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STUDIES ON PHILIPPINE ANONACEAE, I

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The family *Anonaceae* is well represented in the Philippines, and current collections present rather a high percentage of novelties in this family. No attempt has been made here critically to study all the Philippine species, but merely to describe some of the apparently new forms in our abundant accumulated material, and to discuss some questions of nomenclature in regard to both genera and species. Twenty-four new species are proposed in the genera *Uvaria*, *Alphonsea*, *Dasymaschalon*, *Meiogyne*, *Polyalthia*, *Mitrephora*, *Pseuduvaria*, *Orophea*, and *Goniothalamus*. The designation *Desmos* of Loureiro is used in place of *Unona* for the oriental species, excluding the section *Dasymaschalon* which is here treated as a distinct genus. The genus recently described by Diels from New Guinean material as *Papualthia* is found to be represented in the Philippines by six species previously described under *Polyalthia* and *Unona*. In studying this Philippine *Papualthia* material, my attention was again called to the species of the Mariana Islands described by Safford as *Papualthia mariannae* and by me erroneously referred to *Polyalthia*, with the result that I have proposed to make *Papualthia mariannae* Safford the type of a new genus *Guamia*, its alliance being rather with *Oncodostigma* than with *Papualthia*. *Griffithianthus* is proposed as a new generic name for *Griffithia* Maingay, not of Wight and Arnott, and the genus is extended to the Philippines by the transfer of *Mitrephora merrillii* C. B. Rob. and the reduction of *M. viridifolia* Elm.

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Following Boerlage, *Meiogyne* is recognized as a distinct genus. The genus *Pseuduvaria* of Miquel, considered by Boerlage as a section of *Mitrephora* under the name of *Para-Orophea*, is recognized as a valid genus intermediate between *Orophea* and *Mitrephora* in floral characters but differing from both in being diœcious. The generic designations new to the *Philippine* flora are *Desmos*, *Dasymaschalon*, *Papualthia*, *Griffithianthus*, *Meiogyne*, and *Pseuduvaria*. Two of the species described by Blanco that have previously been considered as doubtful have been definitely identified and the synonymy has been adjusted.

UVARIA Linnaeus

UVARIA LANCIFOLIA sp. nov.

Frutex ut videtur scandens, partibus junioribus ferrugineopubescentibus, vetustioribus subglaber; foliis lanceolatis, subcoriaceis, nitidis, acuminatis, basi obtusis vel rotundatis, usque ad 15 cm longis, nervis utrinque 12 ad 18, prominentibus; floribus longe pedicellatis, circiter 1.8 cm diametro, extra-axillaribus subterminalibusque, paucis; connectivo truncato, vix producto.

A shrub, apparently scandent, when young distinctly pubescent with short, stellate, ferruginous hairs, in age becoming nearly glabrous. Branches terete, slender, dark-colored when dry, somewhat glaucous, the young branchlets ferruginous-pubescent. Leaves subcoriaceous, lanceolate, 10 to 15 cm long, 2.5 to 4.5 cm wide, narrowed upward to the rather prominently acuminate apex, the base narrowed, obtuse to rounded, the upper surface greenish-olivaceous, shining, when mature entirely glabrous, the lower surface sparingly pubescent; lateral nerves 12 to 18 on each side of the midrib, prominent, curved-ascending, anastomosing, the reticulations lax, not prominent; petioles about 3 mm long, puberulent. Flowers reddish-brown, extra-axillary and subterminal, solitary or in greatly reduced, 2- or 3-flowered cymes, all parts ferruginous-pubescent, the pedicels 1.5 to 2 cm with a prominent bracteole at about the middle. Sepals broadly ovate, united below, pubescent, obtuse, about 5 mm long. Petals subequal, spreading, elliptic-ovate, about 8 mm long, 6 mm wide, rounded or obtuse, pubescent. Stamens indefinite, about 4 mm long, linear-oblong, connective but slightly produced, truncate, somewhat oblique. Carpels crowded, linear-oblong, pubescent, about 4 mm long. Fruits glabrous or nearly so, globose to ellipsoid-ovoid, about 1 cm long.

LUZON, Province of Zambales, San Antonio, *F. C. Gates 5495* (type), 6647, January and December, 1913, collected by *Ariño* and *Canonizado* in

the Casagtan forest, its local, Ilocano, name being *al-alagat*; Subic, Hallier *s. n.* Perhaps referable here is a fruiting specimen from the District of Zamboanga, Mindanao, *Bur. Sci. 16394 Reillo*, October, 1912.

A species in aspect very different from the other known Philippine forms, distinguished by its rather long pediceled, rather small flowers, its prominently nerved, lanceolate leaves, and in being nearly glabrous at full maturity.

UVARIA ELLIPTIFOLIA sp. nov.

Frutex scandens, prominente ferrugineo-pubescentibus; foliis ellipticis, coriaceis, usque ad 15 cm longis, apice retusis rotundatis vel late obscure acuminatis, basi rotundatis ad leviter cordatis, nervis utrinque circiter 9, valde prominentibus; floribus extra-axillaribus, circiter 5 cm diametro, solitariis vel paucis, sepalis deorsum valde connatis, petalis utrinque cinereopuberulis; connectivo longe producto.

A scandent shrub, apparently of large size, the young branches, inflorescences, and leaves, especially on the lower surface, very prominently and rather densely ferruginous-pubescent with stellate hairs. Older branches dark-colored, glabrous. Leaves elliptic, coriaceous, 10 to 15 cm long, 6 to 9 cm wide, brownish or brownish-olivaceous when dry, apex retuse, rounded, to broadly and obscurely acuminate, base rounded to somewhat cordate, the upper surface ferruginous stellate-pubescent on the midrib and lateral nerves, the indumentum on the surface otherwise somewhat deciduous, the lower surface more densely pubescent than the upper; lateral nerves about 9 on each side of the midrib, very prominent, anastomosing, the reticulations lax; petioles densely ferruginous-pubescent, 3 to 5 mm long. Flowers yellowish-brown, extra-axillary, solitary or two or three together, the pedicels 1 cm long or less, densely ferruginous-pubescent as is also the reniform, somewhat amplexicaul bracteole which is about 10 mm wide and 6 mm long. Calyx pubescent, the lobes united below, reniform, rounded, 5 to 6 mm long and 6 to 10 mm wide. Petals subequal, subelliptic, on both sides densely cinereous-puberulent, or externally, when young, yellowish or ferruginous, rounded, about 2 cm long and 1.4 cm wide. Stamens indefinite, closely packed, about 5 mm long, the outer ones somewhat shorter than the inner, and the outermost reduced to staminodes, linear-oblong, the antheriferous part about as long as the connective which is flattened, oblong, obtuse, about 1 mm wide and 2.5 mm long, the apex obscurely obliquely truncate, puberulent. Carpels numerous, linear-oblong; densely pubescent, about 5 mm long, the stigma thickened, short, glabrous.

Mature fruits said to be edible, oblong-cylindric, glabrous, about 1.5 cm long and 1 cm in diameter when dry, each with from 2 to 4 seeds, the pedicels about 3 cm long, the thickened receptacle about 2.5 cm in diameter.

BILIRAN, *Bur. Sci.* 18878 *McGregor* (type), June, 1914, in forests, altitude about 300 meters. NEGROS, in dense forests, *For. Bur.* 7331 *Everett*, January, 1907, locally known as *saguin-saguin*.

A species well characterized by its elliptic leaves, its rather dense, ferruginous, stellate indumentum, and its prominently produced, thin, flattened, puberulent connectives.

UVARIA LEYTENSIS (Elm.) comb. nov.

Unona leytensis Elm. *Leafl. Philip. Bot.* 5 (1913) 1744.

LUZON, Province of Bataan, *For. Bur.* 87 *Barnes*, *For. Bur.* 2051 *Borden*, *Merrill* 3301: Province of Laguna, Mount Maquiling, *For. Bur.* 19781 *Whitford*. LEYTE, *Elmer* 7365, distributed as *Unona ebracteolata* Presl. MINDANAO, Province of Agusan, *Elmer* 13880 (type): District of Zamboanga, *Hallier*.

All of the above specimens are in fruit, and all are manifestly *Uvaria*, not *Unona*. They have the characteristic fleshy fruits of *Uvaria*, the scandent habit, and the very few hairs that are present are stellate. From the material available I can see little reason for distinguishing *Uvaria nudistellata* Elm. from *U. leytensis* Merr., but the specimens are not directly comparable, the type of the former being in fruit, and of the latter in flower, and of which I have seen merely young buds. Another close ally is *Uvaria stellata* Merr. The alliance of the species is certainly with the Javan *Uvaria concava* T. & B., which has fruits 4 to 8 cm in length, while our species has fruits less than 4 cm long. Still another very closely allied form is *Uvaria lurida* Hook f. & Th.

UVARIA SIBUYANENSIS Elm. *Leafl. Philip. Bot.* 5 (1913) 1747.

This species was based on *Elmer* 12322 from the Island of Sibuyan, and must be excluded from the genus, as it is not a *Uvaria*. The flowers are unknown, and until the species is again collected and with flowers, its generic position remains doubtful. It apparently belongs in *Goniothalamus*.

UVARIA MICRANTHA (A. DC.) Hook. f. & Th. *Fl. Ind.* (1855) 103; King in *Ann. Bot. Gard. Calcutta* 4 (1893) 26, *t.* 18; Finet & Gagnep. in *Lecomte Fl. Gén. Inde-Chine* 1 (1907) 54.

Gutteria micrantha A. DC. *Mém. Anon.* (1832) 42.

LUZON, Province of Batangas, *Bur. Sci.* 22403 *Ramos*, August, 1915. MINDORO, Puerto Galera, *Merrill* 3345, October, 1903. PALAWAN, Taytay, *Merrill* 9271, May, 1913. PANAY, *Bur. Sci.* 21231 *Escritor*, June, 1913, all from low altitudes, on or near the seashore.

This species is reported from Burma, Indo-China, Penang, Malacca, and Sumatra, and its range is now extended to the Philippines by the identification of several specimens from the Archipelago. Our material agrees with the descriptions, the figure, and specimens from Indo-China identified by Finet & Gagnepain as *Uvaria micrantha* Hook. f. & Th.

GRIFFITHIANTHUS nomen novum

Griffithia Maingay non Wight & Arnott.

The generic name *Griffithia* of Maingay was not published until 1893, and then by King² from Griffith's manuscript, although characterized by Maingay many years earlier. The type of the genus is *Polyalthia magnoliaeflora* Maingay ex Hook. f. & Th.,³ published with the comment: "referred to a new genus in Maingay's MSS." The specific name was altered from Maingay's *magnoliaepetala* to *magnoliaeflora*.

The generic designation *Griffithia* was used in 1834 by Wight and Arnott for a group of rubiaceous plants, and about 14 specific names have been published under *Griffithia* of Wight & Arnott by various authors. Although *Griffithia* W. & A. is now considered to be a synonym of *Randia*, I maintain that the earlier use of the name by Wight & Arnott invalidates *Griffithia* of Maingay, and accordingly here propose a slight modification of Maingay's generic name.

The genus has three species in the Malay Peninsula and at least one in the Philippines.

GRIFFITHIANTHUS MAGNOLIAEFLORUS (Maingay) comb. nov.

Polyalthia magnoliaeflora Maingay ex Hook. f. & Th. in Hook. f. Fl. Brit. Ind. 1 (1872) 64.

Griffithia magnoliaepetala Maingay ex King in Ann. Bot. Gard. Calcutta 4 (1893) 9, t. 218.

Malacca and Perak.

GRIFFITHIANTHUS CUPULARIS (King) comb. nov.

Griffithia cupularis King in Ann. Bot. Gard. Calcutta 4 (1893) 9, t. 219.

Perak.

GRIFFITHIANTHUS FUSCUS (King) comb. nov.

Griffithia fusca King in Ann. Bot. Gard. Calcutta 4 (1893) 10, t. 220.

Perak.

GRIFFITHIANTHUS MERRILLII (C. B. Rob.) W. H. Brown comb. nov.

Mitrephora ferruginea Merr. in Govt. Lab. Publ. (Philip.) 17 (1904) 16, excl. descr. fl., Philip. Journ. Sci. 1 (1906) Suppl. 54, non Boerl.

Mitrephora merrillii C. B. Rob. in Bull. Torr. Bot. Club 35 (1908) 67.

Mitrephora viridifolia Elm. Leaf. Philip. Bot. 5 (1913) 1716.

LUZON, Province of Ilocos Norte, *For. Bur. 13918 Merritt & Darling*: Province of Nueva Ecija, *For. Bur. 22357 Alvarez*: Province of Zambales, *Hallier, For. Bur. 382 Maule*: Province of Rizal, *Bur. Sci. 983 Ramos*:

² Ann. Bot. Gard. Calcutta 4 (1893) 8.

³ Hook. f. Fl. Brit. Ind. 1 (1872) 64.

