FIJIAN PLANT STUDIES

BY
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INTRODUCTION

This paper is based on the Fijian plants collected in 1933 and 1934 under the auspices of Bernice P. Bishop Museum and Yale University. The islands Vanualevu, Kandavu, Koro, Taveuni, Vanua Mbalavu, Moala, Kambara, and Fulanga were visited and 2,008 numbers collected. A report on this trip has been published[1].

Essentially complete sets of the collection have been distributed to the following herbaria: Bernice P. Bishop Museum; New York Botanical Garden; Royal Botanic Gardens, Kew; Museum d'Histoire Naturelle, Paris; U. S. National Museum; Botanisches Museum, Berlin-Dahlem; Gray Herbarium; University of California; Rijksmuseum, Stockholm; Buitenzorg; and Yale School of Forestry (numbers accompanied by wood specimens). Types of all species and varieties described in this paper are deposited in the herbarium of Bernice P. Bishop Museum, unless otherwise mentioned.

I have examined many of the older collections of Fijian plants, including most of the types. Herbaria consulted will be indicated in this paper by the following letters: British Museum (BM); Gray Herbarium (G); Royal Botanic Gardens, Kew (K); New York Botanical Garden (NY); U. S. National Herbarium (US). I wish to thank the directors of these institutions for the many privileges accorded me. I have also examined plants collected and named by the late Dr. John W. Gillespie. In citing these I have mentioned no place of deposit; Gillespie's plants are deposited in the herbarium of Bernice P. Bishop Museum, with many duplicates at the University of California, Gray Herbarium, and New York Botanical Garden.

My sincere thanks are due to Bernice P. Bishop Museum and to Yale University for the funds which made the collection possible, to the New York Botanical Garden for the opportunity to continue herbarium work on Fijian plants, to Dr. E. D. Merrill for his interest in the problem and his willing preliminary determinations, and to Professor S. J. Record for his timely suggestions based on examination of the woods. I have been fortunate in enlisting the aid of many specialists, some of whom have permitted their work to be included in this paper. I take this opportunity to thank Dr. M. A. Howe (Algae), Dr. C. W. Dodge (Lichenes), Dr. Fr. Verdoorn (Hepaticae), Mr. E. B. Bartram (Musci), Prof. C. Christensen (Filicales), Dr. H. Nessel

[1] Smith, A. C., Plant collecting in Fiji: New York Bot. Gard., Jour., vol. 35, pp. 261-280, figs. 1-7, 1934.

(*Lycopodium*), Mr. A. H. G. Alston (*Selaginella*), Dr. M. Burret (Palmae), Dr. A. S. Hitchcock (Gramineae), Dr. H. K. Svenson and Dr. H. Uittien (Cyperaceae), Prof. T. G. Yuncker (*Peperomia, Cuscuta*), Mr. C. Schweinfurth (Orchidaceae), Dr. B. H. Danser (Loranthaceae), Mr. V. S. Summerhayes (*Ficus*), Prof. Fr. Markgraf (*Gnetum,* Apocynaceae), Prof. H. J. Lam (Burseraceae, Sapotaceae, Verbenaceae), Dr. H. Sleumer (*Casearia*), Dr. S. J. van Ooststroom (Convolvulaceae), and Dr. J. Th. Koster (Compositae).

Most of the drawings here published were made by Miss Margaret Sörensen, whose accurate work has been of greatest assistance. Drawings of *Peperomia* are by Professor Yuncker, of *Casearia* by Dr. Sleumer, of *Northia* by Professor Lam, and of Apocynaceae by Professor Markgraf. Mr. E. Y. Hosaka has also contributed several drawings.

In this paper three families (Triuridaceae, Hippocrateaceae, and Begoniaceae) are adequately reported from Fiji for the first time[2]. Ninety-one species and seven varieties are described as new; five new genera and two new sections are proposed. In addition it has been found necessary to propose twenty-seven new combinations and five new names. The following twenty-six genera are reported from Fiji for the first time (*Hibbertia* was inadequately mentioned by Horne): *Craspedodictyum* (Polypodiaceae), *Merinthosorus* (Polypodiaceae), *Sciaphila* (Triuridaceae), *Exocarpus* (Santalaceae), *Fissistigma* (Annonaceae), *Cyathocalyx* (Annonaceae), *Zanthoxylum* (Rutaceae), *Atalantia* (Rutaceae), *Salacia* (Hippocrataceae), *Alectryon* (Sapindaceae), *Tetrastigma* (Vitaceae), *Corchorus* (Tiliaceae), *Microcos* (Tiliaceae), *Hibbertia* (Dilleniaceae), *Begonia* (Begoniaceae), *Mooria* (Myrtaceae), *Tristania* (Myrtaceae), *Pagiantha* (Apocynaceae), *Bikkia* (Rubiaceae), *Sukunia* (new genus Rubiaceae), *Hedstromia* (new genus Rubiaceae), *Calycodendron* (new genus Rubiaceae), *Eumorphanthus* (new genus Rubiaceae), *Gillespiea* (new genus Rubiaceae), *Gynochthodes* (Rubiaceae), *Northia* (Sapotaceae).

Since this paper is intended as preliminary to more intensive work on the Fijian flora, only new or rare species are mentioned. No attempt has been made to list all the species known from Fiji or even all the species in the present collection, which includes most of the common plants.

[2] Horne (A year in Fiji, London, 1881) mentioned *Begonia*, but entirely without discussion or specific name.

PTERIDOPHYTA

FILICALES

By C. CHRISTENSEN

HYMENOPHYLLACEAE

Genus TRICHOMANES Linnaeus

Trichomanes caespifrons C. Christensen, new species (fig. 1).

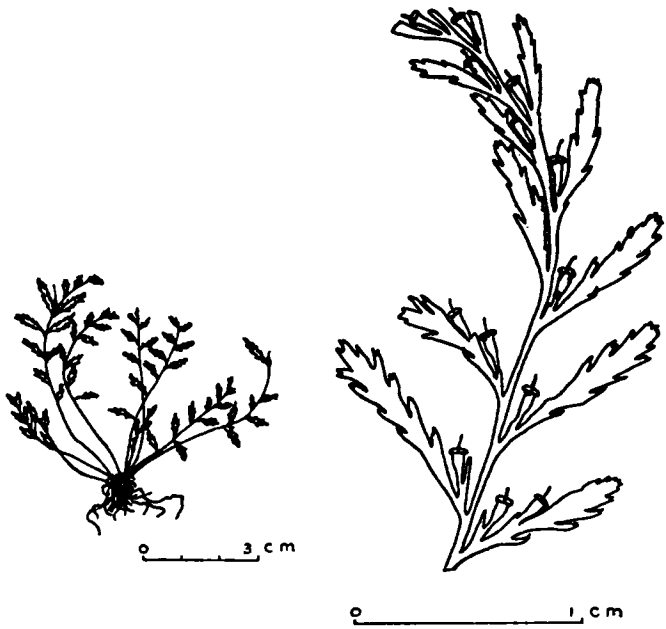

FIGURE 1.—*Trichomanes caespifrons.*

Rhizomate parvo perbrevi, foliis numerosis caespitosis; stipite filiformi, 2-5 cm longo, tereti vel juvenili angustissime marginato-alato, pilis brevibus nonnullis deciduis sparse praeditis; lamina lanceolata vel subdeltoidea, 4-5 cm longa, 1.5-2 cm basi lata, parte inferiore bipinnatifida, sursum pinnata vel saepius in acumen spiciformem 1-1.5 mm latum terminante, textura firma, colore lutescenti-viridi; rachi basi tereti, sursum anguste marginato-alata; pinnis majoribus 1 cm inter se remotis, obliquis, subsessilibus, basi inaequalibus, postice longe cuneatis antice auriculatis, auricula sive pinnula basali fere libera, sorifera, supra eam linearibus vel spathulatis, obtusis, pinnatifidis, 1-1.5 cm longis, 2 mm latis; lobis valde obliquis, plerisque apice inaequaliter bidentatis; venis crassis fere contiguis, e costa sub angulo 10-15° excurrentibus, in lobis saepe furcatis, ramis convergentibus; soris axillaribus, 1 rarius 2 in pinnula, in segmentis partis apicalis frondis terminalibus, pinnula sorifera saepe parenchymate destituta vel dente interna praedita; indusio turbinato 1 mm longo, ore integro expanso, receptaculo filiformi longo exserto curvato.

Kandavu: hills above Namalata and Ngaloa Bays, on wet bank in forest, altitude 200-400 meters, October 13, 1933, Smith no. 78 (type).

In soral characters the new species resembles *T. pyxidiferum* Linnaeus and its allies; in the remarkably thick veins it resembles *T. vieillardii* van den Bosch. It differs greatly from these by its very small, not filiform, rhizome with densely caespitose leaves. The thick veins, which run out from the strong costa at a very narrow angle, sometimes nearly parallel with it before entering the lobes, are also sharply characteristic.

POLYPODIACEAE

Genus **DRYOPTERIS** Adanson

Dryopteris pubirachis (Baker) C. Christensen.

Dryopteris pubirachis (Baker) C. Christensen: Ind. Fil., p. 287, 1905.

Dryopteris mataanae Brause: Notizbl., vol. 8, p. 139, 1922.

Vanualevu: Mbua, summit of Mount Seatura, altitude 700-830 meters, Smith no. 1669.

An epiphyte in dense forest. This is evidently the species referred to by Copeland (B. P. Bishop Mus., Bull. 59, p. 41, 1929) as *D. viscosa* (J. Smith) Kuntze. It differs from that Malayan species by the rather dense scales, gray puberulence, and lack of glands on the stipe and rachis. The present collection is identical with the Samoan type.

Dryopteris maxima (Baker) C. Christensen.

Dryopteris maxima (Baker) C. Christensen: Ind. Fil., p. 277, 1905.

Vanualevu: Thakaundrove, Natewa Peninsula, Uluingala, altitude 600-820 meters, Smith no. 1981. Taveuni: summit of Uluingalau, altitude 1,100-1,220 meters, Smith no. 913.

The collections were made in wet dense forest; the caudex is stout and usually subterranean, the stipe 50 cm long, the frond 1 meter long. Although rather different, the two specimens are referred here from the description Smith no. 1981 differs slightly from *D. subarborea* (Baker) C. Christensen and is perhaps conspecific with it. No. 913 fits more closely the description, of *D. maxima,* although it is smaller. Being indusiate, it cannot be referred to *D. gillespiei* Copeland.

Genus BLECHNUM Linnaeus

Blechnum species.

Vanualevu: Thakaundrove, Natewa Peninsula, Uluingala, altitude 820 meters, Smith no. 1998.

This fern, locally known as *suvi,* is fairly common on the crests of high

ridges. Its stipes attain a length of 3 meters, its fronds of 2 meters. The collector has never found it fertile. It falls into *B. capense* (Linnaeus) Schlechter, *sensu latissimo,* from which at least *B. procerum* (Forster) Swartz must be segregated. The sterile leaf of the Fijian specimen differs considerably from all forms of *B. procerum* known to me by having its stipe, rachis, and costules beneath densely chaffy with woolly pale scales, and its stipe and rachis besides with several larger stiffer lanceolate castaneous pale-margined scales. The pinnae are very long (30 by 2.5 cm) and very close, imbricating. Possibly the collection represents a new species.

Genus ASPLENIUM Linnaeus

Asplenium phyllitidis Don.

Asplenium phyllitidis Don: Prodr. Fl. Nepal., p. 7, 1825.

Fulanga: in forest on limestone formation, terrestrial, Smith no. 1124. Not previously reported from Fiji.

Asplenium bipinnatifidum Baker.

Asplenium bipinnatifidum Baker: Syn. (ed. 1), p. 221, 1867.

Asplenium oceanicum C. Christensen: Ind. Fil., p. 124, 1905.

Vanualevu: Thakaundrove, Smith nos. 416 and 1985; Moala: Smith no. 1372.

As suggested by Copeland (B. P. Bishop Mus., Bull. 59, p. 63, 1929), *A. bipinnatifidum* and *A. oceanicum* are evidently forms of one species to which the former name must be applied. *A. oceanicum* is identical with the older *A. lauterbachii* Christ from New Guinea. *A. bipinnatifidum* grows in Fiji on rocks and humus in forests at altitudes of from 400 to 800 meters. It is interesting to note that a similar variable series of forms is found in a recent New Guinea collection by Brass.

Genus CRASPEDODICTYUM Copeland

Craspedodictyum spathulatum C. Christensen, new species (fig. 2).

Rhizomate breve repente, pilis nigris cylindricis vestito, radicibus dense brunneo-tomentosis; stipitibus caespitosis, ad 35 cm longis, purpurascentibus sursum stramineis nitidis glaberrimis sulcatis; lamina indivisa spathulata, 30 cm longa, 3-4 cm infra apicem acutum vel abrupte et brevissime acuminatum 6-8 cm lata et deinde basin versus longissime cuneatim attenuata, herbacea (juvenili tenuissime membranacea transparente), glaberrima, marginibus planis, anguste cartilagineo-marginatis; venis sub angulo 45° excurrentibus, simplicibus vel furcatis, intus marginem duas series areolarum 5-6-angularium formantibus; soris angustissimis, e costa ad reticulum marginalem extensis; paraphysibus nullis.

Vanualevu: Mbua, southern slope of Mount Seatura, altitude 400 meters, April 28, 1934, Smith no. 1689 (type); Thakaundrove, eastern slope of Mount Ndikeva, altitude 400 meters, Smith no. 1912.

Both collections were terrestrial, forming large clumps in dense forest. This is presumably *Syngramma wallichii* of Copeland's "Ferns of Fiji" (B. P. Bishop Mus., Bull. 59, p. 74, 1929). Copeland himself thought it quite possible that the Fijian specimens were distinct. The species differs manifestly from *S. wallichii* by its spathulate and downwards long attenuate fronds,

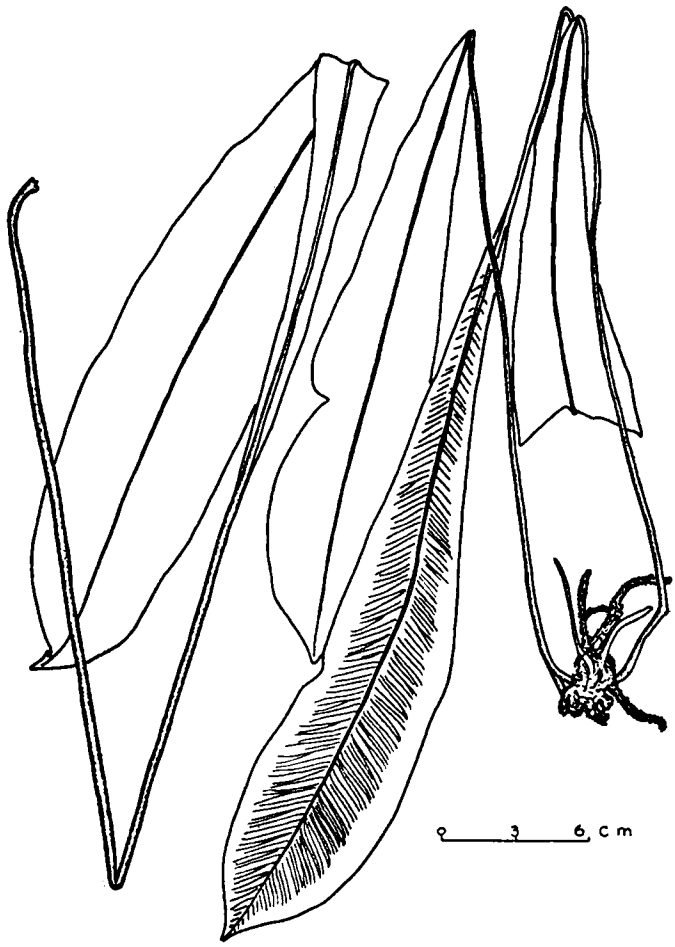

FIGURE 2.—*Craspedodictyum spathulatum.*

and belongs rather to *Craspedodictyum* Copeland, which is distinguished from *Syngramma* by digitate leaves and the absence of paraphyses (Phil. Jour. Sci., vol. 6, p. 84, 1911). As our new species has simple fronds, unlike all known species of *Craspedodictyum,* the genus would seem to be weakly characterized, but nevertheless I regard it as a good one, marked not only by the lack of filamentous paraphyses, but also by the shape and thin tex-

ture of the frond. The young fronds of the new species are transparent in the same degree as those of *C. magnificum* Copeland (Phil. Jour. Sci., vol. 38, p. 147. 1929).

Genus **PTERIS** Linnaeus

Pteris tremula R. Brown.

Pteris tremula R. Brown: Prodr. Fl. N. Holl., p. 154, 1810.

Kandavu: on cliff near Cape Washington, near sea level, western end of island, Smith no. 308.

Not previously reported from Fiji.

Genus **HUMATA** Cavanilles

Humata aemula (Mettenius) Carruthers.

Humata aemula (Mettenius) Carruthers: Seemann, Fl. Vit., p. 335, 1873.

Taveuni: western slope, between Somosomo and Wairiki, altitude 700-900 meters, Smith no. 742.

This can hardly be the plant mentioned by Copeland (B. P. Bishop Mus., Bull. 59, p. 87, 1929) as *H. gaimardiana* (Gaudichaud) J. Smith. It is distinguished from that species by having thinner texture, the veins not distinct or blackish, all lower pinnae equally crenate-lobate at both sides, and the large ovate hyaline indusia protruding distinctly beyond the edge of the segment. Previously known from the New Hebrides.

Genus **MERINTHOSORUS** Copeland

Merinthosorus drynarioides (Hooker) Copeland.

Merinthosorus drynarioides (Hooker) Copeland: Phil. Jour. Sci., vol. 6, p. 92, 1911.

Vanualevu: Thakaundrove, Mount Mbatini, 700-1,030 meters, crest of range, Smith no. 643.

An epiphyte in dense thickets, apparently rare, as only one plant was seen. The sterile portion of this plant is indistinguishable from *Merinthosorus drynarioides*, previously known from New Guinea and the Solomon Islands. The young fertile pinnae of Smith no. 643 bear a close resemblance to those of *Aglaomorpha meyeniana* Schott, but have linear sori. I believe that the older sori are confluent, forming long coenosori; if this is so, *Merinthosorus* cannot be maintained as a genus, and the species should be transferred to *Aglaomorpha*. Neither genus has previously been reported from Fiji.

Genus **ELAPHOGLOSSUM** Schott

Elaphoglossum feejeense Brackenridge.

Elaphoglossum feejeense Brackenridge: Bot. U. S. Expl. Exped., vol. 16, p. 72, 1854.

Vanualevu: Thakaundrove, Mount Mariko, Smith no. 454; Mount Mbatini, Smith no. 675. Both epiphytes in dense forest, altitude 600-800 meters.

FIGURE 3.—*Antrophyum smithii.*

Although rather different in shape of frond, these two collections are referred here with doubt. No. 675 agrees best with the description; no. 454 most resembles *E. vieillardii* (Mettenius) Moore, but has different scales and a short stipe. I have the same form from Samoa; it cannot be referred to the other two species listed by Copeland (B. P. Bishop Mus., Bull. 59, p. 97, 1929). The small scales of the surface, described by Brackenridge, are in both the present specimens altered to glutinose dots, as is the case in older leaves in many species of the genus.

Genus VITTARIA Smith

Vittaria rigida Kaulfuss.

Vittaria rigida Kaulfuss: Enum., p. 193, 1824.

Kandavu: Smith nos. 155, 260. Vanualevu: Thakaundrove, Smith no. 1809. Moala: Smith no. 1342. Epiphytic, at elevations of 300-700 meters.

I presume that Copeland (B. P. Bishop Mus., Bull. 59, p. 103, 1929) has referred specimens similar to these to *V. elongata* Swartz, an earlier name. I do not see how the two species can be clearly distinguished. The fronds of *V. rigida* are smaller and more rigid, but the difference is very slight.

Genus ANTROPHYUM Kaulfuss

Antrophyum smithii C. Christensen, new species (fig. 3).

Rhizomate breve, paleis clathratis nigris iridescentibus, e basi ovata lanceolatis, longe acuminatis, distanter ciliatis; foliis caespitosis, stipite exalato fere nullo, lamina oblanceolata, ad 30 cm longa, supra medium 2-2.5 cm lata, acuminata, basin versus longe attenuata, firmiter herbacea vel subcarnulosa, subtus pallidiore, costa lata pallida utrinque applanata, supra medium laminae evanescente; venis 4 series areolarum magnarum utrinque costae latere formantibus, costalibus 2-2.5 cm longis; soris superficialibus, maturis crassis, 2 vel 3 series costa parallelas, rarissime reticulatim confluentes formantibus, paraphysibus brevibus rubinis ramosis, ramis capitatis, sporis triplanatis.

Taveuni: western slope, between Somosomo and Wairiki, altitude 700-900 meters, December 14, 1933, Smith no. 746 (type). Koro: eastern slope of main ridge, altitude 300-500 meters, Smith no. 986.

Both collections were epiphytic in dense forest. *A. smithii* is a near ally of *A. semicostatum* Blume, but has oblanceolate fronds much narrower and more resembling those of *A. novae-caledoniae* Hieronymus, but with superficial sori.

SPERMATOPHYTA

GYMNOSPERMAE

TAXACEAE

Genus DACRYDIUM Solander

Dacrydium lycopodioides Brongniart and Gris.

Dacrydium lycopodioides Brongniart and Gris: Bull. Soc. Bot. Fr., vol. 16, p. 329, 1869.

Vanualevu: Thakaundrove, Yanawai River region, Mount Kasi, altitude 300-430 meters, Smith no. 1773.

This species, previously known from New Caledonia, is the common *yaka* of Vanualevu. I have not observed the previously reported *D. elatum* (Roxburgh) Wallich growing on Vanualevu, but it is found on Vitilevu.

ANGIOSPERMAE

MONOCOTYLEDONEAE

PANDANACEAE

Genus PANDANUS Rumphius

Pandanus thurstoni Wright (fig. 4, *a*, *e*).

Pandanus thurstoni Wright: Kew Bull., 1894, p. 348, 1894.

Small tree, the stem very short and erect, the leaves densely aggregated, suberect or at length drooping or semi-prostrate; leaves linear, 2-4 meters long, 7-15 cm broad, gradually tapering to an acuminate apex, the margins spinulose (sparsely so near base, densely so above), the costa plane or slightly impressed above, elevated beneath, spinulose beneath distally; male inflorescences on short lateral branches about 8 cm long, proximally densely bracteate, the inflorescence fleshy, 2-3 cm long, less than 1 cm in diameter; flowers subsessile on lateral branches, consisting of an elongate carnose receptacle bearing 2-4 stamens distally, the anthers sessile, membranous, ovoid, 1-1.5 mm long, mucronate at apex; syncarps 5-13, subsessile on short stout branches, oblong-ovoid, 12-20 cm long, 8-10 cm broad; phalanges densely crowded, oblong-obovoid, 3-3.5 cm long, 6-9 mm broad, 5- or 6-angled, striate, tapering to a narrow base, surmounted by a single linear style about 8 mm long; seed solitary.

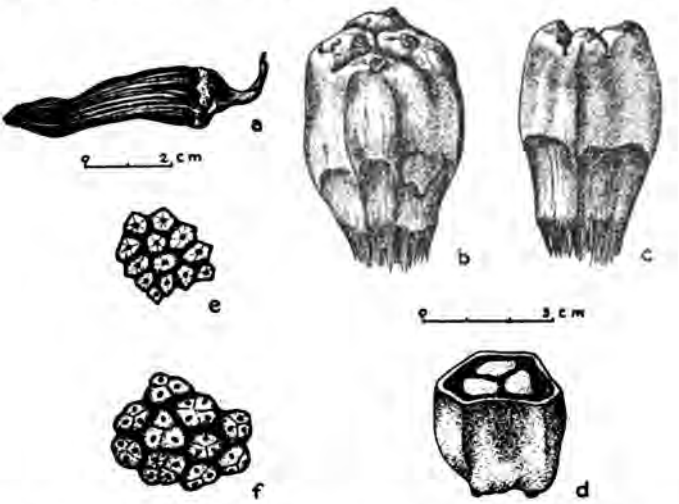

FIGURE 4.— *Pandanus: a, Pandanus thurstoni,* phalange; *b-d, Pandanus sinicolus,* showing phalange (*b, c*) and cross section of phalange (*d*); *e, Pandanus thurstoni,* fruit; *f, Pandanus sinicolus,* fruit.

Martelli (Univ. of Cal. Publ. Bot., vol. 12, p. 335, 1930) implies that the plant referred by Seemann (Fl. Vit., p. 281, 1868) to *P. caricosus* Rumphius is *P. thurstoni.* Seemann no. 650 (the only specimen cited in Flora Vitiensis) is represented at Kew by a specimen which is apparently juvenile.

Whether or not it belongs with *P. thurstoni* is a matter of conjecture, although Seemann's description of the plant and its uses applies well enough to *P. thurstoni,* which is apparently the *voivoi* or *kiekie* of the Fijians, who use it extensively in weaving their finest mats. The natives of Koro know the plant as *varawa* and also use it in weaving mats. I have never seen the species in cultivation, but the natives of Koro collect the leaves from the interior of the island, where considerable groves may be found in shady swampy forest. The species belongs to the Section *Acrostigma.*

Koro: swamp, altitude 500 meters, Smith no. 992. Vitilevu: near Suva, Thurston (type, K).

Pandanus (Section **Keura**) **sinicolus** A. C. Smith, new species (fig. 4, *b-d, f*).

Arbor parva ramosa, inter species mare Pacificum habitantes syncarpio solitario subsessili subgloboso, phalangiis obovoideis angulatis 3 (vel 4)-locularibus, stigmatibus subobliquis distinguenda; *P. boninensi* Warburg affinis, phalangiis multo minoribus differt.

Branching tree 2-4 meters high, the branchlets terminating in densely aggregated leaves surrounding the solitary syncarps; leaves coriaceous, linear, closely parallel-veined, about 1 meter long, 5-7 cm broad near base, gradually tapering to a long acuminate apex, the margins (except within 10 cm of base) regularly spinulose (teeth 1-3 per cm), the costa elevated and sharply spinulose distally beneath; syncarp solitary, sessile or nearly so, subglobose, 9-12 cm in diameter; phalanges crowded, obovoid, obovoid, 2.5-3 cm long, 1-2 cm broad, 5- or 6-angled; locules 3 (sometimes 4); stigma at the apex of each division subhippocrepiform, suboblique, about 2 mm in diameter.

Vanua Mbalavu: northern limestone section, April 2, 1934, Smith no. 1494 (type).

This plant was observed only in the locality of the "Bay of Islands," where it formed small compact thickets on limestone cliffs slightly above sea level. The natives of the region insisted that the common name for this species was *mbalaka* (usually applied to the palm genus *Balaka*) and distinguished it from the common *mbalawa* (*P. tectorius* Solander).

PALMAE

By M. Burret[8]

Genus BALAKA Beccari

Balaka spectabilis Burret, new species.

Palma circ. 8 m alta, caudice 10-15 cm diametro; spadix inter majores, robustiores, duplicato-ramosus, in parte ramosa 38 cm longus, in rhachi ut in ramis gibberulis carens, sed i. s. longitudinaliter angulatus; rami basi bractea haud producta, brevissima, late rotundata suffulti, primarii 11-13, laxe spiraliter inserti, quorum infimi 3-5 ramulos secundarios 5-2 exserentes, reliqui simplices; ramuli floriferi 10-18 cm circ. longi, inter validiores, glabri, ad florum insertiones vix flexuosi, ad spicem supra summi floris basin breviter apiculati; florum glomeruli sat laxe spiraliter dispositi, omnes 3-flori, flore femineo intermedio; bracteae floriferae humiles, sat explanatae, late rotundatae; flores

[8] See also Burret, Max, New Palms from Fiji: B. P. Bishop Museum, Occ. Papers, vol. 11, no. 4, 1935. Describes one new Samoan and eight new Fijian species of palms, and two new Fijian genera.

masculi inter majores: calyx 3 mm diametro, sepalis late imbricatis rotundatis; petala 8 mm longa, lineari-oblonga, extus longitudinaliter dense nervosa; stamina numerosa; antherae lineares, in dimidio dorso affixae; pistillodium basi ventricosum, in stylum longum tenuem stamina aequantem apice leviter dilatatum exiens; flores feminei: sepala late rotundata, margine ciliata, extus ut petala striato-nervosa; petala ovata imbricata, apicibus valvatis, breviter triangularibus.

Ovalau: in rain forest, altitude about 250 meters, October 14, 1924, E. H. Bryan no. 600 (type).

The bark is smooth and gray-green; the flowers are pale green with white stamens and pistils. I have seen only a spadix with flowers, there being neither leaves nor fruits. *B. spectabilis* has a rather large and much-branched spadix, without the small tubercles on the branches in the dried state, which are a characteristic feature of most species of the genus. The only species not sufficiently known and collected only in fruit is *B. longirostris* Beccari, from which our species differs in details of the spadix.

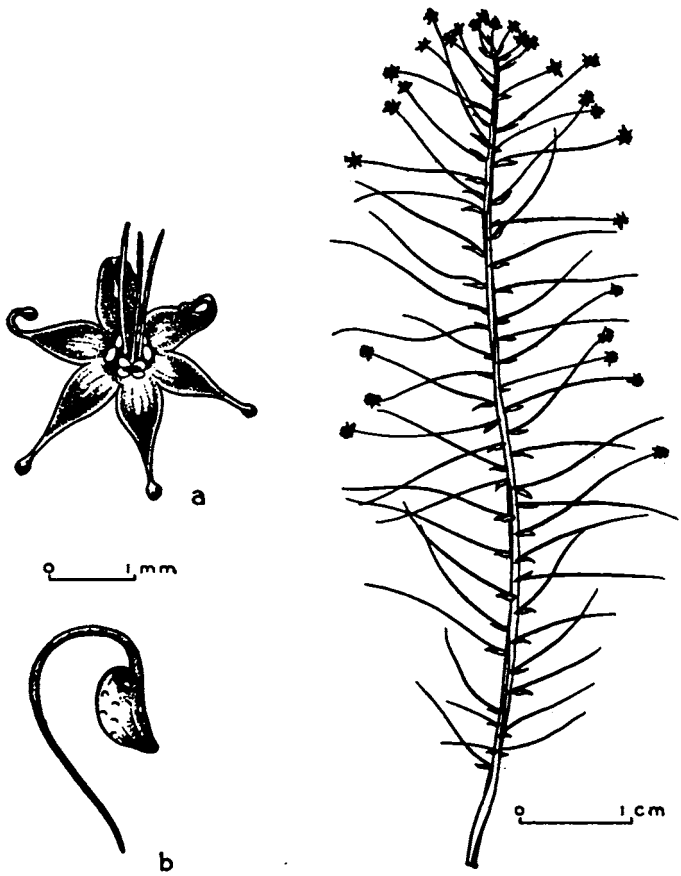

FIGURE 5.—*Sciaphila vitiensis: a*, staminate flower; *b*, a pistil.

TRIURIDACEAE

Genus SCIAPHILA Blume

Sciaphila vitiensis A. C. Smith, new species (fig. 5).

Saprophytum erectum, caule simplici, racemo multifloro, bracteis parvis, pedicellis gracilibus, staminibus 3 sessilibus, carpellis dense aggregatis distinguendum; a speciebus Pacifici occidentalis, e. g. *S. neo-caledonica* Schlechter, pedicellis longis appendiculis segmentorum perianthii longis differt.

Erect saprophyte, the entire plant purplish, at length becoming straw-colored, 8-14 cm high; stem simple, slender, bearing flowers in the distal half; raceme many-flowered (flowers 12-17 per cm); bracts oblong, membranous, about 1.5 mm long, acute at apex; pedicels slender, spreading, 8-12 mm long, the distal ones somewhat shorter; male flowers: perianth segments membranous, oblong, about 1 mm long (excluding appendage) and 0.5 mm broad, the apex attenuate into a filiform distally swollen appendage about 0.7 mm long, the appendage inflexed in bud, at length spreading and often deciduous; stamens 3, membranous, sessile on the minute receptacle, oblong-ovoid, about 0.5 mm on the long axis, 4-celled, dehiscing extrorsely; rudimentary styles (?) 3, nearly 1 mm long, evanescent; female flowers: perianth past maturity in our specimens, apparently similar to that of the male flowers but somewhat smaller and with less obvious appendages; pistils about 15 in a compact head, the ovary ellipsoid, at maturity about 1 mm long and 0.7 mm broad, slightly papillose, the style ventral, subterminal, filiform, slightly longer than the ovary.

Vanua Mbalavu: northern limestone section, forest, slightly above sea level, April 2, 1934, Smith no. 1486 (type).

The family has not previously been reported in the Pacific east of the New Hebrides. Schlechter (Bot. Jahrb. Engler, vol. 49, p. 71, 1912) describes the genus *Andruris* as including those species of *Sciaphila* which have the connective of the stamens filiform and produced. This organ, however, found in *S. vitiensis*, may well be the remnant of a sterile pistil.

CYPERACEAE

By H. K. Svenson and H. Uittien

Genus GAHNIA Forster

Gahnia stokesii F. Brown.

Gahnia stokesii F. Brown: B. P. Bishop Mus., Bull. 84, p. 113, 1931.

Kandavu: in thin forest on hills above Namalata and Ngaloa Bays, altitude 200-400 meters, Smith no 133.

Originally described from the Austral Islands, the species is found in the Hawaiian islands (Degener and Shear no. 8330) as well as in Fiji. It is probably widely distributed in the Pacific.

Gahnia vitiensis Rendle.

Gahnia vitiensis Rendle: Jour. Linn. Soc., vol. 39, p. 179, pl. 13, figs. 18-20, 1909.

Vanualevu: Thakaundrove, Mount Mbatini, in dense thickets on crest of range, altitude 700-1,030 meters, Smith no. 662.

I have not compared this specimen with the type, but the description and the amplexicaul scales shown in the figure leave little doubt of its identity. Since the achene has never been described, the following may be taken to supplement the original description:

Achene 2.5-3 mm long, ellipsoid, ochraceous, terete or obscurely trigonous, narrowed towards apex, non-trabeculate within, the apex (style base) subulate, sharp, 0.3 mm long; setae 2, beardless, 3-4 cm long.

Genus THORACOSTACHYUM Kurz

Thoracostachyum vitiense Uittien, new species.

Species *T. pandanophyllo* (F. v. Mueller) Domin omni ex parte simillima sed fructu majore ovoideo-ellipsoideo sensim acutato diversa.

Culmus 1 m longus, 3-4 mm diametro, obtuse trigonus, lateribus excavatis, basi foliatus, foliis 2-2.5 cm latis coriaceis trinerviis, margine scabris, hinc inde laevibus, apice longe acutatis, pallide viridibus; inflorescentia 10 cm diametro fere 100-spiculata, bracteis tribus suffulta, inferiore plus quam 30 cm longa; spiculae (defloratae) ad 8 mm longae, 3-5 mm latae, glumis 2.5-3 mm longis ovatis apice rotundatis; flores (plerique jam vetustate destructi vel ab insectarum larvis devorati) glumas superantes, squamellis 6, binis exterioribus navicularibus in carina minute setulosis, cum tertia anteriore aequilongis, interioribus trinis longioribus (3-4 mm longis), staminibus 3 in axillis squamellarum exteriorum, interdum 6 in axillis squamellarum omnium, filamentis linearibus flaccidis, antheris (una tantum a me visa) 1 mm longis, 0.25 mm latis; stigmata tria; nux ovoideo-ellipsoidea sensim acutata vel subacuminata, teres sed sulcis tribus profundis fere usque ad basin praeditis, laete brunnea nitida, 3 mm longa.

Vanualevu: Thakaundrove, Yanawai River region, Mount Kasi, in dense forest, altitude 300-430 meters, Smith no. 1786 (type).

A plant growing in dense clumps, locally known as ***kutukutu***. Although represented only by a single collection, the new species is readily separated from *T. pandanophyllum* (F. v. Mueller) Domin by the form of its nut, which in shape and size is like that of *T. floribundum* (Nees) Clarke, and 3-furrowed like that of *T. bancanum* (Miquel) Kurz.

ORCHIDACEAE

By C. Schweinfurth

The orchids of Fiji show a close alliance with those of the two neighboring groups, the New Hebrides on the west and Samoa on the east. Of the 108 numbers collected by Dr. Smith, eight are here described as new species. This study has been carried on in the Ames Botanical Laboratory, Harvard University, where duplicates of most numbers have been deposited.

Genus HABENARIA Willdenow

Habenaria alaeformis C. Schweinfurth, new species (fig. 6, *a*).

Herba terrestris, gracilis; folia prope medium numerosa, elliptico-lanceolata vel oblongo-lanceolata, caudata, membranacea; racemus longus, gracilis, multiflorus, inferne laxiflorus; flores parvi; sepala lateralia ovato-oblonga, uninervia, sub apice dorso mucronata; sepalum dorsale lanceolatum vel lanceolato-ovatum, concavum, apice obtuso cucullatum; petala ovata vel triangulari-ovata, plus minusve obliqua; labellum subcarnosum, profunde trilobatum; lobi laterales late patentes, oblique obovato-oblongi; lobus medius minor, ligulatus, apice rotundatus; calcar breve acutum.

FIGURE 6.—*Habenaria: a, Habenaria alaeformis,* lip; *b, Habenaria cynosorchidacea,* flower; *c, Habenaria maculifera,* flower.

Plant terrestrial, up to about 86.3 cm tall; roots fibrous, lanuginose, issuing from the base of the plant and the lower part of the stem; stem glabrous, leafy above the middle, the blades diminishing abruptly to leafy bracts above and diminishing more gradually to loose imbricating sheaths at the base; leaves narrowly elliptic-lanceolate or oblong-lanceolate, caudate-acuminate, gradually narrowed below to a more or less distinct winged petiole which is dilated into an infundibuliform sheath, the upper and lower blades sessile; blades about 15-22 cm long and 2.1-3.5 cm wide, membranous with a conspicuous midnerve in the dried specimens; inflorescence a slender many-flowered raceme, about 26.6 cm long, very loosely flowered toward the base; floral bracts shorter than the flowers, lanceolate, acuminate, 1- to 3-nerved; flowers small; lateral sepals ovate-oblong to oblong-lanceolate, about 5 mm long and 2 mm wide, subacute to obtuse, 1-nerved, dorsally carinate with the keel terminating in a subapical mucro, asymmetric; dorsal sepal lanceolate to lanceolate-ovate, concave, about 4-4.7 mm long and 2-2.3 mm wide, dorsally slightly carinate, obtuse and slightly cucullate at the apex; petals ovate to triangular-ovate, more or less asymmetric, up to 5 mm long and 3 mm wide, obtuse to rounded above, with 1 or 2 anastomosing nerves; lip deeply 3-lobed, about 3.1-4 mm long and 7-8.1 mm wide across the widely spreading lateral lobes, subfleshy in texture; lateral lobes asymmetrically obovate-oblong, slightly and irregularly crenulate on the posterior margin toward the apex; middle lobe smaller, ligulate (sometimes with a slightly dilated base), 2-2.6 mm long, abruptly rounded at the apex; disc with a transverse trilobulate thickening at the base; spur slenderly clavate-ellipsoid, acute, about 6 mm long, with an incurved apex; ovary twice or more surpassing the spur.

Kandavu: Mount Mbuke Levu, in dense forest, altitude 200-500 meters, October 23, 1933, Smith no. 257 (type; Herb. Ames no. 41969).

H. alaeformis is very similar in general appearance to numerous Polynesian species of *Habenaria*. It particularly resembles *H. carolinensis* Schlechter, but differs in having longer, very acuminate leaves, somewhat larger flowers, rather dissimilar lip, and acute spur. The specific name alludes to the shape of the lip. The perianth segments are greenish white.

Habenaria cynosorchidacea C. Schweinfurth, new species (fig. 6, *b*).

Herba terrestris, agrestis; folia duo radicalia, amplectentia, lanceolata vel ellipticooblonga, acuminata vel acuta; caulis gracilis, medio vagina ornatus; racemus abbreviatus, floribus duobus; flores parvi; sepala lateralia late ovato-elliptica, valde concava, obliqua; sepalum dorsale simile; petala oblique lanceolato-oblonga, apice rotundata; labellum segmenta cetera multo superans, valde trilobatum; lobi laterales lineari-ligulati; lobus medius unguiculatus, profunde bilobatus, lobulis lineari-ligulatis; calcar atque ovarium gracilia, perlonga.

Plant terrestrial, about 34.7 cm high; leaves 2, basal, sessile, clasping, issuing from a tubular abruptly acute sheath; blades oblong-lanceolate or elliptic-oblong, about 9.1-10 cm long and 2-2.8 cm wide, acuminate or abruptly sharp-acute, membranous with the midnerve rather prominent in the dried specimens; stem slender, glabrous, provided in the middle with a single infundibuliform acuminate sheath about 2.7 cm long; raceme abbreviated, apparently 2-flowered; floral bracts ovate-lanceolate, concave, up to 12 or 14 mm long, long-acuminate, much exceeded by the ovary; flowers small, membranous, glabrous except for the lip; sepals strongly concave; lateral sepals reflexed, broadly ovate-elliptic, asymmetric, about 5.5 mm long and 3.2 mm wide, acute or subacute, 3-nerved with the midnerve more or less carinate on the dorsal surface; dorsal sepal similar, broadly ovate-elliptic, about 5.2 mm long and 4.3 mm wide, subacute to obtuse; petals forming a galea with the dorsal sepal, asymmetrically oblong-lanceolate, abruptly rounded at the apex, about 5 mm long and 2 mm wide, 3-nerved; lip about twice surpassing the other segments, very deeply 3-lobed somewhat above the base with the midlobe deeply bilobed, densely papillose on the upper surface; lateral lobes linear-ligulate, slightly anteriorly falcate, about 4.9 mm long from the irregular rounded tip to the anterior junction with the mid-lobe and 1.9 mm wide above the middle; middle lobe with an oblong-cuneate claw about 3 mm long, then divided into two widely spreading linear-ligulate lobules about 4 mm long and 1.7 mm wide above the middle, minutely lobulate or subacute at the truncate apex; spur elongate, very slenderly cylindric, sometimes slightly dilated near the apex, about 2.5 cm long, nearly straight; ovary slenderly fusiform-cylindric, about 3.5 cm long; rostellum prominently and subequally 3-lobed, the stigmatic processes short, stout.

Moala: on Ndelaimoala, in open places among grasses and sedges, altitude 400 meters, March 22, 1934, Smith no. 1364 (type, Herb. Ames no. 41967).

H. cynosorchidacea strongly suggests *Cynosorchis fastigiata* Thouars, the type of its genus, but the structure of the column is different. It is apparently allied to *H. militaris* Reichenbach f. of Indo-China, but differs in having only basal leaves and much smaller flowers with different segments of the lip. The perianth segments are pale purple to white.

Habenaria maculifera C. Schweinfurth, new species (fig. 6, *c*).

Herba terrestris; caulis vaginis dense maculatis maxima pro parte tectus; folia prope medium numerosa, varia, inferne ovata vel elliptica, medio elliptico-vel oblongo-lanceolata, superne lineari-lanceolata; racemus longissimus, pergracilis; flores minimi; sepala

lateralia oblique elliptico-oblonga, cymbiformia, dorso prope apicem mucronata; sepalum dorsale elliptico-ovatum, concavum; petala oblique ovata vel triangulari-ovata; labellum subcarnosum, profunde trilobatum, basi callo transverso ornatum; lobi laterales lineares vel lanceolato-lineares, patentes; lobus medius oblongo-ovatus; calcar breve, anguste ellipsoideum.

Plant terrestrial, about 72.5 cm high; roots fibrous or tuberous, lanuginose; stem glabrous, almost entirely concealed up to the upper parts by loose infundibuliform sheaths which are produced into leaf-blades somewhat above the base of the plant, the entire stem and sheaths (except the portion above the upper leaves) densely dark-maculate; leaves polymorphic, mostly long-acuminate, cuneate-narrowed at the base, membranous in the dried specimens; the lowermost blade smallest, ovate, 2.2 cm long and 1 cm wide; the middle blades elliptic-lanceolate or oblong-lanceolate, up to about 20 cm long and 3.4 cm wide; the uppermost linear-lanceolate, 8.5 cm long and 1 cm wide near the base; raceme slender, many-flowered, loosely flowered at anthesis, about 29.1 cm long; floral bracts exceeding the flowers, lanceolate, long-acuminate, 1-nerved; flowers very small; lateral sepals cymbiform, obliquely elliptic-oblong, about 3.8 mm long and 1.5 mm wide, subacute to obtuse, 1-nerved, cucullate at the apex with a dorsal subapical mucro; dorsal sepal elliptic-ovate, concave, about 3 mm long and 1.5-1.7 mm wide, obtuse to rounded at the apex, 1-nerved; petals asymmetrically triangular-ovate, about 3 mm long and 1.8 mm wide near the base, obtuse to broadly rounded (sometimes obliquely bilobulate near the apex), 1-nerved; lip deeply 3-lobed, subfleshy, with a transverse callus at the base; lateral lobes spreading, linear, 2.2-2.9 mm long, obtuse or rounded at the apex; mid-lobe ovate-oblong, about 1.6-2 mm long and 1.2 mm wide near the base, broadly rounded at the apex; spur narrowly ellipsoid, about 5 mm long, subacute; column very short and stout.

Vanualevu: Thakaundrove, eastern slope of Mount Ndikeva, in dense forest, altitude 500 meters, June 6, 1934, Smith no. 1911 (type, Herb. Ames no. 41968); Mount Mariko, altitude 600-866 meters, Smith no. 427.

Smith no. 427 differs from the type in being a taller, more mature (and less perfect) plant about 99.2 cm high. The portion of the stem above the leaves (extending even into the rachis) is prominently maculate. The inflorescence is about 42.7 cm long, and the floral bracts are considerably shorter than the ovary. The parts of the perianth tend to be a little broader than those of the type.

H. maculifera appears to be related to *H. ponerostachys* Reichenbach f., from which it differs in its strongly maculate leaf-sheaths and relatively shorter lateral lobes of the lip. The perianth segments are yellowish green.

Genus ZEUXINE Lindley

Zeuxine sphaerocheila Fleischmann and Rechinger.

Zeuxine sphaerocheila Fleischmann and Rechinger: Denkschr. Math.-Naturw. Klasse K. Akad. Wiss. Wien, vol. 85, p. 251, t. 2, fig. 6, 1910.

Kandavu: Mount Mbuke Levu, terrestrial in dense forest, altitude 200-500 meters, Smith no. 255. Taveuni: western slope between Somosomo and Wairiki, terrestrial in dense forest, altitude 600 meters, Smith no. 798.

The two collections differ from the description in having erect stems (decumbent only at the base), rather longer scapes (up to about 30 cm tall),

shorter floral bracts (not surpassing the flowers) and somewhat shorter sepals. The perianth segments are white, the lip pink-tinged, the column yellow-tipped. While these collections undoubtedly represent an identical species, they differ from each other rather strikingly. No. 255 has narrower leaves than the type (up to 1.4 cm) and 1-nerved floral bracts. No. 798 differs from the type in having acute or rather obtuse and somewhat broader sepals. In this specimen (in which the flowers are better preserved), the basal calli of the lip appear to consist of two pairs of subquadrate lamellae which are lacerate or dentate at the apex.

Genus MALAXIS Solander

Malaxis brevidentata C. Schweinfurth, new species (fig. 7, *a*).

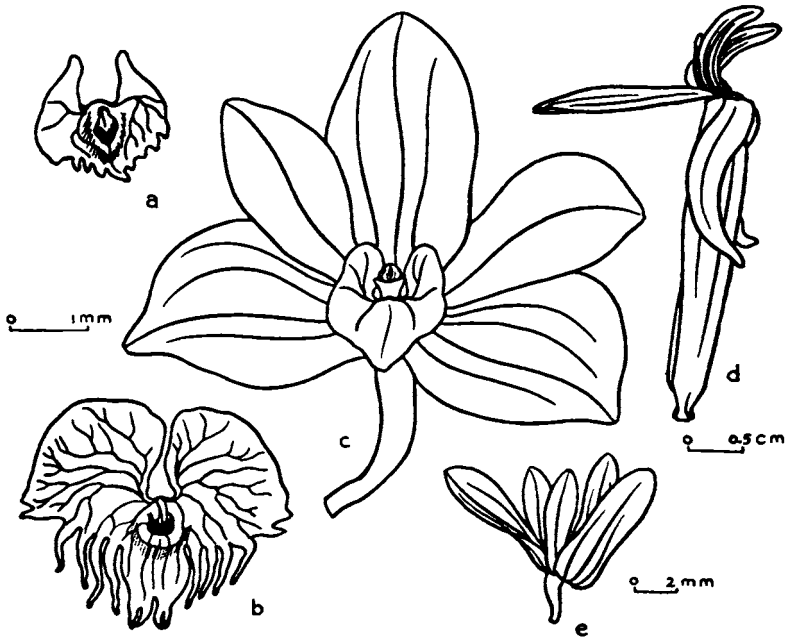

FIGURE 7.—Orchidaceae: *a, Malaxis brevidentata,* lip; *b, Malaxis comans,* lip; *c, Malaxis latisegmenta,* flower; *d, Pseuderia smithiana,* flower; *e, Eria bulbophylloides,* flower.

Herba terrestris, silvicola; caulis inferior pars vaginis laxis imbricatis velata; folia quattuor, oblique ovato-elliptica, acuta vel breviter acuminata, plus minusve petiolata; racemus longus, gracilis, dense multiflorus; flores parvi; perianthii segmenta convexa; sepala lateralia suborbiculari-ovata; sepalum dorsale ovato-ellipticum; petala elliptico-lanceolata vel elliptico-oblanceolata; labellum in circuitu suborbiculare, basi conspicue auriculatum, margine anteriore cum dentibus multis brevibus ornato.

Plant terrestrial, about 56 cm high; roots fibrous, lanuginose, numerous; lower third of the stem concealed by loose membranous imbricating sheaths of petioles of the leaves;

leaves 4, subapproximate, most of them petioled; blades obliquely ovate-elliptic, up to 13.1 cm long and 4.8 cm wide (nearer the base is an additional very small blade about 1.4 cm long and 8 mm wide), acute or abruptly short-acuminate, cuneate at base, sessile-clasping (the uppermost leaf) to distinctly petioled, membranaceous, many-nerved with 3 to 5 more conspicuous nerves; petioles long-sheathing at their base, up to about 6.5 cm long, broad, channelled; upper part of scape with about 5 reflexed linear-lanceolate scarious bracts; raceme slender, densely many-flowered, about 14.3 cm long; floral bracts linear-lanceolate, reflexed, acuminate, scarious; flowers very small, membranaceous except the lip, shortly pedicellate; lateral sepals suborbicular-ovate, convex, about 3.1 mm long and 2.1 mm wide, obtuse to rounded at the apex, indistinctly 3-nerved; dorsal sepal ovate-elliptic, convex, about 3.2 mm long, up to 2 mm wide, obtuse to rounded at the apex, indistinctly 3-nerved; petals elliptic-lanceolate or elliptic-oblanceolate, up to 3.2 mm long and 1.2 mm wide, convex, obliquely bilobulate at the apex, indistinctly 1-nerved; lip suborbicular in outline with conspicuous triangular obtuse auricles, about 3.3 mm long from tip of auricles to apex of lamina and 3 mm wide, with 6 to 8 short irregular teeth on the anterior margin on each side of the center (the 3 middle teeth forming a slightly protuberant group); disc with a central depression which is bounded in front by a fleshy V-shaped callus and in the rear by a thin inverted V-shaped keel; column short and stout.

Vanualevu: Mbua, southern slope of Mount Seatura, in dense forest, altitude 500 meters, April 27, 1934, Smith no. 1620 (type, Herb. Ames no. 41965).

Malaxis brevidentata suggests *M. atrata* (Schlechter) C. Schweinfurth, new combination (*Microstylis atrata* Schlechter, Fedde, Repert. Beih., vol. 1, p. 135, 1911) and *Malaxis brachyodonta* (Schlechter) C. Schweinfurth, new combination (*Microstylis brachyodonta* Schlechter, Fedde, Repert. Beih., vol. 1, p. 135, 1911), but differs from both species in having much larger leaves, dissimilar petals, etc. The new species has the sepals and petals white, the lip white, tinged with green.

Malaxis comans C. Schweinfurth, new species (fig. 7, *b*).

Herba terrestris, silvicola; folia plura, prope caulis basim subapproximata, elliptico-lanceolata vel anguste oblongo-lanceolata, acuta vel acuminata, basi obliqua; racemus plus minusve longus, multiflorus; pedicelli longi filiformes; flores pro genere magni; sepala petalaque convexa; sepala lateralia suborbicularia vel elliptico-suborbicularia; sepalum dorsale late ovato-ellipticum; petala lanceolato-elliptica vel oblongo-elliptica; labellum prominens, in circuitu suborbiculari-reniforme, basi auriculis semiorbicularibus, margine anteriore lacerato-dentatum.

Plant terrestrial, about 59.4 cm high, erect; roots fibrous, lanuginose; stem glabrous, apparently slightly bulbose-thickened at base, concealed below by loose scarious imbricating sheaths and at irregular intervals above by several minute bracts; leaves clustered near the base of the plant, elliptic-lanceolate to narrowly oblong-lanceolate, 7 in number, very small at the base and successively larger upward, acute to long-acuminate, cuneate-narrowed at the oblique base, with a long sheathing sometimes free petiole; blades about 3-19.4 cm long and 0.7-2.1 cm wide, many-nerved with 3-5 nerves more conspicuous, membranaceous; petioles loose, imbricating, enveloping the stem, the free portion up to about 4 cm long; raceme long, rather densely many-flowered, about 17.7 cm long; floral bracts small, reflexed, lanceolate, acuminate, 1-nerved; pedicels filiform, up to about 1.7 cm long; flowers small but rather large for the genus, glabrous, membranaceous; lateral sepals suborbicular or elliptic-suborbicular, convex, about 4-4.4 mm long and 3 mm wide, rounded at apex, 4- or 5-nerved; dorsal sepal broadly ovate-elliptic, about 4.7-5 mm long

and 3.2 mm wide, convex, rounded at apex, 3-nerved; petals lanceolate-elliptic or oblong-elliptic, about 4.6 mm long and 1.8 mm wide, rounded to subacute, convex, 1-nerved; lip conspicuous, suborbicular-reniform in outline, with a pair of broad semiorbicular auricles at base, about 5.9-6.6 mm long from the tip of an auricle to the tip of the lamina and 7 mm wide; in the middle of the anterior margin is an elliptic-subquadrate lamina terminating in 4 lanceolate-triangular teeth and on each side of this central lamina are 5 or 6 sharp teeth of which all but the outer ones are linear-lanceolate; column short and stout.

Vanualevu: Mbua, lower Wainunu River valley, in dense forest, altitude 0-200 meters, May 7, 1934, Smith no. 1739 (type, Herb. Ames no. 41964); southern slope of Mount Seatura, altitude 500 meters, Smith no. 1684.

Number 1684 varies from the type in being about 50 cm tall, with the six leaves up to 20 cm long and 3.9 cm wide (the uppermost blades markedly smaller than the other upper leaves). The short raceme is only 7.5 cm long. The lip is slightly larger and more circular in outline than that of the type, the central lamina in front having only two or three sharp triangular-lanceolate teeth.

Malaxis comans is apparently allied to *M. setipes* (Schlechter) C. Schweinfurth, new combination (*Microstylis setipes* Schlechter, Bot. Jahrb. Engler, vol. 56, p. 461, 1921), but has longer, narrower leaves, broader petals, and semiorbicular auricles of the lip. The new species has yellow or pale yellow perianth segments. The specific name was suggested by the fringed lip.

Malaxis latisegmenta C. Schweinfurth, new species (fig. 7, *c*).

Herba terrestris, silvicola; caulis inferior pars foliis septem oblique ovato-ellipticis ornata; racemus laxe multiflorus; flores pro genere magni; pedicelli longi patentes; sepala lateralia obliquissime rotundato-obovata; sepalum dorsale ellipticum; petala spathulata, saepissime leviter falcata, apice rotundata; labellum multo minus, simplex, cordatum, subcarnosum; columna generis.

Plant terrestrial, 22.7-25 cm or more tall (tallest specimens incomplete), more or less decumbent at base; roots fibrous, short, stout; stems glabrous, entirely or mostly concealed near the base by the distichous slightly dilated bases of the leaf-sheaths which are often imbricating; leaves about 7, clustered near the base of the plant; blades asymmetrically ovate-elliptic, about 2.4-9 cm long and 1-3 cm wide, sharply acute or short-acuminate, obliquely cuneate at base, many-nerved with 3-5 more prominent nerves, membranaceous; petioles indistinct to about 4.3 cm long including the sheathing base, channelled; raceme 10 cm long or more, about 2.5-3 cm across in the dried specimens, sublaxly many-flowered; floral bracts strongly reflexed at anthesis, linear-lanceolate, acuminate, 1-nerved; mature pedicels spreading, 8-9 mm long; flowers small but large for the genus, the segments spreading, glabrous; sepals and petals membranaceous; lateral sepals very obliquely round-obovate, obtuse to rounded at the apex, about 4 mm long and 3.1 mm wide near the middle, with the posterior margin very broadly rounded, 3- or 4-nerved; dorsal sepal elliptic, about 5.1 mm long and 3 mm wide, rounded or subtruncate at the apex, 3-nerved; petals spatulate, usually subfalcate, about 4.6 mm long and 2-2.5 mm wide above, obtuse to rounded at apex, 1-nerved; lip much smaller, simple, cordate with prominent ovate-rounded auricles, about 2.7-3.1 mm long from tip of an auricle to tip of lamina, 2.3-3 mm wide, obtuse or rounded at apex, more or less concave in the anterior part, rather fleshy except the auricles; disc with a small indistinct transverse cucullate callus in front of the minute column.

Koro: eastern slope of main ridge, in forest, altitude 300-500 meters, January 29, 1934, Smith no. 967 (type, Herb. Ames no. 41966).

M. latisegmenta is apparently allied to *Malaxis palawensis* (Schlechter) C. Schweinfurth, new combination (*Microstylis palawensis* Schlechter, Bot. Jahrb. Engler, vol. 56, p. 459, 1921), but has larger leaves, broader laxer racemes, larger and dissimilar sepals and petals. The perianth segments of the new species are dull yellow.

Malaxis latisepala (Rolfe) C. Schweinfurth, new combination.

Microstylis latisepala Rolfe: Kew Bull. for 1921, p. 53, 1921.

Kandavu: summit of Mount Mbuke Levu, altitude 750-840 meters, Smith no. 271. Vanualevu: Thakaundrove, southern slope of Korotini Range below Navitho Pass, altitude 300-650 meters, Smith no. 484. Koro: eastern slope of main ridge, altitude 300-500 meters, Smith no. 1063.

The specimens collected are either epiphytic or terrestrial, growing in dense forest. The inflorescence, stalk, bracts, and perianth segments are rich purple, the column yellow-tinged. Young flowers have the perianth segments pale green and the lip pinkish yellow. These specimens differ somewhat from the type, but the discrepancies appear to be unimportant in this variable genus. Smith nos. 484 and 1063 have somewhat longer scapes than typical, and the leaves of no. 1063 are 6.7 cm wide whereas the maximum width in the type is 5 cm. No. 271 differs from the type in having green flowers, somewhat smaller sepals and petals, and a larger lip with more rounded auricles.

Genus PSEUDERIA Schlechter

Pseuderia smithiana C. Schweinfurth, new species (fig. 7, *d*).

Herba epiphytica, simplex ut videtur, caulibus vaginis foliorum omnino obtectis; folia numerosa disticha, lanceolata vel anguste oblongo-lanceolata, acuminata; inflorescentiae perbreves, pauciflorae; rhachis fractiflexa; flores carnosi; sepala lateralia semicircularia-falcata, oblongo-lanceolata vel elliptico-oblonga, apice incrassato mucronata; sepalum dorsale lineari-oblongum, apice incrassato acutum; petala sepalis lateralibus in circuitu similia sed multo minora; labellum simplex, ellipticum, a basi usque supra medium crasse unicarinatum.

