchlets brownish. Leaves coriaceous, 3.5 to 6 cm long, 1.5 to 2.5 cm wide, oblong-elliptic to oblong-obovate, the base acute, the apex shortly acuminate, the margins in the upper one-half crenulate-denticulate, below entire, both surfaces shining, the lower a little paler than the upper, yellowish-green when dry; lateral nerves about 12 on each side of the midrib, slender, distinct but not prominent, about equally evident on both surfaces, anastomosing; petioles 3 to 5 mm long. Flowers axillary, solitary, the pedicels stout, curved, glabrous, about 2 cm long. Sepals subequal, oblong-ovate, 8 mm long, 5 mm wide, obtuse, somewhat appressed-pubescent. Petals and stamens not seen. Very immature fruit ovoid, 7 mm long, 5-celled, sparingly pilose, the style 8 mm long. Ovules very numerous in each cell, apparently but few developing into seeds.

LUZON, Province of Laguna, Mount Maquiling, in forests on the upper slopes, altitude probably about 1,000 m, *Bur. Sci.* 13650 Ramos, September, 1911, from the Batangas side of the mountain.

A species well characterized by its comparatively small leaves.

ADINANDRA CORIACEA sp. nov.

Arbor glabra; foliis integris, oblongo-ellipticis, coriaceis, 12 ad 15 cm longis, basi acutis, apice latissime breviter obtuse acuminatis, nervis utrinque circiter 15, distinctis, tenuibus, petiolo circiter 1 cm longo; fructibus brunneis, ovoideis, laevis, apiculatis, circiter 1.5 cm longis, 2-locellatis; seminibus 10 ad

12, planis, anguste ovoideis, utrinque sulcatis, nitidis, 6 mm longis; sepalis persistentibus, margine leviter ciliatis.

A glabrous tree, size not indicated. Branches terete, reddish-brown or grayish, smooth. Leaves coriaceous, entire oblong-elliptic, 12 to 15 cm long, 4 to 6.5 cm wide, subequally narrowed at both ends, the base acute, the apex very broadly, shortly, and bluntly acuminate, the upper surface pale-olivaceous when dry, the lower brownish, paler, both slightly shining and very minutely punctulate, glabrous; lateral nerves about 15 on each side of the midrib, slender, rather distinct, about equally prominent on both surfaces, anastomosing, forming a double row of arches, the reticulations lax, indistinct; petioles stout, about 1 cm long. Flowers not seen, the pedicels in fruit stout, 2 to 2.5 cm long, the persistent calyx lobes coriaceous, at first apparently somewhat pubescent, becoming quite or nearly glabrous, the outer two smaller than the inner three which are more or less reniform, entire or nearly so, somewhat reniform or very broadly rounded-ovate, about 8 mm wide, margins deciduously ciliate, in age glabrous or nearly so. Fruit ovoid, about 1.5 cm long, smooth, brown, somewhat shining, entirely glabrous, 2-celled, the pericarp rather thick, dry and brittle in texture. Seeds 10 to 12, brown, shining, flattened, narrowly obovoid, rounded at the apex, about 6 mm long, longitudinally grooved along the middle of both faces.

LUZON, Province of Laguna, Cavinti, *For. Bur.* 19667 *Racelis*, August, 1912.

A species manifestly closely allied to the Malayan *Adinandra acuminata* Korth., from which it differs in its differently shaped, very broadly and obtusely acuminate, more numerously nerved leaves, longer petioles, and other characters.

ADINANDRA LOHERI sp. nov.

Arbor, gemmis petalis staminibusque exceptis glabra; foliis ellipticis, coriaceis, usque ad 10 cm longis, basi decurrento-acuminatis, apice late rotundatis ad brevissime late acuminatis, margine crenulatis vel denticulato-crenulatis, subtus obscurissime glanduloso-maculatis, nervis utrinque tenuibus, distinctis, circiter 15; floribus 5-meris; sepalis glabris; petalis extus in partibus medianus villosis, 1.8 cm longis; staminibus circiter 50, leviter hirsutis; ovario 5-loculare, glaber.

A tree, quite glabrous except the vegetative buds and some parts of the flowers. Branches terete, grayish or dark-colored, the young branchlets reddish-brown, the vegetative buds pale-villous. Leaves coriaceous, elliptic, 6 to 10 cm long, 3.5 to 5

cm wide, the apex broadly rounded to broadly and shortly obtuse-acuminate, base somewhat decurrent-acuminate, margins crenulate or crenulate-denticulate, the upper surface smooth and shining, dark-olivaceous when dry, the lower surface paler, brown, obscurely glandular-maculate; lateral nerves about 15 on each side of the midrib, slender, distinct, anastomosing, more prominent on the lower than on the upper surface; petioles 5 to 7 mm long. Flowers 5-merous, axillary, solitary, the peduncles glabrous, curved, stout, about 2 cm long. Calyx glabrous, the lobes orbicular to orbicular-reniform, broadly rounded, coriaceous, concave, about 7 mm long, 6 to 8 mm wide, margins sometimes slightly ciliate, not glandular. Petals obovate, broadly rounded, about 1.8 cm long, 1.3 cm wide, the exposed median portions of the back rather densely appressed-pubescent with pale hairs otherwise glabrous. Stamens about 50; filaments 4 to 8 mm long, slightly hirsute; anthers oblong-lanceolate, acute or acuminate, slightly hirsute, 4 mm long. Ovary ovoid, glabrous, narrowed upward into the glabrous style, 5-celled, the ovules indefinite.

LUZON, Province of Rizal, Oriud, *Loher 5604*, December, 1905.

A characteristic species, apparently allied to *Adinandra lamponga* Miq., but differing in many details. It is well characterized, among the Philippine forms, by being nearly glabrous, the only pubescent parts being the very small vegetative buds, the median parts of the petals, outside, and the stamens.

ADINANDRA MACGREGORII sp. nov.

Arbor circiter 15 m alta, plus minusve villosa; foliis coriaceis, ellipticis ad oblongo-ellipticis, usque ad 10 cm longis, supra nitidis, gabris, subtus adpresse villosis, basi acutis ad subrotundatis, apice breviter acuminatis, margine distincte minuteque glanduloso-denticulatis, nervis utrinque 12 ad 15, distinctis; sepalis extus villosis, petalis late ellipticis, rotundatis, circiter 1.4 cm longis; staminibus 35, antheris parce villosis; ovario 4-loculare, dense pallide villosa.

A tree about 15 m in height, the buds and growing branchlets very densely appressed-villous with pale hairs, the petioles, lower surfaces of the leaves, and flowers less densely villous. Branches terete, grayish, glabrous. Leaves coriaceous, elliptic to oblong-elliptic, 5 to 10 cm long, 2.5 to 4 cm wide, apex shortly acuminate, base somewhat rounded to somewhat acute, margins very minutely glandular-denticulate, the upper surface olivaceous when dry, glabrous and shining, the lower much paler, with scattered, more or less appressed, pale hairs; lateral nerves

12 to 15 on each side of the midrib, slender, distinct, anastomosing, about equally evident on both surfaces; petioles densely villous, 3 mm long. Flowers axillary, solitary, 5-merous, their peduncles stout, curved, somewhat villous, about 2.5 cm long. Sepals about 1 cm long, 7 mm wide, coriaceous, ovate, acute or slightly acuminate, glabrous inside, outside somewhat densely appressed-villous with pale, short hairs, the margins minutely glandular-denticulate. Petals broadly elliptic to elliptic-ovate, rounded, not at all retuse, 1.4 cm long, 1 cm wide, externally appressed-villous in the exposed median parts, inside and the broad margins externally glabrous. Stamens 35; filaments glabrous, 4 to 5 mm long; anthers lanceolate, acuminate, 5 mm long, very sparingly villous with long stiff hairs on the back. Ovary ovoid, densely villous, 4-celled, the ovules indefinite; style stout, about 8 mm long, widened below to the ovary, prominently villous except near the glabrous apex, cleft into four 1.5 to 2 mm long arms, the stigmas capitate.

LUZON, Benguet Subprovince, Pauai, *Bur. Sci.* 8425 McGregor, June, 1909, in forests, altitude above 2,100 m.

A species manifestly allied to *Adinandra elliptica* C. B. Rob., but distinguishable at once by its much larger flowers, as well as by numerous details in vegetative and floral characters.

ADINANDRA NIGRO-PUNCTATA sp. nov.

Arbor circiter 10 m alta, subglabra; foliis coriaceis, ellipticis ad oblongo-obovatis, 4 ad 7 cm longis, nitidis, basi acutis, apice late acuminatis vel obtusis, minute retusis, margine minute glanduloso-denticulatis, subtus glandulis minutis sparsis nigris instructis, nervis utrinque circiter 7; sepalis 5, subaequalibus, ellipticis, glabris; staminibus circiter 50, densissime hirsutis; ovario glabro, 5-loculare.

A tree about 12 m in height, glabrous except the flowers and the growing tips of the branchlets. Branches stout, terete, reddish-brown, glabrous, the terminal buds pubescent. Leaves coriaceous, elliptic to oblong-obovate, 4 to 7 cm long, 1.5 to 3 cm wide, the base acute, the apex very broadly and shortly blunt-acuminate, sometimes merely obtuse, usually minutely retuse, margins very obscurely and minutely glandular-denticulate, in the lower part quite entire, the upper surface somewhat olivaceous when dry, strongly shining, usually minutely verruculose, the lower surface a little paler, with small, scattered, black glands; lateral nerves about 7 on each side of the midrib, slender, not prominent, about equally evident on both surfaces; petioles 5 mm long. Flowers axillary, soli-

tary, white, their pedicels glabrous, stout, about 2 cm long. Sepals subequal, glabrous, elliptic, broadly rounded, usually somewhat retuse, 10 mm long, 8 mm wide. Petals broadly elliptic, about 1.8 cm long, 1 to 1.3 cm wide, coriaceous broadly rounded, slightly retuse, the median exposed parts very densely pale-hirsute, otherwise glabrous. Stamens about 50; filaments 5 mm long, densely hirsute; anthers ovate-lanceolate, somewhat acuminate, 4 mm long, densely hirsute. Ovary glabrous, ovoid, 5-celled, ovules very numerous in each cell; style glabrous, 12 mm long, the stigma minute, subcapitate.

LEYTE, Dagami, in forests, *Bur. Sci. 15355 Ramos*, August 13, 1912.

A characteristic species, distinguishable by its rather large flowers which are glabrous except for the densely hirsute median parts of the petals externally and the stamens, subequal broadly elliptic petals, subequal broadly elliptic sepals, and its vegetative characters; the scattered, minute, black glands on the lower surface are characteristic.

DILLENACEAE

DILLENIA Linnaeus

DILLENIA MONANTHA sp. nov. § *Wormia*.

Arbor glabra, usque ad 12 m alta; foliis coriaceis, ellipticis ad obovato-ellipticis, usque ad 12 cm longis, obtusis, acutis, vel latissime breviter acuminatis, basi acutis, decurrentibus, margine subintegris vel distanter irregulariter dentatis, nervis utrinque 6 ad 8; floribus flavidis, in axillis superioribus, solitariis, circiter 10 cm diametro, sepalis extus cinereo-pubescentibus; carpellis 5, leviter hirsutis; staminibus interioribus quam exterioribus multo longioribus, antheris poro terminalibus dehiscentibus.

A glabrous tree reaching a height of 12 m, the branches terete, rugose, reddish-brown or grayish. Leaves alternate, coriaceous, rather pale when dry, shining, elliptic to elliptic-obovate, 8 to 12 cm long, 5 to 8 cm wide, the apex subacute, obtuse, or broadly and shortly acuminate, the base acute, the lamina decurrent on the petiole as narrow wings, the margins subentire to distantly dentate; lateral nerves 6 to 8 on each side of midrib, curved, anastomosing, distinct; petioles stout, narrowly decurrent-winged, 1 to 1.5 cm long. Flowers solitary in the upper axils, yellow, about 10 cm in diameter, their peduncles 2 to 4 cm long. Sepals 5, elliptic to elliptic-obovate, rounded, concave, coriaceous, 1.5 to 2 cm long, 1 to 1.4 cm wide, outside more or less cinerous-pubescent. Petals yellow, obovate, membranaceous, about 5 cm long, 3.5 cm wide. Stamens very numerous, the interior ones up to 1.8 cm long, the exterior ones gradually shorter, the outermost

8 to 10 mm long, the anthers opening by terminal pores. Carpels 5, slightly hirsute, 7 mm long, oblong, subcylindric; styles 5, about 1 cm long; ovules about 16, 2-seriate. Fruit not seen.

PALAWAN, Taytay, Merrill 9237 (type), flowering from April 10 to June and probably later, 1913; Malampaya Bay, *Bur. Sci.* 21555 *Escritor*, August, 1913, *For. Bur.* 4518 Curran, June 21, 1913. DUMARAN, *Bur. Sci.* 21642 *Escritor*, August, 1913. CULION, *Bur. Sci.* 15647 *Féniex*, July 11, 1913.

This species is common at low altitudes in northern Palawan, growing in thin, second growth forests, and in and along the borders of open *cogonales*, that is, areas occupied by the cogon or lalang grass (*Imperata cylindrica*). It is, perhaps, most closely allied to the Malayan *Dillenia pulchella* (Jack) Gilg, and among the Philippine species to *Dillenia sibuyanensis* (Elm.) (*Wormia sibuyanensis* Elm.). Its solitary flowers, together with its somewhat decurrent laminae and its few carpels are striking differential characters.

LECYTHIDACEAE

BARRINGTONIA Forster

BARRINGTONIA PTERITA sp. nov.

Arbor parva, glabra; foliis ad apices ramulorum plus minusve confertis, oblanceolatis, sessilibus vel subsessilibus, usque ad 40 cm longis, acuminatis, basi sensim angustatis; racemis circiter 70 cm longis, pendulis; fructibus oblongis, 6 cm longis, longitudinaliter 4-alatis.

A small glabrous tree, 10 m high *vide* Ramos. Branches terete, the ultimate ones about 6 mm in diameter, above with rather prominent petiolar scars. Leaves somewhat crowded at the ends of the branchlets, oblanceolate, 20 to 40 cm long, 4 to 8 cm wide, entire, rather pale when dry, somewhat shining, chartaceous, the apex rather sharply acuminate, gradually narrowed from above the middle to the base, the base 1 cm wide or less, then abruptly acute or rounded, the petiole none, or stout and 4 mm long or less; lateral nerves about 20 on each side of the midrib, rather prominent on the lower surface. Racemes pendulous, about 70 cm long, the flowers unknown. Fruit oblong or narrowly oblong, 6 cm long, 1.5 to 2.5 cm wide, the base acute the pedicels about 1 cm long, the persistent sepals crowning the apex about 1 cm in length, the four angles longitudinally winged, the wings subcoriaceous, about 5 mm wide.

LUZON, Province of Laguna, Dahican River back of San Antonio, *Bur. Sci.* 15121 Ramos, June, 1912.

A species manifestly allied to *Barringtonia racemosa* Blume, but at once distinguishable by its prominently longitudinally 4-winged fruits, in this character differing from all the previously known Philippine species. *Elmer* 9168 from Lucban, Tayabas Province, is undoubtedly a small leaved form of the same species; it was distributed as *Barringtonia racemosa* Blume.

FLACOURTIACEAE

HYDNOCARPUS Gaertner

HYDNOCARPUS CAULIFLORA sp. nov. § *Euhydnocarpus*, *Oliganthera*.

Arbor parva inflorescentiis exceptis glabra; foliis late oblongis, chartaceis vel tenuiter coriaceis, usque ad 30 cm longis, nitidis, acuminatis, basi late cordato-rotundatis, nervis utrinque circiter 15, valde prominentibus, petiolo vix 1 cm longo; inflorescentiis fulvo-villosis, usque ad 15 cm longis, anguste paniculatis vel racemosis, caulinis.

A small tree, glabrous except the inflorescence. Branches slender, terete. Leaves alternate, broadly oblong, chartaceous or thinly coriaceous, of the same color and shining on both surfaces when dry, 23 to 30 cm long, 9 to 12 cm wide, the base broad, rounded, somewhat cordate, the apex shortly acuminate; lateral nerves about 15 on each side of the midrib, very prominent, somewhat curved, anastomosing near the margin, the primary reticulations rather lax, the ultimate ones slender, rather dense; petioles stout, 5 to 8 mm long. Inflorescence of very narrow raceme-like panicles or of simple racemes fascicled on the trunk, 5 to 15 cm long, densely fulvous-villous. Male flowers: Pedicels stout, villous, 3 mm long, the subtending bracteole densely villous, narrowly oblong, 2 mm long. Sepals 5, free, concave, villous, rounded, about 5 mm long. Petals 5, free, imbricate, thinner than the sepals, elliptic, rounded, 3 mm long, somewhat appressed-pilose on the back, the basal scale cleft, the lobes reflexed, about 1 mm long. Filaments villous-bearded, 1.5 mm long. Anthers ovoid, 1 to 1.2 mm long. Rudimentary ovary villous, small. Female flowers and fruits not seen.

MINDANAO, District of Cotabato, Lebak, *For. Bur.* 11799 Whitford, March, 1912, in dipterocarp forests at low altitudes.

A very characteristic species, its inflorescence looking more like that of *Ryparosa* than of *Hydnocarpus*. The structure of its flowers, however, place it in *Hydnocarpus*. It is strongly characterized by its broadly oblong leaves which are prominently nerved and broadly rounded-cordate at the base, and especially by its cauline inflorescence.

XYLOSMA Forster f.

XYLOSMA LUZONENSIS (Presl) comb. nov.

Prockia luzonensis Presl Rel. Haenk. 2 (1835) 94.

Xylosma cumingii Clos. in Ann. Sci. Nat. IV. 8 (1857) 252; F.-Vill. Novis. App. (1880) 13; Vid. Phan. Cuming. Philip. (1885) 94, Rev. Pl. Vasc. Pilip. (1886) 49.

LUZON, without definite locality, *Haenke* in Herb. Prague (type): Province of Cagayan, *For. Bur.* 17114 Curran, *For. Bur.* 18506 Alvarez, *For.*

Bur. 14758, 14748 *Darling*: Province of Ilocos Norte, *Cuming* 1250: Province of Ilocos Sur, *Cuming* 1123: Province of Nueva Vizcaya, *For. Bur.* 15844 *Curran & Merritt*: Benguet Subprovince, *Elmer* 6423: Province of Pangasinan, *For. Bur.* 8376 *Curran & Merritt*: Province of Zambales, *Bur. Sci.* 5042 *Ramos*, *Merrill* 2916: Province of Rizal, *For. Bur.* 1893 *Ahern's collector*: Province of Tayabas (Principe), *Merrill* 1018.

This species appears to be common and widely distributed in northern Luzon. The specimens cited above show considerable variation but are all apparently referable to a single species. Presl's description was based on at least two specimens, one in flower, and one in fruit. The type in the herbarium of the Museum des Königreichs Böhmen at Prague, consists of a fruiting and a flowering specimen mounted on the same sheet, and is, at least in part, identical with the later *Xylosma cumingii* Clos. The earliest name is here adopted.

XYLOSMA SULUENSIS sp. nov.

Frutex glaber circiter 5 m altus; ramulis pallidis, foliis oblongo-ovatis vel oblongo-lanceolatis, chartaceis, nitidis, basi acutis, apice acuminatis, margine integris, usque ad 18 cm longis; racemis axillaribus, solitariis, glabris, quam petiolo paullo longioribus, paucifloris; fructibus globosis, 6 ad 8 mm diametro.

A glabrous shrub about 5 m high, the branches and branchlets slender, terete, very pale, with few, scattered lenticels. Leaves oblong-ovate to oblong-lanceolate, entire, 9 to 18 cm long, 3.5 to 6 cm wide, chartaceous, shining and of about the same color on both surfaces, when dry brownish-olivaceous, the base acute, the apex acuminate, gradually narrowed upward from below the middle, the base often with one or two small glands on the margins near the insertion of the petiole; lateral nerves slender, ascending, about 10 on each side of the midrib; petioles 8 to 10 mm long. Racemes axillary, solitary, glabrous, 2 cm long or less, few-flowered. Flowers unknown. Fruits usually about five to each raceme, globose, 6 to 8 mm in diameter, crustaceous when dry, smooth, crowned by the very short style, their pedicels 3 to 4 mm long, the subtending bracteoles ovate-lanceolate, 1.5 mm long or less. Seeds 4, black, concave, about 4 mm wide.

UBIAN ISLAND, Sulu Archipelago, *Merrill* 5398, October 12, 1906, in thickets back of the beach.

A species well characterized by its entire leaves with are considerably larger than are those of our other species, *Xylosma luzonensis* (Presl) Merr.

FLACOURTIA Commerson

FLACOURTIA EUPHLEBIA sp. nov.

Frutex spinosus circiter 4 m altus subtus foliis ad nervos dense pubescentibus; foliis oblongis, subcoriaceis, usque ad 18 cm longis, basi acutis vel rotundatis, apice breviter acuminatis, margine distincte crenato-serratis; nervis utrinque circiter 10,

valde prominentibus, anastomosantibus; fructibus subovoideis, circiter 1 cm longis, in siccitate circiter 7-sulcatis.

A spiny shrub about 4 m high, the younger branchlets, petioles, and nerves on the lower surfaces of the leaves more or less pubescent. Branches terete, reddish-brown or brown, glabrous, lenticellate, the younger ones with solitary or paired, sharp, nearly straight, 5 to 10 mm long spines subtending each leaf, or the spines often scattered along the branchlet. Leaves oblong, subcoriaceous, brownish when dry and of about the same color on both surfaces, 12 to 18 cm long, 5 to 8 cm wide, the base acute or somewhat rounded, usually with a pair of glands near the insertion of the petiole, the apex rather abruptly and shortly acuminate, margins, except near the base, distinctly crenate-serrate, the midrib and lateral nerves on the lower surface, and in younger leaves on the upper surface, rather densely brown-pubescent; lateral nerves about 10 on each side of the midrib, very prominent on the lower surface, straight, looped-anastomosing near the margin; petioles pubescent, becoming nearly glabrous in age, stout, 4 to 12 mm long. Flowers unknown. Fruit ovoid, fleshy, edible, acid, about 1 cm long, black, when dry, and rather distinctly 7-sulcate.

MINDANAO, District of Davao, Todaya, *Williams 2572*, April 4, 1905.

The specimen has been identified as *Flacourtia montana* Grah., which species, to a certain degree, it resembles. It is, however, entirely different in its leaf-venation, and does not agree with any previously described species of the genus so far as I am able to determine. It is remarkable for its very prominently veined leaves.

RYPAROSA Blume

RYPAROSA CAULIFLORA sp. nov.

Species *R. longipedunculatae* Boerl. similis et ut videtur affinis, differt foliis majoribus, usque ad 35 cm longis, late oblongo-ovatis, apice late rotundatis, nervis utrinque circiter 9.

A shrub or small tree, apparently glabrous except the more or less puberulent inflorescence. Branches terete, brownish when dry. Leaves alternate firmly chartaceous, broadly oblongo-ovate, up to 35 cm long and 17 cm wide, shining when dry, the upper surface brownish-olivaceous, the lower surface pale and somewhat glaucous, the base acute, the apex broadly rounded; nerves 9 on each side of the midrib, curved-ascending, prominent, the reticulations distinct, rather lax; petioles about 9 cm long, geniculate above. Inflorescence apparently racemose, the racemes solitary, springing from the trunk or from the larger branches, up to 35 cm in length, cinereous-puberulent.

Flowers unknown. Immature fruits globose, wrinkled when dry, subglobose, 1 to 1.5 cm in diameter, gray-puberulent externally.

TINAGO ISLAND, *Ahern 416*, collected by *Quadras* between February and May, 1901, locally known as *bunganon*.

The species above described was previously determined by me as *Ryparosa longipedunculata* Boerl., but comparison with authentic material from specimens cultivated in the Botanical Garden at Buitenzorg, show that it is a species quite different from that, although probably closely allied to it.

CASEARIA Jacquin

CASEARIA BREVIPES sp. nov. § *Pitumba*.

Arbor parva, glabra; foliis oblongis vel late oblongo-lanceolatis, chartaceis vel subcoriaceis, in siccitate brunneis, usque ad 20 cm longis, subintegris vel distanter minuteque glanduloso-denticulatis, utrinque angustatis, apice longe acuminatis, basi acutis vel subrotundatis, brevissime petiolatis, nervis utrinque 8 ad 10; floribus axillaribus, fasciculatis, 5-meris, pedicellatis. Staminibus 10, staminodeis oblongis, apice capitatis, dense ciliatis.

A small tree, quite glabrous, the branches prominently zigzag, terete, grayish, rather slender. Leaves oblong to broadly oblong-lanceolate, 14 to 20 cm long, 4 to 7 cm wide, subentire or with widely scattered, minute, gland-like, obscure teeth, chartaceous to subcoriaceous, when dry somewhat brownish, the upper surface slightly shining, the lower a little paler, narrowed at both ends, the base acute or somewhat obtuse, rarely somewhat rounded, equilateral, the apex rather long-acuminate, the acumen blunt; lateral nerves 8 to 10 on each side of the midrib, rather prominent on the lower surface, somewhat curved-ascending, anastomosing near the margin, the reticulations distinct; petioles stout, 2 to 3 mm long. Flowers axillary, few, fascicled, on thickened, prominent, axillary tubercles, 5-merous. Pedicels glabrous, up to 3 mm long, jointed, each subtended by two broadly ovate bracteoles about 1 mm long. Sepals 5, broadly elliptic, rounded, concave, glabrous, membranaceous, 3 to 4 mm long. Stamens ten, 3 mm long, the tubular part about 1 mm long, glabrous, the free parts of the filaments and the anthers each about 1 mm long, the ten, alternating, free staminodes oblong, shorter than the stamens, the apical parts suborbicular-capitate, densely ciliate. Ovary narrowly ovoid, about 2 mm long, narrowed upward to the sessile or subsessile capitate stigma, glabrous, or with very few scattered hairs. Fruit unknown.

BASILAN, *Bur. Sci. 16113 Reillo*, August 31, 1912, along streams.

The species is well characterized by its leaves being narrowed at both

ends, prominently acuminate at the apex and usually acute at the base, the distant, minute, gland-like marginal teeth, the very short petioles, and the subcapitate tips of the staminodes.

CASEARIA LOHERI sp. nov.

Arbor parva, 4 ad 6 m alta, partibus junioribus floribusque exceptis glabra; foliis chartaceis, oblongo-ovatis ad obovatis, usque ad 18 cm longis, breviter petiolatis, in siccitate brunneis, integris, basi rotundatis, apice late acuminatis, nervis utrinque 5 vel 6; floribus axillaribus, fasciculatis, paucis, 5-meris, extus leviter hirsutis. Staminibus 10.

A small tree 4 to 6 m high, quite glabrous except the flowers and the growing tips of the branchlets which are sparingly hirsute with short, appressed hairs. Branches slender, terete, smooth, grayish. Leaves chartaceous, oblong-ovate to obovate, 8 to 18 cm long, 4 to 8 cm wide, entire, the upper surface rather dark-brown or olivaceous-brown when dry, slightly shining, the lower somewhat paler, the base usually broad, rounded, sometimes subacute, equilateral or nearly so, the apex with a short, broad acumen; lateral nerves 5 or 6 on each side of the midrib, distant, rather prominent on the lower surface, curved or curved-ascending, anastomosing, the reticulations distinct; petioles 4 to 7 mm long. Flowers 5-merous, axillary, fascicled and few or subsolitary, their pedicels very short, jointed, the subtending bracteoles 2, reniform or very broadly ovate, somewhat connate, broadly acuminate, externally somewhat pubescent with short hairs. Sepals 5, elliptic, rounded, slightly pubescent externally, concave, 3.5 to 4 mm long. Stamens 10, their filaments united below with the alternating staminodes, the tubular part glabrous, 0.8 mm long, the free parts of the filaments slender, glabrous, 1.4 mm long; anthers oblong-ovate 0.8 mm long. Alternating staminodes shorter than the stamens, oblong, obtuse, 1 to 1.2 mm long, glabrous externally, prominently ferruginous-hirsute at the apex. Ovary ovoid, 1.2 mm long, ferruginous-hirsute in the upper one-half, narrowed to the subsessile or sessile capitate stigma. Fruit ovoid or ellipsoid, glabrous, fleshy, reddish when mature, 2 cm long, the valves coriaceous. Seeds about 15, obliquely obovoid, about 5 mm long, externally densely covered with roundish, distinct, pale dots. Aril thin, submembranaceous, 8 to 10 mm long, enveloping the seed, the upper part more or less lacerate.

LUZON, Province of Rizal, San Isidro, *Bur. Sci. 13525 Ramos* (type), August, 1910, in forests, *Bur. Sci. 1851 Ramos*, January, 1907, in fruit; Oriud, *Loher 6215*.

A species manifestly allied to *Casearia fuliginosa* Blanco, but readily distinguishable by its fewer-nerved leaves. In *C. fuliginosa* Blanco the nerves are usually about 10 on each side of the midrib, in *C. loheri* 5 or 6 on each side. The type was from Rizal Province, not from Laguna Province as distributed.

CASEARIA SUBCORDATA sp. nov. § *Pitumba*.

Arbor parva partibus junioribus floribusque exceptis glabra; foliis coriaceis, oblongis, nitidis, in siccitate brunneis, usque ad 15 cm longis, breviter acute acuminatis, basi abrupte subtruncato-cordatis, leviter inaequalibus, margine serratis, nervis utrinque circiter 12; floribus axillaribus, fasciculatis, ut videtur numerosis, 5-meris, tenuiter pedicellatis; fructibus anguste ovoideis vel ellipsoideo-ovoidis, 1 ad 1.4 cm longis, acutis, in siccitate leviter 6-sulcatis.

A small tree, nearly glabrous except the younger parts. Branches terete, lenticellate, grayish-brown or reddish-brown, glabrous, the younger branchlets distinctly hirsute with short hairs. Leaves oblong, coriaceous, 8 to 15 cm long, 3.5 to 5.5 cm wide, the base abruptly and somewhat obliquely subtruncato-cordate, the sinus shallow, the basal lobes broadly rounded, the apex shortly but rather sharply acuminate, the margins regularly and rather finely serrate throughout, brown when dry, the upper surface strongly shining, the lower a little paler, shining, glabrous or when young with few short hairs on the lower surface; lateral nerves about 12 on each side of the midrib, prominent, somewhat curved, anastomosing, the reticulations fine, distinct; petioles 5 to 8 mm long, the younger ones slightly pubescent. Flowers 5-merous, axillary, fascicled, their pedicels slender, 3 to 6 mm long, slightly pubescent. Sepals 5, oblong-ovate, glabrous or nearly so, coriaceous, obtuse, 3 mm long slightly accrescent and persistent in fruit, somewhat hirsute on the median portion inside. Stamens apparently 10; filaments 0.5 mm long; anthers a little longer; staminodes shorter than the stamens, densely ciliate-hirsute. Ovary narrowly ovoid, glabrous, narrowed upward to the short style, the stigma capitate. Fruit narrowly ovoid to ovoid-ellipsoid, 1 to 1.4 cm long, glabrous, numerous, 2 to 6 or more in each axil, shallowly longitudinally 6-sulcate when dry, acute; valves thickly coriaceous. Seeds about 12 in each fruit, smooth, brown, somewhat inequilaterally obovoid or oblong-obovoid, 4 mm long; aril fleshy, about 5 mm long, quite inclosing the seeds, irregularly lacerate and divided. Peduncles of the fruits about 1 cm long.

MINDANAO, Bukidnon Subprovince, *Bur. Sci.* 15698 *Fénix*, August, 1912.

A species manifestly very closely allied to *Casearia polyantha* Merr.,

which it greatly resembles, but distinguishable by its leaves being truncate-cordate at the base. Its leaf-form is somewhat similar to that of *C. cinerea* Turcz., and *C. grewiaefolia* Vent., but these two species are at once distinguished by their pubescence. *G. truncata* Bl., is also apparently closely allied.

ARALIACEAE

BOERLAGIODENDRON Harms

BOERLAGIODENDRON HETEROPHYLLUM sp. nov.

Arbor erecta, ramosa, circiter 5 m alta, glabra; foliis palmatis 3- ad 7-foliolatis, foliolis valde inaequalis, oblongo-obovatis vel late oblongo-lanceolatis, acuminatis, inferioribus vix 12 cm longis, superioribus usque ad 35 cm longis, acuminatis, lobatis dentatisque, basi sensim angustatis; umbellis densis, floribus subcapitato-dispositis, 4-meris.

An erect, branched tree about 5 m high, glabrous, the trunk about 8 cm in diameter. Leaves chartaceous, palmately 3- to 7-foliolate, or sometimes some of the leaves very deeply 3-parted, the lobes extending almost to the base; leaflets very unequal in size, when 5 or 7 are present the lower two usually 12 cm long or less, the upper ones larger, the middle one up to 35 cm in length, oblong-obovate to broadly oblong-oblongeolate, acuminate, usually lyrate-lobed, dentate, the lobes broadly ovate, acuminate, the base gradually narrowed, the petiolules of the middle leaflets up to 3 cm in length, of the others gradually shorter; petioles 10 to 25 cm long, the basal part with four or more somewhat pectinate crests. Umbels terminal, about 30 terminating each branch, forming a dense cauliflower-like inflorescence, the peduncles 10 to 15 mm long, each with two lanceolate, 8 to 10 mm long bracts at the apex subtending the two lateral branches. Central head of each peduncle almost sessile, subcapitate, of numerous sterile flowers, their pedicels 3 to 4 mm long, the ovaries ellipsoid, about 3 mm long. Lateral two umbels about 1 cm in diameter, dense, subcapitate, their peduncles 8 to 10 mm long. Flowers numerous, sessile or subsessile, 4-merous. Petals 2 mm long. Anthers about 1 mm long.

MINDANAO, Butuan Subprovince, Mount Hilong-Hilong, *Weber 1126*, March 29, 1911, in forests, altitude about 550 m.

A species most closely allied to *Boerlagiodendron clementis* Merr., of Mindanao, but at once distinguished by its leaves being palmately compound.

SCHEFFLERA Forster

SCHEFFLERA OBOVATA sp. nov. § *Euschefflera*, *Heptapleurum*.

Frutex epiphyticus, inflorescentiis exceptis glaber; foliis palmatis 5- ad 7-foliolatis, foliolis subcoriaceis, nitidis, obovatis,

integris, basi angustatis, acutis, apice abrupte caudatis, nervis primariis utrinque 5 vel 6, quam secundariis reticulisque haud magis distinctis; inflorescentiis terminalibus, racemis circiter 8, racemose dispositis, circiter 15 cm longis, fructibus 5-locellatis,

An epiphytic shrub, glabrous except the inflorescence. Branches terete, grayish, striate when dry. Leaves alternate, their petioles 6 to 7 cm long, inflated and clasping at the base, the leaflets 5 to 7, palmately arranged; leaflets obovate, subcoriaceous, 5 to 8 cm long, 2 to 4 cm wide, entire, narrowed gradually to the acute or cuneate base, the apex abruptly and prominently acuminate, the acumen stout, 5 to 8 mm long, acute, the upper surface shining, the lower dull, of about the same color; lateral nerves 5 or 6 on each side of the midrib, the basal ones sharply ascending, distinct but not more prominent than are the secondary ones and the reticulations, all equally prominent on both surfaces; petiolules 1.5 to 2.5 cm long, those of the outer leaflets somewhat shorter than of the middle ones. Inflorescence terminal, sparingly furfuraceous-pubescent with short pale hairs, the rachis short, about 2 cm long, stout. Racemes usually about 8, 12 to 15 cm long, bearing numerous fascicled fruits, the pedicels slender, 3 to 4 mm long, usually 2 or 3 fruits in each fascicle. Fruits reddish-yellow when fresh, glabrous, ellipsoid, when dry prominently longitudinally 5-sulcate, 5-celled, crowned by the 5, round, sessile stigmas.

LUZON, Province of Laguna, Dahican, *Phil. Pl. 1108 Ramos*, September 27, 1912.

A species manifestly allied to *Schefflera caudata* Vid. (*S. acuminatissima* Merr.) from which it differs especially in its quite differentially shaped, much smaller leaves.

Additional material from the same province (*Bur. Sci. 10001, 10973 Ramos*), the specimens in flower, is very similar to the species above described, but in both the flowers are in racemosely disposed umbels, while in the type of *S. obovata* the flowers are merely fascicled, not at all umbellate.

SCHEFFLERA DEMESAE sp. nov. § *Euschefflera*.

Frutex scandens, glaber; foliis alternis, palmatim 5-foliolatis, foliolis chartaceis, usque ad 24 cm longis, integris, nitidis, apice breviter acuminatis, basi rotundatis, nervis tenuibus, utrinque usque ad 25, petiolulis valde inaequalibus; inflorescentiis terminalibus, pedunculatis, floribus 5-meris, racemosis, racemis elongatis, subumbellatim dispositis.

A scandent glabrous shrub, the stem reaching a diameter of about 3 cm, purplish, the ultimate branches terete, about 5 mm in diameter, striate when dry, grayish or brownish. Leaves

palmately 5-foliolate, their petioles inflated at the base, about 5 cm long. Leaflets oblong to elliptic-oblong, chartaceous, shining, 15 to 24 cm long, 7.5 to 9.5 cm wide, entire, the apex shortly acuminate, the base rounded; lateral nerves slender, about 25 on each side of the midrib, the reticulations distinct; petiolule of the central leaflet 7 cm long, of the next two inner leaflets 2.5 to 3 cm long, of the outer leaflets about 1 cm long. Inflorescence terminal, peduncled, the peduncle up to 15 cm long, usually with two distant, ovate bracts, the lower one 5 mm long, the upper one twice as long. Branches of the inflorescence subumbellately disposed near the apex of the peduncles, usually 6, slender, about 30 cm long, many-flowered. Flowers racemosely disposed, usually fascicled at the nodes, few in each fascicle, pale-green, their pedicels about 6 mm long. Calyx short, truncate, somewhat disk-like. Petals 5, oblong-ovate or ovate, acute, appendaged at the apex inside, 3 mm long, 3-nerved. Filaments 2 mm long; anthers broad, about 1.3 mm long. Fruit not seen.

MINDANAO, District of Zamboanga, Siay River, *For. Bur. 13396 Foxworthy, DeMesa, & Villamil*, May 29, 1912, on river banks, known to the Moros as *canonucan*.

Apparently a very distinct species, characterized by being quite glabrous; by its peduncled inflorescence, with its elongated subumbellately disposed primary branches; and its 5-foliolate, entire, ample leaves with their very unequal petiolules.

SCHEFFLERA CAUDATIFOLIA sp. nov. § *Euschefflera*.

Frutex scandens, glaber, ramis ramulisque teretibus; foliis palmatim 5-foliolatis, foliolis subcoriaceis, nitidis, oblongis ad oblongo-lanceolatis, usque ad 10 cm longis, utrinque angustatis, basi acutis, apice longe tenuiter caudato-acuminatis; floribus racemosis, 5-meris, racemis subterminalis, solitariis vel binis, tenuibus, usque ad 13 cm longis.

A scandent shrub, quite glabrous, the branches and branchlets terete, when dry light-gray, wrinkled. Leaves scattered, palmately 5-foliolate, their petioles 4 to 8 cm long, inflated at the base; leaflets oblong to oblong-lanceolate, 5 to 10 cm long, 2 to 3.4 cm wide, subequally narrowed to the acute base and to the slenderly caudate-acuminate apex, entire, the acumen straight or falcate, up to 2 cm long, the upper surface subolivaceous, shining, the lower shining, paler than the upper; lateral nerves 5 or 6 on each side of the midrib, rather distinct, anastomosing; petiolules 1 to 2 cm long. Inflorescence terminal, of one or two rather slender racemes, the racemes up to 13 cm long. Flowers 5-merous, solitary, in pairs, or somewhat fascicled, their pedicels

about 4 mm long. Calyx small, less than 2 mm in diameter. Petals 5, oblong-ovate, about 2.5 mm long, 1.5 mm wide, blunt, inflexed-keeled at the apex inside. Anthers about 1.5 mm long. Fruit 4 to 5 mm long, about 2.5 mm in diameter, oblong, longitudinally 5-sulcate, apparently somewhat fleshy when fresh, brown when dry.

LUZON, Province of Camarines, Mount Isarog, *Bur. Sci.* 20062 Ramos, November 8, 1913, on forested slopes.

Probably most closely allied to *Schefflera obovata* Merr., but with quite different leaflets.

SCHEFFLERA CRASSIFOLIA sp. nov. § *Euschefflera*.

Frutex scandens, glaber; foliis palmatis, foliolis 6, oblongis, coriaceis, nitidis, acuminatis, usque ad 18 cm longis, subtus pallidis, nervis reticulisque valde prominentibus; racemis 3 ad 6 in ramulis junioribus plus minusve confertis, usque ad 35 cm longis; floribus fasciculatis vel solitariis, pedicellatis, 5-meris; fructibus ellipsoideis, longitudinaliter 5-sulcatis, 5 ad 6 mm longis.

A scandent shrub, quite glabrous, or the very young parts sometimes slightly furfuraceous. Branches terete, lightly-gray, striate or wrinkled when dry. Leaves palmately compound, scattered, their petioles 5 to 10 cm long, inflated at the base, clasping the stem. Leaflets 6, oblong, thickly coriaceous, 10 to 18 cm long, 3.5 to 7 cm long, entire, the base rounded to subacute, apex rather abruptly and prominently acuminate, the acumen straight or somewhat falcate blunt, up to 2 cm long; upper surface olivaceous, prominently shining, the veins and reticulations distinct, the lower surface pale, grayish-yellow, the veins and reticulations very prominent, the lateral nerves about 10 on each side of the midrib, spreading, anastomosing; petiolules about 3 cm long. Inflorescence terminal, the racemes 3 to 6, arranged near the apices of the branchlets, the individual racemes up to 35 cm long, dark-brown when dry. Flowers numerous, fascicled and solitary along the racemes, their pedicels 3 to 4 mm long. Fruits apparently somewhat fleshy, when dry brown, ellipsoid, 5 to 6 mm long, about 4.5 mm in diameter, longitudinally 5-celled.

LUZON, Province of Camarines, Sagnay, on trees in damp forests, *Bur. Sci.* 22152 Ramos, December 15, 1913 (type): Province of Albay, Adumoy hills, *For. Bur.* 12384 Curran, June, 1908, locally known as *caranglang*.

A species well characterized by its palmately 6-foliolate leaves, the leaflets very thick and with prominent nerves and reticulations, and its elongated racemes which are somewhat crowded at the apices of the branchlets. Its alliance seems to be with *Schefflera clementis* Merr., but the flowers are all in strict racemes, not in racemously arranged umbels.

EBENACEAE

MABA Forster

MABA EUPHLEBIA sp. nov.

Frutex vel arbor parva (ex Ramos 3 m alta); foliis alternis, breviter petiolatis, oblongis, usque ad 33 cm longis, acuminatis, basi rotundatis, supra glabris subtus parce pubescentibus; nervis utrinque circiter 12, distantibus, valde prominentibus; floribus paucis, sessilibus, bracteolatis, fasciculatis, axillaribus; staminibus 12; corolla circiter 1.5 cm longa, extus dense fulvo-hirsuta.

A shrub or small tree (3 m high ex Ramos), the branchlets and lower surfaces of the leaves somewhat pubescent, the flowers densely so, otherwise glabrous. Branches slender, terete, brown or grayish. Leaves subcoriaceous or thickly chartaceous, oblong, 20 to 33 cm long, 7 to 9 cm wide, somewhat shining when dry, the upper surface olivaceous, glabrous, the lower pale-brownish, distinctly pubescent on the midrib and nerves, the base somewhat narrowed, rounded, the apex acute or acuminate; lateral nerves about 12 on each side of the midrib, very prominent, curved, distinct; anastomosing, the reticulations lax, prominent; petioles stout, pubescent, about 3 mm long. Flowers few, 2 or 3, rarely more, in axillary, sessile fascicles, each flower subtended by three ovate to ovate-lanceolate, acuminate, hirsute, about 3 mm long bracteoles. Calyx about 5 mm long, slightly hirsute, cup-shaped, 3-lobed, the lobes broadly ovate, acute or acuminate, one about as long as the calyx-tube. Corolla in nearly mature bud about 1.5 cm long, cylindrical, 3 mm in diameter below, narrowed above, outside very densely hirsute-pubescent with appressed fulvous hairs. Stamens 12, in three series, the anthers linear-oblong, 2 to 3 mm long, the filaments of the inner series about 2 mm long, of the outer series about 6 mm long, flattened. Female flowers and fruits not seen.

LUZON, Province of Tayabas, Tagcauayan, in forests, altitude about 90 meters, *Bur. Sci. 13335 Ramos*, March 15, 1911.

A very characteristic species, distinguishable by its comparatively large, prominently nerved leaves which are pubescent beneath, and its few, axillary, fascicled, sessile flowers. It is, perhaps, most closely allied to *Maba venosa* King & Gamble, of Singapore, but is entirely distinct from that species as described.

DIOSPYROS Linnaeus

DIOSPYROS TRIFLORA sp. nov.

Arbor parva, floribus exceptis glabra, ramis ramulisque tenuibus, teretibus; foliis oblongis, usque ad 23 cm longis, subcoriaceis, supra nitidis, acuminatis, basi acutis, leviter decurrento-

acuminatis, vel subrotundatis, eglandulosis, nervis utrinque circiter 9, tenuibus, haud prominentibus; inflorescentiis ♂ axillaribus, solitariis, pedunculatis, circiter 2 cm longis, 3-floris; floribus 5-meris, calycibus cylindraceutis, 6 mm longis, leviter 5-dentatis; corolla extus dense pubescens; staminibus 10.

A small tree, glabrous except the flowers. Branches and branchlets slender, terete, smooth, the latter black, the former black when dry. Leaves oblong, subcoriaceous, 12 to 23 cm long, 4 to 9 cm wide, the apex distinctly acuminate, the acumen blunt, the base acute, somewhat decurrent-acuminate, or somewhat rounded, eglandular, the upper surface very smooth and strongly shining when dry, the lower surface of nearly the same color but duller; lateral nerves 8 to 10 on each side of the midrib, slender, not prominent, loosely anastomosing, the reticulations not prominent, lax; petioles about 8 mm long. Male inflorescences axillary, solitary, about 2 cm long, the peduncles 5 to 10 mm long, each bearing three, subumbellately arranged, pedicelled flowers, ebracteolate. Male flowers 5-merous, their pedicels pubescent, 2 to 3 mm long, the calyx, in bud, cylindric, black when dry, slightly pubescent, about 6 mm long, 2 to 2.5 mm in diameter, the base obtuse, somewhat narrowed, the apex truncate and slightly 5-toothed, the teeth acute, 0.5 mm long or less. Corolla (in young bud) narrower than the calyx, externally densely gray-pubescent, the tube apparently short, the lobes elongated, imbricate. Stamens 10, in two series, the anthers lanceolate, acuminate, up to 3 mm long (immature). Female flowers and fruit not seen.

BALABAC, Cape Melville, *Bur. Sci.* 15652 *Fénix*, July 18, 1912, along trails at low altitudes.

A species well characterized by its 3-flowered, peduncled, solitary inflorescences, and its cylindric and truncate, obscurely 5-toothed calyces. It is apparently allied to the Malayan *Diospyros truncata* Zoll. & Mor., but has a peduncled, not fasciculate inflorescence, and quite differently shaped leaves.

DIOSPYROS FASCICULIFLORA sp. nov.

Arbor parva subtus foliis junioribus ramulis floribusque exceptis glabra, ramis ramulisque teretibus; foliis chartaceis vel subcoriaceis, oblongis vel oblongo-lanceolatis, usque ad 20 cm longis, utrinque angustatis, acuminatis; nervis lateralibus circiter 12, subtus valde prominentibus, arcuato-anastomosantibus, reticulis laxis, distinctis; floribus 4-meris, ferrugineo-pubescentibus, solitariis vel fasciculatis in axillis defoliatis vel in ramis infra foliis, calycibus post anthesis brevibus, rotatis, circiter 12 mm diametro; ovario 4-loculare, dense hirsuto; fructibus 4-locel-

latis, globosis vel globoso-obovoideis, circiter 2 cm diametro, seminibus 4, albumine vix ruminato.

A small tree, glabrous except for the flowers, the younger branchlets, and the lower surfaces of young leaves. Branches and branchlets terete, slender, dark-gray or brownish-black when dry, wrinkled, lenticellate, the younger branchlets somewhat ferruginous-pubescent. Leaves oblong, chartaceous or subcoriaceous, 12 to 20 cm long, 3.5 to 8 cm wide, narrowed at both ends, the apex rather sharply acuminate, the base acute, eglandular, the upper surface smooth and shining when dry, brownish or olivaceous, the lower surface usually much paler, slightly shining, when young rather softly pubescent or puberulent, often becoming glabrous or nearly so; lateral nerves about 12 on each side of the midrib, very prominent, arched-anastomosing, the reticulations lax, prominent; petioles up to 1 cm in length. Female flowers solitary or fascicled in the axils of fallen leaves, or fascicled on rather prominent protuberances on the branchlets below the leaves, 4-merous, sessile or very shortly and stoutly pedicelled. Calyx densely ferruginous-pubescent, the tube very short, broad, the lobes immediately after flowering orbicular-reniform, rounded, densely ferruginous-pubescent on both surfaces, about 3 mm in diameter, soon accrescent, spreading, reniform, 5 mm long and 8 mm in diameter, often recurved, thickly coriaceous. Corolla and stamens not seen. Ovary ovoid, densely ferruginous-pubescent, 4-celled. Fruit apparently fleshy, globose or obovoid-globose, when dry about 2 cm in diameter and often grayish, the pericarp glabrous, wrinkled, the coriaceous calyx-lobes persistent at the base of the fruit. Seeds 4, one in each cell, 12 to 15 mm long, about 1 cm wide and thick, the albumen hard but scarcely bony, smooth, whitish or yellowish when dry, not at all ruminant.

BASILAN, *Bur. Sci.* 16101 *Reillo*, August, 1912 (type).

I refer also to this species the following material: LUZON, without definite locality, *Loher* 6562, in fruit: Province of Tayabas, *Bur. Sci.* 10283 *Curran*, in fruit. CEBU, Asturias, *For. Bur.* 6450 *Everett*, in fruit. MINDANAO, District of Zamboanga, San Ramon, *Hallier*, in fruit. The only recorded native name is the Cebuano *panangtilong*.

DIOSPYROS MIRANDAE sp. nov.

Arbor circiter 30 m alta inflorescentiis exceptis glabra; foliis crasse coriaceis, oblongis, nitidis, utrinque concoloribus, usque ad 12 cm longis, acuminatis, nervis utrinque circiter 10, tenuibus, vix prominentibus, reticulis densis; floribus ♀ 5-meris, axillaribus, in racemis brevibus paucifloris dispositis; calycibus in

alabastra obovoideis, 6 mm diametro, crassissime coriaceis, longitudinaliter plicatis, lobis reniformibus; ovario 10-locellato.

A dioecious tree about 30 m high, glabrous except the inflorescence. Branches terete, grayish, lenticellate. Leaves alternate, thickly coriaceous, oblong, 8 to 12 cm long, 3 to 5 cm wide, shining and of about the same color on both surfaces, base rounded or subacute, apex shortly acuminate; lateral nerves about 10 on each side of the midrib, slender, not prominent, anastomosing, the reticulations slender, dense; petioles about 5 mm long. Female flowers in short, axillary, solitary, few-flowered, pubescent, spike-like racemes, the whole about 2 cm long. Flowers 5 or less in each raceme, their pedicels very stout, jointed, pubescent, about 2 mm long. Calyx in bud, just before anthesis, obovoid, pubescent, about 6 mm long and wide, with 5 reniform, rounded lobes, very thickly coriaceous, 3 mm long and 6 mm wide, the lobed portion longitudinally plicate or folded-plicate, star-shaped in cross-section, pubescent inside. Corolla-tube 6 mm long, 2.5 mm wide, cylindric, basal part glabrous, pubescent above, the lobes broadly ovate, spreading in anthesis, 5, pubescent on both surfaces, about 5 mm long, acute. Ovary ovoid, densely appressed-pubescent, narrowed upward into the thick style, ovary and style about 5 mm long, 10-celled. Staminodes 5, inserted at the base of the corolla, the sterile anthers linear, about 2 mm long.

MINDANAO, District of Cotabato, southeastern ridge of Mount Glan, *For. Bur.* 18752 *Miranda* (type), *For. Bur.* 14248 *Tarrosa*, June 6 and May 25, 1912, in forests, altitude 90 to 125 meters, locally known to the Moros as *bantulinay*.

A species well characterized by its peculiar calyx which is somewhat of the type of that of *Diospyros affinis* Thw. The flowers are said to be white and fragrant, and the heart-wood is described as black.

DIOSPYROS PLICATA sp. nov.

Arbor dioica, 8 ad 25 m alta, partibus junioribus inflorescentiisque exceptis glabra; foliis junioribus pubescentibus, vetustioribus glabris, oblongis, usque ad 18 cm longis, coriaceis, nitidis, subtus pallidioribus, acuminatis, nervis utrinque circiter 12, distantibus, patulis, distinctis, anastomosantibus; floribus ♀ axillaribus, fasciculatis, dense fulvo-pubescentibus, 5-meris, sepalis in anthesis breviter connatis, longitudinaliter plicatis et horizontaliter undulato-plicatis, accrescentibus et 2.5 cm longis.

A tree 8 to 25 m high. Branches terete, slender, nearly black when dry, the growing parts, the young leaves, and the flowers appressed-pubescent. Leaves oblong, coriaceous, 12 to 18 cm

long, 2.5 to 8 cm wide, shining on both surfaces, the lower somewhat paler than the upper, the apex blunt-acuminate, the base acute or rounded; nerves about 12 on each side of the midrib, spreading, distant, prominent on the lower surface, looped-anastomosing, the reticulations very lax, distinct; petioles 3 to 8 mm long. Female flowers 5-merous, axillary, in few-flowered fascicles, densely fulvous-pubescent. Calyx in bud densely pubescent, the sepals oblong-lanceolate, longitudinally folded or plicate, the reflexed margins very prominently horizontally undulate-plicate, free nearly to the base. Corolla cylindric, 6 mm long in bud, densely pubescent. Ovary densely appressed-hirsute, narrowly ovoid, 5- or 6-celled. Young fruit narrowly ovoid, obtuse, pubescent, about 1 cm long (very young) quite free from the accrescent, involucre-like calyx. Accrescent calyx-lobes ovate, somewhat foliaceous, coriaceous, slightly pubescent, 2.5 cm long, free except at the very base, folded back longitudinally and also prominently horizontally undulate-plaited, forming an ovoid involucre surrounding but free from the fruit, this accrescent calyx 5 cm in diameter when spread.

MINDANAO, District of Zamboanga, near Margosatubig, *For. Bur. 13281* Foxworthy, DeMesa, & Villamil, May 11, 1912 (type), in hill forests, altitude about 120 meters, specimens with young fruit: District of Cotabato, Cablacan, *For. Bur. 14901* Tarrosa, May, 26, 1912, near the seashore; Buluan Point, *For. Bur. 18284* Miranda, May 27, 1912, the last two with young flowers.

A very striking species, well characterized by its accrescent calyx which is quite free from the fruit, and which is longitudinally folded or plicate and at the same time very prominently horizontally undulate-plicate. Its leaves are very similar to those of our common *Diospyros pilosanthera*, to which, however, it is not otherwise at all closely allied.



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By E. D. MERRILL

*(From the Botanical Section of the Biological Laboratory, Bureau of Science,
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Separate from

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C. BOTANY

VOL. X

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No. 1

NEW OR NOTEWORTHY PHILIPPINE PLANTS, XI

By E. D. MERRILL¹

(From the Botanical Section of the Biological Laboratory, Bureau of Science, Manila, P. I.)

The eleventh paper of this series is essentially like its predecessors.² It consists of the descriptions of 90 new species of Philippine plants in the families *Chloranthaceae*, *Aristolochiaceae*, *Saxifragaceae*, *Cunoniaceae*, *Leguminosae*, *Simarubaceae*, *Burseraceae*, *Anacardiaceae*, *Sabiaceae*, *Rhamnaceae*, *Elaeocarpaceae*, *Begoniaceae*, *Ericaceae*, *Sapotaceae*, *Apocynaceae*, *Verbenaceae*, and *Gesneriaceae*. About 12 previously described species are for the first time credited to the Archipelago, making the total number of additions to the Philippine flora, recorded in this paper, approximately 100. Genera recorded from the Archipelago for the first time are *Aquilaria*, *Koompassia*, *Melilotus*, *Neptunia*, *Cymodocea*, *Diplanthera*, *Hanguana*, *Urceola*, *Vallaris*, and *Protium*. A few reductions are made and a few changes in nomenclature are recorded as such changes have been indicated by the rules of the international code of botanical nomenclature.

¹ Associate professor of botany, University of the Philippines.

² New or Noteworthy Philippine Plants. Govt. Lab. (Philip.) Publ. 6 (1904) 5-18; II, l. c. 17 (1904) 5-47; III, l. c. 29 (1905) 5-50; IV, l. c. 35 (1905) 5-68; V, Philip. Journ. Sci. 1 (1906) Suppl. 169-246; VI, l. c. 3 (1908) Bot. 219-267; VII, l. c. 4 (1909) 247-330; VIII, l. c. 5 (1910) 167-257; IX, l. c. 7 (1912) 259-357; X, l. c. 9 (1914) 261-337.

HYDROCHARITACEAE

THALASSIA Solander

THALASSIA HEMPRICHII (Ehrenb.) Aschers. in Engl. & Prantl Nat. Pflanzenfam. 2¹ (1889) 254.

