OCCASIONAL PAPERS
OF
BERNICE P. BISHOP MUSEUM
HONOLULU, HAWAII

Volume XV | January 10, 1940 | Number 20

Notes on Micronesian Rubiaceae[1]

By F. R. FOSBERG
UNIVERSITY OF PENNSYLVANIA

The following notes are based mainly upon the collections of Rubiaceae made by Mr. Masahiku Takamatsu, botanical collector of the Bishop Museum Expedition to Micronesia in 1936. The specimens, collected in the Caroline and Palau (Pelew) Islands, were loaned to me for study by Bernice P. Bishop Museum, where the specimens cited may be consulted. These are designated by (Ho). Much of the work was done in the herbarium of the New York Botanical Garden, where there are duplicates of many of the collections made by Dr. Ryozo Kanehira in Micronesia, as well as some other collections from that region. Specimens in the New York Botanical Garden are designated by (NY). I wish to thank these institutions for the privilege of studying the specimens. The Takamatsu collections are all cited, others only where the species are discussed critically.

Badusa palauensis Valeton.

Palau Islands: Arukodorokkuru, *Takamatsu 1155* (Ho); Olopshacal, *Takamatsu 1490* (Ho); Kaiguru, *Takamatsu 1601* (Ho).

Bikkia mariannensis Brongniart var. **longicarpa** (Valeton) Fosberg, n. comb.

Bikkia longicarpa Valeton, Engler Bot. Jahrb. **63**: 289, 1930.

Kanehira reduces *B. longicarpa* outright to *B. mariannensis,* but his specimens have fruits uniformly about one third longer than those of plants from Guam and Saipan. The Rota plants should, therefore, be maintained as a variety.

Marianas Islands: Rota, *Kanehira 1774* (NY).

[1] Micronesian Expedition publication 3.

Bikkia palauensis Valeton.

Palau Islands: Angaur, *Takamatsu 1812* (Ho); Iwayane, *Takamatsu 1448* (Ho).

Scyphiphora hydrophyllacea Gaertner.

Palau Islands: Ngatpang, *Takamatsu 1284* (Ho); Garikiai, *Takamatsu 1738* (Ho); Ogiwaru, *Takamatsu 1422* (Ho).

Uncaria korrensis Kanehira, Bot. Mag. Tokyo **48**: 924, 1934.

This species seems to differ from *U. glabrata* De Candolle only in the shape of the calyx lobes, which are lanceolate-aristate, while in *U. glabrata* they are oblong and rounded at the apex. Corollas of *U. korrensis* are not available.

Palau Islands: Arumizu, *Takamatsu 1729* (Ho); Aimiriik (Aimelik) *Kanehira 2318* (NY) (isotype); Koror (Corol), *Kanehira 116, 1849* (NY).

Ophiorrhiza palauensis Valeton, Engler, Bot. Jahrb. **63**: 298, 1930.

Palau Islands: Arukodorokkuru, *Takamatsu 1154* (Ho).

Ophiorrhiza palauensis Valeton var. **biseta** Fosberg, n. var.

Planta robusta; folia oblanceolata, 9-13 cm. longa, maxime 3 cm. lata; stipulae in 2 lobis setiformis divisae, maxime 10-11 mm. longae; calycis lobi subulati 3-3.5 mm. longi.

Differs from the typical form in being more robust, with narrower, oblanceolate leaves, 2-13 cm. long, at most 3 cm. wide; stipules divided practically to base into 2 setiform lobes, up to 10-11 mm. long; calyx lobes subulate, 3-3.5 mm. long.

Palau Islands: Ngatpang, in forests, *Takamatsu 1272* (Ho) (type).

Hedyotis biflora (Linnaeus) Lamarck.

Caroline Islands: Truk, Harushima (Moen Island), *Takamatsu 197* (Ho).

Hedyotis foetida (Forster) J. E. Smith, in Rees Cycl. 1811.

Hedyotis mariannensis Merrill, Phil. Jour. Sci. Bot. **9**: 144, 1914.

The distinguishing characteristics of *H. mariannensis* as given by Merrill (Phil. Jour. Sci. Bot. **9**: 145) are typical of the widespread *H. foetida,* inhabitant of coral limestone from the Cook Islands to Micronesia. Micronesian specimens often have larger leaves, and usually the fruits are a little smaller, but the differences are neither constant nor great enough to be of significance.

