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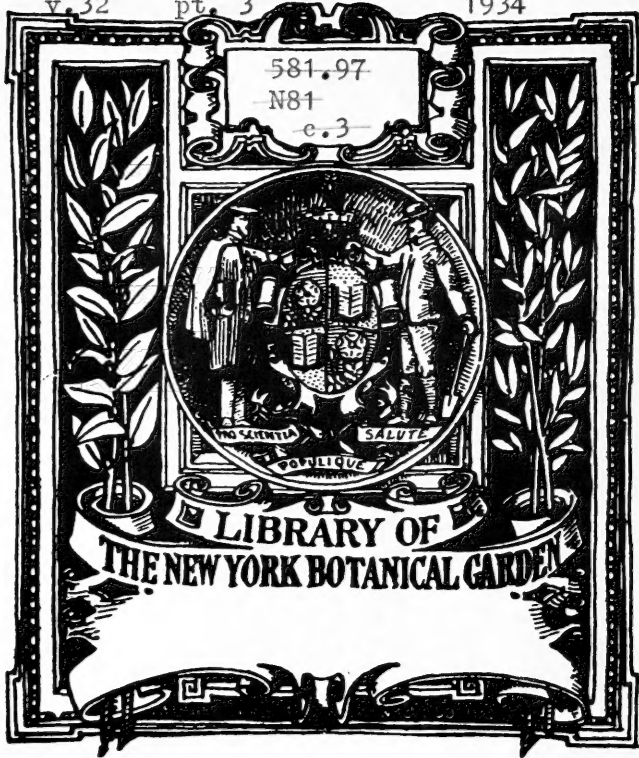
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NORTH AMERICAN FLORA

RUBIALES

RUBIACEAE (pars)

PAUL CARPENTER STANDLEY



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beneath, the costa stout, prominent, the lateral nerves prominulous, 9-12 on each side, nearly straight, ascending at an obtuse angle; staminate spikes slender, pendulous, 18-28 cm. long, long-pedunculate, much interrupted, the flowers sessile; calyx and hypanthium 2 mm. long, the calyx obscurely repand-denticulate; corolla funnellform, 8 mm. long, pale-pink or lavender outside, purplish-pink within, the lobes broadly oblong, densely villous within.

TYPE LOCALITY: Forests on Loma de la Gloria, near Fató, Province of Colón, Panama, altitude 10 to 100 meters.

DISTRIBUTION: Known only from the type locality.

62. GARAPATICA * Karst. Fl. Columb. 1: 57. 1859.

Glabrous shrubs with terete branchlets. Leaves opposite, coriaceous, short-petiolate. Stipules intrapetiolar, small, acute, persistent. Flowers small, whitish, subsessile, dioecious, 4- or 5-parted, the inflorescence terminal, glomerate-cymose or capitate; hypanthium hemispheric or globose, the calyx very short, truncate or denticulate, persistent; corolla salverform, coriaceous, the tube cylindric, the throat glabrous, the limb deeply lobate, the lobes short, contorted. Stamens 4 or 5, in the staminate flower inserted above the base of the corolla-tube, subsessile, included, the anthers oblong-linear, apiculate; in the pistillate flower inserted in the corolla-tube below the middle, the anthers much reduced. Disk annular. Ovary rudimentary in the staminate flower, in the pistillate flower 3-celled; style terete, glabrous, with 2 elongate branches; ovules several in each cell, immersed in the oval placenta, these inserted in the interior angles of the cells. Fruit baccate, fleshy, 3-celled, globose, the septa thin, the placenta pulpy. Seeds lenticular, vertical; endosperm corneous; embryo axial, the cotyledons foliaceous, the radicle terete.

Type species, *Garapatica edulis* Karst.

This genus is maintained here merely for the purpose of preventing interruption in the sequence of the genus-numbers, as indicated in the key to the genera of the tribe *Gardenieae*. The writer's present opinion is that *Garapatica* should be united with *Alibertia*.

1. *Garapatica edulis* Karst. Fl. Columb. 1: 57. 1859.

Alibertia Garapatica K. Schumann, in Mart. Fl. Bras. 6^c: 383. 1889.

Cordia Garapatica Kuntze, Rev. Gen. 279. 1891.

A shrub or small tree, usually 2-3 meters high, glabrous throughout, the branchlets stout, brownish; stipules deltoid, 3-4 mm. long, acute, brown; petioles stout, 3-8 mm. long; leaf-blades lance-oblong, oblanceolate-oblong, or elliptic-oblong, 5.5-13 cm. long, 2.5-6 cm. wide, very acute to obtuse and short-decurrent at the base, acute or acutely short-acuminate at the apex, coriaceous, deep-green above, sublustrous, the venation prominent or prominulous, reticulate, paler beneath, the costa slender, prominent, the lateral nerves slender, 7 or 8 on each side, arcuate-ascending, the margin plane; staminate flowers glomerate-cymose, few or numerous, greenish-white, the pistillate flowers few, subcapitate; calyx and hypanthium 1.5 mm. long, the calyx very short, truncate or obscurely denticulate; corolla-tube 6-7 mm. long, stout, the lobes 3 mm. long, rounded-ovate, acuminate-apiculate; fruit globose, about 1 cm. in diameter, black; seeds thin, 6 mm. long.

TYPE LOCALITY: Near Tomarazón and Chiriguana, southeastern base of the Cordillera de Santa Marta, Colombia.

DISTRIBUTION: Panama and northern Colombia.

ILLUSTRATION: Karst. Fl. Columb. pl. 28.

As indicated above, the writer considers that the proper name for this plant is *Alibertia Garapatica* K. Schum. (*Garapatica edulis* Karst., not *Alibertia edulis* A. Rich.).

63. ALIBERTIA A. Rich.; DC. Prodr. 4: 443. 1830.

Cordia A. Rich.; DC. Prodr. 4: 445. 1830.

Gardeniolo Cham. Linnaea 9: 247. 1834.

Scepsiothamnus Cham. Linnaea 9: 248. 1834.

* A footnote on page 3 states that the treatment of the Rubiaceae is "published by permission of the Secretary of the Smithsonian Institution." This no longer applies, since the author is now Associate Curator of the Herbarium of the Field Museum of Natural History, and this continuation of the treatment of the Rubiaceae is published with the authority of the Director of that institution.

Shrubs or trees, glabrous or pubescent, the branchlets terete or compressed. Leaves opposite, usually coriaceous, sessile or petiolate. Stipules intrapetiolar, acute, connate at the base. Flowers small, sessile, terminal, dioecious, the staminate fasciculate, the pistillate usually solitary; hypanthium hemispheric or globose, the calyx short or tubular, truncate or dentate; corolla coriaceous, salverform, the tube cylindric, sometimes contracted in the throat, the throat glabrous or villous, the limb 4-8-lobate, the lobes short or elongate, obtuse or acuminate, contorted. Stamens 4-8, inserted in the corolla-tube; filaments short or wanting; anthers linear, dorsifixed, obtuse or acute, included. Disk annular. Ovary 2-8-celled; style glabrous or pilose, with 2-8 branches or with an elongate fusiform stigma, subulate or clavate in the staminate flower; ovules few or numerous, pauciseriate or multiseriate, often immersed, the placentae swollen, affixed to the interior angle of the cell. Fruit baccate, usually large, corticate, 2-8-celled, the septa thin, the placentae pulpy. Seeds usually numerous, large, vertical, compressed, the testa coriaceous or fibrous; endosperm corneous; embryo axial, the cotyledons foliaceous, the radicle terete.

Type species, *Alibertia edulis* (Rich.) A. Rich.

In the key to genera (page 151) the name *Cordia* is used for this genus, but the proper name is *Alibertia*.

1. *Alibertia edulis* (Rich.) A. Rich.; DC. Prodr. 4: 443. 1830.

Genipa edulis Rich. Act. Soc. Hist. Nat. Paris 1: 107. 1792.
Gardenia edulis Poir. in Lam. Encyc. Suppl. 2: 708. 1812.
Cordia edulis Kuntze, Rev. Gen. 279. 1891.
Subicea edulis Seem.; B. D. Jackson, Ind. Kew. 772, as synonym. 1895.
Alibertia longistipulata Riley, Kew Bull. 1927: 122. 1927.
Alibertia panamensis Riley, Kew Bull. 1927: 123. 1927.

A shrub or small tree, rarely as much as 6 meters high, the branchlets stout, terete, glabrous, the internodes elongate; stipules lance-triangular or deltoid, 8-18 mm. long, acute or attenuate-acuminate, striate, glandular within; petioles very stout, 2-12 mm. long, glabrous; leaf-blades lance-oblong to ovate-oblong or oval-ovate, 6-20 cm. long, 2-7 cm. wide, acute to rounded at the base, usually short-acuminate at the apex, sometimes long-attenuate, coriaceous to firm-membranaceous, lustrous above, glabrous, the venation usually prominulous, paler beneath, dull or sublustrous, usually short-barbate in the axils of the nerves, elsewhere glabrous, the costa stout, prominent, the lateral nerves very slender, 8-12 on each side, subarcuate, the margin plane; staminate inflorescence usually 6-8-flowered, the flowers white, sessile, the hypanthium and calyx 4-7 mm. long, the hypanthium turbinate, the calyx denticulate, glabrous or puberulent, the corolla about 2.5 cm. long, minutely sericeous outside, the 5 (rarely 4) lobes ovate or lance-oblong, acute or acuminate, sericeous within, half as long as the tube or longer; anthers subsessile, 9 mm. long; pistillate flowers solitary, sessile or subsessile, the ovary 4-celled, the calyx 4 mm. long, puberulent or glabrate, denticulate, the corolla 2-3 cm. long, sericeous outside, the lobes lanceolate to ovate, attenuate or acuminate, about as long as the tube; stigma-lobes 4; fruit globose, about 2.5 cm. in diameter, yellowish, smooth; seeds suborbicular, 5 mm. broad, brownish, finely striate.

TYPE LOCALITY: French Guiana.

DISTRIBUTION: Oaxaca and Chiapas, southward to the Amazon Basin; Cuba and the Isle of Pines; Martinique.

ILLUSTRATION: Mém. Soc. Hist. Nat. Paris 5: pl. 21, f. 1.

64. *RANDIA* L. Sp. Pl. 1192. 1753.

Basanacantha Hook. f.; Benth. & Hook. Gen. Pl. 2: 82. 1873.

Trees or shrubs, usually erect, often armed with axillary or supra-axillary spines, the spines sometimes borne at the ends of the branchlets. Leaves opposite, sessile or petiolate, membranaceous or coriaceous. Stipules small, intrapetiolar, often subconnate. Flowers small or large, perfect or unisexual, solitary or fasciculate, axillary or terminal, usually white or yellowish; hypanthium ovoid, obovoid, or turbinate, terete or costate; calyx usually tubular, lobate or truncate, the lobes often elongate or foliaceous, persistent or deciduous; corolla funnellform, campanulate, or salverform, the tube short or elongate, the throat glabrous or

villous, the limb usually 5-lobate, the lobes short or elongate, acute or obtuse, contorted. Stamens 5, inserted in the throat of the corolla; filaments short or obsolete; anthers dorsifixed, linear, obtuse or acute or acuminate, included or exerted. Disk annular or pulvinate. Ovary usually 2-celled, rarely 3-4-celled; style glabrous or pilose; stigma clavate or fusiform, entire or bidentate or bilobate; ovules numerous, rarely few, immersed in the fleshy placentae, these short or elongate, affixed to the septum. Fruit baccate, globose or oval, 2-celled, the pericarp hard and thick or soft and thin, usually smooth, sometimes tuberculate. Seeds numerous or few, immersed in the pulpy, usually horizontal, rarely pendulous or vertical placentae, compressed, the testa usually thin, adherent to the corneous endosperm; cotyledons orbicular, foliaceous, the radicle terete.

Type species, *Randia aculeata* L.

- Flowers and fruit large; corolla 2.5-14 cm. long; fruit 3-9 cm. long, rarely only 2 cm. long (probably immature).
- Fruit densely covered with long spine-like tubercles. 1. *R. echinocarpa*.
- Fruit smooth or nearly so. 2. *R. concinna*.
- Stipules broadly rounded at the apex; leaves glabrous. 3. *R. calycosa*.
- Stipules acute or acuminate. 4. *R. formosa*.
- Calyx-lobes foliaceous, rhombic-orbicular, 6-9 mm. wide; leaves almost glabrous. 5. *R. laevigata*.
- Calyx-lobes small and narrow, rarely 3 mm. wide. 6. *R. oaxacana*.
- Plants unarmed.
- Leaf-blades 2.5-7 cm. long; hypanthium sericeous-strigose. 7. *R. longiloba*.
- Leaf-blades 14-23 cm. long; hypanthium glabrous. 8. *R. pleiomeris*.
- Leaf-blades long-attenuate to the base.
- Leaf-blades obtuse at the base. 9. *R. armata*.
- Plants armed with spines.
- Corolla glabrous outside; leaves glabrous beneath or pubescent along the nerves; flowers often pedicellate.
- Tube of the corolla about as long as the lobes; leaves glabrous beneath. 10. *R. Pittieri*.
- Tube of the corolla about twice as long as the lobes; leaves appressed-pilose beneath, at least along the costa. 11. *R. Ehrenbergii*.
- Leaf-blades rounded at the apex, 0.8-1.8 cm. long; flowers sessile.
- Leaf-blades acute or acuminate, 5.5-20 cm. long; flowers pedicellate. 12. *R. tetrantha*.
- Corolla usually pubescent outside; leaves usually pubescent beneath over the whole surface; flowers sessile.
- Corolla glabrous outside.
- Corolla-tube 6 cm. long.
- Corolla-tube 13-14 mm. long. 13. *R. panamensis*.
- Corolla pubescent outside.
- Corolla-lobes rhombic-obovate; leaf-blades abruptly attenuate to the base. 14. *R. armata*.
- Corolla-lobes never obovate; leaf-blades not abruptly attenuate to the base. 15. *R. albonervia*.
- Lower surface of the leaves never tomentose.
- Corolla-tube 2 cm. long.
- Corolla-tube 2.5-7 cm. long. 16. *R. lasiantha*.
- Tube of the corolla about 2.5 cm. long. 17. *R. subcordata*.
- Tube of the corolla 3-7 cm. long.
- Corolla-tube 3-4 cm. long.
- Corolla-tube 4-7 cm. long.
- Corolla-tube sericeous. 18. *R. monantha*.
- Corolla-tube villous or pilose with spreading hairs. 19. *R. martinicensis*.
- Leaf-blades rounded or subcordate at the base; corolla-tube 6-7 cm. long.
- Leaf-blades mostly acute or decurrent at the base; corolla-tube 4-5 cm. long.
- Corolla-lobes half as long as the tube.
- Corolla-lobes two thirds as long as the tube.
- Lower surface of the leaves densely tomentose, at least when young.
- Corolla-tube 5.5-6 cm. long.
- Corolla-tube 1.5-2 cm. long.
- Spines in pairs; leaf-blades 3.5 cm. long

- or shorter, rounded at the apex; fruit 2.5–3 cm. long.
- Spines mostly in 4's; leaf-blades usually more than 3.5 cm. long, sometimes acute; fruit sometimes 5–6 cm. long.
- Corolla-tube 1.5 cm. long; leaf-blades mostly acute or acutish, 0.8–2.3 cm. wide.
- Corolla-tube 2 cm. long; leaf-blades mostly rounded at the apex, 1.5–7.5 cm. wide.
- Flowers and fruit small; corolla 0.4–2 cm. long, rarely slightly longer; fruit usually 0.6–2 cm. long, or rarely slightly larger.
- Plants unarmed.
- Leaves sessile.
- Leaves conspicuously petiolate.
- Leaf-blades 12–30 cm. long, glabrous; corolla about 2 cm. long.
- Leaf-blades 1–11 cm. long, often pubescent, at least beneath.
- Corolla about 2 cm. long; leaf-blades densely short-pilose beneath.
- Corolla 6–8 mm. long; leaves glabrous beneath or nearly so.
- Plants armed with spines.
- Spines mostly in 3's or 4's.
- Leaves glabrous, not spinose-mucronate.
- Leaves appressed-pilose, spinose-mucronate.
- Spines in pairs.
- Throat of the corolla densely white-barbate.
- Pericarp thin, black, lustrous, succulent.
- Pericarp usually thick and hard, never black or succulent.
- Fruit 1.6–2.5 cm. in diameter; leaf-blades mostly orbicular-spatulate.
- Fruit 0.6–1.3 cm. in diameter; leaf-blades not orbicular-spatulate.
- Leaves densely scaberulous on the upper surface.
- Leaves glabrous on the upper surface.
- Spines scattered in pairs along the branches; fruit 6–8 mm. in diameter, with 2–4 seeds.
- Spines mostly in pairs at the ends of the branchlets.
- Leaves densely puberulent beneath.
- Leaves glabrous beneath, or pubescent only along the veins.
- Lobes of the corolla shorter than the tube.
- Corolla 4–5 mm. long.
- Corolla 6–10 mm. long.
- Lobes of the corolla as long as the tube.
- Leaf-blades 3–12 mm. long; corolla 4–5 mm. long.
- Leaf-blades mostly 2 cm. long or longer; corolla 6–8 mm. long.
- Throat of the corolla naked, sometimes sparsely pilosulous but never white-barbate.
- Calyx truncate.
- Calyx not truncate.
- Spines all or mostly in pairs at the ends of the branchlets.
- Fruit and hypanthium densely pilose with spreading hairs.
- Fruit and hypanthium glabrous or appressed-pilose.
- Leaves densely puberulent beneath.
- Leaves glabrous beneath, or puberulent only along the costa.
- Corolla 14–20 mm. long; fruit 2–2.5 cm. long.
- Corolla-lobes 7–8 mm. long.
- Corolla-lobes 9–15 mm. long.
- Corolla 6–12 mm. long; fruit 0.7–2 cm. long.
- Calyx densely pilose within; corolla 6 mm. long.
- Calyx glabrous within.
- Corolla 6–7 mm. long; flowers solitary.
- Leaves coriaceous; corolla-lobes about as long as the tube.
- Leaves membranaceous or chartaceous; corolla-lobes much shorter than the tube.
- Corolla 7–12 mm. long; flowers often clustered.
- Fruit about 2 cm. in diameter, with numerous seeds; Cuban species.
20. *R. Nelsonii*.
21. *R. Purpusii*.
22. *R. Watsonii*.
23. *R. blepharophylla*.
24. *R. grandifolia*.
25. *R. Pringlei*.
32. *R. aculeata*.
26. *R. spinifex*.
27. *R. portoricensis*.
49. *R. rhagocarpa*.
48. *R. Thurberi*.
28. *R. jamaicensis*.
47. *R. obcordata*.
35. *R. induta*.
29. *R. guatemalensis*.
30. *R. erythrocarpa*.
31. *R. parvifolia*.
32. *R. aculeata*.
33. *R. truncata*.
34. *R. malacocarpa*.
35. *R. induta*.
36. *R. xalapensis*.
37. *R. Millspaughiana*.
38. *R. Cookii*.
39. *R. chiapensis*.
40. *R. Karstenii*.
41. *R. ciliolata*.

- Fruit 0.8–1.4 cm. in diameter, with few (5–7) seeds; Mexican species. 42. *R. laetevirens*.
 Spines scattered in pairs along the branches.
 Leaves densely long-pilose; corolla pilose outside. 43. *R. canescens*.
 Leaves glabrous or sparsely short-pilose; corolla (so far as known) glabrous outside.
 Lateral nerves of the leaves 5 or 6 on each side, conspicuous; leaves pilose beneath along the costa; corolla 1.8–2 cm. long. 44. *R. Rozei*.
 Lateral nerves of the leaves 2–4 on each side, inconspicuous.
 Branches whitish; calyx 1–1.5 mm. long; corolla 5–6 mm. long. 45. *R. Gaumeri*.
 Branches brown or grayish; calyx 2–3 mm. long.
 Calyx-lobes long-ciliate; flowers clustered. 46. *R. blepharodes*.
 Calyx-lobes obscurely ciliate or naked; flowers solitary.
 Fruit 0.6–0.8 cm. in diameter; seeds 2–4. 47. *R. obcordata*.
 Fruit 1–2.5 cm. in diameter; seeds numerous.
 Pericarp thick and hard, dull, rough; fruit 1.5–2.5 cm. in diameter. 48. *R. Thurberi*.
 Pericarp thin, soft, smooth, lustrous; fruit 1–1.5 cm. in diameter. 49. *R. rhoagocarpa*.

1. *Randia echinocarpa* Moc. & Sessé; DC. Prodr. 4: 385. 1830.

Solena echinocarpa D. Dietr. Syn. Pl. 1: 799. 1839.

Genipa echinocarpa A. Gray, Proc. Am. Acad. 21: 380. 1886.

A shrub about 3 meters high, the branches gray, the branchlets stout, divergent, leafy at the ends, usually densely pilose when young, bearing at the apex 4 spines, these usually stout, sharp-pointed, 1–3 cm. long, densely pilose or glabrate; stipules often imbricate, broadly ovate, small, obtuse or acuminate, thin, brownish, pilose or glabrate outside, more or less pilose within; leaves mostly sessile or subsessile, the blades variable in outline, usually oval, oval-obovate, or rhombic-ovate, 3.5–8.5 cm. long, 2–5 cm. wide, usually obtuse or acuminate at the base, sometimes abruptly long-attenuate, rounded or obtuse at the apex, usually apiculate, rarely acute, membranaceous or chartaceous, densely or sparsely pilose above or puberulent, densely pilose beneath, at least along the veins, with short or long, spreading or appressed hairs, the venation prominent, the margin plane; flowers dioecious, terminal, sessile, solitary or clustered; staminate calyx and hypanthium sericeous, the hypanthium 5–8 mm. long, the 5 calyx-lobes linear, 1.5–4 mm. long, the corolla densely appressed-pilose outside, the tube 2.7–3.2 cm. long, the throat naked or sparsely pilose, the lobes oval or broadly ovate, 1.2–2.3 cm. long, obtuse or acute, apiculate, glabrous within; anthers included or subexserted; pistillate calyx and hypanthium densely pilose, the calyx-lobes linear, 1 cm. long; fruit subglobose, 4.5–9 cm. in diameter, green or yellow, densely short-pilose when young, with long, narrow, flat, irregular tubercles, these mostly 1–3 cm. long; seeds numerous, suborbicular, 6–10 mm. broad, brown.

TYPE LOCALITY: Mexico.

DISTRIBUTION: Dry thickets and hillsides, Chihuahua and Sonora to Guerrero and Veracruz.

ILLUSTRATION: Moc. & Sessé, Calq. Dess. pl. 469.

2. *Randia concinna* Standley, Field Mus. Publ. Bot. 4: 288. 1929.

A tree, the branchlets 3–7 mm. thick, subterete, rimose, brown or grayish, leafy at the apex, glabrous, the internodes 5–10 mm. long, apparently unarmed; stipules foliaceous, deciduous, oval or ovate-oval, 1–2.5 cm. long, 9–16 mm. wide, rounded at the apex, green, glabrous or near the base sparsely setulose; leaves opposite, the stout petioles 1–2.2 cm. long, sulcate, sparsely hispidulous or glabrate; leaf-blades ovate-oval or broadly ovate-elliptic, 6.5–12.5 cm. long, 4–7.5 cm. wide, acutish, rounded at the base or sometimes very oblique, firm-membranaceous, green and glabrous above, the nerves subimpressed, slightly paler beneath, sparsely whitish-barbate in the axils of the nerves, the lateral nerves about 8 on each side, ascending, almost straight, laxly united remote from the margin; fruit globose, glabrous, smooth, shining, 3 cm. in diameter; seeds numerous, compressed, pale-brown, 6 mm. broad.

TYPE LOCALITY: Along a stream-bed, San Sebastián, Hacienda del Ototal, Sierra Madre Occidental, Jalisco, altitude 1500 meters.

DISTRIBUTION: Known only from the type locality.

Known only from fruiting material, the generic position of the plant is somewhat uncertain. The large broad rounded stipules are distinctive, suggestive only of those of *R. blepharophylla* Standley.

3. *Randia calycosa* Standley, Contr. U. S. Nat. Herb. 20: 201. 1919.

An unarmed tree 3–10 meters high, the branches grayish, the branchlets stout, densely leafy; stipules 2–3 mm. long, rounded-ovate, mucronate, brown, glabrous; petioles 2–5 mm. long, glabrous; leaf-blades obovate, elliptic-ovate, or oblong-elliptic, 3.5–6.5 cm. long, 1.5–2.8 cm. wide, acute or acutish, attenuate or acuminate at the base, chartaceous, glabrous above, lustrous, the venation prominulous, slightly paler beneath, sparsely pilose along the costa with long whitish appressed hairs or glabrate, the lateral nerves inconspicuous, usually 4 on each side, the margin plane or subrevolute; flowers perfect (?), terminal, solitary, sessile, 5-parted; calyx and hypanthium 14 mm. long, densely strigose, the calyx-lobes foliaceous, rhombic-orbicular, subapiculate, 6–9 mm. long and wide, sparsely strigose outside, glabrous within; corolla salverform, the tube 2.7–3.2 cm. long, sericeous-strigose outside, the lobes lance-oblong, 1.7–2.5 cm. long, acute, glabrate outside, glabrous within, the throat naked; anthers included; fruit oval-globose, 3–3.8 cm. long, 2–2.5 cm. thick, smooth or obscurely costate, sparsely strigillose or glabrate, the pericarp very thick and hard; seeds numerous, rhombic-orbicular, 8–9 mm. long.

TYPE LOCALITY: Humid forest around Los Sigüas Camp, southern slope of Cerro de la Horqueta, Chiriquí, Panama, altitude about 1700 meters.

DISTRIBUTION: Wet mountain forests of Panama and Costa Rica.

4. *Randia formosa* (Jacq.) K. Schum. in Mart. Fl. Bras. 6⁶: 342. 1889.

Mussaenda formosa Jacq. Enum. Pl. Carib. 16. 1760.

Gardenia Mussaenda L. f. Suppl. 163. 1781.

Randia Mussaendae DC. Prodr. 4: 388. 1830.

Gardenia maritima Vahl; DC. Prodr. 4: 388, as synonym. 1830.

An unarmed shrub, 1–4 meters high, the branches reddish-brown, usually with elongate internodes, the leaves mostly crowded on very short lateral spurs; stipules ovate, acuminate, 2–3 mm. long, thick, glabrous outside, glandular and more or less pilose within; petioles stout, 7 mm. long or shorter, often marginate, puberulent; leaf-blades ovate, rhombic-ovate, oblong-ovate, or oval-orbicular, 2.5–7 cm. long, 1–3.7 cm. wide, rounded or obtuse and abruptly decurrent at the base or sometimes acute or acuminate, acute to rounded at the apex, sometimes short-acuminate, herbaceous, bright-green above, glabrous or puberulent, paler beneath, puberulent or appressed-pilose, the lateral nerves conspicuous, 5–7 on each side, ascending; flowers perfect, terminal, solitary, sessile; calyx and hypanthium sericeous-strigose, the hypanthium 7–8 mm. long, the 5 calyx-lobes subulate, 6 mm. long; corolla salverform, white, sericeous-strigose outside, the tube slender, about 6 cm. long, the throat naked, the 5 lobes ovate or oblong-ovate, 3 cm. long, acuminate, glabrous within; anthers subexserted, 4 mm. long; fruit oblong or oblong-oval, 2–3 cm. long, 1.5–2 cm. thick, smooth, strigose; seeds numerous, oval or rhombic, 7–9 mm. long, dark-brown.

TYPE LOCALITY: Cartagena, Colombia.

DISTRIBUTION: In thickets or forest at low elevations, Panama to Peru and Brazil; Porto Rico and the Lesser Antilles.

ILLUSTRATIONS: Jacq. Sel. Stirp. Am. pl. 48; Mart. Fl. Bras. 6⁶: pl. 141.

5. *Randia laevigata* Standley, Contr. U. S. Nat. Herb. 20: 201. 1919.

An unarmed shrub 2 meters high, the branchlets brownish, rimose, glabrous or sparsely puberulent when young, the internodes often elongate; stipules connate at the base, triangular-ovate, 1 cm. long, acute, cuspidate-mucronate, thick, glabrous or puberulent outside, glabrous within; leaves sessile or short-petiolate, the blades obovate-oblong or rhombic-ovate, 14–23 cm. long, 5–8.5 cm. wide, acute or acuminate, acuminate or long-attenuate to the base, charta-

ceous or membranaceous, bright-green and lustrous above, puberulent when young, glabrate in age, the venation plane or impressed, paler beneath, densely and minutely pilose when young, glabrate in age except along the nerves, the lateral nerves prominent, 10-13 on each side, nearly straight, ascending at an angle of 45° or more; calyx and hypanthium glabrous, the 5 calyx-lobes triangular-subulate, 2-3 mm. long; fruit subglobose, about 6.5 cm. long, umbonate, glabrous, borne on a terminal peduncle 3.5 cm. long; seeds oval or suborbicular, 8-10 mm. long, yellowish-brown.

TYPE LOCALITY: Sierra de Alamos, Sonora.

DISTRIBUTION: Sonora to Durango and Nayarit.

6. *Randia oaxacana* Standley, sp. nov.

Branchlets brown, rimose, glabrous, compressed below the nodes; stipules unknown; leaves large, short-petiolate, membranaceous, the petioles stout, 10-14 mm. long, glabrous; leaf-blades (perfect ones not seen) oval-oblong, about 19 cm. long and 9 cm. wide or larger, obtuse or subobtuse at the base, fuscous when dried, glabrous, the nerves inconspicuous above, elevated beneath, about 13 on each side, very slender, subarcuate, ascending at an obtuse angle, obscurely anastomosing near the margin; flowers dioecious, terminal, solitary, very shortly pedicellate; hypanthium of the pistillate flower cylindrical, glabrous, 6 mm. long; calyx campanulate, 4 mm. long and broad, the teeth linear-attenuate, erect, 2.5-3 mm. long; corolla glabrous outside, the slender tube 4 cm. long, 4 mm. wide above the middle, slightly constricted below the mouth, the 5 lobes lance-oblong, 3.5-4 cm. long, narrowly long-acuminate, spreading, conspicuously veined, glabrous within.

Frutex vel arbor parva omnino glabra; folia magna breviter petiolata membranacea, lamina ovali-oblonga basi obtusa vel subobtusa, nervis lateralibus utroque latere circa 13; flores dioeci, feminei terminales solitarii fere sessiles; calyx campanulatus, dentibus brevibus linear-attenuatis; corolla magna extus glabra, tubo gracili elongato, lobis 5 lanceolato-oblongis longe anguste acuminate tubo fere aequilongis.

Type collected in dense forest, vicinity of Choapam, Oaxaca, July, 1894, *E. W. Nelson 842* (Herb. Field Mus. no. 599712).

Known only from imperfect and unsatisfactory material, but clearly different from any other species of *Randia* known from North America.

7. *Randia longiloba* Hemsl. Biol. Centr. Am. Bot. 4: 101. 1887.

A shrub or small tree, 2-3.5 meters high, the branches gray, the branchlets stout, divergent, leafy at the ends, glabrate, bearing at the apex 2 or 4 stout spines 4-10 mm. long, or sometimes unarmed; stipules 2 mm. long, ovate or rounded, obtuse or acutish, mucronate, usually glabrous outside, sericeous-pilose within; petioles 3-7 mm. long, glabrous; leaf-blades ovate, elliptic-oval, or oblong-elliptic, 2-4.5 cm. long and 1-2.2 cm. wide, or sometimes 7 cm. long, rounded to acute at the base and abruptly acuminate or attenuate, acute at the apex or obtusely short-acuminate, membranaceous or chartaceous, glabrous, lustrous above, the lateral nerves inconspicuous, 7-10 on each side, subarcuate, ascending; flowers perfect (?), terminal, usually clustered, subsessile; calyx and hypanthium glabrous, the hypanthium 3-4 mm. long, the 5 calyx-lobes triangular, acute, 1-2 mm. long; corolla salverform, white, glabrous outside, the tube 1.7-2.2 cm. long, the throat naked, the 5 lobes linear-lanceolate or ovate-lanceolate, 1.5-2.5 cm. long, acuminate or attenuate, glabrous within; anthers included; ovules numerous.

TYPE LOCALITY: Cozumel Island, Yucatán.

DISTRIBUTION: Dry thickets and forests, Yucatán.

8. *Randia pleiomeris* Standley, Contr. U. S. Nat. Herb. 20: 202. 1919.

Branches slender, brownish, strigose when young, with mostly elongate internodes, bearing few pairs of stout ascending spines 1-1.5 cm. long, the leaves crowded on short lateral spurs; stipules ovate-deltoid, 2 mm. long, strigose or glabrous outside, pilose within at the base; petioles slender, 4-8 mm. long, glabrous or sparsely puberulent; leaf-blades cuneate-orbicular or broadly obovate, 8-18 mm. long, 7-13 mm. wide, cuneate or abruptly decurrent at the base, rounded or truncate at the apex, membranaceous, glabrous above, sparsely appressed-pilose beneath along the costa, the lateral nerves obscure; flowers terminal, solitary, sessile; hypan-

thium appressed-pilose, 2.5 mm. long; calyx glabrous, 2 mm. long, the lobes usually 7, linear, 4 mm. long, sparsely ciliate; corolla salverform, glabrous outside, the tube slender, 2.5 cm. long, the 5 lobes ovate or ovate-oblong, 1 cm. long, acuminate, glabrous within, the throat naked; anthers subexserted.

TYPE LOCALITY: Santa Rosa, Guatemala, altitude 900 meters.

DISTRIBUTION: Known only from the type locality.

9. *Randia armata* (Sw.) DC. Prodr. 4: 387. 1830.

Mussaenda spinosa Jacq. Sel. Stirp. Am. 70. 1763.

Gardenia tetraacantha Lam. Encyc. 2: 609. 1786. (Not *Randia tetraacantha* DC. 1830.)

Gardenia armata Sw. Prodr. 51. 1788.

Solena armata D. Dietr. Syn. Pl. 1: 800. 1839.

Randia ovata Duchass.; Griseb. Bonplandia 6: 8. 1858.

Randia dioica Karst. Fl. Columb. 2: 127. 1866.

Randia hondensis Karst. Fl. Columb. 2: 128. 1866.

Randia spinosa Karst. Fl. Columb. 2: 128. 1866. Not *R. spinosa* Poir. 1811.

Basanacantha spinosa K. Schum. in Mart. Fl. Bras. 6: 376. 1889.

Basanacantha armata Hook. f.; B. D. Jackson, Ind. Kew. 277. 1893.

Basanacantha spinosa var. *guatemalensis* K. Schum.; Loesener, Verh. Bot. Ver. Prov. Brand. 65: 110. 1923.