Schizotheca hemprichii Ehrenb. in Abh. Akad. Berlin 1 (1832) 429.

CAVILLI ISLAND, Sulu Sea, *Merrill 7180*, September, 1910, on coral sand, submerged at low tide; sterile specimens, det. C. H. Ostenfeld. LUZON, Manila Bay, *Merrill*, August, 1911, washed up on Pasay beach.

Not previously recorded from the Philippines; widely distributed along the tropical shores of the Indian and Pacific Oceans.

HALOPHILA Thouars

HALOPHILA OVALIS (R. Br.) Hook. f. Fl. Tasm. 2 (1860) 45.

Caulinia ovalis R. Br. Prodr. (1810) 339.

BANCORAN ISLAND, Sulu Sea, *Merrill 7155*, September, 1910, sterile specimens growing on coral sand in shallow water, 0.4 to 1.3 m deep at low tide, det. C. H. Ostenfeld.

This species has previously been recorded from the Philippines by Naves,³ but the record has not before been verified. It is to be noted that *Halophila ovalis* Hook. f. is quite distinct from *H. ovata* Gaudich. For a consideration of the latter see Ostenfeld's paper.⁴

Widely distributed along tropical shores of the Indian and Pacific Oceans.

HALOPHILA SPINULOSA (R. Br.) Aschers. in Neumayer Anleit. Wissenschaft. Beob. 368, ed. 3 (1905) 396; Benth. Fl. Austral. 7 (1878) 183.

Caulinia spinulosa R. Br. Prodr. (1810) 339.

LUZON, Province of Camarines, *For. Bur. 13375 Curran*, June, 1908, sterile specimens thrown up by the waves, det. C. H. Ostenfeld.

This species has previously been reported from Mindanao by Ascherson, l. c. ed. 3, as indicated to me by Dr. Ostenfeld.

Eastern and northern coasts of Australia, the Philippines, and Java.

POTAMOGETONACEAE

CYMODOCEA Koenig

CYMODOCEA ROTUNDATA (Ehrb. & Hempr.) Asch. & Schweinf. in Sitzber. Ges. Freunde Berlin (1870) 84; Graebner in Engl. Pflanzenreich 31 (1907) 147.

Phucagrostis rotundata Ehrb. & Hempr. Symb. Phys. Bot. t. 11.

CAVILLI ISLAND, Sulu Sea, *Merrill 7180A*, September, 1910, sterile specimens mixed with *Thalassia hemprichii* Aschers., det. C. H. Ostenfeld.

This species has already been reported from Mindanao by Graebner, l. c. It extends from the shores of the Red Sea southward to Madagascar and eastward to Mindanao, Timor, and Australia.

³ Novis. App. (1880) 298.

⁴ Philip. Journ. Sci. 4 (1910) Bot. 68.

DIPLANTHERA Thouars

DIPLANTHERA UNINERVIS (Forst.) Aschers. in Engl. & Prantl Nat. Pflanzenfam. 2¹ (1897) 37; Graebner in Engl. Pflanzenreich 31 (1907) 152.

Zostera uninervis Forsk. Fl. Aeg.-Arab. (1775) 159.

CAVILLI ISLAND, Sulu Sea, Merrill 7179, September, 1910, on coral sand in shallow water, usually exposed at low tide; sterile specimens det. C. H. Ostenfeld. LUZON, Manila Bay, on the Bataan coast, Shaw.

Not previously reported from the Philippines; tropical shores from the Red Sea and the east coast of Africa to Malaya, Australia, and Polynesia.

FLAGELLARIACEAE

HANGUANA Blume (*Susum* Blume)

HANGUANA MALAYANA (Jack) comb. nov.

Veratrum ? *malayanum* Jack in Malay Miscel. 1 (1820) 25; Hook. Bot. Miscel. 2 (1831) 74.

Hanguana kassintu Blume Enum. Pl. Jav. (1827) 15, ed. 2 (1830) 15; Miq. Fl. Ind. Bat. 3 (1857) 248.

Susum malayanum Planch ex Hook. f. Fl. Brit. Ind. 6 (1892) 391; Ridl. Mater. Fl. Malay. Penin. 2 (1907) 132.

Veratonia malayana Miq. Fl. Ind. Bat. 3 (1857) 553.

PALAWAN, Malampaya Bay, Merrill 7221, September, 1910. MINDANAO, Province of Surigao, Hinatuan, Piper 529, May, 1911.

There seems to be very little doubt as to the identity of *Veratrum malayanum* Jack and *Hanguana kassintu* Blume, and as Blume's generic name *Hanguana* has three years priority over his generic name *Susum*, it is here adopted. The case is not covered by the lists of *nomina conservanda* adopted by the Vienna or the Brussels botanical congress.

The genus has previously not been reported from the Philippines. Malay Peninsula and Archipelago.

CHLORANTHACEAE

CHLORANTHUS Linnaeus

CHLORANTHUS VERTICILLATUS sp. nov.

Herba erecta, ramulis subtus foliisque ad nervos plus minusve furfuraceo-pubescentibus; foliis membranaceis, breviter petiolatis, verticillatis, ovatis ad elliptico-ovatis vel elliptico-obovatis, acuminatis, usque ad 10 cm longis, utrinque angustatis, margine distincte acute apiculato-serrulatis; spicis 1 vel 2, 2 ad 3 cm longis, pedunculo elongato; squamis antheriferis 3-partitis, lobis inaequalibus, intermedia 4 mm longa.

An erect, apparently branched herb, the younger branchlets, the lower surfaces of the leaves on the veins and reticulations, and to a lesser degree the inflorescence more or less furfuraceous-pubescent. Leaves verticillate at the apices of the branchlets, in whorls of 4, membranaceous, ovate to elliptic-ovate or elliptic-

obovate, about equally narrowed to the slenderly acuminate apex and to the acute base, 8 to 10 cm long, 3.5 to 5 cm wide, the margins prominently and acutely apiculate-serrate except in the lower 1 cm and the margins of the acumen which are entire; nerves 7 or 8 on each side of the midrib, distinct, anastomosing, the reticulations lax; petioles furfuraceous-pubescent, about 2 mm long. Inflorescence terminal, slightly pubescent, solitary, including the peduncle up to 13 cm in length, each bearing one or two, rather many flowered, 2 to 3 cm long spikes. Flowers white, the bract orbicular-ovate, irregularly toothed, 1.7 to 2 mm long, rounded. Pistillate flower: Ovary narrowly ovoid, somewhat narrowed at both ends, about 2 mm long, glabrous. Staminate flowers: Antheriferous scale 3-partite, the lobes oblong, rounded, the central one about 4 mm long, 1.2 mm wide, bearing an oblong, 1.2 mm long, 2-celled anther, the lateral lobes about as wide, one-half as long, each bearing a 1-celled anther.

LUZON, Subprovince of Ifugao, Mount Polis, *Bur. Sci.* 19757 *McGregor*, February, 1913.

Probably as closely allied to *Chloranthus henryi* Hemsl. as to any other species. It is distinguished, however, by its pubescent branchlets and lower surfaces of its smaller leaves, its inflorescence reduced to 1 or 2 spikes, and its smaller flowers. From its closest Philippine ally, *C. philippinensis* Merr., it differs in its much smaller, pubescent, shortly petioled leaves, and its larger flowers.

ARISTOLOCHIACEAE

ARISTOLOCHIA Linnaeus

ARISTOLOCHIA LEYTENSIS sp. nov.

Species *A. tagala* et *A. mindanaensis* similis et affinis, differt floribus multo majoribus, usque ad 8.5 cm longis.

A slender vine, nearly glabrous, the branches brownish when dry, glabrous, deeply sulcate. Leaves ovate, membranaceous, glabrous, of about the same color on both surfaces, somewhat shining, 14 to 17 cm long, 8 to 10 cm wide, entire, the apex acuminate, the base deeply and prominently cordate, the sinus about 2 cm deep, 1.5 to 2 cm wide, often obovate, the basal lobes rounded; basal nerves 3, the lateral pair soon forked, and its lower branches soon forked again, the lateral nerves above the base about 3 on each side of the midrib, prominent, the reticulations very lax; petioles 4 to 7 cm long, glabrous. Racemes axillary, solitary, the rachis slender, slightly pubescent, about 3 cm long, each raceme bearing about 6 flowers, not all developing at one time, each flower subtended by an ovate-lanceolate, acuminate, slightly pubescent bract, the pedicels minutely

pubescent, 7 to 10 mm long. Ovary somewhat clavate, about 8 mm long, the tube constricted for 4 mm above the ovary, then inflated, the larger portion of the tube about 3 cm long, swollen at the base, then constricted, and again enlarged and somewhat funnel-shaped, the lip narrowly lanceolate, glabrous, gradually narrowed upward to the slenderly acuminate apex, 5 to 6 cm long, about 5 mm wide.

LEYTE, near Dagami, *Bur. Sci. 15201 Ramos*, August, 1912, in thickets along streams.

A species with much the same vegetative characters as *Aristolochia tagala* Cham., and *A. mindanaensis* Warb., the leaves being very similar in all three species. *Aristolochia leytensis* is, however, entirely distinct from both the above in its much larger flowers.

SAXIFRAGACEAE

CURRANIODENDRON Merrill

CURRANIODENDRON APOENSE (Elm.) comb. nov.

Dedeo apoensis Elm. *Leaf. Philip. Bot.* 3 (1910) 682 (August 8).

Curraniodendron dedeaeoides Merr. in *Philip. Journ. Sci.* 5 (1910) Bot. 177 (August 19).

This characteristic species was approximately simultaneously described by Mr. Elmer and by myself, but Mr. Elmer's publication of the species under *Dedeo* antedates my own publication of the new genus and species *Curraniodendron dedeaeoides* by about ten days. I have reexamined the material and am still of the opinion that the plant is worthy of being considered the type of a distinct genus, although as previously indicated, very similar to, and manifestly closely allied to the New Caledonian genus *Dedeo* Baill. The question for the future monographer to decide is whether or not the resinous, not lepidote vegetative parts, the difference in number in floral parts, and the very decided difference in the number of ovules constitute sufficiently valid generic differences.

The species is represented by the following material: NEGROS, Mount Marapara, *For. Bur. 13634 Curran & Foxworthy*. LEYTE, Dagami, *Bur. Sci. 15283 Ramos*. MINDANAO, Mount Apo, *Elmer 11524, 10627*.

POLYOSMA Blume

POLYOSMA LAGUNENSIS sp. nov.

Species *P. philippinensis* affinis, differt foliis subtus ad nervos adpresso hirsutis, nervis magis numerosis, floribus minoribus.

A small tree 5 to 8 m high, the older branches terete, light-gray or pale-brownish, the younger branchlets and inflorescences rather densely pubescent with pale-fulvous, short, appressed hairs. Leaves opposite, mostly oblong to obovate-oblong, chartaceous, 8 to 14 cm long, 3 to 6 cm wide, narrowed above to the abruptly, slenderly, and sharply acuminate apex, the acumen somewhat apiculate, and below to the cuneate base, entire or

with minute, scattered teeth opposite the ends of some of the nerves, the upper surface, when dry, dark brownish-olivaceous, slightly shining, smooth, glabrous, the lower surface paler, appressed hirsute with fulvous hairs on the midrib and lateral nerves; lateral nerves 12 to 15 on each side of the midrib, prominent on the lower surface, anastomosing, the reticulations lax; petioles fulvous-pubescent, 2 to 2.5 cm long, in age becoming nearly glabrous. Racemes terminal, many flowered, solitary, 10 to 14 cm long, densely hirsute with short, fulvous hairs. Flowers white, somewhat crowded, their pedicels 3 mm long, the bracteoles usually 3, lanceolate, acuminate, 2 to 2.3 mm long. Calyx hirsute, 2 to 2.5 mm long, the lobes lanceolate-ovate, acuminate, 0.8 mm long. Petals 4, linear-lanceolate, 8 to 9 mm long, about 2 mm wide at the base, narrowed upward to the acute apex, prominently 5-nerved, the nerves dark-colored, outside hirsute. Filaments flattened, hirsute inside, about 4 mm long; anthers linear, narrower than the filaments, 3 mm long. Style glabrous, 8 mm long. Fruit subglobose, not rugose, sparingly pubescent, 7 to 8 mm in diameter.

LUZON, Province of Laguna, near San Antonio and Paete, *Bur. Sci.* 2393 (type), 14960, 10056 Ramos, *For. Bur.* 13185 Curran, flowering in February and March, fruiting June and July.

A species manifestly closely allied to *Polyosma philippinensis* Merr., from which it differs in its smaller flowers, and its more numerous nerved leaves which are appressed-pubescent on the midrib and nerves on the lower surface, not glabrous. Another close ally appears to be the recently described *Polyosma gitingensis* Elm., which, however, has glabrous leaves, even smaller flowers, and much larger bracteoles.

POLYOSMA LINEARIBRACTEA sp. nov.

Arbor, omnibus partibus plus minusve pubescentibus vel hirsutis; foliis crasse coriaceis, oppositis, oblongis, usque ad 17 cm longis, utrinque acutis, apice mucronatis, margine grosse distanter serratis; nervis utrinque circiter 12, subtus valde prominentibus; racemis terminalibus, solitariis, circiter 15 cm longis; floribus circiter 2.4 cm longis, bracteolis linearis, elongatis, 8 ad 12 mm longis.

A tree said by the collector to be 20 m high, the branches terete, dark-brown, glabrous, the younger branchlets, the leaves, and the inflorescence more or less densely hirsute with grayish-brown hairs. Leaves thickly coriaceous, oblong, 12 to 17 cm long, 4 to 5 cm wide, narrowed about equally to the acute base and apex, the apex also mucronate, the upper surface, when young, appressed-hirsute, in age becoming glabrous, shining, greenish-olivaceous, the lower surface paler, rather prominently hirsute

on the midrib and nerves, becoming nearly glabrous, the margins rather coarsely and distantly apiculate or glandular-serrate, the teeth corresponding to the lateral nerves; lateral nerves about 12 on each side of the midrib, curved, anastomosing, very prominent on the lower surface, the reticulations lax, prominent; petioles 2 to 3 cm long, hirsute, becoming nearly glabrous. Racemes terminal, solitary, about 15 cm long, densely hirsute, the rachis rather stout. Flowers pale-lavender, about 30 in each raceme, their densely hirsute pedicels about 4 mm long, the bracteoles 3 at the apices of the pedicels, linear, hirsute, the two lateral ones 8 to 9 mm long, 0.5 mm wide or less, the middle one up to 12 mm long and a little wider than the lateral ones. Calyx somewhat hirsute, including the lanceolate, acuminate calyx-teeth about 6 mm long. Petals 4, about 2.5 cm long, 2.2 mm wide, scarcely narrowed upward, with about 4, dark-colored nerves, hirsute, the apex thickened. Filaments slender, scarcely flattened, 8 to 9 mm long, sparingly pubescent; anthers linear, about as wide as the filament, obtuse, 6 to 7 mm long. Style about 1.7 cm long, slender.

LUZON, Subprovince of Ifugao, Mount Polis, *Bur. Sci.* 19656 *McGregor*, February, 1913.

A most striking species, at once distinguished from all known Philippine forms by its large flowers and very prominent, linear, elongated bracteoles.

CUNONIACEAE

WEINMANNIA Linnaeus

WEINMANNIA LUCIDA sp. nov. § *Leiospermum*.

Arbor circiter 10 m alta inflorescentiis exceptis glabra; foliis 3- vel 5-foliolatis, usque ad 15 cm longis, foliolis subcoriaceis, lanceolatis vel oblongo-lanceolatis, in siccitate brunneis, utrinque valde nitidis, longe acuminatis, basi acutis, margine distanter crenato-serratis, reticulis laxis, haud prominentibus; racemis multifloris, folia subaequantibus, pubescentibus; floribus 4-meris, sepalis caducis.

A tree about 10 m high, glabrous except the inflorescence. Branches grayish, terete, the younger parts brownish. Leaves opposite, 9 to 15 cm long, the rachis and petiole quite glabrous; leaflets 3 or 5, lanceolate or oblong-lanceolate, subcoriaceous, strongly shining, brownish and of the same color on both surfaces when dry, 5 to 10 cm long, 1.5 to 4 cm wide, the apex slenderly acuminate, the acumen blunt, the base acute, the margins slightly and distantly crenate-serrate; lateral nerves about 10 on each side of the midrib, slender, not prominent,

the reticulations lax, slender, rather obscure; petiolules of the lateral leaflets 2 to 3 mm long, that of the terminal one much longer. Inflorescence in the upper axils and subterminal, uniformly pubescent with short, rather closely arranged hairs, the common peduncles thick, flattened, about 5 mm long, each bearing at its apex 4 elongated racemes arranged in one plane; racemes up to 10 cm long, many-flowered. Flowers 4-merous, their pedicels slender, pubescent, 2.5 to 3 mm long, solitary or somewhat fascicled along the rachis. Sepals oblong, obtuse or subacute, 0.8 mm long, deciduous, leaving in fruit a disk-like base nearly 1 mm in diameter and bearing 8 marginal glands. Petals elliptic, rounded, about 1.2 mm long. Stamens 8; filaments 1 to 1.2 mm long; anthers heart-shaped, 0.3 mm long. Capsules oblong, narrowed at both ends, the base acutè, apex acuminate, 4 to 5 mm long including the two styles, 1 to 2 mm in diameter, uniformly pubescent with scattered, short hairs, the styles 1 to 1.5 mm long.

LUZON, Province of Laguna, Dahican, in forests along the river, *Phil. Pl. 1109 Ramos*, September 17, 1912.

A species manifestly allied to *Weinmannia luzoniensis* Vid., from which it differs in its entirely glabrous leaves, but more especially in its much narrower, differently shaped leaflets which are only slightly toothed, strongly shining on both surfaces, and with slender, laxly arranged veins and reticulations. Several of the Philippine representatives of this genus find their closest allies (§ *Leiospermum*) in Polynesia, not in the Malayan region.

LEGUMINOSAE

ALBIZZIA Durazzini

ALBIZZIA MYRIANTHA sp. nov.

Arbor circiter 20 m alta, inflorescentiis exceptis glabra; foliis bipinnatis, circiter 35 cm longis, petiolo basi supra 1-glanduloso, rhachibus glandulis 2 vel 3 instructis; pinnis circiter 10 utrinque, 10 ad 14 cm longis; foliolis circiter 30 utrinque, oblongis, equilateralibus, basi obtusis, apice rotundatis, circiter 1.5 cm longis, costa centralis; inflorescentiis axillaribus folia aequantibus, racemoso-paniculatis; floribus numerosis, albido-viridis, pedicelatis, ad apices ramulorum racemoso-capitatis.

A tree about 20 m high, glabrous except the inflorescence. Branches subterete, very dark-colored when dry, slightly lenticellate. Leaves bipinnate, about 35 cm long, the petiole with a large gland near the base, the rachis with 2 or 3 smaller glands in the upper part; pinnae about 10 on each side of the rachis, opposite, the secondary rachises with glands in the upper one-half, 10 to 14 cm long; leaflets opposite, about 30 pairs on

each pinna, oblong, chartaceous, 1.4 to 1.8 cm long, 5 to 7 mm wide, equilateral, the midrib central, apex rounded, base obtuse or rounded the lateral nerves about 6 on each side of the midrib, indistinct, the upper surface olivaceous, shining when dry, the lower paler. Panicles in the upper axils, usually one in each axil, as long as the leaves, narrow, the whole forming a terminal leafy inflorescence, sparingly fulvous-pubescent; primary branches confined to the upper 10 cm, spreading, solitary or fascicled, scattered below, rather crowded toward the apices, 5 cm long or less, each branch bearing near its apex numerous, racemose-capitate, greenish-white flowers, the heads, including the anthers, about 3 cm in diameter. Pedicels about 2 mm long, appressed-pubescent with short fulvous hairs. Calyx narrowly funnel-shaped, about 4 mm long, sharply 5-toothed, densely appressed fulvous pubescent. Corolla narrowly funnel-shaped, twice as long as the calyx, 5-lobed, the lobes 2 mm long or less, oblong, acute; stamens long-exserted.

PALAWAN, Taytay, Merrill 9259, May 15, 1913, in forests near the sea and slightly above sea level.

A very characteristic species apparently most closely allied to *Albizzia pedicellata* Baker, of the Malay Peninsula.

PARKIA R. Brown

PARKIA SHERFESEEI sp. nov.

Arbor alta, plus minusve ferrugineo-pubescentibus; foliis circiter 50 cm longis; pinnis 8- ad 12-jugatis, inferioribus brevioribus; foliolis 11- ad 16-jugatis, oblongis, coriaceis, usque ad 2.5 cm longis, 1 cm latis, sessilibus, basi subtruncatis, apice rotundatis vel leviter inaequilateraliter retusis; pedunculis usque ad 30 cm longis, inflorescentiis junioribus obovoideis, dense ferrugineo-pubescentibus.

A tree reaching a height of 27 meters, the trunk 1.2 m in diameter, the young branchlets, rachis, secondary rachises, peduncles and inflorescence rather prominently ferruginous-pubescent with short hairs. Leaves up to 50 cm long, the pinnae 8 to 12 pairs, the lower ones about 10 cm long, the intermediate and upper ones up to 16 cm long; leaflets coriaceous, rather pale when dry, oblong, up to 2.5 cm long, and 1 cm wide, sessile, base rounded-truncate, inequilateral, apex rounded or somewhat inequilaterally retuse, the lateral nerves slender, anastomosing, indistinct. Peduncles up to 30 cm long, the inflorescence (in bud) obovoid or pyriform, rather abruptly contracted below the middle, 4 to 5 cm long, about 2.5 cm in diameter, the bract-eoles densely imbricate, spatulate, about 7 mm long, glabrous

except the upper exposed portion which is densely ferruginous-pubescent. Calyx about 7 mm long, the tube glabrous, the lobes densely pubescent.

MINDANAO, Agusan Subprovince, near Butuan, *For. Bur.* 21962 *Sherfesee, Cenabre, & Ponce*, May 22, 1914, along nipa swamps at sea level, locally known as *cunding*.

A very characteristic species, recognizable at once by its ferruginous indumentum, its very dense inflorescences, and its unusually large leaflets.

PITHECOLOBIUM Martius

PITHECOLOBIUM CAULOSTACHYUM sp. nov.

Arbor 5 ad 10 m alta, subglabra; foliis bijugatis, circiter 20 cm longis, pinnis 6-foliolatis, foliolis chartaceis, lanceolatis vel oblongo-lanceolatis, usque ad 11 cm longis, acuminatis, basi acutis, nervis utrinque circiter 9; paniculis parce breviter hirsutis, paucifloris, usque ad 5 cm longis, plerumque fasciculatis, caulinis et in ramis vetustioribus, corolla circiter 5 mm longa.

A tree 5 to 10 m high, the panicles mostly fascicled on the trunk and larger branches. Branchlets slender, grayish-brown, glabrous, the younger ones somewhat puberulent. Leaves 1-jugate, about 20 cm long, the rachis 2 to 3 cm long, slightly puberulent, usually with two prominent glands, one between the pinnae, and one at the upper two-thirds; pinnae with 6-leaflets opposite, the lower subalternate, rachis puberulent, with one gland between each of the two upper pairs of petiolules and usually one gland below the lowermost leaflet. Leaflets chartaceous, lanceolate or oblong-lanceolate, 7 to 11 cm long, 2 to 3 cm wide, dark-brownish when dry, shining, glabrous, the apex rather slenderly and sharply acuminate, base acute; lateral nerves about 9 on each side of the midrib, slender, anastomosing; petiolules 2 mm long or less, puberulent, becoming glabrous. Panicles fascicled, mostly on the trunk and larger branches, occasionally a few on the ultimate branchlets, 5 cm long or less, few-flowered, sparingly hirsute with short hairs. Flowers white, two or three subcapitately disposed at the tip of each ultimate branchlet, the subtending bracteoles narrow, about 1 mm long. Calyx cup-shaped, about 1.5 mm long, glabrous or nearly so, the teeth short, acute. Corolla campanulate, about 5 mm long, the tube 2.5 mm long, the lobes as long as the tube, recurved, oblong, obtuse or subacute. Stamens about 25, the free portions of the filaments about 1 cm long, the lower 2 to 3 mm united into a tube. Ovary glabrous, oblong-cylindric, 2 mm long; style slender, about 13 mm long.

SAMAR, Mount Cauayan, *Phil. Pl. 1637 Ramos*, April, 1914, on forested slopes.

The most striking character of this species is its cauline inflorescence. It is manifestly allied to *Pithecolobium pauciflorum* Benth., but differs not only in the disposition of its inflorescences, but in its very differently shaped, more numerous nerved leaflets. In vegetative characters it closely resembles *Pithecolobium bigeminum* Benth. as represented by Thwaites *C. P. 644*.

PITHECOLOBIUM MULTIFLORUM sp. nov.

Arbor 6 or 8 m alta partibus junioribus inflorescentiisque plus minusve ferrugineo-pubescentibus; foliis circiter 40 cm longis, bijugatis, pinnis inferioribus 4-foliolatis, superioribus 8-foliolatis, foliolis subcoriaceis, oblongis vel oblongo-lanceolatis, breviter obtuse acuminatis, basi acutis ad subrotundatis, usque ad 14 cm longis, nervis utrinque circiter 9, subtus prominentibus; paniculis terminalibus, quam folia longioribus, e basi ramosis, multifloris; floribus subcapitatis, capitulis 4- vel 5-floris, in ramulis plus minusve confertis, petalis fere liberis.

A tree 6 to 8 m high, closely allied to *Pithecolobium ellipticum* Hassk., the branches dark-colored when dry, glabrous or nearly so, the branchlets sparingly brown-pubescent with short hairs, the primary and secondary rachises of the leaves and the inflorescence with similar hairs, the younger parts of the inflorescence densely ferruginous-pubescent. Leaves about 40 cm long, evenly 2-jugate, the rachis about 10 cm long, with a single very large and prominent gland about 1.5 cm above the base, none between the pinnae; lower pinnae 2-jugate, the rachis about 3.5 cm long, with a gland between the petioles of the distal leaflets; upper pinnae 4-jugate, about 30 cm long, with a large gland between the upper two pairs of petiolules, the lower two leaflets alternate, the others opposite. Leaflets subcoriaceous, oblong to rather broadly oblong-lanceolate, entirely glabrous, shining, brownish-olivaceous, the lateral ones somewhat falcate or inequilateral, shortly and bluntly acuminate, base acute to somewhat rounded, or at least rounded on one side of the petiolule, the lower ones smaller than the upper, 8 to 14 cm long, 3.5 to 5 cm wide; lateral nerves about 9 on each side of the midrib, prominent; petiolules about 5 mm long. Panicles terminal, ample, many-flowered, branched from or near the base, as long as or longer than the leaves, the lower branches up to 40 cm in length, the secondary branches in the upper two-thirds. Flowers in small heads on the ultimate branchlets, the heads 4- or 5-flowered, often crowded, the subtending bracteoles ovate, about 1 mm long. Calyx brown, about 3 mm long, rather

densely appressed-pubescent with short, shining, tawny hairs, the teeth broad, subacute, 0.5 mm long. Corolla and stamens straw-colored, the petals free quite to the base or merely slightly connate below, about 6 mm long, 2 mm wide, acute or obtuse, pubescent externally. Stamens indefinite, the filaments at least 1 cm long, the lower 2 mm united into a tube. Pods unknown.

LUZON, Benguet Subprovince, railroad grade west of Baguio, *Phil. Pl.* 1779 Merrill May, 1914, in ravines along small streams, altitude about 1,300 meters.

A species manifestly closely allied to *Pithecolobium ellipticum* Hassk., from which it differs in its very differently shaped, smaller, more numerous nerved leaflets, its petals free or nearly so, and other characters; the duplicates were erroneously distributed as *Pithecolobium platycarpum* Merr., to which species the present form is not closely allied.

NEPTUNIA Loureiro

NEPTUNIA OLERACEA Lour. Fl. Cochinch. (1790) 654.

MINDANAO, Butuan Subprovince, Bunauan, *E. H. Taylor*, September, 1913.

Widely distributed in the tropics of both hemispheres.

This species was credited to the Philippines by F.-Villar,⁵ but was excluded by me⁶ as at the time I revised the Philippine Leguminosae as F.-Villar's record was based on *Cuming 2852*, which was from Malacca, not from the Philippines. Taylor's specimen is the first collection of the species in the Philippines.

KOOMPASSIA Maingay

KOOMPASSIA EXCELSA (Becc.) Taubert in Engl. & Prantl Nat. Pflanzenfam. 3³ (1891) 156; Bericht Deutsch. Bot. Ges. 10 (1892) 641, t. 32, f. 1-3.

Abauria excelsa Becc. Malesia 1 (1877) 169; Nelle Foreste di Borneo (1902) 172, f. 34.

PALAWAN, Alphonso III, *For. Bur.* 21580 Danao, May 10, 1914, in forests, altitude about 20 meters, flowers fragrant, light-yellow, locally known by the Tagbanuas as *manggis*.

Beccari proposed the genus *Abauria* for this plant, but Taubert has reduced it to *Koompassia*, although the fruits are not definitely known. The Palawan specimen is manifestly identical with the Bornean species, agreeing in all essentials with Beccari's description and figure, and with a Sarawak specimen, *Foxworthy 334*, collected under the native name *tapang*, the same native name cited by Beccari. Dr. Foxworthy's specimen is sterile, but with it is a detached fruit, picked up from the ground, which may or may not belong to the species; this fruit is the characteristic winged one of *Koompassia*, strongly resembling that of *Koompassia beccariana* Taubert. A very interesting addition to the few known species confined to the Philippines and Borneo, most of which are not found in the Philippines proper but in Palawan and in the Sulu Archipelago.

⁵ Novis. App. (1880) 73.

⁶ Philip. Journ. Sci. 5 (1910) Bot. 136.

CYNOMETRA Linnaeus

CYNOMETRA COPELANDII (Elm.) comb. nov.

Gleditschia copelandii Elm. Leaf. Philip. Bot. 2 (1910) 695.

SIBUYAN, *Elmer 12234*, April, 1910 (type number).

The species is in all essential characters a member of the *Cynometreae-Caesalpinioideae*, not of the *Eucaesalpincae*. It is anomalous in *Cynometra* in that the ovules are solitary. The species is an exceedingly characteristic one, notably in its leaf-characters.

BAUHINIA Linnaeus

BAUHINIA PAUCIFLORA sp. nov. § *Phanera*.

Frutex scandens inflorescentiis exceptis glaber vel subtus foliis ad nervos parce pubescentibus; foliis oblongo-ovatis, usque ad 10 cm longis, 9- vel 11-nerviis, basi cordatis, 2-lobatis, lobis vix ad medium coalitis, oblongis, obtusis, racemis terminalibus, paucifloris, floribus magnis, calycis tubo elongatis, angustis, 2 ad 2.5 cm longis, petalis oblongo-obovatis, 4 ad 4.5 cm longis.

A scandent shrub, nearly glabrous except the brown-pubescent inflorescence, the branches terete, brownish, glabrous. Leaves alternate, oblong-ovate, 8 to 10 cm long, 4.5 to 6 cm wide, chartaceous, the upper surface olivaceous, shining, the lower a little paler, shining, often with few short hairs on the nerves, the base distinctly cordate, 2-lobed, the lobes oblong, obtuse, extending about two-thirds to the base, the midrib of the leaf excurrent as a slender, acicular, 4 mm long awn; nerves 9 to 11, prominent; petioles slender, 3 to 4 cm long. Racemes terminal, few flowered, pubescent with short brown hairs, the rachis and peduncle 10 cm long or less. Flowers on the type two or three in each raceme, their pedicels pubescent, 2 cm long, the subtending bracteoles ovate, pubescent, about 5 mm long. Calyx-tube cylindric, 2 to 2.5 cm long, 3 mm in diameter, brown-pubescent, the lobes lanceolate, acuminate, pubescent externally, 2.5 to 3 cm long, 0.5 cm wide, the limb, in bud, ovoid-oblong, about 2 cm in length. Petals oblong-obovate, obtuse, glabrous, white or somewhat yellowish, narrowed to the short claws. Fertile stamens 3, the anthers oblong, 1 cm in length. Ovary pubescent with appressed, brown, deciduous hairs; style glabrous.

LUZON, Province of Tayabas, Dap-Dap Point, *Bur. Sci. 13113 Foxworthy & Ramos*, March, 1911, in forests.

A well marked species manifestly allied to *Bauhinia warburgii* Perk., but with very differently shaped leaves, the lobes much narrower.

CANAVALIA DeCandolle

CANAVALIA MACROBOTRYS sp. nov.

Scandens, racemis obscure pubescentibus exceptis glabra; foliolis chartaceis, ovatis, prominente acute acuminatis, basi

rotundatis, usque ad 14 cm longis, nervis utrinque 4 vel 5, subtus prominentibus; racemis axillaribus, circiter 70 cm longis; floribus roseis, 3 cm longis, breviter pedicellatis.

A scandent apparently herbaceous plant, glabrous except the slightly pubescent inflorescence, the branches slender, terete, greenish-straw-colored when dry. Petioles about 7 cm long, the rachis extended 3 to 4 cm above the insertion of the lateral leaflets. Leaflets ovate, chartaceous, 12 to 14 cm long, about 7.5 cm wide, olivaceous and shining when dry, apex rather slenderly and prominently acuminate, the acumen apiculate, base rounded, the central leaflet equilateral, the lateral ones somewhat inequilateral; lateral nerves 4 or 5 on each side of the midrib, prominent on the lower surface; petiolules about 7 mm long. Racemes axillary, solitary, about 70 cm long, the lower 25 to 30 cm without flowers, the rest with prominent alternate nodes, flowering in sequence from the base upward, the flowers below falling, persisting only in the apical part. Flowers pink, about 3 cm long, short-pedicelled, the calyx about 1.5 cm long, the upper lip cleft, very much larger than the lower lip. Standard about 2.5 cm wide, retuse.

SAMAR, Cauayan Valley, *Bur. Sci. 17517 Ramos*, March 14, 1914.

A species strongly characterized by its rather slenderly acuminate, prominently nerved leaflets and especially by its greatly elongated racemes which reach a length of at least 70 cm.

KUNSTLERIA Prain

KUNSTLERIA ATRO-VIOLACEA (Elm.) comb. nov.

Derris atro-violacea Elm. Leaf. Philip. Bot. 5 (1913) 1798.

The type is *Elmer 13105*, from Palawan, in flower, April, 1911. Although the fruits are unknown I do not hesitate to transfer the species to *Kunstleria*.

DALBERGIA Linnaeus f.

DALBERGIA SUBALTERNIFOLIA (Elm.) comb. nov.

Derris subalternifolia Elm. Leaf. Philip. Bot. 5 (1913) 1801.

The type is *Elmer 12965* from Palawan, in flower, April, 1911, and is in all respects a *Dalbergia*, not a *Derris*. It seems to be allied to *Dalbergia densa* Benth. which extends from Amboina and New Guinea to Australia, and may not prove to be distinct from Bentham's species. Elmer's specimen has 3-foliolate leaflets which are distinctly coriaceous; *Merrill 9345*, from Palawan, which is probably referable to the same species, however, has much thinner leaflets varying in number from 2 to 5.

DALBERGIA RETICULATA sp. nov. § *Sissoa*, *Podiopetalum*.

Frutex scandens, subglaber; foliis circiter 10 cm longis, 5- ad 7-foliolatis, foliolis chartaceis, late elliptico-ovatis, vel late ellip-

ticus, rotundatis vel leviter retusis, usque ad 4.5 cm longis; inflorescentiis axillaribus, racemosis, brevibus, paucifloris; staminibus monadelphis; leguminibus anguste oblongis, membranaceis, samaroideis, circiter 7 cm longis, 1.3 ad 2 cm latis, omnibus partibus valde reticulatis; seminibus 1 vel 2.

A scandent shrub, glabrous except the somewhat pubescent inflorescence and the leaflets which are very sparingly pubescent on the lower surface. Branches brownish, wrinkled when dry, lenticellate. Leaves alternate, about 10 cm long, each with from 5 to 7 leaflets, the leaflets opposite or alternate, membranaceous or chartaceous, broadly elliptic-ovate to broadly elliptic, somewhat brownish when dry, lower surface a little paler than the upper, rounded at both ends or the apex slightly retuse, the lower surface with few, scattered, brownish, very short hairs, the upper surface glabrous; lateral nerves about 8 on each side of the midrib, slender, not prominent; petiolules 2 to 3 mm long. Inflorescence racemose, axillary, solitary, few-flowered, the racemes sparingly pubescent, 2.5 to 4 cm long. Calyx sparingly pubescent, about 3.5 mm long. Wings about 6 mm long, the lamina about 3 mm long, 1.6 mm wide, obtuse or rounded, base acute on one side, rounded on the other, the claw very slender, as long as the lamina; standard and keel not seen. Stamens all united into a sheath split down one side to the base. Pods narrowly oblong, membranaceous, about 7 cm long, 1.3 to 2 cm wide, apex rounded and minutely apiculate, base somewhat decurrent and with a slender stalk about 8 mm long, all parts of the valves prominently and rather laxly reticulate; seeds one or two, central, immature.

LUZON, Province of Laguna, Mount Maquiling, *For. Bur. 21406 Villamil*, April 20, 1914, in forests along the Molauin trail beyond the hot springs, altitude about 500 meters.

A very characteristic species, anomalous in the genus in its racemose inflorescence, and further characterized by its very thin, prominently reticulate pods. The specimen is with immature fruits, but portions of the flower were found on one raceme, leaving very little doubt as to the correctness of the genus and section.

MELILOTUS Tournefort

MELILOTUS INDICA (Linn.) All. Fl. Ped. 1 (1785) 308.

Trifolium melilotus-indica Linn. Sp. Pl. (1753) 765.

LUZON, Benguet Subprovince, Baguio, *Merrill 9700*, May, 1914, disturbed soil along the railroad grade, also as a weed in the Forestry nursery.

A plant of wide distribution, recently introduced into the Philippines.

STRONGYLODON Vogel

STRONGYLODON PAUCINERVIS sp. nov.

Frutex scandens glaber; foliis 3-foliolatis, foliolis chartaceis, ovatis, obscure latissime obtuse acuminatis, usque ad 12 cm longis, nervis utrinque circiter 5; racemis ut videtur caulinis, fasciculatis, circiter 20 cm longis, multifloris, floribus azureo-violaceis ad nodos leviter elongatis subracemose dispositis, curvatis, circiter 3 cm longis.

A scandent glabrous vine of large size, the branchlets terete, brownish, 3 to 4 mm in diameter. Leaves 3-foliolate, their petioles 6 to 9 cm long, the stipules oblong, obtuse, strongly nerved, about 4 mm long, deciduous, the stipels linear, about 3 mm long; leaflets chartaceous, the terminal one equilateral, the lateral ones strongly inequilateral, ovate, 10 to 12 cm long, 5 to 6 cm wide, obscurely, very broadly, and bluntly acuminate, base rounded, shining, subolivaceous; lateral nerves about 5 on each side of the midrib, prominent; petiolules about 8 mm long. Racemes apparently from the trunk, at least three in a fascicle, about 20 cm long, many flowered, the peduncles 4 to 6 cm long. Flowers bluish-violet, about 3 cm long, corolla upcurved at nearly right angles at about the middle, in bud nearly straight or only slightly falcate, the nodes produced as short, about 5 mm long, branchlets, the flowers racemously arranged on the produced nodes. Pedicels 1 cm long or less. Calyx cup-shaped, about 6 mm long, margins wavy. Standard about 3 cm long, when spread nearly 2 cm wide, curved upward at about the middle, rostrate-acuminate. Wings slightly falcate, the claw about 8 mm long, the lamina oblong, rounded, 1.5 cm long, 6 mm wide. Keel strongly curved upward, 4 cm long, when spread 2 cm wide, rostrate-acuminate. Ovary long stipitate, the ovules about 5.

BILIRAN, *Bur. Sci.* 18858 *McGregor*, June 22, 1914, a very large vine in forests, altitude about 300 meters.

Among the Philippine species with short racemes well characterized by its fascicled racemes, its produced nodes, its numerous flowers, and its few-nerved leaflets.

STRONGYLODON MEGAPHYLLUS sp. nov.

Scandens, ramulis junioribus exceptis glaber; foliolis oblongo-ovatis, coriaceis, in siccitate brunneis, usque ad 28 cm longis, basi subacutis, apice obtusis vel retusis, nervis utrinque circiter 8, subtus prominentibus; inflorescentiis angustissime paniculatis, 30 ad 40 cm longis, ut videtur multifloris; floribus azureo-violaceis, 5 vel 6 cm longis.

A scandent plant, apparently of large size, quite glabrous

except the young branchlets which are more or less appressed-pubescent, the branches brown, terete, 4 to 5 mm in diameter. Leaves 3-foliolate, the leaflets oblong-ovate, coriaceous, brown and shining when dry, glabrous, 20 to 28 cm long, 9 to 16 cm wide, subequally narrowed to the acute or subacute base and to the blunt or somewhat retuse apex, equilateral, the lateral nerves about 8 on each side of the midrib, prominent on the lower surface, the petioles about 1 cm long. Racemes 30 to 40 cm long, apparently many-flowered, narrowly paniculate, flower bearing in the upper two-thirds, the branchlets from the nodes 1 to 1.5 cm long, each bearing several flowers, judging from the scars of fallen pedicels. Pedicels 1.5 to 2 cm long. Calyx about 1 cm long, nearly 1 cm in diameter, truncate, the upper side somewhat gibbous. Corolla blue-violet in color, very strongly recurved. Standard about 5 cm long, 2.5 cm wide, very sharply bent upward and backward from the mouth of the calyx, acuminate, pubescent inside in the median portion below, auriculate at the sharp curve inside; wings strongly falcate-curved, their claws 1.5 cm long, the lamina 2.5 cm long, 1 cm wide, obtuse, one side auriculate at the base. Keel very strongly recurved, when straightened out about 7 cm long, long-acuminate, rostrate. Fruit apparently fleshy, when dry falcate-ovoid, about 5 cm long, 2.5 cm in diameter, not compressed, beaked at the apex, contracted at the base into a short stipe.

LUZON, Province of Rizal, Montalban, *Loher 5935*, April 15, 1906.

The most strongly marked species known from the Philippines, at once recognizable by its unusually large leaflets, its large flowers, and the nodes of the racemes produced as slender branchlets up to 1.5 cm in length, making the inflorescence a narrow panicle rather than a true raceme.

LUZONIA Elmer

LUZONIA PURPUREA Elm. Leaf. Philip. Bot. 1 (1907) 220.

This genus and species were described from flowering specimens. The fruits are fleshy, oblong to oblong-obovoid in outline, when fresh somewhat fleshy, cylindrical, not at all compressed, about 12 cm long, 5.5 cm thick, smooth, shining, purple, short-apiculate at the apex, the valves very thick, apparently tardily dehiscent, firm, fleshy, greenish-white in color, 1 to 1.5 cm thick; sutures not prominent. Seeds usually 4 in each pod, ellipsoid, about 3 cm long and 2 cm thick.

LUZON, Benguet Subprovince, Pacdal, *Merrill 9685*, May, 1914.

MILLETTIA Wight & Arnott

MILLETTIA BRACHYCARPA sp. nov.

Arbor circiter 7 m alta, inflorescentiis exceptis glabra; foliis circiter 20 cm longis, imparipinnatis, foliolis circiter 7, oblongo-ovatis, subcoriaceis, breviter acuminatis, usque ad 13 cm longis;

floribus ignotis, racemis axillaribus, solitariis, usque ad 10 cm longis; leguminibus 1-spermis, oblongo-ellipticis, 6 cm longis, 3 cm latis, 1 cm crassis, utrinque angustatis, basi acutis, apice rostrato-acuminatis, valvis lignosis.

A tree about 7 m high, glabrous except the inflorescence. Branches terete, lenticellate, grayish or reddish-brown. Leaves alternate, odd-pinnate, the petiole and rachis 10 to 12 cm long; leaflets usually 7, subcoriaceous, ovate to oblong-ovate, up to 13 cm long and 4.5 cm wide, the apex shortly and obtusely acuminate, the base usually rounded, equilateral or somewhat inequilateral, the upper surface brownish-olivaceous when dry, shining, the lower paler; lateral nerves about 9 on each side of the midrib, prominent; petiolules 5 to 8 mm long. Flowers not known, the persistent rachises of the racemes axillary, solitary, thickened, somewhat pubescent, with numerous thickened protuberances. Pods brown when dry, oblong-elliptic, 1-seeded, woody, about 6 cm long, 3 cm wide, and at least 1 cm thick, narrowed below to the acute base and above to the rostrate-acuminate apex, glabrous, the corners rounded, not angled, the valves woody, shining, smooth. Seed solitary, subelliptic, somewhat narrowed to the rounded ends, about 3.5 cm long, 2.3 cm wide, and nearly 1 cm thick.

PALAWAN, Silanga, in deserted clearings on slopes, *Merrill 9578*, May 24, 1913.

A species well characterized by its very thick, woody, 1-seeded pods.

CROTALARIA Linnaeus

CROTALARIA ORIXENSIS Willd in *Ges. Naturf. Fr. Neue Schr.* 4 (1803) 217; Baker in *Hook. f. Fl. Brit. Ind.* 2 (1876) 83.

LUZON, Manila, *Bur. Sci. 19145 Guerrero*, December, 1912, in waste places, certainly of recent introduction.

For the identification of the above specimen I am indebted to Sir D. Prain, director of the Royal Gardens, Kew, England, to whom a specimen was sent. The species is of wide distribution in British India (Western Peninsula), in Abyssinia, and is reported from tropical Africa. It is undoubtedly a recent introduction in the Philippines.

SIMARUBACEAE

BRUCEA J. S. Miller

BRUCEA AMARISSIMA (Lour.) comb. nov.

Genus amarissimus Lour. *Fl. Cochinch.* (1790) 658.

Brucea sumatrana Roxb. *Hort. Beng.* (1814) 12, *Fl. Ind.*, ed. Carey, 1 (1832) 449; *Hook. f. Fl. Brit. Ind.* 1 (1875) 521; *Lecomte Fl. Gén. Indo-Chine* 1 (1911) 698.

This widely distributed Indo-Malayan species is apparently quite common in the southern Philippines, and is represented in our collections by specimens from Negros, Leyte, Camiguin, Cebu, Palawan, Basilan, and Min-

danao, but is not reported from Luzon unless *Cuning 987* from the Province of Pangasinan is correctly referred here. In our extra-Philippine material it is represented by specimens from Cochin China, southern China, Malay Peninsula, Singapore, and Queensland. Loureiro's specific name, being much the older, is here adopted.

BRUCEA MACROBOTRYS sp. nov.

Frutex 1 ad 2 m altus partibus junioribus inflorescentiisque minute adpresse pubescentibus; foliis usque ad 60 cm longis, 9-foliolatis, foliolis ovatis ad oblongo-ovatis, membranaceis, basi late acutis ad rotundatis, apice tenuiter acuminatis, margine integris vel leviter undulatis, distanter glandulosis, subtus parcissime pubescentibus, nervis utrinque 7 vel 8; paniculis angustis, quam folia longioribus, cymis distantibus, circiter 1.5 cm longis; floribus circiter 2 mm diametro.

An erect shrub 1 to 2 m high, the branches terete, pale-brownish, lenticellate, glabrous, the younger ones somewhat pubescent with short pale hairs as are the inflorescences and parts of the leaves. Leaves up to 60 cm long, the rachis greenish when dry, slightly pubescent; leaflets 9, ovate to oblong-ovate, membranaceous, 12 to 17 cm long, 5 to 6 cm wide, olivaceous and shining when dry, base broadly acute to rounded, apex rather slenderly and sharply acuminate, margins entire or slightly undulate, the incipient teeth indicated by distant marginal glands; lateral nerves 7 or 8 on each side of the midrib; petiolules puberulent, about 6 mm long. Panicles axillary, up to 80 cm long, very narrow, many flowered, the flowers in distant, pubescent, rather many-flowered cymes about 1.5 cm in length, few flowers opening at one time, their pedicels pubescent, slender, 4 to 5 mm long, the staminate ones about 2.2 mm in diameter. Sepals 3, pubescent, oblong, acute, 1 mm long. Petals slightly longer than the sepals, oblong-ovate, obtuse, very slightly pubescent. Stamens about as long as the petals. Fruit ovoid, black when dry, about 12 mm long, distinctly reticulate-rugose.

SAMAR, Cauayan Valley, *Phil. Pl. 1626 Ramos*, April, 1914, in forests along small streams.

A species manifestly allied to *Brucea mollis* Wall. and *B. luzoniensis* Vid., closely approaching some forms of the latter. It differs in its larger leaflets, longer leaves, much longer inflorescences, and larger fruits, but in spite of these different characters may be only a variety of Wallich's species unusually large in size.

CANARIUM Linnaeus

CANARIUM HETEROPHYLLUM sp. nov. § *Choriandra*.

Arbor circiter 9 m alta, floribus exceptis glabra; ramulis tenuibus, teretibus; foliis alternis, 1- ad 3-foliolatis, foliolis

subcoriaceis, 7 ad 16 cm longis, integris, utrinque subaequaliter angustatis, basi acutis, apice acuminatis, nervis utrinque 8 ad 10, subtus prominentibus; infructescentibus axillaribus, solitariis, circiter 10 cm longis, racemosis; fructibus oblongis, circiter 1.5 cm longis, obscure 3-angulatis, apiculatis, breviter pedicellatis, pedicellis calycibusque breviter cinereo-pubescentibus.

A tree about 9 m high, glabrous except the flowers. Branches slender, terete, grayish, the very slender branchlets reddish-brown as are the petioles and rachises. Leaves alternate, the rachis and petiole 2 to 6 cm long, slender; leaflets 1 to 3, subcoriaceous, elliptic-oblong, olivaceous, somewhat shining when dry, entire, of about the same color on both surfaces, 6 to 17 cm long, 3 to 7 cm wide, subequally narrowed to the acute base and to the rather prominently acuminate apex; lateral nerves 8 to 10 on each side of the midrib, prominent on the lower surface, anastomosing, the reticulations prominent; petiolules of the lateral leaflets, when present, about 8 mm long, the petioles of the simple leaves up to 3 cm long. Infructescence simple, racemose, axillary, slender, up to 10 cm long, apparently flower bearing only in the upper part. Flowers not seen. Calyx, in fruit, cinereous-pubescent with short hairs, the lobes 3, ovate, acute or obtuse, about 2.5 mm long, the pedicels stout, pubescent, 1.3 mm long. Mature fruits oblong, about 1.5 cm long, about 7 mm in diameter, apiculate, indistinctly, or the upper part distinctly 3-angled, the pericarp 1 mm thick or less, brownish, somewhat wrinkled when dry.

LUZON, Province of Cagayan (or Subprovince of Apayao), Tamoc, *Bur. Sci.* 13878 Ramos, January, 1908.

A species well characterized by its 1- and 3-foliolate leaves, both types occurring on the same branches. In this character it differs from all known species of the genus. On account of its fruit characters and its general aspect I have placed it in the same section with *Canarium villosum* F.-Vill. (*C. cumingii* Engl.).

CANARIUM DOLICHOPHYLLUM sp. nov.

Arbor circiter 18 m alta plus minusve pubescentibus; ramulis incrassatis circiter 1 cm diametro; foliis circiter 70 cm longis, foliolis 13, lanceolatis vel oblongo-lanceolatis, coriaceis, in siccitate pallidis, nitidis, integris, usque ad 25 cm longis et 5 cm latis, apice tenuiter caudato-acuminatis, basi subrotundatis, supra glabris, subtus pubescentibus; nervis utrinque 18 ad 20, subtus valde prominentibus, reticulis primariis subparallelis, prominentibus; infructescentibus axillaribus, racemosis, circiter 20 cm longis, ferrugineo-pubescentibus; fructibus ovoideis ad subellipsoideis, obtusis, glabris vel leviter hirsutis, pallidis,

obscurissime 3-angulatis, circiter 2 cm longis, in siccitate valde rugosis.

A tree about 18 m high. Branchlets thickened, about 1 cm in diameter, brown when dry, pubescent with short, reddish-brown hairs. Leaves up to 70 cm in length, the rachis and petioles glabrous, pale-brown when dry. Leaflets lanceolate to oblong-lanceolate, coriaceous, entire, 20 to 25 cm long, 4 to 5 cm wide, the upper surface pale, shining, the lower ferruginous-pubescent with short hairs on the midrib, nerves, and very prominent reticulations, the base rounded to subacute, nearly equilateral, the apex slenderly caudate-acuminate, the acumen up to 2 cm long, blunt; lateral nerves 18 to 20 on each side of the midrib, very prominent on the lower surface, curved-anastomosing, the reticulations very prominent; petiolules glabrous or slightly pubescent, rugose, 3 to 8 mm long. Infructescence racemose, axillary, solitary, rather stout, about 20 cm long, rather densely ferruginous-pubescent with short hairs, the rachis 4 to 5 mm in diameter. Fruits numerous, on stout peduncles 8 mm long or less, the lower peduncles rarely branched, the persistent calyx-lobes 3, coriaceous, ovate, obtuse, about 4 mm long, the fruits rather pale when dry, glabrous, or with few scattered hairs, ovoid to ellipsoid, about 2 cm long, 1.3 cm in diameter, obtuse, obscurely 3-angled, the pericarp very prominently wrinkled when dry.

MINDANAO, Butuan Subprovince, near Amparo, Agusan Valley, *For. Bur.* 20749 Rafael & Ponce, October 10, 1913, in forests slightly above sea level.

A species well characterized by its long leaves, and especially by its elongated, relatively narrow, caudate-acuminate leaflets which are very prominently reticulate beneath.

CANARIUM LAGUNENSE sp. nov. § *Choriandra* ?

Arbor 12 ad 20 m alta plus minusve breviter brunneo-pubescentibus vel floribus ferrugineo-pilosis; foliis 15 ad 25 cm longis, foliolis 5 vel 6, coriaceis, ellipticis ad oblongo-ellipticis, in siccitate brunneis, nitidis, integris, acuminatis, usque ad 12 cm longis, supra glabris, subtus ad costa nervisque breviter brunneo-puberulis, nervis utrinque circiter 12, subtus valde prominentibus; inflorescentiis axillaribus, folia aequantibus vel paullo longioribus, floribus ♂ numerosis, sessilibus, fasciculatis, 6 ad 7 mm longis, ♀ angustissime paniculatis; fructibus ovoideis, circiter 12 mm longis, apiculatis, extus in siccitate rugosis, glabris, endocarpio osseo, circiter 2 mm crasso.

A tree 12 to 20 m high, branchlets, petioles, inflorescences and leaflets on the nerves and reticulations of the lower surface

more or less covered with very short dark-brown hairs. Branches terete, brownish or grayish, glabrous, lenticellate, 5 to 7 mm in diameter. Leaves 15 to 25 cm long, alternate, the leaflets 5 or 6, coriaceous, brown and shining when dry, entire, 5 to 12 cm long, 4 to 6 cm wide, the apex acuminate, the acumen usually abrupt, short, blunt, the base acute to rounded, mostly nearly equilateral; lateral nerves about 12 on each side of the midrib, very prominent on the lower surface, anastomosing, the reticulations prominent, the nerves, midrib, and reticulations with very short, stout, short, glandlike hairs, the upper surface entirely glabrous; petiolules 5 to 10 mm long; stipules linear-lanceolate, thick, stiff, straight or curved, brown-pubescent, about 5 mm long. Inflorescences axillary, solitary, numerous, equalling or a little longer than the leaves, brown-pubescent, or the flower clusters ferruginous-pubescent. Male flowers numerous, fascicled, the fascicles widely separated, each with numerous ovate, hirsute, 1.2 to 1.8 mm long bracteoles, the flowers sessile. Calyx cylindric, 4 mm long, hirsute, the lobes 3, broadly ovate, obtuse, about 2 mm long. Petals 3, oblong, 6 mm long, 2 mm wide, obtuse, the upper two-thirds externally pubescent. Filaments six, 3 to 3.5 mm long, flattened below and slightly united for the lower 0.5 mm forming an obscure disk; anthers oblong, 1.8 mm long. Rudimentary ovary obovoid, glabrous, 1.5 mm in diameter, more or less evidently 3-cleft and readily separating into three parts. Female or perfect flowers apparently similar to the male, the infructescence narrowly paniculate, the lower branches up to 3 cm in length, each branch with from 1 to 3 fruits, the pedicels stout, 5 to 10 mm long. Mature fruits ovoid, not at all 3-angled, apiculate, about 1.2 cm long, 7 to 8 mm in diameter, the pericarp thin, wrinkled when dry, glabrous, the endocarp 1-celled, bony, about 2 mm thick.

LUZON, Province of Laguna, San Antonio, *Bur. Sci.* 14945 (type), 20468, 20579 Ramos; Mount Banajao, *For. Bur.* 19722 Barber, in flower in February, in fruit in April and May, growing in forests up to an altitude of 500 meters.

A species in many characters closely resembling *Canarium villosum* F.-Vill. (*C. cumingii* Engl.), and probably as closely allied to that species as any other. It is distinguished by its very short, dark-brown indumentum which appears on the younger parts of the inflorescence, and on the lower surface of the leaflets. The male flowers are disposed in sessile, dense, distant fascicles and are ferruginous-pubescent.

CANARIUM BARNESII sp. nov. § *Choriandra*.

Arbor circiter 20 m alta a *C. lagunense* differt foliis longioribus, foliolis magis numerosis, 6 vel 7, inflorescentiis multo

brevioribus, 5 ad 10 cm longis, floribus ♀ solitariis, haud fasciculatis.

