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STUDIES OF PACIFIC ISLAND PLANTS, X
THE MELIACEAE OF FIJI, SAMOA AND TONGA

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PREFACE

The accompanying paper, by A. C. Smith, curator of the Division of Phanerogams, U. S. National Museum, is the tenth in his series of floristic studies and limited revisions of Pacific Island plants. This study discusses the family Meliaceae, the mahogany family, of which 36 indigenous species are found in Fiji, Samoa, Tonga, and adjacent smaller island groups. Some of the species of this family are frequent components of the vegetation in the southwestern Pacific region. Eleven species and two varieties are described as new in the present treatment.

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CONTENTS

STUDIES OF PACIFIC ISLAND PLANTS, X

THE MELIACEAE OF FIJI, SAMOA, AND TONGA

By A. C. Smith

INTRODUCTION

Like some of the preceding papers in this series,[1] this treatment is intended to facilitate the identification of certain phanerogams in Fiji and the adjacent Pacific archipelagos. The writer, in attempting to name the Meliaceae collected by him in Fiji in 1947,[2] discovered that herbarium identifications in this group are not entirely reliable. It has seemed desirable to put his findings into the form of a limited revision, for the purposes of which all the readily available herbarium material of the family from Fiji, Samoa, Tonga, and a few nearby regions, such as Niue and the Horne and Wallis Islands, has been examined and cited. The writer is greatly indebted to the directors and curators of several herbaria for the privilege of examining specimens under their care. The herbaria cited in the present paper are indicated as follows: Arnold Arboretum of Harvard University (A); Bernice P. Bishop Museum (Bish); British Museum (BM); Gray Herbarium of Harvard University (GH); Royal Botanic Gardens, Kew (K); New York Botanical Garden (NY); U. S. National Herbarium (US). In addition, certain fragments of types were lent from the Conservatoire Botanique, Genève, through the kindness of the director, Dr. C. Baehni.

[1] Previous papers in this series have been published as follows:

I. Bull. Torrey Club 68: 397–406. 1941.
II. Journ. Arn. Arb. 24: 347–361. 1943.
III. Bull. Torrey Club 70: 533–549. 1943.
IV. Journ. Arn. Arb. 26: 97–110. 1945.
V. Op. cit. 27: 319–322. 1946.
VI. Op. cit. 31: 137–171. 1950.
VII. Op. cit. 31: 288–319. 1950.
VIII. Op. cit. 32: 27–58. 1951.
IX. Op. cit. 32: 226–255. 1951.

[2] These collections were made under the auspices of the Arnold Arboretum of Harvard University and the John Simon Guggenheim Memorial Foundation, with the aid of grants from the Penrose Fund of the American Philosophical Society and the Bache Fund of the National Academy of Sciences.

Species of Meliaceae occurring only in cultivation in our region are not considered in this paper. Such species in Fiji are *Melia azedarach* L. (frequent), *Azadirachta indica* Juss. (not commonly cultivated), and *Swietenia* spp. (now in experimental cultivation in Fiji). *Melia elegans* Seem. proves to be a species of Sapindaceae, as indicated at the end of the present treatment.

At least 36 indigenous species of 4 genera (*Xylocarpus*, *Vavaea*, *Aglaia*, and *Dysoxylum*) are found in the region under consideration, and it seems likely that future exploration will disclose others. *Xylocarpus* is represented by the 2 widespread Pacific species, *X. granatum* Koen., a common component of mangrove swamps, and *X. moluccensis* (Lam.) Roem., found on beaches but not ordinarily among mangroves. Both species are abundant, but fairly local, in Fiji and presumably throughout most of our region; their identification does not present any problems and they are not here considered in detail. The 3 remaining genera are characterized by a high degree of local endemism, most species being limited to 1 of the archipelagos and in some cases to a single island, although collections are still too sparse to permit a final opinion on distributional problems. The only species now known to extend beyond a single archipelago are *Vavaea amicorum* (Fiji and Tonga), *Aglaia saltatorum* (Fiji, Tonga, and Niue), *Dysoxylum forsteri* (Tonga and Niue), and *D. maota* (Samoa and probably also the Horne and Wallis Islands). In this paper 11 species and 2 varieties are described as new. Following is a simplified key to the genera with indigenous species in our region.

Leaves simple; indument of simple hairs; staminal tube laciniate; disk inconspicuous, adherent to base of staminal tube ..... *Vavaea*
Leaves pinnate (if simple, in *Aglaia*, with lepidote or stellate indument); staminal tube entire or crenulate at apex.
  Disk inconspicuous, not concealing the ovary.
    Leaves and inflorescence glabrous; disk short, thick ..... *Xylocarpus*
    Leaves and inflorescence with lepidote or stellate indument; disk essentially none ..... *Aglaia*
  Disk tubular, surrounding the ovary and base of style; indument of simple hairs (in our species) ..... *Dysoxylum*

VAVAEA Benth.

Vavaea Benth. in Hook. Lond. Journ. Bot. 2: 212. 1843.

For many years after its description, *Vavaea* was thought to be limited to Tonga and later to the Tonga-Fiji area, but subsequently the known range of the genus has been extended westward to the Philippines, Borneo, and Java. The genus now contains at least 17 species. In our area there appear to be 4 species, all occurring in Fiji and 1 extending into Tonga; the genus is not known to occur in Samoa.

In my opinion none of the Fijian species occur to the westward, although some herbarium specimens from the Philippines are said to represent *V. amicorum* (cf. Merrill, Enum. Phil. Fl. Pl. 2: 359. 1923). The Philippine specimens upon which such records are based have comparatively short-petiolate leaves with a very perceptible strigose-hispidulous indument along the costa and nerves beneath. As compared with *V. amicorum*, the Philippine specimens have longer pedicels and larger flowers. A study of the entire genus will be necessary for adequate delimitation of specific ranges.

KEY TO THE SPECIES

Flowers comparatively small, the calyx at anthesis 3–5 mm. in diameter, with lobes 1–2.5 mm. long, not or slightly accrescent in fruit (calyx up to 7 mm. in diameter, the lobes not more than 3 mm. long), the petals 5–6.5 mm. long and 1.5–2.2 mm. broad, the stamens 2.5–3 mm. long, with anthers 0.5–0.8 mm. long; branchlets comparatively slender, 4–7 mm. in diameter toward apex; petioles rarely more than 3.5 cm. long.

Leaves with obvious, slender (rarely to 2 mm. in diameter) petioles 1–3.5 (–4.5) cm. long, the blades usually 6–15×2.5–8 cm. (rarely up to 17×10 cm.), gradually narrowed at base, attenuate to acute and decurrent on the petiole, rounded or obtusely cuspidate at apex, essentially glabrous beneath at maturity or sparsely pilose along costa, rarely soft-pilose on surface; calyx-lobes acute to obtuse or rounded at apex, sometimes with obvious nerves; ovary closely sericeous (hairs 0.1–0.3 mm. long), the style sparsely sericeous in lower half, glabrous above---- 1. *V. amicorum*

Leaves short-petiolate, often appearing subsessile, the petioles comparatively stout (usually 1.5–3 mm. in diameter), 0.5–1.8 (rarely to 4) cm. long, the blades usually 11–23×4.5–11.5 cm. (rarely 7–29×3.5–14 cm.), gradually narrowed proximally, then often obtuse or subrounded at actual base and abruptly decurrent on the petiole, cuspidate at apex (actual apex obtuse or acute), sometimes coarsely undulate-crenate toward apex, persistently pilose beneath; calyx-lobes acute at apex, obscurely nerved; ovary sericeous usually with hairs 0.4–0.6 mm. long, the style sparsely sericeous nearly to apex---- 2. *V. harveyi*

Flowers comparatively large, the calyx at anthesis 6–10 mm. in diameter, with lobes 2.5–4 mm. long, usually slightly accrescent in fruit (calyx up to 14 mm. in diameter, the lobes up to 5 mm. long), the petals 7–9 mm. long and 2–3 mm. broad, the stamens 3–4 mm. long, with anthers 0.7–1 mm. long; branchlets comparatively stout, 8–13 mm. in diameter toward apex, conspicuously verrucose with the scars of fallen leaves and inflorescences; petioles 2–7 cm. long.

Leaf-blades lanceolate-obovate, gradually attenuate toward base and long-decurrent on the petiole, glabrous beneath or with a strigose (not spreading) indument limited to the costa and principal nerves.

3. *V. megaphylla*

Leaf-blades oblong-obovate, obtuse at base and short-decurrent on the petiole, uniformly and persistently soft-pilose beneath with whitish hairs 0.3–0.7 mm. long (hairs of petiole and costa also spreading, not appressed), the costa and bases of secondary nerves on upper surface also pilose.

4. *V. degeneri*

1. **Vavaea amicorum** Benth. in Hook. Lond. Journ. Bot. **2**: 212. 1843; Walp. Rep. Bot. Syst. **5**: 377. 1845; A. Gray, Bot. U. S. Expl. Exped. **1**: 244. *pl. 16B*. 1854; C. Muell. in Walp. Ann. Bot. Syst. **4**: 388. 1857; C. DC. in DC. Monogr. Phan. **1**: 645. 1878; C. DC. in Bot. Jahrb. **7**: 461. 1886; Hemsl. in Journ. Linn. Soc. Bot. **30**: 171. 1894; Burkill in Journ. Linn. Soc. Bot. **35**: 31. 1901.
Vavaea vitiensis Seem. Fl. Vit. 35. 1865.

TYPE LOCALITY: Vavau, Tonga; type collected by Barclay, cited below.

DISTRIBUTION: Fiji and Tonga, often abundant. The species occurs commonly near sea level, along beaches and mangrove swamps, often on limestone cliffs, and in lowland thickets and forest. On the larger islands it is found inland (up to elevations of 1,150 m. on Viti Levu) in forest or forest-grassland transitions, or on ridges and crests. It is usually a slender or shrubby tree, up to 12 m. in height, rarely attaining 20 m., and with a trunk diameter of 20 cm. or perhaps more. The flowers are fragrant, with white to pale yellow petals and filaments; the fruit is at first green, then purple, and black at full maturity.

LOCAL NAMES AND USES: In Tonga: *Ahivoa, yahivau;* in Fiji: *Thevua, sevua.* Less commonly used (and perhaps not too reliable) local names in Fiji are: *Mariko, wawaro* (upland Viti Levu); *ruru* (Koro); *tarau* (Fulanga). In Fiji the species is also known as *false sandalwood*, because of its fragrant wood. The Fijians use the wood as house timbers or as fence posts.

FIJI: VITI LEVU: *Horne* 1050 (GH, K). Mba: Lautoka and vicinity, *Greenwood* 16A (K), 895 (A, K, NY, US); Tavua, *Greenwood* 647A (K); Nandarivatu and vicinity, *Tothill* 59b (K), *Gillespie* 3751 (Bish, GH, NY), *Parks* 20699 (Bish), *Degener & Ordonez* 13597 (A), *Degener* 14283 (A, Bish, K, NY), 14385 (A, Bish, K, NY, US), *Smith* 4900 (A, US); Tholo-i-Nandarivatu Mt., *Gillespie* 3952 (Bish); Mt. Nanggaranambuluta, *Smith* 4789 (A, US); hills east of Nandala Creek, *Smith* 5940 (A, US); Mt. Tomanivi, *Smith* 5211 (A, US); Mt. Koromba [Pickering Peak], *Smith* 4635 (A. US); Mt. Namendre, *Smith* 4511 (A, US). Ra: Rakiraki, *Degener & Ordonez* 13697 (A, Bish, K, NY, US). Nandronga & Navosa: Singatoka, *Greenwood* 16 (K); Rairaimatuku Plateau, between Nandrau and Nanga, *Smith* 5457 (A, US). Serua: Vicinity of Ngaloa, *Degener* 15070 (A, Bish, K, NY, US). Naitasiri: Waindina Valley, *MacDaniels* 59 (K); near Tamavua, *Gillespie* 2444 (Bish, GH). Rewa: Mt. Kombalevu, *Parks* 20285 (Bish); Mt. Korombamba, *Gillespie* 2344 (Bish); near Lami, *Gillespie* 4599 (Bish, GH, K); Suva and vicinity, *Tothill* 191 (K), *MacDaniels* 1074 (A, Bish). VANUA LEVU: Mbua: Ruku-ruku Bay, *H. B. R. Parham* 1 (K), 8 (GH); Seatovo Range, *Smith* 1538 (Bish, GH, K, NY, US). Mathuata: Mathuata coast, *Seemann* 63 (GH, K type of *V. vitiensis*), *Greenwood* 647 (K); Mt. Numbuiloa, near Lambasa, *Smith* 6332 (A, US), 6527 (A, US), 6559 (A, US); Seanggangga Plateau, near Natua, *Smith* 6695 (A, US), 6905 (A, US). Thakaundrove: Mt. Mariko, *Smith* 476 (Bish, GH, K, NY, US); Savu Savu Bay region, *Degener & Ordonez* 13947 (A); Maravu, near Salt Lake, *Degener & Ordonez* 14158 (A, Bish, K, NY, US), 14195 (A, Bish, K, NY, US); Mbutha Bay, *Smith* 816 (Bish, GH, K, NY, US). KORO: North coast, *Smith* 1042 (Bish, GH, K, NY, US). MAKONDRONGA: *Degener & Ordonez* 13807 (A, Bish, K, NY, US). NAIRAI:

Milne 177 (K). KANDAVU: Mt. Mbuke Levu, *Smith* 231 (Bish, GH, K, NY, US): above Namalata and Ngaloa Bays, *Smith* 99 (Bish, GH, K, NY, US). THIKOMBIA-I-LAU: *Tothill* 59c (K). VANUA MBALAVU: *Smith* 1429 (Bish, GH, K, NY, US), 1452 (Bish, GH, K, NY, US. MOALA: Summit ridge, *Bryan* 347 (A, Bish). MATUKU: *Bryan* 251 (A, Bish). LAKEMBA: *Tothill* 61 (K). TAVUNASITHI: *Bryan* 518 (Bish). KAMBARA: *Smith* 1278 (Bish, GH, K, NY, US). FULANGA: *Bryan* 442 (Bish, US), *Smith* 1110 (Bish, GH, K, NY, US), 1156 (Bish, GH, K, NY, US), 1225 (Bish, GH, K, NY, US). ONGEA NDRIKI: *Bryan* 395 (Bish). Fiji, without detailed locality: *U. S. Expl. Exped.* (GH, K, NY, US); *Horne* 359 (K), 574 (GH, K), 667 (GH).

TONGA: VAVAU: *Barclay* s. n. (K TYPE), 3368 (BM), *Crosby* 9 (K); Talau hill, *MacDaniels* 1094 (Bish). TONGATABU: *J. R. & G. Forster* (BM), *Moseley* (K), *Lister* (K), *Graeffe* 1366 (GH), 1520 (K), 1570 (K); Mua, *Setchell & Parks* 15270 (K, NY); Kologa Point, *Setchell & Parks* 15380 (K, US); near Nukalofa, *MacDaniels* 1086 (Bish). EUA: Plateau region, *Parks* 16129 (US), 16183 (Bish, GH, K, NY, US), 16217 (A, Bish, GH, K, US), 16299 (Bish, GH, K, NY, US). Tonga, without detailed locality: *Banks & Solander* in 1769 (BM), *Cartwright* (K), *McKern* 73 (Bish).

Seemann was of the opinion that the Tongan *V. amicorum* did not occur in Fiji, and he described two new Fijian species, *V. harveyi* and *V. vitiensis*. The second of these was reduced to synonymy by de Candolle and has not been taken up by subsequent authors; it differs from the Tongan plant, according to Seemann, in its completely glabrous and almost pruinose leaves and its glabrate calyx. Examination of the two types concerned and the extensive series of specimens cited above confirms the current opinion that the most common *Vavaea* in Fiji represents *V. amicorum*, the only species occurring in Tonga.

Variability in degree of leaf-pubescence is demonstrated by some of the Tongan specimens. For instance, *Parks* 16299, a fruiting specimen, has the leaves quite uniformly soft-pilose beneath, very much as in *V. harveyi*, although in other respects it unmistakably represents *V. amicorum*. *Parks* 16217, a flowering specimen from the same locality, has the leaves essentially glabrous and typical except those on the Arnold Arboretum sheet, which resemble the leaves of No. 16299. The Exploring Expedition material (doubtless from more than one plant) shows similar variability in indument. It seems that the degree of pubescence is unreliable in this species and cannot, in itself, be used as the basis of any subspecific nomenclatural categories. The Fijian material from high elevations is less uniform (in leaf-shape and venation) than that from more typical habitats such as beaches and lowland thickets, but I cannot discern tangible characters for further division of the material.

2. **Vavaea harveyi** Seem. Fl. Vit. 35. 1865; C. DC. in DC. Monogr. Phan. 1: 646. 1878.

TYPE LOCALITY: Fiji, without definite locality; type collected by Harvey, cited below.

DISTRIBUTION: Fiji, apparently limited to the larger volcanic islands, elevations up to 825 m. being recorded. The species is found in forest or in woods, and is noted as a small tree, rarely up to 18 m. in height. The petals and anthers are pale yellow, the fruit red [probably black at maturity].

LOCAL NAME: *T'hevua* or *sevua* applies to this species in Fiji, as to the more abundant *V. amicorum*.

FIJI: VITI LEVU: Nandronga & Navosa: Rairaimatuku Plateau, between Nandrau and Rewasau, *Smith* 5617 (A, US). Namosi: Namuamua and vicinity, *Gillespie* 2995 (Bish, GH, K), 3063 (Bish, GH, NY). Naitasiri: Nasinu, *Gillespie* 3453 (Bish, GH); Kalambo, *Tothill* 192 (Bish, K, US); Suva Pumping Station, *Degener & Ordonez* 13772 (A, NY). Rewa: Suva, *Meebold* 16881 (Bish). OVALAU: Vicinity of Levuka, *Gillespie* 4557.5 (Bish). VANUA LEVU: Mbua: Lower Wainunu River valley, *Smith* 1755 (Bish, GH, K, NY, US). Thakaundrove: Vicinity of Walwai, Savu Savu Bay, *Horne* 639 (GH, K). TAVEUNI: Western slope, between Somosomo and Wairiki, *Smith* 840 (Bish, GH, K, NY, US). Fiji, without definite locality: *Harvey* [probably Vanua Levu, ex Seemann] (GH, K TYPE), *Horne* 568 (K), *B. E. Parham* 198 (A).

Vavaea harveyi is unmistakably a close relative of *V. amicorum*, most readily distinguished by the persistent indument of its leaves, although this alone hardly seems to be a specific character. The comparatively short petioles, larger leaf-blades with more abruptly narrowed bases, and more copious floral indument also separate the plant from *V. amicorum*. No consequential floral differences between the species have been observed, but on the basis of available material their identification does not present difficulties.

3. **Vavaea megaphylla** Wright in Kew Bull. 1895: 102. 1895; Oliver in Hook. Ic. Pl. 25: *pl. 2438*. 1896; Gillespie in Bishop Mus. Bull. 83: 15. *fig. 17*. 1931. *Trigonostemon* (?) *voratus* Croizat in Sargentia 1: 52. 1942.

TYPE LOCALITY: Tamavua (near Suva), in the Province of Naitasiri near the Rewa boundary, Viti Levu, Fiji; type, *Yeoward* 37, cited below.

DISTRIBUTION: Fiji, thus far known definitely only from Viti Levu and the island of Rambi, but to be expected on other volcanic islands. The species is usually reported from low-elevation forest or woods and is mentioned as a low tree (or a "tall tree" according to Yeoward).

LOCAL NAME: Of the cited specimens only *Degener* 15625 lists a local name, *navua*.