Hedyotis korrorensis (Valeton) Hosokawa.

Palau Islands: Garudokku, *Takamatsu 1347* (Ho).

Hedyotis laciniata Kanehira, Nat. Hist. Soc. Form., Trans. **25**: 6, 1935.

The original description says the fruits are 1.5 mm. long, but on the isotype specimen cited below they are 3 mm.

Marianas Islands: Amaragan (Aramagan, Alamagan), *Kanehira 2181* (NY) (isotype).

Hedyotis laciniata Kanehira var. **Takamatsui** Fosberg, n. var.

Planta ramosa; folia acuminata; cyma laxa, ramulis inaequaliter et incomposite auctis aliquando ramulosis; calycis lobi acuti, in fructubus recurvati; fructus 2-2.5 mm. longus.

Differs from the typical form in being much more branched, having leaves longer acuminate, inflorescences much more lax, often with the middle primary branch reduced to a single pedicellate flower, the branches often unequally and irregularly developed, sometimes branching several times, calyx lobes more sharply acute, in fruit recurved, fruit 2-2.5 mm. long.

Palau Islands: Kamusetsu (Kameset), *Takamatsu 1115* (Ho) (type).

Hedyotis ponapensis (Valeton) Kanehira.

Caroline Islands: Ponape, Nan-a-laut, *Takamatsu 1088* (Ho).

Hedyotis tomentosa (Valeton) Hosokawa.

Palau Islands: Garudokku, *Takamatsu 1349* (Ho).

Hedyotis vestita R. Brown.

Palau Islands: Kasioru, *Takamatsu 1512* (Ho).

Dentella repens Forster.

Marianas Islands: Guam, Agana, *Seale* (Ho).

Mussaenda frondosa Linnaeus, Species Plantarum 177, 1753.

This species is extremely variable and much in need of a careful taxonomic revision. Until this is done, I see nothing to be gained by recognizing any of the various segregates from it, *M. sericea* Bl. for instance.

Caroline Islands, Yap: Balabat, *Takamatsu 1872* (Ho); Gorror, *Takamatsu 1856* (Ho).

Palau Islands: Garudokku, *Takamatsu 1348* (Ho); Garasumao, *Takamatsu 1570* (Ho); Arukodorokkuru, *Takamatsu 1151* (Ho).

Randia carolinensis Valeton, Engler Bot. Jahrb. **63**: 301, 1930.

Timonius megacarpus Kanehira, Bot. Mag. Tokyo **46**: 494, 1932.

Rhopalobrachium megacarpus Kanehira, Bot. Mag. Tokyo **46**: 674, 1932.

Trukia megacarpa Kanehira, Bot. Mag. Tokyo **49**: 279, 1935.

A comparison of the descriptions of *Randia carolinensis* and of *Trukia megacarpa* shows that they are identical in almost every detail. Examination of the plants cited below, including 2 sheets of one of the original collections of *Trukia,* shows that they conform in all particulars to *Randia.* Indeed, they differ only in details from *R. sessilis* F. von Müller and *R. Fitzalani* F. von Müller of Queensland. I have not seen the *R. albituba* to which Valeton says his species is closely related. The enlarged corolla throat, notable in *Trukia,* is also present in *R. tenuiflora* A. C. Smith, of Fiji. What Kanehira took for pyrenes in the fruit seem to be very hard seeds, which are embedded in fleshy placentae, as is characteristic of *Randia* and all other Gardeniae.

In view of the above facts, I do not hesitate to reduce the monotypic genus *Trukia* to *Randia* and to consider *Trukia megacarpa* as completely synonymous with *R. carolinensis.*

Caroline Islands, Truk: Natsushima (Dublon Island), *Takamatsu 69, 83, 158* (Ho) (flowers said to be white, but not present on specimens); Tol Island (Suiyoto), *Takamatsu 38* (Ho), *Kanehira 1275* (NY).

Randia cochinchinensis (Loureno) Merrill, Am. Phil. Soc. N. S., Trans. **24**: 365, 1935.

Randia racemosa Fernandez-Villar, Novis. App. Fl. Filip. 108, 1880.