A tree about 20 m high, most parts except the upper surfaces of the leaflets more or less covered with very short brown hairs. Leaves about 35 cm long, the leaflets 6 or 7, coriaceous, oblong-elliptic to oblong-obovate, 7 to 12 cm long, 3.5 to 6 cm wide, rather dark-brown when dry, the upper surface glabrous, shining, base acute to rounded, apex prominently and abruptly acuminate, the acumen blunt, 1 cm long or less; lateral nerves 12 to 14 on each side of the midrib, prominent on the lower surface, anastomosing, the reticulations rather close, prominent; petiolules 1 to 1.5 cm long; stipules stout, stiff, pubescent, curved, about 5 mm long. Spikes 5 to 10 cm long, simple, the flowers scattered below, solitary, above rather close, sessile. Calyx oblong-ovate, about 4 mm long, pubescent, the teeth 3, broadly ovate, obtuse, 1 mm long. Petals 3, narrowly oblong, acute to obtuse, about 5 mm long, 1.5 mm wide, pubescent externally in the upper part. Disk annular, glabrous, rather thick, more or less lobed, 1 mm high or less; filaments 6, slender, 1.5 mm long, attached to the outer upper part of the disk; anthers 1 mm long. Ovary globose-obovoid, pubescent, 1.5 mm in diameter; style stout, pubescent, about 1 mm long, cylindric; stigma capitate, obscurely sulcate.

MASBATE, Marintoc River, collected by P. T. Barnes, May, 1903, distributed as *Merrill 2617*. In forests, locally known as *mili-pili*.

A species in facies much resembling *Canarium lagunense* Merr., but with longer leaves, more numerous leaflets, very much shorter inflorescences, the flowers not at all fascicled, and the flowers in structure quite different from those of *C. lagunense*. The indumentum on the younger parts, inflorescence, and lower surfaces of the leaflets is quite the same in both forms.

CANARIUM OLIGANTHUM sp. nov. § *Crassipyrrena*.

Arbor, ut videtur alta, partibus junioribus plus minusve puberulis; foliis circiter 70 cm longis, foliolis circiter 9, amplis, integris, chartaceis vel subcoriaceis, in siccitate brunneis, usque ad 25 cm longis, et 11 cm latis, acuminatis, nervis utrinque 15 ad 17, prominentibus; inflorescentiis axillaribus, solitariis, circiter 15 cm longis, anguste paniculatis, paucifloris; floribus longe pedicellatis, ebracteolatis, circiter 8 mm longis.

A tree, apparently tall, the trunk about 50 cm in diameter, the branchlets, petioles, midribs on the lower surface of the leaflets, and inflorescence more or less puberulent with pale-brownish hairs. Branches terete, lenticellate, stout, striate, the ultimate branchlets about 1 cm in diameter, pale-brownish.

Leaves ample, up to 70 cm long, the petiole long, about 5 mm in diameter, and with the rachis and petiolules puberulent; leaflets ovate to oblong, 15 to 25 cm long, 8 to 11 cm wide, chartaceous to subcoriaceous, brown and shining when dry, the lower surface a little paler than the upper, entire, apex acuminate, base rounded, subtruncate, or slightly cordate, broad, equilateral, the upper surface quite glabrous, the lower pubescent on the midrib; petiolules 1 to 2 cm long; stipules not seen, apparently early deciduous. Panicles axillary, solitary, 15 cm long or less, narrowly pyramidal, branched at or above the middle, the branches few, scattered, the lower ones 2.5 cm long or less, each branch with one or two long-pedicelled, ebracteolate flowers, or if the bracteoles are present then small and early deciduous; pedicels 1 cm long or less. Flowers 3-merous, about 8 mm long, the calyx cylindric, 6 to 7 mm long, puberulent, the teeth three, broadly triangular-ovate, acute, 2 mm long. Petals 3, oblong, obtuse, 6 to 7 mm long, 3 mm wide, the upper one-third spreading. Stamens 6; filaments 2 mm long, nearly free, flattened and slightly enlarged below, apparently connate into a short obscure disk. Ovary ellipsoid, glabrous, about 4 mm long, narrowed upward into the short, cylindric, stout, 1 mm long style; stigma capitate.

MASBATE, Marintoc River, *P. T. Barnes*, May, 1903, distributed as *Merrill 2618*. In forests along the river, altitude about 16 m, locally known as *pili* and yielding a white resin.

A species manifestly allied to *Canarium luzonicum* A. Gray, but well characterized by its large leaves, ample leaflets, and especially by its narrowly pyramidal, few-flowered panicles, the flowers ebracteolate, their pedicels about 1 cm long.

CANARIUM NITENS sp. nov.

Arbor circiter 15 m alta, inflorescentiis puberulis exceptis glabra; foliis usque ad 35 cm longis, 7- vel 9-foliolatis, foliolis crasse coriaceis, utrinque nitidis, integris, oblongis, acuminatis, 8 ad 13 cm longis, nervis utrinque circiter 10, subtus prominentibus; paniculis obscure brunneo-puberulis, terminalibus, quam folia brevioribus; fructibus anguste ovoideis.

A tree about 15 m high, glabrous except the inflorescence. Branches brown, terete, glabrous, wrinkled when dry. Leaves alternate, up to 35 cm in length. Leaflets oblong, thickly coriaceous, prominently shining on both surfaces, the lower a little paler than the upper, 7 or 9 to each leaf, 8 to 13 cm long, 2.5 to 3.5 cm wide, entire, rather prominently acuminate, base acute, often somewhat inequilateral and sometimes rounded on one side and acute on the other; lateral nerves about 10, very

prominent on the lower surface, strongly curved, obscurely anastomosing near the margins, the reticulations not at all prominent; petiolules of the lateral leaflets 0.6 to 1.5 cm long, of the terminal one up to 4 cm in length. Panicles terminal, 13 cm long in fruit, brown-puberulent, branched from the base. Persistent calyces about 3 mm in diameter, puberulent. Immature fruits narrowly ovoid, somewhat inequilateral or somewhat gibbous, about 2 cm long, glabrous, not at all angled, the pericarp wrinkled when dry.

MINDANAO, District of Zamboanga, Taglibao River, *For. Bur.* 13772 *Foxworthy, DeMesa, & Villamil*, June 17, 1912, growing at sea level immediately back of the mangrove swamp, known to the Moros as *bañli*.

The species is apparently a rather characteristic one, and is perhaps as closely allied to *Canarium calophyllum* Perk., as to any other. It differs from *Canarium calophyllum*, however, in its fewer nerved leaves and in its much smaller persistent calyces.

CANARIUM STENOPHYLLUM sp. nov. § *Eucanarium*, *Monadelpha*.

Arbor alta partibus junioribus exceptis glabra; foliis circiter 20 cm longis, foliolis 13 ad 15, lanceolatis, integris, usque ad 11 cm longis, inaequilateralibus, leviter falcatis vel subrectis, basi acutis, apice longe acuminatis; racemis ♂ axillaribus, solitariis, 8 ad 10 cm longis; floribus circiter 1.3 cm longis, cylindraceutis, filamentis deorsum connatis, disco libero.

A tree reaching a height of 40 meters, glabrous except the younger parts and the inflorescence. Branches terete, glabrous, lenticellate, grayish-brown, about 5 mm in diameter, the branchlets more or less appressed-villous or hirsute, especially the growing parts. Leaves alternate, about 20 cm long. Leaflets 13 to 15, lanceolate, inequilateral, straight or somewhat falcate, chartaceous, entire, 1 to 2.4 cm wide, 6 to 11 cm long, narrowed below to the acute or obtuse base, gradually narrowed upward to the long and rather slenderly acuminate apex, when dry olivaceous or subolivaceous, shining; lateral nerves about 9 on each side of the midrib, slender, curved, anastomosing; petiolules about 2 mm long; stipules not seen, if present very early deciduous. Male racemes axillary, solitary, 8 to 10 cm long, slightly pubescent, the flowers somewhat crowded in the upper one-half, white, their pedicels about 2 mm long. Calyx about 4 mm long, the lobes 3, broadly ovate, 2 mm long. Petals 3, oblong, imbricate, glabrous, about 13 mm long, 5 mm wide. Stamens 6, the filaments united below into a 2 mm high disk, the free parts 6 to 7 mm long; anthers oblong, 3 mm long. Disk free, oblong-cylindric, hirsute, somewhat fluted, about 4 mm long, 2.5 mm in diameter.

LUZON, Province of Camarines, Mount Isarog, *Phil. Pl.* 1550 Ramos, November 20, 1913, in forests.

This species is probably as closely allied to *Canarium perkinsiae* Merr. as to any other, differing in its much smaller, lanceolate leaves and in its short pedicels. It is well characterized by its narrowly lanceolate leaflets.

CANARIUM ELLIPSOIDEUM sp. nov. § *Eucanarium*.

Arbor alta, glabra (floribus ignotis); ramis incrassatis, glabris, circiter 2 cm diametro, brunneis, nitidis; foliis alternis, usque ad 55 cm longis, foliolis circiter 9-jugis, coriaceis, nitidis, ovatus ad oblongis, usque ad 16 cm longis, basi cordatis, apice distincte acuminatis; inflorescentiis ut videtur paniculatis, axillaribus, solitariis, infructescentibus 10 ad 30 cm longis; fructibus ellipsoideis, circiter 3 cm longis, utrinque rotundatis, laevibus vel obscure rugosis, in siccitate castaneis, endocarpio longitudinaliter 6-carinato.

A tall tree, nearly glabrous, the ultimate branches much thickened, about 2 cm in diameter, dark-brown, shining, more or less striate or wrinkled when dry, marked with scattered large scars of fallen petioles, the very tip, above the ultimate leaves, densely ferruginous-pubescent. Leaves more or less crowded toward the ends of the branchlets, up to 55 cm long, each with about 19 leaflets, odd-pinnate, the rachis and petiole rather stout, shining, striate; stipules none or very early deciduous. Leaflets opposite, the lower ones ovate, 8 to 10 cm long, the intermediate and upper ones oblong, up to 16 cm long, 4 to 6 cm wide, shining on both surfaces, glabrous, rather pale when dry, the base prominently and broadly cordate, apex acuminate, the acumen blunt, rather stout; lateral nerves of the median leaflets about 16 on each side of the midrib, of the lower leaves about 10, distinct, anastomosing; petiolules stout, about 5 mm long. Flowers not seen. Infructescence axillary, solitary, 10 to 30 cm long, dark-brown, glabrous, shining, somewhat paniculate. Persistent calyx 3-lobed, very coriaceous, about 8 mm in diameter, slightly pubescent externally, inside densely appressed cinerous-pubescent, the lobes broadly ovate; pedicels stout, very short. Fruit ellipsoid, about 3 cm long, rounded at both ends, not at all 3-angled, the pericarp apparently fleshy, when dry castaneous, slightly wrinkled, glabrous, or the younger fruits with few, scattered, appressed, stiff, ferruginous hairs, the endocarp bony, 3-celled, only a single cell developing a seed, rounded at both ends, not at all 3-angled, but with three very prominent primary longitudinal keels or ridges that unite with each other at the base, and three intermediate keels or ridges,

nearly as prominent as the primary ones, which unite at the apex but are evanescent near the base.

LUZON, Province of Bulacan, Angat, *Bur. Sci.* 21968 Ramos, September 22, 1913, in forests.

A striking species on account of its thickened stems, its long leaves, and the almost entire absence of indumentum of any kind. The strictly ellipsoid, very dark-brown, shining, nearly smooth fruits are exceedingly characteristic, as is also the longitudinally 6-ridged endocarp, the fruit not being at all triangular.

CANARIUM SANCHEZII sp. nov. § *Monadelphæ*.

Arbor, omnibus partibus, alabastris exceptis, glabra; foliis trifoliolatis, vix 20 cm longis, foliolis elliptico-ovatis, subcoriaceis, apice abrupte subcaudato-acuminatis; inflorescentiis axillaribus, spicatis, quam petioli brevioribus; floribus 3-meris, filamentis basi breviter connatis.

A tree, quite glabrous except the buds. Branches terete, light-gray, rather slender. Leaves 3-foliolate, 14 to 18 cm long, the petioles 2 to 3.5 cm long; leaflets elliptic-ovate, or the terminal one somewhat obovate-elliptic, subcoriaceous, somewhat shining, brown beneath when dry, the terminal ones up to 11 cm long and 5.5 cm wide, the lateral ones somewhat smaller, the base acute, the apex rather abruptly and slenderly subcaudate-acuminate, the acumen 1 cm long or less. Spikes axillary, solitary, 2.5 cm long or less, the bracteoles small, oblong-ovate, acute, 1 mm long or less. Calyx 2.5 mm long, 3-lobed, the lobes ovate, obtuse or subacute, about 1.5 mm long, pubescent externally. Petals 3, oblong, obtuse, glabrous, about 4 mm long, 2 mm wide. Stamens 6; filaments somewhat dilated below, united for the lower 0.5 mm, free from the disk; anthers about 1 mm long. Fruit unknown.

MINDANAO, Butuan Subprovince, Butuan, *J. F. Quadras* 172, from the herbarium of the Ateneo de Manila, locally known as *sauangan*.

Named in honor of Father F. Sanchez, for many years connected with the Museum of the Ateneo de Manila. A species well characterized by its trifoliolate leaves and short spikes.

GARUGA Roxb.

GARUGA LITTORALIS sp. nov.

Arbor 15 ad 20 m alta, inflorescentiis plus minusve dense cinereo-puberulis exceptis glabra vel subglabra; foliis 30 ad 45 cm longis, 9- vel 10-jugatis; foliolis oblongis, ovato-oblongis vel lanceolato-oblongis, acuminatis, basi late rotundatis, leviter cordatis, valde inaequalateralibus, integris, rariter distanter irregulariter leviter crenulatis; paniculis terminalibus, in anthesis

circiter 8 cm longis, dense cinereo-puberulis; pedicellis quam alabastra ovoidea brevioribus; petalis quam lacinae calyciniae duplo longioribus.

A tree 15 to 20 m high, nearly or quite glabrous except the rather densely cinereous-puberulent inflorescence. Branches reddish-brown, glabrous, lenticellate, much thickened, 1 to 1.5 cm in diameter. Leaves alternate, crowded at the apices of the branchlets, 30 to 45 cm long, deciduous before anthesis, the rachis often somewhat puberulent, becoming glabrous. Leaflets straight or somewhat falcate, 9 or 10 on each side of the rachis, opposite or nearly so, chartaceous or thinly coriaceous, oblong, ovate-oblong, or lanceolate-oblong, glabrous and somewhat shining when dry, of the same color on both surfaces, the lower ones usually smaller than the median ones, 5 to 12 cm long, 2 to 4.5 cm wide, the margins entire or rarely distantly and irregularly crenulate, the apex rather prominently acuminate, the base usually broad, rounded or sometimes subtruncate, usually somewhat cordate, strongly inequilateral, never with an additional pinnule at the base as in *Garuga floribunda* Dcne. Panicles appearing before the new leaves, terminal, usually many from the apices of the branchlets, about 8 cm long, all parts densely cinereous-puberulent. Flowers yellow, rather congested on the ultimate branchlets of the inflorescence, puberulent, their pedicels 1 to 1.5 mm long, shorter than the ovoid buds. Calyx 3 mm long, the lobes oblong-ovate, acute, 1.5 mm long. Petals puberulent, oblong-oblancoate or narrowly oblong, usually acute, reflexed, about twice as long as the calyx-lobes. Filaments 2.5 mm long, pubescent, much thickened below; anthers 1 mm long. Ovary ovoid, sessile, pubescent, 2 mm long, 4-celled, each cell 2-ovuled, style stout, puberulent, 2.5 mm long; stigma obscurely 4-lobed. Fruit black when ripe, obovoid, much wrinkled when dry, glabrous, 8 to 10 mm in diameter, each containing one or two subglobose, prominently rugose seeds about 5 mm in diameter.

LUZON, Province of Tayabas, *For. Bur.* 12342 Curran (type), April, 1908, near the seashore. MASBATE, *For. Bur.* 12572, 12587 Rosenbluth, January, 1909, both specimens sterile. CEBU, Talisay, *For. Bur.* 6431 *Espinosa*, September, 1906. MINDORO, *For. Bur.* 8705 Merritt, January, 1908.

A tree, usually growing near the seashore, apparently rather widely distributed in the Philippines. It is manifestly allied to *Garuga floribunda* Dcne., of Timor and northern Australia, but appears to be distinguished from that species by its entire, much larger, leaflets, absence of the supplementary reduced pinnules at the base of the leaflets, and its short-pedicelled flowers. The inflorescence is not strictly terminal, but the peduncles are in the crowded axils of the fallen leaves at the apices

of the branchlets. The leaves appear after the flowers, and with the growth of the branchlet the panicles in fruiting stage become lateral, being situated in the axils of fallen leaves below the terminal crown of leaves.

The species is known in Tayabas as *libas* (Tagalog); in Masbate and Cebu as *bogo* (Visayan), and in Mindoro as *abilo* (Tagalog), the last name more usually applied to *Garuga abilo* (Blanco) Merr.

Var. **PAUCIJUGA** var. nov.

A typo differt foliis 5- vel 6-jugatis.

CAGAYAN DE SULU, *Merrill 5301*, October 15, 1906.

The specimen is in fruit, but in all essential characteris it appears to be like the species, differing only in its fewer leaflets. A specimen from Balabac Island, with flowers only, no leaves, may be referable here, *Bur. Sci. 898 Mangubat*, March, 1906, locally known as *baro*.

GARUGA CLARKII sp. nov.

Arbor circiter 30 m alta, subglabra; foliis alternis, usque ad 40 cm longis, imparipinnatis, 11- vel 12-jugatis, rhachibus plus minusve puberulis; foliolis inaequilateralibus, oblongo-lanceolatis, usque ad 10 cm longis, 3 cm latis distincte acuminatis, basi oblique rotundatis, margine distincte regulariterque crenato-dentatis; floribus ignotis; paniculis sub fructu axillaribus, pedunculatis, leviter puberulis, circiter 16 cm longis; fructibus obovoideis, nigris, circiter 1 cm diametro.

A tree about 30 m high, subglabrous, or somewhat gray-puberulent. Branches reddish-brown, glabrous, about 5 mm in diameter. Leaves crowded at the apices of the branchlets, 35 to 40 cm long, the rachis usually black when dry, somewhat puberulent. Leaflets opposite or subopposite, lanceolate or oblong-lanceolate, chartaceous, straight or slightly falcate, the median ones 8 to 10 cm long, 2.5 to 3 cm wide, the upper and lower ones somewhat smaller, the base strongly inequilateral, rounded on one side of the midrib, acute on the other, the apex prominently acuminate, the acumen about 1 cm long, blunt, the margins distinctly and regularly crenate-dentate, the upper surface quite glabrous, shining, the lower very slightly paler, glabrous or with few soft hairs; nerves about 13 on each side of the midrib, distinct; petiolules about 2 mm long, usually puberulent. Flowers unknown. Fruiting panicles axillary, peduncled, about 16 cm long, gray-puberulent. Fruits black and wrinkled when dry, obovoid, glabrous, 1 cm in diameter or less, each containing one or two rugose, subglobose seeds.

MASBATE, *For. Bur. 1700 Clark*, July 23, 1904, in forests at an altitude of about 150 m, on moderate slopes, locally known as *bugo* (Visayan), and said to yield a valuable timber.

This species is manifestly allied to the preceding one, but differs in its longer leaves and more numerous leaflets which are regularly crenate-dentate and although rounded, are never cordate at the base.

PROTIUM Burman

PROTIUM CONNARIFOLIUM (Perk.) comb. nov.

Canarium connarifolium Perk. Frag. Fl. Philip. (1904) 92.

This species, of which Dr. Perkins had no fruiting material, and of which she described only the male flowers is shown to be a representative of the genus *Protium* by additional material. It is not closely allied to *Protium javanicum* Burm., from which it differs in vegetative characters and its very short inflorescence. The fruits are apparently subglobose, when mature about 1.5 cm in diameter, ultimately 2- or 3-valved, and with 1 to 3 pyrenes, the pyrenes hard, about 8 mm long. It is further distinguished from *Canarium* by its 4-merous flowers. The species is represented by the following material, all from Palawan: Merrill 787 (cotype), Bur. Sci. 753, 754, 737, 866 Foxworthy, For. Bur. 21604 Agama, from Iwahig, Alphonso XIII, and Mount Victoria, flowering February to May.

The genus is new to the Philippines.

SANTIRIA Blume

SANTIRIA CAUDATA sp. nov. § *Eusantiria*.

Arbor glaberrima circiter 15 m alta; foliis 25 ad 35 cm longis, foliolis 7, chartaceis vel subcoriaceis, in siccitate pallidis, nitidis, oblongo-ellipticis ad oblongo-lanceolatis, usque ad 18 cm longis, apice tenuiter caudato-acuminatis, basi acutis, nervis utrinque 12 ad 14, subtus prominentibus; paniculis axillaribus, 10 ad 15 cm longis, e basi ramosis; floribus 3 mm diametro.

A tree about 15 m high, entirely glabrous. Branches terete, light-gray, somewhat striate when dry. Leaves 25 to 35 cm long, the leaflets 7, oblong-elliptic to oblong-lanceolate, 12 to 18 cm long, 3.5 to 6 cm wide, chartaceous or subcoriaceous, pale and shining when dry, entire, the apex slenderly caudate-acuminate, acumen blunt, 1.5 to 2.5 cm long, the base acute, equilateral or nearly so; lateral nerves 12 to 14 on each side of the midrib, prominent, anastomosing, the reticulations lax, rather distinct; petiolules 1 to 2 cm long. Panicles axillary, pyramidal, up to 15 cm long, branched at or from near the base, the branches few, spreading, the lower ones 5 to 7 cm long. Flowers about 3 mm in diameter, greenish-yellow, their pedicels 2 to 3 mm long. Calyx shallow, 2.5 mm in diameter, the lobes rounded, about 1 mm long, 2 to 2.5 mm wide. Petals 3, broadly ovate, 2.5 mm wide and about 2.2 mm long, acute or obtuse, glabrous. Disk annular, thick, glabrous, obscurely undulate; stamens 6, the filaments broadened below, 0.5 mm long, attached to the outer part of the disk; anthers 0.5 mm long. Ovary ovoid, glabrous,

1.5 mm in diameter; style very short, stout; stigma depressed-globose or subdisciform.

LUZON, Province of Camarines, Tamban River, *For. Bur.* 21211 (type), 21217 *Alvarez*, April 1, 1914, forested slopes along streams, altitude 20 to 100 meters.

A species apparently belonging in the group with *Santiria beccarii* Engl., but well characterized by being entirely glabrous. It is probably most closely allied to the Philippine *S. glabra* Merr., from which it is readily distinguished by its larger, more numerous nerved, caudate-acuminate leaves and its longer panicles.

SANTIRIA LAGUNENSIS sp. nov. § *Eusantiria* ?

Arbor alta partibus junioribus inflorescentiisque leviter furfuraceis exceptis glabra; foliis usque ad 20 cm longis, foliolis 5 vel 6, oblongo-ovatis, integris, in siccitate pallidis, nitidis, usque ad 11 cm longis, subcoriaceis, acuminatis, basi acutis ad rotundatis, nervis utrinque circiter 8; paniculis axillaribus, usque ad 7 cm longis, leviter ferrugineo-furfuraceis, e basi ramosis.

A tree, apparently tall, glabrous except the rather densely ferruginous-furfuraceous tips of the branchlets and the slightly furfuraceous inflorescence. Branches pale-gray, terete, somewhat striate, glabrous, the tips somewhat brownish. Leaves about 20 cm long, the leaflets usually 6, sometimes 5, oblong-ovate, subcoriaceous, pale and shining when dry, 8 to 11 cm long, 2.5 to 5 cm wide, entire, apex narrowed, rather prominently acuminate, base acute to rounded; lateral nerves about 8 on each side of the midrib, slender but distinct, anastomosing, the reticulations lax; petiolules 7 to 10 mm long. Panicles axillary, about 7 cm long, branched at or from near the base, the branches few, the lower ones up to 2 cm long, the younger parts distinctly but minutely ferruginous-furfuraceous. Flowers 3-merous, the young buds globose, rather numerous. Young fruits globose, black when dry, 8 mm in diameter, the stigma lateral.

LUZON, Province of Laguna, San Antonio, *Bur. Sci.* 20505 *Ramos*, February, 1913, forested slopes.

Somewhat resembling *Santiria nitida* Merr., but the inflorescence entirely different. The species is characterized by its minutely furfuraceous, more or less ferruginous indumentum on the growing tips of the branchlets and on the inflorescence, otherwise quite glabrous.

SANTIRIA SAMARENSIS sp. nov. § *Eusantiria*.

Arbor 20 ad 30 m alta ramulis inflorescentiisque exceptis glabra; ramulis crassis, in siccitate brunneis, partibus junioribus plus minusve breviter ferrugineo-pubescentibus; foliis usque ad 80 cm longis, foliolis 9 vel 11, coriaceis, nitidis, oblongis ad oblongo-ellipticis, usque ad 20 cm longis, basi acutis ad subro-

tundatis, leviter inaequilateralibus, spice caudato-acuminatis, nervis utrinque 12 ad 15, subtus prominentibus; paniculis axillaribus, 30 ad 40 cm longis, amplis, multifloris, ab infima tertia parte ramosis; floribus pubescentibus, circiter 6 mm longis.

A tree 20 to 30 m high, glabrous except the branchlets and inflorescence. Branchlets thickened, reddish-brown or brown when dry, about 1 cm in diameter, terete, lenticellate, the younger parts more or less ferruginous-pubescent with short hairs. Leaves alternate, up to 80 cm in length, the rachis and petioles reddish-brown when dry; leaflets 9 or 11, coriaceous, rather pale when dry, somewhat shining, oblong to oblong-elliptic, entire, 12 to 20 cm long, 5 to 9 cm wide, the base acute to subrounded, somewhat inequilateral, the apex slenderly and rather abruptly caudate-acuminate, the acumen up to 2.5 cm long, blunt; lateral nerves 12 to 15 on each side of the midrib, very prominent on the lower surface, curved-anastomosing, the reticulations distinct; petiolules 2 to 3 cm long, reddish-brown when dry. Panicles axillary, solitary, many on each branchlet, 30 to 40 cm long, the lower one-third without branches, the primary branches spreading or ascending, the lower ones up to 10 cm in length, sparingly pubescent, reddish-brown, the ultimate branchlets and pedicels rather densely pale-ferruginous pubescent with short hairs. Flowers yellowish, about 6 mm long, the pedicels 3 to 4 mm long, the bracts lanceolate, acuminate, deciduous, about 3 mm long. Male flowers: Calyx somewhat cup-shaped, pubescent, about 3 mm long and wide, with 3 broadly triangular-ovate, acute teeth about 1 mm long. Petals 3, free, pubescent on both surfaces, coriaceous, broadly ovate, obtuse, 4 to 4.5 mm long. Disk prominent, thickened, annular, glabrous, about 3 mm in diameter. Stamens 6; filaments attached to the outer margin of the disk, flattened below, narrowed above, about 1.5 mm long; anthers oblong, dorsifixed, 1 to 1.2 mm long. Rudimentary ovary very small, glabrous. Female flowers in general similar to the males. Staminodes 1.5 mm long. Ovary ovoid, glabrous, 3-celled; stigma capitate, sessile, about 1 mm in diameter.

SAMAR, Mount Cauayan, *Phil. Pl. 1641 Ramos* (type), April, 1914, distributed sub *Canarium*. LUZON, Province of Camarines, Mount Balu, *For. Bur. 21136 Miranda*, April, 1914; Tarangtong, *For. Bur. 21098 Abellanosa*, March 31, 1914, in forests, altitude about 160 meters, Bicol name *palaspas*.

A species belonging in the same group with *Santiria laevigata* Bl. and *S. maingayi* Benn., characterized among the few Philippine forms by its large leaflets which are prominently caudate-acuminate, and by its elongated, many flowered panicles.

ANACARDIACEAE

DRACONTOMELUM Blume

DRACONTOMELUM EDULE sp. nov.

Arbor alta, ramis incrassatis, ramulis junioribus dense ferrugineo-puberulis; foliis circiter 40 cm longis, rhachibus puberulis, foliolis alternis subtus, axillis barbatis exceptis, glabris, chartaceis oblongis, nitidis, acuminatis, 12 ad 17 cm longis, nervis utrinque circiter 12, prominentibus; fructibus globosis, carnosis, edulis, glabris, circiter 2.5 cm diametro, putamine depresso, 1.8 cm diametro.

A tree reaching a height of 20 m, similar and closely allied to *Dracontomelum cumingianum* Baill., differing especially in its glabrous leaflets. Branches thickened, terete, about 1 cm in diameter, grayish-brown, marked with large petiolar scars, the tips densely ferruginous-puberulent. Leaves crowded at the apices of the branchlets, about 40 cm long, the petiole and rachis somewhat cinereous-puberulent, becoming glabrous; leaflets about 11, chartaceous, oblong, entire, rather sharply acuminate, base acute to rounded, somewhat inequilateral, mostly 12 to 17 cm long, 4 to 5.5 cm wide, shining on both surfaces, the lower slightly paler than the upper, quite glabrous except for the bearded glands in the axils on the lower surface; lateral nerves about 12 on each side of the midrib, prominent, curved upward, distant from the margin, anastomosing, the reticulations distinct; petiolules about 2 mm long. Panicles in the upper axils, puberulent, flowers not seen. Fruit globose, green, turning yellowish when ripe, about 2.5 cm in diameter, glabrous, smooth, the mesocarp fleshy, acid, edible; stone depressed, about 1.8 cm in diameter, 8 mm high, obscurely undulate-ridged.

PALAWAN, Taytay, Merrill 9391, May 14, 1913, in forests immediately back of the mangrove and on steep slopes, ascending to at least 40 meters altitude.

A species manifestly closely allied to *Dracontomelum cumingianum* Baill., from which it differs in its leaflets being quite glabrous except for the bearded axils. It might be considered merely as a variety or form of Baillon's species by some authors.

BUCHANANIA Sprengel

BUCHANANIA PLATYPHYLLA sp. nov. § *Sagittatae*.

Arbor 10 ad 20 m alta, ramulis junioribus inflorescentiisque parce adpresse ferrugineo-hirsutis; foliis coriaceis, oblongis, nitidis, usque ad 35 cm longis, apice breviter, abrupte, obtuseque acuminatis, basi cuneatis vel leviter decurrento-acuminatis, nervis utrinque circiter 20; paniculis circiter 20 cm longis,

multifloris, floribus 5-meris; fructibus parcissime hirsutis vel vetustioribus glabris, apiculo centrico.

A tree 10 to 20 m high, the growing tips of the branchlets rather densely appressed ferruginous-hirsute. Branches terete, brown, glabrous. Leaves oblong, coriaceous, somewhat shining, 20 to 35 cm long, 8 to 12 cm wide, pale or brownish-olivaceous when dry, of about the same color on both surfaces, the apex shortly, abruptly, and obtusely acuminate, base narrowed in the lower one-fourth, cuneate or somewhat decurrent-acuminate; primary nerves 17 to 22 on each side of the midrib, prominent, the secondary nerves and reticulations netted, not parallel, distinct; petioles 1 to 2 cm long. Panicles numerous, in the upper axils, usually about 20 cm long, many-flowered, all parts with few, scattered, usually appressed, pale or ferruginous, hirsute hairs, in fruit sometimes becoming nearly or quite glabrous. Flowers 5-merous, white, the pedicels 1 mm long or less. Calyxlobes oblong, obtuse, about 1 mm long. Petals oblong, obtuse, about 2.6 mm long, 1 mm wide, reflexed. Disk glabrous. Filaments about 1.3 mm long, much narrowed at the apex; anthers about 1 mm long, prominently sagittate. Carpels rather densely pubescent. Mature fruits red, orbicular to broadly obovoid, somewhat compressed, about 1 cm long, the apiculus central, when immature with few, scattered, pale or ferruginous hairs, in age glabrous or with very few hairs.

This species is widely distributed in the Philippines and is manifestly allied to the common *Buchanania arborescens* Blume, differing notably in its much larger, more numerous nerved leaves. The type is *For. Bur.* 20274 *Miranda*, from the Province of Misamis, Mindanao, March, 1913, and I refer here also the following specimens:

LUZON, Province of Cagayan, *For. Bur.* 17154, 17303 *Curran*, *For. Bur.* 18459, 18468, 18481 *Alvarez*, *For. Bur.* 14767 *Darling*. MINDANAO, District of Zamboanga, *For. Bur.* 21894 *Villamil*, *Williams* 2363, 2879: District of Cotabato, *For. Bur.* 11772 *Whitford*. BASILAN, *Bur. Sci.* 16356 *Reillo*, *For. Bur.* 17896 *Rajael*, *For. Bur.* 3983 *Hutchinson*: District of Lanao, *For. Bur.* 22032 *Sherfesee*, *Cenabre*, & *Ponce*. It is known in Cagayan Province, Luzon, as *paleng*, *arangas*, *sambrit*, and *pappagan*; in Mindanao as *manguian*; and in Basilan as *lingabunu*.

BUCHANANIA ACUMINATISSIMA sp. nov. § *Sagittatae*.

Arbor glabra circiter 10 m alta; foliis coriaceis, nitidis, in siccite brunneis, oblongo-oblongeolatis, tenuiter acuminatis, usque ad 17 cm longis, longe petiolatis, basi longe anguste decurrento-acuminatis, nervis utrinque 20 ad 25; paniculis folia subaequantibus, glabris; floribus 4-meris, longe pedicellatis, pedicellis articulatis; carpellis glabris; antheris sagittatis.

A glabrous tree about 10 m high, or the very tips of the

growing branchlets somewhat pubescent. Branches terete, dark reddish-brown. Leaves brown when dry, shining, coriaceous, oblong-oblongate 15 to 17 cm long, 3 to 4 cm wide, the apex slenderly subcaudate acuminate, the acumen up to 2 cm long, blunt, the base narrowed, long and slenderly decurrent-acuminate; lateral nerves 20 to 25 on each side of the midrib, slender, distinct on both surfaces, the secondary veins not parallel, reticulations distinct; petioles 3 to 3.5 cm long. Panicles quite glabrous, slender, rather few-flowered, about as long as the leaves, branched from the middle and above. Flowers white, 4-merous, their pedicels somewhat 4-angled, distinctly jointed, gradually thickened upward, 2 to 3 mm long. Calyx lobes 0.5 mm long or less. Petals oblong, obtuse, 2.5 mm long, about 1 mm wide. Filaments 1 mm long, the apical part very slender; anthers sagittate, about 1 mm long. Disk and carpels glabrous.

LUZON, Province of Laguna, San Antonio, *Bur. Sci. 10932 Ramos*, August, 1910, in forests, Dahican River.

A species similar to *Buchanania sessilifolia* Blume (*B. acuminata* Turcz.), from which it differs in its much more numerous lateral nerves, and entirely glabrous leaves and panicles. The material was distributed as *Buchanania arborescens* Blume, but it is quite different from that species and not closely allied to it.

BUCHANANIA RETICULATA Elm. Leaf. Philip. Bot. 4 (1912) 1499.

This is typical *Mangifera altissima* Blanco, and must be reduced to Blanco's species. The type is *Elmer 12334* from the Island of Sibuyan.

PRUNUS ? LAURIFOLIA Dcne. in *Nouv. Ann. Mus. Paris* 3 (1834) 458; *Miq. Fl. Ind. Bat.* 1¹ (1855) 366 = *Buchanania arborescens* Blume.

This species was considered by Miquel as a true *Prunus*, but he manifestly saw no specimens. A cotype of the species, received from the Museum of Natural History, Paris, is in the Herbarium of the Bureau of Science. The specimen is with fruits, and is typical *Buchanania arborescens* Blume.

SWINTONIA Griffith

SWINTONIA ACUMINATA sp. nov.

Arbor glabra, 15 ad 20 m alta; foliis coriaceis vel subcoriaceis, usque ad 15 cm longis, oblongo-ellipticis, utrinque subaequaliter angustatis, apice acuminatis, basi leviter decurrentibus, subtus pallidis, nervis utrinque circiter 15; paniculis folia aequantibus vel longioribus, multifloris, pedicellis glabris vel minute pubescentibus, petalis intus puberulis, sub anthesin circiter 2.5 mm longis, obtusis, elliptico-ovatis.

A tree 15 to 20 m high, entirely glabrous except the short pedicels and slightly puberulent petals. Branches terete, dark reddish-brown when dry. Leaves alternate, coriaceous or sub-

coriaceous, oblong-elliptic, 8 to 15 cm long, 3 to 6 cm wide, pale and shining when dry, the lower surface somewhat glaucous, subequally narrowed to the acuminate apex and to the acute or acuminate and very slightly decurrent base, the acumen up to 1 cm in length, blunt; lateral nerves about 15 on each side of the midrib, mostly spreading, slightly curved, prominent, the reticulations distinct on both surfaces; petioles slender, semiterete, not sulcate, reddish-brown when dry, 4 to 5 cm long. Panicles axillary, slender, numerous, many flowered, up to 20 cm in length, the lower branches up to 12 cm in length. Flowers cream-color or white, numerous, somewhat crowded on the ultimate short branchlets, the pedicels 2 mm long or less. Calyx campanulate, about 2 mm long, the lobes broad, rounded, imbricate. Petals in anthesis elliptic-ovate, obtuse, about 2.5 mm long, glabrous outside, somewhat puberulent inside. Stamens 5. Ovary ovoid, glabrous, inequilateral, about 1 mm long; style short; stigma capitate.

LUZON, Province of Camarines, Pinamuhagan, *For. Bur. 21749 Fischer* (type), April 16, 1914; same province and month of collection, *For. Bur. 21729 Peñas, Soriano, & Abellanosa, For. Bur. 21232 Alvarez*. In forests, altitude 10 to 80 meters.

Apparently allied to the Bornean *Swintonia glauca* Engl., but the branchlets entirely glabrous, leaves not dark-colored on the upper surface when dry, and with more prominent and more numerous lateral nerves, relatively shorter and glabrous panicles, and glabrous ovaries. It is quite different from the other known Philippine species.

SABIACEAE

MELIOSMA Blume

MELIOSMA ACUMINATISSIMA sp. nov.

Arbor circiter 5 m alta, glabra vel subglabra; foliis pinnatis, usque ad 50 cm longis, foliolis subcoriaceis, usque ad 13, oblongo-ovatis ad lanceolatis, tenuiter acute acuminatis, basi acutis, margine integris, usque ad 11 cm longis, nitidis, nervis utrinque 6 vel 7; infructescentibus folia aequantibus, terminalibus, fructibus obovoideis, circiter 6 mm diametro, leviter compressis, obscure reticulatis.

A tree about 5 m high, glabrous or nearly so. Branches terete, pale brownish, the very tips ferruginous-hirsute, the plant (in fruit) otherwise glabrous. Leaves up to 50 cm long, pinnate, the leaflets about 13, oblong-ovate to lanceolate, entire, subcoriaceous, pale-olivaceous, shining, 7 to 11 cm long, 3 to 4 cm wide, apex rather slenderly and sharply acuminate, base acute, often a little inequilateral; lateral nerves about 6 on each side of the midrib, prominent, curved-ascending, prominently anas-

tomosing; petiolules about 4 mm long. Panicles (in fruit) terminal, glabrous, as long as the leaves, the fruits nearly black when dry, obovoid, about 6 mm in diameter, slightly compressed, obscurely reticulate.

LUZON, Province of Tayabas, Mount Pular, *Bur. Sci. 19417 Escritor*, January, 1913, in forests near the summit of the mountain.

A species well distinguished by being glabrous or nearly so, and by its entire leaflets. It is probably most closely allied to *Meliosma sylvatica* Elm., but that species is prominently pubescent and has denticulate leaflets.

MELIOSMA MACGREGORII sp. nov.

Arbor erecta vel scandens (?) prominente ferrugineo-hirsutis; foliis pinnatis, usque ad 40 cm longis, foliolis 9, oblongis ad oblongo-oblancheolatis, coriaceis, usque ad 12 cm longis, acuminate, basi acutis, nervis utrinque circiter 10, subtus valde prominentibus, margine integris ad leviter distanter denticulatis; paniculis terminalibus, amplis, multifloris, folia subaequantibus; floribus racemose dispositis, circiter 3 mm longis.

An erect tree of small size (or scandent ?), the branches, inflorescence, petioles and rachis, and the leaflets beneath and on the midrib and lateral nerves on the upper surface prominently ferruginous-hirsute. Leaves pinnate, up to 40 cm long, the leaflets 9, coriaceous, oblong to oblong-oblancheolate, 7 to 12 cm long, 2.5 to 4 cm wide, the apex sharply acuminate, base acute, margins entire to distantly and irregularly denticulate, the upper surface grayish to brownish when dry, somewhat shining, the midrib, nerves, and primary reticulations more or less impressed, the former two ferruginous-hirsute, the lower surface brown, paler than the upper surface, prominently hirsute on the midrib and lateral nerves, with few hairs on the reticulations; lateral nerves about 10 on each side of the midrib, very prominent, curved-anastomosing, the reticulations prominent; petiolules 6 to 10 mm long and with the rachis and petioles prominently ferruginous-hirsute. Panicles terminal, about as long as the leaves, prominently ferruginous-hirsute, the primary branches distant, spreading, up to 16 cm long, the lower secondary ones of each branch up to 7 cm long, many flowered, the flowers white, racemosely disposed on the ultimate branchlets, not crowded, their pedicels 1 mm long or less, the bracts and bracteoles oblong, pubescent, 1 to 2 mm long. Sepals ovate to elliptic-ovate, about 1.8 mm long, margins ciliate. Outer three petals orbicular-ovate, rounded, 2.5 to 3 mm long, the inner two reduced to a bifid membranaceous scale about 1 mm long, cleft into two oblong lobes. Stamens about 1.8 mm long, the

imperfect ones membranaceous, retuse, oblong, about 0.8 mm long. Ovary ovoid, glabrous. Fruit ovoid, slightly compressed, black, about 7 mm in diameter.

LUZON, Ifugao Subprovince, Mount Polis, *Bur. Sci. 19749 McGregor*, February, 1913, in flower (type): Lepanto Subprovince, Mount Data, *Merrill 4600*, November, 1905, in fruit, distributed as *M. pendula*.

A species manifestly allied to *Meliosma pendula* Merr., from which it differs in its much narrower, very differently shaped leaflets.

MELIOSMA LOHERI sp. nov.

Arbor parva circiter 5 m alta partibus junioribus inflorescentisque dense ferrugineo-pubescentibus; foliis simplicibus, anguste oblongo-obovatis ad oblongo-oblancheolatis, coriaceis, usque ad 20 cm longis, acuminatis, basi angustatis, cuneatis, margine sursum irregulariter grosse serratis, nervis utrinque circiter 15, subtus valde prominentibus; inflorescentiis terminalibus, paniculatis, folia subaequantibus, multifloris; floribus plus minusve confertis, brevissime pedicellatis, circiter 2.5 mm longis.

A small tree, about 5 m high according to Vanoverbergh, the younger parts and inflorescence densely ferruginous-pubescent. Branches terete, dark-brown, pubescent, the younger parts very densely so. Leaves simple, coriaceous, narrowly oblong-obovate to oblong-oblancheolate, 10 to 20 cm long, 3 to 6 cm wide, apex prominently acuminate, acumen apiculate, base gradually narrowed, cuneate, margins in the lower part entire, in the upper one-half usually with few, irregular, rather coarse, sharp teeth, the upper surface olivaceous, glabrous, shining, the ultimate reticulations distinct, minute, subfoveolate, the lower surface more or less pubescent, somewhat paler than the upper, the nerves and reticulations very distinct; lateral nerves about 15 on each side of the midrib, prominent, anastomosing, the primary reticulations very prominent; petioles 2 to 3.5 cm long, pubescent. Panicles terminal, about as long as the leaves, ferruginous-pubescent, many-flowered, the flowers white, rather crowded on the ultimate branchlets, their pedicels very short, the bracts pubescent, oblong-lanceolate, acuminate, about 1.2 mm long. Sepals ovate, rather thin, obtuse, about 1.2 mm long, pubescent. Outer three petals orbicular-ovate, rounded, about 2.5 mm long, the inner two adnate to the filaments, 1 mm long or less, cleft nearly to the base into two linear-oblong lobes. Filaments about 1 mm long, the anthers 1 mm wide, one-half as long; imperfect stamens strongly incurved, channeled, retuse, broadly ovate. Ovary compressed, glabrous, ovoid, about 1 mm long.

LUZON, Bontoc Subprovince, Malamey, *Vanoverbergh 1131* (type), March 7, 1914, in forests, altitude about 1,600 meters; Ifugao Subprov-

ince, Mount Polis, *Bur. Sci.* 19630 *McGregor*, February, 1913. Here probably should be referred *Loher 268* (herb. Kew.) from Atoc, Benguet Subprovince, a mere fragment of which is in the Herbarium of the Bureau of Science.

Closely allied to *Meliosma monophylla* Merr. of central Luzon, but at once distinguishable by its fewer nerved leaves, about 15 pairs in the present species, about 20 pairs in *M. monophylla*.

MELIOSMA PAUCINERVIA sp. nov.

Arbor, partibus junioribus inflorescentisque plus minusve ferrugineo-hirsutis; foliis pinnatis, usque ad 35 cm longis, foliolis 7 vel 8, subcoriaceis, oblongis, acute acuminatis, basi acutis ad subrotundatis, usque ad 12 cm longis, nitidis, margine distanter apiculato-serratis, nervis utrinque 4 vel 5, prominente anastomosantibus; paniculis terminalibus, laxis, circiter 25 cm longis; floribus circiter 3 mm longis; ovario hirsuto.

A tree, size not indicated, the younger parts and inflorescence more or less ferruginous-hirsute. Branches reddish-brown when dry, nearly glabrous, the younger ones sparingly hirsute. Leaves pinnate, up to 35 cm in length, the rachis reddish-brown, sparingly hirsute, leaflets 7 or 8, 8 to 12 cm long, 3 to 4.5 cm wide, subcoriaceous, oblong, sharply acuminate, base acute to somewhat rounded, margins of the larger leaflets with from 4 to 6, distant, small, apiculate, serrate teeth, the upper surface olivaceous when dry, shining, glabrous or the midrib sparingly hirsute, the lower surface paler, sparingly hirsute on the midrib and lateral nerves which are brown in contrast to the paler surface; lateral nerves 4 or 5 on each side of the midrib, very prominent, curved, prominently anastomosing, the reticulations lax; petiolules sparingly hirsute, 5 mm long or less. Panicles terminal, ample, lax, up to 25 cm in length, rather prominently ferruginous-hirsute, the branches distant, the lower ones up to 16 cm long, spreading or curved-ascending. Flowers white, racemosely and laxly disposed on the ultimate branchlets, their pedicels hirsute, 1 to 2 mm long, the bracts oblong-lanceolate, acuminate, about 2 mm long. Sepals pubescent, oblong to ovate, about 2 mm long. Outer three petals orbicular-ovate, rounded, about 3 mm in diameter, with a short ligulelike appendage near the apex inside; two inner petals reduced to mere rudiments, each consisting of two, narrowly linear lobes about 1.2 mm long, adnate to the stamens. Fertile stamens 1.5 mm long, the imperfect ones broad, incurved, oblong-ovate, about 1.5 mm long (spread) and 1 mm wide. Ovary ovoid, hirsute.

MINDANAO, District of Zamboanga, Santa Maria, *Bur. Sci.* 16436 *Reillo*, October, 1912.

A species well characterized by its distantly and sharply toothed leaflets, few but prominent and prominently anastomosing lateral nerves, lax panicles with laxly arranged flowers, and hirsute ovaries.

RHAMNACEAE

VENTILAGO Gaertner

VENTILAGO LANCEOLATA sp. nov.

Frutex scandens, partibus junioribus exceptis glaber; ramulis tenuibus, teretibus; foliis lanceolatis, chartaceis, integris, usque ad 8 cm longis, brevissime petiolatis, sursum angustatis, obtusis, basi subacutis ad subrotundatis, nervis utrinque circiter 9, tenuibus; racemis axillaribus, tenuibus, sub fructu usque ad 6 cm longis, solitariis; fructibus 4 ad 5 cm longis.

A scandent shrub, glabrous except the younger parts. Branches slender, terete, the branchlets glabrous or slightly and obscurely pubescent. Leaves lanceolate, chartaceous, 5 to 8 cm long, 1 to 2.5 cm wide, rather pale when dry, shining on both surfaces, entire, gradually narrowed upward to the obtuse apex, the base subacute to subobtuse; lateral nerves about 9 on each side of the midrib, very slender, curved-ascending, obscurely anastomosing very close to the margins, the reticulations fine, close, evident on both surfaces; petioles glabrous, 2 mm long or less. Racemes axillary, solitary, slender, in fruit up to 6 cm long, slightly pubescent. Fruits, including the wing, 4 to 5 cm long, the basal part nearly 5 mm in diameter, quite glabrous, the wing 7.5 to 10 mm wide, reticulate, somewhat rounded at the apex, shortly apiculate.

BILIRAN, *Bur. Sci.* 18646 *McGregor*, June 14, 1914, in thickets near the seashore.

A species characterized by its lanceolate, slenderly nerved leaves, and its inflorescence reduced to a simple axillary raceme.

ZIZYPHUS Linnaeus

ZIZYPHUS OTANESII sp. nov.

Arbor circiter 5 m alta, ramulis pubescentibus, spinosis; foliis parvis, suboblique ellipticis vel elliptico-ovatis, chartaceis, usque ad 3 cm longis, obtusis, 3-nerviis, subtus parce pubescentibus; fructibus globosis, glabris, 1.5 cm diametro.

A tree about 5 m high, the branches terete, reddish-brown, glabrous, the branchlets with very short sharp spines at the nodes 1 to 2 mm in length, the younger branchlets ferruginous-pubescent. Leaves small, somewhat inequilateral, chartaceous, 1.5 to 3 cm long, 1 to 2 cm wide, obtuse, base rounded or subacute on one side and rounded on the other, 3-nerved, the upper surface olivaceous, glabrous or slightly pubescent on the nerves,

the lower surface slightly paler, sparingly appressed-pubescent, the hairs on the nerves somewhat ferruginous; petioles ferruginous-pubescent, 2 to 3 mm long. Fruits globose, hard, glabrous, smooth, about 1.5 cm in diameter.

LUZON, Province of Pangasinan, Umingan, *Bur. Sci.* 17964 *Otanés*, April 16, 1914, in forests east of the town, known to the Ilocanos as *dilap*.

Manifestly allied to *Zizyphus trinervia* Poir., but at once distinguished by its much smaller, but slightly pubescent leaves.

ELAEOCARPACEAE

ELAEOCARPUS Linnaeus

ELAEOCARPUS BATAANENSIS sp. nov. § *Dicera*.

Arbor circiter 12 m alta, novellis inflorescentiisque parcissime pilosis exceptis glabra; foliis oblongo-ellipticis, chartaceis, usque ad 9 cm longis, basi acutis, apice acuminatis, nitidis, subtus eglandulosis, nervis utrinque circiter 6, tenuibus; racemis axillaribus, 3 ad 4 cm longis, paucifloris; floribus 5-meris, sepalis lanceolatis, acuminatis, circiter 5 mm longis, petalis laciniatis, basi cuneatis, margine dense villosis; staminibus 25, antheris apice ciliatis; fructibus 1-locellatis, ellipsoideis, circiter 2.5 cm longis.

A tree about 12 m high, quite glabrous except the slightly appressed-pilose younger branchlets and inflorescence. Branches slender, reddish-brown. Leaves oblong-elliptic, chartaceous, 6 to 9 cm long, 2 to 3.5 cm wide, subequally narrowed to the acute base and the somewhat acuminate apex, margins serrate-crenulate, somewhat olivaceous when dry, shining; lateral nerves slender, about 6 on each side of the midrib, anastomosing, the reticulations slender, axils of the leaves eglandular; petioles slender, 1 to 1.5 cm long. Racemes axillary, solitary, few, 3 to 4 cm long, few-flowered, the pedicels about 5 mm long. Flowers white, 5-merous. Sepals lanceolate, acuminate, about 5 mm long, 1.2 mm wide, externally very slightly puberulent. Petals 5.5 to 6 mm long, base cuneate, margins in the lower part densely villous with long hairs, the apical 2 mm cut into about 15, very slender, subequal divisions. Stamens about 25, 3 mm long, the anthers narrow, scabrid, cleft at the apex, one cell very slightly exceeding the other and ciliate-bearded at the tip. Ovary pubescent; style slender, lower part somewhat pubescent. Fruit ellipsoid or narrowly ellipsoid, about 2.5 cm long, 1.5 cm in diameter, rounded at both ends, the endocarp hard, bony, 1-celled.

LUZON, Province of Bataan, forests back of Limay, *For. Bur.* 21908 *Medina*, July 2, 1914, on forested slopes, altitude about 300 meters.

This species is characterized by its few flowers, equally and slenderly divided petals which are densely villous on the margins of the lower one-half, and its eglandular leaves. It is an ally of *Elaeocarpus isotrichus* F.-Vill., but has much smaller, quite different leaves.

ELAEOCARPUS OLIGANTHUS sp. nov. § *Dicera*.

Arbor parva, plus minusve pubescens; foliis oblongis, chartaceis, usque ad 8 cm longis, basi acutis, apice acuminatis, margine leviter crenatis, dentibus tenuiter aristatis, nervis utrinque 5 vel 6; racemis, axillaribus, solitariis, paucifloris; floribus 5-meris, 5 mm longis, petalis obovatis, $\frac{1}{2}$ laciniatis, laciniis 12, tenuibus, intus dense hirsutis; staminibus 15; ovario 2-loculare, dense villosa; fructibus 2.5 cm longis, vix 1 cm diametro, utrinque angustatis, acutis.

A tree about 8 m high, the branchlets, petioles, lower surfaces of the leaves on the midribs, and inflorescence rather densely pubescent. Branches terete, reddish-brown, glabrous, smooth, very slightly lenticellate. Leaves oblong to broadly oblong-lanceolate, 5 to 8 cm long, 1.8 to 3 cm wide, the base acute, the apex acuminate, the margins crenulate, each tooth tipped with a short, slender, awn or mucro, the upper surface shining, the lower a little paler, chartaceous; lateral nerves 5 or 6 on each side of the midrib, slender; petioles 3 to 4 mm long. Racemes axillary, solitary, few-flowered, pubescent, 4 to 5 cm long. Flowers 5-merous, their pedicels slender, about 8 mm long, pubescent. Sepals lanceolate, acute, 5 mm long, 1.5 mm wide, slightly pubescent externally, margins densely puberulent, inside glabrous. Petals obovate in outline, 4 mm long, cut one-half to the base into 12, slender, subequal, segments, the lower one-half inside densely hirsute, margins hirsute, back glabrous except near the base. Stamens 15, the anthers narrowly oblong, 2 mm long, minutely scabrid, one cell slightly longer than the other and shortly ciliate at the apex, both obtuse; filaments 0.5 mm long or less. Ovary densely villous, 2-celled, narrowed upward to the style, densely pale-villous; disk-glands prominent, pubescent. Fruit narrowly oblong, about equally narrowed and acute at both ends, smooth, about 2.5 mm long, 0.8 mm in diameter.

MINDANAO, District of Zamboanga, Siay River, *For. Bur. 13398 Foxworthy, DeMesa, & Villamil*, May 29, 1912, along the river, near sea level.

A species characterized by its pubescence, its rather small leaves, its few-flowered racemes, and its petal-characters. It somewhat resembles and probably is closely allied to *Elaeocarpus villosiusculus* Warb., from which, however, it differs in many characters.

ELAEOCARPUS RAMIFLORUS sp. nov. § *Ganitrus*.

Arbor alta partibus junioribus inflorescentiisque leviter puberulis vel pubescentibus, vetustioribus glabris; foliis lanceolatis, membranaceis vel chartaceis, usque ad 12 cm longis, nitidis, leviter acuminatis, basi acutis, margine obscure crenulatis; racemis numerosis, e axillis defoliatis, circiter 6 cm longis; floribus 5-meris, 6 mm longis, ovario 5-loculare.

A tall tree, nearly glabrous except the younger parts and the inflorescence. Branches terete, dark-colored when dry, glabrous, the growing parts slightly gray-puberulent. Leaves lanceolate, membranaceous or somewhat chartaceous, 9 to 12 cm long, 2 to 3.5 cm wide, subequally narrowed at both ends, the upper surface shining and olivaceous when dry, the lower a little paler and when young a little pubescent along the midrib, becoming quite glabrous, smooth, the apex acuminate, base acute, margins obscurely crenulate; lateral nerves about 12 on each side of the midrib, slender, rather distinct, usually with glands in the axils; petioles 1 to 1.5 cm long, somewhat appressed-pubescent. Racemes numerous, about 6 cm long, from the branches below the leaves in the axils of fallen leaves, one raceme from each axil, distinctly pubescent with appressed grayish hairs. Pedicels about 6 mm long, appressed-pubescent. Sepals lanceolate, somewhat acuminate, 4.5 to 5 mm long, externally sparingly appressed-pubescent with grayish hairs, internally slightly puberulent, the margins rather densely so. Petals 5 to 6 mm long, cut one-half way to the base into 9 to 11 slender segments, margins rather prominently pubescent in the lower one-half, the back slightly pubescent in the median part, otherwise glabrous. Stamens many; filaments very short, hispid; anthers linear-oblong, about 2 mm long, minutely hispid, one cell slightly longer than the other and with a tuft of few short cilia at the apex. Ovary globose, villous, 5-celled; style slightly pubescent, 2 mm long. Fruits not seen.