FIJI: VITI LEVU: Mba: Nandarivatu, *Tothill* 59a (K). Nandronga & Navosa: Vicinity of Mbelo, near Vatukarasa, *Degener* 15265 (A, Bish, K, NY, US). Serua: Mbuyombuyo, near Namboutini, *Tabualeva* 15569 (A type of *Trigonostemon voratus*, Bish, K, US); Naitasiri: Viria, *B. E. Parham* 215 (A); vicinity of Nasinu, *Gillespie* 3487 (Bish, GH, K, NY); Tamavua, *Yeoward* 37 (K TYPE); Rewa: Central Road, Suva, *Tothill* 190 (K). RAMBI: *Horne* 477 (GH, K). Fiji, without definite locality: *Storck* s. n. (K), VI (GH).

Vavaea megaphylla is at once distinguished from the other described Fijian species of the genus by its stout branchlets with apically congested leaves and inflorescences, its long-petiolate leaves (which are glabrous and uniformly larger than those of *V. amicorum*), and its large flowers. The calyx, in particular, is markedly larger, in both flower and fruit, than that of the two species discussed above. The type of *Trigonostemon voratus* agrees perfectly with the Yeoward specimen and others cited above, in both foliar and calycine characters; other parts of the flower have been damaged and the inflorescence is much reduced, presumably because of insect attack. The reduction of this name removes the genus *Trigonostemon* (Euphorbiaceae) from the known flora of Fiji.

4. **Vavaea degeneri** A. C. Sm. sp. nov.

Arbor foliis magnis longe petiolatis, laminis oblongo-obovatis basi obtusis subtus et costa nervisque secundariis supra persistenter molliter pilosis, inflorescentia robusta, floribus magnis, calyce sub anthesi ad 8 mm. sub fructu ad 12 mm. diametro, petalis 8–9 mm. longis distinguenda; *V. megaphyllae* Wright affinis, foliorum forma basi et indumento differt.

Tree to 6 m. high, the branchlets stout, hollow, 8–13 mm. in diameter just below the apical leaves and inflorescences and copiously cicatricose, distally closely pilose, soon glabrate; petioles stout (2–4 mm. in diameter), swollen at base, (2–) 3–7 cm. long, semiterete, copiously short-pilose or velutinous; leaf-blades papyraceous, drying olivaceous, oblong-obovate, (12–) 17–28 cm. long, (6–) 9–17 cm. broad, obtuse at base and short-decurrent on the petiole, rounded to an abrupt obtusely cuspidate apex, entire or faintly undulate at margin, uniformly and persistently soft-pilose beneath (hairs whitish, 0.3–0.7 mm. long) and on costa and bases of secondaries above, the costa stout, plane or slightly elevated above, prominent beneath, the secondary nerves 10–16 per side, subspreading, nearly straight, anastomosing near margin, slightly impressed or raised above, strongly raised beneath, the veinlet-reticulation copious, fine, sharply prominulous on both surfaces; inflorescences congested among leaves near apices of branchlets, at anthesis not more than 5 cm. long but elongating to 15 cm. in fruit, the peduncle stout, 2–3 cm. long at anthesis but up to 11 cm. in fruit, the peduncle, inflorescence-branches, pedicels, and calyx copiously hispidulous (hairs 0.3–0.5 mm. long); inflorescence-bracts lanceolate, 3–5 mm. long at anthesis (accrescent to 8 mm. in fruit or sometimes subfoliaceous), hispidulous-puberulent without, the bracteoles similar but 2 mm. long; pedicels stout, about 1 mm. long (above articulation), slightly enlarging in fruit; calyx cupuliform-rotate, 6–8 mm. in diameter (to 12 mm. in fruit), the lobes 6 or 7, deltoid-oblong, 3–4×2–3 mm. (up to 5 mm.

long in fruit), subacute, obscurely nerved; petals 5 or 6, carnose, oblong, 8–9 mm. long, 2.5–3 mm. broad, obtuse or rounded at apex, minutely sericeous without, puberulent within; stamens usually 12, 3.5–4 mm. long, alternately slightly unequal, the filaments copiously barbate-hispidulous near apex with hairs about 0.6 mm. long, the anthers oblong, 0.8–1 mm. long; ovary densely stramineous-sericeous with hairs 0.2–0.3 mm. long, the style about 2.5 mm. long, sparsely sericeous below, glabrous above, the stigma subcapitate, about 1 mm. in diameter; fruit succulent, subspherical, apparently about 15 mm. in diameter when fresh, sparsely strigillose, glabrescent; seeds several, often 7 or 8, smooth, nitid, broadly ellipsoid, flattened on 1 or 2 faces, about 6 mm. long and 4–5 mm. broad, obtuse at both ends.

Type in the U. S. National Herbarium, No. 1943578, collected east of Naunduna, eastern drainage of the Yanawai River, Province of Thakaundrove, Vanua Levu, Fiji, alt. 120 m., Jan. 12, 1941, by O. Degener & E. Ordonez (No. 14099). Duplicates at A, Bish, K, NY, etc.

ADDITIONAL SPECIMENS EXAMINED:

FIJI: VITI LEVU: Serua: Thulanuku, vicinity of Ngaloa, alt. 50 m., *Degener* 15098 (A, Bish, K, NY, US); Vatutavathe, vicinity of Ngaloa, alt. 150 m., *Degener* 15188 (A, Bish, K, NY, US).

The specimens are indicated as open- or coarse-branched trees 4–6 meters in height, occurring in forest; the flowers are said to be fragrant and to have the petals white with a yellow tinge, fading to yellow; the fruit is fleshy and red. The type bears mature flowers and No. 15188 essentially mature fruits, while No. 15098 is intermediate in development. The last number bears the local name *mbuanivinggalau.*

In floral characters the new species bears a close similarity to *V. megaphylla* Wright, but differences in the shape, base, and indument of the leaf, mentioned in the above diagnosis and key, are pronounced.

AGLAIA Lour.

Aglaia Lour. Fl. Cochinch. 173. 1790; nomen conservandum.

The species of *Aglaia* in the southwestern Pacific fall into two sections, *Euaglaia* and *Hearnia*, as delimited by Harms (in Nat. Pfl. III. 4: 298–300. 1896, and ed. 2. **19b1:** 140–147. 1940). These sections are based upon whether the anthers are included within the stamen-tube (*Euaglaia*) or marginal upon it (*Hearnia*); de Candolle had retained the two groups as distinct genera (in DC. Monogr. Phan. 1: 600–633. 1878). While the two sections may be perfectly natural, as indicated by Harms, they are in practice difficult to distinguish, even when good flowers are available, because of intermediate positions of the anthers. Sometimes the anthers are attached well within the margin of the tube and yet project apically beyond it, such species belonging technically to § *Euaglaia* but certainly suggesting § *Hearnia* upon casual examination of the flowers. Furthermore, only a small pro-

portion of specimens of *Aglaia* in herbaria are in flowering condition, and therefore this basic division is impracticable for purposes of identification.

In examining the species of our region, I note that the type of indument (especially that on the lower surface of the leaflet-costa) is very constant and furthermore easy to determine regardless of the state of the material. While the character of this indument can usually be detected with a hand-lens, examination with a binocular of 25–50 magnification is much more satisfactory. Under such magnification the type of indument can be readily classified into three groups, as follows:

1. Indument lepidote, the rays of the trichomes adnate into a membranaceous scale.

2. Indument stellate, the rays of the trichomes free nearly to base or at least in the distal half, small and uniform in length.

3. Indument stellate, the rays of the trichomes diverse in length, at least some conspicuously stiffer and longer than the others.

Since the specimens from our region can be readily and confidently referred to one or another of these three groups, I make them the primary divisions of my key, below. In two or three cases (although this is hardly necessary) species have been keyed in more than one group. The fact that certain species identical in type of trichome (and very close in other characters as well) fall into different sections of the genus causes one to question the fundamental nature of anther-position. Nevertheless, I have arranged the species in the traditional sections, *Euaglaia* and *Hearnia*, this classification cutting across the primary divisions of the key. In our region, 17 species are discernible, of which 7 are here described as new.

KEY TO THE SPECIES

Indument of lower surface of leaflet-costa (also of branchlets and inflorescence) lepidote, the rays of the trichomes adnate into a membranaceous scale, free only at extreme apices.

Leaves unifoliolate, obviously petiolate, the blades oblanceolate-elliptic, obtuse at base---------- 16. *A. haplophylla*

Leaves pinnate.

Anthers included within the filament-tube (§ *Euaglaia*).

Petals glabrous; leaflet-blades gradually narrowed to an acuminate apex; Samoa---------- 1. *A. samoensis*

Petals lepidote without (except at imbricate margins and apex); leaflet-blades rounded to obtusely cuspidate at apex.

Flowers comparatively large, the petals 2–2.5 mm. long; filament-tube about 2 mm. long, glabrous; Fiji---------- 2. *A. axillaris*

Flowers comparatively small, the petals 1.5–1.8 mm. long; filament-tube about 1.2 mm. long, obscurely but copiously pilose without; Tonga. 5. *A. heterotricha*

Authers marginal on the filament-tube, not included (§ *Hearnia*); Fijian species.

Petals 2–3.5 mm. long, copiously lepidote without except at margins; filament-tube at least 1 mm. long; inflorescence usually ample, often 10–15 cm. long; leaflet-blades oblong-elliptic, usually gradually narrowed toward apex ---------- 6. *A. vitiensis*

Petals small, not more than 1.5 mm. long, glabrous; filament-tube about 0.5 mm. long; inflorescence compact, rarely exceeding 2 or 3 cm. in length; leaflet-blades lanceolate-oblong, not appreciably narrowed toward the rounded or broadly obtuse apex ---------- 7. *A. gracilis*

Indument of lower surface of leaflet-costa, etc., stellate, the rays of the trichomes free nearly to base or at least in the distal half, not adnate into a membranaceous scale.

Rays of the trichomes small and fairly uniform in length, the stellate hairs not more than 0.2 mm. in diameter (rays 0.1 mm. or less long).

Leaves unifoliolate or, if pinnate, with the terminal leaflet greatly exceeding in size the 2 or 4 lateral leaflets, the lower pair of these arising from base of rachis, simulating stipules.

Leaf-blades essentially sessile, cordate-amplexicaul; anthers marginal on the filament-tube (§ *Hearnia*) ---------- 8. *A. amplexicaulis*

Leaf-blades with greatly reduced lateral leaflets, the terminal leaflet obviously petiolulate, the blade obtuse at base (flowers not known). 17. *A. evansensis*

Leaves pinnate, the lateral leaflets not greatly smaller than the terminal ones, the lowest pair not basal.

Leaflets comparatively large, the terminal one rarely less than 10 cm. long, usually much larger; anthers included within the filament-tube (§ *Euaglaia*).

Petals glabrous; leaflet-blades obviously narrowed to an obtusely cuspidate apex, the hairs of the costa usually with a few longer (to 0.4 mm. long) rays among the short ones; Wallis Islands. 3. *A. psilopetala*

Petals stellate-pilose without (except at imbricate margins and apex); leaflet-blades usually obtuse or rounded at apex (not conspicuously cuspidate), the trichomes of the costa uniform, without long rays; Fiji and Tonga.

Lowermost leaflets usually obviously shorter and proportionately broader than the upper ones; trichomes of the costa stellate, the rays free in the distal half; filament-tube glabrous. 4. *A. saltatorum*

Lowermost leaflets not conspicuously reduced in size; trichomes of the costa scalelike, membranaceous, the rays free only at apex; filament-tube stellate-pilose; known only from Eua Island, Tonga. 5. *A. heterotricha*

Leaflets comparatively small, the terminal one usually less than 10 cm. long.

Leaflets 5 or 7 (rarely 9), oblong or elliptic-oblong, 6–10 (–11) cm. long and 2.5–4.5 cm. broad (lowermost ones sometimes slightly smaller); fruiting inflorescence 2–8 cm. long (including fruits) (flowers not known) ---------- 9. *A. elegans*

Leaflets 7 or 9, lanceolate-oblong, 4–7 cm. long and 1.2–2 cm. broad; fruiting inflorescence scarcely more than 2 cm. long (including fruits); anthers marginal on the filament-tube (§ *Hearnia*). 10. *A. venusta*

Rays of the trichomes (at least those of the costa, young branchlets, and young leaf-surfaces, and usually those of the inflorescence as well) diverse in length, with some rays 0.4–1 mm. or more in length.

Leaves comparatively small, the leaflet-blades rarely exceeding 12×4.5 cm., usually smaller; anthers marginal on the filament-tube (§ *Hearnia*) (flowers not known for No. 11).

Lowermost pair of leaflets attached toward base of leaf, often simulating stipules, the petiole below these leaflets (or obvious scars of them) usually less than 1 cm. long——11. *A. basiphylla*

Lowermost pair of leaflets not basal on the leaf, the petiole usually more than 2 cm. long.

Indument of lower surface of leaflets (except on costa) fugacious; lateral leaflets usually 3 or 4 (rarely 1, 2, or 5) pairs, not conspicuously smaller than the terminal one——12. *A. greenwoodii*

Indument of lower surface of leaflets often persistent; lateral leaflets 1 or 2 pairs, conspicuously smaller than the terminal one (leaves very rarely unifoliolate)——13. *A. fragilis*

Leaves comparatively large, the leaflet-blades rarely less than 15×5 cm., usually much larger.

Anthers marginal on the filament-tube (§ *Hearnia*); petals pilose toward base without; hairs of the costa often with some rays 1 mm. long or more; Fiji.

Lateral leaflets 2 or 3 (rarely 4) pairs, obtuse at base (or the lowermost ones rounded), cuspidate or short-acuminate at apex, the indument persistent on the lower leaflet-surface; hairs of calyx with numerous rays 1 mm. or more in length among the shorter rays.

14. *A. archboldiana*

Lateral leaflets 4 or 5 pairs, rounded or subcordate at base, obtuse at apex, the indument of the lower leaflet-surface persistent only on the costa; hairs of the calyx uniformly small, the rays only occasionally as long as 0.5 mm——15. *A. parskii*

Anthers included within the filament-tube (§ *Euaglaia*); petals glabrous; rays of hairs of the costa usually uniform and small but sometimes up to 0.4 mm. long; Wallis Islands——3. *A. psilopetala*

1. **Algaia** (§ *Euaglaia*) **samoensis** A. Gray, Bot. U. S. Expl. Exped. 1: 236. 1854; C. Muell. in Walp. Ann. Bot. Syst. 4: 387. 1857; C. DC. in DC. Monogr. Phan. 1: 616. 1878; Reinecke in Bot. Jahrb. 25: 644. 1898; Setchell in Carnegie Inst. Washington Publ. 341: 84. 1924; Christophersen in Bishop Mus. Bull. 128: 116. 1935.

Aglaia whitmeei C. DC. in Bull. Herb. Boiss. II. 3: 178. 1903.

Aglaia betchei C. DC. in Bull. Herb. Boiss. II. 3: 179. 1903, in op. cit. II. 6: 984. 1906.

TYPE LOCALITY: Tutuila, Samoa; type collected by U. S. Exploring Expedition, cited below.

DISTRIBUTION: Samoa, apparently fairly frequent in various types of forest or in open places at elevations up to 500 m. The plant is a slender tree, up to 15 m. in height, with a trunk diameter up to 25 cm. or perhaps slightly more. The small flowers are said to be yellow, but the lepidote indument of all inflorescence-parts (except the petals) is typically cinnamon-brown.

LOCAL NAMES AND USES: *Langa'ali* and variants are applied to this

species, of which the fragrant inflorescences are used for personal adornment and for scenting coconut oil; Christophersen mentions that the wood is used for house posts.

SAMOA: SAVAII: Above Matautu, *Vaupel* 163 (Bish, US); near Vaipouli, *Vaupel* 163 bis (K), *Christophersen & Hume* 1838 (Bish, K, NY); Salailua, *Christophersen* 2958 (Bish, US), 2986 (Bish, K, NY, US), 2990 (Bish); Salailua-Lataitai, *Christophersen & Hume* 2626 (Bish, K, NY, US); above Sili, *Christophersen* 3247 (Bish). UPOLU: Mulifanua, *Reinecke* 134 (BM, K, US); Moa Moa plantations, *Eames* 148 (Bish); below Malololelei, *Christophersen* 339 (Bish, K, NY); Vaea, *MacDaniels* 1120 (Bish); Vaea Mt., *Christophersen* 460 (Bish). TUTUILA: *U. S. Expl. Exped.* (GH, K, NY, US 15572 TYPE); Pago Pago and vicinity, *Garber* 914 (Bish, NY), *Diefenderfer* 8 (Bish), *Yuncker* 9430 (Bish); above Vatia, *Garber* 879 (Bish); from Aua to Breaker Point, *Setchell* 156 (Bish). OFU: Toanga, *Garber* 1098 (Bish). Samoa, without detailed locality: *Whitmee* s. n. (type of *A. whitmeei*, fragment seen from De Candolle Herbarium, Conservatoire Botanique, Genève), *Betche* s. n. (type of *A. betchei*, fragment seen from De Candolle Herbarium, Conservatoire Botanique, Genève), *Whitmee* 112 (BM, K), 195 (K), *Powell* 157 (K), 191 (K), s. n. (K), *Horne* 42 (GH, K).

Among the species of § *Euaglaia* in our region, *A. samoensis* is readily distinguished by the combination of glabrous petals and lepidote indument on the vegetative and the other inflorescence parts. In herbaria the species has been interpreted to include material from Tonga, Niue, and Fiji, but more careful consideration indicates that such material does not belong here and that *A. samoensis* occurs only in Samoa. Upon superficial examination such species as *A. psilopetala*, *A. saltatorum*, and *A. heterotricha*, all belonging to § *Euaglaia*, could be confused with *A. samoensis*, but all these have the indument stellate rather than lepidote and are distinguished by other dependable characters.

I am much indebted to Prof. C. Baehni, Director of the Conservatoire Botanique, Genève, for the privilege of examining fragments of the types of *A. whitmeei* and *A. betchei*. In all respects of indument, leaf-texture, and floral detail these fragments agree with the type and other cited specimens of *A. samoensis*. No reasons for the proposal of these two species were given by de Candolle, and his descriptions indicate that the dimensions are well within the extremes for *A. samoensis*. The same conclusion has already been stated by Setchell (in Carnegie Inst. Washington Publ. **341**: 85. 1924). Two specimens from Upolu, collected by Hochreutiner and cited by de Candolle (in Ann. Conserv. Jard. Bot. Genève 15: 246. 1912) as *A. forbesiana* C. DC., should also be compared with *A. samoensis*, since the type of *A. forbesiana* is from New Guinea and its occurrence in Samoa is unlikely. In my observation there is only one species of *Aglaia* in Samoa; Christophersen mentions a specimen (listed at the end of this treatment) which differs from *A. samoensis* in its fewer leaflets and larger fruit, but it is possible that this specimen represents merely an extreme form of *A. samoensis*.

2. **Aglaia (§ *Euaglaia*) axillaris** A. C. Sm. in Sargentia 1: 43. 1942.

TYPE LOCALITY: Vicinity of Nandarivatu, Province of Mba, Viti Levu, Fiji; type, *Degener* 14505, cited below.

DISTRIBUTION: Fiji, thus far definitely known from Viti Levu, Ovalau, and Taveuni, at elevations up to 1,050 m. The species is a component of dense and often dark forest; it is reported as a tree, often slender, up to 10 m. in height, with brown flowers (petals yellowish within), and with fruits that are yellowish or bright orange, at length becoming brown.

LOCAL NAMES: In central Viti Levu I recorded the names *lindiyango* and *nggiliyango*, but these are more or less generic in that part of Fiji.