Palau Islands: Garasumao, *Takamatsu 1578* (Ho); Arukodorokkuru, *Takamatsu 1152, 1139, 1132* (Ho); Olopshacal, *Takamatsu 1471, 1483* (Ho); Arakabesan, *Takamatsu 1253* (Ho).

Caroline Islands: Ponape, Taman, *Takamatsu 877* (Ho).

Guettarda speciosa Linnaeus.

Palau Islands: Olopshacal, *Takamatsu 1461* (Ho); Ogiwaru, *Takamatsu 1423* (Ho).

Caroline Islands, Ponape: Na Island, *Takamatsu 847* (Ho); Taman, *Takamatsu 874* (Ho). Truk: Kaeide (Param Island), *Takamatsu 325* (Ho). Kusaie: Mot, *Takamatsu 457* (Ho); Mount Matante, *Takamatsu 568* (Ho).

Timonius albus Volkens.

Caroline Islands, Yap: Balabat, *Takamatsu 1885a, 1881* (Ho); Kanif, *Takamatsu 1918, 1960* (Ho); Rumung Island, *Takamatsu 1905* (Ho).

Timonius corymbosus Valeton, Engler Bot. Jahrb. **63**: 308, 1930.

Timonius korrensis Kanehira, Bot. Mag. Tokyo **45**: 351, 1931.

Kanehira's *T. korrensis* seems to correspond very well with *T. corymbosus,* but in specimens I have seen the leaves and stipules are not as large as the maximum described by Valeton. The staminate inflorescence is quite variable in size and complexity.

Palau Islands: Olopshacal Island, *Takamatsu 1478, 1458, 1452* (all Ho); Kaiguru, *Takamatsu 1580* (Ho); Peleliu, *Takamatsu 1786* (Ho); Koror, *Kanehira 460, 2462, 105, 2444, 2436, 2466* (all NY).

Timonius Ledermannii Valeton, Engler Bot. Jahrb. **63**: 305, 1930.

The striking resemblance of this species and *T. affinis* Gray (of Fiji) has not, I think, hitherto been pointed out. In material lacking pistillate flowers the only discernible difference is in the more prominently reticulate lower surface of the leaves of *T. Ledermannii,* and a slightly different pattern of the reticulation of the upper surface. The important difference is in the corolla of the pistillate flowers, which, in *T. Ledermannii,* has the tube 5-7 mm. long, expanding from 2 mm. wide at base to 4 mm. wide at top, and 8-12 lanceolate-acuminate lobes 5-6 mm. long, while that of *T. affinis* has a more slender tube about 17 mm. long (acc. Gillespie), with only 5 lobes. The calyx of the latter is also somewhat longer than in *T. Ledermannii.*

Timonius mollis Valeton, Engler Bot. Jahrb, **63**: 308, 1930.

Timonius villosissimus Kanehira, Bot. Mag. Tokyo **48**: 923, 1934.

These two species seem identical in every respect. The leaves vary in size, and the slightly larger fruit and longer pedicel seem merely individual variations.

Palau Islands: Aimiriik, *Kanehira 2305* (NY) (2 isotype sheets); Arekalong, *Takamatsu 1660* (Ho); Kaiguru *Takamatsu 1623* (Ho).

Timonius ponapensis Valeton.

Caroline Islands, Ponape: Toleailuka, *Takamatsu 826* (Ho).

Timonius subauritus Valeton, Engler Bot. Jahrb. **63**: 307, 1930.

This species is variable in pubescence, and somewhat in leaf shape.

Kanehira 415 is ochraceous on the branchlets, veins on under sides of leaves, stipules, and inflorescences (in Kanehira's Enumeration of Micronesian Plants this specimen was referred to both *T. mollis* and *T. corymbosus,* but it seems unquestionably to belong to *T. subauritus*). In most specimens the pubescence is thinly sericeous. The leaves in Kanehira 2344 are cuneate at base, while in most specimens they are subcordate.

Palau Islands: Garudokku, *Takamatsu 1418* (Ho); Garikiai, *Takamatsu 1733* (Ho); Aimiriik (Aimelik) *Kanehira 1928, 2344, 2323, 2284* (all NY); Koror (as Corol), *Kanehira 145* (NY); Marukiyoku, Main Island (Babelthuap), *Kanehira 415* (NY); Armonogui, Main Island (Babelthuap), *Kanehira 505* (NY).