LUZON, Province of Laguna, San Antonio, trail between San Antonio and Piape, in forests, *Bur. Sci.* 13115 Ramos, June, 1912.

One of the very few species of the section at present known from the Philippines, characterized by its lanceolate shining leaves and its numerous racemes which are borne on the ultimate branches but entirely below the leaves.

ELAEOCARPUS CALOMALA (Blanco) comb. nov.

Vallea calomala Blanco Fl. Filip. (1837) 439.

Ageracium (*Ageratium*) *calomala* Blanco l. c. ed. 2 (1845) 306, ed. 3, 2: 204.

Monocera isotricha Turcz. in Bull. Soc. Nat. Mosc. 19² (1846) 494; Walp. Ann. 1 (1848) 112.

Elaeocarpus lancaefolius F.-Vill. Novis. App. (1880) 31, non Roxb.

Elaeocarpus oblongus F.-Vill. l. c.; Vid. Sinopsis Atlas (1883) t. 21, f. A. (poor), Rev. Pl. Vasc. Filip. (1886) 72; Perk. Frag. Fl. Philip. (1904) 100, p. p.; Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 90; Aug. DC. in Elm. Leaf. Philip. Bot. 2 (1909) 636, non Gaertn.

Elaeocarpus isotrichus F.-Vill. l. c.; Aug. DC. l. c.

Elaeocarpus philippinensis Warb. in Perk. Frag. Philip. (1904) 100; Aug. DC. l. c. 636.

This much named endemic species is of wide distribution in Luzon and Mindoro, its oldest valid specific name being here adopted. Blanco's description is quite good and agrees perfectly with the material cited below. It is, moreover, the only form known to me from Luzon to which his description can be referred. His material was from the Province of Batangas, and his specific name is from its Tagalog name *calomala*.

Elaeocarpus isotrichus (Turcz.) F.-Vill. has been considered by several authors as a species of doubtful status. It was based on *Cuming 836* in Turczaninow's herbarium, but this number in other herbaria is *Medinilla cumingii* Naud. Through the kindness of the Director of the Botanical Institute of the University of Kharkoff I have been able to examine Turczaninow's type, and find it to be the common Luzon form, identical in all respects with the species recently described by Warburg as *Elaeocarpus philippinensis*; of the later I have examined the type in the Berlin Herbarium, an unnumbered specimen of Cuming's collection.

Elaeocarpus oblongus Gaertn. apparently does not occur in the Philippines, the numerous specimens so named having been determined as such through error. The exact status of Gaertner's species is doubtful, as it was based primarily on *Ganitrum oblongum* Rumph. Herb. Amb. 3: 161, t. 102, from which the specific name was taken. The only description given by Gaertner is that of the fruit, taken from a specimen in the Leiden Herbarium, its origin not indicated. Rumphius's figure represents a plant with entire leaves, a form entirely different from the *Elaeocarpus oblongus* of all modern authors except Gaertner and DeCandolle.

LUZON, without definite locality, *Cuming 836* (type of *Monocera isotricha* Turcz.), *Cuming s. n.* (type of *Elaeocarpus philippinensis* Warb.): Sub-province of Benguet, *Elmer 6084*: Province of Bataan, *For. Bur. 2937 Borden, For. Bur. 2852 Meyer, For. Bur. 17602 Curran*: Province of Rizal, *Phil. Pl. 1065 Ramos, Bur. Sci. 2665 Ramos, Merrill 1719, For. Bur. 454, 2906, 3201 Ahern's collector*: Province of Tayabas, *For. Bur. 6693 Kobbe*. MINDORO, *Merrill 1174, 2375, Whitford 1392, For. Bur. 3727, 4059 Merritt*.

THYMELAEACEAE

AQUILARIA Lamark

AQUILARIA MALACCENSIS Lam. Encycl. 1 (1783) 49; Gamble in Journ. As. Soc. Beng. 75² (1912) 264.

LUZON, Province of Camarines, Salauigan, *For. Bur. 21452 Alvarez*, May, 1914.

The identification was originally made from Gamble's description, Alvarez's specimens being in fruit, no flowers available. Through the kindness of Mr. I. H. Burkill, director of the Botanic Garden, Singapore, I have

recently received a fruiting specimen of Lamark's species from Malacca, and consider the Philippine plant to be specifically identical with the Malacca one. The genus is new to the Philippines.

BEGONIACEAE

BEGONIA Linnaeus

BEGONIA ALBA sp. nov. § *Diploclinium*.

Herba parce bruneo-setosa praesertim partibus junioribus; foliis longe petiolatis, subreniformibus vel subrotundatis, integris vel leviter undulatis, basi profunde subaequaliter cordatis, palmatim 7- vel 9-nerviis; floribus masculinis paucis, albis, circiter 2.5 cm diametro, bracteis orbicularibus, deciduis; staminibus circiter 20.

A succulent herb, the rhizome creeping, rather slender, glabrous or nearly so, the stipules persistent only at the growing tip, sparingly brown-setose, ovate, acuminate, submembranaceous, about 1.5 cm long. Petioles up to 30 cm in length, glabrous, or when young with few, long, scattered, brown, setose hairs. Leaves chartaceous when dry, pale-brownish, orbicular or subreniform, up to 15 cm long and 17 cm wide, entire or the margins slightly undulate, very broadly rounded, subequilateral, the base deeply and subequally cordate, the sinus very narrow, up to 4 cm deep, the basal lobes very broadly rounded, the upper surface glabrous, the lower with long scattered, brown hairs when young, becoming glabrous or nearly so, the margins distinctly brown-setose; nerves 7 or 9, radiating from the base, prominent, forked, the lateral ones above the base 2, rarely 3 pairs; petioles up to 30 cm in length, brown-setose when young, becoming glabrous. Scape rather slender, 20 cm long or less, the staminate flowers few, subumbellately cymose at the apex of the peduncle, the primary branches 2 or 3, 1 cm long or less. Bracts prominent, orbicular or subreniform, membranaceous, deciduous, white, about 6 mm in diameter, two subtending each flower. Staminate flowers: Sepals 2, elliptic to elliptic-orbicular, broadly rounded, about 12 mm long. Petals 2, oblong-oblancheolate, about 10 mm long, narrowed below. Stamens about 20; filaments 1 mm long; anthers narrowly obovoid, as long as the filaments. Pistillate flowers and fruits not seen.

LUZON, Subprovince of Ifugao, Mount Polis, *Bur. Sci. 19963 McGregor*, February, 1913.

A very characteristic species, at once distinguishable by its nearly equilateral, entire, deeply and subequally cordate leaves, and by its few, comparatively large, white flowers. In vegetative characters it resembles *Begonia suborbiculata* Merr., of Palawan, but is entirely different from that species in its floral characters.

BEGONIA BILIRANENSIS sp. nov. § *Diploclinium*.

Herba subtus foliis ad nervos petiolis pedunculisque brunneo-setosis, caulibus prostratis; foliis confertis, longe petiolatis, usque ad 22 cm longis, oblique ovatis, acuminatis, valde inaequilateraliter cordatis, margine undulatis vel parce undulato-lobatis; inflorescentiis folia subaequantibus, multifloris, floribus masculinis circiter 11 mm diametro, sepalis orbiculari-ovatis, quam petalis multo latioribus; staminibus circiter 60; capsulis circiter 1 cm longis, 1.5 cm latis, subaequaliter 3-alatis, alis rotundatis.

Stems creeping, rather stout, more or less brown-setose and with brown, ovate, acuminate stipules about 1 cm long, the leaves crowded, the peduncles, leaves on the nerves beneath, and petioles prominently brown-setose, the petioles 11 to 18 cm long. Leaf-blades obliquely ovate, strongly inequilaterally cordate, submembranaceous when dry, 15 to 22 cm long, 10 to 15 cm wide, acuminate, margins undulate or somewhat undulate-lobed, the upper surface somewhat olivaceous when dry, slightly shining, minutely puncticulate, glabrous, the lower surface greenish- or brownish-olivaceous, the nerves in strong contrast, brown, brown-setose on the nerves and primary reticulations, everywhere white-puncticulate, the nerves about 10. Inflorescence about as long as the leaves, long-peduncled, ample, with both male and female flowers. Male flowers white or very pale-pink, about 11 mm in diameter. Sepals orbicular-ovate, rounded, about 5.5 mm long, 5 mm wide. Petals oblong-obovate, rounded, narrowed below, as long as the sepals, about 2 mm wide. Stamens about 60; anthers 0.6 mm long, obovoid, as long as the filaments. Female flowers: Sepals 2, broadly elliptic-ovate, rounded, about 6 mm long, 5 mm wide. Petals 2, as long as the sepals, oblong-obovate, 2.5 mm wide. Styles 3, about 3 mm long, forked above, the stigmas spiral. Capsules about 1 cm long, 1.5 cm wide, including the wings, the wings 3, subequal, rounded.

BILIRAN, *Bur. Sci.* 18822 (type), 18760, 18544 *McGregor*, June, 1914, on rocks in forests, altitude 100 to 800 meters.

A species allied to *Begonia mindorensis* Merr., but with larger leaves, smaller flowers, and decidedly larger fruits.

BEGONIA PLATYPHYLLA sp. nov. § *Petermannia*.

Herba erecta, ramosa, *B. cumingii* affinis, differt foliis latioribus, usque ad 9 cm latis, minus pubescentibus, floribus masculinis multo minoribus, petalis circiter 5 mm longis.

An erect branched herb, nearly glabrous. Leaves inequilateral, broadly oblong to oblong-ovate, 11 to 18 cm long, 7 to 9

cm wide, chartaceous, the apex abruptly short-acuminate, the base scarcely narrowed, one side much narrower than the other, acute, the broader side very broadly rounded, forming a shallow, wide sinus with the petiole, the margins irregularly and rather coarsely toothed, not at all lobed, the primary teeth very broad, short, acute, the shallow sinuses denticulate; upper surface glabrous, subolivaceous when dry, slightly shining, the lower surface much paler, glabrous except for the slightly subfurfuraceous nerves; nerves prominent, nearly straight, forked, the basal ones usually 9, of which 2, sometimes 3, are on the narrower side of the lamina, the lateral nerves above the base 2 on the narrower side, 3 on the broader side, ascending, the reticulations lax, indistinct; petioles 3.5 to 5.5 cm long, when young somewhat brown-furfuraceous; stipules 2 cm long. Staminate and pistillate flowers in different inflorescences on the same plant. Staminate inflorescence terminal, lax, divaricately branched, up to 10 cm long, few-flowered. Flowers pink or white. Sepals 2, orbicular, about 5 mm in diameter. Petals none. Stamens about 30; anthers ellipsoid, about 1 mm long, equaling the filaments. Pistillate inflorescence axillary and terminal, few-flowered, 5 cm long or less, each flower subtended by 2, deciduous, oblong-elliptic, acute or obtuse, membranaceous bracts. Sepals 5, narrowly elliptic, narrowed at both ends, acute, about 1.3 cm long. Mature capsules, including the wings, turbinate, about 2 cm long, 2.5 cm wide, subequally 3-winged, the apex truncate, the upper outer corners of the wings rounded, the base broadly rounded.

LUZON, Province of Nueva Vizcaya, near Imugan, *Bur. Sci.* 20074 *McGregor*, January, 1912.

In comparison with *Begonia cumingii* A. Gray (*B. philippinensis* A. DC.), to which the species is manifestly allied, the striking differences are in the small staminate flowers and the relatively broad, nearly glabrous leaves of the present species.

BEGONIA MEGALANTHA sp. nov. § *Petermannia*.

Species *B. merrittii* affinis, differt ramulis et subtus foliis ad nervos prominente pubescentibus, foliis subintegris vel leviter dentatis, vix lobatis, petiolo brevioribus, floribus majoribus, petalis usque ad 2.5 cm longis.

An erect, branched shrub 1 to 2 m high, the stems very woody, stout. Branches and branchlets more or less zig-zag, prominently pubescent with short, more or less crisped, pale-brown hairs. Leaves inequilateral, oblong, chartaceous, 5 to 10 cm long, 1.8 to 4 cm wide, the upper surface brownish or olivaceous, slightly shining, the lower surface paler, densely punctulate, glabrous except the midrib and nerves which are prominently

brown-pubescent, the hairs similar to those on the branchlets, the apex slenderly acuminate, somewhat falcate, the base not at all or but slightly narrowed on the broadly rounded wider side, slightly narrowed and acute or somewhat cordate on the narrower side, the margins distantly and slightly toothed, not at all lobed, the base 6 or 7-nerved, the primary lateral nerves above the base 2 on the narrower side, usually 3 on the broader side, ascending, forked, prominent on the lower surface, the reticulations lax, indistinct; petioles brown-pubescent, 2 to 4 mm long; stipules oblong, submembranaceous, about 7 mm long, their midribs excurrent as long and slender apiculi. Staminate and pistillate flowers on separate inflorescences on the same plant, in rather lax, few-flowered, terminal cymes, sometimes reduced to two or three, long-pedicelled flowers. Staminate flowers: Sepals 2, pure white to somewhat pink, broadly ovate, membranaceous, glabrous, 2 to 2.5 cm long, 2 to 2.3 cm wide, the base broadly cordate, the apex broadly rounded. Petals none. Stamens about 50, inserted on the slightly elongated torus, the filaments 2.5 mm long, the anthers narrowly oblong-obovoid, about 1.5 mm long. Bracts membranaceous, apiculate, about 7 mm long. Pistillate flowers: Bracts elliptic-ovate, membranaceous, 1 cm long, apiculate, two subtending each flower, deciduous; pedicels slender, pubescent, about 2.5 cm long. Sepals 5, narrowly ovate, membranaceous, acute or obtuse, about 2.3 cm long. Stigmas spirally arranged. Capsules turbinate, including the wings about 1.5 cm long and wide, subequally 3-winged, the apex truncate or somewhat cordate, the tips of the wings broadly rounded, the base acute or subtruncate, broadly rounded.

LUZON, Subprovince of Ifugao, Mount Polis, *Bur. Sci.* 19857, 19858, 19859, 19860 (type) *McGregor*, February, 1913.

A striking species, manifestly closely allied to *Begonia merrittii* Merr., from which it is distinguished by the numerous characters indicated in the diagnosis. It is remarkable for its large size, the development of woody tissue in the stems, and its very large flowers.

BEGONIA LANCIFOLIA sp. nov. § *Petermannia*.

Erecta vel suberecta, ramosa, usque ad 60 cm alta, glabra, ramis ramulisque tenuibus; foliis lanceolatis, in siccitate membranaceis, viridis, usque ad 12 cm longis, deorsum angustatis, basi acutis vel obtusis, subaequalateralibus, apice longissime caudato-acuminatis, margine grosse irregulariter sinuato-lobatis; inflorescentiis terminalibus, paniculatis, tenuibus; floribus ♂ parvis, sepalis 2, petalis 0; capsulis 8 mm longis, aequaliter 3-alatis.

An erect or suberect branched glabrous herb 60 cm high or

more, the stems and branches slender, pale-brown when dry, sometimes geniculate and emitting small roots at the nodes. Leaves lanceolate, when dry membranaceous, green, of nearly the same color on both surfaces, glabrous, 8 to 12 cm long, 1.5 to 2.5 cm wide, narrowed below to the acute or obtuse, nearly equal or slightly inequilateral base, not at all cordate, the apex very long and slenderly caudato-acuminate, the acumen sharply toothed, the margins in the basal part entire, in the median portions coarsely and irregularly sinuate-lobed, about 3 lobes on each side of the midrib, the lobes acute, broad, the sinuses mostly rather shallow, rounded; stipules lanceolate, long and slenderly aristate-acuminate, about 10 mm long, 2 mm wide at the base; petioles slender, 1 to 2 cm long. Inflorescence terminal, 9 cm long or less, the branches and branchlets rather few, very slender, one or more female flowers at the base, the male flowers above, apparently rather numerous but early deciduous. Male flowers: Sepals 2, orbicular, broadly rounded, in nearly mature bud 4 mm in diameter. Petals none. Stamens about 25, the anthers oblong-obovoid, nearly 1 mm long. Capsules about 8 mm long, including the 3 subequal wings about 1.4 cm wide, the base truncate, the apex broadly rounded or subtruncate, the wings thin, rounded.

BASILAN, *Bur. Sci.* 16162 Reillo, August 23, 1912, in forests, Camalarang River.

Most closely allied to *Begonia littleri* Merr., also known only from Basilan, but distinguished by its entirely different leaves, and its equally 3-winged capsules. From *B. longistipula* Merr. and *B. palawanensis* it not only differs in its much narrower, differently shaped leaves, but also in its very much smaller capsules.

BEGONIA LACERA sp. nov. § *Petermannia*.

Species praecedente affinis, differt foliis brevioribus angustioribusque, usque ad 7 cm longis, 1 cm latis, irregulariter lacero-lobatis, stipulis brevioribus, circiter 6 mm longis, sepalis (fl. ♂) late ovatis, subacutis.

An erect, branched, slender herb about 40 cm high, quite glabrous, the branches and branchlets reddish-brown when dry, slender. Leaves lanceolate, thinly membranaceous when dry, green, 3 to 7 cm long, about 1 cm wide, narrowed to the subequilateral acute or obtuse base, the apex very long and slenderly caudate-acuminate, the margins irregularly lacerate-lobed in the median portion, the basal portion entire, the long and slender acumen sharply and rather coarsely toothed, the lobes few, rather narrow, acute or acuminate; petioles 5 mm long or less;

stipules lanceolate, 6 mm long, 1.8 mm wide below, long and slenderly aristate-acuminate. Inflorescence paniculate, terminal or in the uppermost axil, lax, 4 cm long or less, the branches few, slender. Flowers few, the staminate ones with 2, broadly ovate, subacute or obtuse, not rounded, sepals 3 mm in length. Petals none. Stamens about 20. Anthers broadly obovoid, rounded, 0.6 mm long. Female flowers apparently solitary at the base of the staminate panicle, the sepals lanceolate, acuminate or acute, 4 mm long, 1.2 to 1.5 mm wide. Stigmas 3, about 1 mm long, spirally twisted. Capsules not seen, but from the female flowers (in anthesis) apparently equally 3-winged.

BASILAN, Cumalarang River, in forests, *Bur. Sci.* 16111 Reillo, August 30, 1912.

A rather striking species, distinguishable by its lanceolate, very slenderly acuminate, more or less lacerate-lobed leaves which are narrowed to the subequilateral acute or obtuse bases. It is manifestly allied to *Begonia lancifolia* Merr., but can be readily distinguished by its smaller, more narrowly lobed leaves, shorter petioles and stipules, subacute or obtuse sepals of the male flowers and fewer shorter anthers.

BEGONIA OLIGANTHA sp. nov. § *Petermannia*.

Herba erecta, parce ramosa, glabra, circiter 30 cm alta; foliis oblongis, vel anguste oblongo-obovatis, membranaceis, usque ad 7 cm longis, sinuato-dentatis, acuminatis, deorsum angustatis, leviter inequilateralibus, basi minute oblique subauriculatis; inflorescentiis terminalibus, paucifloris, floribus ♂ circiter 18 mm diametro, sepalis 2, late ovatis, petalis 2, oblanceolatis; capsulis 1.3 cm longis, aequaliter 3-alatis, basi rotundatis, apice truncatis.

An erect herb, glabrous throughout, about 30 cm high, sparingly branched, the stems and branches reddish-brown when dry. Leaves membranaceous when dry, green, oblong to narrowly oblong-obovate, 5 to 7 cm long, 1 to 2 cm wide, slightly falcate, narrowed below to the slightly inequilateral, obtuse, obliquely subauriculate base, and above to the slenderly acuminate apex, the margins distantly and irregularly sinuate-toothed; petioles 2 to 7 mm long; stipules narrowly lanceolate, long and slenderly acuminate, about 12 mm long, 1.5 mm wide. Inflorescence terminal or in the uppermost axil, paniculate, 5 to 7 cm long, the branches very few, few-flowered, slender. Male flowers: Sepals 2, broadly ovate, 9 to 10 mm long, about 6 mm wide, obtuse or narrowly rounded. Petals 2, oblanceolate, obtuse, 8 mm long, 2 mm wide. Stamens about 20, inserted on the elongated torus; anthers narrowly obovoid, rounded, base acute, 1.5 mm long. Pistillate flowers apparently solitary at the base of each panicle. Capsules 1.3 cm long, 1 to 1.5 cm

wide, equally 3-winged, broadly rounded at the base, the apex truncate, the upper outer angles sharp.

MINDANAO, Bukidnon Subprovince, Sumilao, *Bur. Sci. 15733 Fénix*, August 4, 1912, on wet rocky slopes, locally known as *tabaring*.

A species with the vegetative characters of *Begonia littleri* Merr., in general similar to that species, and to the allied forms *B. brevipes* Merr., *B. longistipula* Merr., and *B. palawanensis* Merr. It is at once distinguished by its large male flowers, which in this species are about 2 cm in diameter, while in the above species they do not exceed 1 cm in diameter.

BEGONIA LATISTIPULA sp. nov. § *Petermannia*.

Herba erecta, ramosa, ramis ramulisque crassis, teretibus, parce setoso-ciliatis; foliis usque ad 13 cm longis, valde inaequilateralibus, oblongis vel ovato-oblongis, acuminatis, irregulariter lobatis denticulatisque, lateraliter cordatis, basi haud angustatis; stipulis 1.5 ad 2 cm longis, ovatis, cilato-setosis; floribus paucis, axillaribus, fasciculatis, ♂ 1 vel 2, longe pedicellatis, circiter 3 cm diametro, ♀ solitariis, subsessilibus; capsulis aequaliter 3-alatis, apice truncatis, basi acutis, circiter 1.5 cm longis, 2 cm latis.

An erect, sparingly branched, rather stout herb at least 50 cm in height, the stems and branches, stipules, petioles, and young leaves on the lower surface more or less setose-ciliate. Branches terete, reddish-brown when dry. Leaves thinly membranaceous when dry, strongly inequilateral, oblong to ovate-oblong, somewhat falcate, 9 to 13 cm long, 3 to 5 cm wide, when young ciliate-setose with brown hairs on the nerves of the lower surface, becoming glabrous or nearly so, the margins irregularly lobed, the broader side with one or two rather coarse, acute lobes and 5 or 6 much smaller ones more like coarse teeth, irregularly ciliate-denticulate, the apex rather slenderly acuminate, the base scarcely narrowed, prominently laterally cordate, the lobes rounded, that of the broader side very much wider than that of the narrow side; petioles 8 to 15 mm long, rather densely setose-ciliate with brown hairs; stipules ovate, somewhat inequilateral and slightly falcate, membranaceous, 1.5 to 2 cm long, 1 to 1.2 cm wide, prominently ciliate-setose on the margins, the midrib excurrent as a short mucro. Flowers axillary, fascicled, one male and one female, or two males and one female in the same axil. Male flowers: Pedicels slender, up to 2 cm long. Sepals 2, broadly ovate, rounded, 1.5 cm long. Petals none. Stamens about 20, inserted on the elongated torus; anthers narrowly ovoid, 2 mm long, rounded. Capsule subsessile or shortly pedicelled, triangular, the base acute, the apex

truncate, the outer upper angles sharp, about 1.5 cm long and 2 cm wide across the apex.

LEYTE, Dagami, *Bur. Sci. 15367 Ramos*, August, 1912, in forests near the summit of Mount Burau.

A characteristic species readily distinguishable by its broad stipules and its rather large axillary fascicled flowers, two or three flowers in a fascicle, one of which is pistillate and one or two staminate, the former shortly pedicelled or subsessile, the latter long and slenderly pedicelled. Its alliance seems to be with *Begonia robinsonii* Merr., which, however, it does not greatly resemble.

ERICACEAE

DIPLYCOSIA Blume

DIPLYCOSIA FASCICULIFLORA sp. nov.

Species *D. parvifoliae* affinis, differt floribus fasciculatis, pedicellis brevioribus, ramis ramulisque glabris, vix setosis.

Apparently scandent, probably epiphytic, the branches terete, glabrous, dark reddish-brown, the branchlets paler, glabrous, not at all setose. Leaves coriaceous, elliptic to elliptic-oblong, dull, 2 to 4 cm long, 1 to 1.5 cm wide, when young with few, long, slender, brown, setose hairs on the margins, and scattered ones on both surfaces, when mature quite glabrous, the midrib prominent, lateral nerves obsolete, base and apex acute; petioles 2 to 3 mm long, slightly setose. Flowers small, pedicelled, in axillary fascicles, up to 8 in each fascicle, the pedicels slender, glabrous, 5 mm long or less, the basal bracts small, the apical bracteoles very broadly ovate, obscurely acuminate, puberulent. Calyx glabrous, somewhat accrescent and 2.5 mm long, the lobes triangular, acute, about 1 mm long. Corolla and stamens not seen.

LUZON, Subprovince of Ifugao, Mount Polis, *Bur. Sci. 19758 McGregor*, February 1, 1913.

A species very similar and manifestly closely allied to *Diplycosia parvifolia* Merr., of Negros, strongly resembling that species in vegetative characters, especially in the obsolete lateral nerves and reticulations. It differs from that species, however, in its flowers being fascicled, not solitary, its longer pedicels, and somewhat larger leaves.

VACCINIUM Linnaeus

VACCINIUM IRIGAENSE sp. nov.

Frutex glaber, circiter 5 m altus; foliis usque ad 6 cm longis, coriaceis, oblongo-obovatis, petiolatis, utrinque angustatis, basi acutis, tenuiter 5- vel 7-plinerviis, apice subrostrato-acuminatis; racemis axillaribus, solitariis, usque ad 6 cm longis, multifloris; floribus 1 cm longis, oblongis, sursum angustatis, ebracteolatis; filamentis pilosis.

A glabrous shrub about 5 m high, the branches dark reddish-brown, terete, shining, the branchlets brownish. Leaves coriaceous, rather narrowly oblong-obovate, 4.5 to 6 cm long, 1.5 to 2.5 cm wide, shining, the lower surface paler than the upper, narrowed below to the acute and slenderly 5- or 7-plinerved base, and above to the somewhat rostrate-acuminate apex, the acumen blunt, less than 1 cm long; reticulations slender, lax; petioles 5 mm long or less. Racemes axillary, solitary up to 6 cm long, rather many flowered. Flowers red, 1 cm long, their pedicels 6 to 7 mm long, ebracteate. Calyx glabrous, about 1.5 mm long, 3 to 3.5 mm in diameter, the lobes broadly ovate, blunt, 1 mm long or less. Corolla oblong, 3 mm in diameter below, narrowed above and 1 mm in diameter under the orifice, glabrous, the lobes slightly spreading, oblong, obtuse, 1 mm long. Stamens 10; filaments flattened below, somewhat pilose, 4 mm long; anthers oblong, truncate, straight or slightly curved, 1.5 mm long. Style stout, glabrous, 8 mm long.

LUZON, Province of Camarines, Mount Iriga, *Phil. Pl. 1549 Ramos*, December 3, 1913, in the mossy forest.

A species manifestly allied to *Vaccinium caudatum* Warb., from which it differs in its quite differently shaped leaves and larger flowers.

VACCINIUM MACGREGORII sp. nov.

Frutex erectus (vel scandens ?), inflorescentiis parce pubescentibus exceptis glaber; foliis magnis, coriaceis, usque ad 18 cm longis, petiolatis, basi acutis, apice subcaudato-acuminatis, anguste ovatis ad oblongo-ovatis, basi prominente 7-plinerviis; racemis paucifloris, pubescentibus, axillaribus, solitariis, usque ad 9 cm longis, bracteolis oblongo-lanceolatis, acuminatis, 2 cm longis, deciduis; corolla rubra, 1.6 cm longa, supra leviter ampliata.

An erect (or scandent ?) shrub, the branches slender, brownish, striate, somewhat zig-zag between the distant leaves, glabrous. Leaves narrowly ovate to oblong-ovate, coriaceous, shining on both surfaces, 14 to 18 cm long, 6 to 7 cm wide, entire, the base acute, the apex slenderly subcaudate-acuminate, the base prominently 7-plinerved, sometimes with an additional outer fainter pair, the inner one or two pairs reaching the apex, the primary reticulations lax, the ultimate ones rather dense; petioles stout, 8 mm long. Racemes axillary, solitary, up to 8 cm in length, each about 10-flowered, all parts sparingly pubescent with short, white, scattered hairs, the bracteoles oblong-lanceolate, sharply acuminate, about 2 cm long, deciduous, the pedicels 1 to 1.5 cm long. Calyx-tube cup-shaped, slightly constricted above, the limb somewhat spreading, making the whole

calyx somewhat urceolate, the tube 2.5 mm long, about 3 mm in diameter, the lobes 5, broadly triangular, acute or acuminate, 1.8 mm long, margins distinctly ciliate. Corolla red, slightly funnel-shaped, rather broad, 1.6 cm long, sparingly pubescent outside, the lobes 5, short, acute or rounded, about 4 mm wide and 2 mm long. Stamens 10; filaments 9 mm long, more or less pilose with long white hairs; anthers 8.5 mm long, narrowly oblong, base slightly curved and apiculate, the apical tubes laterally compressed, 5 mm long, the slit slightly oblique. Top of the ovary somewhat white-hispid; style 1.5 cm long, glabrous. Fruit unknown.

LUZON, Subprovince of Ifugao, Mount Polis, *Bur. Sci.* 19846 McGregor, February 11, 1913, indicated by the collector, with query, as a vine.

A species manifestly allied to *Vaccinium indutum* Vidal from which it is distinguished by its larger, more prominently nerved, glabrous or nearly glabrous leaves; from *Vaccinium barandanum* Vid., which it also resembles, it is distinguished by the vegetative characters just indicated and its pubescent inflorescence.

VACCINIUM TURBINATUM sp. nov.

Frutex epiphyticus, glaber; foliis crasse coriaceis, obovatis ad anguste obovatis, usque ad 9 cm longis, obtusis vel abrupte breviter obtuseque acuminatis, basi acutis, integris, margine revolutis, nervis utrinque 6, tenuibus, adscendentibus; floribus ignotis; racemis in axillis superioribus vel terminalibus, fructibus longe pedicellatis, turbinatis, circiter $\frac{1}{3}$ superioribus, 7 mm diametro.

An epiphytic glabrous shrub (flowers unknown), the branches olivaceous or brownish and more or less sulcate when dry, the growing parts reddish-brown. Leaves thickly coriaceous, obovate to narrowly obovate, 5 to 9 cm long, 2.5 to 5 cm wide, apex obtuse or abruptly, broadly, shortly, and obtusely acuminate, the base acute, entire, the margins revolute, with usually one or two pairs of prominent glands above the insertion of the petiole, shining on both surfaces, the upper surface pale, the lower one brownish when dry; lateral nerves about 6 on each side of the midrib, ascending, slender, not prominent, anastomosing; petioles stout, 5 to 7 mm long; bracteoles deciduous (not seen). Flowers unknown. Racemes, in fruit, about 5 cm long, in the uppermost axils or terminal, solitary, few, the pedicels about 1.5 cm long, thickened upward and about 2 mm thick at the apex, distinctly jointed to the calyx. Fruit turbinate, about 5 mm in diameter, one-third superior, the persistent calyx-teeth broadly triangular, acute or obtuse, about 2 mm long.

LUZON, Province of Laguna, San Antonio, in forests on trees, *Bur. Sci.* 15068 Ramos, June, 1912.

A characteristic species distinguishable by its fruit being one-third superior, the rounded upper part of the fruit as wide as the calyx in its thickest part, protruding above the persistent calyx-teeth. The plant somewhat resembles *Vaccinium jagori* Warb. in vegetative characters, but has larger, longer petioled leaves.

RHODODENDRON Linnaeus

RHODODENDRON LEYTENSE sp. nov. § *Vireya* ?

Frutex epiphyticus, subglaber, ramis ramulisque teretibus; foliis coriaceis, alternis vel subverticillatis, oblongis vel oblongo-ellipticis, usque ad 7 cm longis, utrinque angustatis acutisque, supra nitidis, subtus lepidotis, nervis lateralibus utrinque circiter 8, tenuibus, obscuris; floribus terminalibus, in umbellis sessilibus dispositis, bracteis involucrantibus caducis, oblongis, acuminatis, circiter 2.5 cm longis; corolla flava, 4 cm longa, late tubuloso-campanulata.

An epiphytic, nearly glabrous shrub, the branches and branchlets terete, grayish or reddish-brown, smooth, the ultimate ones about 2.5 mm in diameter. Leaves alternate or subverticillate, coriaceous, oblong to oblong-elliptic, 4 to 7 cm long, 1.5 to 3 cm wide, subequally narrowed to both the acute base and apex, or the base sometimes a little decurrent-acuminate, brownish when dry, the upper surface glabrous, shining, the lower somewhat paler, and with numerous, but not densely arranged, brown lepidote scales; lateral nerves slender, obscure, about 8 on each side of the midrib; petioles 1 to 1.5 cm long. Inflorescence terminal, the flowers in sessile umbels, in bud quite enclosed by imbricate bracts, the bracts caducous, brown when dry, glabrous, shining, oblong, acuminate, about 2.5 cm long, the bracteoles narrow. Flowers yellow, usually 4 or 5 in each umbel, their pedicels pubescent, about 1 cm long in anthesis, twice as long in young fruit. Calyx obsolete, represented by a mere thickening of the apex of the pedicel. Corolla broadly tubular-campanulate, yellow, about 4 cm long, the tube broad, about 2 cm long, the lobes broadly elliptic to obovate, rounded, 1.3 to 1.5 cm wide. Stamens 9 or 10, the filaments slender, a little unequal; anthers oblong, obtuse, 3 mm long. Ovary rather densely pubescent, cylindric, elongated, narrowed upward into the style which is pubescent below and glabrous above; stigma with 5, stout, broad, obtuse lobes.

LEYTE, Mount Ibuni, back of Dagami, *Bur. Sci.* 15252 Ramos, August 23, 1912, growing in the tops of trees.

A rather characteristic species, among the Philippine forms perhaps most closely allied to *Rhododendron kochii* Stein, although entirely different from that species in many details of its leaves, and in the color and character of its flowers.

SAPOTACEAE

BASSIA Koenig

There appears to be no reason whatever for substituting the generic designation *Illipe* for *Bassia*, as Baillon and Engler have done. This conclusion has been reached by Trimen, Cooke, and Gamble,¹ and at my request Mr. F. V. Coville has examined the original publication of the two names, expressing the opinion that *Illipe*, as published in Linn. Mantissa 2 (1771) 563, has no standing whatever as a published generic name. It is manifest that Koenig merely intended *Illipe* to represent one of the native names of the original species, *Bassia longifolia* Linn. This status of the names *Bassia* and *Illipe* is confirmed by Richter.²

Following Engler and Prantl several Philippine species have been referred to the genus *Illipe*, but are now transferred to the genus *Bassia*. It is possible that more complete material will necessitate the transfer of some to the genus *Payena*.

BASSIA BETIS (Blanco) comb. nov.

Azaola betis Blanco Fl. Filip. (1837) 402.

Payena betis F.-Vill. Novis. App. (1880) 125.

Illipe betis Merr. in Bull. Bureau of Forestry (Philip.) 1 (1903) 46.

A large tree of wide distribution in the Philippines, yielding a valuable timber commercially known as *betis*.

BASSIA CORIACEA (Merr.) comb. nov.

Illipe coriacea Merr. in Govt. Lab. Publ. (Philip.) 17 (1904) 41.

BASSIA MULTIFLORA (Merr.) comb. nov.

Illipe multiflora Merr. l. c.

BASSIA RAMIFLORA (Merr.) comb. nov.

Illipe ramiflora Merr. l. c. 42.

BASSIA MONTICOLA sp. nov.

Arbor circiter 8 m alta, glabra vel subglabra; foliis crasse coriaceis, oblongis ad oblongo-oblancheolatis, pallidis, nitidis, usque ad 14 cm longis, obtusis, basi cuneatis, nervis utrinque circiter 15; fructibus fasciculatis, e ramis defoliatis, ovoideis ad oblongo-ovoides, in siccitate brunneis, glabris; sepalis late ovatis, extus parce pubescentibus glabrescentibus, circiter 6 mm longis.

A tree up to 8 m in height, nearly glabrous. Branches stout, terete, brownish, brown-pubescent at the attachment of the pedicels, otherwise glabrous, the branchlets with numerous petiolar scars. Leaves crowded near the apices of the branchlets, oblong to somewhat oblong-oblancheolate, thickly coriaceous, when dry pale and shining on both surfaces, 9 to 14 cm long,

¹ Trimen Fl. Ceyl. 2: 79; Cooke Bombay Flora (cited by Gamble); Gamble in Journ. As. Soc. Beng. 72² (1905) 176.

² Codex Botanicus Linnaeanus (1840) 455.

3 to 4 cm wide, narrowed upward to the obtuse apex and below to the cuneate base; lateral nerves about 15 on each side of the midrib, distinct on the lower surface, the reticulations lax, not prominent; petioles stout, 1 to 1.5 cm long. Flowers not seen. Fruits numerous, fascicled on the branches in the axils of fallen leaves, their pedicels brown, 1.2 to 2.2 cm long, glabrous, the points of attachment densely brown furfuraceous-pubescent. Young fruits brown when dry, ovoid to oblong-ovoid, glabrous, about 1.5 cm long, tipped by the rather stout 1 cm long style, the persistent calyx-lobes four, 2-seriate, broadly ovate, coriaceous, obtuse, the outer two about 6 mm long, 5 mm wide, the inner two somewhat thinner and a little broader, outside with few, appressed, dark-brown, shining hairs, becoming nearly or quite glabrous.

PALAWAN, Silanga Peak, *Merrill 9622*, May 30, 1913, in forests on the exposed peak, summit, altitude about 530 meters, distributed as *Payena*.

Apparently allied to *Bassia multiflora* Merr., but with relatively much narrower, less prominently nerved leaves.

BASSIA OBOVATIFOLIA sp. nov.

Arbor glabra circiter 20 m alta; foliis crasse coriaceis, obovatis, usque ad 12 cm longis, in siccitate nitidis, pallidis, apice obtusis, rotundatis vel retusis, basi cuneatis, nervis utrinque circiter 12; fructibus e axillis defoliatis, ellipsoideis, circiter 2.5 cm longis, pedicellis circiter 2 cm longis, sursum incrassatis; sepalis persistentibus, circiter 5 mm latis, irregulariter lacerato-retusis.

A tree about 20 m in height, entirely glabrous, the branches reddish-brown, terete, somewhat wrinkled when dry. Leaves thickly coriaceous, obovate to oblong-obovate, 7 to 12 cm long, 4 to 6.5 cm wide, pale and shining when dry, apex obtuse, broadly rounded or retuse, base narrowed, cuneate, margins recurved; lateral nerves about 12 on each side of the midrib, distinct, the reticulations lax, not prominent; petioles stout, about 1.5 cm long. Fruits solitary or in pairs in the axils of fallen leaves on the ultimate branchlets, in general ellipsoid, coarsely wrinkled when dry, pale-brownish, about 2.5 cm long, the style persistent as a slender straight apiculus up to 1 cm in length. Persistent calyx lobes 4, in two pairs, suborbicular, concave, coriaceous, about 5 mm wide, irregularly lacerate-retuse; pedicels about 2 cm long, rather prominently thickened upward.

LUZON, Province of Camarines, near Daet, *For. Bur. 21426* (type), *21454 Alvarez*, May, 1914, on forested slopes, 20 to 50 meters altitude.

A species similar to and manifestly closely allied to *Bassia coriacea* Merr., from which it is readily distinguished by its obovate leaves and fewer lateral nerves; distributed as *Palaquium*.

BASSIA MINDANAENSIS sp. nov.

Arbor circiter 15 m alta, floribus exceptis glabra; foliis oblongis, usque ad 23 cm longis, subcoriaceis, in siccitate brunneis, nitidis, apice breviter acuminatis, basi acutis, nervis utrinque 15 ad 17, subtus prominentibus; floribus axillaribus, fasciculatis, sepalis 2-seriatis, extus pubescentibus, circiter 7.5 mm longis; staminibus circiter 30; ovario glabro, 8-loculare.

A tree about 15 m high, glabrous except the flowers. Ultimate branches subterete, brown, smooth. Leaves oblong, subcoriaceous, brown and shining when dry, 12 to 23 cm long, 5 to 8 cm wide, base shortly but rather prominently acuminate, the acumen blunt, base acute, sometimes a little inequilateral; lateral nerves 15 to 17 on each side of the midrib, very prominent on the lower surface, the reticulations rather fine, distinct; petioles 1.5 to 2 cm long. Flowers white, fragrant, axillary, about 3 in each fascicle, their pedicels somewhat appressed-pubescent, 10 to 12 mm long. Sepals four, 2-seriate, the outer two broadly ovate, obtuse, coriaceous, appressed-pubescent, about 7.5 mm long, 6.5 mm wide, the inner two thinner, somewhat narrower, their margins ciliate. Corolla tube about 3.5 mm long, enlarged upward, villous inside, the lobes 8, erect, oblong-lanceolate, obtuse, 6 to 7 mm long, 1.5 to 2 mm wide. Stamens about 30, the filaments very short; anthers lanceolate, slenderly acuminate, about 4 mm long, slightly pubescent. Ovary glabrous, 8-celled; style about 1 cm long.

MINDANAO, Province of Misamis, east of Mount Catmon, *For. Bur.* 17977 *Miranda*, February 21, 1913, in forests along streams, altitude about 120 meters.

A species recognizable by its leaves turning brown in drying, its prominent nerves, and its glabrous ovaries.

BASSIA PLATYPHYLLA sp. nov.

Arbor alta, floribus exceptis glabra; foliis oblongo-ellipticis, usque ad 30 cm longis, coriaceis, pallidis, nitidis, apice rotundatis vel brevissime obtuse abrupteque acuminatis, basi acutis, nervis utrinque circiter 23, subtus valde prominentibus; floribus axillaribus, longe pedicellatis, sepalis coriaceis, extus leviter pubescentibus, late ovatis, obtusis, circiter 8 mm longis.

A tree reaching a height of about 20 meters, glabrous except the flowers. Ultimate branchlets terete, brown, 4 to 5 mm in diameter. Leaves oblong-elliptic, coriaceous, 23 to 30 cm long, 10 to 13 cm wide, pale and shining when dry, the apex rounded or very shortly, broadly, obtusely, and abruptly acuminate, base acute; lateral nerves about 23 on each side of the midrib, very prominent on the lower surface, curved-spreading, scarcely anas-

tomosing, the reticulations distinct; petioles 4.5 to 5.5 cm long, much thickened and rugose at the base. Flowers axillary, about 5 in each axil, the pedicels glabrous or very slightly pubescent, nearly 3 cm long. Calyx-lobes four, 2-seriate, coriaceous, broadly ovate, obtuse, about 8 mm long, 7 mm wide. Corolla and stamens not seen. Fruit "green, globose" (not seen); seeds brown, shining, about 18 mm long, 10 mm wide, slightly compressed, acute.

MINDANAO, District of Zamboanga, Margosatubig, *For. Bur. 21873 Villamil*, June 9, 1914, forested slopes, altitude about 70 meters.

A species characterized by its large leaves with numerous, very prominent nerves; flowering specimens may show it to belong in some other genus.

SIDEROXYLON Linnaeus

SIDEROXYLON VILLAMILII sp. nov.

Arbor alta partibus junioribus floribusque parce pubescentibus exceptis glabra; foliis oblongis, chartaceis vel subcoriaceis, usque ad 20 cm longis, nitidis, sursum angustatis, obtusis, basi cuneatis vel decurrento-acuminatis, nervis utrinque circiter 8, subtus prominentibus; floribus parvis, axillaribus, fasciculatis, breviter pedicellatis; sepalis 6, circiter 2 mm longis, extus parce pubescentibus; staminoideis oblongis, obtusis, integris, 0.7 mm longis; ovario dense hirsuto.

A tree reaching a height of 30 meters, glabrous except the slightly cinereous-pubescent flowers and pedicels and the growing tips of the branchlets. Branches terete, dark reddish-brown when dry, glabrous. Leaves oblong, chartaceous to subcoriaceous, 10 to 20 cm long, 3.5 to 7 cm wide, about equally narrowed to the obtuse tip and to the cuneate or decurrent-acuminate base, dark-olivaceous and shining when dry; lateral nerves about 8 on each side of the midrib, slender but prominent, curved, anastomosing, the reticulations lax, distinct; petioles 1 to 3 cm long. Flowers small, axillary, fascicled, up to 7 in each fascicle, the pedicels sparingly cinereous-pubescent, 3 to 5 mm long. Sepals 6, outside sparingly cinereous-pubescent, about 2 mm long, 1.5 to 2.5 mm wide, concave, rounded, the inner ones larger than the outer ones, varying from oblong-ovate to subreniform-ovate. Corolla tubular, about 2.7 mm long, glabrous, the lobes 5, orbicular-ovate, rounded, about 1 mm in diameter. Stamens 5, the filaments very short; anthers ovoid, acute, 0.6 mm long. Staminodes alternating with the corolla lobes, oblong, obtuse, entire, 0.7 mm long, glabrous. Ovary densely hirsute; style stout, glabrous, 2 mm long. Fruit globose or depressed-globose, glabrous, fleshy, when dry up to 4 cm in diameter, the seeds pale-

brown, shining, hard, somewhat compressed, about 1.8 cm long and 1.2 cm wide.

LUZON, Province of Laguna, Mount Maquiling, *For. Bur.* 19762 (type), 20604 Villamil, June and September, 1913, and from the same tree, *For. Bur.* 13154 Curran, November, 1911, with mature fruits, *For. Bur.* 11927 Tamesis, April, 1910, locally known as *dolitan*.

A species resembling in vegetative characters *Sideroxylon macranthum* Merr., but quite different in floral characters; it is readily distinguished by its very much smaller flowers which are but slightly pubescent.

SAPOTACEAE

PALAEQUIMUM Blanco

PALAEQUIMUM FOXWORTHYI sp. nov.

Arbor, partibus junioribus floribusque exceptis glabra; foliis coriaceis, oblongo-obovatis ad obovatis, usque ad 12 cm longis, in siccitate brunneis, nitidis, nervis utrinque 12 ad 14, apice breviter obtuseque acuminatis, basi cuneatis; floribus axillaribus, fasciculatis, sepalis extus pubescentibus; staminibus 16; ovario 6-loculare, pubescente; pedicellis circiter 1.5 cm longis, leviter pubescentibus.

A tree, apparently of large size, glabrous except the very tips of the branchlets, pedicels, and parts of the flowers. Branches terete, grayish-brown, glabrous. Leaves coriaceous, oblong-obovate to obovate, 8 to 12 cm long, 3 to 5 cm wide, dark-brown and shining when dry, the lower surface a little paler than the upper, the apex very shortly and broadly blunt-acuminate, base gradually narrowed, cuneate; lateral nerves 12 to 14 on each side of the midrib, prominent, the reticulations very fine; petioles 5 to 10 mm long. Flowers axillary and in the axils of fallen leaves, fascicled, 2 to 5 in each axil, their pedicels slightly pubescent, about 1.5 cm long. Sepals broadly ovate, about 3 mm long, the outer three thickly coriaceous, acute or slightly acuminate, the inner three rounded or obtuse. Corolla tube about 3 mm long, the lobes 6, reflexed, lanceolate, about 6 mm long, 2.5 mm wide. Stamens 16; filaments 3 mm long; anthers lanceolate, acuminate, 2.8 mm long. Ovary appressed-pubescent, 6-celled; style about 12 mm long.

LUZON, Province of Tayabas, Apad, *Bur. Sci.* 13112 Foxworthy & Ramos, March 8, 1911, in forested valleys, altitude about 30 meters.

A species similar to *Palaquium lanceolatum* Blanco, differing in its somewhat smaller leaves, much shorter, less pubescent pedicels, smaller flowers, and pubescent ovaries. To this species I tentatively refer the following sterile material: LUZON, Province of Laguna, *For. Bur.* 22328 Mariano: Province of Pangasinan, *For. Bur.* 19441 Agama.

PALAEQUIUM GLABRUM sp. nov.

Arbor alta, sepalis interioribus exceptis glabra; foliis subcoriaceis, usque ad 16 cm longis, obovatis ad oblongo-obovatis, in siccitate brunneis, nitidis, apice obtusis ad rotundatis, basi cuneatis, nervis utrinque 8 ad 10, subtus prominentibus; floribus numerosis, axillaribus, fasciculatis, longe pedicellatis, sepalis exterioribus glabris, interioribus leviter pubescentibus; staminibus 18; ovario glabro, 6-loculare.

A tree about 20 m high, quite glabrous except the inner sepals. Branches terete, grayish-brown, rugose when dry. Leaves rather crowded on the ultimate branchlets, obovate to oblong-obovate, 11 to 16 cm long, 5 to 7 cm wide, subcoriaceous, brown and shining when dry, of about the same color on both surfaces, the apex obtuse to somewhat rounded, base gradually narrowed, cuneate; lateral nerves 8 to 10 on each side of the midrib, prominent on the lower surface, the reticulations very slender, not prominent; petioles 1 to 1.5 cm long. Flowers very numerous, in the axils of leaves and of fallen leaves, several in each axil, their pedicels slender, glabrous, about 3 cm long. Sepals 6, 2-seriate, broadly ovate, coriaceous, 3.5 to 4 mm long, the outer three quite glabrous, the inner three sparingly pubescent. Corolla lobes (in bud) 6, oblong, obtuse, glabrous, 3.5 mm long. Stamens 18; anthers lanceolate, acuminate, 2.5 mm long. Ovary glabrous, 6-celled; style stout, about 2.5 mm long.

LUZON, Province of Rizal, back of Bosoboso, *Bur. Sci.* 13582 Ramos, August 15, 1911, in forests along streams, locally known as *alacaac na puti*.

A very characteristic species, readily recognized by its long slender pedicels, and in being quite glabrous in all parts except the inner sepals.

PALAEQUIUM HETEROSEPALUM sp. nov.

Arbor circiter 15 m alta, ramulis junioribus floribusque exceptis glabra; foliis crasse coriaceis, obovatis, apice rotundatis, basi cuneatis, usque ad 4 cm longis, nervis utrinque circiter 10, obscuris vel subobsoletis; floribus breviter pedicellatis, circiter 6 mm longis, sepalis 4 vel 6, staminibus 12.

A tree about 15 m high, quite glabrous except the growing tips of the branchlets and the flowers. Branches and branchlets rather stout, dark-colored when dry, glabrous. Leaves crowded toward the apices of the branchlets, thickly coriaceous, obovate, 2 to 4 cm long, 1.5 to 2.5 cm wide, brownish when dry, shining, apex broadly rounded, base cuneate; lateral nerves about 10 on each side of the midrib, very slender, obscure or nearly obsolete; petioles 5 mm long or less. Flowers in the axils of fallen leaves

on the ultimate branchlets, rather numerous, white, their pedicels slightly ferruginous-pubescent with short appressed hairs as are the sepals externally. Sepals 4 or 6, orbicular-ovate, coriaceous, rounded, 2 to 3 mm long, the inner two or three a little larger than the outer two or three. Corolla about 6 mm long, the tube about 1.5 mm, the lobes 6, oblong-elliptic, rounded or obtuse, about 4.5 mm long, 2.5 to 3 mm wide, externally very slightly pubescent. Stamens 12; anthers oblong, acute or acuminate, about 2.5 mm long. Ovary ovoid, pubescent, 5- to 7-celled, narrowed upward into the rather stout style, the ovary and style about 6 mm long.

LUZON, Province of Rizal, Mount Susong Dalaga, *Bur. Sci.* 19160 Reillo, December 6, 1914, altitude not indicated, but from the mossy forest.

The species somewhat resembles a small leaved form of *Palaquium cuneatum* Vidal, and is characterized not only by its unusually small leaves, but by its very obscure, often nearly obsolete nerves, very short pedicels, and the variable number of sepals, either 4 or 6; in those flowers with 4 sepals, however, there are always 6 corolla lobes and 12 stamens. I know of no other species of *Palaquium* where the number of calyx lobes is variable.

PALAEQUIUM LANCEOLATUM Blanco Fl. Filip. (1837) 403, ed. 2 (1845) 282, ed. 3, 2 (1878) 159.

This species is of importance as it is the type of the genus *Palaquium* Blanco, and no material previously referred to the species, unless it be Vidal's specimen cited by Dubard, has agreed with Blanco's description in essential characters; specimens referred by me at various times to the species have correctly been indicated by Dubard as a distinct species, *Palaquium merrillii* Dubard,⁹ as Blanco's species has 18 stamens, and the material Dubard has referred to *P. merrillii* has but 12 stamens. Specimens in flower, recently collected, agree in practically all details with Blanco's description, and I feel perfectly confident that the present interpretation of the species is the correct one, and an amplification of Blanco's description follows:

A tall tree, quite glabrous except the younger parts and the flowers. Branchlets and young petioles ferruginous-pubescent. Leaves oblong to oblong-oblongate or obovate, rarely approaching the lanceolate type, coriaceous or subcoriaceous, brown and shining when dry, glabrous on both surfaces, shortly and obtusely acuminate to obtuse or even rounded at the apex, base narrowed, cuneate; lateral nerves about 11 on each side of the midrib, prominent, the reticulations fine; petioles about 1 mm long. Flowers numerous, axillary, in the axils of leaves and of fallen leaves on the ultimate branchlets, fascicled, their pedicels ferruginous-pubescent, 2.5 to 4 cm long. Outer 3 sepals densely ferruginous-pubescent, ovate, acute to somewhat acuminate, cori-

⁹ Bull. Mus. Hist. Nat. Paris 15 (1909) 381.

aceous, about 4.5 mm long, 3 to 3.5 mm wide, the inner three thinner, oblong to oblong-elliptic, obtuse, pubescent, 4 to 4.5 mm long, 2.5 to 3 mm wide. Corolla glabrous, the tube about 3 mm long, the lobes lanceolate, acuminate, reflexed, about 8 mm long, 2 mm wide. Stamens 18; filaments 4 to 5 mm long, 3 to 3.5 mm wide. Ovary glabrous, 6-celled; style 12 to 15 mm long.

LUZON, Province of Tayabas, Mauban, *Bur. Sci.* 19483 Ramos, January, 1913; Province of Camarines, Sagnay, *Bur. Sci.* 22135 Ramos, December, 1913.

As to Blanco's description, the above specimens agree with it absolutely in all respects except that the leaves are not "lanceoladas," but while some approach the lanceolate type, most of them are oblong-obovate to oblong-oblancheolate; they are glabrous and the petioles are short. The flowers agree perfectly especially in the corolla lobes "estrechas, aguzadas, y muy revueltas hácia abajo." The stamens are 18 (in Blanco's description 18, 19, or fewer); ovary (fruit) 6-celled; style longer than the stamens. Blanco gives the date of flowering as March, but saw only old dried flowers; his specimens were from the Province of Batangas which may account for the difference in the time of flowering, which at most would be about one month, as the specimens from Camarines were collected on January 25. The native (Tagalog) name *bagalañgit* does not appear on any of our specimens of *Palaquium*.

Whether or not "Vidal 7" referred to Blanco's species by Dubard is the same as my interpretation of Blanco's species I cannot say. I have a copy of Pierre's detailed drawing of the flower, apparently taken from young buds, and it does not appear to be the same as the specimens cited above; the differences, however, may be due to the stage of development. At any rate, Pierre's drawing does not agree with Blanco's description in the corolla lobes which in Vidal's specimen are rounded and merely elliptic, not "estrechas, aguzadas."

PALAQIUM NEGROSENSE sp. nov. § *Palaquoides*.

Arbor circiter 20 m alta, partibus junioribus inflorescentiisque exceptis glabra; foliis crasse coriaceis, obovatis, usque ad 22 cm longis, in siccitate brunneis, nitidis, apice late rotundatis, basi angustatis, cuneatis, nervis utrinque circiter 12, subtus prominentibus; floribus axillaribus, paucis, sepalis extus pubescentibus; staminibus 18; ovario parce pubescente, 6-loculare.

A tree about 20 m high, glabrous except the younger parts and the flowers. Branches rather stout, terete, brown, the growing tips somewhat ferruginous-pubescent, as are the very young petioles, the pedicels, and the calyx externally. Leaves thickly coriaceous, obovate, 14 to 22 cm long, 6 to 12 cm wide, apex broadly rounded, base gradually narrowed, cuneate, when dry brown and shining on both surfaces; lateral nerves about 12 on each side of the midrib, prominent, the reticulations very fine; petioles 1.5 to 2.5 cm long. Flowers few, axillary and in the

axils of fallen leaves, but one or two in each axil, the pedicels ferruginous-pubescent, up to 3 cm long. Young sepals broadly ovate, obtuse, ferruginous-pubescent, coriaceous, about 4 mm long. Very young corolla-lobes elliptic-ovate, rounded or slightly retuse, 3 mm long. Stamens 18, the young anthers 2 mm long. Ovary very slightly pubescent, 6-celled. Fruit oblong, inequilateral, up to at least 3 cm in length (immature) tipped by the style which is up to 14 mm in length, glabrous.

NEGROS, Cadiz, *For. Bur.* 15029 Danao, March, 1908; Paniquon River, *For. Bur.* 7325 Everett, March, 1907; near San Carlos, *For. Bur.* 20696 *Tamesis* (type), September, 1913, locally known as *nato* and *bayog*.

This is the species that Dubard has referred, with doubt, to *Palaquium obovatum* King & Gamble,¹⁰ from fruiting specimens; a more recent collection, however, presents young flowers, and an examination of these shows 18, not 12 stamens, so that the specimens must be referred to the section *Palaquoides*, not to *Eupalaquium*, to which *P. obovatum* belongs. It is closely allied to *Palaquium lanceolatum* Blanco, differing in its larger leaves which are broadly rounded at the apex, not at all acuminate, its somewhat shorter pedicels, its much fewer flowers, but one or two in each axil, and its slightly pubescent ovary.