Province of Bataan, *For. Bur.* 635, 2045 Borden, *For. Bur.* 2629 Meyer, *For. Bur.* 5770 Curran, *For. Bur.* 61, 367, 513 Barnes, Elmer 7000, 6734, Williams 111, *Bur. Sci.* 1878 Foxworthy, Merrill 3728: Province of Tayabas, *Bur. Sci.* 13091, 13107 Foxworthy & Ramos, *Bur. Sci.* 19442 Ramos: Province of Camarines, Ahern 67, 253. MINDORO, *For. Bur.* 6202, 3703 Merritt, Whitford 1374, *For. Bur.* 11876 Amarillas. SAMAR, *For. Bur.* 12852 Rosenbluth, *Bur. Sci.* 17496 Ramos. MINDANAO, Province of Agusan, Elmer 14184: Province of Misamis, *For. Bur.* 11894 Miranda: District of Lanao, *For. Bur.* 23163 Agama: District of Cotabato, *For. Bur.* 3927 Hutchinson: District of Zamboanga, *For. Bur.* 9205 Whitford & Hutchinson, Hallier: District of Davao, Williams 2890.

This widely distributed species presents considerable variation in the size of its leaves and in its indumentum, varying from rather densely and softly stellate ferruginous-pubescent to forms that are but slightly stellate-pubescent on the midrib and nerves only so far as the leaves are concerned. Practically all intergrades are presented in our extensive series of specimens, and I am of the opinion that but a single species is represented.

The species was originally described as *Mitrephora ferruginea* Merr., but it was soon discovered that two different species were included in the description, fruiting specimens of the form here considered, and flowering specimens of an entirely different species, a true *Mitrephora*, and *M. lanotan* (Blanco) Merr. Robinson proposed the name *Mitrephora merrillii* in place of *M. ferruginea*, as Boerlage had previously described another species under the latter specific name. This change was made without the examination of flowering specimens. *Mitrephora viridifolia* Elm. was more recently described from flowering specimens as a species distinct from *M. merrillii*, but I do not consider the form sufficiently strongly characterized to be distinguished, unless one wishes to propose, from the material I have above referred to *Griffithianthus merrillii*, several very closely allied species to be separated by merely trivial characters.

While the species is represented by a large number of specimens, nearly all of them are in fruit, and no flowering specimens were received that with certainty could be referred to *Mitrephora merrillii*, until 1913. An examination of these flowers, and of those described by Elmer under *Mitrephora viridifolia*, shows at once that the species is not a *Mitrephora*, that it does not even belong in the same tribe with *Mitrephora*, and that it is apparently generically identical with the group characterized by Maingay as *Griffithia*, a genus previously known only from the Malay Peninsula. Even in *Griffithia* (= *Griffithianthus*) it is somewhat anomalous, differing, apparently, in its stellate indumentum (I have seen no specimens of the species described by King, and in his descriptions and figures there is no indication that the indumentum is stellate), its smaller flowers, and its sepals not or but very slightly imbricate.

The flowers are axillary, short-pedicel, densely ferruginous-pubescent, each pedicel with a broadly ovate, rounded or obtuse, 3.5 mm long bracteole. Sepals broadly ovate, densely ferruginous-pubescent on both surfaces, about 3 mm long, obtuse to subacute, valvate or obscurely imbricate at the base. Outer petals oblong, thick, obtuse, 8 to 9 mm long, 4 mm wide, imbricate, somewhat keeled inside, the inner three similar in size or a little shorter, valvate by their broadened margins, cohering in bud and perhaps in young flowers, later spreading, the basal part excavated, much thinner than the upper one-half, but not arched or vaulted, base broad. Stamens about 25,

rather crowded, flattened, about 1.8 mm long, 1 mm wide, the filamentous part as long as the antheriferous part, the connectives broad, thin, not produced, not entirely concealing the cells. Carpels usually 8 to 12, 25 mm long, oblong, crowded, densely hirsute; ovule solitary, basal; style cylindrical, glabrous, about 1 mm long, somewhat curved.

ALPHONSEA Hooker f. & Thomson

ALPHONSEA ARBOREA (Blanco) comb. nov.

Macanea arborea Blanco Fl. Filip. (1837) 431.

Monodora myristica Blanco l. c. ed. 2 (1845) 300, ed. 3, 2 (1878) 193, non Dun.

Monocarpia blancoi F.-Vill. Novis. App. (1880) 6.

Alphonsea philippinensis Merr. in Govt. Lab. Publ. (Philip.) 35 (1906) 9.

LUZON, Province of Rizal, Bosoboso, *For. Bur. 2010 Ahern's collector*: Province of Laguna, Mount Maquiling, *For. Bur. 20288 Villamil*: Province of Tayabas, *Merrill 1925, 1988, 2062, 2591, For Bur. 3215 Hagger*: Province of Camarines, *For. Bur. 10499 Curran*. MINDORO, *Bur. Sci. 939 Mangubat*. TICAŌ, *For. Bur. 1015 Clark*. MASBATE, *Merrill 3075*. LEYTE, *For. Bur. 12710 Rosenbluth*. CEBU, *For. Bur. 6439 Espinosa*. MINDANAO, District of Zamboanga, *For. Bur. 22020 Villamil*.

Local names: *sapiro* (Cebu); *lanutan* (Leyte, Tayabas, Mindoro); *calay* (Zamboanga, Laguna); *lanutan itum* (Ticao); *bolon* (Camarines).

Blanco's *Macanea arborea* does not appear in Index Kewensis. In the second edition of the Flora de Filipinas he erroneously reduced it to the American *Monodora myristica* Dun. *Monocarpia blancoi* F.-Vill. is merely a new name for Blanco's species accompanied by a description based on specimens from Luzon. *Alphonsea philippinensis* Merr. is certainly identical with *Macanea arborea* Blanco, and Blanco's specific name is accordingly here accepted.

Blanco's description is unmistakable and applies in all respects to the species as here interpreted. His material was from Luzon and Cebu; the native name *calai* cited by him is still in use for this species, and is apparently exclusively applied to it; the time of flowering agrees. Even if Blanco's description were very poor, which it is not, the phrase describing the fruit would unmistakably locate the form: "La corteza exterior del fruto se parece enteramente al del llamado en Manila Maméi [*Lucuma mamosa* Gaertn.]." The fruits are very hard, woody, brown, rounded at the apex, up 9 cm long and 5 to 6 cm in diameter.

F.-Villar placed the species in the genus *Monocarpia*, but saw no flowers. The stamens in our material are miliusoid and exclude the species from Miquel's genus in which the connectives are produced and truncate.

ALPHONSEA SESSILIFLORA sp. nov.

Frutex vel arbor parva, ramulis floribusque ferrugineo-pubescentibus; foliis lanceolatis, in siccitate pallidis, chartaceis, 5 ad 8 cm longis, acuminatis, basi acutis, nervis utrinque circiter 11, tenuibus, indistinctis; floribus axillaribus, solitariis, sessilibus, sepalis petalisque extus ferrugineo-pubescentibus.

A shrub or a small tree, the branches very slender, terete,

glabrous, grayish, the younger branchlets distinctly ferruginous-pubescent. Leaves lanceolate, chartaceous, 5 to 8 cm long, 1.3 to 2.5 cm wide, pale and of the same color on both surfaces when dry, shining, gradually narrowed upward to the acuminate apex, the base obtuse or acute, the upper surface entirely glabrous, the lower slightly ciliate-hirsute on the midrib, becoming glabrous; lateral nerves slender, obscure, about 11 on each side of the midrib, the rather lax reticulation nearly as prominent; petioles ferruginous-pubescent, 2 to 3 mm long. Flowers axillary, sessile, solitary, the mature buds globose. Sepals orbicular, rounded, appressed fulvous-pubescent, 2.5 mm long. Petals very thickly coriaceous, the outer three fulvous-pubescent externally, ovate, 7 mm long, the inner three very much thicker, 5 mm long, slightly pubescent. Stamens indefinite, 1.5 to 2 mm long, the connectives oblong, truncate, 0.8 mm in diameter. Carpels about 7, oblong, 2 mm long, densely hirsute; ovules 6, 1-seriate; stigma 0.5 mm long, glabrous.

LUZON, Province of Nueva Ecija, Sabani, *For. Bur.* 22118 Alvarez, December, 1910. *Bur. Sci.* 13617 Ramos, from Rizal Province, Luzon, may represent the same species. It is in fruit and differs in its leaves being remarkably shiny.

The species has the vegetative characters of *Polyalthia*, but its flowers do not admit referring it to that genus. I am not satisfied entirely with its reference to *Alphonsea*, but it seems to agree in essential characters with this genus, as described, better than with any other genus known to me. The sessile, solitary, axillary flowers are characteristic.

DESMOS Loureiro

Safford⁴ has recently conclusively shown that the genus *Unona* Linn. f. was based on an American species, *Unona discreta* Linn. f., and that Vahl was in error in placing under *Unona* the Asiatic *U. discolor* Vahl=*Desmos chinensis* Lour. The Indo-Malayan material that has by various authors been referred to *Unona* cannot properly be considered under this generic designation, and Safford has correctly taken up the generic appellation *Desmos* for the oriental forms, this genus having been proposed by Loureiro in 1790. Safford erred, however, in extending *Desmos* to cover the section *Dasymaschalon* of *Unona*, as *Dasymaschalon* is a perfectly valid genus which cannot properly be placed in the same tribe with *Unona* auct.=*Desmos* Lour. The only Philippine species that can definitely be referred to *Desmos* is *Desmos chinensis* Lour. The other Philippine forms described under *Unona* apparently belong in other genera.

⁴ Bull. Torr. Bot. Club 39 (1912) 501-508.

DESMOS CHINENSIS Lour. Fl. Cochinch. (1790) 352.

Unona discolor Vahl Symb. 2 (1791) 63, t. 26.

LUZON, Manila, *Ahern 730* (cult.). PALAWAN, *Merrill 9279*, *Bur. Sci. 210 Bermejós*. BASILAN, *For. Bur. 20092 Miranda*.

The other Philippine species that have been described under *Unona* in recent years are as follows: *Unona agusanensis* Elm. = *Polyalthia*; *Unona leytensis* Elm. = *Uvaria*; *Unona sympetala* C. B. Rob. = *Papualthia*; *Unona miniata* Elm. probably = *Polyalthia* (flowers not seen by me); *Unona palawanensis* Elm. probably = *Polyalthia* (flowers not seen by me); *Unona mindorensis* Merr., proper generic designation doubtful, but not *Desmos*; *Unona rubra* Merr., fruits unknown, but probably not *Desmos*.

The following extra-Philippine species must be considered under *Desmos*, not under *Unona*:

DESMOS HAHNII (Finet & Gagnep.) comb. nov.

Unona hahnii Finet & Gagnep. in Bull. Soc. Bot. France 53 (1906)

Mém. 4:67, et in Lecomte Fl. Gén. Indo-Chine 1 (1907) 58, t. 8, B.

Cambodia.

DESMOS DINHENSIS (Pierre) comb. nov.

Unona dihensis Pierre ex Finet & Gagnep. l. c. 79, 62, t. 11 B.

Cochinchina.

DESMOS HANCEI nom. nov.

Unona velutina Hance in Journ. Bot. 15 (1877) 328; Finet & Gagnep.

Lecomte Fl. Gén. Indo-Chine 1 (1907) 61.

Cambodia.

DESMOS TEYSMANNII (Boerl.) comb. nov.

Unona teysmannii Boerl. in Ic. Bogor. 1 (1899) 103.

Borneo.

DESMOS CHRYSSEUS (Miq.) comb. nov.

Monoon chryseum Miq. Ann. Mus. Bot. Lugd.-Bat. 2 (1865) 15.

Unona chrysea Boerl. in Ic. Bogor. 1 (1899) 102.

Sumatra.

DESMOS COSTATUS (Miq.) comb. nov.

Unona costata Miq. Fl. Ind. Bat. Suppl. (1861) 376.

Sumatra.

DESMOS SUBBIGLANDULOSUS (Miq.) comb. nov.

Unona subbiglandulosa Miq. Ann. Mus. Bot. Lugd.-Bat. 2 (1865) 11.

Borneo.

DASYMASCHALON (Hook. f. & Th.) Torre & Harms

This genus, first proposed as a section of *Unona* by Hooker f. and Thomson,⁵ is very distinct from all other groups, presents no intermediate forms between it as a genus and the allied

⁵ Fl. Ind. 1 (1875) 61.

groups, and certainly merits general recognition as a valid genus. The name was taken from *Unona dasymaschala* Blume Fl. Jav. Anon. 55, t. 27, although the first species cited under the section was the allied *Unona longiflora* Roxb. It should be noted that Blume's figure is not correct in presenting the flowers with separate petals. In *Dasymaschalon* the petals, 3 in number, never 6, are firmly united by their broad margins, never separate, and the corolla falls as a whole. Boerlage,⁶ who treats the group merely as a section of *Unona*, has separated it from the sections *Desmos* and *Stenopetalum* of *Unona* which he places in his series *Unonées*, and rather illogically places *Dasymaschalon*, still as a section of *Unona*, under the series *Mélodorées*. While Boerlage is probably correct in placing *Dasymaschalon* in the alliance with *Melodorum*, the genus *Unona* certainly cannot logically be considered as partly in one tribe and partly in another, under the same generic name, as Boerlage proposed to do.

Dasymaschalon was retained merely as a section of *Unona* until 1901, when Torre & Harms raised it to generic rank. In this they have been followed by Finet & Gagnepain,⁷ who follow Boerlage in considering *Dasymaschalon* in the alliance with *Melodorum* rather than with *Unona* auct., non Linn. f. (= *Desmos* Lour.). I believe that Boerlage is correct in placing it in the tribe *Melodorieae* (including *Xylopieae*) rather than retaining it in the tribe *Unoneae* with the two other sections of the genus *Unona* (= *Desmos*).