Plant epiphytic, up to 82.7 cm tall to the tip of the terminal erect leaf (stem incomplete below); stem terete, entirely concealed by leaf-sheaths, about 5 mm in diameter near the base; leaves numerous, distichous, spreading, lanceolate to narrowly oblong-lanceolate, up to 16.9 cm long and 2.4 cm wide, gradually decreasing in size upwards (the uppermost immature blade much smaller), long acuminate to an acute apex, cuneate to a sessile base, 1.3-2.2 cm apart, chartaceous, many-nerved with about four more conspicuous nerves; racemes numerous, short, puncturing the leaf-sheaths, about 4- to 6-flowered; rachis fractiflex, up to about 1.5 cm long; floral bracts cucullate, suborbicular, the flowers fleshy; lateral sepals semicircular-falcate, lanceolate-oblong or elliptic-oblong, about 13.2 mm long and 3.5-4 mm wide across the middle, acute with the dorsal subapical keel extended into a mucro, 5-nerved; dorsal sepal linear-oblong, about 16.1-16.9 mm long and 2.8-3 mm wide, acute and thickened at the apex, 3- or indistinctly 5-nerved; petals relatively small, in form like miniature lateral sepals, falcate-linear,

about 8.7 mm long and 1.75 mm wide, obtuse to subacute, 3-nerved; lip simple, elliptic, recurved in natural position, about 8 mm long and 4-4.3 mm wide, 7-nerved, obtuse to subacute; disc with a median linear-triangular depressed keel extending as a fleshy ridge to above the middle, the entire upper surface (except near keel) densely minute-papillose; column stout, arcuate, about 5-5.5 mm long measured along the posterior surface, extended into a short stout foot.

Kandavu: hills above Namalata and Ngaloa Bays, in dense forest, altitude 200-400 meters, October 16, 1933, Smith no. 161 (type, Herb. Ames no. 41963). Vanualevu: Thakaundrove-Mathuata Boundary, crest of Korotini Range between Navitho Pass and Mount Ndelaikoro, altitude 650-900 meters, Smith no. 561.

Specimen no. 561 is taller and more slender than the type (though likewise incomplete), being about 92.5 cm tall, with stems 4 mm or less in diameter. The largest leaves are about 13 cm long and 1.5 cm wide. The rachis is frequently about 2 cm long. One lateral sepal is only 11.4 mm long and about 3-3.2 mm wide. One dorsal sepal is 10.5 mm long and 2.7 mm wide; another is about 4 mm across the broadened apex. Some petals are as narrow as 1.4 mm. One lip is 7 mm long, another 3 mm wide. One column appears to be slender.

In common with *P. sympodialis* J. J. Smith from New Guinea and *P. vanikorensis* Ames from the New Hebrides, *P. smithiana* appears to vary from the other members of the genus in having a single keel through the center of the lip. However, it differs from *P. sympodialis* in its simple habit with much longer dissimilar leaves, and from *P. vanikorensis* in its much larger, less fleshy flowers. The relatively short petals are diagnostic. The new species has the perianth segments yellow, spotted with red or purple, the column white, tinged with pink.

Genus ERIA Lindley

Eria bulbophylloides C. Schweinfurth, new species (fig. 7, *e*).

Herba corticicola ut videtur, minima; rhizoma filiforme, longe repens, ramosum; pseudobulbi suborbiculares bifoliati; folia suborbicularia vel elliptica vel oblanceolata; pedunculus terminalis, gracillimus, uniflorus; sepala lateralia late oblonga vel ovato-oblonga; sepalum dorsale simile sed minus; petala late oblonga vel elliptico-oblonga; labellum simplex, sigmoideum, ovatum, obtusum, apice recurvatum; columna perbrevis, in pedem longum extensa; pollinia octo.

Plant very small, forming a dense mat; rhizome long creeping, commonly much branched, filiform, glabrous, provided between the pseudobulbs with about two inconspicuous scarious tubular or infundibuliform sheaths; roots apparently 1 or 2, arising beneath the pseudobulbs, short, relatively stout, lanuginose; pseudobulbs subglobose, about 1.5-3 mm across, up to 1.4 cm distant, bifoliate, rugose in the dried plant; leaves very small, polymorphic (suborbicular, oval, elliptic or elliptic-oblanceolate), up to 10.5 mm long and 6.5 mm wide, acute to rounded at apex, more or less cuneate-narrowed or rounded at base, marginate, widely spreading; peduncle terminal, filiform, 1-flowered, up to about 2 cm high, adorned above the base with two remote inconspicuous infundibuliform sheaths; flower relatively large, membranaceous, glabrous; lateral sepals broadly

oblong or ovate-oblong, about 6.7 mm long and 2.8 mm wide near the slightly asymmetric base, abruptly rounded at the apex, 3-nerved; dorsal sepal similar but rather smaller, about 6 mm long and 2 mm wide above the middle, rounded at apex, 3-nerved; petals broadly oblong or elliptic-oblong, about 4.9 mm long, up to 2 mm wide, obtuse, 1-nerved (indistinctly 3-nerved below); lip simple, slightly sigmoid-curved in natural position with the sides erect, the anterior margins revolute and the tip recurved, concave and slightly thickened below, cuneate-narrowed at the base, when expanded broadly ovate, obtuse, about 3.5 mm long and 2.2 mm wide, 3-nerved; column very short and stout, broadly rounded at apex, concave in front, extended into a long foot; anther complanate-suborbicular, 2-celled; pollinia 8, ellipsoid to pyriform.

Vanualevu: Thakaundrove, Mount Mariko, on humus in dense forest, altitude 600-866 meters, November 14, 1933, Smith no. 452 (type, Herb. Ames no. 41962); Yanawai River region, Mount Kasi, on tree trunks in dense forest, altitude 300-430 meters, Smith no. 1815.

Collection no. 1815, which appears to contain somewhat more advanced material, has two pseudobulbs that are separated by 1.7 cm. One oblanceolate leaf is about 14.5 mm long. The entire flower is considerably smaller. The lateral sepals are somewhat connate near the base and obtuse. The petals are acute to subacute.

E. bulbophylloides superficially suggests a *Bulbophyllum* of the Section *Monanthaparva,* but it has terminal inflorescences and the eight pollinia of the genus *Eria.* In habit it appears similar to the Himalayan *E. pusilla* (Griffith) Lindley. The new species has the perianth dull yellow or dull orange.

DICOTYLEDONEAE

PIPERACEAE

Genus PIPER Linnaeus

Piper polystachyum C. De Candolle.

Piper polystachyum C. De Candolle: Jour. Linn. Soc., vol. 34, p. 162, 1909.

This species, characterized by large leaves and numerous long-pedunculate spikes, is not uncommon in wet forest from 600 to 900 meters.

Vitilevu: Thurston (K); Tholo North, Nandarivatu, Gibbs no. 794 (type, BM). Vanualevu: Thakaundrove, Mount Mariko, Smith no. 458. Taveuni: Seemann no. 566 (G, K) (referred by Seemann to *P. latifolium* Forster); Smith no. 791. Moseley's (BM, K) collections from the New Hebrides also appear to represent this species.

Genus PEPEROMIA Ruiz and Pavon

By T. G. Yuncker

All species of *Peperomia* now known from Fiji are included here. It is interesting to note that no specimens have been seen of either *P. reflexa*

Dietrich or *P. pellucida* Humboldt, Bonpland, and Kunth, both widely distributed throughout the range of the genus, although their presence in Fiji is to be expected. *P. leptostachya* Hooker and Arnott, probably the commonest and most widely distributed of the Polynesian species, is apparently not common in Fiji. As far as known, all the species included, with the exception of *P. leptostachya,* are endemic. Descriptions of species of De Candolle, based on the collections of Miss Gibbs, are drawn up from the original descriptions, photographs and fragments of the types, and notes made at the British Museum by Dr. Smith. Duplicates of Dr. Smith's collections of *Peperomia* are in the herbarium of DePauw University.

In several Fijian species the spikes occur in axillary groups of two or more, arranged in more or less paniculately branching clusters with each spike in the axil of a very small, usually lanceolate, and easily deciduous bract. This type of spike arrangement is also characteristic of several species occurring on the island of Juan Fernandez near the coast of Chile. In most of the Polynesian species, however, the spikes are unbranched and occur singly or in clusters of two or more.

Key to the Fijian Species

1. Leaves predominantly alternate 2
1. Leaves predominantly opposite or verticillate 13
2. Plants obviously and mostly more or less completely hairy 3
2. Plants essentially glabrous or at most with a few hairs 5
3. Plants not exceeding 5 cm in height ..... 1. **P. orbiculimba**
3. Plants much larger (up to 35 cm or more in height) 4
4. Leaf apex acute to narrowly acuminate; plants densely appressed-hirtellous ..... 2. **P. vitiana**
4. Leaf apex obtuse to acutish; plants appressed-hirsute ..... 3. **P. ciliifolia**
5. Leaves mostly palmately 3- or 5-nerved, glabrous 6
5. Leaves mostly pli-nerved, glabrous or sparsely hairy 10
6. Spikes not in branching clusters; leaves not exceeding 4 cm in length 7
6. Spikes commonly in branching clusters; leaves mostly larger (smaller in *P. lasiostigma* variety *microlimba*) 9
7. Spikes in leaf axils; leaves more or less fleshy, obtuse or acutish 8
7. Spikes leaf-opposed; leaves membranous, acute to acuminate ..... 4. **P. flexuosa**
8. Plants suberect, glabrous; leaves briefly attenuate, mostly more than 2.5 cm in length ..... 5. **P. endlicheri** variety **fijiana**
8. Plants decumbent, spreading, minutely puberulent; leaves not attenuate, less than 1.5 cm in length ..... 6. **P. curtispica**
9. Leaves mostly less than 2.5 cm in width and three or more times as long as wide (less in variety *microlimba*) ..... 7. **P. lasiostigma**
9. Leaves up to 4 cm in width and mostly less than three times as long as wide ..... 8. **P. kandavuana**
10. Leaves pli-nerved within the lowermost 5 mm 11
10. Leaves with the main lateral nerves branching off the midrib 5-10 mm above the base 12
11. Leaves narrowly and attenuately acuminate, the upper surface glabrous; inflorescences mostly branching, disposed along the stem ..... 9. **P. attenuata**

11. Leaves acute to acuminate, hirtellous along the nerves on the upper surface; inflorescences mostly in the upper leaf axils.....10. **P. flavida**
12. Stems with many branches; leaves mostly about twice as long as wide .....11. **P. albertiana**
12. Stems mostly unbranched; leaves three to five times as long as wide .....12. **P. laevilimba**
13. Plants moderately to densely hirtellous.....13. **P. leptostachya**
13. Plants glabrous, or at most only sparingly hirtellous.....14. **P. pilostigma**

1. **Peperomia orbiculimba** Yuncker, new species (fig. 8).

Herba usque ad 5 cm alta, ad basin carnosa et crassa, hirsuta; folia alterna, primum hirsuta, demum glabra, ciliolata, orbiculata, circiter 1 cm longa, palmatim 3-nervia, apice et basi rotundata obtusa, petiolo usque ad 2 cm longo hirsuto; spicae terminales vel axillares, usque ad 2.5 cm longae, pedunculo usque ad 1.5 cm longo; ovarium ovoideum, apice obliquum, stigmate sub apice; fructus circiter 0.75 mm longus, ovoideus, apice plus minusve acutus.

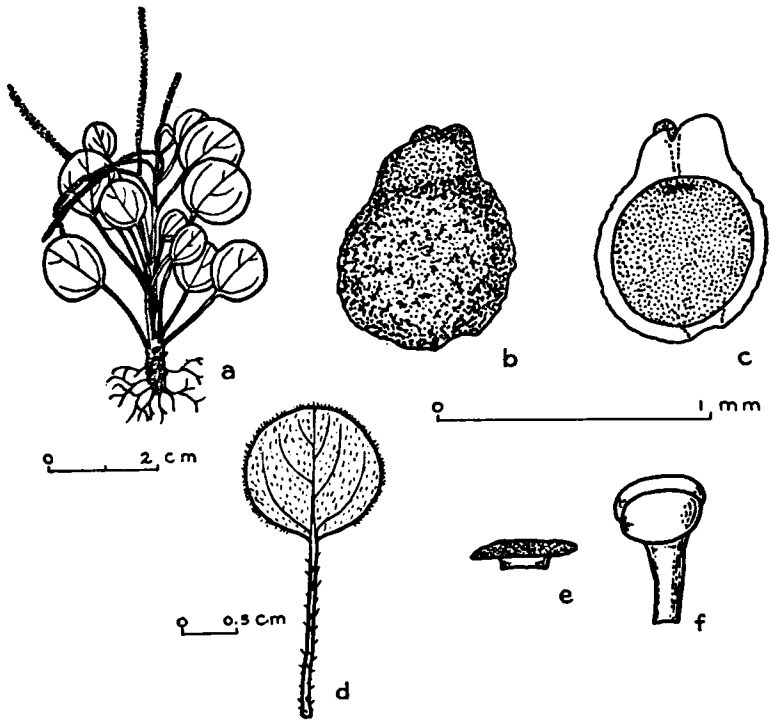

FIGURE 8.—*Peperomia orbiculimba: a,* plant; *b,* fruit; *c,* section of fruit; *d,* leaf; *e,* bract, enlarged; *f,* stamen, enlarged.

Plants small, less than 5 cm high, the lowermost part of the stem fleshy, 2-3 mm thick in dry specimens, bearing many long-petiolate leaves, the upper branches slender, less than 1 mm thick, hirsute, the hairs multicellular, brownish, spreading, up to 1 mm long, the internodes on the lower part of the stem very short, those of the branches up to 1.5 cm long, but mostly much shorter. Leaves alternate, appearing whorled below

because of the very short internodes, hirsute on both surfaces at least when young, becoming glabrate, marginally ciliate, mostly orbicular, up to 1.4 cm long and as wide but mostly about 1 cm long, palmately 3-nerved, rounded and obtuse at base and apex, the petiole slender, up to 2 cm long, moderately hirsute, the leaf scars semicircular, the bundle scars 3. Spikes axillary and terminal, up to 2.5 cm long, moderately flowered, the peduncle slender, up to 1.5 cm long but mostly somewhat shorter, hirsute, the rachis glabrous, the bracts about 0.4 mm wide, round, peltate, punctate with yellow dots, the filaments about equal to the ellipsoid anthers, the ovary ovoid, oblique at apex, the stigma single, subapical; fruit about 0.75 mm long, ovoid, apically somewhat pointed, verrucose, viscid.

Ovalau: on dry rocks near Levuka, rare, January, 1878, Horne no. 370 (type, K).

This is one of the smallest species known from Polynesia. It is readily recognized by its orbicular leaves, long slender petioles, and short stems.

2. Peperomia vitiana C. De Candolle (fig. 9).

Peperomia vitiana C. De Candolle: Prodr., vol. 16, pt. 1, p. 458, 1869.

Stems up to 35 cm or more high and 2.5 mm thick when dry, erect or ascending from a rooting base, branching, especially above, with long slender branches, densely appressed hirtellous, the hairs about 0.25 mm long, the internodes mostly 1-1.5 cm long above and up to 7 cm in the lower part of the stem. Leaves alternate or rarely opposite, drying thin and membranous, the upper surface dark green, the lower surface light green when dry, punctate with black and orange dots, the lower surface hirtellous, the upper surface hirtellous or sometimes so only near the base, or older leaves sometimes becoming glabrate, ciliate with short hairs, elliptic to ovate-lanceolate, 1.5-5 cm long, 1-1.5 cm broad, mostly about 2-3 cm long and 1-1.2 cm broad, palmately 5-nerved, the apex attenuately acute to narrowly acuminate, the base acute, the petioles mostly about 3 mm long or those of the lower leaves up to 8 mm long, densely appressed hirtellous, the leaf scars semicircular. Spikes axillary, mostly only one at a node, up to 2.5 cm long, moderately flowered, the peduncle up to 1 cm long but mostly 5-7 mm, glabrous or sparsely hirtellous, the rachis glabrous, the bracts round, peltate, punctate with black dots, about 0.5 mm broad, the ovary ovoid-globose, oblique at apex, the stigma subapical, the filaments equaling or exceeding the ellipsoid anthers; fruit globose, verrucose, viscid, about 0.7 mm long.

Taveuni: on rocks, Seemann no. 565, in part (type, K, G). Koro: epiphytic, in forest, eastern slope of main ridge, altitude 300-500 meters, Smith no. 971. Vanualevu: Thakaundrove, epiphytic, crest of range, in dense forest, Mount Mbatini, altitude 700-1,030 meters, Smith no. 644; epiphytic, in dense forest, eastern buttress, Mount Ndikeva, altitude 700 meters, Smith no. 1899; epiphytic, in dense forest, Mount Mariko, altitude 600-866 meters, Smith no. 479 (leaves mostly much shorter than those of other specimens examined; otherwise appears typical; reddish spikes).

Seemann (Fl. Vit., p. 433, 1873) questions the validity of *P. vitiana* and refers his no. 565 to *P. pallida* Dietrich. No authentic specimens of *P. pallida* have been seen from Fiji. At Kew, Seemann no. 565 is a mixture of what is taken to represent the type of *P. vitiana* and a wholly glabrous specimen with narrowly lanceolate leaves, which I am now describing as new under the name of *P. laevilimba*.

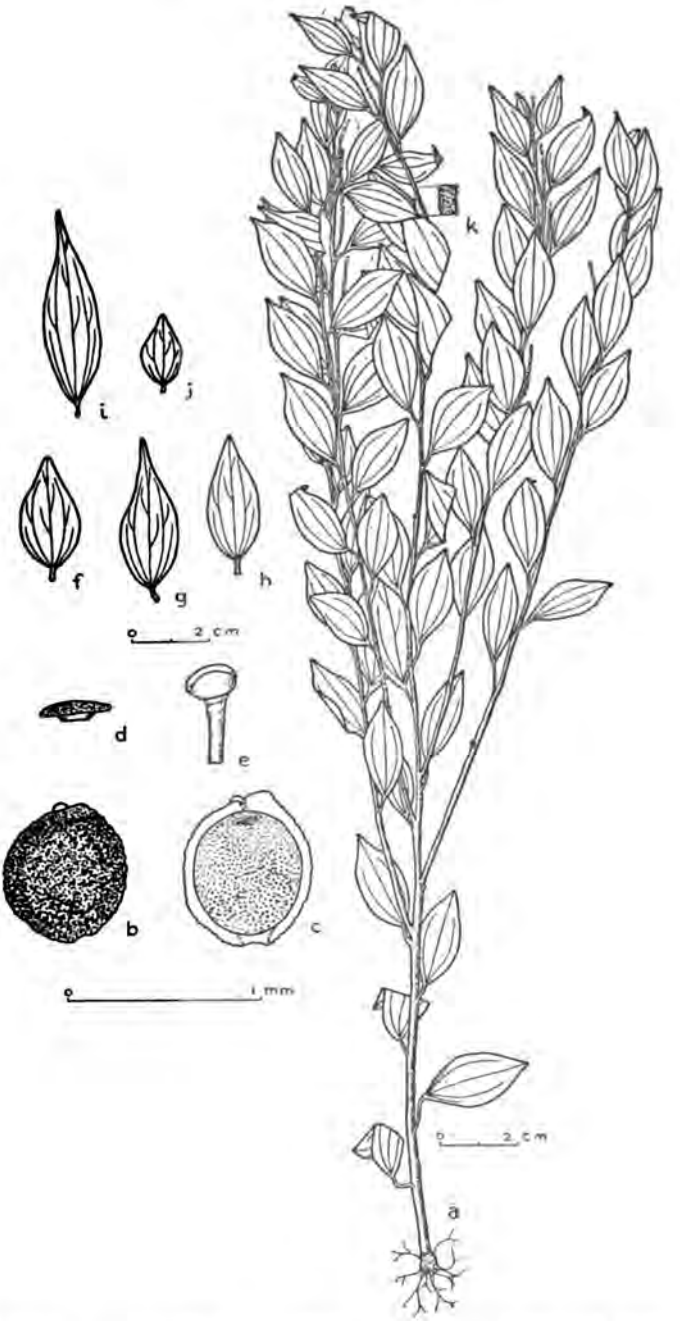

FIGURE 9.—*Peperomia vitiana: a*, plant; *b*, fruit; *c*, section of fruit; *d*, bract, enlarged; *e*, stamen, enlarged; *f-j*, leaves, showing variation in size and shape; *k*, section of stem, enlarged.

The generally erect habit, the densely hirtellous condition, and the shape and abundance of the leaves serve to identify *P. vitiana*. The leaves are typically alternate and the type at Kew so shows them. However, a specimen of the same number in the Barbey-Boissier Herbarium shows some leaves also oppositely arranged.

3. **Peperomia ciliifolia** Yuncker, new species (fig. 10).

Herba terrestris, usque ad 35 cm alta, dense adpresso-hirsuta; folia alterna hirsuta ciliata, ovata vel ex elliptica obovata, 3-5.5 cm longa, 1.8-3.3 cm lata, palmatim 5-nervia aut subpli-nervia, apice et basi obtusa vel subacuta, petiolo 2-5 mm longo hirsuto; spicae 3-4 cm longae, pedunculo 5-8 mm longo, hirsuto vel glabro; ovarium subglobosum, apice obliquum, stigmate sub apice.

Plants terrestrial, the stems ascending from a decumbent rooting base, up to 35 cm or more high and 2.5 mm thick below in dry specimens, simple or branching near the base, densely appressed hirsute, the hairs 0.5-1 mm long, the internodes mostly 1.5-2.5 cm long, the lower ones up to 4 cm. Leaves alternate, hirsute on both surfaces when young, the older leaves hirsute on the upper surface near base and along nerves or subglabrate, the lower surface mostly moderately hirsute, the margin densely and completely ciliate, drying moderately firm, the nerves appearing light-colored against a dark green background above, lighter green beneath, punctate with dark or pellucid dots, ovate or elliptic or obovate, or the lower leaves not uncommonly orbicular, 3-5.5 cm long, 1.8-3.3 cm broad, mostly about 4 cm long and 2.5 cm broad, palmately 5-nerved or with the innermost pair of lateral nerves coalescing with the midrib in the lowermost 2 mm, the small nerves reticulate, the apex obtuse to acutish, briefly attenuate, the base obtuse or acutish, the petioles mostly 2-5 mm long, densely hirsute with subappressed hairs. Spikes axillary and terminal, single or in branching inflorescences, mostly 3-4 cm long, moderately flowered, the rachis glabrous, the peduncle 5-8 mm long, hirsute or glabrate, the bracts orbicular, somewhat irregular, about 0.5 mm broad, peltate, punctate with yellow dots, the filaments about equal to the ellipsoid anthers, the ovary subglobose, oblique at apex, the stigma subapical, single or divided, pilose when young, becoming smooth; fruit not seen.

Vanualevu: Thakaundrove, Mount Mariko, terrestrial on moist banks in dense forest, altitude 600-866 meters, November 14, 1933, Smith no. 478 (type).

The hirsute stems and leaves, dense ciliation, and shape of the leaves serve to distinguish this species.

4. **Peperomia flexuosa** Yuncker, new species (fig. 11).

Herba epiphyta; caules graciles flexuosi glabri, plus minusve stoloniferi; folia alterna glabra ciliolata rhombico-elliptica, 2-3.5 cm longa, 1-2 cm lata, palmatim 3-nervia, apice attenuata, ex acuta acuminata, basi acuta, petiolo 2-3 mm longo, glabro; spicae folio-oppositae, circiter 2 cm longae, pedunculo 4-5 mm longo, glabro; ovarium ovoideum, stigmate piloso; fructus ovoideus, plus minusve acutus, circiter 0.8 mm longus.

Plants epiphytic, the stems slender, repent and rooting at the lower nodes, up to 40 cm or more long and 1 mm thick in dry specimens, subdichotomously branching, glabrous, the internodes 1-3 cm long. Leaves alternate, glabrous, marginally ciliate from about the middle to the apex, the distance between the more or less erect hairs commonly about equal to the length of the hairs, drying very thin and membranous, not noticeably punctate, rhomboid-elliptic, 2-3.5 cm long, 1-2 cm broad, palmately 3-nerved, the outer pair of nerves sometimes forking low to simulate 5-nerved venation, narrowly and attenuately acute to acuminate at apex, acute at base, the petioles glabrous, 2-3 mm

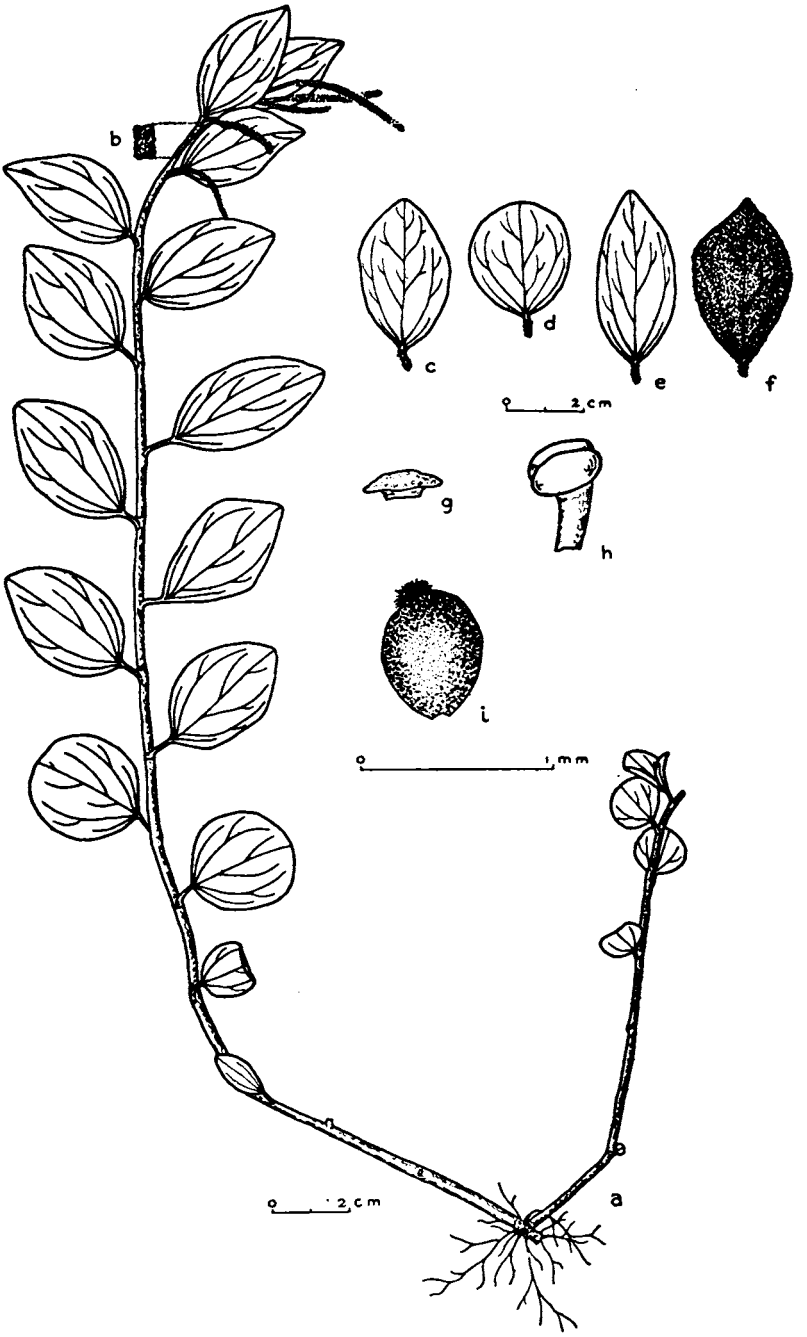

FIGURE 10.—*Peperomia ciliifolia: a,* plant; *b,* section of stem, enlarged; *c-f,* leaves, showing variation in size and shape; *g,* bract, enlarged; *h,* stamen, enlarged; *i,* ovary.

long. Spikes leaf-opposed, about 2 cm long, moderately to densely flowered, the peduncles mostly 4-5 mm long, glabrous, the rachis glabrous, the bracts round, peltate, punctate with black dots, about 0.5 mm wide, the filaments about equal to the ellipsoid anthers, the ovary ovoid, the stigma large, apical or very slightly subapical, pilose; fruit ovoid, more or less pointed, about 0.8 mm long, verrucose, viscid.

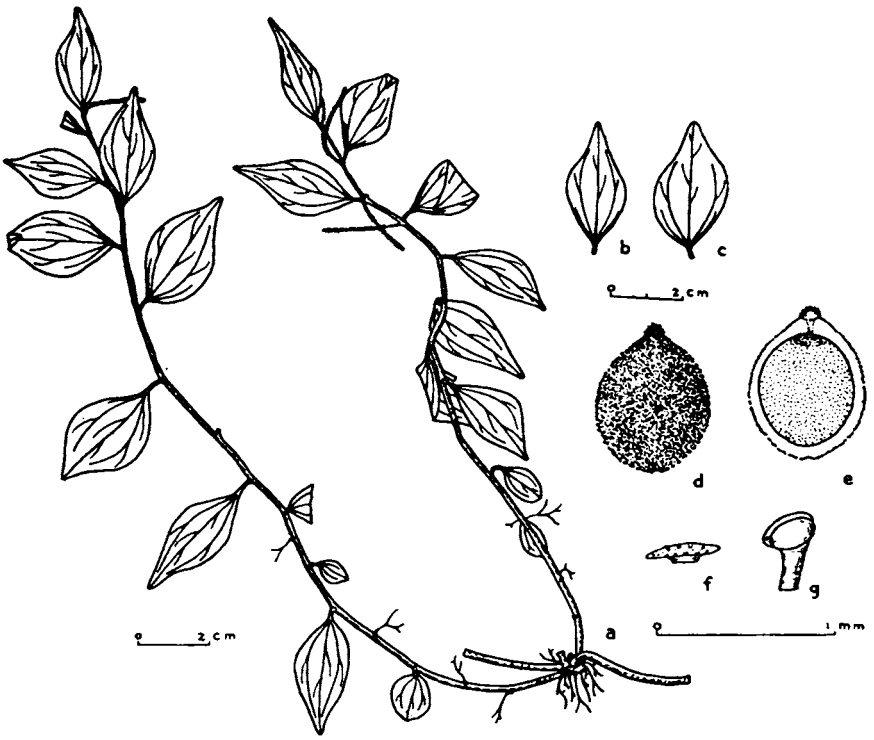

FIGURE 11.—*Peperomia flexuosa: a,* plant; *b, c,* leaves; *d,* fruit; *e,* section of fruit; *f,* bract, enlarged; *g,* stamen, enlarged.

Kandavu: Mount Mbuke Levu, in dense forest, altitude 500-750 meters, October 25, 1933, Smith no. 263 (type).

The species bears some resemblance to *P. vitiana* C. De Candolle, but differs from that species in its trailing habit of growth, glabrous condition, leaf-opposed spikes, and apical stigmas. From all other Fijian species it is distinguished by the leaf-opposed spikes.

5. Peperomia endlicheri Miquel variety **fijiana** Yuncker, new variety (fig. 12).

Herba terrestris glabra; folia alterna, elliptica vel ovata vel obovata, 2.5-4 cm longa, 1.5-2.3 cm lata, palmatim 3- vel 5-nervia, apice plus minusve attenuata, obtusa, basi ex acuta cuneata.

Terrestrial, fleshy, the stems suberect or ascending from a slightly decumbent rooting base up to 20 cm or more high, 2.5 mm thick when dry, moderately branching,

glabrous, the internodes 1-1.5 cm long. Leaves alternate, glabrous, not ciliate, elliptic to ovate or obovate, up to 4 cm long and 2.3 cm broad, mostly 2.5-3 cm long and 1.5-2 cm broad, palmately 3- or 5-nerved, the outermost pair of nerves in 5-nerved leaves commonly indistinct, drying coriaceous and rigid, punctate with dark dots, the apex rounded or mostly attenuate, obtuse, the base acute to cuneate, the petioles 3-5 mm long, glabrous, the leaf scars semicircular, the bundle scars 3. Spikes axillary and terminal, up to 8 cm long, moderately to densely flowered, the peduncles up to 1.5 cm long, glabrous, the rachis glabrous, the bracts round, peltate, punctate with yellow dots, about 0.5 mm wide, the filaments slender, about equal to the globose-ellipsoid anthers, the ovary obovoid, oblique at apex, the stigmas 1 or 2, pilose, subapical; fruit globose-ovoid, about 1 mm long, verrucose, viscid.

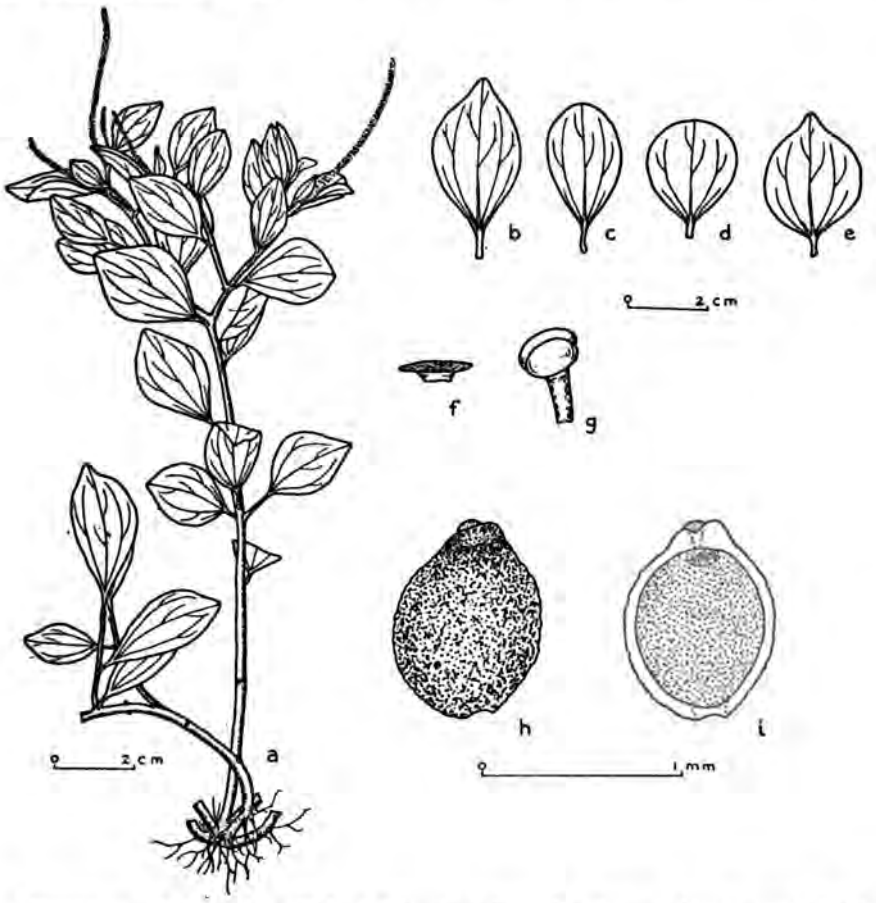

FIGURE 12.—*Peperomia endlicheri fijiana*: *a*, plant; *b-e*, leaves, showing variation in size and shape; *f*, bract, enlarged; *g*, stamen, enlarged; *h*, fruit; *i*, section of fruit.

Kambara: terrestrial on cliff, limestone formation, altitude 0-100 meters, March 5, 1934, Smith no. 1282 (type). Navutu-i-loma: summit of ridge, in crevices of rock face, altitude about 50 meters, Bryan no. 466.

The shape of the leaves, the obtuse apex, the rigidity when dry, together with the glabrous condition of the entire plant, readily distinguish this variety from the other Fijian species. I am unable specifically to distinguish this variety from *P. endlicheri* Miquel of Norfolk Island from which it differs in being somewhat larger and having attenuately pointed leaves.

6. Peperomia curtispica C. De Candolle (fig. 13).

Peperomia curtispica C. De Candolle: Jour. Linn. Soc., vol. 39, p. 166, 1909.

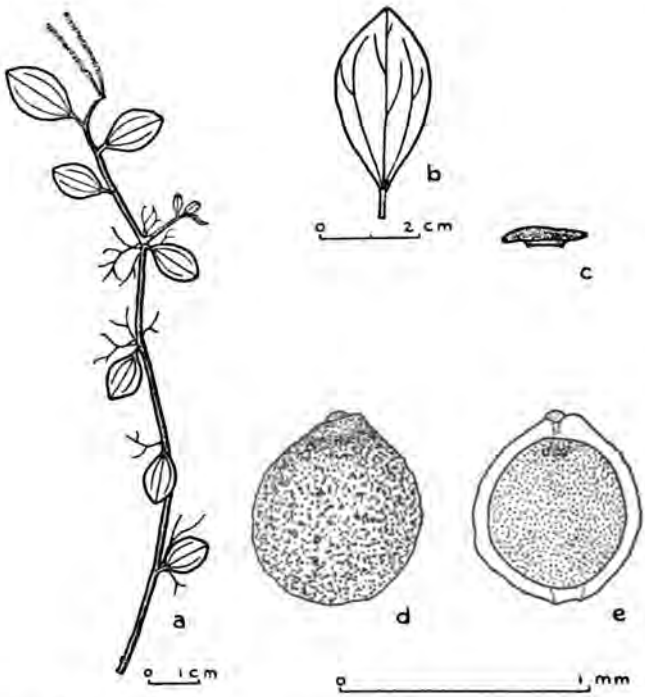

FIGURE 13.—*Peperomia curtispica: a,* section of plant; *b,* leaf; *c,* bract, enlarged; *d,* fruit; *e,* section of fruit.

Plant spreading, graceful, the stems more or less decumbent and rooting at the nodes, sparingly branched, minutely puberulent, the internodes about 5 mm long in young branches, becoming somewhat longer in the older parts. Leaves alternate, bright green, fleshy, drying membranous, glabrous or minutely puberulent below when young, ovate-elliptic, up to 1.7 cm long and 1.1 cm broad, palmately 3-nerved, or the lateral nerves sometimes coalescing with the midrib in the lowermost 1-2 mm, the apex rounded, obtuse, the base acute, the petioles 2-3 mm long, minutely puberulent. Spikes simple, axillary and terminal, up to 1.4 cm long, moderately flowered, the peduncle about 3 mm long, glabrous, the bracts orbicular, nearly 0.5 mm broad, the anthers elliptic, the ovary ovoid, the stigmas pilose; fruit globose, verrucose, viscid, about 0.8 mm long, oblique at apex, the stigma slightly subapical.

Vitilevu: Tholo North, Nandarivatu, epiphytic in forest, common, altitude about 800 meters, Gibbs no. 651 (type, BM).

The habit and size of this plant distinguish it from all other known Fijian species.

7. Peperomia lasiostigma C. De Candolle (fig. 14, *a-f*).

Peperomia lasiostigma C. De Candolle, Jour. Linn. Soc., vol. 39, p. 165, 1909.

Peperomia subroseispica C. De Candolle: Jour. Linn. Soc., vol. 39, p. 165, 1909.

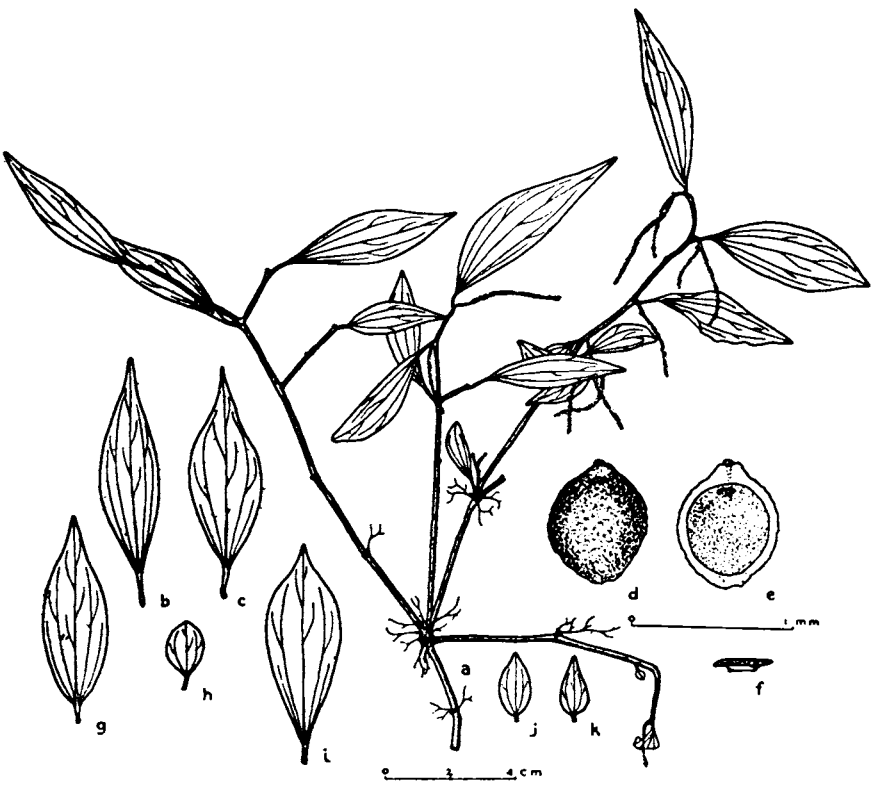

FIGURE 14.—*Peperomia lasiostigma: a,* plant; *b, c,* leaves; *d,* fruit; *e,* section of fruit; *f,* bract, enlarged; *g,* leaf from upper part of stem of variety *gibbsiae; h,* leaf from lower part of stem of variety *gibbsiae; i,* leaf of variety *carnosa*; *j, k,* leaves of variety *microlimba.*

Plants epiphytic, the stems suberect or ascending from a decumbent rooting base, up to 30 cm or more high but mostly 15-20 cm, up to 2 mm thick in dry specimens, branching, glabrous, the internodes up to 3.5 cm long but mostly less than 1.5 cm. Leaves alternate, glabrous, sparsely and minutely puberulent along the margins near

apex, punctate with many small yellow or black dots, mostly drying dark green, elliptic-lanceolate, up to 7.5 cm long and 2.5 cm broad, mostly 5-7 cm long and 1.3-1.7 cm broad, palmately 5-nerved, or the innermost pair of lateral nerves coalescing with the midrib in the lowermost 1-2 mm, the outermost pair of nerves slender and inconspicuous, the apex narrowly and attenuately acuminate, the base cuneate, the petioles 3-5 mm long, glabrous. Spikes axillary, often reflexed, single, or more commonly two or more forming a compound branching inflorescence, each spike in the axil of a lanceolate bract, up to 4 cm long, moderately flowered, the peduncles about 5 mm long, glabrous, the rachis glabrous, the bracts round, peltate, about 0.5 mm wide, punctate with orange dots, the ovary obovoid, rounded at apex, slightly if at all oblique, the stigma inconspicuous, essentially apical; fruit about 0.75 mm long, subglobose, verrucose, viscid, apically somewhat pointed, the stigma essentially apical or only slightly subapical.

Vitilevu: Graeffe (K, Vienna); Tholo North, Nandarivatu, altitude 800-1,000 meters, Gibbs no. 890 (type, BM); summit of ridge, on volcanic agglomerate (leaves sage green, fleshy, the spike eventually turning pink), Gibbs no. 726 (type of *P. subroseispica*, BM); Im Thurn no. 285 (K); Tomanivi (Mount Victoria), altitude about 1,300 meters, Im Thurn nos. 29 (K), 30 (K). Ovalau: Horne no. 29 (K). Vanualevu: Thakaundrove, Natewa Peninsula, hills south of Natewa, on trees and rocks in dense forest, altitude 400-600 meters, Smith no. 1972. Taveuni: western slope between Somosomo and Wairiki, in dense forest, altitude 600-900 meters, Smith nos. 738, 890.

The Vanualevu specimen, Smith no. 1972, has leaves near the lower limit of the size given and all of the spikes are single, but otherwise it agrees with the other cited specimens.

Key to the Species and its Varieties

Leaf base more or less cuneate, the apex acute to acuminate.
- Leaves mostly less than 2.2 cm wide.....**P. lasiostigma**
- Leaves mostly more than 2.2 cm wide.....variety **carnosa**

Leaf base more or less rounded, acute.
- Leaves mostly 4 cm or more long.....variety **gibbsiae**
- Leaves mostly less than 2 cm long.....variety **microlimba**

7a. Peperomia lasiostigma C. De Candolle variety **carnosa** (C. De Candolle) Yuncker, new combination (fig. 14, *i*).

Peperomia carnosa C. De Candolle: Jour. Linn. Soc., vol. 39, p. 166, 1909.

Leaves alternate above, the lower leaves sometimes opposite, mostly 5.5-7 cm long and 2.4-2.9 cm broad, glabrous or minutely and sparsely puberulent on some leaf surfaces, puberulent-ciliate, palmately 5-nerved, elliptic-lanceolate, or some leaves subob-lanceolate, the internodes mostly 2-3 cm long; spikes axillary, unbranched, about 3 cm long.

Vitilevu: Tholo North, Nandarivatu, epiphytic or on ground in forest, altitude about 800 meters, Gibbs no. 600 (type, BM).

7b. Peperomia lasiostigma C. De Candolle variety **gibbsiae** (C. De Candolle) Yuncker, new combination (fig. 14, *g, h*).

Peperomia gibbsiae C. De Candolle: Jour. Linn. Soc., vol. 39, p. 164, 1909.

Upper leaves mostly 4-5.8 cm long and about 2 cm broad, elliptic-lanceolate, the apex attenuately acuminate, the base acute, the lower leaves about 1.5 cm long and 1 cm broad, ovate to obovate, the apex rounded, obtuse, the base acute; internodes mostly 1.5-2 cm long; otherwise similar to the species.

Vitilevu: Tholo North, Nandarivatu, epiphytic or on ground (whole plant fleshy, the leaves glabrous, dark green, shining), altitude about 800 meters, Gibbs no. 883 (type, BM).

7c. Peperomia lasiostigma C. De Candolle variety **microlimba** Yuncker, new variety (fig. 14, *j, k*).

Herba parva glabra; folia alterna ovata, apice obtusa, basi breviter acuta, 1-1.8 cm longa, 0.7-0.9 cm lata, palmatim 3- vel 5-nervia; spicae circiter 6 mm longae.

Plants small, glabrous; leaves alternate, punctate with black dots, ovate to oval, the apex obtusish, the base briefly acute, 1-1.8 cm long and 0.7-0.9 cm broad, palmately 3- or 5-nerved, the petioles 1-2 mm long; spikes about 6 mm long.

Vanualevu: Thakaundrove, between Waiwai and Lomaloma, on rocks and trees in damp shady forest, April, 1878, Horne no. 652 (type, K).

P. lasiostigma resembles *P. oahuensis* C. De Candolle of the Hawaiian islands in many respects, but differs in the usually more spreading habit of growth, palmate venation, single and apical stigmas, and the usual arrangement of the spikes in branching clusters. It differs from *P. kandavuana* Yuncker, with which it is also closely allied, in its narrower and more slenderly pointed leaves which are also mostly three or more times as long as wide.

The types of *P. lasiostigma, P. gibbsiae,* and *P. carnosa* were all collected together by Miss Gibbs under her no. 600. De Candolle subsequently separated this collection into three. The number 600 was retained for *P. carnosa,* no. 883 was given to the part named *P. gibbsiae,* and no. 890 to the part named *P. lasiostigma.* De Candolle described the stigmas of *P. lasiostigma* and *P. gibbsiae* as apical and those of *P. carnosa* as subapical. I find the stigmas to be essentially apical or only slightly subapical in all three and I am unable specifically to separate the specimens on this stigmatic character. There do appear to be some differences, however, in the shape and size of the leaves, but I do not believe that these differences are sufficiently great or important enough to be bases of specific distinction. De Candolle also described the stigmas of *P. subroseispica* as being subapical. While I find the stigma on the matured fruit of this species to be very slightly subapical, it could also be considered essentially apical, and from the evidence at hand I do not believe that there is any material difference in the position of the stigmas. In the type of *P. subroseispica* the few spikes present appear to be solitary and

unbranched. Unbranched as well as branched inflorescences are present in *P. lasiostigma.* Therefore I do not believe that *P. subroseispica* should be maintained as a distinct species. Variety *microlimba* is based on a fragmentary and poorly prepared specimen which appears to be most closely allied to *P. lasiostigma.* However, the small size of the plant and the shape and small size of the leaves distinguish it from that species.

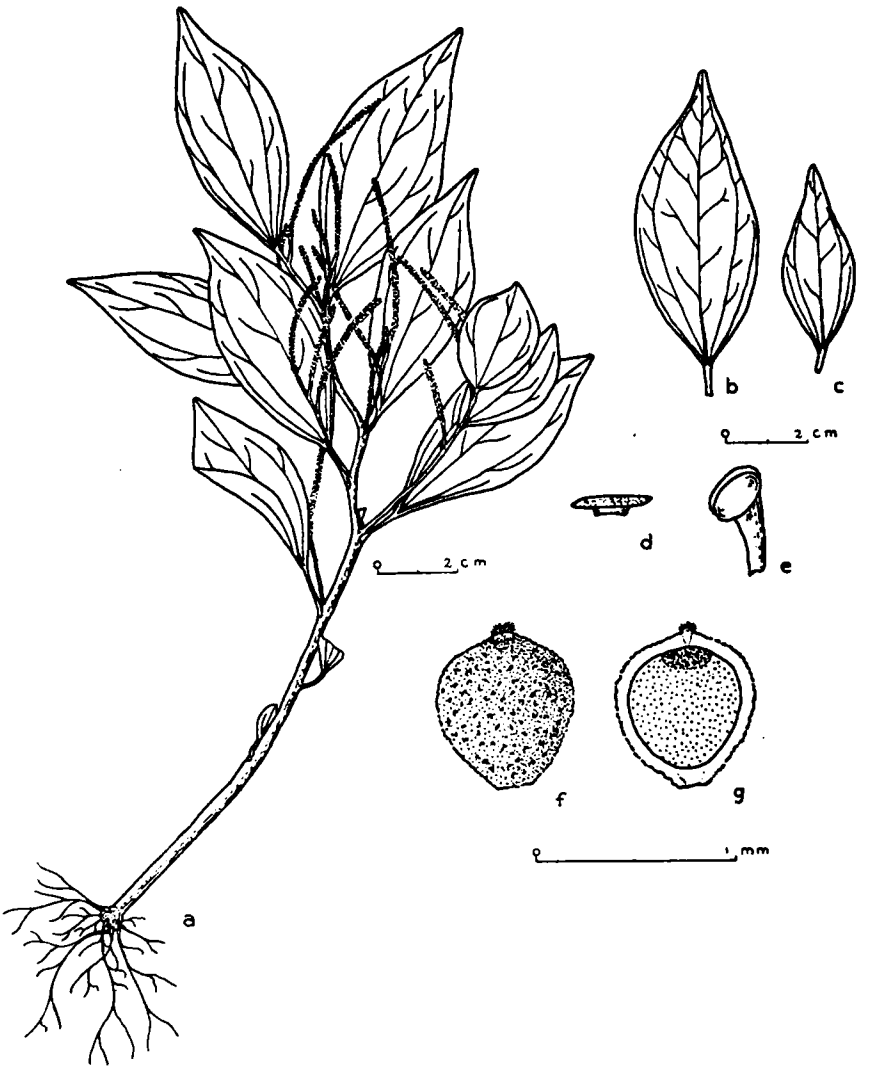

FIGURE 15.—*Peperomia kandavuana: a,* plant; *b, c,* leaves; *d,* bract, enlarged; *e,* stamen, enlarged; *f,* fruit; *g,* section of fruit.

8. Peperomia kandavuana Yuncker, new species (fig. 15).

Herba epiphyta; caules usque ad 20 cm longi, glabri; folia alterna glabra, elliptica vel subobovata et plus minusve rhombica, usque ad 8.5 cm longa et 3 cm lata, membranacea, palmatim 5-nervia, apice ex attenuato-acuta acuminata, basi ex acuta cuneata, petiolo 4-6 mm longo, glabro; spicae usque ad 5 cm longae, inflorescentiae solitariae aut ramosae, pedunculo usque ad 5 cm longo, glabro; ovarium globoso-ovoideum aut plus minusve turbinatum, stigmate apicali piloso, solitario aut diviso; fructus circiter 0.8 mm longus, globoso-ovoideus, aut plus minusve turbinatus.

Plants epiphytic, the stems erect or ascending, up to 20 cm or more high and 2.5 mm thick when dry, simple, or branching above, glabrous, the internodes 1-2 cm long. Leaves alternate, entirely glabrous or rarely with a few short marginal hairs near apex, elliptic to subobovate, more or less rhombic, up to 8.5 cm long and 4 cm broad, drying thin and membranous, punctate with pellucid or yellow dots, palmately 5-nerved, or the nerves coalescing in the lowermost 2 mm, the apex attenuately acute to acuminate, the base acute to cuneate, the petioles 4-6 mm long, glabrous. Spikes axillary and terminal, single or in branching inflorescences, in the axils of elliptic-lanceolate bracts, up to 4.5 cm long, moderately flowered, the peduncle up to 5 mm long, glabrous, the rachis glabrous, the bracts orbicular, about 0.4 mm broad, peltate, punctate with yellow dots, the filaments about equaling the ellipsoid anthers, the ovary globose-ovoid, the stigma single or divided, large and conspicuous, pilose, apical or slightly subapical; fruit about 0.8 mm long, globose-ovoid or somewhat turbinate, verrucose, very viscid, eventually on pseudopedicels.

Kandavu: Mount Mbuke Levu, summit, in dense forest, altitude 750-840 meters, October 25, 1933, Smith no. 292 (type); altitude 200-500 meters, Smith no. 246. Ovalau: U. S. Expl. Exped. (G); on rocks and tree trunks in shady places, altitude about 400 meters, Horne no. 30 (K).

This species is closely allied to *P. lasiostigma* C. De Candolle. The leaves of *P. kandavuana,* however, are larger, more abruptly attenuate, and mostly less than three times as long as wide. It is distinguished from *P. oahuensis* C. De Candolle of the Hawaiian islands by its palmate venation and apical stigmas. The specimens from Ovalau have slightly subapical stigmas, but otherwise appear to be typical.

9. Peperomia attenuata Yuncker, new species (fig. 16, *a-f*).

Herba terrestris aut epiphytica; caules usque ad 50 cm longi, glabri aut ad apicem adpresso-pubescentes; folia alterna, glabra aut primum raro ad basin plus minusve pubescentia, ciliata, membranacea, elliptico-lanceolata, usque ad 9 cm longa et 3 cm lata, 5-plinervia, apice attenuato-acuminatissima, basi acuta, petiolo 2-3 mm longo; inflorescentia plerumque ramosa, spicae usque ad 3 cm longae; ovarium obovoideum, stigmate sub apice; fructus obovoideus, circiter 0.8 mm longus.

Stems ascending from a decumbent rooting base, up to 50 cm or more long and 5 mm thick when dry, epiphytic or terrestrial, simple or with few branches from below, glabrous, or very young branches pubescent with appressed hairs near the apex, the hairs less than 0.5 mm long, the internodes 1.5-2 cm long above, up to 5 cm below. Leaves alternate, glabrous (very young leaves sparingly hairy at the very base), the upper half of leaves marginally ciliate, particularly so near apex, drying thin and membranous, punctate with black dots, ovate- or elliptic-lanceolate, up to 9 cm long and 3 cm broad, mostly 6-7 cm long and 2-2.5 cm broad, 5-pli-nerved, the two innermost lateral nerves coalescing with the midrib in the lowermost 4-5 mm, the apex narrowly and attenuately acuminate, the base acute, the petioles mostly 2-3 mm long, glabrous, or in young growth rarely hairy with appressed hairs. Spikes commonly in

branching, axillary, and terminal inflorescences, or less commonly unbranched, up to 2.5 cm long and 1.5 mm thick, each spike of a branching inflorescence in the axil of a narrowly lanceolate bract, the flowers at first very densely clustered, but becoming moderately separated by the growth of the rachis, the peduncle about 5 mm long, subclavate, glabrous, the rachis glabrous, the bracts round, peltate, punctate with yellow dots, about 0.5 mm broad, the filaments mostly shorter than the ellipsoid anthers, the ovary obovoid, oblique at apex, the stigma smooth, subapical; fruit obovoid, narrowed toward the base, about 0.8 mm long, verrucose, viscid.

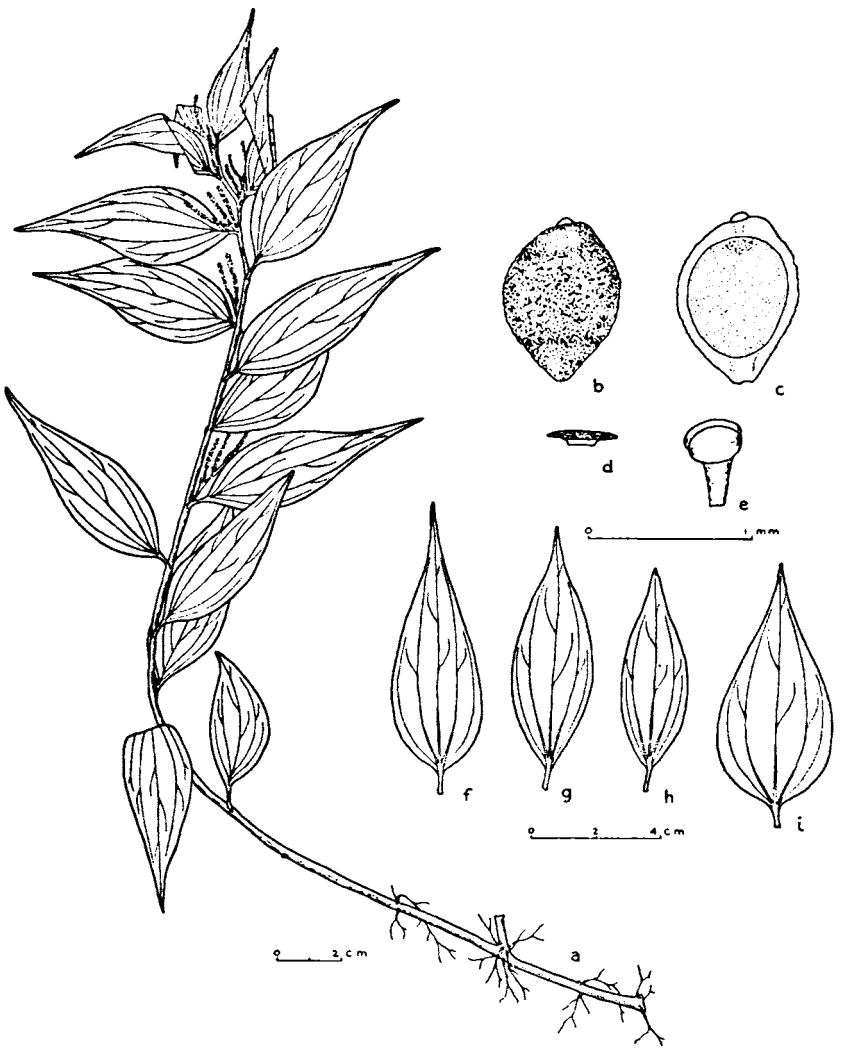

FIGURE 16.—*Peperomia attenuata: a,* plant; *b,* fruit; *c,* section of fruit; *d,* bract, enlarged; *e,* stamen, enlarged; *f,* leaf; *g, h,* leaves of variety *taveuniana; i,* leaf of variety *roseispica.*

Vanualevu: Thakaundrove, terrestrial in dense thickets, summit of Mount Mbatini, altitude 700-1,030 meters, November 29, 1933, Smith no. 712 (type); Mount Mariko, terrestrial on moist banks in dense forest, altitude 600-866 meters, Smith no. 480. Koro: eastern slope of main ridge, epiphytic in forest, altitude 300-500 meters, Smith no. 976.

Key to the Species and its Varieties

Leaves mostly about three times as long as broad, elliptic-lanceolate.
  Apex narrowly and attenuately acuminate, the base acute, the leaves all alternate ..... **P. attenuata**
  Apex less slenderly pointed, the base acute to cuneate, the lower leaves not uncommonly opposite ..... variety **taveuniana**
Leaves mostly 2-2.5 times as long as broad, ovate-lanceolate ..... variety **roseispica**

9a. Peperomia attenuata Yuncker variety **taveuniana** Yuncker, new variety (fig. 16, *g*, *h*).

Folia prope apicem caulis alterna, prope basin opposita, elliptico-lanceolata aut raro plus minusve oblanceolata, desiccata rigida, apice acuminatissima, basi ex acuta cuneata.

Stems sparingly hirtellous to glabrate; leaves alternate above, not uncommonly opposite below, glabrous on the upper surface, sparingly hirtellous to glabrate on the lower surface, elliptic-lanceolate or rarely more or less oblanceolate, the upper leaves 5.5-7 cm long, 1.8-2.5 cm broad, the lower leaves 2.5-4 cm long and about 1.5 cm broad, drying firm, the apex slenderly and attenuately acuminate, the base acute to cuneate; stigma slightly subapical.