Canthium barbatum (Forster) Seemann, var. **korrorense** (Valeton) Fosberg, n. comb.

Plectronia korrorensis Valeton, Engler Bot. Jahrb. **63**: 311, 1930.

Canthium korrorense Kanehira, Bot. Mag. Tokyo **46**: 671, 1932.

The characters separating Valeton's species from *C. barbatum* are just such as I have used in distinguishing the Polynesian varieties of this species (B. P. Bishop Mus. Occ. Papers **13** (19): 255-261, 1937). Therefore I am reducing the Micronesian plant to varietal status. It is the first time that *C. barbatum* has been recognized from Micronesia.

The essential characters of the variety are as follows:

Branches robust, internodes terete, 3-6 cm. long; leaves thin-coriaceous, acuminate, base contracted, veins opaque; inflorescence usually many-flowered, congested, thick, variable in size, with internodes so crowded as to be indistinct, pedicels 3-6 mm. long, elongating to 1 cm. in fruit; calyx glabrous; corolla tube (2)-3-4 mm. long, lobes ovate 2-2.5 mm. long; fruit obovoid, flattened, not notched at apex, slightly grooved laterally, 8-10 mm. long, 7-9 mm. wide.

Caroline Islands, Ponape: Toleailuka, *Takamatsu 815* (Ho); Toletik, *Takamatsu 941* (Ho); Mount Tolotom, *Takamatsu 1060* (Ho); Mount Tean, *Takamatsu 1761* (Ho); Param, *Takamatsu 621* (Ho); Kolonia (Ponape), *Kanehira 1482, 1489* (NY); Parkier, *Kanehira 1520, 1699, 1497* (NY).

Canthium odoratum (Forster) Seemann, Fl. Vit. 132, 1866.

Randia tinianensis Kanehira, Bot. Mag. Tokyo **46**: 494, 1932.

Canthium tinianense (Kanehira) Kanehira, Bot. Mag. Tokyo **49**: 354, 1935.

After studying series of plants of this species from all parts of its range, and observing it in the field in Polynesia, I am unable to find characters which seem to have any geographic localization of sufficient constancy to be used in separating even varieties. The species is most variable, but the variations are as likely to occur on trees growing side by side as on islands a thousand miles apart. It is a case where, with a few specimens, apparently distinct species are represented, but more collections completely break them down. (See Fosberg, Bishop Mus. Occ. Papers 13 (19): 253-255, 1937.) Material from Tinian and Rota (*C. tinianense*) does not appear to me to differ significantly from that from other parts of the Pacific.

Marianas Islands: Tinian, *Kanehira 2275, 1059, 1069, 50* (NY). Rota, *Kanehira 1745.B* (NY).

Gynochthodes ovalifolia (Valeton) Kanehira, Bot. Mag. Tokyo 46: 351, 1931.

Plectronia ovalifolia Valeton, Engler Bot. Jahrb. 63: 310, 1930.

To the best of my knowledge, the flowers of this species have not yet been described. Takamatsu 1270 has one open flower and a number of buds, from which the following description has been drawn up:

Hypanthium at anthesis urceolate, 2 mm. high and slightly less than that wide, calyx entire, somewhat flaring, somewhat crisped when dry, calyx and hypanthium glabrous; corolla externally glabrous, salverform, 5-lobed, tube 4 mm. long, somewhat over 1 mm. thick, only slightly dilated at throat, glabrous within, below the attachment of filaments, throat and lobes densely gray-woolly within, lobes linear, 7 mm. long, 1 mm. wide, acute, less woolly near apex, limb in bud spindle-shaped, acute; anthers linear, 4.5 mm. long exserted, dehiscing before opening of bud, dorsally attached 1 mm. from base, filaments glabrous, free portion somewhat shorter than anthers; disk raised, conic-umbonate, style glabrous, including branches about 9 mm. long, bifid about half-way into linear flattened lobes, stigmatic on inner side and with margins somewhat revolute, branches much shorter in bud.

Palau Islands: Garudokku, *Takamatsu 1270* (Ho); Kamusetsu (Kameset), *Takamatsu 1118* (Ho); Arumizu, *Takamatsu 1728* (Ho).