FIJI: VITI LEVU: Mba: Mt. Matomba, Nandala, vicinity of Nandarivatu, *Degener* 14505 (A TYPE, Bish, K, NY, US); on the escarpment at Nandarivatu, *Gillespie* 3757 (Bish, GH, US); road from Tavua toward Nandarivatu, *B. E. Parham* 2384 (A); Nauwanga, near Nandarivatu, *Degener* 14334 (A, K, NY); Mt. Ndelaiyoö, on the escarpment west of Nandarivatu, *Smith* 5073 (A, US); hills between Nggaliwana and Tumbeindreketi Creeks, east of the sawmill at Navai, *Smith* 5983 (A, US), 5989 (A, US). Nandronga & Navosa: Northern portion of Rairaimatuku Plateau, between Nandrau and Nanga, *Smith* 5557 (A, US); same region, between Nandrau and Rewasau, *Smith* 5611 (A, US). Naitasiri: Near Tamavua village, *Gillespie* 2430 (Bish, GH). Rewa: Central Road, Suva, *Tothill* F520 (K). OVALAU: Near summit of ridge west of Levuka, *Gillespie* 4451 (Bish). TAVEUNI: Vicinity of Wairiki, *Gillespie* 4682 (Bish); western slope between Somosomo and Wairiki, *Smith* 728 (Bish, GH, K, NY, US). Fiji, without detailed locality: *U. S. Expl. Exped.* (US 15570).

Many of the specimens cited above have been otherwise identified in herbaria, but I believe that they can now be referred to *A. axillaris* with reasonable confidence. On the other hand, two specimens which I cited in connection with the original description of the species are now referred to *A. gracilis*. The Fijian *Aglaiae* with lepidote indument and compound leaves fall into at least three species, which are easily distinguishable when flowers are available. But in the absence of petals and stamens the recognition of *A. axillaris*, *A. gracilis*, and *A. vitiensis* becomes difficult, even when adequate material is available for comparison. In referring fruiting material to the three species I have been guided by general appearance and leaflet-shape. *Aglaia gracilis*, of which only the type collection is known in flowering condition, has comparatively long and narrow leaflets, lanceolate-oblong in shape and not appreciably narrowed toward the rounded or broadly obtuse apex. The other two species have leaflets more obviously tapering toward the apex and in general proportionately broader than those of *A. gracilis*. In general, the compact inflorescence (often with only two or three fruits on a very short peduncle) of *A. axillaris* will serve to distinguish fruiting material of it from *A. vitiensis*, in which the inflorescence is typically more extended, but this character is not en-

tirely dependable. For instance, *Gillespie* 2430, which has the flowers of § *Euaglaia* and therefore is placed in *A. axillaris*, has a freely branching inflorescence as much as 20 cm. long.

The following specimens are provisionally placed in *A. axillaris*, but the parts needed for positive identification are not available:

VITI LEVU: Namosi: Mt. Naitarandamu, *Gillespie* 3105 (Bish, GH, NY, K); Naitasiri: Central road, 8 miles from Suva, *MacDaniels* 1144 (Bish). VANUA LEVU: Thakaundrove: Southern slope of Korotini Range, below Navitho Pass, *Smith* 491 (Bish, K, NY, US); Mt. Mbatini, crest of range, *Smith* 645 (Bish, GH, K, NY, US), 653 (Bish, GH, K, NY, US). Fiji, without detailed locality: *U. S. Expl. Exped.* (US 15574).

3. **Aglaia (§ *Euaglaia*) psilopetala A. C. Sm. sp. nov.**

Arbor foliis pinnatis, foliolis apice obtuse cuspidatis, inflorescentia paniculata multiflora, floribus parvis, petalis glabris distinguitur; *A. samoensi* affinis, indumento stellato non lepidoto facile distinguenda, ab *A. saltatorum* et *A. heterotricha* subtus descriptis petalis glabris et foliolorum forma differt.

Tree to 15 m. high, the branchlets slender, terete; indument of young parts, distal portions of branchlets, petioles, leaf-rachises, petiolules, and lower surface of leaflet-costae stellate, the hairs ferruginous or cinnamon-colored, usually 0.15–0.2 mm. in diameter, with 15–20 rays free nearly to base (often also with several longer rays, up to 0.4 mm. long, arising from center of trichome); leaves 3- or 5-foliolate (at least distal ones), 22–27 cm. long, the petiole 5–7 cm. long, slender, swollen and semiterete at base, terete distally like the rachis, the petiolules 3–5 mm. long (of terminal leaflet to 10 mm. long); leaflet-blades papyraceous, drying dull olivaceous, elliptic or obovate-oblong, the terminal and upper lateral ones similar in size, 11–16 cm. long, 4.5–6.5 cm. broad (lowermost ones slightly reduced), obtuse or acute at base, narrowed at apex to an obtuse acumen about 1 cm. long, slightly recurved at margin, copiously punctate on both sides with minute pits indicating caducous hairs, the costa slightly impressed above, prominent beneath, the secondary nerves 9–12 per side, subspreading, slightly curved, nearly plane above, elevated beneath, the veinlets inconspicuous; inflorescences axillary toward apices of branchlets, solitary, paniculate, many-flowered, up to 13 cm. long, branched from base, uniformly (i. e., on branches, pedicels, and calyx) stellate-pilose like vegetative parts but the hairs 0.1–0.15 mm. in diameter, usually with 20–30 rays free in the distal half and lacking the occasional longer rays; bracts and bracteoles minute; pedicels slender (about 0.3 mm. in diameter), 1–1.5 mm. long at anthesis, the flowers about 1.5 mm. long and 2 mm. in diameter; calyx submembranaceous, rotate, about 1.5 mm. in diameter, deeply 5-lobed, the lobes oblong-deltoid, about 0.5 mm. long, obtuse, ciliolate-margined with simple or fascicled hairs about 0.15 mm. long; petals 5 (rarely 6), thin-carnose, elliptic or sub-

orbicular, 1.2–1.4 mm. long, 0.8–1.2 mm. broad, rounded at apex, scariose-margined, strictly glabrous on both sides; androecium broadly cupuliform, the filaments connate into a carnose glabrous tube about 0.8 mm. long and 1.5 mm. in diameter, undulate at apex, the anthers inserted within the tube-margin, oblong-deltoid, 0.3–0.4 mm. long, only the tips exserted; ovary pilose like calyx, the stigma carnose, subcapitate.

Type in the herbarium of the Bernice P. Bishop Museum, collected in inland forest on Uvea, Wallis Islands, alt. about 15 m., Nov. 9, 1932, by E. G. Burrows (No. W19).

The specimen is from a tree 15 m. high; the collector notes the local name as *langakali* and indicates that the inflorescences are used in necklaces. The only available specimen from the Wallis Islands, west of Samoa, obviously represents an undescribed species. Like *A. samoenis*, it belongs in § *Euaglaia* and has glabrous petals, a combination of characters not otherwise found among the species of our region. However, *A. psilopetala* differs radically from *A. samoensis* in its type of indument, in this respect suggesting the two species which follow but readily distinguished from them as indicated in my key.

4. **Aglaia (§ *Euaglaia*) saltatorum** A. C. Sm. sp. nov.

Aglaia edulis A. Gray, Bot. U. S. Expl. Exped. 1: 237. 1854 (quoad spec. non sensu typi); Seem. Fl. Vit. 37. 1865, pro parte; C. DC. in DC. Monogr. Phan. 1: 609. 1878, pro parte.

Aglaia samoensis sensu A. C. Sm. in Bishop Mus. Bull. 141: 80. *fig. 41, b.* 1936; Yuncker in Bishop Mus. Bull. 178: 71. 1943; non A. Gray.

Aglaia sp. Burkill in Journ. Linn. Soc. Bot. 35: 31. 1901.

Arbor vel frutex *A. psilopetalae* supra descriptae affinis, petalis extus copiose stellato-pilosis non glabris, foliolorum laminis apice obtusis vel rotundatis vel inconspicue cuspidatis, costae pilis uniformiter ramulosis differt; a *A. samoensi* indumento stellato non lepidoto et petalis pilosis facile distinguitur.

Shrub or tree, usually 2–10 m. high, perhaps sometimes larger, the branchlets slender, subterete; indument of young parts, distal portions of branchlets, petioles, leaf-rachises, and leaflets stellate, the hairs pale brown, 0.1–0.2 mm. in diameter, composed of 13–20 rays free nearly to base or at least in the distal half (indument sometimes becoming sparse on older parts); leaves 5- or 7(rarely 9)-foliolate, 23–40 (–65) cm. long, the petiole 6–11 (–18) cm. long, swollen at base, terete like rachis; leaflets opposite or subopposite, the petiolules 5–14 mm. long (of terminal leaflet 10–20 mm. long), the blades papyraceous, drying pale green or brownish, elliptic or oblong-elliptic (terminal ones sometimes oblanceolate), the terminal and upper lateral ones subsimilar in size, 10–20 (rarely 8–26) cm. long, 4–10 (rarely 3.5–12) cm. broad (lowermost ones conspicuously or at least noticeably reduced in size), obtuse or acute at base (inequilaterally so except the terminal one, the lower

ones rounded), broadly obtuse or rounded or inconspicuously obtusely cuspidate at apex, nearly plane at margin, persistently stellate-pilose beneath (at least on costa, the hairs of the surface often caducous but leaving minute pits indicating the attachments), soon glabrate and minutely punctate above, the costa sulcate or slightly elevated above, prominent beneath, the secondary nerves 10–16 (rarely 8–18) per side, spreading, inconspicuously anastomosing, plane or slightly raised above, elevated beneath, the veinlets plane, obscure above; inflorescences supra-axillary toward apices of branchlets, paniculate, freely branched, many-flowered, usually 20–40 cm. long (rarely reduced to 3 cm. and comparatively few-flowered), pedunculate (peduncle usually 2–7 cm.long), the indument (on branches, pedicels, calyx, and petals) like that of vegetative parts but the hairs only 0.1–0.15 mm. in diameter and sometimes with only about 10 rays; bracts and bracteoles minute; pedicels at anthesis usually 1–1.5 mm. long and 0.5–0.7 mm. in diameter (enlarging, with calyx and petals, after anthesis), the flowers about 1.5–2 mm. long and 1.6–2.5 mm. in diameter; calyx submembranaceous, rotate, 1.5–2 mm. in diameter, 5-lobed nearly to base, the lobes oblong-deltoid, 0.5–0.7 mm. long, obtuse or subacute at apex; petals 5, narrowly imbricate, carnose, oblong-elliptic, 1.3–2 mm. long, 1–1.3 mm. broad, rounded at apex, scariose and minutely erosulous at margin and there glabrous, otherwise copiously stellate-pilose without; androecium broadly obovoid, the filaments carnose, glabrous, loosely connate into a tube 0.8–1.2 mm. long, the anthers inserted within the tube-margin, usually horizontally inflexed, scarcely exserted, deltoid-suborbicular, 0.4–0.6 mm. long; ovary pilose like calyx, the stigma carnose, minutely emarginate, the locules 2, each apparently 2-ovuled; fruits at apparent maturity subglobose or ellipsoid, 3–4 cm. in diameter, the pericarp thin, brittle, obscurely but closely stellate-pilose, the seeds ellipsoid, up to 22×13 mm., rounded at both ends, flattened on the ventral surface.

Type in the U. S. National Herbarium, No. 1674954, collected in forest on the islet of Malatta, southern limestone section of Vanua Mbalavu, Fiji, alt. 0–100 m., March 29, 1934, by A. C. Smith (No. 1439). Duplicates at Bish, K, GH, NY, etc.

ADDITIONAL SPECIMENS EXAMINED:

FIJI: VITI LEVU: Tailevu: Verata, *B. E. Parham* 2500 (A) (cultivated), *Salimoni Rokonaca* 5611 (A) (cultivated). MOTURIKI: *Seemann* 60 (BM, GH, K). KORO: West coast, *Smith* 1079 (Bish, GH, K, NY, US). VANUA MBALAVU: Northern limestone section, *Smith* 1476 (Bish, GH, K, NY, US), 1507 (Bish, GH, K, NY, US). LAKEMBA: Tumbou, *Aporosa Wagatabu* 1137 (A). KAMBARA: On limestone formation, *Smith* 1240 (Bish, GH, K, NY, US). FULANGA: *Tothill* 64 (K). Fiji, without detailed locality: *Milne* 5a (K).

TONGA: VAVAU: *Crosby* (K). TONGATABU: Near Mua, *Setchell & Parks* 15245 (GH, K, US); Ha'amoga, *Setchell & Parks* 15369 (GH, K, US). Tonga, without detailed locality: *McKern* 104 (Bish), 111 (Bish).

TONGA or FIJI, without detailed locality: *U. S. Expl. Exped.* (NY, US 15573).
NIUE: Near Tamakautoga Village, *Yuncker* 9755 (fragm. US); on cliffs near sea, south of Alofi, *Yuncker* 10192 (fragm. US).

DISTRIBUTION: As shown above, the species occurs in Fiji, Tonga, and on Niue. In Fiji it seems to occur only on the smaller eastern islands of the group, the records for Viti Levu being from cultivated plants; in my observation it is generally found on limestone soil at low elevations, in forest or in thickets. It has been noted as a shrub or slender tree up to 10 m. in height, perhaps rarely larger. The fragrant flowers are brown to yellowish or greenish brown, and the fruit orange or russet-yellow.

LOCAL NAMES AND USES: Throughout its range this plant is known as *langakali* (often *la'angakali* in Tonga, *langakali thavuthavu* on Kambara and perhaps elsewhere). Wherever it occurs the people use its inflorescences in making floral necklaces for festive occasions, and also indicate that the inflorescences and fruits are used to scent coconut oil. On the islands of the Lau group in Fiji, the elusive fragrance of the inflorescence of this plant is highly prized, and dancers consider its presence in their necklaces to be essential; hence my specific epithet "of the dancers."

The specimens that I now associate with the new species have been variously named in herbaria. In 1936 I considered this entity identical with *A. samoensis*, but more careful study shows that the two are not very closely related, having quite different types of indument, while the petals are glabrous in one case and copiously pilose in the other. *Aglaia saltatorum* actually is closely related only to two other new species, one from the Wallis Islands and one from Tonga; points of difference among these three novelties are indicated in my key.

The species is not entirely uniform throughout its range. The Tongan specimens and those from Niue tend to have the lowermost leaflets somewhat broader in proportion than the Fijian ones, while the indument of the lower surfaces of leaflets is more persistent in Tonga than it is in the Lau Group of Fiji. However, the cited specimens from Viti Levu (cultivated) are similar to those from Tonga, which may merely indicate that the introduction was made by some of the Tongans who settled in parts of Fiji and superposed their traditions on the Fijian ones. The cited specimen from Koro is the least typical one, having very large leaves with fairly persistent indument and a much reduced inflorescence. In general, however, the species is very well marked and reasonably consistent. I am indebted to Prof. T. G. Yuncker for the privilege of examining two of his specimens from Niue; a third number collected by him, No. 10131, was not seen in connection with the present study but it doubtless represents the same species.

5. **Aglaia** (§ *Euaglaia*) **heterotricha** A. C. Sm. sp. nov.

Arbor *A. saltatorum* supra descriptae affinis, foliorum foliolis inferioribus magnitudine haud reductis, indumento ramulorum juvenilium et foliorum rhachi et foliolorum costa lepidoto (indumento alibi stellato-piloso), filamentorum tubo extus stellato-piloso differt.

Tree, the branchlets terete, slender; indument of young branchlets, petioles, leaf-rachises, and costa of leaflets on lower surface lepidote, the scales membranaceous, 0.1–0.15 mm. in diameter, composed of 40–50 adnate rays free only at the erosulous scale-margin; leaves 7-foliolate (always?), up to 55 cm. long, the petiole 15–20 cm. long, conspicuously swollen at base, subterete like rachis; leaflets opposite, the petiolules 7–17 mm. long (of terminal leaflet to 20 mm. long), the blades papyraceous, greenish olivaceous when dried, elliptic (terminal ones slightly obovate), 15–25 cm. long, 7–10 cm. broad (lower ones on distal leaves sometimes smaller), obtuse or acute at base, apparently obtuse or obtusely cuspidate at apex, punctate on both surfaces and usually with a few persistent scattered trichomes beneath (these with 30–40 rays free nearly to middle), the costa nearly plane or slightly raised above, prominent beneath, the secondary nerves usually 12–15 per side, subspreading, slightly curved, nearly plane above, raised beneath, the veinlets often prominulous beneath, immersed above; inflorescences axillary, paniculate, freely branched (apparently from near base), many-flowered, the indument (on branches, pedicels, and calyx) stellate, the hairs with 30–40 rays free in the distal half; bracts and bracteoles minute; pedicels slender, at anthesis about 0.4 mm. in diameter and 0.5–1 mm. long; calyx submembranaceous, rotate, about 1.5 mm. in diameter, deeply 5-lobed, the stellate hairs toward the margins with only 10–15 rays free nearly to base, the lobes oblong, 0.5–0.7 mm. long, subacute; petals 5, thin-carnose, imbricate, oblong, 1.5–1.8 mm. long, 0.8–1.3 mm. broad, subacute, stellate-pilose without except at margins (hairs about 0.1 mm. in diameter, with 10–20 rays free in distal half); androecium urceolate, about 1.2 mm. long and 1.5 mm. in diameter, the filaments firmly connate into a tube, this closely but copiously pilose without (hairs minute, with 10–20 rays free nearly to base), the anthers inserted within the tube, oblong, about 0.5 mm. long; ovary minute, pilose like petals.

Type in the U. S. National Herbarium, No. 1527045, collected on the plateau on Eua Island, Tonga, in June or July 1926, by H. E. Parks (No. 16305). Duplicates at Bish, BM, K.

The single collection here described is closely related only to *A. saltatorum*, differing in its pilose filament-tube, the scarcely reduced lower leaflets of its leaves, and the diversity of its indument. In *A. saltatorum* the indument is uniformly stellate-pilose, the rays of the

hairs being free nearly to the base. This is the type of hair which occurs on the inflorescences and on the leaf-surfaces of *A. heterotricha*, but on the branchlets, leaf-rachises, and costas this species has a lepidote indument not unlike that of *A. samoensis*. Because of the presence of scales, the new species is also placed in the first part of my key, but it seems more closely related to *A. saltatorum* than to such species as *A. samoensis* and *A. axillaris*. *Aglaia saltatorum*, although occurring on Vavau and Tongatabu, has not yet been collected on Eua Island.

6. **Aglaia** (§ *Hearnia*) **vitiensis** A. C. Sm. in Bishop Mus. Bull. 141: 80. *fig. 41.* 1936.

In connection with the original description of this species I cited five collections. One of these, *Smith* 728 from Taveuni, has the flowers of § *Euaglaia* and must surely be referred to *A. axillaris*, while all the others except the type probably also represent *A. axillaris*, although they are in fruit. Again, in 1942 (in Sargentia **1**: 42) I cited five additional collections as *A. vitiensis*, but I am now inclined to place four of these in either *A. axillaris* or the new species described below, *A. gracilis*. The difficulties of distinguishing these three species, in the absence of flowering material, have been discussed above under *A. axillaris*. To the typical form of *A. vitiensis* I can refer with reasonable certainty only the type and two additional collections.

However, a more abundant small-leaved form is evident in Fiji, which has flowers identical with those of *A. vitiensis*, being clearly of § *Hearnia*; although this form is not specifically separable, it seems to merit varietal recognition. The two varieties of *A. vitiensis* may be differentiated as follows:

Leaves up to 45 cm. long, the lateral leaflets (lowermost sometimes slightly reduced) 10–20 cm. long and 4.5–7.5 cm. broad, with 12–15 secondary nerves per side, the terminal leaflet similar or larger, up to 21 × 13 cm., with 12–17 secondary nerves per side ..... var. *vitiensis*

Leaves less than 30 cm. long, the lateral leaflets (3–) 4–10.5 cm. long and (1.2–) 2–4.5 cm. broad, with 6–12 secondary nerves per side, the terminal leaflet essentially similar ..... var. *minor*

6a. **Aglaia vitiensis** var. **vitiensis.**

TYPE LOCALITY: Koro, Fiji; type, *Smith* 981, cited below.