As originally delimited the genus included those species of *Unona* that present but three petals, and these quite united by their broad margins and falling as a whole, the carpels with several ovules, and the fruits moniliform. Its limits should be extended to include several Philippine forms having the prominent perianth characters of *Dasymaschalon* but with carpels having but 1 or 2 ovules, and the fruits ovoid to ellipsoid, not at all moniliform. One species is common and very widely distributed in the Philippines, having originally been placed in *Unona*, but later transferred to *Polyalthia* on the basis of the number of ovules; yet no species of *Polyalthia* presents the peculiar petal characters of this plant, which does occasionally present carpels with 2 ovules, and fruits with 2 seeds. The genus includes the following known species:

⁶ Ic. Bogor. 1 (1899) 84, 87, 98, 126.

⁷ Bull. Soc. Bot. France 53 (1906) Mém. 4: 143; Lecomte Fl. Gén. Indo-Chine 1 (1907) 104.

DASYMASCHALON LOMENTACEUM Finet & Gagnep. in Bull. Soc. Bot. France 53 (1906) Mém. 4: 143; Lecomte Fl. Gén. Indo-Chine 1 (1907) 105.

Cochinchina and Cambodia.

DASYMASCHALON MACROCALYX Finet & Gagnep. in Bull. Soc. Bot. France 53 (1906) Mém. 4: 143.

Cochinchina and Cambodia.

DASYMASCHALON LONGIFLORUM (Roxb.) Finet & Gagnepain in Bull. Soc. Bot. France 53 (1906) Mém. 4: 143.

Unona longiflora Roxb. Fl. Ind. 2 (1832) 668.

Desmos longiflorus Safford in Bull. Torr. Bot. Club. 39 (1912) 507.

Eastern Himalaya, Khasia Hills, etc., to Perak.

DASYMASCHALON BLUMEI Finet & Gagnep. in Bull. Soc. Bot. France 53 (1906) Mém. 4: 143.

Unona dasymaschala Blume Fl. Jav. Anon. (1828-36) 55, t. 27.

Desmos dasymaschalus Safford in Bull. Torr. Bot. Club. 39 (1912) 507.

Burma to Sumatra and Java.

DASYMASCHALON COELOPHLOEUM (Scheff.).

Unona coelophloea Scheff. in Flora 52 (1869) 300; Boerl. in Ic. Bogor. 1 (1899) 127, t. 43.

Java; cult. in hort. Bot. Bogor. XI, A, 25; XVI, E, 70.

DASYMASCHALON CLEISTOGAMUM (Burck).

Unona cleistogama Burck ex Boerl. in Ic. Bogor. 1 (1899) 127, 201, t. 72.

Riouw; cult in Hort. Bot. Bogor. IV, G, 45a, 58a.

Specimens of all of the above species are in the herbarium of the Bureau of Science

DASYMASCHALON CLUSIFLORUM (Merr.) comb. nov.

Unona clusiflora Merr. in Govt. Lab. Publ. (Philip.) 35 (1906) 13.

Polyalthia clusiflora C. B. Rob. in Bull. Torr. Bot. Club. 35 (1908) 68.

This Philippine species is represented by over 30 specimens, ranging from the Babuyanes Islands on the north to Palawan and southern Mindanao. The material presents considerable variation, especially in the length of the flowers, but the vegetative characters are rather constant. Abundant fruiting material nearly always presents fruits with but a single seed, sometimes with two superposed seeds, but the fruits are never in the slightest degree moniliform.

Var. **MEGALANTHUM** var. nov.

A typo differt floribus multo majoribus, usque ad 11 cm longis.

LUZON, Province of Camarines, Caramoan Peninsula, *For. Bur. 10636 Curran*, June, 1908.

DASYMASCHALON OBLONGATUM sp. nov.

Arbor parva, circiter 10 m alta, floribus parcissime pubescentibus exceptis glabra; ramis ramulisque teretibus, gracilib;

foliis oblongo-lanceolatis, chartaceis vel leviter coriaceis, usque ad 11 cm longis, acuminatis, basi acutis, supra nitidis, subtus leviter glaucescentibus; nervis lateralibus utrinque, 9 ad 12, tenuibus; floribus flavidis, solitariis, pedicellatis, lanceolatis, longe acuminatis, usque ad 6.5 cm longis, extus parcissime pubescentibus; fructibus ellipsoideis vel cylindraceutis, circiter 12 mm longis, seminibus solitariis.

A small tree about 10 m high, glabrous except the flowers. Branches and branchlets slender, terete, dark reddish-brown when dry. Leaves oblong, chartaceous to subcoriaceous, 8 to 11 cm long, 2 to 3 cm wide, the apex acuminate, base acute, the upper surface smooth, shining, rather pale, the lower surface somewhat glaucous; lateral nerves 9 to 12 on each side of the midrib, very slender, not prominent, anastomosing, the reticulations lax; petioles 4 to 8 mm long. Flowers yellow, solitary, up to 6.5 cm long, lanceolate, acuminate, the pedicels 1 to 2 cm long, opposed to the ultimate leaf on the branchlets. Calyx about 8 mm in diameter, the lobes broadly triangular-ovate, subacute, somewhat united below, glabrous or with very few, short, scattered, ferruginous hairs. Petals lanceolate, acuminate, coriaceous, united by their margins, the corolla falling as a whole, up to 7 cm long and 1.5 cm wide, narrowed upward to the long-acuminate apex, glabrous or with very few, short, scattered, ferruginous hairs. Stamens indefinite, 1.8 mm long, crowded on the sides of the torus, the connectives broad, truncate. Carpels very many, densely arranged on the elongated torus, narrowly oblong, slightly pubescent, curved, narrowed upward, 2.5 mm long, including the curved, 1 mm long style. Ovules solitary. Fruits ellipsoid, about 12 mm long, 6 to 7 mm in diameter, dark-colored when dry, glabrous or nearly so, not at all moniliform, apex blunt; seeds conforming to the fruit in outline, solitary.

LUZON, Subprovince of Benguet, Baguio, *Merrill 9703* (type), May, 1914, in flower, *Elmer 6016*, March, 1904, in fruit, in thickets about limestone cliffs, altitude about 1,300 meters.

A species manifestly allied to *Dasymaschalon clusiflorum* Merr., from which it differs in its narrower leaves, and especially in its slenderer, long-acuminate flowers, the petals gradually narrowed upward in the upper one-half, glabrous or with but few, scattered, short, ferruginous hairs, not at all uniformly cinereous-pubescent externally as in *D. clusiflorum* Merr.

DASYMASCHALON SCANDENS sp. nov.

Frutex scandens, glaber (floribus ignotis), ramis ramulisque tenuibus teretibus; foliis oblongis, chartaceis usque ad 11 cm longis, utrinque subaequaliter angustatis, basi acutis, apice acuminatis, nitidis, supra olivaceis, subtus subglaucescentibus, nervis

utrinque circiter 12, tenuibus, primariis quam secundariis vix magis distinctis; fructibus ellipsoideis, prominente apiculatis, glabris, circiter 9 mm longis, seminibus solitariis.

A scandent shrub reaching a height of about 10 m, entirely glabrous (flowers unknown). Branches and branchlets slender, terete, smooth, dark reddish-brown when dry. Leaves oblong, chartaceous, 7 to 11 cm long, 2.5 to 4.5 cm wide, subequally narrowed to the acute base and to the acuminate apex, the upper surface dark olivaceous when dry, shining, the lower subglau-cous; lateral nerves slender, not prominent, the primary ones about 12 on each side of the midrib, slender, anastomosing, scarcely more distinct than are the secondary nerves and primary reticulations; petioles 5 to 7 mm long. Flowers not seen, solitary, axillary, and terminal, opposed to the ultimate leaf, the fruiting peduncles stout, glabrous, thickened upward, up to 2 cm long, the persistent sepals thickly coriaceous, broadly ovate, glabrous, 3 to 4 mm long and wider than long, persistent. Fruits numerous, ellipsoid, about 9 mm long, prominently apiculate, brown when dry, dark purple when fresh, entirely glabrous even when very young, their pedicels 2 to 2.5 cm long. Seeds solitary, conforming to the fruit in outline but not at all apiculate.

PALAWAN, Taytay, Merrill 9277 (type), May, 1913, on forested slopes, Taytay-Bantolan trail, altitude about 150 meters. I refer here also *Elmer 12808* from Puerto Princesa, Palawan, distributed as *Unona clusiflora* Merr.

A species quite different from *Dasymaschalon clusiflorum* Merr., especially in its habit and in its vegetative characters. It is distinguished by its leaves being smaller, thinner, dark-colored when dry, acute, never rounded at the base, and by its more numerous, much less prominent nerves, the primary ones scarcely more distinct than are the secondary ones and the reticulations.

MEIOGYNE Miquel

Meiogyne was proposed by Miquel in the year 1865⁸ as a monotypic genus, based on *Unona virgata* Blume Bijdr. (1825) 14. *Meiogyne*, however, was reduced to *Unona* by Bentham & Hooker f.⁹ the same year, where it has been placed by most later authors. Blume himself¹⁰ transferred it to the genus *Uvaria*, with which, however, it has little in common. Hooker f. & Thomson¹¹ referred it to the genus *Cananga*, chiefly, apparently, because of its numerous 2-seriate ovules. King¹² transferred it to the genus

⁸ Ann. Mus. Bot. Lugd. Bat. 2 (1865) 12.

⁹ Gen. Plant. 1 (1865) 956.

¹⁰ Fl. Jav. Anon. (1828) 43.

¹¹ Fl. Brit. Ind. 1 (1872) 57.

¹² Journ. As. Soc. Beng. 61² (1892) 28; Ann. Bot. Gard. Calcutta 4 (1893) 37.

Cyathocalyx. The species has, hence, by various authors been referred to five different genera in several distinct tribes.

In such cases as this where a single species is by various authors referred to several very different genera, it not infrequently happens that in reality a distinct generic type is represented. The most recent consideration of *Unona virgata* Blume is that by Boerlage,¹³ who reinstates *Meiogyne* Miq. as a valid genus, for reasons that I consider to be entirely valid. According to Blume's first classification of the species it would fall in the tribe *Unoneae*, and to his second in the tribe *Uvarieae*. Hooker f. & Thomson retain it in the *Unoneae* as does King. Boerlage, however, removes it from the *Unoneae*, and correctly, I think, places it in the *Xylopieae*.

Unona virgata Blume has been credited to the Philippines on the basis of a specimen collected in Leyte¹⁴ by *Cuming No. 1738*, but although a specimen of this collection has been in the herbarium of the Bureau of Science for some years, the same form has not been contained in any modern collections until recently, when it was collected by Ramos, again in Leyte. The additional material seems to show that the Philippine form is specifically distinct from the Javan one, and it is accordingly described here as a new species. The synonymy of *Meiogyne virgata* Miq. is as follows:

MEIOGYNE VIRGATA (Blume) Miq. Mus. Bot. Lugd. Bat. 2 (1865) 12;
Boerl. in Ic. Bogor. 1 (1899) 123, pl. 41.

Unona virgata Blume Bijdr. (1825) 14; Miq. Fl. Ind. Bat. 1² (1858)
42.

Uvaria virgata Blume Fl. Jav. Anon. (1828) 45, t. 19, 25B.

Cananga virgata Hook. f. & Th. in Hook. f. Fl. Brit. Ind. 1 (1872) 57.

Cyathocalyx virgatus King in Journ. As. Soc. Bang. 61² (1892) 28,
Ann. Bot. Gard. Calcutta 4 (1893) 37, pl. 44.

The species was originally described from Javan material, and is reported from Chittagong, the Malay Peninsula, Sumatra, and Borneo. From an examination of the descriptions given by various authors, and especially the figures given by Blume, King, and Boerlage, it seems doubtful whether or not all can be referred to a single species. The three figures represent forms so different in detail that it would not be surprising if, on critical examination of all available material, several distinct species were found to be represented. It is almost absolutely certain that the form figured and described by King represents a species different from that described by Blume, for Blume described the outer petals as one and one-half inches long,

¹³ Ic. Bogor. 1 (1899) 123.

¹⁴ Vidal Phan. Cuming. Philip. (1885) 92, Rev. Pl. Vasc. Filip. (1886) 41; Rolfe in Journ. Bot. 23 (1885) 210.

while King describes the flowers of his specimens as about three-fourths of an inch in length; Blume describes the carpels as from 3 to 5 in each flower, while King states that he never found more than two.

The Philippine form, which was determined by Rolfe as *Unona virgata* Blume, I consider to be specifically distinct, and its description follows:

MEIOGYNE PAUCINERVIA sp. nov.

Unona virgata Rolfe in Journ. Bot. 23 (1885) 210; Vid. Phan. Cuming. Philip. (1885) 92, Rev. Pl. Vasc. Filip. (1886) 41, non Blume.

Species *M. virgatae* affinis et similis, differt floribus minoribus petalis angustioribus foliisque minoribus, nervis utrinque circiter 6.