Caroline Islands, Truk: Harushima (Moen Island), *Takamatsu 237* (Ho).

Morinda citrifolia Linnaeus.

Caroline Islands: Ponape: Na Island, *Takamatsu 852* (Ho); Param, *Takamatsu 630* (Ho). Truk: Natsushima (Dublon Island), *Takamatsu 270* (Ho). Yap: Kanif, *Takamatsu 1912, 1956* (Ho).

Kanehira 1864 (NY), from Palau, referred to *M. pedunculata,* seems rather to belong to *M. citrifolia.*

Morinda pedunculata Valeton.

Palau Islands: Garasumao, *Takamatsu 1547* (Ho); Garudokku, *Takamatsu 1323, 1417* (Ho); Marukiyoku, *Takamatsu 1719* (Ho); Kaiguru, *Takamatsu 1595* (Ho).

Morinda umbellata Linnaeus var. **glandulosa** (Merrill) Fosberg, n. comb.

Morinda glandulosa Merrill, Phil. Jour. Sci. Bot. **9**: 146, 1914.

This variety differs from the typical form from Ceylon in that the leaves are obtusish rather than abruptly acuminate, coriaceous and not prominently reticulate. It resembles *M. Forsteri* except that the latter has not the densely bearded corolla throat.

Marianas Islands, Guam (type locality): Pati Point, *Bryan 1264* (Ho).

Caroline Islands, Kusaie: Mount Matante, *Takamatsu 518* (Ho).

Ixora (Phylleilema) triantha Volkens, Engler Bot. Jahrb. **31**: 476, 1901.

The Guam plants differ in the slightly shorter and broader fruit.

Caroline Islands, Yap (type locality): *Kanehira 1200, 1167* (NY); Kanif, *Takamatsu 1959* (Ho).

Marianas Islands, Guam: *Thompson 33, 99* (NY); Mount Alifan, alt. 270 meters, *Bryan 1204* (Ho, NY).

Ixora carolinensis Hosokawa, Nat. Hist. Soc. Form., Trans. **25**: 268, 1935.

Ixora confertiflora Valeton, Engler Bot. Jahrb. **63**: 313, 1930 (not Merrill, 1921).

Ixora pulcherrima Volkens, Engler Bot. Jahrb. **31**: 476, 1901 (not Sesse and Moç., 1887-90, nor Valeton, 1913).

Ixora Volkensii Hosokawa, Nat. Hist. Soc. Form., Trans. **25**: 259, 1935.

Study of a rather abundant series of specimens has convinced me that all of the plants of *Ixora* sect. *Ixorastrum* known from Micronesia must be regarded as belonging to one complex and variable species, though selected individuals might seem to represent at least five distinct species. I can draw no satisfactory lines between the

groups represented to separate them as species. Of the two available names I here select *Ixora carolinensis* for the species as a whole, as it has been applied to a wider range of material than has *Ixora Volkensii.*

The material available may be separated, roughly, into six varieties, which seem to merge into one another. More and better material of some of them, as well as of one or two forms known only from sterile or immature specimens either may clarify the relationships between them, or may show that what seems to be geographic separation is only the result of imperfect knowledge of the different forms present in each locality.

The following key will separate most specimens into the varieties treated below:

KEY

A. Leaves mostly 15 cm. or more long, inflorescence ample, corolla tube over 3 cm. long, lobes 8-12 mm. long.
  B. Inflorescence loose, its branches more or less drooping.
    C. Leaves stiff-chartaceous or subcoriaceous, narrowly oblong to elliptical ..... var. **typica**
    C. Leaves thin-chartaceous, narrowly oblong to lanceolate..... var. **chartacea**
  B. Inflorescence somewhat stiff, with stronger branches..... var. **Volkensii**
A. Leaves well under 15 cm. long, mostly lanceolate, corolla tube usually under 3 cm. long, lobes 5-8 mm. long.
  B. Leaves mostly about 1.5 cm. wide ..... var. **ponapensis**
  B. Leaves mostly 2 cm. or more wide.
    C. Inflorescence condensed, pedicels and ultimate internodes thickened and hirtellous, hypanthium hirtellous ..... var. **lanceolata**
    C. Inflorescence loose, parts not thickened, glabrous, hypanthium glabrous ..... var. **parvifolia**

Ixora carolinensis Hosokawa var. **typica** Fosberg, new name.