DISTRIBUTION: Fiji, known with certainty only from Viti Levu and Koro, at elevations up to 750 m. The plant is a tree, as much as 23 m. tall, with brownish flowers.

FIJI: VITI LEVU: Mba: Sovutawambu, near Nandarivatu, *Degener* 14666 (A, Bish, K, NY, US). Naitasiri or Rewa: Central Road, near Suva, *Tothill* 518 (Bish, K). KORO: Eastern slope of main ridge, *Smith* 981 (Bish TYPE, GH, K, NY, US).

Aglaia vitiensis and *A. samoensis*, with which I originally compared it, belong to different sections of the genus and are not closely related, although both have a copious lepidote indument which causes a superficial similarity. Actually, *A. vitiensis* is a very distinct species, closely related only to the following, *A. gracilis*.

6b. **Aglaia vitiensis** var. **minor** A. C. Sm. var. nov.

Arbor parva vel mediocris indumento et inflorescentia varietate typica similis, foliis minoribus, foliolorum nervis secundariis pauciori-bus differt.

Tree, usually small, rarely to 20 m. high, the leaves 5–11-foliolate, up to 30 cm. long, the terminal leaflet essentially like the upper lateral ones; petiolules 3–11 mm. long, the leaflet-blades (3–) 4–10.5 cm. long, (1.2–) 2–4.5 cm. broad, with 6–12 lateral nerves per side; inflorescence as in var. *vitiensis*, 3–15 cm. long, usually many-flowered.

Type in the U. S. National Herbarium, No. 1674996, collected in dense forest on Mt. Kasi, Yanawai River region, Province of Thakaundrove, Vanua Levu, Fiji, alt. 300–430 m., May 10, 1934, by A. C. Smith (No. 1788). Duplicates at Bish, K, GH, NY, etc.

ADDITIONAL SPECIMENS EXAMINED:

FIJI: VITI LEVU: "Between Vienunga and Namoali," *Horne* 858 (GH, K). Mba: Northern portion of Mt. Evans Range, between Mt. Vatuyanitu and Mt. Natondra, *Smith* 4375 (A, US); Mt. Nanggaranambuluta [Lomalangi], east of Nandarivatu, *Greenwood* 852 (A, NY, US), *Smith* 4834 (A, US); Mt. Tomanivi [Mt. Victoria], *Smith* 5096 (A, US). Ra: Ridge from Mt. Namama toward Mt. Tomanivi, *Smith* 5726 (A, US). Nandronga & Navosa: Northern portion of Rairaimatuku Plateau, between Nandrau and Rewasau, *Smith* 5405 (A, US); between Nandrau and Nanga, *Smith* 5556 (A, US). Namosi: Mt. Naitarandamu, *Gillespie* 3348 (Bish, GH); Mt. Voma, *Gillespie* 2784 (Bish, GH). Naitasiri or Rewa: Central Road, near Suva, *Tothill* 519b (Bish, K). Rewa: Mt. Korombamba, *Meebold* 16793 (Bish). OVALAU: Near summit of main range west of Levuka, *Gillespie* 4437 (Bish). VANUA LEVU: Thakaundrove: East of Naunduna, Yanawai River region, *Degener & Ordonez* 14084 (A, Bish, K, NY, US); eastern slope of Mt. Ndikeva, *Smith* 1900 (Bish, GH, K, NY, US). MOALA: Near Maloku, *Smith* 1337 (Bish, GH, K, NY, US).

DISTRIBUTION: As indicated above, the variety is apparently limited to Fiji, being known from the islands of Viti Levu, Ovalau, Vanua Levu, and Moala, at elevations of near sea level to 1,200 m., usually occurring in dense forest. The specimens are from compact or slender trees usually 3–15 m. in height (rarely as much as 20 m.); the inflorescence is brown and the fruit orange or orange-brown.

LOCAL NAMES: *Lindiyango* (interior Viti Levu); *thavuthavu* (Vanua Levu and Moala).

In inflorescence characters this entity scarcely differs from typical *A. vitiensis*, but, because of its consistently smaller and fewer-nerved leaflets, I believe that it merits varietal status. It is the more common form of *A. vitiensis*. Although specimens from the higher ele-

vations fall into var. *minor*, it also occurs downward nearly to sea level, and the small leaves do not appear fundamentally concomitant with higher altitudes. Several of the cited collections have been identified as *A. elegans*, but the similarity is no more than superficial, the type of indument being entirely different.

7. Aglaia (§ *Hearnia*) gracilis A. C. Sm. sp. nov.

? *Dysoxylum obliquum* Gillespie in Bishop Mus. Bull. 83: 13 (excl. *fig. 15*). 1931; non *Aglaia obliqua* White & Francis (1927).

? *Didymocheton obliquum* Harms in Nat. Pfl. ed. 2. 19b1: 157. 1940.

Frutex vel arbor gracilis *A. vitiensi* affinis, inflorescentia compacta, petalis glabris minoribus, filamentorum tubo minuto, foliolorum laminis lanceolato-oblongis apice rotundatis vel late obtusis distinguitur; ab *A. axillari* antheris in filamentorum tubum marginalibus, petalis glabris, et foliolorum forma differt.

Slender tree or simple-stemmed shrub 2–4 m. high, the branchlets slender, terete; indument of young parts, petioles, leaf-rachises, and leaflets lepidote, the scales membranaceous, 0.1–0.15 mm. in diameter, composed of 40–60 adnate rays free only at the erosulous scale-margin; leaves 7- or 9-foliolate (rarely 5-foliolate), 15–42 cm. long, the petiole 3–7 cm. long, conspicuously swollen at base, slightly flattened or shallowly canaliculate above like the rachis; leaflets opposite or subopposite, the petiolules 2–8 mm. long (of terminal leaflet to 10 mm. long), the blades papyraceous, drying greenish brown, lanceolate-oblong, the terminal and upper lateral ones subsimilar, 7–20 cm. long, 2–5.5 cm. broad (lowermost ones sometimes reduced to 5×1.5 cm.), acute or obtuse at base (lower ones sometimes rounded), rounded or broadly obtuse at apex, obscurely punctate on both sides and at length glabrate except for scattered subpersistent scales on the costa beneath, the costa impressed above, prominent beneath, the secondary nerves 8–18 per side, spreading, slightly curved, plane or faintly impressed above, elevated beneath, the veinlets immersed on both sides or plane but evident beneath; inflorescences axillary or arising from stem below leaves, compact, few-flowered, at anthesis scarcely exceeding 1 cm. in length, the indument (on branches, pedicels, and calyx) lepidote, the scales like those of vegetative parts but with fewer and less highly adnate rays, the flowers soon essentially glabrate; bracts and bracteoles oblong, obtuse, 0.5 mm. long or less; pedicels slender, about 0.5 mm. in diameter, at anthesis 1–1.5 mm. long; calyx rotate, about 2 mm. in diameter, deeply 5-lobed, the lobes oblong, 0.6–0.8 mm. long, obtuse, minutely glandular-margined; petals 5, imbricate, thin-carnose, suborbicular, 1.3–1.5 mm. long, 1–1.8 mm. broad, glabrous, rounded at apex; androecium 1–1.2 mm. high and about 1.5 mm. in diameter, the filaments connate into a minute carnose tube about 0.5 mm. long, undulate at margin, the anthers marginal, suberect or

slightly incurved, oblong-deltoid, about 0.7 mm. long; ovary minute, copiously lepidote, the stigma carnose, faintly emarginate; fruiting inflorescences small (scarcely 3 cm. long including fruits), the fruits few or often solitary and terminal on an apparently simple peduncle, the calyx persistent, remaining small; fruit ovoid-ellipsoid, at maturity 1.5–2 cm. long and 1–1.5 cm. broad, obtuse at both ends or rounded at base, the pericarp thin, persistently lepidote, the seeds oblong-ellipsoid, about 13×6 mm., rounded at both ends, flattened ventrally.

Type in the herbarium of the Arnold Arboretum, collected in dense forest on the western slopes of Mt. Nanggaranambuluta [Lomalangi], east of Nandarivatu, Province of Mba, Viti Levu, Fiji, alt. 850–1,000 m., Oct. 2, 1947, by A. C. Smith (No. 6325). Duplicate at US.

ADDITIONAL SPECIMENS EXAMINED:

FIJI: VITI LEVU: Mba: Summit of Mt. Koroyanitu, high point of Mt. Evans Range, *Smith* 4203 (A); Nandarivatu, *Gillespie* 4161 (Bish, GH), ? *Gillespie* 4316 (Bish type of *Dysoxylum obliquum*, GH); Tholo-i-Nandarivatu, *Gillespie* 3951 (Bish, GH, NY); ridge between Mt. Nanggaranambuluta [Lomalangi] and Mt. Namama, east of Nandarivatu, *Smith* 4901 (A, US); Nauwanga, near Nandarivatu, *Degener* 14689 (A).

DISTRIBUTION: The few specimens known of this species come from northern Viti Levu, all except one from the general vicinity of Nandarivatu, from elevations of 750–1,200 m. The habitat reported is dense forest, and the plants are slender trees or simple-stemmed shrubs 2–4 m. high, with white petals and bright orange fruit.

LOCAL NAME: *Lindiyango* (more or less generic in parts of Viti Levu).

The difficulties of distinguishing this species from *A. axillaris* and *A. vitiensis* have been discussed above, but actually it is a well-marked entity and the cited specimens are referred here with reasonable confidence, although only the type bears flowers. The only questionable specimen referred here is the type collection of *Dysoxylum obliquum*, which, as I have mentioned in Sargentia **1:** 42.1942, was based upon a confused concept. However, only the type collection is concerned in the nomenclature. Unfortunately this type collection, in fruit, is difficult to place accurately, although I think that it very likely represents *A. gracilis* rather than *A. vitiensis* (to which I referred it in 1942) or *A. axillaris*. At any rate, the epithet *obliqua* is not available in *Aglaia;* so that rather than base the present concept and a new name upon Gillespie's type (the identity of which may remain open to question), I think it best to propose a new species to which Gillespie's binomial may be questionably referred. Gillespie's *figure 15*, published in connection with his original description, is not referable to *A. gracilis*. The habit sketch and the seed drawings (*f*, *g*) may represent *A. axillaris* or *A. vitiensis*, but the floral details (*a–e*) picture *Dysoxylum lenticellare*.

Aglaia gracilis is distinguished not only by its compact inflorescence, glabrous petals, and lanceolate-oblong leaflets, but also by its characteristic slender habit and its comparatively fugacious indument; the calyx is deeply lobed and, with the pedicel, bears very few scales soon after anthesis.

8. Aglaia (§ *Hearnia*) **amplexicaulis** A. C. Sm. in Bishop Mus. Bull. **141**: 78. *fig. 39.* 1936.

TYPE LOCALITY: Kandavu, Fiji; type, *A. C. Smith* 156, cited below.

DISTRIBUTION: Fiji, thus far known only from Viti Levu and Kandavu, at elevations of 200–450 m. The species has been collected in dense forest and noted either as a tree 10 m. high or a shrub 1–2 m. high; the petals are yellowish brown.

FIJI: VITI LEVU: Nandronga & Navosa: Southern slopes of Nausori Highlands, in drainage of Namosi Creek above Tumbenasolo, *Smith* 4718 (A, US). KANDAVU: Hills above Namalata and Ngaloa Bays, *Smith* 156 (Bish TYPE, GH, K, NY, US).

This very distinct species is at once distinguished by its simple, subsessile, cordate-amplexicaul leaves and its sparse, stellate indument of uniformly branched hairs. Since the species was originally based on a fruiting specimen, it is a satisfaction to have a second collection in flower; this indicates that the species falls into § *Hearnia.* The following notes, based mostly upon *Smith* 4718, supplement the original description:

Indument of young parts and lower surface of leaf-costa sparse, stellate, the hairs 0.1–0.2 mm. in diameter, composed of 10–20 rays free nearly to base or at least in the distal half; leaves often glabrate, the blades as small as 9×2 cm. or rarely less, with 15–30 pairs of secondary nerves; inflorescences axillary to uppermost leaves, paniculate, at anthesis 4–5 cm. long, few-branched and few-flowered, sparsely stellate-pilose like vegetative parts; bracts lanceolate-oblong, 1.5–2 mm. long, obtuse, the bracteoles similar but about 0.5 mm. long; pedicels at anthesis 2–3.5 mm. long, the flowers about 2.5 mm. in diameter; calyx-lobes oblong-deltoid, subacute, 0.8–1 mm. long; petals 5, elliptic-obovate, 2–2.2 mm. long, about 1.5 mm. broad, rounded at apex, scariose-margined, pilose without toward base like calyx, otherwise glabrous; androecium about 1.8 mm. long and 2.2 mm. in diameter, the filaments connate in a carnose glabrous tube about 1 mm. long, the anthers 5, marginal, suberect, deltoid-ellipsoid, about 1 mm. long; ovary pilose like calyx, the stigma large, carnose, bilobed.

9. Aglaia (§ *Hearnia?*) **elegans** Gillespie in Bishop Mus. Bull. **83**: 11. *fig. 12.* 1931.

TYPE LOCALITY: Tamavua, Province of Naitasiri, Viti Levu, Fiji; type, *Gillespie* 2005, cited below.

DISTRIBUTION: Fiji, thus far known only from Viti Levu, at elevations from near sea-level up to 1,075 m. The species occurs in dense forest and is reported as a tree up to 7 m. in height, with a brown fruit.

LOCAL NAME: Gillespie records the name *kau toa*, which I have not otherwise noted for *Aglaia* in Fiji.

FIJI: **VITI LEVU**: **Mba**: Mt. Evans Range, *Greenwood* 1142 (A, Bish); upper slopes of Mt. Koromba [Pickering Peak], *Smith* 4664 (A, US). **Naitasiri**: Tamavua woods, *Gillespie* 2005 (Bish TYPE, GH, K, NY, US), 2138 (Bish, GH); vicinity of Nasinu, *Gillespie* 3564 (Bish, GH); Central road, 8 miles from Suva, *MacDaniels* 1143 (Bish). **Rewa**: Vicinity of Suva, *Tothill* 93 (Bish, K).

Of the seven collections originally cited by Gillespie, four are referable to *A. vitiensis* var. *minor*, as are several more recent collections that have been identified as *A. elegans*. Actually these two entities bear only a superficial resemblance, differing fundamentally in type of indument. The stellate hairs of the vegetative parts and of the fruiting inflorescence of *A. elegans* are about 0.15 mm. in diameter, composed of 15–20 rays free nearly to base; these rays are fairly uniform in length and under high magnification are seen to be several-celled.

Although Gillespie did not have flowering material of *A. elegans*, he referred to it § *Euaglaia*. Flowering specimens are still not available, and accurate reference to a section is not possible. However, in view of the apparent relationship between this species and the following, I am more inclined provisionally to place *A. elegans* in § *Hearnia*.

10. **Aglaia (§ *Hearnia*) venusta** A. C. Sm. sp. nov.

Frutex habitu gracili, foliis parvis, foliolis lanceolato-oblongis apice rotundatis, inflorescentia compacta, petalis pilosis, antheris parvis marginalibus, fructu saepe solitario distinguitur; *A. eleganti* videtur affinis, foliolis plerumque numerosioribus et minoribus (haud 2 cm. latis) differt.

Slender shrub to 4 m. in height, the branchlets slender, terete, at length glabrate and cinereous; indument of young parts, petioles, leaf-rachises, and leaflets stellate, the hairs 0.1–0.2 mm. in diameter, composed of 8–17 several-celled rays free nearly to base; leaves 7- or 9-foliolate, 12–18 cm. long, the petiole 2–4 cm. long, slightly swollen at base, like the rachis very slender and subterete; leaflets opposite or subopposite, the petiolules very slender, 3–6 mm. long (of terminal leaflet to 8 mm. long), the blades papyraceous, dark green when dried, lanceolate-oblong, the terminal and upper lateral ones similar, 4–7 cm. long, 1.2–2 cm. broad (lowermost ones sometimes slightly smaller), inequilaterally obtuse or nearly rounded at base, rounded at apex, obscurely punctate on both surfaces with minute pits indicating hair-attachments, soon glabrate except for persistent indument on costa

beneath, the costa plane or slightly impressed above, strongly elevated beneath, the secondary nerves 9–13 per side, spreading, inconspicuously anastomosing, nearly plane above, prominulous beneath, the veinlet-reticulation obscure or faintly prominulous; inflorescences axillary, compact, few-flowered, not more than 1.5 cm. long at anthesis, the indument (on rachis, pedicels, calyx, and petals) like that of vegetative parts; bracts and bractcoles oblong, 1 mm. or less long; pedicels up to 1 mm. long; calyx cupuliform, about 2.5 mm. in diameter, 5-lobed, the lobes carnose, oblong, 1–1.2 mm. long, rounded at apex; petals 5, imbricate, carnose, suborbicular, 1–1.5 mm. long and broad (not quite mature), glabrous only toward margins; androecium about 1 mm. high and 1.5 mm. in diameter, the filaments carnose, connate into a glabrous tube 0.3–0.5 mm. long, the anthers erect from margin of tube, subglobose-deltoid, about 0.5 mm. long; ovary minute, pilose like calyx, the stigma subcapitate; fruiting inflorescences small, the fruits often solitary on apparently simple peduncles, the calyx persistent, slightly accrescent; fruit ellipsoid, at maturity about 2 cm. long and 1.3 cm. broad, rounded at both ends, the pericarp thin, brittle, closely velutinous-stellate-pilose, the seeds 1 or 2, ellipsoid, up to 13×9 mm., rounded at both ends, ventrally flattened.

Type in the U. S. National Herbarium, No. 1676177, collected in dense forest on the southwestern slope of Mt. Mbatini, Province of Thakaundrove, Vanua Levu, Fiji, alt. 300–700 m., Nov. 28, 1933, by A. C. Smith (No. 616). Duplicates at Bish, GH, K, NY, etc.

The only known collection was from a slender shrub 4 m. high, the recorded local name being *kula;* the fruit is red, becoming brown at maturity. On the basis of its indument and other vegetative characters, this species can be related only to the preceding, *A. elegans*, but since no flowers are yet known for that species a careful comparison cannot now be made. Assuming that *A. elegans* also belongs to § *Hearnia*, perhaps only the very slender habit and reduced size of leaflets will serve to differentiate my new species; on the basis of available material I think that it should not be combined with the older entity.

11. Aglaia (§ *Hearnia?*) basiphylla A. Gray, Bot. U. S. Expl. Exped. 1: 237, 1854; C. Muell. in Walp. Ann. Bot. Syst. 4: 387. 1857; Seem. Fl. Vit. 37. 1865.

TYPE LOCALITY: Ovalau, Fiji; type collected by U. S. Exploring Expedition, cited below.

DISTRIBUTION: Fiji, thus far known with certainty only from the island of Ovalau. The Gillespie specimen bears the altitudinal note of 500 m., but no data pertaining to habit or habitat are available.

FIJI: OVALAU: *U. S. Expl. Exped.* (GH, US 15569 TYPE); **vicinity of Levuka, overland trail to the west coast, *Gillespie* 4342.1** (Bish).

In the arrangement proposed in my key, this is the first of the species from our region having the trichome-rays comparatively long and diverse in length. It shares this character with the four species immediately following. No flowers are known for *A. basiphylla*, but the other four species with this type of indument all belong to § *Hearnia*. For convenience, because its trichomes occasionally bear rays of intermediate length, *A. psilopetala* (§ *Euaglaia*) has also been keyed in this relationship, although its true affinity is doubtless with *A. samoensis* and *A. saltatorum*.

12. Aglaia (§ *Hearnia*) **greenwoodii** A. C. Sm. in Bishop Mus. Bull. 141: 79. *fig. 40*. 1936.

TYPE LOCALITY: Near Wainikoro, Province of Mathuata, Vanua Levu, Fiji; type, *Greenwood* 500A, cited below.