APOCYNACEAE

ALYXIA R. Brown

ALYXIA CONFERTIFLORA sp. nov.

Species ut videtur *A. lucidae* Wall. affinis, differt inflorescentiis valde congestis, haud pedunculatis, quam petiolo multo brevioribus, floribus longioribus, circiter 1 cm longis.

A scandent shrub, quite glabrous except the inflorescence. Branches smooth, reddish-brown, distinctly 4-angled. Leaves fragrant in drying, whorled, 4 in each whorl, oblong, chartaceous to subcoriaceous, 6 to 10 cm long, 2 to 3.5 cm wide, about equally narrowed at both ends, the apex blunt-acuminate, the base decurrent-acuminate, both surfaces slightly shining when dry, the lower a little paler than the upper, the margins recurved; lateral nerves very slender, indistinct, about 50 on each side of the midrib, anastomosing with the faint submarginal nerve; petioles 1 to 1.5 cm long. Cymes axillary, sessile or very shortly peduncled, congested, about 0.8 mm long (excluding the corollas), pubescent, the flowers sessile, 5-merous, each subtended by an ovate, pubescent, acute or acuminate bract about 3 mm long and several similar but much smaller bracteoles. Calyx 3 mm long, the lobes ovate, acute, about 2 mm long, ciliate-pubescent or puberulent. Corolla-tube cylindric, externally glabrous, 10 mm long, swollen above opposite the anthers, contracted at the

¹⁰ Bull. Mus. Hist. Nat. 15 (1909) 280.

throat, the tube prominently pubescent inside; lobes spreading-recurved, orbicular, 3 mm in diameter. Anthers narrowly ovate-lanceolate, 1.2 mm long. Ovary short, pubescent. Fruit not seen.

BASILAN, *Bur. Sci. 16143 Reillo*, September, 1912.

A species manifestly allied to the Malayan *Alyxia lucida* Wall., which it greatly resembles, but from which it is distinguished by its congested inflorescence which is much shorter than the petioles, its longer flowers, and more numerous nerved leaves. It is also closely allied to *Alyxia odorata* Wall., perhaps closer to this than to *A. lucida*, but is distinguishable by its acuminate, not acute or obtuse leaves, shorter cymes, sessile flowers, and orbicular, not ovate, corolla-lobes.

ALSTONIA R. Brown

ALSTONIA OBLONGIFOLIA sp. nov, § *Dissuraspermum*.

Arbor circiter 10 m alta, ramulis subtus foliis inflorescentiisque leviter pubescentibus; foliis ternis vel quaternis, chartaceis vel subcoriaceis, subtus pallidis, oblongis ad oblongo-lanceolatis, usque ad 14 cm longis, nervis distantibus, utrinque 14 ad 18, distinctis; inflorescentiis terminalibus, floribus circiter 8 mm longis.

A tree about 10 m high. Branches obscurely angled, slightly pubescent. Leaves whorled, 3 or 4 at each node, oblong to oblong-lanceolate, narrowed and somewhat acuminate at both ends, chartaceous or subcoriaceous, 6 to 14 cm long, 2 to 4 cm wide, the upper surface glabrous, shining, brown when dry, the lower surface much paler, slightly pubescent, especially on the midrib and nerves; nerves distant, spreading, distinct, brown, 14 to 18 on each side of the midrib, the reticulations slender, not prominent; petioles somewhat pubescent, less than 1 cm long. Inflorescence terminal, sessile, that is numerous peduncles springing from the apex of the branchlet, the peduncles slender, slightly pubescent, 2 to 7 cm long, subumbellately or corymbosely branched at their apices, the branches gray-villous but not densely so. Flowers numerous, white, their pedicels 1 to 2 mm long. Calyx cup-shaped, slightly gray-pubescent, about 1.5 mm long, the lobes very short. Corolla-tube about 5 mm long, cylindrical, slightly pubescent on the outside, somewhat inflated above the middle opposite the insertion of the stamens, inside and throat villous, the lobes oblong, obtuse, 3.5 to 4 mm long, overlapping to the right, their margins ciliate-villous. Anthers inserted above the middle, about 1 mm long. Ovary glabrous, narrowed into the slender, 2 mm long style.

PALAWAN, in old clearings near Puerto Princesa, *For. Bur. 4495 Curran*, June 5, 1906.

A species apparently allied to *Alstonia angustifolia* Wall., of the Malay Peninsula, but differing in many characters, notably, in its quite different flowers.

KICKXIA Blume

KICKXIA BLANCOI Rolfe in Journ. Linn. Soc. Bot. 21 (1884) 313.

Kickxia arborea Vid. Sinopsis Atlas (1883) t. 67, f. G; F.-Vill. Novis. App. (1880) 132; Naves in Blanco Fl. Filip. ed. 3, t. 428 bis, non Blume.

Kickxia merrittii Merr. in Philip. Journ. Sci. 4 (1910) Bot. 355.

Kickxia macgregorii Elm. Leaflet. Philip. Bot. 4 (1912) 1457.

Rolfe's species is typified only by the plate in the third edition of Blanco's Flora de Filipinas, no description having been published; the plate well represents the species as here interpreted. There is some variation in vegetative characters, but in essentials the species is quite constant. A careful examination of all available material has convinced me that the two recently described species, above cited as synonyms, are not distinct from *Kickxia blancoi* Rolfe. The species is sometimes known as *lanete*, as *laneting gubat*, and as *ayate*, and probably represents the form mentioned by Blanco Fl. Filip. (1837) 114, ed. 2 (1845) 81 after the description of *Anasser laniti* as "Hai otra especie con las flores axilares solitarias." It is represented by the following material:

LUZON, Province of Batangas, Looc, *For. Bur.* 7649 Curran & Merritt; Santo Tomas, *For. Bur.* 21545 Tamesis: Province of Laguna, Calamba, *For. Bur.* 20964 Villamil. MINDORO, *For. Bur.* 11488 Merritt (type of *K. merrittii* Merr.). GUIMARAS, *For. Bur.* 862 Gammill. SIBUYAN, Elmer 12373 (type number of *K. macgregorii* Elm.). NEGROS, *For. Bur.* 15112 Tabat. LEYTE, Wenzel 330, July, 1913. Without definite locality, Loher 6329.

By description alone *Kickxia macgregorii* Elm. appears to be a remarkably distinct form, but this is due to errors in the description. "Calyx 1.5 to 2.25 cm long" is the description of the pedicel, the calyx being very short; the pedicel is subtended by a very few, small, obscure bracteoles. The flowers are about 6 cm long as in the other specimens referred to *Kickxia blancoi* Rolfe and as represented by Naves' plate.

TABERNAEMONTANA Linnaeus

TABERNAEMONTANA HEXAGONA sp. nov.

Frutex glaber, circiter 2 m altus; foliis chartaceis vel submembranaceis, oblongo-ellipticis, usque ad 17 cm longis, acutis ad abrupte obtuseque acuminatis, nervis utrinque circiter 14, patentibus; pedunculis axillaribus, ut videtur paucifloris; fructibus oblongo-lanceolatis, rectis, acuminatis, basi acutis, 6-angulatis vel angulis propriis (3) anguste 3-alatis, alternantibus vix alatis, circiter 6 cm longis, in siccitate minute verruculosus.

A glabrous shrub, according to the collector about 2 m high. Branches terete, light-gray, the younger ones somewhat compressed when dry. Leaves membranaceous to somewhat chartaceous, oblong-elliptic, the larger ones 13 to 17 cm long, 4 to 7 cm wide, base acute or decurrent-acuminate, apex acute to

shortly, broadly, and obtusely acuminate, when dry shining, the upper surface pale-olivaceous, the lower very much paler; lateral nerves about 14 on each side of the midrib, spreading, evanescent or subevanescent near the margins, sometimes obscurely anastomosing, the reticulations subobsolete; petioles 1 cm long or less, inflated at the base on the upper side. Peduncles axillary, apparently few-flowered (1-flowered ?), in fruit 3 to 4 cm long. Flowers not seen. Follicles two, free to the very base, oblong-lanceolate in outline, straight, not at all curved, acute at the base, acute or somewhat rostrate-acuminate at the apex, about 6 cm long, 1.3 to 1.5 cm in diameter, 6-angled, or better with 3 longitudinal, narrow wings, and 3 alternating, less prominent ridges, the pericarp coriaceous, greenish-olivaceous when dry, shining, minutely verruculose. Seeds about 24 in each follicle, irregularly oblong-obovoid, about 7 mm long.

PANAY, Capiz, *Bur. Sci. 21241 Escritor*, June, 1913.

The species presents no particularly striking vegetative characters by which it may be distinguished from some other species. Its follicles, however, are very distinct in form, being quite different from those of any other species known to me except the following one. They are straight, not at all falcate as is usually the case in this genus, free to the very base, oblong-lanceolate in outline, acuminate, and with 3 longitudinal, narrow, thick wings, and 3 alternating, less prominent ridges.

TABERNAEMONTANA MINDANAENSIS sp. nov.

Frutex glaber 2 ad 4 m altus; foliis chartaceis, oblongo-lanceolatis ad late oblongo-oblancoatis, usque ad 12 cm longis, utrinque angustatis, apice acuminatis, basi acutis, nervis utrinque circiter 9; cymis axillaribus, brevibus, paucifloris; folliculis rectis vel leviter curvatis, oblongis vel oblongo-lanceolatis, acuminatis, 4 ad 5 cm longis, circiter 1 cm diametro.

A glabrous shrub about 4 m high. Branches terete, slender, gray, not lenticellate, the younger ones sometimes slightly compressed. Leaves chartaceous, oblong-lanceolate to broadly oblong-oblancoate, 7 to 12 cm long, 2 to 4.5 cm wide, narrowed upward to the sharply acuminate apex, the acumen straight or somewhat falcate, somewhat apiculate, and to the cuneate base; lateral nerves about 9 on each side of the midrib, slender but prominent on the lower surface, the reticulations fine; petioles 4 to 8 mm long. Cymes axillary, few-flowered, in anthesis 4 cm long or less, somewhat elongated in fruit, the immature buds up to 1.5 cm long, the pedicels less than 1 cm in length. Follicles usually in pairs, oblong to lanceolate, 4 to 5 cm long, about 1 cm in diameter, straight or somewhat curved, with 4 rather prominent ridges and 2 less prominent ones, red, the base

acute, the apex acuminate, the pericarp coriaceous. Seeds about 20 in each follicle, irregular, about 6 mm long.

MINDANAO, District of Cotabato, Craan, *For. Bur. 14930 Tarrosa & Almagro*, April, 1912 (type); Reina Regente, *Bur. Sci. 11653 Robinson*, June, 1910, in thickets and open places at low altitudes.

A species in vegetative characters somewhat resembling the common *Tabernaemontana pandacaqui* Poir., but with entirely different fruits, which resemble those of *Tabernaemontana hexagona* Merr.; it differs from *T. hexagona* Merr. in its smaller, much fewer nerved leaves.

TABERNAEMONTANA OLIGANTHA sp. nov.

Frutex glaber circiter 2 m altus; foliis membranaceis vel chartaceis, oblongo-ellipticis, usque ad 15 cm longis, utrinque subaequaliter angustatis, apice acuminatis apiculatisque, basi acutis, nervis utrinque circiter 9, subtus prominentibus; cymis axillaribus, laxis, circiter 10 cm longis, paucifloris; floribus albis, longe pedicellatis, circiter 2.5 cm diametro, corollae tubo circiter 1.7 cm longo.

A glabrous shrub about 2 m high with very lax, few-flowered, axillary cymes, the flowers about 5 to each cyme, long pedicelled. Branches terete, slender, grayish-brown, lenticellate. Leaves membranaceous to chartaceous, oblong-elliptic, 12 to 15 cm long, 5 to 7 cm wide, olivaceous and somewhat shining when dry, subequally narrowed to the acute base and to the distinctly acuminate and slightly apiculate apex; lateral nerves about 9 on each side of the midrib, prominent on the lower surface, curved, obscurely anastomosing, the reticulations fine; petioles 5 mm long or less. Cymes axillary, solitary, about 10 cm long, each about 5-flowered, the branches divaricate, lax. Flowers white, their pedicels 1.5 to 3.5 cm long. Calyx 4 to 5 mm long, the lobes elliptic-ovate, obtuse or acute, 2.5 to 3 mm long. Corolla tube cylindric, 1.5 to 1.8 cm long, the lobes spreading, 12 to 13 cm long, 4 to 5 mm wide, oblong, falcate, rounded. Anthers 2 mm long. Ovary glabrous.

SAMAR, Cauayan Valley, forested slopes, *Phil. Pl. 1621 Ramos*, April, 1914.

A species well characterized by its long, very lax, few-flowered cymes, the flowers about 5 in each cyme, long pedicelled.

URCEOLA Roxburgh

URCEOLA IMBERBIS (Elmer) comb. nov.

Carruthersia imberbis Elmer *Leaf. Philip. Bot. 2* (1909) 588.

LUZON, Province of Tayabas, Lucban, *Elmer 9239* (type number): Province of Laguna, San Antonio, *Bur. Sci. 12057 Ramos*, August, 1910, in fruit.

The species is in all respects a typical *Urceola* as evidenced by its very short flowers and valvate corolla lobes. It belongs in the group with *Urceola brachysepala* Hook. f. of the Malay Peninsula. The follicles are cylindrical and brown when dry, not at all torulose, straight or slightly curved, about 13 cm long, 3 to 4 mm in diameter. The genus, which is new to the Philippines, is also represented by the following allied species:

URCEOLA PHILIPPINENSIS sp. nov.

Species praecedente similis et affinis, differt foliis chartaceis, haud coriaceis, calycis lobis longioribus prope ad basin porrectis.

A scandent shrub, glabrous except the inflorescence, the branches slender, terete, reddish-brown. Leaves chartaceous, oblong-ovate, brown or brownish-olivaceous when dry, slightly shining, 7 to 11 cm long, 3 to 5.5 cm wide, apex prominently acuminate, base rounded to subacute; lateral nerves about 7 on each side of the midrib, rather prominent, curved-anastomosing near the margin, the reticulations distinct; petioles 1 to 1.8 cm long, reddish-brown. Inflorescence corymbose, terminal and in the upper axils, frequently forming an ample, somewhat leafy inflorescence, 7 to 25 cm in width, the younger parts more or less villous with pale or brownish hairs. Flowers very numerous, crowded on the ultimate branchlets, the bracts subtending the primary branches linear, 5 to 15 mm long. Calyx pubescent, cleft nearly to the base, the lobes narrowly ovate, 1 to 1.3 mm long, acute. Corolla about 3 mm long, somewhat pubescent externally, the lobes 5, narrowly ovate, acute, about 1 mm long, valvate. Anthers about 1.3 mm long, base sagittate. Disk prominent, somewhat 5-costate. Ovary glabrous.

MINDANAO, District of Lanao, Camp Keithley, Mrs. Clemens 1098, June, 1907 (type): Province of Surigao, Piper 219, 512, 545, May, 1911. LEYTE, Jaro, Wenzel 689, May, 1914.

A species manifestly closely allied to *Urceola imberbis* (Elm.) Merr., to which most of the specimens have previously been referred, differing in its thinner leaves and manifestly much more deeply cleft calyx. In *U. imberbis* the leaves, when mature, are rather thickly coriaceous, and the calyx lobes extend less than half way to the base.

URCEOLA LAEVIS (Elmer) comb. nov.

Carruthersia laevis Elmer Leafl. Philip. Bot. 4 (1912) 1449 (*laevis*).

Like *Carruthersia imberbis* Elm., this species has the characteristic flowers of *Urceola* and must be transferred to that genus. It is readily distinguished from the two other Philippine species by its oblong-obovate bracts and bracteoles, fewer nerves, less prominently acuminate coriaceous leaves, and especially by its calyx lobes extending quite to the base.

PALAWAN, Puerto Princesa, Elmer 12837, March, 1911, type number.

VALLARIS Burman f.

VALLARIS DARONENSIS (Elmer) comb. nov.

Holarrhena daronensis Elmer Leaf. Philip. Bot. 4 (1912) 1455.

MINDANAO, District of Davao, *Elmer 11912* (type number), in fruit, October, 1909: District of Lanao, Camp Keithley, *Mrs. Clemens s. n.*, May, 1907, with young flowers: Province of Misamis, *Quadras 100*, from Talisayan, locally known as *pamacoton*.

This species is in all respects a *Vallaris*, not a *Holarrhena*, and is accordingly transferred to the former genus; it is closely allied to *Vallaris gitingensis* (Elmer) Merr., but has broader, more prominently nerved leaves and apparently somewhat larger flowers.

VALLARIS GITINGENSIS (Elmer) comb. nov.

Kickxia gitingensis Elmer Leaf. Philip. Bot. 4 (1912, March 18) 1455.

Vallaris angustifolia Merr. in Philip. Journ. Sci. 7 (1912, November 15) Bot. 335.

The name proposed by Mr. Elmer, sub *Kickxia*, has priority over that used by me, sub *Vallaris*, the latter being the proper genus as the anthers are exerted, not included in the corolla tube. Mr. Elmer's specific name is accordingly adopted, transferred to *Kickxia*, and *K. angustifolia* Merr. reduced as a synonym. The two are identical in all respects. *Vallaris gitingensis* is represented by the following material:

LUZON, Province of Laguna, Paete, *Holman 8*, April, 1910; Nangaiby, *For. Bur. 20175 Manuel*, September, 1913 (sterile): Province of Tayabas, Lucban, *Bur. Sci. 19537 Ramos*, January, 1913, in fruit: Province of Sorsogon, *For. Bur. 10507 Curran*, June, 1908, *For. Bur. 15077 Rosenbluth*, April, 1909 (type of *V. angustifolia* Merr.). SIBUYAN, *Elmer 12203*, April, 1910 (type number of *Kickxia gitingensis* Elmer). LEYTE, *Wenzel 652, 678*, May, 1914. Some of the material has been distributed as *Vallaris holmanii* Merr., but I consider now that but a single species is represented.

The follicles are in pairs, about 20 cm long, 5 mm in diameter, narrowed at both ends, straight or slightly curved; seeds linear-lanceolate, about 2 cm long, the coma plumose, the hairs very soft, pale-brownish, abundant, 5 to 6 cm long.

VERBENACEAE

CALLICARPA Linnaeus

CALLICARPA LANCIFOLIA sp. nov.

Frutex 1 ad 4 m altus plus minusve stellato-pubescentibus glandulosisque; foliis lanceolatis vel anguste oblongo-lanceolatis, chartaceis, usque ad 20 cm longis, basi leviter inaequaliteribus, obtusis, apice longe caudato-acuminatis, supra parce simpliciter pubescentibus, eglandulosis, subtus leviter stellato-pubescentibus, glandulosis, nervis utrinque circiter 11; cymis axillaribus solitariis, laxis, 2 ad 4 cm longis, dichotomis; floribus 4-meris, circiter 3 mm longis, corolla glabra vel subglabra.

A shrub 1 to 4 m high. Branches terete, slender, subglabrous or more or less ferruginous-stellate-pubescent, the younger ones

densely stellate-pubescent and with scattered, longer, sparingly branched hairs intermixed. Leaves chartaceous, lanceolate to narrowly oblong-lanceolate, 15 to 20 cm long, 3 to 5 cm wide, narrowed above to the long and slender, often subfalcate, caudate-acuminate apex and below to the obtuse, usually slightly inequilateral base, the margins serrate-dentate, the teeth distinct, gland-tipped, the upper surface usually olivaceous when dry, eglandular, with scattered, short simple hairs, the lower surface usually somewhat paler, sparingly stellate-tomentose, minutely glandular; lateral nerves about 10 on each side of the midrib, distinct, curved-ascending, anastomosing; petioles densely stellate-tomentose, 5 to 8 mm long. Cymes axillary, solitary, peduncled, dichotomous, 2 to 4 cm long, rather lax and open, many-flowered, the branches divaricate, rather densely pubescent with simple and stellate hairs intermixed. Flowers lilac, 4-merous, small, the bracteoles linear, pubescent, small. Calyx about 1 mm long, sparingly hirsute-pubescent with short, straight, simple hairs, obscurely and subequally 4-toothed. Corolla-tube about 2 mm long, glabrous, the lobes 4, orbicular-ovate, rounded, about 1 mm long. Filaments 4 mm long; anthers 0.5 mm long. Style slender, 5.5 mm long, slightly thickened near the apex.

MINDORO, Mount Halcon, Merrill 5556. TICA0, *For. Bur.* 2534 Clark. CEBU, *Bur. Sci.* 11078 Ramos, March, 1912 (type). MINDANAO, District of Lanao, Camp Keithley, Mrs. Clemens s. n.: District of Zamboanga, *Bur. Sci.* 15802 Fénix, Merrill 8115, *Bur. Sci.* 11802 Robinson, Williams 2307. BASILAN, Hallier s. n., DeVore & Hoover 41.

This species has been confused with *Callicarpa caudata* Maxim., and *C. longifolia* Lam., and is manifestly allied to the former, differing in its very different indumentum. It is apparently more closely allied to *C. stenophylla* Merr., than to *C. caudata*, but is distinguished from the former by its broader leaves. Among the extra-Philippine forms it is apparently most closely allied to *Callicarpa longifolia* Lam., differing in its indumentum, shape of its leaves, and in details of its flowers.

CALLICARPA MEGALANTHA sp. nov.

Arbor circiter 10 m alta, omnibus partibus plus minusve dense glandulosis et stellato-plumoso-pubescentibus, indumento obscure fusco vel griseo-fusco; foliis oppositis, oblongo-ovatis, subcoriaceis, acuminatis, integris, basi acutis, usque ad 16 cm longis, nervis utrinque circiter 9, subtus prominentibus; cymis axillaribus, longe pedunculatis, dense multifloris; floribus albis, 6 ad 7 mm longis.

A tree about 10 m high, most parts, except the upper surfaces of adult leaves more or less yellow-glandular and stellate-plumose pubescent, the indumentum dark-brown or dark grayish-brown in color. Branches terete, the younger ones more or less com-

pressed, yellow-glandular, and the younger parts densely stellate-plumose pubescent. Leaves oblong to oblong-ovate, subcoriaceous, entire, 12 to 16 cm long, 5 to 6 cm wide, about equally narrowed to the acute base and to the acuminate apex, the upper surface when young more or less stellate-pubescent, becoming nearly glabrous, brownish-olivaceous, slightly shining, the lower surface paler, with numerous, scattered, pale-yellow, shining glands, densely stellate-pubescent on the midrib and nerves, with scattered stellate hairs on the lamina; lateral nerves about 9 on each side of the midrib, prominent on the lower surface, anastomosing, curved upward; petioles very densely stellate-pubescent, 2 to 2.5 cm long. Cymes in the upper axils, solitary, densely many-flowered, dichotomously branched, 7 to 8 cm in diameter, the peduncles stout, about 8 cm long, the peduncles, branches, bracts, bracteoles, and calyces densely stellate-plumose pubescent, the indumentum almost obscuring the scattered, shining, pale-yellow glands. Flowers white, 6 to 7 mm long, the bracts oblanceolate to spatulate, 6 to 8 mm long, the bracteoles similar but much smaller. Calyx somewhat funnel-shaped, equally 4-lobed, 3 mm long, the lobes short, acute. Corolla 6 to 7 mm long, outside sparingly supplied with small, yellow, shining glands, the lobes 4, subequal, oblong-ovate, broadly rounded, 3 to 3.5 mm long, externally in the median portion sparingly stellate-pubescent as well as glandular. Filaments 7 and 8 mm long; anthers ovoid, 1.2 mm long, somewhat glandular on the back. Ovary ovoid, very densely covered with small, shining, pale-yellow glands.

LUZON, Subprovince of Ifugao, Mount Polis, *Bur. Sci.* 19687 *McGregor*, February, 1913.

Probably most closely allied to *Callicarpa subglandulosa* Elm., but differing from that species in many characters. *Callicarpa megalantha* is remarkable for its comparatively large flowers which are indicated by the collector as being white, a color otherwise unknown or at least very rare in the genus, its long-peduncled cymes, and its dark-brown or dark grayish-brown indumentum.

CLERODENDRON Linnaeus

CLERODENDRON PUBERULUM sp. nov.

Species *C. intermedio* valde affinis, differt omnibus partibus plus minusve puberulis vel pubescentibus.

A suffrutescent, erect, sparingly branched plant 2 m high or less, very similar in appearance to *Clerodendron intermedium* Cham. Older stems glabrous or nearly so, 4-angled, the younger ones distinctly puberulent. Leaves broadly ovate, chartaceous, 10 to 20 cm long, 9 to 17 cm wide, acuminate, base with a

deep, wide sinus, the basal lobes broadly rounded, margins repand-toothed, the upper surface hispid-hirsute with scattered, appressed, stiff hairs, the lower surface densely and softly puberulent, the indumentum nearly obscuring the glands; petioles up to 15 cm in length, puberulent. Panicles terminal, narrowly pyramidal, about 20 cm long, the lower branches about 7 cm long, all parts puberulent, the bracts narrowly spatulate, 1 to 1.5 cm long, the bracteoles linear or subfiliform, short. Flowers numerous, red, their pedicels slender, 1 to 1.5 cm long. Calyx-lobes pubescent, oblong, obtuse, somewhat unequal, about 3 mm long, accrescent in fruit and 5 to 6 mm long. Corolla-tube slender, about 12 mm long, 1 mm in diameter, slightly enlarged above, sparingly pubescent externally, the lobes somewhat unequal, oblong to oblong-obovate, obtuse or rounded, 5 to 7 mm long. Filaments slender, the exerted parts about 2 cm in length. Fruit about 5 mm long, 8 mm wide, depressed-globose, of 2 to 4, 1-seeded pyrenes.

MINDANAO, District of Davao, Davao, in open wet places, *Copeland*, 404 (type), March 9, 1904, *DeVore & Hoover* 177, April, 1903.

A species manifestly very closely allied to *Clerodendron intermedium* Cham., which it greatly resembles in aspect. The chief differences appear to be in the indumentum, *C. intermedium* Cham. being entirely glabrous, the present species rather densely puberulent and pubescent.

PREMNA Linnaeus

PREMNA AREOLATA sp. nov. § *Gumira*.

Frutex scandens, inflorescentiis exceptis glaber; foliis oblongis, usque ad 14 cm longis, chartaceis ad subcoriaceis, nitidis, integris, breviter acuminatis, basi acutis ad rotundatis, subtus dense areolatis, nervis utrinque circiter 6; inflorescentiis terminalibus, brunneo-puberulis, multifloris; floribus 4-meris, parvis, calycibus obsolete 4-dentatis, corollae lobis late rotundatis, subaequalibus.

A scandent shrub, glabrous except the inflorescence, the branches terete, grayish, somewhat lenticellate, the younger ones dark-colored when dry. Leaves chartaceous to submembranaceous, oblong, entire, 8 to 14 cm long, 3 to 5 cm wide, the apex shortly acuminate, the base acute to rounded, olivaceous or somewhat brownish when dry, shining, of about the same color on both surfaces or the lower one a little paler, the lower surface very densely areolate, the areolae small, 1 mm or less in diameter, each enclosed by the ultimate reticulations; lateral nerves about 6 on each side of the midrib, slender, rather distinct, somewhat ascending, anastomosing; petioles 1 to 2 cm long. Inflorescence terminal, many flowered, usually peduncled, up to

10 cm long and wide, the rachis, branches, branchlets, and bracts rather densely brown-puberulent, the bracts lanceolate, the largest ones 5 mm long or less. Flowers 4-merous, white or nearly so, cymose, sessile. Calyx somewhat puberulent, 2 mm long, truncate, obsoletely 2-toothed. Corolla-tube glabrous externally, about 2.5 mm long, throat and upper part of the tube inside densely villous, the lobes 4, subequal, broadly ovate, rounded, about 1.4 mm long. Filaments slender, 2 to 2.5 mm long. Style slender, glabrous, 3 mm long, the arms slender, nearly 1 mm in length.

BASILAN, *Bur. Sci. 16179 Reillo*, September 6, 1912 (type). MINDANAO, District of Lanao, Camp Keithley, *Mrs. Clemens 604*, September, 1906. Said by Mrs. Clemens to be a vine reaching a length of from 75 to 100 feet, growing in large *Ficus* trees.

The species is a very characteristic one, distinguishable by its oblong leaves which are densely areolate on the lower surface, its scandent habit, and its brown-puberulent inflorescence.

PREMNA WILLIAMSII sp. nov. § *Gumira*.

Species *P. areolatae* affinis, differt foliis subtus haud areolatis, basi semper acutis, apice acute acuminatis, nervis utrinque 5, petiolo longioribus, floribus paullo majoribus.

A scandent shrub, glabrous except the inflorescence. Branches terete, gray or brownish, somewhat lenticellate, the younger ones scarcely darker in color than the mature ones. Leaves oblong, chartaceous, entire, shining, of the same color on both surfaces, 8 to 14 cm long, 3 to 5 cm wide, narrowed below to the acute base, the apex sharply acuminate; lateral nerves 5 on each side of the midrib, curved-ascending, distinct; petioles up to 3 cm in length. Inflorescence terminal, cymose, brown-puberulent up to 8 cm long and wide, many-flowered. Flowers 4-merous. Calyx cup-shaped, very obscurely puberulent or nearly glabrous, somewhat 4-angled, 2.2 mm long, truncate, obscurely and broadly 4-toothed. Corolla-tube 3 mm long, glabrous externally, inside in the upper part and the throat densely villous, subequally 4-lobed, the lobes broadly ovate, rounded, about 1.5 mm long. Style slender, glabrous, 5 mm long, the arms about 1 mm in length.

MINDANAO, District of Zamboanga, Sax River, *Williams 2330*, the stems trailing, reaching a diameter of 5 cm, flowers white.

Manifestly very closely allied to the preceding species which it greatly resembles. The leaves, however, are not at all areolate on the lower surface, the petioles are longer, nerves fewer, and the flowers slightly larger.

GESNERIACEAE

CYRTANDRA Forster

CYRTANDRA ATROPURPUREA sp. nov. § *Aureae*.

Frutex erectus, simplex, circiter 2 m altus; foliis confertis, oblongi-obovatis, usque ad 30 cm longis, sessilibus, coriaceis, grosse irregulariter serratis, acuminatis, basi valde angustatis, in siccitate atropurpureis, subtus ad costa nervisque adpresse pubescentibus, nervis utrinque circiter 13, prominentibus; inflorescentiis axillaribus, pedunculatis, bracteis numerosis, oblongo-ellipticis, usque ad 5 cm longis.

An erect, unbranched shrub about 2 m high, the stems stout, the leaves more or less crowded near the summit. Leaves oblong-obovate, 25 to 30 cm long, about 10 cm wide, sessile, coriaceous, the apex shortly and rather sharply acuminate, the base much narrowed, the lower 2 to 4 cm 2 cm wide or less, the margins coarsely serrate, the larger teeth corresponding to the ends of the lateral nerves and up to 6 mm long, with intermediate similar but smaller teeth, the upper surface dark-colored when dry, smooth, somewhat shining, the lower surface when fresh red, when dry dark-purple, the midrib, lateral nerves, and primary reticulations on the lower surface rather densely ferruginous-pubescent with appressed hairs; lateral nerves about 13 on each side of the midrib, anastomosing, curved-ascending, very prominent on the lower surface, the reticulations lax. Inflorescence axillary, the peduncles stout, up to 2 cm long, furfuraceous-pubescent, bearing at their apices numerous, crowded, large bracts and apparently numerous, crowded flowers, the bracts mostly elliptic-oblong to ovate-elliptic, narrowed at both ends, membranaceous or chartaceous 2.5 to 5 cm long, rather prominently nerved, acuminate, coarsely toothed, the nerves more or less pubescent. Flowers not seen. Capsules narrowly ellipsoid, about 12 mm long, narrowed above, glabrous, their pedicels about 5 mm long.

LUZON, Subprovince of Ifugao, Mount Polis, *Bur. Sci.* 19852 *McGregor*, February 2, 1913.

A species manifestly allied to *Cyrtandra rex* Kränzl., from which it is at once distinguished by its colored leaves; from other Philippine species in this group such as *Cyrtandra cumingii* Clarke, *C. oblongata* Merr., *C. abnifolia* Kränzl., etc., it differs in its sessile leaves.

CYRTANDRA FERRUGINEA sp. nov. § *Cuneatae*?

Frutex erectus, omnibus partibus plus minusve dense ferrugineo-pubescentibus; foliis oppositis, longe petiolatis, oblongis ad

oblongo-ellipticis, usque ad 20 cm longis, inaequalibus, plus minusve falcatis, acutis vel leviter acuminatis, margine denticulatis, basi acutis vel subrotundatis, nervis utrinque circiter 10; inflorescentiis axillaribus, 1- ad 3-floris, usque ad 5 cm longis, bracteis lanceolatis, liberis; floribus 4 cm longis, calycibus persistentibus, lobis lanceolatis, acuminatis, quam tubo paullo brevioribus.

An erect shrub or suffrutescent plant apparently sparingly branched, all parts more or less densely covered with pale-ferruginous, weak, shining hairs, the younger parts very densely pubescent. Branches terete, or somewhat compressed when dry. Leaves opposite, in somewhat unequal pairs, chartaceous, oblong to oblong-elliptic, 12 to 20 cm long, 2 to 12 cm wide, inequilateral, somewhat falcate, apex acute or slightly acuminate, margins distantly denticulate, base acute or rounded, very inequilateral, the lamina blunt or usually rounded and extending farther on one side than on the other which is acute; lateral nerves about 10 on each side of the midrib; petioles 4 to 7 cm long, those of the smaller leaves of each pair shorter than those of the larger ones. Inflorescence axillary, solitary, few-flowered, 5 cm long or less, the flowers 1 to 3; bracts few, lanceolate, acuminate, free, 1 cm long. Calyx in anthesis 1.5 cm long, in fruit 2 cm long, persistent, the lobes 5, lanceolate, acuminate, somewhat shorter than the tube, the pedicels 1 to 1.5 cm long. Corolla white, 4 cm long, the tube narrow, the lobes rounded. Fruit lanceolate, including the persistent slender style about 3 cm long, slightly pubescent, the fruit proper about as long as the calyx, the style exerted.

LUZON, Province of Camarines, Mount Cauayan, *Phil. Pl.* 1548 Ramos, December 9, 1913.

Not closely allied to any Philippine form known to me, well characterized by its rather uniformly dense ferruginous pubescence, its opposite inequilateral leaves, few flowers, narrow free bracts, and persistent calyces.

CYRTANDRA KRÄNZLINII sp. nov. § *Campanulaceae* ?

Suffrutex erectus vel adscendentibus, simplex, usque ad 50 cm altus, plus minusve ferrugineo-villosus; foliis oppositis, crenatis, in paribus valde inaequalibus, majoribus oblongo-obovatis, apice rotundatis, usque ad 18 cm longis, minoribus subellipticis, 1.5 ad 4 cm longis; floribus axillaribus, solitariis, longe pedicellatis, albis, circiter 5 cm longis, anguste campanulatis.

An erect or ascending undershrub, simple, 30 to 50 cm high, the stems, petioles, lower surfaces of the leaves on the midrib and lateral nerves densely covered with long, weak, ferruginous, jointed hairs. Leaves opposite, firmly chartaceous, slightly cre-

nate, the upper surface glabrous, dark-olivaceous, the lower much paler, in very unequal pairs; larger leaf of each pair oblong-obovate, 12 to 18 cm long, 5 to 8 cm wide, the apex usually broadly rounded, narrowed below to the acute or obtuse, usually strongly inequilateral base; primary lateral nerves about 7 on each side of the midrib, prominent on the lower surface, irregular, the reticulations lax; petioles densely villous, 12 mm long or less: smaller leaves of each pair mostly elliptic, 1.5 to 4 cm long, 0.8 to 2 cm wide, shortly petioled, slightly acuminate. Flowers white, axillary, solitary, ebracteolate, the pedicels densely villous, slender, about 2 cm long. Calyx 2 cm long, subpersistent, narrowly campanulate, villous-pubescent with scattered, long, ferruginous, jointed hairs, the lobes ovate-lanceolate, slenderly caudate-acuminate, about 8 mm long. Corolla narrowly tubular-campanulate, white, about 5 cm long, slightly pubescent externally, the tube (flattened) about 4 mm wide for the lower 1.5 cm, then gradually widened and about 2 cm wide at the throat, the lobes broadly rounded, comparatively short. Disk glabrous, truncate, 2 mm high. Stamens included, the filaments of both the fertile stamens and the staminodes somewhat spirally twisted; anthers narrowly oblong, 3 mm long. Ovary puberulent; style somewhat hirsute; stigma obliquely oblong, 3 mm long. Capsule (immature) cylindric, about 3 cm long, 3.5 mm in diameter, rostrate, rugose, surrounded at the base by the persistent calyx.

PALAWAN, Malampaya Bay, Binaloan, *Merrill 7247, September, 1910*, in forests at sea level, on damp shaded banks.

A very characteristic species, distinguished by its very unequal leaves, its villous, ferruginous indumentum, and its solitary, axillary, long-pedicelled, comparatively large flowers. The flowers are frequently borne in the axils of fallen leaves slightly above the surface of the ground.

CYRTANDRA LONGIPEDUNCULATA sp. nov. § *Polynesiae*.

Frutex subglaber, ramulis junioribus inflorescentiisque parce pubescentibus; foliis oppositis, lanceolatis ad oblongo-oblanco-latis, in paribus leviter inaequalibus, usque ad 10 cm longis, glabris, acuminatis, basi acutis, margine distanter serratis vel denticulatis, nervis utrinque 5 vel 6, prominentibus; inflorescentiis axillaribus, solitariis, umbellatis, paucifloris, laxis, quam folia brevioribus, longe graciliterque pedunculatis; floribus albis, circiter 1.8 cm longis.

An erect shrub, glabrous except the younger branchlets and the inflorescence. Branches and branchlets slender, light-gray, terete, or when dry more or less ridged or striate, the younger parts minutely pubescent with short, brown, appressed hairs.

Leaves opposite, in somewhat unequal pairs, chartaceous or subcoriaceous, lanceolate to oblong-oblancoelate, 4 to 10 cm long, 1 to 3 cm wide, narrowed above to the rather long-acuminate apex and below to the acute or cuneate base, the margins distantly and coarsely serrate to merely denticulate, the upper surface smooth, shining, brownish-olivaceous, the lower paler, often brownish, when young somewhat pubescent, becoming entirely glabrous; lateral nerves 5 or 6 on each side of the midrib, prominent on the lower surface, anastomosing, the reticulations lax, prominent; petioles of the larger leaves about 5 mm long, of the smaller ones somewhat shorter. Inflorescence very slender, axillary, solitary, few-flowered, shorter than the leaves, the flowers umbellately disposed at the apices of the simple peduncles. Peduncles very slender, 3.5 to 5.5 cm long, the bracts lanceolate, 4 mm long, the pedicels 1 to 1.5 cm long. Flowers few, white, but one or two opening at the same time in each umbel. Calyx 6 mm long, glabrous or nearly so, ovoid, the tube 3 mm long, the lobes ovate-lanceolate, 3-nerved, long-acuminate, more or less spreading, about 3 mm long. Corolla glabrous, narrowly campanulate, about 1.8 cm long, slightly widened upward, 2-lipped, the upper lip with 2, broadly ovate, rounded lobes about 3 mm long, the lower lip with 3 lobes, similar to those of the upper lip but slightly larger. Disk cupular, truncate, glabrous, 2 mm high. Stamens 2; filaments slightly pubescent; anthers 1 mm long, connate. Ovary narrowly ovoid, glabrous, tapering upward into the style which is glabrous below, and pubescent in the upper one-half or two-thirds.

LUZON, Subprovince of Ifugao, Mount Polis, *Bur. Sci.* 19664 (type), 19796 *McGregor*, February 8, 1913.

A species similar to and manifestly closely allied to *Cyrtandra plectranthiflora* Kränzl., from which it differs in its differently shaped, glabrous, smaller, fewer-nerved leaves and its larger flowers.

CYRTANDRA OBLONGATA sp. nov. § *Aureae*.

Frutex erectus, 2 ad 3 m altus, plus minusve pubescentibus; foliis oblongis, coriaceis, usque ad 25 cm longis, acuminatis, base longe angustequa decurrentibus, margine irregulariter serratis, supra glabris, subtus dense ferrugineo-pubescentibus; nervis utrinque 14 ad 16, adscendentibus, subtus valde prominentibus; inflorescentiis axillaribus, sessilibus, floribus confertis, circiter 3 cm longis, bracteis involucriantibus albis, usque ad 3 cm longis, anguste obovatis vel elliptico-ovatis.

An erect, more or less branched shrub 2 to 3 m high, the branches stout, terete, or the younger ones more or less angled.

Leaves somewhat crowded toward the ends of the branchlets, oblong, coriaceous, 18 to 25 cm long, 4 to 8 cm wide, the upper surface glabrous, dark-olivaceous, smooth, the lower much paler, the apex shortly but sharply acuminate, the base long and narrowly decurrent, winging the stout, 3 to 6 cm long petiole, the margins rather coarsely and irregularly serrate; nerves 14 to 16 on each side of the midrib, curved-ascending, very prominent on the lower surface, and with the midrib and the primary reticulations densely lanate-pubescent with brown hairs. Inflorescence axillary, sessile, the flowers crowded, shortly pedicelled, subtended by an involucre of large bracts. Bracts numerous, white, narrowly obovate to ovate-elliptic, membranaceous, up to 3 cm long and 2 cm wide, acuminate, coarsely toothed, sessile, prominently veined, the reticulations lax, slightly pubescent. Calyx about 18 cm long, outside appressed ferruginous-lanate, the upper 1 cm divided into 5, ovate-lanceolate, long and slenderly acuminate lobes. Corolla white, narrowly campanulate, 3 cm long, the two lobes of the upper lip about 6 mm long, orbicular-ovate, rounded, the cleft between them narrow, 5 mm deep, the three lobes of the lower lip broadly ovate, rounded, about 10 mm long. Stamens 4; anthers about 2.5 mm long. Ovary narrowly ovoid, glabrous, 4 to 5 mm long; style pubescent below the stigma. Capsule narrowly ellipsoid, about 12 mm long.

LUZON, Provinces of Tayabas and Laguna, Mount Banajao, *Merrill 7515* (type), February, 1911, *Whitford 931, 1008*, October, 1904: without definite locality, *Lohr 6650*. *Merrill 5578*, from Mount Halcon, Mindoro, a very poor specimen, is also apparently referable here.

This species has previously been confused with *Cyrtandra cumingii* Clarke, to which it is allied, but from which it differs in many characters, the shape and pubescence of its leaves, and the elongated, narrowly winged petioles. It is apparently closer to *Cyrtandra rex* Kränzl. than to *C. cumingii* Clarke, but is very different from Kränzl's species.

CYRTANDRA NANA sp. nov. § *Brevicaules*.

Planta parva, glabra, erecta, simplex, circiter 4 cm alta; foliis oppositis et ternis, sessilibus, oblongis, chartaceis, acutis, serratis, aequalibus, circiter 2 cm longis, 4 mm latis; floribus axillaribus, solitariis, circiter 1 cm longis, calycibus alte 5-partitis.

A small, glabrous, erect, unbranched plant about 4 cm high. Leaves rather crowded, the internodes short, mostly ternate or some opposite, equal, sessile, chartaceous, oblong, about 2 cm long, 4 mm wide, acute, base narrowed-decurrent, margins sharply serrate, the nerves obscure. Flowers apparently pur-

plish, solitary, axillary, their pedicels about 7 mm long, the bracts small or wanting. Calyx divided nearly to the base into 5, linear-oblong, obtuse lobes, the lobes about 6 mm long, 0.7 mm wide. Corolla narrowly funnel-shaped, somewhat enlarged upward, obscurely 2-lipped, the lobes broadly rounded, quite glabrous, 1 cm long. Ovary narrowly oblong, glabrous, 1.5 mm long, narrowed upward into the 5 mm long style. Stamens included, the staminodes inserted higher up than the stamens.

MINDANAO, Bukidnon Subprovince, near Tangcolan, *Bur. Sci.* 21462 *Escriitor*, August 2, 1913.

A species well characterized by its very small size, the entire plant not exceeding 4 cm in height. Other striking characters are its solitary, pedicelled flowers, and its sessile ternate and opposite sessile leaves.

DICHROTRICHUM Reinwardt

DICHROTRICHUM PAUCIFLORUM sp. nov.

Suffrutex epiphyticus, scandens, plus minusve setoso-hirsutus; foliis longe petiolatis, ellipticis, usque ad 13 cm longis, 7 cm latis, basi acutis, apice breviter obtuse acuminatis, nervis utrinque circiter 7; inflorescentiis axillaribus, brevibus, paucifloris; floribus circiter 3 cm longis, extus setoso-hirsutis.

An epiphytic, sparingly branched suffrutescent vine, the stems terete, somewhat fleshy when fresh, glabrous, emitting numerous roots along the side next to the supporting plant, glabrous, light-gray when dry, the apical parts more or less setose-hirsute. Leaves elliptic, 10 to 13 cm long, 5.5 to 7 cm wide, chartaceous, olivaceous, the base acute, the apex shortly and obtusely acuminate, margins irregularly and doubly toothed, the teeth small, both surfaces with more or less scattered, long, stiff, white, jointed, setose-hirsute hairs especially along the midrib and lateral nerves, similar hairs also on the petioles and the inflorescence; lateral nerves about 7 on each side of the midrib, rather prominent on the lower surface, curved-ascending; petioles 4 to 6 cm long, when young densely setose-hirsute, less so when old. Inflorescence axillary, few-flowered, setose-hirsute, including the prominent flowers 4 cm long or less, the flowers subfascicled or arranged on a very short peduncle. Flowers up to 5 in each axil, but one or two opening at the same time, red, their pedicels 3 to 4 mm long, setose. Sepals 5, oblong-obovate to oblong-oblancoelate, 1.2 to 1.5 cm long, 3 to 4 mm wide, obtuse or acute, irregularly and rather prominently toothed, dorsally setose-hirsute with long stiff hairs. Corolla about 3 cm long, somewhat curved, externally somewhat setose-hirsute, the mouth very oblique, lobes broadly rounded. Fila-

ments exerted 6 to 10 mm. Ovary glabrous; style spatulate. Disk prominent, glabrous, about 1.5 mm in diameter.

PALAWAN, Mount Capoas, Malampaya Bay, Merrill 9497, April 21, 1913, epiphytic in the mossy forest, altitude about 950 meters.

A species readily distinguished by its very short inflorescence, in this character approaching *D. asperifolium* Benth. & Hook. f., and *D. brevipes* Clarke, from both of which, however, it is very distinct.

TRICHOSPORUM D. Don

TRICHOSPORUM BRACHYSEPALUM sp. nov.

Frutex epiphyticus, scandens, glaber, tenuibus; foliis oppositis, coriaceis, oblongo-lanceolatis, usque ad 8 cm longis, acuminatis, nervis lateralibus obsoletis; floribus axillaribus, solitariis, pedicellatis, calycis usque ad basin divisi, segmentis 2 mm longis; corolla 2.2 cm longa, curvata, staminibus exsertis, filamentis pubescentibus.

An epiphytic, glabrous, slender, branched vine, the stems and branches rather slender, terete, light-gray, the branchlets often longitudinally sulcate or striate when dry. Leaves opposite, oblong-lanceolate, fleshy when fresh, coriaceous and wrinkled when dry, 6 to 8 cm long, 1.5 to 2 cm wide, narrowed below to the acute base, and above to the sharply and usually slenderly acuminate apex, the lateral nerves obsolete or nearly so; petioles 2 to 5 mm long. Flowers axillary, solitary, their pedicels slender, glabrous, about 1 cm long. Calyx consisting of 5, small, ovate-lanceolate, acuminate, 2 mm long, glabrous lobes. Corolla tubular, curved, base broadly rounded, glabrous, 2 to 2.2 cm long, about 4.5 mm in diameter, the throat somewhat oblique, limb 2-lipped, 2 lobes somewhat larger than the other 3, the lobes orbicular, rounded, about 4 mm in diameter, their margins with few, scattered, stiff hairs. Disk glabrous, truncate, 0.5 mm in diameter. Ovary glabrous; style pubescent. Stamens exerted about 1 cm; filaments pubescent; anthers connate, about 2 mm long.

BASILAN, Cumalarang, Bur. Sci. 16163 Reillo, August 25, 1912.

A species well characterized by its greatly reduced calyx which consists merely of 5, ovate-lanceolate, acuminate, 2 mm long lobes.

TRICHOSPORUM MACGREGORII sp. nov. § *Haplotrichium*.

Species *T. rizalense* affinis, differt floribus majoribus, 3.5 cm longis, corolla deorsum haud angustata, lobis majoribus (circiter 6 mm diametro), foliis tenuiter acuminatis.

An epiphytic vine, glabrous except the inflorescence, the branches light-gray, terete, the branchlets slender. Leaves

oblong-ovate to ovate-lanceolate, chartaceous or subcoriaceous when dry, usually olivaceous, 3.5 to 5 cm long, 1.3 to 1.6 cm wide, the base acute, the apex slenderly and sharply acuminate; lateral nerves 3 or 4 on each side of the midrib, ascending, very slender, often obscure; petioles about 2 mm long. Flowers solitary, axillary, their pedicels rather densely hirsute, about 6 mm long. Calyx cleft to the base into 5, narrowly lanceolate, acuminate or blunt lobes which are somewhat hirsute, about 7 mm long, 1.2 mm wide, 3-nerved. Corolla red, somewhat curved and ventricose, 3.5 cm long, hirsute outside, the mouth somewhat oblique, the lower 3 lobes broadly ovate, rounded, about 6 mm in diameter, the upper two about 4 mm in diameter. Disk glabrous, truncate, about 2 mm long. Ovary glabrous; style hirsute. Anthers 2 mm long, connate, included, the filaments as long as the corolla-tube.

LUZON, Province of Nueva Vizcaya, near Imugan, *Bur. Sci.* 20075 *McGregor*, January, 1913.

Manifestly closely allied to *Trichosporum rizalense*, which it closely resembles, differing in the indicated floral and vegetative characters.

TRICHOSPORUM RIZALENSE sp. nov. § *Haplotrichium*.

Species *T. philippinense* simillima et affinis, differt floribus majoribus, circiter 3 cm longis, extus parce hirsutis, nervis lateralibus vix obsoletis, tenuibus, adscendentibus.

A scandent, slender, epiphyte, glabrous except the inflorescence. Branches and branchlets slender, terete, mostly light gray. Leaves opposite, when fresh fleshy, when dry coriaceous, elliptic-ovate, 3.5 to 4 cm long, 1.5 to 2 cm wide, the base acute, the apex acute or slightly acuminate, rather pale when dry; lateral nerves slender, ascending, about 4 on each side of the midrib, sometimes indistinct; petioles about 3 mm long. Flowers solitary, axillary, their pedicels slender, hirsute, 5 to 6 mm long. Calyx cleft to the base into 5, lanceolate, obtuse, 3-nerved lobes 5 to 6 mm long, about 1.4 mm wide, sparingly hirsute. Corolla red, somewhat curved, 3 cm long, sparingly hirsute outside, narrowed below, the mouth somewhat oblique, 2-lipped, lobes of the upper lip broadly rounded-ovate, about 4 mm in diameter, of the lower lip about 5 mm in diameter. Disk glabrous, truncate, 1.5 mm long. Ovary glabrous; style hirsute. Anthers included, connate in pairs, 2 mm long, the filaments as long as the corolla.

LUZON, Province of Rizal, Mount Canumay, *Bur. Sci.* 13775 *Ramos*, October, 1911.

In general appearance greatly resembling *Trichosporum philippinense*, differing however, among other characters, in its larger hirsute flowers.

TRICHOSPORUM MALINDANGENSE sp. nov. § *Haplotrichium* ?

Frutex epiphyticus, scandens, gracile, inflorescentiis exceptis glaber; foliis coriaceis, anguste lanceolatis vel oblongis, glabris, circiter 7 cm longis, integris, nervis lateralibus obsoletis; calycibus tubulosis, breviter dentatis, extus parce capitellato-hirsutis, 2 ad 2.5 cm longis; corolla 4 cm longa, cylindrica, extus parce hirsuta.

An epiphytic, scandent shrub, the branches rather stout, terete, pale-brown when dry, very slightly pubescent or subglabrous. Leaves opposite, lanceolate to narrowly oblong, thickly coriaceous, pale and more or less wrinkled when dry, 6 to 7 cm long, 1.5 to 2 cm wide, narrowed above to the blunt apex, the base acute, somewhat shining, the midrib prominent, the nerves and reticulations obsolete; petioles 5 to 7 mm long. Flowers axillary, the pedicels 6 to 8 mm long, solitary or 2 to 4 fascicled in the upper axils. Calyx tubular, 2 to 2.5 cm long, 6 to 8 mm in diameter, slightly inflated in the middle, 5-toothed, the teeth short, acute, outside with scattered, short, white, capitate hairs. Corolla red, about 4 cm long, narrowly tubular, the limb somewhat spreading, irregularly 5-lobed, the lobes ovate, rounded, about 6 mm in diameter. Stamens 4, included or slightly exerted; anthers about 3 mm long. Disk glabrous. Ovary nearly as long as the corolla, rather densely capitellate-hirsute.

MINDANAO, Province of Misamis, Mount Malindang, *For. Bur.* 4660 Mearns & Hutchinson, May, 1906, in forests, altitude about 1,000 m.

TRICHOSPORUM MINDORENSE sp. nov. § *Haplotrichium*.

Species *T. philippinense* affinis, differt pedunculis unifloris, floribus brevioribus latioribusque, circiter 2 cm longis,

An epiphytic, scandent shrub, quite glabrous, the branches slender, terete, light-gray, 2 to 3 mm in diameter. Leaves fleshy when fresh, when dry coriaceous, pale-brownish, dull or slightly shining, oblong-ovate to oblong-lanceolate, 4 to 6 cm long, 1.5 to 2 cm wide, entire, the base acute, the apex long and slenderly subcaudate-acuminate, the midrib distinct, the lateral nerves and reticulations obsolete; petioles about 2 mm long. Flowers scarlet, axillary, solitary, their pedicels about 1 cm long, jointed in the middle, with a pair of linear, obtuse, 4 mm long bracts near the joint. Calyx cleft to its base into linear, obtuse, 4 to 5 mm lobes. Corolla scarlet, 2 cm long, glabrous, slightly curved, when flattened about 1 cm wide at the throat, somewhat ventricose, the mouth somewhat oblique, not contracted, the three lower lobes rounded-reniform, about 7 mm in diameter. Stamens

included; anthers connate in pairs, 2 mm long. Disk 2 mm high, truncate, about 1.5 mm in diameter.

MINDORO, Mount Halcon, *Merrill 6141*, November, 1906 (type), *For. Bur. 4379 Merritt*, June, 1906, altitude about 1,300 m; Mount Sablayan, *For. Bur. 9761 Merritt*, March, 1908, altitude about 1,000 m.

A species manifestly allied to *Trichosporum philippinense* O. Ktze., with which the three specimens above cited have previously been confused, and which they greatly resemble, especially in vegetative characters. The flowers, however, are very different, relatively much shorter and broader, while the peduncles bear but a single flower, both the peduncles and pedicels being longer in the present species than in *T. philippinense* O. Ktze.

TRICHOSPORUM IRIGAENSE sp. nov.

Frutex epiphyticus, glaber, ramulis teretibus; foliis oppositis, petiolatis, coriaceis, oblongo-lanceolatis vel ovato-lanceolatis, nitidis, usque ad 9 cm longis, basi acutis, apice longe tenuiterque acuminatis, nervis lateralibus numerosis, densis, tenuibus, adscendentibus; floribus axillaribus, solitariis, pedicellatis, circiter 3 cm longis; sepalis oblongis, acutis, circiter 1 cm longis, 3 ad 4 mm latis; corolla glabra, leviter inflata, plus minusve curvata.

An epiphytic plant, sparingly branched, quite glabrous, the branches terete, apparently somewhat fleshy, when dry 2 to 3 mm in diameter. Leaves opposite, coriaceous, oblong-lanceolate to ovate-lanceolate, 6 to 9 cm long, 2 to 3 cm wide, base acute or somewhat rounded, apex long and slenderly acuminate, straight or slightly falcate, the upper surface olivaceous, shining, the lower paler; lateral nerves 10 or more on each side of the midrib, slender, densely arranged, sharply ascending, about equally evident on both surfaces; petioles 10 to 12 mm long. Flowers axillary, solitary, apparently red, quite glabrous, about 3 cm long, their pedicels about as long as the petioles. Calyx lobes nearly free, oblong, acute or obtuse, about 1 cm long, 3 to 4 mm wide, narrowed at both ends. Corolla somewhat inflated, slightly curved; when flattened out about 7 mm in diameter, enlarged upward.

LUZON, Province of Camarines, Mount Iriga, on trees at the summit, altitude about 1,200 m, *Bur. Sci. 22211 Ramos*, December 3, 1913.

The alliance of this species seems to be with **TRICHOSPORUM FOX-WORTHYI** (Kränzl.) *Aeschynanthus foxworthyi* (Kränzl.), but is sufficiently distinct. The slender ascending nerves are characteristic.

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NEW OR NOTEWORTHY PHILIPPINE PLANTS, XII

By E. D. MERRILL

*(From the Botanical Section of the Biological Laboratory, Bureau of Science,
Manila, P. I.)*

Separate from

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THE PHILIPPINE JOURNAL OF SCIENCE

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No. 5

NEW OR NOTEWORTHY PHILIPPINE PLANTS, XII

By E. D. MERRILL¹

(From the Botanical Section of the Biological Laboratory, Bureau of Science, Manila, P. I.)