Taveuni: western slope between Somosomo and Wairiki, epiphytic in dense forest, altitude 600-900 meters, December 29, 1933, Smith no. 889 (type).

9b. Peperomia attenuata Yuncker, variety **roseispica** Yuncker, new variety (fig. 16, *i*).

Folia ovato-lanceolata, 6-7.5 cm longa, 2.5-3.5 cm lata, 5- vel 7-pli-nervia, membranacea, basi acuta vel obtusa.

Stems glabrous or sparsely hirtellous; leaves ovate-lanceolate, glabrous above, sparingly hirtellous to glabrate beneath, 6-7.5 cm long, 2.5-3.5 cm broad, 5- or 7-pli-nerved or some leaves with the nerves essentially free to base, drying thin and membranous, the apex slenderly and attenuately acuminate, the base acute or obtusish; stigma slightly subapical.

Vanualevu: Mbua, Navotuvotu, summit of Mount Seatura, in dense forest (succulent subscandent epiphyte, the spikes pinkish), altitude 700-830 meters, April 27, 1934, Smith no. 1658 (type).

The slenderly pointed pli-nerved leaves, short thick spikes, and branching inflorescences serve to distinguish *P. attenuata*. Variety *taveuniana* differs in its more elliptic-lanceolate leaves with acute to cuneate bases, while variety *roseispica* has leaves proportionately broader.

10. Peperomia flavida C. De Candolle (fig. 17, *a-f*).

Peperomia flavida C. De Candolle: Jour. Linn. Soc., vol. 39, p. 165, 1909.

Plants epiphytic, the stems abundantly branching, glabrous, the nodes somewhat swollen, the internodes mostly 1-2 cm long. Leaves alternate, glabrous, fleshy, yellow and rigid when dry, not ciliate, elliptic-lanceolate, mostly 3-4 cm long and 0.9-1.5 cm broad, 3- or 5-pli-nerved, the innermost nerves coalescing with the prominent midrib in the lowermost 1-3 mm, or more rarely essentially free to the base, the apex acuminate, the base acute to cuneate, the petiole glabrous, 3-4 mm long. Spikes single in the leaf axils or commonly grouped in a branching inflorescence, each spike in the axil of an acute bract, about 3 cm long, moderately to densely flowered, the peduncles 5-8 mm long, the rachis glabrous, the bracts round, peltate, punctate with yellow dots, about 0.5 mm broad, the filaments somewhat longer than the ellipsoid anthers, the ovary obovoid, oblique at apex, the stigma small, subterminal; fruit globose, glandular, asperulate, sessile, 0.5 mm or a little thicker.

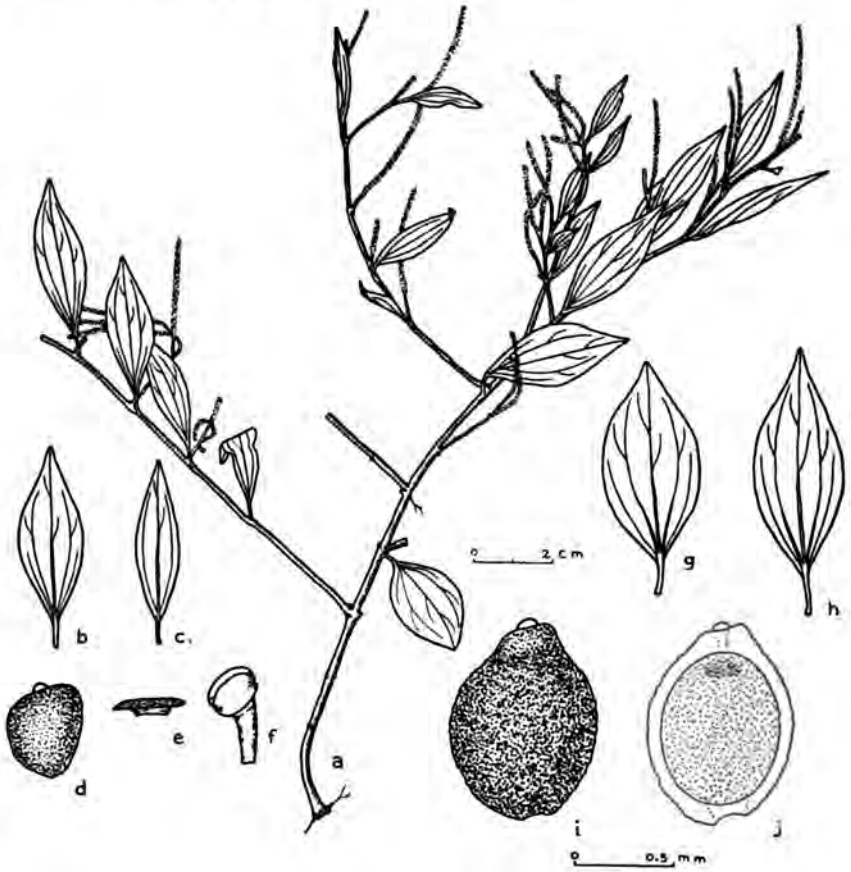

FIGURE 17.—*Peperomia flavida*: *a*, plant; *b*, *c*, leaves; *d*, ovary, enlarged; *e*, bract, enlarged; *f*, stamen, enlarged; *g*, *h*, leaves of variety *pubinervis*; *i*, fruit of variety *pubinervis*; *j*, section of fruit of variety *pubinervis*.

Vitilevu: Tholo North, Nandarivatu, in forest, altitude about 900 meters, Gibbs no. 549 (type, BM).

10a. Peperomia flavida C. De Candolle variety **pubinervis** Yuncker, new variety (fig. 17, *g-j*).

Herba epiphyta; folia supra ad nervos pubescentia subtus glabra, 4-6 cm longa, 1.5-2.3 cm lata, 5-pli-nervia, apice acuminata, basi acuta; fructus globoso-ovoideus, circiter 1 mm longus.

Stems suberect or ascending from a decumbent rooting base, up to 40 cm or more high and 4 mm thick when dry, more or less branching, glabrous, the internodes mostly 1-2 cm long above, up to 4 cm long below. Leaves mostly alternate above, not uncommonly opposite below, glabrous beneath, hairy above along the nerves or glabrescent, ciliate near apex only when young, drying rather firm and yellowish, punctate with pellucid or yellow dots, elliptic-lanceolate, 4-6 cm long, 1.5-2.3 cm broad, 5-pli-nerved, the innermost pair of lateral nerves coalescing with the prominent midrib in the lowermost 3-4 mm, the apex acuminate, the base acute, the petioles glabrous, up to 1 cm long, but mostly 3-5 mm. Spikes simple or in branching bracteolate inflorescences, terminal or axillary in upper leaf axils, up to 3 cm long, moderately flowered, the peduncle 3-5 mm long, glabrous, the rachis glabrous, the bracts round, peltate, about 0.6 mm broad, punctate with yellow dots, the ovary obovoid, oblique at apex, the stigma subapical; fruit about 1 mm long, globose-ovoid, more or less beaked, verrucose, viscid.

Vanualevu: Thakaundrove, Natewa Peninsula, Uluingala, epiphytic in dense forest, altitude 600-820 meters, June 15, 1934, Smith no. 2000 (type).

The description and drawing of the fruit are from a single fruit found adhering to the plant adjacent but not attached to an inflorescence. The variety *pubinervis* differs from the species by its mostly larger leaves which are commonly hairy on the upper surface along the nerves.

11. Peperomia albertiana Yuncker, new species (fig. 18).

Herba epiphyta, usque ad 1 m longa, glabra, ramis pendulis subdichotomis; folia alterna glabra, ex ovata sublanceolata, 5- vel 7-pli-nervia, usque ad 6.5 cm longa et 3.3 cm lata, apice attenuato-acuminata, basi acuta, petiolo usque ad 1.5 cm longo, glabro; spicae terminales vel axillares, 3-4 cm longae; ovarium obovoideum aut plus minusve turbinatum, apice obliquum, stigmate sub apice; fructus circiter 1 mm longus, globoso-obovoideus.

Epiphytic, the branches pendant, up to 1 meter long, subdichotomously branching, the branches up to 6 mm thick when dry, glabrous, the internodes of branches mostly 1-2 cm long, becoming much longer in the older parts of the stem. Leaves alternate or rarely appearing opposite, glabrous, marginally ciliate near apex, drying firm, punctate with black dots in young leaves which become pellucid in older leaves, ovate to oval-lanceolate, 5- or 7-pli-nerved, the innermost pair of lateral nerves coalescing with the prominent midrib in the lowermost 1 cm, up to 6.3 cm long and 3.3 cm broad, mostly 4-5 cm long and 1.8-2.5 cm broad, the apex attenuately acuminate, the base acute, the petioles up to 1.5 cm long on the lower leaves, mostly 0.5-0.7 cm long on the upper leaves. Spikes axillary and terminal, mostly 3-4 cm long, moderately flowered, the rachis glabrous, the peduncle 3-5 mm long, often bracteate with a small acute bract, the floral bracts round, peltate, punctate with yellow dots, about 0.4 mm broad, the filaments slender, about equal to the ellipsoid or suborbicular anthers, the ovary obovoid or somewhat turbinate, apically oblique, the stigma subapical; fruit about 1 mm long, globose-obovoid, narrowed toward the base, verrucose, more or less viscid.

Vanualevu: Mbua, southern slope of Mount Seatura, altitude 600-700 meters, April 27, 1934, Smith no. 1637 (type).

This species is recognized by its long pendant branches, leaf shape, and type of venation. It is named after the collector.

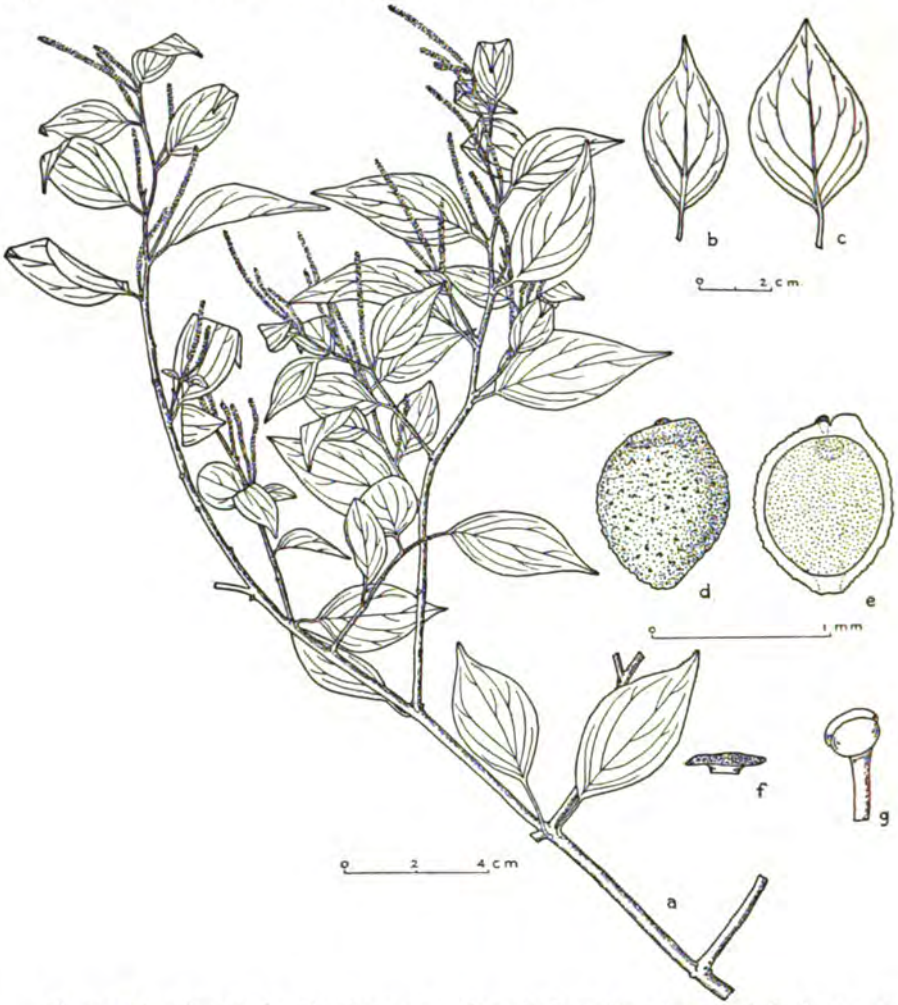

FIGURE 18.—*Peperomia albertiana: a,* section of plant; *b, c,* leaves; *d,* fruit; *e,* section of fruit; *f,* bract, enlarged; *g,* stamen, enlarged.

12. **Peperomia laevilimba** Yuncker, new species (fig. 19).

Herba usque ad 20 cm alta; folia alterna glabra, elliptico- vel oblongo-lanceolata, usque ad 6 cm longa et 1.7 cm lata, 5-pli-nervia, apice attenuato-acuminatissima, basi acuta, petiolo 2-3 mm longo glabro; spicae terminales et axillares, usque ad 12 mm longae, pedunculo 2-3 mm longo glabro; ovarium obovoideo-turbinatum, apice obliquum, stigmate sub apice plus minusve piloso; fructus circiter 0.8 mm longus ovoideus.

Plants 20 cm or more high, 1.5 mm thick below when dry, glabrous, the internodes mostly 1-1.3 cm long. Leaves alternate, glabrous, sparingly ciliate towards apex or glabrous, elliptic- to oblong-lanceolate, up to 6 cm long and 1.7 cm broad, 5-pli-nerved, the innermost pair of lateral nerves coalescing with the prominent midrib in the lowermost 5-10 mm, the lateral nerves very slender and inconspicuous, the apex very narrow and attenuately acuminate, the base acute, the petiole 2-3 mm long. Spikes axillary and terminal, up to 12 mm long, single or grouped in branching inflorescences with each spike in the axil of a lanceolate bract, the peduncle 2-3 mm long, glabrous, the rachis glabrous, the bracts round, peltate, about 0.4 mm broad, punctate with yellow dots, the ovary obovoid-turbinate, oblique at apex, the stigma subapical, commonly somewhat pilose; fruit about 0.8 mm long, ovoid, verrucose, viscid, eventually on pseudopedicels.

Taveuni: on rocks, June, 1860, Seemann no. 565, in part (type, K). Plant mixed with the type of *P. vitiana* C. De Candolle.

This species differs from *P. vitiana* in the shape of the leaves, the glabrous condition of the entire plant, and the definitely pli-nerved leaves.

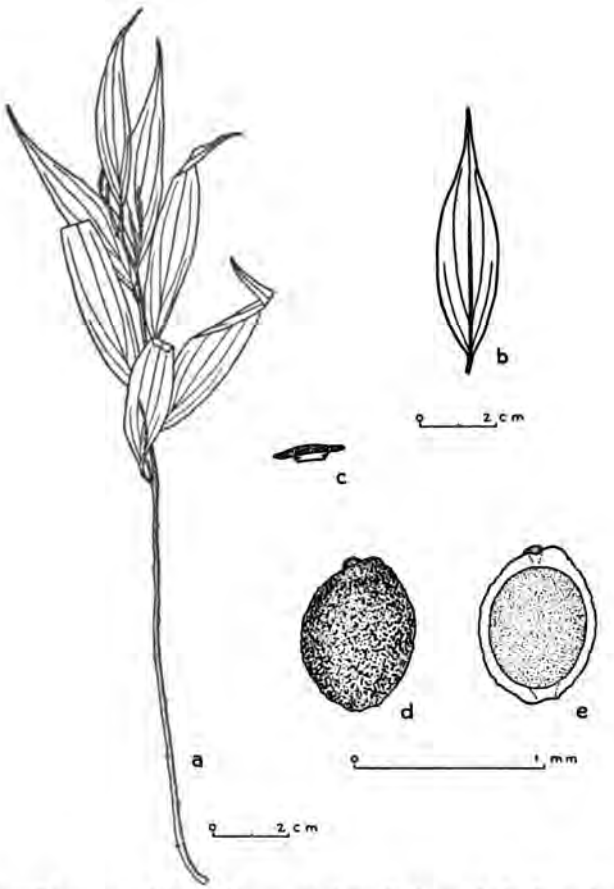

FIGURE 19.—*Peperomia laevilimba*: *a*, section of plant; *b*, leaf; *c*, bract, enlarged; *d*, fruit; *e*, section of fruit.

13. Peperomia leptostachya Hooker and Arnott.

Peperomia leptostachya Hooker and Arnott: Bot. Beechey, p. 96, 1832.—Yuncker: B. P. Bishop Mus., Bull. 112, p. 57, fig. 16, 1933.

Stems ascending from a shortly decumbent and rooting base, mostly less than 25 cm high, densely hirtellous, the internodes comparatively short. Leaves opposite or in whorls, hirtellous, oval, elliptic, or obovate, up to 5 cm long and 2.3 cm broad, mostly about 2-3 cm long and 1.3-1.8 cm broad, palmately 5-nerved, soon deciduous, the apex shortly attenuate, acutish or rounded and obtuse, the base acute to cuneate, the petioles 0.5-1 cm long. Spikes slender, numerous, axillary and terminal, up to 10 cm long, the peduncles 1-2 cm long, hirtellous, the fruit globose-ovoid, about 0.9 mm long, oblique at apex, the stigma subapical.

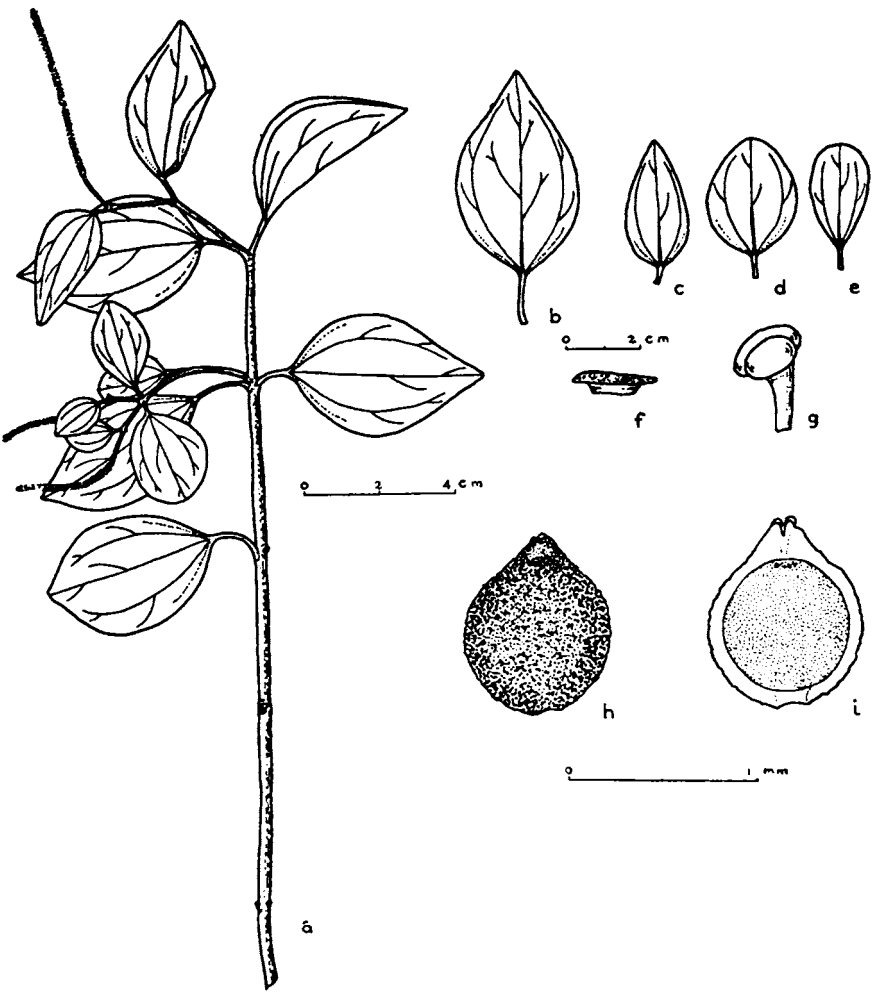

FIGURE 20.—*Peperomia pilostigma: a*, section of plant; *b-e*, leaves, showing variation in size and shape; *f*, bract, enlarged; *g*, stamen, enlarged; *h*, fruit; *i*, section of fruit.

Fiji, without exact locality: Weber no. 49 (Herb. Berlin). Moala: terrestrial on rocky shore of north coast, Smith no. 1402. Kandavu: Namalata isthmus region, altitude 0-30 meters, terrestrial herb in wooded valley, Smith no. 31. Type from Oahu, Hawaiian islands (Beechey, at Kew).

This is more widely distributed throughout Polynesia than any other species of *Peperomia*. It is usually found growing most abundantly on rocks at or near sea level and is readily recognized by its opposite or whorled leaves and hirtellous habit. It does not appear to be common in Fiji.

14. Peperomia pilostigma Yuncker, new species (fig. 20).

Herba terrestris usque ad 30 cm alta, sparse hirtella aut glabra; folia opposita, sparse hirtella aut glabra, elliptica, subobovata, aut raro subovata, 4-5 cm longa, 2.5-3 cm lata, palmatim 5-nervia, apice plus minusve attenuata obtusa vel subacuta, basi acuta vel subobtusa, petiolo 0.8-1.2 cm longo glabro; spicae usque ad 4.5 cm longae; ovarium obovoideum, apice obliquum, stigmate sub apice piloso; fructus circiter 1 mm longus.

Terrestrial, the stems ascending from a decumbent rooting base, up to 30 cm or more high and 4 mm thick when dry, branching, sparingly hirtellous to glabrate, the internodes 3-6 cm long. Leaves opposite or rarely only one at a node, glabrous or sparingly hirtellous beneath and along the nerves above, rarely sparsely ciliate toward apex, elliptic, oval, subobovate, or more rarely subovate, 3-5 cm long and 2.5-3.2 cm broad, drying firm, the leaves on the young growth ovate-orbicular to obovate, much smaller, mostly 1.5-2.5 cm long and 1-2 cm broad, palmately 5-nerved, the outer pair of nerves very indistinct, the small veins anastomosing, the apex more or less attenuate, obtuse or acutish, the base acute or obtusish, the petioles 0.8-1.2 cm long, mostly 0.8-1 cm, sparsely hirtellous or glabrate. Spikes terminal and axillary, up to 5 cm long, moderately flowered, the peduncle 0.8-1.2 cm long, glabrous, the rachis glabrous, the bracts about 0.5 mm broad, orbicular, peltate, the ovary obovoid, apically oblique, the stigma single or divided, subapical, pilose with comparatively long hairs; fruit subglobose, about 1 mm long, verrucose, viscid, apically somewhat pointed, the stigma slightly subapical.

Vanua Mbalavu: northern limestone section, on sea cliff, April 2, 1934, Smith no. 1492 (type).

There is a wide variation in the size of the leaves, with the larger ones on the upper part of the main stem, and those on the branches commonly much smaller. The stigmas on the mature fruit appear to be nearly apical although they are definitely subapical on the ovary.

PROTEACEAE

KERMADECIA Brongniart and Gris

Kermadecia vitiensis Turrill.

Kermadecia vitiensis Turrill: Hook. Ic. Pl., vol. 31, t. 3022, 1915.

Fiji: Vanualevu, altitude 300-800 meters; Mbua, Mount Seatura, Smith no. 1665; Thakaundrove, Mount Kasi, Smith no. 1820; Mount Mbatini, Smith no. 702; Mount Mariko, Smith no. 409. Samoa: Upolu, Graeffe (K).

The species has previously been known from Ovalau and Vitilevu. The type and other specimens are cited by Gillespie (B. P. Bishop Mus., Bull. 91, p. 4, 1932).

Kermadecia ferruginea A. C. Smith, new species (fig. 21).

Arbor parva, foliis simplicibus et floribus binis *K. austro-caledonicae* (Brongniart et Gris) Bentham et Hooker f. affinis, sed foliis basi minus attenuatis et margine remote serratis, inflorescentia conspicue ferrugineo-tomentosa differt; a *K. vitiensi* Turrill foliis simplicibus et inflorescentia tomentosa recedit.

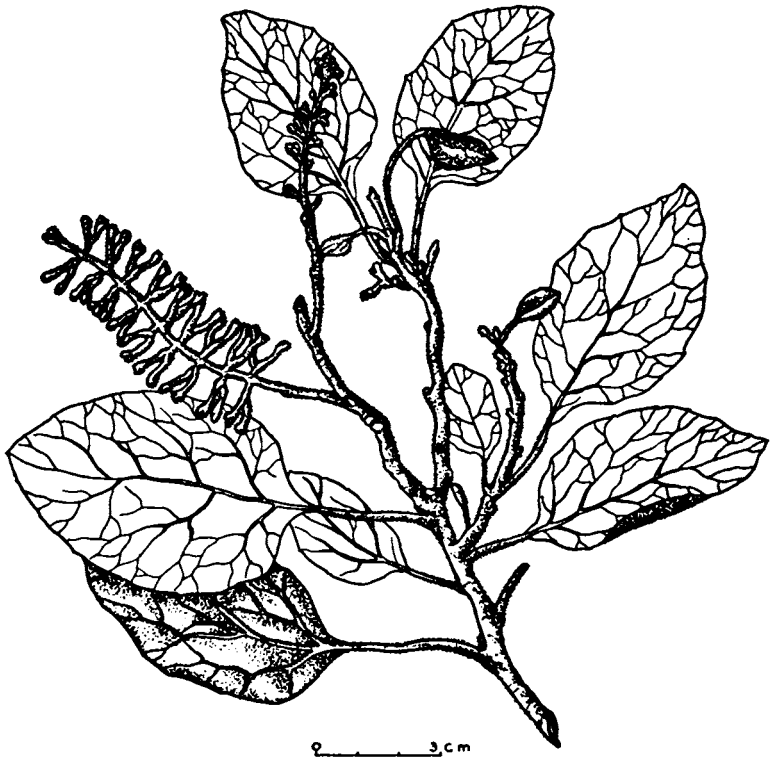

FIGURE 21.—*Kermadecia ferruginea,* flowering branch.

Spreading tree 5 meters high, the young parts and inflorescences densely and closely ferruginous-tomentose, the branchlets and old leaves at length glabrous; leaves alternate, simple, the petioles subterete, 2.5-4 cm long, the leaf blades thin coriaceous, ovate, 7-9 cm long, 5-7 cm broad, the apex subobtuse, the base acute or slightly attenuate, the margins remotely callose-serrate, the upper surface shining and dark green, the lower brownish and deciduously tomentose, the secondary nerves 2- or 3-paired, arcuate-ascending, with the costa slightly raised on both surfaces, the veinlets copiously reticulate, prominulous on both surfaces; racemes several at the apices of branchlets, short-pedunculate, 5-7 cm long; pedicels connate in pairs, about 2 mm long; perianth curved, glabrous within, at anthesis about 11 mm long and 1 mm in diameter, swollen at base and distally, the lobes 4, linear-spatulate, subacute at apex, at length recurved and free; stamens 4,

glabrous, attached near the apices of perianth lobes, the filaments about 0.5 mm long, the anthers oblong, about 1.2 mm long and 0.8 mm broad, the connective slightly produced into an obtuse apiculum; ovary minute, obliquely sessile on the receptacle; style carnose, about 0.7 mm in diameter, the stigma ellipsoid.

Taveuni: western slope, east of Wairiki, Mount Manuka, in forest, altitude 600-830 meters, December 18, 1933, Smith no. 788 (type).

SANTALACEAE

Genus EXOCARPUS Labillardiere

Exocarpus latifolius R. Brown.

Exocarpus latifolius R. Brown: Prodr. Fl. Nov. Holl., p. 356, 1810.

Vanua Mbalavu: northern limestone section, altitude 150 meters, Smith no. 1502.

This collection was from a tree seven meters high, growing in a somewhat exposed situation on a cliff head on the edge of the dense forest which covers the limestone regions of Vanua Mbalavu. Unfortunately it bears fruit only, in which condition I cannot distinguish it from *E. latifolius* of Australia, Malaysia, and New Guinea. Possibly the collection of flowers will establish it as distinct.

The genus appears not to have been reported from the islands between New Caledonia and Hawaii. The species known from those areas, however, are not closely related to specimen no. 1502. If this collection is correctly placed in *E. latifolius,* the discovery of the species in the islands between New Guinea and Fiji is to be expected.

MORACEAE

Genus FICUS Linnaeus

By V. S. Summerhayes

A more complete account of the species of *Ficus* in Fiji is being prepared by the writer. The present treatment lists only the specimens collected by Dr. Smith.

Ficus barclayana (Miquel) Summerhayes.

Ficus barclayana (Miquel) Summerhayes: Jour. Arn. Arb., vol. 13, p. 104, 1932.

Vanualevu: Thakaundrove, southern slope of Valanga Range, altitude 200-400 meters, Smith no. 381.

A slender tree four meters high, locally known as *losilosi.*

Ficus (Section **Sycidium**) **begoniifolia** Summerhayes, new species (fig. 22).

Arbor affinis *F. senffiianae* Warburg et *F. greenwoodii* Summerhayes, ab utraque nervis lateralibus utrinsecus paucioribus, ab illa foliis basi obliquis pedunculis longiori-

bus, florum femineorum perianthii segmentis obtusis, ab hac receptaculis minoribus scabrido-puberulis squamulis orbicularibus obtectis differt.

Arbor parva 8 m alta; ramuli teretes, juventute sparse pubescentes, demum glabri, cortice laevi vel ruguloso flavo-brunneo obtecti; folia valde oblique oblongo-ovata, apice breviter acuminata, basin versus uno latere excavata, altero latere valde dilatata, utrinque cordata, 15-22 cm longa, 7-9 cm lata, marginibus leviter sinuatis, chartacea, supra griseo-viridia, subtus pallide viridia, glabra, supra asperula, subtus fere laevia, costa et nervis supra prominulis subtus prominentibus, nervis primariis utrinsecus 7-8 infimis e costa angulo 30-45° ceteris angulo 40-60° exortis prope marginem arcuatim conjunctis, venis secundariis et tertiariis prominulis, rete venularum indistincto; petiolus crassiusculus, supra leviter canaliculatus, 1.5-2 cm longus, mox cortice in laminas parvas tenuissimas decorticante obtectus; stipulae lanceolatae, acutae, pubescentes, 5-8 mm longae; recep-

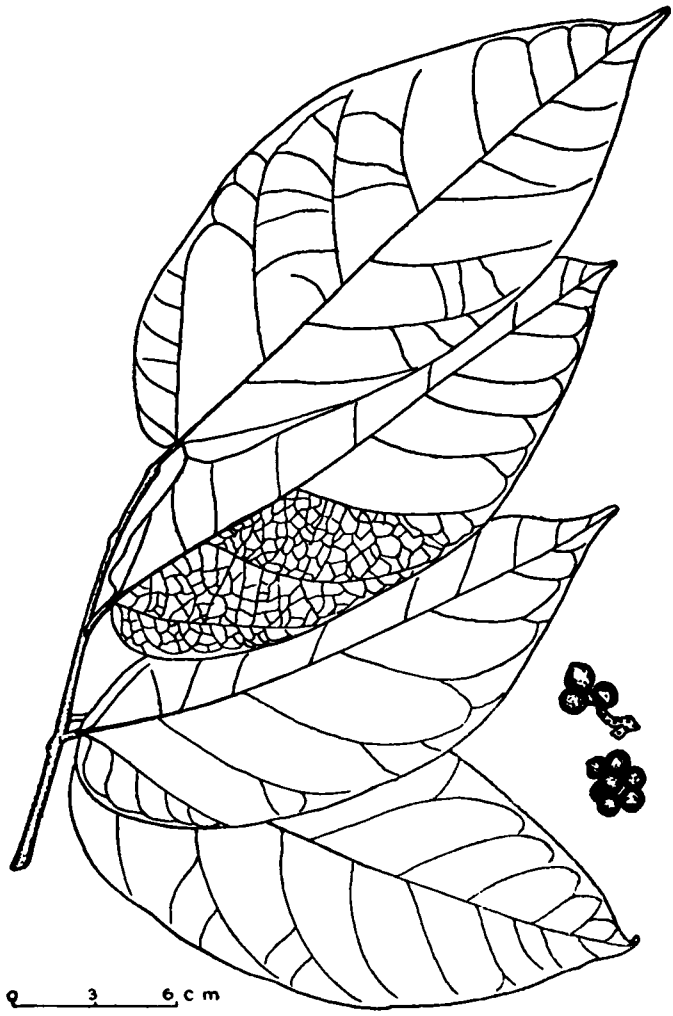

FIGURE 22.—*Ficus begoniifolia.*

tacula e ramulis brevissimis ramosis e trunco exeuntibus orta, pedunculata, fere sphaeroidea, rubra, 1-1.5 cm diametro, scabrido-puberula, squamulis orbicularibus (?lenticellis) obtecta, umbilico prominente, ostioli bracteis ciliatis, intus setis inter flores instructa; pedunculus circiter 1 cm longus, gracilis, pubescens, apicem versus bracteis tribus deltoideo-ovatis ciliatis instructus; flores feminei tantum visi, sessiles vel usque ad 2.5 mm pedicellati, perianthii segmentis 4 spathulato-oblongis 1.8-2.5 mm longis hyalinis vel flavido-aurantiacus subopacis eciliatis; ovarium sessile vel breviter stipitatum, compresse ellipsoideum, stylo laterali, stigmate brevi dilatato.

Vanua Mbalavu: central volcanic section, near Lomaloma, in woods, altitude 100-200 meters, March 28, 1934, Smith no. 1413 (type).

A local name is ***nunu***.

Ficus (Section **Sycidium**) **fulvo-pilosa** Summerhayes, new species (fig. 23).

Frutex vel arbor, affinis *F. scabrae* Forster et *F. marecnsi* Warburg, ab illa ramulis et receptaculis fulvo-pilosis, foliis basi plus minusve obliquis, pedunculis apice bracteatis, ab hac ramulis receptaculisque fulvo(nec griseo)-pilosis, foliis basi vix trinerviis nervis primariis utrinsecus 6-11 costa supra pubescente, perianthii segmentis ciliatis differt. "*Ficus scabra*" Seemann (Fl. Vit., p. 249, pl. 64, 1868; non *F. scabra* Forster).

Frutex vel arbor parva usque ad 10 m alta; ramuli hornotini plus minusve dense fulvo-pilosi, annotini glabrescentes, cortice brunneo leviter longitudinaliter ruguloso obtecti; folia ovata, oblongo-ovata vel lanceolato-ovata, apice acuta vel breviter acuminata, basi plus minusve interdum valde obliqua, uno latere valde dilatata rotundata, utrinque cordata, usque ad 25 cm longa et 14 cm lata, chartacea, supra (costa et nervis lateralibus inferioribus plus minusve dense pubescentibus exceptis) sparse pubescentia vel fere glabra, brunneo- vel olivaceo-viridia, subtus praesertim costa et nervis fulvo-pubescentia, viridia, costa et nervis supra prominulis subtus prominentibus, nervis primariis utrinsecus 6-11 e costa angulo 40-60° exortis prope marginem arcuatim conjunctis, venis secundariis et tertiariis supra indistinctis subtus prominentibus, rete venularum subtus saepe distincto; petiolus crassiusculus vel rarius subgracilis, subteres, supra leviter excavatus, 0.5-2.5 cm longus, indumento ei caulis simili obtectus; stipulae lanceolatae, acutae, usque ad 1.5 cm longae, dense fulvo-pilosae; receptacula axillaria vel e ramulis junioribus orta, solitaria vel saepius gemina, alia flores masculos et femineos cecidiophoros, alia flores femineos includentia, pedunculatae, sphaeroidea vel fere sphaeroidea, matura 1-1.5 cm diametro, primo flava, matura rubro-brunnea, plus minusve dense fulvo-pilosa, umbilico saepe prominente, intus setis inter flores instructa; pedunculus 3-15 mm longus, gracilis, fulvo-pilosus, prope apicem bracteis tribus parvis instructus; flores masculi pauci, prope ostiolum siti, sessiles vel breviter pedicellati, perianthii segmentis 4-7 spathulato-oblanceolatis obtusis 1.5-2.2 mm longis apice ciliatis; stamen 1, perianthio brevior; ovarium abortivum, saepius minutum, rarissime major stamen superans; flores feminei cecidiophori sessiles vel usque ad 2 mm pedicellati, perianthii segmentis eis florum masculorum similibus sed longioribus; ovarium stipitatum, ellipsoideum vel obovoideum, stylo laterali brevi, stigmate brevi subcapitato; flores feminei sessiles vel usque ad 2.5 mm pedicellati, perianthii segmentis eis florum masculorum et femineorum cecidiophororum similibus; ovarium sessile vel breviter stipitatum, stylo laterali longiusculo, stigmate brevi valde dilatato vel brevissime bilobo.

Vanualevu: Thakaundrove, southern slope of Korotini Range, below Navitho Pass, in dense forest, altitude 300-650 meters, November 21, 1933, Smith no. 512 (type, male-gall plant); southern slope of Valanga Range, Smith no. 397; Mbua, southern slope of Mount Seatura Smith no. 1612; southern portion of Seatovo Range, Smith no. 1569. Koro: eastern slope of main ridge, Smith no. 938 (female plant, subsidiary type). Kandavu: hills

above Namalata and Ngaloa Bays, Smith no. 121; summit of Mount Mbuke Levu, Smith no. 291. Moala: near Naroi, Smith no. 1326.

This is a very common fig in Fiji, growing in forest from 100 to 850 meters altitude. I have also seen specimens from many localities in Vitilevu and Taveuni. Local names are ***masimasi, masi ni ulutoa, losilosi,*** and ***nunu.***

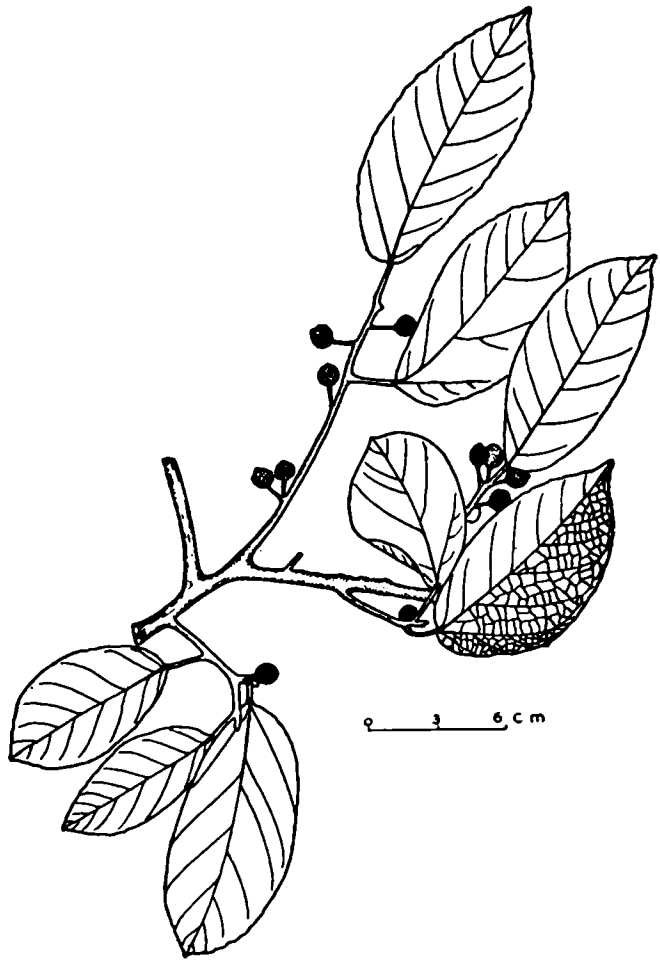

FIGURE 23.—*Ficus fulvo-pilosa.*

Ficus (Section **Sycidium**) **greenwoodii** Summerhayes, new species (fig. 24).

Arbor affinis *F. storckii* Seemann, a qua foliis dimidio inferiore saepius leviter angustatis, petiolis brevioribus, receptaculis majoribus basi 2-3-bracteatis differt. *"Ficus aspera"* Seemann (Fl. Vit., p. 249, pl. 65, 1868, in part; non *F. aspera* Forster).

Arbor 5-18 m alta, cortice laevi obtecta; ramuli juventute brunnei vel rubro-brunnei, scabrido-puberuli vel glabri, demum cortice brunneo vel atro-brunneo laevi vel leviter

longitudinaliter rugoso obtecti; folia ovata vel oblongo-ovata vel oblongo-oblanceolata, apice breviter vel longiuscule et anguste acuminata, basi valde obliqua, uno latere angustata et saepe cuneata vel subrotundata, altero latere valde dilatata rotundata et cordata, usque ad 30 cm longa et 13 cm lata, acumine usque ad 4 cm longo, chartacea, supra glabra vel pilis rarissimis praedita, aspera, subtus glabra, punctulato-asperula vel sublaevia, supra viridia vel brunneo-viridia, subtus pallidiora, costa supra prominula inferne leviter canaliculata subtus prominente, nervis primariis utrinsecus 9-14 e costa angulo 45-60° exortis curvatis prope marginem arcuatim conjunctis supra prominulis subtus prominentibus, venis secundariis et tertiariis prominulis, rete venularum indistincto; petiolus semivel subteres supra leviter excavatus vel canaliculatus, 1-3.5 cm longus, scabrido-pubescens, brunneus; stipulae lanceolatae, acuminatae, 5-10 mm longae, scabrido-puberulae; receptacula ex axillis foliorum gemina vel e ramis et trunco fasciculata, alia flores masculos et femineos cecidiophoros, alia flores femineos includentia, pedunculata, globosa vel globoso-ellipsoidea, matura circiter 2.5 cm longa et 2 cm diametro, juventute scabrido-puberula, demum glabra, asperula, matura rubra vel purpurascentia, ostioli bracteis prominentibus erectis vel rarius reflexis, intus setis hyalinis inter flores instructa; pedunculus gracilis, 7-20 mm longus, asperulus, apice vel prope apicem bracteis 2 vel 3 ovatis plus minusve patentibus usque ad 4 mm longis instructus, bracteis basalibus brevissimis deciduis; flores masculi prope ostiolum siti, sessiles vel rarius breviter pedicellati, perianthii segmentis 4-5 plus minusve liberis spathulato-oblongis 1.5-2.5 mm longis apice ciliolatis; stamen 1, perianthio brevior vel eum aequans; ovarium abortivum, minutum, rarissime stamen fere aequans; flores feminei cecidiophori sessiles vel usque ad 1.7 mm pedicellati, perianthio eo florum masculorum simili; ovarium ellipsoideum vel obovoideum, stipitatum, stylo laterali brevi, stigmate parvo subclavato; flores feminei sessiles vel usque ad 2.5 mm pedicellati, perianthii segmentis 3-5 eis florum masculorum similibus sparse ciliolatis; ovarium compresse ellipsoideum, stylo laterali vel subterminali cum stigmate usque ad 2 mm longo, stigmate cylindrico-clavato vel filiformi.

Vitilevu: Lautoka, Loloti Mountains, September 18, 1920, Greenwood no. 76 (type, male-gall plant; K). Vanualevu: Thakaundrove, hills south of Nakula valley, on Nasuvasuva, Smith no. 355; Mount Ndikeva, eastern slope, Smith no. 1915. Taveuni: western slope between Somosomo and Wairiki, Smith no. 721 (female plant, subsidiary type). Koro: eastern slope of main ridge, Smith no. 968. Kandavu: Mount Mbuke Levu, Smith no. 221. Moala: near Naroi, Smith nos. 1311, 1325.

The species is distributed throughout the islands, specimens having been seen also from many localities on Vitilevu, Matuku, and Vanua Mbalavu. It occurs in forest up to 500 meters altitude and is locally known as ***nunu, masimasi,*** and ***vuaitamona.***

Ficus kajewskii Summerhayes.

Ficus kajewskii Summerhayes: Jour. Arn. Arb., vol. 13, p. 103, 1932.

Vanualevu: Thakaundrove, hills south of Nakula valley, Smith no. 338; Mount Mariko, Smith no. 460; crest of Korotini Range, Smith no. 532; Mbua, southern portion of Seatovo Range, Smith no. 1558. Koro: main ridge, Smith no. 1057. Kandavu: hills above Namalata and Ngaloa Bays, Smith no. 199. Moala: near Naroi, Smith nos. 1314, 1323.

This species also is widely distributed in Fiji, and has been collected in many localities on Vitilevu and smaller islands. It is a shrub or small tree

3-12 meters high, occurring in thickets, woods, and forest up to 900 meters altitude. The fruit is often yellow at first, becoming orange, red, or purple. Local names are *nunu, nunu ni tuatua, losilosi, masa ni ulutoa,* and *nduvu-nduvu.*

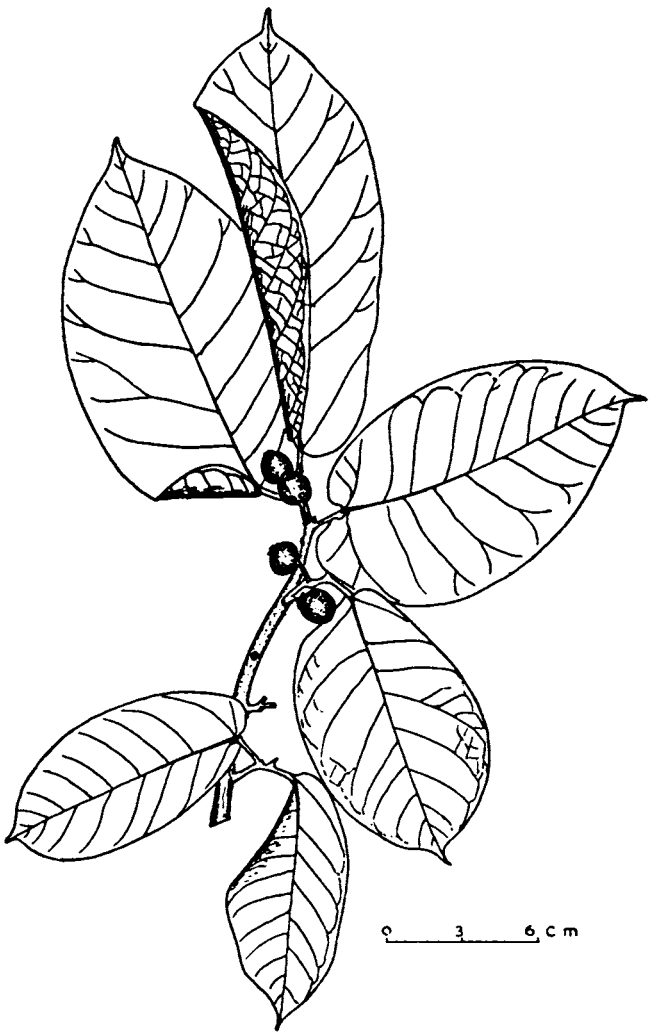

FIGURE 24.—*Ficus greenwoodii.*

Ficus masoni Horne.

Ficus masoni Horne: Baker, Jour. Linn. Soc., vol. 20, p. 371, 1883.

Vanualevu: Thakaundrove, southern slope of Korotini Range below Navitho Pass, in dense forest, altitude 300-650 meters, Smith no. 489. Kan-

davu: Mount Mbuke Levu, summit, in dense forest, altitude 750-840 meters, Smith no. 285. Shrub 3-4 meters high, locally known as *vuaitamona.*

Ficus obliqua Forster.

Ficus obliqua Forster: Prodr., p. 77, 1786.

Kandavu: hills above Namalata and Ngaloa Bays, Smith nos. 49, 58. Fulanga: limestone formation, Smith no. 1199.

Spreading tree up to 30 meters high, growing in forest up to 400 meters altitude. The fruit is orange. A local name is *mbaka.*

Ficus pritchardii Seemann.

Ficus pritchardii Seemann: Fl. Vit., p. 252, pl. 70, 1868.

Vanualevu: Thakaundrove, Mount Mariko, Smith no. 429; between Vatukawa and Wainingio Rivers, Ndrekeniwai Valley, Smith no. 581; Natewa Peninsula, hills south of Natewa, Smith no. 1971; Mbua, southern portion of Seatovo Range, Smith no. 1554. Kandavu: Mount Mbuke Levu, Smith no. 235.

Fairly common tree 5-20 meters high, growing in forest at 100-900 meters altitude, locally known as *loroloro, losilosi, masi,* or *nunu.* The inflorescence usually arises from the trunk in dense masses or on lateral branches up to 2 meters long; the mature fruits are red.

Ficus smithii Horne.

Ficus smithii Horne: Baker, Jour. Linn. Soc., vol. 20, p. 372, 1883.

Vanualevu: Thakaundrove, southwestern slope of Mount Mbatini, in dense forest, altitude 300-700 meters, Smith no. 605; Mbua, lower Wainunu River valley, in thin forest, altitude 0-200 meters, Smith no. 1728.

Tree 4-18 meters high, with red fruits. In the Wainunu region a local name is *mbauvundi,* and the trunks are used as ship masts.

Ficus storckii Seemann.

Ficus storckii Seemann: Fl. Vit., p. 251, pl. 69, 1868.

Vanualevu: Thakaundrove, Nasuvasuva, south of Nakula Valley, Smith no. 357; southern slope of Valanga Range, Smith no. 372. Fulanga: on limestone formation, Smith no. 1177.

Tree 3-7 meters high, growing in woods at low altitudes, locally known as *nunu* or *masimasi.*

Ficus tinctoria Forster.

Ficus tinctoria Forster: Prodr., p. 76, 1786. Seemann: Fl. Vit., p. 249, pl. 63, 1868.

Vanualevu: Mbua, southern portion of Seatovo Range, Smith no. 1699. Koro: rocky west coast, Smith no. 1077. Kandavu: Namalata isthmus region, Smith nos. 36, 41. Kambara: limestone formation, Smith nos. 1256, 1296. Fulanga: limestone formation, Smith nos. 1115, 1138.

Slender shrub or tree up to 10 meters high, growing in thickets or rocky woods at altitudes up to 350 meters. The fruit is yellow or orange. Local names are *nunu, mbaka,* and *savirewa.*

FIGURE 25.—*Pellionia goepeliana,* flowering branch, staminate.

Ficus vitiensis Seemann.

Ficus vitiensis Seemann: Fl. Vit., p. 250, 1868.

Vanualevu: Mbua, southern portion of Seatovo Range, Smith no. 1515. Taveuni: Mount Manuka, Smith no. 775. Kandavu: Namalata isthmus region, Smith no. 21.

Shrub or tree up to 5 meters high, usually found in dry places, often among reeds, up to an altitude of 800 meters. A local name is *lolo,* and the fruit is said to be edible.

URTICACEAE

Genus PELLIONIA Gaudichaud

Pellionia goepeliana A. C. Smith, new species (fig. 25).

Herba sublignea vel frutex scandens, *P. elatostemoidi* Gaudichaud affinis, foliis apice haud acuminatis margine repandis vel subintegris differt; floribus masculis *P. elatoste-*

moidi* var. *pubescenti Turrill affinis, habitu glabro, foliorum forma, inflorescentiis masculis simplicioribus differt.

Subligneous herb 1-2 meters high, sometimes becoming a high-climbing liana, the stem sparingly branched, glabrous; leaves alternate, the petioles glabrous, slender, terete, 8-20 mm long, the blades submembranous when dried, oblong-elliptic, 10-20 cm long, 3.5-6 cm broad, sometimes smaller in climbing specimens, acute and slightly asymmetric at base, acute or short-cuspidate at apex, subentire or repand-crenate at margins, copiously marked on both surfaces with short linear cystoliths, glabrous, the costa slightly raised on both surfaces, the secondary nerves 7-10 per side, curved, anastomosing near margins, nearly plane on both surfaces, the veinlets inconspicuous; stipules lanceolate, acute, 5-10 mm long, soon deciduous; staminate inflorescences glabrous, 1-4 at the nodes, the cymes simple, the peduncles slender, 3-10 mm long, the receptacle swollen; flowers 8-12 per cyme, the pedicels slender, at anthesis 2-3 mm long; sepals 5, membranous, ovate-oblong, 2-2.5 mm long, 1.5 mm broad, the midvein thickened; stamens 5, the filaments about 1.5 mm long, the anthers about 1 mm long, the locules distinct.

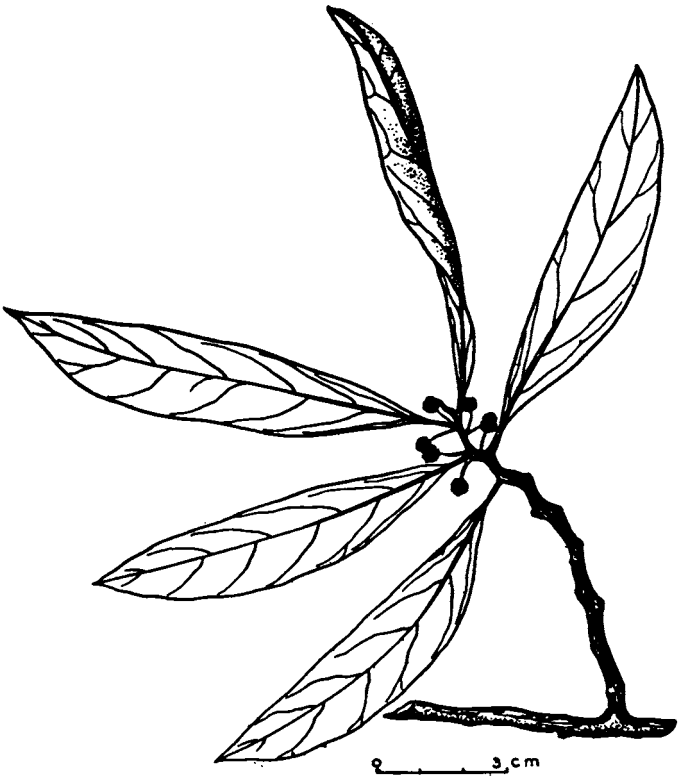

FIGURE 26.—*Elatostema anfractum*, flowering branch, pistillate.

Vanualevu: Thakaundrove, in dense forest on the southern slope of the Korotini Range below Navitho Pass, altitude 300-650 meters, November 21, 1933, Smith no. 519 (type); dense forest on Mount Mariko, altitude 600-866 meters, Smith no. 433. Koro: forest on eastern slope of main ridge, altitude 300-500 meters, Smith no. 979.

The species is named in honor of Mr. John Goepel, at the time of my visit District Commissioner of Savusavu, my host in that region, and my companion during an ascent of Mariko.

I have not seen authentic material of *P. australis* Weddell (collected by Vieillard on Ovalau), but from description that species may be identical with *P. elatostemoides* variety *pubescens*.

Genus ELATOSTEMA Forster

Elatostema anfractum A. C. Smith, new species (fig. 26).

Herba inter species maris Pacifici *E. sessili* Forster et *E. fruticoso* Gibbs affinis, foliis integris vel subintegris, cystolithis inconspicuis, capitulis femineis longe pedunculatis differt; foliorum forma *E. sesquifolio* (Blume) Hasskarl similis, petiolis pedunculisque longioribus facile distinguitur.

Suffruticose herb, glabrous throughout, the young branchlets anfractuose; leaves alternate, the petioles shallowly canaliculate, 5-10 mm long, the blades submembranous and brownish when dried, oblong-elliptic, 8-12 cm long, 2-3 cm broad, acute and slightly asymmetric at base, acute or short-cuspidate at apex, entire (or distally shallowly crenate) at margins, sparsely (or not at all) marked on the upper surface with minute cystoliths, the costa raised beneath, the secondary nerves 5 or 6 per side, ascending, plane on both surfaces; stipules linear, about 5 mm long, soon deciduous; pistillate inflorescences (past maturity in our specimens) axillary, solitary and paired; peduncles slender, 4-7 mm long; heads bright red, 3-5 mm in diameter, bracteate; perianth segments linear, about 1 mm long; ovary ovoid, in our specimens (past anthesis) 1 mm long.

Taveuni: in forest on the western slope, between Somosomo and Wairiki, altitude 700-900 meters, December 14, 1933, Smith no. 744 (type).

Elatostema seemannianum A. C. Smith, new species (fig. 27).

Herba crassa *E. macrophyllo* Brongniart affinis, foliis margine minus prominente serratis, capitulis masculis multo majoribus, sepalis strigosis, antheris pro longitudine filamentorum longioribus differt.

Stout herb to 2 meters high, the stem simple, glabrous or sparsely pale-strigose; leaves alternate, subsessile or with very short winged petioles, the blades bright green, papyraceous or submembranous when dried, elliptic or obovate-elliptic, 18-40 cm long, 6-15 cm broad, asymmetrically attenuate at base, abruptly short acuminate at apex, serrate at margins (serrations obtuse or subacute, 1-3 per cm), very densely and minutely tuberculate on both surfaces, otherwise glabrous above and sparsely pilose on the nerves beneath (hairs spreading, up to 2 mm long), the costa plane above, prominent beneath, the secondary nerves 8-18 per side, curved, ascending towards margins, elevated beneath, the veinlets reticulate, obscure above, slightly raised beneath; stipules membranous, lanceolate, about 2 cm long, soon deciduous; staminate inflorescences axillary, subsessile, at maturity 2-3.5 cm in diameter, the outer bracts ovate-oblong, involucrate, slightly pubescent or glabrous, the inner bracts membranous, oblong-spatulate, 4-5 mm long, 1-2 mm broad, strigose distally without (hairs 0.5-1 mm long); pedicel of staminate flowers 1 mm long, the sepals 4, oblong-ovate, 1.5 mm long, 1 mm broad, cuspidate, sparsely strigose distally without; stamens sharply inflexed in bud, the filaments 1-1.5 mm long, the anthers oblong, about 1 mm long.

Fiji: without definite locality, Harvey (BM, G, K). Vitilevu: Tholo North, Nandarivatu, altitude 900 meters, Gibbs no. 862 (BM). Koro: in forest on eastern slope of main ridge, altitude 300-500 meters, January 29, 1934, Smith no. 982 (type).

This species, which forms large patches in wet forest, was referred by Seemann (Fl. Vit., p. 241, 1868) and Gibbs (Jour. Linn. Soc., vol. 39, p. 172, 1909) to *E. macrophyllum* Brongniart, originally described from Amboyna. It appears to differ from that species by the characters brought out in the above diagnosis. The new species does not appear to be any of the Samoan species described by Reinicke and Rechinger.

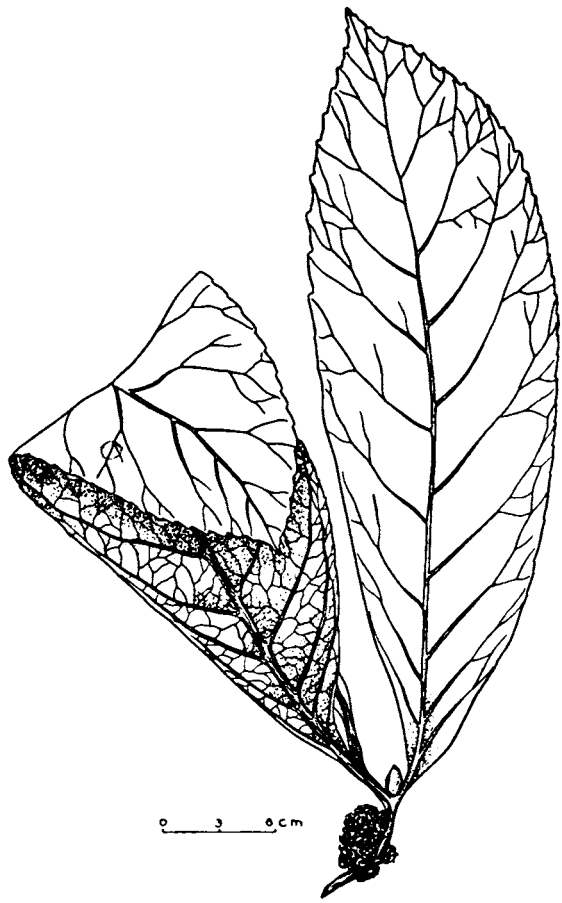

FIGURE 27.—*Elatostema seemannianum*, flowering branch, staminate.

ANNONACEAE

Genus **POLYALTHIA** Blume

Gillespie has recently combined *Uvaria amygdalina* A. Gray and *Polyalthia vitiensis* Seemann, a course which does not seem justified in view of the discrepancy of fruit characters. Reinstatement of these two species, together

with two which appear to be new, raises the number of *Polyalthias* known from Fiji to five. The following key is based on foliage and fruit characters.