A shrub or small tree, 1 to rarely 6 meters high, the trunk sometimes 7 cm. in diameter, the branches gray or brownish, lenticellate, the branches usually slender, divaricate, leafy at the apex, glabrate, usually bearing at the apex 4 stout spines 0.6–2.5 cm. long; stipules broadly ovate, 3–8 mm. long, mucronulate-acuminate, usually imbricate, thin, brownish, glabrous, often glandular within; petioles slender, 0.5–2 cm. long, puberulent or glabrate; leaf-blades variable in outline, mostly ovate, oblong-ovate, oval, or obovate, 6–22 cm. long, 2–10.5 cm. wide, acute or abruptly acuminate, acute or acuminate at the base, membranaceous, bright-green above, glabrous or sparsely puberulent, the venation plane or prominulous, paler beneath, puberulent or minutely appressed-pilose along the nerves or glabrate, the lateral nerves prominent or prominulous, about 7 on each side, subarcuate, ascending; flowers dioecious, slender-pedicellate, 2–8 at the end of each branchlet, the pedicels glabrous or puberulent; calyx and hypanthium glabrous or puberulent, the 5 calyx-lobes linear, lanceolate, or obovate-oblong, 4–9 mm. long, acute or acuminate, often ciliate; corolla white or ochroleucous, glabrous outside or sparsely pilose or short-villous, the tube about 2.5 cm. long, the throat naked, the 5 lobes rhombic-obovate, 1 cm. long, obtuse; anthers inserted in the corolla-throat, 3–6 mm. long, apiculate; fruit oval or subglobose, 1.5–3.5 cm. long, 1–2.5 cm. thick, umbonate, smooth or obscurely costate, glabrous or sparsely puberulent, the pulp at maturity black, sweetish, edible; seeds numerous, suborbicular, 4–6 mm. broad, brown.

TYPE LOCALITY: Cartagena, Colombia.

DISTRIBUTION: Usually in dry thickets at low elevations, western coast of Mexico from southern Lower California to Oaxaca, and throughout the lowlands of Central America; Santa Lucia; Guadeloupe and Martinique (?); southward in South America to Argentina.

ILLUSTRATIONS: Jacq. Sel. Stirp. Am. pl. 49; Jacq. Sel. Stirp. Pict. pl. 71; Mart. Fl. Bras. 6: pl. 149; Karst. Fl. Columb. pl. 167.

10. *Randia Pittieri* Standley, Contr. U. S. Nat. Herb. 20: 201. 1919.

Basanacantha Pittieri Standley, Contr. U. S. Nat. Herb. 18: 134. 1916.

Branches stout, brownish, lenticellate, the branchlets subdivaricate, glabrous, leafy at the apex and bearing 4 stout spines 3–5 mm. long; stipules crowded, imbricate, broadly ovate, acutish, thin, brownish, glabrous and minutely tuberculate outside, white-sericeous within; petioles stout, 9–14 mm. long, fulvous-pilose with short stiff hairs; leaf-blades oval or obovate-oval, 12–16 cm. long, 7–10 cm. wide, rounded or subcordate at the base, abruptly acute, with a short acute acumen, membranaceous, dark-green above and shortly setose-pilose, paler beneath and copiously setose-pilose, the venation impressed above, prominent beneath, the lateral nerves 8 or 9 on each side, arcuately ascending, the margin plane; flowers dioecious, solitary or fasciculate, terminal; staminate flowers on stout pedicels 4–5 mm. long; hypanthium campanulate, 4 mm. long, sparsely long-ciliate, the calyx-lobes subulate, about as long as the hypanthium, long-ciliate; corolla salverform, glabrous outside, the tube 6 cm. long, slightly

ampliate above, glabrous in the throat, the lobes lanceolate or oblong-lanceolate, 2.5–3 cm. long, 6–10 mm. wide, attenuate; anthers 1 cm. long; style 4.5 cm. long, glabrous.

TYPE LOCALITY: Zent Junction, near Matina, Costa Rica.

DISTRIBUTION: Known only from the type locality.

11. *Randia Ehrenbergii* Standley, sp. nov.

A densely branched shrub, the branchlets spreading, stout, subterete, rimose, ochraceous, the younger ones densely pilose with short, spreading or subappressed hairs, the branches bearing at the apex 3 or 4 stout pale spines 1 cm. long; stipules imbricate at the apices of the branchlets, glumaceous, 4–5 mm. long, pale, broadly ovate, subulate-mucronate, persistent, appressed-pilose outside; leaves short-petiolate, thick-membranaceous, opposite, densely crowded at the apices of the branchlets, the slender petioles 2–4 mm. long, densely pilose; leaf-blades rounded or broadly obovate, 1.2–3.5 cm. long, 1–2.5 cm. wide, rounded or very obtuse at the apex, acute or cuneately narrowed at the base, sometimes abruptly contracted near the base and decurrent, black when dried, glabrous above or at first sparsely hispidulous, when young densely hispidulous-hirsute along the veins and sometimes tomentose, soon glabrate, the slender costa elevated, the lateral nerves about 6 on each side, slender, inconspicuous, strongly arcuate, ascending at a broad angle, the lower ones approximate near the base of the blade; flowers dioecious; hypanthium narrowly campanulate, 3–3.5 mm. long, appressed-pilose, the calyx-lobes oblong or linear, 1.5–2 mm. long, erect, obtuse or acute, remote; corolla obtuse in bud, glabrous outside, the tube thick, 13–14 mm. long, 2–2.5 mm. wide at the middle, strongly dilated above, 4 mm. broad in the throat, the lobes oblong-ovate, 7–8 mm. long, obtuse.

Frutex spinosus dense ramosus; folia parva breviter petiolata, lamina rotundata vel late obovata apice late rotundata vel obtusissima, basi acuta vel cuneato-angustata, supra glabra vel primo sparse hispidula, subtus statu juvenili praesertim ad venas hispidulo-hirsuta et interdum tomentosa, cito glabrata; flores dioeci, calycis lobis oblongis vel linearibus; corolla extus glabra, tubo crasso 13–14 mm. longo, lobis oblongo-ovatis obtusis tubo duplo brevioribus.

Type from Plan de Amilpas (Veracruz?), Mexico, March, 1831, *C. Ehrenberg* 575 (Herb. Berol.).

12. *Randia tetraacantha* (Cav.) DC. Prodr. 4: 387. 1830.

Mussaenda tetraacantha Cav. Ic. 4: 20. 1797.

Basanacantha tetraacantha Hook. f.; B. D. Jackson, Ind. Kew. 277. 1893.

A shrub 2–3 meters high, the branches brownish or grayish, the branchlets stout, divaricate, lenticellate, glabrate, leafy at the apex and bearing 4 stout spines 1–2 cm. long; stipules ovate, cuspidate, 2–3 mm. long, glabrous or nearly so, brownish, imbricate; petioles slender, 0.5–2.5 cm. long, short-pilose or glabrate, marginate above; leaf-blades ovate, rhombic-ovate, ovate-oblong, or oval-oblong, 5–11 cm. long, 1.7–5 cm. wide, usually abruptly long-attenuate at the base, sometimes acuminate, usually acute or acuminate at the apex, membranaceous or subchartaceous, scaberulo-strigillose or glabrous above, minutely appressed-pilose, puberulent, or glabrate beneath, the lateral nerves prominent, 7–9 on each side; flowers terminal, dioecious (?), sessile or pedicellate, solitary or clustered; calyx and hypanthium about 1.2 cm. long, pilose, the 5 calyx-lobes subulate; corolla salverform, the tube 5 cm. long or longer, villous outside, the throat naked, the 5 lobes rhombic-obovate, apiculate, about one third as long as the tube; anthers acute, included; fruit oval, 2.5–4.5 cm. long, 2–3 cm. thick, umbonate, obscurely costate, yellowish, glabrous, the pericarp thick and hard; seeds numerous, oval, 8 mm. long, dark-brown.

TYPE LOCALITY: Near Acapulco, Guerrero.

DISTRIBUTION: Coastal thickets, southern Sinaloa to Guerrero.

ILLUSTRATION: Cav. Ic. *pl.* 435.

13. *Randia panamensis* Standley, Field Mus. Publ. Bot. 4: 288. 1929.

Branchlets slender, 1.5–2.5 mm. thick, terete, brown, puberulent, with scattered, pale, slightly elevated lenticels, sometimes armed with spines at the nodes, the spines slender, rigid, ascending, 5–7 mm. long, the internodes elongate; stipules lanceolate, subulate-acuminate, 5–8 mm. long, erect, brown, many-nerved; leaves crowded at the apices of the branchlets, the slender petioles 3–6 mm. long, strigillose; leaf-blades obovate-oblong or oblanceolate-oblong,

4.5–12.5 cm. long, 2–4.5 cm. wide, subabruptly short-acuminate, the tip obtuse or acute, at the base acute or acuminate, membranaceous, green and glabrous above, the nerves often subimpressed, slightly paler beneath, strigose along the nerves, short-barbate in their axils, the costa slender, elevated, the lateral nerves about 10 on each side, ascending at an acute angle, almost straight, anastomosing remote from the margin; flowers few, terminal, fasciculate, the pedicels 5–6 mm. long, grayish-strigose; calyx 5-parted, the segments linear-subulate, 5–7 mm. long, 3-nerved, appressed-ciliate; corolla ochroleucous, the tube 2 cm. long, 1.5 mm. wide at the base, 3 mm. wide in the throat, densely griseous-strigillose, the lobes oval or rounded, 5–6 mm. long, rounded at the apex, sparsely and minutely strigose on the outer surface, glabrous within; apices of the anthers short-exserted.

TYPE LOCALITY: Flat Rock; region of Almirante, Province of Bocas del Toro, Panama.
DISTRIBUTION: Known only from the region of the type locality.

14. *Randia albonervia* Brand. *Zoe* 5: 257. 1908.

A shrub, the branches grayish, the branchlets stout, divaricate or ascending, leafy at the ends, appressed-pilose when young, bearing near the apex 2 or 4 stout spines 5–7 mm. long; stipules imbricate, oval or broadly ovate, 4–6 mm. long, obtuse or acute, thin, brownish, usually glabrous outside and minutely tuberculate, densely white-pilose within; petioles slender, 3–13 mm. long, appressed-pilose; leaf-blades mostly obovate, sometimes ovate, oval-obovate, or oblong-obovate, 2–5.5 cm. long, 1–2.5 cm. wide, usually cuneate at the base, sometimes obtuse and short-decurrent, acute or abruptly short-acuminate at the apex, membranaceous, dark-green above, densely short-pilose with subappressed or spreading hairs, densely appressed-pilose beneath with short grayish hairs, the lateral nerves conspicuous, numerous, nearly straight, ascending at an acute angle; flowers dioecious (?), terminal, solitary; calyx-lobes unequal, narrowly lanceolate, 1 cm. long, longer than the hypanthium; corolla densely white-pilose outside, the tube 3–4 cm. long, the 5 lobes lanceolate, 2 cm. long, attenuate; anthers sessile in the corolla-throat, 6 mm. long.

TYPE LOCALITY: Corral de las Piedras, near Zacuapam, Veracruz.
DISTRIBUTION: Veracruz.

15. *Randia lasiantha* Standley, *Contr. U. S. Nat. Herb.* 20: 201. 1919.

Basanacantha lasiantha Standley, *Contr. U. S. Nat. Herb.* 18: 134. 1916.

Branches grayish, the branchlets divaricate, leafy at the apex, glabrate, the spines few, opposite, 6 mm. long; stipules glumaceous, crowded and imbricate, oblong or broadly ovate, 6–8 mm. long, obtuse, thin, brownish, glabrous outside, white-pilose within; petioles slender, 6–15 mm. long, densely whitish-pilose; leaf-blades oval-obovate, 7–12 cm. long, 3.5–6.5 cm. wide, acute to rounded at the base, acute or acutish or abruptly acute at the apex, membranaceous, subconcolorous, scabro-hirtellous above, densely soft-pilose beneath with short grayish hairs, the venation plane above, prominulous beneath, the lateral nerves 9–12 on each side, subarcuate, ascending, usually at an acute angle, the margin plane; flowers dioecious, terminal; corolla salverform, white, densely pilose-sericeous outside with white hairs, the tube 6–7 cm. long, slender, sparsely pilose within, the throat naked, the lobes narrowly lanceolate, long-attenuate, 4.5–7 cm. long, 9–12 mm. wide, glabrous within; anthers inserted in the corolla-throat, 1 cm. long.

TYPE LOCALITY: In forests on dry limestone, around Alhajuella, Chagres Valley, Province of Panama, Panama, altitude 30 to 100 meters.
DISTRIBUTION: In thickets or forest, Panama.

16. *Randia subcordata* Standley, *Contr. U. S. Nat. Herb.* 20: 201. 1919.

Basanacantha subcordata Standley, *Contr. U. S. Nat. Herb.* 18: 133. 1916.

A shrub or small tree, the branches grayish, the branchlets slender, divaricate, leafy at the apex, glabrate, bearing near the apex 4 or 2 stout spines 5–7 mm. long; stipules imbricate, ovate or oblong, 6–8 mm. long, acute or obtuse, mucronulate, thin, brownish, glabrous outside, densely white-sericeous within; petioles slender, 1–2.5 cm. long, canescent-pilose with short,

mostly appressed hairs; leaf-blades oval, orbicular-oval, oval-oblong, or broadly ovate, 4–10 cm. long, 2.5–6 cm. wide, subcordate or rounded at the base, often short-decurrent, acute or abruptly acute at the apex, membranaceous, concolorous, minutely appressed-pilose on the upper surface with setose hairs, the venation plane, copiously appressed-pilose beneath, the lateral nerves prominulous, 6–8 on each side, subarcuately ascending, the margin plane; flowers white, fragrant, dioecious; staminate flowers 2 or more at the end of each branchlet, sessile, the calyx and hypanthium strigose-sericeous, the hypanthium tubular-campanulate, 7 mm. long, the calyx-lobes linear-subulate, 5 mm. long, the corolla salverform, densely hirtellous outside, the tube 5–6 cm. long, slender, the lobes ovate or lanceolate, attenuate, 2.5–4 cm. long, 1.2–1.5 cm. wide, glabrous within; pistillate flowers solitary, terminal, the hypanthium 8 mm. long, sericeous, the calyx-limb 5–6 mm. long, its lobes oblanceolate-linear, 1.5–1.8 cm. long, subulate-attenuate, appressed-pilose, the corolla-tube about 4.5 cm. long, hirtellous.

TYPE LOCALITY: Near Nicoya, Costa Rica.

DISTRIBUTION: In thickets and hedges, Honduras to Costa Rica.

17. *Randia monantha* Benth. Pl. Hartw. 84. 1841.

Basanacantha monantha Benth. & Hook.; Hemsl. Biol. Centr. Am. Bot. 2: 39. 1881.

A stout, densely branched shrub 2–3 meters high, the thick branchlets usually bearing at the apex 4 stout ascending spines 1–2 cm. long; stipules glumaceous, broad, acuminate, brown, glabrate outside, sericeous within; leaves clustered at the ends of the branchlets, membranaceous, the slender petioles 1.5 cm. long or less, hispidulous; leaf-blades ovate, obovate, or elliptic, 6–17 cm. long, 2.5–9.5 cm. wide, short-acuminate or obtuse and mucronate at the apex, acute at the base or abruptly contracted and decurrent, short-hispidulous above, sometimes pilose with long stiff hairs, beneath short-pilose or hispidulous; flowers terminal, dioecious, sessile, solitary or clustered; hypanthium short-pilose; calyx lobes subequal, linear-cuneiform or linear, 6 mm. long, acute; corolla villous outside, the tube 4–5 cm. long, slender, slightly dilated above, the lobes ovate-oblong to linear-lanceolate, 2.5–3.5 cm. long, acuminate or long-attenuate; fruit globose, 2-celled, 3.5–4 cm. long, with a very thick, rough, hard, brownish shell, containing very numerous seeds.

TYPE LOCALITY: Río de los Esclavos, Guatemala.

DISTRIBUTION: Veracruz, Guatemala; reported, probably in error, from Costa Rica and Panama.

18. *Randia martinicensis* (Urban) Standley.

Basanacantha martinicensis Urban, Notizbl. Bot. Gart. Berlin 8: 29. 1921.

A shrub 3 meters high, the branchlets terete, glabrous, bearing near the apex 4 spines 1.5 cm. long; stipules triangular, 5–8 mm. long, subcoriaceous, glabrous outside, densely whitish-pilose within; leaves crowded at the apices of the branchlets, the slender petioles 5–20 mm. long, shortly and densely spreading-pilose; leaf-blades oval or obovate, 6–8 cm. long, 3.5–4.5 cm. wide, gradually short-acuminate, with acute short-mucronate tip, gradually narrowed to the base, membranaceous, short-pilose on the upper surface, beneath short-pilose between the nerves and more densely pubescent upon them, the lateral nerves 7 or 8 on each side, branched but not anastomosing; flowers solitary at the apex of the branchlet, sessile, 5-parted; calyx produced above the hypanthium into a tube 5 mm. long, the lobes lanceolate, abruptly narrowed near the base, shortly acuminate, 10–12 mm. long, 2–2.5 mm. wide, pilose especially on the nerves and margin; corolla-tube 4.5 cm. long, 1 mm. thick near the base, ampliate above, below the apex 4 mm. broad, with short spreading pubescence, the lobes ovate-oblong, acutely long-acuminate, 3 cm. long, 8–10 mm. wide near the base, glabrous within, short-pilose outside toward the base; hypanthium elliptic-oblong, shortly and densely tomentose.

TYPE LOCALITY: Montagne du Vauclin, Martinique.

DISTRIBUTION: Martinique.

19. *Randia cinerea* (Fernald) Standley, Contr. U. S. Nat. Herb. 20: 201. 1919.

Genipa cinerea Fernald, Proc. Am. Acad. 33: 93. 1897.

A shrub, the branches grayish, the branchlets stout, divaricate, leafy at the ends, glabrate, with 2 or 4 spines near the ends, these stout, 6–15 mm. long; stipules imbricate, broadly ovate,

7 mm. long, obtuse, thin, brownish, glabrous outside, densely white-sericeous within; petioles slender, 2.5–4 cm. long or sometimes shorter, tomentose; leaf-blades oval or broadly oval, 5–15 cm. long, 4–9 cm. wide, obtuse or broadly rounded at the base and often abruptly acuminate, acute to rounded at the apex, thick-membranaceous, dark-green above, densely short-pilose, the venation plane or impressed, paler beneath, densely tomentose with grayish hairs, the lateral nerves prominent, about 9 on each side, nearly straight, ascending at an acute angle, the margin plane; flowers dioecious, yellowish-white; staminate flowers clustered at the ends of the branchlets, sessile, the calyx-tube 10–12 mm. long, sericeous, split on one side by the expanding corolla, the lobes linear or subulate, 4–10 mm. long, pilose; corolla yellowish-sericeous outside, the tube 5.5–6 cm. long, the lobes oblong-lanceolate, 2.5–3 cm. long, 0.7–7 cm. wide, acuminate, glabrous within, the throat glabrous; fruit obovoid, 7 cm. long, 5 cm. thick, umbonate at the apex, 6–8-costate, sparsely obtuse-tuberculate, densely pilose, the pericarp very thick and hard; seeds numerous, oblong or orbicular, 1 cm. long, brown, lustrous.

TYPE LOCALITY: In the high mountains near Acapulco, Guerrero.

DISTRIBUTION: Mountains of Guerrero and Oaxaca.

20. *Randia Nelsonii* Greenman, Proc. Am. Acad. 34: 574. 1899.

A shrub, the branches stout, grayish or brownish, densely short-pilose when young, sparsely lenticellate, often with elongate internodes, bearing few pairs of stout spines 1–1.5 cm. long, the leaves mostly crowded on very short lateral spurs; stipules oval or orbicular, 2 mm. long, mucronate, thick, brownish, glabrous or short-pilose outside, pilose within at the base; petioles 6 mm. long or shorter, pilose; leaf-blades obovate, cuneate-obovate, spatulate, or obovate-orbicular, 1.3–3.5 cm. long, 1–2.5 cm. wide, cuneate, rounded and short-acuminate, or attenuate at the base, obtuse to subretuse at the apex, often apiculate, membranaceous, densely short-pilose on both surfaces, sometimes tomentose beneath when young, the lateral nerves evident, usually 4 or 5 on each side; flowers perfect, terminal, solitary, sessile; calyx and hypanthium densely pilose, the hypanthium 3–4 mm. long, the 5 calyx-lobes linear, 2 mm. long; corolla salverform, sparsely hirtellous outside, the tube 1.5 cm. long, ampliate above, the throat naked, the 5 lobes ovate or oblong-ovate, 1–1.5 cm. long, obtuse or acutish, glabrous within; anthers included, 3 mm. long; fruit subglobose, 2.5–3 cm. long, umbonate at the apex, often substipitate at the base, usually costate, very densely short-pilose, the pericarp very thick; seeds numerous, rhombic-oval, 8 mm. long.

TYPE LOCALITY: On the way from Juchitán to Chivela, Oaxaca, altitude 46 to 277 meters.

DISTRIBUTION: Oaxaca and Puebla.

21. *Randia Purpusii* Greenm. & Thoms. Ann. Mo. Bot. Gard. 1: 410. 1915.

Branches grayish or brownish, the branchlets very short and stout, leafy at the ends, densely whitish-pilose when young, bearing 2 or 4 spines at the apex, these stout, 3–10 mm. long, or wanting; stipules imbricate, broadly ovate, 2–3 mm. long, obtuse or acute, thin, brownish, sericeous outside, white-pilose within; petioles slender, 3–5 mm. long, pilose; leaf-blades mostly obovate or obovate-oblong, 1.5–5.5 cm. long, 0.8–2.3 cm. wide, long-attenuate at the base, acute or acutish at the apex, membranaceous, dark-green, densely short-pilose above, densely grayish-tomentose beneath, at least when young, the lateral nerves conspicuous, about 5 on each side, subarcuate, ascending at an acute angle; flowers terminal, sessile; hypanthium 1.5 mm. long, sericeous, the 4 calyx-lobes linear or linear-spatulate, 3–3.5 mm. long, sparsely pilose; corolla salverform, the tube 1.5 cm. long, sparsely pilose outside, the 4 lobes oblong-lanceolate, about as long as the tube; anthers subexserted, inserted in the corolla-throat; ovules numerous.

TYPE LOCALITY: Minas de San Rafael, San Luis Potosí.

DISTRIBUTION: Known only from the type locality.

22. *Randia Watsoni* B. L. Robinson, Proc. Am. Acad. 29: 317. 1894.

Randia tomentosa S. Wats. Proc. Am. Acad. 25: 152. 1890. Not *R. tomentosa* Wight & Arn. 1834.
Randia megacarpa Brand. Zoc 5: 257. 1908.

A shrub or small tree 3–5 meters high, the branches gray or brownish, lenticellate, the branchlets stout, divaricate, leafy at the ends, densely pilose when young, bearing at the apex 4 stout spines 6–15 mm. long; stipules imbricate, oval or ovate, 6–10 mm. long, acute or obtuse, thin, brownish, usually glabrous outside, sometimes pilose, densely white-pilose within; petioles stout, 2–11 mm. long, pilose; leaf-blades oval, rounded-oval, obovate-oval, or obovate, 2.5–8.5 cm. long, 1.5–7.5 cm. wide, acute to truncate at the base, often short-decurrent, usually rounded or obtuse at the apex, often short-apiculate, rarely acutish, densely short-pilose above, paler and densely whitish-tomentose beneath, the lateral nerves prominent, often numerous, ascending or divergent; flowers perfect, white, few at the ends of the branchlets, sessile; hypanthium densely sericeous, 5–6 mm. long, the 5 calyx-lobes linear or linear-spatulate, 2.5–3.5 mm. long, sparsely or densely pilose; corolla sparsely or densely pilose with appressed or spreading hairs, the tube stout, 1.8–2 cm. long, the throat glabrous, the 5 lobes oval or oblong, 1.3–1.8 cm. long, obtuse, glabrous within; anthers sessile in the throat, included; fruit globose or oval, 3–4.5 cm. broad, sometimes 6 cm. long, umbonate at the apex, sometimes short-stipitate at the base, smooth or obtusely short-tuberculate, densely short-pilose when young, often glabrate in age; seeds oval or orbicular, 7–10 mm. long, brown.

TYPE LOCALITY: Sierra de la Silla, near Monterrey, Nuevo León.

DISTRIBUTION: In dry thickets, Nuevo León to southern Lower California, Morelos, and Michoacán; Chiapas (?).

23. *Randia blepharophylla* Standley, Contr. U. S. Nat. Herb. 23:
1375. 1926.

An unarmed shrub, the branchlets thick and stout, dark-ferruginous, glabrous, with short internodes; stipules deciduous, oval or obovate, about 10 mm. long and 7 mm. wide, broadly rounded at the apex, membranaceous, conspicuously and closely veined, glabrous; leaves opposite, sessile, oval or rounded-ovate, 6–11 cm. long, 4–6 cm. wide, rounded or very obtuse at the apex, subcordate or broadly rounded at the base, firm-membranaceous, densely whitish-ciliate, glabrate in age but when young copiously pilose beneath, the lateral nerves 8 or 9 on each side, like the veinlets prominent or prominent, arcuate, anastomosing near the margin, the veinlets irregularly reticulate; flowers dioecious, the staminate in few-flowered, axillary or terminal, short-pedunculate cymes, the slender pedicels 7–10 mm. long, sparsely white-pilose; calyx of the staminate flower broadly campanulate, 4 mm. long and 5 mm. broad, glabrous, irregularly undulate; corolla glabrous outside, the tube 8 mm. long, gradually dilated upward, 5 mm. wide at the apex, the lobes oval or rounded, 5–6 mm. long, broadly rounded at the apex, densely ciliate; fruit subglobose, glabrous, 13 mm. in diameter, or at maturity probably much larger.

TYPE LOCALITY: Between Aguacate and Dolores, Nayarit.

DISTRIBUTION: Sinaloa and Nayarit.

24. *Randia grandifolia* (Donn. Smith) Standley, Jour. Wash. Acad.
18: 166. 1928.

Basanacantha grandifolia Donn. Smith, Bot. Gaz. 55: 436. 1913.

A shrub or small tree, unarmed, glabrous throughout or nearly so; stipules ovate-deltoid, 4 mm. long, brown, cuspidate, glabrous outside, pilose within; leaves large, mostly crowded at the tips of the branches, the stout petioles 0.5–3.5 cm. long, glabrous; leaf-blades elliptic, lance-oblong, or elliptic-ovate, 12–40 cm. long, 6–15 cm. wide, acute or acuminate, acute or short-acuminate at the base, or sometimes attenuate to the base, subcoriaceous at maturity, bright-green when dried, lustrous, the venation prominent on both surfaces, the lateral nerves about 8 on each side, arcuate-divaricate, the margin plane; flowers dioecious, the staminate flowers few, aggregate, subsessile; calyx 3 mm. long, sparsely short-pilose, the lobes subulate or lanceolate, 1–2 mm. long; corolla glabrous outside, greenish-yellow, the stout tube 12 mm. long, the throat naked, the lobes ovate, 7 mm. long, acuminate; anthers 5 mm. long; fruit globose, 2.5 cm. in diameter, obscurely costate.

TYPE LOCALITY: Forests near Santo Domingo, Golfo Dulce, Comarca de Puntarenas, Costa Rica.

DISTRIBUTION: Wet forests of the Pacific slope of Costa Rica.

25. *Randia Pringlei* A. Gray, Proc. Am. Acad. 21: 379. 1886.

Basanacantha reticulata S. Wats. Proc. Am. Acad. 18: 98. 1883. Not *Randia reticulata* Benth. 1849.

A shrub or small tree, unarmed, the branches gray or brown, the branchlets stout, ascending, densely short-pilose when young, densely leafy at the ends or with elongate internodes; stipules often imbricate, lanceolate or ovate, 4–6 mm. long, acuminate or attenuate, thick, rigid, puberulent outside, glabrous and glandular within; petioles stout, 3–17 mm. long, densely short-pilose; leaf-blades mostly obovate or oval, sometimes oblong, obovate-oval, or oval-ovate, 3–8 cm. long, 1.3–3.5 cm. wide, cuneate-attenuate to truncate and short-decurrent at the base, acute or rounded at the apex, coriaceous, very densely velvety-pilose above, at least when young, with short hairs, densely tomentose or velvety-pilose beneath with grayish hairs, the venation impressed above, prominently reticulate beneath; flowers dioecious, mostly terminal, clustered, sessile or short-pedicellate; hypanthium 2–3 mm. long, densely pilose, the 5 calyx-lobes lance-subulate, 2–3 mm. long, sparsely pilose; corolla white, sparsely or densely pilose outside, the tube stout, 10–12 mm. long, the 5 lobes ovate, acuminate, about as long as the tube, the throat naked; anthers subexserted; fruit globose, 2 cm. in diameter, densely short-pilose, with numerous seeds.

TYPE LOCALITY: Canyons of the mountains near Jimulco, Coahuila.

DISTRIBUTION: Tamaulipas, Coahuila, and Durango.

26. *Randia spinifex* (R. & S.) Standley, Contr. U. S. Nat. Herb. 20: 201. 1919.

Ehretia spinifex R. & S. Syst. 4: 806. 1819.

Gardenia Sagraeana A. Rich. in Sagra, Hist. Cuba 11: 10. 1850.

Randia Sagraeana Griseb. Cat. Pl. Cub. 122. 1866.

Morelosia spinifex Kuntze, Rev. Gen. 439. 1891.

Genipa Sagraeana Maza, Anal. Soc. Esp. Hist. Nat. 23: 288. 1894.

Beureria spinifex Gürke, in E. & P. Nat. Pfl. 4^{3a}: 87. 1897.

Scolosanthus Sagraeanus Millsp. Field Mus. Publ. Bot. 2: 102. 1900.

Basanacantha Sagraeana Urban, Symb. Ant. 5: 508. 1908.

Basanacantha spinifex Urban; O. E. Schulz, Symb. Ant. 7: 71. 1911.

A shrub 1–4.5 meters high, the branches gray or brownish, the branchlets very stout, rigid, short, divaricate, often thyrsiform, scaberulous or glabrous when young, bearing at the apex 3 or 4 stout spines 4–15 mm. long; stipules minute, ovate, thick, brown, ciliolate, glabrous within; petioles 1 mm. long or shorter; leaf-blades suborbicular, oval, or broadly obovate, 3–15 mm. long, 3–12 mm. wide, rounded to broadly cuneate at the base, rounded at the apex, coriaceous, glabrous, lustrous above, the costa impressed, paler beneath, the lateral nerves prominent, 3–5 on each side, the margin plane or subrevolute; flowers axillary, white, solitary or geminate, sessile; calyx-lobes very short, acute; corolla-tube twice as long as the calyx, the throat naked, the lobes broadly oval, acutely acuminate; fruit globose, 2–2.5 cm. in diameter, grayish, glabrous, whitish-tuberculate, sometimes subcostate; seeds numerous, suborbicular, 5–7 mm. long.

TYPE LOCALITY: Cuba.

DISTRIBUTION: Dry thickets, Cuba.

27. *Randia portoricensis* (Urban) Standley, Contr. U. S. Nat. Herb. 20: 201. 1919.

Basanacantha portoricensis Urban, Symb. Ant. 5: 507. 1908.

A shrub about 1 meter high, the branches grayish, the branchlets very stout, 7–13 mm. long, minutely pilose when young, bearing at the apex 3 stout spines 5–10 mm. long; stipules minute, triangular, subulate-acuminate, thick, puberulent outside, glabrous within; leaves sessile or subsessile, oval, orbicular, or obovate, 5–13 mm. long, 4–8 mm. wide, obtuse or rounded at the base, rounded or obtuse at the apex, pungent-apiculate, coriaceous, minutely appressed-pilose, lustrous above, the costa impressed, the lateral nerves obsolete, the venation prominulous beneath, the lateral nerves usually 3 on each side, the margin plane; fruit sessile, globose, 1.5–1.7 cm. thick, grayish, coarsely short-tuberculate, glabrous; seeds 6 mm. long.

TYPE LOCALITY: Near Guanica, Porto Rico.

DISTRIBUTION: Mountain forests and coastal thickets, Porto Rico.

28. *Randia jamaicensis* (Spreng.) Krug & Urban; Urban, Symb.

Ant. 1: 426. 1899.

Gardenia jamaicensis Spreng. Syst. 1: 761. 1825.*Randia jamaicensis* var. *Campbellii* Krug & Urban; Urban, Symb. Ant. 1: 427. 1899.

A shrub the branches brownish or grayish, the branchlets divaricate, stout, glabrous or densely short-pilose when young, bearing several pairs of stout spines 6–10 mm. long, the leaves mostly crowded on short lateral spurs; stipules minute, acuminate; petioles 2 mm. long or shorter; leaf-blades suborbicular, oval, or obovate, 0.7–2.5 cm. long, 0.7–1.4 cm. wide, subcordate to obtuse at the base, often short-decurrent, rounded or very obtuse at the apex, often apiculate, coriaceous, densely short-pilose or scaberulous above, densely pilosulous beneath, especially when young, the lateral nerves 2–5 on each side, inconspicuous; flowers perfect, 4–5-parted, terminal, solitary, sessile; calyx and hypanthium 2.5 mm. long, whitish-strigose or scaberulous, the calyx-lobes oblong or triangular, shorter than the hypanthium; corolla 7–10 mm. long, sparsely pilose outside, the tube cylindrical, the throat densely white-barbate, the lobes ovate, acute or short-acuminate, shorter than the tube; anthers 2–2.5 mm. long; fruit globose, 7 mm. in diameter, densely short-pilose, the pericarp thin; seeds about 8.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Jamaica.

In the typical form the branchlets are short-pilose and the leaf-blades are rounded or subcordate at the base; in var. *Campbellii* the branchlets are glabrous, and the leaf-blades narrowed at the base.

29. *Randia guatemalensis* Standley, Contr. U. S. Nat. Herb. 20:

202. 1919.

Branches reddish-brown, the branchlets stout, subdivaricate, densely puberulent when young, bearing at the apex 2 stout spines 4–8 mm. long, the leaves fasciculate in the axils; stipules ovate-deltoid, 1–1.5 mm. long, mucronate, strigillose outside; petioles 1–11 mm. long, scaberulous or glabrate; leaf-blades mostly oblong-elliptic, sometimes elliptic, broadly obovate, broadly ovate, or suborbicular, 0.6–5.5 cm. long, 0.6–2.8 cm. wide, rounded to attenuate at the base, usually obtuse or acutish at the apex, often mucronulate, subcoriaceous, lustrous above, the costa prominent, puberulent along the costa, paler beneath, minutely pilose along the costa, the lateral nerves obscure, 5–8 on each side, the margin plane; flowers perfect, 5-parted, axillary, solitary, sessile; calyx and hypanthium 1.5 mm. long, scaberulous, the calyx-lobes minute, triangular-subulate, less than half as long as the limb; corolla 4–5 mm. long, glabrous outside, acuminate in bud, the tube cylindrical, the throat densely white-barbate, the lobes broadly ovate, apiculate, shorter than the tube; anthers subexserted.

TYPE LOCALITY: Near Secanquim, Alta Verapaz, Guatemala, altitude 550 meters.

DISTRIBUTION: Known only from the type locality.

30. *Randia erythrocarpa* Krug & Urban; Urban, Symb. Ant. 1: 425.

1899.