DISTRIBUTION: Fiji, thus far known from Viti Levu and Vanua Levu, at elevations from near sea level up to 850 m., occurring in open or dense forest. The species is usually reported as a tree, often slender, 5–12 m. high or perhaps larger, rarely as a shrub as low as 1 m. in height. The flower-buds are greenish white, the petals at anthesis being brown without and yellow within; the fruit is bright red or reddish orange or brown.

LOCAL NAMES AND USES: Recorded local names are *tawatawa* (region of Nalotawa), *tombuthe* (in Ra), *malandamu* (Wainunu River, Thakaundrove), and *waithavuthavu* (Mathuata). In Ra, Degener noted that the wood was used for house building, while I was informed that in Mathuata the trunks of saplings are used to make spears.

FIJI: VITI LEVU: Mba: Mountains near Lautoka, western slopes of Mt. Evans Range, *Greenwood* 1067 (A, Bish, US); vicinity of Nalotawa, eastern base of Mt. Evans Range, *Smith* 4455 (A, US); Nandala, near Nandarivatu, *Degener* 14374 (A, Bish, K, NY, US); hills between Nandala and Nukunuku Creeks, along trail from Nandarivatu toward Lewa, *Smith* 6201 (A, US). Ra: Mataimeravula, vicinity of Rewasa, near Vaileka, *Degener* 15334 (A, Bish, K, NY, US). Namosi: Slopes of Mt. Voma, *Gillespie* 2470 (Bish); vicinity of Namuamua, *Gillespie* 3068 (Bish). Naitasiri: Tamavua, *Yeoward* 620 (K); near Nasinu, *Greenwood* 1137 (A). VANUA LEVU: Mbua: Lower Wainunu River Valley, *Smith* 1738 (Bish, GH, K, NY, US). Mathuata: Near Wainikoro, *Greenwood* 500A (K TYPE, NY fragment); near Lambasa, *Greenwood* 500 (K); southern slopes of Mt. Numbuiloa, east of Lambasa, *Smith* 6335 (A, US); Seanggangga Plateau, in drainage of Korovuli River, vicinity of Natua, *Smith* 6720 (A, US). Thakaundrove-Mathuata boundary: Crest of Korotini Range, between Navitho Pass and Mt. Ndelaikoro, *Smith* 528 (Bish, GH, K, NY, US).

The cited specimens have sometimes been confused in herbaria with *A. elegans*, but the two species are quite distinct in type of indument, although superficially their foliage is somewhat similar. Actually, the relationship of *A. greenwoodii* seems to be with *A. basiphylla*, but this should not be positively stated because of the lack of flowers for

the latter species. The presence of a pair of basal stipule-simulating leaflets on the leaves of *A. basiphylla* distinguishes that species, to which, on the basis of foliage alone, *A. greenwoodii* is admittedly close.

13. Aglaia (§ *Hearnia*) fragilis A. C. Sm. in Sargentia 1: 45. 1942.

TYPE LOCALITY: Nauwanga, near Nandarivatu, Province of Mba, Viti Levu, Fiji; type, *Degener* 14680, cited below.

DISTRIBUTION: Thus far known only from the vicinity of Nandarivatu, Viti Levu, at elevations of 750–1,200 m., reported as an undershrub or as a small tree up to 5 m. in height, occurring in dense and often wet forest.

FIJI: VITI LEVU: Mba: Nauwanga, near Nandarivatu, *Degener* 14680 (A TYPE, Bish, K, NY, US); Nandarivatu, *Tothill* 91 (K), *Parks* 20741 (Bish), *Gillespie* 3691 (Bish); near summit of Mt. Nanggaranambuluta [Lomalangi], *Gillespie* 3794 (Bish); hills east of Nandala Creek, about 3 miles south of Nandarivatu, *Smith* 5937 (A, US).

This well-marked and apparently very local species is closely related only to the preceding, *A. greenwoodii*, from which it differs, as noted in my key, in its fewer and more persistently pilose leaflets, of which the lateral ones are conspicuously smaller than the terminal. Its leaves, however, do not bear the essentially basal reduced leaflets which characterize those of *A. basiphylla*.

14. Aglaia (§ *Hearnia*) archboldiana A. C. Sm. in Sargentia 1: 44. 1942.

TYPE LOCALITY: Vicinity of Ngaloa, Province of Serua, Viti Levu, Fiji; type, *Degener & Ordonez* 13705, cited below.

DISTRIBUTION: Known only from Viti Levu, at elevations from near sea level up to 970 m., usually in dense forest. The collections are noted as trees, usually slender, up to 10 m. in height; the indument throughout is a light brown.

LOCAL NAMES: *Sasawira* (noted by Degener); *kali* (noted by Gillespie, but the name more often refers to *Myristica* spp.).

FIJI: VITI LEVU: Mba: Immediate vicinity of Nandarivatu, *Gillespie* 3709 (A, Bish), *Smith* 5046 (A, US); Mt. Matomba, Nandala, near Nandarivatu, *Degener* 14506 (A, Bish, K, NY, US); hills between Nandala and Nukunuku Creeks, along trail from Nandarivatu toward Lewa, *Smith* 6199 (A, US); hills east of Nandala Creek, about 3 miles south of Nandarivatu, *Smith* 5928 (A, US); hills between Nggaliwana and Nandala Creeks, south of Nauwanga, *Smith* 5829 (A, US). Serua: *Greenwood* 1020 (A, K); vicinity of Ngaloa, *Degener & Ordonez* 13705 (A TYPE, Bish, K, NY, US).

Aglaia archboldiana has no close relatives except the following species, *A. parksii*. These two allied species of § *Hearnia* are of the general affinity of *A. greenwoodii* and its allies, but their very large leaves immediately distinguish them. My original description of the petals as glabrous was inaccurate, as at least the outer petals are sparsely pilose toward the base without.

15. **Aglaia** (§ *Hearnia*) **parksii** A. C. Sm. in Bull. Torrey Club **70**: 541. 1943, in Journ. Arn. Arb. **27**: 320. 1946.

TYPE LOCALITY: Tholo-i-Suva, Province of Naitasiri, Viti Levu, Fiji; type, *Parks* 20076, cited below.

DISTRIBUTION: Thus far collected only in southeastern Viti Levu, in dense forest at elevations of 200 m. or less; the plants are trees up to 6 m. in height, with a brownish ferruginous indument.

FIJI: VITI LEVU: Naitasiri: Tholo-i-Suva, *Parks* 20076 (A fragm., Bish TYPE); near Nasinu, *Greenwood* 1136 (A).

This apparently local species is related only to *A. archboldiana*, differing in the characters noted in my key. *Greenwood* 1136 bears young inflorescences which are, however, sufficiently developed to show that the species belongs in § *Hearnia*; the petals are pilose (hairs 0.2–0.25 mm. in diameter, with about 15 rays free nearly to base, the rays only occasionally as long as 0.5 mm.) in the basal half without, glabrous distally; the anthers are definitely marginal on the filament-tube.

16. **Aglaia haplophylla** A. C. Sm. sp. nov.

Arbor parva foliis simplicibus petiolatis basi obtusis vel acutis, indumento copioso partum novellarum et inflorescentiae compactae lepidoto distinguitur; indumento *A. axillari*, *A. vitiensi*, et *A. gracili* similis, foliis simplicibus valde differt.

Tree 7 m. high, the branchlets slender, terete, the older ones brownish or cinereous, rugulose; young parts copiously lepidote with cinnamon-brown scales, these membranaceous, 0.1–0.15 mm. in diameter, composed of 40–60 rays adnate except at the erosulous margin of the scale; leaves simple, with the lepidote indument persisting on the petiole and costa (at least beneath), otherwise soon glabrate; petioles slender, 1–2 cm. long, flattened or shallowly grooved above, swollen at base and apex; leaf-blades papyraceous, drying dull green, oblanceolate-elliptic or narrowly oblong-elliptic, 7–11 cm. long, 2–4 cm. broad, obtuse at base, rounded or broadly obtuse at apex, recurved at margin, copiously but obscurely punctate on both surfaces with pits indicating scale-attachments, the costa impressed above, prominent beneath, the secondary nerves 9–13 per side, spreading, anastomosing near margins, plane and inconspicuous above, slightly elevated beneath, the veinlets immersed; inflorescences axillary toward apices of branchlets, solitary, 2–3 cm. long in young fruit, few-flowered (flowers not seen but young fruits usually 2–4 per inflorescence), uniformly and copiously lepidote like the young vegetative parts throughout (branches, pedicels, bracteoles, calyx, and ovary); bracteoles lanceolate, 1–1.5 mm. long; pedicels in young fruit about 1.5 mm. long; calyx 3–4 mm. in diameter, the lobes oblong, 0.8–1 mm. long, obtuse; young fruit ellipsoid, rounded at both ends, the locules 2, each with 2 ovules.

Type in the herbarium of the Arnold Arboretum, collected in dense forest on the ridge between Mt. Nanggaranambuluta [Lomalangi] and Mt. Namama, east of Nandarivatu, Province of Mba, Viti Levu, Fiji, alt. 1,050–1,120 m., Aug. 18, 1947, by A. C. Smith (No. 5683). Duplicate at US.

The only available specimen is indicated as a tree 7 m. high. Although no flowers are available, the specimen clearly represents a new species, being sharply characterized by its simple leaves. The lepidote indument and the leaf-texture indicate a relationship with *A. axillaris*, *A. vitiensis*, and *A. gracilis*, all of which occur in the same general area but have compound leaves. Without flowers it is not possible to place *A. haplophylla* in a section, but it is obviously more closely related to one of the mentioned species than it is to *A. amplexicaulis*, the only other simple-leaved *Aglaia* thus far known from Fiji.

17. **Aglaia evansensis** A. C. Sm. sp. nov.

Frutex vel arbor gracilis, indumento sparso stellato (pilorum ramulis parvis uniformibus), foliis parvis 3- vel 5-foliolatis, foliolis lateralibus valde reductis, infimis folii rhachi basalibus stipulis simulantibus, inflorescentia compacta pauciflora distinguitur; indumento *A. eleganti* et *A. venusta* subsimilis, foliorum forma valde differt.

Shrub or slender tree to 8 m. in height, the branchlets slender, terete, subflexuose distally, soon glabrate and cinereous; indument of young parts, leaf-rachises, and leaflets stellate, the hairs 0.1–0.2 mm. in diameter, composed of 12–20 rays fairly uniform in length and free nearly to base; leaves 3- or 5-foliolate (or appearing simple due to loss of the small basal leaflets), 7–17 cm. long, the petiole essentially none, the rachis slender, terete, 1–5 cm. long; leaflets papyraceous, drying pale green, eventually glabrate except for persistent hairs on the costa beneath, the 2 or 4 lateral leaflets opposite, much reduced, with petiolules 1–2 mm. long, the lowermost leaflets simulating stipules, with suborbicular few-nerved blades 0.5–3 cm. long and nearly as broad, the blades of the second pair of leaflets (if present) oblong-elliptic, 1.5–4.5 cm. long and 1–2.5 cm. broad, rounded at base, obtuse at apex, with 4–8 pairs of secondary nerves, the terminal leaflet with a swollen petiolule 2–4 mm. long and an oblong- or lanceolate-elliptic blade, this 4–12 cm. long, 2–5 cm. broad, broadly obtuse at base and apex, the costa plane or slightly impressed above and prominent beneath, the secondary nerves 6–15 per side, spreading, plane above, raised beneath, the veinlets obscure or faintly prominulous beneath; inflorescences (seen only before and after anthesis) axillary, compact, few-flowered, up to 3.5 cm. long including fruit, the indument (on rachis, pedicels, and calyx) like that of vegetative parts; pedicels swollen, 2–2.5 mm. long; calyx persistent, 2–2.5 mm. in diameter, the lobes 5, oblong-deltoid, obtuse, 0.7–1 mm. long; petals (very minute

on *Greenwood* 117) apparently glabrous, the stamens too undeveloped to distinguish; fruits often reduced to 1 per inflorescence on an apparently simple peduncle, ellipsoid, at maturity about 2 cm. long and 1.5 cm. broad, rounded at both ends, the pericarp thin, brittle, closely stellate-pilose like the calyx, the seeds 1 or 2, ellipsoid, about 13×8 mm., rounded at both ends, flattened ventrally.

Type in the herbarium of the Arnold Arboretum, collected in dense low forest on the eastern slopes of Mt. Koroyanitu, Mt. Evans Range, Province of Mba, Viti Levu, Fiji, alt. 950–1,050 m., May 1, 1947, by A. C. Smith (No. 4152). Duplicate at US.

ADDITIONAL SPECIMENS EXAMINED:

FIJI: VITI LEVU: Mba: Mt. Evans Range [upper western slopes toward Lautoka and near summit of Mt. Mbotilamu], *Greenwood* 117 (K), 1068 (A), 1072 (A, Bish, US); slopes of Mt. Nairosa, eastern flank of Mt. Evans Range, *Smith* 4080 (A, US).

DISTRIBUTION: Apparently limited to the isolated Mt. Evans Range, in northwestern Viti Levu, Fiji, at elevations of 900–1,180 m. The plant is a slender shrub or tree 2–8 m. high, occurring in upper slope forest of a dense, low type; the fruit is red.

In spite of the absence of mature flowers, which makes the assignment of the plant to a section inadvisable, I venture to describe this very distinct entity as new. It is at once distinguished by its small leaves with greatly reduced lateral leaflets, the lowest of which are basal on the rachis and simulate stipules. In having such basal leaflets the species resembles *A. basiphylla*, while in size of leaves it suggests *A. fragilis*, but both these species have indument of a different type, the trichome-rays being frequently elongate. In pubescence the new species suggests *A. elegans* and *A. venusta*, which are possibly its closest relatives, but the reduced number and size and the position of the lateral leaflets at once distinguish it. Although the leaves of *A. evansensis* may appear unifoliolate, close examination discloses the scars of the basal leaflets.

Aglaia sp.

Aglaia basiphylla sensu C. DC. in DC. Monogr. Phan. 1: 613. 1878, non A. Gray.

FIJI: VITI LEVU: Ra: Mataimeravula, vicinity of Rewasa, near Valleka, alt. 50–200 m., *Degener* 15422 (A, Bish, K, NY, US). VANUA LEVU: Thakaundrove: Hills west of Mbutha Bay, Natewa Peninsula, alt. 150–350 m., *Smith* 809 (Bish, GH, K, NY, US) (*langakali*). TAVEUNI: *Seemann* 59 (GH, K).

The cited specimens, all in fruit, may be compared only with *A. greenwoodii;* they have the same type of indument, but it is more fugacious, persisting only sparsely on the costa of leaflets; their leaflets tend to be more distinctly narrowed distally, oblong-ovate rather than oblong-elliptic; the calyx in fruit is considerably smaller than in typical *A. greenwoodii*, the hairs of the calyx and inflorescence-branches lacking the occasional long rays which characterize that species; the

indument is pale brown rather than deep cinnamon-colored. I suspect that the cited material represents an undescribed species, but verification from flowering specimens should be awaited.

Apparently de Candolle's description of *A. basiphylla*, cited above, was based entirely upon *Seemann* 59.

Aglaia sp.

FIJI: Viti Levu: Mba: Mountains east of Lautoka [western base of Mt. Evans Range], alt. 250 m., *Greenwood* 282 (K).

The cited specimen is indicated as a tree about 6 m. high; its leaves are 18–25 cm. long, with 5 leaflets, these being lanceolate-elliptic and up to about 12×5 cm.; the indument consists of pale stellate hairs about 0.3 mm. in diameter, with 10–15 rays uniform in length and free to base; the lower surface of leaflets is persistently and conspicuously covered with hairs of this type.

The single specimen appears to represent an undescribed species of the general relationship of *A. elegans*, but the persistence and large size of the hairs, together with minor details of leaflet-shape and texture, exclude it from that species. As the specimen is in young fruit, it cannot be definitely assigned to a section of the genus.

Aglaia sp. (Christophersen in Bishop Mus. Bull. 128: 116. 1935.)

SAMOA: Savaii: Forest above Matavanu Crater, alt. 1,030 m., *Christophersen & Hume* 2195 (Bish, NY, US).

Christophersen has briefly discussed this fruiting specimen, which in indument agrees with *A. samoensis*, but which differs in having leaves with only 1 or 2 pairs of lateral leaflets and in its larger fruits.

DYSOXYLUM Bl.

Dysoxylum Bl. Bijdr. Fl. Ned. Ind. 172. 1825.

Dysoxylum has traditionally been divided into two well-marked sections, *Eudysoxylum* and *Didymocheton*, this arrangement having been accepted by C. de Candolle (in DC. Monogr. Phan. **1**: 480–528. 1878). Both groups were originally proposed by Blume as genera, a separation which is maintained by Harms (in Nat. Pfl. ed. 2. **19b1**: 156–166. 1940) and a few other students of the family. The separation of the groups is based wholly upon characters of the calyx, which in *Dysoxylum* proper is gamosepalous (but often deeply lobed) and in *Didymocheton* composed of separate imbricate sepals. In the species of our region there is also a consistent difference in the indument of the fruit, stated in the key. However, except for the calycine differences the flowers of the two groups are fundamentally similar, with parallel series of variations. In the present paper the more comprehensive concept of *Dysoxylum* is maintained, following most recent workers. In our area 13 species are recognizable, three of them being described as new.

KEY TO THE SPECIES

Calyx gamosepalous but deeply lobed, subtended by 1–3 minute bracteoles not forming a cupule; fruits glabrous at maturity (§ *Eudysoxylum*).

Petals connate into a tube in the lower half or third and adnate to lower part of staminal tube; leaflets sometimes with very short petiolules and with the distal base of the blade rounded and touching the leaf-rachis.

Leaflet-blades densely and persistently soft-pilose beneath, the costa often persistently pilose above; petiolules (on distal margin) usually 4–8 mm. long; Fiji ..... 1. *D. pilosum*

Leaflet-blades soon glabrate on both surfaces (sometimes hispidulous when juvenile but not soft-pilose) except for often persistently barbellate nerve-axils beneath.

Flowers comparatively small and slender; calyx-lobes 0.5–0.7×0.7–1.4 mm.; corolla and staminal tube submembranaceous in texture; corolla 6–9 mm. long at anthesis; disk 2–2.5 mm. long, 0.5–0.8 mm. in diameter, glabrous; style 5–6.5 mm. long.

Leaves comparatively robust, 40–65 (–85) cm. long, the petioles 5–15 (–18) cm. long; petiolules (on distal margin) usually 3–10 mm. long; calyx-lobes 1–1.4 mm. broad; Fiji ..... 2. *D. richii*

Leaves less robust, 25–50 cm. long, the petioles 3–8 cm. long; petiolules (on distal margin) usually 1–3 mm. long; calyx-lobes 0.7–1 mm. broad; Tonga and Niue ..... 3. *D. forsteri*

Flowers comparatively large; calyx-lobes 0.7–1.5×1.2–2.2 mm.; corolla and staminal tube thin-carnose in texture; corolla 8–12 mm. long at anthesis; disk 2–4 mm. long, 0.8–1.5 mm. in diameter, glabrous or sometimes retrorse-strigose within; style usually 8–10 mm. long; petiolules of leaflets short, 1–5 mm. long (on distal margin); Samoa. 4. *D. samoense*

Petals free from each other and from staminal tube, or connate and adnate to the tube only at extreme base; leaflets always obviously petiolulate, the blades acute to rounded at base but the distal base scarcely touching the leaf-rachis.

Leaflets densely strigose on costa and secondary nerves beneath; flowers comparatively robust, the petals 9–11 mm. long and 4–8 mm. broad; staminal tube 6–8 mm. long and about 6 mm. in diameter, the stamens 14 or 15, with anthers about 2.5 mm. long; Fiji ..... 5. *D. myriandrum*

Leaflets glabrous (perhaps strigillose when juvenile, persistently so in no. 13); flowers less robust, the petals not more than 4.5 mm. broad; stamens 10, with anthers less than 2 mm. long.