Key to the Species

Leaf base subcordate; fruiting pedicel 1-2 cm long, the receptacle globose and smooth.
  Receptacle and fruit glabrous.
    Fruit globose, sessile, the apex apiculate.....**P. amygdalina**
    Fruit oblong, stipitate, the apex obtuse or rounded.
      Branchlets and leaves glabrous.....**P. vitiensis**
      Branchlets, principal nerves, and often the leaf surfaces persistently yellowish-hirsute .....**P. loriformis**
  Receptacle short-setose; fruit closely yellowish-brown-tomentellose; leaf base often subamplexicaul.....**P. laddiana**
Leaf base rotund-cuneate; fruiting pedicel 4-5 cm long, the receptacle transversely elliptic and tuberculate.....**P. pedicellata**

Polyalthia amygdalina (A. Gray) Gillespie.

Polyalthia amygdalina (A. Gray) Gillespie: B. P. Bishop Mus., Bull. 83, p. 4, 1931.

Uvaria amygdalina A. Gray: Bot. U. S. Expl. Exped., vol. 1, p. 31, 1854.

Ovalau: U. S. Expl. Exped. (type, G); Graeffe no. 1550 (K); Horne no. 318 (K); Gillespie no. 4532.

Polyalthia vitiensis Seemann.

Polyalthia vitiensis Seemann: Fl. Vit., p. 4, pl. 3, 1865.

Ovalau: Seemann no. 4 (type, K).

Polyalthia loriformis Gillespie.

Polyalthia loriformis Gillespie: B. P. Bishop Mus., Bull. 83, p. 4, fig. 1, 1931.

Fiji, without definite locality: Storck (K). Vanualevu: Thakaundrove, southwestern slope of Mount Mbatini, altitude 300-700 meters, Smith no. 601.

This species is also represented by Vitilevu specimens cited by Gillespie.

Polyalthia laddiana A. C. Smith, new species (fig. 28).

Arbor parva, pedicellis sub fructu brevibus et receptaculis globosis laevibus *P. amygdalinae* (A. Gray) Gillespie, *P. vitiensi* Seemann, et *P. loriformi* Gillespie affinis, fructibus arcte tomentellis et foliis basi conspicue cordatis saepe subamplexicaulibus distinguenda.

Tree to 5 meters high, the branchlets slender, terete, glabrous, rugose, slightly flexuose; petioles subterete, 1-3 mm long, glabrous or when young sparsely puberulent; leaf blades chartaceous, glabrous, ovate-elliptic, 9-15 cm long, 3.5-6 cm broad, rounded and conspicuously cordate at base, often appearing subamplexicaul, obtuse at apex, entire at margins, the costa slightly impressed above, prominent beneath, the secondary nerves 7-10 per side, copiously anastomosing, raised on both surfaces, the veinlets copiously reticulate, prominulous; frutescences pedicellate, the pedicel stout, curved, about 1 cm long, sparsely puberulent or glabrescent, the receptacle globose, setose with short yellowish hairs, the carpels about 6, divergent, smooth, closely tomentellous (hairs yellowish-brown,

persistent), short-stalked, oblong, 13-20 mm long, 6-8 mm broad, obtuse or rounded at apex.

Fulanga: in forest on limestone formation, altitude 0-80 meters, February 22, 1934, Smith no. 1147 (type).

A local name is *vuvundi*. The species is named in honor of my companion on Fulanga, Dr. H. S. Ladd, whose geological studies of Fiji have greatly enriched our knowledge.

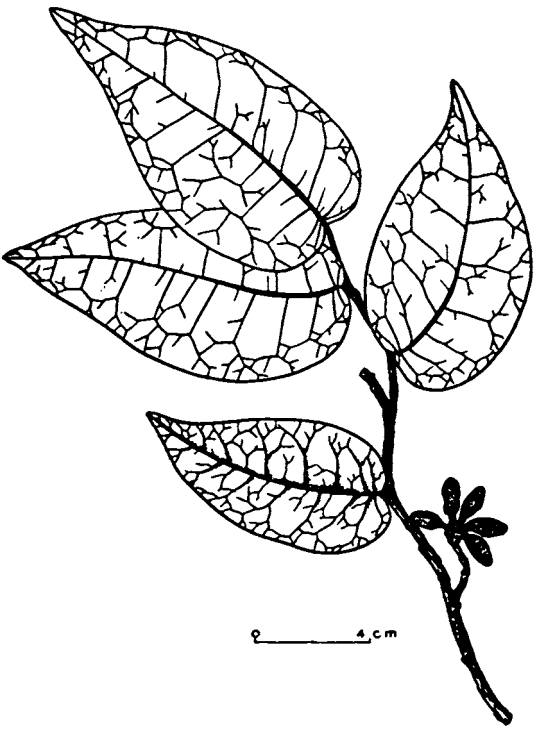

FIGURE 28.—*Polyalthia laddiana*, fruiting branch.

Polyalthia pedicellata A. C. Smith, new species (fig. 29).

Arbor ubique glabra, a *P. amygdalina* (A. Gray) Gillespie ceterisque speciebus vitiensibus foliorum forma, pedicellis longis, receptaculis sub fructu irregularibus differt.

Tree about 15 meters high, glabrous throughout, the branchlets terete, rugose, copiously lenticellate; petioles nigrescent, rugose, subterete, about 5 mm long; leaf blades chartaceous, ovate-elliptic, 12-19 cm long, 5-6.5 cm broad, rounded or cuneate at base, acuminate at apex, entire at margins, the costa slightly raised above, prominent beneath, the secondary nerves 5-8 per side, arcuate-ascending, raised on both surfaces, the veinlets copiously reticulate, prominulous; frutescences cauligerous, pedicellate, the pedicel terete, curved, 4-5 cm long, the receptacle transversely ellipsoid and tuberculate, the carpels about 8, divergent, black and rugose when dried, short-stalked (stalks stout, 2-4 mm long), oblong, 2.5-4 cm long, 8-12 mm broad, rounded at apex.

Vanualevu: Thakaundrove, Mount Mbatini, in dense forest on crest of range, altitude 700-1,030 meters, November 28, 1933, Smith no. 647 (type).

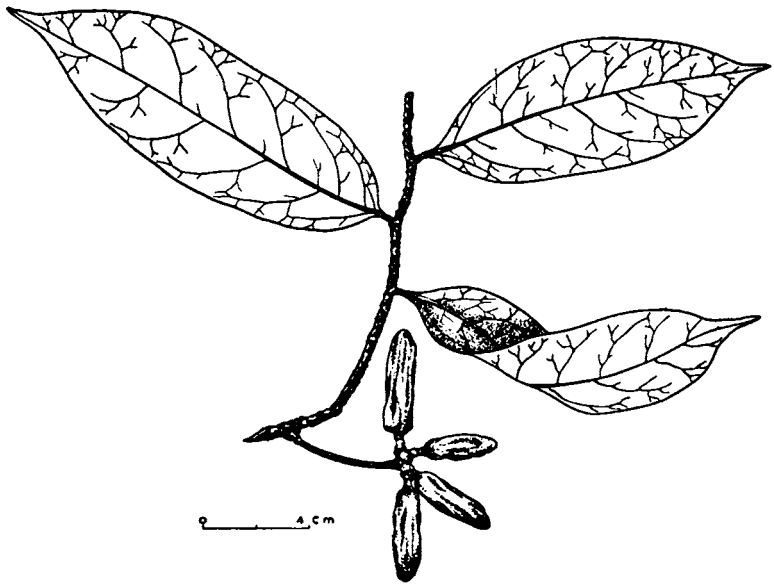

FIGURE 29.—*Polyalthia pedicellata,* fruiting branch.

Genus OXYMITRA Hooker f.

Oxymitra monosperma (A. Gray) A. C. Smith, new combination.

Richella monosperma A. Gray: Bot. U. S. Expl. Exped., vol. 1, p. 28, pl. 2, 1854.

Oxymitra grayana Baillon: Hist. Pl., vol. 1, p. 237, 1868.

In reducing Gray's genus *Richella* to *Oxymitra,* Baillon mentions that there are sometimes three or four seeds in a carpel. Furthermore, the remarkable winged seeds of the Fijian species find a lesser development in a New Caledonian species, thus providing a transition to Malayan species which have the seeds variously marked. Gray's specific name, inaccurate though it may be, must be retained.

Genus FISSISTIGMA Griffith

Fissistigma sericeum A. C. Smith, new species (fig. 30).

Arbor, generis species unica vitiensis, a speciebus per Malaysiam dispersis foliis ovato-oblongis apice breviter acuminatis subtus luteo-glandulosis, floribus axillaribus paucis, calyce petalisque exterioribus minute sericeis, staminibus numerosis minutis, carpellis paucis distinguenda.

Tree about 10 meters high, the branchlets terete, rugose, cinereous, glabrous, copiously lenticellate; petioles canaliculate, rugose, glabrous, about 15 mm long; leaf blades chartaceous, ovate-oblong, 9-13 cm long, 4-6 cm broad, rounded to an abruptly attenuate base, obtusely short-acuminate at apex, entire and slightly thickened at margins, minutely and closely yellow-glandular beneath, sparsely hirtellous beneath, soon glabrous, the costa raised above, prominent beneath, the secondary nerves 8-15 per side, copiously anastomosing with the closely reticulate veinlets and with them prominulous on both surfaces; flowers axillary, 1 or 2 (or more?) per inflorescence; pedicel 2-3 mm long, minutely tomentellous or glabrous; calyx coriaceous, sericeous with yellowish hairs less than 0.2 mm long, turbinate, about 6 mm long and 5 mm in diameter, the lobes 3, broadly deltoid, acute, about 2 mm long, the sinuses acute; corolla cylindric-urceolate, slightly 6-sided, erect, 15-18 mm

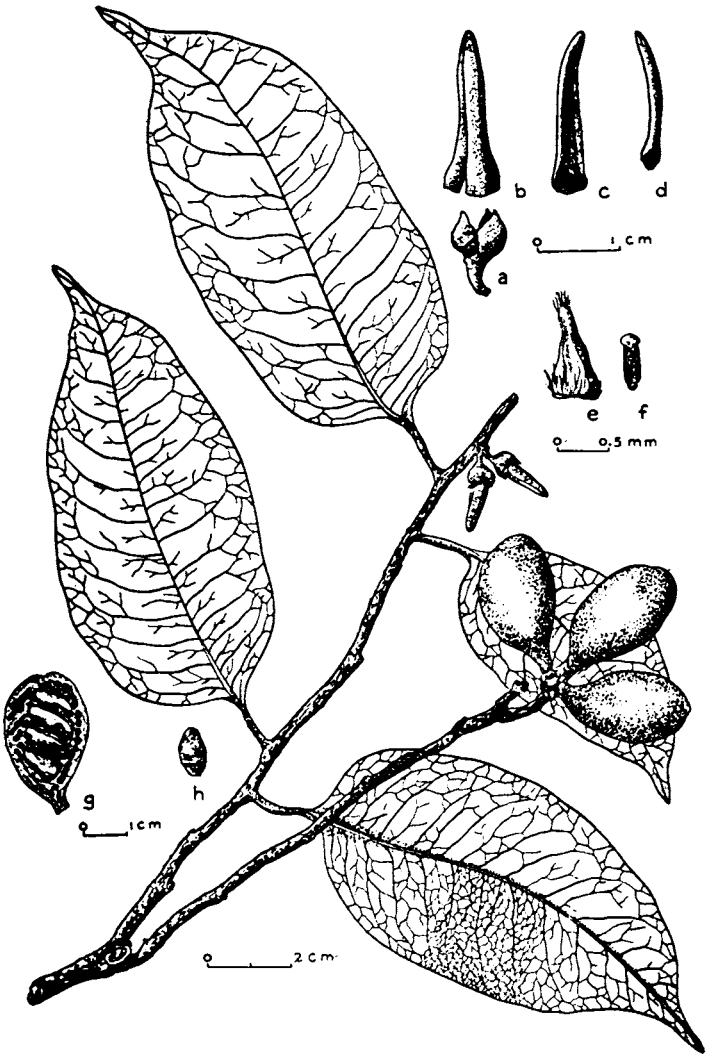

FIGURE 30.—*Fissistigma sericeum: a*, calyx; *b*, corolla; *c*, inner surface of an outer petal; *d*, inner surface of an inner petal; *e*, pistil; *f*, stamen; *g*, section of fruit; *h*, seed.

long, 3-4 mm in diameter, swollen near base to 5-6 mm, the petals thick carnose, valvate, connate in two series, the 3 outer petals oblong-lanceolate, acute, very densely sericeous without (hairs dull yellow, about 0.2 mm long), minutely pale-sericeous within, the 3 inner petals lanceolate, acute, slightly shorter than the outer ones, 3-cornered in cross-section, closely appressed to one another, leaving at the base a minute chamber for the genital organs; receptacle flattened or slightly concave; stamens numerous (about 100), densely crowded, 0.5-0.6 mm long, the carnose connectives distally swollen, the filaments very short, the locules linear; pistils apparently few (5-7), at anthesis slightly less than 1 mm long, the ovary oblong, minutely setose at base, the ovules 8 (or more?), attached along the ventral suture, the style linear, thick, slightly shorter than the ovary; fruiting pedicels stout, about 15 mm long, the receptacle subglobose; ripened carpels apparently 4 or 5 per frutescence, dark brown, coriaceous, obovoid, 2.5-3.5 cm long, 1.5-2 cm broad, rounded at apex, contracted at base into a short stipe about 4 mm long, indehiscent, the pericarp about 1 mm thick, lined within by numerous air-cavities; seeds 8, dark brown, ovoid, flattened, about 10 mm long and 5 mm broad.

Vanualevu: Thakaundrove, in dense forest on the southwestern slope of Mount Mbatini, altitude 300-700 meters, November 28, 1933, Smith no. 669 (type).

The natives referred to the tree as *tondo*. The flowers of the new species are very similar to those of some Malayan species of *Fissistigma*, among which, however, it has no very close affinities. The only species previously reported east of New Guinea is the New Caledonian *F. punctulatum* (Baillon) Merrill, a species with short broad flowers, unrelated to *F. sericeum*.

Genus CYATHOCALYX Champion

Cyathocalyx vitiensis A. C. Smith, new species (fig. 31).

Arbor gracilis, generis species unica vitiensis; *C. obtusifolio* Beccari et Scheffer novo-guineensi affinis, foliorum nervis secundariis numerosis, pedicellorum bracteis majoribus, sepalis latioribus et basi contractis, petalis brevioribus differt.

Slender tree about 10 meters high, the young vegetative parts minutely puberulent, soon glabrous, the branchlets nigrescent, terete, rugose; petioles shallowly canaliculate, 1.5-3 cm long; leaf blades thin coriaceous, obovate or elliptic, 10-16 cm long, 5-8.5 cm broad, unequally obtuse or acute at base, obtuse or rounded or slightly emarginate at apex, entire and slightly recurved at margins, the costa shallowly canaliculate above, prominent beneath, the secondary nerves 11-14 per side, straight, anastomosing near margins, raised above, prominent beneath, the veinlets reticulate, prominulous; flowers fasciculate, usually opposite the leaves, 1-3 (or more?) per inflorescence, subtended by 2 or 3 ovate bracts 2 mm long; pedicels and flowers uniformly and minutely puberulent (hairs 0.1-0.2 mm long), the pedicel slender, 2.5-3 cm long, bibracteolate slightly below the middle, the bractlets ovate, about 3 mm long and 4 mm broad; sepals 3, thin-carnose, ovate, obtuse, about 5 mm long and 7 mm broad; petals 6, yellowish green, carnose, oblong-lanceolate from an orbicular base, about 15 mm long, the basal portions concave, about 6 mm broad, enclosing the genital organs, the ligulate portions spreading, obtuse, 3-4 mm broad, those of the three inner petals slightly narrower and firmly connate at the base; receptacle flattened; stamens about 150, crowded and closely imbricate, obovoid-oblong, about 1.5 mm long and 1 mm broad at apex, the carnose connective distally swollen and truncate, the filament very short, the locules linear-oblong; pistils about 20, at anthesis about 3 mm long, the ovary oblong, angled, minutely hirtellous, the ovules many, the style stout, slightly shorter than the ovary, obliquely truncate, with the other styles connate into a mass above the ovaries; fruiting pedicels straight, to 3.5 cm long, the receptacle subglobose; ripened carpels apparently 3-5 per frutescence, dark brown.

coriaceous, obovoid, contracted at base into a stipe about 5 mm long, 10-12 mm long (excluding stipe), 7-8 mm broad, indehiscent, the pericarp about 1 mm thick, the seeds very numerous, stramineous, obovoid, about 2 mm long (in our specimens), truncate at apex.

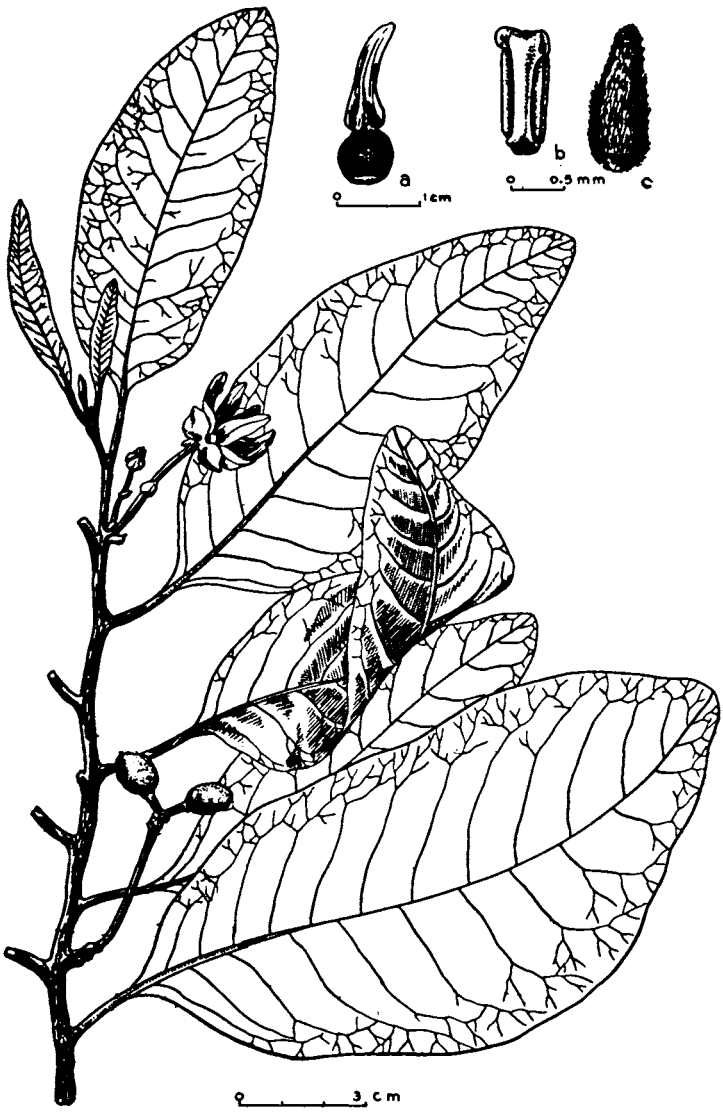

FIGURE 31.—*Cyathocalyx vitiensis: a,* inner surface of an outer petal; *b,* stamen; *c,* pistil.

Vanualevu: Mbua, in dense forest in the lower Wainunu River valley, altitude 10-200 meters, May 7, 1934, Smith no. 1720 (type); Thakaundrove,

Yanawai River region, Mount Kasi, dense forest, altitude 300-430 meters, Smith no. 1791.

C. vitiensis belongs to the Section *Drepananthus*. A local name is *mako*. The genus has not previously been discovered east of the Bismarck Archipelago, but it is probably present in the islands nearer Fiji.

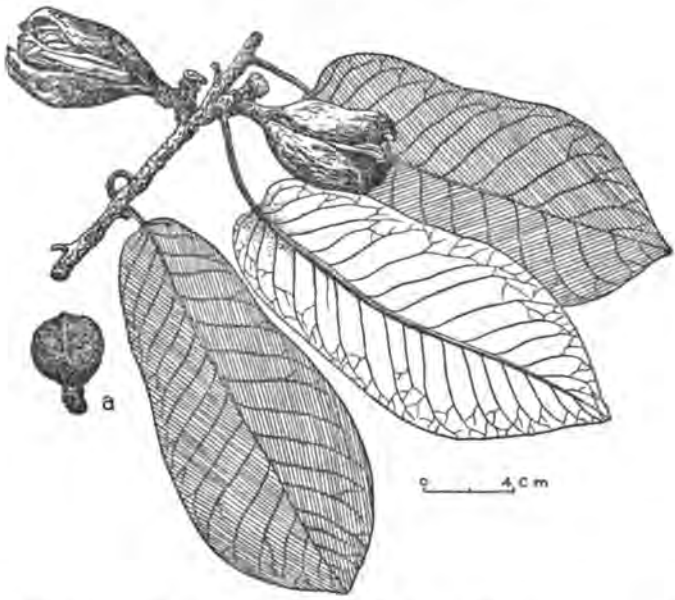

FIGURE 32.—*Myristica gillespieana*, fruiting branch; *a*, *Myristica castaneaefolia*, fruit.

MYRISTICACEAE

Genus MYRISTICA Linnaeus

Myristica hypargyraea A. Gray.

Myristica hypargyraea A. Gray: Bot. U. S. Expl. Exped., vol. 1, p. 33, 1854.

Vanualevu: Mbua, Seatovo Range, altitude 100-350 meters, Smith no. 1537.

Not previously reported from Fiji.

Myristica chartacea Gillespie.

Myristica chartacea Gillespie: B. P. Bishop Mus., Bull. 83, p. 5, fig. 2, 1931.

Vanualevu: Thakaundrove, altitude 300-650 meters, Smith nos. 501, 1825. Moala: altitude 200 meters, Smith nos. 1316, 1319.

Previously known from Vitilevu.

Myristica gillespieana A. C. Smith, new species (fig. 32).

Arbor, *M. castaneaefoliae* A. Gray affinis, foliis supra medium latissimis, fructibus pallidioribus majoribus pro latitudine longioribus basi attenuatis differt; a *M. inutili* A. Gray samoensi fructibus maximis, forma foliorum latiorum recedit.

Tree about 20 meters high, the branchlets stout, terete, rugose, glabrous, often copiously lenticellate; petioles subterete, rugose, 1-3.5 cm long; leaf blades thin coriaceous, glabrous, obovate-oblong, 18-21 cm long, 7-9 cm broad, rotund-cordate at base, acute or short-cuspidate at apex, entire and slightly recurved at margins, dark green and shining above, glaucous beneath, the costa prominent on both surfaces, the secondary nerves about 18 per side, straight, nearly plane above, raised beneath, the veinlets reticulate, nearly plane on both surfaces; frutescences often 2-fruited, the peduncles stout, about 7 mm long, the pedicels about 15 mm long and 8-10 mm in diameter, very rugose; fruit obovoid-ellipsoid, light brown, minutely tomentellous, glabrescent, at maturity about 5 cm long and 2.5 cm broad, at the base attenuate into a short stout stipe, at the apex obliquely apiculate, the pericarp about 2 mm thick, the seed about 40 × 22 mm, the aril copiously laciniate.

Koro: in forest on eastern slope of main ridge, altitude 200-300 meters, January 29, 1934, Smith no. 946 (type). Vitilevu: Seemann no. 6 (G, K).

M. gillespieana is locally known as *male,* a name applied to all members of the genus in Fiji. The species is named for the late Dr. John W. Gillespie, in appreciation of his valuable work towards a flora of Fiji. Seemann referred his specimen, among others, to *M. castaneaefolia* A. Gray (fig. 32, *a*), from which the new species differs in leaf and fruit shape as noted in the diagnosis.

Myristica macrantha A. C. Smith, new species (fig. 33).

Arbor, inter species mare Pacificum habitantes ramulis foliis floribusque maximis facile distinguitur; inflorescentiis *M. castaneaefoliae* A. Gray affinis, sed magnitudine omnium partium differt.

Dioecious tree 7-15 meters high, the branchlets very stout (1.5 cm in diameter at leaf bases), terete, rugose, sparsely hirtellous, glabrescent; petioles subterete, stout (6-8 mm in diameter), 4-6 cm long; leaf blades coriaceous, essentially glabrous (sparsely puberulent beneath when young), oblong, 50-60 cm long, 18-23 cm broad, rotund-cordate at base (the sinuses acute), obtuse at apex, entire and slightly recurved at margins, brownish green and shining above, often glaucous beneath, the costa stout, very prominent on both surfaces, the secondary nerves 25-35 per side, straight, spreading (those of the base slightly down-curved), raised above, very prominent beneath, the veinlets reticulate, often slightly impressed above and nearly plane or obscure beneath; peduncles (except the oldest parts), bracts, and flowers densely and uniformly villose with brown hairs 0.5-1.5 mm long, the peduncles densely aggregated on the old branches and large branchlets, stout, often up to 4 cm long and 1 cm in diameter; staminate flowers densely (spirally?) crowded on the peduncle, each subtended by a small ovate soon deciduous bract, the basal flowers first deciduous; pedicel stout, 3-5 mm long, surmounted by a single ovate bractlet about 5 mm long; perianth thick carnose, glabrous and greenish within, campanulate, about 10 mm long and 5 mm broad, the lobes 3, deltoid, often reflexed, subacute, 2-3 mm long and broad; staminal column glabrous, 6-8 mm long, the basal sterile portion carnose, 1-2 mm long, the apical sterile portion minute, obtuse, the anthers narrow, about 12; pistillate flowers very young in our specimens, apparently resembling the staminate, the ovary subglobose, densely pilose; fruit sessile, densely brown-tomen-

tose, ovoid or globose-ovoid, at maturity about 3 cm long and 2.5 cm broad (or larger?), the apex apiculate.

Vanualevu: Mbua, lower Wainunu River valley, dense forest, altitude 10-200 meters, May 7, 1934, Smith no. 1719 (type); Thakaundrove, southwestern slope of Mount Mbatini, dense forest, altitude 300-700 meters, Smith no. 613.

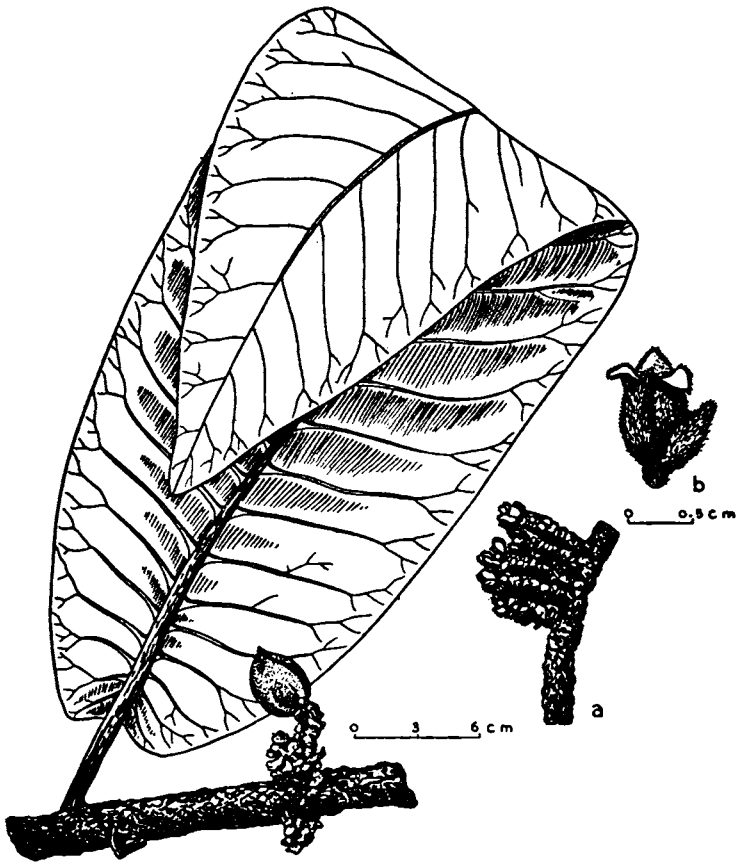

FIGURE 33.—*Myristica macrantha:* fruiting branch; *a*, staminate inflorescences; *b*, staminate flower.

This species is locally known as *male wangga*, as distinguished from *male* or *male ndina*, the "true" *Myristica* of Fiji. The timber is sometimes used for houseposts, but is said to be not very durable. It is not uncommon at low elevations in the wet forest of Vanualevu. The type bears fruits, the staminate inflorescences distributed with no. 1719 having been collected from

an adjacent tree. *M. macrantha* is among the largest species of the genus in regard to branchlets, leaves, flowers, etc., which characters readily distinguish it from its Fijian allies.

FIGURE 34.—*Cryptocarya lancifolia,* branch.

M. grandifolia A. De Candolle (*M. macrophylla* A. Gray, not of others), has perhaps been too summarily reduced by Warburg to *M. castaneaefolia. M. grandifolia* is known only from a sterile specimen collected on Ovalau by the U. S. Exploring Expedition (type, US); it has leaves as large as those of *M. macrantha,* but tapering to an acute base. This character separates it from *M. macrantha,* but the two species may be allied.

LAURACEAE

Genus CRYPTOCARYA R. Brown

Cryptocarya lancifolia A. C. Smith, new species (fig. 34).

Arbor gracilis, inter species mare Pacificum habitantes foliis longis angustis basi minute cordatis valde distincta.

Slender tree about 5 meters high, the branchlets terete, grayish, minutely puberulent when young, soon glabrous; petioles pilose with short spreading brown hairs, subterete, 4-6 mm long; leaf blades chartaceous, lanceolate-oblong, 10-15 cm long, 2-3 cm broad, rotund-cordate at base (the sinuses small), obtuse at apex, entire and slightly recurved at margins, glabrous, green and shining above, somewhat brownish beneath, pinnate-veined, the costa slightly impressed above, prominent beneath, the secondary nerves 5 or 6 per side, short, ascending, prominulous above, prominent beneath, the veinlets copiously reticulate, prominulous on both surfaces; inflorescences 1 or 2 in leaf axils, paniculate, probably about 25-flowered, 5-7 cm long, short-pedunculate, the rachis villose with spreading brown hairs, the branches spreading, slender, essentially glabrous, each subtended by an oblong pubescent bractlet about 2 mm long; flowers glabrous, the pedicel slender, 2-5 mm long, often bearing near the middle a linear bractlet 1-1.5 mm long; perianth tube subglobose or cupuliform, the six segments copiously pellucid-glandular, broadly ovate, obtuse, about 1 mm long and 1.3 mm broad; stamens less than 1 mm long, the anthers oblong-ovate, acute, longer than the filaments; ovary immersed in the perianth tube; fruit coriaceous, black when dried, glabrous, subglobose, 10-12 mm in diameter, the apex sharply apiculate into a column 3 mm long, bearing the persistent perianth lobes and stamens.

Vanualevu: Thakaundrove, Yanawai River region, Mount Kasi, in dense bush, altitude 300-430 meters, May 10, 1934, Smith no. 1762 (type).

The genus of this remarkable plant is clearly indicated by the fruit. It bears little resemblance to other Pacific species of *Cryptocarya,* being marked by its long narrow leaves, which are minutely cordate at the base.

Genus ENDIANDRA R. Brown

Endiandra luteola A. C. Smith, new species (fig. 35).

Arbor, *E. reticulatae* Gillespie affinis, foliis brevioribus pro longitudine latioribus, inflorescentiis glabris majoribus, perianthii tubo pro lobis magnis parvo differt.

Tree 25-30 meters high, glabrous throughout, the branchlets terete, brownish, lenticellate; leaves often subopposite, the petioles semiterete, narrowly winged above, 8-14 mm long, the leaf blades thin coriaceous, ovate, 6-10 cm long, 3-4 cm broad, acute or subattenuate at base, obtuse or obtusely short-acuminate at apex, entire and slightly thickened at margins, yellowish green, slightly brownish beneath, pinnate-veined, the costa raised on both surfaces, the secondary nerves about 5 per side, arcuate-ascending, with the copiously reticulate veinlets prominulous on both surfaces, the areolae very small; inflorescences axillary, paniculate, 15-25-flowered, 3-4 cm long, short-pedunculate, deciduously bracteolate at the junctures, the bractlets oblong, 1-2 mm long; pedicels about 1 mm long; flowers 4-5 mm long, spreading to 6-7 mm in diameter, the perianth tube very short, the lobes subequal, yellowish, oblong, about 3 mm long and 2 mm broad, rounded at apex; stamens 3, extrorse, the filaments carnose, about 0.3 mm long, biglandular at base, the glands whitish, sessile, the anthers ovoid, about 1 mm long, obtuse, the carnose connective produced beyond the locules, the staminodes apparently none; ovary subconical, attenuate to the short style.

Taveuni: in forest on western slope between Somosomo and Wairiki, altitude 300 meters, December 18, 1933, Smith no. 763 (type).

A local name is *ngelengai*. Another collection apparently is Ovalau, Graeffe (K), bearing a single fruit which is globose, rugose, about 2 cm in diameter.

FIGURE 35.—*Endiandra luteola:* flowering branch; *a*, flower; *b*, stamen.

Endiandra monticola A. C. Smith, new species (fig. 36).

Frutex *E. elaeocarpae* (A. Gray) Gillespie affinis, foliorum minorum reticulatione crassa, inflorescentiis glabris minoribus differt.

Shrub about 3 meters high, glabrous throughout (the young parts minutely and deciduously puberulent), the branchlets terete, grayish, lenticellate; petioles semiterete, rugose, 8-14 mm long; leaf blades thin coriaceous, broadly ovate, 7-9 cm long, 4-6 cm broad, acute or subattenuate at base, obtusely apiculate at apex (apiculum often emarginate), entire and slightly thickened at margins, brownish when dried, pinnate-veined, the costa prominent on both surfaces, the secondary nerves 4 or 5 per side, ascending, raised on both surfaces, the veinlets coarsely reticulate and prominulous; inflorescences

axillary, depauperate-paniculate, 5-15-flowered, about 2 cm long, the peduncle somewhat flattened, the bractlets minute, soon deciduous; pedicels about 1 mm long; flowers about 2 mm long and 3 mm in diameter, the perianth tube very short, the lobes subequal, thin carnose, yellowish, ovate, obtuse or rounded at apex, about 1.5 mm long and broad, the inner three slightly narrower; stamens 3, extrorse, the filaments carnose, 0.5 mm long, biglandular at base, the glands globose, about 0.4 mm in diameter, the anthers ovate-deltoid, about 0.7 mm long, the connective slightly produced and acute; staminodes 6, obovoid-deltoid, 0.5 mm in diameter, short-stipitate; ovary subglobose, attenuate to a short stout style.

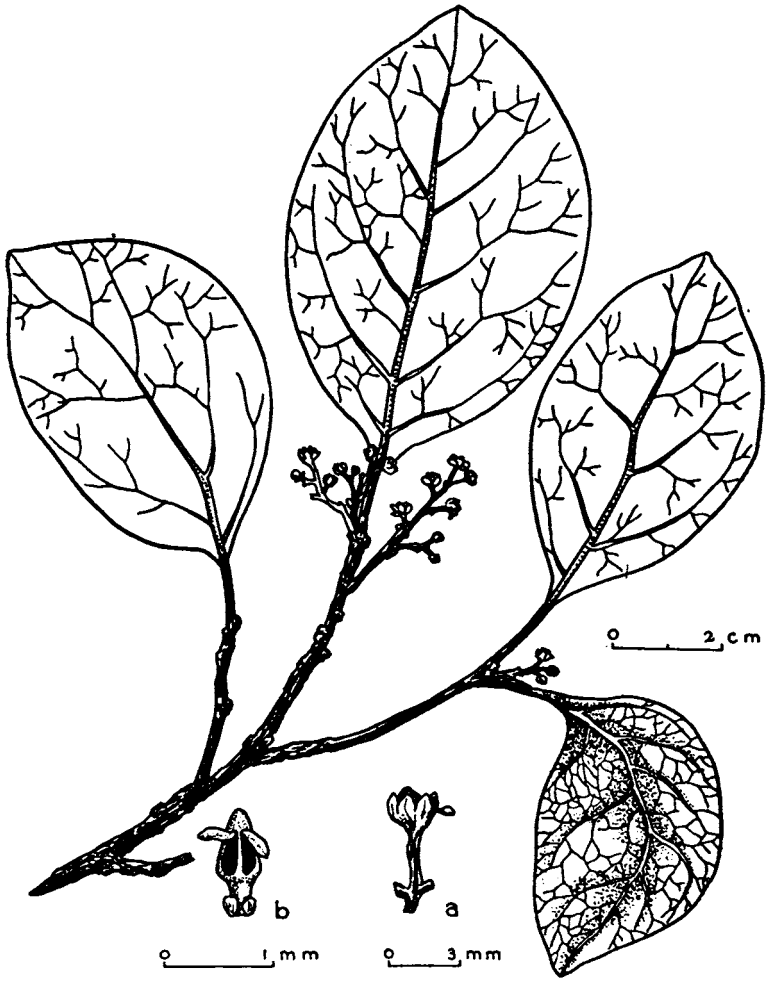

FIGURE 36.—*Endiandra monticola:* flowering branch; *a,* flower; *b,* stamen.

Vanualevu: Thakaundrove-Mathuata Boundary, in dry forest on the crest of the Korotini Range between Navitho Pass and Mount Ndelaikoro, altitude 650-900 meters, November 21, 1933, Smith no. 563 (type).

MENISPERMACEAE

Genus **PACHYGONE** Miers

Pachygone vitiensis Diels.

Pachygone vitiensis Diels: Pflanzenreich IV, no. 94, p. 244, 1910.

Staminate inflorescences essentially glabrous, the racemes short, 2-5-flowered, the pedicels slender, 7-10 mm long; 3 outer sepals lanceolate-oblong, about 1.5 mm long and 0.4 mm broad; three inner sepals and three outer petals obovate, about 1.5 mm long and 1 mm broad; three inner petals obovate-spatulate, 1 mm long, strongly concave towards base; stamens 6, free, about 0.7 mm long, the filaments slender, 0.5 mm long, the anthers oblong, dehiscing transversely.

Kambara: on limestone formation, altitude 10-100 meters, Smith no. 1294.

The foregoing description of the staminate inflorescence is based on Smith no. 1294. *P. vitiensis* is a rare vine, climbing over rocks in the forest. It has previously been known only in fruit. It appears to be the only Fijian species of the family. It has been known from Graeffe's collections on Oneata and Kanathea and its discovery on the other islands in Lau is to be expected.

PITTOSPORACEAE

Genus **PITTOSPORUM** Banks

Section **SPATHICALYX** A. C. Smith, new section

Sectio a *Pittospori* sectionibus ceteris calyce spathaceo integro vel 2-lobato, petalis lanceolato-oblongis liberis vel basi connatis facile distinguenda.

The new section is differentiated from *Pittosporum* proper by its one-sided and spathaceous calyx, of which the segments are coalescent into a single or two lobes. It is composed of two distinct species.

Key to the Species

Petiole 10-20 mm long; inflorescence 5-10-flowered, the branches soft-pilose, the pedicels 4-6 mm long.....**P. brackenridgei**
Petiole 5-10 mm long; inflorescence glabrous, usually 3-flowered, the pedicels 10-18 mm long.....**P. spathaceum**

Pittosporum brackenridgei A. Gray (fig. 37).

Pittosporum brackenridgei A. Gray: Bot. U. S. Expl. Exped., vol. 1, p. 225, pl. 17A, 1854.

Pittosporum tobiroides A. Gray: Bot. U. S. Expl. Exped., vol. 1, p. 226, pl. 17B, 1854.

Tree, to 25 meters high, the branchlets terete, grayish, the young parts puberulent, soon glabrous; petioles tomentellous when young, glabrescent, semiterete, 10-20 mm

long; leaf blades papyraceous, glabrous, shining above, dull beneath, obovate-oblong, 6-13 cm long, 3.5-5.5 cm broad, acute or attenuate at base, obtuse, rounded, or retuse at apex, entire at margins, the costa slightly raised above, prominent beneath, the secondary nerves 10-15 per side, spreading, copiously anastomosing, nearly plane above, slightly raised beneath, the veinlets reticulate, prominulous beneath; inflorescences several near apices of branchlets, short-paniculate, 2-3 cm long, 5-10-flowered, the branches and pedicels soft brown pilose; pedicels 4-6 mm long, each subtended by a lanceolate bract 3 mm long, minutely bibracteolate near base, the bractlets 1.5 mm long, deciduous;

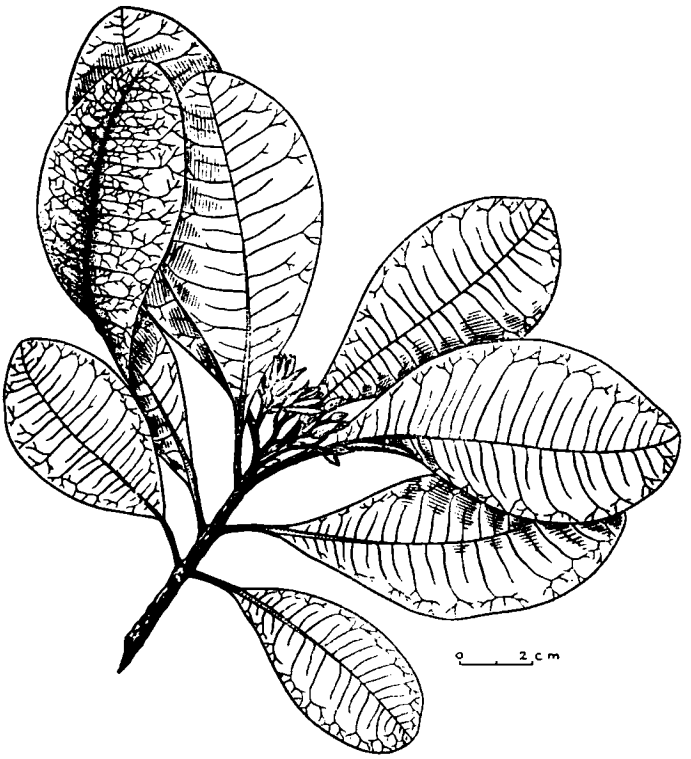

FIGURE 37.—*Pittosporum brackenridgei*, flowering branch.

calyx submembranous, soon glabrous, copiously reticulate-veined, ovate-deltoid, acute, 6-7 mm long, the lobes (if two) separated by a small acute cleft; petals white, thin carnose, loosely connate at base, free above, lanceolate-oblong, subacute, 11-13 mm long, 1.5-2.5 mm broad; stamens glabrous, about 9 mm long, the filaments thin carnose, about 1 mm broad at base, tapering distally, the anthers elliptic-oblong, about 2 mm long and 1 mm broad, apiculate at apex, laterally dehiscent; receptacle small, truncate; gynaecium soft-carnose, at anthesis about as long as the stamens, the ovary obovoid, tapering to a short stipe, the style stout, about as long as the ovary, the stigma truncate, obscurely 4-lobed; peduncles in fruit subterminal, solitary or two or three together, 10-25 mm long, apparently 1-fruited but frequently marked by the scars of deciduous pedicels (or inflorescence branches); capsule slightly rugose, subglobose, slightly flattened, 15-22 mm in diameter, apiculate at apex; seeds obovoid-globose.

Fiji, without definite locality: Horne (K), no. 446 (G, K). Vanualevu: Mathuata, U. S. Expl. Exped. (type, G, US); Lambasa, Greenwood nos. 558 (K), 558A (K); Thakaundrove, Natewa Peninsula, hills west of Mbutha Bay, Smith no. 818. Taveuni: near Somosomo, U. S. Expl. Exped. (type of *P. tobiroides,* G, US). Ovalau: Graeffe (K); Gillespie no. 4556. Kanathea: Graeffe no. 1544 (K).

Greenwood no. 558 was from a tree up to 5 meters high, growing behind mangrove formation. The Mbutha Bay specimen was from forest at 150-350 meters altitude, and was known by the natives as *mbau*; it furnishes a timber used in boat-building.

A comparison between the type specimens of Gray's species indicates that the distinctions pointed out by him cannot be maintained. Leaf size and shape and length of peduncle do not appear to constitute specific characters in the above cited list of specimens. Of these specimens, only Greenwood no. 558 and Smith no. 818 are in flower; their identity with the fruiting specimens is strongly indicated, but cannot be absolutely verified until the same plant has been seen both in flower and fruit.

It may be that the extraordinary spathaceous calyx of the new section entitles it to generic rank. The fruit of *P. brackenridgei* appears similar to that of other species of *Pittosporum,* and no feature of the inflorescence, except the calyx, can be considered distinct from the genus as a whole. Therefore I hesitate to assign generic rank to these plants, at least until flower and fruit have been definitely linked.

Pittosporum spathaceum Burkill.

Pittosporum spathaceum Burkill: Hook. Ic. Pl., vol. 26, pl. 2561, 1898.

Tonga: Vavau, Crosby no. 200 (type, K).

Burkill compares his species with the Australian *Pittosporum undulatum* Ventenat, which has the calyx lobes connate at the base and the calyx often somewhat one-sided. But that species does not show the complete coalescence of lobes which characterizes the new section.

RUTACEAE

Genus **ACRONYCHIA** Forster

Acronychia heterophylla A. Gray.

Acronychia heterophylla A. Gray: Bot. U. S. Expl. Exped., vol. 1, p. 333, pl. 32, 1854.

Vanualevu: Thakaundrove, slope of Mount Mbatini, altitude 300-700 meters, Smith no. 632; Thakaundrove-Mathuata Boundary, crest of Korotini Range, altitude 650-900 meters, Smith no. 539.

Trees 5-10 meters high, growing in dense forest, locally known as *ngga-rikalavu* or *ndrautolu*, both of which names are also applied to species of *Evodia*. The present specimens appear to be similar to Samoan material, including the type collection, U. S. Expl. Exped. (G, NY.)

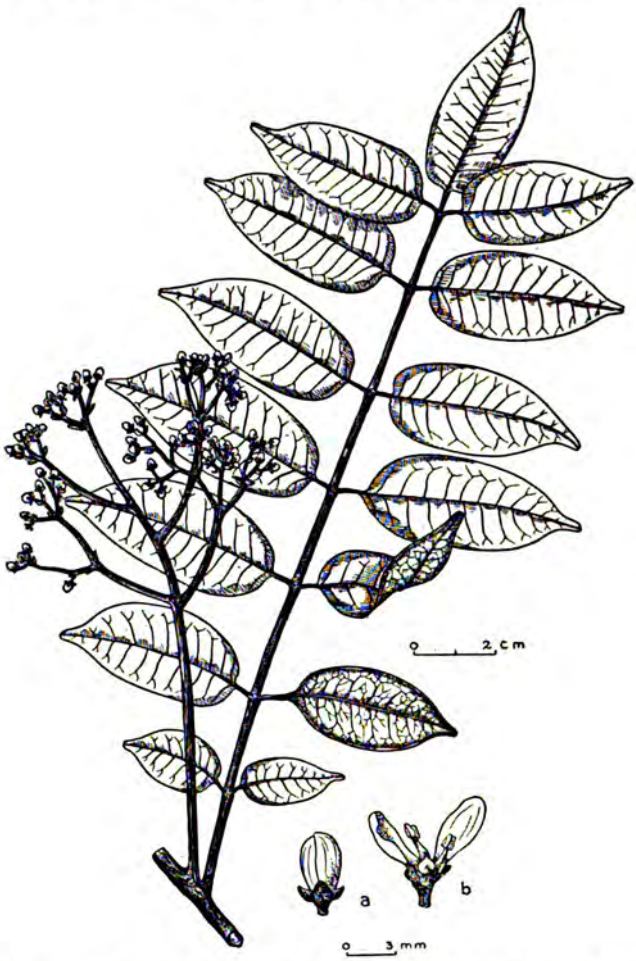

FIGURE 38.—*Zanthoxylum vitiense:* leaf and inflorescence; *a*, young flower; *b*, flower with two petals and two stamens removed.

Genus ZANTHOXYLUM Linnaeus

Zanthoxylum pinnatum (Forster) Druce.

Blackburnia pinnata Forster: Char. Gen., pl. 6, 1776.

Ptelea pinnata Linnaeus f.: Suppl., p. 126, 1781.

Zanthoxylum blackburnia Bentham: Fl. Austral., vol. 1, p. 363, 1863.

Zanthoxylum pinnatum (Forster) Druce: Rep. Bot. Exch. Club Brit. Isles for 1916, p. 653, 1917.

Fulanga: in forest on limestone formation, altitude 0-80 meters, tree 12 meters high, locally known as *warui,* Smith no. 1150. This species ranges from Australia to Tonga, where it is known from Harvey (K) and Crosby (K). The genus has not previously been reported from Fiji. I have compared Smith no. 1150 with Forster's type in the British Museum, and can not find any differences. However, some of the New Caledonian plants referred to this species in herbaria appear to be quite distinct.

Zanthoxylum vitiense A. C. Smith, new species (fig. 38).

Arbor gracilis, generis species secunda vitiensis, a Z. *pinnato* (Forster) Druce foliolis crassis margine plus minusve crenatis basi subaequaliter rotundatis vel acutis, inflorescentiis compactis, floribus sessilibus valde differt.

Slender tree about 3 meters high, glabrous throughout (except the minutely and deciduously puberulent inflorescence branches), the branchlets terete, rugose; leaves pinnate, oblong, 25-30 cm long, about 10 cm broad, the petioles (2-3 cm long) and rachis deeply canaliculate; leaflets opposite, often 15 or 17, the basal ones slightly reduced, the petiolules canaliculate, 5-7 mm long, the blades thin coriaceous, elliptic-oblong, 5-7 cm long, 2-3 cm broad, subequally rounded or acute at base, obtusely cuspidate and slightly emarginate at apex, often shallowly crenate at the narrowly revolute margins, sparsely pellucid-punctate, the costa impressed above, prominent beneath, the secondary nerves 8-10 per side, prominulous on both surfaces, the veinlets reticulate; inflorescences axillary, spreading-paniculate, many-flowered, the peduncle 4-8 cm long, the branchlets opposite, each subtended by an ovate bractlet 1-2 mm long; flowers sessile, in ultimate clusters of three; calyx about 3.5 mm in diameter, the lobes spreading, oblong, obtuse, about 1.5 mm long and 1.2 mm broad; petals white, thin carnose, oblong, rounded at apex, about 5 mm long and 2 mm broad; filaments white, carnose, about 2.5 mm long; anthers yellow, oblong, 1.5-1.8 mm long; disk not conspicuous; ovary ovoid-conical, at anthesis about 1 mm long, tapering to a short style.

Vanualevu: Thakaundrove, in crest thickets on the eastern buttress of Mount Ndikeva, altitude 800 meters, June 5, 1934, Smith no. 1884 (type).

Genus ATALANTIA Correa

Atalantia species.

Kambara: on limestone formation, altitude 10-100 meters, Smith nos. 1265, 1293.

A slender tree about 4 meters high, growing in the forest, locally known as *molimoli.* As the specimens are in fruit, they can not be referred to a genus with certainty, although from leaf and fruit characters they appear to belong to *Atalantia* Section *Paramignya.* The genus has not previously been reported from Fiji. It is possible that the plant is an introduction, but I have not been able to match it with any Malayan species.

The specimens are unarmed, the leaves petiolate, oblong, obtuse, 12-20 cm long, 4-9 cm broad, the fruits orange, pedunculate, globose, up to 4 cm in diameter, apparently 1-5-seeded. The collection of flowers may establish it as a new species.

MELIACEAE

Genus AGLAIA Loureiro

Aglaia amplexicaulis A. C. Smith, new species (fig. 39).

Arbor, inter species mare Pacificum habitantes foliis simplicibus facile distinguitur; *A. simplicifoliae* Harms et *A. rubrae* Ridley novo-guineensi affinis, foliorum subamplexicaulium forma recedit.

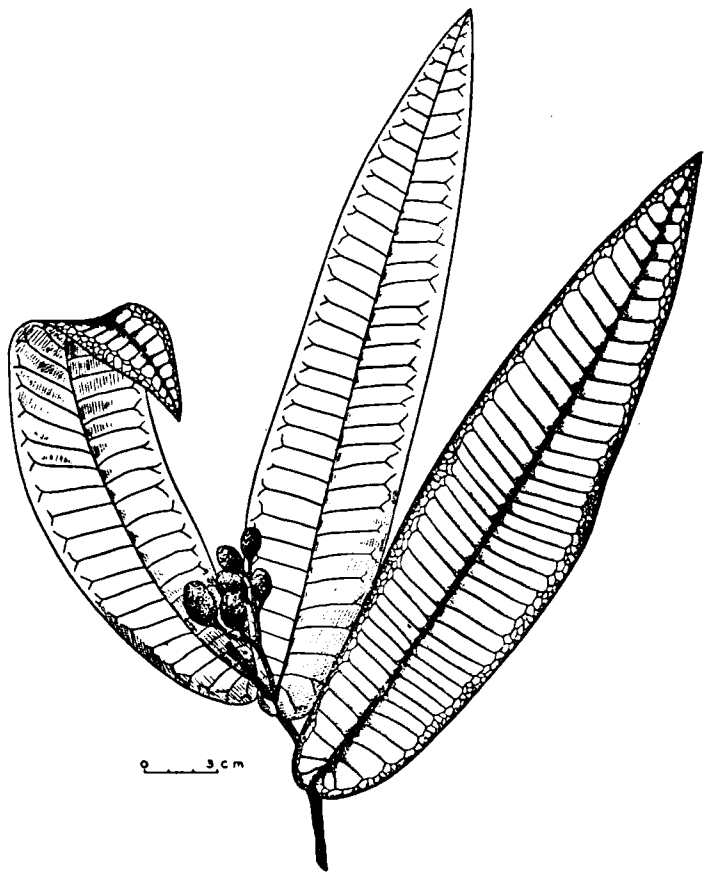

FIGURE 39.—*Aglaia amplexicaulis*, fruiting branch.

Tree about 10 meters high, the mature parts (except frutescences) glabrous, the branchlets terete, rugose, grayish; leaves simple, sessile or essentially so, the blades chartaceous, oblong, 20-25 cm long, 5.5-7 cm broad, rounded to a deeply cordate amplexicaul base, acute at apex, entire and slightly revolute at margins, the costa slightly impressed or plane above, prominent beneath, the secondary nerves 20-30 per side, straight, anastomosing about 5 mm within the margins, nearly plane above, prominent beneath, the veinlets few, prominulous beneath; inflorescences not seen; frutescences axillary near apices of branchlets, paniculate (lateral branches short), few-fruited, 3-7 cm long,

the rachis and branches sparsely stellate-lepidote, the scales about 0.15 mm in diameter, the bractlets lanceolate, 1-2 mm long; fruiting calyces sessile, coriaceous, about 3 mm long and 4-5 mm in diameter, stellate-puberulent, the lobes deltoid, obtuse; fruit brown when dried, persistently and minutely puberulent, ellipsoid, about 2 cm long and 1 cm broad (or larger?), the pericarp very thin, the locules apparently 2, the seeds 2 or 3, ellipsoid-oblong.

Kandavu: in dense forest on hills above Namalata and Ngaloa Bays, altitude 200-400 meters, October 16, 1933, Smith no. 156 (type).

Aglaia greenwoodii A. C. Smith, new species (fig. 40).

Frutex vel arbor parva, habitu foliolis fructibusque *A. basiphyllae* A. Gray affinis, petiolis longis (foliis haud sessilibus), foliolis basalibus parvis nullis differt.

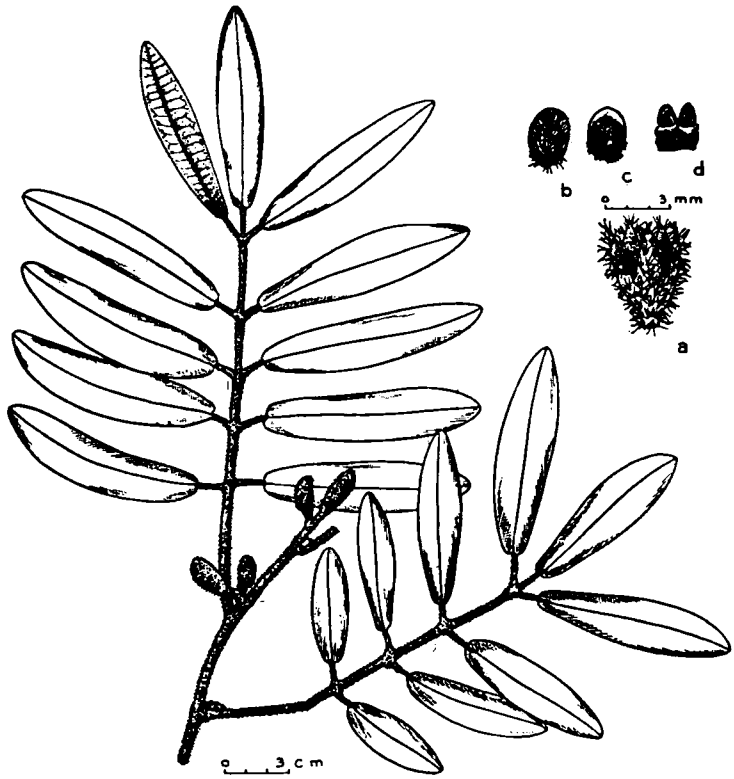

FIGURE 40.—*Aglaia greenwoodii:* fruiting branch; *a*, calyx; *b*, outer petal; *c*, inner petal; *d*, portion of staminal tube.

Shrub or small tree, to 7 meters high, the branchlets pilose when young, glabrescent, terete; leaves pinnate, oblong, 15-30 cm long, the petioles (3-6 cm long), rachis and petiolules shallowly canaliculate, tomentellous with stellate brown hairs about 0.5 mm long, at length glabrescent; leaflets subopposite or alternate, 7 or 9 (rarely 5), the basal ones slightly the shortest, the petiolules 5-11 mm long, the blades thin coriaceous,

oblong, 6-13 cm long, 2-4 cm broad, subequally rounded or subcordate at base, obtuse at apex, entire or distantly crenate at margins, pilose with stellate hairs when young, soon glabrescent except on the costa, the costa slightly impressed above, prominent beneath, the secondary nerves 10-14 per side, prominulous on both surfaces, the veinlets reticulate; inflorescences axillary, 5-15 mm long, 2-5-flowered, densely brown-setose, the hairs stellate, about 0.5 mm long; pedicel about 1 mm long; calyx lobes lanceolate-oblong, obtuse, 1.5-2 mm long, about 1 mm broad; petals strongly imbricate, concave, thin coriaceous, glabrous (except the two outer ones somewhat setose without), yellowish, orbicular-ovate, 2.5-3 mm long, about 2 mm broad; stamens glabrous, the filaments coriaceous, connate in a ring about 1 mm long, the anthers ovate-deltoid, about 0.8 mm long; disk minute; ovary conical, densely brown-pilose, the stigma subsessile; fruiting calyx coriaceous, about 4 mm long and in diameter, persistently pilose; fruit ovoid, 1.5-2 cm long, persistently brown-tomentellous.

Vanualevu: Mathuata, in forest near Wainikoro, February 25, 1925, W. Greenwood no. 500A (type, K); near Lambasa, Greenwood no. 500 (K); Thakaundrove-Mathuata Boundary, crest of Korotini Range, altitude 650-900 meters, Smith no. 528. Without definite locality: Jeoward no. 62 (K).

Aglaia samoensis A. Gray (fig. 41, *b*).

Aglaia samoensis A. Gray: Bot. U. S. Expl. Exped., vol. 1, p. 236, 1854.

Fiji, without definite locality: U. S. Expl. Exped. (G, NY); Milne (K). Moturiki: Seemann no. 60 (BM, G, K). Vanua Mbalavu: Smith nos. 1439, 1476, 1507. Kambara: Smith no. 1240.

The specimens which Gray and in part Seemann (Fl. Vit., p. 37, 1865) referred to the continental *A. edulis* (Roxburgh) A. Gray appear identical with the type of *A. samoensis*. The plant is the common *langakali* of the Lauans, who use the inflorescences to scent coconut oil.

Aglaia vitiensis A. C. Smith, new species (fig. 41).

Arbor, characteribus vegetativis *A. samoensi* A. Gray affinis, inflorescentiarum fructuumque indumento pertinaciore, floribus majoribus, calycis tubo ampliore atque coriaceo differt.