A shrub 1–3 meters high, the branches grayish, the branchlets slender, divaricate, scaberulous when young, bearing at the apex 2 slender spines 8–14 mm. long, and often with other pairs below the apex, the leaves mostly clustered on short axillary spurs; stipules minute, triangular, subulate-acuminate; petioles 3 mm. long or shorter; leaf-blades narrowly obovate or obovate-oblong, 1–5 cm. long, 0.5–1.5 cm. wide, acuminate or attenuate at the base, obtuse or acutish at the apex, subcoriaceous, glabrous, lustrous above, the lateral nerves 4–6 on each side, subimpressed or prominulous beneath, the margin plane or subrevolute; flowers perfect, 5-parted, terminal, solitary, sessile; calyx and hypanthium 3–4.5 mm. long, glabrous or scaberulous, the calyx-lobes linear to oval, about equaling the calyx-tube; corolla white, 6–10 mm. long, glabrous outside, the tube cylindrical, the throat densely white-barbate, the lobes ovate, acute or obtuse, shorter than the tube; anthers 1.5–2 mm. long; fruit globose, 7 mm. in diameter, glabrous.

TYPE LOCALITY: Near Port-au-Prince, Haïti.

DISTRIBUTION: Hispaniola.

31. *Randia parvifolia* Lam. Encyc. 3: 25. 1789.

Gardenia parvifolia Dietr. Lex. Nachtr. 3: 441. 1817.

A shrub, the branches brownish or grayish, the branchlets short, stout, divaricate, scaberulo-puberulent when young, bearing at the apex 2 or 3 slender spines 5–8 mm. long; stipules minute, deltoid, acuminate, deciduous, brownish, pilose within at the base; leaves sessile or on petioles 1.5 mm. long or shorter, the blades obovate-oblong to orbicular, 3–12 mm. long, 3–9 mm. wide, acute or rounded and abruptly decurrent at the base, rounded at the apex, coriaceous, glabrous, punctulate above, lustrous, the lateral nerves obsolete or obscure, the margin plane or subrevolute; flowers perfect, terminal, solitary, sessile; calyx and hypanthium glabrous or ciliate, 2 mm. long, the 5 calyx-lobes triangular or triangular-ovate, much shorter than the hypanthium; corolla 4–5 mm. long, glabrous outside, the tube cylindric, the throat densely white-barbate, the 5 lobes obovate, as long as the tube, obtuse or rounded; fruit globose, 6 mm. in diameter, smooth, the pericarp thick and hard; seeds 5–7, about 4 mm. long.

TYPE LOCALITY: Santo Domingo.

DISTRIBUTION: Hispaniola.

ILLUSTRATION: Lam. Tab. Encyc. pl. 156, f. 2.

32. *Randia aculeata* L. Sp. Pl. 1192. 1753.

Randia mitis L. Sp. Pl. 1192. 1753.

Randia latifolia Lam. Encyc. 3: 24. 1789.

Gardenia aculeata Ait. Hort. Kew. 1: 295. 1789.

Gardenia Randia Sw. Fl. Ind. Occ. 526. 1797.

Gardenia Randia var. *mitis* Sw. Fl. Ind. Occ. 528. 1797.

Randia obovata H. B. K. Nov. Gen. & Sp. 3: 409. 1819. Not *R. obovata* R. & P. 1799.

Randia latifolia β *mitis* DC. Prodr. 4: 385. 1830.

Randia latifolia var. *micrantha* Schlecht. Linnaea 6: 723. 1831.

Solena Randia D. Dietr. Syn. Pl. 1: 799. 1839.

Randia aculeata β *mitis* Griseb. Fl. Brit. W. Ind. 318. 1861.

Genipa aculeata Maza, Anal. Soc. Esp. Hist. Nat. 23: 288. 1894.

Mussaenda rotundifolia Sessé & Moc. Fl. Mex. ed. 2. 59. 1894.

Rondeletia spinosa K. Schumann, Bull. Herb. Boiss. 3: 620. 1895.

?*Randia aculeata* var. *chiapasina* Loesener, Verh. Bot. Ver. Prov. Brand. 65: 109. 1923.

Randia spinosa Loesener, Verh. Bot. Ver. Prov. Brand. 65: 109. 1923. Not *R. spinosa* Poir. 1811.

A densely branched shrub 1–3 meters high, the branches reddish-brown or grayish, the branchlets stout, divaricate, glabrous or scaberulous when young, usually bearing at the apex 2 stout, ascending or divaricate spines 0.5–1.5 cm. long, sometimes unarmed, the leaves mostly clustered at the ends of the branchlets or on very short lateral spurs; stipules 2 mm. long or shorter, ovate-deltoid, usually acuminate, glabrous or scaberulous outside, pilose within at the base; petioles very short or obsolete, usually marginate to the base; leaf-blades very variable in shape and size, mostly obovate or obovate-orbicular, often orbicular, obovate-oblong, elliptic-oblong, or rhombic-ovate, 0.6–11 cm. long, 0.5–6 cm. wide, mostly about 3 cm. long and 1.5 cm. wide, acute or broadly rounded at the apex, broadly rounded to acuminate or attenuate at the base, coriaceous at maturity, usually lustrous above and glabrous, beneath glabrous or sparsely pilose along the costa, the lateral nerves 3–6 on each side, usually prominent above and subimpressed beneath, the margin plane or subrevolute; flowers perfect, terminal, sessile, usually clustered; calyx and hypanthium 2–3 mm. long, usually glabrous, the calyx-lobes linear, triangular, oblanceolate, or ovate, commonly much shorter than the hypanthium, often ciliate; corolla white, 6–8 mm. long, glabrous outside, the tube cylindric, the 5 lobes ovate or ovate-oblong, usually acute or acuminate, equaling or longer than the tube, the throat very densely white-barbate; anthers exerted; fruit globose, 6–13 mm. in diameter, usually smooth and glabrous; seeds usually 5–10, rounded, 3.5–5 mm. long, brownish-black.

TYPE LOCALITY: Not stated.

DISTRIBUTION: Dry hillside and thickets, southern Florida, Bermuda, and the West Indies; chiefly in coastal thickets, Sinaloa and Veracruz through Central America to Colombia and Venezuela.

ILLUSTRATIONS: P. Br. Hist. Jam. pl. 8, f. 1; Sloane, Hist. Jam. pl. 2, f. 4; pl. 161, f. 1; Bot. Mag. pl. 1841; Britton, Fl. Bermuda f. 391; Gaertn. Fruct. 1: pl. 26; Lam. Tab. Encyc. pl. 156, f. 1; Descourt. Fl. Ant. pl. 92; Houst. Reliq. pl. 4.

33. *Randia truncata* Greenm. & Thoms. Ann. Mo. Bot. Gard. 1:
411. 1915.

Randia tetramera Loesener, Verh. Bot. Ver. Prov. Brand. 65: 109. 1923.

A shrub 2-4 meters high, the branches gray, the branchlets stout, often with elongate internodes, divergent or ascending, sparsely scaberulous when young, usually bearing at the apex 2 slender spines 5-10 mm. long, the leaves often clustered on very short lateral spurs; stipules imbricate, ovate or rounded, 1-2 mm. long, obtuse, thick, brownish, usually glabrous outside, pilose within, at least at the base; petioles 3 mm. long or shorter, marginate, glabrous; leaf-blades suborbicular, orbicular-obovate, or spatulate-obovate, 0.5-3 cm. long, 0.3-1.7 cm. wide, rounded or obtuse at the base and abruptly decurrent, obtuse or rounded at the apex, membranaceous or chartaceous, glabrous, the lateral nerves inconspicuous; flowers perfect, terminal, solitary or clustered, sessile; calyx and hypanthium glabrous, 1.5-2 mm. long, the calyx cupular, truncate; corolla salverform, glabrous outside, the tube 1-1.5 cm. long, slender, the throat naked or sparsely short-pilose, the 4 lobes oval or orbicular, 3.5-5 mm. long, rounded at the apex, sometimes apiculate; anthers subexserted. -

TYPE LOCALITY: Vicinity of Izamal, Yucatán.

DISTRIBUTION: Yucatán, in dry forest or thickets.

ILLUSTRATION: Ann. Mo. Bot. Gard. 1: *pl.* 26.

34. *Randia malacocarpa* Standley, Contr. U. S. Nat. Herb. 20: 202.
1919.

A shrub about 1 meter high, and reported, probably in error, as a tree of 6-9 meters, the branches dark reddish-brown or grayish, the branchlets divaricate, stout, short-pilose when young, bearing at the apex 2 stout spines 0.6-1.5 cm. long, the leaves mostly crowded on very short lateral spurs; stipules ovate, acuminate, 1-2 mm. long, thick, brownish, glabrous or short-pilose outside, glabrous within; petioles stout, 3 mm. long or shorter, short-pilose; leaf-blades mostly ovate, ovate-oblong, or narrowly elliptic-oblong, rarely rounded-obovate, 2.5-5.5 cm. long, 0.8-2.5 cm. wide, acute to long-attenuate at the base, or rounded or obtuse and short-decurrent, usually acute at the apex, sometimes obtuse or rounded, often subapiculate, membranaceous or chartaceous, puberulent or scaberulous above, densely short-pilose beneath, the lateral nerves inconspicuous, 3-5 on each side; flowers perfect, terminal, sessile, solitary or clustered; calyx and hypanthium densely short-pilose, the hypanthium 2 mm. long, the 5 calyx-lobes linear or oblong, 1-1.5 mm. long, acute or obtuse, spreading; corolla salverform, sparsely hirtellous outside, the tube 3-4 mm. long, ampliate above, the 5 lobes rounded, 2-3 mm. long, glabrous within, the throat naked; anthers subexserted; fruit globose, 1.2 cm. in diameter (or larger?), smooth, densely velvety-pilose, the pericarp very thick and hard; seeds numerous.

TYPE LOCALITY: Near Acaponeta, Nayarit.

DISTRIBUTION: Dry thickets and hillsides, southern Sinaloa to Colima; northern Honduras.

35. *Randia induta* Standley, Contr. U. S. Nat. Herb. 23: 1377.
1926.

Branches slender, grayish, the branchlets slender, divaricate, puberulent when young, leafy at the apex and bearing 2 stout spines 7-13 mm. long; stipules rounded-ovate, acuminate, 2 mm. long, glabrate outside, pilose within; petioles slender, 4-8 mm. long, short-pilose or puberulent; leaf-blades oblong-obovate or rhombic-obovate, 5-9 cm. long, 2.5-4.3 cm. wide, acute or acuminate at the base, rounded or very obtuse at the apex, membranaceous, green above, glabrous, the costa impressed, the other venation prominulous, slightly paler beneath, copiously puberulent, the lateral nerves prominulous, 6-11 on each side, the margin plane; fruits terminal on short lateral spurs, solitary, sessile, globose, 7-10 mm. in diameter, smooth, glabrate, the pericarp very thin; seeds usually 4, oval or rhombic, 5 mm. long, brown.

TYPE LOCALITY: Cayacal, Guerrero.

DISTRIBUTION: Known only from the type locality.

36. *Randia xalapensis* Mart. & Gal. Bull. Acad. Brux 11¹: 239.
1844.

?*Randia Tomatillo* Loesener, Repert. Sp. Nov. 18: 360. 1922.

A shrub, the branches reddish-brown or grayish, the branchlets stout, ascending or divaricate, bearing at the apex 2 stout spines 0.6–1.5 cm. long, the leaves mostly crowded on very short axillary spurs; stipules 2–3 mm. long, long-cuspidate from a deltoid base, puberulent outside, glabrous within; leaves sessile or subsessile, the blades obovate, obovate-oblong, elliptic-oblong, or rarely rounded-obovate or suborbicular, 1.5–4 cm. long, 0.5–2.2 cm. wide, attenuate to rounded and abruptly decurrent at the base, acute to rounded at the apex, sometimes apiculate, coriaceous, glabrous, lustrous above, the venation prominulous, paler beneath, the lateral nerves obscure, 4 or 5 on each side, the margin plane or subrevolute; flowers perfect, terminal, solitary or geminate, sessile, 5-parted; calyx and hypanthium 3–3.5 mm. long, glabrous, the calyx-lobes linear or subulate, equaling or shorter than the calyx-tube, sometimes ciliate; corolla white, glabrous outside, attenuate in bud, the tube 7–12 mm. long, gradually dilated upward, the throat naked, the lobes ovate-oblong, 7–8 mm. long, obtuse or acute, apiculate, glabrous within; fruit oval-globose, 2–2.5 cm. long, 1.6–2 cm. thick, smooth or obscurely tuberculate, glabrous; seeds numerous (about 30), 5–6 mm. long, dark-brown.

TYPE LOCALITY: Near Jalapa, Veracruz.

DISTRIBUTION: Nuevo León and Tamaulipas to Tabasco.

37. *Randia Millsplughiana* Blake, Proc. Biol. Soc. Wash. 34: 45.
1921.

A glabrous shrub, the stout branches armed with stout spines 4–9 mm. long; leaves crowded at the ends of the branchlets, opposite, the petioles 1–1.5 mm. long, glabrous; leaf-blades elliptic or broadly elliptic, 15–27 mm. long, 9–17 mm. wide, obtuse or acutish, acute at the base, deep-green above and sublustrous, slightly paler beneath, glabrous or sparsely pilosulous along the costa, the lateral nerves 5–7 on each side; flowers perfect, solitary, terminal on short spur-like twigs; hypanthium obconic, glabrous, 2.5 mm. long; calyx-lobes united into a short tube, this pilose within at the base, the free lobes thick, subulate-triangular, 2.5–3 mm. long, acute, erect; corolla glabrous outside, the tube 13–15 mm. long, slightly dilated upward, with a pilose ring within between the base and the stamens, the 5 lobes lanceolate, acuminate, slightly oblique, 9–15 mm. long, 5 mm. wide; stamens included, the anthers 5 mm. long; ovary 2-celled, the style 10.5 mm. long, the stigma clavate, undivided, 4 mm. long.

TYPE LOCALITY: Maxcanú, Yucatán.

DISTRIBUTION: Known only from the type locality.

38. *Randia Cookii* Standley, sp. nov.

Branches grayish, the branchlets stout, divaricate, appressed-pilose when young, bearing at the apex 2 stout spines 6–9 mm. long, the leaves mostly clustered on short lateral spurs; stipules 1.5–3 mm. long, rounded-deltoid, acuminate, strigose outside, glabrous within; petioles 1–1.5 mm. long, glabrous; leaf-blades obovate, oval-oblong, oval-ovate, or obovate-oblong, 1–3.3 cm. long, 0.6–1.2 cm. wide, acutish to rounded at the apex, obtuse to acuminate at the base, often apiculate, coriaceous or subcoriaceous, lustrous, glabrous above, the venation prominulous, glabrous beneath or sparsely scaberulous along the costa, the lateral nerves 4 or 5 on each side, prominulous or plane, the margin plane or subrevolute; flowers perfect, terminal, solitary, sessile, 5-parted; calyx and hypanthium 2–2.5 mm. long, the calyx strigillose outside, pilose within, the calyx-lobes linear, triangular, or oblanceolate, usually ciliate, equaling or shorter than the calyx-tube; corolla 6 mm. long, the tube cylindric, the throat naked, the lobes rounded, about half as long as the tube; anthers subexserted; fruit globose, 8–12 mm. in diameter, smooth, glabrous, lustrous, the pericarp thin; seeds few.

Ramuli adpresso-pilosi apice spinis 2 crassis terminati; folia parva, lamina obovata vel obovato-oblonga apice acutiuscula vel rotundata saepe apiculata, supra glabra, subtus glabra vel ad costam sparse scaberula; flores hermaphroditii terminales solitarii sessiles 5-meri; calyx extus strigillosus intus pilosus, lobis linearibus vel triangularibus vel oblanceolatis; corolla parva fauce non barbata, lobis rotundatis tubo duplo brevioribus; fructus parvus globosus glaber paucispermus.

Type collected at Santa Rosa, Guatemala, June, 1904, *O. F. Cook 249* (U. S. Nat. Herb. 860099).

39. *Randia chiapensis* Standley, Contr. U. S. Nat. Herb. 23: 1377.
1926.

Branches brownish, the branchlets elongate, divaricate, scaberulous when young, bearing at the apex 2 slender spines 7–12 mm. long, the leaves crowded at the ends of the branches or on short lateral spurs; stipules 1.5–2.5 mm. long, rounded-deltoid, cuspidate, strigillose outside, glabrous within; petioles 2 mm. long or shorter, often obsolete, glabrous; leaf-blades obovate, rounded-obovate, or rhombic-orbicular, 0.8–2.8 cm. long, 0.6–1.5 cm. wide, rounded or very obtuse at the apex, often apiculate, attenuate to rounded and short-decurrent at the base, coriaceous, glabrous, lustrous above, the venation prominulous, slightly paler beneath, the lateral nerves subimpressed, 3–6 on each side, the margin plane or subrevolute; flowers perfect, terminal, solitary, sessile, 5-parted; calyx and hypanthium 2.5 mm. long, glabrous, the calyx-lobes linear to ovate-oblong, obtuse, shorter than the tube; corolla 6–7 mm. long, acuminate in bud, glabrous outside, the tube cylindrical, nearly as thick as long, the throat naked, the lobes suborbicular, shortly cuspidate-acuminate, about equaling the tube; anthers subexserted; fruit globose, 1 cm. in diameter, glabrous, slightly roughened, with a thick hard pericarp.

TYPE LOCALITY: Canjob, Chiapas.

DISTRIBUTION: Chiapas.

40. *Randia Karstenii* Polak. Linnaea 41: 568. 1877.

A densely branched shrub 1–2 meters high, the branches brownish or grayish, the branchlets stout, subdivaricate, minutely appressed-pilose when young, bearing at the apex 2 stout suberect spines 1–1.4 cm. long, the leaves crowded on very short lateral spurs; stipules 1.5 mm. long, rounded-ovate, mucronate, glabrous; petioles 6 mm. long or shorter, marginate, glabrous; leaf-blades obovate-oblong, obovate, oblong-elliptic, or rounded-obovate, 1.5–4 cm. long, 0.8–2.2 cm. wide, acuminate or attenuate at the base, obtuse or rounded at the apex, often apiculate, membranaceous or chartaceous, deep-green and lustrous above, glabrous, the venation prominulous, slightly paler beneath, minutely pilose along the costa or glabrous, the lateral nerves subimpressed, 5–8 on each side, the margin plane; flowers perfect, terminal, solitary, sessile, 5-parted; calyx and hypanthium 2–3 mm. long, glabrous, the calyx-lobes linear or oblanceolate, equaling or shorter than the tube, ciliolate; corolla 6 mm. long, glabrous outside, acute in bud, the tube cylindrical, the throat naked, the lobes broadly ovate, abruptly short-acuminate; anthers subexserted; fruit globose, 7–11 mm. in diameter, glabrous, the pericarp very thin; seeds 2–4, 6–7 mm. long, dark-brown.

TYPE LOCALITY: San José, Costa Rica.

DISTRIBUTION: Costa Rica, at an elevation of 1500 meters or less, chiefly in dry thickets and roadside hedges.

41. *Randia ciliolata* C. Wright; Sauv. Anal. Acad. Ci. Habana 6:
100. 1869.

Genipa ciliolata Maza, Anal. Soc. Esp. Hist. Nat. 23: 288. 1895.

A shrub 2 meters high, the branches grayish, the branchlets stout or slender, divergent, sparsely strigillose when young, bearing at the apex 2 stout or slender spines 0.6–1.2 cm. long, the leaves clustered on very short lateral spurs; stipules minute, pilose within at the base; petioles 4 mm. long or shorter, marginate; leaf-blades orbicular, oval, rounded-obovate, or elliptic-oblong, 1.5–3.2 cm. long, 0.8–3.2 cm. wide, obtuse or rounded at the base and abruptly decurrent, very obtuse or rounded at the apex, subcoriaceous, ciliolate when young, glabrous, lustrous above, the venation prominulous, the lateral nerves subimpressed beneath, inconspicuous, 3–5 on each side, the margin subrevolute; flowers perfect, terminal, solitary, sessile; calyx and hypanthium 2.5 mm. long, glabrous, the 5 calyx-lobes minute, subulate; corolla 11–12 mm. long, glabrous outside, the tube cylindrical, the throat naked, the 5 lobes ovate, acuminate, shorter than the tube; anthers subexserted; fruit globose, 2 cm. in diameter, umbonate, obscurely tuberculate; seeds numerous.

TYPE LOCALITY: Plains near Santa Catalina de Guantánamo, Cuba.

DISTRIBUTION: Oriente, Cuba.

42. *Randia laetevirens* Standley, Contr. U. S. Nat. Herb. 23: 1377.
1926.

A shrub 1-3 meters high, the branches grayish or brownish, the branchlets stout, divaricate, strigillose when young, bearing at the apex 2 stout ascending spines 0.8-1.5 cm. long, the leaves crowded on very short lateral spurs; stipules 3 mm. long or shorter, cuspidate from a deltoid base, strigillose or glabrate outside, glabrous within; petioles 5 mm. long or shorter, often obsolete; leaf-blades mostly obovate-oblong, sometimes obovate, oblong, oblong-oval, elliptic, or rarely suborbicular, 0.8-6 cm. long, 0.5-2.2 cm. wide, acute, acuminate, or attenuate at the base, rarely rounded, acute to rounded at the apex, often mucronulate, coriaceous at maturity, bright-green, glabrous, lustrous above, often whitish-punctulate, the venation prominent or prominulous, the lateral nerves plane or subimpressed beneath, 4-9 on each side, subdivaricate, the margin usually subrevolute; flowers perfect, terminal, sessile, usually clustered, 5-parted; calyx and hypanthium 1.5-3 mm. long, glabrous or obscurely scaberulous, the calyx-lobes triangular-subulate, half as long as the tube or almost obsolete; corolla white, acute or acuminate in bud, glabrous outside, the tube 4-6.5 mm. long, cylindric, dilated upward, the throat naked, the lobes 2.5-4.5 mm. long, rounded-ovate, abruptly short-acuminate; anthers subexserted; fruit globose, 8-14 mm. in diameter, smooth or slightly rugose, glabrous, stramineous, the pericarp thick and hard; seeds few (5-7), 6-7 mm. long, dark-brown.

TYPE LOCALITY: Cerro de la Silla, near Monterrey, Nuevo León.

DISTRIBUTION: In dry thickets, Tamaulipas to Sinaloa, Nayarit, and Veracruz.

43. *Randia canescens* Greenm. Proc. Am. Acad. 34: 573. 1899.

A shrub or small tree, 3-5 meters high, the branches stout, grayish or brownish, the leaves crowded at the ends of very short lateral spurs, the branches bearing numerous pairs of very stout spines 5-14 mm. long; stipules imbricate, rounded, 2-4 mm. long, thin, brownish, glabrous, or sparsely pilose outside; leaves sessile or very shortly petiolate, the blades obovate, obovate-orbicular, or suborbicular, 7-15 mm. long, 5-15 mm. wide, broadly rounded to acute at the base, rounded at the apex, subcoriaceous, densely white-pilose above, densely whitish-tomentose beneath at first, pilose in age, the venation inconspicuous; flowers perfect (?), terminal, solitary, sessile; hypanthium 4 mm. long, densely pilose, the 5 calyx-lobes linear, acute, equaling or longer than the tube, pilose; corolla salverform, short-pilose outside with mostly spreading hairs, the tube 6-7 mm. long, the throat naked, the 5 lobes broadly oval or suborbicular, 4-6 mm. long, obtuse or rounded at the apex, glabrous within; anthers subexserted.

TYPE LOCALITY: Barranca near Cuernavaca, Morelos, altitude 1500 meters.

DISTRIBUTION: Vicinity of the type locality.

44. *Randia Rosei* Standley, Contr. U. S. Nat. Herb. 20: 203. 1919.

Branches brownish, with short internodes, short-pilose when young with appressed hairs, armed with numerous pairs of stout divergent spines 1-2 cm. long, the leaves mostly crowded on very short lateral spurs; stipules 2 mm. long, rounded-ovate, obtuse, mucronate, thick, brownish, glabrous; petioles slender, 1-5 mm. long, ciliate; leaf-blades suborbicular, rhombic-oval, or rhombic-ovate, 1-2.5 cm. long, 0.7-1.8 cm. wide, rounded or obtuse at the base and short-decurrent, rounded or very obtuse at the apex, sometimes apiculate, herbaceous, bright-green, ciliate, short-pilose beneath along the veins, elsewhere glabrous, the lateral nerves inconspicuous, 5 or 6 on each side, ascending or subdivaricate; flowers perfect, terminal, solitary, sessile; hypanthium 2 mm. long, pilose, the 5 calyx-lobes linear, 3-6 mm. long, ciliate; corolla salverform, glabrous outside, the tube 10-12 mm. long, ampliate above, the throat naked, the 5 lobes ovate-oval, 8 mm. long, 5-7 mm. wide, obtuse or acutish, apiculate, glabrous within; anthers 1.5-2 mm. long, included; fruit (very immature) subglobose, rather sparsely pilose.

TYPE LOCALITY: Rosario, Sinaloa.

DISTRIBUTION: Sinaloa and Nayarit.

45. *Randia Gaumeri* Greenm. & Thomps. Ann. Mo. Bot. Gard. 1:
410. 1915.

A shrub, the branches whitish, bearing numerous pairs of stout divaricate spines 0.7-1.5 cm. long, the leaves clustered on very short lateral spurs; stipules minute, whitish, mucronate;

petioles slender, 2–3 mm. long; leaf-blades cuneate-orbicular or broadly cuneate-obovate, 0.5–1.5 cm. long, 0.5–1.1 cm. wide, cuneate or broadly cuneate at the base, broadly rounded or subretuse at the apex, membranaceous, minutely ciliate, glabrous or puberulent above near the base, the lateral nerves inconspicuous, 3 or 4 on each side, ascending at an acute angle; flowers perfect, terminal, solitary, sessile, 4–5-parted; calyx and hypanthium 1–1.5 mm. long, glabrous, the calyx-lobes deltoid, ciliate, about half as long as the tube; corolla 5–6 mm. long, glabrous outside, obtuse in bud, the tube cylindrical, the throat naked, the lobes ovate-oblong, obtuse, equaling the tube; anthers subexserted.

TYPE LOCALITY: Izamal, Yucatán.
DISTRIBUTION: Yucatán.

46. *Randia blepharodes* Standley, Contr. U. S. Nat. Herb. 23: 1378.
1926.

A shrub about 3 meters high, the branches brownish, bearing numerous pairs of stout divaricate spines 0.8–2 cm. long, the leaves crowded on short lateral spurs; stipules minute, brownish, glabrous; leaves (immature) subsessile or short-petiolate, the blades cuneate-orbicular or rounded-obovate, 7–17 mm. long and broad, cuneate at the base, broadly rounded at the apex or subretuse, membranaceous, glabrous, the lateral nerves 3 or 4 on each side; flowers perfect, terminal, clustered, sessile, 5-parted; calyx and hypanthium 2.5–3 mm. long, more or less scaberulous, the calyx-lobes lance-linear, much longer than the tube, long-ciliate; corolla white, glabrous outside, attenuate in bud, the tube slender, 1 cm. long, the lobes ovate or oblong-ovate, 4–5 mm. long, obtuse, the throat naked; anthers subexserted; fruit globose, 2 cm. in diameter, sparsely puberulent, the pericarp hard and thick; seeds numerous.

TYPE LOCALITY: Mexcala, Guerrero, altitude 500 meters.
DISTRIBUTION: Guerrero and Oaxaca.

47. *Randia obcordata* S. Wats. Proc. Am. Acad. 24: 53. 1889.

A shrub 2–3 meters high, the branches stout, brown or gray, glabrate, bearing few or numerous pairs of stout divergent spines 6–10 mm. long, the leaves crowded on very short, nearly obsolete lateral spurs; stipules minute, imbricate; leaf-blades flabellate, broadly cuneate-orbicular, or obcordate, 0.4–1.8 cm. long and broad, decurrent at the base to a short ciliate petiole, truncate or retuse at the apex, glabrous, usually ciliate, the lateral nerves obscure; flowers terminal, solitary, sessile; fruit globose, 6–8 mm. in diameter, black, more or less rugose, lustrous, glabrous, the pericarp very thick; seeds 2–4, oval or suborbicular, brown, 5 mm. long.

TYPE LOCALITY: On high gravelly mesas near Guaymas, Sonora.
DISTRIBUTION: Dry plains and hillsides, Sonora to Colima.

48. *Randia Thurberi* S. Wats. Proc. Am. Acad. 24: 53. 1889.

A shrub 1.5–2.5 meters high, the branches stout, reddish-brown or grayish, appressed-pilose when young, bearing numerous pairs of stout divergent spines 1–1.5 cm. long, the leaves mostly crowded on very short, nearly obsolete lateral spurs; stipules ovate-deltoid, 1.5 mm. long, thin, appressed-pilose outside, pilose within at the base; petioles sometimes 1.5 cm. long, marginate, often nearly obsolete; leaf-blades oval, orbicular, cuneate-orbicular, orbicular-spatulate, or cuneate-obovate, 0.6–4.5 cm. long, 0.5–3 cm. wide, cuneate at the base or usually rounded or obtuse and abruptly acuminate or very long-attenuate, obtuse to subretuse at the apex, often apiculate, chartaceous or subcoriaceous, ciliate, glabrous or sparsely short-pilose or puberulent, especially along the nerves beneath, the lateral nerves usually inconspicuous, 2 or 3 on each side; flowers terminal, solitary, sessile; calyx-lobes 5, linear or oblanceolate, 1.5–3 mm. long; fruit globose, 1.6–2.5 cm. in diameter, greenish-yellow, smooth, glabrous; seeds numerous, suborbicular, 6 mm. long, dark-brown.

TYPE LOCALITY: On hills between Rayón and Ures, Sonora.
DISTRIBUTION: Dry hillsides and thickets, Sonora and Sinaloa.

49. *Randia rhagocarpa* Standley, Contr. U. S. Nat. Herb. 23: 1376.
1926.

A densely branched shrub 2–3 meters high, the branches brown or grayish, bearing numerous pairs of stout divaricate spines 1–1.8 cm. long, the leaves crowded on short lateral spurs;

stipules 1.5 mm. long, broadly ovate, acuminate, scaberulous or glabrate outside, glabrous within; petioles slender, 2-7 mm. long, ciliolate or glabrate; leaf-blades cuneate-orbicular or rounded-obovate, 1-4 cm. long, 1-3 cm. wide, rounded or truncate at the apex, sometimes emarginate, cuneate or acuminate at the base, chartaceous or subcoriaceous, ciliolate, dull above and whitish-punctulate, scaberulous along the costa, appressed-pilous or glabrate beneath, the lateral nerves plane or subimpressed, 3 or 4 on each side, the margin plane; flowers terminal, sessile; fruit globose, 10-12 mm. in diameter, smooth and black at maturity, very lustrous, the pericarp thin; seeds about 8, suborbicular or rhombic, 5-7 mm. long, dark-brown.

TYPE LOCALITY: Vicinity of Victoria, Tamaulipas, altitude 320 meters.

DISTRIBUTION: Dry hillsides, Tamaulipas.

DOUBTFUL SPECIES

RANDIA CAPITATA DC. Prodr. 4: 387. 1830. (*Solena capitata* D. Dietr. Syn. Pl. 1: 800. 1839.) Described from Anasteca, Mexico. The description suggests *R. echinocarpa* Moc. & Sessé, but that species does not resemble very closely the plate cited by De Candolle.

65. *BERTIERA* Aubl. Pl. Guian. 180. 1775.

Shrubs or small trees, glabrous or pubescent, the branchlets terete. Leaves opposite, petiolate or sessile. Stipules intrapetiolar, connate into a bifid sheath. Flowers small, white or greenish, cymose, the cymes arranged in terminal pedunculate panicles, the bracts narrow; hypanthium subglobose or turbinate, the calyx 5-dentate or truncate, persistent; corolla funnellform, the tube terete, usually sericeous outside, the throat glabrous or villous, the limb 5-lobate, the lobes short, ovate, acute, contorted. Stamens 5, inserted in the corolla-throat; filaments very short; anthers ovate to subulate, dorsifixed, the connective acuminate or produced at the apex, bilobate at the base, included. Disk cupular or annular. Ovary 2-celled; style filiform, glabrous; stigma fusiform, entire or bilobate, the lobes linear, obtuse; ovules numerous, the placentae entire, affixed to the septum. Fruit baccate, globose, fleshy, 2-celled. Seeds numerous, very small, angulate, the testa foveolate or granulate; endosperm fleshy; embryo small, straight or curved, the cotyledons ovate, the radicle terete.

Type species, *Bertiera guianensis* Aubl.

Flowers not secund; lateral nerves of the leaves 12-14 on each side.

Flowers secund; lateral nerves of the leaves 5-8 on each side.

Flowers short-pedicellate.

Flowers closely sessile.

Stipules 1-1.8 cm. long, the sheath deeply cleft on one side, shallowly cleft on the other side; bracts of the inflorescence often 1 cm. long.

Stipules 0.5-1 cm. long, the sheath cleft on both sides to about the middle; bracts 6 mm. long or shorter.

1. *B. panamensis*.

2. *B. gon-zalcoides*.

3. *B. angustifolia*.

4. *B. guianensis*.

1. *Bertiera panamensis* Standley, sp. nov.

A shrub 2 meters high, the slender branchlets strigose, with elongate internodes; petioles stout, 1.2-3 cm. long, strigose; leaf-blades elliptic or ovate-elliptic, 12-18 cm. long, 5-7 cm. wide, long-acuminate, with a narrow acumen, acute at the base, membranaceous, concolorous, the veins prominently reticulate on both surfaces, glabrous above, strigillose beneath on the nerves, the lateral nerves 12-14 on each side, arcuate-divaricate; inflorescence cymose-paniculate, lax, the peduncle 4 cm. long, the bracts and bractlets ovate, the flowers long-pedicellate, the pedicels 7 mm. long or shorter; fruit 2.5 mm. in diameter, orange, sparsely strigillose; seeds reddish-brown, lustrous, foveolate.

Frutex, ramulis strigosis; folia petiolata, lamina elliptica vel ovato-elliptica longiacuminata basi acuta membranacea, venis utrinque prominenti-reticulatis, supra glabra, subtus ad nervos strigillosa, nervis lateralibus utroque latere 12-14; inflorescentia cymoso-paniculata laxa pedunculata, bracteis bracteolisque ovatis, floribus usque ad 7 mm. longe pedicellatis; bacca 2.5 mm. diam. aurantiaca sparse strigillosa, seminibus ferrugineis foveolatis.

Type collected in the vicinity of Cana, Panama, in 1908, *R. S. Williams 832* (U. S. Nat. Herb. no. 678312, type).

2. *Bertiera gonzaleoides* Griseb. Cat. Pl. Cub. 124. 1866.

A shrub, the branchlets slender, glabrous, the internodes short; stipules 5–8 mm. long, cleft to below the middle, the lobes triangular-subulate, glabrous or nearly so; petioles slender, 3–13 mm. long, glabrous; leaf-blades oblong-lanceolate, 9–15 cm. long, 2.5–4 cm. wide, very acute at the base, attenuate to the apex, membranaceous, concolorous, glabrous above, the venation plane or subimpressed, glabrous beneath or obscurely strigillose along the costa, the veins slender, prominent, the lateral nerves 5 on each side, subarcuate, ascending at an acute angle; inflorescence narrowly cymose-paniculate, the flowers secund, very shortly pedicellate, the bracts linear, 3 mm. long or shorter; calyx and hypanthium about 1.2 mm. long, glabrous, the calyx-lobes deltoid-ovate, obtuse, shorter than the tube; fruit globose, 3 mm. in diameter, glabrous; seeds reddish-brown, 1–1.3 mm. long, coarsely granulate.