Ixora carolinensis Hosokawa, Nat. Hist. Soc. Form., Trans. **25**: 268, 1935. (sensu stricto).

Ixora confertiflora Valeton, Engler Bot. Jahrb. **63**: 313, 1930.

Leaves elliptic to oblong, subcoriaceous, usually 18-25 cm. long, 6-9 cm. wide, occasionally larger or smaller, pairs of secondary veins 9-18, varying with length of leaf; inflorescence ample, 10-15 cm. across exclusive of corollas, rather open and weak, branches often drooping.

Type locality Palau Islands, Koror.

Palau Islands: Garudokku, *Takamatsu 1350* (Ho); Aimiriik (Aimelik), *Kanehira 2360* (NY); Koror, *Kanehira 1848,* (as Corol)

125 (NY); small islands near Koror, *Herre 26, 50* (NY) (no. 50 approaches var. *parvifolia*).

Caroline Islands, Ponape: *Kanehira 1469, 636* (NY). Kusaie: *Kanehira 1311* (NY); Mount Matante, *Takamatsu 502, 542* (Ho).

A sterile specimen from the last locality, *Takamatsu 580* (Ho). has the leaves lanceolate.

Ixora carolinensis Hosokawa var. **Volkensii** (Hosokawa) Fosberg, n. comb.

Ixora pulcherrima Volkens, Engler Bot. Jahrb. **31**: 476, 1901.

Ixora Volkensii Hosokawa, Nat. Hist. Soc. Form., Trans. **25**: 259, 1935.

Differs from var. *typica* in the stiffer, usually somewhat more compact inflorescence, its branches not at all drooping.

Caroline Islands, Yap: Kanif, *Takamatsu 1946* (Ho); without locality *Kanehira 1093, 1122* (NY).

Ixora carolinensis Hosokawa var. **chartacea** Fosberg, n. var.

Folia anguste oblonga, chartacea, supra venulosa.

Leaves narrowly oblong, acuminate, upper surface somewhat venulose, thin-chartaceous, otherwise as in var. *typica*.

Caroline Islands, Truk: Harushima (Moen Island), *Takamatsu 235* (Ho) (type). Kusaie; Lele, *Takamatsu 344* (Ho) (an immature specimen, probably belonging here, though not so venulose above).

Ixora carolinensis Hosokawa var. **parvifolia** Hosokawa, Nat. Hist. Soc. Form., Trans. **24**: 204, 1934.

Ixora carolinensis var. *parviflora* Kanehira, Jour. Dept. Agr. Kyushu Univ. **4**: 420, 1935, sphalm.

Ixora confertiflora Valeton var. *parvifolia* Hosokawa, Nat. Hist. Soc. Form., Trans. **24**: 204, 1934.

Leaves lanceolate, stiff-chartaceous to thin-chartaceous, 10-15 cm. long, (1.5)-2.5-4-(5.5) cm. wide, secondary veins 10-16 pairs; inflorescence stiff, 6-10 cm. wide; corolla tube about 2.5 cm. long, lobes 8 mm. long; fruit somewhat didymous, 6 mm. high, 7.5 mm. wide, 5 mm. thick (dried).

Palau Islands: *Kanehira 515* (NY) (two plants with different leaf-shape represented); Ngatpang, *Takamatsu 1302* (Ho); Arekalong, *Takamatsu 1657* (Ho) (the pieces in this collection vary greatly, and can scarcely have come from one plant).

Caroline Islands, Ponape: Anapeng-pa, *Takamatsu 746* (Ho).

Ixora carolinensis Hosokawa var. **ponapensis** Fosberg, n. var.

Folia lanceolata, coriacea vel subcoriacea, 8-10 cm. longa, 1.5 cm. lata; thyrsa compacta, dura, 3-4 cm. lata; corollae tubus 2-2.5 cm. longus, lobi 5-7 mm. longi.

Leaves lanceolate, coriaceous to subcoriaceous, 8-11 cm. long, 1.5 (rarely 2.5) cm. wide, secondary nerves 12-16 pairs (not dependent upon leaf size); inflorescence compact, stiff, 3-4 cm. wide (excluding corollas); corolla tube 2-2.5 cm. long, lobes 5-7 mm. long.