Tree up to 23 meters high, the trunk up to 30 cm in diameter, the young parts brownish-lepidote and sparsely stellate-puberulent, at length glabrescent, the branchlets terete; leaves pinnate, obovate-oblong, up to 60 cm long, the petioles (up to 17 cm long), rachis, and petiolules subterete or shallowly canaliculate; leaflets subopposite, 5-9, the basal ones somewhat the smallest, the petiolules 7-15 mm long, the blades chartaceous, oblong, 9-20 cm long, 4-9 cm broad, obtuse and slightly unequal at base, obtuse or rounded at apex, entire at margins, the costa nearly plane above, prominent beneath, the secondary nerves 9-16 per side, straight, anastomosing near margins, nearly plane above, raised beneath, the veinlets reticulate, prominulous beneath; inflorescences axillary, paniculate, many-flowered, often up to 10 cm long, persistently brownish lepidote, the bractlets ovate, 1-2 mm long, soon deciduous; pedicel up to 2 mm long; calyx coriaceous, about 3 mm long and 2.5 mm in diameter, the lobes broadly ovate, rounded, about 0.7 mm long and 1.5 mm broad, membranous at margin; petals carnose, imbricate, glabrous (the outer ones brownish lepidote without), orbicular, about 2.5 mm long; stamens glabrous, the filament tube coriaceous, about 1 mm long, the anthers oblong-deltoid, about 1 mm long; ovary short-conical; mature fruit orange (drying brown), persistently lepidote and minutely stellate-puberulent, ellipsoid-globose, 2-3 cm in diameter,

the pericarp thin and brittle, the seeds 2, separated by a thin membrane, ellipsoid-oblong, conspicuously reticulate.

Koro: eastern slope of main ridge, altitude 300-500 meters, January 29, 1934, Smith no. 981 (type). Vanualevu: Thakaundrove, Mount Mbatini, Smith nos. 645, 653; Korotini Range, Smith no. 491. Taveuni: western slope, Smith no. 728.

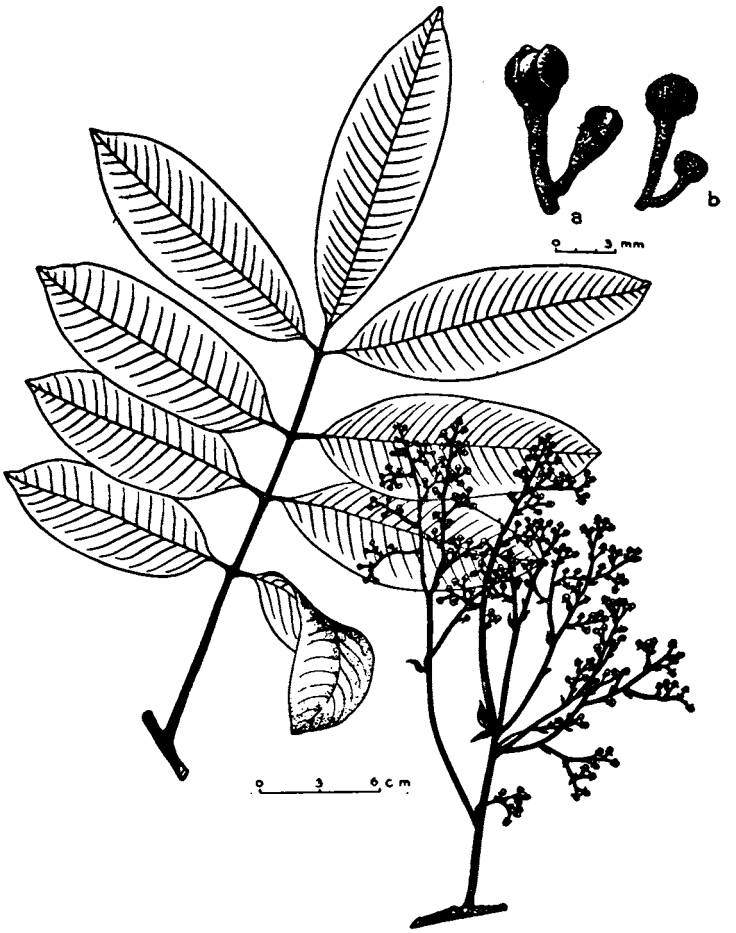

FIGURE 41.—*Aglaia vitiensis:* leaf and inflorescence; *a*, flowers; *b*, flowers, *Aglaia samoensis*, for comparison.

This species is not uncommon on the volcanic islands in forest from 300 to 1,000 meters elevation. It has conspicuously larger flowers, especially as regards the calyx, than *A. samoensis* A. Gray. The fruit of the new species is larger at maturity than that of others of the region.

Genus **DYSOXYLUM** Blume

Dysoxylum aff. **aneityense** Guillaumin.

Dysoxylum aff. *aneityense* Guillaumin: Jour. Arn. Arb., vol. 12, p. 237, 1931.

Taveuni: western slope, altitude 400 meters, Smith no. 766.

Specimen no. 766, in fruit, is distinguishable from the New Hebrides species only by the slightly narrower leaflets. It is closely related to *D. lenticellare* Gillespie, but has a differently shaped and smooth fruit.

EUPHORBIACEAE

Genus **ENDOSPERMUM** Bentham

Endospermum macrophyllum (Mueller-Argau) Pax and K. Hoffmann.

Endospermum macrophyllum (Mueller-Argau) Pax and K. Hoffmann: Pflanzenreich IV, no. 147[8], p. 419, 1914.

Staminate inflorescences paniculate, 4-12 cm long, short-stipitate, the branches pale tomentellous, the lateral branches short, the bracts ovate, about 1 mm long; pedicels 1 mm long or less; calyx membranous, puberulent, cupuliform, truncate, about 2 mm long and in diameter; staminal column carnose, exserted 2-3 mm, the stamens 12-16, the anthers sessile.

Vitilevu: Seemann no. 396 (type, G, K); Tholo North, Nandarivatu, altitude 800 meters, Mead no. 1991 (K). Vanualevu: Mathuata, Wainikoro, Greenwood no. 698 (K).

A tree 20-27 meters high with a trunk nearly 1 meter in diameter, said to yield a soft white timber which is used for banana crates. It is known as *mavu* (ex Seemann) or *kau vulavula* (ex Mead). The Mead and Greenwood collections bear staminate inflorescences, described above.

Endospermum robbieanum A. C. Smith, new species (fig. 42).

Arbor, *E. macrophyllo* (Mueller-Argau) Pax et K. Hoffmann affinis, foliis coriaceis basi obtusis (haud cordatis vel truncato-cordatis) apice obtusis (haud acuminatis vel cuspidatis) subtus persistenter stellato-pilosis (haud subglabris), fructibus praecipue 3-locularibus differt.

Tree about 13 meters high, the branchlets stout, terete, glabrous, lenticellate; petioles stout, terete, striate, glabrous, 6-9 cm long, at the apex conspicuously biglandular; leaf blades thin coriaceous, ovate, 20-25 cm long, 13-16 cm broad, obtuse at base and apex, entire and slightly revolute at margins, glabrous above, persistently stellate-pilose beneath (hairs spreading, 0.2-0.3 mm long), 5-nerved from the base, the two lowest nerves least prominent, the three principal nerves slightly raised and grooved above, prominent beneath, the secondary nerves (of the midnerve) about 4 per side, ascending, anastomosing 1-5 mm within the margin, prominent beneath, the transverse veinlets nearly straight and with the lesser reticulate veinlets conspicuous beneath; frutescences paniculate, 8-10 cm long, short-pedunculate, the rachis and short secondary branches striate, minutely stellate-pilose; pedicels 1-2 mm long; fruiting calyx puberulent, spreading, truncate, about 3 mm in diameter; fruit puberulent, yellowish, subglobose, 6-8 mm in diameter, the persistent stigmas sessile, the locules usually 3, sometimes 1, 2, or 4, the seeds smooth, subglobose, apiculate, 4-5 mm in diameter.

Vanualevu: Mbua, lower Wainunu River valley, in open forest, altitude 0-200 meters, May 7, 1934, Smith no. 1730 (type).

The plant is locally known as *vulavula*; its wood is used for building purposes. The species is named in honor of Captain David Robbie, of Ndavutu, my host in the Wainunu district and for half a century a leading figure in Fiji.

FIGURE 42.—*Endospermum robbieanum.*

Genus CROTON Linnaeus

Croton storckii Seemann.

Croton storckii Seemann: Bonplandia, vol. 10, p. 297, 1862.

Croton verreauxii Baillon variety *storckii* Mueller-Argau: Linnaea, vol. 34, p. 117, 1865.

Ovalau: Storck no. 905 (type, BM, G, K). Vitilevu: Tholo North, Nandarivatu, altitude 900 meters, Tothill no. 702 (K); Gibbs no. 562 (BM).

Vanualevu: Thakaundrove, Mount Kasi, altitude 300-430 meters, Smith no. 1779; Mount Mbatini, altitude 1,030 meters, Smith no. 706. Kanathea: Graeffe no. 1546 (K). Vanua Mbalavu: Tothill no. 701 (K); Smith no. 1466.

C. storckii is probably best considered a distinct species, differing in leaf shape and in margins from *C. verreauxii.* The above cited specimens differ slightly among themselves in leaf texture, length of petiole, length of inflorescence, and density of scales on the young parts and inflorescence. The specimens from high elevations have the smallest leaves and the most persistent scales. *C. microtiglium* Burkill, as represented by Crosby no. 150 (type, K) from Vavau, Tonga, can hardly be distinguished from lowland specimens of *C. storckii,* and I believe only one species is involved.

Genus GLOCHIDION Forster

Glochidion seemanni Muller-Argau.

Glochidion seemanni Mueller-Argau: Linnaea, vol. 32, p. 63, 1863.

Phyllanthus seemannianus Mueller-Argau: Flora, vol. 48, p. 374, 1865.

Glochidion seemannianum Mueller-Argau: Flora, vol. 48, p. 374, 1865, as synonym.

Phyllanthus venulosus Mueller-Argau: Flora, vol. 48, p. 374, 1865.

Fiji, without locality: U. S. Expl. Exped. (type of *Phyllanthus venulosus,* G); Horne no. 1120 (G). Kandavu: Seemann no. 413 (type, K, BM). Vitilevu: Graeffe no. 1541 (K); Tholo North, Mead no. 1977 (K); Lautoka, Greenwood nos. 336 (K), 337 (K). Vanualevu: Mathuata, Greenwood no. 336A (K); Smith no. 1851; Thakaundrove: Smith no. 606. Ovalau: Tothill (K). Moala: Smith no. 1339.

The differences between Mueller's species do not seem to justify their separation. His later change in the specific name *seemanni* is also unjustified.

Genus APOROSA Blume

Aporosa (?) species.

Vanualevu: Thakaundrove, Mount Mariko, altitude 600-866 meters, Smith no. 463.

This plant is a shrub 3 meters high with pale green young fruits, growing in dense forest. It is apparently a species not previously reported from the group, but until flowers are known it can not be accurately assigned to a genus.

Genus BACCAUREA Loureiro

Baccaurea obtusa A. C. Smith, new species (fig. 43).

Frutex vel arbor parva, a speciebus ceteris vitiensibus foliis coriaceis apice rotundatis vel obtusis (haud acutis vel cuspidatis) distinguitur; a *B. seemannii* Mueller-Argau

et *B. wilkesiana* Mueller-Argau habitu glabro differt; a *B. stylari* Mueller-Argau fructu globoso stigmatibus sessilibus differt.

Shrub or small tree up to 9 meters high, glabrous throughout (except the sparsely puberulent staminate inflorescence branches), the branchlets terete, grayish; petioles slender, subterete, 10-25 mm long, swollen at base and apex; leaf blades thin coriaceous, elliptic or slightly obovate, 7-8 cm long, 3.5-5 cm broad, acute at base, rounded or obtuse at apex, entire and slightly thickened at margins, the costa slightly raised above, prominent beneath, the secondary nerves about 6 per side, nearly plane above, elevated beneath, the veinlets reticulate, sometimes prominulous beneath; staminate inflorescences red, narrowly paniculate, 2-4 cm long, the rachis slender, slightly puberulent, the lateral branches each subtended by a minute ovate bract, 3-flowered, at anthesis about 2 mm long; sepals 5 or 6, membranous, ovate, obtuse, about 0.7 mm long; stamens 5-7, the filaments filiform, about 1 mm long, the anthers globose-oblong, about 0.6 mm long, the rudimentary ovary obtusely conical, about 0.5 mm long; frutescences glabrous, short-paniculate, 1-3 cm long, 2-6-fruited; fruiting calyx minute, soon deciduous; fruit smooth, globose, 6-8 mm in diameter, surmounted by the minute sessile stigmas, the seeds 1 or 2, subglobose, rugose.

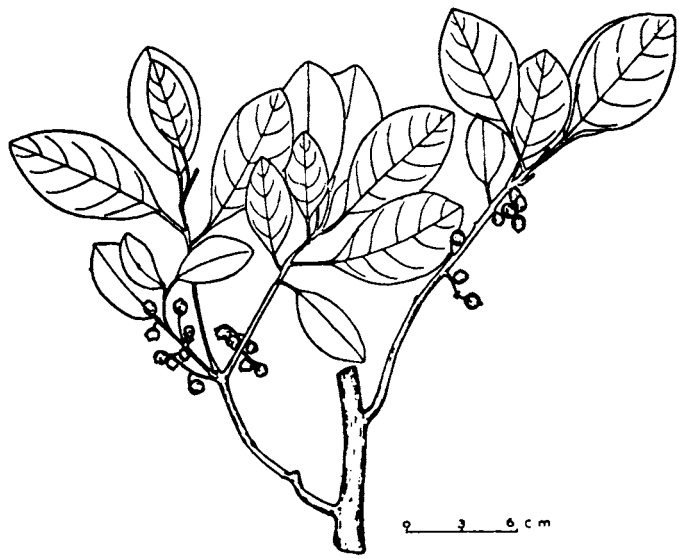

FIGURE 43.—*Baccaurea obtusa.*

Vanualevu: Thakaundrove, in dense forest on Mount Mariko, altitude 600-866 meters, November 14, 1933, Smith no. 420 (type); Yanawai River region, Mount Kasi, altitude 300-430 meters, Smith no. 1780. Vitilevu: Tholo North, Nandarivatu, Tothill no. 779 (K).

The type bears staminate inflorescences; Smith no. 1780 bears mature fruits. *B. stylaris* Mueller-Argau, apparently the closest relative of *B. obtusa,* has a conical fruit produced into a persistent style 1 mm long or more. The new species is known in Thakaundrove as *sinu mbuta.*

Genus MACARANGA Thouars

Macaranga crenata A. C. Smith, new species (fig. 44).

Arbor glabra, *M. seemannii* Mueller-Argau affinis, foliis minoribus conspicue crenatis anguste peltatis margine basali truncatis vel leviter cordatis (haud rotundatis), inflorescentiis sub fructu glabris (haud tomentellis) distinguenda; a *M. graeffeana* Pax et K. Hoffmann foliis minoribus anguste peltatis, habitu glabro differt.

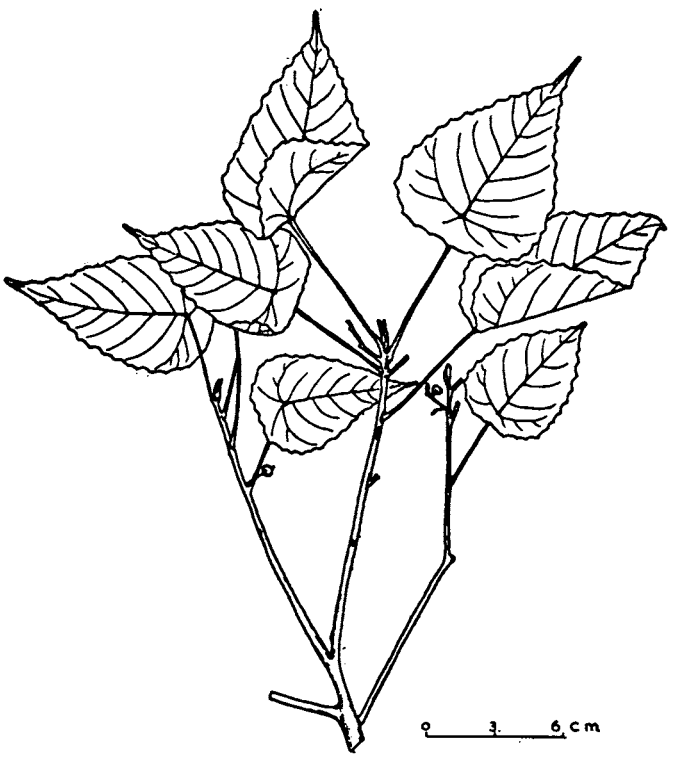

FIGURE 44.—*Macaranga crenata.*

Tree about 10 meters high, glabrous throughout, the branchlets terete, brownish; petioles terete, slender, 4-8 cm long, affixed to the leaf blade about 1 cm from its lower margin; leaf blades chartaceous, ovate-deltoid, shallowly peltate, 8-11 cm long, 5-8 cm broad, truncate or shallowly cordate at base, long-acuminate at apex, glandular-crenate at margins, densely granulose-glandular beneath, palmate (usually 7-nerved), the principal nerves slightly raised above, prominent beneath, the secondary nerves (excluding those of the base) about 7 per side, raised beneath, the veinlets conspicuously reticulate beneath; stipules lanceolate-oblong, about 15 mm long, soon deciduous; frutescences paniculate, 1.5-3 cm long, the secondary branches short; fruiting calyx minute, the lobes 3; capsule smooth, 2(sometimes 1)-locular, about 4 mm long and 7 mm broad, minutely glandular, surmounted by the persistent styles about 1 mm long, the seeds globose, about 3 mm in diameter, tuberculate-rugose.

Vanualevu: Thakaundrove-Mathuata Boundary, in dry thickets on the crest of the Korotini Range between Navitho Pass and Mount Ndelaikoro, altitude 650-900 meters, November 21, 1933, Smith no. 530 (type).

The new species, belonging to the Section *Adenoceras,* is locally known as ***kitimoku.***

ANACARDIACEAE

Genus PLEIOGYNIUM Engler

Pleiogynium solandri (Bentham) Engler.

Pleiogynium solandri (Bentham) Engler: De Candolle, Monogr. Phan., vol. 4, p. 255, 1883.

Vitilevu: Seemann no. 96 (K). Ovalau: Graeffe no. 1553 (K). Vanualevu: Thakaundrove, Smith no. 1940. Moala: Smith nos. 1331, 1399. Vanua Mbalavu: Smith no. 1499. Kambara: Smith no. 1300. Fulanga: Smith nos. 1136, 1184.

Known to the Lauans as *manui,* this tree grows to a height of 30 meters, the trunk being nearly 2 meters in diameter. The wood is often used for canoes. In other parts of Fiji it is known as *totowiwi* or *ndumbundumbu* (according to Graeffe). This is the plant to which Seemann (Fl. Vit., p. 49, 1865) referred as *Rhus taitensis* Guillaumin. Gillespie, according to a note in the herbarium at Kew, apparently thought that the sterile specimen described by Seemann as *Dracontomelon pilosum* (Vitilevu: Seemann no. 100, type) belongs here. I am inclined to think that Seemann no. 100 may represent a species of *Dysoxylum* (Meliaceae), but as the specimen consists only of two juvenile leaves, I believe Seemann's name should be ignored.

Genus BUCHANANIA Roxburgh

Buchanania attenuata A. C. Smith, new species (fig. 45).

Arbor glabra, a *B. vitiensi* Engler foliis angustis longe petiolatis, floribus minoribus, inflorescentiis pedicellisque sub fructu gracilioribus distinguenda.

Tree 5-10 meters high, glabrous throughout, the branchlets subterete, stout, often hollow; petioles flattened above, swollen at base, 5-7 cm long; leaf blades chartaceous, oblong or narrowly obovate, 15-23 cm long, 5-6.5 cm broad, attenuate at base, obtuse or rounded and slightly emarginate at apex, entire and slightly thickened at margins, the costa stout, plane or raised above, prominent beneath, the secondary nerves about 15 per side, straight, ascending and anastomosing near margins, raised on both surfaces, the veinlets copiously reticulate and prominulous on both surfaces; inflorescence paniculate, axillary, pedunculate, about 10 cm long in flower and 15-23 cm long in fruit; bractlets minute, soon deciduous; pedicels about 1 mm long; calyx lobes submembranous, deltoid, obtuse, about 0.7 mm long and 1 mm broad; petals white, thin carnose, oblong, rounded at apex, 2.5-3 mm long, about 1.5 mm broad; stamens 10, about 2 mm long, the filaments linear, abruptly narrowed distally, the anthers narrowly deltoid, about 1.5 mm long, obtuse at apex, the locules produced at base into prominent lobes; disk carnose, cupuliform, about 0.7 mm high, crenate at margins; carpels 5, free, one fertile, sparsely

strigose at base; fruit glabrous, obliquely orbicular, flattened, 11-13 mm broad, 7-8 mm thick.

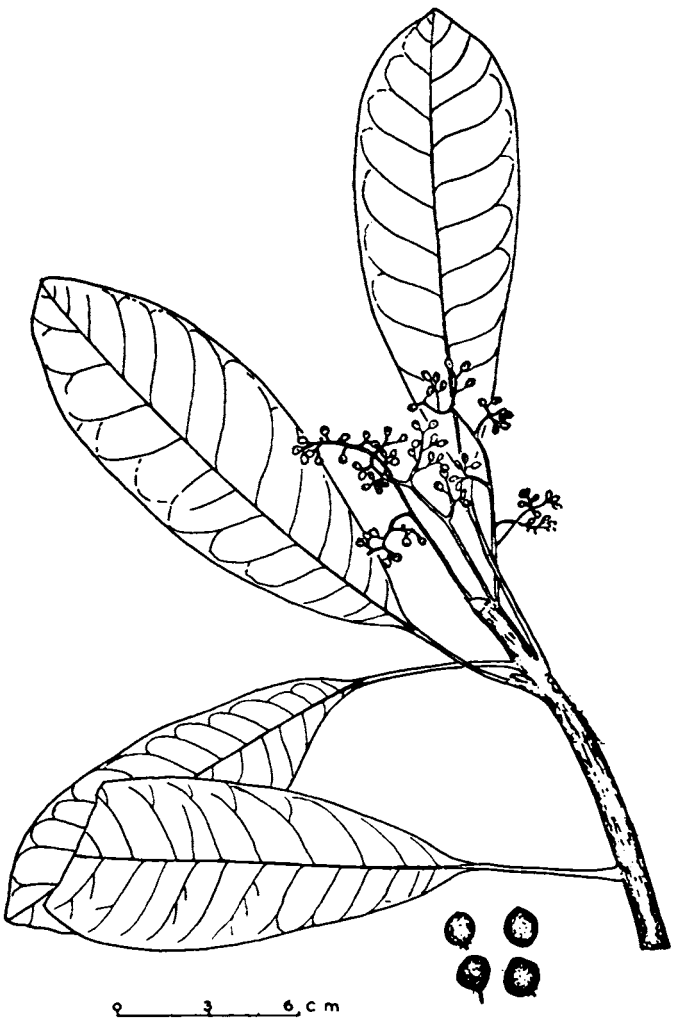

FIGURE 45.—*Buchanania attenuata.*

Kandavu: hills above Namalata and Ngaloa Bays, on edge of forest, altitude 200-400 meters, October 14, 1933, Smith no. 108 (type). Moala: in forest near Naroi, altitude 200 meters, Smith no. 1310.

A local name is *kaukaro*. It is a species of the Section *Sagittatae*, differing from *B. vitiensis* Engler by its proportionately narrower long-petioled leaves (the petioles are 5-7 cm long; those of *B. vitiensis*, less than 1 cm

long), its somewhat smaller flowers, and more slender fruiting inflorescences and pedicels. The Samoan *B. macrocarpa* Merrill also has long-petioled leaves, but belongs to the Section *Adnatae* and has larger fruits than the new species.

HIPPOCRATEACEAE

Genus SALACIA Linnaeus

Salacia prinoides (Willdenow) De Candolle.

Salacia prinoides (Willdenow) De Candolle: Prodr., vol. 1, p. 571, 1824.

Vanualevu: Thakaundrove, southern slope of Mount Mbatini, in dense forest, altitude 300-700 meters, Smith no. 623.

I have not seen any other specimens of Hippocrateaceae from Fiji, and apparently the family has not previously been known from the group.

SAPINDACEAE

Genus GUIOA Cavanilles

Guioa subfalcata Radlkofer.

Guioa subfalcata Radlkofer: Sitzb. Math.-Phys. Acad. Muench., vol. 9, p. 609, 1879.

Vanua Mbalavu: southern limestone section, in thickets, altitude 0-100 meters, Smith no. 1456.

Previously known from Samoa.

Genus ELATTOSTACHYS Radlkofer

Elattostachys venosa A. C. Smith, new species (fig. 46).

Arbor, *E. vitiensi* (Seemann) Radlkofer affinis, habitu puberulo, foliolorum nervis secundariis numerosis rectis, inflorescentiis elongatis differt.

Tree about 15 meters high, the branchlets terete, puberulent, soon glabrous; leaves pinnate, 30-45 cm long, the petioles (10-12 cm long) and rachis terete, striate, sparsely puberulent, the leaflets 6-9, alternate, the petiolules canaliculate, 8-15 mm long, swollen at base, the blades thin coriaceous, oblong, 12-18 cm long, 3.5-5.5 cm broad, obtuse and slightly unequal at base, acuminate at apex, entire at margins, glabrous above, puberulent on the nerves beneath, the costa prominent beneath, the secondary nerves 16-19 per side, straight, ascending near margins, prominulous above, prominent beneath, the veinlets copiously reticulate, prominulous on both surfaces; frutescences axillary, short-stipitate, up to 18 cm long, the secondary branches few and short, the rachis stout, puberulent; pedicels stout, 2-3 mm long; capsules obovoid, trigonous, obtuse at base, flattened and minutely apiculate at apex, about 18 mm in diameter, puberulent without, at length glabrous, densely villose within, the pericarp about 1.5 mm thick, the valves lignose.

Vanualevu: Thakaundrove, in dense forest on the southwestern slope of Mount Mbatini, altitude 300-700 meters, November 28, 1933, Smith no. 604 (type).

The leaflets of the new species have numerous straight secondary nerves, those of *E. vitiensis* (Seemann) Radlkofer having only about ten pairs of such nerves.

FIGURE 46.—*Elattostachys venosa*, leaf and frutescence.

Genus ALECTRYON Gaertner

Alectryon grandifolius A. C. Smith, new species (fig. 47).

Arbor gracilis, generis species prima vitiensis, a *A. macrococco* Radlkofer hawaiiensi et *A. samoensi* Christophersen foliolorum magnitudine et forma, habitu minus valde pubescenti differt.

Slender tree 5-10 meters high, the branchlets stout, terete, puberulent or glabrescent; leaves pinnate, broadly oblong, 50-80 cm long, the petioles (12-35 cm long) and rachis stout, puberulent, striate, semiterete, flattened and angled or narrowly winged above, the leaflets often 8, subopposite, the petiolules swollen, puberulent, narrowly winged above, 5-10 mm long, the blades thin coriaceous, oblong, 15-35 cm long, 6-9 cm broad, rounded

or obtuse and slightly unequal at base, obtuse or obtusely short-acuminate at apex, entire at margins, glabrous (or puberulent on the principal nerves beneath), the costa raised above, prominent beneath, the secondary nerves 20-30 per side, straight, anastomosing near margins, raised on both surfaces, the veinlets copiously reticulate, prominulous;

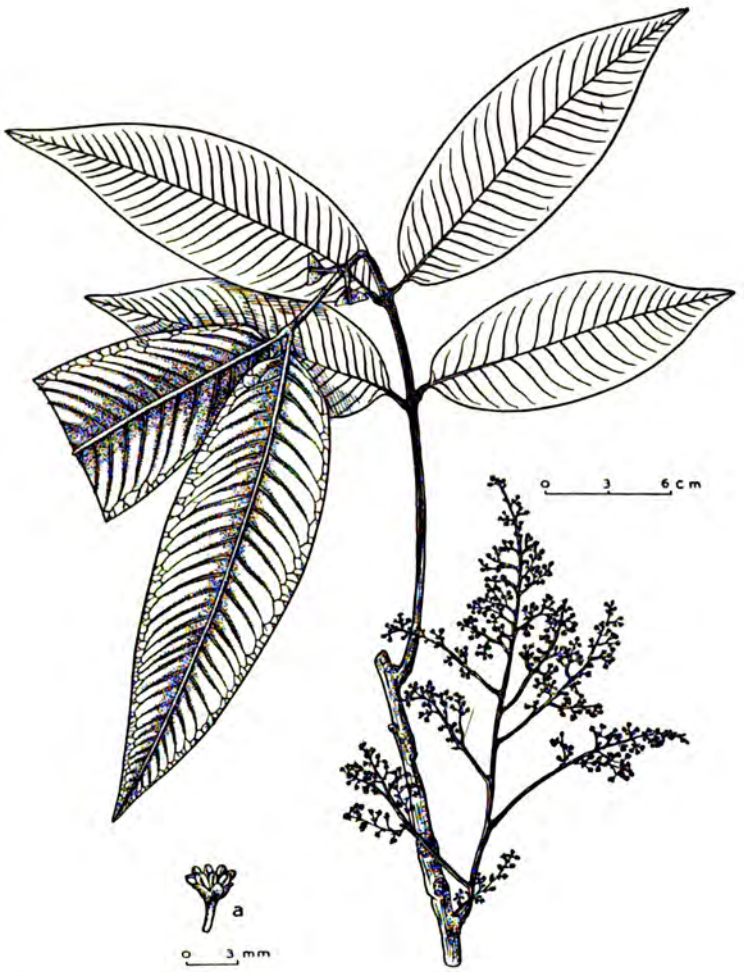

FIGURE 47.—*Alectryon grandifolius,* leaf and inflorescence; *a,* flower.

staminate inflorescences broadly paniculate, 20-25 cm long, short-pedunculate, the branches subterete, puberulent, the bractlets minute, ovate, soon deciduous; pedicels 1-2 mm long, with the calyx puberulent; calyx obconical, the lobes 5, deltoid, obtuse, about 0.7 mm long and 1 mm broad; petals none (or rudimentary?); stamens 8, glabrous, the filaments slender, about 0.3 mm long, the anthers carnose, pale yellow, oblong-ellipsoid, about 1.8 mm long and 0.8 mm broad, rounded at base and apex; disk small, annular, carnose; rudimentary ovary minute, globose, short-setose.

Koro: in dense forest on the main ridge, altitude 300-500 meters, February 2, 1934, Smith no. 1055 (type). Vanualevu: Thakaundrove, dense forest on the southwestern slope of Mount Mbatini, altitude 300-700 meters, Smith no. 713.

Without fruits I can not definitely assign this species to a section, but it appears to belong to the Section *Mahoe*. The genus has not previously been reported from Fiji.

Alectryon species.

Kambara: forest on limestone formation, altitude 0-100 meters, Smith no. 1270.

A tree 17 meters high, locally known as *masa*. In fruit only, this plant appears closer to *A. samoensis* Christophersen than to *A. grandifolius* A. C. Smith. It differs from both in the shape of the leaflets. Collection of the flowers, which are necessary to verify the generic determination, will perhaps establish the species as new.

VITACEAE

Genus **TETRASTIGMA** Planchon

Tetrastigma vitiensis (A. Gray) A. C. Smith, new combination.

Cissus vitiensis A. Gray: Bot. U. S. Expl. Exped., vol. 1, p. 272, 1854.

Vitis vitiensis Seemann: Mission to Viti, p. 434, 1862.

Vanualevu: Mbua, Mbua Bay, U. S. Expl. Exped. (type, US); southern portion of Seatovo Range, in forest, altitude 100-350 meters, Smith no. 1518; Thakaundrove, Natewa Bay region, hills west of Korotasere, in thickets, altitude 100-300 meters, Smith no. 1941. Taveuni: western slope, edge of forest, altitude 300 meters, Smith no. 720.

Examination of the flowers and young fruits of Smith no. 1518 indicates that the stigma is dilated and definitely 4-parted. The inclusion of this species in *Tetrastigma* apparently extends eastward the range of the genus. Sterile and fruiting specimens of *T. vitiensis* can be distinguished from the common *Cissus saponaria* (Seemann) Planchon of Fiji by the more coriaceous and less deeply serrate leaflets, which are obtuse rather than subcordate at base. *T. vitiensis* is locally known as *wa ngondro, wa kalou,* and *vere*.

ELAEOCARPACEAE

Genus **ELAEOCARPUS** Linnaeus

Elaeocarpus kasiensis A. C. Smith, new species (fig. 48).

Frutex, a speciebus vitiensibus foliis obovato-oblongis basi attenuatis apice rotundatis margine revolutis crenato-dentatis, sepalis 4 petalis 4 staminibus paucis distinguitur; a *E. dentato* (Forster) Vahl foliorum forma floribus parvis differt.

Shrub about 3 meters high, glabrous throughout (except inflorescence), the branchlets terete; petioles rugose, shallowly canaliculate, 10-17 mm long; leaf blades thin coriaceous, obovate-oblong, 7-13 cm long, 3-5 cm broad, attenuate at base, rounded at apex, crenate-dentate at the revolute margins, the serrations minutely apiculate, green and shining above, often reddish beneath, the costa slightly raised above, prominent beneath, the secondary nerves 5-7 per side, ascending, anastomosing 2-7 mm within the margin, prominent beneath, the veinlets reticulate, slightly prominulous on both surfaces;

FIGURE 48.—*Elaeocarpus kasiensis:* fruiting branch; *a*, flower; *b*, petal; *c*, ovary and a stamen.

racemes axillary, 2-5 cm long, short-pedunculate, 6-16-flowered, the rachis and pedicels puberulent, often reddish; pedicels 3-6 mm long, often cernuous, each subtended by a soon deciduous lanceolate bractlet 2-3 mm long; sepals 4, thin carnose, yellow, lanceolate-ovate, acute, about 3.5 mm long, 1.5-2 mm broad, minutely pale puberulent without; petals 4, submembranous, glabrous, pink, yellow-margined, obovate, about 3 mm long and 1.5 mm broad, rounded and fimbriate at apex, the lobes about 7, about 0.5 mm long; glands 4, minute, short-pilose; stamens about 10, the filaments glabrous, filiform, 0.5-0.8

mm long, the anthers minutely puberulent, linear-oblong, about 1.3 mm long, opening by apical clefts; ovary ellipsoid, minutely pale-sericeous, produced into a filiform style about 1 mm long, the locules 2, each 2-ovuled; frutescences glabrous, 6-8 cm long, sometimes minutely foliaceous distally; pedicels stout, 7-10 mm long; fruits obovoid, probably up to 2 cm long and 1 cm broad, apiculate at apex, the pericarp less than 1 mm thick.

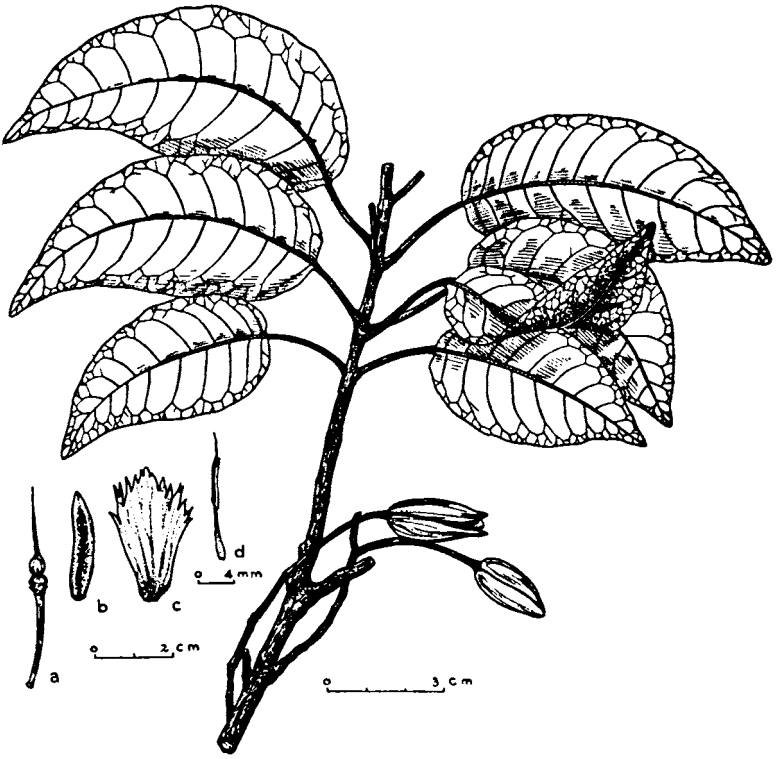

FIGURE 49.—*Elaeocarpus gillespicanus:* flowering branch; *a,* pedicel, receptacle, and ovary, the other parts removed; *b,* inner surface, sepal; *c,* petal; *d,* stamen.

Vanualevu: Thakaundrove, Yanawai River region, Mount Kasi, in dense bush, altitude 300-430 meters, May 10, 1934, Smith no. 1761 (type).

The new species appears to belong to the Section *Dicera,* in which it differs from the New Zealand *E. dentatus* (Forster) Vahl not only in the small size of its flowers, but also in details of leaf shape. The leaves of the new species are characteristically red-tinged beneath.

Elaeocarpus gillespieanus A. C. Smith, new species (fig. 49).

Arbor, *E. subcapitato* Gillespie affinis, foliis minoribus basi truncatis vel subcordatis (haud obtusis), floribus majoribus, sepalis extra glabris differt; a *E. storckii* Seemann foliorum forma, floribus minoribus, petalis albis differt.

Tree about 20 meters high, glabrous throughout (except some flower parts), the branchlets terete, brownish; petioles slender, 2-3.5 cm long; leaf blades coriaceous, ovate-

oblong, 7-10 cm long, 3.5-4.5 cm broad, rounded to a truncate or lightly subcordate base, obtuse or obtusely acuminate at apex, subentire or remotely crenate-dentate at margins, green and shining above, somewhat brownish beneath, the costa nearly plane above, prominent beneath, the secondary nerves 8-10 per side, arcuate-ascending, anastomosing 3-7 mm within the margins, with the copiously reticulate veinlets prominulous on both surfaces; racemes axillary, 5-8-flowered, 4-6 cm long, short-pedunculate; pedicels curved, 25-30 mm long; sepals thick coriaceous, lanceolate-oblong, 18-23 mm long, 4-5 mm broad, acute at apex, slightly thickened at margins, brown and glabrous without, sericeous within with long white hairs; petals white, membranous, glabrous, obovoid, 25-30 mm long, 10-16 mm broad, fimbriate at apex; stamens numerous, about 15 mm long, the filaments slender, short-pilose, the anthers linear-oblong, 5-8 mm long, sparsely pilose (hairs white, 0.5 mm long), appendiculate at apex, the appendage filiform, often 3 mm long; ovary ovoid, glabrous, at anthesis about 3 mm in diameter, the style filiform, glabrous, about 15 mm long.

Vanualevu: Mbua, in dense forest on the southern slope of Mount Seatura, altitude 400 meters, April 27, 1934, Smith no. 1613 (type).

A local name is *mamakara*. It is a species of the Section *Monocera*.

Elaeocarpus milnei Seemann.

Elaeocarpus milnei Seemann: Fl. Vit., p. 28, 1865.

Vitilevu: Milne (type, K). Vanualevu: Thakaundrove, southwestern slope of Mount Mbatini, altitude 700 meters, Smith no. 670.

It is a stout spreading tree growing along small streams. The large glossy leaves and the large panicles of abundant small flowers, of which the petals are rich pink tinged with white, make this one of the most beautiful trees in Fiji.

Elaeocarpus chelonimorphus Gillespie.

Elaeocarpus chelonimorphus Gillespie: B. P. Bishop Mus., Bull. 83, p. 18, fig. 22, 1931.

Vanualevu: Thakaundrove, Yanawai River region, Mount Kasi, Smith nos. 1798, 1802; Natewa Peninsula, Uluingala, Smith no. 2001; Thakaundrove—Mathuata Boundary, Korotini Range, Smith no. 550.

The species is also represented by specimens cited by Gillespie. The above specimens vary somewhat in leaf size and shape, but all show the strong veinlets and large fruits which characterize the species. The only one in flower, Smith no. 2001, has somewhat broader petals than those described by Gillespie.

TILIACEAE

Genus **CORCHORUS** Linnaeus

Corchorus torresianus Gaudichaud.

Corchorus torresianus Gaudichaud: Bot. Voy. Uranie, p. 477, 1826.

Fulanga: on limestone cliff in lagoon, Smith no. 1227.

A compact shrub 30 cm high. The species, originally described from the Marianas Islands, is also known from New Caledonia: Balansa no. 1803

(BM, K), and from Tonga: Harvey (G, K). The genus has not previously been reported from Fiji.

Corchorus trilocularis Linnaeus.

Corchorus trilocularis Linnaeus: Mant., p. 77, 1767.

Vitilevu: Lautoka, Greenwood no. 251 (K).

This common tropical weed has not previously been reported from Fiji.

Genus TRICHOSPERMUM Blume

Trichospermum species.

Vanualevu: Thakaundrove, Mount Mariko, altitude 400-600 meters, Smith no. 406.

A spreading tree in dense forest, locally known as *mako*. I am not sure of the specific position of this plant. In many respects it agrees with Gillespie's interpretation (B. P. Bishop Mus., Bull. 91, p. 19, fig. 21, 1932) of *T. calyculatum* (Seemann) Burret, but the pubescence is different throughout and the fruits are larger. Collection of flowers may establish it as a new species of this alliance.

Genus MICROCOS Linnaeus

Microcos vitiensis A. C. Smith, new species (fig. 50).

Arbor gracilis, generis species unica vitiensis, a speciebus novo-guineensibus e. g. *M. schlechteri* Burret foliorum forma reticulatione, fructu magno distinguitur.

Slender tree about 12 meters high, glabrous throughout, the branchlets terete, striate, brownish; petioles subterete, rugose, swollen above, 15-20 mm long; leaf blades thin coriaceous, oblong or obovate-oblong, 20-25 cm long, 9-12 cm broad, rounded to a truncate base, obtuse at apex, entire or lightly sinuate at margins, 3-nerved from the base, the lateral nerves ascending one-half the length of the leaf, the secondary nerves about 5 per side, ascending, anastomosing near margins, with the primary nerves slightly raised above, prominent beneath, the veinlets copiously reticulate, prominulous; frutescences 2-4 cm long, few (or sometimes 1)-fruited, short-pedunculate, the branches striate, terete; pedicels about 1 cm long; fruits ovoid, 3.5-4 cm long, 2-2.5 cm broad, rounded at base and apex, the pericarp very rugose when dried, the mesocarp fibrous, the endocarp ligneous, very thick, the locules apparently 4, each 1-seeded (1 or 2 seeds aborted), the seeds probably about 15 mm long.

Taveuni: in forest on western slope between Somosomo and Wairiki, altitude 700-900 meters, December 14, 1933, Smith no. 759 (type).

In the absence of flowers the new species, which extends eastward the known range of the genus, cannot be accurately related. Probably it is allied to the group of New Guinea species with large fruits, but it is characterized by details of leaf shape and venation.

DILLENIACEAE

Genus HIBBERTIA Andrews

Hibbertia lucens Brongniart and Gris.

Hibbertia lucens Brongniart and Gris: Bull. Soc. Bot. Fr., vol. 11, p. 191, 1864.

Vitilevu: Namosi, Mount Naitarandamu, altitude 1,250 meters, Gillespie no. 3239. Vanualevu: Thakaundrove, Mount Mbatini, altitude 1,030 meters, Smith no. 687; Mount Ndikeva, altitude 900 meters, Smith no. 1877.

FIGURE 50.—*Microcos vitiensis,* leaf and fruits.

A shrub or gnarled tree about 4 meters high, growing in dense thickets on the crests of high mountains. The specimens appear identical with those from New Caledonia. The known range of the genus is here extended eastward.

FLACOURTIACEAE

Genus **CASEARIA** Jacquin

By H. Sleumer

Casearia adiantoides Sleumer, new species (fig. 51, *a*).

Frutex gracilis 1 m altus; ramuli glabri griseo-corticati; folia elongato-ovata brevissime petiolata, apicem versus longe caudato-attenuata, apice extremo obtusa, basi late rotundata vel interdum subcordata, membranacea, manifeste punctis striulisque bene pellucidis instructa, glaberrima, utrinque opaca, integra vel imprimis inferne levissime crenulata, 4.5-7 cm longa, 1.5-2.2 cm lata, semper sub medio latissima, costa supra vix subtus magis elevata, nervis lateralibus arcuato-adscendentibus utroque latere circ. 5-6 subtus minute prominulis, venis ubique subobscuris; petioli graciles glabri circ. 3 mm longi; flores ad fasciculos axillares plus minusve multifloros dispositi, minimi, iis *Caseariae silvestris* habitu similes, saepe in gallas aculeis setiformibus densissime horridas mutati; pedicelli gracillimi circ. 1.5 mm longi, in inferiore parte manifeste articulati; tepala 5 oblonga obtusa glabra, 1.8 mm longa; stamina 10, alternatim 5 tepalis aequilonga atque 5 alia longitudine circ. antherae unius breviora; filamenta minutissime pilosula; disci lobi 10, cum staminibus alternantes sed 1/2 longit. staminum longiorum tantum aequantes, lineares, crassiusculi, pilosuli, apice barbati; ovarium elongato-ovoideum subglabrum, stigmate magno capitato sessili; fructus non visus, ex coll. ruber.

Vanualevu: Mbua, southern slope of Mount Seatura, in dense forest, altitude 600 meters, April 27, 1934, Smith no. 1682 (type).

This species belongs in the Section *Pitumba,* and in leaf form is very distinct from all other known species of the genus.

Casearia myrsinoides Sleumer, new species (fig. 51, *b*).

Frutex 1 m altus; ramuli novelli subteretes laeves; folia oblonga vel leviter obovato-oblonga, petiolata, apice rotundato-obtusa, basi breviter in petiolum angustata, rigide membranacea, laxe pellucido-punctata, glaberrima, integra, margine subcartilagineo cinerascenti minute revoluta, 3.5-5 cm longa, 1.7-2 cm lata, medio latissima, supra subnitida et in statu sicco cinereo-brunnea, subtus opaca et dilute castanea, costa supra fere obscura, subtus parum prominula, nervis lateralibus utrinque 4 subarcuatis marginem patentibus, cum venis plus minusve dense reticulatis parum sed distincte elevatis; petioli glabri 5-6 mm longi; flores ad fasciculos axillares paucifloros digesti, minimi, dilute lutei; pedicelli vix 1 mm longi; tepala 5 oblonga submembranacea obtusa, 2 mm longa, 1 mm lata; stamina 10 alternatim 1.3 et 1 mm longa; filamenta filiformia minutissime pilosula; antherae globosae didymae, circ. 0.4 mm diametro; disci lobi cum staminibus alternantes, lineari-oblongi, truncati, 0.5 mm longi, imprimis apicem versus breviter pilosuli; ovarium ovoideo-conicum glabrum, sub anthesi 1.5 mm longum, stigmate sessili capitato; fructus ignotus.

Vanualevu: Thakaundrove, Yanawai River region, Mount Kasi, altitude 300-400 meters, May 10, 1934, Smith no. 1772 (type).

Like *C. adiantoides,* this species belongs in the Section *Pitumba,* but appears to be without close relatives among the known Polynesian species of the genus.

Genus **ERYTHROSPERMUM** Lamarck

Erythrospermum acuminatissimum (A. Gray) A. C. Smith, new combination.

Casearia acuminatissima A. Gray: Bot. U. S. Expl. Exped., vol. 1, p. 80, 1854.

Erythrospermum polyandrum Oliver: Hooker, Ic. Pl., vol. 14, pl. 1333, 1881.

Vitilevu: Naitasiri, Gillespie nos. 3621, 3649; Rewa, Gillespie no. 2401. Kandavu: Smith no. 151. Vanualevu: Mbua, U. S. Expl. Exped. (type, G); Smith nos. 1587, 1599; Mathuata, Smith no. 1850; Thakaundrove, Smith no. 1961. Taveuni: Gillespie no. 4758. Vanua Mbalavu: Smith no. 1470. Kambara: Smith no. 1254.

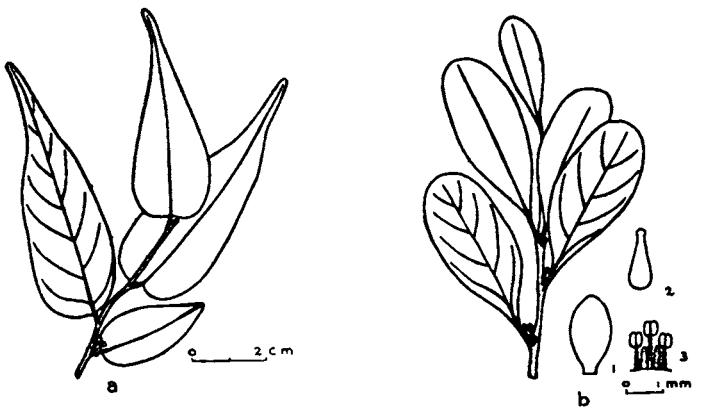

FIGURE 51.—*Casearia: a, Casearia adiantoides,* flowering branch; *b, Casearia myrsinoides,* showing petal (1), ovary (2), and stamens and staminodes (3).

The types of Oliver's Samoan species, collected by Powell, and of Gray's Fijian species do not materially differ. The plant appears to be fairly common both in Samoa and Fiji, where it occurs as a shrub or tree up to 12 meters high, in forest up to 600 meters altitude. Local names in Fiji are ***mavinda*** and ***nggetata.***

BEGONIACEAE

Genus **BEGONIA** Linnaeus

Begonia vitiensis A. C. Smith, new species (fig. 52).

Herba carnosa, familiae species unica vitiensis, foliorum pilis rufescentibus conspicuis, floribus magnis albis, ovario anguste alato distinguenda.

Carnose herb about 50 cm high, the stem often creeping, reddish, striate, soft pilose, glabrescent; petioles 10-15 cm long, sparsely pilose, the hairs reddish, stout, 1-2 mm long; leaf blades membranous, greenish, slightly paler beneath, broadly orbicular, 12-15 cm long, 15-18 cm broad, deeply and subequally cordate at base (sinus open, 1.5-2 cm deep), rounded or apiculate at apex, minutely serrulate and ciliate at margins (cilia 10-14 per cm), sparsely but obviously and persistently pilose on both surfaces (hairs reddish, 1.5-3 mm long, those of the margin often shorter), about 8-nerved from base, the principal nerves prominent, several times branched, often excurrent, the veinlets obscurely reticulate,

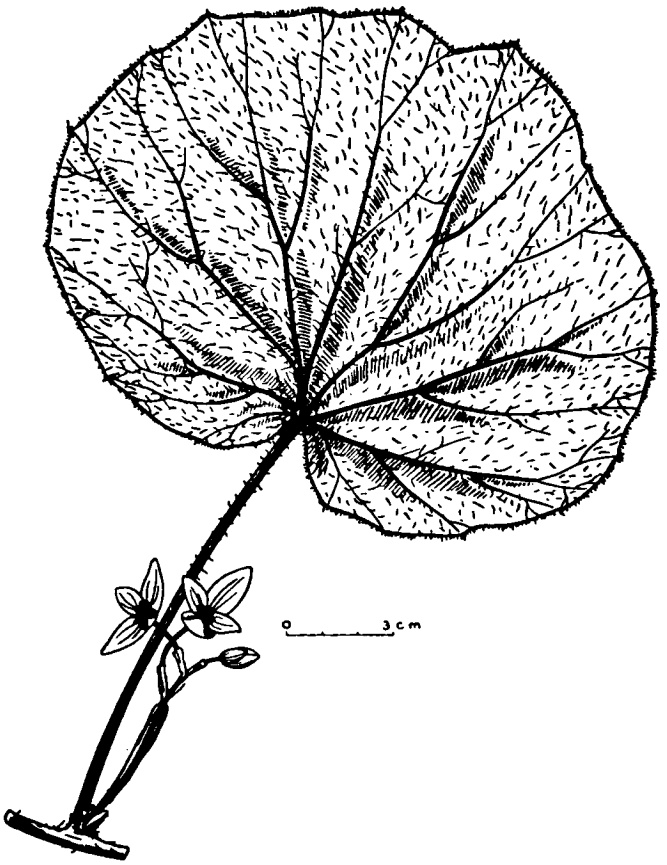

FIGURE 52.—*Begonia vitiensis*, leaf and inflorescence.

those of the margins excurrent; inflorescence axillary, 8-12 cm long, long-pedunculate, sparsely branched, the peduncle and branches 1.5-4 mm broad including the membranous wings, reddish-pilose like the leaves, glabrescent; bracts few, glabrous, membranous, white, oblong, about 2 cm long; pedicels slender, 15-20 mm long, long pilose; flowers glabrous, the staminate and pistillate probably in the same inflorescence; staminate flowers: sepals 2, membranous, white, ovate-oblong, about 18 mm long and 11 mm broad, obtuse at apex; petals 2, similar to the sepals but somewhat obovate, about 13 mm long and 4 mm broad; stamens about 20, up to 6 mm long, the filaments filiform, white, connate at base, the anthers yellow, oblong, obtuse, about 1 mm long; pistillate flowers; perianth similar to that of staminate flowers in size and texture (number of parts uncer-

tain); ovary ovoid, after maturity about 1 cm long, narrowly 3-winged, the wings equal, about 0.5 mm broad; style 5-6 mm long, 3-parted, the branches forked, the stigmas often subpeltate on filiform branchlets.

Vanualevu: Thakaundrove, in dense forest on Mount Mariko, altitude 600-866 meters, November 14, 1933, Smith no. 466 (type); between Waiwai and Lomaloma, Horne no. 618 (K).

This plant was common in a wet shaded ravine near the summit of Mount Mariko, but was not observed on neighboring peaks. It belongs to the Section *Diploclinium*. This species apparently extends the known range of the family eastward in the Pacific.

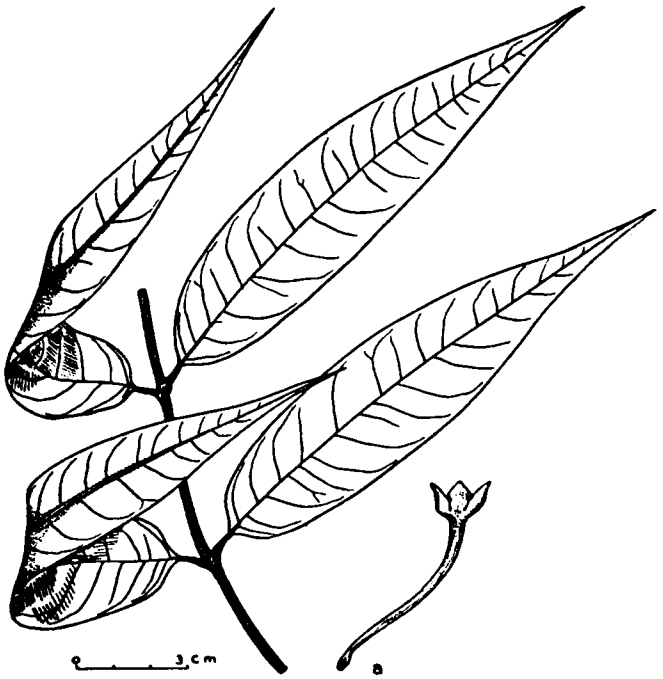

FIGURE 53.—*Phaleria angustifolia*, branch; *a*, flower.

THYMELIACEAE

Genus PHALERIA W. Jack

Phaleria angustifolia A. C. Smith, new species (fig. 53).

Arbor parva, *P. acuminatae* (A. Gray) Gilg affinis, foliis angustioribus longe acuminatis, pedunculis brevioribus, perianthii lobis latioribus acutis differt; *P. lanceolata* (A. Gray) Gilg magnitudine omnium partium differt.

Slender tree about 4 meters high, glabrous throughout (except the flowers within), the branchlets terete, slender, brownish; petioles canaliculate, 7-10 mm long; leaf blades papyraceous, lanceolate-oblong, 13-17 cm long, 2.5-3.5 cm broad, acute at base, long-acuminate at apex, entire at margins, the costa slightly raised above, prominent beneath, the secondary nerves 10-13 per side, anastomosing 2-5 mm within the margins, with the copiously reticulate veinlets prominulous on both surfaces; inflorescences borne on trunk and branches, many-flowered; peduncles short (probably not more than 3 mm long), the floral bracts green, papyraceous, ovate-orbicular, 5-8 mm in diameter; perianth white, glabrous without, 5-6 cm long, the tube narrowly cylindric, 1 mm or less in diameter near base, 3-4 mm at throat, sparsely pilose within with slender white hairs 1-2 mm long, the lobes 4, ovate, acute, 7-8 mm long, 4-5 mm broad, puberulent within; scales oblong, subentire, 0.5-1 mm long; stamens 8, glabrous, the filaments about 0.5 mm long, the anthers oblong, about 1.5 mm long; disk cupuliform, membranous, short; ovary oblong-ellipsoid, at anthesis 2-3 mm long, sparsely setose distally with pale hairs about 1 mm long; style filiform, glabrous, slightly longer than the perianth tube, the stigma ellipsoid.

Vanualevu: Mbua, in dense forest on the southern slope of Mount Seatura, altitude 500 meters, April 28, 1934, Smith no. 1685 (type).

A local name is *numbu*.

LECYTHIDACEAE

Genus **BARRINGTONIA** Forster

Barringtonia petiolata A. C. Smith, new species (fig. 54).

Arbor glabra, speciebus vitiensibus descriptis non valde affinis; racemo elongato, floribus parvis *B. samoensi* A. Gray affinis, foliorum parvorum forma, petiolis conspicuis, floribus sessilibus (haud pedicellatis) differt; a *B. racemosa* (Linnaeus) Blume foliis brevioribus petiolatis valde differt.

Tree up to 15 meters high, glabrous throughout, the branchlets terete, brownish; petioles slightly angled, swollen at base, 2-4 cm long; leaf blades chartaceous, elliptic-obovate, 12-15 cm long, 5.5-7.5 cm broad, acute or subattenuate at base, obtuse at apex, entire or serrulate at margins, the costa elevated above, prominent beneath, the secondary nerves 7-9 per side, arcuate-ascending, anastomosing 3-6 mm within the margins, raised on both surfaces, the veinlets conspicuously reticulate, prominulous on both surfaces; racemes 30-50 cm long, pendulous, short-pedunculate, the rachis striate, subterete; flowers about 2 per cm, sessile; calyx tube short cylindric, at anthesis about 4 mm long and 3 mm in diameter, rugose when dried, the limb erecto-patent, 4-6 mm long, the lobes 4, rounded, 2 sinuses deeper than the others; petals membranous, pale pink or greenish, obovate, at maturity 18-22 mm long, 10-12 mm broad, often slightly 3-lobed at the rounded apex; stamens numerous, the filaments filiform, pink, at maturity about 35 mm long, connate at base for 2-3 mm, the anthers suborbicular, about 1 mm in diameter; disk annular, about 0.5 mm high, surrounding the filiform style (30-40 mm long); ovary 4-celled; fruit obovoid, about 4 cm long and 2 cm in diameter, 4-sided and narrowly 4-winged (wings not more than 1 mm broad), truncate at base and apex, surmounted by the persistent coriaceous calyx limb.

Vanualevu: Thakaundrove, Ndrekeniwai valley, hills between the Vatukawa and Wainingio Rivers, in forest, altitude 200-500 meters, November

24, 1933, Smith no. 597 (type); between Waiwai and Lomaloma, Horne no. 619 (K); Mbua, southern slope of Mount Seatura, in dense forest, altitude 600 meters, Smith no. 1626.