TYPE LOCALITY: Western Cuba.

DISTRIBUTION: Known only from the type locality.

3. *Bertiera angustifolia* Benth. Bot. Voy. Sulph. 103. 1845.

A shrub 3 meters high, the branchlets slender, brown, densely pilose-strigose with fulvous hairs, the internodes elongate; stipules 1–1.8 cm. long, the sheath cleft on one side halfway to the base, shallowly cleft on the other side, thin, densely fulvous-sericeous; leaves sessile or nearly so, the blades oblong-lanceolate, 10–12.5 cm. long, 4–5 cm. wide, rounded or obtuse at the base, very acute or attenuate at the apex, membranaceous, concolorous, glabrous above or sericeous along the costa, the venation impressed, fulvous-sericeous beneath, especially along the prominent veins, the lateral nerves about 8 on each side, subarcuate, ascending at an acute angle; inflorescence cymose-paniculate, the panicles 5.5–11 cm. long, 4–9 cm. wide, long-pedunculate, the flowers secund, closely sessile, the bracts linear, 6–16 mm. long; calyx and hypanthium strigillose, the calyx-lobes triangular-subulate; corolla white, sparsely short-pilose outside; fruit globose, 3–3.5 mm. in diameter, sparsely strigillose; seeds 1–1.3 mm. long, coarsely granulate, orange-brown.

TYPE LOCALITY: Cocos Island, Costa Rica.

DISTRIBUTION: Cocos Island and Panama.

4. *Bertiera guianensis* Aubl. Pl. Guian. 180. 1775.

Bertiera palustris A. Rich; DC. Prodr. 4: 392. 1830.

A slender shrub 2–4 meters high, the branches brown, the branchlets slender, appressed-pilose or glabrate, the internodes elongate; stipules 0.5–1 cm. long, cleft on both sides to the middle or lower, the lobes triangular, subulate-acuminate, brown, sericeous; petioles stout, 3–7 mm. long, sericeous or glabrate; leaf-blades lance-oblong or ovate-oblong, 8–17 cm. long, 3–7 cm. wide, acute or acutish at the base, short-acuminate or attenuate at the apex, membranaceous, concolorous, glabrous above or appressed-pilose along the costa, the venation plane or subimpressed, appressed-pilose beneath, especially along the prominent veins, the lateral nerves 5–8 on each side, arcuate, ascending at an obtuse angle; inflorescence a narrow elongate pedunculate panicle, the flowers closely sessile, secund, the bracts linear, 6 mm. long or shorter; calyx and hypanthium 2–2.5 mm. long, short-pilose, the calyx-lobes triangular; corolla greenish-white, 5–7 mm. long, appressed-pilose outside, the lobes deltoid-ovate, acuminate, half as long as the tube; anthers 2 mm. long; fruit globose, 3.5–4 mm. in diameter, blue, 10-costate, minutely pilose or glabrate; seeds 1–2 mm. long, coarsely granulate, orange-brown.

TYPE LOCALITY: Guiana.

DISTRIBUTION: British Honduras to Panama, Amazonian Brazil, and Bolivia.

ILLUSTRATIONS: Aubl. Pl. Guian. pl. 69; Lam. Tab. Encyc. pl. 165; Mart. Fl. Bras. 6: pl. 137; E. & P. Nat. Pfl. 4: f. 30, H-K; Mém. Soc. Hist. Nat. Paris 5: pl. 23.

66. *OTOCALYX* Brand. Univ. Calif. Publ. Bot. 6: 68. 1914.

Branched shrubs, the branchlets terete. Leaves opposite, short-petiolate. Stipules interpetiolar, deltoid, persistent. Flowers small, in few-flowered, axillary or terminal, long-pedunculate cymes; hypanthium obovoid; calyx 4-lobate, persistent, one of the lobes dilated into a foliaceous limb; corolla sericeous outside, the tube cylindrical, slightly ampliate above,

the limb 4-lobate, the lobes imbricate. Stamens 4, inserted in the corolla-throat; filaments very short; anthers oblong, dorsifixed, obtuse at each end. Ovary 2-celled; style short, the branches oblong, obtuse, glabrous; ovules very numerous, the placentae affixed to the septum, lamellate, reflexed. Fruit baccate (?), subglobose. Seeds minute, angulate, tuberculate.

Type species, *Otocalyx chiapensis* Brand.

1. *Otocalyx chiapensis* Brand. Univ. Calif. Publ. Bot. 6: 69. 1914.

Branches slender, terete, brown or grayish, the branchlets strigillose, the internodes short; stipules 2-3 mm. long, acuminate, erect, strigose outside; petioles slender, 3-10 mm. long, appressed-pilose; leaf-blades ovate, 4-6 cm. long, 1.7-3 cm. wide, rounded to acutish at the base, sometimes short-decurrent, long-acuminate at the apex, with a narrow, often falcate acumen, membranaceous, green above, sparsely setose-pilose or glabrate, paler beneath, appressed-pilose along the veins, elsewhere glabrous, the lateral nerves slender, prominent, 5 or 6 on each side, arcuate; cymes 3-9-flowered, the peduncles slender, 1.5-3 cm. long, strigose, the flowers sessile or short-pedicellate, the bracts foliaceous, the bractlets linear-subulate, green, 3-5 mm. long; hypanthium 3-4 mm. long, densely strigose, 3 of the calyx-lobes linear, 3-5 mm. long, green, the fourth foliaceous, lanceolate, linear-oblong, or oblanceolate, 9-12 mm. long, acute, appressed-pilose; corolla coriaceous, the tube 1 cm. long, the lobes short, rounded; fruit 5-6 mm. long, strigose; seeds pale-brown.

TYPE LOCALITY: Cerro del Boquerón, Chiapas.

DISTRIBUTION: Chiapas.

67. *HAMELIA* * Jacq. Enum. Pl. Carib. 2, 16. 1760.

Tepesia Gaertn. Fruct. 3: 72. 1805.

Duhamelia Pers. Syn. Pl. 1: 203. 1805. Not *Duhamelia* Dombey, 1783.

Shrubs or trees, glabrous or pubescent. Leaves opposite or verticillate, petiolate. Stipules interpetiolar, deciduous. Flowers yellow or red, small or large, arranged in mostly terminal, scorpioid cymes, sessile or pedicellate, the bracts minute; hypanthium ovoid or turbinate; calyx 5-lobate, the lobes short or elongate, persistent; corolla tubular or funneliform, the tube 5-costate, constricted at the base, the throat glabrous, the limb 5-lobate, the lobes short, imbricate, 1 or 2 exterior. Stamens 5, inserted at the base of the corolla-tube; filaments short; anthers linear, basifixed, included or subexserted, the connective appendaged at the apex. Disk swollen. Ovary 5-celled; style filiform, the stigma fusiform; ovules numerous, the placentae affixed to the axis of the ovary. Fruit small, baccate, ovoid to cylindrical, 5-celled. Seeds numerous, minute, angulate, the testa membranaceous, foveolate; endosperm fleshy; embryo clavate, bifid.

Type species, *Hamelia erecta* Jacq.

Calyx-lobes oblong to subulate, longer than broad.

Corolla 1.8-4 cm. long, conspicuously ampliate above; leaves mostly ternate.

Calyx-lobes subulate; corolla 3-4 cm. long.

Corolla 3.5-4 cm. long, pilose or villosulous outside.

Corolla 3 cm. long, minutely puberulent.

Calyx-lobes mostly oblong, obtuse; corolla 1.8-3 cm. long.

Corolla villous; leaves villous beneath.

Corolla glabrous or minutely puberulent; leaves puberulent beneath along the veins.

Corolla 18-22 mm. long; calyx-lobes 2.5-6 mm. long; leaves mostly ternate.

Corolla 25-30 mm. long; calyx-lobes 1.5 mm. long; leaves opposite.

Corolla 1-1.5 cm. long; leaves opposite.

Corolla conspicuously ampliate above when fully expanded; leaves almost glabrous.

Corolla tubular.

Corolla 6-10 mm. long; leaves glabrous.

Corolla 15 mm. long; leaves villous beneath.

Calyx-lobes deltoid or broadly deltoid, as broad as long.

Leaves very scabrous on the upper surface.

Corolla 3-4 cm. long; fruit 10-14 mm. long.

1. *H. xorullensis*.
2. *H. costaricensis*.
3. *H. Roviroasae*.

4. *H. calycosa*.

5. *H. Storkii*.

6. *H. axillaris*.

7. *H. breviflora*.

8. *H. xerocarpa*.

9. *H. scabrida*.

* Often spelled *Hamellia* by later writers.

- Corolla about 2 cm. long; fruit 7 mm. long.
Leaves not scabrous. 10. *H. papillosa*.
- Corolla 2.5-4.5 cm. long, ampliate above or with spreading lobes.
Corolla pubescent outside with spreading hairs.
Corolla-tube 22 mm. long; leaves verticillate, almost glabrous. 11. *H. magniloba*.
Corolla-tube 28 mm. long; leaves opposite, pilose beneath. 12. *H. Rowleei*.
- Corolla glabrous outside or merely pruinose-puberulent.
Leaves 6-12 cm. wide; corolla-lobes spreading; leaves opposite. 13. *H. panamensis*.
Leaves 1.5-6 cm. wide; corolla-lobes erect; leaves mostly ternate.
Corolla 3.5-6 cm. long. 14. *H. ventricosa*.
Corolla 2.5-3 cm. long.
Leaves glabrous on the upper surface; corolla yellow. 15. *H. cuprea*.
Leaves minutely pilosulous on the upper surface; corolla orange. 16. *H. intermedia*.
- Corolla 0.6-2.2 cm. long, tubular.
Leaves opposite.
Corolla 6-10 mm. long. 7. *H. breviflora*.
Corolla 15-20 mm. long.
Flowers sessile, secund; leaf-blades 10-24 cm. long. 17. *H. magnifolia*.
Flowers pedicellate, not secund.
Leaf-blades 4-6.5 cm. long; flowers short-pedicellate. 18. *H. chrysantha*.
Leaf-blades 15-25 cm. long; flowers long-pedicellate. 19. *H. longipes*.
- Leaves verticillate.
Inflorescences 2- or few-flowered; corolla 22 mm. long. 20. *H. pauciflora*.
Inflorescences many-flowered.
Flowers not secund, or obscurely so, pedicellate; fruit globose; corolla 8-13 mm. long. 21. *H. versicolor*.
Flowers secund, mostly sessile; fruit usually longer than broad; corolla 14-22 mm. long.
Mature leaves glabrous, or pubescent beneath along the costa and nerves; leaves mostly quaternate. 22. *H. nodosa*.
Mature leaves copiously pubescent beneath, usually over the whole surface; leaves mostly ternate. 23. *H. patens*.

1. *Hamelia xorullensis* H. B. K. Nov. Gen. & Sp. 3: 414. 1820.

Hamelia hypomalaca B. L. Robinson, Proc. Am. Acad. 45: 406. 1910.

A shrub or small tree, 3-6 meters high, the branches stout, reddish-brown, densely short-pilose when young with fulvous hairs; stipules small, deltoid, subulate-cuspidate; leaves mostly ternate, the petioles slender, 1-2.5 cm. long, densely short-pilose, the blades oval, elliptic, oval-oblong, or oval-ovate, 5.5-13.5 cm. long, 2.5-6.5 cm. wide, rounded or obtuse at the base, sometimes short-decurrent, abruptly or subabruptly long- or short-acuminate at the apex, with an obtuse acumen, membranaceous, bright-green above, sparsely and minutely pilose, paler beneath, densely short-pilose or villosulous, the lateral nerves prominent, 5-8 on each side, arcuate; inflorescence usually terminal, pedunculate, few- or many-flowered, the branches densely short-pilose, the flowers usually secund, sessile or pedicellate, the pedicels sometimes 1 cm. long; calyx and hypanthium pilose, the hypanthium 3-4 mm. long, the calyx-lobes linear or subulate, 1-4 mm. long; corolla yellow, 3.5-4 cm. long, sparsely short-pilose or villosulous, abruptly ampliate above the base, 1-1.2 cm. wide in the throat, the lobes rounded-ovate, cuspidate, 5-6 mm. long; filaments 1-1.2 cm. long, the anthers 2 cm. long, spatulate at the apex, equaling the corolla-tube; fruit ellipsoid or cylindric, 1 cm. long, pilose or glabrate; seeds 0.8 mm. long, compressed, lustrous, faveolate.

TYPE LOCALITY: Mount Jorullo, Michoacán, at an altitude of 1150 meters.

DISTRIBUTION: Sinaloa and Durango to Michoacán.

2. *Hamelia costaricensis* Standley, Contr. U. S. Nat. Herb. 20: 207. 1919.

Branchlets stout, angulate, densely and minutely fulvous-puberulent; stipules small, deltoid; leaves opposite, the petioles slender, 1.2-3.5 cm. long, minutely puberulent, the blades oval-ovate or oval-elliptic, 8-19 cm. long, 4-10.5 cm. wide, rounded and short-decurrent at the base, very acute or subacuminate at the apex, membranaceous, minutely puberulent along the veins, the venation prominent beneath, the lateral nerves about 9 on each side, subarcuate; inflorescence pedunculate, branched, the branches puberulent, the flowers sessile, secund; calyx and hypanthium densely puberulent, the hypanthium oblong, 3.5 mm. long, the calyx-lobes subulate, 1-1.5 mm. long; corolla densely fulvous-puberulent in bud, becoming glabrate,

the tube 2.2 cm. long, ampliate upward, 6–7 mm. wide in the throat, the lobes rounded, 5 mm. long, spreading.

TYPE LOCALITY: Near San Mateo, Costa Rica.

DISTRIBUTION: Known only from the type locality.

3. *Hamelia Rovirosae* Wernham, Jour. Bot. 49: 211. 1911.

Hamelia patens var. *coronata* Donn. Smith, Bot. Gaz. 40: 4. 1905.

Hamelia purpurascens Blake, Contr. Gray Herb. 52: 105. 1917.

A large shrub or small tree as much as 5 meters high, sometimes clambering, the branches slender, sparsely or densely villous; stipules deltoid, with a subulate tip 3–5 mm. long; leaves ternate, the petioles slender, 0.4–1.4 cm. long, villous, the blades elliptic, elliptic-oblong, or oval-elliptic, 4.5–15 cm. long, 2–5 cm. wide, acute or acuminate at the base, acute or obtusely short-acuminate at the apex, membranaceous-chartaceous, deep-green above, glabrous or sparsely villous, minutely papillose, paler beneath, sparsely or densely villous along the principal veins, the lateral nerves slender, arcuate, about 8 on each side; inflorescence terminal, few- or many-flowered, short-pedunculate, lax, the branches short or elongate, short-villous, the flowers sessile or subsessile, usually secund; calyx and hypanthium sparsely or densely villous, the hypanthium 3 mm. long, the calyx-lobes narrowly oblong, obtuse, 2–5 mm. long, reflexed; corolla 1.8–2.4 cm. long, dull-red or orange-red, villous outside, cylindrical below, gradually ampliate upward, 6 mm. wide in the throat, the lobes rounded, 1.5–2 mm. long; anthers 8–9 mm. long, nearly equaling the corolla-tube; fruit ovoid, 8 mm. long, red or purple, sparsely or densely villous; seeds 0.6–0.8 mm. long, yellowish-brown, lustrous, foveolate.

TYPE LOCALITY: Banks of San Sebastián River, Tabasco.

DISTRIBUTION: Forests and stream banks, Tabasco to Panama.

4. *Hamelia calycosa* Donn. Smith, Bot. Gaz. 12: 132. 1887.

Hamelia chiapensis Brand. Univ. Calif. Publ. Bot. 6: 71. 1914.

A shrub about 4 meters high, the branches brownish, lenticellate, glabrous or minutely puberulent when young; stipules small, triangular-subulate; leaves mostly ternate, the petioles 0.4–1.2 cm. long, puberulent or glabrate, the blades elliptic or oblong-elliptic, 5.5–8.5 cm. long, 1.3–3.2 cm. wide, acuminate or acute at the base, subabruptly long- or short-acuminate at the apex, with an obtuse or acutish acumen, subchartaceous, deep-green above, glabrous, slightly paler beneath, glabrous or minutely puberulent along the veins, the lateral nerves prominent, 6 or 7 on each side, arcuate; inflorescence terminal, usually few-flowered, lax, the branches puberulent or glabrate, the flowers not secund, the pedicels sometimes 7 mm. long; calyx and hypanthium glabrous or sparsely puberulent, the hypanthium 3–4 mm. long, the calyx-lobes oblong or oblanceolate, 2.5–6 mm. long, foliaceous, obtuse, recurved; corolla yellow, 1.8–2.2 cm. long, glabrous or minutely puberulent, constricted at the base, narrowly campanulate above, the throat 8 mm. wide, the lobes semiorbicular, 2–2.5 mm. long; filaments 2–3 mm. long, the anthers 1.4 cm. long, slightly exceeding the corolla-lobes; fruit oblong or cylindrical, 7–12 mm. long, 4–6 mm. thick, glabrous; seeds compressed, 1–1.5 mm. long, brown, foveolate.

TYPE LOCALITY: Pansamalá, Guatemala.

DISTRIBUTION: In forest and hedges, Chiapas and Guatemala.

5. *Hamelia Storkii* Standley, Jour. Wash. Acad. 15: 7. 1925.

A shrub or small tree as much as 4.5 meters high, with a trunk 5 cm. in diameter, the branches stout, glabrous; stipules 10–12 mm. long, subulate from a narrowly triangular base, ciliate; leaves large, opposite, membranaceous, the slender petioles 1.5–5 cm. long, glabrous; leaf-blades elliptic to oblanceolate-elliptic, 12–22 cm. long, 4–9 cm. wide, gradually or abruptly acuminate, acute at the base, sparsely barbellate beneath in the axils of the nerves, elsewhere glabrous, or sometimes sparsely short-pilose beneath; inflorescence terminal, with few or numerous branches, these often 10 cm. long, glabrous or puberulent, many-flowered, the flowers secund, sessile or nearly so; hypanthium oblong, glabrous; calyx-lobes glabrous, triangular-oblong, 1.5 mm. long, obtuse, erect; corolla yellow, 2.5–3 cm. long, tubular, slightly widened above, 4 mm. broad in the throat, the lobes erect, ovate, acute, 3–4 mm. long; anthers linear,

included or half-exserted; fruit oblong, 10–12 mm. long, 3–5 mm. broad, smooth, glabrous; seeds pale-brown, coarsely foveolate.

TYPE LOCALITY: Western Panama.

DISTRIBUTION: Wet forest and thickets at low elevations, Costa Rica and Panama.

6. *Hamelia axillaris* Sw. Prodr. 46. 1788.

Hamelia chrysantha Jacq. Coll. 3: 204. 1789. Not *H. chrysantha* Sw. 1788.

Hamelia appendiculata Gaertn. Fruct. 3: 64. 1805.

Hamelia lutea Rohr; Smith, in Rees, Cycl. 17: Hamellia no. 4. 1811.

Hamelia lucida Desf. Tabl. ed. 2. 135. 1815.

Hamelia axillaris var. *appendiculata* DC. Prodr. 4: 442. 1830.

Hamelia declinata Sessé & Moc. Fl. Mex. ed. 2. 60. 1894.

A low weak shrub or a small tree, the branches slender, gray or yellowish, glabrous or minutely puberulent when young; stipules deltoid, acuminate or cuspidate, 2–6 mm. long; leaves opposite, the petioles slender, 0.6–4 cm. long, minutely puberulent or glabrous, the blades mostly oval or broadly elliptic-oval, sometimes obovate-oval or oblong-elliptic, 4.5–18 cm. long, 2–7 cm. wide, acute at the base or abruptly short-acuminate, cuspidate-acuminate or long-acuminate at the apex, membranaceous, deep-green above, glabrous, paler beneath, minutely puberulent along the veins or glabrous, the lateral nerves slender, 6–10 on each side, arcuate-divaricate; inflorescence terminal, few- or many-flowered, lax, pedunculate, the branches short or elongate, puberulent, the flowers sessile or subsessile, secund; calyx and hypanthium 3 mm. long, minutely puberulent or glabrate, the calyx-lobes oblong or linear-oblong, obtuse, minute, in fruit recurved and sometimes 1.5 mm. long; corolla yellow, 1–1.5 cm. long, glabrous or nearly so, constricted at the base, tubular-campanulate above and 3–4 mm. broad, the lobes rounded, 1–1.5 mm. long; anthers 3.5–4 mm. long, equaling or shorter than the corolla-lobes; fruit globose-ellipsoid, 5–6 mm. long, glabrate; seeds brown, 0.6–0.8 mm. long, compressed, lustrous, finely foveolate.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Greater Antilles and the Virgin Islands; British Honduras to Peru and Brazil.

ILLUSTRATIONS: Jacq. Hort. Schoenbr. pl. 335; Gaertn. Fruct. pl. 91, f. 4; Plum. Pl. Am. pl. 218, f. 1.

7. *Hamelia breviflora* A. Rich. in Sagra, Hist. Cuba 11: 17. 1850.*

A shrub, the branches puberulent; stipules lanceolate; leaves opposite, petiolate, the blades broadly oval or suborbicular, abruptly acuminate at the base and apex, glabrous; branches of the inflorescence divaricate and recurved, puberulent, the flowers secund; calyx-lobes short, oblong, obtuse; corolla tubular, 6–10 mm. long, slender, glabrate; fruit ovoid, glabrate.

TYPE LOCALITY: Mountains near Santiago de Cuba, Cuba.

DISTRIBUTION: Known only from the type locality.

8. *Hamelia xerocarpa* Kuntze, Rev. Gen. 284. 1891.

A tall shrub, the branchlets stout, densely fulvous-villous; leaves opposite, the petioles about 2.5 cm. long, villous, the blades elliptic-obovate or elliptic-oblong, 13.5–15.5 cm. long, 6–6.5 cm. wide, acute at the base, acuminate at the apex, membranaceous, green above, glabrous or nearly so, fulvous-villous beneath; inflorescence about 13 cm. broad, the peduncle 4 cm. long, the flowers sessile, secund; calyx and hypanthium densely fulvous-villous, the hypanthium 3–4 mm. long, the calyx-lobes lance-subulate, 1–1.5 mm. long; corolla subfunneliform, 1.5 cm. long, 2.5 mm. wide in the throat, densely fulvous-villous, the lobes broad, acuminate, 3–4 mm. long; fruit cylindrical, 1.5 cm. long, 4 mm. thick, villous.

TYPE LOCALITY: Baguar, Costa Rica, altitude 600 meters.

DISTRIBUTION: Nicaragua and Costa Rica.

9. *Hamelia scabrida* Britton, Torreya 12: 31. 1912.

A small tree, 4 meters high, the branchlets glabrous; stipules small, deltoid-acuminate; leaves ternate and opposite, the petioles 6–18 mm. long, the blades elliptic-oval or rounded-ovate, 5–10 cm. long, 2.2–5 cm. wide, rounded or obtuse at the base, acute or short-acuminate at the apex, subchartaceous, green above, very scabrous, the venation subimpressed, slightly

* Description compiled.

paler beneath, scabrous and villosulous, especially along the veins, the lateral nerves about 7 on each side, arcuate-divaricate; cymes branched, the flowers sessile or short-pedicellate; calyx and hypanthium 3–4 mm. long, glabrous, the calyx-lobes deltoid, 1–1.5 mm. long; corolla yellow, 3–4 cm. long, ampliate upward, farinose-puberulent outside, 6–9 mm. wide in the throat, the lobes 3 mm. long, obtuse; fruit oval, 10–14 mm. long, 8–9 mm. wide; seeds 1 mm. long, lustrous, foveolate.

TYPE LOCALITY: Rocky thicket, Fairfield, Parish of Manchester, Jamaica.

DISTRIBUTION: Known only from the type locality.

10. *Hamelia papillosa* Urban, Symb. Ant. 5: 508. 1908.

A shrub 3–4 meters high, the branches grayish, lenticellate, the branchlets glabrous; stipules triangular, subulate-acuminate, 2–5 mm. long; leaves opposite and ternate, the petioles 0.5–2 cm. long, papillose-pilose, the blades oval-orbicular, ovate, or ovate-elliptic, 5–9 cm. long, 3.5–6 cm. wide, rounded and short-decurrent at the base, abruptly short-acuminate at the apex, chartaceous, papillose-scabrous, green and sublustrous above, slightly paler beneath, usually villosulous along the veins, the lateral nerves 4–7 on each side, strongly arcuate; inflorescence long-pedunculate, trifurcate, the flowers sessile or subsessile, the bracts triangular, minute; hypanthium ovoid, the calyx-lobes deltoid, minute; corolla yellow, 2 cm. long, farinose-puberulent outside, the lobes deltoid, short, erect; anthers linear, 1 cm. long or shorter; fruit ovoid, 7 mm. long, 5–6 mm. thick, glabrous.

TYPE LOCALITY: Near Troy, Jamaica, altitude 660 meters.

DISTRIBUTION: Vicinity of the type locality.

11. *Hamelia magniloba* Wernham, Jour. Bot. 49: 209. 1911.

A tree, the branchlets glabrate; leaves verticillate, the petioles 3–3.5 cm. long, the blades elliptic, about 15 cm. long and 7 cm. wide, narrowed at the base, very shortly acuminate at the apex, with a subacute acumen, membranaceous, glabrous above, glabrous beneath or very sparsely puberulent along the costa; inflorescence ferrugino-puberulent, the flowers mostly pedicellate; calyx and hypanthium 3 mm. long, slightly puberulent, the calyx-lobes minute, deltoid; corolla-tube 2.2 cm. long, ampliate upward, 7 mm. wide in the throat, pubescent outside, the lobes spreading, ovate, acute, 8–9 mm. long; filaments 7 mm. long, the anthers 8 mm. long; fruit small, the seeds strongly complanate.

TYPE LOCALITY: Chontales, Nicaragua.

DISTRIBUTION: Known only from the type locality.

12. *Hamelia Rowleei* Standley, Jour. Wash. Acad. 15: 7. 1925.

A shrub, the stout branchlets obtusely angulate, pilose with long spreading hairs; stipules subulate from a triangular base, 1 cm. long or less, short-villous; leaves large, opposite, membranaceous, the slender petioles 1.5–6 cm. long, sparsely pilose; leaf-blades elliptic-obovate or elliptic, 15–19 cm. long, 6–9 cm. wide, abruptly short-acuminate, with a narrow, acute, often curved tip, cuneate-attenuate at the base or abruptly contracted and decurrent, villosulous above along the costa, sparsely pilose or glabrous elsewhere, beneath copiously pilose with long stiff spreading hairs, the lateral nerves slender, elevated, arcuate, about 11 on each side; inflorescence terminal, with few or numerous branches, many-flowered, the stout branches densely pilose, the flowers secund, sessile or nearly so; hypanthium oblong-turbinate, densely sordid-villous, the calyx-lobes deltoid-subulate, 1.5 mm. long, erect; corolla-tube puberulent or short-pilose, 28 mm. long, slightly dilated upward, 5 mm. wide above the base and somewhat wider at the throat, the lobes broadly ovate, acuminate, spreading, 4–5 mm. long.

TYPE LOCALITY: Livingston, on the Reventazón River, Costa Rica.

DISTRIBUTION: In low wet forest, Costa Rica and Panama.

13. *Hamelia panamensis* Standley, Contr. U. S. Nat. Herb. 20: 208. 1919.

A tree 4.5 meters high, with a trunk 10 cm. in diameter, the bark gray, the branchlets grayish, glabrous; leaves apparently opposite, the petioles about 5 cm. long, the blades oval or

broadly ovate, 11–19 cm. long, 6–12 cm. wide, broadly rounded at the base and short-decurrent, acute or short-acuminate at the apex, membranaceous, glabrous, bright-green, the lateral nerves about 12 on each side, arcuate-divaricate, the margin plane; inflorescence very ample, much branched, 15 cm. wide or larger, pedunculate, the branches slender, elongate, glabrous, the flowers sessile, the bractlets subulate, very small; calyx and hypanthium glabrous, 2.5–3.5 mm. long, the calyx-lobes deltoid, acute; corolla about 2.5 cm. long, yellow, glabrous, the tube gradually amplified upward, 4.5 mm. thick in the throat, the lobes ovate, 6 mm. long, spreading; fruit cylindrical, 6–7 mm. long, 5-celled; seeds brown, foveolate.

TYPE LOCALITY: Above Paca, Panama.

DISTRIBUTION: In forest or thickets, Panama.

14. *Hamelia ventricosa* Sw. Prodr. 46. 1788.

Hamelia grandiflora L'Hér. Sert. Angl. 4. 1788.

Hamelia pauciflora Willd.; Spreng. Syst. 1: 763, as synonym. 1825.

A shrub or small tree, up to 5 meters high, the branches gray or brown, the branchlets slender, glabrous or minutely puberulent; stipules small, deltoid, subulate-acuminate; leaves mostly ternate, the petioles slender, 1–2 cm. long, glabrous or sparsely puberulent, the blades usually elliptic, 6.5–15 cm. long, 3–6 cm. wide, acute or rounded and short-decurrent at the base, acuminate or long-acuminate at the apex, membranaceous, bright-green, glabrous above, villous beneath in the axils of the nerves, the venation prominent beneath, the lateral nerves 8–10 on each side, arcuate; inflorescence terminal, short-pedunculate, usually many-flowered and broad, the branches puberulent or short-pilose, the flowers secund, pedicellate; calyx and hypanthium 4 mm. long, glabrous, the calyx-lobes broadly deltoid, minute; corolla yellow, 3.5–6 cm. long, glabrous, cylindrical below, swollen at the base, much amplified upward, about 1.5 cm. wide in the throat, the lobes ovate-oval, 8 mm. long, obtuse or acutish, nearly erect; fruit oblong, 1 cm. long, coriaceous; seeds 0.5 mm. long, brown, foveolate, lustrous.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Jamaica.

ILLUSTRATIONS: L'Hér. Sert. Angl. *pl.* 7; Bot. Reg. 14: *pl.* 1195; Salisb. Parad. Lond. *pl.* 55; Bot. Mag. *pl.* 1894.

15. *Hamelia cuprea* Griseb. Fl. Brit. W. Ind. 320. 1861.

Hamelia cuprea var. *haitiensis* Urban, Ark. Bot. 17: 57. 1921.

A shrub or small tree, the branches reddish-brown or grayish, lenticellate, glabrous or minutely puberulent when young; stipules very small, deltoid-subulate; leaves chiefly ternate, the petioles slender, 0.5–2 cm. long, glabrous or minutely puberulent, the blades mostly elliptic-oblong, sometimes elliptic, ovate-oblong, ovate, or elliptic-oval, 5–12 cm. long, 1.6–4.5 cm. wide, acute or short-acuminate at the base, sometimes obtuse or rounded, acute, acuminate, or attenuate at the apex, subchartaceous, bright-green above, glabrous, slightly paler beneath, glabrous or minutely puberulent along the veins, the lateral nerves slender, 6 or 7 on each side, arcuate; inflorescence terminal, pedunculate, usually few-flowered, the branches glabrous or minutely puberulent, the flowers more or less secund, the pedicels in fruit sometimes 12 mm. long; calyx and hypanthium 3–4 mm. long, glabrous, the calyx-lobes deltoid, nearly obsolete; corolla yellow, 2.5–3 cm. long, glabrous, cylindrical below, swollen at the base, tubular-campanulate above, 6–8 mm. wide in the throat, the lobes rounded-ovate, 3–4 mm. long; filaments 8 mm. long, the anthers 1.5 cm. long, spatulate at the apex, shorter or longer than the corolla-lobes; fruit subglobose or ellipsoid, 8–10 mm. long, glabrous; seeds 1 mm. long, brown, lustrous, foveolate.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Cuba, Jamaica, and Haiti.

ILLUSTRATION: P. Br. Hist. Jam. *pl.* 14, *f.* 1.

16. *Hamelia intermedia* Urban & Ekman; Urban, Ark. Bot. 24A⁴:

46. 1931.

A small tree, with dense rounded crown, the branchlets pulverulent-pilosulous, the branches quadrangular; stipules triangular-lanceolate, 2 mm. long; leaves ternate, membranaceous, the

petioles 1–4 cm. long; leaf-blades ovate or oval-elliptic, 7–12 cm. long, 3.5–5 cm. wide, shortly acute-acuminate, narrowed to the petiole, the costa impressed above, prominulous beneath, the lateral nerves 8 or 9 on each side, ascending at an angle of 50–60°, minutely pilosulous on both surfaces, barbate beneath in the axils of the nerves, in age sometimes glabrate; inflorescence terminal, 3–5-branched from the base, the branches several times cymose, the branchlets as much as 10-flowered and 9 cm. long, the pedicels 1.5–6 mm. long; calyx-lobes broadly triangular, 0.3 mm. long; corolla bright-orange, 25 mm. long, the tube gradually ampliate almost from the base, 6 mm. broad at the mouth, the lobes 3 mm. long; fruit narrowly ovoid, conic-produced above the calyx, 7–8 mm. long, 4–4.5 mm. wide.

TYPE LOCALITY: Western part of Massif de la Hotte, near Les Abricots, Haïti, on coral limestone.

DISTRIBUTION: Haïti.

17. *Hamelia magnifolia* Wernham, Jour. Bot. 49: 210. 1911.

A shrub or small tree as much as 4.5 meters high, with a trunk 7 cm. in diameter, the branchlets slender, brownish, glabrous, or minutely puberulent when young; stipules deltoid, cuspidate, 3.5 mm. long; leaves opposite, membranaceous, the slender petioles 1.2–4 cm. long, puberulent or glabrate; leaf-blades oblanceolate, oblanceolate-oblong, obovate, or elliptic-oblong, 10–28 cm. long, 3–11 cm. wide, abruptly or subabruptly acuminate or long-acuminate, acute to long-attenuate at the base, bright-green and glabrous above, scarcely paler beneath, glabrous or minutely puberulent on the veins, the lateral nerves slender, 7–11 on each side, arcuate-ascending; cymes terminal, many-flowered, short-pedunculate, the short branches puberulent, the flowers sessile, subsecund, the bracts minute; calyx and hypanthium 3 mm. long, puberulent or glabrate, the calyx-lobes minute, broadly deltoid; corolla yellow, subcylindric, 1.5 cm. long, glabrous or obscurely puberulent, the lobes ovate, obtuse, 1 mm. long; filaments 3 mm. long, the anthers 7 mm. long, equaling the corolla-lobes; fruit oblong-ellipsoid, 5–8 mm. long, glabrate; seeds brown, 0.5 mm. long, conspicuously foveolate.

TYPE LOCALITY: Río Corozal, near Santo Domingo de Golfo Dulce, Costa Rica.

DISTRIBUTION: Low wet forest and thickets, Costa Rica and Panama.

18. *Hamelia chrysantha* Sw. Prodr. 46. 1788.

Duhamelia chrysantha Pers. Syn. Pl. 1: 203. 1805.