Caroline Islands, Ponape: Wone, *Takamatsu 1031* (Ho) (type); Nanue, *Takamatsu 1008* (Ho); Toleailuka, *Takamatsu 809* (Ho) (sterile, leaves somewhat too wide, referred to here with doubt).

Ixora carolinensis Hosokawa var. **lanceolata** (Kanehira) Fosberg, n. comb.

Ixora pulcherrima var. *lanceolata* Kanehira, Fl. Micron.: 361, 1933 (nom. nud.).

Ixora Volkensii var. *lanceolata* Kanehira, Jour. Dept. Agr. Kyushu Univ. 4: 421, 1935.

Leaves subcoriaceous, narrowly oblong to elliptic-lanceolate, apex obtuse to acute, apiculate, blade 7-9-(10) cm. long, 2-2.5-(3.3) cm. wide; inflorescence condensed, 4.5 cm. wide, the ultimate branchlets and pedicels thickened and hirtellous; hypanthium hirtellous; corolla tube 2.6-2.8 cm. long, lobes 4-5 mm. long.

Caroline Islands, Yap: *Kanehira 1092* (NY) (isotype).

Distinguished easily from var. *ponapensis* and var. *parvifolia* by the hirtellous hypanthium and the obtuse, apiculate leaves.

Psychotria

There is, so far as I can see, no reason whatever for separating from *Psychotria* those Micronesian species which have been assigned to the genus *Amaracarpus*. Leaving *Amaracarpus,* as it is known elsewhere, out of the discussion, the Micronesian species are typical *Psychotria* in every way, providing that plants with axillary inflorescences can be included in that genus, and if the inflorescence must be terminal then many of the Pacific species of *Psychotria* will have to find other disposition.

The Micronesian group seems characterized by filiform or at least very slender inflorescences. The differences used to separate most of the species are, to me, trivial and unimportant, rather differences between individual plants than between species. I cannot even, at

present, see any basis for varietal distinction. Only one species of this relationship seems to be sufficiently distinct from the common form to be maintained.

Psychotria carolinensis (Valeton) Fosberg, n. comb.

Amaracarpus carolinensis Valeton, Engler Bot. Jahrb. **63**: 318, 1930.

Amaracarpus Kraemeri Valeton, Engler Bot. Jahrb. **63**: 319.

Amaracarpus kusaiensis Kanehira, Bot. Mag. Tokyo **49**: 276, 1935.

Amaracarpus mariannensis Kanehira, Bot. Mag. Tokyo **48**: 926, 1934.

Amaracarpus Kanehirae Hosokawa, Nat. Hist. Soc. Form., Trans. **25**: 35, 1935.

I have seen no specimens of *Amaracarpus rotensis* Hosokawa, or of *A. ladronicus* Hosokawa, but can find nothing in the original descriptions to separate them from this species. *Amaracarpus macrophyllus* Valeton, does not seem, from the description, to differ much. However, the brown pubescence and large leaves suggest the following species.

Marianas Islands, Amaragan (Aramagan, Alamagan): *Kanehira 2186* (NY) (isotype of *A. mariannensis*).

Palau Islands: Angaur, *Takamatsu 1801* (Ho); Koror (Coral Islands), *Kanehira 2475* (NY).

Caroline Islands, Kusaie: *Kanehira 1339* (NY) (isotype of *A. kusaiensis* and *A. Kanehirae*); Mount Matante, *Kanehira 1442* (NY); Mount Faming, *Takamatsu 500* (Ho). Ponape: Parkier, *Kanehira 1506* (NY); Param, *Takamatsu 638* (Ho); Anapeng-pa, *Takamatsu 742* (Ho). Truk: Harushima (Moen Island), *Takamatsu 192* (Ho); Natsushima (Dublon Island), *Takamatsu 58, 59* (Ho); Tol Island (Suiyoto), *Kanehira 1297* (NY).

Specimens from Truk are somewhat less pubescent than those from other islands.

Psychotria ponapensis Fosberg, n. name.

Amaracarpus hirtellus Valeton, Engler Bot. Jahrb. **63**: 320, 1930. (not *Psychotria hirtella* Oliver, 1887).