A small tree, 19 m high *vide* Ramos, the branches slender, terete, glabrous, light gray, the branchlets sparingly appressed-hirsute. Leaves lanceolate or ovate-lanceolate, usually pale when dry, shining on both surfaces, chartaceous, 6 to 12 cm long, 2 to 3.5 cm wide, the base acute, the apex slenderly and sharply acuminate, the upper surface quite glabrous, the lower sparingly appressed-hirsute along the midrib and the lateral nerves; lateral nerves about 6 on each side of the midrib, prominent on the lower surface, somewhat curved-ascending; petioles slightly pubescent, 5 to 8 mm long. Flowers greenish-yellow, usually solitary, axillary, their pedicels very short, pubescent. Sepals densely pubescent, broadly ovate, obtuse, about 4 mm long. Petals densely pubescent on both surfaces, the outer three narrowly lanceolate, about 2 cm long, 3.5 mm wide at the base, gradually narrowed upward to the long-acuminate but blunt apex; inner petals about 1.5 cm long, long subcaudate-acuminate from an oblong-ovate base which is 5 to 6 cm long and 4 to 4.5 mm wide, concave, the margins touching but not conniving, the tips of the inner petals free and more or less divergent. Anthers numerous, obovoid, about 1.5 mm long, the connectives broad, truncate, concealing the anthers. Carpels about 5, oblong-ovate, somewhat flattened, 2 mm long, pubescent; ovules about 20, in two rows. Fruit 2 to 4 on each peduncle, ellipsoid, about 6 cm long, 3.5 to 4 cm in diameter, hard and woody, externally more or less brown-pubescent.

LEYTE, in forests near Dagami, *Bur. Sci.* 15381 Ramos (type), August 23, 1912, the flowers said to be very fragrant; *Cuming* 1738 (localized from Cuming's own list of localities), *Wenzel* 645. SAMAR, *Philip. Pl.* 1640 Ramos.

MEIOGYNE LUCIDA Elm. Leaf. Philip. Bot. 5 (1913) 1715.

MINDANAO, Province of Agusan, *Elmer* 13984; *For. Bur.* 21657 *Sherfesee*, *Cenabre*, & *Ponce*.

MEIOGYNE PHILIPPINENSIS Elm. Leaf. Philip. Bot. 5 (1913) 1714.

MINDANAO, District of Davao, *Elmer 11318*, distributed as a *Melodorum*.

Both of these species are closely allied to *M. paucinervia*, but differ in their shorter and broader petals. *M. lucida* is characterized by its sessile bracteolate flowers, while in *M. philippinensis* the flowers are pedicelled. The three species manifestly are closely allied.

PAPUALTHIA Diels

This genus was proposed by Diels¹⁵ for a series of species from New Guinea, in general similar to *Polyalthia* but differing strikingly in the petals being wholly united below. The genus, as defined by Diels, is quite well represented in the Philippines, several species having been described under *Polyalthia* and one under *Unona*. The occurrence of several species of this very natural group in the Philippines, and a somewhat larger number in New Guinea, is of considerable interest from the standpoint of phytogeography. The following Philippine species are here transferred to *Papualthia*:

PAPUALTHIA LANCEOLATA (Vid.) comb. nov.

Polyalthia lanceolata Vid. Phan. Cuming. Philip. (1885) 92, 170.

LUZON, Province of Laguna, *Cuming 450* (cotype), *For. Bur. 19955*, *19884 Villamil*, *For. Bur. 11709 Whitford*, *Baker 603*, *For. Bur. 21346 Foxworthy & Catalan*: Province of Batangas, *For. Bur. 11998 Tamesis*.

PAPUALTHIA LOHERI (Merr.) comb. nov.

Polyalthia loheri Merr. in Philip. Journ. Sci. 7 (1912) Bot. 268.

Polyalthia romblonensis Elm. Leaf. Philip. Bot. 5 (1913) 1729.

This species extends from northern Luzon southward to Romblon if my reduction of *Polyalthia romblonensis* Elm. is correct, and from the material available I can see no reason for distinguishing the latter species; the specimen I have seen of *Elmer 12170*, however, presents no flowers or fruits, and additional material may show it to be really specifically distinct from *P. loheri* Merr.

PAPUALTHIA SYMPETALA (C. B. Rob.) comb. nov.

Unona sympetala C. B. Rob. in Philip. Journ. Sci. 6 (1911) Bot. 203.

LUZON, Province of Laguna, San Antonio, *Bur. Sci. 20515 Ramos*: Province of Isabela, *Bur. Sci. 7999 Ramos*: Province of Tayabas, *Bur. Sci. 13196 Foxworthy & Ramos*. ROMBLON, *Bur. Sci. 10352 McGregor* (type).

PAPUALTHIA RETICULATA (Elm.) comb. nov.

Polyalthia reticulata Elm. Leaf. Philip. Bot. 1 (1908) 292.

Polyalthia loheri Merr. var. *cagayanensis* Merr. in Philip. Journ. Sci. 7 (1912) Bot. 269.

LEYTE, *Elmer 7272* (cotype). SAMAR, *Bur. Sci. 17417 Ramos*, March, 1914. LUZON, Province of Cagayan, *Bur. Sci. 13948 Ramos*: Province of Isabela, Biocbian Bay, *Bur. Sci. 10664 McGregor*.

¹⁵ Engl. Bot. Jahrb. 49 (1912) 138.

PAPUALTHIA URDANETENSIS (Elm.) comb. nov.

Polyalthia urdanetensis Elm. Leaf. Philip. Bot. 5 (1913) 1738.

MINDANAO, Province of Agusan, *Elmer 13931* (cotype).

This species is very closely allied to *Papualthia reticulata* and is perhaps not specifically distinct from that species. It differs in its somewhat smaller flowers, but this apparent difference may be due to the stage of development of the flowers.

PAPUALTHIA TENUIPES (Merr.) comb. nov.

Polyalthia tenuipes Merr. in Philip. Journ. Sci. 7 (1912) Bot. 269.

LUZON, Province of Tayabas, *Bur. Sci. 13472 Foxworthy & Ramos*.

Readily distinguished from all the other Philippine species by its very dissimilar petals, the inner ones much shorter than and differently shaped from the outer.

GUAMIA genus novum

Sepala 3, ovata, brevia, valvata. Petales 6, 2-seriata, valvata, crassa, pubescentia, exteriora demum patula, interiora paullo minora, angustiora, basi subexcavata, leviter conniventia. Stamina ∞ , obconica, connectivo oblique subtruncato. Carpellia circiter 12, pilosa; stigmatibus subcapitato, glabro; ovulis numerosis. Baccae oblongae, cylindricae, leviter transverse constrictae, pilosulae. Arbor parva partibus junioribus ferrugineo-pilosis, pilis haud stellatis; foliis subaequilateralibus; floribus solitariis, breviter pedicellatis, axillaribus vel subterminalibus.

GUAMIA MARIANNAE (Safford) comb. nov.

Papualthia mariannae Safford in Journ. Wash. Acad. Sci. 2 (1912)

459, fig. 1, 2; Diels in Engl. Bot. Jahrb. 52 (1914) 16, fig. 2.

Polyalthia mariannae Merr. in Philip. Journ. Sci. 9 (1914) Bot. 83.

The type of the species was from Guam, collected by Costenoble. Additional collections are *Palomo*, cited by Safford; *Guam Experiment Station 209*, distributed from the Bureau of Science as *Orophea* n. sp., fruiting specimen; while Diels cites *Volkens 559* and a specimen collected by *Fritz* on the neighboring island of Saipan.

At the time I was studying the Guam material I stated that I could see no reason for considering the species other than as a representative of the genus *Polyalthia*, but this statement was made without due consideration of the floral characters of the plant. The perianth characters and especially the numerous ovules exclude it at once from *Polyalthia*, with which genus it apparently has little in common. My study of the species at this time is due to the fact that in examining the original material of *Unona mindorensis* Merr. its great similarity to the Guam plant at once impressed me, and as *Unona mindorensis* must probably be referred to some other genus, I tried to place it in *Papualthia* with the Guam species; it differs strikingly, however, in that the inner petals are spreading from the base, not connivent, and is scarcely congeneric with *Guamia*.

I cannot see how the species can be referred to *Papualthia* without invalidating that genus. The petals are quite free, not united at the base as in the New Guinean and Philippine representatives of that genus, while

the ovules are more numerous than in most species of the genus. Diels has remarked that the flowers are of the *Melodorum* type, and that the fruits are uvarioid, but made no attempt to place it in any genus other than *Papualthia*. Regarding the propriety of placing it in *Papualthia*, he states: "Auch mit den meisten *Papualthia* Neuguineas stimmen mehrere Merkmale nicht überein: so den freien Blumenblätter, deren äussere zuletzt sogar klaffen, so die Mehrzahl der Samenanlagen und die wenig asymmetrischen, kleinen Blätter. Immerhin kommen bei gewissen weniger bekannten *Papualthien* Andeutungen dieser Merkmale vor, und so mag die Art so lange bei *Papualthia* bleiben, bis uns die fortschreitende Erforschung Neuguineas erlauben wird, die Grenzen dieses Genus schärfer zu bestimmen." I am inclined to consider its proper place as very near *Oncodostigma* Diels, from which it differs essentially in its more numerous carpels, somewhat different stigma, and its slightly transversely constricted uvarioid fruits; it may not be generically distinct from *Oncodostigma*, but at any rate it is not a *Papualthia*.

POLYALTHIA Blume

POLYALTHIA RAMIFLORA sp. § *Monoon*.

Arbor circiter 12 m alta, subglabra; foliis oblongo-lanceolatis vel oblongis, nitidis, usque ad 16 cm longis, subcoriaceis, caudato-acuminatis, basi acutis, nervis utrinque circiter 12; floribus numerosis, fasciculatis, e ramis et axillis defoliatis, petalis anguste lanceolatis, glabris, 4.5 cm longis.

A tree about 12 m high, nearly glabrous. Branches terete, light gray, lenticellate, glabrous, the very tips of the growing branchlets pubescent. Leaves oblong-lanceolate or oblong, subcoriaceous, shining, when dry the upper surface rather pale, the lower a little browner in color, 8 to 16 cm long, 4 to 6 cm wide, the base acute or sometimes somewhat rounded, the apex slenderly caudate-acuminate, the acumen 1 to 1.5 cm long; lateral nerves about 12 on each side of the midrib, prominent on the lower surface, the primary reticulations slender, subparallel; petioles 5 to 7 mm long, glabrous. Flowers greenish, numerous, fascicled, the fascicles scattered along the branches below the leaves and apparently also in the axils of fallen leaves, their pedicels slender, 2 to 2.5 cm long, the small protuberances bearing the pedicels ferruginous-pubescent. Sepals broadly ovate, acute or obtuse, pubescent, about 2 mm long. Sepals subequal, narrowly lanceolate or linear-lanceolate, up to 4.5 cm long, 4 mm wide, glabrous, narrowed upward to the long-acuminate apex. Stamens many, about 1 mm long. Carpels narrowly ovoid, glabrous or slightly pubescent, with a single basal ovule; style somewhat club-shaped. Fruiting peduncles stout, about 2 cm long, the torus about 1 cm in diameter, bearing usually about 8 ellipsoid to oblong-ellipsoid, smooth, glabrous,

shining, dark brown fruits, 2 to 3 cm long, 1.2 to 1.5 cm in diameter.

LUZON, Province of Sorsogon, Sugod Bay, *For. Bur. 5160 Bridges* (type), August 6, 1906, in forests from sea level to an altitude of 75 meters: Province of Laguna, *Bur. Sci. 21989 Ramos*, October, 1913, in fruit: Province of Cagayan, *For. Bur. 20472 Barros*, July, 1913. SAMAR, *Phil. Pl. 1660 Ramos* (as *P. ramosii*).

A species well characterized by its numerous flowers which are fascicled along the branches below the leaves and by its especially narrow and long subequal petals.

POLYALTHIA ZAMBOANGAENSIS sp. nov. § *Monoon*.

Species *P. lateriflorae* similis et affinis differt foliis tenuioribus, venis lateralibus obscure anastomosantibus vix evanescentibus, floribus paullo longioribus.

A tree about 10 m high, nearly glabrous. Branches terete, lenticellate, glabrous, the youngest branchlets somewhat puberulent and the terminal buds ferruginous-pubescent. Leaves oblong, chartaceous, 16 to 18 cm long, 6 to 7 cm wide, glabrous, the base rounded, the apex acuminate, shining on both surfaces, the lower a little paler than the upper; lateral nerves about 16 on each side of the midrib, prominent on the lower surface, curved upward, faintly anastomosing near the margins, the reticulations very fine, indistinct; petioles 5 to 7 mm long, glabrous. Flowers greenish-yellow, very fragrant, fascicled on the branches of the previous year below the leaves, the nodules bearing the flowers pubescent, each with about three flowers developed at one time, but with additional small buds present. Pedicels 3 to 4.5 cm long, slender, slightly pubescent, usually with an orbicular, obtuse, pubescent bracteole about 1.5 mm long at about the middle. Sepals broadly ovate or reniform, pubescent, 4 to 5 mm wide, wider than long. Petals flat, lanceolate, narrowed gradually to the acute or blunt apex, 5 to 6 cm long, 4 to 6 mm wide, slightly pubescent on the back in the lower part, the outer three a little shorter and narrower than the inner three. Stamens indefinite, about 1 mm long, connectives truncate, the torus convex, pubescent. Carpels indefinite, oblong, about 1 mm long, pubescent, with a single basal ovule.

MINDANAO, District of Zamboanga, near Margosatubig, *For. Bur. 13276 Foxworthy, DeMesa; & Villamil*, May 11, 1912, in hill forests, altitude about 120 meters. Locally known to the Moros as *malacayang lupu*.

A well-marked species but manifestly closely allied to the Malayan *Polyalthia lateriflora* King, which it greatly resembles. It is distinguishable by its thinner leaves, different venation, obscure and fine ultimate reticulations, and somewhat longer flowers.