A shrub 1.5–2.5 meters high, the branches grayish, villosulous when young; stipules small, deltoid-acuminate; leaves opposite or rarely verticillate, the petioles stout, 0.4–1 cm. long, villosulous or glabrate, the blades oval or oval-elliptic, 4–6.5 cm. long, 2–3.5 cm. wide, rounded or obtuse at the base, abruptly acute-acuminate at the apex, coriaceous, deep-green above, glabrous, the venation plane or impressed, paler beneath, glabrous or when young sparsely villosulous along the veins, the lateral nerves prominent, 7 or 8 on each side, arcuate-divaricate, the margin plane; inflorescence terminal, cymose-corymbose, few-flowered, the flowers short-pedicellate, not secund; calyx and hypanthium 2–2.5 mm. long, glabrate, the calyx-lobes minute, broadly deltoid; corolla orange, tubular or slightly ampliate above, 1.5–2 cm. long, glabrous outside, the lobes short, ovate-deltoid, erect; fruit subglobose, the pericarp hard, glabrous.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Jamaica; reported, probably in error, from Mexico.

19. *Hamelia longipes* Standley, Proc. Biol. Soc. Wash. 37: 53. 1924.

A shrub or tree 2–6 meters high, glabrous throughout, the branches slender, with elongate internodes; stipules deltoid-acuminate, 3–4 mm. long; leaves opposite, firm-membranaceous, the slender petioles 2.5–4.5 cm. long; leaf-blades oval, elliptic, or oblong-elliptic, 15–25 cm. long, 7–11 cm. wide, acute or rather abruptly short-acuminate, rounded to acute at the base, sometimes short-decurrent, somewhat lustrous, concolorous, the lateral nerves about 10 pairs, arcuate, ascending at a wide angle; inflorescence terminal, on a long or short peduncle, erect, cymose-corymbose, sometimes 12 cm. long and 20 cm. broad, the rachis and pedicels bright-red, the flowers not or scarcely secund, the slender pedicels 6–13 mm. long; calyx and hypan-

thium 3 mm. long, the calyx-lobes almost obsolete, short and broadly rounded; corolla pale-buff, 16-17 mm. long, tubular, very slightly ampliate above, the lobes very short, ovate-deltoid, erect; fruit red, turning black at maturity, oblong-ovoid, about 7 mm. long and 4.5 mm. wide; seeds pale-brown, 0.5 mm. in diameter, coarsely punctate.

TYPE LOCALITY: In deep forest at Escoba, on the bay opposite Puerto Barrios, Guatemala, altitude about 150 meters.

DISTRIBUTION: In wet upland forest near the Atlantic coast, Guatemala and Honduras.

20. *Hamelia pauciflora* Standley, Contr. U. S. Nat. Herb. 18: 139.

1916.

A shrub, the branches slender, reddish-brown, villosulous when young; stipules minute; leaves ternate, the petioles 2-3 mm. long, villosulous, the blades (immature) broadly ovate or ovate-oval, 1.5-2.8 cm. long, 0.7-1.5 cm. wide, obtuse or rounded at the base and short-decurrent, acute or acutish at the apex, membranaceous, glabrous above, sparsely villosulous beneath along the veins when young, the lateral nerves slender, arcuate, 3 or 4 on each side; inflorescence usually terminal on short lateral branches, mostly simple, 2-4-flowered, the flowers secund, sessile; calyx and hypanthium 3-3.5 mm. long, glabrous or nearly so, the calyx-lobes minute, broadly deltoid; corolla about 2.2 cm. long, tubular, glabrate, 3-4 mm. wide in the throat, the lobes rounded-ovate, obtuse, 1.5 mm. long; anthers equaling or slightly exceeding the corolla-lobes.

TYPE LOCALITY: In forests on dry limestone, around Alhajuella, Chagres Valley, Panama, altitude 30 to 100 meters.

DISTRIBUTION: In wet forest at low elevations, Panama.

21. *Hamelia versicolor* A. Gray; S. Wats. Proc. Am. Acad. 21: 416.

1886.

A shrub 1.5-3 meters high, the branches dark-reddish-brown or grayish, sparsely lenticellate, the branchlets villosulous, puberulent or glabrate; stipules small, deltoid, subulate-cuspidate; leaves mostly ternate, the petioles slender, 0.3-1 or rarely 3 cm. long, short-pilose or glabrate, the blades ovate, ovate-oblong, elliptic-oblong, or oval-ovate, 2.7-12.5 cm. long, 1.2-5.5 cm. wide, rounded to acute at the base, acute or acuminate at the apex, often abruptly so, membranaceous, bright-green above, sparsely pilose or puberulent when young but soon glabrate, paler beneath, puberulent or villosulous, especially along the veins, in age usually nearly glabrous, the lateral nerves slender, prominent, about 7 on each side, arcuate; inflorescence terminal, many-flowered, 4-9 cm. broad, the flowers obscurely or not at all secund, the pedicels 8 mm. long or shorter, some of the flowers sessile; calyx and hypanthium 3-3.5 mm. long, sparsely or rarely densely puberulent with minute, appressed or incurved hairs, the calyx-lobes minute, broadly deltoid; corolla tubular, 8-13 mm. long, orange, becoming red in age, very sparsely farinose-puberulent, the lobes minute, acutish; filaments 2.5-3 mm. long, the anthers 7 mm. long, usually much exceeding the corolla-lobes; fruit globose, 5-7 mm. in diameter, shallowly sulcate, glabrate, red, black at maturity; seeds 1 mm. long, brown, finely foveolate, lustrous.

TYPE LOCALITY: Barranca near Guadalajara, Jalisco.

DISTRIBUTION: Sinaloa to Oaxaca.

22. *Hamelia nodosa* Mart. & Gal. Bull. Acad. Brux. 11¹: 234.

1844.

Hamelia viridifolia Wernham, Jour. Bot. 49: 213. 1911.

A shrub 2.5-6 meters high, the branches stout, glabrous or sparsely puberulent when young; stipules small, deltoid-subulate; leaves mostly quaternate, the petioles stout, 0.5-1 cm. long, minutely puberulent or glabrate, the blades elliptic-oblong, oval, elliptic, or ovate, 4-9.5 cm. long, 1.7-4.2 cm. wide, rounded to attenuate at the base, often short-decurrent, acute or short-acuminate at the apex, bright-green above, glabrous, paler beneath, villosulous or minutely puberulent along the principal veins or glabrate, the lateral nerves 6-8 on each side, arcuate-ascending; inflorescence terminal, many-flowered, the branches puberulent, the

flowers sessile or subsessile, secund; calyx and hypanthium 3–4 mm. long, sparsely puberulent, the calyx-lobes minute, deltoid; corolla red, tubular, 1.8–2.2 cm. long, minutely puberulent, swollen at the base, the lobes ovate, acutish, almost 1 mm. long; anthers 8–10 mm. long, partly exserted; fruit oblong-cylindric, 8–10 mm. long, glabrate; seeds 0.8–1 mm. long, brown, lustrous, finely foveolate.

TYPE LOCALITY: Savannas of Mirador, Veracruz, altitude 900 meters.

DISTRIBUTION: Veracruz and Oaxaca to Panama, in wet forest or thickets.

23. *Hamelia patens* Jacq. Enum. Pl. Carib. 16. 1760; Sel. Stirp. Am. 72. 1763.

Hamelia erecta Jacq. Enum. Pl. Carib. 16. 1760; Sel. Stirp. Am. 71. 1763.

Hamelia coccinea Sw. Prodr. 46. 1788.

Hamelia patens var. *erecta* Lam. Encyc. 3: 68. 1789.

Duhamelia patens Pers. Syn. Pl. 1: 203. 1805.

Hamelia patens var. *quinifolia* DC. Prodr. 4: 442. 1830.

Hamelia verticillata Moc. & Sessé; DC. Prodr. 4: 442, as synonym. 1830.

Hamelia lanuginosa Mart. & Gal. Bull. Acad. Brux. 11: 233. 1844.

Hamelia pedicellata Wernham, Jour. Bot. 49: 212. 1911.

Hamelia patens var. *axillaroides* Wernham, Jour. Bot. 49: 216. 1911.

Hamelia Brittoniana Wernham, Jour. Bot. 49: 346. 1911.

A shrub or small tree 1–4 meters high, the branches brown or grayish, the branchlets villous or puberulent when young, often glabrate; stipules 3–6 mm. long, triangular-acuminate; leaves mostly ternate, the petioles slender, 1–5.5 cm. long, villous or puberulent, the blades lance-oblong, elliptic-oblong, elliptic, ovate, oval, or rounded-oval, 5.5–21 cm. long, 2–9 cm. wide, rounded to acuminate at the base, usually short-acuminate at the apex, sometimes acute, obtuse, or abruptly acuminate, membranaceous, bright-green above, puberulent, villosulous, or nearly glabrous, the costa impressed, the lateral nerves mostly plane, paler beneath, usually copiously villosulous, villous-tomentose, or puberulent, especially along the veins, the areoles usually pubescent but sometimes glabrate, the lateral nerves prominent, 7–10 on each side, arcuate; inflorescence terminal, many-flowered, the branches often much elongate in fruit, the flowers sessile or short-pedicellate, secund; calyx and hypanthium 2.5–3 mm. long, sparsely or densely puberulent or villous with short or long hairs, the calyx-lobes minute, deltoid or broadly deltoid; corolla tubular, 1.5–2 cm. long, orange-red, sparsely or densely puberulent or villosulous or farinose-puberulent, the lobes minute, obtuse or acutish, erect; filaments very short, the anthers 9–10 mm. long, conspicuously exceeding the corolla-lobes; fruit subglobose or oblong-ellipsoid, 6–10 mm. long, 4–6 mm. thick, villosulous, puberulent, or glabrate, often shallowly sulcate, red; seeds 0.8 mm. long, brown or yellowish-brown, lustrous, foveolate.

TYPE LOCALITY: Forests near Cartagena, Colombia.

DISTRIBUTION: Peninsular Florida; in thickets, Veracruz to Yucatán and Panama; West Indies; Colombia to Bolivia and Paraguay.

ILLUSTRATIONS: Jacq. Sel. Stirp. Am. pl. 50; Smith, Exot. Bot. pl. 24; Gaertn. Fruct. pl. 196, f. 3; Mart. Fl. Bras. 6: pl. 136; E. & P. Nat. Pfl. 4: f. 30, L, M; Plum. Pl. Am. pl. 218, f. 2; Jacq. Sel. Stirp. Piet. pl. 72; Lam. Tab. Encyc. pl. 155, f. 2; R. & P. Fl. Per. pl. 221; Descourt. Fl. Ant. pl. 107; Bot. Mag. pl. 2533; Vell. Fl. Flum. Ic. 2: pl. 82.

DOUBTFUL SPECIES

HAMELIA ROSTRATA Bartl.; DC. Prodr. 4: 442. 1830. Described from Acapulco, Guerrero. It is probably *H. versicolor* A. Gray, but it is impossible to determine from the description.

68. *HOFFMANNIA* Sw. Prodr. 30. 1788.

Ohigginsia R. & P. Fl. Per. 1: 55. 1798.

Higginsia Pers. Syn. Pl. 1: 133. 1805.

Campylobotrys Lemaire, Fl. Serres 3: Misc. no. 37. 1847.

Ophryococcus Oerst. Vidensk. Medd. 1852: 52. 1852.

Glabrous or pubescent shrubs or herbs, the branchlets terete or tetragonous. Leaves opposite or verticillate, the petioles rarely vesiculiferous. Stipules interpetiolar, deciduous or persistent. Flowers small, ebracteolate, white or yellow or red, cymose, the cymes axillary,

sessile or pedunculate; hypanthium oblong or turbinate, terete or tetragonous; calyx 4- or rarely 5-lobate, rarely truncate, the lobes short, persistent; corolla funnelliform or almost rotate, the tube short or elongate, the throat glabrous, the limb 4- or rarely 5-lobate, the lobes oblong, obtuse or acute, imbricate, sometimes only obscurely so, 2 of them exterior; stamens 4 or rarely 5, inserted in the corolla-throat; filaments short, complanate; anthers linear-oblong, large, dorsifixed, bilobate at the base, obtuse or apiculate, exerted. Disk annular or pulvinate. Ovary 2- or rarely 3-celled; style filiform, the stigma bilobate, the lobes free or connate, obtuse; ovules numerous, multiseriate, the placentae bilamellate, longitudinally affixed to the septum. Fruit baccate, small, oblong, 2-celled. Seeds numerous, minute, the testa crustaceous, foveolate; endosperm fleshy; embryo minute, obovoid.

Type species, *Hoffmannia pedunculata* Sw.

Petioles vesiculiferous.

Petioles naked.

Lobes of the corolla twice as long as the tube or longer.*

Calyx truncate.

Calyx lobate or dentate.

Cymes long-pedunculate, longer than the petioles, the peduncles equaling or longer than the cymes.

Stems herbaceous, low; corolla bright-red.

Leaves glabrous beneath; corolla 12-13 mm. long.

Leaves villous or villosulous beneath along the veins; corolla 10 mm. long.

Leaves petiolate; stipules deciduous.

Leaves sessile; stipules persistent.

Stems woody, elongate; corolla yellow or red.

Leaves sessile, the base dilated and clasping.

Leaves petiolate.

Leaves villosulous beneath along the veins.

Leaves minutely puberulent beneath along the veins.

Corolla farinose-puberulent; leaves opposite, long-petiolate, the blades about twice as long as wide.

Corolla glabrous.

Petioles 1 cm. long or less; leaf-blades narrowly oblanceolate-oblong or oblanceolate, 2-4 cm. wide.

Petioles 1.5-5.5 cm. long; leaf-blades mostly elliptic or lance-elliptic, 6-12 cm. wide.

Fruit white; flowers long-pedicellate; corolla red.

Fruit red; flowers partly sessile; corolla pale-green.

Cymes sessile or short-pedunculate, usually shorter than the petioles, the peduncles shorter than the cymes, or the flowers sometimes solitary and long-pedicellate.

Leaves conspicuously puberulent or villosulous beneath with ferruginous hairs; corolla usually more or less villous.

Leaves essentially sessile, the blades decurrent to the base of the petiole.

Cymes lax, many-flowered; base of leaf-blade deeply cordate and clasping.

Cymes dense, few-flowered; base of leaf-blade acute.

Leaves conspicuously petiolate.

Leaves small, mostly 1-3 cm. wide.

Calyx-lobes broadly deltoid, minute.

Calyx-lobes linear, 2-3 mm. long.

Leaves large, mostly 3-8 cm. wide.

Leaf-blades chiefly obovate, broadest above the middle.

Leaf-blades mostly elliptic, broadest at the middle.

Lateral nerves of the leaves 5-8 pairs.

Flowers subsessile; lobes of the corolla 5 times as long as the tube.

Flowers on pedicels 2-5 mm. long; lobes of the corolla 3 times as long as the tube.

Lateral nerves about 12 or 13 pairs.

Calyx-lobes obtuse; corolla densely short-villosulous.

Calyx-lobes acute; corolla glabrous or with a few scattered hairs.

1. *H. vesiculifera*.

2. *H. lenticellata*.

3. *H. discolor*.

4. *H. refulgens*.

5. *H. phoenicopoda*.

6. *H. subauriculata*.

7. *H. pedunculata*.

8. *H. Rosei*.

9. *H. rotata*.

10. *H. leucocarpa*.

11. *H. pallidiflora*.

12. *H. amplexifolia*.

13. *H. ramonensis*.

14. *H. excelsa*.

15. *H. uniflora*.

16. *H. hamelioides*.

17. *H. Tuerckheimii*.

18. *H. Valerii*.

19. *H. asclepiadea*.

20. *H. rhodonta*.

* In several of the species the corolla is unknown, therefore they have been included in both arms of the key.

- Leaves glabrous beneath or obscurely grayish-puberulent; corolla glabrous or puberulent.
- Calyx-lobes broadly deltoid or ovate, obtuse.
- Leaves sessile or essentially so, the blades decurrent to the base of the petiole.
- Leaves conspicuously petiolate.
- Leaf-blades typically broadest at the middle.
- Petioles glabrous; leaves glabrous, the lateral nerves about 12 pairs.
- Petioles puberulent; leaves puberulent beneath on the nerves, the lateral nerves about 16 pairs.
- Leaf-blades all broadest above the middle.
- Petioles 0.5–2 cm. long; leaves glabrous.
- Petioles 3–7 cm. long.
- Leaves minutely puberulent beneath on the veins.
- Leaves glabrous beneath.
- Calyx-lobes linear or narrowly triangular, very acute.
- Calyx-lobes linear, 4–5 mm. long.
- Calyx-lobes narrowly triangular, less than 2 mm. long.
- Inflorescence many-flowered, the pedicels short; hypanthium oblong; leaf-blades mostly elliptic-oblong.
- Inflorescence few-flowered, the pedicels elongate; hypanthium turbinate; leaf-blades elliptic or broadly elliptic.
- Lobes of the corolla equaling or shorter than the tube, or but slightly exceeding it.
- Branches winged.
- Branches not winged.
- Leaf-blades dilated and clasping at the base.
- Leaf-blades not dilated and clasping at the base.
- Corolla pubescent outside.
- Leaves glabrous beneath.
- Calyx-lobes elongate, acute.
- Calyx-lobes broadly deltoid, obtuse.
- Leaf-blades oblanceolate-elliptic, 3.5–5.5 cm. wide; bracts foliaceous.
- Leaf-blades mostly oblong-oval, 6–9 cm. wide; bracts minute.
- Leaves villosulous beneath, or rarely puberulent, at least along the veins.
- Leaves merely puberulent beneath along the veins.
- Leaves villosulous beneath.
- Leaves densely ferruginous-villosulous on the upper surface.
- Calyx-lobes deltoid, minute; leaves 7.5–10 cm. wide.
- Calyx-lobes linear, 3 mm. long; leaves 3.5–5 cm. wide.
- Leaves glabrous or nearly so on the upper surface.
- Cymes long-pedunculate.
- Corolla 6–8 mm. long, the lobes slightly longer than the tube.
- Corolla 10–13 mm. long, the lobes equaling or shorter than the tube.
- Leaf-blades 1–3 cm. wide.
- Leaf-blades 4.5–10 cm. wide.
- Cymes sessile or short-pedunculate.
- Leaves sessile, the blades decurrent to the base of the petiole.
- Leaves petiolate.
- Leaf-blades broadest at the middle.
- Leaves short-villous beneath.
- Leaves minutely puberulent beneath on the nerves.
- Leaf-blades broadest above the middle.
- Leaves large, 4.5–7 cm. wide.
- Leaves 2–4.5 cm. wide.
- Corolla-lobes shorter than the tube; calyx-lobes 1–1.5 mm. long.
- Corolla-lobes longer than the tube; calyx-lobes minute.
- Corolla glabrous.
- Corolla about 25 mm. long.
- Corolla 15 mm. long or shorter.
- Leaves villosulous on the upper surface.

21. *H. Carpintera*.22. *H. Pittieri*.23. *H. inamoena*.24. *H. hondurensis*.25. *H. lineolata*.26. *H. longepetiolata*.27. *H. calycosa*.28. *H. panamensis*.29. *H. Tonduzii*.30. *H. Ghiesbreghtii*.6. *H. subauriculata*.31. *H. nesiotia*.32. *H. arborescens*.22. *H. Pittieri*.23. *H. inamoena*.33. *H. tetrastigma*.34. *H. gesnerioides*.35. *H. affinis*.36. *H. orizabensis*.37. *H. trichocalyx*.13. *H. ramonensis*.19. *H. asclepiadea*.23. *H. inamoena*.16. *H. hamelioides*.38. *H. decurrens*.39. *H. cuneatissima*.40. *H. cauliflora*.41. *H. confertiflora*.

Leaves usually glabrous on the upper surface, not villosulous.

Lobes of the corolla shorter than the tube.

Leaf-blades obovate or oblong-obovate, villosulous beneath along the veins.

42. *H. josefina*.

Leaf-blades elliptic to lance-oblong, glabrous beneath, at least at maturity.

Calyx-lobes triangular-oblong, 2-3 mm. long.

43. *H. piratarum*.

Calyx-lobes minute, deltoid.

44. *H. lubiflora*.

Lobes of the corolla about as long as the tube.

Corolla 15 mm. long.

45. *H. Dotae*.

Corolla 6-12 mm. long.

Corolla 10-12 mm. long.

Leaf-blades very narrowly elliptic, attenuate at the apex; calyx-lobes lance-oblong, 1-1.5 mm. long.

46. *H. angustifolia*.

Leaf-blades elliptic-oblong or elliptic, abruptly acuminate; calyx-lobes deltoid, minute.

47. *H. psychotriaefolia*.

Leaves glabrous.

37. *H. trichocalyx*.

Leaves villosulous beneath on the nerves.

Corolla 6-8 mm. long.

Leaf-blades villosulous beneath, at least along the costa, mostly elliptic.

48. *H. chiapensis*.

Leaf-blades glabrous or strigillose beneath, obovate-oblong or ovate-oblong.

Calyx-lobes deltoid, minute; leaves caudate-acuminate.

49. *H. Conzattii*.

Calyx-lobes oblong, 1 mm. long; leaves attenuate.

50. *H. strigillosa*.

1. *Hoffmannia vesiculifera* Standley, Field Mus. Publ. Bot. 4: 285. 1929.

Suffrutescent or herbaceous, suberect, the stem 10 cm. high, 4 mm. thick, terete, densely villous with long spreading brownish many-celled hairs, densely leafy at the apex, the internodes short; stipules caducous; petioles stout, densely long-villous, 7-11 mm. long in the naked portion, vesiculiferous above, the vesicle inflated, reaching the base of the blade, 1-2.3 cm. long, 5-8 mm. wide, produced above the point of insertion on each side into a rounded lobe, obtuse or slightly narrowed at the base, green, densely villous; leaf-blades obovate-elliptic or oval-elliptic, 9-17 cm. long, 5-8 cm. wide, short-acuminate or rounded and very shortly and broadly acuminate, with acute tip, obtuse or rounded at the base, membranaceous, green above, sparsely villous with long hairs, the nerves inconspicuous, paler beneath, along the nerves densely villous with long soft fulvous multicellular hairs, the costa elevated, the lateral nerves about 10 pairs, arcuate, ascending at an acute angle, percurrent, the veinlets prominent, reticulate; cymes long-pedunculate, with the peduncle 4-7 cm. long, lax, many-flowered, densely long-villous, the peduncles slender, 1.5-3.5 cm. long, the flowers secund, the pedicels 4-7 mm. long; hypanthium obovoid, 2.5 mm. long, villous; calyx 4-parted, long-villous; berry red, obovoid-globose, 5 mm. long, densely villous; seeds numerous, globose-obovoid, 0.4 mm. long, brown, foveolate.

TYPE LOCALITY: Buena Vista Camp on Chiriquí Trail, Province of Bocas del Toro, Panama.

DISTRIBUTION: Region of the type locality, in wet forest at an elevation of 750 meters.

Among North American *Rubiaceae* this plant is unique in the inflated vesicles of the petioles. These probably are inhabited by ants, as in certain *Melastomataceae* with similar inflated organs.

2. *Hoffmannia lenticellata* Hemsl. Diag. Pl. Mex. 30. 1879.

A shrub, glabrous throughout, the branches subterete, minutely lenticellate; stipules linear-oblong, 6 mm. long or shorter, deciduous; petioles stout, 0.5-3 cm. long; leaf-blades obovate, obovate-oblong, or elliptic, 10-22.5 cm. long, 5-8.5 cm. wide, long-attenuate at the base, obtusely acuminate at the apex, membranaceous, bright-green above, the costa impressed, paler beneath, the venation prominent, the lateral nerves 11-14 on each side, arcuate-divaricate; flowers 4-parted, umbellate-fasciculate, 6 mm. long, long-pedicellate, the cymes several-flowered, ebracteate, shorter than the petioles; calyx and hypanthium 2 mm. long, the calyx truncate or obscurely dentate; corolla-lobes ovate-oblong, about twice as long as the

tube; filaments very short, the anthers large; fruit 2-celled, 3 mm. in diameter, bisulcate; seeds numerous, minute, angulate, punctulate.

TYPE LOCALITY: Orizaba, Veraacruz.

DISTRIBUTION: Veraacruz to Guatemala, in wet forest.

3. *Hoffmannia discolor* (Lemaire) Hemsl. Biol. Centr. Am. Bot. 2:
36. 1881.

Campylobotrys discolor Lemaire, Fl. Serres 3: Misc. no. 37. 1847.

Higginsia discolor Planch. Fl. Serres 5: 482d. 1849.

Campylobotrys argyroneura Linden, Belg. Hort. 8: 166. 1858.

Herbaceous or suffrutescent, the stems stout, terete, sparsely pubescent, densely leafy; stipules triangular-acuminate, caducous; leaves opposite, the petioles stout, 3 cm. long or shorter, pubescent, the blades obovate or oval-obovate, 14 cm. long and 7 cm. wide or smaller, acute or attenuate at the base, obtuse or acutish at the apex, subcoriaceous, ciliate, bright-green above, lustrous, glabrous, the venation impressed, paler beneath, often red along the veins, glabrous or sparsely pilose, the venation prominent, the lateral nerves arcuate-divaricate; flowers few or numerous, 4-parted, short-pedicellate, subracemose, secund, the peduncles slender, reddish, much longer than the petioles and sometimes equaling the leaves, the bracts minute, green; calyx and hypanthium 4 mm. long, the hypanthium glabrous, the calyx-lobes minute, deltoid, short-pilose, alternating with glands; corolla red, 12–13 mm. long, the lobes oblong, obtuse or acutish, twice as long as the tube; filaments very short, the anthers linear, exserted; ovary 2-celled.

TYPE LOCALITY: Described from cultivated plants, probably of Mexican origin.

DISTRIBUTION: Probably southern Mexico; reported from Chiapas, but known definitely only from cultivated plants.

ILLUSTRATIONS: Fl. Serres *pl.* 427; Bot. Mag. *pl.* 4530; Stand. Cycl. Hort. *f.* 1843.

4. *Hoffmannia refulgens* (Hook.) Hemsl. Biol. Centr. Am. Bot. 2:
37. 1881.

Higginsia refulgens Hook. Bot. Mag. *pl.* 5346. 1862.

Herbaceous or suffrutescent, the stems simple, stout, terete, erect, usually less than 30 cm. long, ferruginous-villous or glabrate, densely leafy above; stipules triangular, caducous; leaves opposite, the stout petioles 3.5 cm. long or shorter, villous; leaf-blades obovate to oblong-ob lanceolate, 9–25 cm. long, 3.5–11 cm. wide, rounded or obtuse at the apex and abruptly apiculate, acute to long-attenuate at the base, membranaceous or firm and succulent, bright-green above, glabrous or sparsely villous, paler beneath, sometimes purple or reddish, ferruginous-villous, at least on the nerves, or finally glabrate, the venation prominent, the lateral nerves 8–15 on each side, arcuate-divaricate, the veins prominently reticulate; flowers 4-parted, subumbellate or subracemose, sometimes secund, short-pedicellate, the peduncles slender, often red, 2.5–12 cm. long; calyx and hypanthium 3–4 mm. long, the hypanthium turbinate, glabrous, the calyx-lobes triangular or lance-triangular, acute, 2 mm. long or shorter, sparsely villosulous, reddish; corolla red or pale-red, 1 cm. long, glabrous, the lobes oblong, obtuse or acutish, spreading, 2–3 times as long as the tube; filaments very short, the anthers exserted, yellow or white; berry juicy, bright red.

TYPE LOCALITY: Described from cultivated plants.

DISTRIBUTION: In dark wet forest, Chiapas to Costa Rica, at low elevations.

ILLUSTRATION: Bot. Mag. *pl.* 5346.

5. *Hoffmannia phoenicopoda* K. Schumann, Notizbl. Bot. Gart.
Berlin 2: 276. 1899.

Herbaceous, 2–5 dm. high, the stems simple, stout, subangulate, sparsely villous or glabrous, the internodes short; stipules ovate-deltoid, 4 mm. long, obtuse or acutish, green, succulent, persistent; leaves opposite, sessile, obovate or obovate-oblong, 9–25 cm. long, 3.8–11 cm. wide, long-attenuate to the rounded or slightly clasping base, acute or broadly short-acuminate at the apex, succulent, somewhat bullate, dark-green above, glabrous or thinly villous, the venation plane, reddish beneath, puberulent or villosulous along the veins, these

very prominent, reticulate, the lateral nerves 18–20 on each side, arcuate-divaricate, the margin villous-ciliate; inflorescence densely cymose, few-flowered, the flowers sessile or subsessile, the peduncles slender, 2–8 cm. long, rufous-villous, the bracts minute; hypanthium turbinate, 2 mm. long, glabrous, the calyx-lobes triangular, 1.5–2 mm. long, acute, red, sparsely villous; corolla bright-red, 9–12 mm. long, sparsely villous outside, the lobes lance-oblong, twice as long as the tube or longer; anthers 5 mm. long.

TYPE LOCALITY: Described from cultivated plants of unknown origin.

DISTRIBUTION: Guatemala, in wet forest at low elevations.

6. *Hoffmannia subauriculata* Standley, Jour. Wash. Acad. 18: 179.
1928.

A slender decumbent shrub 1–1.5 meters long, the branchlets obtusely quadrangular, glabrous, the internodes 5–7.5 cm. long; leaves opposite, sessile, elliptic-obovate, 15–22 cm. long, 7–9.5 cm. wide, abruptly short-acuminate, abruptly narrowed near the base into a petioliform portion about 2 cm. long and 1.5–2 cm. wide, rounded to cordate at the base and amplexicaul, membranaceous, glabrous, deep-green above, somewhat paler beneath, furnished with numerous minute cystoliths, the stout costa prominent beneath, the lateral nerves about 15 pairs, slender, prominent, divaricate and strongly arcuate, anastomosing close to the margin; cymes borne on the naked older branches below the leaves, many-flowered, cymose-paniculate, on slender peduncles 6.5–9 cm. long, the cymes 5 cm. long, glabrous; bracts deciduous; pedicels slender, 6–12 mm. long; fruit oval or globose, 2-celled, bright-red, glabrous, 8 mm. long; calyx-lobes 4, deltoid, acutish, 1 mm. long, glabrous, erect; seeds minute, subglobose, brown, coarsely foveolate.

TYPE LOCALITY: In moist forest at El Muñeco, on the Río Navarro, Cartago, Costa Rica, altitude 1400 meters.

DISTRIBUTION: Known only from the type locality.

Distinguished from all other species of the genus by the dilated and more or less clasping leaf-bases.

7. *Hoffmannia pedunculata* Sw. Prodr. 30. 1788.

Hoffmannia jamaicensis Spreng. Syst. 1: 416. 1825.

A shrub 0.6–2 meters high, the branches stout, terete, grayish, sparsely ferruginous-villous when young, the internodes short; stipules caducous; leaves opposite, the petioles slender or stout, 0.8–4 cm. long, villosulous, the blades oblanceolate, obovate, or elliptic-obovate, 7.5–19 cm. long, 3–6 cm. wide, long-attenuate at the base, acutely acuminate at the apex, membranaceous, deep-green above, glabrous or sparsely villous, pale beneath, ferruginous-villous, especially along the veins, the lateral nerves conspicuous, 8–10 on each side, arcuate-ascending; cymes solitary or fasciculate, subumbellate, few-flowered, the peduncles 1.2–2.5 cm. long, slender, the pedicels slender, 2–6 mm. long; calyx and hypanthium 2 mm. long, glabrous or sparsely villous, the calyx-lobes minute, deltoid; corolla yellow and red, glabrous, the lobes oblong, subobtusate, twice as long as the tube or longer; anthers subsessile; fruit subglobose, 5 mm. in diameter.

TYPE LOCALITY: Mountain forests of Jamaica.

DISTRIBUTION: Mountains of Jamaica.

ILLUSTRATION: Sw. Fl. Ind. Occ. pl. 5.

8. *Hoffmannia Rosei* B. L. Robinson, Proc. Am. Acad. 45: 407.
1910.

A shrub 3 meters high, the branches stout, densely leafy, brownish, minutely puberulent; stipules minute, deltoid, early deciduous; leaves opposite, the petioles slender, 0.8–4 cm. long, puberulent, the blades obovate, oblanceolate-oblong, or elliptic-oblong, 6–12 cm. long, 3.5–5 cm. wide, acute to long-attenuate at the base, rather abruptly acuminate at the apex, membranaceous, bright-green above, glabrous or minutely strigillose, paler beneath, minutely puberulent, especially along the veins, the lateral nerves prominulous, 5–7 on each side, arcuate-ascending; flowers 4-parted, ebracteate, the pedicels slender, 1–2 mm. long, the cymes 5–9-flowered, on slender peduncles 1–1.5 cm. long; calyx and hypanthium 2 mm. long, lenticellate,

glabrous or sparsely farinose-puberulent, the calyx-lobes minute, deltoid, alternating with 4 glands; corolla white, 7 mm. long, farinose-puberulent, the lobes oblong, acute, about twice as long as the tube; anthers exerted.

TYPE LOCALITY: Along a brook near Pedro Paulo, Nayarit.

DISTRIBUTION: Known only from the type locality.

9. *Hoffmannia rotata* Donn. Smith, Bot. Gaz. 18: 204. 1893.

A shrub 1-2 meters high, the branches stout, terete or obtusely quadrangular, brownish, densely ferruginous-puberulent, the internodes short; stipules minute, deltoid; leaves 3-4 verticillate or opposite, the petioles stout, 1 cm. long or shorter, puberulent, the blades narrowly oblanceolate or oblong-oblanceolate, 8-18 cm. long, 2-4 cm. wide, long-attenuate at the base, acuminate or acute at the apex, membranaceous, bright-green above, glabrous or sparsely puberulent, paler beneath, copiously puberulent, especially along the veins, the costa very stout, the lateral nerves 9-12 on each side, arcuate-ascending; flowers 4-parted, umbellate-cymose, slender-pedicellate, the pedicels usually longer than the calyx, the cymes 6-15-flowered, on slender peduncles 1-5 cm. long; calyx and hypanthium glabrous, 2 mm. long, the calyx-lobes minute, deltoid; corolla 6 mm. long, glabrous, the tube nearly obsolete, the lobes oblong, obtuse; anthers 2.5-3 mm. long, exerted, about twice as long as the filaments; fruit globose, 5 mm. in diameter, 2-celled; seeds minute, reddish-brown.

TYPE LOCALITY: Damp forests near San Miguel Uspantán, Quiché, Guatemala, altitude 2100 meters.

DISTRIBUTION: Vicinity of the type locality.

10. *Hoffmannia leucocarpa* Standley, Jour. Wash. Acad. 15: 9. 1925.

A shrub 2 meters high, simple or with few branches, glabrous throughout; stipules deciduous; leaves large, opposite, the stout petioles 3-6.5 cm. long; leaf-blades elliptic or lance-elliptic, 15-25 cm. long, 6-12 cm. wide, subabruptly acuminate, acute or cuneate at the base, sometimes rather abruptly contracted and short-decurrent, bright-green above, somewhat paler beneath, the stout costa prominent, the lateral nerves about 13 pairs, arcuate, divergent at almost a right angle; cymes equaling or often much exceeding the petioles, lax, few- or many-flowered, the branches bright-red, the slender pedicels 5-12 mm. long; calyx 2-3 mm. long, red, the lobes deltoid, acute, erect; corolla red, in bud acute, 7 mm. long, the lobes longer than the tube, glabrous outside; fruit subglobose, 1 cm. long, white.