The preceding number of this series was published in the early part of the present year,² and the present contribution is essentially like its predecessors. Seven genera are for the first time credited to the Archipelago, *Avena*, *Polytoca*, *Angelesia*, *Glyptopetalum*, *Ochrocarpus*, *Asystasia*, and *Polytrema*. Sixty-two new species are described in various families, while 18 species previously described from extra-Philippine material are for the first time credited to the Archipelago. The total additions to the Philippine flora in the present paper are eighty species. Some reductions are made, and the synonymy of some species is discussed, resulting in a few cases in the substitution of older specific names for those in more general use. All proposed changes in nomenclature are in accordance with the rules of the International Botanical Congress.

GRAMINEAE

AVENA Linnaeus

AVENA FATUA L. Sp. Pl. (1753) 80; F.-Vill. Novis. App. (1880) 319; Hook. f. Fl. Brit. Ind. 7 (1897) 275.

LUZON, Benguet Subprovince, *Bur. Sci. 2812 Mearns*, April, 1907.

This European species is now widely distributed in Asia, northern Africa, and North America, a weed of cultivation. It has previously been recorded from the Philippines by F.-Villar, but his record has not before been verified. It is apparently a casual plant here and may or may not persist.

¹ Associate professor of botany, University of the Philippines.

² Philip. Journ. Sci. 10 (1915) Bot. 1-84.

CHLORIS Swartz

CHLORIS INCOMPLETA Roth. Nov. Sp. Pl. (1821) 60; Hook. f. Fl. Brit. Ind. 7 (1897) 290.

MINDANAO, District of Zamboanga, *Merrill 8279*, December 6, 1911, along roadsides near Calarian, and on dry hills back of Zamboanga, ascending to at least 200 meters altitude. PALAWAN, Taytay, *Merrill 9275*, sandy seashore; Silanga, *Merrill 9616*, *Phil. Pl. 1308 Merrill*, open places near the seashore. LUZON, Province of Zambales, *Gates*.

Not previously reported from the Philippines, India, Formosa, and Malaya. In addition to the Philippine specimens, cited above, I have before me also *Henry 1151* from Formosa, and *Koorders 21237* from Java. *Chloris mearnsii* Merr., from Luzon, is allied, but is much smaller, with much narrower leaves, fewer, slenderer, and shorter spikes, and smaller spikelets.

POLYTOCA R. Brown

POLYTOCA HETEROCLITA (Roxb.) comb. nov.

Coix heteroclita Roxb. Fl. Ind. ed. Carey 3 (1832) 572.

Polytoxa bracteata R. Br. in Benn. Pl. Jav. Rar. (1838) 20, t. 5; Hook. f. Fl. Brit. Ind. 7 (1897) 101.

MINDANAO, Bukidnon Subprovince, Tongkulan, *C. F. Baker 3616*, June, 1914.

The first representative of the genus to be found in the Philippines, here recorded under its oldest specific name; India to Burma, Tonkin, and Java.

CYPERACEAE

CLADIUM Schrader

CLADIUM RIPARIUM (Nees) Benth. Fl. Austral. 7 (1878) 405; C. B. Clarke Ill. Cyp. (1909) t. 85, fig. 5-8.

Chapelliera riparia Nees in Lehm. Pl. Preiss. 2 (1846-48) 76.

Baumea riparia Boeckl. in Linnaea 38 (1874) 246.

MINDANAO, Lake Lanao, Camp Keithley, *Mrs. Clemens 916*, January, 1907, in swamps.

In attempting to identify the above specimen, it was suspected that it might represent the species described by Gaudichaud as *Baumea glomerata*, and accordingly a duplicate was sent to the Museum of Natural History, Paris, for comparison with Gaudichaud's type. Dr. E. G. Camus, who kindly made the comparison, reports that it is not Gaudichaud's species, but is manifestly the same as *Cladium riparium* Benth., in which identification I concur after studying the description of Bentham's species and fragments supplied me by Doctor Camus for comparison. A distinct Australian type.

ARACEAE

ACORUS Linnaeus

ACORUS GRAMINEUS Soland. in Ait. Hort. Kew 1 (1789) 474; Engl. Pflanzenreich 21 (1905) 312.

LUZON, Province of Laguna, near San Antonio, on boulders in stream beds, *Bur. Sci. 14949 Ramos*, June 20, 1912.

This species has not previously been reported from the Philippines. Widely distributed in central and in temperate eastern Asia, extending from Sikkim and Tibet to Japan, southward to Burma, southern China, and Formosa. It is known from no part of Malaya and must be considered a northern type in the Philippine flora.

The commoner and widely distributed *Acorus calamus* L. occurs in the Philippines as an introduced and cultivated plant, but is thoroughly spontaneous in some localities in Mountain Province, Luzon.

AMORPHOPHALLUS Blume

AMORPHOPHALLUS LUZONIENSIS sp. nov. § *Conophallus*.

Tuber parvum, depresso-globosum, in siccitate circiter 2 cm diametro; foliis umbraculiformibus, tripartitis, segmentis circiter 20 cm longis, pinnatisectis, segmentis utilimis oblongis vel oblongo-ovatis, caudato-acuminatis, 5 ad 9 cm longis; petiolo circiter 50 cm longo; pedunculis tenuibus, 10 cm longis; spathis circiter 15 cm longis, 6 cm latis, purpureis; spadiceis quam spatha paulo brevioribus, cylindraceis, supra sensim caudato-angustatis; stilus quam ovario triplo longior.

Tubers depressed-globose, when dry about 2 cm in diameter, emitting many roots. Petioles slender, about 50 cm high; lamina umbraculiform, 3-partite, the segments pinnatisect, about 20 cm long, membranaceous, the ultimate segments oblong to oblong-ovate, caudate-acuminate, 5 to 9 cm long, nearly the same color on both surfaces or slightly paler beneath, the sinuses acute, extending almost or quite to the rachis. Sheaths of the peduncles membranaceous, brown when dry, the outer ones oblong-lanceolate, 2 to 3 cm long, the inner ones lanceolate up to 10 cm in length; peduncles slender, up to 10 cm in length. Spathes purple, about 15 cm long, thin, the tube broad, about 6 cm long, the lamina ovate, slightly acute-acuminate or merely acute, about 6 cm wide. Spadix slender, cylindrical, a little shorter than the spathe, the pistillate part about 2.5 cm long, 1 cm wide, the staminate part contiguous, about 3 cm long and 8 mm wide, the appendage slender, continuous, verruculose, caudate, at the base 5 mm in diameter or less, gradually narrowed upward, the entire spadix about 14 cm long. Pistillate flowers: Ovary depressed, about 1 mm long, 1.5 mm wide, 1-celled, 1-ovuled; style slender, about 3 mm long; stigma ovoid, entire, somewhat oblique, about 1 mm long. Staminate flowers crowded, mostly 2-androus, the anthers subglobose, 1 mm long, 1.5 mm wide, opening by two terminal slits.

LUZON, Province of Cagayan, Abulug River, *For. Bur.* 19560 Curran (type), January, 1912, *Weber s. n.*, same locality and date.

A species growing in crevices of limestone ledges, quite different from any other known Philippine form. Apparently through its elongated styles

allied to both *Amorphophallus longistilus* Kurz, of the Andaman Islands, and to *A. harmandii* Engl. & Gehrm., of Cambodia, but differing from both in many characters. It is at once distinguished from the former by its much smaller spathes, and from the latter by its larger spathes and relatively much longer spadices.

AMORPHOPHALLUS DECURRENS (Blanco) Kunth Enum. 3 (1841) 581;
Engl. in DC. Monog. Phan. 2 (1879) 319, Pflanzenreich 48 (1911)
108 = **AMORPHOPHALLUS CAMPANULATUS** (Roxb.) Blume!

Kunth's *Amorphophallus decurrens* was based on *Arum decurrens* Blanco Fl. Filip. (1837) 656, and is retained by Engler, in his recent monograph of the group, among the doubtful and imperfectly known species. In all characters Blanco's description applies very closely to Blume's species, which is very common and widely distributed in the settled areas throughout the Archipelago. There is no reason whatever for doubting that *Arum decurrens* Blanco, that is, *Amorphophallus decurrens* Kunth, is identical with the older *Amorphophallus campanulatus* (Roxb.) Blume.

ERIOCAULONACEAE

ERIOCAULON Linnaeus

ERIOCAULON NIGRICEPS sp. nov.

Planta dense caespitosa, inflorescentiis exceptis glabra; caulis brevibus, crassis; foliis numerosis, lanceolatis, usque ad 6 cm longis, basi brevissime vaginantibus; pedunculis numerosis, 5 ad 18 cm longis, gracilis, leviter tortis, 5-costatis; capitulis subglobosis, circiter 5 mm diametro, in siccitate nigris, bracteis albidis-ciliatis; floribus ♂ sepalis 3, connatis; petalis nullis vel 1 ciliato-fissis; antheris nigris; floribus ♀ exacte trimeris, sepalis oblongis vel oblanceolatis, breviter acuminatis, apice ciliatis.

A densely caespitose plant, glabrous except the inflorescence. Stems stout, short. Leaves numerous, densely crowded, lanceolate or narrowly lanceolate, 2 to 6 cm long, 5 to 8 mm wide, about 10-nerved, much wider at the base than above, gradually narrowed and usually obtuse. Peduncles numerous, slender, up to 18 cm in length, 5-ribbed, slightly twisted. Heads subglobose, 4 to 5 mm in diameter, nearly black or somewhat grayish when dry, dense, the involucreal bracts pale, oblong to obovate, truncate, about 2 mm long. Receptacle glabrous. Floral bracts dark-colored, oblong-oblanceolate to oblong-obovate, shortly acuminate, distinctly white-ciliate toward the apex on the back. Male flowers: Calyx about 1.5 cm long, dark-colored, spathe-like, at first 3-toothed, the lobes eventually becoming free nearly or quite to the base, eglandular. Petals none, or one only and ciliate-cleft into several hyaline-jointed segments. Stamens 6; anthers black. Center of the flower with 3 minute, dark-colored sessile glands. Female flowers: Sepals 3, subequal, oblanceolate to oblong, 1.8 to

2 mm long, obtuse or acute, slightly ciliate at the apex, dark-colored, not glandular. Petals 3, hyaline, linear-oblongate, about 1.5 mm long, slightly ciliate at the apex, not glandular. Ovary 3-celled; style-arms 3. Seeds minutely striate.

LUZON, Benguet Subprovince, Trinidad River, *Bur. Sci.* 5544 Ramos (type), December, 1908; Baguio, *Merrill* 7748, May, 1911, *Williams* 1004, October, 1904; Lepanto Subprovince, Balili, *Merrill* 4646, November, 1905.

This species is apparently distinct from all described ones, characterized especially by the corolla of the male flowers being reduced to a single ciliate-cleft petal, consisting of several jointed filiform lobes. It appears to fall in the section defined by Ruhland under section 5 of his key.

ERIOCAULON ALPESTRE Hook. f. & Th. ex Koern. in Miq. Ann. Mus. Lugd. Bat. 3 (1867) 163; Ruhl. in Engl. Pflanzenreich 13 (1903) 95.

MINDANAO, District of Davao, Mount Apo, *Copeland* 1481, October, 1904, altitude about 1,800 meters, seen in only one place.

Mountains of India to Indo-China, China, and Japan; not previously reported from the Philippines.

ERIOCAULON CINEREUM R. Br. Prodr. (1810) 254; Benth. Fl. Austral. 7 (1878) 193.

Eriocaulon sieboldianum Sieb. & Zucc. ex Steud. Syn. 2 (1855) 272; Ruhl. in Engl. Pflanzenreich 13 (1903) 111.

LUZON, Subprovince of Abra, in rice paddies, *For. Bur.* 16458 Bacani: Subprovince of Bontoc, in rice paddies, *Vanoverbergh* 602: Province of Rizal, Calocan, *Phil. Pl.* 293 *Merrill* (distributed as *E. merrillii*), *Bur. Sci.* 9501 *Robinson* (pro parte).

This very widely distributed species does not appear to be common in the Philippines; at least it has been collected but a few times. I can see no valid reason for ignoring Robert Brown's specific name, as it is certainly valid and antedates the one accepted by Ruhland (*E. sieboldianum*) by forty-five years.

ERIOCAULON MERRILLII Ruhl. in Perk. Frag. Fl. Philip. (1904) 136.

This species was based on *Merrill* 572, collected in the Island of Culion. As described by Ruhland, one of the special characters by which the species is distinguished from allied forms is the absence of sepals in the female flowers. This character alone does not appear to be a valid one, for in the original collection, two sheets of which are in our herbarium, most of the heads have female flowers with two sepals, while other flowers are without them. The species, as interpreted by me, is the commonest and most widely distributed one in the Philippines, and appears to me to be very closely allied to, if not identical with, *Eriocaulon truncatum* Ham. I would refer to it the following specimens:

LUZON, Province of Tarlac, *Merrill* 3624: Province of Zambales, *For. Bur.* 8158 *Curran & Merritt*: Province of Nueva Ecija, *Bur. Sci.* 5277 *McGregor*: Province of Rizal, vicinity of Manila, *Merrill* 7122, *Bur. Sci.* 9500, 9501 (pro parte) *Robinson*, *McGregor* s. n. POLILLO, *Bur. Sci.* 9031 *Robinson*. CULION, *Merrill* 572 (cotype). MINDANAO, Province of Surigao, *Piper* 534: District of Lanao, Camp Keithley, *Mrs. Clemens* 909 (pro parte), s. n.

Among the species of this genus credited to the Philippines by various authors, of which I have seen no specimens originating in the Archipelago, are the following:

Eriocaulon "longissimum" Nees; Usteri Beitr. Ken. Phil. Veg. (1905) 131, manifestly an error for *E. longifolium* Nees, as there is no such species as *E. longissimum*. I have specimens of *E. longifolium* Nees from Singapore (coll. Ridley), Labuan (coll. Merrill), Cochinchine (coll. Pierre), and the Caroline Islands, Yap (coll. Volkens 406). The species is certainly to be expected in the Philippines.

Eriocaulon sexangulare L. Reported from the Philippines, but without the citation of specimens, by Miquel Fl. Ind. Bat. 3 (1859) 523, Naves Novis. App. (1882) 299, and Ruhland in Engl. Pflanzenreich 13 (1903) 110. I have seen no Philippine specimens.

Eriocaulon truncatum Ham.; Naves Novis. App. (1882) 299; Ruhl. in Engl. Pflanzenreich 13 (1903) 107. The specimen cited by the latter author (Cuming 2362) was not from the Philippines, but from the Malay Peninsula. See *E. merrillii* above.

Eriocaulon setaceum L.; Naves Novis. App. (1882) 299. Probably admitted on an erroneous determination.

COMMELINACEAE

ANEILEMA R. Brown

ANEILEMA AZUREUM sp. nov. *Tricarpellaria*, *Euaneilema*.

Caespitosum, plus minusve pubescens praesertim inflorescentiis; foliis numerosis, anguste lanceolatis vel elongato-lanceolatis, usque ad 25 cm longis, 5 ad 10 mm latis, in siccitate dense minutequae puncticulatis, laevis, acutis vel apiculato-acuminatis; floribus azureis, cymoso-paniculatis, inflorescentiis angustis, confertis, bracteis magnis, spathulatis, pubescentibus, plus minusve imbricatis; capsulis oblongo-ellipsoideis, trigonis, circiter 6 mm longis; seminibus angulatis, in quisque loculo 4, uniseriatis.

A tufted, distinctly pubescent plant 20 to 40 cm high, the roots fibrous, no tuberous ones present on the material examined. Leaves numerous, narrowly lanceolate to elongate-lanceolate, chartaceous, 12 to 25 cm long, 5 to 10 mm wide, when dry minutely and distinctly puncticulate, smooth, not scabrous, sparingly pubescent or nearly glabrous, base not narrowed, somewhat sheathing, apex acute or apiculate-acuminate. Scapes up to 40 cm in length, simple, leafless, more or less pubescent, the flower-bearing parts rather densely pubescent. Flowers deep blue, cymose, the inflorescence narrow. Bract subtending the first branch about 4 cm long, somewhat sheathing, leaflike, the upper ones smaller, more or less imbricate, pubescent, about 1.5 cm long, 7 mm wide, acuminate, sheathing, elliptic to oblong-elliptic; bracteoles sheathing, obovate when spread out, 3 to 4

mm long. Flowers numerous. Sepals oblong to elliptic-oblong, obtuse, 3-nerved, not glandular, externally pubescent, rather thin, 4 to 5 mm long, 1.5 to 2 mm wide. Petals thinly membranaceous, about as long as the sepals, finely nerved. Stamens 6, their filaments all bearded, three sterile and three perfect, bearing oblong, 1.5 mm long anthers. Capsule 3-angled, oblong-ellipsoid, about 6 mm long, 3 mm in diameter, 3-celled, shortly pointed. Seeds 1-seriate, 4 in each cell, angular, brown, 1 to 1.3 mm. long.

SEMERARA, Merrill 4134, July, 1905, common in open, wet grasslands a few meters above sea level.

A species very closely allied to the Indian *Aneilema scapiflorum* Wight, differing in its relatively longer, narrower leaves which are not at all scabrous, its distinctly pubescent inflorescence, and its more or less imbricate bracts.

ANEILEMA PLATYPHYLLUM sp. nov. *Tricarpellaria*, *Euaneilema*.

Species a praecedente differt planta minoribus, foliis brevioribus latioribusque, usque ad 10 cm longis et 2.5 cm latis, inflorescentiis glabris, bracteis minoribus, non imbricatis, sepalis glanduloso-puncticulatis.

Like *Aneilema azureum* closely allied to the Indian *Aneilema scapiflorum* Wight, from which it differs in many characters. Tufted, the leaves comparatively few, from fibrous and tuberous roots, the tubers more or less fusiform, when dry up to 3 cm long and 6 mm in diameter. Leaves smooth, membranaceous or chartaceous, 4 to 8 in each rosette, oblong-ovate to ovate-lanceolate, 4 to 10 cm long, 1.5 to 2.5 cm wide, base not or but slightly narrowed, sheathing, apex acute or somewhat acuminate. Scapes 2 to 5 from each rosette, leafless, or with one much-reduced leaf, 12 to 20 cm high, the flowers cymosely arranged, pink or nearly white, the cymes narrow, comparatively few-flowered. Primary bracts oblong-ovate, sheathing, less than 1 cm long, acute or acuminate, the bracteoles triangular-ovate, 2 to 3 mm long. Sepals oblong-elliptic, 5 mm long, 2.2 mm wide, glandular-punctate with yellowish dots and short dashes, 3-nerved, obtuse. Petals thinly membranaceous, finely nerved, elliptic-obovate, rounded, about 5 mm long, 3.5 mm wide. Stamens 6, three sterile, three fertile, all bearded; anthers broadly elliptic, 1.5 mm long. Capsule elliptic, 3-angled, 3-celled, acute, 6 mm long, 3.5 mm in diameter. Seeds 1-seriate, 3 in each cell, superposed, brownish, angular, irregular, about 1.5 mm long.

LUZON, Province of Rizal, Antipolo, *Bur. Sci.* 20985 Ramos (type), June, 1913; Tanay, *Bur. Sci.* 3342 Ramos, June, 1907; Bosoboso, *Bur. Sci.* 985 Ramos, June, 1906.

Not as closely allied to *Aneilema scapiflorum* as is the preceding species, differing from both in its few, relatively much shorter and broader leaves, in its glandular-punctate sepals, and in its small bracts. *Loher 1340, 1939*, in the Kew Herbarium under *Aneilema scapiflorum* Wight, are both probably referable to *A. platyphyllum*.

ANEILEMA GIGANTEUM (Vahl) R. Br. Prodr. (1810) 271; Naves in Novis. App. (1880) 271; C. B. Clarke in DC. Monog. Phan. 2 (1881) 212.

Commelina gigantea Vahl Enum 2 (1806) 177.

SEMERARA, *Merrill 4132*, July, 1905. MINDANAO, Bukidnon Subprovince, *Bur. Sci. 21385 Escritor*, July, 1913.

Naves's record for this species as a Philippine one has not previously been verified. Tropical Africa and Asia through Malaya to tropical Australia.

JUNCACEAE

JUNCUS Linnaeus

JUNCUS BUFONIUS L. Sp. Pl. (1753) 328; Buchenau in Engl. Pflanzenreich 25 (1906) 105.

LUZON, Benguet Subprovince, Mount Tonglon, *Merrill 7794*, May, 1911.

Not previously reported from the Philippines; warmer parts of the entire world.

This species was found scattered along the recently constructed bridge trail to Mount Tonglon, in the mossy forest, at an altitude of about 1,900 meters. It is undoubtedly an introduced plant here.

LILIACEAE

SMILAX Linnaeus

SMILAX LOHERI sp. nov. § *Eusmilax*.

Frutex scandens glaber, ramulis teretibus, aculeis sparsis tenuibus nectis vel curvatis 2 ad 5 mm longis armatis; foliis crasse coriaceis, late ovatis, 5-nervis, basi, late cordatis, apice abrupte acuminatis apiculatisque, 8 ad 12 cm longis, subtus glaucescentibus; racemis 1-umbellatis, pedunculis 4 ad 5 cm longis; floribus numerosis, sepalis 5 mm longis.

A scandent, glabrous vine, the branches slender, terete, armed with scattered, slender, straight or somewhat curved spines 2 to 5 mm in length. Leaves very broadly ovate, thickly coriaceous, 8 to 12 cm long, 7 to 10 cm wide, when dry slightly shining, the upper surface brownish, the lower glaucous or subglaucous, the base very broad, shallowly cordate, distinctly 5-nerved, the inner pair of nerves reaching the apex of the leaf, much more prominent than the outer pair, the reticulations rather distinct, the apex abruptly acuminate, the acumen about 8 mm long, apiculate; petiole about 1 cm long, inflated, the

tendrils slender, up to 15 cm in length. Inflorescence axillary, solitary, consisting of a single umbel, the floral branch less than 1.5 cm long, subtended by a coriaceous, ovate, acuminate bract about 8 mm in length which is split down the back, the floral branch bearing at its apex a very much reduced or sometimes aborted bud, and opposite to it a single oblong, obtuse, or retuse and apiculate bract about 5 mm in length, this bract subtending the solitary, slender, 4 cm long peduncle. Male flowers 40 to 50 in each umbel, their pedicels about 8 mm long, the subtending bracteoles ovate, 2 mm long or less. Sepals about 5 mm long, 1.5 mm wide, recurved, obtuse, cucullate. Petals as long as the sepals, 0.5 mm wide. Stamens 6, all fertile, their filaments about 3.5 mm long, the anthers 1.5 mm long. Female flowers and fruits not known.

LUZON, Province of Rizal, Angilog, *Loher 6986*, April 15, 1906.

A characteristic species, distinguishable by its short-petioled, thickly coriaceous, broadly ovate leaves which are abruptly acuminate and apiculate, the base very broad, cordate, and 5-nerved, the lower surface glaucous. Among the Philippine species it is probably most closely allied to *Smilax bracteata* Presl, but that species has an entirely different inflorescence and different leaves.

SMILAX LUZONENSIS Presl Rel. Haenk. 1 (1827) 131; Miq. Fl. Ind. Bat. 3 (1859) 566.

LUZON, *Haenke* (type in herb. Prag.). MINDANAO, Lake Lanao, Camp Keithley, *Mrs. Clemens 835, 905 bis, s. n.*

This species was described by Presl from a sterile specimen, no flowers or fruits being known. I have seen the type in the Prague Herbarium, and it seems to be matched by the specimens cited above, two of which are with male flowers, the other with very immature fruits. The specimens agree with Presl's description, so far as it goes, and with a carbon rubbing of typical leaves of the type, preserved in the herbarium of the Bureau of Science.

C. DeCandolle³ reduces *Smilax luzonensis* Presl (1827), with doubt, to *Smilax helferi* C. DC. While the two species may be identical, Presl's specific name has a priority by many years, and should be adopted, at least for the Philippine form. Only by a careful comparison between Philippine specimens of *Smilax luzonensis* Presl, and authentic specimens of *S. helferi* C. DC., will it be possible to determine whether one or two species are represented.

Smilax luzonensis Presl has solitary male umbels which are 2 to 2.5 cm in diameter, each with from 20 to 30 flowers, the peduncles slender, axillary, 2.5 to 3 cm long, bracteate at the base, and with a small ovate bracteole at the lower one-fourth or below. The pedicels are about 8 mm long; the sepals are narrowly oblong, obtuse, 6 mm long, the petals as long as the sepals but much narrower. Anthers about one-fifth as long as the filaments. Female flowers and mature fruits unknown.

³ Monog. Phan. 1 (1878) 176.

ZINGIBERACEAE

ALPINIA Linnaeus

ALPINIA BRACHYANTHA sp. nov. § *Hellenia*.

Species *A. pubiflorae* K. Schum. ut videtur affinis, differt floribus multo minoribus vix 1 cm longis, connectivo inappendiculato.

Simple, erect, nearly glabrous, except the pubescent inflorescence, apparently less than 1 m high. Sheaths rather loose, ciliate on their margins; ligule 8 to 10 mm long, oblong-ovoid, obtuse, margins ciliate. Leaves lanceolate or narrowly oblong-lanceolate, 22 to 30 cm long, 2.5 to 3.5 cm wide, subequally narrowed at both ends, subcoriaceous, glabrous, base cuneate, apex sharply acuminate. Panicle erect, about 20 cm long, the branches two or three, spreading-ascending, about 7 cm long, many-flowered, the rachis and pedicels softly pubescent with short, spreading hairs, the pedicels 2 to 3 mm long; bracteoles apparently small, very caducous (not seen). Ovary globose to ovoid-globose, 1 to 1.5 mm in diameter, purple when fresh, very densely ciliate-pilose. Calyx-tube about 7 mm long, subequally 3-toothed, glabrous, the teeth broadly ovate, obtuse, 1.5 mm long or less, ciliate at their apices. Corolla-tube 6 to 7 mm long, about 1 mm in diameter, light green, glabrous, the lobes oblong, somewhat cucullate, 4 to 5 mm long, 2.5 to 3 mm wide. Lip 3 mm long, glandular-punctate, twice cleft, the lateral lobes rounded, obovoid, twice as wide as the oblong, obtuse inner lobes, white marked with purple. Anther 3 mm long, the connective inappendiculate.

LUZON, Province of Cagayan, Abulug River, *Weber 1571* (type), February, 1912, altitude about 60 meters; same locality, *Bur. Sci. 13920 Ramos, For. Bur. 19617 Curran*.

A species allied to *Alpinia pubiflora* K. Schum., but at once distinguished by its much smaller flowers and its inappendiculate anther-connective.

KAEMPFERIA Linnaeus

KAEMPFERIA PHILIPPINENSIS sp. nov. § *Monolophus*.

Planta erecta, saltem 50 cm alta, leviter hirsuta; foliis 9, lanceolatis, subcaudato-acuminatis, basi angustatis, acutis, vix vel breviter petiolatis, circiter 20 cm longis; spicis solitariis, paucifloris, in vaginis superioribus, corollae lobis inaequalibus, superioribus valde tubuloso-cucullatis.

A rather slender, erect plant at least 50 cm high, the stems 3 to 4 mm in diameter, the sheaths, leaves, and inflorescence with scattered, spreading, pale brown, ciliate-hirsute hairs.

Leaves 9 (or more), lanceolate, membranaceous, about 20 cm long, 3 to 3.5 cm wide, subequally narrowed to the slender, caudate-acuminate apex and to the acute base; sheaths rather loose or slightly inflated above, rather prominently ciliate-hirsute; petioles none or up to 5 mm in length. Spikes in the uppermost sheath, more or less included, short, few-flowered, only one or two flowers opening at a time, the maximum number apparently 4 or 5 in each spike, the bracts lanceolate, acuminate, about 2 mm long, 5 mm wide, hirsute. Calyx cylindric, about 12 mm long, punctate-glandular, as are the other parts of the flower, hirsute, very broadly and shortly 3-toothed. Corolla-tube slender, slightly enlarged upward, 16 mm long, sparingly hirsute, the lobes unequal, the upper one about 11 mm long, 4 mm wide in the flattened portion, slenderly 9-nerved, the apical 3 mm a cylindric, obtuse hood, the two lateral ones oblong, 7 mm long, 3 mm wide, 5-nerved, slightly cucullate at the apex; staminodes slender, lateral, attached to the margins of the lip near its base, about 2 mm long, 0.6 mm wide; lip not seen. Filament flat, glandular-punctate, 5 to 6 mm long, about 1 mm wide; anther-cells parallel, 3 mm long, the connective appendiculate, the appendage ovate, obtuse, more or less inflexed or curled when dry. Ovary villous, 3-celled, the cells with few axile ovules; style slender; stigma obconic, ciliate. Fruit not seen.

LUZON, Province of Laguna, Dahican River back of San Antonio, *Bur. Sci.* 14952 Ramos, June, 1912, in forests, flowers white.

The second species of the genus to be found in the Philippines, the only other one, *K. galanga* L., manifestly an introduced plant in the Archipelago. *Kaempferia philippinensis* Merr. manifestly belongs in the section *Monocephus*, and is very distinct from the other known species, although probably as closely allied to the Bornean *K. gracillima* K. Schum. as to any other species. The lip on the flowers available for study has been destroyed, and hence cannot be described until the plant is again collected.

FAGACEAE

QUERCUS Linnaeus

QUERCUS ROBINSONII sp. nov. § *Cyclobalanus*.

Arbor circiter 20 m alta, subtus foliis ramulisque dense ferrugineo-furfuraceis; foliis oblongo-ovatis ad oblongo-lanceolatis, coriaceis, integris, usque ad 12 cm longis, basi acutis, apice tenuiter subcaudato-acuminatis, nervis utrinque circiter 8, prominentibus; glandibus late ovoideis, glabris, circiter 1.3 cm longis latisque, apiculatis, cupulis circiter 8 mm altis, 1.6 cm diametro, ferrugineo-pubescentibus, truncatis, laminis numerosis, indistinctis, denticulis numerosis.

A tree about 20 m high, the younger parts and the leaves on the lower surface densely ferruginous-furfuraceous. Branches terete, dark-colored when dry, glabrous, sparingly lenticellate, the younger ones densely ferruginous-furfuraceous. Leaves alternate, oblong-ovate to oblong-lanceolate, coriaceous, 7 to 12 cm long, 2.5 to 5 cm wide, subequally narrowed to the acute base and to the slender subcaudate-acuminate apex, the acumen usually about 1 cm long, blunt, the upper surface furfuraceous in very young leaves, soon becoming quite glabrous, brownish-olivaceous when dry, shining, the lower surface paler than the upper, in extreme age glabrous or nearly so; lateral nerves about 8 on each side of the midrib, prominent on the lower surface; petioles 5 to 8 mm long. Male spikes up to 14 cm long, the flowers scattered below, rather crowded above. Glands broadly ovoid or conic-ovoid, glabrous, about 1.3 cm long and wide, apiculate. Cup thick, ferruginous-pubescent, broadly saucer-shaped, truncate, base thickened, about 8 mm high and 1.6 cm in diameter, the laminæ numerous, indistinct, below scattered, above approximate, the teeth numerous, distinct, less than 1 mm long.

LUZON, Province of Laguna, Mount Maquiling, *Bur. Sci. 17911 Brown* (type), May, 1913, *Bur. Sci. 17143 Robinson*, December, 1912, in forests, altitude about 700 meters. Possibly referable here are *Loher 6963*, from Rizal Province (specimens with male flowers), and *Bur. Sci. 9462 Robinson*, from Infanta, Province of Tayabas, Luzon (glands pubescent).

The alliance of this species seems to be with *Quercus caudatifolia* Merr., from which it is at once distinguished by its differently shaped gland which is as wide as long. Among the extra-Philippine species it approaches *Quercus sundaica* Blume, but has much smaller fruits than our Philippine material so referred.

URTICACEAE

LAPORTEA Gaudichaud

LAPORTEA BRUNNEA sp. nov.

Frutex, inflorescentiis exceptis glaber; foliis in siccitate utrinque brunneis, nitidis, oblongis, usque ad 22 cm longis, subcoriaceis vel chartaceis, acute acuminatis, basi acutis, leviter 3- vel obscure 5-plinerviis, longe petiolatis, nervis lateralibus utrinque circiter 15; inflorescentiis pilis paucis urentibus instructis, axillaribus, usque ad 5 cm longis, floribus ♀ flabellatim dispositis.

A shrub 1 to 2 m high, glabrous except the slightly hairy inflorescence. Branches light gray, terete, wrinkled when dry. Leaves uniformly brown, of the same color on both surfaces and slightly shining when dry, the upper surface minutely verruculose, the lower smooth, chartaceous to subcoriaceous, brittle, oblong, 12 to 22 cm long, 4 to 7.5 cm wide, subequally narrowed to

the usually acute base and to the sharply acuminate apex, entire, the base somewhat 3- or obscurely 5-plinerved; lateral nerves about 15 on each side of the midrib, rather prominent, somewhat curved; petioles 3 to 6.5 cm long. Pistillate inflorescences axillary, with few short, stinging hairs, up to 5 cm in length, the branches few. Flowers flabellately disposed on the ultimate branchlets, the ultimate branchlets usually dichotomous, short, the achenes deflexed, ovoid, compressed, about 3 mm long and 2 mm wide, the styles reflexed, very slender, about 2 mm long.

SAMAR, Cauayan Valley, *Bur. Sci. 17559 Ramos*, March, 1914, on forested slopes, the flowers blue and white.

A species well characterized by its long-petioled leaves which are uniformly brown when dry, and which are quite glabrous, with no vestiges of stinging hairs; the only part of the dried plant that presents stinging hairs is the inflorescence. The alliance of the species is manifestly with *Laportea luzonensis* Warb., on account of its flabellately arranged pistillate flowers, although in all details it is entirely different from Warburg's species.

LAPORTEA MONTICOLA sp. nov.

Frutex vel arbor parva, glabra vel subglabra; foliis oblongis ad oblongo-lanceolatis, chartaceis vel subcoriaceis, integris, tenuiter caudato-acuminatis, usque ad 10 cm longis; infructescentiis axillaribus, 6 ad 8 cm longis, fructibus circiter 4 mm diametro haud flabellatis.

A shrub or small tree, glabrous, or with very few persistent hairs when dry, the branches slender, grayish, wrinkled, the internodes short, especially on the ultimate branchlets where they are usually less than 5 mm long. Leaves oblong-lanceolate, dark olivaceous when dry, slightly shining, thickly chartaceous to subcoriaceous, entire, 7 to 10 cm long, 2 to 3.5 cm wide, base obtuse to rounded, 3-nerved, apex very slenderly caudate-acuminate, the acumen up to 2 cm in length, sharp, the upper surface rather densely white-punctulate; lateral nerves about 6 on each side of the midrib, rather distinct, curved, anastomosing, the reticulations lax; petioles 1.5 to 2.4 cm long. Infructescences 6 to 8 cm long, axillary, the branches few, spreading, 2.5 cm long or less. Fruits white, fleshy, about 4 mm in diameter, the receptacle enlarged in fruit, the achenes inequilateral, compressed, about 2.5 mm long and 2 mm wide, but one or two on each ultimate branchlet.

LUZON, Subprovince of Ifugao, Mount Polis, *Bur. Sci. 19765 McGregor*, February 1, 1913, altitude not indicated, but apparently from the mossy forest.

A species somewhat resembling a small-leaved form of *Laportea luzonensis* Warb., but its fruits not flabellate. It is readily distinguished by its small leaves which are slenderly and prominently caudate-acuminate.

LAPORTEA TRIPLINERVIA sp. nov.

Arbor parva, subtus foliis pilis longis sparsis urentibus instructis; foliis oblongis, chartaceis vel membranaceis, usque ad 18 cm longis, in siccitate viridis, utrinque subaequaliter angustatis, basi acutis, triplinerviis, apice acuminatis, nervis utrinque circiter 6; infructescentiis axillaribus, usque ad 6 cm longis, fructibus in siccitate nigris, capitulis globosis, 8 ad 10 mm diametro, acheniis numerosis.

A tree up to 13 m in height, the leaves with persistent, long, stiff, scattered, stinging hairs on the lower surface. Branches pale gray, terete, 4 to 6 mm in diameter. Leaves green when dry, in general oblong, chartaceous or membranaceous, 10 to 18 cm long, 3 to 6.5 cm wide, entire, subequally narrowed to the acute, 3-plinerved base and to the acuminate apex, the upper surface rather densely white-punctulate; lateral nerves about 6 on each side of the midrib, rather prominent, curved; petioles 2 to 4 cm long. Infructescences axillary, up to 6 cm long, with few branches, the achenes arranged in dense globose heads at the tips of the branchlets, up to 15 or more achenes in each head, the heads black when dry, 8 to 10 mm in diameter.

LUZON, Province of Tayabas, Mount Pular, *Bur. Sci. 19462 Ramos*, January 15, 1913, on forested slopes.

A species somewhat resembling *Laportea luzonensis* Warb., but with the leaves constantly acute and 3-plinerved at the base, the stinging hairs persistent on the lower surface, which sting even when dry, and with an entirely different arrangement of its fruits, the achenes crowded into dense, globose heads which are black when dry, not flabellately arranged.

PROTEACEAE**HELICIA** Loureiro**HELICIA LONGIFLORA** sp. nov.

Arbor parva, circiter 8 m alta, glabra; foliis late oblongo-oblancoelatis, integris, usque ad 15 cm longis, breviter obtuse acuminatis, basi acutis; racemis folia subaequantibus, paucifloris, pedicellis in paribus connatis; floribus 2.5 cm longis.

A small tree, quite glabrous, or the racemes with few, scattered, deciduous hairs, the branches rather stout, terete, brownish. Leaves subcoriaceous, broadly oblong-oblancoelate, 11 to 15 cm long, 3.5 to 5.5 cm wide, entire, the apex rather shortly and obtusely acuminate, sometimes falcate, the base gradually narrowed to the short stout petiole, cuneate and sometimes a little decurrent, upper surface olivaceous when dry, somewhat shining, the lower brownish, dull; lateral nerves prominent, about 10 on each side of the midrib, curved-ascending; petioles 5 to 8

mm long. Racemes about as long as the leaves, solitary, axillary, comparatively few-flowered. Pedicels in pairs, 4 mm long, united nearly to the middle; bracteoles deciduous (not seen). Perianth 2.5 cm long, rather slender. Anthers, including the prominent connective, 2 mm long. Hypogynous scales free or nearly so, coriaceous, ovate, 1 to 1.3 mm long.

LUZON, Province of Tayabas, Luchan (Mount Banajao), *Whitford 982*, October, 1904, margins of forests, altitude about 750 meters.

Characterized by its entire leaves and comparatively long flowers.

HELICIA INTEGR sp. nov.

Arbor parva, glabra; foliis oblongo-lanceolatis vel oblongo-ob lanceolatis, usque ad 14 cm longis, integerrimis, utrinque angustatis, apice acuminatis, basi cuneatis, brevissime petiolatis, chartaceis vel subcoriaceis; racemis folia subaequantibus, multifloris, axillaribus; floribus tenuibus, circiter 1.5 cm longis.

A small glabrous tree, or the racemes with very few, scattered, deciduous hairs. Branches terete, grayish-brown, smooth. Leaves oblong-lanceolate to oblong-ob lanceolate, entire, 10 to 14 cm long, 2 to 5 cm wide, chartaceous or subcoriaceous, somewhat yellowish when dry, slightly shining, glabrous, narrowed at both ends, the apex shortly and usually sharply acuminate or acute, the base cuneate, narrowed into the very short petiole; lateral nerves 10 to 12 pairs, slender, distinct, the reticulations very slender; petioles stout, less than 3 mm long. Racemes solitary, axillary, about as long as the leaves, many-flowered. Flowers yellowish, in pairs, their pedicels in pairs, free to the rachis, about 3 mm long; bracteoles ovate, subpersistent, 1 mm long. Perianth very slender, about 0.5 mm in diameter, a little thicker at the base and apex, 1.6 cm long, the segments linear, spirally twisted in anthesis. Anthers, including the prominent connective, 1.2 mm long. Hypogynous scales free, oblong-ovate, obtuse, coriaceous, 1 mm long.

LUZON, Province of Laguna, San Antonio, *Bur. Sci. 15127 Ramos*, June, 1912, in forests along streams.

The species is characterized by its entire, nearly sessile leaves, and appears to be most closely allied to *Helicia moluccana* Blume.

POLYGONACEAE

POLYGONUM Linnaeus

POLYGONUM BENGUETENSE sp. nov. § *Persicaria*, *Trigyna*.

Eglandulosum, caulibus tenuibus, quadrangularibus, simplicibus vel supra leviter ramosis; ochreis cylindratis, circiter 1 cm longis, truncatis, apice rigide ciliatis, ciliis 2 ad 3 mm longis; foliis oblongo- ad elliptico-ovatis, 1 ad 2.5 cm longis, acuminatis,

basi rotundatis vel subcordatis; racemis pedunculatis, oblongis vel cylindraceutis, densis, usque ad 1 cm longis, pedunculis leviter capitato-glandulosis.

A slender, ascending, simple or very sparingly branched plant, nearly glabrous, the stems often decumbent below, 4-angled, 1 mm in diameter or less. Nodes elongated. Leaves scattered, oblong- to elliptic-ovate, chartaceous, entire, apex somewhat acuminate, base rounded or subcordate, 1 to 2.5 cm long, 7 to 12 mm wide; petioles 5 mm long or less, inserted at or near the base of the sheath, often scabrid; sheaths cylindric, split down one side, brown, membranaceous, about 1 cm long, apex truncate, the apical margin with erect, rigid, 2 to 3 mm long cilia, the base of the sheath often with few reflexed, spinelike cilia. Racemes few, short, dense, 1 cm long or less, oblong or cylindric, very loosely corymbose, the peduncles slender, sparingly capitato-glandular. Bracts oblong-ovate, margins and apex prominently ciliate, about 3 mm long. Calyx pink, 3 to 3.5 mm long, the pedicels short, the sepals oblong-obovate, obtuse. Stamens 6, with 6 alternating, small, perigynous scales. Style 3-cleft, short. Achene oblong-ovate, sharply 3-angled, about 3 mm long.

LUZON, Benguet Subprovince, Baguio, scattered among grasses and sedges on wet seepage slopes about springs, altitude about 1,550 meters, *Phil. Pl.* 768 Merrill, May, 1911, Merrill 9682, May, 1914, *Bur. Sci.* 13483 Ramos, *Bur. Sci.* 14120 Robinson.

A species apparently belonging in the section *Persicaria*, but very different from the other species placed here.

POLYGONUM CONVOLVULUS Linn. Sp. Pl. (1753) 364.

LUZON, Benguet Subprovince, Baguio, Merrill 9698, May, 1914, a weed in gardens, recently introduced, altitude about 1,400 meters.

Widely distributed in the north temperate zone, a native of Europe or Asia. It has not before been reported from the Philippines.

CARYOPHYLLACEAE

POLYCARPON Linnaeus

POLYCARPON INDICUM (Retz.) comb. nov.

Loeflingia indica Retz. Obs. 4 (1786) 38.

Pharnaceum depressum Linn. Mant. 2 (1771) 564, non *Polycarpon depressum* Nutt.

Polycarpaea depressa DC. Prodr. 3 (1828) 357.

Polycarpon loeflingiae Benth. & Hook. f. ex Edgew. in Hook. f. Brit. Ind. 1 (1874) 245.

Polycarpon polyphyllum Blanco Fl. Filip. (1837) 53, ed. 2 (1845) 36, ed. 3, 1 (1877) 66.

This species has been credited to the Philippines by F.-Villar, who correctly, I think, reduced to *Polycarpon loeflingiae* Blanco's *P. polyphyllum*.

The species is apparently very rare in the Philippines, but although Blanco's specimens were from Pasig, near Manila, I have seen but a single Philippine specimen that I consider referable to the genus and species: LUZON, Province of Pampanga, Arayat, Merrill 1462, March, 1903, erroneously placed under *Mollugo*.

RANUNCULACEAE

CLEMATIS Linnaeus

CLEMATIS LESCHENAULTIANA DC. var. **SUBGLABRIFOLIA** var. nov.

A typo differt foliis glabris vel subglabris, subtus parcissime breviter hirsutis.

LUZON, Subprovince of Ifugao, Mount Polis, *Bur. Sci.* 19813 *McGregor*, February, 1913: Subprovince of Lepanto, Mount Malaya, *For. Bur.* 14496 *Darling*, January, 1909.

The typical form of the species, which is well represented in the Bureau of Science herbarium by a large series of specimens from Mountain Province, Luzon, has rather densely ciliate-hirsute leaves. In the variety above proposed the leaves are nearly glabrous; otherwise the form is very similar to typical *Clematis leschenaultiana* DC.

MENISPERMACEAE

HYP SERPA Miers

ZANTHOXYLUM ? TRIPLINERVE Turcz. in Bull. Soc. Nat. Mosc. 36² (1863) 597; F.-Vill. Novis. App. (1880) 35; Vid. Rev. Pl. Vasc. Filip. (1886) 74; Perk. Frag. Fl. Philip. (1905) 161 = **HYP SERPA CUSPIDATA** (Wall.) Miers in Ann. Nat. Hist. II 7 (1851) 40; Diels in Engl. Pflanzenreich 46 (1910) 206.

The status of Turczaninow's species has been doubtful, as from his description it is at once evident that the plant he described, having simple leaves, could not be a *Zanthoxylum*, as indicated by Perkins l. c. Doctor Perkins indicates that such a Province as "North Hows," cited by Turczaninow, does not exist in Luzon, and suggested that the plant may have come from Lord Howe's Island. Through the kindness of the director of the Botanical Institute of the University of Kharkoff, I have been able to examine Turczaninow's type which is preserved in the herbarium of that institution. The original label reads "Runner No. 2, Ilocos Norte, Island of Luzon, April, 1839, H. C.," with notes on the dissection of the flowers by Turczaninow. The plant is identical in all respects with *Cuming 1252*, localized by Cuming himself as from the Province of North Ilocos (= Ilocos Norte), which is *Hypserpa cuspidata* Miers; the specimen in Turczaninow's herbarium, type of *Zanthoxylum ? triplinerve* Turcz., is unquestionably a part of the same collection.

CAPPARIDACEAE

CAPPARIS Linnaeus

CAPPARIS AFFINIS sp. nov.

Species *C. sepiariae* affinis, differt foliis majoribus, usque ad 9 cm longis, coriaceis, nervis utrinque magis numerosis, utrinque circiter 8.

A scandent, armed shrub, apparently entirely glabrous. Branches pale greenish-yellow when dry, terete, stout, slightly zigzag, glabrous, or the younger ones very slightly pubescent. Leaves alternate, oblong, coriaceous, 8 to 9 cm long, 3 to 4 cm wide, pale yellowish-green when dry, brittle, the upper surface very smooth and strongly shining, the lower paler, dull, base rounded, apex retuse; lateral nerves about 8 on each side of the midrib, slender, indistinct, scarcely anastomosing, the reticulations obsolete or nearly so; petioles 5 to 7 mm long; spines stout, recurved, about 2 mm long. Inflorescence fascicled or umbellate, axillary, apparently few-flowered. Flowers not seen. Peduncles in fruit 3 mm long or less, each bearing from 2 to 4, long-pedicelled fruits, the pedicels about 1 cm long, the androgynophore as long as the peduncles. Fruit globose, about 8 mm in diameter when dry, the pericarp somewhat wrinkled, glabrous, pale, shining.

PALAWAN (Arricife Island, near the southern end of Palawan), *Bur. Sci.* 21583 *Escritor*, August 14, 1913.

A species with much the appearance of *Capparis sepiaria* Linn., but with much larger, quite glabrous, coriaceous, more numerous nerved leaves.

CAPPARIS PALAWANENSIS sp. nov.

Frutex suberectus, 2 ad 3 m altus, partibus junioribus plus minusve pubescens, ramis ramulisque inermis vel subinermis; foliis oblongo-ovatis, usque ad 11 cm longis, acuminatis, basi rotundatis, nervis utrinque 10 ad 12; floribus subterminalibus, solitariis vel binis; fructibus longissime pedunculatis, ellipsoideis ad globoso-obovoideis, circiter 1.5 cm diametro, extus pubescentibus.

A suberect shrub, 2 to 3 m high, the branches somewhat drooping or subscandent, unarmed, or with only few, scattered, short spines. Branches terete, glabrous, dark-colored, the branchlets yellowish-olivaceous, terete, slender, rather densely pubescent with short hairs. Leaves alternate, oblong-ovate, 9 to 11 cm long, 3.5 to 4.5 cm wide, chartaceous, base broadly rounded, narrowed in the upper one-third to the rather sharply acuminate apex, pale olivaceous, rather dull, and glabrous or very slightly pubescent on the upper surface, the lower surface much paler, slightly pubescent on the midrib and nerves; lateral nerves 10 to 12 on each side of the midrib, spreading, anastomosing, the reticulations lax; petioles densely pubescent, 2 to 4 mm long. Flowers subterminal, in the uppermost axils, solitary or in pairs,

not superposed (not seen). Peduncles in fruit about 4 cm long, slender, the androgynophore about as long as the peduncle, somewhat thicker and slightly thickened upward, the fruit ellipsoid to globose-obovoid, about 1.5 cm in diameter, nearly black when ripe, the pericarp distinctly pubescent.

PALAWAN, between Taytay and Lake Manguao, *Merrill 9459*, April 23, 1913, on forested dry slopes, altitude about 60 meters.

Probably as closely allied to *Capparis lobbiana* Turcz. as to any other species, but with much larger, differently shaped leaves, larger fruits, and unarmed or nearly unarmed branches.

CAPPARIS VENOSA sp. nov.

Frutex scandens, floribus exceptis glaber, spinis brevissimis, vix 1 mm longis; foliis oblongis vel elliptico-oblongis, chartaceis, usque ad 18 cm longis, acuminatis, basi acutis vel rotundatis, nervis utrinque circiter 7, prominentibus, anastomosantibus; floribus paucis, in racemis terminalibus dispositis, pedicellis in paribus seriatim dispositis supra nodis aculeatis sed defoliatis; petalis dense pubescentibus.

A scandent shrub, glabrous except the flowers, the branches terete, straw-colored when dry, the ultimate ones 2 to 3 mm in diameter, armed with very short spines at the nodes, the spines less than 1 mm in length. Leaves oblong to elliptic-oblong, 15 to 18 cm long, 5.5 to 7.5 cm wide, chartaceous or subcoriaceous, pale when dry, shining, the lower surface decidedly paler than the upper, the apex acuminate, the base acute or rounded; lateral nerves prominent, distinctly impressed on the upper surface, projecting on the lower, about 7 on each side of the midrib, curved and distinctly anastomosing, the reticulations rather lax; petioles 5 to 8 mm long. Racemes terminal, few-flowered, the flowers in pairs, seriate above the leafless nodes, but each node with a pair of minute spines, scattered, the pedicels about 2 cm long. Sepals 8 mm long, oblong-elliptic or elliptic, concave, acute, glabrous or nearly so. Petals obovate to broadly oblong-obovate, rather densely pubescent, rounded, about 12 mm long, 8 mm wide. Stamens numerous, their filaments up to 2.5 cm long; anthers oblong, 1.3 mm long. Gynophore glabrous, 1.5 cm long, bearing the glabrous, narrowly ovoid, 3 to 4 mm long ovary.

MINDANAO, District of Cotabato, near Lebak, *For. Bur. 14216 Whitford*, April, 1912, in dipterocarp forests at low altitudes.

A species probably as closely allied to *Capparis micracantha* DC. as to any other, but very different in many characters. The venation of the leaves and the inflorescence are characteristic.

NEPENTHACEAE

NEPENTHES Linnaeus

NEPENTHES BRACHYCARPA sp. nov.

Alte scandens, partibus junioribus inflorescentiisque exceptis glabra; inflorescentiis racemosis, pedicellis brevibus, 1-floris; operculum ascidii intus planum; foliis petiolatis, nervis longitudinalis circiter 2 utrinque, tenuibus, obscurissimis, basi angustatis, longe in petiolo decurrento-alatis, leviter amplexicaulibus, haud decurrentibus; capsulis brevibus, 6 ad 15 mm longis.

Scandent, 4 to 5 m high or more, glabrous except the dark brown pubescent very young parts and the racemes, the stems terete, brown, about 5 mm in diameter. Leaves alternate, spirally arranged, the lamina coriaceous, 12 to 14 cm long, 2 to 3 cm wide, brownish or olivaceous when dry, slightly shining, narrowed below and winging the 4 to 6 cm long petiole, the wings about 2 mm wide, about one-third amplexicaul at the base, apex acute or acuminate and extended as a long, slender tendril, the lateral longitudinal nerves at most 2 on each side of the midrib, very slender, obscure, or obsolete. Pitchers reddish, glabrous, or when young somewhat pubescent, about 9 cm long, 3 to 3.5 cm in diameter, cylindrical-ventricose, dimorphous, those on young plants with two ventral wings which are about 5 mm wide and prominently lacerate-toothed, those on mature plants with the wings reduced to merely low ridges which are not all toothed, 0.5 mm wide and high, the base gradually narrowed into the tendril, the mouth oblique, 3 to 4 cm in diameter, ovate, dorsally produced into a short stalk, the peristome cylindrical, equal, 2 to 3 mm in diameter, densely striate; operculum elliptic to elliptic-ovate, broadly rounded, base rounded or somewhat cordate, about 3.5 cm long, 2.5 cm wide, plane, not at all keeled or cristate, inside with numerous small, round glands. Racemes dark brown pubescent, the female ones in flower about 9 cm long and 1.5 cm wide, in fruit very long-peduncled, about 13 cm long and 3 cm wide, the peduncles up to 35 cm long. Pedicels 3 to 5 mm long, pubescent. Sepals elliptic, obtuse, 3 mm long, somewhat pubescent. Ovary narrowly ellipsoid, 3 mm long, densely ferruginous-pubescent. Capsules glabrous, oblong to lanceolate, 6 to 1.5 mm long.

PALAWAN, Silanga Peak, back of Silanga, *Merrill 9588* (type), 9615, May 30, 1913.

The first specimen cited is with female flowers and mature, but old, fruits, while the second is a juvenile stage of what is apparently the same species, both being collected in the same place, on steep, dry, forested ridges at an altitude of from 250 to 400 meters.

The species is apparently most closely allied to *Nepenthes copelandii* Merr., of Mindanao, differing, however, in many characters. It resembles *Nepenthes alata* Blanco, at least the form I take to be a juvenile stage, but the type number has quite wingless pitchers. Good differential characters are its comparatively short capsules and its short-petioled flowers, together with its very obscurely nerved leaves, the lateral nerves, at times, being quite obsolete.

ROSACEAE

ANGELESIA Korthals

ANGELESIA SPLENDENS Korth. in Ned. Kruidk. Arch. 3 (1854) 384; Miq. Ann. Mus. Bot. Lugd. Bat. 3 (1867) 236; Boerl. & Koord. in Ic. Bogor. 1 (1901) t. 96.

Licania angelesia Blume Mél. Bot. (1855) no. 2, Flora 41 (1858) 256.

Trichocarya splendens Miq. Fl. Ind. Bat. 1¹ (1855) 358.

Chrysobalanus splendens Miq. l. c. in syn.

Parinarium nitidum Hook. f. Fl. Brit. Ind. 2 (1878) 310; King in Journ. As. Soc. Beng. 66² (1897) 284.

MINDANAO, Province of Surigao, *Piper* 249, April, 1911. SAMAR, *Bur. Sci.* 17431 Ramos, April, 1914, *Phil. Pl.* 1696 Ramos. PALAWAN, *Phil. Pl.* 1224 Merrill, Elmer. SIBUYAN, Elmer 12130, 12214, distributed as a new species of *Parinarium*.

I have examined the following extra-Philippine material: PENANG, Curtis 14a, 147, Ridley s. n. MALAY PENINSULA, Setul, Ridley 1503. BORNEO, Sarawak, Tabuan, *Native collector* 784 *Bureau of Science*.

I think that there can be no doubt as to the validity of Korthals's genus, which is well figured by Boerlage and Koorders l. c. The species and genus were based on material collected in Borneo by Korthals, and as Boerlage and Koorders explain, were joined by Miquel⁴ with *Diemenia racemosa* Korth. to form the genus *Trichocarya* Miq. Later Miquel himself⁵ separated the two genera, which, as Boerlage and Koorders note, has been overlooked by later authors. Bentham and Hooker f.⁶ retain Miquel's *Trichocarya* with two species, and Focke⁷ maintains the genus *Angelesia* with 2 or 3 species. *Trichocarya splendens* Miq., the type of the genus *Trichocarya*, is identical with *Angelesia splendens* Korth., but Miquel's second species, *Trichocarya?* *racemosa* Miq. (*Diemenia racemosa* Korth.) is, according to Boerlage and Koorders, identical with the earlier *Parastemon urophyllus* A. DC.

The only synonym I have added to the list given by Boerlage and Koorders is *Parinarium nitidum* Hook. f., which is manifestly identical with Korthals's species. Hooker cites in the original description "Malacca, Griffith, Maingay (Herb. Kew 619).-Distrib. Borneo;" King, among other specimens, cites "Griffith 2047/1;" while Boerlage and Koorders cite in their discussion Griffith 2047, and a part of their plate, the fruiting specimen, is drawn from Griffith's specimen. Hooker himself indicated *Parinarium nitidum* as the type of an unnamed subgenus. King includes the species

¹ Fl. Ind. Bat. 1¹ (1855) 358.