POLYALTHIA PALAWANENSIS sp. nov. § *Monoon*.

Arbor circiter 20 m alta, subglabra; foliis oblongis, chartaceis, usque ad 15 cm longis, in siccitate pallidis, nitidis, basi rotundatis ad subacutis, apice prominente acuminatis, nervis utrinque circiter 9, tenuibus; floribus viridis, caulinis, fasciculatis, e tuberculis magnis, pedicellatis, sepalis leviter pubescentibus, petalis glabris, crasse coriaceis, oblongo-ovatis, obtusis, usque ad 3.5 cm longis; carpellis numerosis, hirsutis, 1-ovulatis.

A tree about 20 m high, glabrous except the younger parts and portions of the inflorescence. Branches slender, terete, wrinkled when dry, with small, scattered lenticels, brownish, the branchlets somewhat pubescent. Leaves oblong, chartaceous, pale and shining when dry, 11 to 15 cm long, 4 to 5 cm wide, base rounded to subacute, apex rather prominently acuminate; lateral nerves about 9 on each side of the midrib, slender, somewhat spreading, distant, anastomosing far from the margin, the reticulations slender, rather distinct; petioles about 4 mm long, glabrous. Flowers green or somewhat yellowish when mature, borne on large tubercles on the trunk, the tubercles 2 to 3 cm in diameter, very irregular, each bearing 2 to 4 flowers; pedicels pubescent, stout, about 1 cm long. Sepals broadly ovate, coriaceous, obtuse, about 3 mm long and 4 mm wide, spreading or reflexed, sparingly pubescent externally, glabrous within. Petals thickly coriaceous, glabrous, ovate to oblong-ovate, obtuse, the outer ones up to 3.5 cm long and 1.7 cm wide, the inner somewhat smaller. Stamens indefinite, crowded, about 1.6 mm long, truncate, anther-cells entirely hidden by the connectives. Carpels numerous, crowded, including the styles 1.7 mm long, the ovaries hirsute, oblong, the styles pubescent, as long as the ovaries. Ovule solitary, basal.

PALAWAN, Lake Manguao, *Merrill 9469*, April 27, 1913, on dry forested ridges, altitude about 80 meters.

A species in the group with *Polyalthia macropoda* King and allied forms, but quite different from this species and the others placed here. It has no close allies among the Philippine forms bearing the flowers on the trunk or on the larger branches.

POLYALTHIA GIGANTIFOLIA sp. nov. § *Monoon*.

Arbor circiter 20 m alta, inflorescentiis exceptis glabra; foliis oblongis, coriaceis, circiter 60 cm longis, nitidis, acuminatis, basi cordatis, nervis utrinque circiter 30, valde prominentibus; floribus 7 cm diametro, pedicellatis, plus minusve pubescentibus, in truncis fasciculatis.

A tree about 20 m high, glabrous except the inflorescence.

Branches terete. Leaves very large, about 60 cm long, 15 cm wide, oblong, coriaceous, shining on both surfaces, the base cordate, the apex acuminate; lateral nerves very prominent, about 30 on each side of the midrib; petioles very stout, black when dry, 1 to 1.5 cm long, 5 mm in diameter. Flowers numerous, yellowish-green with a disagreeable odor, fascicled on the trunk, the protuberances bearing the flowers pubescent, supplied with small pubescent bracts, the pedicels 2 to 5 cm long, pubescent, and with a pubescent, reniform, rounded bracteole, about 3 mm long, at about the lower one-third. Sepals broadly ovate, obtuse, 6 mm long, pubescent. Petals 2-seriate, subequal, thickly coriaceous, more or less pubescent on both surfaces especially when immature, oblong-lanceolate or narrowly oblong-ovate, narrowed upward to the acute or blunt apex, 3 to 3.5 cm long, 10 to 13 mm wide. Stamens very numerous, 1.5 mm long, narrowly oblong, the connectives convex-truncate. Carpels indefinite, narrowly oblong or linear oblong, glabrous, 2.5 mm long, each with a single basal ovule.

MINDANAO, District of Zamboanga, near Margosatubig, *For. Bur.* 13763 Foxworthy, DeMesa, & Villamil, May 11, 1912, in hill forests, altitude about 120 meters, locally known to the Moros as *tába*.

A very striking and characteristic species, distinguishable by its very large leaves in conjunction with its fascicled, cauline, rather large flowers.

POLYALTHIA GLANDULOSA sp. nov. § *Monoon*.

Arbor, partibus junioribus floribusque plus minusve ferrugineo-pubescentibus exceptis glabra; foliis chartaceis vel subcoriaceis, oblongis, usque ad 12 cm longis, acutis vel obscure acuminatis, basi acutis, nervis utrinque circiter 6, curvatis, distinctis, subtus in axillis glandulosis; floribus axillaribus et in axillis defoliatis, solitariis vel binis, pedicellatis, circiter 6 cm diametro, sepalis elliptico-ovatis, rotundatis, reflexis, petalis 2.5 ad 3 cm longis, subaequalis; ellipticis ad elliptico-obovatis.

A tree, glabrous or nearly so except the younger parts and the flowers which are more or less ferruginous-pubescent. Branches terete, dark gray when dry, somewhat wrinkled, glabrous, the branchlets ferruginous-pubescent. Leaves oblong, chartaceous or subcoriaceous, rather pale when dry, or the very young ones brown, 9 to 12 cm long, 3 to 4 cm wide, acute or obscurely acuminate, base acute; lateral nerves about 6 on each side of the midrib, curved-ascending, anastomosing, the axils on the lower surface distinctly glandular, often obscurely bearded; petioles 2 to 3 mm long. Flowers green, axillary and in the axils of fallen leaves, solitary or in pairs, their pedicels

about 1 cm long, cinereous- or ferruginous-pubescent. Sepals reflexed in anthesis, elliptic-ovate, rounded, ferruginous-pubescent, about 6 mm long, 5 mm wide. Petals 6, 2-seriate, subequal, spreading from the base, ferruginous-pubescent externally, 2.5 to 3 cm long, about 1.5 cm wide, the inner usually slightly larger than the outer ones, rounded at the apex, elliptic to elliptic-obovate. Stamens numerous, crowded, cuneiform, 1.2 mm long, the anther-cells obscured by the truncate connectives. Carpels numerous, crowded, narrowly oblong, pubescent, about 1 mm long, the style ellipsoid, 0.5 mm long; ovule basal, solitary.

MINDANAO, District of Zamboanga, Santa Maria, *Bur. Sci. 16460 Reillo*, October 4, 1912, near Mount Pulungbato.

A species well characterized by its leaves being glandular in the axils on the lower surface. It apparently has no very close allies in the Philippines.

POLYALTHIA GRACILIPES sp. nov. § *Monoon*.

Frutex vel arbor parva, glabra, ramis ramulisque teretibus tenuibus; foliis chartaceis vel subcoriaceis, anguste oblongis ad lanceolatis, nitidis, usque ad 20 cm longis, leviter inaequilateralibus, rectis vel obscure falcatis, longe tenuiterque acuminatis, basi subacutis, nervis utrinque circiter 12; floribus axillaribus, solitariis, longissime pedicellatis, circiter 4 cm longis, petalis 2-seriatis, obscurissime nigro-punctulatis, in siccitate pallidis, exterioribus oblongo-ovatis ad subellipticis, 2 cm latis, interioribus circiter 1.3 cm latis.

A shrub or small tree, quite glabrous except the very slightly pubescent parts of the flowers. Branches and branchlets slender, terete, dark reddish-brown when dry. Leaves narrowly oblong to lanceolate, chartaceous to subcoriaceous, 11 to 20 cm long, 2.5 to 3 cm wide, pale olivaceous when dry, shining, straight or somewhat falcate, often distinctly inequilateral, narrowed upward to the long and slenderly acuminate apex, and below to the acute or subacute base; primary lateral nerves about 12 on each side of the midrib, slender, not prominent, straight, distant, anastomosing and forming an arched marginal nerve, the reticulations distinct; petioles about 4 mm long. Flowers solitary, axillary, the pedicels very slender, about 10 cm long. Sepals oblong-ovate to narrowly ovate, acuminate, chartaceous or subcoriaceous, glabrous or very obscurely pubescent, about 9 mm long, 6 mm wide. Petals 6, 2-seriate, pale when dry, subchartaceous, minutely black-punctulate, glabrous or nearly so, about 4 cm long, the outer three oblong-ovate to subelliptic, obtuse, about 2 cm wide, the inner three as long as the outer ones, obtuse, about 1.3 cm wide. Stamens indefinite, crowded,

2.5 to 3 mm long, the connectives concealing the anther-cells, truncate, oblique, rounded at the tip. Carpels many, crowded, narrowly oblong, pubescent; ovule solitary, basal. Young fruit ellipsoid, black when dry, about 1 cm long.

LUZON, Province of Tayabas, Guinayangan, *Bur. Sci.* 20792 (type), 20825 *Escritor*, March, 1913; Quinatacutan, *Bur. Sci.* 13177 *Forworthy & Ramos*, March, 1911.

A strongly marked species, at once recognizable by its large, solitary, very long pedicelled, axillary flowers. It has no close allies among the Philippine forms.

POLYALTHIA LUCIDA sp. nov. § *Monoon*.

Frutex vel arbor parva, floribus exceptis glabra; foliis oblongis ad oblongo-lanceolatis, valde nitidis, laevis, usque ad 22 cm longis, utrinque subaequaliter angustatis, apice acuminatis, basi acutis, nervis utrinque 10 ad 12, subtus prominentibus, rectis, valde anastomosantibus, reticulis laxis; floribus axillaribus, breviter pedicellatis, depresso-globosis, circiter 1 cm diametro, petalis late ovatis ad orbiculari-ovatis, valde incrassatis, carnosis, incurvis, liberis, interioribus quam exterioribus distincte majoribus; carpellis numerosis, ovulis solitariis.

A shrub or small tree 4 to 6 m high, quite glabrous except parts of the flowers, or the growing tips of the branchlets sometimes sparingly pubescent. Branches and branchlets terete, smooth, dark reddish-brown, somewhat shining. Leaves oblong to oblong-lanceolate, chartaceous, 12 to 22 cm long, 3.5 to 6 cm wide, smooth, both surfaces strongly shining, subequally narrowed to the acute base and to the rather sharply acuminate apex, the margins distinctly recurved; lateral nerves slender, straight, prominent on the lower surface, distant, 10 to 12 on each side of the midrib, prominently anastomosing with the arcuate marginal nerves 5 to 8 mm from the edge of the leaf, the marginal nerves about as prominent as the lateral ones, the reticulations lax; petioles about 8 mm long. Flowers greenish-yellow, depressed-globose, about 1 cm in diameter, axillary, solitary, the pedicels 5 mm long or less, obscurely pubescent, bracteolate at the base. Sepals valvate, very thickly coriaceous, reniform, rounded, about 2 mm long and 2 mm wide, externally slightly pubescent. Petals 6, 2-seriate, very thick and fleshy, strongly incurved, valvate, quite free, sparingly pubescent, bases broad, the inner three distinctly larger than the outer ones; outer petals broadly ovate, about 6 mm long and 5 mm wide, rounded or obtuse, the inner three thicker, up to 2 mm in thickness, 6 to 7 mm in diameter, rounded, suborbicular-ovate. Stamens many, closely packed, 1.8 mm long, the anther-cells lateral,

concealed by the short, truncate connectives. Carpels about 30, crowded, oblong, pubescent, 1 to 1.2 mm long, the stigma sessile, truncate, broad, obscurely cleft; ovule solitary, basal. Torus fiat. Fruit ellipsoid, about 2 cm long, rounded, the pericarp somewhat wrinkled when dry, thin, glabrous; seed solitary, very hard when dry, about 1 cm long, ruminant, the pedicels in fruit 2.5 to 3 cm long.

LUZON, Province of Tayabas, Tagcauayan, *Bur. Sci. 13338 Ramos* (type), March 15, 1911, in forests, altitude about 100 m; Mount Pular, *Bur. Sci. 19416 Ramos*, January, 1913, in fruit. MINDANAO, District of Zamboanga, *For. Bur. 9008, 9400 Whitford & Hutchinson*.

The species is anomalous in *Polyalthia* in its short, very thick, incurved petals, which are, however, entirely free, valvate, not at all arched over the stamens although incurved, and its sessile truncate stigmas. The flowers at anthesis are depressed-globose and about 1 cm in diameter, although the petals at all stages are entirely free. It perhaps belongs in the alliance with *Polyalthia persicaefolia* Benth. & Hook. f.

POLYALTHIA AGUSANENSIS (Elm.) comb. nov.

Unona agusanensis Elm. Leaf. Philip. Bot. 5 (1913) 1743.

MINDANAO, Province of Agusan, Mount Urdaneta, *Elmer 13654*, type number.

This species is not a *Unona* (*Desmos*), but belongs in the section *Monoon* of *Polyalthia*, its carpels having a single basal ovule. It is very similar and very closely allied to *Polyalthia cumingiana* Merr., and a series of specimens may show the two to be identical. *Polyalthia agusanensis* differs from *P. cumingiana* in its distinctly broader petals and in its rather more numerous nerved leaves. The original description of Elmer's species is faulty as to the length of the outer petals being indicated as 4 mm when manifestly 4 cm was intended. The type number is 13654, not 3654 as cited.

POLYALTHIA GRANDIFOLIA Elm. Leaf. Philip. Bot. 1 (1908) 291.