Calyx at anthesis 5–5.5 mm. in apical diameter, the lobes 1.8–2×2.5–3 mm.; petals 7.5–11×3–4.5 mm.; staminal tube 6–8.5 mm. long, 4–5 mm. in diameter; anthers 1–1.8 mm. long; disk 2–2.5 mm. long and in diameter, retrorsely sericeous within; Samoa ..... 6. *D. huntii*

Calyx at anthesis not more than 3.5 mm. in apical diameter; petals not exceeding 7.5×3 mm.; staminal tube not more than 6 mm. long and 3.5 mm. in diameter; anthers 0.8–1 mm. long; disk not exceeding 1.8 mm. in length and diameter.

Disk glabrous on both sides; calyx-lobes about 1×1–1.5 mm.; petals 5–6×1.6–2 mm.; staminal tube about 4 mm. long; Fiji. 7. *D. lenticellare*

Species of this alliance, with lenticellate fruits arising from branchlets below leaves ..... 13. *D. gillespieanum*

Disk minutely but copiously retrorse-sericeous within; calyx-lobes about 2×2–2.5 mm.; petals 7–7.5×2–3 mm.; staminal tube 5–6 mm. long; Tonga ..... 8. *D. tongense*

Calyx with separate imbricate sepals, subtended by several to numerous bracteoles, these free but often forming a cupule and simulating sepals; fruits at maturity minutely but very copiously and densely velutinous (§ *Didymocheton*).

Petiolules conspicuous, 10–35 mm. long, the leaflet-blades large, 13–30×4.5–10.5 cm., glabrous at maturity, acute or obtuse at base and only slightly inequilateral; leaves 50–100 cm. long, with petioles up to 20 cm. long and with 13–21 leaflets; flowers comparatively large (corolla 15–16 mm. long at anthesis, 5-lobed; stamens 10; disk about 5 mm. long); Fiji.

9. *D. seemannii*

Petiolules comparatively inconspicuous, 1–5 mm. long (on the shorter margin), the leaflets often appearing subsessile, hardly exceeding 22×7 cm., usually smaller.

Corolla 10–16 mm. long at anthesis, 5-lobed; stamens 10; disk 4–5.5 mm. long, retrorsely sericeous or strigillose within; style 9–13 mm. long; leaflet-blades obviously inequilateral, rounded at base on the distal side (distal half of blade longer than proximal half), glabrous at maturity or persistently barbellate in nerve-axils on lower surface.

Leaflets usually 13–25 (rarely 11 or 27); Samoa ..... 10. *D. maota*

Leaflets 7 or 9; Fiji ..... 11. *D. tenuiflorum*

Corolla 5–10 mm. long at anthesis, often 3- or 4-lobed, sometimes 5-lobed; stamens 5 or 6, rarely 7; disk 2–3 mm. long, glabrous or very sparsely strigose within; style 6–7.5 mm. long; leaflets (3–) 5–9, the blades only slightly inequilateral, acute to obtuse at base (or, if inequilateral and rounded, with the distal half of blade shorter than proximal half), often persistently pilose on costa beneath; Fiji ..... 12. *D. hornei*

1. **Dysoxylum** (§ *Eudysoxylum*) **pilosum** A. C. Sm. in Sargentia 1: 40. 1942.
? Dracontomelon pilosum Seem. Fl. Vit. 52. 1865.

TYPE LOCALITY: Near Lautoka [western base of Mt. Evans Range], Province of Mba, Viti Levu, Fiji; type, *Greenwood* 396, cited below.

DISTRIBUTION: Thus far known only from Viti Levu, Fiji, where it occurs uncommonly at elevations up to 550 m., in forest or on dry slopes. In western Viti Levu it characteristically occurs in forested gullies on the flanks of grassy or deforested hills. The species is reported as a tree 7–15 m. high.

FIJI: VITI LEVU: Mba: Mountains near Lautoka [western base and slopes of Mt. Evans Range], *Greenwood* 396 (A TYPE, K), 396C (A, K); north of Lomolomo, near Lautoka, *Degener & Ordonez* 13715 (A, Bish, K, NY, US). Nandronga & Navosa: Southern slopes of Nausori Highlands, in drainage of Namosi Creek above Tumbenasolo, *Smith* 4589 (A, US); Naruku, vicinity of Mbelo, near Vatukarasa, *Degener* 15310 (A, Bish, K, NY, US). Naitasiri: Viria, *Meebold* 16722 (K); near Nasinu, *Greenwood* 1133 (A). Rewa: Vicinity of Suva, *Meebold* 16907 (Bish).

Dysoxylum pilosum is readily distinguished from other species of the genus in our region by the dense and persistent soft indument of the lower surfaces of its leaflets. In other characters it closely resem-

bles *D. richii*, certainly its closest ally; floral differences between the two species are negligible, and the several collections not originally cited by me now show that *D. pilosum* has as ample an inflorescence as *D. richii*.

2. **Dysoxylum** (§ *Eudysoxylum*) **richii** (A. Gray) C. DC. in DC. Monogr. Phan. 1: 511. 1878.

Didymochiton richii A. Gray, Bot. U. S. Expl. Exped. 1: 239. *pl. 20.* 1854; C. Muell. in Walp. Ann. Bot. Syst. 4: 387. 1857.

TYPE LOCALITY: Fiji, three localities being cited by Gray ("Vanua-levu, at Sandalwood Bay; Somu-somu; Nukulau"). These localities are: (1) Mbua Bay, Province of Mbua, Vanua Levu, (2) Somosomo, on the western coast of Taveuni, and (3) Nukulau, an islet near the mouth of Lauthala Bay, east of Suva, Province of Rewa, Viti Levu. Type collected by the U. S. Exploring Expedition, cited below.

DISTRIBUTION: *Dysoxylum richii* is the most abundant Fijian species of the genus at low and middle elevations, probably to be found on most of the islands at elevations up to about 1,000 meters. It is a common component of forests, both wet and dry, and at low elevations it occurs in thickets and on edges of mangrove swamps. The species is reported as a tree from 5 to 25 meters in height; the flowers have the corolla and staminal tube cream-white to pale yellow or greenish yellow; the fruit is rusty brown or greenish, often with brown or yellowish lenticels, exuding a milky latex when cut, and with a red aril. Parts of the plant, when bruised, emit a sharp alliaceous odor; although this is characteristic of many species of *Dysoxylum*, it seems especially noticeable in *D. richii*.

LOCAL NAMES AND USES: The most frequently used local names seem to be *sasawira* and variants of *tarawau* (usually referred to *Draconto-melon*) indicating that this is the *tarawau* eaten by pigeons and other birds, e. g. *tarawau ni kaka*, *tarawau kei thongge*, *tarawau kei raka-raka*. Also used on Viti Levu are *sawira*, *mala*, and *malamala*; several other names reported by collectors are open to question. The trunks of *D. richii* are sometimes used as house posts.

FIJI: VITI LEVU: Mba: Mt. Evans Range, *Smith* 4059 (A, US), 4355 (A, US); Nandarivatu and vicinity, *Gillespie* 3861 (Bish), 4263 (Bish), *Degener* 14538 (A), 14539 (A, Bish, K, NY, US); hills between Nggaliwana and Nandala Creeks, south of Nauwanga, *? Smith* 5832 (A, US); valley of Nggaliwann Creek, *? Smith* 5359 (A, US); hills between Nggaliwana and Tumbeindreketi Creeks, *Smith* 5979 (A, US). Ra: Tuvatuva, vicinity of Rewasa, near Vaileka, *Degener* 15376 (A, Bish, K, NY, US). Nandronga & Navosa: Northern portion of Rairaimatuku Platean, between Nandrau and Nanga, *Smith* 5504 (A, US); Thuvu, near Singatoka, *Greenwood* 923 (A, K, NY). Namosi: Vicinity of Namosi, *Gillespie* 2472 (Bish). Naitasiri: Nauduna, *B. E. Parham* 1085 (A). Rewa: Vicinity of Suva, *Tothill* 63 (K), *MacDaniels* 1002 (Bish). KANDAVU: Hills above Namalata and Ngaloa Bays, *Smith* 53 (Bish, GH, K, NY, US). VANUA LEVU: Mbua: Southern portion of Seatovo Range, *Smith* 1513 (Bish, GH, K, NY, US). Mathuata: Mathuata coast, *Greenwood* 396B (K); Lambasa, *Greenwood* 598

(K); southern slopes of Mt. Numbuiloa, east of Lambasa, *Smith* 6348 (A, US); Seanggangga Plateau, vicinity of Natua, *Smith* 6723 (A, US). TAVEUNI: Vicinity of Wairiki, *Gillespie* 4643 (Bish); vicinity of Waiyevo, *Gillespie* 4736 (Bish, GH, K, NY, US). KORO: Eastern slope of main ridge, *Smith* 941 (Bish, GH, K, NY, US). VANUA MBALAVU: Northern limestone section, *Smith* 1496 (Bish, GH, K, NY, US); central volcanic section, near Lomaloma, *Smith* 1414 (Bish, GH, K, NY, US). MATUKU: *Bryan* 244 (A, Bish). KAMBARA: On limestone formation, *Smith* 1290 (Bish, GH, K, NY, US). Fiji, without detailed locality: *U. S. Expl. Exped.* (GH, TYPE US 42447 and 42448).

With the following two species, *D. forsteri* and *D. samoense*, *D. richii* forms a well-marked species-group in § *Eudysoxylum*. Characters separating the three species are not strong, the populations from Fiji (*D. richii*) and from Tonga (*D. forsteri*) being especially close. The comparatively conspicuous petiolules of *D. richii*, together with other characters mentioned in my key, permit its specific recognition; if the two entities should be combined, as suggested by Seemann (Fl. Vit. 36. 1865), *D. forsteri* would be the correct binomial. In comparing *D. richii* with *D. samoense*, Setchell (in Carnegie Inst. Washington Publ. 341: 81. 1924) implies that the corolla-lobes of *D. richii* are imbricate; I do not find this to be the case, the lobes of all the species of this alliance being valvate and fundamentally similar.

Two of my collections from Viti Levu (nos. 5359 and 5832), cited above as questionable, have a more or less persistent hispidulous indument on the lower leaflet-surface, even in fruiting condition. At present I do not note other characters to indicate that this form merits nomenclatural recognition.

3. **Dysoxylum** (§ *Eudysoxylum*) **forsteri** (Juss.) C. DC. in DC. Monogr. Phan. 1: 507. 1878.

Trichilia alliacea Forst. f. Fl. Ins. Austr. Prodr. 33. 1786; DC. Prodr. 1: 623. 1824; non *Dysoxylum alliaceum* Bl. (1825).

Hartighsea forsteri Juss. in Mém. Mus. Hist. Nat. [Paris] 19: 265. 1830.

Dysoxylum alliaceum Seem. Fl. Vit. 36. 1865; non Bl. (1825).

Dysoxylum richii sensu Hemsl. in Journ. Linn. Soc. Bot. 30: 171. 1894; Burkill in Journ. Linn. Soc. Bot. 35: 31. 1901; Yuncker in Bishop Mus. Bull. 178: 71. 1943; non C. DC.

TYPE LOCALITY: Tonga, in the Nomuka Group; type presumably collected on Cook's third voyage, cited below.

DISTRIBUTION: Tonga and Niue, at low elevations, presumably in forest. The species is reported as a tree, up to 8 meters (but probably also more) in height; the flowers are yellowish green, and the fruit has an alliaceous odor.

LOCAL NAMES AND USES: *Maota* or *maotai* (Tonga); *moota* (Niue). Yuncker reports that on Niue the wood is used in making canoes and that the fruits are eaten by birds.

TONGA: VAVAU: *Barclay* 3367 (BM), *Crosby* (K). NOMUKA GROUP: "*Cook's 3rd Voyage*" (TYPE BM). TONGATABU: *Graeffe* 1374 (K), 1375 (K); district of

Vahe, *Setchell & Parks* 15433 (Bish, K); 10 miles from Nukalofa, *MacDaniels* 1081 (Bish). EUA: Powell Plantation, *Parks* 16026 (Bish, GH, K, NY, US).

NIUE: 2 miles east of Alofi, *Yuncker* 9639 (Bish, US); near Hikutivake village, *Yuncker* 9846 (Bish).

The close relationship between this species and *D. richii* has been noted under that species and in my key.

4. **Dysoxylum** (§ *Eudysoxylum*) **samoense** A. Gray, Bot. U. S. Expl. Exped. 1: 241 (as *Disoxylon ? samoense*). 1854; C. Muell. in Walp. Ann. Bot. Syst. 4: 387. 1857; C. DC. in DC. Monogr. Phan. 1: 527. 1878; Setchell in Carnegie Inst. Washington Publ. 341: 80. *fig. 2.* 1924; Christophersen in Bishop Mus. Bull. 128: 115. 1935.

Dysoxylum funkii C. DC. in Bull. Herb. Boiss. II. 6: 981. 1906.

Didymocheton funkii Harms in Nat. Pfl. ed. 2. 19b1: 157. 1940.

TYPE LOCALITY: Samoa ("Manua and Tutuila"); type collected by the U. S. Exploring Expedition, cited below. The fact that Gray's original materials were a mixture has been noted by Setchell and is discussed below, but it is not possible to state whether the lectotype is from Manua or from Tutuila.

DISTRIBUTION: Samoa, at elevations up to 750 m., occurring in forest, open forest, or open places. The species is a tree, up to 20 m. in height, with white flowers and a light brown fruit.

LOCAL NAME: Christophersen implies that the three recognizable Samoan species of *Dysoxylum* are designated by different local names; *D. samoense* is the *maota mamala* of the Samoans. Collectors' labels also note the name as *maota* or *mamala*.

SAMOA: SAVAII: Felealupo peninsula, *Christophersen* 2807 (Bish, K, NY); above Sili, *Christophersen* 3201 (Bish, K, NY, US); Matavanu, open woodland near crater, *Christophersen & Hume* 1945 (Bish, K, NY, US); Le To, above Salailua, *Christophersen* 2938 (Bish); Lealatele district, *Vaupel* 233 (US). UPOLU: *Funk* 1 (type of *D. funkii*, fragment seen from De Candolle Herbarium, Conservatoire Botanique, Genève); below Malololelei, *Christophersen* 336 (Bish, US). TUTUILA: Pago Pago and vicinity, *Garber* 916 (Bish), *Meebold* 16720 (Bish); near Blunt's Point, *Setchell* 358 (Bish). TUTUILA or MANUA: *U. S. Expl. Exped.* (GH, TYPE US 42484). TAU: Plateau back of Siufaga village, *Yuncker* 9183 (Bish). Samoa, without definite locality: *Whitmee* 95, part (K), 95 bis (K), 200, part (K).

In describing *D. samoense*, Gray took the characters from two specimens, stating that "It is not absolutely certain, therefore, that the two belong to the same species." Unfortunately, this opinion has been confirmed, but the situation has been clarified in detail by Setchell (in the publication cited above). Setchell points out that the leaves and fruits belong to one species, and he has wisely selected this as the portion to be associated with Gray's binomial, a choice binding upon subsequent workers. He indicated the specimen in the U. S. National Herbarium as No. 42484 as the holotype of Gray's species. The second species is represented by US sheet No. 42485, with juvenile leaves and young inflorescences; this species Setchell has correctly associated

with *D. huntii* Merr. The corresponding Exploring Expedition sheet in the Gray Herbarium bears detached leaflets and fruits of *D. samoense* and an undeveloped inflorescence of *D. huntii*. Both species are now known from Tutuila, but additional material from Manua is not available.

Christopherson (in the publication cited above) referred his specimens to "*Dysoxylum* aff. *samoense*," but I find no reason to doubt their place in Gray's species as emended by Setchell. Two sterile specimens which Christophersen thought might differ (Nos. 1945 and 2938) seem to me essentially identical in foliage with other cited material.

A fragment of the type of *D. funkii* has been lent to me from the Conservatoire Botanique, Genève; in floral characters and in leaf-texture this is identical with the concept here under consideration, and nothing in de Candolle's description contradicts this position for his species. In his monograph of the family (1878) de Candolle included *D. samoense* among his "species incertae sedis," and obviously he did not take Gray's species into consideration when he described *D. funkii*.

Dysoxylum samoense differs from *D. richii* and *D. forsteri*, as my key indicates, in its comparatively large floral parts. When mature flowers are not available the species will be separable with difficulty from *D. forsteri*, like which it has shorter petiolules than *D. richii*.

5. **Dysoxylum** (§ *Eudysoxylum*) **myriandrum** A. C. Sm. in Sargentia 1: 41. 1942.

TYPE LOCALITY: Vanua Levu, Fiji.

DISTRIBUTION: Known only from the type collection, from a tree 6 m. high growing in dense forest at an altitude of 650–900 m.; the petals and staminal tube are pale green, brown-tinged.

LOCAL NAME: *Warokamithi* was the name recorded by me in 1933, but it has not been noted elsewhere in the genus and is open to question.

FIJI: VANUA LEVU: Thakaundrove-Mathuata boundary: Crest of Korotini Range, between Navitho Pass and Mt. Ndelaikoro, *Smith* 569 (Bish, K, GH, NY TYPE, US).

This species and the three following form a clearly marked group within § *Eudysoxylum*, differing from *D. forsteri* and its allies in having the petals free from each other and from the staminal tube essentially to base. In foliage this group of species is also readily recognized, as the leaflets are obviously petiolulate, with blades that are comparatively thick in texture, glabrous (except in *D. myriandrum*), and acute to rounded at base, without the exaggerated distal base of the blade that characterizes most species of the genus in our region. *Dysoxylum myriandrum* is one of the most distinct species of the genus by virtue of its increased number of stamens, but its relationship to such species as *D. huntii* and *D. aneityense* is unquestionable. In

my original description I erroneously referred this species to § *Didymocheton*, mistaking the stout calyx-tube for a pedicel, whereas actually the flowers are sessile and the sepals are not completely free.

6. **Dysoxylum** (§ *Eudysoxylum*) **huntii** Merr. in Setchell in Carnegie Inst. Washington Publ. 341: 83. *fig. 4.* 1924; Christophersen in Bishop Mus. Bull. 128: 114. 1935.
Didymocheton huntii Harms in Nat. Pfl. ed. 2. 19b1: 157. 1940.

TYPE LOCALITY: In the original publication three collections in Setchell's series, all from the vicinity of Pago Pago, Tutuila, Samoa, are cited; of these two are indicated as sterile, and the third, No. 433 (collected by Lt. Comdr. Daniel Hunt), is in flower. This last collection, therefore, is doubtless to be taken as the type; it is deposited in the herbarium of the University of California. Although I have not seen the original material, the description and the discussions of Setchell and Christophersen clearly indicate the identity of this well-marked species.

DISTRIBUTION: Endemic to Samoa, occurring at least on the larger islands at elevations of 400–1,550 m. Christophersen notes the species as one of the commonest forest trees at medium and high altitudes. It is a tall tree, up to 20 m. in height, with a straight trunk up to 70 cm. in diameter. The fruit is said to be pale green, with a coating of yellow or pale brown confluent lenticels.

LOCAL NAMES AND USES: *Maota mea* is apparently the most commonly used name for this species, but Christophersen's labels also record the names *malava* and *ma'ali*. The green wood burns readily and is utilized by the Samoans as firewood.