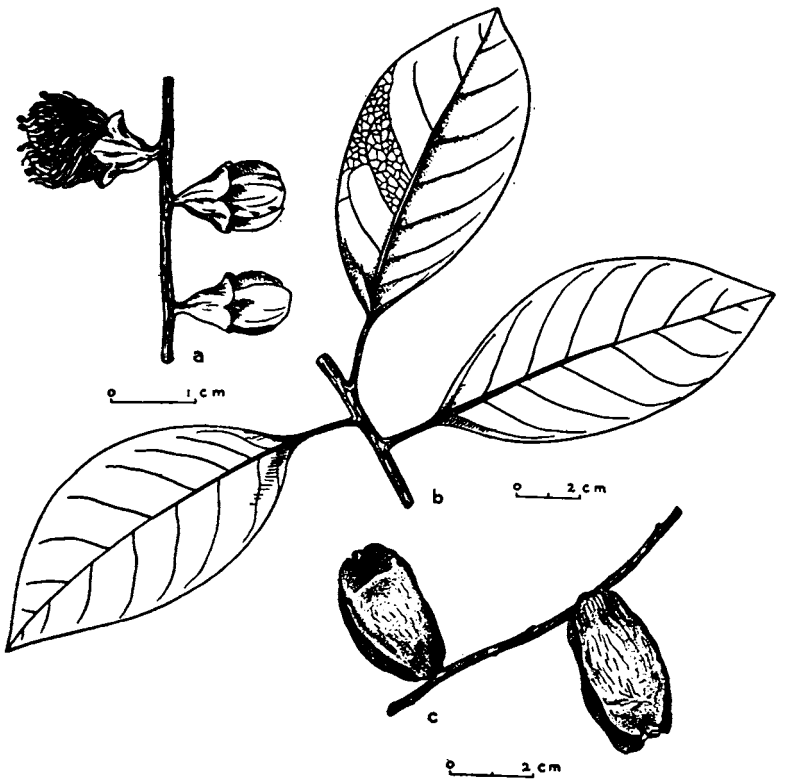

FIGURE 54.—*Barringtonia petiolata: a,* portion of flowering raceme; *b,* leaves; *c,* portion of fruiting raceme.

A local name, applied to the entire genus in Fiji, is ***vutu***. The new species, which is uncommon in middle elevation forest, is not closely related to the three species already known from Fiji. In common with *B. samoensis* A. Gray, it has a beautiful elongate raceme of comparatively small flowers. *B. petiolata* is the only true forest *Barringtonia* I know from Fiji. It may be the species to which Seemann (Fl. Vit., p. 83, 1865) refers as ***vutu ndina,*** known to him only by natives' reports.

RHIZOPHORACEAE

Genus **CROSSOSTYLIS** Forster

Crossostylis richii (A. Gray) A. C. Smith, new combination.

Haplopetalon richii A. Gray: Bot. U. S. Expl. Exped., vol. 1, p. 608, pl. 76, 1854.

Crossostylis harveyi Bentham: Jour. Linn. Soc., vol. 3, p. 77, 1858.

Fiji, without locality: Harvey (type of *C. harveyi,* K, G); Horne nos. 885 (K), 919 (G, K), 1058 (K), 1066 (G, K). Vitilevu: Naitasiri, altitude 150 meters, Gillespie no. 3650. Ovalau: altitude 600 meters, Gillespie no. 4429. Vanualevu: Mbua, Mbua Bay, U. S. Expl. Exped. (type, G); Mount Seatura, altitude 600-830 meters, Smith nos. 1647, 1670, 1680.

In reducing *Haplopetalon* to *Crossostylis,* Schimper (Engler and Prantl, Pflanzenfam., pt. 3, vol. 7, p. 50, 1893) neglected to make this combination.

FIGURE 55.—*Crossostylis richii stenophylla,* fruiting branch.

Crossostylis richii (A. Gray) A. C. Smith variety **stenophylla** A. C. Smith, new variety (fig. 55).

Frutex, a forma typica foliis angustissimis differt.

Slender shrub; leaf blades lanceolate-oblong, 6-10 cm long, 1.5-2 cm broad, obtuse or obtusely acuminate at apex.

Vanualevu: Thakaundrove, Yanawai River region, on Mount Kasi, dense bush, altitude 300-430 meters, May 10, 1934, Smith no. 1765 (type). Vitilevu: Horne no. 968 (K).

These specimens, in fruit only, differ from typical material of the species only by their extremely narrow leaves. Discovery of the flowers may establish the plant as a distinct species.

Crossostylis parksii (Gillespie) A. C. Smith, new combination.

Haplopetalon parksii Gillespie: B. P. Bishop Mus., Bull. 91, p. 21, fig. 24, 1932.

MYRTACEAE

Genus EUGENIA Micheli

Eugenia durifolia A. C. Smith, new species (fig. 56).

Arbor glabra, *E. rubescenti* A. Gray affinis, foliis coriaceis acuminatissimis, nervis secundariis paucioribus prominentioribus, nervo marginali e margine distantiore, inflorescentiis minus divaricatis differt; a *E. curvistyla* Gillespie habitu gracili valde differt.

Tree about 6 meters high, glabrous throughout, the branchlets stiff, terete, brownish; petioles flattened above, 6-10 mm long; leaf blades coriaceous, elliptic, 6-8 cm long, 2.5-4 cm broad, subattenuate at base, acuminate at apex (acumen slender, about 1 cm long, subacute), entire and narrowly revolute at margins, the costa slightly grooved above, raised beneath, the secondary nerves about 7 per side, raised on both surfaces, collected into an irregular vein 2-4 mm within the margin, this frequently paralleled by an outer secondary collecting vein, the veinlets prominulous on both surfaces; inflorescences terminal on short branchlets, compound-paniculate, 5-9 cm long, many-flowered, the branches slightly flattened, the bractlets caducous; flowers often in ultimate clusters of 2 or 3, sessile or very short-pedicellate; calyx coriaceous, cupuliform, 3-4 mm long, about 3.5 mm in diameter, the limb very short, erect, the margin undulate in 4 small rounded lobes; petals membranous, obovate, about 2 mm long, coherent into a flattened lid, deciduous together; stamens numerous, the filaments (in bud) 2-3 mm long, the anthers about 0.5 mm in diameter; style carnose, about 3.5 mm long, tapering distally and curved at the tip.

Taveuni: in dense forest on borders of the lake east of Somosomo, altitude 700-900 meters, January 8, 1934, Smith no. 919 (type).

Eugenia confertiflora A. Gray.

Eugenia confertiflora A. Gray: Bot. U. S. Expl. Exped., vol. 1, p. 523, pl. 61B, 1854.

Ovalau: U. S. Expl. Exped. (type, G, K, NY). Vitilevu: Naitasiri, near Suva, Horne no. 702 (G, K). Vanualevu: Mbua, Horne no. 1056 (G, K); Thakaundrove, Mount Kasi, Yanawai River region, Smith nos. 1757, 1797, 1821.

The above specimens differ slightly in leaf shape and flower size; Horne no. 702 and Smith no. 1757 have very reduced inflorescences. However, I think they may be taken as conspecific. *E. effusa* A. Gray is very closely related, differing slightly in the degree of development of calyx lobes. I

believe that only one species will be maintained when a larger series of specimens has been collected.

Eugenia wolfii Gillespie.

Eugenia wolfii Gillespie: B. P. Bishop Mus., Bull. 83, p. 22, fig. 28, 1931.

Vanualevu: Mbua, Horne no. 1100 (G, K). Mathuata: Wainunu-Ndreketi Divide, altitude 200-300 meters, Smith no. 1854.

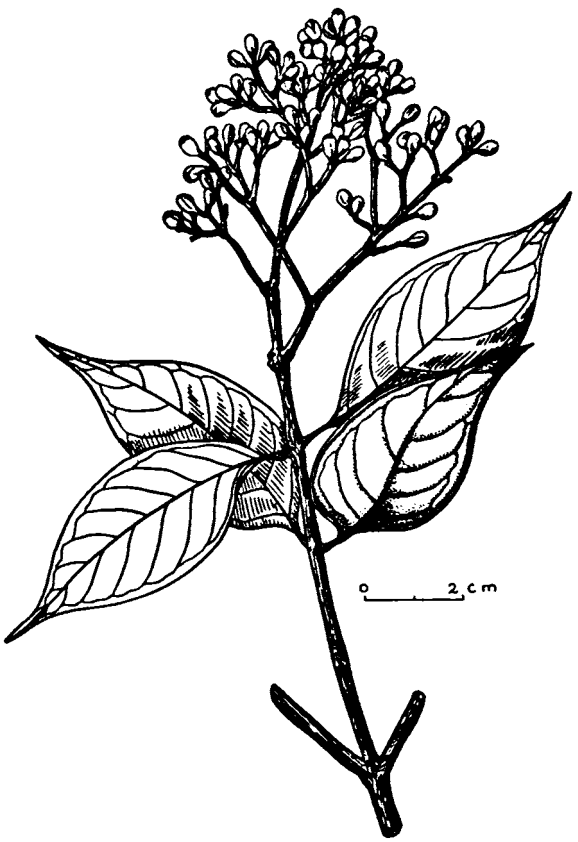

FIGURE 56.—*Eugenia durifolia*, flowering branch.

The type, collected at 1,150 meters on Vitilevu, is less robust throughout than the present specimens, of which the leaves are up to 45 cm long and 17 cm broad, the branchlets and inflorescences proportionately larger. It is possible that the lowland forms of this remarkable species, as represented by the above collections, deserve specific rank, but in the absence of mature flowers it seems best to recognize them as a very robust form of *E. wolfii*.

Eugenia diffusa Turrill.

Eugenia diffusa Turrill: Jour. Linn. Soc., vol. 43, p. 20, 1914.

Kandavu: Mount Mbuke Levu, altitude 200-500 meters, Smith no. 224.

The second collection of this species, from the type locality, bears mature fruits, which are here described:

Fruiting inflorescences on short branchlets, sometimes growing from the trunk; fruit orange, coriaceous, ellipsoid or obovoid-ellipsoid, 3-4 cm long, 1.5-2 cm broad, tapering at base, rounded at summit, surmounted by the short coriaceous calyx limb, the single seed ellipsoid, adhering to the fibrous wall.

Eugenia species.

Vanualevu: Thakaundrove, southwestern slope of Mount Mbatini, in dense forest, altitude 300-700 meters, Smith no. 619.

A tree 20 meters high, with red ovoid-ellipsoid fruits about 2 cm long, locally known as *yasiyasi* and producing a durable timber valued in boat-building. This species is probably undescribed and appears to be related to *E. amicorum* A. Gray, but has smaller leaves and a more reduced inflorescence. In the absence of flowers I hesitate to name it.

Genus ACICALYPTUS A. Gray

Acicalyptus seemanni A. Gray (Fig. 57, *b*).

Acicalyptus seemanni A. Gray: Bonplandia, vol. 10, p. 35, 1862.

Calyptranthes seemanni Seemann: Fl. Vit., p. 81, 1865.

Eugenia prora Burkill: Kew Bull. for 1906, p. 4, 1906.

Fiji, without definite locality: Yeoward (type of *Eugenia prora,* K). Ovalau: Graeffe (G, K). Vitilevu: Namosi, Horne nos. 774 (G, K), 874 (K). Vanualevu: Mathuata, Seemann no. 168 (type, K, BM, G); Thakaundrove, Mount Ndikeva, Smith no. 1876.

Acicalyptus elliptica A. C. Smith, new species (fig. 57, *a, c*).

Arbor glabra, *A. seemanni* A. Gray affinis, habitu foliisque robustioribus, foliis minus abrupte acuminatis, acumine brevioribus latioribusque differt.

Tree about 5 meters high, glabrous throughout, the branchlets terete, brownish; petioles rugose, canaliculate, 6-10 mm long; leaf blades coriaceous, shining above, dull beneath, elliptic, 8-12 cm long, 3.5-5 cm broad, acute or attenuate at base, acuminate at apex (acumen about 10 mm long and 4 mm broad, obtuse), entire at margins, the costa slightly grooved above, prominent beneath, the secondary nerves about 15 per side, straight, spreading, collected into a continuous vein 2-3 mm from the margin, raised on both surfaces, the veinlets conspicuously reticulate, prominulous, those near the margin collected into a second marginal vein; inflorescence terminal, cymose-paniculate, many-flowered, short-pedunculate, 4-7 cm in diameter, the flowers sessile in ultimate clusters of 2 or 3, the bractlets coriaceous, ovate, minute, soon deciduous; flower buds (just before anthesis) obovoid, lightly 4-angled or smooth, 3-3.5 mm long, the calyx limb operculate, about 1 mm long, apiculate (apiculum about 0.3 mm long); petals membranous, white, ovate-deltoid, attached to the calyx and falling with the operculiform summit; stamens numerous, the filaments white, filiform, narrowed distally, the anthers subglobose, about 0.2 mm in diameter; style stout, 1-1.5 mm long, truncate.

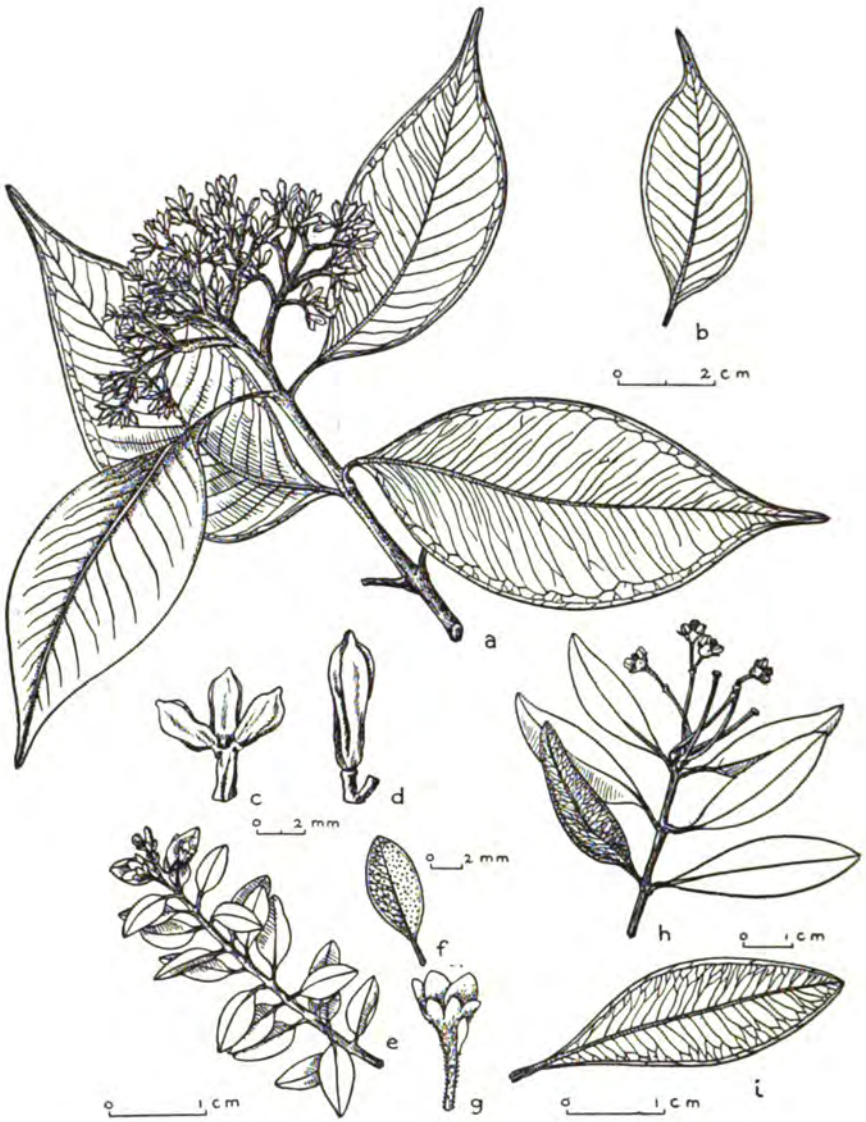

FIGURE 57.—Myrtaceae: *a, Acicalyptus elliptica,* flowering branch; *b, Acicalyptus seemanni,* leaf; *c, Acicalyptus elliptica,* group of flowers; *d, Acicalyptus longiflora,* flower; *e-g, Mooria microphylla,* showing flowering branch (*e*), lower surface of leaf (*f*), and flower (*g*); *h-i, Tristania vitiensis,* showing fruiting branch (*h*), and lower surface of leaf (*i*).

Vanualevu: Mbua, southern portion of Seatovo Range, in ridge forest, altitude 100-300 meters, April 20, 1934, Smith no. 1567 (type).

The leaves of the new species are twice as large as the typical ones of *A. seemanni* and less abruptly acuminate, the acumen being shorter and broader. The collecting vein of the leaves of *A. seemanni* is uniformly 1 mm or less from the margin, that of *A. elliptica* being 2-3 mm within the margin, with somewhat conspicuous veinlets and a secondary collecting vein near the margin. The flowers of the two species are very similar, those of *A. seemanni* being a trifle larger.

Acicalyptus longiflora A. C. Smith, new species (fig. 57, *d*).

Arbor glabra, *A. myrtoidi* A. Gray affinis, foliis multo majoribus, floribus minoribus apice non conspicue subulatis; a *A. elliptica* A. C. Smith floribus duplo majoribus pedicellatis facile distinguenda.

Small tree, glabrous throughout, the branchlets terete, brownish; petioles rugose, 4-8 mm long, narrowly winged above; leaf blades coriaceous, dark brown above when dried, paler beneath, oblong or elliptic-oblong, 9-12 cm long, 3.5-4.5 cm broad, attenuate at base, short-acuminate at apex (acumen 5-8 mm long, obtuse), entire and slightly revolute at margins, the costa impressed above, prominent beneath, the principal secondary nerves about 15 per side, straight, collected into a continuous vein about 1.5 mm from the margin, raised on both surfaces, the veinlets conspicuously reticulate, prominulous, the outer ones collected into a second marginal vein; inflorescence terminal, corymbose-paniculate, many-flowered, short-pedunculate, 6-11 cm in diameter, the flowers ultimately solitary, the pedicels up to 3 mm long, the bractlets minute, deciduous; flower buds (just before anthesis) oblong-obovoid, 4-angled, 5-6 mm long, 2 mm in diameter near apex, the calyx limb operculate, apiculate (apiculum 0.5-0.8 mm long); petals small, falling with the calyx limb; stamens numerous, the filaments filiform, the anthers about 0.2 mm in diameter; style stout, short, truncate; fruit coriaceous, ellipsoid, about 20 mm long and 10 mm broad, obtuse at both ends, surmounted by the short persistent calyx limb, the pericarp thick, the seed solitary.

Fiji, without exact locality: June, 1883, Storck XXV (or XXVI?), (type, K; duplicate at Gray Herbarium). Vitilevu: Wainimala River, Horne no. 959 (G, K); Tholo North, Nandarivatu, Gillespie no. 3962; Rewa, Mount Korombamba, altitude 300 meters, Gillespie no. 2277.

This species resembles *A. elliptica* A. C. Smith in leaf, although the collecting vein is nearer the margin. The flowers, however, are twice as large and pedicellate, characters which ally it to *A. myrtoides* A. Gray. From this the new species differs in its much larger leaves and smaller flowers, which lack the conspicuous subulate apex of those of *A. myrtoides*. *A. eugenioides* (Seemann) Drake is quite distinct, with rounded or emarginate leaves.

Genus PAREUGENIA Turrill

Pareugenia brackenridgei (A. Gray) A. C. Smith, new combination.

Eugenia brackenridgei A. Gray: Bot. U. S. Expl. Exped., vol. 1, p. 521, pl. 61A, 1854.

Fiji, without definite locality: Horne no. 888 (K). Vitilevu: Graeffe (K), no. 50 (BM); Tamavua, Yeoward no. 92 (K); Namosi, Seemann no. 155 (BM, G, K); Gillespie no. 2657; Lautoka, Greenwood no. 36 (K). Ovalau: U. S. Expl. Exped. (type, G, NY). Kandavu: Mount Mbuke Levu, altitude 200-500 meters, Smith no. 239.

Dissection of mature flowers shows that the filaments are united into phalanges, although the value of this as a generic character may be questioned. I believe that Gillespie (B. P. Bishop Mus., Bull. 83, p. 24, 1931) was not justified in referring Seemann no. 155 to *P. oblongifolia* Gillespie. That species differs from *P. brackenridgei* by its larger and thicker leaves and somewhat pointed apex. In addition to the type from Vitilevu, *P. oblongifolia* is represented by: without definite locality, Horne no. 936 (G, K). Vitilevu: Namosi, Horne no. 873 (K). Vanualevu: Mbua, Horne (G, K); lower Wainunu River valley, Smith no. 1723; Mathuata, Wainunu-Ndreketi Divide, Smith no. 1840.

Genus **MOORIA** Montrouzier

Mooria microphylla A. C. Smith, new species (fig. 57, *e-g*).

Frutex, generis species unica vitiensis, foliis *M. buxifoliae* (Brongniart et Gris) Guillaumin affinis, floribus plus minusve minoribus, calycis minute pilosi forma differt.

Glabrous shrub 1-3 meters high, the crown rounded, compact, the branchlets stiff, terete, swollen at leaf bases, brownish; leaves opposite, crowded, the petioles slightly swollen, 1-2 mm long, the blades coriaceous, elliptic or obovate, 7-12 mm long, 3-6 mm broad, subattenuate at base, rounded at apex, entire at the thickened margins and slightly revolute towards base, copiously black-punctate on both surfaces, the mid-nerve impressed above, raised beneath, the secondary nerves immersed; flowers solitary, axillary near apices of branchlets, the pedicels 2.5-4 mm long, sparsely puberulent, surmounted by two punctate bractlets, the bractlets obovate, obtuse, 1.5-2 mm long; calyx tube cupuliform, about 1 mm long, closely and minutely pilose, the limb spreading, glabrous, about 1 mm long, 5-lobed nearly to base, the lobes orbicular, pellucid-punctate, short-ciliate at margins; petals white, membranous, glabrous, pellucid-punctate, obovate, about 3 mm long and 2-3 mm broad, rounded at apex; stamens about 30, separate, 1-seriate, the filaments 2-3 mm long, the anthers subglobose, about 0.3 mm in diameter; style carnose, about 2.5 mm long, the stigma small, subcapitate, the ovary 5-locular.

Vanualevu: Thakaundrove, summit of Mount Mbatini, in dense thickets, altitude 1,030 meters, November 29, 1933, Smith no. 685 (type).

This species extends the known range of the genus eastward.

Genus **TRISTANIA** R. Brown

Tristania vitiensis A. C. Smith, new species (fig. 57, *h, i*).

Frutex glaber, generis species unica vitiensis, a speciebus novo-caledonicis e. g. *T. vieillardii* (Brongniart et Gris) Niedenzu foliis parvis angustis, nervis abrupte adscendentibus, nervo marginali prominenti differt.

Shrub about 3 meters high, glabrous throughout, the branchlets copiously branching, terete, rugose, brownish; petioles rugose, 4-6 mm long, narrowly winged above; leaf blades coriaceous, shining above, dull beneath, oblong or oblong-obovate, 2.5-4 cm long, 1-1.5 cm broad, attenuate at base, rounded at apex, entire and somewhat thickened at margins, the costa slightly raised on both surfaces, the lateral veins numerous, ascending, copiously anastomosing, with the veinlets prominulous on both surfaces, collected into a continuous vein about 0.5 mm from the margins; inflorescence lacking; fruits 2-6 in short-pedunculate cymes near ends of branchlets, the secondary peduncles 10-20 mm long, the pedicels 2-4 mm long, the bractlets deciduous; fruiting calyx cupuliform, the limb about 1 mm long, the lobes 5, coriaceous, deltoid, obtuse, less than 1 mm long, the sinuses rounded; fruit semi-adnate, extending about 2 mm beyond the calyx, capsular, 3-valved.

Vanualevu: Thakaundrove, summit of Mount Mbatini, in dense thickets, altitude 1,030 meters, November 29, 1933, Smith no. 684 (type).

By this species, a member of the Section *Eutristania,* the known range of the genus is extended eastward. It is noteworthy that this species and the preceding (*Mooria microphylla*), representing the first Fijian collections of typical New Caledonian genera, were found together on the highest point of Vanualevu.

MELASTOMACEAE

Genus **MEDINILLA** Gaudichaud

Medinilla waterhousei Seemann.

Medinilla waterhousei Seemann: Fl. Vit., p. 89, 1865.

Taveuni: Gillespie no. 4781; above Somosomo, Seemann no. 175 (type, K); borders of lake east of Somosomo, altitude 700-900 meters, Smith no. 850; summit of Uluingalau, altitude 1,100-1,220 meters, Smith no. 899. Vanualevu: Mbua, summit of Mount Seatura, altitude 700-830 meters, Smith no. 1653.

This beautiful liana is the *tangimauthia* of Fijian legend. It grows profusely at high altitudes on Taveuni, to which it was thought limited. However, my collection from Mbua seems identical. Natives assured me that the species does not occur on the Vanualevu peaks between Seatura and the island of Taveuni, and my many efforts to find it failed. It is doubtless the most showy plant native to Fiji.

Genus **ASTRONIA** Blume

Astronia sessilis A. C. Smith, new species (fig. 58).

Frutex, *A. robustae* Seemann affinis, foliis sessilibus pro longitudine angustioribus, nervis primariis alte connatis valde differt.

Glabrous shrub about 2 meters high, the branchlets terete, stout, the leaf scars conspicuous; leaves aggregated near ends of branchlets, sessile, the blades thin coriaceous, elliptic or obovate-elliptic, 17-25 cm long, 6.5-9.5 cm broad, tapering at base, acute (?)

at apex, slightly recurved at margins, 3-pli-nerved, the nerves joined 3-4 cm above the base, slightly raised above, prominent beneath, the second and third distinct to apex, 8-15 mm within the margins, the cross-veins spreading, slightly raised on both surfaces, those near the margin collected into a vein 2-3 mm within the margin, the veinlets copiously reticulate, obvious beneath; inflorescence terminal, ample, many-flowered, up to 15 cm long, the branchlets stout, flattened, swollen at the nodes, the bractlets papyraceous,

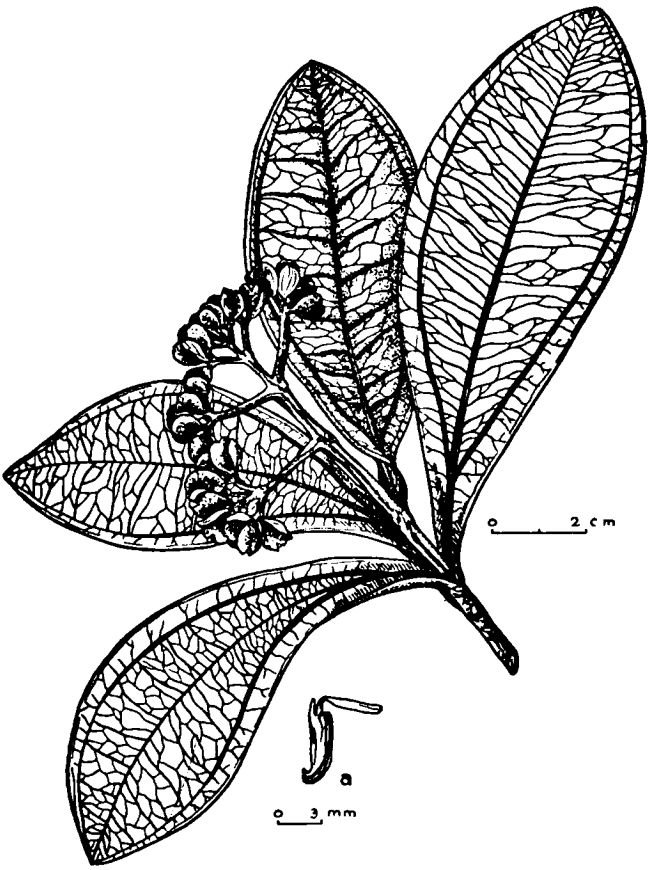

FIGURE 58.—*Astronia sessilis*, flowering branch; *a*, stamen.

orbicular, sessile, 12-15 mm in diameter; flowers in ultimate clusters of 3; young unopened calyces coriaceous, obovoid, about 10 mm long and 7 mm in diameter, tapering to a stout pedicel 2-4 mm long, short-apiculate at apex, the limb at length erect, splitting into 4 or 5 subequal lobes, the lobes deltoid, acute, 4-5 mm long; petals 8-10, white, carnose, obovate, in bud about 6 mm long and 5 mm broad, probably considerably larger at anthesis, obtuse at apex; stamens 18 (or 16 or 20?), the filaments ligulate, carnose, in bud 4-5 mm long and 1 mm broad, narrowed and sharply recurved distally, the anthers stout, in bud about 6 mm long, the basal spur short, straight, the apex sharply curved; style stout, about 1.5 mm in diameter, the stigma capitate; locules 7 (always?), the placentas erect.

Vanualevu: Thakaundrove-Mathuata Boundary, in dry forest on the crest of the Korotini Range between Navitho Pass and Mount Ndelaikoro, altitude 650-900 meters, November 21, 1933, Smith no. 533 (type).

The leaves of *A. robusta* Seemann have petioles 2-6 cm long, and the principal nerves are joined only 2 cm, usually 1 cm or less. The leaves of *A. robusta* are 10-14 cm broad.

Astronia macrantha A. C. Smith, new species (fig. 59).

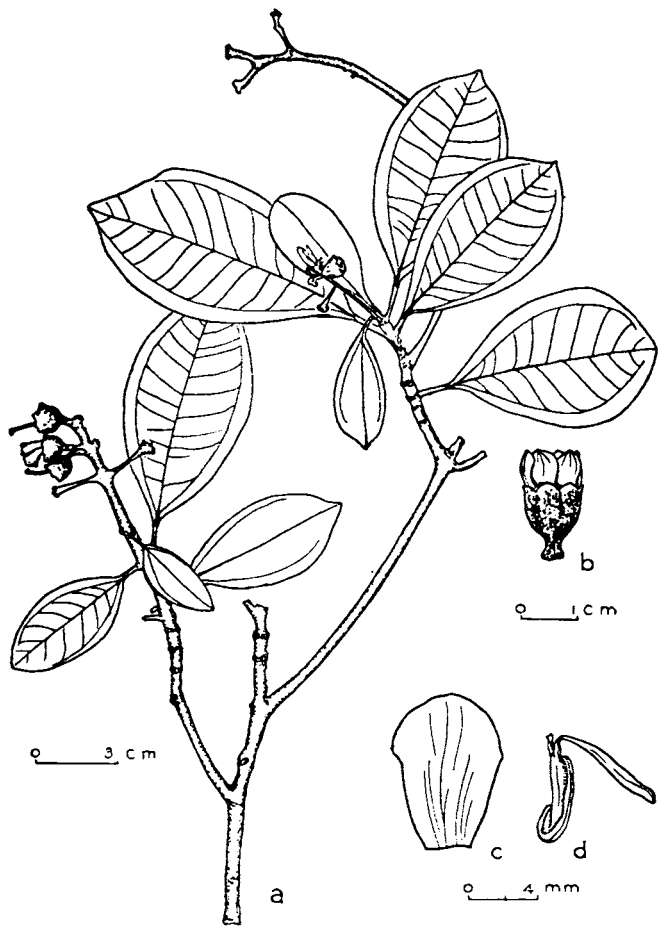

FIGURE 59.—*Astronia macrantha: a,* branch; *b,* flower; *c,* petal; *d,* stamen.

Arbor, *A. robustae* Seemann affinis, foliis 3-nerviis multo minoribus, inflorescentiis paucifloris, bracteolis parvis distinguenda; a *A. pickeringii* A. Gray var. *vitiensi* A. Gray et *A. floribunda* Gillespie inflorescentiis compactis, floribus magnis paucis differt.

Small spreading tree 3-7 meters high, glabrous throughout (young parts deciduously ferruginous-lepidote), the branchlets subterete, brownish, swollen at the nodes; petioles

slender, shallowly canaliculate, 1-3 cm long; leaf blades thin coriaceous, elliptic or obovate, 8-11 cm long, 4-5.5 cm broad, acute at base, subacute, obtuse, or faintly emarginate at apex, entire and slightly recurved at margins, 3-nerved from base or 3-pli-nerved, the principal nerves seldom joined more than 5 mm above base, slightly impressed above, prominent beneath, the marginal pair distinct to apex, the cross-veins about 12 pairs, spreading, plane above, prominulous beneath, the veinlets inconspicuous; inflorescence terminal, trichotomously branched, few-flowered, 4-9 cm long, the branchlets flattened and conspicuously swollen at nodes, the bractlets suborbicular, papyraceous, 5-7 mm in diameter, sessile; flowers in ultimate clusters of 3, soon deciduous; pedicels stout (1.5-2 mm in diameter), swollen at base, 3-4 mm long; calyx coriaceous, rugose, cupuliform, at anthesis about 10 mm long and 8 mm in diameter, the tube thick-walled, the limb (entire in bud) at anthesis erect, 4-5 mm long, about 7-lobed, the lobes broadly ovate, apiculate, 1-2 mm long, 3-4 mm broad; petals about 7, white, carnose, oblong-obovate, about 12 mm long and 7 mm broad, rounded or obtuse at apex, often contracted near the middle; stamens usually 14, the filaments carnose, ligulate, about 10 mm long, 1.5-2 mm broad, contracted and sharply curved distally, the anthers about 7 mm long and 1.5 mm thick, the base prolonged about 1 mm below the junction with the filament, the apex sharply recurved for 2-3 mm; style carnose, 1-2 mm in diameter, 10-16 mm long, the stigma capitate; locules usually 7, the placentas erect, the ovules numerous; fruit wall eventually splitting longitudinally, leaving the upright club-shaped placentas, the placentas at length 4 mm long.

Vanualevu: Mbua, in dry forest on the southern portion of the Seatovo Range, altitude 100-350 meters, May 2, 1934, Smith nos. 1706 (type), 1525. Without definite locality: Harvey (K).

The Harvey specimen was cited by Cogniaux (De Candolle, Monogr. Phan., vol. 7, p. 1096, 1891) as *A. robusta* Seemann, which in fact seems to be the nearest relative of the new species. *A. robusta* is represented in the present collection by: Taveuni: borders of lake east of Somosomo, altitude 700-900 meters, Smith no. 859.

Astronia inflata A. C. Smith, new species (fig. 60).

Frutex vel arbor gracilis, calycibus inflatis limbo brevi incurvato truncato distinguitur; a *A. victoriae* Gillespie foliorum 3-nerviorum forma, calycibus brevibus truncatis, antheris magnis valde differt.

Shrub or slender tree up to 7 meters high, essentially glabrous throughout, the branchlets terete, brownish or nigrescent, swollen at the nodes; petioles slender, canaliculate above, 1-3 cm long; leaf blades thin coriaceous, elliptic or obovate, 5-10 cm long, 2-4 cm broad, acute at base, obtuse or rounded (rarely emarginate) at apex, entire and slightly revolute at margins, ferruginous-lepidote beneath when young, soon glabrous, 3-nerved from base, the principal nerves plane or impressed above, prominent beneath, the marginal pair distinct to apex, the cross-veins about 10 pairs, spreading, prominulous beneath, the veinlets obscure; inflorescence terminal, ample, repeatedly trichotomously branched, many-flowered, 4-12 cm long, the branchlets somewhat flattened, the principal bracts small, foliaceous, soon deciduous; flowers in ultimate clusters of 3, each 3 subtended by 2 spatulate bractlets 4-5 mm long; pedicels 3-4 mm long at anthesis; calyx coriaceous, cupuliform, somewhat inflated, about 4 mm long and 6 mm in diameter, the limb 1-1.5 mm thick, incurved and truncate at margin; petals 5 or 6, carnose, white, contorted in bud, obovate-spatulate, obtuse or rounded at apex, 4-6 mm long, 2-3 mm broad; stamens generally 10, the filaments about 4 mm long, sharply curved, the anthers 4-5 mm long, about 0.7 mm thick, the basal spur straight, about 1 mm long, the apex sharply curved; style carnose, about 5 mm long, the apex swollen; locules 5, the placen-

tas erect, the ovules numerous; fruiting pedicels 7-10 mm long, the maturing calyx rich pink within, the fruit wall eventually splitting longitudinally, leaving the upright club-shaped placentas.

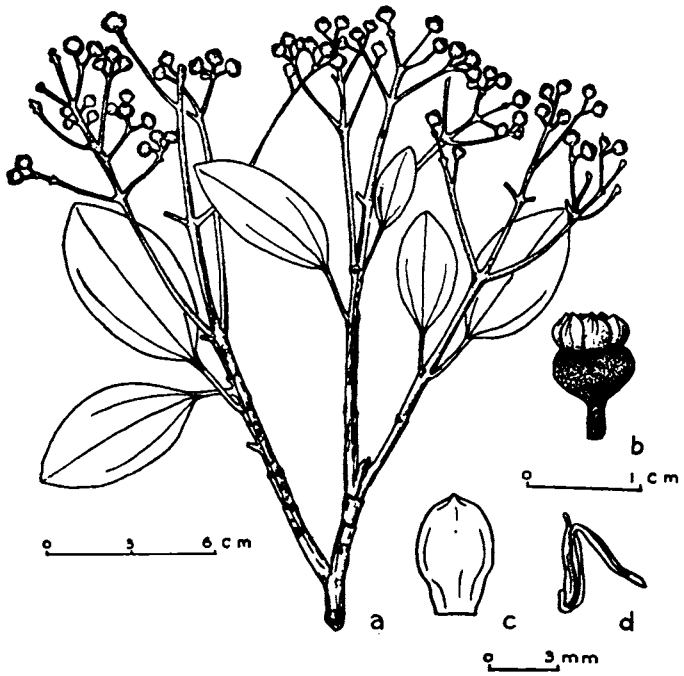

FIGURE 60.—*Astronia inflata: a,* branch; *b,* flower; *c,* petal; *d,* stamen.

Vanualevu: Horne no. 616 (K); Thakaundrove, in crest thickets on the eastern buttress of Mount Ndikeva, altitude 800 meters, June 5, 1934, Smith no. 1875 (type); summit of Mount Mbatini, in dense thickets, altitude 1,030 meters, Smith no. 707; Mbua, summit of Mount Seatura, in dense forest, altitude 700-830 meters, Smith no. 1645; Mathuata, near Wainikoro, Greenwood no. 704 (K).

Smith no. 1645 bears young fruits and Greenwood no. 704 bears old fruits; Horne no. 616 has shortened emarginate leaves.

Genus **ASTRONIDIUM** A. Gray

Astronidium storckii Seemann.

Astronidium storckii Seemann: Fl. Vit., p. 87, 1865.

Fiji: without definite locality, Horne (K). Vanualevu: Thakaundrove, Yanawai River region, Mount Kasi, altitude 300-430 meters, Smith no. 1799. The type collection is from Ovalau.

A local name is *rusila*. My specimens, from a tree 7 meters high in dense forest, have the leaves puberulent rather than hispid beneath, and the hairs much shorter than those of the type.

ARALIACEAE

Genus **PLERANDRA** A. Gray

Nesopanax Seemann: Jour. Bot., vol. 2, p. 249, 1864.

Bakeria Seemann: Jour. Bot., vol. 2, p. 248, 1864.

Chiefly because Seemann used the specific name *vitiensis* in two genera which have since been unified, the names of Fijian species of *Plerandra* have been confused. In combining the above mentioned genera, Bentham and Hooker f. (Gen. Pl., vol. 1, p. 946, 1867) did not actually make specific combinations, and no names can be attributed to them in that publication. Following is a list of the species and specimens of *Plerandra* known from Fiji.

Plerandra pickeringii A. Gray.

Plerandra pickeringii A. Gray: Bot. U. S. Expl. Exped., vol. 1, p. 729, pl. 95, 1854.

Vitilevu: Seemann no. 206 (BM, G, K); Gillespie nos. 2156, 2465, 3432, 4678. Ovalau: U. S. Expl. Exped. (type, G). Kandavu: Mount Mbuke Levu, altitude 200 meters, Smith no. 205. Koro: eastern slope of main ridge, altitude 200-300 meters, Smith no. 936. Moala: near Naroi, altitude 200 meters, Smith no. 1309. Vanualevu: Mbua, Seatovo Range, altitude 100-350 meters, Smith no. 1524.

A local name is *sole*.

Plerandra grayi Seemann.

Plerandra grayi Seemann: Jour. Bot., vol. 2, p. 242, 1864; Fl. Vit., p. 117, pl. 22, 1865.

(?)*Plerandra graeffei*: Gartenfl., vol. 36, p. 71, 1887, sphalm.

Vitilevu: Seemann no. 208 (type, K).

Plerandra vitiensis (Seemann) Baillon.

Plerandra vitiensis (Seemann) Baillon: Hist. Pl., vol. 7, p. 169, 1880.

Nesopanax vitiensis Seemann: Jour. Bot., vol. 2, p. 249, 1864; Fl. Vit., p. 117, pl. 20, 1865.

Plerandra seemanni Bentham and Hooker f.: Drake, Ill. Fl. Ins. Mar. Pac., p. 183, 1886.

Plerandra nesophanax Harms: Engler and Prantl, Pflanzenfam. III, vol. 8, p. 29, 1898.

Fiji: without locality, Milne (K). Ovalau: Seemann no. 207 (type, K, BM, G). Vanualevu: Thakaundrove, Mount Mariko, altitude 400-600 meters, Smith no. 412.

Plerandra victoriae Gibbs.

Plerandra victoriae Gibbs: Jour. Linn. Soc., vol. 39, p. 150, 1909.

Vitilevu: Tholo North, summit-ridge of Mount Tomanivi (Victoria), altitude 1,200 meters, Gibbs no. 784 (type, BM). Vanualevu: Thakaundrove, summit of Mount Mbatini, altitude 1,030 meters, Smith no. 680.

Smith's specimens differ from the type only in the longer petiolules, up to 5 cm long.

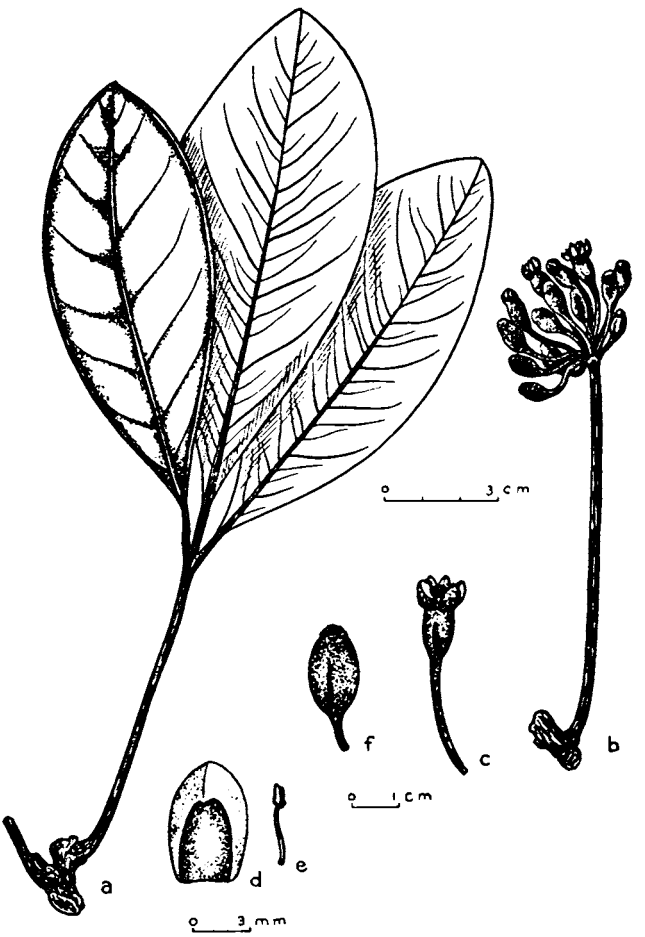

FIGURE 61.—*Plerandra grandiflora: a,* leaf; *b,* primary ray of inflorescence; *c,* flower; *d,* petal; *e,* stamen; *f,* fruit.

Plerandra grandiflora A. C. Smith, new species (fig. 61).

Arbor gracilis, *P. vitiensi* (Seemann) Baillon et *P. victoriae* Gibbs affinis, foliolorum pauciorum forma, petiolulis brevibus, floribus majoribus, calycis tubo maximo, fructis magnis facile distinguenda.

Slender tree about 3 meters high, glabrous throughout, the leaves and inflorescences aggregated at ends of branchlets, the branchlets terete, brownish, sparsely lenticellate; petioles subterete, 6-10 cm long, expanded at base into a sheath 15-20 mm broad, the ligule conspicuous, coriaceous, subentire, 5-8 mm long; leaflets 3, the petiolules stout, rugose, subterete, 1-2 cm long, the blades shining above, dull and paler beneath, coriaceous, elliptic, 12-18 cm long, 5-8 cm broad, attenuate at base, obtuse at apex, narrowly revolute at margins, the costa stout, prominent on both surfaces, the secondary nerves 7-10 per side, straight, ascending near margins, slightly raised on both surfaces or obscure beneath, the veinlets obscure; inflorescences short-pedunculate, the primary rays numerous, diverging, up to 15 cm long, the branches straight, striate, the ultimate umbels about 5 cm across, 20-25-flowered, the pedicels up to 2 cm long; calyx tube coriaceous, smooth, cylindric-ellipsoid, at anthesis about 8 mm long and 5 mm in diameter, truncate at apex; petals 5, pale yellow, valvate, carnose, deltoid-ovate, 5-6 mm long, 3-4 mm broad, acute, thickened and slightly incurved at apex; stamens pale yellow, about 50, in two or more series, the filaments filiform, about 4 mm long, the anthers oblong, about 1.5 mm long; styles 5-8, separate, very short, often obscure, forming a small ring of papillae on the flattened or rounded summit of the calyx; locules 5-8, the walls carnose; fruit black, carnose, ellipsoid, up to 2 cm long and 1 cm broad, the seeds yellowish, about 15 mm long and 4 mm broad, flattened, the inner margin straight.

Vanualevu: Thakaundrove, Yanawai River region, in dense bush on Mount Kasi, altitude 300-430 meters, May 10, 1934, Smith no. 1777 (type).

Plerandra bakeriana A. C. Smith, new name.

Bakeria vitiensis Seemann: Jour. Bot., vol. 2, p. 249, 1846; Fl. Vit., p. 117, pl. 21, 1865.

Plerandra vitiensis Bentham and Hooker f.: Drake, Ill. Fl. Ins. Mar. Pac., p. 183, 1886; non Baillon (1880).

Vitilevu: Namosi, Seemann no. 209 (type, K, BM, G); Milne no. 99 (K); Mount Naitarandamu, altitude 1,100 meters, Gillespie no. 3153; Lautoka, Mount Evans, altitude about 1,000 meters, Greenwood no. 382 (K). Vanualevu: Mbua, Mount Seatura, altitude 500 meters, Smith no. 1621.

Plerandra species.

Vanualevu: Thakaundrove, eastern buttress of Mount Ndikeva, in crest thickets, altitude 700 meters, Smith no. 1890.

Smith's specimens, from a slender tree 2 meters high, are not sufficiently complete to permit description of this doubtlessly undescribed species. Dissection of the small flowers indicates its relationship to *P. bakeriana* A. C. Smith, but the present plant has about 30 rather than 15 stamens, and has narrower leaflets.

Genus **SCHEFFLERA** Forster

Schefflera seemanniana A. C. Smith, new name.

Agalma vitiensis Seemann: Fl. Vit., p. 116, 1865; non *Schefflera vitiensis* Seemann (1865).

Heptapleurum vitiense Bentham and Hooker f: Drake, Ill. Fl. Ins. Mar. Pac., p. 183 (corr. p. 409), 1886; Gillespie: B. P. Bishop Mus., Bull. 91, p. 24, fig. 27, 1932.

Kandavu: Mount Mbuke Levu, altitude 200-500 meters, Smith no. 242.

Following the treatments of Baillon (Hist. Pl., vol. 7, p. 247, 1880) and Harms (Engler and Prantl, Pflanzenfam. III, vol. 8, p. 38, 1898), it is necessary to give this plant a new name in *Schefflera*. The species is known to me only from the descriptions of Seemann and Gillespie, and the single specimen, Smith no. 242. This is in fruit only, and appears to agree with Gillespie's description, but has the leaflets 5 or 7 rather than 3 or 5.

Schefflera costata A. C. Smith, new species (fig. 62).

Arbor, foliorum textura, fructuum forma *S. seemannianae* A. C. Smith affinis, foliolis 9 (haud 3-7) apice acuminatis (haud obtusis), fructibus plerumque 10 (haud 5-7)- locularibus, stylo breviore crassiore differt.

Tree about 5 meters high, glabrous throughout, the leaves and inflorescences aggregated near summit, the branchlets stout (1 cm in diameter near extremities), the leaf scars conspicuous; petioles subterete, striate, up to 20 cm long, about 3 mm in diameter, expanded at base into a sheath about 2 cm broad, the ligule entire, coriaceous; leaflets 9 (always?), the petiolules slender, shallowly canaliculate, 2-3 cm long, the blades dull green, paler beneath, thin coriaceous, elliptic, 7-9.5 cm long, 2.5-4.5 cm broad, acute or subattenuate at base, acuminate at apex (acumen 5-15 mm long, often callose-tipped), slightly recurved at margins, the costa slightly raised above, prominent beneath, the secondary nerves 20 or more per side, spreading, prominulous, the veinlets reticulate, obscure; frutescences about 15 cm long, the peduncle stout, about 9 cm long, the primary rays few, diverging, the pedicels 5-8 mm long, continuous with calyces; fruits in ultimate clusters of 4 or 5, subglobose, up to 8 mm or more in diameter, when dried conspicuously about 10-ribbed, the calyx limb short, coriaceous, long persistent, the style stout, about 1 mm long and nearly as thick, the locules about 10, the seeds ellipsoid, flattened.

Taveuni: in forest on the western slope between Somosomo and Wairiki, altitude 600-900 meters, December 29, 1933, Smith no. 886 (type).

Although it lacks flowers, this plant is designated as a *Schefflera* because of its resemblance in leaf texture and in fruit to *S. seemanniana* A. C. Smith (*Agalma vitiensis* Seemann).

MYRSINACEAE

Genus **RAPANEA** Aublet

Rapanea samoensis Lauterbach.

Rapanea samoensis Lauterbach: Bot. Jahrb. Engler, vol. 41, p. 232, 1908.

Kambara: Smith no. 1245. Fulanga: Smith no. 1218.

This species, which has not been previously reported from Fiji, grows in southern Lau as a shrub or small tree on limestone soil. The specimens appear similar to the type collection from Samoa.

Genus **MAESA** Forskal

Maesa samoana Mez.

Maesa samoana Mez: Pflanzenreich IV, no. 236, p. 53, 1902.

Maesa insularis Gillespie: B. P. Bishop Mus., Bull. 74, p. 6, fig. 3, 1930.

Kandavu: Smith nos. 57, 69, 80, 118. Fulanga: Smith no. 1160.

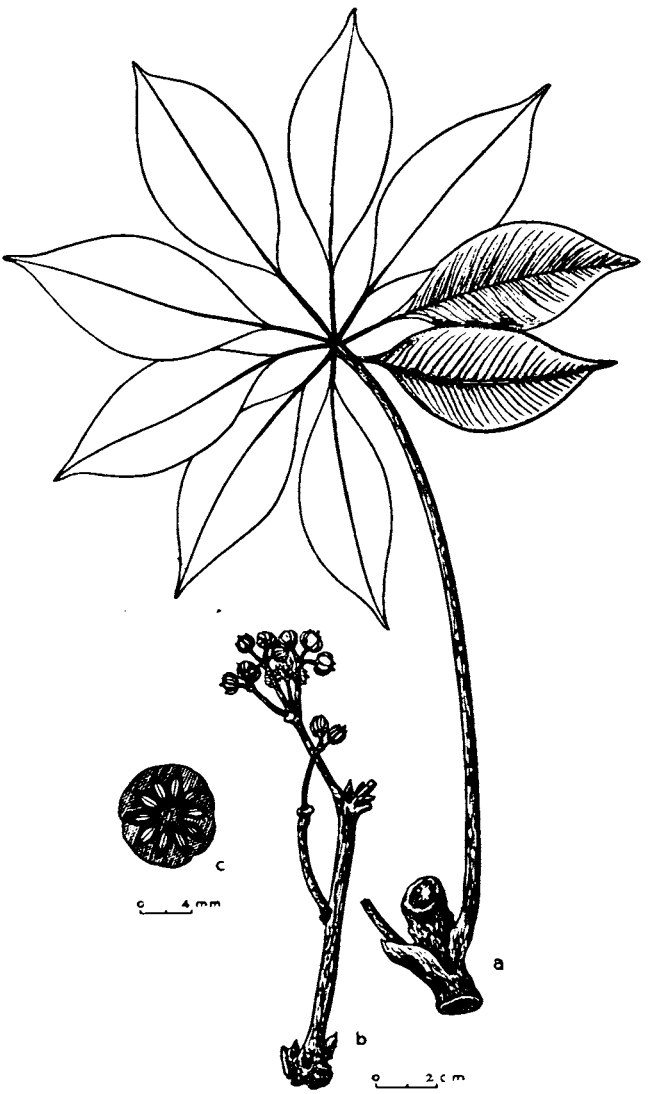

FIGURE 62.—*Schefflera costata: a,* leaf; *b,* frutescence with many rays removed; *c,* cross section of fruit.

The species, very common in Samoa, is also frequent at low elevations in Fiji where it is also represented by specimens cited by Gillespie.

EBENACEAE

Genus MABA Forster

Maba buxifolia (Rottboell) Persoon.

Maba buxifolia (Rottboell) Persoon: Syn., vol. 2, p. 606, 1807.

Fiji, without definite locality: Seemann no. 295 (BM, K); Storck no. 898 (BM, K); Horne no. 390 (K). Vitilevu: Naitasiri, altitude 150 meters, Gillespie no. 2450. Kandavu: altitude 200-400 meters, Smith no. 126. Vanualevu: Mathuata, Seemann no. 297 (BM, K). Taveuni: Seemann no. 296 (K). Kanathea: Graeffe no. 1364 (K).

The specimens referred by Seemann (Fl. Vit., p. 152, 1866) to *M. elliptica* Forster, one of which was referred by Hiern (Trans. Cambr. Phil. Soc., vol. 12, p. 116, 1873) to *M. sandwicensis* A. De Candolle, appear to be best placed in the widespread *M. buxifolia,* as uncertainly suggested by Hiern (Trans. Cambr. Phil. Soc., vol. 12, p. 118, 1873).

Maba globosa A. C. Smith, new species (fig. 63).

Arbor, *M. lateriflorae* Hiern affinis, floribus masculis glabris, staminibus numerosis, fructibus minoribus globosis (haud ellipsoideis) distinguenda; a *M. samoensi* Hiern fructuum forma valde differt; a *M. savaiiensi* Christophersen foliis multo majoribus facile distinguitur.

Tree 7-10 meters or more high, the vegetative parts glabrous, the branchlets terete, grayish, copiously lenticellate; petioles subterete, distally angled, 6-13 mm long; leaf blades thin coriaceous, broadly elliptic, 12-18 cm long, 6-10.5 cm broad, rounded or obtuse at base, obtuse or slightly emarginate at apex, entire at margins, the costa prominent on both surfaces, the secondary nerves 6-10 per side, spreading, anastomosing 5-15 mm within the margins, raised on both surfaces, the veinlets copiously reticulate, prominulous; staminate inflorescences axillary, contracted, not more than 15 mm long, 5-10-flowered, the bractlets ovate, minute, the pedicels about 1 mm long; calyx coriaceous, sparsely pilose, soon glabrous, obconical, about 4 mm long and in diameter at anthesis, the limb erect, exceeding the tube, the lobes 3, broadly ovate, minutely apiculate, the margins slightly thickened; corolla white, carnose, cylindric-urceolate, broadest near the middle, 10-12 mm long, 3-4 mm in diameter, the lobes 3, erect, ovate-deltoid, obtuse, about 2 mm long at anthesis; stamens 15-20, attached separately or in pairs to base of corolla, the filaments essentially glabrous, ligulate, 1-3 mm long, the anthers linear-oblong, acute, 3-3.5 mm long; ovary rudimentary, conical, glabrous; pistillate calyx coriaceous, the limb appressed-sericeous on both surfaces, slightly accrescent in fruit; fruit coriaceous, globose, about 1 cm in diameter, minutely apiculate at apex, appressed-sericeous, the hairs pale, about 1 mm long, the locules 3, each usually 1-seeded.

Kambara: in forest on limestone formation, March 2, 1934, Smith nos. 1241 (type), 1242.

Local names are *mulu* and *kaukauloa*; the timber is valued by the natives It is a species of the Section *Ferreola,* most closely related to *M. lateriflora* Hiern, which is represented in the present collection by Koro: forest on

main ridge, altitude 300-500 meters, Smith no. 1045; native name, *mamba*. The staminate flowers of *M. lateriflora* are copiously sericeous, with about six stamens.

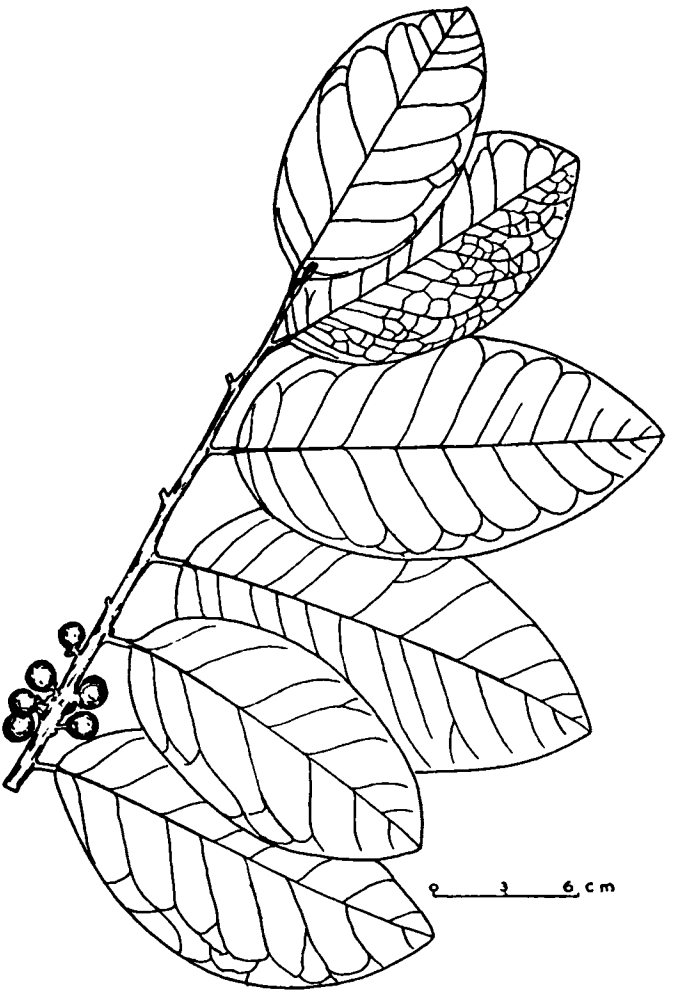

FIGURE 63.—*Maba globosa*, fruiting branch.

OLEACEAE

Genus JASMINUM Linnaeus

Jasminum pedicellatum A. C. Smith, new species (fig. 64).

Frutex scandens, *J. betchei* F. Mueller samoensi e descriptione affinis, foliis basi valde truncatis, nervis 5 vel 7 (haud 3), calycis lobis longioribus angustioribus differt; a *J. simplicifolio* Forster foliorum forma, pedunculis pedicellis corollisque elongatis facile distinguitur.

High-climbing liana, glabrous throughout, the branchlets slender, terete; leaves unifoliolate, the petioles canaliculate, distally angled, 5-8 mm long, the blades papyraceous, oblong-ovate, 7-9 cm long, 4.5-5.5 cm broad, truncate or subcordate at base, short-acuminate at apex, entire at margins, 5 (or 7)-nerved from the base, the principal nerves slightly raised on both surfaces, anastomosing by transverse veins, the veinlets reticulate, prominulous or obscure; inflorescences axillary, solitary, the peduncles slender, straight,

FIGURE 64.—*Jasminum pedicellatum:* flowering branch; *a, Jasminum sessile,* leaf; *b, J. sessile,* flower.

2.5-4 cm long, deciduously bracteate at summit, the bracts oblong-spatulate, acute, 5-7 mm long; flowers 2-4 per inflorescence, the pedicels straight, 15-27 mm long, each subtended by a linear bractlet 1-2 mm long; calyx cupuliform, at anthesis 3-4 mm long, about 2.5 mm in diameter, the lobes 4, slightly thickened, subulate, nearly 1 mm long, the sinuses rounded; corolla white, curved in bud, at anthesis about 5 cm long, the tube 2-3 mm in diameter, the lobes as long as the tube, closely imbricate, 8 (always?), linear-oblong, 2-5 mm broad near base, sharply contracted and subauriculate at base, gradually tapering to a subulate apex; stamens essentially sessile, the anthers linear-oblong, 6-7 mm long, about 1 mm broad, truncate at base, acuminate at apex; ovary subglobose or

ellipsoid, 1-1.5 mm long at anthesis, truncate at apex, the style filiform, 25-30 mm long, flattened and bifid for about 5 mm at apex, each branch of the stigma forked.