Polyalthia pinnatinervia Elm. Leaf. Philip. Bot. 5 (1913) 1736.

The type of *Polyalthia grandifolia* Elm. is *Elmer 7358*, from Leyte, a specimen with very immature fruits; the type of *P. pinnatinervia* Elm. is *Elmer 13611*, from Agusan, Mindanao, a specimen with flowers. While the specimens are not directly comparable in all characters, one being with young fruits and the other with flowers, I can detect no specific differences, and am confident that but a single species is represented.

POLYALTHIA MERRITTII (Merr.) comb. nov. § *Eupolyalthia*.

Unona merrittii Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 190.

This species is apparently a *Polyalthia* rather than a *Unona*, and seems to be closely allied to the Malayan *Polyalthia glauca* (Hassk.) Boerl. in Ic. Bogor. 1 (1899) 104. It is represented by the following specimens: LUZON, Province of Tayabas (Principe), *Merrill 1031*: Province of Camarines, *For. Bur. 10475 Curran*. MINDORO, *Whitford 1447, For. Bur. 3712 Merritt*.

SIBUYAN, *Elmer 12449*. MINDANAO, Butuan Subprovince, *For. Bur. 20757 Ponce, Miranda, & Rafael*.

MITREPHORA Hook. f. & Thomson

MITREPHORA BASILANENSIS sp. nov.

Arbor circiter 15 m alta, partibus junioribus inflorescentiis floribusque prominente ferrugineo-pubescentibus; foliis oblongo-lanceolatis ad lanceolatis, sursum gradatim angustatis, acuminatis, basi subacutis, chartaceis, usque ad 12 cm longis, in siccitate pallide griseis, nitidis, nervis utrinque circiter 7, tenuibus, adscendente-curvatis; inflorescentiis axillaribus, depauperatocymosis, paucifloris; petalis exterioribus oblongis, circiter 11 mm longis, interioribus unguiculatis, arcuatis, extus hirsutis; carpellis paucis, hirsutis.

A tree about 15 m high, the younger parts and the inflorescence prominently ferruginous-pubescent. Branches slender, terete, grayish-brown, wrinkled, glabrous, the younger ones ferruginous-pubescent. Leaves oblong-lanceolate to lanceolate, firmly chartaceous, pale grayish and prominently shining when dry, 8 to 12 cm long, 2 to 3.5 cm wide, gradually narrowed upward to the rather sharply acuminate apex, the base subacute, the lower surface with very few appressed hairs on the midrib and lateral nerves; nerves about 7 on each side of the midrib, slender, not prominent, curved-ascending, very obscurely anastomosing, the reticulations nearly obsolete; petioles 2 to 3 mm long. Inflorescence of depauperate, few-flowered, ferruginous-pubescent cymes in the uppermost axils, but one flower opening at a time, the rachis 1.5 cm long or less; pedicels about 5 mm long. Sepals broadly ovate, coriaceous, acute or broadly acuminate, about 3 mm long and wide, ferruginous-pubescent. Outer three petals spreading, oblong, about 11 mm long, 5 mm wide, acute or obscurely acuminate, pubescent; inner three petals clawed, arcuate, about 9 mm long, the claw about 5 mm in length, the limb subrhomboid, about 5 mm wide, the angles rather sharp, externally densely hirsute. Stamens indefinite, closely crowded, 1 mm long, the truncate connectives concealing the anther-cells. Carpels about 6, crowded, densely pubescent, about 1.3 mm long; ovules about 4; stigma glabrous, oblique.

BASILAN, *For. Bur. 20060 Miranda*, October 4, 1912, not far from the mangrove swamp, near the Barrio of Balobato, altitude about 10 meters.

This species somewhat resembles *Mitrephora ellipanthoides* Elm., the flowers of which are unknown, and which may prove to be not a *Mitrephora*. The present species is readily distinguished by its differently shaped leaves

and its prominent ferruginous indumentum on the younger branchlets and the inflorescence.

MITREPHORA FRAGRANS sp. nov.

Arbor 8 ad 10 m alta, partibus junioribus dense ferrugineo-pubescentibus; foliis coriaceis, oblongo-ovatis ad elliptico-ovatis, usque ad 26 cm longis, junioribus utrinque ad costa nervisque plus minusve ferrugineo-pubescentibus, vetustioribus glabrescentibus, obtusis vel obtuse acuminatis, basi subacutis ad subrotundatis, nervis utrinque 13 ad 16, valde prominentibus; floribus paucis, usque ad 11 cm diametro, petalis exterioribus accrescentibus; carpellis circiter 10; ovulis 16 ad 20.

A tree 8 to 10 m high, the branchlets, young petioles, pedicels and buds densely ferruginous-pubescent. The branches terete, nearly black when dry, more or less ferruginous-pubescent, becoming glabrous. Leaves coriaceous, pale when dry, slightly shining, oblong-ovate to elliptic-ovate, 10 to 26 cm long, 5 to 11 cm wide, apex obtuse to obtusely acuminate, base subacute to subrounded, both surfaces more or less ferruginous-pubescent on the midrib and lateral nerves, in age becoming glabrous or nearly so; lateral nerves 13 to 16 on each side of the midrib, very prominent. Flowers perfect, fragrant, opening pale yellowish-white, turning bright orange-yellow, extra-axillary, solitary, their pedicels 1 cm long or less, with 2 or 3 subverticillate, broadly ovate, coriaceous, ferruginous-pubescent, about 7 mm long bracteoles near the apex. Sepals broadly ovate to oblong-ovate, 10 to 14 mm long, obtuse, more or less ferruginous-pubescent. Outer petals 3 cm long at anthesis, accrescent and soon 5.5 cm long and up to 4 cm wide, oblong-ovate to obovate, acuminate, base narrowed, outside rather densely pubescent, inside sparingly so; inner petals vaulted, deciduous, nearly 3 cm long, the claw slender, 1.5 cm long, the limb subrhomboid, obtuse, about 12 mm wide, externally slightly pubescent, internally hirsute. Stamens very numerous, crowded, 1.5 mm long, connectives broad, truncate, slightly oblique. Carpels about 10, crowded, densely pubescent, narrowly oblong, narrowed upward, about 1.8 mm long; ovules 16 to 20, 2-seriate.

PALAWAN, Taytay, *Merrill 9217*, April, 1913, on forested slopes of a small valley, altitude about 40 meters.

The flowers open, pale yellowish-white, the external petals then being about 3 cm long; the inner three arched petals are marked with purple, and are early deciduous, but the external petals persist for some time, are accrescent, and gradually turn bright orange-yellow. The species is well characterized by its unusually large flowers, and although its vegetative characters resemble those of *Mitrephora williamsii* C. B. Rob., the two species are not at all closely allied.

MITREPHORA SAMARENSIS sp. nov.

Arbor 10 ad 12 m alta, partibus junioribus inflorescentiisque ferrugineo-pubescentibus; foliis ovato-ellipticis ad oblong-ovatis, subcoriaceis, usque ad 10 cm longis, acuminatis, basi subacutis ad subrotundatis, nitidis, nervis utrinque 6 vel 7, subtus prominentibus; racemis paucifloris, floribus usque ad 3 cm diametro, petalis exterioribus elliptico-ovatis, undulatis, extus pubescentibus, intus glabris, interioribus arcuatis, circiter 12 mm longis, acuminatis, intus dense hirsutis; carpellis circiter 12, hirsutis.

A tree 10 to 12 m high, the younger parts and the inflorescences rather prominently ferruginous-pubescent. Branches terete, glabrous, nearly black when dry. Leaves subcoriaceous, ovate-elliptic to oblong-ovate, rather pale when dry, shining on both surfaces, glabrous or the midribs slightly pubescent, at least when young, 6 to 10 cm long, 2 to 4 cm wide, base subacute to subrounded, apex distinctly acuminate; lateral nerves 6 or 7 on each side of the midrib, when young somewhat pubescent on the lower surface, curved, prominent, looped-anastomosing; petioles about 5 mm long. Racemes short, on the ultimate branchlets, mostly leaf-opposed, the rachis 1 cm long or less, densely ferruginous-pubescent as are the pedicels and sepals, each raceme producing but one or two flowers at a time, the pedicels 1 to 1.5 cm long. Sepals broadly ovate, coriaceous, somewhat acuminate, 2.5 to 3 mm in diameter. Outer petals elliptic-ovate, acuminate, base somewhat narrowed, up to 1.6 cm long and 11 mm wide, outside pubescent, prominently undulate, inside glabrous, pale yellow to buff-yellow with blotches of red, inside deep orange; inner petals about 12 mm long, vaulted, pubescent externally, the claw 6 to 7 mm long, the limb broadly ovate, somewhat acuminate, basal angles rounded, about 5 mm long and wide, inside densely hirsute. Stamens indefinite, closely packed, about 1 mm long, the truncate connectives concealing the anther-cells. Carpels about 12, oblong, hirsute, narrowed upward, about 1 mm long, the styles oblong-obovate, glabrous, as long as the ovaries; ovules about 4.

SAMAR, Cauayan Valley, *Phil. Pl. 1666 Ramos* (type), April, 1914. BILIRAN, *Bur. Sci. 18550 McGregor*, June, 1914, in forests, altitude about 300 m.

A species manifestly very closely allied to *Mitrephora maingayi* Hook. f. & Th., but with much smaller, fewer nerved leaves. King figures the external petals of *M. maingayi* as prominently pubescent inside, while in the present species they are quite glabrous internally. This may be the same as *Mitrephora pictiflora* Elm., of which I have seen no specimens, but it differs in many details from the description of that species, notably in its somewhat smaller leaves, and smaller flowers, the outer petals quite glabrous inside, not strigose.

PSEUDUVARIA Miquel

The genus *Pseuduvaria* was proposed by Miquel¹⁶ for the species described by Blume as *Uvaria reticulata*, which is, therefore, the type of the genus *Pseuduvaria*. The section *Mitrephora* of *Uvaria* as characterized by Blume¹⁷ is typified by *Mitrephora obtusa* (Blume) Hook. f. & Th., a species with perfect flowers. Miquel's genus *Pseuduvaria* was reduced by Bentham & Hooker f. to *Mitrephora*, and all authors who have recently considered the Indian and Malayan species of *Anonaceae*¹⁸ have followed Bentham & Hooker f. in their treatment of Miquel's genus, although all consider species that properly fall in *Pseuduvaria*, whether this be considered as a valid genus or merely as a section of *Mitrephora*. As genera are now characterized in the *Anonaceae*, I consider that *Pseuduvaria* is sufficiently distinct from *Mitrephora* to be recognized as a valid genus; it is certainly more strongly differentiated from *Mitrephora*, and *Orophea*, the allied genera, than are several other generally recognized genera of the family.

The section *Para-Orophea* Boerl.¹⁹ is the same as the genus *Pseuduvaria* Miq., at least as to most of the species placed here by Boerlage, and the first species cited. In proposing the section Boerlage states: "Les espèces de cette section se rapprochent d'*Orophea* par les dimensions de le fleur et la grandeur relative des pétales, mais les étamines quoique moins nombreuses sont analogues à celles des *Mitrephora*. M. King en rapportant au genre *Mitrephora* l'espèce décrite comme *Orophea reticulata* par Miquel fait prévaloir le caractère des étamines; je l'ai imité pour éviter de nouveaux changements dans la délimitation des genres." As *Pseuduvaria* (*Para-Orophea*) is intermediate between *Mitrephora* and *Orophea*, and is apparently distinguished from both by constant characters, it appears logical to recognize the group as a valid genus. I accordingly refer to *Pseuduvaria* the following species:

PSEUDUVARIA RETICULATA (Blume) Miq. F. Ind. Bat. 1² (1858) 33.

Uvaria reticulata Blume Fl. Jav. Anon. (1828-36) 50, t. 24.

Mitrephora reticulata Hook. f. & Th. in Hook. f. Fl. Brit. Ind. 1 (1872)

¹⁶ Fl. Ind. Bat. 1² (1858) 32.

¹⁷ Fl. Jav. Anonaceae 32, t. 10, t. 14 C.

¹⁸ King, G. The Anonaceae of British India. *Ann. Bot. Gard. Calcutta* 4 (1893) 1-169, t. 1-220; Boerlage, J. G. Notes sur les Anonacées du Jardin Botanique de Buitenzorg. *Ic. Bogor.* 1 (1899) 79-156, t. 26-75; Diels, L. Die Anonaceen von Papuasien. *Engl. Bot. Jahrb.* 49 (1912) 113-167.

¹⁹ *Ic. Bogor.* 1 (1899) 138.

77; King in Ann. Bot. Gard. Calcutta 4 (1893) 113, t. 156A; Boerl. in Ic. Bogor. 1 (1899) 139.

Orophea reticulata Miq. Ann. Mus. Bot. Lugd.-Bat. 2 (1865) 23.

The known range of the species is Burma, Perak, Malacca, Java, and Noesa Kambangan. I have seen the following specimens: Perak, *Ridley 14599*; Java, cult. Buitenz., IV, H, 104; Noesa Kambangan, *Native collector 247*.

This species is the type of the genus *Pseuduvaria* Miquel.

PSEUDUVARIA DIEPENHORSTII Teysm. & Binn. in Nat. Tijdschr. Nederl. Ind. 27 (1864) 38.

Mitrephora diepenhorstii Teysm. & Binn. Cat. Hot. Bogor. (1856) 175; Boerl. in Ic. Bogor. 1 (1899) 139, t. 47.