⁵ Ann. Mus. Bot. Lugd. Bat. 3 (1867) 236.

⁶ Gen. Plant. 1: 607.

⁷ Engl. & Prantl Nat. Pflanzenfam. 3³ (1888) 60.

in *Parinarium* with doubt, and expresses the opinion that, when mature fruits are known, a separate genus might be formed with advantage for the species, apparently not realizing that two generic names, *Angelesia* Korth. and *Trichocarya* Miq., had already been proposed for an identical species.

Angelesia splendens Korth. is represented by the following material: MALAY PENINSULA, Setul, Ridley 15043: Malacca, Griffith 2047, Maingay 619, Derry 189, 1180: Perak, King's collector 8599, 8680, 8711. PENANG, Curtis 14a, 147, 853, King's collector 1274, 1472, Ridley s. n. BORNEO, Sarawak, Native collector 784, Bureau of Science; southern Borneo, Korthals. SUMATRA, Koorders, and the Philippine material cited above.

PARINARIUM Aublet

PARINARIUM VILLAMILII sp. nov.

Arbor alta partibus junioribus inflorescentiisque exceptis glabra; foliis coriaceis, oblongis, acuminatis, usque ad 16 cm longis, nervis utrinque circiter 12, basi subtus 2-glandulosis, nervis reticulisque utrinque minute scaberulis, ramulis junioribus stipulisque longe adpresse ciliato-hirsutis, inflorescentiis axillaribus, racemosis (vel paniculatis?), adpresse pubescentibus; fructibus ellipsoideis, 2.5 ad 3 cm longis.

A tree reaching a height of 27 m, glabrous except the inflorescence and the younger parts. Branchlets slender, terete, dark reddish-brown and somewhat glaucous, the very young ones appressed-ciliate-hirsute with long, rather pale hairs, similar hairs on the stipules, younger petioles, and near the base of the leaf on the midrib beneath in young leaves. Leaves oblong, coriaceous, pale when dry, 12 to 16 cm long, 4 to 8 cm wide, rather prominently acuminate, the acumen obtuse, base acute to nearly rounded, with two small glands on the lower surface near the junction with the petiole; lateral nerves about 12 on each side of the midrib, prominent on the lower surface, curved, anastomosing, these and the reticulations minutely scaberulous on both surfaces; petioles 5 mm long or less, at maturity quite glabrous; stipules oblong-lanceolate, acute or obtuse, about 1 cm long, with scattered, appressed, long, pale hairs. Racemes (or panicles?) axillary, appressed-pubescent, in fruit up to 9 cm in length. Fruit ellipsoid, brown, 2.5 to 3 cm long (immature), prominently verruculose, the pedicels stout, pubescent, about 5 mm long, the persistent sepals pubescent on both surfaces, the tube villous within, stamens apparently at least 30.

MINDANAO, District of Zamboanga, Margosatubig, For. Bur. 21863 *Villamil*, June 9, 1914, forested slopes, altitude about 80 meters.

Among the Philippine species most closely allied to *Parinarium laurinum* A. Gray, but entirely different in vegetative characters.

PARINARIUM BICOLOR sp. nov.

Arbor circiter 10 m alta, subtus foliis ramulis inflorescentiisque dense albido- vel ferrugineo-villosis; foliis coriaceis, usque ad 7 cm longis, oblongo-ellipticis, basi acutis ad subrotundatis, apice breviter obtuse acuminatis, supra castaneis, nitidis, glabris, subtus albidis vel subferrugineis, densissime tomentosis villosisque, nervis utrinque circiter 15, prominentibus; inflorescentiis terminalibus confertis, dense multifloris, usque ad 4 cm diametro, bracteis bracteolisque numerosis; floribus circiter 4 mm longis, petalis sepalisque subaequilongis.

A tree about 10 m high, the younger parts and inflorescence densely ferruginous-villous, the lower surface of the leaves very densely white- or subferruginous-tomentose and more or less villous. Branches dark-colored, terete, glabrous, the younger ones ferruginous. Leaves alternate, coriaceous, oblong-elliptic, 4 to 7 cm long, 2 to 3 cm wide, base rounded to subacute, apex shortly and obscurely blunt-acuminate, the upper surface castaneous, glabrous and shining when dry, when young somewhat ferruginous-tomentose, the lower surface white or subferruginous; lateral nerves about 15 on each side of the midrib, very prominent on the lower surface, nearly straight; petioles densely ferruginous-villous, 3 mm long or less; stipules inequilateral, deciduous, oblong acuminate, up to 7 mm long, somewhat pubescent. Panicles terminal, dense, many-flowered, densely ferruginous-tomentose, up to 4 mm in diameter. Flowers yellowish-brown, their pedicels short, densely villous, the bracteoles oblong-ovate, acuminate, pubescent, concave, about 4 mm long. Calyx about 4 mm long, densely ferruginous-villous, the lobes 5, oblong, acuminate, 1.2 to 2 mm long. Petals membranaceous, glabrous, about 2 mm long, oblong-obovate. Calyx-tube densely villous within. Style densely villous below, glabrous or nearly so above. Fruit hard, irregular, dark brown, somewhat ovoid, about 3 cm long and 2.3 cm in diameter, apex rounded.

MINDANAO, Province of Surigao (Ginituan Island), *For. Bur. 28022 Razon*, October 6, 1914, on slopes, altitude about 30 meters.

A species entirely different from the other Philippine representatives of the genus, well characterized by its small leaves and its indumentum. Its alliance is with the Malayan *Parinarium costatum* Blume.

PARINARIUM CORYMBOSUM (Blume) Miq. Fl. Ind. Bat. 1¹ (1855) 356.

Maranthes corymbosa Blume Bijdr. (1825) 89.

Maranthes multiflora Korth. Verh. Nat. Gesch. Bot. (1839-42) 259, t. 70, fide Blume Mus. Bot. Lugd. Bat. 2: 98.

Parinarium griffithianum Benth. in Hook. Niger Fl. (1849) 334; Miq. l. c. 356; F.-Vill. Novis. App. (1880) 76; Vid. Sinopsis Atlas

- (1883) 25, t. 46, f. A; Koord. & Valeton Bijdr. Boomsort. Java 5 (1900) 334; Perk. Frag. Fl. Philip. (1904) 118; Whitford in Philip. For. Bureau Bull. 10² (1911) 34, pl. 14, 15.
Grymania salicifolia Presl Epim. Bot. (1849) 193.
Parinarium salicifolium Miq. Fl. Ind. Bat. 1¹ (1855) 357; F.-Vill. l. c. 76; Vid. Rev. Pl. Vasc. Filip. (1886) 121.
Parinarium multiflorum Miq. l. c. 356.
Parinarium racemosum Vid. Cat. Pl. Prov. Manila (1880) 29.

This species is very widely distributed in the Philippines, and is represented in the herbarium of the Bureau of Science by about 60 specimens, from all parts of the Archipelago from northern Luzon to southern Mindanao. What is manifestly the oldest specific name is here adopted, for Blume's species was reduced to *Parinarium griffithianum* Benth. by Koorders and Valeton, which reduction is apparently correct. Blume's name, being by far the oldest one, must be adopted. The species is a widely distributed one, extending from the Andaman Islands through Sumatra, Borneo, and Java to New Guinea and northern Australia.

PARINARIUM LAURINUM A. Gray Bot. Wilkes U. S. Explor. Exped. (1854) 490, pl. 55; K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee (1901) 341.

Parinarium scabrum Merr. in Philip. For. Bureau Bull. 1 (1903) 22, non Hassk.

Parinarium mindanaense Perk. Frag. Fl. Philip. (June, 1904) 119.

Parinarium racemosum Merr. in Govt. Lab. Publ. (Philip.) 17 (October, 1904) 19, non Vidal.

Parinarium curranii Merr. in Philip. Journ. Sci. 4 (1910) Bot. 264.

LUZON, Province of Albay, *For. Bur. 10575 Curran*, June, 1908. MASBATE, *Merrill 2614*, May, 1903 (type of *P. racemosum* Merr.-*P. curranii* Merr.). PALAWAN, Malampaya Bay, *For. Bur. 11253 Manalo*, January, 1908, *Merrill 7255*, September, 1910. MINDANAO, Province of Surigao, *Ahern 375*: Butuan Subprovince, La Paz, *Miller s. n.*, July, 1910: District of Davao, *Warburg 14484*, in herb. Berlin (type of *P. mindanaense* Perk.), *Elmer 11237, 12383*.

There appears to be no doubt as to the specific identity of all the Philippine material cited above, and equally as little doubt as to the identity of the Philippine form with *Parinarium laurinum* A. Gray. The type of *Parinarium laurinum* was from the Samoan Islands, and is well figured and illustrated by Gray. The species is also represented in the herbarium of the Bureau of Science by *Vaupel 237* from Samoa (distributed as *Parinarium insularum* A. Gray), a specimen that agrees perfectly with the original description and plate of *Parinarium laurinum* A. Gray, but not with *P. insularum* A. Gray. This specimen in all essential characters also agrees with the Philippine material.

Parinarium laurinum A. Gray is known from the Samoan, Fiji, Solomon, and Admiralty Islands, and in consideration of the general character of the Polynesian flora, its discovery in the Philippines is not at all surprising. A considerable number of species are known only from the Philippines and Polynesia, and a still greater number are represented in the two regions by very closely allied forms. In a collection of plants made in Samoa by Vaupel, which I have examined carefully, the similarity between the

constituents of the Samoan and Philippine flora is so very striking that Vaupel's entire collection might almost as well have been made at some point in the Philippines; the percentage of difference as to species is no greater between Vaupel's Samoan collection and the general run of the Philippine flora than is noted in current collections made in botanically unexplored parts of the Philippines as compared with the known flora of the Archipelago.

K. Schumann and Lauterbach note that oil produced by the fruits is used in the Solomon Islands for caulking the seams of boats; in the Philippines it is used by the natives of Agusan Valley, Mindanao, for water-proofing bamboo and rattan baskets. The following note was supplied by Dr. M. L. Miller, of the division of ethnology, Bureau of Science, and communicated by him with botanical specimens: "The fruit of the *tabon-tabon* tree, when mature, is full of a yellowish-white pulp, that has about the hardness of a camote (sweet potato). On being rubbed over a rough surface, such as a rattan plaiting, it fills the interstices, assuming a chocolate color and drying within an hour to a hardness that does not crack under a torrid sun. The coating of *tabon-tabon* on baskets, etc., is frequently darkened in color with charcoal."

Native names: *tambon-tambon* (Masbate); *batobon* (Palawan); *tabun-tabun* (Albay); *tabon-tabon* (Surigao, Agusan).

As to nomenclature, the oldest valid specific name applied to the Philippine form is *Parinarium mindanaense* Perk., the type of which I have examined in the Berlin herbarium. *Parinarium racemosum* Merr., published a few months later, and during the same year, is invalidated by *P. racemosum* Vid. (1880); *P. curranii* Merr. was proposed as a new name for *P. racemosum* Merr., non Vidal.

PYGEUM Gaertner

PYGEUM EUPHLEBIUM sp. nov.

Arbor 10 m alta, subtus foliis ad costa ramulis inflorescentiisque ferrugineo-villosis; foliis oblongis, coriaceis, usque ad 10 cm longis, integris, acuminatis, basi subacutis ad rotundatis, nervis utrinque 8 ad 10, supra impressis, subtus valde prominentibus, reticulis laxis, obscuris; racemis spiciformibus, brevibus, fasciculatis, 1 ad 1.5 cm longis, bracteolis deciduis, fructibus junioribus anguste ovoideis, plus minusve ferrugineo-villosis.

A tree about 10 m high, the young branches, inflorescence, petioles, and the leaves along the midrib on the lower surface rather prominently ferruginous-villous. Branches slender, terete, dark brownish-purple, glabrous. Leaves oblong, coriaceous, 7 to 10 cm long, 2 to 4 cm wide, the upper surface shining, brownish-olivaceous, the lower paler, brownish, the apex shortly and sharply acuminate, the base subacute to rounded, with one or two plane, dark-colored, small glands evident on the lower surface near the base; lateral nerves impressed on the upper surface, very prominent on the lower surface, 8 to 10 on each

side of the midrib, curved upward near the margins, scarcely anastomosing, the reticulations lax, obscure; petioles 7 to 10 mm long. Racemes short, ferruginous-villous, fascicled, spike-like, 1 to 1.5 cm long, usually two or three in a fascicle in the axils of leaves or of fallen leaves, the bracteoles small, deciduous; young fruit narrowly ovoid, 5 mm long, ferruginous-villous with scattered hairs, the rather slender style persistent.

MINDANAO, District of Lanao, Momungan, *For. Bur. 20619 Miranda*, May 20, 1913, along Agus River, sea level to 80 meters in altitude.

A species allied to *Pygeum merrillianum* Koehne, but entirely different from that form, well characterized by its ferruginous-villous, short, fascicled, spikelike racemes, its pubescent young fruit, indicating a pubescent ovary, and its very prominently nerved leaves.

PYGEUM MONTICOLUM sp. nov.

Arbor circiter 10 m alta, partibus junioribus ferrugineo-pubescentibus; foliis crasse coriaceis, oblongis, usque ad 10 cm longis, utrinque subaequaliter angustatis, apice acuminatis, basi acutis, eglandulosis; nervis utrinque circiter 8, subtus prominentibus; racemis axillaribus, solitariis, usque ad 5 cm longis; fructibus globosis, glabris vel subglabris, 2 cm diametro.

A tree about 10 m high, the younger parts, branchlets, young leaves, etc. rather densely ferruginous-villous. Branches terete, glabrous. Leaves thickly coriaceous, oblong or somewhat oblong-lanceolate, 8 to 10 cm long, 2.5 to 4 cm wide, entire, about equally narrowed to the distinctly acuminate apex and to the acute base, the basal glands none, the upper surface dark olivaceous, prominently shining, the lower paler, dull, very slightly pubescent along the midrib at maturity; lateral nerves about 8 on each side of the midrib, very prominent on the lower surface, somewhat ascending, distinctly anastomosing, the reticulations rather fine, distinct; petioles 1 to 1.5 cm long. Racemes axillary, solitary, up to 5 cm long, ferruginous-pubescent. Fruits globose, glabrous or nearly so, 2 cm in diameter.

LUZON, Province of Bataan, Mount Mariveles, *Whitford 1203*, April 7, 1905, forested slopes, altitude about 1,060 meters.

A species best characterized by its thickly coriaceous, eglandular leaves and its very large fruits.

PYGEUM MEGAPHYLLUM sp. nov.

Arbor parva, racemis exceptis glabra; foliis ellipticis vel ovato-ellipticis, chartaceis, circiter 20 cm longis, breviter acuminatis, basi subrotundatis vel subacutis, glandulis 2 magnis instructis; racemis solitariis, axillaribus vel in axillis defoliatis, 6 ad 9

cm longis, dense fulvo-pilosis; floribus in anthesis 1 ad 1.5 cm diametro.

A small tree about 8 m high, glabrous except the inflorescence. Branches brown, smooth, slender, terete, the ultimate ones 2 to 3 mm in diameter. Leaves elliptic or elliptic-ovate, chartaceous, brown when dry, the lower surface paler than the upper, somewhat shining, about 20 cm long, 10 cm wide, the apex rather broadly acuminate, the acumen blunt, the base rounded or subacute, sometimes a little decurrent, supplied at the junction with the petiole with a pair of very prominent oblong glands which are open on the lower surface, slightly projecting on the upper one; lateral nerves about 10 pairs, rather prominent; petioles 2 cm long. Racemes axillary, 6 to 9 cm long, rather densely pubescent with pale fulvous hairs; bracteoles oblong-lanceolate, acuminate, pubescent, 3.5 mm long, deciduous; pedicels about 2 mm long. Flowers white, in anthesis 1 to 1.5 cm in diameter. Calyx-tube funnel-shaped, 3 mm long, 4 mm in diameter at the throat, the lobes 6, ovate-lanceolate, somewhat acuminate, pubescent, 2 to 2.5 mm long. Petals 6, suborbicular to orbicular-ovate, 2 mm long, very densely pubescent on both surfaces. Stamens indefinite, the filaments 2 to 6 mm long. Ovary glabrous, ovoid; style 5 mm long.

LUZON, Province of Laguna, Dahican River back of San Antonio, *Bur. Sci.* 14923 Ramos, June, 1912.

A distinct species, well characterized by its unusually large leaves with their very prominent basal glands, and by its flowers which are considerably larger than those of any other known Philippine species.

LEGUMINOSAE

ORMOSIA Jack

ORMOSIA VILLAMILII sp. nov. § *Amacrotropis*.

Arbor circiter 25 m alta, glabra, inflorescentiis ignotis; foliis imparipinnatis, circiter 25 cm longis, foliolis circiter 7, alternis vel inferioribus suboppositis, chartaceis, nitidis, oblongis, usque ad 11 cm longis, obtuse acuminatis, basi rotundatis; leguminibus anguste oblongis, tenuibus, 11 cm longis, 2.5 ad 3 cm latis, seminibus 3 vel 4.

A tree about 25 m in height, quite glabrous so far as the material shows (inflorescence not seen). Branches slender, brownish, shining, terete, lenticellate. Leaves alternate, about 25 cm long, the rachis and petiole dark brown or nearly black when dry; leaflets usually 7, alternate, or the lower ones subopposite,

shining, mostly oblong, the lower surface a little paler than the upper one, 6 to 11 cm long, 3 to 4.5 cm wide, the base rounded, the apex blunt-acuminate, the acumen distinctly retuse; lateral nerves 5 to 7 on each side of the midrib, slender, not prominent; petiolules 4 to 5 mm long, the rachis bearing the terminal leaflet produced. Inflorescence and flowers not seen. Pods narrowly oblong, thin, pale brown or grayish, smooth and shining, about 11 cm long, 2.5 to 3 cm wide, acute or acuminate, base decurrent into a short stipe, the margins narrowly keeled, apparently tardily dehiscent, containing three or four seeds.

MINDANAO, District of Zamboanga, opposite Olutanga Island, *For. Bur.* 13290 *Foxworthy, DeMesa, & Villamil*, May 16, 1912, on forested slopes near the sea, altitude about 20 meters.

There is some doubt as to the correctness of referring the species to *Ormosia* in the absence of flowers, but it is probably correct, and probably referable to the section *Amacrotopis*. Its Moro name, *bahay*, is also significant, for in other parts of the Archipelago this is the common name of *Ormosia calavensis* Azaola. The seeds, in the specimens available, were destroyed by insects before the time of collection.

SINDORA Miquel

SINDORA INERMIS sp. nov.

Arbor alta, partibus junioribus leviter pubescentibus; foliolis 6, chartaceis vel subcoriaceis, usque ad 12 cm longis, subellipticis, breviter obtuse acuminatis, basi subacutis ad rotundatis aliquis inaequilateralibus; stipulis late acinaciformibus, 2 ad 2.5 cm longis; leguminibus compressis, inermis, inaequilateraliter subellipticis, circiter 7 cm longis et 5 cm latis, brevissime apiculatis.

A tall tree, the younger parts sparingly pubescent, otherwise glabrous (inflorescence not seen). Branches slender, terete, brown. Leaves about 25 cm long, each with 6 leaflets, the leaflets chartaceous to subcoriaceous, subelliptic, somewhat shining, brownish-olivaceous, 8 to 12 cm long, 5.5 to 6.5 cm wide, some of them more or less inequilateral, apex shortly and obtusely acuminate, base subacute to rounded; lateral nerves slender, 15 or more on each side of the midrib, both surfaces rather distinctly and densely subfoveolate-reticulate; stipules broadly scimitar-shaped, falcate, coriaceous, 2 to 2.5 cm long, shortly acuminate. Flowers not seen. Fruits compressed, somewhat inequilateral, about 7 cm long, 5 cm wide, brown, glabrous, with a short excentric apiculus at the apex, the valves unarmed, thickly coriaceous.

MINDANAO, District of Cotabato, Sapu, Sarangani Bay, *For. Bur.* 23054 *Ferraris*, October 3, 1914, growing at sea level near the mangrove, locally known as *gayugalo*, oil-producing like *Sindora supa*. A sterile specimen,

For. Bur. 23039 Ferraris from the same locality, dry slopes, altitude about 50 meters, probably represents the same species.

The species is decidedly similar to *Sindora supa* Merr. in its vegetative characters, but differs in having its pods entirely unarmed.

BURSERACEAE

CANARIUM Linnaeus

CANARIUM CAUDATIFOLIUM sp. nov.

Arbor glabra (floribus ignotis), circiter 10 m alta; foliis circiter 70 cm longis, foliolis 11, subcoriaceis, oblongis ad oblongo-lanceolatis, integris, usque ad 20 cm longis, apice caudato-acuminatis, basi acutis, plus minusve inaequalateralibus, in siccitate pallidis nitidis, nervis utrinque circiter 15, patulis, prominentibus; infructescentiis 22 cm longis, cymosis, longe pedunculatis; fructibus oblongo-ovoideis vel oblongis, haud angulatis, inaequalateralibus, 4 cm longis, obtusis, 1-locellatis, pericarpio crustaceo, in siccitate valde rugoso.

A glabrous tree (flowers unknown), about 10 m high, the branches and branchlets, petioles, petiolules, axis, and branches of the infructescence reddish-brown, with numerous small lenticels. Ultimate branches subterete, about 1 cm in diameter, longitudinally wrinkled when dry. Leaves alternate, about 70 cm long; leaflets 11, oblong to oblong-lanceolate, 15 to 22 cm long, 5.5 to 7 cm wide, entire, subcoriaceous, the apex prominently caudate-acuminate, the acumen 1.5 to 2 cm long, slender, blunt, the base acute or subacute, somewhat inequilateral, the upper surface pale and shining when dry, the lower a little browner than the upper; lateral nerves about 15 on each side of the midrib, prominent, spreading, somewhat curved upward, anastomosing, the reticulations lax; petiolules about 2 cm long. Infructescence axillary, about 22 cm long, cymose, the peduncles at least 12 cm long, above somewhat dichotomously branched, the pedicels about 1.5 cm long. Fruits oblong to oblong-ovoid, subterete, not at all angled, inequilateral, about 4 cm long, 1.6 cm wide, base rounded, apex obtuse, 1-celled, the pericarp crustaceous, yellowish, and prominently wrinkled when dry.

MINDANAO, Province of Surigao, Ilaya Mainit, *For. Bur. 22827 Ponce*, August 16, 1914, on semiopen slopes, altitude about 15 meters, locally known as *pilihanay*.

A species well characterized by its rather large, prominently caudate-acuminate, entire leaflets, its cymose infructescence, and its subterete, inequilateral, rather large fruits, the pericarp thin, crustaceous, and prominently wrinkled when dry. Its alliance is apparently with *Canarium nitens* Merr., although it is entirely different from that species.

POLYGALACEAE

XANTHOPHYLLUM Roxburgh

XANTHOPHYLLUM PSEUDOSTIPULACEUM sp. nov.

Arbor circiter 10 m alta, inflorescentiis exceptis glabra; foliis coriaceis, oblongis vel oblongo-ovatis, usque ad 7 cm longis, basi acutis, apice obtusis ad obtuse acuminatis, subtus pallidis, nervis vix prominentibus, axillis petiolorum squamis binis oblongis coriaceis 5 ad 7 mm longis instructis; racemis puberulis, nodis valde incrassatis; fructibus globosis, 1.5 cm diametro.

A tree about 10 m high, glabrous except the inflorescence. Branches terete, smooth, brown or yellowish-brown, quite glabrous. Leaves rather thickly coriaceous, oblong to oblong-ovate, 5 to 7 cm long, 1.5 to 2.5 cm wide, the base acute, apex obtuse to obtusely acuminate, the upper surface somewhat yellowish when dry, shining, the lower much paler but scarcely glaucous; lateral nerves about 7 on each side of the midrib, not prominent, anastomosing, the reticulations rather close; petioles 5 to 8 mm long; axillary scales stipulelike, oblong, coriaceous, closely appressed in pairs, 2 scales in each axil, oblong, obtuse, persistent, 5 to 7 mm long. Racemes terminal, simple, rarely paniced, puberulent, in fruit up to 6 cm long, the internodes very short, the nodes strongly thickened, each with a prominent scar of the fallen pedicel. Flowers not seen. Fruit globose, smooth, about 1.5 cm in diameter.

LUZON, Province of Isabela, Palanan Bay, *Bur. Sci.* 21135 *Escritor* (type), June, 1913: Province of Nueva Ecija, Mount Macasantol, *For. Bur.* 22403 *Alvarez*, February, 1911.

The species is strongly characterized by its unusually large, coriaceous, persistent, oblong, 5 to 7 mm long axillary scales and its comparatively small leaves. It does not appear to be closely allied to any previously described form, at least from the Philippines.

AQUIFOLIACEAE

ILEX Linnaeus

ILEX GUERREROII sp. nov. § *Aquifolium*, *Lemurenses*.

Frutex vel arbor parvus, glaber; foliis coriaceis, integris vel subintegris, oblongis vel oblongo-ellipticis, usque ad 7 cm longis, acutis, obscure acuminatis vel obtusis, nervis utrinque circiter 6, supra obsolete; floribus ♀ axillaribus, fasciculatis, 4-meris, pedicellis circiter 4 mm longis, bibracteolatis; ovario 4-loculare.

A shrub or small tree, glabrous throughout. Branches terete, rather stout, somewhat wrinkled when dry, pale gray. Leaves

coriaceous, oblong to narrowly oblong-elliptic, shining when dry, 5 to 7 cm long, 1.5 to 2.8 cm wide, entire or sometimes obscurely and distantly subcrenulate, the apex acute, slightly acuminate, or blunt, the base usually somewhat decurrent-acuminate; nerves about 6 on each side of the midrib, obsolete above, spreading, anastomosing, the reticulations very few, lax; petioles 5 to 10 mm long. Pistillate flowers axillary, fascicled, two to six in each axil, the pedicels about 4 mm long, each with a pair of ovate, acuminate bracteoles at the lower one-fourth or one-third. Flowers 4-merous. Calyx-lobes about 1.5 mm wide, 1 mm long, rounded. Petals free, 3 to 3.5 mm long, about 2 mm wide, oblong-ovate, rounded. Staminodes about 2 mm long. Ovary rhomboid-ovoid, 4-celled; stigma large, sessile, 1.5 mm in diameter. Very immature fruit somewhat angled, wrinkled, 4 mm long, 4-celled.

LUZON, Province of Rizal, mountains back of San Mateo, comm. *Leon Guerrero*, 1910.

A species apparently allied to *Ilex sumatrana* Loesener, but quite different from that form.

ILEX SUBCAUDATA sp. nov. § *Thyrsoprinus, Indico-Malaicae*.

Frutex vel arbor parvus, glaber; foliis ovato-ellipticis, usque ad 7 cm longis, integris, subcoriaceis, siccitate nitidis, breviter petiolatis, utrinque acuminatis, apice subcaudatis, acuminibus obtusis, circiter 1 cm longis; racemis ♂ axillaribus, solitariis vel binis, quam folia paulo brevioribus; floribus 4-, rariter 5-meris.

An erect, glabrous shrub or small tree. Branches rather slender, terete, wrinkled when dry, reddish-brown or grayish, not lenticellate. Leaves scattered, the internodes 1 to 3.5 cm long, ovate-elliptic, subcoriaceous, shining when dry, not punctate or glandular, somewhat pale, 5 to 7 cm long, 2 to 3.5 cm wide, entire, the apex rather abruptly subcaudate-acuminate, the acumen about 1 cm long, blunt, straight or somewhat falcate, the base somewhat acuminate, the margins not, or very slightly, recurved; nerves about 6 on each side of the midrib, slender, not prominent, ascending, anastomosing, the reticulations lax; petioles 3 to 4 mm long; stipules, if present, very early deciduous. Staminate racemes solitary or in pairs in the leaf-axils, 3 to 5 cm long, each with from 10 to 20, slenderly pedicelled flowers, the pedicels 4 to 5 cm long, each subtended by a small, ovate, obtuse bracteole less than 1 mm long. Flowers 4-, rarely 5-merous. Calyx-lobes ovate, obtuse, 0.5 to 0.8 mm long. Corolla-tube 1 mm long, the lobes oblong-ovate, obtuse, 1.5 mm long. Anthers

0.8 mm long. Ovary rudimentary. Pistillate flowers and fruits unknown.

LUZON, Province of Rizal, mountains back of San Mateo, comm. *Leon Guerrero*, 1910.

A species probably as closely allied to *Ilex spicata* Bl. as to any other species, but abundantly distinct.

ILEX PACHYPHYLLA sp. nov. § *Byronia*, *Eubyronia*.

Species *I. cymosae* affinis, differt foliis crassissime coriaceis, apice late rotundatis vel obtusis retusisque, vix acuminatis, floribus majoribus, ovario 4- vel 5-locellato.

A tree about 10 m high, glabrous except the somewhat pubescent inflorescence. Branches terete, stout, dark-colored. Leaves very thickly coriaceous, elliptic to obovate-elliptic, 5 to 10 cm long, 2.5 to 6 cm wide, entire, the apex broadly rounded to obtuse, usually more or less retuse, never acuminate, the base somewhat narrowed, acute or a little decurrent-acuminate, the margins strongly revolute, the upper surface olivaceous when dry, somewhat shining, the lower shining, much paler; lateral nerves 7 or 8 on each side of the midrib, slender, not prominent, the reticulations obsolete or nearly so; petioles 1 to 1.5 cm long, dark reddish-brown. Inflorescence cymose, sparingly cinereous-pubescent, the cymes in the upper axils pseudo-terminal, many-flowered, 2 to 5 cm long and wide. Flowers white, 5-merous, the pedicels and calyx somewhat puberulent, the calyx-lobes orbiculate-ovate, about 1.5 mm long, somewhat serrate-lacerate. Petals 5, oblong to oblong-ovate, rounded, about 3 mm long. Ovary 4- or 5-celled, glabrous, oblong, narrowed upward. Young fruit narrowly ovoid.

LUZON, Province of Tayabas, Mount Binuang, back of Infanta, *Bur. Sci.* 9400 *Robinson*, August 28, 1909, in the mossy forest, altitude about 980 meters.

ILEX BRUNNEA sp. nov. § *Thyrsoprinus*, *Indico-Malaicae*.

Frutex ut videtur epiphyticus, glaber, ramis ramulisque pallidis; foliis alternis, integris, coriaceis, oblongo-ovatis ad elliptico-lanceolatis, utrinque acuminatis vel basi acutis, usque ad 5 cm longis, petiolatis, in siccitate nitidis, brunneis, nervis lateralibus utrinque circiter 6, tenuibus, indistinctis; inflorescentiis ♂ axillaribus, solitariis, racemosis, racemis numerosis, multifloris, 2 ad 4 cm longis; floribus 4- vel 5-meris, petalis 2 mm longis.

Apparently an epiphytic shrub, quite glabrous or the racemes very slightly and obscurely pubescent. Branches pale gray, terete, slightly wrinkled when dry, the branchlets similar, somewhat angled, 1 to 1.2 mm thick. Leaves alternate, 3 to 5 cm

long, 1.4 to 3 cm wide, oblong-ovate to elliptic-lanceolate, about equally narrowed to the somewhat blunt-acuminate apex and to the acute or somewhat acuminate base, entire, coriaceous, when dry strongly shining on the upper surface, a little paler on the lower surface, uniformly dark brown, the lower surface very minutely, densely, and obscurely punctulate, and with few, scattered, larger, dark glands; lateral nerves about 6 on each side of the midrib, very slender, obscure, anastomosing, the reticulations obsolete or nearly so; petioles about 5 mm long. Male racemes axillary, solitary, rarely 2 in an axil, numerous, 2 to 4 cm long, many-flowered, glabrous or very obscurely and sparingly pubescent, the flowers sometimes solitary at the nodes of the racemes, more often in fascicles of from 2 to 6, their pedicels slender, up to 5 mm long, the bracteoles narrowly ovate, 0.5 mm long. Flowers white, 4- and 5-merous in the same raceme. Calyx glabrous, about 2.5 mm in diameter, the lobes broadly elliptic-ovate to suborbicular, broadly rounded, 0.5 mm long. Petals narrowly oblong, 2 mm long, rounded or obtuse, glabrous. Filaments 2 mm long; anthers somewhat ovoid, 0.8 mm long.

LUZON, Province of Tayabas, Mount Pular, *Bur. Sci. 19461 Ramos*, January 15, 1913.

Said by the collector to grow on trees at the summit of the mountain. Most closely allied to *Ilex halconensis* Merr., from which it differs in its smaller, obscurely nerved, brown leaves, more numerous racemes, and smaller flowers.

CELASTRACEAE

MICROTROPIS Wallich

MICROTROPIS PLATYPHYLLA sp. nov.

Arbor glabra; foliis coriaceis, in siccitate pallidis, usque ad 20 cm longis, petiolatis, breviter acuminatis, basi decurrento-acuminatis, nervis utrinque 10 ad 12; cymis axillaribus, extra-axillaribusque, pedunculatis, usque ad 2.5 cm longis, multifloris, floribus 5-meris, sessilibus, capitato confertis; capsulis ellipsoideis, acutis vel apiculato-acuminatis, circiter 1.5 cm longis.

Apparently a tree, quite glabrous. Branches terete, reddish-brown or pale when dry, the tips of the branchlets somewhat compressed. Leaves large, coriaceous, pale, and somewhat shining when dry, the lower surface somewhat brownish, 12 to 20 cm long, 5.5 to 12 cm wide, subequally narrowed at both ends, elliptic-ovate, apex shortly and sharply acuminate, base decurrent-acuminate; lateral nerves 10 to 12 on each side of the midrib, slender, anastomosing, the reticulations rather close, fine, distinct; petioles stout, 1.5 to 2.5 cm long. Cymes axillary and

extra-axillary, peduncled, mostly 3-branched, up to 2.5 cm long, each subtended by several, coriaceous, linear bracts 2 to 5 mm in length. Flowers numerous, 5-merous, capitate at the tips of the branches, the heads up to 7 mm in diameter. Sepals obovate-orbicular, concave, externally prominently wrinkled-reticulate, about 2 mm in diameter, glabrous except the somewhat furfureaceous-incised margins. Corolla about 3.5 mm long, the tube short, the lobes elliptic-obovate, rounded, about 2 mm long, glabrous; filaments 1 mm long; anthers about 0.5 mm long. Ovary brown, glabrous, 2 mm in length. Capsule apparently somewhat fleshy when fresh, ellipsoid, about 1.5 cm long, 2-valved, the pericarp thickly coriaceous, apex acute or apiculate-acuminate; seed solitary, about 1 cm long, brown, and much wrinkled when dry.

LUZON, Province of Rizal, Montalban, *Loher 5779* (type), in flower, March, 1906, *5774*, in fruit, July, 1905.

A species readily recognizable by its unusually large leaves.

EUONYMUS Linnaeus

EUONYMUS OLIGANTHUS sp. nov.

Arbor glabra circiter 8 m alta; foliis chartaceis ad subcoriaceis, oblongo-oblongeolatis vel oblongo-ellipticis ad obovatis, usque ad 10 cm longis, pallidis, nitidis, sursum plus minusve serrato-crenulatis, utrinque subaequaliter angustatis, basi cuneatis, apice breviter obtuse acuminatis, nervis utrinque circiter 6, tenuibus; cymis axillaribus, tenuibus, longe pedunculatis, usque ad 9 cm longis, dichotomis, paucifloris; fructibus obovoideis, circiter 6 mm longis, vix sulcatis, laevis.

A glabrous tree about 8 m high, the branches pale yellowish-green, slender, terete. Leaves opposite, chartaceous to subcoriaceous, pale yellowish-green on both surfaces when dry, shining, oblong-elliptic to oblong-oblongeolate or obovate, 6 to 10 cm long, 2 to 4.5 cm wide, subequally narrowed to the cuneate base and to the shortly broad-acuminate apex, the upper part distinctly serrate-crenulate with small distant teeth, below entire; lateral nerves about 6 on each side of the midrib, slender, ascending, anastomosing, the reticulations lax, obscure; petioles 4 to 7 mm long. Cymes axillary, slender, few-flowered, dichotomous, in fruit up to 9 cm long. Flowers mostly in groups of threes at the tips of the branchlets, the very young buds obovoid, sepals and petals more or less ciliate, the latter at maturity possibly lacerate. Mature fruits crimson, smooth, obovoid when dry, about 6 mm long, somewhat apiculate by the persistent style, not or very obscurely longitudinally sulcate when dry, when

fresh not at all so, the persistent calyx thickly coriaceous, 4 to 5 mm in diameter, the lobes reniform, 2 mm long, about 3 mm wide, glabrous.

LUZON, Benguet Subprovince, Baguio, Merrill 9644, May, 1914, in thickets, limestone region, Sablan trail, altitude about 1,300 meters.

A species allied to *Euonymus viburnifolius* (Juss.) Merr. (*E. philippinensis* Merr.), differing in its smaller leaves, slender, elongated, very few-flowered cymes, and smaller fruits which are not sulcate or lobed.

GLYPTOPETALUM Thwaites

GLYPTOPETALUM LOHERI sp. nov.

Frutex vel arbor glabra; foliis subcoriaceis, ellipticis ad elliptico-ovatis, integris, breviter petiolatis, usque ad 10 cm longis, in siccitate pallidis, acuminatis, basi acutis, nervis utrinque 5 vel 6, tenuibus, obscuris, reticulis subobsoletis; cymis axillaribus, brevibus, paucifloris; fructibus globosis, 6 ad 10 mm diametro, 1-ad 4-locellatis.

A glabrous shrub or small tree, the branches terete, reddish-brown, the younger ones pale straw-colored. Leaves rather unequal in size, opposite, subcoriaceous, pale when dry, elliptic to ovate-elliptic, 6 to 10 cm long, 3 to 6 cm wide, subequally narrowed to the acute base and to the sharply acuminate apex, shining, entire; lateral nerves 5 or 6 on each side of the midrib, slender, obscure, the reticulations nearly obsolete; petioles 3 to 4 mm long. Cymes axillary, short, the peduncles 1 cm long or less, unbranched or with two very short branchlets. Flowers apparently sessile, crowded, few. Fruits globose, 6 to 10 mm in diameter, not sulcate, 1- to 4-celled, 1- to 4-seeded, the pericarp pale when dry, thickly coriaceous; seeds brown, about 7 mm long, the apical one-third surrounded by a thin, membranaceous, brittle, brown aril. Persistent sepals coriaceous, reniform, 4, entire, 2 to 3 mm wide.

LUZON, Province of Rizal, Montalban, Loher 5765 (type), 5796, February and December, 1904.

A species characterized by its pale, obscurely nerved leaves, its nearly obsolete reticulations, and its globose, not sulcate fruits.

GLYPTOPETALUM MARIVELENSE sp. nov.

Arbor parva, glabra, 3 ad 7 m alta; foliis oblongis ad oblongo-lanceolatis, chartaceis ad subcoriaceis, usque ad 13 cm longis, in siccitate pallidis, utrinque aequaliter angustatis, basi acutis, apice acuminatis, margine crenulato-serrulatis, nervis utrinque 6 vel 7, tenuibus, laxe anastomosantibus, reticulis distinctis, laxis; inflorescentiis axillaribus, tenuibus, usque ad 10 cm longis, plerumque breviter furcatis, ut videtur paucifloris; fructibus de-

presso-globosis, circiter 1.5 cm diametro, in siccitate brunneis, rugosis, 3- vel 4-locellatis, sepalis 4, persistentibus integris.

A shrub or small tree 3 to 7 m high, quite glabrous. Branches terete, slender, straw-colored or yellowish-green. Leaves opposite, chartaceous to subcoriaceous, oblong to oblong-lanceolate, pale and shining when dry, 7 to 13 cm long, 2.5 to 4.5 cm wide, subequally narrowed to the acute base and the shortly acuminate apex, the margins distinctly crenulate-serrate, the midrib very prominent; lateral nerves 6 or 7 on each side of the midrib, slender, laxly anastomosing, the reticulations slender, lax; petioles about 5 mm long. Inflorescence axillary, solitary, slender, usually forked near the apex, apparently few-flowered, up to 10 cm long in fruit, the bracts in pairs, lanceolate, acuminate, about 1.5 mm long. Flowers 4-merous. Fruits depressed-globose, brown when mature, about 1.5 cm in diameter, 3- or 4-celled, the pericarp coriaceous, wrinkled. Seeds 1 in each cell, attached near the apex of the cell, brown, about 8 mm long, the upper one-third surrounded by a thin brown aril.

LUZON, Province of Bataan, Mount Mariveles, *Elmer 6644* (type), November, 1904, *Whitford s. n.*, *For. Bur. 2639 Meyer*, February, 1905 (the two latter with mature fruits): Province of Tayabas, *For. Bur. 10306 Curran*, April, 1908. From this can scarcely be distinguished *For. Bur. 6457 Everett*, from Cebu, February, 1907, and this specimen probably represents a form of the same species. In forests, altitude about 800 meters.

Duplicates of some of the above specimens were studied by me in the Kew Herbarium in December, 1907, and the memorandum then made was attached to one of the sheets in the herbarium of the Bureau of Science to the effect that the material represented a new species of *Euonymus*; later Mr. Elmer added the specific name *mariveleensis* (sub. *Euonymus*) to our specimen of his *No. 6644*. A further study of the material leads me to consider that the species should be treated under the genus *Glyptopetalum*.

Var. **EUPHLEBIUM** var. nov.

A typo differt foliis valde nervosis, nervis, lateralibus reticulisque primariis subtus admodum prominentibus.

LUZON, Province of Zambales, Mount Tapulao, *For. Bur. 8108 Curran & Merritt*, December 15, 1907, in forests, altitude 100 to 1,400 meters.

ICACINACEAE

PHYTOCRENE Wallich

PHYTOCRENE OBOVOIDEA sp. nov.

Frutex alte scandens; foliis ovatis, coriaceis, glabris, in siccitate pallidis, usque ad 16 cm longis, acuminatis, integris, basi cordatis, 5-nervis, nervis lateralibus utrinque 3 vel 4, subtus valde prominentibus; capitulis ♀ binis, pedunculatis, globosis, circiter 2 cm

diametro, floribus 4-meris, sub fructu globosis, circiter 10 cm diametro, fructibus obovoideis vel oblongo-obovoideis, circiter 3.5 cm longis, apice abrupte rotundatis, depressis, abrupte brevissime apiculatis, densissime retrorse hirsutis.

A scandent shrub apparently of large size, the fruit-bearing branches up to 1.5 cm in diameter, pale brownish, prominently wrinkled when dry. Leaves ovate, coriaceous, pale, 12 to 16 cm long, 7 to 10 cm wide, entire, the upper surface glabrous, shining, the lower surface paler, glabrous, apex acuminate, base prominently cordate; basal nerves 5, the lateral ones about 4 pairs (or 3 above the base), very prominent, looped-anastomosing near the margins, the reticulations very distinct; petioles 5 to 7 cm long, very slightly hirsute. Female heads, just after anthesis, in pairs, apparently from the axils of fallen leaves, brown, globose, about 2 cm in diameter, their peduncles brown-hirsute, up to 4 cm in length. Flowers 4-merous, the calyx 4 to 5 mm long, lobes broadly ovate, acute or somewhat acuminate, up to 1.5 mm long, externally densely appressed-hirsute. Ovaries densely hirsute, when slightly developed (6 to 8 mm long) distinctly 3- or 4-toothed at the apex, the base narrowed. Heads in fruit (immature) globose, 8 to 10 cm in diameter, brown, the drupes very numerous, obovoid to oblong-obovoid, about 3.5 cm long, the apex up to 2 cm in diameter, angular by mutual pressure, gradually narrowed from the apex to the base, the apex itself abruptly rounded, usually distinctly depressed, and with a short, stout, blunt apiculus 2 mm long or less, all parts very densely hirsute with stiff, brown, appressed, reflexed hairs.

BILIRAN, *Bur. Sci.* 18882 *McGregor*, June 28, 1914, in forests.

This species is manifestly allied to *Phytocrene blancoi* (*Azaola*) Merr., which in turn is doubtfully distinct from *Phytocrene macrophylla* Blume; it differs, however, in its leaves being glabrous beneath, and in its entirely differently shaped drupes which are not gradually narrowed upward to the tip, but are obovoid or oblong-obovoid, abruptly rounded and depressed, gradually narrowed from the apex to the base. In the shape of its drupes it is equally distinct from *Phytocrene dasycarpa* Miq.

TILIACEAE

COLUMBIA Persoon

COLUMBIA SUBINTEGRA sp. nov.

Arbor circiter 35 m alta, inflorescentiis exceptis glabra; foliis ovatis ad oblongo-ovatis, coriaceis, usque ad 17 cm longis, utrinque glabris, nitidis, concoloribusque, integris vel leviter undulatis, aequilateralibus, basi late rotundatis, apice acuminatis; paniculis terminalibus, pyramidatis, pubescentibus; fructibus 2 cm diametro, suborbicularis, 5-alatis.

A tree about 35 m high, glabrous except the inflorescence. Branches slender, terete, brownish. Leaves coriaceous, equilateral, ovate to oblong-ovate, 14 to 17 cm long, 7 to 10 cm wide, of the same color, brownish and shining on both surfaces, entirely glabrous, the base broadly rounded, the apex acuminate, the margins entire or somewhat undulate, or even obscurely undulate-toothed in the upper part; nerves 6 on each side of the midrib, prominent, the reticulations slender, but distinct; petioles 2 to 2.5 cm long. Panicles terminal, pyramidal, uniformly pubescent, about 25 cm long, the branches scattered, the lower ones 10 cm long. Flowers not seen. Fruit orbicular in outline (lateral view), 2 cm in diameter, slightly pubescent or becoming glabrous, somewhat retuse at both base and apex, equally 5-winged, the wings about 8 mm wide.

MINDANAO, District of Zamboanga, Talisay, *For. Bur. 13776 Foxworthy, DeMesa, & Villamil*, June 18, 1912, in forests, altitude about 20 meters.

The species is locally known as *malacayan* a name applied also to other unrelated species, and is allied to *Columbia longipetiolata* Merr. of Luzon, from which it differs in its entire or nearly entire leaves. The fruit is red when fresh, the bark very tough and stringy as in other species of the genus, and the wood has a slightly pungent odor.

THEACEAE

TERNSTROEMIA Mutis

TERNSTROEMIA JAPONICA Thunb. in *Trans. Linn. Soc.* 2 (1794) 335; Dyer in *Hook. f. Fl. Brit. Ind.* 1 (1874) 280.

Adinandra coriacea Elm. *Leaf. Philip. Bot.* 1 (1908) 322.

LUZON, Province of Tayabas, Luchan (Mount Banajao), *Elmer 7438, 9214*; Province of Laguna, Mount San Cristobal, *Copeland, May, 1908*; Province of Zambales, Mount Tapulao, *For. Bur. 8075 Curran & Merritt, Bur. Sci. 4696, 5077 Ramos*. MINDORO, Mount Halcon, *For. Bur. 4473 Merritt*, June, 1906. PALAWAN, Mount Victoria, *Bur. Sci. 646 Foxworthy*, March, 1906.

This species is widely distributed, extending from Japan and China to the mountains of India, Ceylon, and Sumatra. The Philippine material, while variable, agrees rather closely in all essential characters with specimens from Japan, Ceylon, and China. The species described by Mr. Elmer as *Adinandra coriacea* is a typical *Ternstroemia* in all respects.

GUTTIFERAE

CALOPHYLLUM Linnaeus

CALOPHYLLUM FERRUGINEUM sp. nov. § *Inophyllum*.

Arbor alta, ramis ramulisque crassis, partibus junioribus inflorescentisque dense ferrugineo-pubescentibus; foliis crassissime coriaceis, oblongis, usque ad 10 cm longis, in siccitate pallidis, nitidis, basi acutis, apice obtusis ad obscure acuminatis, subtus

leviter ferrugineo-pubescentibus; inflorescentiis terminalibus, paniculatis, circiter 15 cm longis, bracteolis oblongo-obovatis ad lanceolatis, 1.5 ad 2 cm longis, deciduis; sepalis 4; petalis 6.

A tall tree with stout branches, the ultimate branchlets stout, ferruginous-pubescent, 4 to 5 mm in diameter, reddish-brown. Leaves thickly coriaceous, mostly oblong, about 10 cm long, 4 to 5 cm wide, base acute, the apex obscurely acuminate, obtuse or sometimes rounded, pale when dry, the upper surface shining, the lower more brownish-yellow and, at least when young, sparingly ferruginous-pubescent; nerves spreading, rather distinct, about 16 to a centimeter; petioles dark brown, pubescent, about 1.5 cm long. Inflorescence a terminal panicle, all parts very densely ferruginous-pubescent, in nearly mature bud up to 15 cm long, many-flowered, bipinnately paniculate, each flower subtended by a very thick, densely pubescent, deciduous, oblong-oblongeolate to oblong-obovate bracteole 1.5 to 2 cm in length, the pedicels about 1 cm long. Sepals 4, densely pubescent, concave, the two outer ones about 10 mm long and 8 mm wide, the two inner ones orbicular, about 1 cm in diameter. Petals 6, in bud suborbicular, very slightly pubescent. Stamens very numerous. Ovary glabrous.

LUZON, Province of Laguna, in forests back of San Antonio, *Bur. Sci.* 20545 Ramos, February, 1913.

For the genus a rather characteristic species. It is apparently allied to *Calophyllum blancoanum* Pl. & Tr., from which it differs in its very densely ferruginous-pubescent inflorescence, younger branches, and to a less degree the lower surfaces of its leaves, in its prominent bracteoles which are up to 2 cm in length, and in its thickly coriaceous, more coarsely nerved, rather differently shaped leaves.

GARCINIA Linnaeus

GARCINIA NERVOSA Miq. Ann. Mus. Lugd. Bat. 1 (1863-64) 208; King in Journ. As. Soc. Beng. 59² (1890) 169.

Stalagmites ? nervosa Miq. Fl. Ind. Bat. Suppl. (1861) 496.

PALAWAN, near Taytay, *Merrill 9387*, May, 1913, in bamboo thickets at about sea level. Probably referable here is a single specimen from the Province of Camarines, Luzon, *For. Bur. 21750 Fischer*, but this specimen has leaves 65 cm long and 25 cm wide, the base broadly rounded and distinctly cordate.

The species is new to the Philippines. Perak, Singapore (*Ridley 5966!*), Malacca, and Sumatra.

OCHROCARPUS Thouars

OCHROCARPUS RAMIFLORUS sp. nov.

Arbor parva, glabra; foliis oppositis, oblongis, subcoriaceis, usque ad 25 cm longis, in siccitate pallidis, basi acutis ad rotun-

dati, apice acutis vel breviter acuminatis, utrinque obscure foveolatis, subtus plus minusve glandulosis, nervis primariis utrinque 16 ad 20, tenuibus, quam secundariis reticulisque vix magis distinctioribus; floribus in ramis fasciculatis, pedunculis sub fructu 3 ad 4 cm longis.

A small tree about 5 m high, quite glabrous. Branches terete, pale, the younger ones brownish-yellow or yellow, somewhat compressed or angled, wrinkled when dry. Leaves opposite, oblong, subcoriaceous, 15 to 25 cm long, 6 to 9 cm wide, base rounded to acute, apex acute or shortly acuminate, margins recurved, both surfaces pale when dry, shallowly foveolate, the foveolæ on the lower surface often glandular; primary lateral nerves very slender, obscure, 16 to 20 on each side of the midrib, scarcely more distinct than are the secondary nerves and the reticulations; petioles wrinkled, 1.5 to 2 cm long. Flowers fascicled on the branches below the leaves, the subsistent petals oblong, about 5 mm long, the stamens very numerous, about 6 mm long. Young fruits subglobose, about 1.5 cm in diameter, much wrinkled when dry, brownish, apparently when mature 1-celled and 1-seeded, when young at least 2-celled.

LUZON, Province of Camarines, Madadagat River, *For. Bur.* 22795 *Tabat*, August 5, 1913, on the banks of the river.

The first representative of the genus to be found in the Philippines, *Ochrocarpus pentapetalus* F.-Vill., based on *Tovomita pentapetala* Blanco being a *Calophyllum* and a synonym of *C. amplexicaule* Choisy. *Ochrocarpus ramiflorus* appears to be most closely allied to *O. siamensis* T. Anders. from which it differs in its acute or acuminate, fewer nerved leaves and longer pedicels.

FLACOURTIACEAE

HOMALIUM Jacquin

HOMALIUM OBLONGIFOLIUM sp. nov. § *Myriantheia*.

Arbor circiter 35 m alta, inflorescentiis exceptis glabra; foliis oblongis, usque ad 30 cm longis, coriaceis, nitidis, breviter acuminatis, nervis utrinque circiter 15; paniculis amplis, folia subaequantibus, axillaribus subterminalibusque, pubescentibus; floribus 7-meris, sepalis quam petalis subduplo longioribus; staminibus 21.

A tree 35 to 40 m high, glabrous except the inflorescence. Branches terete, lenticellate, dark-colored when dry. Leaves oblong, 20 to 30 cm long, 7 to 11 cm wide, entire, coriaceous, shining, the lower surface a little paler than the upper when dry, entire, shortly acuminate, base acute; lateral nerves about

15 on each side of the midrib, slender, distinct, anastomosing; petioles 1.5 to 2 cm long. Panicles axillary and subterminal, ample, many-flowered, open, about as long as the leaves, branched from the base, the lower branches sometimes 25 cm in length, all parts rather densely gray-pubescent. Perianth-tube funnel-shaped, 4 mm long, somewhat hirsute. Sepals 7, when fully grown 6 to 7 mm long, about 1.8 mm wide, obtuse, pubescent, oblong-ob lanceolate. Petals 7, oblong, obtuse, pubescent, about 4 mm long. Stamens 21, in groups of three each opposite the petals; filaments filiform, 2.5 to 3 mm long, very slightly pubescent; anthers 0.3 mm long. Ovary densely hirsute, the styles 1 to 1.5 mm long.

MINDANAO, District of Zamboanga, Talisay, *For. Bur. 13781 Foxworthy, DeMesa, & Villamil* (type), June 18, 1912, in forests, altitude about 30 meters; near Port Banga, *For. Bur. 15216 Klemme*, July, 1910, sterile specimen.

A species most closely allied to *Homalium luzoniense* F.-Vill., but well characterized by its oblong entire leaves.

The specimen collected by Klemme consists of leaves only, taken from sprouts. One leaf is entire, 40 cm long and 14 cm wide, while the other, a more juvenile form, is 40 cm long and 20 cm wide, the margins being distinctly undulate-toothed.

SCOLOPIA Schreb.

Most of the recently collected Philippine material of the genus *Scolopia* has been referred to *Scolopia crenata* Clos, and to *S. luzonensis* (Presl) Warb. While Briquet's paper on the genus has been known to me for some years, it has only recently become available.⁸ Following Briquet in his interpretation of the group of species closely allied to *Scolopia crenata* Clos, in which he is doubtless correct, the known Philippine forms may be disposed of as follows:

SCOLOPIA LUZONENSIS (Presl) Warb. in Engl. & Prantl Nat. Pflanzenfam. 3^{ea} (1893) 30, f. 11; Briq. in Ann. Conserv. Jard. Bot. Genève 2 (1908) 45; Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 98.

Dasianthera luzonensis Presl Rel. Haenk. 2 (1835) 90, t. 66.

Phoberos dasyanthera Benn. Pl. Jav. Rar. (1844) 192; F.-Vill. Novis. App. (1880) 12.

Banara racemosa Blanco Fl. Filip. (1837) 425.

Flacourtia corollata Blanco l. c. ed. 2 (1845) 559.

Flacourtia crenata F.-Vill. Novis. App. (1880) 12; Vid. Rev. Pl. Vasc. Filip. (1886) 48; Sinopsis Atlas (1883) 13, t. 7, f. B, non Clos.

Phoberos sp. Turcz. in Bull. Soc. Nat. Mosc. 27 (1854) 333.

Scolopia rhinantha F.-Vill. Novis. App. (1880) 12, non Clos.

⁸ Briquet, J. Remarques sur les espèces asiatiques du genre *Scolopia* Schreb., *Ann. Conserv. Jard. Bot. Genève* 2 (1908) 41-47.

This species is common and widely distributed in the Philippines, and to it should be referred most of the Philippine material distributed from the Bureau of Science as *Scolopia crenata* Clos and as *S. luzonensis* Warb. It is well characterized by its ciliate anther-appendages.

I think it probable that *Banara brevifolia* Blanco Fl. Filip. (1837) 426 = *Flacourtia parvifolia* Blanco Fl. Filip. ed. 2 (1845) 560 should also be referred here. Blanco's description is altogether too short and incomplete properly to determine the plant he had in mind, and of which he saw no flowers. F.-Villar has reduced it to *Scolopia dasyanthera* Benn., which, if correct, would place it under *Scolopia luzonensis* Warb., for Bennett's designation is only a new name for the plant originally described by Presl as *Desianthera luzonensis*. This fact I overlooked at the time I worked over the determinations of Blanco's species, which accounts for my statement⁹ that *Scolopia dasyanthera* Benn. was a species unknown from the Philippines.

Just how constant are the characters selected by Briquet in distinguishing the closely allied forms that have, for the most part, been reduced at one time or another to form a comprehensive species, *Scolopia crenata* Clos, remains to be seen. In our rich Philippine collections evidences of intergrading forms occur, that to a greater or less degree invalidate the key characters adopted by Warburg and by Briquet in distinguishing the sections *Adenoscolopia* and *Sphenoscolopia*. Elmer 5625, 6363, from Benguet Subprovince, Luzon, and Bur. Sci. 10376 McGregor, from Polillo, are in all essential characters typical *Scolopia luzonensis* Warb., and have the peculiar ciliate anthers of that species; yet all three specimens have glands at the apices of their petioles, or on the leaf margins near the insertion of the petioles which would place them in the section *Adenoscolopia*, and as a result necessitate the description of the form as a new species. In my mind there is absolutely no doubt but that all three sheets are fairly typical *Scolopia luzonensis* Warb., a species manifestly belonging in the section *Sphenoscolopia*.