This seems a satisfactory distinct species, characterized by large, elliptic to obovate leaves, the whole plant pubescent; and long, pendent, filiform inflorescences.

I have not seen material of *Amaracarpus heteropodioides* Valeton, but suspect it may possibly belong here, in which case the specific name would have to be changed.

Caroline Islands, Ponape: Mount Nan-a-laut, *Kanehira 1619, 1671* (NY).

Psychotria arbuscula Volkens.

Caroline Islands, Yap: *Kanehira 1168, 1186* (NY); Takiol, *Takamatsu 1834* (Ho); Balabat, *Takamatsu 1885* (Ho).

Psychotria lasianthoides Valeton.

Caroline Islands, Ponape: Kuporujo, *Takamatsu 672* (Ho).

Psychotria leptothyrsa Miquel var. **longicarpa** Valeton.

Palau Islands, Aimiriik (Aimelik): *Kanehira 278, 2313* (NY); Garudokku, *Takamatsu 1233, 1216* (Ho); Garasumao, *Takamatsu 1573* (Ho).

Caroline Islands, Yap: *Kanehira 1187* (NY); Balabat, *Takamatsu 1862* (Ho); Takiol, *Takamatsu 1837, 1848* (Ho).

Psychotria mycetoides Valeton.

Not satisfactorily distinguishable from *P. leptothyrsa* on the basis of material at hand, though probably distinct.

Palau Islands: Aimiriik (Aimelik), *Kanehira 2329* (NY); Koror (Coral Islands), *Kanehira 2476* (NY); Kaiguru, *Takamatsu 1630* (Ho); Almaten, *Takamatsu 1530* (Ho); Garasumao, *Takamatsu 1568* (Ho); Marukiyoku, *Takamatsu 1711* (Ho). The last two collections are doubtfully placed here, because of poor material.

Psychotria leptothyrsoides Kanehira.

Caroline Islands, Truk: Tol Island (Suiyoto), *Takamatsu 12* (Ho).

Psychotria rhombocarpa Kanehira.

Caroline Islands, Kusaie: Mot, *Takamatsu 466* (Ho); Mount Matante *Takamatsu 511* (Ho).

Psychotria Merrillii Kanehira, Bot. Mag. Tokyo **46**: 674, 1932.

Plectronia polyneura Valeton, in Engler Bot. Jahrb, **63**: 309, 1930. (not *Psychotria polyneura* De Candolle, 1830, or Kurz, 1875).

Plectronia obovata Valeton, Engler Bot. Jahrb. **63**: 311, 1930 (not *Psychotria obovata* Wall., 1828-49, or Ruiz and Pavon 1798, or Hemsley 1879).

Canthium polyneurum (Valeton) Kanehira, Bot. Mag. Tokyo **46**: 672, 1932.

This species is typically a *Psychotria* in every respect. The ovules are erect, attached at base of cells, the pyrenes are flattened ventrally and tricarinate or sulcate dorsally. The distinguishing feature is the inflorescence, which is reduced to a fascicle of pedicels.

I see no difference, except in hairiness, between *Plectronia polyneura* and *P. obovata,* the latter being a hairy extreme, such as is sometimes found in other species of this relationship growing side by side with glabrous or glabrate forms (see Fosberg, B. P. Bishop Mus. Occ. Papers **13** (19) : 279,1937).

Caroline Islands, Ponape: Mount Nan-a-laut, *Kanehira 1661, 1618* (NY) ; Tolomail, *Takamatsu 960* (Ho) ; Toleailuka, *Takamatsu 812* (Ho) ; Anapeng-pa, *Takamatsu 770a* (Ho).

In addition to the wild plants discussed above, the following were collected in cultivation: *Gardenia jasminoides* Ellis [Caroline Islands, Ponape: Anapeng-pa, *Takamatsu 768* (Ho). Kusaie: Mount Wakapp, *Takamatsu 422* (Ho)]. *Coffea arabica* Linnaeus [Caroline Islands, Ponape: Anapeng-pa, *Takamatsu 770* (Ho)]. *Ixora coccinea* Linnaeus [Caroline Islands, Kusaie *Takamatsu 351* (Ho)].

The gardenia is said to have grown in the forest, but it is the common cultivated species.