TYPE LOCALITY: In wet forest at Las Nubes, San José, Costa Rica, altitude 1600 meters.

DISTRIBUTION: Wet forest in the mountains of central Costa Rica, at 1300-1700 meters.

11. *Hoffmannia pallidiflora* Standley, Jour. Wash. Acad. 15: 9. 1925.

A shrub 1-2 meters high, with simple, glabrous, obtusely tetragonous stems; stipules deciduous; leaves large, membranaceous, opposite, the slender pale petioles 2-4 cm. long, or the uppermost leaves often sessile; leaf-blades elliptic or obovate-elliptic, 15-25 cm. long, 7-9 cm. wide, abruptly acuminate or long-acuminate, abruptly long- or short-decurrent at the base, glabrous; cymes few-flowered, long-pedunculate, often borne on naked branches below the leaves, equaling the petioles, the branches glabrous, the flowers partly sessile and partly slender-pedicellate; calyx pale-green, the lobes triangular, obtuse or acute, 1-1.5 mm. long; corolla pale-green, slender and acute in bud, in anthesis 8 mm. long, the lobes almost twice as long as the tube; fruit oval, red, 1 cm. long.

TYPE LOCALITY: In wet forest at La Hondura, San José, Costa Rica, altitude 1500 meters.

DISTRIBUTION: Wet mountain forests of central Costa Rica, at 1400-1500 meters.

12. *Hoffmannia amplexifolia* Standley, Jour. Wash. Acad. 15: 8. 1925.

Stems simple, herbaceous, 1-1.5 meters high, glabrous, sharply quadrangular; stipules deciduous; leaves large, membranaceous, ternate, sessile, oblanceolate or oblong-obovate,

23–35 cm. long and 8–13 cm. wide or larger, acuminate or long-acuminate, long-attenuate to the very narrow, deeply cordate, clasping base, glabrous and bright-green above, beneath minutely puberulent along the nerves, the lateral nerves very slender, strongly arcuate, 21 pairs or more; cymes clustered in the leaf-axils, many-flowered, 3–8 cm. long, lax, sessile, the branches densely villosulous, the flowers slender-pedicellate; calyx reddish, short-villous, the lobes narrowly triangular, obtuse; corolla greenish-yellow, puberulent or villosulous, in bud 5 mm. long, the lobes longer than the tube; berries red.

TYPE LOCALITY: In moist forest near Orosi, Cartago, Costa Rica.
DISTRIBUTION: Vicinity of the type locality.

13. *Hoffmannia ramonensis* Standley, Jour. Wash. Acad. 18: 180.
1928.

A shrub, the older branches stout, terete, the younger ones glabrous or nearly so, the internodes 2–6.5 cm. long; stipules caducous; leaves large, opposite, sessile or nearly so, membranaceous, obovate-oblong, 14–28 cm. long, 5.5–10 cm. wide, acute, gradually narrowed below the middle, then rather abruptly long-attenuate into a petioliform portion 3–6 cm. long and 1.5 cm. wide or narrower, acute at the base, deep-green and glabrous above, beneath paler, when very young densely tomentose with loose brownish hairs, in age glabrate except along the short-villous nerves, the slender costa prominent beneath, the lateral nerves about 14 pairs, slender, prominent, divaricate, arcuate, anastomosing close to the margin, the lower surface marked with very numerous short linear cystoliths; cymes axillary, solitary or fasciculate, umbelliform, mostly 2–5-flowered, the stout peduncles 6–15 mm. long, densely brown-tomentose, the bracts caducous, the stout pedicels 2–4 mm. long, densely villous-tomentose; hypanthium turbinate, 2.5–3 mm. long, brown-tomentose; calyx-lobes 4, narrowly triangular, 1.5–2 mm. long, narrowed to an obtuse apex, brown-villous on the outer surface; corolla in bud oblong-ovoid, obtuse, 6–7 mm. long, densely villous-tomentose with brown hairs; anthers linear, 5 mm. long, narrowed to the acutish apex.

TYPE LOCALITY: Along the Río Barranca at San Juan, near San Ramón, Costa Rica, altitude 1300–1400 meters.

DISTRIBUTION: Known only from the type locality.

14. *Hoffmannia excelsa* (H. B. K.) K. Schumann, in Mart. Fl. Bras.
6^b: 327. 1889.

Psychotria excelsa H.B.K. Nov. Gen. & Sp. 3: 355. 1819.
Coffea lanceolata Schlecht. & Cham. Linnaea 6: 412. 1831.
Higginsia mexicana Link, Klotzsch, & Otto, Ic. Pl. Rar. 57. 1841.
Choristes excelsa Benth.; Walp. Rep. 2: 506. 1843.
Hoffmannia mexicana Hemsl. Biol. Centr. Am. Bot. 2: 37. 1881.
Deppea excelsa Standley, N. Am. Flora 32: 89. 1921.*

A slender, often densely branched shrub 60–120 cm. high, the branches grayish or green, densely ferruginous-puberulent when young, the internodes short or elongate; stipules minute, deltoid, deciduous; leaves small, opposite, the slender petioles 3–13 mm. long, puberulent; leaf-blades obovate, elliptic, or elliptic-oblong, 2–9.5 cm. long, 0.7–3 cm. wide, acute to acuminate, rarely obtuse, acute to attenuate at the base or rarely obtuse or rounded, membranaceous, bright-green and glabrous above, paler beneath, puberulent or villosulous on the veins, the lateral nerves slender, 4–6 on each side, arcuate-divaricate; cymes sessile or short-pedunculate, mostly 2-flowered, the slender pedicels 3 mm. long or shorter; calyx and hypanthium 2–2.5 mm. long, glabrous or nearly so, the calyx-lobes minute, deltoid; corolla yellow, 7 mm. long, sparsely puberulent or villous outside, the lobes oblong, obtuse or acutish, spreading, about twice as long as the tube; anthers subsessile, exserted; berries 2-celled, red, globose or oblong, 5–9 mm. long; seeds minute, brown, foveolate.

TYPE LOCALITY: Near Jalapa, Veracruz, altitude about 1345 meters.

DISTRIBUTION: Wet mountain forest, Veracruz, Oaxaca, and Chiapas.

ILLUSTRATIONS: Link, Klotzsch, & Otto, Ic. Pl. Rar. pl. 23; H.B.K. Nov. Gen. & Sp. pl. 282.

* The transfer of *Psychotria excelsa* H.B.K. to *Deppea*, in the present volume, now appears to have been an error, as indicated by examination of authentic material. The proper name for species no. 4 on page 89 is *Deppea tenuiflora* Benth.

15. **Hoffmannia uniflora** Standley, Contr. U. S. Nat. Herb. **20**: 204.
1919.

Branches fruticose, slender, brownish, the branchlets very slender, subterete, bifariously rufous-puberulent, the internodes short; stipules deltoid, acutish, 1 mm. long, deciduous; leaves opposite, the petioles slender, 3–6 mm. long, sparsely puberulent, the blades narrowly oblong-elliptic or lance-elliptic, 4–8 cm. long, 1–2 cm. wide, attenuate to the base, acuminate or long-acuminate at the apex, membranaceous, deep-green above, glabrous, paler beneath, sparsely puberulent along the veins or glabrate, the lateral nerves very slender, about 6 on each side, arcuate-divaricate or ascending; flowers mostly solitary, sometimes in 2-flowered cymes, the pedicels slender, 3–6 mm. long, glabrate; calyx-lobes linear, acute, in fruit 2–3 mm. long; fruit oval, 6–7 mm. long, 5–6 mm. wide, costate, glabrous; seeds minute, brownish, coarsely reticulate.

TYPE LOCALITY: Near Cobán, Alta Verapaz, Guatemala, altitude 1100 meters.

DISTRIBUTION: Known only from the type locality.

16. **Hoffmannia hamelioides** Standley, Jour. Wash. Acad. **15**: 8.
1925.

A sparsely branched shrub 1.5 meters high, the branches glabrous; leaves opposite, membranaceous, the stout petioles 1–3 cm. long, puberulent or glabrous; leaf-blades obovate-elliptic or oblanceolate-elliptic, 12–21 cm. long, 4.5–7 cm. wide, abruptly acuminate, cuneate-decurrent at the base, glabrous above, paler beneath, villous along the nerves, the lateral nerves about 12 pairs, conspicuous, ascending at a broad angle, strongly arcuate; cymes sessile, few- or many-flowered, about equaling the petioles, the branches short-villous; calyx short-villous, the lobes 1–1.5 mm. long, narrowly triangular, acutish; corolla in bud ovoid, acutish, 4 mm. long, greenish-white, short-villous; fruit dark-red, subglobose, 7–8 mm. long.

TYPE LOCALITY: In moist forest between Aserrí and Tarbaca, San José, Costa Rica, altitude 1800 meters.

DISTRIBUTION: Mountain forests of central Costa Rica.

17. **Hoffmannia Tuerckheimii** Donn. Smith, Bot. Gaz. **47**: 254.
1909.

A shrub, the branchlets terete, lenticellate, ferrugino-villous, the internodes elongate; stipules triangular; leaves opposite, the petioles stout, 1.5–2.2 cm. long, villous, the blades oval-ovate or rounded-elliptic, 5–6.5 cm. long, 2.5–4 cm. wide, rounded or short-decurrent at the base, short-acuminate at the apex, subcoriaceous, glabrous above or villous along the costa, brownish beneath, ferrugino-villous, especially along the veins, the lateral nerves 5–7 on each side, arcuate; flowers 4-parted, few, fasciculate, subsessile, the cymes subsessile; calyx and hypanthium rufous-villous, 3 mm. long, the hypanthium obovoid, the calyx-lobes triangular, subulate, half as long as the hypanthium; corolla sparsely villous, 12 mm. long, the lobes linear, about 5 times as long as the tube; anthers linear-oblong, longer than the filaments.

TYPE LOCALITY: Mountain forests near Cobán, Alta Verapaz, Guatemala, altitude 1600 meters.

DISTRIBUTION: Known only from the type locality.

18. **Hoffmannia Valerii** Standley, Jour. Wash. Acad. **18**: 178.
1928.

A branched shrub 1–1.5 meters high, the older branches subterete, the young branches subterete, their internodes 3.5–5.5 cm. long, when young densely villous with slender spreading hairs; stipules rounded, scarcely more than 1 mm. long, caducous; leaves opposite, membranaceous, the slender petioles 1–2 cm. long, villous; leaf-blades elliptic or ovate-elliptic, 6.5–11 cm. long, 3.5–5.5 cm. wide, acute or acuminate, with acute or obtuse tip, at the base obtuse or rounded and abruptly decurrent, deep-green on the upper surface, when young sparsely villous but soon glabrate, somewhat paler beneath, marked with numerous short linear cystoliths, villous along the nerves with slender, pale or brownish, spreading hairs, the costa and nerves

prominent, the lateral nerves slender, ascending, arcuate, anastomosing very close to the margin; cymes few-flowered, dense, axillary, fasciculate, sessile or nearly so, the peduncles in fruit sometimes 1 cm. long, the bracts caducous, the pedicels 2-5 mm. long, glabrous or nearly so; hypanthium turbinate, 2 mm. long, glabrous or with a few short hairs; calyx-lobes 4, narrowly triangular, 1 mm. long, acute or obtuse, sometimes bearing dorsally a few short hairs; corolla in bud lance-ovoid, acutish, 5-6 mm. long, short-villous, the 4 lobes triangular-oblong, obtuse, 3 times as long as the tube; fruit subglobose, 6 mm. long, bright-red, glabrous; seeds minute, subglobose, dark-brown, coarsely and deeply foveolate.

TYPE LOCALITY: El Arenal, Guanacaste, Costa Rica, altitude 600 meters.

DISTRIBUTION: Wet mountain forests of Guanacaste, Costa Rica.

19. *Hoffmannia asclepiadea* Standley, Jour. Wash. Acad. 15: 7.
1925.

A simple shrub or herb 1.5 meters high, erect or ascending, the stems villosulous, with short or elongate internodes; stipules caducous; leaves large, opposite, membranaceous, the stout petioles 2.5-4 cm. long, villosulous; leaf-blades elliptic or ovate-elliptic, 15-20 cm. long, 7-9 cm. wide, abruptly acuminate or long-acuminate, cuneate at the base, bright-green and glabrous above, copiously short-villous beneath, especially on the nerves, the costa stout, prominent, the lateral nerves about 17 pairs, slender, diverging at a wide angle, arcuate; cymes sessile, shorter than the petioles, many-flowered, the branches densely short-villous, the flowers short-pedicellate; hypanthium turbinate, villosulous; calyx-lobes short-villous, ovate-deltoid, obtuse, 1 mm. long; corolla ovoid and acutish in bud, greenish-yellow, densely short-villous outside; berries subglobose, red, sparsely short-villous.

TYPE LOCALITY: Wet forest at Las Nubes, San José, Costa Rica, altitude 1900 meters.

DISTRIBUTION: Wet forests of central Costa Rica, at 1900-2300 meters.

20. *Hoffmannia rotundata* Standley, Contr. U. S. Nat. Herb. 20:
204. 1919.

Branchlets stout, subterete, glabrate, the internodes elongate; leaves opposite, the stout petioles 1.5-3 cm. long, sparsely villosulous or glabrate; leaf-blades broadly oval-elliptic, 10.5-16 cm. long, 6-7.5 cm. wide, very obtuse to acute and short-acuminate, acutish or short-acuminate at the base, membranaceous, dark-green and glabrous above, paler beneath, ferruginous-villosulous, especially on the veins, the costa very stout and prominent, the lateral nerves about 12 pairs, slender, strongly arcuate; cymes dense, sessile, the numerous flowers sessile or short-pedicellate; calyx and hypanthium sparsely ferruginous-villous or glabrate, 2-2.5 mm. long, the hypanthium turbinate, angulate, the calyx-lobes deltoid, acute, shorter than the hypanthium; corolla 6-8 mm. long, glabrous outside or with a few scattered hairs, the lobes lance-oblong, acutish, twice as long as the tube.

TYPE LOCALITY: Cerro del Boquerón, Chiapas.

DISTRIBUTION: Known only from the type locality.

21. *Hoffmannia Carpintera* Standley.

Hoffmannia macrophylla Standley, Jour. Wash. Acad. 15: 9. 1925. Not *H. macrophylla* Hemsl. 1881.

A shrub 3 meters high, with few stout branches, glabrous throughout, the stems green; leaves large, membranaceous, sessile or nearly so, the blades decurrent to the base, oblong-obovate, 21-35 cm. long, 8-10 cm. wide, abruptly acute, long-attenuate to the base, bright-green, the lateral nerves numerous, ascending at a wide angle, slender, strongly arcuate, anastomosing close to the margin; cymes sessile or pedunculate, 3-4 cm. long, laxly few-flowered, the pedicels 3-8 mm. long; calyx red, shallowly lobate, the lobes rounded-deltoid, 1.5 mm. long; corolla in bud cylindric, obtuse, 6 mm. long, red outside, the lobes yellow within, twice as long as the tube.

TYPE LOCALITY: In wet forest, Cerro de la Carpintera, Cartago, Costa Rica, altitude 1700 meters.

DISTRIBUTION: Known only from the type locality.

22. *Hoffmannia Pittieri* Standley, Contr. U. S. Nat. Herb. 18: 140.
1916.

Herbaceous, or suffrutescent at the base, the stems simple, stout, terete, glabrous, the internodes elongate; stipules triangular, acute; leaves opposite, the petioles stout, 2–3 cm. long, glabrous, the blades oblong-obovate or oblong-oval, 12–24 cm. long, 6–9 cm. wide, acute or attenuate at the base, subabruptly acuminate at the apex, chartaceous, glabrous, bright-green above, paler beneath, the lateral nerves prominent, about 12 on each side, arcuately ascending or subdivaricate; cymes sessile or short-pedunculate, many-flowered, the branches puberulent, the flowers 4-parted, pedicellate, the pedicels in fruit sometimes 5 mm. long, the bracts small, oblong-linear; calyx and hypanthium 2 mm. long, sparsely puberulent, the calyxlobes minute, ovate, obtuse; corolla yellowish-white, pruinose-puberulent, at least above; fruit subglobose, 5 mm. long, glabrous; seeds numerous, brown, foveolate.

TYPE LOCALITY: Humid forest between Alto de las Palmas and top of Cerro de la Horqueta, Chiriquí, Panama, altitude 2100 to 2250 meters.

DISTRIBUTION: Known only from the type locality.

23. *Hoffmannia inamoena* Standley, Jour. Wash. Acad. 18: 179.
1928.

A simple erect shrub 1–1.5 meters high, the stems stout, subterete, with short or elongate internodes, the young stems densely and minutely puberulent; stipules ovate, 1.5 mm. long, caducous; leaves opposite, membranaceous, the slender petioles 1–4.5 cm. long, densely puberulent; leaf-blades pale when dried, chiefly elliptic, sometimes ovate-elliptic, rarely oblong-ovate, 8–20 cm. long, 3.5–10 cm. wide, abruptly acute or acuminate, rarely long-acuminate, with acute or obtuse, often falcate tip, at base obtuse to rounded and abruptly long-decurrent, glabrous above, beneath paler, densely and minutely puberulent on the nerves and sometimes, at least when young, over the whole surface, the costa stout and prominent, the lateral nerves slender, about 16 pairs, divaricate, usually arcuate, anastomosing to form a distinct collective nerve close to the margin, the ultimate veins prominulous and closely reticulate; flowers fasciculate in the leaf-axils or in sessile or short-pedunculate, 2–4-flowered cymes, the pedicels in fruit 1–4 mm. long, short-villous; calyxlobes 4, triangular-oblong, 1–2 mm. long, obtuse, short-villous; fruit subglobose, 6–7 mm. long, white, juicy, copiously villous; seeds minute, dark-brown, coarsely and deeply foveolate.

TYPE LOCALITY: In wet forest at Los Ayotes, near Tilarán, Guanacaste, Costa Rica, altitude 600 meters.

DISTRIBUTION: Wet mountain forests of Guanacaste, Costa Rica.

24. *Hoffmannia hondurensis* Standley, Field Mus. Publ. Bot. 4: 329.
1929.

A slender, sparsely branched shrub 1–2 meters high, the branches terete, glabrous, green, densely and minutely pale-lenticellate, with short or elongate internodes; stipules caducous; leaves opposite, membranaceous, the stout petioles 0.5–2 cm. long; leaf-blades oblanceolate-oblong or oblong-obovate, 13–26 cm. long, 5–8.5 cm. wide, abruptly acuminate or long-acuminate, with narrow attenuate tip, long-attenuate to the base, glabrous, scarcely paler beneath, the costa rather stout, prominent, the lateral nerves about 14 pairs, ascending at a wide angle, slender, prominulous, arcuate, anastomosing near the margin, the veins inconspicuous, laxly reticulate, the upper surface of the blade often marked with numerous minute short cystoliths; cymes axillary, sessile or short-pedunculate, solitary or fasciculate, mostly 2–4-flowered, glabrous, the slender pedicels 5–8 mm. long; calyx 0.7 mm. long, very shallowly dentate, the teeth triangular, acute; fruit white, juicy, subglobose, 4–5 mm. long, glabrous; seeds very numerous, minute, brown, coarsely foveolate.

TYPE LOCALITY: In wet forest on the hills above Lancetilla Valley, Atlántida, Honduras, altitude 200–500 meters.

DISTRIBUTION: Vicinity of the type locality.

25. *Hoffmannia lineolata* Donn. Smith, Bot. Gaz. 40: 5. 1905.

A shrub, the branches very stout, terete, glabrate; stipules deciduous; leaves opposite, the petioles slender, 3–7 cm. long, glabrate, the blades obovate-oblong or oblanceolate-oblong, 24–30 cm. long, 6–12 cm. wide, attenuate at the base, acuminate at the apex, membranaceous, finely lineolate, deep-green above, glabrous, often papillose-roughened, paler beneath, minutely puberulent along the veins, the lateral nerves prominulous, 14–17 on each side; flowers 4-parted, short-pedicellate, the cymes fasciculate, few-flowered, 1.5–2.5 cm. long, short-pedunculate; calyx and hypanthium ferruginous-puberulent, 2 mm. long, the calyx-lobes minute, deltoid; corolla 6 mm. long, sparsely puberulent, the lobes linear-oblong, spreading, twice as long as the tube; anthers sessile, 3 mm. long; ovary 2-celled; fruit globose; seeds reddish.

TYPE LOCALITY: Cubilquitz, Alta Verapaz, Guatemala, altitude 350 meters.

DISTRIBUTION: Known only from the type locality.

26. *Hoffmannia longepetiolata* Polak. Linnaea 41: 567. 1877.

A slender glabrous shrub, apparently branched, the branches slender, subterete, with short or elongate internodes; leaves opposite, membranaceous, the slender petioles 2–4 cm. long; leaf-blades obovate to obovate-oblong, 10–19 cm. long, 3–7 cm. wide, abruptly short-acuminate or sometimes long-acuminate, long-cuneate or attenuate at the base, bright-green above, paler beneath, rarely sparsely villosulous along the nerves, the lateral nerves very slender, about 8 pairs, ascending at an angle of 45°, strongly arcuate; cymes axillary, 3–8-flowered, sessile, much shorter than the petiole, the flowers slender-pedicellate or sometimes almost sessile; calyx-lobes minute, obtuse; corolla yellow, almost 1 cm. long, the narrowly oblong lobes obtuse, much longer than the slender tube, spreading; stamens exerted, the anthers linear; fruit subglobose.

TYPE LOCALITY: In forests of Cerro de la Carpintera, Costa Rica.

DISTRIBUTION: Mountain forests of central Costa Rica.

Var. *minor* Polak. *op. cit.* 568 may be a form of this, but it is more probably a distinct species.

27. *Hoffmannia calycosa* Donn. Smith, Bot. Gaz. 40: 4. 1905.

A shrub, the branches terete, brownish, bifariously puberulent when young, the internodes elongate; stipules minute, deltoid-acuminate, deciduous; leaves opposite, the petioles slender, 0.8–2 cm. long, glabrate, the blades obovate or obovate-elliptic, 9–15 cm. long, 3.5–5.5 cm. wide, acute or acuminate at the base, short-acuminate at the apex, membranaceous, bright-green above, glabrous, slightly paler beneath, puberulent along the veins or glabrate, the lateral nerves prominulous, 6–8 on each side, subdivaricate, arcuate; flowers 4-parted, subsessile or short-pedicellate, the cymes 1 cm. long or shorter, subsessile, densely few-flowered; calyx and hypanthium sparsely villosulous, the hypanthium 2 mm. long, the calyx-lobes linear, 4–5 mm. long, acute; corolla glabrous, about equaling the calyx-lobes, the lobes linear-lanceolate, spreading, twice as long as the tube; anthers subsessile, exerted; ovary 2-celled.

TYPE LOCALITY: Cubilquitz, Alta Verapaz, Guatemala, altitude 350 meters.

DISTRIBUTION: Known only from the type locality.

28. *Hoffmannia panamensis* Standley, Contr. U. S. Nat. Herb. 20: 204. 1919.

A slender branched shrub 2–4 meters high, glabrous throughout, the branches subterete, with elongate internodes; leaves opposite, membranaceous, the slender petioles 1–3.5 cm. long; leaf-blades oblong, lance-oblong, or elliptic-oblong, 7–15 cm. long, 2.5–5.5 cm. wide, long-acuminate or cuspidate-acuminate, acute to very obtuse at the base, bright-green above, pale-yellowish-green beneath, the lateral nerves prominent, about 11 pairs; cymes sessile, much shorter than the petioles, few- or many-flowered, dense, the flowers 4-parted, short-pedicellate or sessile; calyx and hypanthium 2.5 mm. long, the calyx-lobes triangular or lanceolate, acute, minute in anthesis, sometimes elongate in fruit; corolla yellow, 7–8 mm. long, the lobes lance-oblong, acutish, twice as long as the tube or longer; ovary 2-celled.

TYPE LOCALITY: In forests along the Río Ladrillo, above El Boquete, Chiriquí, Panama, altitude 1200–1300 meters.

DISTRIBUTION: Known only from the type locality.

29. *Hoffmannia Tonduzii* Standley, Contr. U. S. Nat. Herb. 20: 205.
1919.

A slender, often straggling shrub 1–2 meters high, the branches green, often elongate and drooping, the branchlets glabrous, with short or elongate internodes; stipules minute, caducous; leaves small, the stout or slender petioles 2–12 mm. long, glabrous; leaf-blades membranaceous, oval-elliptic to obovate-elliptic or oblong-oblongate, 5–12 cm. long, 1.5–5.5 cm. wide, acute to acuminate or cuspidate-acuminate, acute to long-decurrent at the base, glabrous, dark-green above and usually marked with numerous minute pale cystoliths, paler beneath and minutely punctulate, the lateral nerves slender, about 8 on each side, arcuate; cymes axillary, sessile or subsessile, few-flowered, usually shorter than the petioles, the pedicels in fruit up to 5 mm. long, some of the flowers usually sessile; calyx and hypanthium glabrous or sparsely puberulent, the hypanthium turbinate, angulate, 2.5 mm. long, the calyx-lobes narrowly triangular, 1–1.5 mm. long, acute; corolla 6–7 mm. long, yellow, glabrous outside, the lobes lance-oblong, acute, twice as long as the tube; fruit dark cherry-red, subglobose, 1 cm. long; seeds very numerous, ferruginous, coarsely foveolate.

TYPE LOCALITY: In forests of Las Vueltas, Tucurrique, Costa Rica, altitude 635–700 meters.

DISTRIBUTION: Mountain forests of central Costa Rica, at 1800 meters or less, common in many regions.

30. *Hoffmannia Ghiesbreghtii* (Lemaire) Hemsl. Biol. Centr. Am.
Bot. 2: 36. 1881.

Campylobotrys Ghiesbreghtii Lemaire, Ill. Hort. 8: pl. 279. 1861.

Higginsia Ghiesbreghtii ["*Gheisbechtii*"] Hook. Bot. Mag. pl. 5383. 1863.

A shrub 1 meter high or more, the branches stout, quadrangular, narrowly winged on the angles, glabrous or nearly so, the internodes usually very short; leaves opposite, sessile or almost so, oblanceolate-oblong or obovate-oblong, 23–30 cm. long, 6–9 cm. wide, acute or abruptly acuminate, long-attenuate to the base, membranaceous, bright-green and glabrous above, paler beneath, sometimes purplish, minutely puberulent, especially on the veins, the lateral nerves prominent, about 20 on each side, arcuate-divaricate; cymes axillary, few- or many-flowered, dense, subsessile, the flowers 4-parted, sessile or short-pedicellate; calyx and hypanthium 2 mm. long, puberulent, the calyx-lobes minute, deltoid; corolla yellow, 6 mm. long, puberulent outside, the lobes narrowly oblong, acute, spreading, equaling or slightly longer than the tube; anthers exerted.

TYPE LOCALITY: Described from cultivated plants that probably were of Mexican origin.

DISTRIBUTION: Guatemala; probably also in the forests of southern Mexico.

ILLUSTRATIONS: Ill. Hort. pl. 279; Bot. Mag. pl. 5383.

31. *Hoffmannia nesiota* Donn. Smith, Bot. Gaz. 61: 374. 1916.

A shrub, the branchlets subterete, glabrous; leaves opposite, the petioles stout, 7.5–8 cm. long, glabrous, the blades broadly elliptic, 22–26 cm. long, 10.5–11 cm. wide, short-acuminate at the base, acuminate at the apex, subcoriaceous, glabrous, the venation prominent beneath, the lateral nerves 14–16 on each side; cymes few- or many-flowered, lax, the peduncles usually 3.5–5 cm. long, sparsely pilosulous, the pedicels 6–10 mm. long, the bracts obsolete; hypanthium turbinate, angulate, the calyx-lobes narrowly triangular, 1.5–2 mm. long, acute; corolla 11 mm. long, puberulent, the lobes linear, acute, about as long as the tube; anthers 5.5 mm. long, apiculate; disk pulvinate; fruit oval, 1 cm. long, 3-celled, 4-costate; seeds ellipsoid, 0.5 mm. long, foveolate, reddish.

TYPE LOCALITY: Wafer Bay, Cocos Island, Costa Rica.

DISTRIBUTION: Known only from the type locality.

32. *Hoffmannia arborescens* Donn. Smith, Bot. Gaz. 37: 417.
1904.

A shrub or small tree, the branchlets quadrangular; stipules deciduous; petioles 3–5 mm. long; leaf-blades oblanceolate-elliptic, 15–19 cm. long, 3.5–5.5 cm. wide, long-attenuate at the base, acuminate at the apex, subcoriaceous, glabrous, bright-green above, paler beneath, the lateral nerves 8 or 9 on each side; cymes fascicled, many-flowered, fuscous-pubescent, 2–3.5

cm. long, the flowers 4-parted, the pedicels as long as the calyx, the bracts foliaceous, 1 cm. long; calyx and hypanthium pubescent, the calyx-lobes minute, deltoid; corolla 12 mm. long, pubescent, pale-rose, the lobes oblong-ovate, suberect, about as long as the tube; anthers 4 mm. long, obtuse, the filaments 1 mm. long; ovary 2-celled.

TYPE LOCALITY: In forests, Santa Rosa de Copey, Costa Rica, altitude 1800 meters.

DISTRIBUTION: Known only from the type locality.

33. *Hoffmannia tetragynia* Donn. Smith, Bot. Gaz. 27: 336. 1899.

A shrub, the branches stout, subterete, densely ferruginous-villous, the internodes short; stipules triangular, caducous; leaves opposite, the petioles stout, 1.5–5 cm. long, ferruginous-villous, the blades obovate or oblong-elliptic, 15–35 cm. long, 7.5–10 cm. wide, acute, acuminate, or attenuate at the base, acute or acuminate at the apex, membranaceous, bright-green above, villosulous or puberulent with ferruginous hairs, slightly paler beneath, copiously ferruginous-villous, especially along the veins, the venation prominent, the lateral nerves 14 or 15 on each side, the veins prominently reticulate; cymes fasciculate, many-flowered, 9 cm. long or usually shorter, the peduncles usually very short, the flowers 4-parted, short-pedicellate, bracteate; calyx and hypanthium 3 mm. long, villosulous, the calyx-lobes minute, deltoid; corolla 11–14 mm. long, ferruginous-villosulous, the lobes oblong-triangular, 4–5 mm. long; anthers 4 mm. long, obtuse; ovary 4-celled.

TYPE LOCALITY: Damp forests near Zamorora, Santa Rosa, Guatemala, altitude 1800 meters.

DISTRIBUTION: Known only from the type locality.

34. *Hoffmannia gesnerioides* (Oerst.) Kuntze, Rev. Gen. 285.

1891.

Ophryococcus gesnerioides Oerst. Vidensk. Meddel. 1852: 53. 1852.

A shrub 60 cm. high, sparsely branched, the branches ochraceous, subterete, with elongate internodes, densely villous with very long multicellular, rufous, spreading hairs; stipules caducous; leaves opposite, the slender petioles 2–3.5 cm. long, densely villous; leaf-blades oblong or elliptic-oblong, 9–18 cm. long, 3–5 cm. wide, narrowly long-acuminate, attenuate to the base, membranaceous, when young very densely villous on both sides with long soft rufous hairs, in age more sparsely villous, green above and marked with very numerous minuted pale cystoliths, beneath somewhat paler, the costa pale, prominent, slender, the lateral nerves about 9 pairs, elevated, ascending at an acute angle; cymes axillary, 3–4-flowered, the peduncles very short in anthesis but in fruit as much as 2.5 cm. long or more, the pedicels 2–3 mm. long, densely rufous-villous, the flowers 6–8 mm. long; hypanthium turbinate, 2 mm. long, villous, the calyx-lobes linear, 3 mm. long, acuminate, villous on the margins; corolla villous outside, the lobes short, triangular; fruit ovoid, purple, 7 mm. long or larger, sparsely villous; seeds numerous, minute, fuscous (probably as a result of age), coarsely foveolate.

TYPE LOCALITY: Monte Pantasma, Segovia, Nicaragua.

DISTRIBUTION: Known only from the type locality.

35. *Hoffmannia affinis* Hemsl. Diag. Pl. Nov. 31. 1879.

A shrub, the branches terete, puberulent when young; leaves opposite, the petioles about 6 mm. long, the blades ovate-oblong, 10–12.5 cm. long, attenuate at the base, obtusely acuminate at the apex, subcoriaceous, minutely puberulent beneath, the costa and veins prominulous; flowers 4-parted, 6–8 mm. long, puberulent, umbellate-cymose, the cymes fasciculate, about 6-flowered, the peduncles slender, 8–16 mm. long, the pedicels 2–4 mm. long; calyx 4-lobate, the lobes rounded; corolla-tube broad, slightly shorter than the lobes; ovary 2-celled.

TYPE LOCALITY: Costa Rica.

DISTRIBUTION: Known only from the type locality.

36. *Hoffmannia orizabensis* Standley, Contr. U. S. Nat. Herb. 20:

205. 1919.

A low shrub, the branches slender, decumbent, rufous-villosulous when young; leaves opposite, the slender petioles 0.5–2 cm. long, rufous-villosulous or puberulent; leaf-blades elliptic or elliptic-oblong, 3–8 cm. long, 1–3 cm. wide, acute or subacuminate, acute at the

base, membranaceous, deep-green above, rufous-villosulous along the costa, with numerous conspicuous white cystoliths, paler beneath, rufous-villosulous along the veins, the slender costa prominent, the lateral nerves slender, prominulous, 7-9 pairs, ascending, strongly arcuate; cymes 4-flowered, the slender peduncles 1 cm. long, rufous-villosulous, the slender pedicels 2-3 mm. long; calyx and hypanthium sparsely villosulous, the hypanthium oblong-turbinate, 2.5 mm. long, the calyx-lobes narrowly triangular, acute; corolla 12-13 mm. long, sparsely villosulous outside, the throat ampliate, the lobes ovate-oval, obtuse or rounded, half as long as the tube; anthers obtuse.

TYPE LOCALITY: Region of Orizaba, Veracruz.

DISTRIBUTION: Known only from the type locality.

37. *Hoffmannia trichocalyx* Standley, Jour. Wash. Acad. **18**: 181. 1928.

A large weak shrub 1-2.5 meters long, often decumbent, the branches thick and stout, terete, ochraceous, rimose, the young branchlets obtusely tetragonous, their internodes 1-4 cm. long, sparsely villous or often glabrous; stipules caducous; leaves large, opposite, membranaceous, the slender petioles 1.5-7 cm. long, sparsely villous or glabrous; leaf-blades elliptic to oblong-elliptic, rarely ovate or obovate, 12-26 cm. long, 4.5-10 cm. wide, abruptly acuminate, with acute tip, cuneate to obtuse at the base, usually abruptly contracted and short-decurrent, deep-green and glabrous on the upper surface, beneath usually villous along the nerves but sometimes glabrate, the slender costa prominent, the lateral nerves 10-14 pairs, divaricate, strongly arcuate, prominent, extending nearly to the margin; cymes pendent, borne on naked branches below the leaves, fasciculate, 2.5-14 cm. long, few- or many-flowered, the long and slender peduncles usually villous, dark-red, the bracts deciduous, the pedicels 3-6 mm. long, densely or sparsely villous; calyx-lobes 4, broadly deltoid, acutish, 2 mm. long, sparsely or densely villous; corolla 1 cm. long, bright-yellow or red and yellow, glabrous or sparsely villous outside, the tube 3 mm. thick, cylindric, the lobes triangular-oblong, narrowed to the obtuse apex, about equaling the tube; berry 2-celled, oval, 8 mm. long, 5 mm. thick, dark-red, glabrous or sparsely villous.