Orophea diepenhorstii Scheff. in Flora 52 (1869) 302.

Sumatra; Java, cult. in Hort. Bogor. IV, H, 54!

PSEUDUVARIA GLANDULIFERA (Boerl.) comb. nov.

Mitrephora glandulifera Boerl. in Ic. Bogor. 1 (1899) 139, 175, t. 60.

Origin unknown, but probably from some part of the Malay Archipelago; cultivated in the Botanical Garden at Buitenzorg IV, H, 34!

PSEUDUVARIA RUGOSA (Blume) comb. nov.

Uvaria rugosa Blume Bijdr. (1825) 12; Fl. Jav. Anon. 47, t. 22.

Orophea rugosa Miq. Fl. Ind. Bat. 1² (1858) 26.

Mitrephora rugosa Boerl. in Ic. Bogor. 1 (1899) 140.

Java; cult. in hort. bot. Bogor. IV, G, 95, 95a!

PSEUDUVARIA MACROPHYLLA (Oliver) comb. nov.

Mitrephora macrophylla Oliver in Hook. Ic. 16 (1887) t. 1532; King in Ann. Bot. Gard. Calcutta 4 (1893) 114, t. 157!

Penang, Perak, *Ridley 14600, 14601!*

PSEUDUVARIA PRAINII (King) comb. nov.

Mitrephora prainii King in Journ. As. Soc. Beng. 61¹ (1892) 33, Ann. Bot. Gard. Calcutta 4 (1893) 115, t. 158.

Andaman Islands.

PSEUDUVARIA AURANTIACA (Miq.) comb. nov.

Orophea aurantiaca Miq. Ann. Mus. Bot. Lugd.-Bat. 2 (1865) 25.

Borneo.

PSEUDUVARIA VERSTEEGII (Diels) comb. nov.

Mitrephora versteegii Diels in Engl. Bot. Jahrb. 49 (1912) 154.

New Guinea.

To this genus are probably to be referred the following species: *Mitrephora grandifolia* Diels (*Stelechocarpus grandifolia* Warb), of New Guinea; *Orophea trachycarpa* Miq., of Sumatra (possibly identical with *Pseuduvaria diepenhorstii* T. & B.); *Orophea sumatra* Miq., of Sumatra; *Mitrephora* (?) *parallelivenia* Boerl., of Borneo (fruits and flowers unknown); *Mitrephora aperta* T. & B., of Java [perhaps identical with *Pseuduvaria reticulata* (Bl.) Miq.]; *Mitrephora chrysocarpa* Boerl., of Borneo; *M.* (?) *ovata* Boerl., of New Guinea; and *M.* (?) *rupestris* Boerl., of Celebes

(flowers unknown, but from Boerlage's figure apparently in the group with *Pseuduvaria diepenhorstii* Miq.).

PSEUDUVARIA PHILIPPINENSIS sp. nov.

Arbor dioeca, 10 ad 15 m alta, plus minusve molliter pubescentibus; foliis oblongis ad oblongo-lanceolatis, chartaceis ad subcoriaceis, usque ad 16 cm longis, acuminatis, basi acutis, supra, costa exceptis, glabris, nitidis, subtus pallidis, molliter pubescentibus, nervis utrinque circiter 10, prominentibus; floribus ♂ numerosis, axillaribus, fasciculatis, longe pedicellatis, pubescentibus, petalis exterioribus ovatis, quam sepalis paulo majoribus, interioribus valde diversis, longe unguiculatis, circiter 6 mm longis; staminibus circiter 50, uvarioideis.

A tree 10 to 15 m high, dioecious, more or less softly pubescent. Branches terete, dark-colored when dry, more or less wrinkled, glabrous, the young branchlets rather densely and softly pubescent with pale or subferruginous hairs. Leaves chartaceous to subcoriaceous, rather pale when dry, shining, oblong to oblong-lanceolate, 9 to 16 cm long, 3 to 4.5 cm wide, base acute, the apex rather prominently acuminate, the upper surface brownish-olivaceous or rather pale, glabrous except the more or less pubescent midrib, the lower surface much paler than the upper, rather softly pubescent with grayish hairs; lateral nerves about 10 on each side of the midrib, prominent, curved-ascending, anastomosing, the reticulations lax, distinct; petioles about 3 mm long, pubescent, ultimately subglabrous. Male flowers numerous, axillary and in the axils of fallen leaves, yellow, 2 to 10 in a fascicle, their pedicels about 1.5 cm long, densely pubescent, the buds depressed-globose. Sepals 3, broadly ovate, obtuse, densely pubescent, about 1.5 mm long. Outer 3 petals quite similar to the sepals but 2 mm long; inner 3 petals entirely different from the outer, clawed, arched, about 6 mm long, pubescent, coriaceous, the claw slender below, widened above, about 4 mm long, the limb 3.5 to 4 mm wide, cohering by the lateral margins leaving an opening in the center above the stamens. Stamens about 50, uvarioid, densely crowded on the pubescent torus, about 0.7 mm long, truncate, the anther-cells concealed by the connectives. Pistillate flowers not seen.

LUZON, Province of Tayabas, Hinabaan, *For. Bur. 20182 Aguilar* (type) April 22, 1913: Province of Cagayan, Claveria, *For. Bur. 12987 Bernardo*. Probably referable here is *Merrill 9213* from Palawan, the specimen in fruit.

The alliance of this species is with the Sumatran *Pseuduvaria diepenhorstii* T. & B., which it greatly resembles. It is distinguished, however, by its indumentum and its fewer nerved leaves.

OROPHEA Blume

OROPHEA AVERSA (Elm.) comb. nov.

Mitrephora aversa Elm. Leaflet. Philip. Bot. 5 (1913) 1719.

MINDANAO, Province of Agusan, Mount Urdaneta, *Elmer 13985*, October, 1912, type number.

This species is in all respects an *Orophea*, not a *Mitrephora*. Its inner petals are longer than the outer, and its stamens are miliusioid. Elmer has described the flowers as pistillate, but in the younger ones the stamens are present, stout, glabrous, about 1 mm long, few in number (apparently about 6), the cells not obscured by the overlapping connectives. The carpels are about 6 in number, about 1 mm long (not 1 dm long as described), each with 2 or 3 ovules.

OROPHEA POLYANTHA sp. nov.

Arbor parva, ramulis foliis subtus ad costa nervisque inflorescentisque ferrugineo-pubescentibus; foliis chartaceis, in siccitate brunneis, oblongis ad elliptico-ovatis, usque ad 13 cm longis, basi acutis, apice acuminatis, nervis utrinque 7 vel 8, curvato-adscendentibus; inflorescentiis numerosis, extra-axillaribus, depauperato-cymosis, 1.5 ad 2 cm longis; floribus numerosis, sepalis late ovatis, 3 mm longis, obtusis petalis exterioribus circiter 5 mm longis, patulis vel reflexis, late ovatis, interioribus unguiculatis, circiter 7 mm longis, arcuatis; staminibus circiter 6, miliusioideis; carpellis circiter 6, pubescentibus.

A small tree, the branchlets, leaves on the midrib and lateral nerves beneath, and the inflorescence rather prominently ferruginous-pubescent. Branches slender, terete, glabrous, very dark brown or nearly black when dry. Leaves chartaceous, brownish when dry, oblong to elliptic-ovate, 7 to 13 cm long, 3 to 5 cm wide, the upper surface somewhat pubescent when young, in age quite glabrous, the lower surface ferruginous-pubescent on the midrib and lateral nerves; lateral nerves 7 or 8 on each side of the midrib, slender, prominent, curved-ascending; petioles 2 to 3 mm long. Cymes depauperate, extra-axillary, among the leaves and on the branchlets below the leaves, numerous, solitary, the rachis 5 mm long or less, with numerous small bracts. Flowers few in each inflorescence, but 1 or 2 opening at the same time, their pedicels about 1 cm long, thickened upward, ferruginous-pubescent, with an oblong, 2 mm long bracteole at the lower one-third. Sepals pubescent, spreading, broadly ovate, obtuse, about 3 mm long. Outer 3 petals similar to the sepals but larger, about 5 mm long, spreading or reflexed, obtuse; inner 3 petals clawed, arcuate, thick, pubescent, about 7 mm long, the limb subrhomboid, coarsely acuminate-rostrate, about 3 mm long and 2.5 to 3 mm wide. Stamens about

6, miliusioid, about 1 mm long. Carpels about 6, inequilaterally ovoid, about 1.2 mm long, densely pubescent, crowded, the ovules 4.

SAMAR, Cauayan Valley, *Phil. Pl. 1673 Ramos*, April, 1914, in forests near small streams.

There are several Philippine species from which this one is not strongly differentiated. It is apparently most closely allied to *Orophea bracteolata* Merr., from which it differs in its very much smaller bracteoles, fewer nerved leaves, fewer stamens, and much fewer carpels.

OROPHEA TARROSAE sp. nov.

Arbor parva, circiter 6 m alta, subtus foliis ad nervos petiolis ramulis inflorescentiisque plus minusve pubescentibus; foliis oblongis, chartaceis, in siccitate pallidis, usque ad 16 cm longis, brevissime obtuse acuminatis, basi acutis vel subrotundatis, nervis utrinque 10, subtus prominentibus; racemis brevibus, extra-axillaribus; floribus 2 vel 3, petalis exterioribus 6 mm longis; staminibus 6.

A small tree, about 6 m high, the branches slender, terete, black or nearly so when dry, glabrous, the branchlets distinctly ferruginous-pubescent. Leaves oblong, chartaceous, rather pale when dry, of about the same color on both surfaces, shining, 10 to 16 cm long, 5 to 7 cm wide, the apex very shortly and bluntly acuminate, base acute or somewhat rounded, the upper surface glabrous, the lower sparingly pubescent on the midrib and nerves; lateral nerves 10 on each side of the midrib, prominent, distinctly looped-anastomosing; petioles very short, 3 mm long, pubescent. Racemes extra-axillary, short, pubescent, solitary, few-flowered, their rachises 1.5 cm long or less, usually producing two flowers at a time. Pedicels slender, 8 to 10 mm long, pubescent, with an ovate, acuminate, about 2 mm long, pubescent bracteole at about the middle or below. Sepals ovate, pubescent, acuminate, 3 mm long. Outer 3 petals ovate, obtuse, about 6 mm long, 4.5 mm wide, pubescent on both surfaces, distinctly nerved. Inner three petals arcuate, 8 mm long, the claw glabrous, 4 mm long, the limb thick, somewhat triangular, acute, pubescent on the back, glabrous within, about 5 mm wide. Stamens 12, 2-seriate. Carpels 6, narrowly ovoid, pubescent, somewhat curved, 2 mm long, each containing 5 ovules arranged in a single row.

MINDANAO, District of Cotabato, *For. Bur. 14927 Tarrosa & Almagro*, April 20, 1912, in dipterocarp forests, altitude about 40 meters. The flowers are said to be yellow and fragrant.

A species characterized among the Philippine forms by its comparatively large leaves which are very shortly and bluntly acuminate.

OROPHEA WILLIAMSII sp. nov.

Arbor parva, plus minusve pubescentibus; foliis oblongis, chartaceis, usque ad 17 cm longis, in siccitate supra pallidis, nitidis, apice distincte acuminatis, basi acutis vel subrotundatis, nervis utrinque circiter 10, subtus prominentibus; floribus in fasciculis vel in umbellis breviter pedunculatis extra-axillaribus dispositis, pedicellis 1.5 ad 2 cm longis; petalis exterioribus ovatis, 8 mm longis; staminibus 12.

A small tree, about 4 m high. Branches terete, slender, dark-colored when dry, glabrous, the branchlets ferruginous-pubescent. Leaves oblong, chartaceous, 11 to 17 cm long, 4 to 6 cm wide, the upper surface glabrous, pale and shining when dry, the lower somewhat brownish, duller, distinctly pubescent on the midrib and to a less degree on the lateral nerves, the base acute or somewhat rounded, the apex narrowed into a distinct, blunt acumen about 1 cm in length; lateral nerves about 10 on each side of the midrib, prominent on the lower surface, somewhat curved-ascending, distinctly anastomosing, the reticulations fine, subparallel, not prominent; petioles pubescent, 3 to 5 mm long. Flowers yellowish, in extra-axillary fascicles or in shortly peduncled umbels, 2 to 6 flowers in each. Pedicels prominently pubescent, 1.5 to 2 cm long, subtended by basal, lanceolate, acuminate, 3.5 mm long bracts, each bearing a similar bracteole at about the lower one-third. Sepals broadly ovate, acuminate, pubescent, 4 mm long. Outer three petals broadly ovate, pubescent, acute or obtuse, 8 mm long, 5 mm wide, nerved, the inner three of about the same length, the claw glabrous, 3 mm long, bearing an orbicular-reniform rounded limb which is pubescent on the back and glabrous on the inner face and distinctly horizontally sulcate or somewhat cucullate. Stamens 12, in two series, 1 to 1.2 mm long. Carpels about 5, densely pubescent, narrowly ovoid, 2 mm long, somewhat curved, each with about 6 ovules, apparently borne in two rows.

MINDANAO, District of Zamboanga, Sax River, *R. S. Williams 2311*, February 26, 1905, in forests, altitude about 200 meters.

A species manifestly allied to *Orophea willamii* Merr., but with differently shaped, rather prominently acuminate leaves, more numerous, longer pedicelled flowers, and entirely differently shaped inner petals which are glabrous within and horizontally sulcate or cucullate.