SAMOA: SAVAII: Vicinity of Matavanu Crater, *Christophersen & Hume* 1957 (Bish, K, NY, US), 2151 (Bish, K, NY), 2210 (Bish); Salailua (cultivated), *Christophersen & Hume* 2575 (Bish); above Salailua, *Christophersen* 2680 (Bish, US), 3083 (Bish), 3124 (Bish, K, NY, US); near Le To, above Salailua, *Christophersen* 3060 (Bish, K, NY); above Siuvao, *Christophersen & Hume* 3306 (Bish). UPOLU: Malololelei-Lanutoo trail, *Christophersen* 397 (Bish); near Malololelei, *Christophersen* 956 (Bish). TUTUILA: Top of Pioa, *Christophersen* 3537 (Bish, NY). TUTUILA or MANUA: *U. S. Expl. Exped.* (US 42485).

Dysoxylum huntii is clearly distinguished from its relatives in our region, such as the Fijian *D. lenticellare*, by the floral characters mentioned in my key. *Dysoxylum aneityense* Guillaumin (1931), of the New Hebrides, has foliage and inflorescences remarkably similar to those of *D. huntii;* its disk is somewhat more slender and the indument of its ovary is closer, but otherwise the flowers of the two species seem essentially identical. The fruit of *D. aneityense*, as far as can be discerned from the only available fruiting specimen (*Wilson* 949, A), has a pericarp which is comparatively smooth in texture, whereas the fruit of *D. huntii* at maturity is strikingly rugulose and presumably

paler. I believe that the two species can be retained, but if not, *D. huntii* has nomenclatural priority.

The U. S. Exploring Expedition specimen cited above is one of the two elements which Gray referred to his *D. samoense*, being the non-typical element as that species was redefined by Setchell. *Dysoxylum huntii* was originally referred to § *Didymocheton*, but it clearly has a gamosepalous calyx and should be placed in § *Eudysoxylum*.

7. **Dysoxylum (§ *Eudysoxylum*) lenticellare** Gillespie in Bishop Mus. Bull. 83: 13. *fig. 14.* 1931.

Dysoxylum obliquum sensu Gillespie in Bishop Mus. Bull. 83: *fig. 15. a–e.* 1931, non sensu typi.

? *Dysoxylum* aff. *aneityense* sensu A. C. Sm. in Bishop Mus. Bull. 141: 82. 1936; non Guillaumin.

Didymocheton lenticellare Harms in Nat. Pfl. ed. 2. 19b1: 157. 1940.

TYPE LOCALITY: Mt. Nanggaranambuluta, Province of Mba, Viti Levu, Fiji; type, *Gillespie* 3927, cited below.

DISTRIBUTION: Fiji, but thus far known with certainty only from the island of Viti Levu; although Gillespie states that the species occurs on Ovalau, all the collections he cites were obtained on Viti Levu (one of these, No. 2472, represents *D. richii*). On Viti Levu, this is the most abundant species of *Dysoxylum* in upland forests, elevations of 400–1,250 m. having been recorded. It occurs in dense rain-forest, in crest thickets, and in forest-grassland transitional zones. The species is a tree 3–15 m. high, with its petals and staminal tube white or greenish white; the fruit is usually light green with conspicuous whitish or pale brown lenticels.

LOCAL NAMES: *Mala* or *malamala* is commonly used for the species in interior Viti Levu; Gillespie also noted the names *mbau so ro* and *kau toa*.

FIJI: VITI LEVU: Mba: Mt. Evans Range, east of Lautoka, *Greenwood* 949 (A, K, NY),1157 (A); upper slopes and summit of Mt. Koromba [Pickering Peak], *Smith* 4650 (A, US), 4691 (A, US); Vicinity of Nandarivatu, *Gillespie* 3754 (A, Bish), *Parks* 20711 (Bish), *TotMill* 65 (K), 95 (K); slopes of Mt. Nanggaranambuluta [Lomalangi], east of Nandarivatu, *Gillespie* 3722 (Bish), 3781 (Bish); summit ridge of Mt. Nanggaranambuluta, *Gillespie* 3927 (Bish TYPE); ridge between Mt. Nanggaranambuluta and Mt. Namama, *Smith* 5000 (A, US); Nauwanga, south of Nandarivatu, *Degener* 14561 (A, Bish, K, NY, US); hills between Nggaliwana and Tumbeindreketi Creeks, *Smith* 5877 (A, US); Mt. Tomanivi [Mt. Victoria], *Gillespie* 4127 (Bish, GH); western slopes of Mt. Tomanivi, *Smith* 5121 (A, US). Nandronga & Navosa: Northern portion of Rairaimatuku Plateau, between Nandrau and Rewasau, *Smith* 5396 (A, US), between Nandrau and Nanga, *Smith* 5531 (A, US). Namosi: Mt. Naitarandamu, *Gillespie* 3314 (Bish, GH, K, NY); Mt. Voma, *B. E. Parham* 1716 (A); vicinity of Namosi, *Gillespie* 2598 (Bish, GH), 2822 (Bish, GH, US); vicinity of Namuamua, *Gillespie* 3035 (Bish), 3064 (Bish). TAVEUNI: Western slope, between Somosomo and Wairiki, ? *Smith* 766 (Bish, GH, K, NY, US). Fiji, without definite locality: *Horne* 141a (K), 316 (GH, K), 881 (K).

As indicated by my key, this species is distinguishable from the Samoan *D. huntii* in its smaller flowers, dimensional differences being quite obvious and consistent as far as observed at present; in foliage and fruit the two species are difficult to separate, but nevertheless I have no hesitation in retaining both. Gillespie erroneously referred his species to § *Didymocheton.* In the original publication he described and figured only fruiting material, although he correctly cited *Horne* 316, a specimen with immature flowers. These flowers were inadvertently described and figured by Gillespie under *D. obliquum*, this fact explaining why he referred that species to *Dysoxylum* rather than to *Aglaia*, to which genus all the cited specimens of *D. obliquum* belong. Elsewhere in this paper I have placed the various specimens cited by Gillespie as *D. obliquum* under the species of *Aglaia* which they represent. Since no analysis of the inflorescence has been provided for *D. lenticellare* (except that based on the immature flowers of *Horne* 316 and referred to *D. obliquum*), the following description has been drawn up, based on ample flowering material (*Smith* 4650, 4691, 5000) :

Inflorescence axillary toward apices of branchlets, at anthesis 6–9 cm. long, spreading, with a peduncle 1–2.5 cm. long and 4–8 lateral branches; bracts deltoid, acute, 1–1.5 mm. long; inflorescence-branches, bracts, and bracteoles copiously but minutely sericeous-strigillose; flowers sessile on short ultimate branchlets, subtended by 2 opposite bracteoles about 0.5 mm. long; calyx gamosepalous, cupuliform, at anthesis about 2 mm. long and 2–2.5 mm. in apical diameter, strigillose-sericeous without (hairs pale brown, 0.1–0.2 mm. long), the tube minute, the limb subcarnose, 5-lobed nearly to base, the lobes narrowly imbricate, ovate-suborbicular, about 1 mm. long and 1–1.5 mm. broad, rounded at apex, ciliolate-margined; petals 5, thin-carnose, free, oblong, at anthesis 5–6 mm. long and 1.6–2 mm. broad, subspreading, obtuse, puberulent dorsally with very minute brown hairs; staminal tube short-cylindric, carnose, about 4 mm. long and 3.5 mm. in diameter, crenulate at apex, glabrous on both sides; stamens 10, with sessile oblong obtuse anthers about 1 mm. long; disk carnose, 1.3–1.5 mm. long, 1.5–1.8 mm. in diameter, crenulate at apex, glabrous on both sides; ovary densely sericeous with stramineous hairs about 0.3 mm. long, the locules 3, each with 2 collateral ovules affixed near middle, the style stout, terete, sericeous in the lower half, glabrous distally, the stigma peltate-capitate, about 1 mm. in diameter.

The only available specimen of this relationship from Taveuni, *Smith* 766, is questionably referred to *D. lenticellare.* It bears young fruits which appear to be elenticellate and softer than typical in texture; it is noted as a shrub 3 m. high (the other cited specimens being indicated as trees), and it has somewhat narrower leaflets than the specimens from Viti Levu. This is the specimen which in 1936 I

identified as *D.* "aff. *aneityense*," but I am now inclined to believe that it more likely represents Gillespie's species, unless the discovery of flowers should establish it as an undescribed entity. *Dysoxylum aneityense*, of the New Hebrides, differs markedly from *D. lenticellare* in its more robust flowers, which suggest those of the Samoan *D. huntii*, as mentioned above under that species.

8. Dysoxylum (§ *Eudysoxylum*) tongense A. C. Sm. sp. nov.

Arbor foliolis glabris manifeste petiolulatis, floribus cum petalis liberis distinguenda; *D. lenticellari* Gillespie vitiensi affinis, inflorescentiae pedunculis longioribus et bracteis majoribus, calycis lobis et petalis majoribus, tubo stamineo longiore, disco intus minute sed copiose retrorso-sericeo differt.

Large tree, the branchlets robust, subterete, up to 15 mm. in diameter toward apex and there very minutely pale-strigillose, glabrate, often marked by conspicuous scars of fallen leaves and lenticellate; leaves and inflorescences congested toward apices of branchlets, the leaves 17–28 cm. long, the petiole and rachis terete, slender, very minutely and obscurely strigillose-puberulent, soon glabrate, the petiole 5–9 cm. long, swollen at base; leaflets (5–)7–13, glabrous, the petiolules slender, 6–12 mm. long, the blades thin-coriaceous, drying brownish, the middle lateral ones subfalcate-ovate, 7–12(–15) cm. long, 3–5.5 (–6) cm. broad, at base inconspicuously inequilateral, broadly obtuse and decurrent on the petiolule (distal half the longer, sometimes rounded), at apex obtusely cuspidate or short-acuminate (acumen to 15 mm. long), the leaflets toward base and apex of leaf somewhat reduced, the terminal one often atrophied; venation of leaflets inconspicuous, the costa and secondaries nearly plane above, raised beneath, the secondaries 7–11 per side, spreading, slightly curved, the veinlet-reticulation obscure, coarse; inflorescence axillary, at anthesis 8–13 cm. long, paniculate, the peduncle up to 5 cm. long, slightly broadened and flattened distally, the branches few, spreading, short; bracts oblong, obtuse, 2–3 mm. long, caducous; inflorescence-branches, bracts, and bracteoles minutely strigillose or sericeous with pale hairs; flowers sessile, subtended by deltoid obtuse bracteoles less than 1 mm. long; calyx gamosepalous, at anthesis 2.5–3 mm. long and about 3.5 mm. in apical diameter, minutely strigillose-puberulent without, the tube minute, less than 1 mm. long, the limb cupuliform, submembranaceous, 5-lobed nearly to base, the lobes imbricate, ovate-suborbicular, about 2 mm. long and 2–2.5 mm. broad, rounded at apex, ciliolate-margined; petals 5, essentially free or weakly adnate to staminal tube at base, thin-carnose, oblong, at anthesis 7–7.5 mm. long and 2–3 mm. broad, obtuse, recurved, minutely but copiously sericeous dorsally (hairs pale, less than 0.1 mm. long), glabrous within; staminal tube carnose, cylindric, 5–6 mm. long, 2–3 mm. in diameter, crenulate at apex, glabrous on

both sides; stamens 10, affixed 1–1.2 mm. from apex of tube, the anthers sessile, oblong, about 0.8 mm. long, obtuse at apex; disk carnose, cylindric, 1.5–1.7 mm. long, about 1.2 mm. in diameter, crenulate at apex, glabrous without, minutely but copiously retrorse-sericeous within (hairs colorless, 0.1–0.15 mm. long); ovary conical, strigose-sericeous with stramineous hairs about 0.2 mm. long, the locules 3, each with 2 collateral-superposed ovules, the style stout, terete, about 5 mm. long, glabrous except at very base, the stigma peltate-capitate, about 0.8 mm. in diameter; immature fruits arising from a short-cylindric calyx-tube surmounted by persistent lobes, obovoid, seen up to 2.5×1.5 cm., conspicuously stipitate at base, rounded at apex, soon glabrate, the pericarp coriaceous, lenticellate.

Type in the U. S. National Herbarium, No. 1527033, collected in forest on the Johannsen Plantation, Eua, Tonga, in June or July, 1926, by H. E. Parks (No. 16072). Duplicates at Bish, GH.

ADDITIONAL SPECIMENS EXAMINED:

TONGA: EUA: High central plateau, *Parks* 16133 (Bish, GH, K, US); in plateau forests, *Parks* 16282 (Bish, BM, GH, K, NY, US).

DISTRIBUTION: Tonga, thus far known only from the island of Eua; Parks indicates that the species is a large forest tree, but no altitudinal or color data are available.

The new species is closely related to the Fijian *D. lenticellare*, but the floral differences pointed out in my key and diagnosis indicate that it is worthy of specific rank. Of the available specimens, the type is in flower and the other two bear immature fruits. Possibly the collection of mature fruits will disclose other differences from *D. lenticellare*, but in general the diagnostic characters in *Dysoxylum* are to be found in flowers rather than fruits.

9. **Dysoxylum** (§ *Didymocheton*) **seemannii** Gillespie in Bishop Mus. Bull. 83: 14. *fig. 16.* 1931 (as *D. seemanni*).

Milnea edulis sensu Seem. in Bonplandia 10: 296. 1862; non Roxb.

Aglaia multijuga Seem. Fl. Vit. 37. 1865; non *Dysoxylum multijugum* Arn. (1834).

Didymocheton multijugum Harms in Nat. Pfl. ed. 2. 19b1: 157. 1940.

TYPE LOCALITY: Island of Wakaya, Fiji; type, *Storck* 874, cited below.

DISTRIBUTION: Throughout Fiji, probably to be found on most of the islands, usually occurring at low elevations but noted, for the first specimen cited below, up to 900 m. It is a species of forests but has also been observed on wooded ridges, on edges of forest, and in forest-grassland transitional regions. The species is a shrub or tree 1.5–10 m. high, often with the leaves and inflorescences up to 1 m. long and congested at the summit of the plant. The corolla and staminal tube are yellowish green or cream-white, and the fruit is orange-brown to russet-brown.

LOCAL NAMES: *Kau toa* (ex Gillespie, Petersen); *tavai* (ex Degener). I have noted the names *taravau* (usually referred to *Dracontomelon*) and *ndanindani* (usually referred to *Polyscias multijuga* and other araliaceous plants which somewhat resemble this in foliage); Storck also noted the local name as *danidani loa.*

FIJI: VITI LEVU: Mba: Vicinity of Nandarivatu, *Gillespie* 4301 (Bish, GH, K, NY). Ra: Waindawa, vicinity of Rewasa, near Vaileka, *Degener* 15498 (A, Bish, K, NY, US). Namosi: Southeast of Namosi, *Gillespie* 2855 (Bish). Naitasiri: Tholo-i-Suva, *F. Raiqiso* 798 (A); Kalambo, *Tothill* 219 (K); Tamavua, *Gillespie* 2408 (Bish, GH, US). Province?: *Petersen* 19 (NY). KANDAVU: Hills above Namalata and Ngaloa Bays, *Smith* 88 (Bish, NY), 153 (Bish, NY), 160 (Bish, GH, K, NY, US). WAKAYA: *Storck* 874 (BM, K TYPE). VANUA LEVU: Mbua: Upper Ndama River valley, *Smith* 1609 (Bish, K, NY, US). Thakaundrove: Naunduna, eastern drainage of Yanawai River, *Degener & Ordonez* 14109 (A, NY). TAVEUNI: Vicinity of Waiyevo, *Gillespie* 4805 (Bish, GH). VANUA MBALAVU: Northern limestone section, *Smith* 1509 (Bish, GH, K, NY, US). MANGO: Edge of limestone forest and grassland, *Bryan* 564 (A, Bish, US). MOALA: Near Naroi, *Smith* 1307 (Bish, GH, K, NY, US). KAMBARA: On limestone formation, *Smith* 1277 (Bish, GH, K, NY, US). Fiji, without definite locality: *Horne* 410 (GH, K).

Among the species of § *Didymocheton* in our region, *D. seemannii* is readily recognized by its large leaves with conspicuous petiolules, and by its large flowers, the corolla being copiously strigillose without. In fruiting condition, the local species of § *Didymocheton* are readily distinguished from those of § *Eudysoxylum* by the dense velutinous indument of the fruits. In flower, the ovaries of these species are hispidulous or strigillose with stiff hairs, similar to those found in § *Eudysoxylum.* These hairs persist for a time on the young fruits, but they eventually fall. The hairs composing the ultimate and persistent fruit-indument are closely set, contiguous, pale brown, simple, spreading, and less than 0.1 mm. long. These hairs are not seen on the ovary in flower, either because they are then too minute or because they develop only after anthesis. The mature fruits of *D. seemannii* and its allies tend to be oblate-spherical, with inconspicuous longitudinal ridges demarcating the valves.

Although Gillespie published his epithet as "*seemanni*," I have corrected it to *seemannii* in accordance with an addition to Art. 70 of the International Rules of Botanical Nomenclature accepted by the Stockholm Congress of 1950, to the effect that the use of the termination *i* instead of *ii*, prescribed in Rec. XL (b), is treated as an unintentional orthographic error which may be corrected.

10. **Dysoxylum** (§ *Didymocheton*) **maota** Reinecke in Bot. Jahrb. 25: 643. 1898; Rechinger in Denkschr. Akad. Wiss. Wien 85: 296. 1910; Setchell in Carnegie Inst. Washington Publ. 341: 81. *fig. 3.* 1924; Christophersen in Bishop Mus. Bull. 128: 115. 1935.

Dysoxylum betchei C. DC. in Bull. Herb. Boiss. II. 3: 178. 1903.

Dysoxylum amooroides sensu C. DC. in Bull. Herb. Boiss. II. 3: 178. 1903; non Miq.
Dysoxylum albiflorum C. DC. in Ann. Conserv. Jard. Bot. Genève 15: 245. 1912.
Didymocheton betchei Harms in Nat. Pfl. ed. 2. 19b1: 157. 1940.
Didymocheton albiflorum Harms in Nat. Pfl. ed. 2. 19b1: 157. 1940.
Didymocheton maota Harms in Nat. Pfl. ed. 2. 19b1: 157. 1940.

TYPE LOCALITY: Mulifanua, Upolu, Samoa; type, *Reinecke* 122, presumably deposited in the Botanical Museum at Berlin and perhaps destroyed. Duplicates of the type are cited below.

DISTRIBUTION: Samoa, at least on the larger islands and probably throughout, and also apparently in the Horne and Wallis Islands. It is a frequent tree in lowland forests, elevations up to 300 m. having been recorded. The trees are noted as 5–20 m. in height, with greenish white or yellowish flowers and orange or yellow fruits.

LOCAL NAMES AND USES: This species is the *maota* of the Samoans, a name also recorded for the Horne and Wallis Islands material; Christophersen notes that the fruits are a favorite food of pigeons.

SAMOA: SAVAII: *Vaupel* 120 (Bish), 120 bis (K); Salailua *Christophersen* 2957 (Bish, K, NY, US); above Salailua, *Christophersen* 2762 (Bish, K, NY, US); Salailua-Lataitai, *Christophersen* 2632 (Bish, US); above Sili, *Christophersen* 3206 (Bish, K, NY, US). UPOLU: *Horne* 7 (K); Mulifanua, *Reinecke* 122 (TYPE COLL., BM, K, US); Ululaloa, *Hochreutiner* 3435 (type of *D. albiflorum*, fragment seen from De Candolle Herbarium, Conservatoire Botanique, Genève); near Apia, *Rechinger* 1173 (BM, US); Moa Moa plantations, *Eames* 182 (Bish, K, NY). TUTUILA: Pago Pago, *Bryan* 1006 (Bish). Samoa, without definite locality: *Betche* (type of *D. betchei*, fragment seen from De Candolle Herbarium, Conservatoire Botanique, Genève), *Betche* 14 and *Whitmee* 18 (source of the record for *D. amooroides*, fragments seen from De Candolle Herbarium), *Whitmee* 95, part (K), 199 (K), 200, part (K), *Horne* (GH).