Moala: on rocky shore of north coast, on edge of forest, near sea level, March 24, 1934, Smith no. 1400 (type).

Jasminum sessile A. C. Smith, new species (fig. 64, *a, b*).

Frutex gracilis, *J. simplicifolii* Forster affinis, foliis sessilibus basi truncatis, inflorescentiis contractis paucifloris valde differt.

Slender shrub 1-3 meters high, essentially glabrous throughout (young branchlets, peduncles, and calyces puberulent, glabrescent), the branchlets slender, terete; leaves unifoliolate, essentially sessile, the petioles 2 mm long or less, the blades thin coriaceous, ovate, 3-5 cm long, 2-3.5 cm broad, truncate or subcordate and often subamplexicaul at base, acute or obtuse at apex; sometimes mucronate, entire at margins, pinnate-veined (or obscurely 5-nerved from base), the costa nearly plane above, raised beneath, the secondary nerves 3-5 per side, arcuate-ascending, prominulous beneath, the veinlets obscure; inflorescences axillary, often 3-flowered, the peduncles 2-8 mm long, bibracteolate at summit, the bractlets linear, about 1.5 mm long, the pedicels 1-3 mm long; calyx short-cylindric, at anthesis 2-3 mm long, 1.5-2 mm in diameter, the lobes 4, about 0.5 mm long, apiculate or subulate, the sinuses flattened; corolla white, 20-25 mm long, the tube 1.5-2 mm in diameter, the lobes 4 or 5, oblong, 7-10 mm long, 2-3 mm broad, contracted and imbricate at base, acute at apex; filaments ligulate, about 1 mm long, the anthers linear-oblong, about 5 mm long, obtuse at apex; ovary ellipsoid, at anthesis 1-1.5 mm broad, the style 4-5 mm long, flattened distally, forked about 1 mm below apex.

Vanualevu: Mathuata, on dry rocky slopes of the seacoast, January 10, 1924, W. Greenwood no. 656 (type, K); islet of Tutu, on Mathuata coast, Horne no. 672 (K).

LOGANIACEAE

Genus GENIOSTOMA Forster

Geniostoma rupestre Forster.

Geniostoma rupestre Forster: Char. Gen., p. 24, pl. 12, 1776.

Geniostoma crassifolium Bentham variety *glaberrimum* Bentham: Jour. Linn. Soc., vol. 1, p. 97, 1857.

Plectronia macgregori Horne: Baker, Jour. Linn. Soc., vol. 20, p. 363, 1883.

This variable plant is one of the most common shrubs in Fiji, being found in dry thickets from the coasts up to the highest summits. A local name is *mboimboinda*. The only specimen at Kew referred to *Plectronia macgregori* is Horne no. 261, which is so marked and which agrees with the description. This is presumably the type, although Horne no. 227 is cited. Only the synonyms based on Fijian material are cited above.

The type of *G. crassifolium*, collected by Milne in New Caledonia, appears to me sufficiently distinct to retain the specific name, but this course has not been followed by other workers. The plants mentioned below are of this relationship, but until the genus has been carefully studied, it is impossible accurately to place them.

Geniostoma species.

Fulanga: on limestone cliff face, altitude 0-80 meters, Smith nos. 1116, 1203.

A scandent shrub up to 50 cm high, locally known as *mbitimbiti.* These plants are related to or perhaps similar to *G. crassifolium* Bentham, or perhaps they may represent a form of the variable *G. rupestre* Forster. They differ from typical material of the latter species in their low habit and small oblong obtuse leaves.

APOCYNACEAE

By Fr. Markgraf

Genus **ALSTONIA** R. Brown

Alstonia smithii Markgraf, new species (fig. 65, *a*).

Arbuscula usque ad 4 m alta; ramuli teretes glabri nigricantes; folia opposita; petiolus crassiusculus, 1-2 cm longus, supra ciliatus; lamina coriacea glabra, supra nitida, oblonga, apice obtusa, basi cuneata, usque ad 11 cm longa et 5 cm lata, plerumque 8 cm longa et 2.5 cm lata, nervi secundarii recti distincti, ad 15 in utroque latere, sicut costa supra impressi, subtus prominuli, subhorizontales, usque in marginem revolutum producti; inflorescentiae terminalis et ex foliis supremis axillares, in corymbum communem compositae, cymosae, laxiflorae, glabrae; bracteae et bracteolae ovato-triangulares, 1 mm longae; pedicelli graciles 4-6 mm longi; calyx glaber campanulatus, tubus 1 mm altus, lobi 2 mm longi, acutiuscule ovati, eglandulosi, quincunciales; corollae albae tubus 2-4 mm longus, 1.5 mm latus, cylindricus, vix ampliatus, extus glaber, intus villosus, praesertim in fauce, lobi oblongi obtusi dextrorsum tecti, auriculati, usque ad 7 mm longi et 2 mm lati, non nisi prope basin intus villosi, alabastrum obtusum formantes; stamina medio tubo filamentis brevissimis inserta, antherae oblongo-ovatae acutae non apiculatae, totae fertiles, 2 mm longae, 1 mm latae; stigma antheras non attingens, breve, obtusum, collo crassiusculo circumdatum; styli separati 1.5 mm longi; carpella 2 glabra subglobosa, 1 mm alta, plane apocarpa, disco destituta; semina numerosa pluriseriata.

Vanualevu: Thakaundrove, summit of Mount Mbatini, in dense thickets, altitude 1,030 meters, November 29, 1933, Smith nos. 697 (type), 711.

The new species belongs to the Section *Dissuraspermum,* the only one hitherto known from Fiji. It is related to *A. plumosa* Labillardiere of New Caledonia and Fiji, but differs in its oblong, obtuse, almost obovate leaves and somewhat poorer inflorescences.

Genus **ALYXIA** Banks; R. Brown

Alyxia bracteolosa Rich variety **retusa** Markgraf, new variety (fig. 66, *a*).

Folia obovata, obtusa vel retusa, pleraque 6 cm longa, 3 cm lata (sine petiolo); bracteolae florum in pedicello bis binae.

Vanualevu: Thakaundrove, Yanawai River region, Mount Kasi, altitude 300-430 meters, May 10, 1934, Smith no. 1775 (type).

Gillespie (B. P. Bishop Mus., Bull. 91, p. 26, 1932) has already mentioned blunt-leaved specimens of this widespread Melanesian species. The bracteolate inflorescences, as well as the shining veinless leaves with a charac-

teristic lead-gray colored upper surface (in the dried state) and a pale lower surface, permit this form to be included in the variable *A. bracteolosa*.

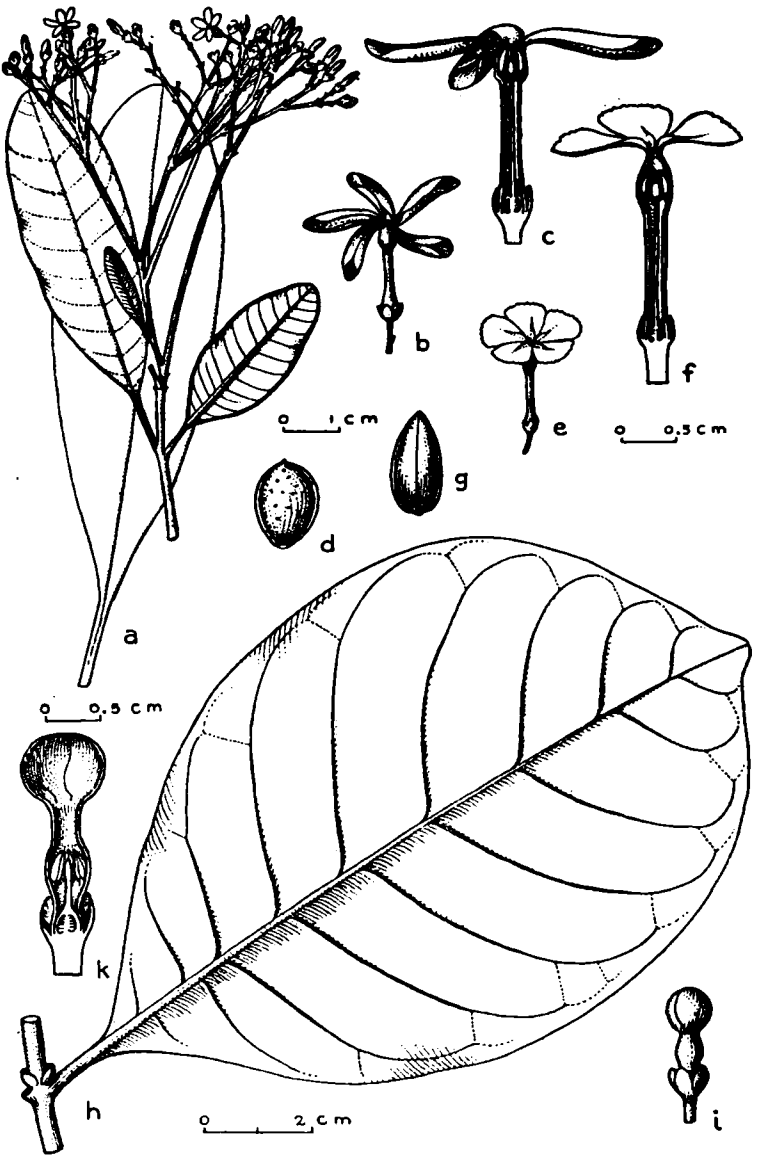

FIGURE 65.—Apocynaceae: *a*, *Alstonia smithii*, leaves and inflorescence; *b-d*, *Ervatamia obtusiuscula*, showing flower (*b*), longitudinal section of flower (*c*), and mericarp seen from above (*d*); *e-g*, *Ervatamia orientalis*, showing flower (*e*), longitudinal section of flower (*f*), and mericarp (*g*); *h-k*, *Pagiantha koroana*, showing leaf (*h*), flower bud (*i*), and longitudinal section of flower bud (*k*).

Genus EXCAVATIA Markgraf

Excavatia vitiensis Markgraf, new species (fig. 66, *b, c*).

Arbor usque ad 12 m alta; rami teretes glabri squarrosi; folia 2-5-verticillata; petiolus 1-2 cm longus, lamina glabra elliptica firme chartacea, apice brevissime et obtuse acuminata, basi angustata, usque ad 13 cm longa et 5 cm lata, plerumque ad 8 cm longa et 4 cm lata, nervi secundarii tenues numerosi; inflorescentiae terminales breves pauciflorae cymosae; pedunculi crassiusculi, bracteae et bracteolae triangulares scariosae, 1 mm longae; pedicelli 1-2 mm longi; calyx oblongus, lobi oblongi eglandulosi, 3 mm longi,

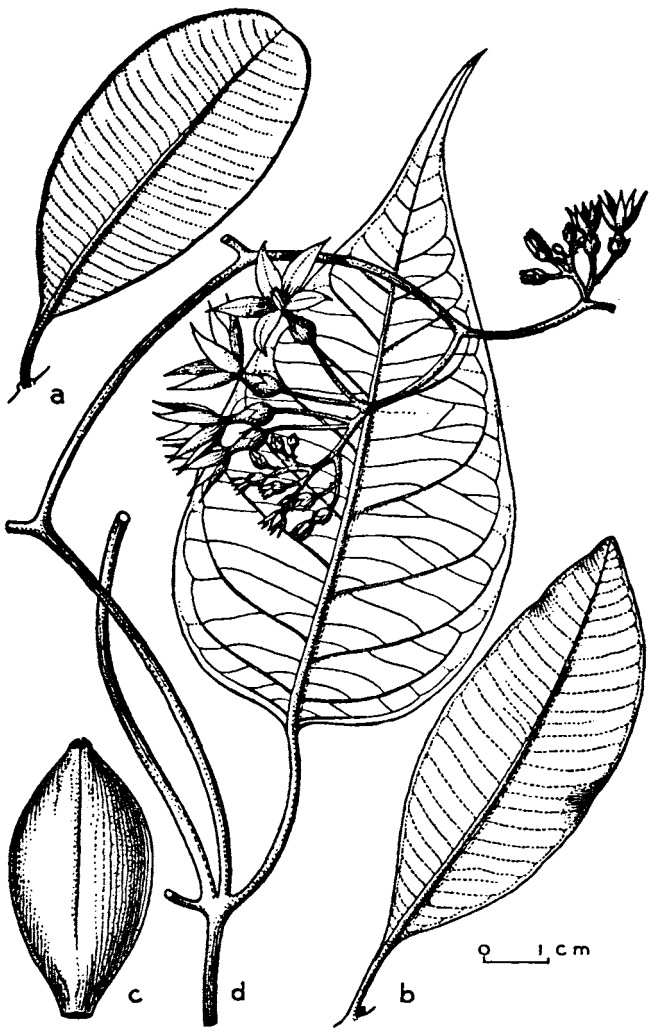

FIGURE 66.—Apocynaceae: *a, Alyxia bracteolosa retusa,* leaf; *b-c, Excavatia vitiensis,* showing leaf (*b*) and mericarp seen from above (*c*); *d, Parsonsia smithii,* leaf and inflorescence.

1 mm lati, ciliati; corollae glabrae ochroleucae tubus ad 10 mm longus, 1 mm latus, in media longitudine paulo ampliatus, lobi oblongi, auriculati, 8 mm longi, 2 mm lati, dextrorsum tecti, leviter sinistrorsum torti; stamina in parte ampliata tubi supra zonam pilosam filamentis brevissimis inserta; antherae oblongae acutae, 1.5 mm longae; stigma antheras non attingens, turbinatum et longe apiculatum; stylus 2 mm longus; ovarium glabrum oblongum, 1 mm altum, apocarpum; semina pauca; mericarpia tota libera rubra, oblique fusiformia et compressa, in dorso convexa, in ventre subplana, a lateribus rotundata, non rostrata, 4 cm longa, 2.5 cm lata, 1.5 cm crassa; placentae duae nitidae subcoriaceae, per totum loculum extensae; semina bina in utraque placenta, clipeata, utrinque acuminata, anguste (2 mm) alata, basale minus, 8 mm longum, 6 mm latum, apicale majus, 12 mm longum, 10 mm latum.

Fulanga: on limestone formation, in forest, altitude 0-80 meters, February 23, 1934, Smith nos. 1155 (type), 1224. Vanua Mbalavu: southern limestone section, Malatta, altitude 0-100 meters, Smith no. 1434; northern limestone section, altitude 0-200 meters, Smith no. 1501.

This plant, which is fairly common in limestone forest, is known on Fulanga as *ndongondongo*. By its rather thin leaves tapering at both ends and by its beakless fruits, the species resembles the Micronesian *E. mariannensis* (De Candolle) Markgraf more closely than the Melanesian *E. elliptica* (Labillardiere) Markgraf. *E. mariannensis* differs from *E. elliptica* in its rhombic laterally winged mericarps.

Genus ERVATAMIA Stapf

Ervatamia obtusiuscula Markgraf, new species (fig. 65, *b-d*).

Frutex ad 2 m altus; ramuli divaricati graciles sparsim lenticellosi; folia chartacea glabra; petiolus 1 cm longus, gracilis, collo humili intrapetiolari ornatus; lamina elliptica integra, obtusa vel obtusiuscule acuminata, supra obscure subtus pallide viridis, opaca, usque ad 20 cm longa et 8 cm lata, sed plerumque tantum 10-12 cm longa et 5-6 cm lata; nervi secundarii supra diluti, ad 10 in utroque latere, satis patuli, indistincte conjunctis, tertiarii gracillime reticulati; inflorescentiae terminalis cymosae laxiflorae divaricatae glabrae ebracteatae; pedicelli graciles glabri, 2-3 cm longi; calyx glaber, vix 2 mm altus, cyathiformis; lobi triangulares, intus eglandulosi vel pauciglandulosi; corolla glabra alba, tubus 12 mm longus, 1.5 mm latus, sub ipsa fauce ad 2.5 mm ampliatus et ibi dextrorsum tortus, lobi oblique securiformes, obtusi, sinistrorsum torti, pars basalis oblonga, 6 mm longa, 3 mm lata, pars apicali-lateralis oblonga, 12 mm longa, 3 mm lata; alabastrum loborum globosum, jam initio aliquanto crassius quam tubus, ante ipsam anthesin ad 5 mm ampliatum; antherae in fauce filamentis 1 mm longis glabris insertae, ovatae, glabrae, obtusae, 2 mm longae, 1 mm latae; stigma antheras attingens, turbinatum, asperum, non rimosum, breviter biapiculatum, 1 mm altum; stylus glaber 9 mm longus, basi bifidus; discus nullus; ovarium apocarpum glabrum globosum biloculare 1 cm altum, ovula pauca; fructus parvi glabri laeves lutei; mericarpia oblique ovata, obtusa, brevissime apiculata, lateraliter bialata, in ventre magis convexo linea prominula longitudinali notata, sparsim dilute punctata, 1.5-2 cm longa, 8-10 mm lata; pericarpium vix 1 mm crassum, coriaceum, pulpa tenuis; semina pauca (8-10) oblique prismatica, 7 mm longa, 4 mm lata, arillo tenui rubro tota induta, longitudinaliter sulcata, hilum alte et longe immersum; endospermium circa hilum cymbiformiter plicatum, in marginibus undulatum; embryo in medio endospermio nidulans, rectus, parvus; cotyledones late ovati, paulo inaequales, 0.5 mm longi et lati, radicula 0.5 mm longa.

Samoa: Savaii, lowlands near Safune, January 30, 1906, Vaupel no. 265 (type, in Herb. Botanisches Museum, Berlin-Dahlem); northeastern hills, Reinecke no. 358; above Safotu, altitude 100 meters, Christophersen and Hume no. 2366; near Aopo, in forest, altitude 250 meters, Christophersen no. 3425. Upolu: base of Lepua, Reinecke no. 569.

Tonga: Eua, June, 1889, collector unknown (K).

Fiji: Fulanga, forest on limestone formation, altitude 0-80 meters, Smith no. 1197. Vanualevu: Thakaundrove, Natewa Peninsula, hills west of Mbutha Bay, altitude 150-350 meters, in forest, Smith no. 811.

This species has hitherto been confused with *E. orientalis* (R. Brown) Turrill (fig. 65, *e-g*), which is rather common from Malaysia through the Philippines, New Guinea, northern Australia, and Melanesia (including Fiji). The flowers of *E. orientalis,* however, are narrower, with the corolla bud even immediately before anthesis only double the diameter of the lower tube portion or slightly more (in *E. obtusiuscula* the corolla bud is four times as broad as the lower tube). The corolla lobes in *E. orientalis* are very narrow and only half as long as the tube. Its anthers are inserted somewhat below the mouth, which is slightly constricted above them. Its fruits are more acuminate and always shortly beaked, and lack the pale spots that are spread here and there on the pericarp of *E. obtusiuscula.* The leaves of *E. orientalis* are often rather sharply acuminate, whereas in the new species they tend sometimes to a blunt acumination. The reticulation of the leaves is finer and more expressed in *E. obtusiuscula.*

The Fijian specimen Smith no. 811 shows a remarkable phyllodic appearance of the calyx lobes, which are about 7 mm long, obovate, leaf-like in color, structure, and venation. However, as all other characters agree with those of *E. obtusiuscula,* I am convinced that this leafiness is merely a teratological alteration. Moreover, the lobes have at their base a triangular darker spot of a somewhat fleshy structure, quite resembling the normal calyx teeth of the species. The phyllody may have been caused by destruction at an early stage of the inner part of the corolla, of which the inner surface, including the anthers, has been attacked by some minute animal.

Genus PAGIANTHA Markgraf

Pagiantha koroana Markgraf, new species (fig. 65, *h-k*).

Arbor 18 m alta; ramuli diluti carnosuli; folia subcoriacea glabra; petiolus 1 cm longus, crassiusculus, collo intrapetiolari 2 mm alto auctus; lamina obovato-elliptica, usque ad 15 cm longa et 9.5 cm lata; nervi secundarii distincti, 8 in utroque latere, ante marginem arcuato-conjuncti, tertiarii obsoleti; inflorescentia terminalis cymosa glabra corymbosa, 5 cm longa et lata; bracteae et bracteolae ovatae scariosae, 2 mm longae; calyx cyathiformis, paene usque ad basin lobatus, lobi orbiculares, 4 mm longi et lati, quincunciales, breviter ciliati, intus multiglandulosi, ceterum glabri; corolla alba fragrantissima glabra, tubus 2 cm longus, 0.5 cm latus, lobi sinistrorsum tecti, oblique

oblongi, obtusi, reflexi, ad 2 cm longi, 8 mm lati, alabastrum globosum obtusum formantes; antherae in medio tubo filamentis 1.5 mm longis glabris prope basin dilatatis insertae, oblongae, glabrae, 3.5 mm longae, 1 mm latae, brevissime apiculatae, auriculis incurvis fertilibus ornatae; stigma longe conicum, bicaudatum, asperum, 2 mm longum, non latius quam stylus, antheras attingens; stylus glaber, 6 mm longus, basi bifidus; discus nullus; ovarium glabrum apocarpum cepiforme, 4 mm altum, 3 mm latum, biloculare, polyspermum.

Koro: eastern slope of main ridge, in dense forest, altitude 300-500 meters, January 31, 1934, Smith no. 1019 (type).

The genus *Pagiantha* has recently been established by Markgraf to include the thick-flowered Asiatic species hitherto confused with the American genus *Tabernaemontana* Plumier. Among them, the nearest relatives of the new species are *P. sphaerocarpa* (Blume) Markgraf and *P. macrocarpa* (Jack) Markgraf from Malaysia, *P. dichotoma* (Roxburgh) Markgraf from India, *P. megacarpa* (Merrill) Markgraf from the Philippines, and *P. cerifera* (Panchon and Sebert) Markgraf from New Caledonia. The chief characteristics of this group are: big, blunt, fleshy, wide-nerved leaves; large, thick flowers with a blunt corolla bud; large obtuse calyx lobes with many glands inside; incurved anther tails; a narrow stigma; thick globose mericarps (as far as known). The present specimen is the first collection of a thick-flowered species of *Tabernaemontana* from Fiji.

Genus **PARSONSIA** R. Brown.

Parsonsia smithii Markgraf, new species (fig. 66, *d*).

Frutex scandens; rami teretes, juniores brevissime puberuli; petioli 3-4 cm longi, carnosuli, puberuli; lamina foliorum ovata caudata glabra chartacea, basi oblique rotundata, 11 cm longa, 5 cm lata; nervi secundarii ad 10 in utroque latere, ante marginem arcuato-conjuncti; inflorescentiae axillares puberulae laxiflorae cymosae, pluries dichotomae, ad 20 cm longae et latae; bracteae et bracteolae minutae lineares; pedicelli 1-1.5 cm longi puberuli; calyx cyathiformis, extus puberulus, 2 mm altus; lobi acuti triangulares, 1 mm longi; corolla pallide viridis, fuscescens, extus tenuissime pilosa, tubus 4 mm longus, a basi 3 mm lata versus faucem ad 1 mm constrictus, intus glaber, in fauce laxe villosus, lobi ovato-lanceolati, albido-marginati, 12 mm longi, 3 mm lati, supra glabri; antherae sagittato-oblongae, 3 mm longae, auriculis basalibus incurvis, exsertae, filamentis laxe pilosis, 5 mm longis, prope basin tubi affixis suffultae, stigmati arcte adhaerentes; stigma oblongum obtusum, collo basali deflexo cinctum; stylus glaber, 6 mm longus; ovarium cepiforme glabrum, 1.5 mm altum; carpellis sibi arcte appressis, disco 5-squamato glabro 1 mm alto cinctum.

Vanualevu: Mbua, Navotuvotu, summit of Mount Seatura, in crest thickets, altitude 700-830 meters, April 27, 1934, Smith no. 1664 (type).

This new species, remarkable for its beautiful flowers, is related to the Fijian *Parsonsia laevis* (A. Gray) Markgraf, new combination (*Lyonsia laevis* A. Gray: Proc. Am. Acad., vol. 5, p. 333, 1862) by its acuminate leaves and to the New Caledonia *Parsonsia scabra* (Labillardiere) Markgraf, new combination (*Echites scabra* Labillardiere: Sert. Austro-Caled., p. 26, t. 31,

1824) by its larger flowers and its pubescence. *P. neo-ebudica* Guillaumin, of the New Hebrides, seems to be of this affinity. The genus apparently shows the same mountainous modification as it does in New Guinea. (See Bot. Jahrb. Engler, vol. 61, p. 165, 1927). The arguments in favor of the union of the genera *Parsonsia* and *Lyonsia* have recently been discussed (Bot. Jahrb. Engler, vol. 61, p. 213, 1927).

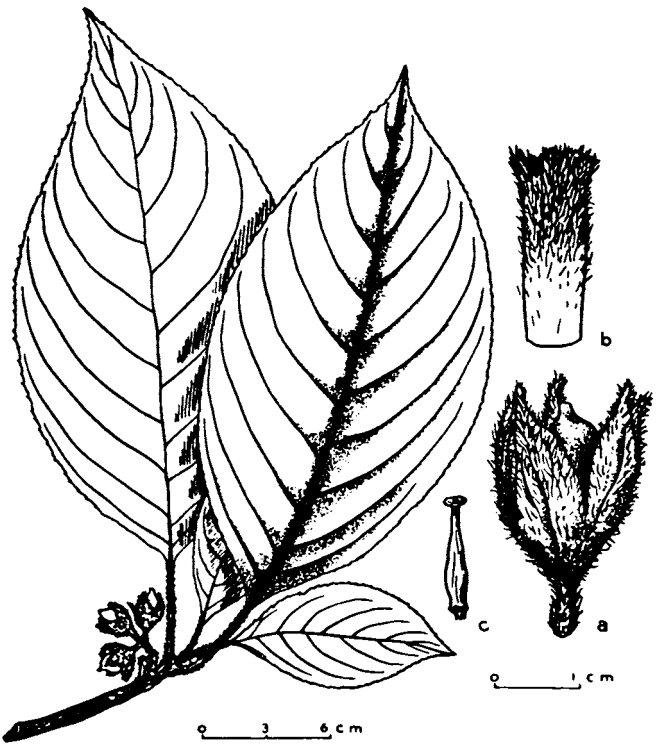

FIGURE 67.—*Cyrtandra muskarimba:* fruiting branch; *a,* calyx and young fruit; *b,* corolla; *c,* ovary.

GESNERIACEAE

Genus CYRTANDRA Forster

Up to the present, 30 species of *Cyrtandra* have been described from Fiji, all apparently endemic. After examining type material of practically all of these, I believe that most, if not all, are good species. Of course, more thorough field work will be necessary before one can write with authority on this complex genus. In the present collection, three species are apparently new and are here described. In addition, one new name is given.

Cyrtandra muskarimba A. C. Smith, new species (fig. 67).

Frutex, foliolorum textura forma marginibusque *C. chippendalei* Horne affinis, pubescentia adpressiore et parciore, inflorescentiis conspicue pedunculatis pedicellatisque, calycibus pro longitudine latioribus lobis magnis differt.

Shrub 1-3 meters high, the branchlets terete, brownish pilose, at length glabrous, the leaf scars conspicuous; leaves opposite, the petioles slender, pilose, 4-9 cm long, the blades papyraceous, oblong-ovate, 25-30 cm long, 11-16 cm broad, acute or obtuse and slightly unequal at base, acute at apex, irregularly serrate at margins (serrations 2 or 3 per cm, often tufted-setose), papillose and sparsely pilose above (hairs flattened, 1-2 mm long), more densely pilose beneath (hairs somewhat finer and shorter), the costa nearly plane above, prominent beneath, the secondary nerves 10 or 11 per side, arcuate-ascending, slightly raised above, prominent beneath, the veinlets reticulate, prominulous, those near the margins excurrent in serrations; cymes axillary, often 3-flowered, the bracts soon deciduous, the peduncles brown-sericeous, 1-2 cm long, the pedicels similar, 7-12 mm long; calyx cupuliform, 15-18 mm long, densely and uniformly spreading brown-pilose on both surfaces (hairs about 1 mm long), the lobes 5, oblong-lanceolate, acute, 8-11 mm long, about 5 mm broad at base; corolla white, carnose, cylindric, 20-23 mm long, 4-6 mm in diameter, contracted at base, spreading-pilose above the middle without (hairs brown, 1-3 mm long), glabrous within, the lobes 5, equal, rounded at apex, 2-3 mm long and broad; stamens soon deciduous (not observed); pistil glabrous, about 14 mm long, the ovary elongate, contracted at base, tapering to a short style, the stigma capitate, about 3 mm in diameter; young fruit coriaceous, ovoid, about 15 mm long and 8 mm in diameter, bluntly apiculate at apex, surrounded and practically equalled by the apparently persistent calyx.

Vanualevu: Thakaundrove, in dense forest on the southwestern slope of Mount Mbatini, altitude 300-700 meters, November 29, 1933, Smith no. 673 (type); eastern slope of Mount Ndikeva, altitude 400 meters, Smith no. 1914.

A local name is *muskarimba,* which is also applied to other large-flowered species of *Cyrtandra.* It is a species of the Section *Campanulaceae,* related to *C. chippendalei* Horne. That species has a very contracted inflorescence and a somewhat campanulate calyx, of which the lobes are about 2 mm long.

Cyrtandra kandavuensis A. C. Smith, new species (fig. 68).

Frutex vel arbor parva, *C. denhami* Seemann et *C. ciliatae* Seemann affinis, foliorum forma et pubescentia, floribus multo majoribus, calycibus magnis membranaceis lobis alte connatis valde differt.

Shrub or small spreading tree 2-4 meters high, the branchlets terete, rugose, brown-pilose when young, at length glabrous; leaves opposite, the petioles slender, sericeous, 2-6 cm long, the blades papyraceous, oblong-elliptic, 14-25 cm long, 6-11 cm broad, obtuse at base, short acuminate at apex, serrate at margins (serrations 2 or 3 per cm, often mucronate), pilose on both surfaces (hairs pale, flattened, about 1 cm long, often very dense on principal nerves), the costa slightly raised above, prominent beneath, the secondary nerves 7-9 per side, arcuate-ascending, slightly raised above, prominent beneath, the veinlets reticulate, obscure above, prominulous beneath; inflorescences axillary, 6-10-flowered, the branches short-sericeous, the peduncles 3-6 cm long, surmounted by 2 foliaceous caducous bracts about 3 cm long, the pedicels 1-2 cm long, in ultimate groups of 3 or 4, subtended by smaller foliaceous bracts; calyx sparsely puberulent, glabrescent, membranous, cupuliform-rotate, 12-20 mm long, the lobes 5, ovate, 6-10 mm long, 4-7 mm broad at base, reticulate-veined, acuminate and thickened at apex, the sinuses acute; corolla white or pale yellow, membranous, campanulate, flaring at apex, 22-27 mm long, 4-5 mm in diameter at middle, minutely pale puberulent without, glabrous within, the

lobes 5, equal, oblong-obovate, rounded at apex, 5-6 mm long and broad; stamens attached at throat, the filaments filiform, about 2 mm long, the anthers globose or ellipsoid, about 2 mm long; pistil glabrous, 10-12 mm long, the ovary elongate, tapering to a short style, the stigma capitate, about 2 mm in diameter; fruit coriaceous, white, ellipsoid, 8-12 mm long, 4-5 mm in diameter, tapering to a more or less persistent style 3-6 mm long, the calyx soon deciduous.

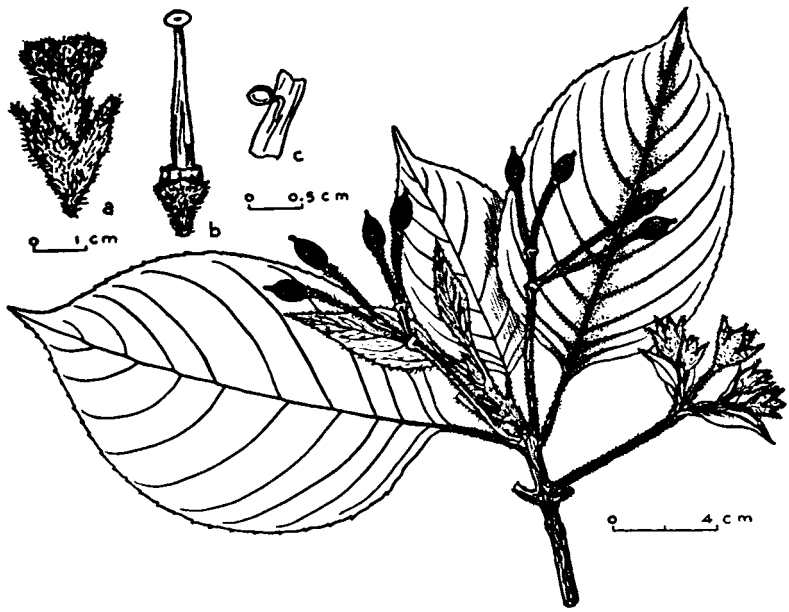

FIGURE 68.—*Cyrtandra kandavuensis:* fruiting branch; *a*, flower; *b*, flower with calyx limb and corolla removed; *c*, stamen attached to corolla.

Kandavu: in dense forest on the summit of Mount Mbuke Levu, altitude 750-840 meters, October 25, 1933, Smith nos. 282 (type), 288; altitude 500 meters, Smith no. 214.

This species belongs to the Section *Polynesieae*.

Cyrtandra spathacea A. C. Smith, new species (fig. 69).

Arbor gracilis, calyce spathacea facile distinguitur; foliis *C. harveyi* Seemann affinis, habitu glabro, calycibus spathaceis, corollis majoribus valde differt.

Slender tree about 4 meters high, glabrous throughout (young leaves sparsely puberulent on nerves beneath, glabrescent), the branchlets grayish, often quadrangular; leaves opposite, the petioles 3-8 cm long, the blades papyraceous, paler beneath, oblong-elliptic, 22-25 cm long, 12-14 cm broad, obtuse at base and sometimes decurrent on the petiole, obtuse or bluntly apiculate at apex, serrate at margins (serrations 2-3 per cm, obtuse or mucronate), the costa nearly plane above, prominent beneath, the secondary nerves about 11 per side, arcuate-ascending, prominent beneath, the veinlets reticulate, sometimes prominulous on both surfaces, those near the margins often excurrent in serrations; inflorescences on trunk or branches, often 2- or 3-flowered, the peduncles up to 5 mm long, the

pedicels 10-25 mm long, dilated distally; calyx membranous, 15-17 mm long, one-sided and spathaceous, 1- or 2-lobed, callose-apiculate at apex, cleft on one side to about 5 mm above base, the sinus rounded; corolla membranous, cream-white, campanulate, distally flaring, 25-33 mm long, 6-7 mm in diameter at middle, the lobes 5, subequal, oblong, rounded at apex, 6-9 mm long and about 6 mm broad; filaments filiform, 2-3 mm long, the anthers oblong, about 2 mm long; pistil 15-17 mm long, the ovary elongate, equalling the slender style at anthesis, the stigma capitate, about 2 mm in diameter; fruit coriaceous, white, ellipsoid, 8-12 mm long, 4-5 mm in diameter, tapering to a short style, the calyx soon deciduous.

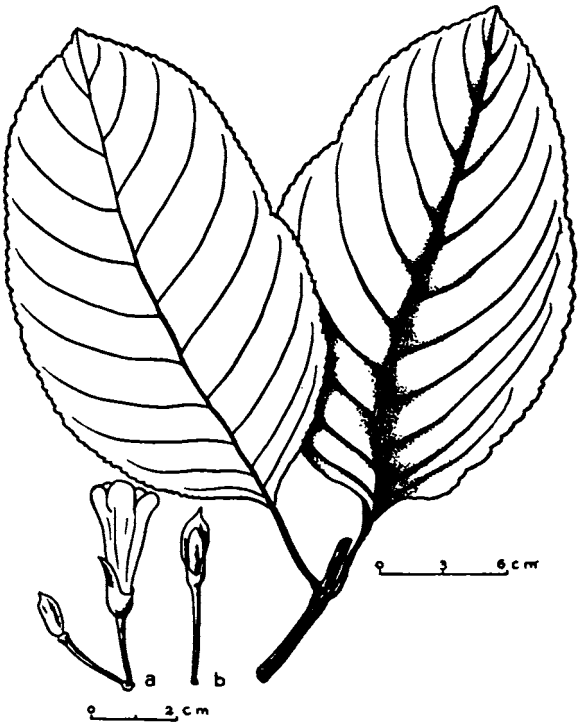

FIGURE 69.—*Cyrtandra spathacea:* leaves; *a,* flower; *b,* flower bud.

Kandavu: in dense forest on the slope of Mount Mbuke Levu, altitude 500-750 meters, October 25, 1933, Smith no. 258 (type).

This is a species of the Section *Polynesieae,* remarkable for its one-sided, spathaceous calyx, which appears to enclose the young corolla and eventually to split along one side.

Cyrtandra gillespieana A. C. Smith, new name.

Cyrtandra monticola Gillespie: B. P. Bishop Mus., Bull. 74, p. 23, fig. 30, 1930; non *C. monticola* K. Schumann (1905); non *C. monticola* Lauterbach (1910).

RUBIACEAE

Genus **BIKKIA** Reinwardt

Bikkia grandiflora Reinwardt; Blume.

Bikkia grandiflora Reinwardt: Blume, Bijdr., p. 1017, 1826, as synonym; Syll. Pl. Nov. Ratisb., vol. 2. p. 8, 1828.

Fulanga: on limestone cliffs in lagoon, Smith no. 1205.

The genus has not previously been reported from Fiji.

Genus **HEDYOTIS** Linnaeus

Hedyotis foetida (Forster) Sprengel.

Hedyotis foetida (Forster) Sprengel: Pl. Min. Cogn. Pugill., no 2, p. 28, 1815.

Fulanga: Smith no. 1231.

A dwarf shrub on bare limestone. Although reported from other Pacific groups, the species apparently has not previously been mentioned from Fiji.

Genus **RANDIA** Houstoun

Randia tenuiflora A. C. Smith, new species (fig. 70).

Arbor gracilis, *R. sessitat* Guillaumin novo-caledonicae affinis, floribus multo majoribus, calycis limbo truncato facile distinguenda; a *R. crosbyi* Burkill tongensi characteribus supra enumeratis differt.

Slender tree 5-10 meters high, the vegetative parts puberulent when young, soon glabrous, the branchlets terete, brownish, rugose, swollen at nodes; petioles narrowly winged distally, 5-12 mm long; leaf blades papyraceous, dark green and shining above, paler beneath, oblong or narrowly elliptic, 10-14 cm long, 2.5-4.5 cm broad, acute or attenuate at base, obtuse and often mucronulate at apex, the costa plane or slightly raised above, prominent beneath, the secondary nerves 6-9 per side, ascending, nearly plane above, yellowish and slightly raised beneath, the veinlets obscure; flowers axillary, solitary or paired (the minute peduncle lignescent and up to 7 mm long in fruiting specimens), the pedicels slender, 7-9 mm long, with the calyces minutely puberulent; calyx cylindric-obconical, at anthesis about 5 mm long and 3 mm in diameter, the limb slightly longer than the tube, truncate or with the lobes minutely apiculate and obscure; corolla white, 35-40 mm long, the tube cylindric, 15-20 mm long, puberulent without (glabrous near base), glabrous within, 2-3 mm in diameter proximally, swollen in the upper half to 5 mm in diameter, the lobes 5, essentially glabrous, imbricate, spreading at anthesis, oblong-lanceolate, as long as the tube, 2-3 mm broad, tapering to an acute apex, conspicuously veined distally; anthers 5, subsessile, oblong, acute at both ends, about 5 mm long; style slender, equalling the corolla tube, flattened distally and cleft for about 2 mm; ovary 2-celled; fruiting pedicels up to 25 mm long, the fruit coriaceous, subglobose, up to 2 cm in diameter, surmounted by the persistent coriaceous calyx limb.

Fulanga: in forest on limestone formation, altitude 0-80 meters, February 26, 1934, Smith no. 1215 (type). Kambara: on limestone formation, altitude 0-100 meters, Smith no. 1243. Susui (Exploring Isles): Graeffe no. 1400 (K).

A local name is *sulu*. The corollas of *R. sezitat* Guillaumin and *R. crosbyi* Burkill are less than 20 mm long, and the calyx limbs are less definitely truncate than those of the new species.

FIGURE 70.—*Randia tenuiflora*: flowering branch; *a*, fruit.

Genus SUKUNIA A. C. Smith, new genus

Genus floribus maximis in fasciculis axillaribus dense aggregatis, bracteis numerosis cinctis distinguitur; *Randiae* Houstoun et *Gardeniae* Ellis affinis, characteribus supra enumeratis, foliorum maximorum stipulorumque forma differt.

Calyx tube turbinate, the limb erect, 5-dentate; corolla large, hypocrateriform, the tube elongate, the lobes 5, contorted; stamens 5, inserted at the throat of the corolla, the filaments short, the anthers dorsally affixed; ovary 2-locular, the ovules numerous, the style filiform, the stigma clavate; fruit ovoid, indehiscent, many-seeded, the seeds agglutinated, compressed. Small tree, the leaves opposite, very large, obovate, the stipules very large, interpetiolar; inflorescence axillary, surrounded by bracts, the flowers fasciculate, large.

It is with great pleasure that I name this genus in honor of the distinguished Fijian chief Ratu J. L. V. Sukuna, in appreciation of his keen interest in the scientific exploration of his country. Among my most pleasant memories of Fiji are those of periods spent as a guest of Ratu Sukuna, at that time District Commissioner of Lau.

Sukunia is characterized by its large flowers densely clustered in axillary fascicles and surrounded by numerous bracts. It belongs in the Tribe *Gardenieae* and is related to *Randia* Houstoun and *Gardenia* Ellis, probably more closely to *Randia.* The form of the large leaves and stipules is apparently not duplicated in the allied genera. The combination of large flowers and a fasciculate many-flowered inflorescence does not appear to occur in *Randia;* in the Section *Euclinia* of that genus the flowers are as large or larger than ours, but are solitary or paired.

Sukunia pentagonioides (Seemann) A. C. Smith, new combination (fig. 71).

Gardenia (?) pentagonioides Seemann: Fl. Vit., p. 122, 1866.

Slender tree 3-4 meters high, the vegetative parts essentially glabrous, the branchlets subterete, stout, up to 15 mm in diameter near apices; leaves densely aggregated near apices of branchlets, opposite, papyraceous, obovate, 60-90 cm long, 15-36 cm broad, subacute at apex, long attenuate at base, the petiole lacking (or up to 15 cm long) or conspicuously winged, the costa stout, very prominent on both surfaces, the secondary nerves 18-25 per side, straight, spreading, anastomosing near margins, prominent on both surfaces, the cross-veins numerous, prominulous, the veinlets obscure; stipules subcoriaceous, oblong-lanceolate, up to 7 cm long and 2 cm broad at base, subacute at apex, the midnerve prominent; inflorescence about 20-flowered (flowers in all stages from bud to anthesis), the bracts numerous, thin coriaceous, ovate, acute, the outer ones about 3 cm long and 1.5 cm broad, the inner ones smaller, each subtending a flower; pedicels and calyx sparsely puberulent, soon glabrous, the pedicels slender, up to 5 cm long; calyx obconical, at anthesis about 14 mm long, 5-6 mm in diameter at base of lobes, the tube longer than the limb, the lobes erect, papyraceous, deltoid, 7-8 mm long, 4-5 mm broad at base, the apex subulate, the sinuses acute; corolla tube greenish, short-sericeous without, cylindric, 35-43 mm long, 2-3 mm in diameter proximally, swollen to 6 mm in diameter in the upper half, the lobes white, glabrous, oblong-lanceolate, 35-50 mm long, 8-10 mm broad, suddenly contracted at base, gradually tapering to an acute or obtuse apex; filaments short, ligulate, black, the anthers oblong-lanceolate, 10-11 mm long, acute at apex, the connective thickened and blackish; style equalling the corolla tube, swollen distally and cleft for about 12 mm; fruiting pedicels stout, frequently only one fruit per inflorescence maturing; fruit coriaceous, up to 8 cm long and 4 cm in diameter, rugose, sometimes narrowly 8-10-winged when dried, tapering at both ends, the calyx limb persistent or deciduous, the wall lignose, 2-3 mm thick; seeds compressed, 5-10 mm long, horizontally imbedded in pulp.

Taveuni: in forest above Somosomo, Seemann no. 219 (type, K, G); borders of lake east of Somosomo, in dense forest, altitude 700-900 meters, Smith no. 855. Vanualevu: Thakaundrove-Mathuata Boundary, crest of Korotini Range, in dry forest, altitude 650-900 meters, Smith no. 560.

Description of the inflorescence is from Smith no. 855, from essentially the type locality, where several trees were seen in one colony. The flowers are

impressive by their great abundance, size, pure white corolla lobes, and pleasant fragrance. Description of leaves and fruits is from all the cited material; the Vanualevu specimens have the longest petioles and longest fruits and may prove to be a distinct species when flowers are known. Professor S. J. Record, having examined the wood, doubts whether Smith no. 560 belongs in the species.

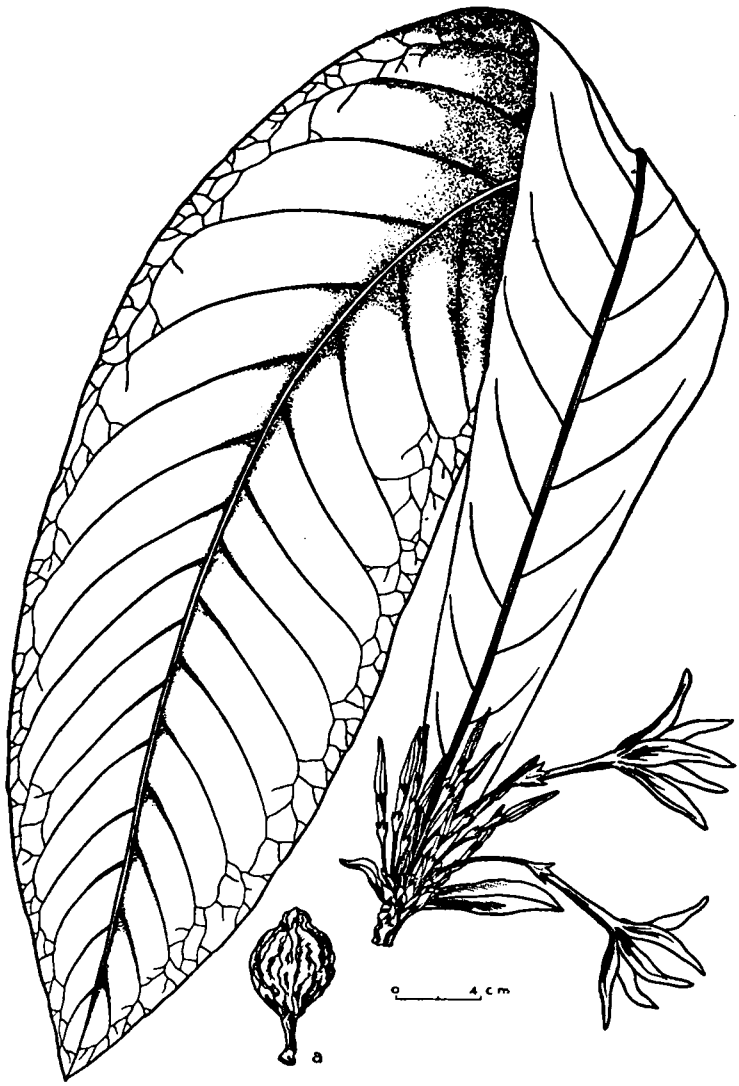

FIGURE 71.—*Sukunia pentagonioides:* leaf and inflorescence; *a*, fruit.

Genus CANTHIUM Lamarck

Canthium rectinervium A. C. Smith, new species (fig. 72).

Arbor glabra, speciebus vitiensibus ceteris non valde affinis; a speciebus per Malaysiam dispersis, e. g. *C. glabro* Blume et *C. megacarpo* (Merrill) Merrill, foliorum forma et reticulatione, fructibus 2-locularibus maximis facile distinguenda.

Tree about 7 meters high, glabrous throughout, the branchlets terete or slightly flattened, brownish; petioles canaliculate, angled or narrowly winged, 4-6 mm long; leaf blades papyraceous, blackish when dried, oblong-elliptic, 13-17 cm long, 5-6 cm broad, obtuse or acute at base, acuminate at apex (acumen 10-15 mm long), the principal nerves often yellowish, the costa grooved above, prominent beneath, the secondary nerves 7-9 per side, nearly straight, ascending, anastomosing near margins, nearly plane above, prominent beneath, the veinlets obscure, the cross-veins prominulous beneath; stipules interpetiolar, oblong, acute, about 10 mm long and 3 mm broad; inflorescence axillary, contracted, the peduncle about 1 mm long, the flowers 2-5, the pedicels 1-1.5 mm long; calyx turbinate, 2-2.5 mm long and in diameter, the limb very short, the lobes 5, minutely apiculate; corolla (not fully mature) about 2.5 mm long and 1.5 mm in diameter, the lobes 5, small; filaments very short, affixed to the corolla tube near base, the anthers oblong, about 1.5 mm long; fruiting pedicels up to 8 mm long, the fruit yellow, blackish when dried, flattened, heart-shaped, about 35 mm long, 30 mm broad, and 14 mm thick, obtuse at base, strongly retuse at apex, the cells 2, each 1-seeded.

FIGURE 72.—*Canthium rectinervium:* leaves; *a*, fruit.

Vanualevu: Thakaundrove-Mathuata Boundary, in dense forest on the crest of the Korotini Range, between Navitho Pass and Mount Ndelaikoro, altitude 650-900 meters, November 21, 1933, Smith no. 558 (type).

A local name is *ngaungau*.

Genus **ANTIRRHOEA** Commerson

Antirrhoea inconspicua (Seemann) Christophersen.

Antirrhoea inconspicua (Seemann) Christophersen: B. P. Bishop Mus., Bull. 128, p. 202, 1935.

Fiji, without definite locality: Horne nos. 350 (K), 385 (G), 401 (G, K). Ovalau: Seemann no. 257 (type, K, BM, G); Storck no. 893 (BM, G, K). Vanualevu: Mathuata, Lambasa, Greenwood no. 557 (K). Koro: altitude 200 meters, Smith no. 1039. Moala: altitude 100 meters, Smith no. 1330. Kambara: Smith no. 1269. Fulanga: Smith no. 1131.

A local name for this common shrub or small tree in Lau is *tambutasia.*

Genus **TIMONIUS** Rumphius

Timonius polygamus (Forster) Robinson.

Timonius polygamus (Forster) Robinson: Proc. Am. Acad., vol. 45, p. 408, 1910.

Fulanga: on limestone cliff in lagoon, Smith no. 1220.

Not previously reported from Fiji.

Timonius species.

Vanualevu: Thakaundrove, hills west of Korotasere, Smith no. 1930; Mbua, lower Wainunu River valley, Smith no. 1724. Moala: above Maloku, Smith no. 1347.

A tree 5-18 meters high, growing in forest up to 400 meters altitude, locally known as *ndondolala* and *mboko ni lekutu.* The fruit is red, very coriaceous, striate, and between 2 and 3 cm in diameter. The locules are about 10, closely grouped near the center of the fruit, which is copiously traversed by longitudinal air chambers. This belongs to no species of *Timonius* known from Fiji, but bears a close resemblance to certain New Caledonian species. I hesitate to place it definitely or to describe it without flowers, but the structure of the fruit verifies its place in the genus.

Genus **DORISIA** Gillespie (non Cornaceae)

Dorisia flavida (Seemann) A. C. Smith, new combination.

Canthium flavidum Seemann: Fl. Vit., p. 132, 1866.

Plectronia flavida Bentham and Hooker f.: Drake, Fl. Ins. Mar. Pac., p. 194, 1886.

Dorisia rarissima Gillespie: Hook. Ic. Pl., vol. 32, pl. 3190, 1933.

Vanualevu: Mathuata, Seemann no. 256 (type, K, BM); near Lambasa, Greenwood no. 517 (type of *Dorisia rarissima,* K); Thakaundrove, between Waiwai and Lomaloma, Horne no. 608 (K); Yanawai River region, Mount

Kasi, altitude 300-430 meters, Smith no. 1790; Mount Mariko, altitude 600-866 meters, Smith no. 430; Natewa Bay region, hills west of Korotasere, altitude 100-300 meters, Smith no. 1932. Rambi: Horne no. 441 (K).

A local name in the Yanawai region is *reiova.*

Gillespie's genus *Dorisia* has all the habital characters of Rubiaceae, such as opposite leaves and stipules. However, the petals are valvate and essentially separate, the stamens are attached at the base of the petals, and the fruit is only about three quarters inferior. The last character, in particular, would lead one to believe *Dorisia* correctly allied to *Mastixia* Blume in Cornaceae, where Gillespie placed it.

I would have accepted this position for the genus had not Professor Record of the Yale School of Forestry assured me that the wood accompanying my specimens is distinctly rubiaceous. An examination of the stomata of *Dorisia* bears out this relationship. The stomata, found only on the lower surfaces of leaves, are accompanied by two narrow subsidiary cells placed parallel to the pore, a character of all Rubiaceae, but lacking in Cornaceae (Boodle and Fritsch, Solereder's Systematic Anatomy of the Dicotyledons, vol. 1, pp. 432, 444, 1908). Reexamining the flowers, one finds that there is no real objection to placing the genus in Rubiaceae, although the not wholly inferior fruit is somewhat anomalous.

The genus appears to be best placed in the Tribe Chiococceae, where it may be compared with the Australian *Hodgkinsonia* F. Mueller. The distinct petals and the fruit characters amply distinguish *Dorisia,* which appears to have no close relatives. The wood, according to Professor Record, is hard, light-colored, and fine-textured, somewhat similar to that of *Coffea, Guettarda,* and *Hodgkinsonia.* There are no essential differences between the two type specimens involved.

Genus IXORA Linnaeus

Ixora coronata A. C. Smith, new species (fig. 73).

Frutex, *I. pelagicae* Seemann et *I. amplexicauli* Gillespie affinis, foliis multo majoribus, nervis secundariis numerosis distinguitur; a *I. pelagica* foliis utrinque glabris, a *I. amplexicauli* calycis lobis bracteolisque brevioribus differt.

Shrub about 3 meters high, glabrous throughout, the branchlets subterete or slightly flattened; leaves essentially sessile, the petioles stout, passing directly into the costa, the blades coriaceous, shining above, dull and paler beneath, oblong, 30-40 cm long, 8-11 cm broad, cordate and subamplexicaul at base, gradually narrowed to an acute apex, slightly recurved at margins, the costa shallowly grooved above, prominent beneath, the secondary nerves 16-18 per side, arcuate-spreading, anastomosing 5-15 mm within the margins, prominulous above, prominent beneath, the veinlets reticulate, prominulous; stipules coriaceous, abruptly acuminate; inflorescences terminal, many-flowered, contracted, enclosed by the apical leaves, about 4 cm in diameter, short-pedunculate; pedicels 1-5 mm long, 2-4-bracteolate, the bractlets linear or spatulate, 4-5 mm long; calyx tubular, about 7 mm long, the limb erect, the lobes 4, oblong-lanceolate, subacute, 4-5 mm long, 1-1.5 mm broad; corolla not seen; fruit red, globose, 7-9 mm in diameter, surmounted by the persistent calyx limb.

Vanualevu: Mbua, in open forest in the lower Wainunu River valley, altitude 0-200 meters, May 7, 1934, Smith no. 1718 (type).

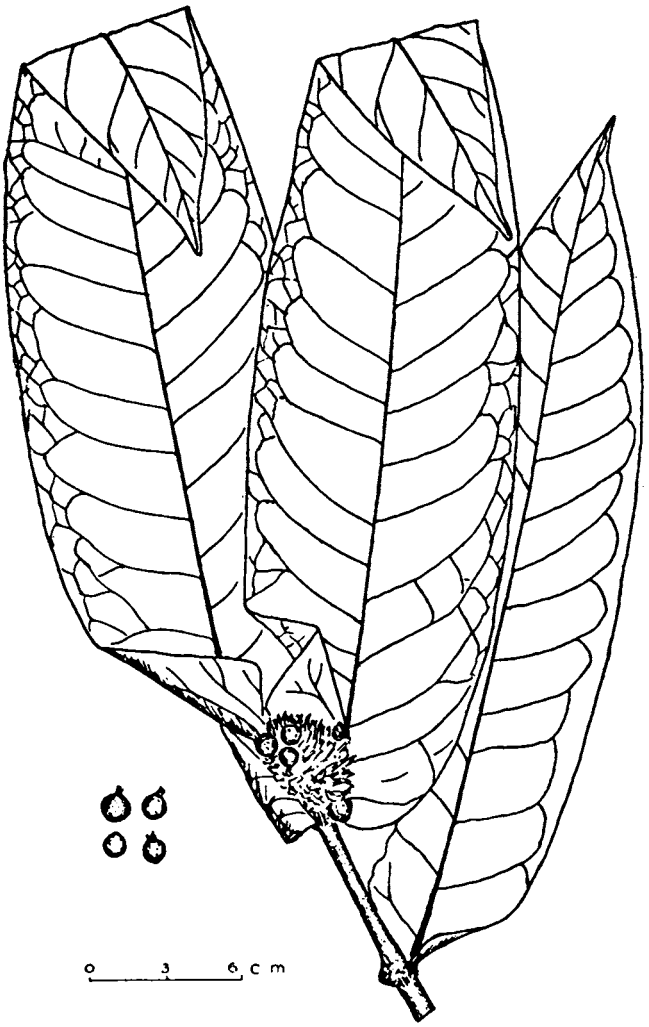

FIGURE 73.—*Ixora coronata.*

Ixora myrtifolia A. C. Smith, new species (fig. 74).

Frutex vel arbor gracilis, *I. maximae* Seemann affinis, foliis multo minoribus utrinque glabris, inflorescentiis contractis distinguitur; foliorum forma et magnitudine *I. pelagicae* Seemann et *I. amplexicauli* Gillespie similis, floribus pedicellatis haud dense bracteolatis, calycis lobis deltoideis brevibus valde differt.

Shrub or slender tree 3-7 meters high, glabrous throughout (young inflorescences minutely puberulent, glabrescent), the branchlets slender, terete, straight; petioles rugose,

up to 3 mm long, the leaves essentially sessile; leaf blades papyraceous, oblong, 12-20 cm long, 4-7 cm broad, rounded and slightly cordate at base, subacute at apex, the costa slightly impressed above, prominent beneath, the secondary nerves 9-12 per side, spreading, anastomosing 2-6 mm within the margins, nearly plane above, raised beneath, the veinlets reticulate, prominulous beneath; stipules broadly ovate at base, abruptly narrowing to a subulate apex, about 3 mm long; inflorescences terminal or axillary, many-flowered, about 3 cm broad, short-pedunculate, the primary branches somewhat flattened, the bracts small, resembling the stipules, the flowers in our material immature;

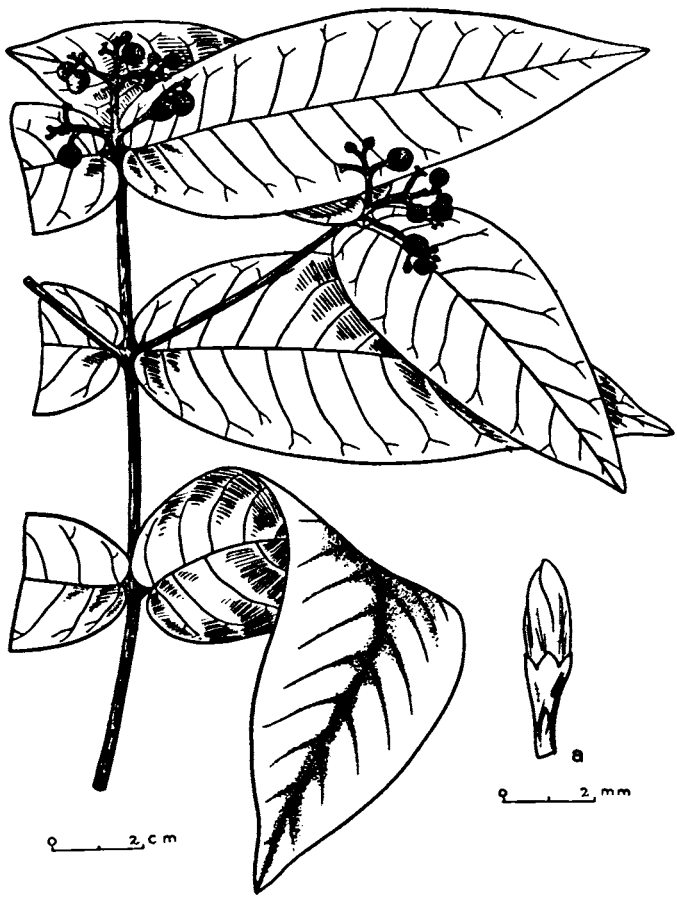

FIGURE 74.—*Ixora myrtifolia*, fruiting branch; *a*, flower bud.

pedicels 0.5-1 mm long, bibracteolate near apex, the bractlets linear, about 0.5 mm long, soon deciduous; calyx cupuliform, about 1.5 mm long and broad, the limb erect, the lobes 4, deltoid, obtuse, about 0.5 mm long; young corolla cylindric, about 2.5 mm long, the tube short, the lobes 4, contorted, elliptic, obtuse, about 1 mm broad, probably larger at maturity; filaments short, the anthers linear-oblong, about 1.5 mm long, acute at apex; style about 1 mm long, flattened and bifid at apex; fruit red, globose, 5-6 mm in diameter, surmounted by the minute calyx lobes.