TYPE LOCALITY: In wet forest at Fraijanes, Alajuela, Costa Rica, altitude 1600 meters.

DISTRIBUTION: Vicinity of the type locality.

38. *Hoffmannia decurrens* Standley, Contr. U. S. Nat. Herb. **20**: 205. 1919.

A sparsely branched shrub 1-2.5 meters high, the branches ochraceous, the branchlets stout, subangulate, rufous-villosulous or glabrate, the internodes short or elongate; stipules deltoid, minute, caducous; leaves opposite, membranaceous, the stout petioles 0.5-3 cm. long, villosulous or glabrate; leaf-blades oblong-oblancheolate to narrowly elliptic, 7-20 cm. long, 2-6 cm. wide, acute or acuminate, long-attenuate to the base, dark-green above, glabrous, paler beneath, with numerous minute pale cystoliths, villosulous along the nerves or finally glabrate, the lateral nerves slender, arcuate-ascending, 8-10 pairs; cymes axillary or on naked branches below the leaves, usually many-flowered, sessile or short-pedunculate, the branches rufous-villosulous, the flowers subsessile, or the pedicels sometimes 5 mm. long, the bracts minute; calyx and hypanthium rufous-villous or villosulous, the hypanthium obovoid, 2.5-3 mm. long, the calyx-lobes triangular or narrowly triangular, 1-1.5 mm. long, obtuse; corolla 8-9 mm. long, white tinged with rose, sparsely villous or villosulous, the lobes oblong, obtuse, slightly shorter than the tube; fruit oval, red, 6-8 mm. long, villosulous; seeds 1 mm. long, brown, dull, coarsely foveolate.

TYPE LOCALITY: Forests of Santa Rosa de Copey, Costa Rica, altitude 1800-2000 meters.

DISTRIBUTION: Mountain forests of central Costa Rica, at 1500-2000 meters.

39. *Hoffmannia cuneatissima* B. L. Robinson, Proc. Am. Acad. **45**: 407. 1910.

A shrub, the branches stout, terete, brownish, brown-villosulous; stipules caducous; leaves ternate or opposite, the petioles slender, 0.5-3 cm. long, villosulous, the blades oblancheolate,

obovate, or oval-oblong, 5.5–16 cm. long, 1.8–4.5 cm. wide, long-attenuate or acute at the base, short-acuminate at the apex, membranaceous, bright-green above, glabrous or nearly so, slightly paler beneath, copiously puberulent along the veins, the venation prominent or prominulous; flowers 4-parted, umbellate-cymose, ebracteate, sessile or short-pedicellate, the cymes 4–8-flowered, on peduncles 1 cm. long or shorter; calyx and hypanthium 2 mm. long, sparsely rufous-villosulous, the calyx-lobes minute, deltoid; corolla yellowish, 1 cm. long, sparsely villosulous, the lobes oblong, subobtuse, longer than the tube; fruit blackish, 5 mm. in diameter; seeds numerous, brown, subcompressed, foveolate.

TYPE LOCALITY: Mountain canyon near Cuernavaca, Morelos, altitude 1950 meters.

DISTRIBUTION: Mountain forests, Sinaloa to Michoacán and Morelos.

40. *Hoffmannia cauliflora* Hemsl. *Diag. Pl. Nov.* 30. 1879.

A shrub, the branches stout, glabrous; leaves crowded at the ends of the branches, sessile, the blades broadly ovate-elliptic, 15–22.5 cm. long or larger, strongly attenuate at the base, obtusely acuminate at the apex, somewhat fleshy, more or less ferruginous-puberulent when young, the lateral nerves prominent, arcuate; flowers 4-parted, glabrous, pedicellate, the cymes short, several-flowered, the branches and pedicels slender, ebracteate; calyx and hypanthium 4 mm. long or shorter, the calyx-lobes very short; corolla tubular-funneliform, 2.5 cm. long, the tube gradually ampliate upward, the lobes ovate, acute, subpatent, 4 mm. long; stamens included; ovary 3–4-celled.

TYPE LOCALITY: Guatemala.

DISTRIBUTION: Known only from the type locality.

ILLUSTRATION: Hemsl. *Biol. Centr. Am. Bot. pl.* 39.

41. *Hoffmannia confertiflora* Standley, *Contr. U. S. Nat. Herb.* 20: 206. 1919.

A branched shrub, the branches slender, obtusely tetragonous, glabrous, with elongate internodes; stipules caducous; leaves opposite, membranaceous, the petioles 5–10 mm. long, glabrate; leaf-blades elliptic or oblong-elliptic, 6–11.5 cm. long, 2.5–4 cm. wide, acuminate, at the base acuminate or long-attenuate, deep-green above, copiously ferruginous-villosulous, paler beneath, villosulous along the nerves, the lateral nerves about 11 pairs, prominent, arcuate-divaricate; cymes axillary, sessile, few-flowered, dense, the flowers 4-parted, sessile or short-pedicellate; calyx and hypanthium 2–2.5 mm. long, glabrous, the calyx-lobes minute, broadly deltoid; corolla 9 mm. long, glabrous outside, the lobes lance-oblong, acute, equaling the tube; anthers 3 mm. long.

TYPE LOCALITY: San Miguel Uspantán, Quiché, Guatemala, altitude 2100 meters.

DISTRIBUTION: Known only from the type locality.

42. *Hoffmannia josefina* Standley, *Jour. Wash. Acad.* 15: 8. 1925.

A sparsely branched shrub 3 meters high, the branches terete, glabrous; stipules caducous; leaves large, membranaceous, the stout glabrous petioles 1–1.5 cm. long; leaf-blades obovate or oblong-obovate, 13–22 cm. long, 5.5–9 cm. wide, acute or abruptly short-acuminate, cuneate-attenuate at the base, glabrous, deep-green above, paler and minutely punctulate beneath, the costa stout, prominent, the lateral nerves about 12 pairs, ascending at a wide angle, strongly arcuate, anastomosing close to the margin; cymes few- or many-flowered, pedunculate, longer than the petioles, the branches glabrous, the pedicels 1–3 mm. long; calyx glabrous or with a few short scattered hairs, the limb 2 mm. long, the lobes narrowly triangular, acute, green; corolla in bud ovoid, acute, in anthesis 11 mm. long, glabrous, greenish, the lobes shorter than the tube; fruit subglobose, 6 mm. long, dark-red; seeds numerous, irregularly ovoid, 1 mm. long, brown, coarsely foveolate.

TYPE LOCALITY: In moist forest between Aserrí and Tarbaca, San José, Costa Rica, altitude 1800 meters.

DISTRIBUTION: Moist mountain forests of central Costa Rica.

43. *Hoffmannia piratarum* Standley, Jour. Wash. Acad. 18: 180. 1928.

A shrub, the young branchlets stout, obtusely tetragonous, glabrous, the internodes 1.5–3 cm. long; stipules caducous; leaves opposite, membranaceous, the slender petioles 2.5–4.5 cm. long, glabrate; leaf-blades lance-oblong, 10–20 cm. long, 5–6 cm. wide, long-acuminate, with narrow, long-attenuate, often falcate tip, deep-green and glabrous above, paler beneath, when very young sparsely short-villous with ferruginous hairs but soon glabrate, the costa prominent, rather stout, the lateral nerves 8 or 9 pairs, very slender, strongly ascending, arcuate, irregularly anastomosing close to the margin; cymes axillary, solitary or fasciculate, dense, few-flowered, 3 cm. long or shorter, the peduncles 2.5 cm. long or less, glabrous or nearly so, the bracts caducous, the pedicels 2–5 mm. long, usually sparsely short-villous; hypanthium 3 mm. long, glabrous or sparsely short-villous; calyx-lobes 4, triangular-oblong, 2–3 mm. long, acute, villous-ciliate with short hairs; corolla 1 cm. long, in bud oblong, obtuse, glabrous or with a few short hairs at the apex, the tube obconic, 2 mm. wide at base, 5 mm. wide in the throat, the 4 lobes oblong-triangular, slightly shorter than the tube; fruit subglobose, 2-celled, 6 mm. long, glabrous; seeds minute, subglobose, dark-brown, coarsely and deeply foveolate.

TYPE LOCALITY: In wet forest in the Wafer Valley, Cocos Island, Costa Rica, altitude 200 meters or less.

DISTRIBUTION: Known only from the type locality.

44. *Hoffmannia tubiflora* Griseb. Fl. Brit. W. Ind. 321. 1861.

A shrub 0.8–1.2 meters high, the branches stout, terete or obtusely quadrangular, reddish-brown, glabrous or sparsely villosulous, the internodes short; petioles stout, 1.2–3.5 cm. long, glabrous or sparsely villosulous, the blades elliptic or elliptic-oblong, 7.5–21 cm. long, 3–6.5 cm. wide, acute, acuminate, or attenuate at the base, acuminate or cuspidate-acuminate at the apex, membranaceous, deep-green above, glabrous, pale beneath, sparsely ferruginous-villosulous along the veins or glabrate, the lateral nerves slender, 7–10 on each side, arcuate-ascending; cymes sessile, few-flowered, the flowers 4-parted, short-pedicellate; calyx and hypanthium 2.5 mm. long, sparsely villosulous or glabrate, the calyx-lobes minute, deltoid; corolla yellowish, glabrous, the lobes oblong, subobtuse, shorter than the tube, suberect; anthers oblong, semi-exserted, equaling or longer than the filaments; fruit oblong, 6 mm. long or larger; seeds very minute, brown, coarsely foveolate.

TYPE LOCALITY: St. Vincent.

DISTRIBUTION: Martinique, St. Vincent, and Guadeloupe.

45. *Hoffmannia Dotae* Standley, Jour. Wash. Acad. 18: 181. 1928.

An erect branched shrub 2–4.5 meters high, the young branches obtusely tetragonous, glabrous or sparsely villous, the internodes 2.5–10 cm. long; stipules caducous; leaves large, membranaceous, the petioles 2 cm. long or less, often marginate to the base, glabrous; leaf-blades oblong-obovate to obovate-elliptic, 18–30 cm. long, 7.5–12.5 cm. wide, abruptly short-acuminate with acute or obtuse tip, narrowed toward the base and abruptly long-decurrent, deep-green and glabrous above, paler beneath, with numerous short pale cystoliths, at first sparsely short-villous along the nerves but soon glabrate, the costa stout and prominent, the lateral nerves 15–17 pairs, arcuate-divaricate, anastomosing close to the margin; cymes axillary, solitary or fasciculate, lax, few-flowered, 5.5 cm. long or shorter, the peduncles sometimes 3.5 cm. long, the bracts caducous, the pedicels 4–12 mm. long, sparsely or densely short-villous; hypanthium turbinate, 4 mm. long, sparsely short-villous; calyx-lobes 2.5–3.5 mm. long, unequal, triangular or narrowly triangular, narrowed to the obtuse or acutish apex, sparsely villous; corolla red below, yellow above, 15 mm. long, glabrous, or sparsely villous on the lobes, acuminate in bud, the tube 4 mm. thick, the 4 lobes linear-lanceolate, equaling the tube; anther-tips slightly exceeding the corolla-tube; stigma oblong, much exceeding the anthers; fruit red, oblong, 8–9 mm. long, 4 mm. thick, sparsely villous; seeds minute, yellowish, shallowly and coarsely foveolate.

TYPE LOCALITY: In moist forest near Santa María de Dota, San José, Costa Rica, altitude 1700 meters.

DISTRIBUTION: Region of the type locality.

46. *Hoffmannia angustifolia* Standley, Contr. U. S. Nat. Herb. 20:
206. 1919.

A slender, sparsely branched shrub 1-2 meters high, glabrous throughout or sometimes minutely puberulent on the lower leaf-surface, the branches stout, subterete, green, with short internodes; stipules caducous; leaves membranaceous, opposite, the petioles 1-2.5 cm. long; leaf-blades narrowly elliptic to narrowly lance-oblong, 10-20 cm. long, 3-5 cm. wide, or somewhat larger, long-acuminate or long-attenuate, usually long-attenuate to the base, bright-green above, slightly paler beneath, the costa stout and prominent, the lateral nerves usually conspicuous, 12-14 pairs, arcuate-ascending at an angle of 45° or more; cymes axillary, sessile, few- or many-flowered, dense, shorter than the petioles, the flowers sessile or nearly so, 4-parted; hypanthium 2 mm. long, the calyx-lobes lance-oblong, 1-1.5 mm. long, obtuse, minutely ciliate; corolla 12 mm. long, pale-yellow, glabrous outside, the lobes linear-oblong, obtuse, equaling or slightly shorter than the tube, ascending or spreading; anthers 3 mm. long.

TYPE LOCALITY: Acatepeque, Zacatepequez, Guatemala, altitude 1290 meters.

DISTRIBUTION: In moist forest, Guatemala, Honduras, and Salvador.

47. *Hoffmannia psychotriaefolia* (Benth.) Griseb. Fl. Brit. W. Ind.
321. 1861.

Higginsia psychotriaefolia Benth.; Oerst. Vidensk. Meddel. 1852: 50. 1852.

A shrub 1-2.5 meters high, glabrous throughout, or the young leaves ciliate, the branches slender, brownish, subterete, the internodes elongate; stipules minute, caducous; leaves opposite, the petioles slender, 0.8-4 cm. long, the blades elliptic-oblong or elliptic, 7-15 cm. long, 2.5-5 cm. wide, acute or attenuate at the base, cuspidate-attenuate at the apex, membranaceous, bright-green above, pale yellowish-green beneath, the lateral nerves prominent, 8-10 on each side, subdivaricate, arcuate; cymes sessile, few-flowered, equaling or shorter than the petioles, the flowers 4-parted, short-pedicellate; calyx 1.5-2 mm. long, the lobes minute, deltoid; corolla yellow, 10-11 mm. long, the lobes lance-oblong, acute, ascending, about equaling the tube; anthers yellow, 4 mm. long.

TYPE LOCALITY: Volcán de Barba, Costa Rica.

DISTRIBUTION: In wet forest at elevations of 1600 meters or less, Guatemala to Costa Rica; reported, probably in error, from southern Mexico.

48. *Hoffmannia chiapensis* Standley, Contr. U. S. Nat. Herb. 20:
206. 1919.

A branched shrub, the branches stout, obtusely tetragonous, glabrous, the internodes mostly elongate; stipules small, deltoid, caducous; leaves opposite, membranaceous, the slender petioles 1.5-6 cm. long, glabrous; leaf-blades elliptic or elliptic-oblong, 10-20 cm. long, 4-7.5 cm. wide, acuminate, often falcate-acuminate, acuminate or attenuate at the base, bright-green and glabrous above, paler beneath, sparsely villosulous along the costa or glabrate, the lateral nerves about 14 pairs, prominent, arcuately subdivaricate; cymes axillary, sessile or short-pedunculate, few- or many-flowered, about 2 cm. long, the flowers 4-parted, on slender pedicels 1-6 mm. long; hypanthium oblong, glabrous, 2 mm. long, the calyx-lobes lance-triangular or oblong, obtuse, 1-2.5 mm. long, sparsely puberulent; corolla yellow, 10-12 mm. long, glabrous outside, the lobes narrowly oblong, obtuse, about equaling the tube.

TYPE LOCALITY: Cerro del Boquerón, Chiapas.

DISTRIBUTION: Wet mountain forest, Oaxaca and Chiapas.

49. *Hoffmannia Conzattii* B. L. Robinson, Proc. Am. Acad. 45: 406.
1910.

Coffea obovata Schlecht. & Cham. Linnaea 6: 412. 1831. (Not *Hoffmannia obovata* Standley, 1929.)

A simple or branched shrub, glabrous throughout, the branches subterete, with usually short internodes; stipules ovate, caducous; leaves opposite, membranaceous, the petioles slender or stout, 2-2.5 cm. long; leaf-blades elliptic to oblong-obovate or oblanceolate-oblong, 10-20 cm. long, 3.5-9 cm. wide, abruptly short-acuminate, long-attenuate to the base or abruptly

decurrent and contracted, deep-green above, paler and densely punctulate beneath, the costa stout and prominent, the lateral nerves 8 or more pairs, ascending at a wide angle, arcuate; cymes axillary, sessile or nearly so, dense, about 6-flowered, the pedicels equaling or shorter than the hypanthium; hypanthium subglobose, 2.5 mm. long, the 4 calyx-lobes minute, obtuse or acutish; corolla about 6 mm. long, sometimes slightly longer, the lobes narrowly oblong, spreading, slightly longer than the tube; anthers linear, exserted, almost equaling the corolla-lobes.

TYPE LOCALITY: Colonia Melchor Ocampo, Cantón de Córdoba, Veracruz, altitude 1200 meters.
DISTRIBUTION: Wet mountain forests of Veracruz.

50. *Hoffmannia strigillosa* Hemsl. *Diag. Pl. Nov.* 31. 1879.

A shrub, the branches elongate, compressed, glabrous; stipules caducous; leaves opposite, the petioles short, strigillose at first, the blades ovate-oblong, 15–20 cm. long, long-attenuate at each end, membranaceous, strigillose beneath, especially on the veins, these prominent; flowers 4-parted, glabrous, about 6 mm. long, cymose, pedicellate, the cymes short, few-flowered, ebracteate; calyx-lobes oblong, obtuse, sometimes unequal, 1 mm. long, equaling the hypanthium; corolla-lobes linear, slightly longer than the tube; filaments very short, the anthers equaling the corolla-lobes; ovary 2-celled.

TYPE LOCALITY: Mexico.

DISTRIBUTION: Known only from the type locality.

DOUBTFUL SPECIES

HOFFMANNIA LATIFOLIA (Bartl.) Kuntze, *Rev. Gen.* 284. 1891. Reported from Costa Rica, but doubtless in error, the species being Peruvian.

HOFFMANNIA MACROPHYLLA (Planch.) Hemsl. *Biol. Centr. Am. Bot.* 2: 37. 1881. (*Higginsia macrophylla* Planch. *Fl. Serres* 5: 482d. 1849.) Described from cultivated plants grown from Guatemalan seeds. The calyx is not described, and the identification of the plant is therefore doubtful. It may be the same as *H. lenticellata* Hemsl.

HOFFMANNIA REGALIS (Hook.) Hemsl. *Biol. Centr. Am. Bot.* 2: 37. 1881. (*Campylobotrys regalis* Linden, *Cat.* 15: 3, hyponym. 1860; *Higginsia regalis* Hook. *Bot. Mag. pl.* 5280. 1861.) Described from cultivated plants. The species has been ascribed doubtfully to Mexico, but the writer has seen no Mexican material agreeing with the original description and illustration.

69. *PHYLLACANTHA* Hook. f. in Hook. *Ic.* 11: 76. 1871.

Glabrous shrubs, leafless or nearly so, the branches rigid, divaricate, terete, the internodes almost or quite covered for their whole length with opposite, elongate, very large, vertically compressed spines. Stipules deciduous. Flowers axillary, solitary, pedicellate; hypanthium obovoid, the calyx short, 4-lobate, persistent, the lobes subulate; corolla cylindrical-campanulate, coriaceous, the throat glabrous, the limb 4-lobate, the lobes very short, obtuse, valvate. Stamens 4, inserted at the base of the corolla, included; filaments short; anthers large, sub-basifixed, linear-oblong, obtuse, apiculate. Disk annular. Ovary 2-celled; style filiform, linear, compressed above, acute and incurved at the apex; ovules numerous, biseriate, the 2 placentae parietal. Fruit baccate, small, oval, thick-coriaceous, 2- or 1-celled. Seeds numerous, horizontal, vertically compressed.

Type species, *Catesbaea phyllacantha* Griseb.

The generic name was originally spelled *Phyllacanthus*, but it was changed later to *Phyllacantha* (Benth. & Hook. *Gen. Pl.* 2: 78. 1873, where the genus is published as new, without mention of the earlier publication).

1. *Phyllacantha Grisebachiana* Hook. f. in Hook. *Ic.* 11: 77. 1871.

Catesbaea phyllacantha Griseb. *Cat. Pl. Cub.* 122. 1866.

Branches and spines green, olive when dried, the spines semideltoid, 2–3 cm. long, 6–12 mm. wide at the base, rigid, gradually attenuate to the very sharp apex; stipules broad, mem-

branaceous, truncate; leaves caducous, scalelike, minute; pedicels slender, 6 mm. long; calyx-lobes about as long as the hypanthium; corolla 16–18 mm. long, the lobes one fourth as long as the tube; anthers twice as long as the filaments; fruit about 1 cm. long, the seeds pale.

TYPE LOCALITY: Northern coast of western Cuba.

DISTRIBUTION: Province of Pinar del Río, Cuba, in forests bordering on mangrove swamps.

ILLUSTRATION: Hook. Ic. *pl.* 1095.

70. CATESBAEA L. Sp. Pl. 109. 1753.

Shrubs or small trees, sometimes scandent, glabrous or pubescent, usually armed with long spines, the branchlets terete. Leaves opposite, small, often fasciculate. Stipules interpetiolar, small, deciduous. Flowers small or large, axillary, solitary, pedicellate, erect or pendulous; hypanthium oblong or campanulate, terete or tetragonous; calyx 4-lobate, rarely 5–6-lobate, the lobes subulate, persistent; corolla funnelform or campanulate, membranaceous, the throat glabrous, the limb 4-lobate, or rarely 5–6-lobate, the lobes short, acute or rounded, valvate. Stamens usually 4, inserted at the base of the corolla; filaments filiform, short or elongate, glabrous or pilose; anthers dorsifixed near the base, linear, bilobate at the base, included or short-exserted, the connective sometimes produced into a subulate appendage. Disk annular. Ovary 2-celled; style filiform; stigma elongate; ovules numerous or few, biserial or multiseriate, the placentae affixed to the septum. Fruit usually small, thick-coriaceous, ovoid or globose, 2-celled. Seeds numerous, angulate, compressed, the testa subcoriaceous, granulate; endosperm fleshy; embryo minute, the cotyledons ovate, the radicle terete.

Type species, *Catesbaea spinosa* L.

Corolla 2–23 cm. long; fruit often 2 cm. or more in diameter.

Corolla 2 cm. long; leaf-blades ovate-triangular.

Corolla 5–23 cm. long.

Corolla 23 cm. long; leaf-blades ovate-oblong to lance-linear.

Corolla 5–17 cm. long; leaf-blades broadly ovate to suborbicular.

Corolla 5–7 cm. long.

Corolla 10–17 cm. long.

Corolla less than 1.5 cm. long; fruit 1.5 cm. in diameter or smaller.

Leaves thick-coriaceous, rigid.

Ovules 14–17 in each cell; flowers pedicellate; filaments shorter than the anthers.

Ovules 2–4 in each cell; flowers sessile or nearly so; filaments longer than the anthers.

Leaves chartaceous or subcoriaceous, never rigid.

Ovules 12 or more in each cell.

Fruit about 15 mm. in diameter, long-pedicellate; calyx-lobes shorter than the hypanthium.

Fruit 5–6 mm. in diameter, sessile or subsessile; calyx-lobes longer than the hypanthium.

Ovules 1–6 in each cell.

Fruit 7 mm. long.

Fruit 2–5 mm. long.

Lobes of the corolla equaling or shorter than the tube.

Corolla 4.5 mm. long.

Corolla 5–8 mm. long.

Fruit globose, 2–3 mm. long; style straight; calyx-lobes nearly equaling the hypanthium.

Fruit oval or narrowly oval, 3.5 mm. long; style curved at the apex; calyx-lobes half as long as the hypanthium or shorter.

Lobes of the corolla twice as long as the tube.

Ovules 1 or 2 in each cell.

Leaf-blades 4–7 mm. long, the lateral nerves obsolete.

Leaf-blades 7–15 mm. long, the lateral nerves evident beneath.

Ovules 3–6 in each cell.

Fruit globose, 3.5–4 mm. thick.

Fruit oval, about 2 mm. thick.

1. *C. flaviflora*.

2. *C. Ekmaniana*.

3. *C. longispina*.

4. *C. spinosa*.

5. *C. Grayi*.

6. *C. parviflora*.

7. *C. macracantha*.

8. *C. melanocarpa*.

9. *C. nana*.

10. *C. gamboana*.

11. *C. holacantha*.

12. *C. glabra*.

13. *C. Fuertesii*.

14. *C. microcarpa*.

15. *C. sphaerocarpa*.

16. *C. parvifolia*.

1. *Catesbaea flaviflora* Urban, Symb. Ant. 9: 157. 1923.

A shrub, the stout branches terete, olivaceous, striate, glabrous or minutely spreading-pilous, the internodes 7–15 mm. long; spines 1.5–3.5 cm. long, divaricate at almost a right

angle, laterally compressed near the base, stout; stipules subtruncate or scarcely semilunate, 0.4–0.7 mm. long; petioles 1 mm. long or less; leaf-blades short-ovate or ovate-deltoid, 4–9 mm. long, 3–7 mm. wide, acute, subtruncate at the base, subcoriaceous, lustrous, the costa prominent above, the lateral nerves obsolete; pedicels axillary, solitary or binate, short-pilose, 7–13 mm. long; hypanthium oblong, glabrous or densely short-pilose; calyx-lobes linear or narrowly lanceolate, acute, glabrous, 6–7 mm. long, twice as long as the hypanthium; corolla yellow, glabrous, 2 cm. long, the tube cylindraceous, slightly ampliate above, 6 mm. wide at the middle, the lobes triangular, one fifth as long as the tube; filaments adnate to the base of the corolla, the anthers linear, 9 mm. long; ovules about 55, pluriseriate; fruit globose, densely short-pilose, 5.5 mm. long, 5 mm. thick.

TYPE LOCALITY: Calcareous slopes near Santiago de Cuba, Oriente, Cuba.

DISTRIBUTION: In calcareous soil, Oriente, Cuba.

2. *Catesbaea Ekmaniana* Urban, Ark. Bot. 20A⁵: 54. 1926.

A scandent shrub, the branches terete, glabrous, the internodes 2–4 cm. long; spines arising slightly above the axils of the leaves, 7–13 mm. long, straight or subrecurved; stipules 2–3 mm. long, linear from a triangular base; petioles 1.5–2 mm. long; leaf-blades ovate-oblong to lance-linear, gradually narrowed or acuminate, with acute or subobtusate tip, acute at the base, 1.7–3 cm. long, 0.4–1.3 cm. wide, membranaceous, the lateral nerves 3–4 pairs, slender; flowers solitary, the pedicels 16–20 mm. long; hypanthium oblong, 15–17 mm. long, glabrous; calyx-lobes 5 or 6, 20–33 mm. long, linear from a somewhat dilated base; corolla glabrous, 23 cm. long, the lower part of the tube linear-cylindraceous, 5 mm. thick, gradually dilated into a cylindric limb 4–4.5 cm. broad, 10-nerved, the 5 lobes rounded-triangular, shortly obtuse-apiculate, 15 mm. long, 30 mm. wide; stamens adherent to the base of the corolla, the filaments 11.5 cm. long, pilosulous below, glabrous above, the anthers linear, 4.2 cm. long.

TYPE LOCALITY: Massif de la Selle, Morne Cabaio, near Roberjot, Haïti, altitude 1700 meters.

DISTRIBUTION: Known only from the type locality.

3. *Catesbaea longispina* A. Rich. in Sagra, Hist. Cuba 11: 12. 1850.

A shrub, sometimes scandent, densely branched, the branches stout, terete, rimose, the younger ones glabrous or minutely pilosulous, the internodes 1.5 cm. long or shorter; stipules minute, membranaceous; spines slender, 1.5–2.3 cm. long, ascending at a wide angle, terete, olivaceous, striate; petioles stout, 1–2 mm. long; leaf-blades rounded-ovate or elliptic, 6–10 mm. long, 5–8 mm. wide, rounded or very obtuse at the apex and minutely apiculate, abruptly contracted and short-decurrent at the base, dark-green and lustrous above, glabrous, slightly paler beneath, the slender costa prominent, the lateral nerves obsolete, the margin plane or subrevolute; flowers axillary, solitary, the pedicels about 5 mm. long, glabrous or puberulent; hypanthium clavate, tapering to the base, 4–5 mm. long; calyx-lobes shortly united at the base, 3–4 mm. long, linear-subulate from a somewhat dilated base; corolla yellow, 5–7 cm. long, glabrous, the tube gradually dilated upward, 2.5 mm. wide at the base, 6–8 mm. thick in the throat, the 4 lobes rounded-triangular, obtuse or acutish, 1.5 cm. long; anthers exerted, linear, 1.5 cm. long.

TYPE LOCALITY: Cuba.

DISTRIBUTION: Sandy stream banks or saline plains, Santa Clara and Camaguey (and perhaps other provinces), Cuba.

4. *Catesbaea spinosa* L. Sp. Pl. 109. 1753.

Catesbaea longiflora Sw. Prodr. 30. 1788.

Catesbaea latifolia Lindl. Bot. Reg. 10: pl. 858. 1825.

Catesbaea macrantha A. Rich. in Sagra, Hist. Cuba 11: 12. 1850.

A shrub or tree 2–5 meters high, the branches greenish or brownish, minutely hirtellous or glabrate, the internodes very short, the spines stout, 1–2.6 cm. long; stipules small, annular, subtruncate, apiculate; leaves opposite or verticillate, the petioles 2.5 mm. long or shorter, the blades ovate to rhombic-orbicular, 0.8–2 cm. long, 0.5–1.8 cm. wide, rounded to acuminate at the base, acutish to rounded at the apex, apiculate, chartaceous to coriaceous, glabrous,

deep-green and lustrous above, the costa impressed, the lateral nerves often prominulous, slightly paler beneath, the costa prominent, the lateral nerves prominulous or obscure, the margin often revolute; flowers solitary or geminate, pendent, 4-parted, the pedicels 3-6 mm. long; calyx and hypanthium glabrous, the hypanthium oval or oblong, 3-4 mm. long, the calyx-lobes subulate, connate at the base, equaling or slightly shorter than the tube; corolla yellow, 10-17 cm. long, the tube stout, about 3 mm. thick at the base, ampliate upward, glabrous, the lobes ovate or ovate-deltoid, obtuse, 2 cm. long; stamens adnate to the base of the corolla, the anthers 1.8-2.8 cm. long, yellow, subexserted, several times shorter than the filaments; style curved at the apex, exceeding the anthers; ovules very numerous; fruit globose, 2-5 cm. in diameter, yellow or white, the pericarp thick and hard.

TYPE LOCALITY: Providence Island, Bahamas.

DISTRIBUTION: Bahamas and Cuba.

ILLUSTRATIONS: Lam. Tab. Encyc. pl. 67, f. 1; Bot. Mag. pl. 131; Tratt. Augs. Taf. pl. 259; Bot. Reg. 10: pl. 858; Sagra, Hist. Cuba pl. 47; Catesb. Nat. Hist. Carol. 2: pl. 100.

5. *Catesbaea Grayi* Griseb. Mem. Am. Acad. II. 8: 503. 1862.

A shrub, glabrous nearly throughout, the branches green, the internodes 0.6-1.4 cm. long, the spines stout, subsacending, 0.5-1 cm. long; stipules minute, scaberulous; leaves opposite, the petioles 2 mm. long or shorter, the blades obovate, elliptic, or broadly oval, 6-15 mm. long, 3-12 mm. wide, rounded or obtuse at the base, rounded at the apex, thick-coriaceous, dark-green and lustrous above, the costa sulcate, paler beneath, the costa prominent, the lateral nerves obsolete, the margin more or less revolute; flowers solitary, 4-parted, the pedicels 3 mm. long or shorter; hypanthium obovoid, the calyx-lobes lance-attenuate, short-connate, as long as the hypanthium; corolla 8-10 mm. long, the tube narrowly funnellform, the lobes semi-oval, rounded, about one third as long as the tube; stamens free from the corolla, obsoletely connate, the filaments shorter than the anthers; ovules 14-17 in each cell; fruit subglobose, white, 6 mm. in diameter.

TYPE LOCALITY: In forests, Monteverde, Cuba.

DISTRIBUTION: Province of Oriente, Cuba.

6. *Catesbaea parviflora* Sw. Prodr. 30. 1788.

Catesbaea campanulata Sagra; DC. Prodr. 4: 401. 1830.

Echinodendrum campanulatum A. Rich. in Sagra, Hist. Cuba 11: 18. 1850.

Scolosanthus parviflorus C. Wright; Sauv. Anal. Acad. Ci. Habana 6: 126. 1869.

Catesbaea parviflora var. *septentrionalis* S. Urban; Urban, Symb. Ant. 1: 429. 1899.

Catesbaea fasciculata Northrop, Mem. Torrey Club 12: 66. 1902.

Catesbaea foliosa Millsp., Field Mus. Publ. Bot. 2: 312. 1909.

A shrub 1-3 meters high, the branches green or grayish, the branchlets stout, green, scaberulous or glabrous, the internodes usually very short, the spines stout or slender, 0.5-2.2 cm. long, or often wanting; stipules triangular, short-acuminate; leaves mostly crowded on short lateral spurs, short-petiolate, the blades orbicular to narrowly obovate-oblong, 3-15 mm. long, 2.5-8 mm. wide, rounded to acuminate at the base, usually broadly rounded at the apex, often apiculate, thick-coriaceous, lustrous above, glabrous, the costa subsulcate, paler beneath, glabrous or scaberulous, the costa sometimes prominent, the lateral nerves obsolete, the margin more or less revolute, often strongly so; flowers solitary, sessile or subsessile, 4-parted; calyx and hypanthium glabrous or scaberulous, the hypanthium obovoid, the calyx-lobes linear-subulate, sometimes twice as long as the hypanthium; corolla 5-12 mm. long, white, the lobes narrowly triangular, subobtusate, half as long as the tube or shorter; stamens subadherent to the base of the corolla, the anthers exserted, slightly shorter than the filaments; ovules 2-4 in each cell; fruit globose, white, 3-4.5 mm. long, the pericarp thin; seeds oval, not compressed, 1.7 mm. long, reddish-brown, reticulate.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Florida Keys; Bahamas; Cuba, Porto Rico, and Jamaica.

ILLUSTRATIONS: Sagra, Hist. Cuba pl. 47 bis (as *Echinodendrum parviflorum*); Mem. Torrey Club 12: pl. 16; Sloane, Hist. Jam. pl. 207, f. 1.

Through most of its range, perhaps, this plant is copiously armed with slender but stiff spines. Many individuals, especially in the Bahamas, are almost or wholly unarmed. The latter form *Catesbaea foliosa* Millsp., differs in no important character from typical *C. parviflora* Sw.

7. *Catesbaea macracantha* C. Wright; Sauv. Anal. Acad. Ci.

Habana 6: 99. 1869.