SCOLOPIA SAEVA (Hance) Hance in Ann. Sci. Nat. IV 28 (1862) 217; Briq. in Ann. Conserv. Jard. Bot. Genève 2 (1898) 46.

Phoberos saevus Hance in Walp. Ann. 3 (1853) 825.

Scolopia lanceolata Clos, in Ann. Sci. Nat. IV 8 (1857) 252, p. p., quoad pl. Philip.; Vid. Rev. Pl. Vasc. Filip. (1886) 49.

This species is very similar to *Scolopia luzonensis* Warb., but is distinguished by its entirely glabrous anthers. The following material is apparently referable to it:

LUZON, Benguet Subprovince, *For. Bur. 10921 Curran*: Province of Pangasinan, *For. Bur. 9632 Zschokke*: Province of Zambales, *Merrill 2949, For. Bur. 908 Maule*: Province of Rizal, *For. Bur. 428, 2680 Ahern's collector, Merrill 1653*.

I have seen no specimen of *Cuming 1061*, cited by Clos, but the above specimens agree with Hongkong material and with the descriptions available. *Scolopia lanceolata* Clos is based on *Phoberos lanceolata* W. & A. Prodr. (1834) 30, and is an older name than that proposed by Hance and accepted by Briquet. The type of *Phoberos lanceolata* W. & A. was from India, and the species is, presumably, different from the Philippine form.

⁹ Govt. Lab. Publ. (Philip.) 27 (1905) 18.

FLACOURTIA Commerson

FLACOURTIA RUKAM Zoll. & Mor. Syst. Verz. (1854) 33; King, in Journ. As. Soc. Beng. 59² (1890) 117; Vid. Phan. Cuming. Philip. (1885) 94; F.-Vill. Novis. App. (1880) 112.

Hisingera grandifolia Turcz. in Bull. Soc. Nat. Mosc. 27² (1854) 332.

Flacourtia inermis Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 99, non Roxb.

This species is widely distributed in the Philippines, and is somewhat variable in its vegetative characters. In general the leaves of the Philippine form average considerably larger than in our rather comprehensive set of Malayan forms, but there appears to be no specific difference. The species is very similar in vegetative characters to *Flacourtia inermis* Roxb., with which the Philippine specimens have been confused. As indicated in the original description, as later noted by King, and as shown in our Malayan specimens, *Flacourtia inermis* has perfect flowers, while *F. rukam* has dioecious flowers. I refer to *Flacourtia rukam* the following Philippine material:

LUZON, Province of Tayabas, *Cuming 771* (cotype of *Hisingera grandifolia* Turcz.): Benguet Subprovince, *Elmer 8890*: Province of Pangasinan, *For. Bur. 19455 Agama*: Province of Zambales, *For. Bur. 5901, 5999 Curran*: Province of Laguna, *Bur. Sci. 6041 Robinson*: Province of Rizal, *Loher 6772*: Province of Bataan, *For. Bur. 1744 Borden, Whitford 1252*. POLILLO, *Bur. Sci. 9125 Robinson, Bur. Sci. 10410 McGregor*. MINDORO, *For. Bur. 5413 Merritt*. CEBU, *For. Bur. 15253 Cenabre*. DINAGAT, *Ahern 482*. MINDANAO, District of Davao, *Copelend 534*.

CASEARIA Jacquin

CASEARIA PHILIPPINENSIS sp. nov.

Frutex circiter 3 m altus, subtus foliis ramulis floribusque moliter pubescentibus; foliis integris, oblongis ad oblongo-lanceolatis, usque ad 29 cm longis, in siccitate brunneis, acuminatis, basi acutis, breviter petiolatis, nervis utrinque circiter 12; floribus paucis, fasciculatis, sepalis circiter 4.5 mm longis; staminodis planis, sursum dense villosis.

A shrub about 3 m high, the branchlets, flowers, and lower surface of the leaves rather densely and softly pubescent; branches rather slender, terete, brown. Leaves alternate, entire, oblong to oblong-lanceolate, firmly chartaceous or subcoriaceous, 20 to 29 cm long, 7 to 10 cm wide, brown when dry, the upper surface glabrous, shining, the lower softly brown-pubescent, the apex acuminate, base acute; lateral nerves about 12 on each side of the midrib, somewhat curved-ascending, prominent; petioles stout, 5 mm long or less. Flowers yellowish, axillary, few, subsolitary or somewhat fascicled, shortly pedicelled. Sepals broadly ovate to elliptic-ovate, rounded, pubescent, 4 to 5 mm long. Stamens 10, the free parts of the filaments glabrous, about 1 mm long, slender, the lower 1.5 mm, entirely united with the

staminodes, glabrous; anthers about 1 mm long; staminodes flattened, about 1.4 mm long, the upper part densely villous. Ovary ovoid, about 3 mm long, with very few, scattered, short hairs; style short; stigma capitate.

LUZON, Province of Cagayan, Claveria, *Bur. Sci.* 7364 Ramos (type), March, 1909, in forests. SAMAR, *Phil. Pl.* 1644 Ramos, April, 1914, as *Rinorea*.

A species well characterized by its comparatively large, entire leaves, which are brown when dry, glabrous and shining on the upper surface and softly pubescent on the lower surface; it does not appear to be closely allied to any other Philippine species.

PASSIFLORACEAE

ADENIA Forskål

ADENIA LONGIFOLIA sp. nov.

Scandens, glabra; foliis oblongis, membranaceis, 20 ad 25 cm longis, basi acutis vel leviter acuminatis, biglandulosis, vix auriculatis, apice breviter acute acuminatis, margine distanter repando-denticulatis, nervis utrinque circiter 10; cymis pedunculatis, paucifloris, floribus, ♂ 4-meris, alabastro clavato, circiter 1 cm longo.

A scandent, herbaceous, glabrous vine, or the stems somewhat woody, firm, striate and pale when dry, 3 mm in diameter. Leaves oblong, membranaceous, 20 to 25 cm long, 8 to 10 cm wide, shining, somewhat olivaceous on the upper surface, the lower surface a little paler, base acute or somewhat decurrent-acuminate, 2-glandular, the glands prominent on the lower surface, not auricled, apex shortly and sharply acuminate, margin distantly repand-denticulate; lateral nerves about 10 on each side of the midrib, distinct, anastomosing, the reticulations lax; petioles about 4 cm long. Peduncles solitary, axillary, up to 6 cm long, the cymes few-flowered. Staminate flowers greenish or nearly white, the fully mature buds clavate, about 1 cm long, the lobes 4, ovate, short. Stamens 4, narrowly oblong, about 3.5 mm long. Pistillate flowers and fruits not seen.

BASILAN, *Bur. Sci.* 15495 Reillo, August, 1912.

A species well characterized by its oblong, thin, repand-denticulate leaves, which are acute or decurrent-acuminate at the base but not auriculate.

ADENIA PALMATIFOLIA sp. nov.

Scandens, glabra; foliis profunde palmato-5-lobatis, basi prominente subauriculato-glandulosis, lobis lanceolatis, rectis vel leviter falcatis, acuminatis, integris, usque ad 20 cm longis, 1.5 ad 2.5 cm latis; pedunculo elongato; fructibus (immaturis) circiter 6 cm longis, nitidis, ut videtur obovoideis.

A scandent, glabrous, herbaceous vine, the branches pale, striate, terete, 2 to 3 mm thick. Leaves chartaceous or subcoriaceous, pale when dry, slightly shining and of the same color on both surfaces, the base very broadly truncate or abruptly acute, subauriculate-glandular, 3- or obscurely 5-plinerved, the lamina up to 23 cm long, subreniform in outline, very deeply palmately 5-lobed, the lobes lanceolate, straight or somewhat falcate, entire, sharply acuminate, 8 to 20 cm long, 1.5 to 2.5 cm wide, the sinuses obtuse or acute, each with a prominent gland on the lower surface of the leaf, each lobe with a prominent midrib, the nerves slender, distinct, spreading at right angles, anastomosing; petioles 2.5 to 4 cm long. Peduncles up to 15 cm long, the tendril part short. Flowers not seen. Immature fruits apparently obovoid, about 6 cm long, shining, yellowish-brown when dry, the pericarp thin, brittle.

LUZON, Subprovince of Benguet, Sablan, *Elmer 6262*, April, 1904 (type), *Bur. Sci. 12577 Fénix*, December, 1910, in forests and thickets.

The specimens, or at least those of the last number cited, were distributed as *Modecca parviflora* Blanco, but that species is described as having 3-lobed leaves, while the present form has constantly 5-lobed leaves. It is suspected that *Modecca triloba* Blanco and *M. parviflora* Blanco are the same species, and moreover that they are only forms of *Adenia coccinea* (Blanco) Merr. (*Modecca coccinea* Blanco). There are several specimens in the herbarium of the Bureau of Science that present entire ovate leaves on the same branches with prominently 3-lobed ones. *Modecca saponaria* Blanco is a species of *Momordica*, and does not belong to the *Passifloraceae*. *Adenia palmatifolia* is well characterized by its deeply palmately 5-lobed leaves and its narrow, straight or falcate lobes.

ADENIA CRASSA sp. nov.

Scandens, glabra; foliis integris, ovatis, circiter 10 cm longis, basi late rotundatis, cordatis, auriculatis, apice acute acuminatis, chartaceis vel submembranaceis; fructibus ellipsoideis vel ovoideis, circiter 8 cm longis, pericarpio crassissimo; seminibus inaequaliter obovatis, compressis, foveolatis, 8 mm longis.

A scandent, glabrous, apparently herbaceous vine, the stems slender, pale, striate, terete. Leaves ovate, chartaceous or submembranaceous, 8 to 10 cm long, 5 to 7 cm wide, entire, base broadly rounded, prominently cordate, and biauriculate, the apex rather slenderly and sharply acuminate, both surfaces somewhat shining, the lower a little paler than the upper; base 5-nerved or somewhat 5-plinerved, the lateral nerves above the base one or two pairs, distinct, reticulations lax; petioles 1.5 to 2.5 cm long; peduncles axillary, solitary, slender, about 3 cm long, the cymes apparently few-flowered, the tendril-parts short. Flowers unknown. Fruit when fully mature about 8 cm long,

ellipsoid or ovoid, smooth, pale, shining, splitting into 3 valves, the pericarp very firm, about 2 mm thick; seeds numerous, compressed, inequilateral, about 8 mm long, pale, prominently pitted, base acute, apex somewhat oblique, their funicles up to 2 cm in length.

BASILAN, *Bur. Sci. 15419 Reillo*, August, 1912.

In vegetative characters somewhat similar to our common *Adenia coccinea* (Blanco) Merr., but in this species the pericarp of the mature fruit is very thin, almost membranaceous.

THYMELAEACEAE

WIKSTROEMIA Endlicher

WIKSTROEMIA POLYANTHA sp. nov.

Frutex vel arbor parva, ramulis puberulis vel leviter pubescentibus; foliis brevissime petiolatis, ovatis ad oblongo-ovatis, coriaceis, nitidis, usque ad 6 cm longis, acutis vel obscure acuminatis, basi late rotundatis vel obscure cordatis, nervis utrinque circiter 8, tenuibus; inflorescentiis racemosis, floribus numerosis, brevissime pedicellatis, circiter 1 cm longis, extus glabris vel parvis pubescentibus.

A shrub or small tree, nearly glabrous, the branches terete, reddish-brown, glabrous, the branchlets obscurely puberulent, the younger ones with very short, appressed, cinereous hairs, somewhat angled or compressed. Leaves ovate to oblong-ovate, glabrous, brownish when dry, shining on both surfaces, the lower surface a little paler than the upper, the apex acute or very obscurely acuminate, the base broadly rounded, often obscurely cordate; nerves slender, about 8 on each side of the midrib, obscurely anastomosing; petioles reddish-brown, obscurely puberulent, 2 mm long or less. Racemes terminal or in the uppermost axils, appressed-hirsute, 2 to 3 cm long, many-flowered, the entire lower part thickly covered with the persistent pedicels of fallen flowers, the buds and open flowers crowded at the apices, the pedicels sparingly appressed-hirsute, stout, less than 1 mm long. Perianth cylindrical, yellow, 10 to 11 mm long, about 1.5 mm in diameter, glabrous outside, or with very few scattered hairs in the upper part, the two outer lobes orbicular-elliptic, broadly rounded, 2.2 mm long, the two inner ones somewhat shorter and narrower. Stamens 8, 4 inserted at about the middle of the tube, 4 inserted near the apex, included; anthers narrowly oblong, 1.5 mm long. Ovary narrowly oblong, cylindrical, 2.5 mm long, villous at the apex, glabrous below; style slender, about 1 mm long; stigma globose, 0.5 mm in diameter.

Fruit narrowly ovoid, fleshy, red, about 8 mm long, sparingly villous near the apex, otherwise entirely glabrous.

LUZON, Province of Rizal, near the summit of Mount Susung Dalaga, *Bur. Sci.* 19243 Reillo, December 9, 1913.

A very characteristic species, quite distinct from the other Philippine forms in its many-flowered, somewhat elongated racemes, the rachises of which are rather densely covered with the short, persistent, stout pedicels.

RHIZOPHORACEAE

GYNOTROCHES Blume

GYNOTROCHES PUBERULA sp. nov.

Arbor parva, ramulis junioribus, subtus foliis stipulisque plus minusve puberulis vel breviter pubescentibus; foliis oblongis, subcoriaceis, integris, acuminatis, basi acutis, usque ad 15 cm longis, nervis utrinque circiter 7, curvato-ascendentibus; fructibus axillaribus, fasciculatis, pedicellatis, ovoideis, circiter 4 mm longis.

A species very similar to *Gynotroches axillaris* Blume, differing chiefly in its indumentum. Branches slender, terete, brownish-red, somewhat compressed at the nodes, glabrous, the young branchlets puberulent. Leaves subcoriaceous, oblong, 10 to 15 cm long, 3 to 6 cm wide, pale or brownish when dry, shining, the base acute, the apex rather prominently acuminate, the upper surface quite glabrous, the lower distinctly puberulent or short-pubescent especially on the midrib and lateral nerves; lateral nerves about 7 on each side of the midrib, rather prominent, curved-ascending; petioles about 8 mm long, puberulent; stipules linear-lanceolate, 1.2 cm long, puberulent, deciduous. Fruits numerous, axillary, fascicled, red when mature, ovoid, about 4 mm long, the pedicels jointed at about the middle, about as long as the fruits, the persistent sepals ovate, acute, 1.5 mm long.

SAMAR, Catbalogan, *Bur. Sci.* 17396 Ramos (type); Cauayan Valley, *Phil. Pl.* 1632 Ramos, April, 1914, in forests.

Very similar to and manifestly closely allied to *Gynotroches axillaris* Blume, from which it differs chiefly in its puberulent indumentum on the young branchlets, petioles, stipules, and lower surface of its leaves.

ARALIACEAE

BOERLAGIODENDRON Harms

BOERLAGIODENDRON DIVERSIFOLIUM sp. nov.

Frutex 2 ad 3 m altus, inflorescentiis exceptis glaber; foliis coriaceis, valde diversis, majoribus usque ad 35 cm longis, usque ad $\frac{1}{2}$ vel $\frac{3}{8}$ palmatis 3- vel 5-lobatis, superioribus minoribus, ellipticis ad oblongo-ovatis, 15 ad 30 cm longis, margine grosse

irregulariter serratis; inflorescentiis terminalibus, plus minusve ferrugineo-furfuraceo-villosis vel hirsutis; floribus numerosis, 5-meris.

A shrub 2 to 3 m high, glabrous except the inflorescence, the branches terete, gray, 1 to 1.5 cm in diameter. Leaves crowded at the apices of the branches or of the simple (?) stem, coriaceous, exceedingly variable in form; larger leaves palmately 3- or 5-lobed, up to 35 cm long, the lobes reaching to the middle or lower two-thirds of the leaf, 5 to 11 cm wide, acuminate, coarsely and irregularly serrate, the sinuses rounded; other leaves on the same branchlets not at all lobed, elliptic to oblong-ovate, acuminate, coarsely and irregularly serrate, 15 to 30 cm long, 7 to 17 cm wide, the nerves prominent, more or less ascending; petioles 5 to 25 cm long, base with several crestlike ridges. Inflorescence terminal, crowded, furfuraceous-villous or hirsute with few to many short, brown hairs, the primary branches numerous, 2 to 3 cm long, each subtended by lanceolate, furfuraceous, and somewhat pectinate-ciliate bracts 2 to 2.5 cm long; central sterile head 1 to 2 cm in diameter, sessile or very shortly peduncled, the sterile fruits globose, fleshy, glabrous, purple when fresh, black when dry, 3 to 5 mm in diameter, the pedicels about as long as the fruits; each primary branch with two lateral branches bearing globose heads of perfect flowers, these lateral branches 2 to 3 cm long, the heads globose, dense, about 1.5 cm in diameter. Flowers many, densely disposed, 5-merous, yellowish, their pedicels stout, somewhat pubescent, 2 mm long. Calyx 2 mm long and wide, glabrous, truncate. Corolla 3.5 to 4 mm long, with 5, ovate, acute or obtuse, 1 to 1.2 mm long teeth; filaments 4 to 5 mm long; anthers about 1.7 mm long. Ovary 5-celled. Bracteoles numerous, brown-hirsute, broadly ovate, obtuse, 2 to 2.5 mm long. Entire inflorescence up to 15 cm in diameter.

MINDANAO, Bukidnon Subprovince, Sumilao, *Bur. Sci.* 15727 *Fénix* (type), August 2, 1913, steep slopes near streams; Mount Dilirig, *Bur. Sci.* 21447 *Escritor*, July 30, 1913: Butuan Subprovince, *Weber 1099*, July 14, 1911, at Talacogon, distributed as *B. serratifolium* Elm.

A species characterized by its exceedingly variable leaves, these small to large, and entire to deeply 5-lobed. The variation somewhat parallels that of *Boerlagiodendron heterophyllum* Merr., but the species are very different from each other.

MYRSINACEAE

ARDISIA Swartz

ARDISIA ZAMBALENSIS nom. nov.

Ardisia biflora Merr. in *Philip. Journ. Sci.* 5 (1910) Bot. 212, non King & Gamble, 1905.

The above new name is necessary for this species as the one previously selected was preoccupied.

ARDISIA KEITHLEYI nom. nov.

Ardisia oblongifolia Merr. in Philip. Journ. Sci. 5 (1910) Bot. 219, non King & Gamble, 1905.

Dedicated to Lieutenant Keithley in whose honor Camp Keithley was named. The new name is necessary as the original specific name was preoccupied.

EBENACEAE

DIOSPYROS Linnaeus

DIOSPYROS ALVAREZII sp. nov.

Arbor circiter 15 m alta, glabra vel subglabra, ramulis tenuibus, leviter puberulis vel subglabris; foliis chartaceis, oblongo-ellipticis ad oblongis, usque ad 16 cm longis, utrinque subaequaliter angustatis, basi acutis, eglandulosis, apice acutis vel obscure acuminatis, nitidis, pallidis, nervis utrinque 5 vel 6, tenuibus, prominentibus, reticulis laxis; floribus axillaribus, ut videtur solitariis vel binis, pedicellatis 4-meris; fructibus depresso-globosis, junioribus 1.3 cm diametro, pubescentibus, 8-locellatis, calycibus persistentibus, coriaceis, tubo circiter 1.5 cm diametro, lobis late ovatis, 1.5 cm longis, reflexis.

A tree about 15 m high, nearly glabrous except the fruits (flowers unknown). Branches terete, very slender, the branchlets sometimes minutely puberulent. Leaves chartaceous, pale when dry, oblong-elliptic to oblong, 10 to 16 cm long, 4 to 7 cm wide, shining, subequally narrowed to the acute, eglandular base and to the acute or somewhat acuminate apex; lateral nerves 5 or 6 on each side of the midrib, distinct, slender, rather prominent, anastomosing, the reticulations lax; petioles 6 to 8 mm long. Flowers 4-merous, axillary, apparently solitary or in pairs, the pedicels, in fruit, minutely puberulent, 1.5 cm long or less. Young fruits depressed-globose, about 1.3 cm in diameter, grayish-pubescent with short, appressed hairs, apiculate; persistent calyx large and prominent, thickly chartaceous, externally more or less puberulent, the tube very shallow, up to 1.5 cm in diameter, 4-angled, the angles rather sharp, the lobes sharply reflexed, broadly ovate, obtuse, up to 1.5 cm long, more or less plicate when dry; fruit 8-celled.

LUZON, Province of Camarines, Lanot, *For. Bur. 21417 Alvarez*, May 12, 1914, forested slopes at about sea level, locally known as *bantolinao*.

A species well characterized by its chartaceous, distantly but rather prominently nerved leaves, and especially by its prominent, accrescent, persistent, reflexed calyx which in young fruit is sharply 4-angled.

DIOSPYROS PONCEI sp. nov.

Arbor circiter 9 m alta, ramulis junioribus dense adpresse subferrugineo-hirsutis, foliis junioribus subtus obscure adpresse pubescentibus, fructibus subglobosis, extus densissime ferrugineo-hirsutis, junioribus circiter 2 cm diametro; foliis oblongis ad oblongo-lanceolatis, coriaceis, usque ad 9 cm longis, in siccitate pallidis, nitidis, utrinque subaequaliter angustatis, basi acutis, apice acutis vel breviter acuminatis, nervis lateralibus obscuris; sepalis persistentibus, orbiculari-ovatis, circiter 6 mm diametro, adpresse hirsutis.

A tree about 9 m high, the branches terete, glabrous, wrinkled, dark gray, the younger ones reddish-brown, smooth, the growing parts densely appressed ferruginous-hirsute. Leaves coriaceous, oblong to oblong-lanceolate, 6 to 9 cm long, 1.4 to 2.8 cm wide, subequally narrowed to the acute base and to the acute or somewhat acuminate apex, eglandular, the upper surface pale olivaceous when dry, shining, glabrous, or the midrib in the lower part somewhat appressed-pubescent with pale, shining hairs, the lower surface paler than the upper, when young sparingly appressed-pubescent with pale hairs, when mature quite glabrous; lateral nerves slender, obscure, ascending, the primary ones about 12 on each side of the midrib, scarcely more distinct than are the secondary ones and the reticulations; petioles 5 mm long or less, appressed-hirsute when young, becoming glabrous in age. Flowers not seen. Fruits globose, the young ones about 2 cm in diameter, axillary, sessile or subsessile, solitary, the pericarp very densely hirsute with ferruginous or fulvous hairs. Sepals persistent, plane, coriaceous, orbicular-ovate, about 6 mm in diameter, rounded, outside rather densely appressed-hirsute with pale or ferruginous hairs.

MINDANAO, Province of Surigao, Combot, *For. Bur.* 22842 Ponce, August 28, 1914, on semiopen slopes, altitude about 15 meters, locally known as *ituman*.

A species in many characters resembling the common *Diospyros discolor* Willd., and probably belonging in the same section as Willdenow's species. It differs remarkably, however, in its very much smaller, entirely differently shaped leaves which are quite glabrous on both surfaces when mature.

DIOSPYROS CAMARINENSIS sp. nov.

Arbor circiter 25 m alta, floribus exceptis glabra; foliis chartaceis, oblongis, usque ad 27 cm longis, breviter acuminatis, basi acutis vel subacutis, in siccitate nitidis, nigricantibus, nervis utrinque 12 ad 14, subtus distinctis, reticulis laxis; floribus axillaribus, fasciculatis, 4-meris, extus pubescentibus, calycis lobis erectis, acuminatis, corolla inflata; ovario 8-loculare; fructibus

globosis vel depresso-globosis, circiter 3 cm diametro, in siccitate nigris, nitidis, glabris, seminibus 7 vel 8.

A tree about 25 m in height, quite glabrous except the flowers, the branches slender, terete, dark-colored, the branchlets and petioles black when dry. Leaves chartaceous, dark-colored or somewhat blackish when dry, shining, 14 to 27 cm long, 5 to 9 cm wide, of about the same color on both surfaces, the apex shortly acuminate, base acute to subacute, usually with a pair of distinct glands near the junction with the petiole; lateral nerves 12 to 14 on each side of the midrib, slender, distinct, anastomosing, the reticulations rather lax, distinct; petioles 1 to 1.5 cm long. Flowers axillary, fascicled, 4-merous, few in each fascicle, some in the axils of leaves, some in the axils of fallen leaves, each subtended by one or two pairs of broadly ovate, pubescent bracts 2 mm long or less. Calyx about 8 mm long and 7 mm in diameter, pubescent externally, black when dry, the lobes broadly ovate, acuminate, erect, about 4 mm long, 4 to 4.5 mm wide at the base. Corolla-tube 8 to 9 mm long, inflated, about 7 mm in diameter, much narrowed toward the throat, rather densely pubescent with short, grayish-brown hairs, the lobes 4, spreading, narrowly oblong, somewhat falcate, acute, thickly coriaceous, about 9 mm long, 5 mm wide. Stamens about 20, mostly in pairs, 2-seriate, the filaments of each pair more or less united; anthers narrowly lanceolate, acuminate, 3.5 to 5.5 mm long. Ovary ovoid, pubescent, about 4 mm in diameter, 8-celled; style stout, pubescent, widened below, about as long as the ovary, the stigma irregularly lacerate. Fruit globose or depressed-globose, yellow to red when mature, black and shining when dry, about 3 cm in diameter, the persistent calyx black, coriaceous, glabrous or nearly so, nearly square in outline, about 1.5 cm broad, shallow. Seeds 7 or 9, somewhat flattened, about 13 cm long, 7 mm wide, rounded at both ends, smooth, black, shining, the albumen smooth.

LUZON, Province of Camarines, *For. Bur.* 21443 (type) 21705, 22631 Alvarez, April and May, 1914, March, 1912, from Mount Calinigan, Mount Labo, and Lanot River, in forests, 100 to 500 meters.

The species is perhaps as closely allied to *Diospyros maritima* Blume as any other species, but with entirely different, much thinner, fewer nerves and different flowers and fruits.

MIMUSOPS Linnaeus

MIMUSOPS CALOPHYLLOIDES sp. nov.

Arbor circiter 18 m alta, floribus exceptis glaberrima; foliis oblongo-obovatis, subcoriaceis, usque ad 12 cm longis, obtusis ad rotundatis, basi acutis, nitidis, nervis lateralibus numerosissimis, densis, distinctis, margine recurvatis, venis marginalibus dis-

tinctis; floribus 6-meris, sepalis puberulis circiter 5 mm longis, exterioribus quam interioribus bis latioribus; staminibus 6; ovario glabro, 6-loculare; fructibus globosis, 2 ad 2.5 cm diametro, breviter apiculatis, glabris, pericarpio fragile.

A tree about 18 m high, entirely glabrous except the flowers. Branches dark-colored when dry, the younger ones marked with numerous, crowded, petiolar scars. Leaves subcoriaceous, oblong-obovate, 9 to 12 cm long, 2.5 to 5 cm wide, entirely glabrous on both surfaces, shining, subolivaceous when dry, the base acute, the apex obtuse to rounded, margins distinctly recurved; lateral nerves very numerous, slender but rather distinct, the primary ones not more prominent than the secondary ones and the reticulations, crowded, about 20 to a centimeter, uniting to form a distinct submarginal nerve about 1 mm from the edge of the leaf; petioles 2 to 2.5 cm long. Flowers axillary, 6-merous, their pedicels puberulent, in fruit thickened upward and about 2.5 cm long. Sepals 6, 2-seriate, puberulent, the outer three about 5 mm long, triangular-oblong, acute, the inner three as long as the outer ones but one-half as wide. Stamens 6. Ovary glabrous, 6-celled. Fruit globose, 2 to 2.5 cm in diameter, brown when dry, tipped by the very short style, glabrous, the pericarp brittle. Seeds 1 or 2 in each fruit, brown and shining, obtuse, about 1.5 cm long and 1 cm wide, slightly compressed.

MINDANAO, Province of Surigao, Cadyangao, *For. Bur. 22834 Ponce*, August 20, 1914, in rather dense forests at about sea level, locally known as *duyuk-duyuk*.

The alliance of this species is with the Malayan *Mimusops kauki* Linn. from which it differs in its leaves being entirely glabrous, even when very young, not at all pubescent on the lower surface, its much more distinct lateral nerves, giving the leaves quite the appearance of those of some species of *Calophyllum*, and the distinct marginal veins.

OLEACEAE

LINOCIERA Swartz

LINOCIERA OBOVATA sp. nov.

Arbor parva, ramulis junioribus inflorescentiisque minute puberulis exceptis glabra; foliis crassissime coriaceis, obovatis, 4 ad 7 cm longis, apice late rotundatis vel late breviter acuminatis, basi angustatis, decurrento-acuminatis, nervis lateralibus obscuris, circiter 8 utrinque. Cymis axillaribus, solitariis, anguste pyramidatis, dense multifloris, sessilibus.

A small tree, glabrous except the minutely puberulent branchlets and the inflorescence. Branches gray, stout, terete, glabrous. Leaves very thickly coriaceous, obovate, 4 to 7 cm long, 2 to 4.5 cm wide, pale when dry, the upper surface shining, the

lower dull, apex broadly rounded, sometimes very shortly and broadly acuminate, sometimes even slightly retuse, the base narrowed and more or less decurrent on the petioles, the margins recurved; lateral nerves indistinct, often subobsolete, about 8 on each side of the midrib; petioles 1 to 1.5 cm long. Cymes panicle, axillary, sessile, solitary, densely many-flowered, branched from the base, slightly puberulent, brown when dry, 2 to 4.5 cm long, 2 to 3 cm wide, the branches spreading. Flowers 4-merous, the buds ellipsoid or obovoid, about 2 mm long, their pedicels 1 to 3 mm long. Calyx-teeth broadly triangular, acute, short. Mature flowers and fruits not seen.

LUZON, Province of Laguna, San Antonio, in forests, *Bur. Sci. 15014 Ramos* (type), *Phil. Pl. 1161 Ramos*, June, 1912.

A very characteristic species, recognizable by its very thick, obovate, obscurely nerved leaves, and by its dense pyramidal inflorescence.

LINOCIERA NITIDA sp. nov.

Ut videtur arbor parva, glabra; foliis oblongis, in siccitate nitidis, subcoriaceis, oblongis vel late oblongis, usque ad 18 cm longis, basi rotundatis vel subacutis, apice brevissime acuminatis, nervis utrinque circiter 8, patulis, prominentibus, anastomosantibus, reticulis obsoletis vel subobsoletis; racemis brevibus, 1 ad 1.5 cm longis, solitariis vel fasciculatis, axillaribus, densifloris; floribus 4-meris, 5 mm longis.

Apparently a small tree, glabrous, the branches terete, smooth, light gray. Leaves oblong or broadly oblong, subcoriaceous, 12 to 18 cm long, 5 to 7 cm wide, entire, brown when dry, or the upper surface somewhat olivaceous and the lower surface brown, shining on both surfaces, smooth, the base broadly rounded or somewhat acute, the apex very shortly and somewhat abruptly acuminate; lateral nerves 7 or 8 on each side of the midrib, prominent, spreading at nearly right angles, somewhat curved, anastomosing, the reticulations obsolete or nearly so; petioles dark brown, 2 to 3 mm long. Racemes short, axillary or in the axils of fallen leaves, solitary or somewhat fascicled, 1 to 1.5 cm long, densely flowered, quite glabrous or very obscurely and sparsely puberulent, the bracts broadly ovate, acute or acuminate, 1.5 mm long. Sepals ovate, acute, about 1 mm long. Petals 4, narrowly oblong, thick, 5 mm long, about 1 mm wide, slightly narrowed upward, the apex obtuse, somewhat cucullate, the margins somewhat inflexed. Anthers about 1 mm long, the connective very broad.

BASILAN, *Bur. Sci. 15406 Reillo*, August 11, 1912, in forests.

A species well characterized by its vegetative characters, especially by its leaves being brown when dry and with obsolete or nearly obsolete

reticulations, and its short, many-flowered, mostly fascicled, racemose inflorescence.

LINOCIERA PALUDOSA King & Gamble in Journ. As. Soc. Beng. 74³ (1905) 268.

PALAWAN, Taytay, Merrill 9177, 9335, Phil. Pl. 1373 (as *L. euphlebica* Merr.), April, May, 1913.

The specimens are not quite identical with *King's collector 6476* from Larut, Malay Peninsula, a duplicate of one of the specimens cited in the original description. I can, however, detect no essential differences and prefer to consider the Philippine form under King & Gamble's specific name.

Previously known only from the Malay Peninsula.

BORAGINACEAE

HELIOTROPIUM Linnaeus

HELIOTROPIUM OVALIFOLIUM Forsk. var. **DEPRESSUM** (Cham.) Merr. in Philip. Journ. Sci. 9 (1914) Bot. 134.

Heliotropium gracile R. Br. var. *depressum* Cham. in Linnaea (1829) 457.

Heliotropium coromandelinum Retz. var. *depressum* A. DC. Prodr. 9 (1845) 542.

LUZON, Province of Laguna, Calamba, along the shores of Lake Bay, *F. C. Gates 6651*, July 27, 1913.

This species, other than the record of F.-Villar, sub *H. coromandelinum* Retz., is new to the Philippines. The specimen cited above agrees in all essentials with our Guam material, the type of the variety *depressum* being from Guam. It differs from the Indian material notably in its relatively longer and much narrower leaves. Forskål's specific name dates from the year 1775, Retzius's name from the year 1781.

India, Tropical Africa, and Australia, the variety in Luzon and the Mariana Islands (Guam).

GESNERIACEAE

TRICHOSPORUM D. Don

TRICHOSPORUM BAKERI sp. nov. § *Holocalyx*.

Scandens, ramulis junioribus plus minusve pilosus; foliis coriaceis, in siccitate pallidis, ovatis ad elliptico-ovatis, usque ad 4.5 cm longis, obtusis vel late obscure obtuseque acuminatis, basi rotundatis, nervis lateralibus circiter 3, obscurissimis vel obsoletis; floribus glaberrimis, 5.5 cm longis, corolla quam calycis duplo longioribus.

Scandent, slender, elongated, the stems terete, grayish, wrinkled, 3 mm in diameter or less, rooting at the nodes, sparingly branched, the younger branchlets rather densely villous. Leaves numerous, when fresh apparently fleshy, when dry coriaceous or subcoriaceous, pale, dull or slightly shining, the

nerves and reticulations obsolete, or sometimes about 3 pairs of lateral nerves evident but obscure, 2 to 4.5 cm long, 1.5 to 3.8 cm wide, base rounded to obscurely cordate, apex obtuse to broadly and obscurely blunt-acuminate, the younger ones often slightly villous on the margins; petioles 2 to 4 mm long, when young more or less villous, when old quite glabrous. Flowers apparently dark red, on short, 1- or 2-flowered peduncles in the uppermost axils. Calyx cylindrical, quite glabrous, about 2.5 cm long, very shallowly lobed, slightly enlarged upward. Corolla about 5.5 cm long, entirely glabrous, somewhat curved, contracted above the base, then expanded, the lobes broad, subequal; stamens slightly exerted; style pubescent in the lower one-half.

LUZON, Province of Laguna, hills back of Paete, *C. F. Baker 3714* (type), 3719, December 28, 1914; Mount Maquiling, *Bur. Sci. 16889 Serviñas*, November, 1912, trailing over boulders or ledgers.

A species similar to and manifestly closely allied to **TRICHOSPORUM LOHERI** (Kränzl.) [*Aeschynanthus loheri* Kränzl. in Philip. Journ. Sci. 8 (1913) Bot. 165], from which it differs in its much slenderer, entirely glabrous flowers. Kränzlin describes the flowers of *Trichosporum loheri* as glabrous, but both the calyx and corolla are distinctly but minutely pubescent externally.

ACANTHACEAE

ASYSTASIA Blume

ASYSTASIA GANGETICA (Linn.) T. And. in Thwaites Enum. Pl. Zeyl. (1859-64) 235.

Justicia gangetica Linn. Amoen. Acad. 4 (1759) 299.

Asystasia coromandelica Nees in Wall. Pl. As. Rar. 3 (1832) 89, F.-Vill. Nov. App. (1880) 154.

LUZON, Province of Isabela, Ilagan, *Bur. Sci. 7981 Ramos*: Province of Laguna, Los Baños, *Merrill 8613*, *For. Bur. 20858 Villamil*, *Bur. Sci. 17282 Robinson & Foxworthy*, all from living plants secured in Cagayan Province by Mr. Curran.

The above is the first verification of F.-Villar's record for this genus and species as a Philippine plant. Widely distributed in tropical Asia, Africa, and Malaya.

POLYTREMA C. B. Clarke

POLYTREMA ADDISONIENSE (Elmer) comb. nov.

Hypoestes addisoniensis Elmer Leaf. Philip. Bot. 5 (1913) 1697.

The type number of this is *Elmer 12715*, from Addison Peak, Palawan; the same species is apparently represented by *Merrill 7235* from Ulugan Bay, Palawan, September, 1910. It is not a *Hypoestes* but is congeneric with the three species of the Malay Peninsula for which C. B. Clarke has proposed the generic name *Polytrema*. The Palawan species is apparently closely allied to *Polytrema vulgare* C. B. Clarke. The genus appears to be very closely allied to *Hallieracantha* Stapf. Here I also refer the following species:

POLYTREMA PULGARENSE (Elmer) comb. nov.

Hypoestes pulgarensis Elmer Leaf. Philip. Bot. 5 (1913) 1698.

The type is *Elmer 12785*, from Mount Pulgar, Palawan, and is not matched by any other collection so far received.

POLYTREMA AEQUIFOLIUM C. B. Clarke sp. nov.

Procumbens, radicans, parum pilosa, foliis oppositis, aequalibus, lamina 6 ad 7 cm longa, elliptica aut lanceolata, petiolo 5 ad 10 mm longo; corolla 11 ad 12 mm longa; capsula 15 mm longa, glabra; seminibus 4, minute verrucosis.

Resembling a weak axillary-flowered *Justicia*, the corolla and capsule much as in that genus. Stamens 2; anther-cells parallel, oblong, at equal height, muticous. Pollen globose, minutely granular, without bands, with 4 (or more) stopples. Cymes 5- to 1-flowered, small, axillary. Calyx-segments 5, linear, 6 mm long; bract lanceolate, shorter than the calyx.

PALAWAN, Puerto Princesa, *Bur. Sci. 357 Bermejos*, January, 1906.

The above description was supplied to me by the late C. B. Clarke some time before his death, but was not printed then as the description of the genus had not been published at that time.

LEPIDAGATHIS Willdenow**LEPIDAGATHIS PALAWANENSIS** sp. nov.

Herba erecta usque ad 60 cm alta, haud vel parce ramosa, subtus foliis ad nervis ramulisque prominente subfurfuraceo-pubescentibus, inflorescentiis dense albido-ciliato-pilosis; foliis chartaceis, oblongo-ovatis, usque ad 12 cm longis, integris vel obscure undulatis, obtusis vel subacutis, base longe decurrento-acuminatis, nervis utrinque 8 vel 9, subtus prominentibus; spicis axillaribus terminalibusque, fasciculatis, densis, usque ad 5 cm longis, calycis lobis bracteisque dense ciliato-pilosis; capsulis 5 mm longis, 4-angulatis.

An erect, unbranched or sparingly branched herb up to 60 cm in height, the stems terete, about 4 mm in diameter, the younger parts obscurely 4-angled, rather prominently subfurfuraceous-pubescent as are the nerves on the lower surface of the leaves and petioles. Leaves in equal pairs, oblong-ovate, chartaceous, 9 to 12 cm long, 3.5 to 6 cm wide, the upper surface olivaceous, shining, glabrous, with scattered, short cystoliths, the lower surface a little paler, apex obtuse or subacute, base long-decurrent-acuminate, winging the petiole nearly to its base, the petioles 3 to 4 cm long; lateral nerves 8 or 9 on each side of the midrib, prominent on the lower surface. Spikes axillary and terminal,

numerous, fascicled, up to 5 cm in length, dense, many-flowered, ciliate-pilose with white hairs. Bracts oblong-lanceolate, acuminate, about 4.5 mm long, 1.5 mm wide, imbricate, prominently ciliate-pilose with white hairs as are the sepals. Sepals 5, four narrowly lanceolate, acuminate, 4 mm long, 0.8 mm wide, the other as long but twice as wide. Corolla at least 5 mm long, the lobes subequal, rounded. Capsule oblong-lanceolate, narrowed upward, 4-angled, about 5 mm long, slightly puberulent toward the apex; seeds 4.1 mm in diameter, the margins rather prominently ciliate.

PALAWAN, Taytay, *Merrill 9760*, April, 1913, in dry thickets along trails at sea level.

Perhaps as closely allied to *Lepidagathis mindorensis* Merr. as any other species, but the indumentum not at all capitate-glandular and the leaves entirely different in shape, not rounded or cordate at the base and with short petioles, but long decurrent-acuminate and long-petioled.

LEPIDAGATHIS MINDORENSIS sp. nov.

Herba erecta circiter 20 cm alta; foliis oblongo-lanceolatis, subcoriaceis, glabris, usque ad 9 cm longis, basi late rotundatis vel subcordatis, supra sensim angustatis, obtusis vel obscure obtuse acuminatis, breviter petiolatis; spicis terminalibus dense fasciculatis, 2 ad 4 cm longis, angustis, densis, calycis segmentis bracteisque capitato-glandulosis, plus minusve dense ciliato-pilosis; capsulis dense cinereo-pubescentibus.

An erect herb about 20 cm high, somewhat branched, the basal parts of the stems somewhat woody, terete, glabrous, grayish-brown, the younger parts distinctly 4-angled, brown, more or less densely covered with weak, crisp, brownish hairs. Leaves in equal pairs, oblong-lanceolate, subcoriaceous, 5 to 9 cm long, 2 to 3 cm wide, widest in the lower part, gradually narrowed upward to the blunt, or slightly blunt-acuminate apex, the base broad, rounded or subcordate, margins slightly undulate, the upper surface glabrous and shining, the lower when young somewhat puberulent on the midrib and nerves; nerves slender, distinct beneath, anastomosing and forming a submarginal nerve; petioles pubescent, 2 to 4 mm long. Spikes terminal, fasciculate, many at the apex of each branch, crowded, 2 to 5 cm long, less than 5 mm in diameter, the bracts and calyx-segments rather densely ciliate-pilose, with numerous glandular-capitate hairs intermixed. Bracts narrowly lanceolate, slenderly long-acuminate, about 4 mm long, less than 1 mm wide, 1-nerved. Calyx-segments all 1-nerved, slenderly acuminate, narrowly lanceolate, one

about 1.2 mm wide, two slightly less than 1 mm wide, the fourth cleft to within about 1 mm of the base. Corolla pink, pubescent outside, 5 mm long, the tube slightly narrowed upward, not abruptly contracted, the upper lip about 1.3 mm wide, rounded or very obscurely retuse, the lower one cleft into three obtuse lobes about 1.2 mm long and 1 mm wide. Anthers 0.5 mm long, the cells parallel. Capsule narrowly oblong-ovate, densely cinereous-pubescent with short hairs.

MINDORO, Bulalacao, in rocky soils along streams, altitude about 50 meters, *Bur. Sci. 6702 Robinson*, March 17, 1909.

A species well characterized by its firm, short-petioled leaves which are rounded or subcordate at the base, and by its narrow, dense, fasciculate spikes, the bracts, bracteoles, and calyx-segments being rather densely ciliate-pilose and capitate-glandular, and in its capsules being densely cinereous-pubescent.

LEPIDAGATHIS CLARKEI sp. nov.

Species *L. incurvae* Don affinis differt spicis oblongis, solitariis vel subsolitariis, bracteis majoribus, margine parce ciliatis exceptis glabris, in siccitate brunneis vel brunneo-purpureis.

An erect herbaceous plant 20 to 30 cm high, not or but slightly branched, the basal part rarely decumbent. Stems brown or olivaceous, glabrous, slender, terete or slightly angled. Leaves in equal pairs, ovate to oblong-ovate, membranaceous, greenish when dry, slightly shining and somewhat paler on the lower surface than on the upper, 5 to 10 cm long, 2.5 to 4.5 cm wide, the base usually long and slenderly decurrent-acuminate, the apex acute or obscurely acuminate, margins entire, both surfaces with scattered, short cystoliths, glabrous; lateral nerves about 6 on each side of the midrib, slender; petioles 1 to 2.5 cm long. Spikes solitary, terminating the stem and the short, axillary branches, the whole inflorescence appearing compound, the individual spikes oblong, 2 to 5 cm long, about 1.5 cm in diameter, the bracts lanceolate, long and slenderly acuminate, about 11 mm long, 2 mm wide, brown or brown-purple when dry, 3-nerved, with distinct transverse reticulations in the upper part, glabrous except the slightly ciliate margins. Calyx-lobes all acuminate, one lanceolate, 3-nerved, with transverse reticulations in the upper half, about 10 mm long, 2.1 mm wide, two linear, 9 mm long, the fourth one cleft to within 4 mm of the base, the lobes about 2 mm wide, with a prominent midnerve and each with a pair of marginal nerves, all the segments slightly ciliate on the margins, otherwise glabrous. Corolla 8 mm long, white, glabrous, the tube slightly constricted, the lobes four, subequal, oblong, obtuse,

about 2.5 mm long, 1 to 1.2 mm wide. Capsule oblong, 6 mm long, 2 mm wide, glabrous.

LUZON, Province of Bataan, Lamao River, *Williams 37*, October, 1903 (type), *Merrill 3119*, October, 1903, *Whitford 493*, July, 1904, on damp shaded banks along the stream at an altitude of 150 meters or less.

One of the specimens (*Whitford 493*) was identified by the late C. B. Clarke as *Lepidagathis incurva* Don (*L. hyalina* Nees), but it seems to me to be specifically distinct from that species. The brown or brown-purplish color of the spikes is characteristic. It is the form previously reported by me as *Lepidagathis incurva* Don.¹⁰

LEPIDAGATHIS SUBINTERRUPTA sp. nov.

Herba parva, prostrata, ramis floriferis suberectis, vix 10 cm altis, inflorescentiis exceptis glabra; foliis parvis, oblongis, usque ad 2.5 cm longis, breviter petiolatis, obtusis vel obscure acuminatis; spicis terminalibus, gracilibus, plus minusve interruptis, solitariis vel subfasciculatis, terminalibus, usque ad 5 cm longis; calycis segmentis bracteisque leviter ciliatis capitato-glandulosisque.

A small prostrate herb, glabrous except the inflorescence, the stems 4-angled, slender, rooting at the nodes, the flowering branches erect or suberect, 10 cm high or less. Leaves in equal pairs, mostly oblong, chartaceous, 1 to 2.5 cm long, 4 to 8 mm wide, glabrous, somewhat shining, paler on the lower surface than on the upper, both surfaces with small scattered cystoliths, the base acute or somewhat decurrent-acuminate, the apex obtuse or obscurely acuminate; petioles 1 to 3 mm long. Spikes terminal, solitary or at most three together, slender, interrupted, 1 to 5 cm long, about 5 mm in diameter, the flowers somewhat scattered. Bracts and bracteoles similar, lanceolate, acuminate, 3 to 4 mm long, less than 1 mm wide, 1-nerved, slightly ciliate and capitate-glandular. Calyx-segments 5, 3 to 4 mm long, obscurely ciliate and slightly capitate-glandular, one about 1.2 mm wide, the other four similar but less than 1 mm wide. Corolla white, 4 mm long, the tube not contracted, the upper lip 1.5 mm long, 1.1 mm wide, rounded or very obscurely retuse, the lower one 3-lobed, the lobes about 1 mm long, 0.8 mm wide, obtuse. Capsule glabrous, 4 mm long, the seeds brown, about 1 mm in diameter.

LUZON, Province of Isabela, San Luis, *Bur. Sci. 8024 Ramos*, May, 1909, on boulders along shaded streams.

A species probably most closely allied to *Lepidagathis laxa* Nees, differing especially in its much smaller leaves.

¹⁰ Philip. Journ. Sci. 1 (1906) Suppl. 125.

LEPIDAGATHIS MACGREGORII sp. nov.

Species *L. laxae* Nees ut videtur affinis, differt foliis oblongo-ovatis, multo majoribus, usque ad 12 cm longis, 5 cm latis, floribus 4-meris, spicis longioribus, calycis segmentis bracteisque leviter ciliatis, vix glandulosis.

Erect, nearly glabrous, the branches quadrangular, slender, often somewhat puberulent at the nodes, reddish-brown. Leaves in equal pairs, membranaceous, glabrous, oblong-ovate, 10 to 12 cm long, 4.5 to 5 cm wide, somewhat shining when dry, slightly paler on the lower surface than on the upper, the base rather abruptly and shortly decurrent-acuminate, the apex acute or slightly acuminate, margins somewhat undulate, both surfaces with small, scattered cystoliths, the lower one sometimes slightly puberulent along the midrib; lateral nerves 7 or 8 on each side of the midrib, curved, anastomosing; petioles 1 cm long or less. Spikes fasciculate, from one to three on each peduncle, the peduncles very short or up to 4 cm in length, crowded in the upper axils, the spikes slender, 2 to 6 cm long, 5 to 6 mm in diameter. Bracts and bracteoles similar, lanceolate, acuminate, 1-nerved, 4 to 5 mm long, 1.2 mm wide, margins slightly ciliate with short hairs, otherwise glabrous, not at all glandular. Calyx-segments all acuminate, slightly ciliate on the margins, not glandular, one lanceolate, 5 mm long, 1.3 mm wide, very obscurely 3-nerved, not reticulate, two linear-lanceolate, less than 1 mm wide, the fourth cleft to within 2.5 mm of the base, the lobes lanceolate, about 1 mm wide. Corolla apparently white, 5 mm long, glabrous, the tube not or very slightly contracted, the upper lip elliptic-ovate, slightly retuse, 1.5 mm wide, the lower one cleft into three, oblong, obtuse lobes, about 2 mm long, 1 mm wide. Anthers about 0.8 mm long. Capsule 4.5 mm long, glabrous except the puberulent apex.

MINDORO, Baco River, *McGregor 128*, March 15, 1905.

A species well characterized by its slender, nearly glabrous spikes; it is similar to *Lepidagathis laxa* Nees in some respects, but differs from that form in the points indicated in the diagnosis; from *L. incurva* Ham., to which it is also manifestly allied, it differs in its slender, nearly glabrous spikes.

LEPIDAGATHIS HUMILIS sp. nov.

Herba parva, plus minusve prostrata, ramis floriferis erectis vix 10 cm altis; foliis in paribus inaequalibus, breviter petiolatis, ovatis vel late ovatis, usque ad 2 cm longis, basi late truncatis, rariter leviter cordatis vel decurrentibus; spicis axillaribus terminalibusque, solitariis, laxis, angustis, usque ad 5 cm longis, vix 5 mm latis, calycis lobis bracteisque vix ciliatis, leviter hispidis.

A small, nearly glabrous herb, the stems prostrate and rooting at the nodes, 4-angled, obscurely puberulent or glabrous, the flower-bearing branches erect, slightly branched, less than 10 cm tall. Leaves in unequal pairs, the larger ones of each pair ovate to broadly ovate, 1.5 to 2 cm long, about 1.5 cm wide, the base broad, truncate or sometimes subcordate, rarely somewhat decurrent, the apex acute or blunt, margins slightly undulate, the smaller leaves of each pair similar but less than one-half as large, both surfaces with small, scattered cystoliths; petioles 3 mm long or less. Spikes terminal and axillary, solitary, slender, 1 to 5 cm long, less than 0.5 cm in diameter, somewhat interrupted, the bracts and bracteoles similar, broadly lanceolate, acuminate, 1-nerved, about 3 mm long, 0.8 mm wide, very slightly hispid, not ciliate nor glandular. Calyx-segments all acuminate, obscurely hispid with short hairs, not ciliate, 3 to 4 mm long, one 1.2 mm wide, very obscurely 3-nerved, very obscurely reticulate above, two narrowly lanceolate, 0.7 mm long, 1-nerved, the fourth cleft to within 1.5 mm of the base, the lobes lanceolate, 1-nerved. Corolla 4 mm long, pale pink, glabrous, the tube not constricted, the upper lip 1.5 mm long, 1.1 mm wide, rounded, the lower one 3-cleft, the lobes elliptic-ovate, obtuse, nearly 1 mm wide. Anthers 0.6 mm long, the cells parallel.

MINDANAO, District of Davao, Santa Cruz, *Williams 2955*, June 19, 1905.

A species perhaps as closely allied to *Lepidagathis tenuis* C. B. Clarke as to any other Philippine species, but quite distinct from that form. Well characterized by its small size, small, unequal, broadly ovate, short-petioled leaves and its slender, nearly glabrous spikes.

RUELLIA Linnaeus

RUELLIA PANAYENSIS sp. nov.

Species *R. nudispicae* C. B. Cl. affinis, differt brevissime petiolatis, inflorescentiis fasciculatis haud solitariis tenuioribus, interdum ramosis.

An erect herb about 20 cm in height, simple or sparingly branched, the stems terete, 2.5 mm in diameter or less, ciliate-hirsute, the younger parts rather densely so. Leaves oblong-ovate, chartaceous, 4 to 9 cm long, 2 to 4 cm wide, somewhat olivaceous, shining, apex rounded, base acute or subacute, the upper surface glabrous, the lower more or less hirsute with short hairs especially on the midrib and nerves, margins entire or obscurely undulate; lateral nerves about 8 on each side of the midrib, slender; petioles pubescent, 3 to 5 mm long. Inflorescence mostly spikelike, apical, fascicled, 3 or 4 from each stem, 8 to 12 cm long, slender, glabrous or very slightly pubescent,

occasionally branched, mostly simple. Bracts linear, 2, acuminate, 2.5 mm long. Sepals 5, equal, linear-lanceolate, acuminate, about 8.5 mm long, 1 mm wide, slightly pubescent, free to the base. Corolla (very young) apparently about 1 cm long; stamens 4, all fertile, the anthers 2-celled, cells contiguous. Ovary oblong, glabrous; style-arms one only, short. Capsule linear, slightly pubescent, 8 to 9 mm long, 1.5 mm wide, the sides parallel, seed-bearing to the base. Seeds about 12, on retinacula, somewhat compressed, about 1 mm in diameter.

PANAY, Capiz, *Bur. Sci. 21236 Escritor*, June, 1913.

It is not entirely clear that the specimen came from Panay, as from the field label it seems probable that it was collected on the neighboring Island of Romblon; the locality is given simply as "Capiz, Mount Romblon." The species is manifestly allied to *Ruellia nudispica* C. B. Clarke (*Gymnostachyum nudispicum* Elm.), which is a true *Ruellia* in the sense that Clarke and Lindau interpret the genus; it differs notably in its inflorescence which consists of fascicled spikes, rarely branches, instead of solitary spikes.

HEMIGRAPHIS Nees

HEMIGRAPHIS BAKERI sp. nov.

Planta parva, glabra vel subglabra, circiter 20 cm alta, parce ramosa, ramulis plus minusve geniculatis, tenuibus; foliis in paribus aequalibus, obovato-oblongis, obtusis, integris vel leviter undulatis, basi angustatis, cuneatis, usque ad 3 cm longis; spicis tenuibus, paucifloris, bracteolis angustis, quam sepalis haud latioribus, 4 ad 5 mm longis; calycis lobis lineari-lanceolatis, acuminatis, circiter 5 mm longis, glabris; corolla 11 mm longa; capsulis lineari-oblongis, 7 mm longis, 1.7 mm diametro, seminibus circiter 12.

A small, nearly glabrous, sparingly branched plant 20 cm high or less, the branches slender, more or less geniculate in the lower part, the very young ones slightly pubescent, soon quite glabrous. Leaves opposite, those of each pair equal, oblong-obovate; chartaceous greenish-olivaceous when dry, with prominent cystoliths on the upper surface, apex rounded to obtuse, base gradually narrowed, cuneate, margins entire or obscurely undulate, 1 to 2.5 cm long, 4 to 8 mm wide, the lateral nerves about 4 on each side of the midrib, slender; petioles 2 mm long or less. Spikes terminal, slender, few-flowered, up to 5 cm long, the flowers distant, bracteoles not imbricate except toward the tips of the spikes. Calyx about 8 mm long, glabrous, the tube 3 mm long, the lobes 5, linear-lanceolate, acuminate, equal, about 0.6 mm wide below. Corolla about 11 mm long. Anthers 1.3 mm long. Capsule linear-oblong, about 7 mm long, 1.7 mm wide, apiculate, glabrous,

not at all clavate. Seeds about 12, brown, slightly compressed, obtuse, base inequilaterally cordate, somewhat shaggy-ciliate, about 1.5 mm long. Bracteoles linear, 4 to 5 mm long, green, 1 mm wide or less, the lower ones slightly spatulate, glabrous.

LUZON, Province of Tayabas, hills near Malimao, *C. F. Baker 3272* (type), May 7, 1914. SAMAR, *For. Bur. 21081 Sherfese, Cenabre, & Cortes*, April, 1914.

A species probably belonging in the group with *Hemigraphis fruticulosa* C. B. Clarke, but nearly or quite glabrous, with entirely differently shaped leaves and relatively very narrow bracteoles.

[Vol. X, Sec. C, Nos. 3 and 4, including pages 159 to 285, were issued July 13 and August 9, respectively.]



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