Vanualevu: Mbua, in forest on southern portion of Seatovo Range, altitude 100-350 meters, April 20, 1934, Smith no. 1550 (type).

Another collection is Milne no. 445 (K), from woods above Nandi. This locality is probably the village of that name on the Mbua coast near Nambouwalu, and not Nandi in Vitilevu. The flowers are described from the Milne specimen, for which the native name *tukutuku* is given.

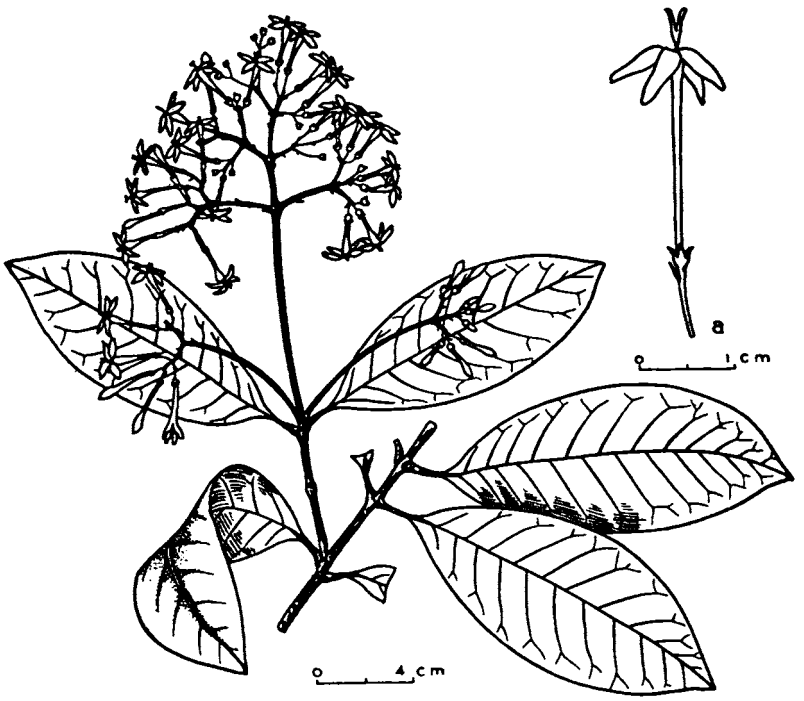

FIGURE 75.—*Ixora tubiflora*, flowering branch; *a*, flower.

Ixora harveyi (A. Gray) A. C. Smith, new combination.

Stylocoryne harveyi A. Gray: Proc. Am. Acad., vol. 4, p. 309, 1860.

Fiji: Nandi, Harvey (type, BM, K). Vanualevu: Thakaundrove, summit of Mount Mbatini, in dense thickets, altitude 1,030 meters, Smith no. 700; southern slope of Korotini Range, in dense forest, altitude 300-650 meters, Smith no. 506.

A slender shrub 1-3 meters high, locally known as *tomitomi*. Among Fijian species, *I. harveyi* appears to be related to *I. carewi* Horne, a species which is more robust in all parts. There is no indication whether Harvey's specimens were from Nandi in Vitilevu or Nandi in Mbua, Vanualevu.

Ixora tubiflora A. C. Smith, new species (fig. 75).

Frutex vel arbor gracilis, *I. eleganti* Gillespie affinis, habitu ubique glabro, corollis longissimis angustis, corollae tubo quam lobis latis 3- vel 4-plo longiore differt.

Shrub or slender tree 3-7 meters high, glabrous throughout, the branchlets terete, brownish; petioles rugose, narrowly winged above, 12-15 mm long; leaf blades papyraceous, elliptic, 10-15 cm long, 5-8 cm broad, acute or subattenuate at base, acute at apex, the costa slightly grooved above, prominent beneath, the secondary nerves 8-10 per side, spreading, slightly raised on both surfaces, the veinlets reticulate, often obscure; stipules coriaceous, subulate from a broad base, about 5 mm long; inflorescences terminal on short branchlets, many-flowered, up to 17 cm long, the peduncles stout, 2-5 mm long, surmounted by two caducous foliaceous bracts 5-10 mm long, the primary branches 3, spreading, unbranched for 4-8 cm; pedicels slender, 2-10 mm long, usually 2-bracteolate, the bractlets linear, about 1 mm long; calyx cupuliform, at anthesis about 3 mm long and 2 mm in diameter, the limb erect, the lobes 4, deltoid, subacute, about 1 mm long and broad; corolla white, the tube narrowly cylindric, 18-20 mm long at anthesis, about 1.5 mm in diameter, the lobes 4, contorted, reflexed, oblong, obtuse, 5-6 mm long, about 4 mm broad; stamens exserted, attached at base of corolla lobes, the filaments about 1 mm long, the anthers yellow, oblong, about 2 mm long; style very slender, glabrous, longer than the corolla tube, the stigma exserted, swollen, bifid.

Taveuni: in dense forest near lake east of Somosomo, altitude 700-900 meters, December 29, 1933, Smith nos. 856 (type), 918; summit of Uluingalau, in dense forest, altitude 1100-1220 meters, Smith no. 900.

A local name is *mothe lutu*. *I. tubiflora* is related to *I. elegans* Gillespie, from which it differs by being glabrous throughout (the calyx and style of *I. elegans* being puberulent), and by having extraordinarily long and narrow corollas. In mature flowers of the new species the corolla tube is three or four times as long as the broad lobes, whereas in *I. elegans* it hardly exceeds the narrow lobes. It is probable that the Taveuni specimen cited by Gillespie (B. P. Bishop Mus., Bull. 74, p. 31, 1930) belongs with *I. tubiflora*.

Ixora pubifolia A. C. Smith, new species (fig. 76).

Frutex, *I. eleganti* Gillespie affinis, foliis subtus puberulis, inflorescentiis contractis, corollis puberulis differt; a *I. harveyi* (A. Gray) A. C. Smith foliis majoribus, habitu puberulo differt.

Shrub 1-5 meters high, the branchlets glabrous, terete, brownish; petioles essentially glabrous, canaliculate, 5-17 mm long; leaf blades papyraceous, oblong, 15-25 cm long, 5-10 cm broad, tapering at base, subacute at apex, glabrous above, persistently and minutely puberulent beneath, the costa shallowly grooved above, prominent beneath, the secondary nerves 8-10 per side, ascending, anastomosing near margins, nearly plane above, raised beneath, the veinlets reticulate, prominulous on both surfaces; stipules ovate, acuminate, 3-4 mm long, soon deciduous; inflorescence axillary on short branchlets, up to 5 cm long, the peduncles practically none, the bracts oblong, about 5 mm long, soon deciduous, the branches and flowers (including corollas) uniformly pale puberulent, the primary branches 3, spreading, 1.5 cm long or less without branching, the pedicels 0-1 mm long (slightly longer in fruit); calyx cupuliform, about 2 mm long and broad, the lobes 4, deltoid-rounded, minute; corolla white, the tube 8-10 mm long, about 1 mm in diameter, the lobes 4, contorted, oblong, rounded, about 6 mm long and 2 mm broad; filaments attached at base of lobes, about 1.5 mm long, the anthers oblong-lanceolate, about 5 mm long, acute at apex, produced at base; style slender, longer than the corolla tube, spreading-pilose with minute pale hairs, the stigma exserted at anthesis, swollen, clavate; fruit coriaceous, red, glabrous, 5-6 mm in diameter, surmounted by the persistent short calyx limb.

Vanualevu: Thakaundrove, in woods on hills south of the Nakula Valley, near Savusavu, altitude about 40 meters, November 9, 1933, Smith no. 352

(type); Natewa Peninsula, hills west of Mbutha Bay, altitude 150-350 meters, Smith no. 835.

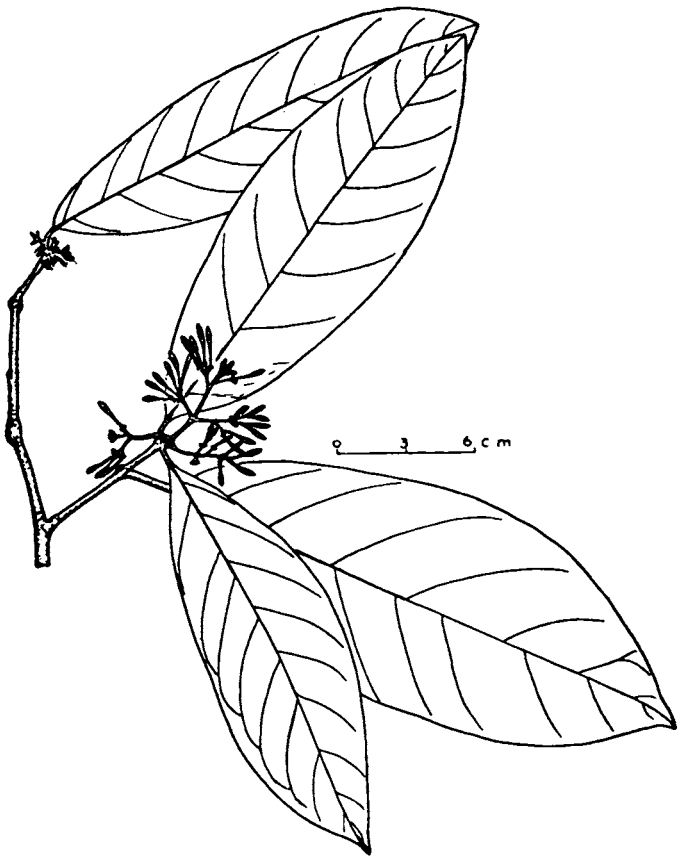

FIGURE 76.—*Ixora pubifolia.*

Genus **HEDSTROMIA** A. C. Smith, new genus

Genus calyce parvo 5-dentato, petalis 5 liberis, staminibus basi petalorum insertis, stylis 2 cohaerentibus, loculis 2, ovulis solitariis erectis basalibus distinguitur; a *Psychotria* Linnaeus petalis staminibus stylisque valde differt.

Calyx tube small, the limb about as long as the tube, minutely 5-dentate; petals 5, essentially free; stamens 5, attached at base of corolla, the filaments short; styles 2, laterally coherent; locules 2, the ovules solitary, erect, basal. Low tree, the leaves opposite, entire, petiolate, the stipules interpetiolar; inflorescence terminal, cymose, many-flowered.

I take pleasure in naming this genus in honor of Sir Maynard Hedstrom

in appreciation of his many kindnesses to me in Fiji and in acknowledgment of his lifelong interest in the scientific exploration of the Fijian islands.

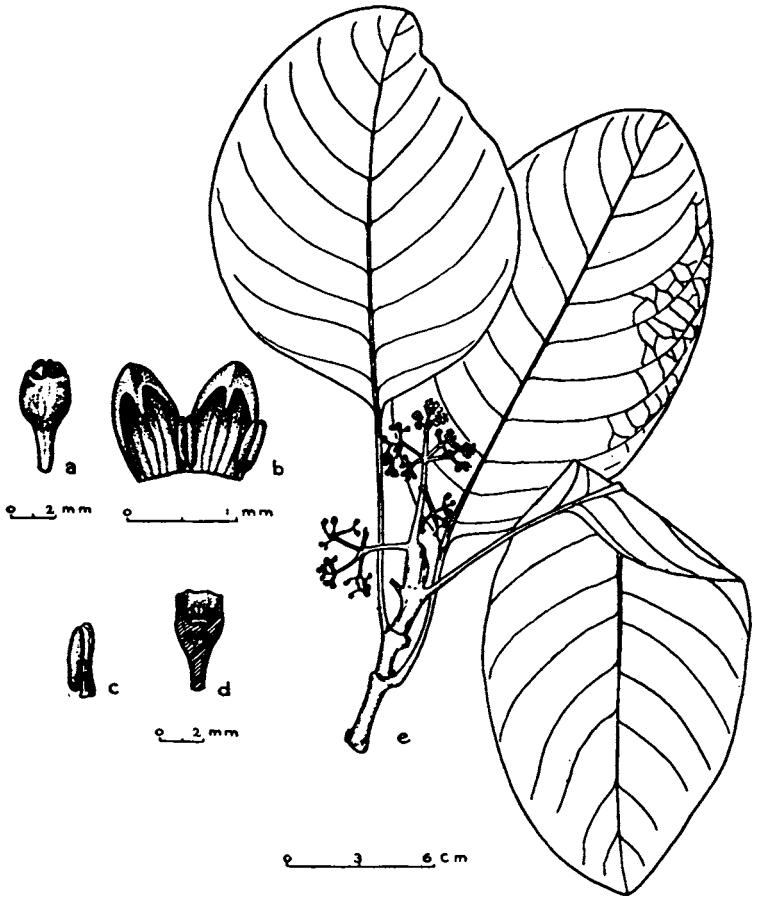

FIGURE 77.—*Hedstromia latifolia: a,* flower; *b,* petals and stamens; *c,* stamen, lateral view; *d,* longitudinal section through calyx and ovary; *e,* branch.

The new genus is marked by several characters which are rare in Pacific Rubiaceae, such as separate petals, stamens attached at the base of the petals, and two short laterally coherent styles. *Dorisia* Gillespie shows the first two of these characters, but has a single style and the ovules attached near the apex. There are many superficial differences between *Dorisia* and the present genus, the position of the ovules alone placing the genera in different tribes. *Hedstromia* is perhaps best placed in the Psychotrieae in spite of the anomalies presented by the diagnostic characters. This position is borne out by the wood structure, which Professor Record considers similar to that of *Psychotria calycosa* A. Gray and *Calycosia petiolata* A. Gray.

Hedstromia latifolia A. C. Smith, new species (fig. 77).

Arbor parva, generis characteribus supra enumeratis distinguitur.

Tree about 8 meters high, glabrous throughout, the branchlets stout, flattened when young, the leaf scars conspicuous; petioles striate, 6-10 cm long; leaf blades coriaceous, broadly elliptic, 16-20 cm long, 11-13 cm broad, cuneate and abruptly attenuate at base, rounded or short cuspidate at apex, the costa prominent on both surfaces, shallowly grooved above, the secondary nerves 9 or 10 per side, arcuate-ascending, anastomosing near margins, prominent on both surfaces, connected by numerous cross-veins, the veinlets copiously reticulate, raised on both surfaces; stipules oblong, rounded, about 17 mm long and 10 mm broad, soon deciduous; inflorescence 6-10 cm long, the peduncle about 2 cm long, the principal branches 3, spreading, the bractlets minute, deciduous, the pedicels 0.5-2 mm long; flower buds carnose, greenish, obovoid, 2.5-3 mm long, the calyx limb equal to the tube, slightly incurved in bud; petals 5, oblong-ovate, 1-1.5 mm long, about 0.7 mm broad, the apex thickened and incurved, minutely setulose; stamens 5, the anthers subsessile at base of corolla (filaments up to 0.3 mm long), oblong, rounded at both ends, 0.5-1 mm long, the connective thickened; disk small, carnose; styles 2, carnose, laterally coherent, about 0.5 mm long, the stigmas truncate.

Vanualevu: Thakaundrove, in dense forest on hills west of Korotasere, Natewa Bay region, altitude 100-300 meters, June 8, 1934, Smith no. 1944 (type).

A local name is *mbulei*.

Genus PSYCHOTRIA Linnaeus

Psychotria pachyantha A. C. Smith, new species (fig. 78).

Frutex vel arbor gracilis, calycis limbo subtruncato, corollis intus pilosis distinguitur; *P. forsterianae* A. Gray var. *vitiensi* A. Gray affinis, foliis coriaceis apice haud acutissimis, floribus majoribus minus dense aggregatis differt.

Shrub or slender tree 2-4 meters high, glabrous throughout (except corollas within), the branchlets terete, swollen at the nodes; petioles shallowly canaliculate, 1-4 cm long; leaf blades coriaceous, elliptic or slightly obovate, 8-16 cm long, 3.5-6 cm broad, attenuate at base, obtuse or subacute at apex, the costa raised and shallowly grooved above, prominent beneath, the secondary nerves 10 or 11 per side, arcuate-spreading, anastomosing near margins, prominulous on both surfaces, the veinlets obscurely reticulate; stipules oblong, obtuse, or acute, up to 15 mm long, soon deciduous; inflorescences terminal, 1-3 together, 5-7 cm long, the peduncles slender, 2-3 cm long, the flowers 8-12 per inflorescence, loosely arranged, the pedicels up to 10 mm long; calyx carnose, cupuliform, 4-6 mm long at anthesis, about 4 mm in diameter, the limb erect, minutely 5-dentate; corolla white, carnose, tubular, flaring distally, 16-18 mm long at anthesis, about 4 mm in diameter near middle, glabrous without, densely short white-pilose near middle within, the lobes 5 or 6, suberect, deltoid-lanceolate, thickened and incurved at apex, about 4 mm long, 2-3 mm broad; stamens 5 or 6, the filaments very short, the anthers linear-oblong, about 2 mm long; style slightly shorter than corolla, the apex bifid, the stigmas flattened; disk carnose, enlarged.

Vanualevu: Mbua, in dense forest on Navotuvotu, summit of Mount Seatura, altitude 700-830 meters, April 27, 1934, Smith no. 1648 (type); Mathuata, mountains near the coast, Greenwood no. 659 (K).

Psychotria edentata A. C. Smith, new species (figs. 78, *b*; 79).

Frutex gracilis, corollis intus pilosis *P. forsterianae* A. Gray var. *vitiensi* A. Gray et *P. pachyanthae* A. C. Smith affinis, calycis limbo truncato, corollae lobis staminibusque saepe 8, corolla distaliter farinoso-puberula differt.

Slender shrub 2-3 meters high, glabrous throughout (except corollas), the branchlets terete; petioles swollen at base, narrowly winged above, 5-20 mm long; leaf blades thin coriaceous, narrowly elliptic or slightly obovate, 12-17 cm long, 3.5-6 cm broad, attenuate at base, obtuse or obtusely cuspidate at apex, the costa prominent on both surfaces, shallowly grooved above, the secondary nerves 7-11 per side, arcuate-ascending, slightly

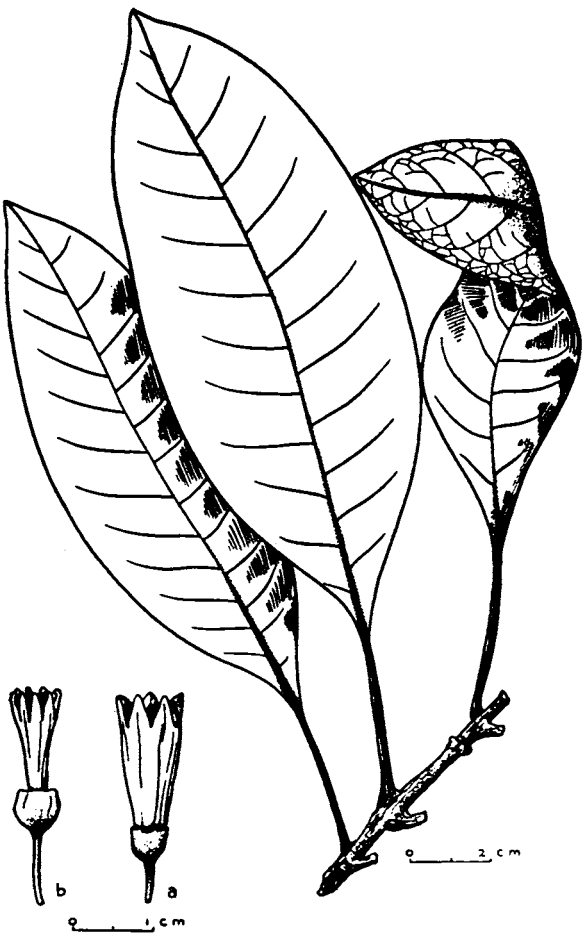

FIGURE 78.—*Psychotria pachyantha:* leaves; *a,* flower; *b, P. edentata,* flower.

raised on both surfaces, the veinlets obscurely reticulate; stipules lanceolate, acute, about 5 mm long, soon deciduous; inflorescences terminal, 2-4 together, 4-7 cm long, the peduncles 1-4 cm long, the flowers laxly arranged, 6-12 per inflorescence, the pedicels 10-15 mm long; calyx carnose, cupuliform, about 4 mm long and in diameter, the limb erect, longer than the tube, truncate or slightly undulate, the lobes completely suppressed; corolla carnose, white, cylindric, about 12 mm long at anthesis, white-pilose within at base of stamens, the tube about 2 mm in diameter, slightly swollen at base and apex, the lobes

6-8, oblong-lanceolate, suberect, 3-4 mm long, about 1.5 mm broad, thickened and sharply recurved at apex, farinose-puberulent on both surfaces; stamens as many as corolla lobes, attached at throat of corolla, the filaments short, sparsely white-pilose, the anthers oblong, obtuse at both ends, about 1.5 mm long; style filiform, slightly shorter than corolla, the stigma minutely 2-parted, the disk carnose, enlarged.

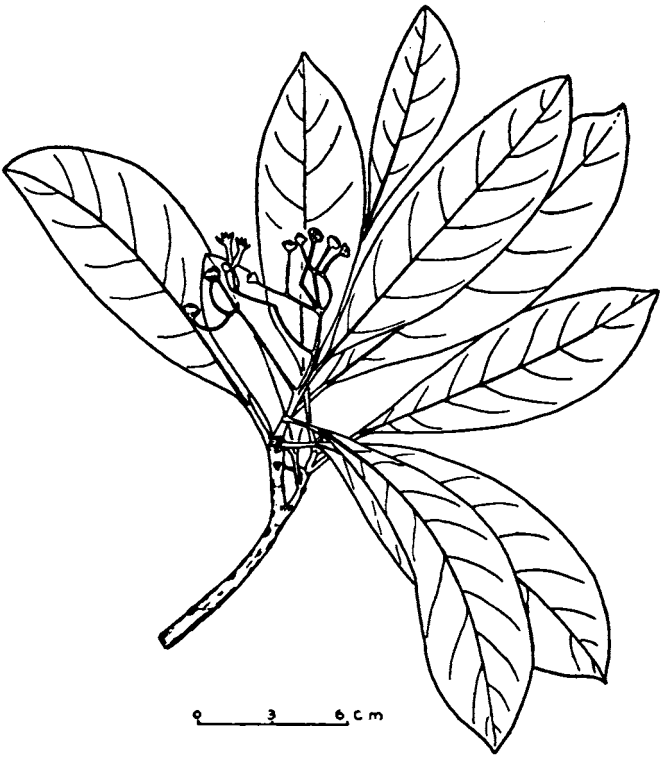

FIGURE 79.—*Psychotria edentata.*

Malatta (Exploring Isles, south of Vanua Mbalavu): in forest on limestone, altitude 0-100 meters, March 29, 1934, Smith no. 1437 (type). Fulanga: in forest on limestone, Smith no. 1132.

A local name is *ndoko ni mbu.*

Psychotria tephrosantha A. Gray.

Psychotria tephrosantha A. Gray: Proc. Am. Acad., vol. 4, p. 45, 1860.

Psychotria sulphurea Seemann: Fl. Vit., p. 134, 1866.

Psychotria effusa Turrill: Jour. Linn. Soc., vol. 43, p. 26, 1915.

Having examined type material of these three species in connection with a large series of collections, I can only conclude that one species is represented. The three types differ from one another merely in stage of development.

Psychotria gillespieana A. C. Smith, new name.

Calycosia laxiflora Gillespie: B. P. Bishop Mus., Bull. 74, p. 38, fig. 53, 1930 (non *Psychotria laxiflora* Blume).

This is a species related to *P. calycosa* A. Gray, but apparently distinct, characterized by somewhat thinner leaves and longer flowers.

Section EUMACHIA (De Candolle) A. C. Smith, new section.

Eumachia De Candolle: Prodr., vol. 4, p. 478, 1830, as genus.

The generic position of *Petesia carnea* Forster has long been uncertain. De Candolle made the species the basis of his genus *Eumachia,* which has been neglected by subsequent writers, most of whom have placed the species in *Psychotria* under various specific names. The calyx limb of *Petesia carnea* is 4-lobed, short, usually suberect but sometimes erecto-patent, and usually persistent in fruit. The corolla, which is suddenly enlarged distally, is tubular below, but the four large lobes develop edge to edge in such a way that the corolla appears 4-angled distally. The anther cells are somewhat divergent at the base. Of this alliance are *Calycosia hunteri* Horne and *Psychotria umbraticola* Gillespie. The three species appear to me to form a coherent section of *Psychotria,* to which the name *Eumachia* may be applied. On the basis of material now available, I hesitate generically to distinguish *Eumachia* from *Psychotria,* but the group is clearly distinguishable on calyx and corolla characters. The synonymy of the three species is somewhat complicated, and each must have a new name.

Psychotria carnea (Forster) A. C. Smith, new combination.

Petesia carnea Forster: Prodr. Fl. Ins. Austr., p. 10, 1786.

Eumachia carnea De Candolle: Prodr., vol. 4, p. 479, 1830.

Chasalia amicorum A. Gray: Proc. Am. Acad., vol. 4, p. 43, 1860.

Ixora carnea Bentham and Hooker f.: Gen. Pl., vol. 2, p. 114, 1873.

Psychotria amicorum Bentham and Hooker f.: Drake, Ill. Fl. Ins. Mar. Pac., p. 197, 1886.

Psychotria oncocarpa K. Schumann: Bot. Jahrb. Engler, vol. 25, p. 688, 1898.

Psychotria hemisphaerica Gillespie: B. P. Bishop Mus., Bull. 91, p. 32, fig. 35, 1932.

Tonga: Forster (type, BM, K); Nelson (BM); Harvey (K); Lister (K); Graeffe no. 1403 (K); U. S. Expl. Exped. (type of *Chasalia amicorum,* G).

Samoa: Powell no. 345 (K); Eames no. 202[4] (NY).

[4] I am indebted to Dr. E. Christophersen for pointing out the identity of Eames no. 202, which he has found similar to the type of *Psychotria oncocarpa* in the Berlin Herbarium.

Fiji, without definite locality: Horne no. 498 (K). Vitilevu: Horne no. 705 (K). Ovalau: Horne nos. 40 (K), 279 (K). Koro: Smith nos. 993, 1018. Vanualevu: Horne no. 534 (K); Greenwood no. 613 (K); Smith nos. 462, 588, 699, 832, 1907, 1945. Rambi: Horne no. 501 (K).

I am indebted to Gillespie's notes in the herbarium at Kew for much of the above synonymy. In addition to the specimens listed, I have seen those cited by Gillespie.

Psychotria hunteri (Horne) A. C. Smith, new combination.

Calycosia hunteri Horne: Baker, Jour. Linn. Soc., vol. 20, p. 364, 1884.

Taveuni: Horne no. 1137 (type, G, K); western slope, altitude 500 meters, Smith no. 770; borders of lake east of Somosomo, altitude 700-900 meters, Smith no. 870.

The species is distinguished from *P. carnea* by its longer flowers, but perhaps does not merit specific rank. This species and the following usually have 5-merous flowers.

Psychotria confertiloba A. C. Smith, new name.

Psychotria umbraticola Gillespie: B. P. Bishop Mus., Bull. 91, p. 36, fig. 42, 1932 (non *P. umbraticola* Vatke, 1875).

Fiji: Nandi (Vitilevu?), Milne (K). Vanualevu: Horne no. 593a (K); Mbua, Ndama River valley, altitude 100-300 meters, Smith no. 1589; Thakaundrove, Mount Mariko, altitude 600-866 meters, Smith no. 465; Korotini Range, altitude 300-650 meters, Smith no. 520; Mount Ndikeva, altitude 700 meters, Smith no. 1861. Additional specimens are cited by Gillespie.

A local name in Thakaundrove is *tambulina*.

Genera CALYCOSIA A. Gray and CALYCODENDRON

The genus *Calycosia* was founded on two species, the Fijian *C. petiolata* A. Gray and the Samoan *C. sessilis* A. Gray. According to Gray, it is distinguished from *Psychotria* and *Cephaelis* by the remarkably large, funnelform, and deciduous limb of the calyx. It is also characterized by its extremely large leaves, its capitate and congested flowers, and its broad submembranous involucrate bracts. In my opinion it is well maintained as a genus, being at once distinguished from other Pacific genera by these characters.

Subsequently Gray added two species to *Calycosia, C. pubiflora* of Fiji and *C. milnei* of the New Hebrides. These species have the flowers in loose cymes, of which the bracts are small and deciduous; the calyx limb is more spreading than erect and is somewhat sinuate at the margins; the anther cells are usually divergent at base. In addition, the species differ markedly from Gray's original species in habit, being more plentifully branched and with

smaller leaves. In my opinion these species cannot be left in *Calycosia* in Gray's original sense.

Since *C. petiolata* is the type species of *Calycosia,* it is obvious that Gillespie's transfer of it to *Uragoga* (even if *Uragoga* were to be maintained over *Cephaelis*) cannot be accepted unless Gillespie intended to submerge Gray's genus. Since he subsequently referred four new species to *Calycosia,* it is evident that he intended to maintain the genus in the sense of *C. pubiflorum,* which, however, was not one of Gray's original species.

The problem then arises: what shall be done with *Calycosia pubiflora, C. milnei,* and other species of recent writers who used the name *Calycosia* in this sense? Among Polynesian plants, the species which appears most closely related to these is *Psychotria carnea* (Forster) A. C. Smith. *Calycosia pubiflora* and its allies differ from *Psychotria carnea* by their spreading or subspreading calyx limb and their cylindric corolla, the lobes of which are small. I believe these species to represent a coherent genus, which is here described as *Calycodendron.*

Calycosia and *Calycodendron* are both related to *Psychotria,* but each of them has several characters which remove it from that genus, unless it is used in an inconveniently broad sense. Taxonomic notes on the two genera follow.

Genus CALYCOSIA A. Gray

Calycosia A. Gray: Proc. Am. Acad., vol. 4, p. 47, 1860.

Uragoga Linnaeus, Section *Sertoides* Hochreutiner: Candollea, vol. 5, p. 273, 1934.

Calycosia petiolata A. Gray.

Calycosia petiolata A. Gray: Proc. Am. Acad., vol. 4, p. 48, 1860.

Uragoga petiolata Gillespie: B. P. Bishop Mus., Bull. 74, p. 37, fig. 51, 1930.

Fiji, without definite locality: U. S. Expl. Exped. (G, type, NY). Ovalau: Horne no. 71 (K). Koro: altitude 300-500 meters, Smith no. 970. Kandavu: summit of Mount Mbuke Levu, altitude 750-840 meters, Smith no. 273. Vanualevu: Thakaundrove, Mount Mariko, altitude 600-866 meters, Smith no. 472. Additional specimens are cited by Gillespie.

Two or even three species may be represented by the cited material. Until a larger series of material is available, I am unable to decide what value should be given to such characters as size of involucral bracts, calyx lobes, length of corolla, etc. Smith no. 472 has larger involucral bracts and a more compact inflorescence than Smith no. 273, but this may be due to its immaturity. The corollas of no. 273 are 25-30 mm long at maturity; those described by Gillespie were apparently young.

C. petiolata may be taken as the type of the genus.

Calycosia lageniformis (Gillespie) A. C. Smith, new combination.

Uragoga lageniformis Gillespie: B. P. Bishop Mus., Bull. 74, p. 36, fig. 50, 1930.

Calycosia sessilis A. Gray.

Calycosia sessilis A. Gray: Proc. Am. Acad., vol. 4, p. 48, 1860.

"Uragoga forsteriana K. Schumann": Reinecke, Bot. Jahrb. Engler, vol. 25, p. 689, 1898; Rechinger: Denskschr. Kais. Akad. Wiss. Wien, Math.-Naturwisse Klasse, vol. 81, p. 377, fig. 29, 1910.

Psychotria infundibulifera Setchell: Dept. Mar. Biol. Carn. Inst. Wash., vol. 20, p. 46, pl. 5, 1924.

Uragoga cyrtandroides Hochreutiner: Candollea, vol. 5, p. 271, 1934.

Samoa: Specimens of Graeffe, Powell, and Vaupel have been seen in addition to the type, U. S. Expl. Exped. (G).

Excluded Species

Calycosia aneitensis Guillaumin = *Calycodendron milnei.*
Calycosia fragrans Gillespie = *Calycodendron fragrans.*
Calycosia glabra Turrill = *Calycodendron glabrum.*
Calycosia hunteri Horne = *Psychotria hunteri.*
Calycosia laxiflora Gillespie = *Psychotria gillespieana.*
Calycosia magnifica Gillespie = *Calycodendron magnificum.*
Calycosia milnei A. Gray = *Calycodendron milnei.*
Calycosia monticola Gillespie = *Psychotria calycosa* A. Gray.

Calycosia monticola Gillespie: B. P. Bishop Mus., Bull. 74, p. 39, fig. 55, 1930.

I can find no differences worthy of specific value between the two types.

Calycosia pubiflora A. Gray = *Calycodendron pubiflorum.*
Calycosia trichocalyx Drake.

Calycosia trichocalyx Drake: Ill. Fl. Ins. Mar. Pac., p. 196, pl. 16, 1886; Fl. Polyn. Fr., p. 98, 1893.

Uragoga trichocalyx Drake: Fl. Polyn. Fr., p. 98, 1893.

Psychotria speciosa variety *cymosa* Nadeaud: Drake, Fl. Polyn. Fr., p. 78, 1893.

This Society Island plant differs in many respects from both *Calycosia* and *Calycodendron,* but I cannot suggest an alternative binomial.

Genus CALYCODENDRON A. C. Smith, new genus

Genus *Calycosiae* A. Gray affinis, habitu ramosissimo foliis minoribus, cymis laxis, bracteis parvis deciduis, calycis limbo patente vel erecto-patente (haud erecto) margine saepe sinuato, antherarum loculis basi saepe divergentibus differt; a *Psychotria* Linnaeus calycis forma textura valde differt; a *Psychotria* Sect. *Eumachia* (De Candolle) A. C. Smith calycis limbo maximo patente vel erecto-patente plerumque membranaceo, corollis cylindricis, corollae lobis parvis distinguitur.

Calyx tube short-cylindric, the limb spreading, erecto-patent, or broadly infundibuliform, membranous, often white and conspicuously veined, the margins sinuate or indistinctly 4- or 5-lobed; corolla cylindric, gradually

flaring distally, the lobes 4 or 5, small, valvate; stamens 4 or 5, attached above middle of corolla, the filaments short, the anther cells sometimes separate at base; style subequalling the corolla, the stigmas 2, the disk carnose, annular; ovary 2 (rarely 3)-loculed, the ovules solitary, erect from base; fruits coriaceous, 2 (rarely 3)-seeded, subglobose or ellipsoid, the calyx limb soon deciduous. Shrubs or small trees, the leaves opposite, often thin coriaceous; stipules often connate, soon deciduous; inflorescence terminal, laxly cymose, the bracts small, soon deciduous.

The generic name is compounded from Καλυξ and δενδρον. *C. pubiflorum* is designated as the type species.

Calycodendron pubiflorum (A. Gray) A. C. Smith, new combination.

Calycosia pubiflora A. Gray: Proc. Am. Acad., vol. 4, p. 306, 1860.

Fiji, without definite locality: Horne nos. 994 (K), 1030 (K). Vitilevu: Namosi, Milne nos. 73 (type, K), 290 (K); Mount Naitarandamu, altitude 1,250 meters, Gillespie no. 3125; Tholo North, Nandarivatu, Im Thurn no. 298 (K); Gillespie no. 3391. Vanualevu: Thakaundrove, Mount Ndikeva, altitude 600 meters, Smith no. 1856.

Calycodendron milnei (A. Gray) A. C. Smith, new combination.

Calycosia milnei A. Gray: Proc. Am. Acad., vol. 4, p. 307, 1860.

Psychotria milnei K. Schumann: Engler and Prantl, Pflanzenfam. IV, vol. 4, p. 113, 1897.

Calycosia aneitensis Guillaumin: Bull. Soc. Bot. Fr., vol. 76, p. 303, 1929.

New Hebrides, Aneityum: Milne no. 275 (type, K); MacGillivray nos. 6 (type of *Calycosia aneitensis,* BM), 54 (BM); Kajewski no. 817 (K. NY). Eromanga: MacGillivray (BM); Kajewski nos. 315 (NY), 315A (K, NY). Tanna: Kajewski no. 162 (K, NY).

Fiji, Ovalau: Seemann no. 213 (BM, G, K). Vanualevu: Thakaundrove, Mount Ndikeva, altitude 700 meters, Smith no. 1891.

The species is distinguished from *C. pubiflorum* primarily by its glabrous flowers, and may be found not worthy of specific rank. The Fijian specimens have slightly broader leaves than those from the New Hebrides, but the scarcity of flowers makes detailed comparison impossible for the present.

Calycodendron glabrum (Turrill) A. C. Smith, new combination.

Calycosia glabra Turrill: Jour. Linn. Soc., vol. 43, p. 26, 1915.

Kandavu: Mount Mbuke Levu, Im Thurn no. F.10 (type, K).

Calycodendron fragrans (Gillespie) A. C. Smith, new combination.

Calycosia fragrans Gillespie: B. P. Bishop Mus., Bull. 74, p. 38, fig. 52, 1930.

Represented by the type collection from Vitilevu.

Calycodendron magnificum (Gillespie) A. C. Smith, new combination.

Calycosia magnifica Gillespie: B. P. Bishop Mus., Bull. 74, p. 39, fig. 54, 1930.

Vanualevu: Thakaundrove, Mount Mbatini, on crest of range, altitude 700-1,030 meters, Smith no. 666. Type collection from Vitilevu.

Calycodendron gibbsiae (S. Moore) A. C. Smith, new combination.

Psychotria gibbsiae S. Moore: Jour. Linn. Soc., vol. 39, p. 152, 1909.

Vitilevu: Tholo North, Nandarivatu, altitude 800 meters, Gibbs nos. 664 (BM), 734 (BM, type, K); Im Thurn no. 267 (K). Vanualevu: Thakaundrove, Mount Ndikeva, altitude 900 meters, Smith no. 1878. Taveuni: Seemann no. 314 (K); altitude 600-900 meters, Smith no. 887.

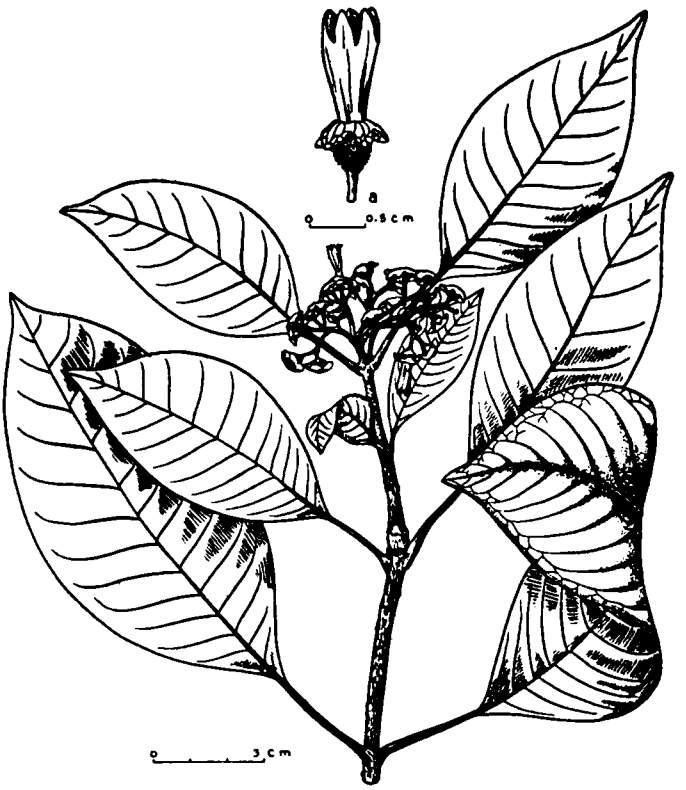

FIGURE 80.—*Calycodendron rufescens*, flowering branch; *a*, flower.

Calycodendron rufescens A. C. Smith, new species (fig. 80).

Frutex, *C. fragranti* (Gillespie) A. C. Smith affinis, inflorescentiis compactis, calycis tubo rufo-piloso, corollis brevioribus tubo glabro differt.

Shrub about 3 meters high, the vegetative parts glabrous, the branchlets terete, brownish; petioles subterete, angled distally, 2-4.5 cm long; leaf blades thin coriaceous,

oblong or elliptic, 10-14 cm long, 4-7 cm broad, acute at base, short cuspidate at apex, the costa slightly raised above, prominent beneath, the secondary nerves 11-13, arcuate, raised on both surfaces, the veinlets obscurely reticulate; stipules soon deciduous; inflorescence solitary, terminal, up to 4 cm long, many-flowered, the peduncle very short, the branches and pedicels tufted-pilose with short reddish hairs at base, otherwise glabrous, the pedicels 4-7 mm long; calyx tube cupuliform, about 2 mm long and in diameter, densely pilose, the hairs reddish, stiff, about 0.5 mm long, the limb glabrous, membranous, spreading, often recurved, about 4 mm long, shallowly 5-lobed, reticulate-veined; corolla carnose, white, pink-tinged distally, glabrous without (except lobes), white-pilose within at middle, cylindric, flaring distally, 10-12 mm long, about 4 mm in diameter near apex, the lobes 5, oblong, obtuse, about 2 mm long, sparsely puberulent; stamens 5, attached near middle of corolla tube, the filaments very short, the anthers oblong, about 2 mm long, the cells slightly separated at base; style filiform, nearly as long as corolla, flattened and bifid distally, the disk carnose, annular.

Vanualevu: Mbua, in crest thickets on Navotuvotu, summit of Mount Seatura, altitude 700-830 meters, April 27, 1934, Smith no. 1655 (type).

Calycodendron species.

Kandavu: hills above Namalata and Ngaloa Bays, altitude 200-400 meters, Smith no. 202.

This specimen appears to represent an undescribed species, having its large puberulent calyces sessile in groups of three. In the absence of mature corollas I hesitate to describe it.

Genus EUMORPHANTHUS A. C. Smith, new genus

Genus calycis limbo maximo erecto 4- vel 5-lobato, corollis maximis lobis elongatis patentibus, fructibus maximis carnosis distinguitur; *Psychotriae* Linnaeus affinis, characteribus enumeratis valde differt.

Calyx tube short-cylindric, the limb ample, erect, indistinctly 4- or 5-lobed, fully developed before the corolla elongates; corolla large, the tube narrowly cylindric, the lobes 5 or 6, developing earlier than the tube, valvate, spreading at anthesis, linear-oblong, nearly half as long as the tube; stamens 5 or 6, attached at throat of corolla, the filaments short, the anthers dorsifixed; style about as long as corolla tube, bifid at apex; disk carnose, annular, closely surrounding the style; locules 2, the ovules solitary, erect from base; fruit large, 2-seeded, the seeds flattened and smooth on the inner surfaces. Slender shrub, the leaves ample, opposite, petiolate, the stipules interpetiolar, soon deciduous; inflorescence terminal, cymose, bibracteate, the bracts small, foliaceous, soon deciduous.

This striking plant is characterized by the large erect 4- or 5-lobed calyx limb, which is fully developed before the corolla elongates. The corolla lobes appear to be developed before the tube, which then elongates rapidly, carrying upwards the already separate 5 or 6 lobes. The large corollas with elongate spreading lobes, the extraordinary calyx limb, and the large carnose fruit definitely remove this genus from *Psychotria* Linnaeus, to which it appears

related. In my opinion *Eumorphanthus* represents still another of those peculiar Pacific genera which cannot reasonably be included in *Psychotria*. It differs from *Calycosia* A. Gray in the absence of large bracts and in the greater development of corolla and fruit, from *Calycodendron* A. C. Smith in the entirely different calyx and corolla. The name, referring to the beautiful flowers, is compounded from εν-μορφη and ανθος.

Eumorphanthus fragrans A. C. Smith, new species (fig. 81).

Frutex gracilis albiflorus, generis characteribus supra enumeratis distinguitur.

Slender shrub about 4 meters high, glabrous throughout (except corolla, in part), the branchlets terete, the internodes often hollow; petioles narrowly winged distally, 1-4 cm long; leaf blades papyraceous, elliptic or obovate-elliptic, 15-25 cm long, 6-9 cm broad, attenuate at base, abruptly acuminate at apex (acumen acute, 5-10 mm long), the costa prominent on both surfaces, sometimes shallowly grooved above, the secondary nerves 9-13 per side, arcuate-ascending, anastomosing near margins, raised on both surfaces, the veinlets sparsely reticulate, plane or prominulous; stipules not observed; inflorescence terminal, up to 15 cm long, 6-12-flowered, short (up to 1 cm)-pedunculate or 3-branched from base, the two lateral branches subtended by bracts, the bracts linear-oblong, up to 35 mm long and 5 mm broad, the flowers fragrant, often in ultimate clusters of 3, the pedicels 3-8 mm long; calyx white, carnose, at anthesis 20-25 mm long, the limb up to 23 mm long, 7-10 mm in diameter at apex, obscurely veined, the lobes broadly deltoid, 1-3 mm long, 4-5 mm broad, acute at apex, slightly thickened at margins; corolla carnose, white, at anthesis 7-8 cm long, the tube 4-5 cm long, about 2 mm in diameter, slightly swollen distally, sparsely white-pilose within at throat, otherwise glabrous, the lobes minutely puberulent and glabrescent without, glabrous within, attaining nearly their full size before the tube elongates, 24-28 mm long, 3-4 mm broad, rounded and conspicuously cucullate at apex; filaments ligulate, up to 1 mm long, the anthers oblong, obtuse at both ends, about 4 mm long; style filiform, glabrous, about 50 mm long, the stigmas 3-5 mm long; fruit carnose, deep red, ellipsoid when fresh, sharply 4-angled when dried, at maturity 30-35 mm long, 15-20 mm broad, acute at base, truncate at apex, the calyx limb deciduous; seeds about 20 mm long, 15 mm broad, and 5 mm thick, sharply triangular in cross-section.

Taveuni: in dense forest bordering lake east of Somosomo, altitude 700-900 meters, January 8, 1934, Smith no. 916 (type).

Genus GILLESPIEA A. C. Smith, new genus

Genus calycis limbo maximo membranaceo apice integro vel leviter 2-lobato distinguitur; *Calycosiae* A. Gray affinis, calycis forma, habitu ramosissimo, bracteis magnis involucratis nullis differt.

Calyx tube small, the limb ample, membranous, spathaceous, completely developed before anthesis and enclosing the young corolla, splitting along one side as the corolla matures, the apex acute, entire or rarely splitting into two lobes; corolla tubular, the lobes 5, valvate; stamens 5, attached near apex of corolla, the anthers dorsally affixed; style filiform, bifid and flattened at apex; disk conspicuous, carnose, annular, closely surrounding base of style; locules 2, the ovules solitary, erect from base. Shrub or low tree, the leaves opposite,

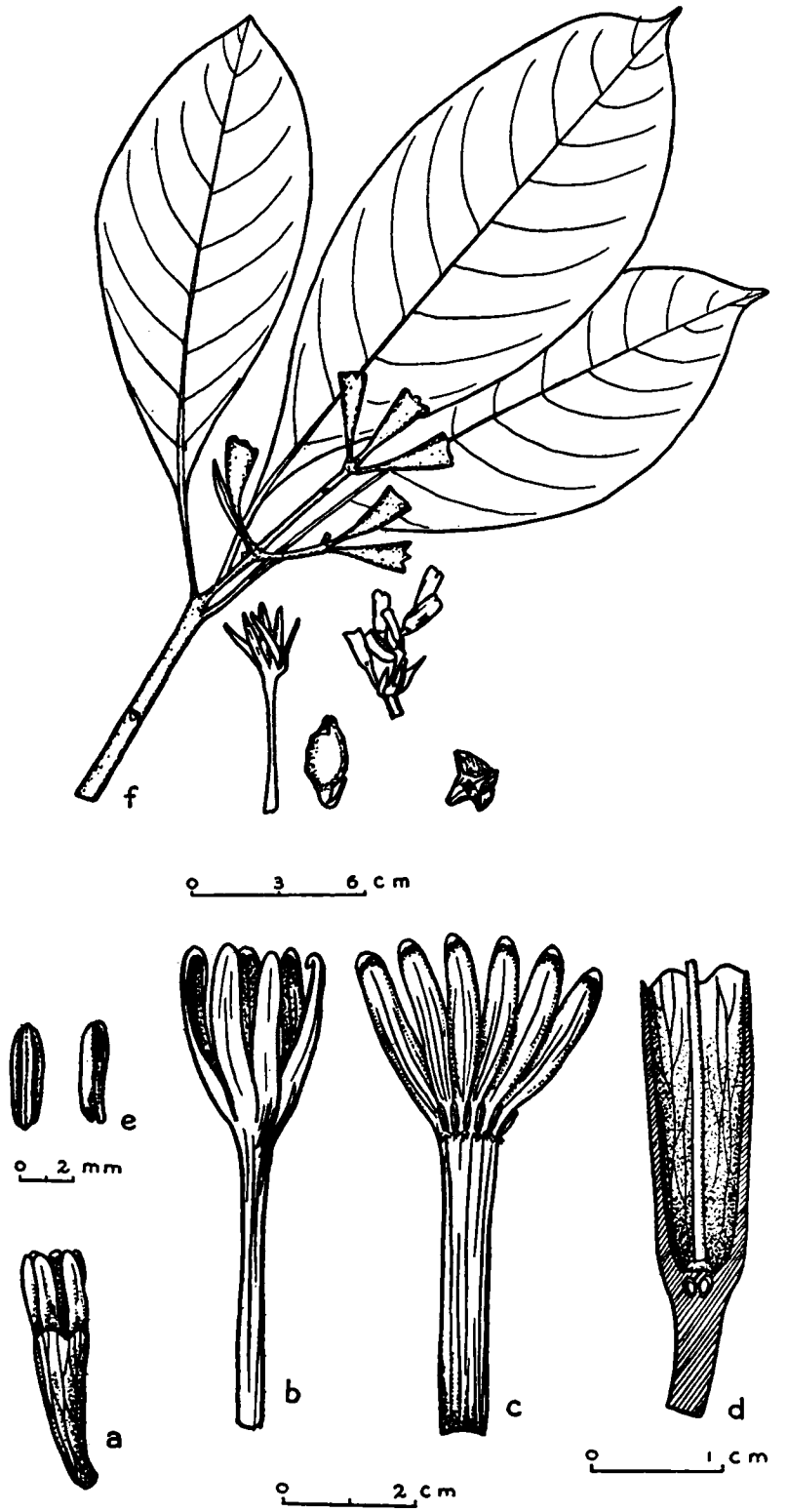

FIGURE 81.—*Eumorphanthus fragrans: a,* young flower; *b,* corolla; *c,* corolla, inner surface; *d,* longitudinal section of calyx and ovary; *e,* stamens, ventral and lateral views; *f,* branch with detached corolla, fruit, and cross-sectioned fruit.

entire, petiolate, the stipules small, interpetiolar, soon deciduous; inflorescence terminal, apparently ebracteate, cymose, few-flowered.

The new genus is named in honor of the late Dr. John W. Gillespie, in recognition of his excellent work on the flora of Fiji and his keen interest in the family Rubiaceae.

The plant is remarkable for its large membranous calyx limb, which is fully developed before the corolla, and which at length splits along one side to permit the elongation of the corolla. The apex of the calyx limb is acute, usually entire, but sometimes splitting into two small lobes. The genus is of the alliance of *Calycosia* A. Gray, of which the calyx is also elongate, but in that genus the limb is not distinctly membranous and is regularly 5-lobed. In habit, *Gillespiea* is more freely branching, has smaller leaves, and lacks the large involucrate bracts of *Calycosia.*

I have seen no material of the genus other than that recently collected by me. It appears to be restricted to a small area of wet middle-elevation forest in central Vanualevu. The plants are very attractive, with abundant foliage and pure white flowers.

Gillespiea speciosa A. C. Smith, new species (fig. 82).

Frutex vel arbor parva, calycibus corollisque albis, generis characteribus supra enumeratis distinguitur.

Shrub or small tree up to 6 meters high, the vegetative parts essentially glabrous (stipule scars sometimes fringed distally with appressed brown hairs up to 1 mm long), the branchlets terete, swollen at nodes; petioles narrowly winged distally, 5-15 mm long; leaf blades papyraceous, oblong or elliptic, 8-15 cm long, 3-6.5 cm broad, acute or subattenuate at base, acuminate at apex (acumen acute, 5-10 mm long), the costa prominent on both surfaces, the secondary nerves 8-11 per side, spreading, anastomosing near margins, slightly raised on both surfaces, the veinlets reticulate, prominulous beneath; stipules ovate, short acuminate, 3-4 mm long; inflorescence sometimes parted from base, sometimes pedunculate, the peduncle up to 4.5 cm long, the primary branches 3 or 4, up to 4 cm long, each bearing a cluster of 3-8 flowers; flowers usually subsessile, the pedicels rarely as much as 2 mm long; calyx white, the tube carnose, glabrous, subglobose or obovoid, at anthesis 1-2 mm long, 1.5-2.5 mm broad, the limb sparsely puberulent and glabrescent on both surfaces, copiously reticulate-veined, 15-22 mm long, 4-6 mm in diameter; corolla white, thin carnose, slightly flaring distally, 25-30 mm long at anthesis, 5-6 mm in diameter at apex, glabrous without, minutely white-pilose proximally within, the lobes oblong, obtuse, 4-6 mm long, about 1.5 mm broad, thickened and slightly cucullate at apex; stamens attached about 8 mm below apex of corolla, the filaments ligulate, slender, about 1 mm long, the anthers oblong, 2.5-3 mm long, subacute at both ends; style 15-25 mm long, glabrous, the stigmas lanceolate, 3-4 mm long, short-pilose; young fruit coriaceous, obovoid, 4-5 mm in diameter, the calyx limb often somewhat persistent but at length deciduous (mature fruit not seen).

Vanualevu: Thakaundrove, in dense forest on the southern slope of the Korotini Range below Navitho Pass, altitude 300-650 meters, November 21, 1933, Smith nos. 518 (type), 493; Mount Mariko, in dense forest, altitude 600-866 meters, Smith nos. 419, 477.

Native names are *nakau* and *sola ni mbongi.*

FIGURE 82.—*Gillespiea speciosa:* flowering branch; *a*, group of flowers in various stages; *b*, young flower, the calyx inclosing the young corolla; *c*, distal portion of corolla with stamens; *d*, ovary and style; *e*, longitudinal section of ovary.

Genus GYNOCHTHODES Blume

Gynochthodes ovalifolia (Valeton) Kanehira.

Gynochthodes ovalifolia (Valeton) Kanehira: Bot. Mag. Tokyo, vol. 45, p. 351, 1931.

Vanualevu: Mbua, lower Wainunu River valley, altitude 0-200 meters, Smith no. 1716; Mathuata, on river bank a few miles inland, Greenwood no. 660 (K). Fulanga: in forest on limestone formation, altitude 0-80 meters, Smith no. 1127.

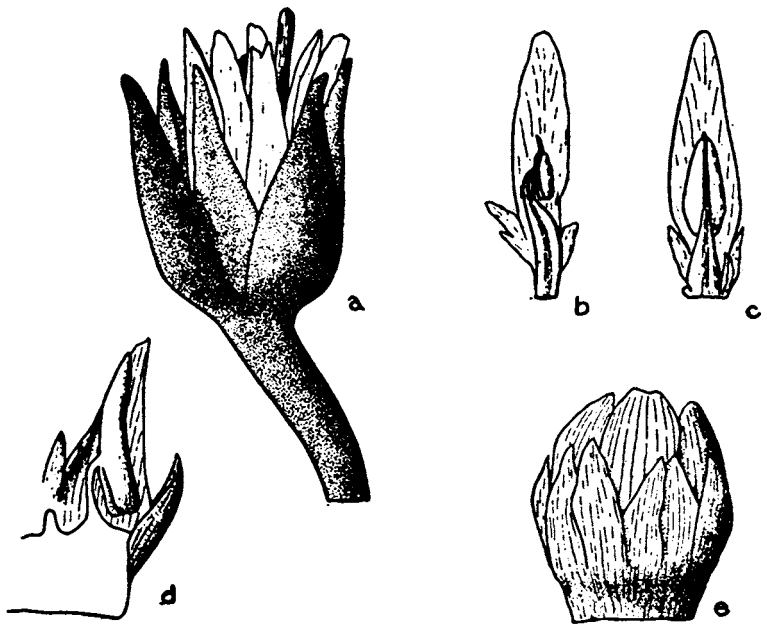

FIGURE 83.—*Northia vitiensis: a*, flower; *b-c*, corolla lobes and stamens; *d*, *Mimusops emarginata*, corolla lobe and stamen; *e*, *M. emarginata*, flower.

Although I have not seen the type of this species, I have examined several other specimens from the Caroline Islands and have come to the conclusion that the Fijian material here cited does not differ specifically. The species also occurs in Samoa, perhaps more commonly than in Fiji. The genus has not previously been reported from Fiji.

APPENDIX

SAPOTACEAE

By H. J. LAM

Genus NORTHIA Hooker f.

Northia vitiensis H. J. Lam and E. van Olden, new species (fig. 83, *a-c*).

Arbor 7 m alta; folia ad ramulorum apices laxe conferta, glaberrima, juniora tenerrima, seniora subcoriacea, i. s. pallido-viridia, elliptico-obovata, basi late acuta vel subobtusa, apici obtusa, petiolus gracilis, supra canaliculatus, 2-4.5 cm longus, lamina 9-12 cm longa, 3.5-5 cm lata, costa media i. s. supra paulo sulcata, subtus valde prominens, nervi secundarii 13-15, vix conspicui, angulo c. 70° de costa media adscendentes, recti, inter sese parallelli, 6-7 mm distantes, ad marginem arcuatim conjuncti, nervi tertiarii supra inconspicui, subtus minutissimi reticulati; flores in axillis foliorum positi; pedicelli 15-25 mm longi, cum calyce extus puberuli; calyx 6 lobis oblongo-lanceolatis vel triangularibus 11-12 mm longis; corolla alba 6 lobis 12 mm longis, tubo brevi, appendices dorsolaterales 3-5 mm longi; stamina 6 epipetalia, filamentis latis, 7 mm longa; staminodia 6, 2 mm longa, filiformia; ovarium glabrum, 6-loculatum cum stylo 13 mm longum, loculi uniovulati; fructus ignotus.

Vanua Mbalavu: southern limestone section, on sea cliff, March 29, 1934, Smith no. 1461 (type). A local name is *mbotha*.

Northia vitiensis differs from *Northiopsis hoshinoi* (Kanehira) Kanehira by the smaller number of secondary nerves, the smaller flowers, the presence of small but distinct dorsal appendages and the broad filaments. We cannot agree with Kanehira's erection of the genus *Northiopsis* (Flora Micronesica, p. 302, 1933) for his new species. *Northia* apparently originated polyphyletically and polytopically (in the Seychelles, Moluccas, New Guinea, Ponape, Fiji, and possibly tropical America) on the basis of the circumtropical genus *Manilkara* (*Mimusops*) by a simple reduction of the dorsal appendages of the petals and apparently also of the staminodes. If our key (Bull. Jard. Bot. Buitenzorg III. vol. 7, pp. 10-12, 1925) no longer covers the facts, then it must be modified.

In tropical America, *Mimusops emarginata* (Linnaeus) Britton must be considered in connection with *Northia*. The flower parts of Eggers no. 3837, from the Bahamas, are here illustrated for comparison (fig. 83, *d-e*).

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