WALLIS ISLANDS: UVEA: ? *Burrows* W20 (Bish).

HORNE ISLANDS: FUTUNA: ? *Burrows* 11 (Bish).

This very distinct species is readily distinguished from its allies, the Fijian *D. seemannii* and *D. hornei*, by the obvious foliage and floral characters mentioned in my key. In sterile condition, however, it is not readily separated from *D. samoense*, a species with very different flowers and fruits. The sterile and inadequate specimens from the Wallis and Horne Islands are questionably referred to *D. maota*. They agree well with Samoan material in shape and texture of leaflets but have slightly longer than average petiolules.

Fragments of the types of *D. betchei* and *D. albiflorum*, kindly lent me by Prof. Baehni, precisely agree with specimens of *D. maota*, and nothing in the original descriptions indicates reason for questioning this disposition. The petals of *D. betchei* are said to be 4, but the one flower available has them 5, as usual for *D. maota*. All flowers examined of various specimens have 5 petals, but possibly there is some variation in this respect. The leaflets of *D. albiflorum* are said to be 13×2 cm.; these would be very narrow for the species, but leaflets with

proportions approaching these are found in *Bryan* 1006. Prof. Baehni has also permitted me to examine fragments of *Whitmee* 18 and *Betche* 14, the bases of de Candolle's Samoan record for *D. amooroides*, and I find these specimens to be typical for *D. maota*.

It may be noted that both Setchell and Christophersen, in their discussions of Samoan Meliaceae, account for only three species of *Dysoxylum*, although they refrain from reducing the three additional names proposed by de Candolle. My observations bear out the conclusion that only three species of the genus occur in Samoa (*D. samoense*, *D. huntii*, and *D. maota*).

11. **Dysoxylum** (§ *Didymocheton*) **tenuiflorum** A. C. Sm. sp. nov.

Arbor *D. maota* Reinecke samoensi valde affinis, foliolis paucioribus laminis plerumque ovato-ellipticis basi inconspicue inaequilateralibus, sepalis paullo minoribus, corollae lobis angustioribus, tubo stamineo et disco textura leviter tenuioribus differt.

Tree 8–20 m. high, sometimes spreading, the branchlets terete, sparsely and obscurely strigillose distally, soon glabrate; leaves and inflorescences aggregated toward apices of branchlets, the leaves (20–) 25–50 cm. long, the petiole, rachis, and petiolules slender, terete, glabrous or very sparsely strigillose, the petiole 4–13 cm. long, slightly swollen at base; leaflets (5–) 7 or 9, the petiolules 1–4 mm. long (on distal margin, sometimes up to 7 mm. on proximal margin), the blades papyraceous, pale greenish and rugulose when dried, the middle lateral ones ovate- or oblong-elliptic, 9–17 cm. long, 4–6.5 cm. broad, at base obviously but not conspicuously inequilateral, broadly obtuse (rounded on distal side), at apex gradually narrowed into an obtuse acumen 10–15 mm. long, the basal leaflets reduced in size, the terminal leaflet similar to the laterals or slightly smaller, acute at base on a petiolule to 2 cm. long; venation of leaflets pale or yellowish, the costa elevated above, prominent beneath, the secondaries 7–12 per side, spreading, nearly plane above, elevated beneath, the veinlet-reticulation inconspicuous; leaflet-blades glabrous or usually barbellate in nerve-axils beneath with pale tangled hairs less than 1 mm. long; inflorescence supra-axillary, broadly or narrowly paniculate, at anthesis 15–40 cm. long, the peduncle (3–6 cm. long), rachis, and branches slender, essentially glabrous, the branches several or numerous, spreading, up to 10 cm. long; bracts minute, deltoid, less than 1 mm. long, acute, like the bracteoles dorsally strigillose-puberulent; flowers subsessile, subtended by about 10 closely imbricate bracteoles, these membranaceous, broadly deltoid, ciliolate-margined, the outermost about 0.5×1 mm., the innermost up to 1.2×1.5 mm., simulating sepals and forming a cupule; sepals 5, free, in texture and indument similar to bracteoles, at length glabrate, ovate-suborbicular, 1–1.7 mm. long, 1.3–2 mm. broad, rounded at apex; corolla thin-

carnose, at anthesis about 12 mm. long, copiously strigose-puberulent without (hairs 0.1–0.2 mm. long, predominantly retrorse), glabrous within, composed of 5 petals eventually strongly reflexed and free in the distal two-thirds, these oblong-ligulate, 1.2–1.6 mm. broad, subacute and minutely inflexed at apex; staminal tube submembranaceous, slightly shorter than corolla, strigillose in free portion without, glabrous within, crenulate at apex with 10 emarginate lobes 0.7–1 mm. long; stamens 10, affixed between the lobes of the tube about 1 mm. from apices, the anthers sessile, oblong, 1–1.2 mm. long, obtusely mucronate and slightly exserted; disk thin-carnose, cylindric, about 4.5 mm. long and 1.5–2 mm. in diameter, obscurely crenulate at apex with 5 minute lobes, sparsely and very minutely retrorse-puberulent without, retrorse-strigillose within (hairs 0.1–0.15 mm. long); ovary conical, hispidulous-strigillose with stramineous hairs 0.3–0.4 mm. long, the locules 3, each with 2 collateral-superposed ovules (fruiting locules 4 ex Bryan), the style terete, stout, 9–10 mm. long, glabrous distally, the stigma peltate-capitate, about 1 mm. in diameter, obscurely 3-lobed when young; fruit subtended by subpersistent sepals, subglobose, about 2.5 cm. in diameter, the pericarp rugulose, without obvious longitudinal ridges, very densely velutinous with hairs less than 0.1 mm. long.

Type in the herbarium of the New York Botanical Garden, collected in forest on limestone formation, Kambara, Fiji, alt. 0–100 m., March 2, 1934, by A. C. Smith (No. 1247). Duplicates at Bish, GH, K, US, etc.

ADDITIONAL SPECIMENS EXAMINED:

FIJI: TAVEUNI: Western slope, between Somosomo and Wairiki, *Smith* 717 (Bish, GH, K, NY, US). LAKEMBA: Northwestern lowland forest, *Bryan* 530 (Bish).

DISTRIBUTION: Fiji, thus far known only from the three islands cited above, in the eastern part of the archipelago. It is a tree of lowland forest, occurring at elevations up to 300 m. (on Taveuni); the corolla and staminal tube are cream-white, and the fruit (*Bryan* 530) is green with brown pubescence.

LOCAL NAMES: I noted the names of *tokai* (1247) and *tarawau tangane* (717), but I do not feel sure that either name was correctly applied by my informants.

The new species is closely related only to the Samoan *D. maota*, differing most obviously in its reduced number of leaflets. The flowers of the two entities are quite similar, those of the new species being a trifle the more slender and delicate in texture; the leaflets of *D. maota* are usually the narrower in proportion and have very conspicuously inequilateral bases. The new species differs from its relatives in Fiji, *D. seemannii* and *D. hornei*, by the several obvious characters stated in my key; these three Fijian species of § *Didymocheton* are actually not closely related to one another.

12. Dysoxylum (§ *Didymocheton*) hornei Gillespie in Bishop Mus. Bull. 83: 12. *fig. 13.* 1931.

Didymocheton hornei Harms in Nat. Pfl. ed. 2. 19b1: 157. 1940.

Dysoxylum hornei is a very distinct species of § *Didymocheton*, differing from its allies in our region in its reduced number of stamens, smaller corolla, which is often only 3- or 4-lobed, and its short and usually glabrous disk. Even when the corolla-lobes are 5, *D. hornei* has only 5 or 6 (rarely 7) stamens. The species is further characterized by its comparatively few and nearly sessile leaflets, of which the distal half of the blade is shorter than the proximal half (the reverse of the usual condition in the genus). The inflorescence is comparatively narrow, with the lateral branches insignificant in length.

Gillespie's species is not entirely uniform, however. Typical specimens have the leaflets persistently pubescent on the costa beneath, whereas certain specimens, scattered within the range of the species, have the leaflets quite glabrous and in other respects have a more limited and closer indument than typical. I propose to separate these latter specimens from the typical form as var. *glabratum*. The two varieties may be distinguished as follows:

Leaflets persistently hispidulous or at least obviously puberulent on costa beneath, often also pubescent on lower surface; bracteoles and sepals copiously strigillose without (hairs 0.1–0.3 mm. long); corolla copiously sericeous-strigillose without (hairs 0.1–0.3 mm. long); corolla-lobes usually 3 or 4, less commonly 5; ovary with hairs 0.5–1 mm. long ---------- var. *hornei*

Leaflets complete glabrous, the costa beneath without indument; bracteoles and sepals often glabrous (or inconspicuously strigillose dorsally with hairs scarcely exceeding 0.1 mm. long); corolla minutely appressed-puberulent without (hairs 0.05–0.1 mm. long); corolla-lobes 5; ovary with hairs 0.2–0.3 mm. long---------- var. *glabratum*

12a. Dysoxylum hornei var. hornei.

TYPE LOCALITY: Vicinity of Namosi, Namosi Province, Viti Levu, Fiji; type, *Gillespie* 2863, cited below.

DISTRIBUTION: Fiji, thus far known only from Viti Levu and Ovalau, at elevations up to 1,100 m. Habitats of dense forest, partially open forest, and hillside thickets have been noted. The plant is a tree, often slender, 2–13 m. in height, with white or yellowish flowers.

LOCAL NAMES AND USES: *Kau toa* is recorded by Gillespie, *viviniura* by Degener (no. 15308). In connection with the latter, Degener notes that an extract of the leaves is used medicinally.

FIJI: VITI LEVU: Mba: Mountains near Lautoka [western base of Mt. Evans Range], *Greenwood* 1061 (A), 1061A (A, US); slopes of Mt. Nairosa, eastern flank of Mt. Evans Range, *Smith* 4046 (A, US); vicinity of Nandarivatu, *Gillespie* 4212 (Bish, GH, K); slopes of escarpment north of Nandarivatu, *Smith* 6263 (A, US); Mt. Matomba, near Nandarivatu, *Degener* 14419 (A, Bish, K, NY); hills between Nandala and Nukunuku Creeks, along trail from Nandarivatu toward Lewa, *Smith* 6193 (A, US). Nandronga & Navosa: Singatoka River,

Greenwood 834 (A, K, NY, US); Naruku, vicinity of Mbelo, near Vatukarasa, *Degener* 15308 (A, Bish, K, NY, US); vicinity of Mbelo, *Tabualewa* 15642 (A, Bish, K, NY, US). Serua: Mbuyombuyo, near Namboutini, *Tabualewa* 15610 (A, Bish, K, NY). Namosi: Mt. Naitarandamu, *Gillespie* 3318 (Bish); vicinity of Namosi, *Gillespie* 2863 (Bish TYPE, GH). Naitasiri: Tholo-i-suva, *B. E. Parham* 1068 (A); vicinity of Nasinu, *Gillespie* 3587 (Bish, GH). OVALAU: Lovoni Valley, *Horne* 233 (GH, K); Levuka, *Horne* 375 (GH, K). Fiji, without definite locality: *Gillespie* 4263 (Bish, juvenile).

12b. **Dysoxylum hornei var. glabratum A. C. Sm. var. nov.**

Arbor a varietate typica foliolis glabris, florum indumento parciore et breviore differt.

Tree, up to 15 m. high, with leaves similar to those of var. *hornei* but completely glabrous; bracteoles and sepals glabrous or very inconspicuously strigillose dorsally; corolla about 9 mm. long at anthesis, minutely appressed-puberulent without, the lobes 5, strongly reflexed at anthesis, 1–1.3 mm. broad; staminal tube sparsely strigillose without, the stamens 5 or 6, with anthers 0.7–0.8 mm. long; disk about 3 mm. long, glabrous or sparsely retrorse-strigillose on both sides; ovary minutely hispidulous-strigillose with stramineous hairs 0.2–0.3 mm. long.

Type in the herbarium of the Arnold Arboretum, collected in open forest near Nandarivatu, Province of Mba, Viti Levu, Fiji, alt. about 750 m., Feb. 4, 1941, by Otto Degener (No. 14267). Duplicates at Bish, K, NY, US, etc.

ADDITIONAL SPECIMENS EXAMINED:

FIJI: VITI LEVU: Vicinity of Nandarivatu, *Gillespie* 4220 (Bish, GH, NY, US); hills between Nggaliwana and Nandala Creeks, south of Nauwanga, *Smith* 5835 (A, US); hills between Nggaliwana and Tumbeindreketi Creeks, east of the sawmill at Navai, *Smith* 5881 (A, US). OVALAU: Lovoni Valley, *Horne* 141 (GH, K). TAVEUNI: Western slope, between Somosomo and Wairiki, *Smith* 730 (Bish, GH, K, NY, US).

DISTRIBUTION: Fiji, known from the islands of Viti Levu, Ovalau, and Taveuni, at elevations of 600–900 m. Habitats of dense to open forest have been noted. The plant is a tree, often slender, 4–15 m. high, with fragrant flowers (type collection) which are cream-white or greenish yellow, sometimes pink-tinged; the fruit has a brownish green velutinous indument.

LOCAL NAMES: I have noted the names *ndrengandrenga* (No. 5835) and *raidambo* (No. 730), neither of which is ordinarily used for the genus in Fiji.

13. **Dysoxylum (§ *Eudysoxylum*) gillespieanum A. C. Sm. sp. nov.**

Arbor foliolis subcoriaceis manifeste petiolulatis, fructibus infra folia aggregatis valde stipitatis pericarpio coriaceo glabrato, *D. lenticellari* Gillespie affinis, petiolis petiolulisque manifeste canaliculatis, foliorum indumento strigilloso subpersistente, fructibus paucis infra folia aggregatis pericarpio haud lenticellato differt.

Tree, up to 25 m. high, the branchlets robust, terete, rugulose, at first brownish and copiously strigillose or puberulent with pale hairs about 0.2 mm. long, at length glabrate, cinerascent; leaves aggregated toward apices of branchlets, 14–27 cm. long, the petiole, rachis, and petiolules densely but sometimes inconspicuously pale-strigillose or puberulent like young branchlets, the petiole 3–5 cm. long, deeply canaliculate, slightly swollen at base; leaflets 7 or 9, subopposite or alternate, the petiolules slender, canaliculate, 7–15 mm. long, the blades subcoriaceous, drying dark green or brownish, the middle lateral ones oblong-elliptic, 5.5–9 (–11) cm. long, 3–4.5 cm. broad, obtuse or rounded at base (distal side the longer), obtuse or obtusely short-acuminate at apex, the venation comparatively inconspicuous, the costa plane or slightly grooved above, elevated beneath, the secondary nerves 7–10 per side, spreading, plane above, slightly elevated beneath, the veinlet-reticulation immersed, the basal leaflets slightly reduced; leaflet-blades glabrous or sparsely strigillose above, minutely punctate beneath and inconspicuously strigillose with colorless hairs 0.1–0.2 mm. long, or sometimes copiously hispidulous especially along costa and secondaries with hairs to 1 mm. long, eventually essentially glabrate; inflorescences not seen; fructescences arising from branchlets below leaves, reduced and comparatively simple, the rachis stout, up to 3 cm. long, usually simple, sometimes reduced to a coarse woody glomerule, at length glabrate; fruits 1–5, each borne on a swollen cylindric stalk (calyx-tube) 5–8 mm. long, this rugulose, subpersistently strigillose, the calyx-lobes deciduous; fruit obovoid-ellipsoid, with 3 or 4 inconspicuous longitudinal ridges, at apparent maturity 3.5–4 cm. long and 1.5–2 cm. broad, conspicuously narrowed at base to a stipe 3–8 mm. long and about 5 mm. in diameter, rounded at apex, the pericarp coriaceous, rugulose, minutely strigillose toward base, eventually glabrate, elenticellate or with a few inconspicuous lenticels, 1.5–2 mm. thick, the locules 3, the dissepiments coriaceous, persistent; seeds apparently solitary in each locule, elongate-ellipsoid.

Type in the herbarium of the Arnold Arboretum, collected in dense forest on hills east of Nandala Creek, about 3 miles south of Nandarivatu, Province of Mba, Viti Levu, Fiji, alt. 850–970 m., Sept. 9, 1947, by A. C. Smith (No. 5955). Duplicate at US.

ADDITIONAL SPECIMENS EXAMINED:

FIJI: VITI LEVU: Mba: Vicinity of Nandarivatu, alt. 900 m., *Gillespie* 4198 (A, Bish).

DISTRIBUTION: Known only from the two specimens cited, obtained in essentially the same locality in north-central Viti Levu, Fiji; Gillespie notes the fruits as dull green in color.

Although the important diagnostic characters in *Dysoxylum* are found in the flowers, the two cited specimens seem definitely to repre-

sent an undescribed species of § *Eudysoxylum*. Because flowers are lacking I have not been able to place this species accurately in my key, but it seems certainly to be a close ally of *D. lenticellare*, with which it agrees in leaflet-texture and -shape. The fruiting inflorescences of *D. lenticellare* are usually ample and associated with the leaves, and the fruits are conspicuously lenticellate. The leaves of Gillespie's species have the petioles and petiolules subterete or merely flattened above, whereas those of the new species have them canaliculate, the petioles very conspicuously so. *Dysoxylum lenticellare* has glabrous leaflets, those of *D. gillespieanum* being more or less persistently strigillose beneath. The two available collections of the new species are not identical in foliage-indument. *Gillespie* 4198 has the leaflets copiously hispidulous on the costa and nerves beneath with hairs up to 1 mm. long and also densely but less obviously strigillose with appressed hairs about 0.2 mm. long. Only the latter type of indument occurs on the leaflets of the type, but in other respects the specimens are similar, and it can hardly be doubted that they represent the same species.

RECORD OF MELIACEAE TO BE EXCLUDED FROM THE REGION

Dysoxylum bijugum (Labill.) Seem. Fl. Vit. 37. 1865.

In making this new combination in Flora Vitiensis, Seemann refers to it his No. 104 (said to be from Viti Levu but indicated in the herbarium at Kew as being from Taveuni). The specimen is very inadequate, and I find no reason to suppose that it belongs to the Meliaceae, although I have been unable to identify it. Seemann's combination is based upon the New Caledonian *Trichilia bijuga* Labill. and is referred by de Candolle (in DC. Monogr. Phan. **1**: 506. 1878) to *Dysoxylum lessertianum* (Juss.) Benth., a species that apparently does not occur in Fiji.

SPECIES EXCLUDED FROM THE FAMILY

Koelreuteria elegans (Seem.) A. C. Sm. comb. nov.
Melia (?) *elegans* Seem. Fl. Vit. 36. 1865.
Koelreuteria vitiensis A. C. Sm. in Journ. Arn. Arb. **31**: 299. 1950.

Seemann's brief description of *Melia elegans* is quite inadequate for recognition of the plant, and the possibility of the species' representing a member of the Sapindaceae did not occur to me until the description and type collection were carefully scrutinized in connection with the present study of Meliaceae. There can be no doubt that Seemann's specimen represents a juvenile form of *Koelreuteria vitiensis*, in which the young leaflets are more coarsely serrate and more densely pilose than mature ones. The fact that the species was well established along the Mathuata coast as early as 1860 indicates that

it cannot have been a recent introduction, as suggested by me when I referred the plant to *Koelreuteria formosana* Hayata (in Sargentia 1: 55. 1942). While it is a satisfaction to place another puzzling Fijian binomial in its proper place, I regret that the discovery of the identity of *Melia elegans* was not made before I proposed the entity as a new species. The type collection is very similar to *Smith* 6429, also from Mathuata, a similarly sterile specimen. To my citations of 1950 should be added:

FIJI: VANUA LEVU: Mathuata: Along coast, *Seemann* 64 (GH, K TYPE).

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[Synonyms in *italics*. Page numbers of principal entries in **boldface**]