OXYMITRA Hook. f. & Thomson**OXYMITRA BAKERI** sp. nov.

Frutex scandens, partibus junioribus infructescentibus exceptis glaber vel subglaber; foliis anguste lanceolatis, usque ad 25 cm

longis, 1.5 ad 2.5 cm latis, sursum sensim angustatis, acutis vel leviter acuminatis, basi rotundatis cordatisque, subtus glaucescentibus, nervis utrinque circiter 25; pedunculis axillaribus, tenuibus, circiter 3.5 cm longis; fructibus ellipsoideis, glabris, circiter 8 mm longis, obtuse apiculatis.

A scandent shrub, nearly glabrous except the younger parts, the infructescence, and the flowers. Branches terete, slender, glabrous, nearly black when dry, about 2.5 mm in diameter or less, the branchlets slenderer and somewhat ferruginous-pubescent. Leaves narrowly lanceolate, 15 to 24 cm long, 1.5 to 5 cm wide, subcoriaceous, gradually narrowed upward to the acute or somewhat acuminate apex, the base rather broadly and abruptly rounded and distinctly cordate, the upper surface smooth, shining, the lower glaucous, pubescent with very few scattered hairs, ultimately quite glabrous; lateral nerves about 25 on each side of the midrib, distinct, the reticulations lax, not parallel; petioles 2 to 3 mm long, glabrous or nearly so. Flowers not seen. Fruiting peduncles axillary, solitary, slender, up to 3.5 cm long, glabrous. Fruits numerous, glabrous, ellipsoid, about 8 mm long, reddish-brown when dry, blunt-apiculate, their pedicels pubescent, about 1 cm long.

LUZON, Province of Laguna, hills back of Paete, *C. F. Baker 3691* (type), December 28, 1914: Province of Albay, Calanaga, *Bur. Sci. 6290 Robinson*, August, 1908, sterile specimen.

A very characteristic species, at once recognizable by its very narrow, greatly elongated leaves.

OXYMITRA LANCEOLATA sp. nov.

Frutex scandens; foliis lanceolatis, coriaceis, acuminatis, usque ad 12 cm longis, basi obtusis vel subacutis, distincte biglandulosus, supra glabris, nitidis, vel junioribus plus minusve pubescentibus, subtus brunneis, pubescentibus, nervis utrinque circiter 10; floribus solitariis, breviter pedicellatis, 3.5 cm longis, petalis sulcatis; carpellis 1-ovulatis.

A scandent shrub, the branches terete, glabrous, dark-colored when dry, the younger branchlets, petioles, pedicels, flowers, and lower surfaces of the leaves rather densely and uniformly pubescent with short, brown or ferruginous hairs. Leaves lanceolate, coriaceous, 8 to 12 cm long, 2 to 3 cm wide, narrowed upward to the acuminate apex, the base subacute, obtuse, or sometimes nearly rounded with two small glands on the upper surface at the junction of the petiole, when young somewhat pubescent on the upper surface, when mature quite glabrous, dark brown, shining, the lower surface paler; lateral nerves about 10 on each side of the midrib, very prominent, ascending; petioles about 2

mm long. Flowers green and pink, on the ultimate branchlets opposite the terminal leaves. Calyx pubescent, the sepals broadly ovate, obtuse, coriaceous, about 3 mm long. Outer three petals narrowly lanceolate, coriaceous, about 3.5 cm long, 8 mm wide, longitudinally sulcate, uniformly brown-pubescent, narrowed upward to the blunt apex, the base slightly concave; inner three petals narrowly ovate, glabrous, thickly coriaceous, 6 to 7 mm long, deeply concave, prominently and sharply acuminate. Stamens many, about 1 mm long, the connectives truncate. Carpels many, narrowly oblong, somewhat curved, 1.2 to 1.4 mm long, narrowed upward, about 1.2 mm long; stigmas of the outer carpels narrowly oblong, up to 1 mm long, of the inner ones irregularly obovoid, truncate, shorter; ovules solitary.

LEYTE, near Dagami, in forests, *Bur. Sci. 15342 Ramos*, August, 1912.

A species manifestly allied to *Oxymitra biglandulosa* (Blume) Scheff., but with very differently shaped leaves, more numerous nerves, and somewhat longer flowers. It differs from *O. urdanatensis* Elm. notably in its more numerous nerved leaves.

OXYMITRA PHILIPPINENSIS sp. nov.

Frutex scandens, partibus junioribus ferrugineo-pubescentibus; foliis subcoriaceis, oblongis ad oblongo-ellipticis, usque ad 25 cm longis, apice rotundatis, basi cordatis, supra glabris, nitidis, subtus glaucis, ad costa nervisque ferrugineo-pubescentibus, nervis utrinque 16 ad 18; floribus extra-axillaribus, solitariis, longe pedicellatis, circiter 5.5 cm longis, ferrugineo-pubescentibus, petalis exterioribus concavis, interioribus glabris vel subglabris, circiter 9 mm longis, carpellis dense hirsutis.

A scandent shrub, the younger leaves, twigs, and flowers rather densely ferruginous-pubescent. Branches terete, brown, slender, more or less ferruginous-pubescent. Leaves oblong to oblong-elliptic, subcoriaceous, 17 to 25 cm long, 7.5 to 11 cm wide, apex broadly rounded, base equilateral or somewhat inequilateral, cordate, scarcely narrowed, the upper surface brown and shining when dry, glabrous, or the midrib slightly pubescent, the lower surface glaucous, the midrib and nerves dark brown, ferruginous-pubescent; lateral nerves 16 to 18 on each side of the midrib, prominent; petioles stout, 8 mm long or less, ferruginous-pubescent. Flowers extra-axillary, solitary, their pedicels about 2 cm long, densely ferruginous-pubescent, with an oblong-lanceolate, acuminate, 6 to 7 mm long bracteole at the lower one-third. Sepals 3, sometimes 4, oblong-ovate, obtuse or acute, ferruginous-pubescent, coriaceous, about 9 mm long and 5.5 mm wide. Outer petals 3, sometimes 4, narrowly lanceolate, ferruginous-pubescent, 5.5 cm long, 1 cm wide below, convex at the base, above chan-

neled-concave, narrowed upward; inner petals 3, glabrous or very slightly pubescent toward their apices, coriaceous, oblong-ovate, slightly acuminate, about 9 mm long and 4 to 4.5 mm wide, keeled. Anthers many, 2.2 to 2.5 mm long, the cells concealed by the overlapping connectives. Carpels numerous, densely ferruginous-hirsute, including the style and stigma about 2.5 mm long, the style glabrous, slender, thickened upward.

PALAWAN, Malampaya Bay, Binaloan, *Merrill 9413* (type), May, 1913, in forests back of the beach. Possibly referable here is *For. Bur. 17901 Barros*, from Cagayan Province, Luzon, November, 1912, but the specimen is old, poorly prepared, and in fruit only.

The alliance of this species is with *Oxymitra latifolia* Hook. f. & Th. of the Malay Peninsula, but with more numerous lateral nerves, larger flowers, and longer pedicels. From *Oxymitra longiflora* Merr. it differs notably in its shorter flowers.

GONIOTHALAMUS Hook. f. & Thomson

GONIOTHALAMUS COPELANDII sp. nov.

Arbor glabra vel subglabra; foliis oblongis, chartaceis, usque ad 20 cm longis, basi acutis apice brevissime abrupte acuminatis, nervis utrinque circiter 18, subtus prominentibus, anastomosantibus; floribus in ramis defoliatis, solitariis vel fasciculatis, pedicellatis, circiter 5 cm longis, petalis interioribus carpellis pubescentibus, cetero glabris; stigmatibus anguste hypocrateriformibus, truncatis, fassis.

A tree about 15 m high, quite glabrous except the terminal buds, the interior petals, and the carpels. Branches terete, dark-colored when dry, wrinkled. Leaves oblong, chartaceous, rather pale when dry, slightly shining and of about the same color on both surfaces, the base acute, the apex abruptly and very shortly acuminate; lateral nerves about 18 on each side of the midrib, rather slender but very prominent on the lower surface, distinctly anastomosing, mostly impressed on the upper surface, the reticulations slender, lax, not prominent; petioles 1 to 1.5 cm long. Flowers greenish, tinged with lavender, on the branches below the leaves, solitary, in pairs, or in fascicles, their pedicels about 2 cm long, subtended by small bracts. Sepals thickly coriaceous, ovate, about 14 mm long, 9 mm wide, rounded, rather distinctly nerved, glabrous. Outer three petals very thickly coriaceous, almost fleshy when fresh, glabrous, oblong to oblong-ovate, the apex rounded, margins thickened and somewhat incurved, 4 to 5 cm long, 2 to 2.5 cm wide, the base somewhat contracted to a width of about 7 mm and there slightly concave; inner three petals connivent into a cone by their very thick

margins, sessile, oblong-ovate, obtuse, very thick, slightly pubescent externally, concave, 10 to 12 mm long, 6 mm wide. Stamens indefinite, linear-oblong, flat, 4 to 4.5 mm long, about 1 mm wide, closely packed, the connectives ovate-sagittate, 1 mm long, rostrate-acuminate. Carpels many, pubescent, narrowly oblong, about 2 mm long, narrowed into the slender, flattened, 2 mm long styles, the stigmas narrowly funnel-shaped, truncate, split down one side, 1 mm wide when spread, ovule solitary, basal.

MINDANAO, District of Zamboanga, Sax River, mountains back of San Ramon, *Merrill 8297*, November 28, 1911, in hill forests, altitude about 900 meters.

Apparently a very distinct species, in its stigma-characters allied to *Goniothalamus tenuifolius* King, but otherwise very different and in habit and general appearance somewhat resembling *G. prainianus* King, to which, however, it does not seem to be closely allied.

GONIOTHALAMUS GIGANTIFOLIUS sp. nov.

Frutex circiter 5 m altus, glaber vel subglaber; foliis oblongis, chartaceis ad subcoriaceis, usque ad 60 cm longis et 20 cm latis, nitidis, pallidis, basi acutis, apice latissime breviter obtuse acuminatis vel obtusis, nervis utrinque circiter 30, valde prominentibus, supra impressis, arcuate-anastomosantibus, reticulis distinctis, laxis, floribus caulinis vel e ramis vetustioribus, ut videtur solitariis, breviter pedicellatis; fructibus oblongis, cylindraceutis, acuminato-rostratis, 2.5 to 4.5 cm longis, circiter 1 cm diametro, in siccitate rugosis, glabris; seminibus 2.

A shrub about 5 m high, apparently quite glabrous except parts of the flower and fruit. Branches terete, smooth, dark reddish-brown. Leaves very large, up to 60 cm long and 20 cm wide, oblong, firmly chartaceous to subcoriaceous, rather pale, of the same color, and shining on both surfaces when dry, the base acute, the apex very shortly, broadly, and obtusely acuminate or merely obtuse; lateral nerves about 30 on each side of the midrib, somewhat ascending, nearly straight, impressed on the upper surface, very prominent on the lower surface, prominently arched-anastomosing 1 cm from the margin or less to form a very prominent, arched, marginal nerve; petioles stout, about 2 cm long. Flowers unknown, from the trunk or the larger branches, solitary, the pedicels, in fruit, 1 to 1.5 cm long, subtended by several small basal bracteoles, slightly pubescent. Fruits 5 to 20 on each peduncle, oblong to cylindric, 2.5 to 4.5 cm long, about 1 cm in diameter, very dark brown when dry, the pericarp thin, wrinkled, base acute, apex prominently rostrate-acuminate, externally very sparingly pubescent with scattered, short, shining,

brown hairs, the pedicels about 1 cm long, with more numerous similar hairs. Seeds 2, rarely 3, about 1 cm long and 5 mm thick, prominently ruminant.

BASILAN, near Singal, *For. Bur.* 18958 *Miranda*, September 26, 1912, altitude about 160 meters.

A very strongly marked species readily distinguishable by its very large, prominently nerved leaves, its solitary cauline flowers, and its cylindrical, rostrate-acuminate fruits. It apparently belongs in the group with *Goniothalamus curtisii* King.

GONIOTHALAMUS AMUYON (Blanco) comb. nov.

Uvaria amuyon Blanco *Fl. Filip.* (1837) 463.

Unona cauliflora Blanco *Fl. Filip.* ed. 2 (1845) 323; ed. 3, 2 (1878) 235.

Melodorum fulgens F.-Vill. *Novis. App.* (1880) 7, non Hook. f. & Th.

Goniothalamus gitingensis Elm. *Leaf. Philip. Bot.* 5 (1913) 1710.

The species recently described by Elmer as *Goniothalamus gitingensis* is quite identical with the form I interpret as *Uvaria amuyon* Blanco. It is not an abundant species in the Philippines, but is widely distributed. I refer here the following specimens: LUZON, Province of Ilocos Sur, *For. Bur.* 5642 *Klemme*: Province of Pangasinan, *Alberto*: Province of Batangas, *Ramos*: SIBUYAN, *Elmer* 12507. BOHOL, *Bur. Sci.* 1229 *McGregor*. Its name in Ilocos Sur and Pangasinan is *sagiat*; in Batangas and in Bohol *amuyong* or *amuyon*, and its fruits are used for medicinal purposes. An allied form occurs in Tayabas, appearing under the Tagalog name *amuyong*, but it does not agree as well with Blanco's description as does the present form.