A shrub, the branches green, minutely hirtellous or glabrate, the internodes 0.4–1.5 cm. long, the spines stout, subsacscending, 1.2–3.7 cm. long; stipules minute, thin, sericeous within; leaves opposite, often deciduous, the petioles 1–2 mm. long, minutely hirtellous, the blades rounded-ovate, oval-ovate, or oval-elliptic, 4–9 mm. long, 3–7 mm. wide, rounded at the base, often abruptly short-decurrent, obtuse or rounded at the apex, apiculate, subcoriaceous, glabrous, sublustrous above, the costa prominulous, the lateral nerves usually evident, paler beneath, the costa prominent, the margin plane or subrevolute; flowers solitary, 4-parted, the pedicels in fruit sometimes 1 cm. long, recurved; calyx sparsely hirtellous or glabrate, the hypanthium obovoid, the lobes subulate, recurved, much shorter than the hypanthium; corolla very small, the lobes rounded; fruit globose, 1.5 cm. in diameter, the pericarp thick and hard; seeds numerous, irregular, 2.5–3 mm. long, reddish-brown.

TYPE LOCALITY: Potrero Manatí, near Trinidad, Cuba.

DISTRIBUTION: Known only from the type locality.

ILLUSTRATION: Sagra, Hist. Cuba *pl.* 47.8. *Catesbaea melanocarpa* Urban, Symb. Ant. 1: 427. 1899.*Catesbaea parviflora* Vahl, Symb. 2: 31. 1791. Not *C. parviflora* Sw. 1788.*Scolosanthus versicolor* Bello, Anal. Soc. Esp. Hist. Nat. 10: 280. 1881. Not *S. versicolor* Vahl, 1796.

A shrub 2–3 meters high, the branches greenish, minutely hirtellous when young, the internodes 0.5–2 cm. long, the spines slender, 1–2 cm. long, subdivaricate; stipules small, deltoid-acuminate or subulate; leaves opposite, the petioles 0.5–1.5 mm. long, the blades orbicular, obovate, or rhombic, 5–15 mm. long, 2–10 mm. wide, cuneately narrowed at the base, rounded to acutish at the apex, chartaceous, bright-green, dull, glabrous above, sparsely puberulent or glabrous beneath, the lateral nerves obscure or obsolete; flowers sessile or subsessile, solitary or geminate, 4-parted; hypanthium obovoid, glabrous, 1 mm. long, the calyx-lobes lance-linear, attenuate, 3 mm. long, or in fruit 5 mm. long, short-connate; corolla 8 mm. long, the tube narrowly funnellform, glabrous within, the lobes narrowly ovate, subobtuse, slightly shorter than the tube; stamens adherent to the base of the corolla, the anthers partly exerted, slightly longer than the filaments; ovules 12 or 13 in each cell; fruit globose, 5–6 mm. in diameter, black, the pericarp crustaceous; seeds 5–7 in each cell, orbicular or broadly ovate, 2 mm. long, brown, granulate.

TYPE LOCALITY: Near Guanica, Porto Rico.

DISTRIBUTION: In thickets, Porto Rico, St. Croix, Antigua, Guadeloupe.

ILLUSTRATIONS: Vahl, *Ecol.* *pl.* 10, *f.* 1; Gaertn. *Fruct.* *pl.* 192, *f.* 2.9. *Catesbaea nana* Greenm.; Combs, Trans. Acad. St. Louis 7: 428.

1897.

A sparsely branched shrub 15–30 cm. high, the branches rather slender, somewhat flexuous, olivaceous, scaberulous or glabrate, the internodes mostly 7 mm. long or shorter; spines slender, 5–12 mm. long, ascending-spreading; stipules minute, membranaceous; leaves subcoriaceous, the stout petioles 1 mm. long, the blades elliptic to rounded-ovate, 2–5 mm. long, obtuse, rounded to acute at the base, glabrous, the lateral nerves obsolete; flowers on very short pedicels, 4- or rarely 3-parted; calyx-lobes persistent upon the fruit, about 1 mm. long, triangular-ovate, acute or acutish, erect, glabrous; fruit globose, red, 4–7 mm. in diameter; ovules 5 or 6 in each cell.

TYPE LOCALITY: In dry soil, Cienaguita, Province of Santa Clara, Cuba.

DISTRIBUTION: Known only from the type locality.

ILLUSTRATION: Trans. Acad. St. Louis 7: *pl.* 35.10. *Catesbaea gamboana* Urban, Symb. Ant. 9: 524. 1928.

A low shrub, densely branched, the branches rather slender, terete, substriate, olivaceous, the young branchlets minutely spreading-pilulous, the internodes mostly less than 1 cm. long; spines terete, 1.5 cm. long or shorter, divaricate at a wide angle; stipules scarcely 0.3 mm.

long; petioles 0.5–1.5 mm. long; leaf-blades chartaceous, obovate or obovate-oblong or oblong, rarely subrhombic, 3–8 mm. long, 1.5–3 mm. wide, rounded or obtuse and minutely apiculate, contracted at the base and short-decurrent, glabrous, the costa prominulous on both surfaces, the lateral nerves obsolete; flowers solitary or rarely binate, sessile or subsessile; hypanthium minutely pilosulous, the calyx scarcely 0.5 mm. long, the 4 lobes triangular, acute; corolla 4.5 mm. long, the tube ampliate upward, the lobes lanceolate, about equaling the tube; stamens inserted in the lower third of the tube, the filaments 2.5 mm. long, the anthers exerted, linear, 2.5 mm. long; style equaling the anthers, obscurely bilobate at the apex; ovary 2-celled, the ovules 1 in each cell; fruit globose, 2.5 mm. in diameter.

TYPE LOCALITY: Moist forests near Gamboa, Oriente, Cuba.

DISTRIBUTION: Known only from the type locality.

11. *Catesbaea holacantha* C. Wright; Griseb. Cat. Pl. Cub. 122.
1866.

A densely branched shrub, the older branches stout, brownish, rimose, the younger branches olivaceous, terete, scaberulous or glabrate, the internodes 0.4–2 cm. long; spines stout, divaricate at almost a right angle, 1.3–2.5 cm. long; stipules minute, deciduous; leaves soon deciduous, the blades chartaceous, obovate or ovate or oblanceolate, 1–5 mm. long, obtuse, acute at the base, dull, the lateral nerves obsolete, the margin plane; flowers solitary, sessile or subsessile, 4-parted; hypanthium obovoid or subglobose, glabrous, the calyx-lobes triangular-subulate, shorter than the hypanthium; corolla 6–8 mm. long, the lobes ovate-oblong, equaling or slightly shorter than the tube; stamens adnate to the base of the corolla, the anthers exerted, slightly shorter than the filaments; ovules 3 or 4 in each cell; fruit globose or subglobose, 2–3 mm. long; seeds about 4, oval, 1.5 mm. long, dark-brown, reticulate.

TYPE LOCALITY: Near Mayari-abajo, Cuba.

DISTRIBUTION: Dry thickets, Oriente and Camaguey, and perhaps elsewhere, Cuba.

12. *Catesbaea glabra* Urban, Symb. Ant. 7: 401. 1912.

Catesbaea holacantha Urban, Symb. Ant. 1: 430, in part. 1899. Not *C. holacantha* C. Wright, 1866.

A shrub 2–3.5 meters high, the branches glabrous, the internodes 1–2 cm. long, the spines 0.7–1.8 cm. long, glabrous; stipules triangular, 0.3–0.6 mm. long; leaves opposite or ternate, the upper ones deciduous, the petioles 0.5–1 mm. long, the blades obovate or obovate-elliptic, rarely ovate or suborbicular, 1.5–5 mm. long, 1–2.5 mm. wide, acute or abruptly contracted at the base, rounded or acute at the apex, glabrous, the lateral nerves obsolete; flowers sessile or subsessile, solitary or 2–3-fasciculate, 4-parted; calyx and hypanthium glabrous, the hypanthium obovoid or ellipsoid, the calyx-lobes triangular, acute, united below, one third to one half as long as the hypanthium; corolla 5–7 mm. long, white, the tube obconic, glabrous within, the lobes lanceolate, about as long as the tube, acute or subobtuse; anthers half as long as the filaments or almost equaling them, 2.5–3 mm. long; style thickened at the apex and incurved; ovules 3–6 in each cell; fruit oval or narrowly oval, 3.5 mm. long, almost 2.5 mm. thick.

TYPE LOCALITY: Haïti.

DISTRIBUTION: Hispaniola.

13. *Catesbaea Fuertesii* Urban, Symb. Ant. 7: 402. 1912.

A shrub, the branches minutely hirtellous, the internodes 0.5–1 cm. long, the spines 0.5–1 cm. long, hirtellous; stipules triangular, short-acuminate or apiculate, about 1 mm. long; leaves opposite, the petioles 0.5 mm. long or shorter, the blades obovate or narrowly obovate, 4–7 mm. long, 2–4 mm. wide, gradually narrowed to the base, very obtuse or rounded at the apex, sometimes obscurely apiculate, subcoriaceous, minutely pilose, the lateral nerves obsolete; flowers subsessile, solitary or geminate, white, 4-parted; hypanthium obovoid or narrowly obovoid, minutely hirtellous, the calyx-lobes short-connate at the base, lanceolate, subobtuse, shorter than the hypanthium; corolla 5 mm. long, the tube broadly obconic, glabrous within, the lobes ovate-elliptic, about twice as long as the tube, obtuse, sparsely and minutely pilose outside; stamens inserted at the base of the corolla, the filaments 3.5 mm. long, the anthers

1.5 mm. long, exserted; style straight; ovules solitary or rarely 2; fruit narrowly oval, 2.5–3 mm. long, 1.5–1.8 mm. thick, glabrate, the pericarp thin; seeds obovate, brownish-green, punctate.

TYPE LOCALITY: In open forests, Barahona, Santo Domingo, altitude 50 meters.
DISTRIBUTION: Known only from the type locality.

14. *Catesbaea microcarpa* Urban, Symb. Ant. 5: 509. 1908.

A shrub 2–2.5 meters high, the branches minutely hirtellous, the internodes 5–10 mm. long, the spines 5–7 mm. long, reddish at the apex; stipules triangular-lanceolate, 1.5 mm. long or shorter, stramineous; petioles 1–2 mm. long; leaf-blades ovate, rhombic-oval, or oval-elliptic, 7–15 mm. long, 4–7 mm. wide, cuneate at the base, obtuse or acute at the apex, chartaceous, glabrous above, minutely pilosulous beneath, the lateral nerves 1 or 2 on each side, prominulous beneath; flowers sessile, solitary or geminate; hypanthium narrowly obovoid, glabrous, the calyx-lobes lance-linear, obtuse, slightly connate at the base, 1.3 mm. long, equaling the hypanthium; corolla 3.5 mm. long, glabrous within, the lobes oblong, obtuse, twice as long as the tube; stamens adnate to the base of the corolla, the anthers 2.5 mm. long, the filaments 1 mm. long; ovules solitary; fruit oval, 2.5 mm. long, 1.6–1.8 mm. thick, the pericarp thin; seeds oval, brown.

TYPE LOCALITY: In forests, Petite Rivière de Bajonnais, Haiti, altitude 100 meters.
DISTRIBUTION: Haiti.

15. *Catesbaea sphaerocarpa* Urban, Symb. Ant. 7: 401. 1912.

Catesbaea parvifolia Urban, Symb. Ant. 1: 429, in part. 1899. Not *C. parvifolia* DC. 1830.

Branches minutely hirtellous, the internodes 0.6–1.2 cm. long, the spines 0.5–1 cm. long, minutely hirtellous; stipules triangular, 1 mm. long; leaves opposite, sessile or subsessile, the blades obovate or obovate-elliptic, 3–8 mm. long, 1.5–3.5 mm. wide, usually gradually narrowed to the base, rounded or truncate at the apex, obscurely apiculate, subcoriaceous, minutely pilosulous, the lateral nerves obsolete; flowers subsessile, solitary or geminate, 4- or rarely 3-parted; hypanthium obovoid, sparsely hirtellous or glabrate, the calyx-lobes triangular-lanceolate, about as long as the hypanthium, short-connate at the base, obtuse or acutish; corolla 6 mm. long, the tube obconic, glabrous within, the lobes ovate-elliptic, obtuse, almost twice as long as the tube; stamens inserted at the base of the corolla, the anthers about half as long as the filaments, 3 mm. long; style straight; ovules 3–6 in each cell; fruit globose, 3.5–5 mm. in diameter, glabrous, the pericarp thin; seeds rounded or oval, brown, granulate.

TYPE LOCALITY: Near Gonaïves, Haïti.
DISTRIBUTION: Haïti.

16. *Catesbaea parvifolia* DC. Prodr. 4: 401. 1830.

Catesbaea parviflora var. *domingensis* Spreng.; DC. Prodr. 4: 401. 1830.

A shrub, the branches slender, hirtellous, grayish or green, the internodes mostly very short, the spines slender, 4–9 mm. long; stipules minute, deltoid, acuminate; leaves opposite, short-petiolate or subsessile, the blades rhombic-orbicular or broadly obovate, 2–6 mm. long, 2–5 mm. wide, obtuse or rounded at the base and short-decurrent, sometimes cuneate, obtuse or rounded at the apex, chartaceous, dull, scaberulous or minutely hirtellous, the costa scarcely prominulous beneath, the lateral nerves obsolete, the margin plane or subrevolute; flowers sessile, solitary, 4-parted; hypanthium narrowly obovoid, minutely hirtellous, the calyx-lobes lance-triangular, equaling or slightly longer than the hypanthium; corolla 4–6 mm. long, the lobes oblong, about twice as long as the tube; stamens adherent to the base of the corolla, the anthers exserted, 1.5 mm. long, equaling or shorter than the filaments; style curved at the apex; ovules 3 in each cell; fruit oval, 3 mm. long, about 2 mm. thick, the pericarp thin.

TYPE LOCALITY: Santo Domingo.
DISTRIBUTION: Hispaniola.

VIII. GUETTARDEAE. Trees or shrubs, rarely scandent, sometimes armed with axillary spines. Inflorescence usually axillary; flowers perfect or

polygamo-dioecious, regular; corolla funnellform or salverform, the lobes imbricate or valvate. Stamens inserted in the throat of the corolla, the anthers dorsifixed. Ovary with 2 to numerous cells; ovules solitary, anatropous, pendulous from the apex of the cell. Fruit drupaceous, with 2 to numerous cells, rarely dicocous (in *Machaonia*). Seeds terete, pendulous; endosperm scant or none; embryo elongate, the radicle superior.

- Fruit separating into 2 cocci at maturity; calyx-lobes 4 or 5, persistent; corolla-lobes imbricate. 71. *MACHAONIA*.
- Fruit drupaceous, not separating into cocci at maturity.
 Corolla-lobes valvate or but slightly imbricate.
 Corolla-tube very short. 72. *MALANEA*.
 Corolla-tube elongate.
 Corolla-lobes corniculate-appendaged near the apex; basal lobes of the anthers acute or attenuate. 73. *CHOMELIA*.
 Corolla-lobes not appendaged; basal lobes of the anthers obtuse. 74. *ANISOMERIS*.
 Corolla-lobes strongly imbricate, 1 or 2 of them exterior.
 Anthers long-exserted; cymes paniculate; calyx persistent. 75. *PITTONIOTIS*.
 Anthers included; inflorescence not cymose-paniculate.
 Calyx deciduous; plants often densely pubescent. 76. *GUETTARDA*.
 Calyx persistent upon the fruit; plants mostly glabrous or nearly so.
 Stipules distinct; stigma 2-3-lobate.
 Flowers arranged in bifid scorpioid pedunculate cymes; endosperm none. 77. *ANTIRRHŒA*.
 Flowers axillary, solitary, subsessile; endosperm present. 78. *OTTOSCHMIDTIA*.
 Stipules united into a sheath; stigma 4-5-lobate. 79. *LAUGERIA*.

71. *MACHAONIA* Humb. & Bonpl. Pl. Aequin. 1: 101. 1806.

Tertrea DC. Prodr. 4: 481. 1830.

Schiedea A. Rich. Mém. Soc. Hist. Nat. Paris 5: 186. 1834. Not *Schiedea* Schlecht. & Cham. 1826.

Microsplenium Hook. f.; Benth. & Hook. Gen. Pl. 2: 4. 1873.

Shrubs or small trees, glabrous or pubescent, the branchlets terete, often spinose. Leaves opposite or ternate, sometimes fasciculate, petiolate or sessile. Stipules intrapetiolar, triangular, acute or acuminate. Flowers small, white or whitish, the inflorescence terminal; hypanthium turbinate or obovoid-oblong, compressed; calyx 4- or 5-lobate, the lobes equal or unequal, persistent; corolla short-funnelform, the tube short, the throat villous, the limb 4- or 5-lobate, the lobes rounded, imbricate, 1 or 2 exterior. Stamens 4 or 5, inserted in the throat of the corolla; filaments short or elongate; anthers short-oblong, dorsifixed, included or exserted. Disk fleshy. Ovary 2- or rarely 3-celled; style filiform, with 2 subspatulate branches; ovules solitary, pendulous from the apex of the cell. Fruit small, dry, obpyramidal or oblong, laterally compressed, dicocous, the cocci indehiscent, obtusely trigonous, finally pendulous from the persistent axis. Seeds cylindric, elongate, the funicle short, the testa membranaceous; endosperm fleshy; embryo slightly compressed, the cotyledons linear, obtuse, the radicle elongate, terete, superior.

Type species, *Machaonia acuminata* Humb. & Bonpl.

Leaf-blades oblong-linear or linear-oblancheolate, less than 4 mm. wide; leaves mostly fasciculate, sessile or subsessile; plants unarmed; calyx-lobes rounded.

Leaf-blades not oblong-linear or linear-oblancheolate, or, if so, the plants spine-armed and the calyx-lobes acute, the leaves mostly 5-35 mm. wide, chiefly opposite or ternate.

Leaf-blades all or mostly 1.5 cm. long or shorter, mostly chartaceous or subcoriaceous; inflorescence small and narrow, usually less than 3.5 cm. wide; plants often armed with spines. West Indian species.

Leaves scabrous or scaberulous on the upper surface, more or less pilose or scaberulous beneath, at least along the costa.

Leaf-blades mostly ovate or broadly ovate; plants unarmed.

Leaf-blades mostly obovate-oblong; plants densely spiny.

Leaves glabrous, at least beneath, sometimes ciliate, rarely scabrous or scaberulous on the upper surface.

Hypanthium glabrous or appressed-scaberulous.

Calyx-lobes obtuse; fruit usually about 2 mm. long.

Leaves scabrous on the upper surface, 2-4 mm. long, suborbicular or obovate.

1. *M. Coulteri*.

2. *M. cymosa*.

20. *M. Urbaniana*.

3. *M. minutifolia*.

- Leaves glabrous, 3–10 mm. long.
 Leaf-blades rhombic-orbicular or rhombic-elliptic, 6–10 mm. long, rounded and short-decurrent at the base.
- Leaf-blades obovate, 3–6 mm. long, cuneate at the base. 4. *M. littoralis*.
- Calyx-lobes acute; fruit 4–4.5 mm. long; plants armed with spines. 5. *M. tiffina*.
- Fruit abruptly narrowed at the base, about 3 mm. wide, the persistent calyx-lobes 0.5–0.7 mm. long. 6. *M. pauciflora*.
- Fruit gradually narrowed to the base, 2 mm. wide, the calyx-lobes 1.5–2 mm. long. 7. *M. trifurcata*.
- Hypanthium densely short-pilose with spreading hairs.
- Corolla 1–2.5 mm. long.
- Calyx-lobes acute or acutish. 8. *M. calcicola*.
- Calyx-lobes rounded or very obtuse.
- Leaf-blades mostly obovate and acute at the base. 9. *M. microphylla*.
- Leaf-blades ovate-orbicular or suborbicular, rounded at the base. 10. *M. haitiensis*.
- Corolla 3–4 mm. long.
- Leaf-blades all rhombic-ovate to suborbicular, and rounded to obtuse at the base. 11. *M. portoricensis*.
- Leaf-blades, at least most of them, obovate to oblanceolate, and acute to attenuate at the base.
- Fruit rounded at the base; calyx-lobes narrowly ovate. 12. *M. subinermis*.
- Fruit acute or acutish at the base; calyx-lobes linear or lanceolate. 13. *M. variifolia*.
- Leaf-blades 2.5 cm. long or longer, mostly membranaceous; inflorescence large and broad, usually much more than 3.5 cm. wide; plants unarmed. Species of Mexico and Central America, except *M. rotundata*.
- Leaves copiously short-pilose or puberulent beneath.
- Calyx-lobes longer than broad, acute or acutish. 14. *M. velutina*.
- Calyx-lobes as broad as long, rounded. 15. *M. acuminata*.
- Leaves glabrous beneath or nearly so.
- Fruit 4.5–6 mm. long; leaves 3–4.5 cm. wide. 16. *M. rotundata*.
- Fruit 3 mm. long or shorter; leaves mostly less than 1.5 cm. wide.
- Calyx-lobes glabrous, not ciliolate, usually truncate at the apex; leaf-blades linear-lanceolate. 17. *M. Pringlei*.
- Calyx-lobes puberulent or ciliolate, not truncate; leaf-blades mostly ovate or elliptic.
- Hypanthium densely covered with minute whitish appressed hairs; calyx-lobes ovate, as long as the corolla-tube. 18. *M. floribunda*.
- Hypanthium sparsely pilose with short spreading hairs or glabrate; calyx-lobes obovate, shorter than the corolla-tube. 19. *M. Lindeniana*.

1. *Machaonia Coulteri* (Hook. f.) Standley, Contr. U. S. Nat. Herb. 20: 209. 1919.

Microsplenium Coulteri Hook. f.; Benth. & Hook. Gen. 2: 4. 1873.
Machaonia fasciculata A. Gray, Proc. Am. Acad. 19: 77. 1883.

An unarmed shrub, the branches dark-gray or brownish, the branchlets densely and minutely whitish-pilose; stipules 1–1.5 mm. long, lance-triangular, lacinate or sparsely setiferous, reddish; leaves ternate or mostly fasciculate at the nodes, the petioles none or up to 1 mm. long, the blades oblong-linear to linear-oblanceolate, 5–16 mm. long, 1–4 mm. wide, attenuate to the base, rounded or very obtuse at the apex, subchartaceous, concolorous, very sparsely short-pilose or glabrous, 1-nerved; inflorescence few- or many-flowered, 1–2.5 cm. broad, the flowers mostly short-pedicellate, the bractlets minute; hypanthium 2–2.5 mm. long, turbinate, densely short-pilose, the 5 calyx-lobes orbicular, 1 mm. long, ciliate; corolla yellowish, 4–5 mm. long, glabrous or very sparsely short-pilose outside, the lobes oval, twice as long as the tube, the throat very sparsely barbate; anthers exerted.

TYPE LOCALITY: Zimapán, Hidalgo.

DISTRIBUTION: Dry hillsides, Querétaro and Hidalgo.

2. *Machaonia cymosa* (Sw.) Griseb. Fl. Brit. W. Ind. 348. 1861.

Lippia cymosa Sw. Prodr. 93. 1788.

Machaonia cymosa var. *glabrescens* S. Moore, Jour. Bot. 68: 112. 1930.

A low shrub, the branches gray or reddish-brown, the branchlets slender, sparsely puberulent or glabrous, sometimes spinose, the internodes short; stipules 1–1.5 mm. long, triangular, acute; leaves opposite, the petioles 1–2 mm. long, the blades orbicular, oval, or rhombic-ovate, 0.8–2.5 cm. long, 0.5–1.5 cm. wide, rounded to acutish at the base, rounded to acute

at the apex, sometimes apiculate, chartaceous, green above, sparsely scaberulous, paler beneath, scabrous or short-pilose when young, becoming glabrate, the lateral nerves obscure, 3 or 4 on each side, arcuate; inflorescence many-flowered, 1–2 cm. broad, the branches puberulent or short-pilose, the flowers sessile or short-pedicellate, the bracts linear, often foliaceous; hypanthium turbinate, 1.5–2 mm. long, glabrous or sparsely puberulent, the 4 calyx-lobes narrowly triangular, 1–1.5 mm. long, very acute, glabrous; corolla 2.5–3 mm. long, glabrous outside, the lobes oval, less than half as long as the tube, puberulent within; anthers exerted; fruit narrowly obpyramidal, 6 mm. long or shorter.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Jamaica.

ILLUSTRATIONS: Sloane, *Hist. Jam. pl. 174, f. 3, 4*; Symb. Ant. 5: 513. *f. B.*

The form described as var. *glabrescens* S. Moore is merely somewhat less abundantly pubescent, especially in the inflorescence, than the type, and is scarcely worthy of even varietal rank.

3. *Machaonia minutifolia* Britton & Wilson; Britton, Mem. Torrey Club 16: 112. 1920.

A rather densely branched shrub about 2 meters high, the branches slender and somewhat flexuous, the older ones ferruginous or ochraceous, with short internodes, the young branchlets ferruginous, puberulent or glabrate, often becoming pungent and spinelike; leaves very shortly petiolate, the blades ovate-orbicular to broadly obovate, 2–4 mm. long, broadly rounded at the apex, subtruncate to acute at the base, subcoriaceous, ciliate, sparsely scabrous on the upper surface, somewhat paler and glabrous beneath; flowers sessile or nearly so in the small few-flowered short-pedunculate cymes; calyx-lobes rounded-spatulate, obtuse, equaling or shorter than the hypanthium; corolla white, 1.5 mm. long, glabrous, with short obtuse lobes; style almost equaling the calyx-lobes; fruit 2–2.3 mm. long, 1.8 mm. wide, scaberulous, very obtuse at the base, compressed, bisulcate.

TYPE LOCALITY: Palm barren between Camaguey and Santayana, Cuba.

DISTRIBUTION: In dry thickets, Camaguey and Oriente, Cuba.

4. *Machaonia littoralis* Britton, Bull. Torrey Club 43: 452. 1916.

A shrub about 2 meters high, unarmed (?), the branches grayish, the branchlets slender, reddish-brown, puberulent, the internodes short; stipules minute, triangular; leaves opposite, the petioles stout, 1 mm. long or shorter, puberulent, the blades rhombic-orbicular or rhombic-elliptic, 6–10 mm. long, 7 mm. wide or narrower, rounded and abruptly short-decurrent at the base, rounded to acutish at the apex, subcoriaceous, glabrous, green above, sublustrous, slightly paler beneath, the lateral nerves obscure, 2 or 3 on each side, the margin subrevolute; inflorescence few-flowered, the flowers subsessile or on pedicels 1–2 mm. long, the bractlets linear; fruit obpyramidal, 2 mm. long, glabrate, the persistent calyx-lobes oblong-obovate, 1–1.5 mm. long, glabrous.

TYPE LOCALITY: Coastal thickets, vicinity of Sigüanea, Isle of Pines, Cuba.

DISTRIBUTION: Known only from the type locality.

5. *Machaonia tiffina* Urban & Ekman; Urban, Symb. Ant. 9: 531. 1928.

A densely branched shrub, the branches terete, the older ones grayish, the branchlets mostly short and unarmed, sometimes becoming spinose and sharp-pointed, with short internodes, minutely pilosulous at first; stipules minute, broadly triangular; leaves very shortly petiolate, subcoriaceous, the blades obovate, 3–6 mm. long, 2–3.5 mm. wide, rounded or very obtuse at the apex, cuneately narrowed to the base, glabrous, the costa prominulous beneath, the lateral nerves 1 or 2 on each side, slender, obscure or obsolete; flowers few at the apices of the branchlets, sometimes in 3-flowered cymes, the pedicels 0.5 mm. long; hypanthium obtriangular, glabrous; calyx-lobes lanceolate or lance-linear, 0.5–0.7 mm. long; corolla 3.2 mm. long, the tube ampliate above, the lobes almost as long as the tube, obovate, rounded at the apex; stamens inserted at the angles of the corolla-lobes, slightly shorter than the corolla.

TYPE LOCALITY: Near Tiffin, between Camaguey and Nuevitas, Camaguey, Cuba, in pastures.

DISTRIBUTION: Type locality; Isle of Pines (?).

6. *Machaonia pauciflora* Urban, Symb. Ant. 5: 512. 1908.

A densely branched, very spiny shrub, the branches ochraceous, terete, rimose, the branchlets ferruginous, with short internodes, puberulent or glabrate; leaves opposite, the petioles 0.5–1 mm. long, the blades obovate or rhombic-ovate, 7–12 mm. long, 4–8 mm. wide, obtuse or rounded at the apex, narrowed to the base, or sometimes rounded and abruptly decurrent, glabrous, firm-membranaceous; inflorescence few-flowered, minutely pilose or glabrate, the bractlets linear or lanceolate, 0.5–2 mm. long; calyx-lobes triangular or narrowly triangular, acute, 0.5–0.7 mm. long, glabrous or nearly so; fruit obpyramidal, rather abruptly constricted near the base, 4–4.5 mm. long, 3 mm. wide at the apex, sparsely and minutely puberulent or almost glabrous.

TYPE LOCALITY: Cuba.

DISTRIBUTION: Pinar del Río, on limestone rocks, and probably also in other provinces of Cuba.

ILLUSTRATION: Symb. Ant. 5: 513. f. C.

7. *Machaonia trifurcata* Urban, Symb. Ant. 5: 512. 1908.

A shrub, the branches grayish, armed with short slender spines, the branchlets minutely pilose, the internodes short; stipules minute, triangular; leaves opposite, the petioles 1–2 mm. long, the blades obovate, elliptic, or rounded-obovate, 6–15 mm. long, 3–10 mm. wide, acute or obtuse at the base, rounded or obtuse at the apex, subcoriaceous, glabrous, green above, paler beneath, the lateral nerves plane, 2 or 3 on each side; inflorescence few-flowered, about 1 cm. wide, the flowers sessile, the bractlets linear, 1–4 mm. long; hypanthium sparsely scaberulous, 1–1.5 mm. long, the 4 calyx-lobes lance-oblong, 1–2 mm. long, acute, glabrous; corolla 2.5 mm. long, glabrous outside, the 4 lobes ovate, nearly as long as the tube; fruit oblong-obovoid, slightly and gradually narrowed below, 4 mm. long, 2 mm. wide, glabrate.

TYPE LOCALITY: Cuba.

DISTRIBUTION: In thickets of pastures and palm barrens, Pinar del Río, and perhaps elsewhere in Cuba.

ILLUSTRATION: Symb. Ant. 5: 513. f. F.

8. *Machaonia calcicola* Britton, Bull. Torrey Club 43: 453. 1916.

?*Spermacoce spinosa* Jacq. Sel. Stirp. Am. 21. 1763. Not *S. spinosa* L. 1762.

?*Spermacoce havanensis* Jacq.; J. F. Gmel. Syst. Nat. 234. 1796.

A shrub or small tree, up to 3 meters high, the branches grayish, armed with numerous pairs of slender divaricate spines, the branchlets reddish-brown, densely and minutely hirtellous, spinose in age, the internodes short; stipules minute; leaves opposite, the petioles 2.5 mm. long or shorter, puberulent, the blades ovate, rhombic-ovate, elliptic, or elliptic-oblong, 3–15 mm. long, 3–10 mm. wide, acuminate to obtuse at the base, rounded to acute at the apex, subcoriaceous, glabrous, slightly paler beneath, the lateral nerves obscure, 2 or 3 on each side; cymes mostly few-flowered, 1–2 cm. broad, short-pedunculate, the flowers sessile or short-pedicellate, the bracts linear, 2.5 mm. long or shorter; calyx and hypanthium densely short-pilose, the hypanthium turbinate, the 4 calyx-lobes deltoid-ovate, acute or acutish, nearly as long as the hypanthium; corolla white or yellowish, 1–1.5 mm. long, glabrous outside, the lobes rounded-oval, about as long as the tube; anthers exerted; fruit turbinate, 3–4 mm. long, 2.5 mm. wide at the apex, gradually narrowed downward, minutely pilose.

TYPE LOCALITY: Coastal hillside, Bay of Mariel, Pinar del Río, Cuba.

DISTRIBUTION: Dry forests and rocky slopes, Pinar del Río, Habana, and Matanzas, Cuba.

It is probable that the proper specific name for this species is *havanensis*, based upon *Spermacoce havanensis* Jacq., but it is inadvisable to make that new combination without examination of Jacquin's type, or at least until more information is available regarding distribution of the Cuban species of *Machaonia*. The type locality of Jacquin's species is near Havana.

9. *Machaonia microphylla* Griseb. Mem. Am. Acad. II. 8: 510.

1862.

A shrub or small tree, the branches grayish, the branchlets stout, reddish-brown, scaberulous, spinescent in age, the internodes short; stipules minute, broadly deltoid, acutish, glandular-denticulate; leaves opposite, the petioles 1 mm. long or shorter, the blades ovate, elliptic,

obovate, or rhombic-ovate, 4–12 mm. long, 3–8 mm. wide, obtuse or acute at the base, obtuse or acute at the apex, subcoriaceous, lustrous, green above, glabrous or sparsely scaberulous, paler beneath, glabrous, the lateral nerves obscure, subimpressed, 2 or 3 on each side; cymes few-flowered, dense, about 1 cm. broad, the flowers sessile or subsessile; calyx and hypanthium densely short-pilose, the hypanthium broadly turbinate, the 4 calyx-lobes oblong or ovate, obtuse, at anthesis nearly as long as the hypanthium; corolla 2 mm. long, puberulent outside, the 4 lobes oval-oblong, about as long as the tube, the throat densely white-barbate; anthers exerted; fruit obpyramidal, 2.5 mm. long, gradually narrowed downward, densely short-pilose.

TYPE LOCALITY: Cuba.

DISTRIBUTION: In dry thickets, Oriente and Santa Clara, Cuba.

ILLUSTRATION: Symb. Ant. 5: 512. *f. D.*

10. ***Machaonia haitiensis*** Urban & Ekman; Urban, Ark. Bot. 20A⁵:
59. 1926.

A shrub, the branches terete, the young branchlets pulverulent-pilosulous, the internodes 0.7–1.5 cm. long, some of the branchlets spinose; stipules semilunate, linear-apiculate, 1 mm. long; leaves opposite, the petioles 2–3 mm. long; leaf-blades ovate-orbicular or suborbicular, 8–17 mm. long, 7–15 mm. wide, acute or acutish, rounded at the base and short-decurrent, the costa and nerves prominulous on both surfaces, the lateral nerves 2 or 3 on each side, chartaceous, minutely pulverulent; inflorescences terminal and from the upper axils, forming a panicle as much as 4 cm. long, pulverulent; hypanthium narrowly obtriangular; calyx-lobes ovate or obovate, rounded at the apex, in anthesis 1.2–1.4 mm. long, in fruit ovate-oblong; corolla white, 2.5 mm. long, pulverulent, the tube short-turbinate, the lobes equaling the tube, ovate, rounded or subtruncate at the apex; anthers 0.4 mm. long; style 2.2 mm. long, glabrous, bilobate at the apex; fruit obovate-triangular, 3 mm. long, narrowly 4-sulcate, minutely and densely pilosulous.

TYPE LOCALITY: Montagnes du Trou d'Eau, Morne à Cabrits, on calcareous hillsides, altitude 200–300 meters.

DISTRIBUTION: Known only from the type locality.

11. ***Machaonia portoricensis*** Baillon, Bull. Soc. Linn. Paris 1: 204.
1879.

A densely branched shrub or small tree, 2–6 meters high, the branches dark-brown, coarsely lenticellate, armed with numerous stout or slender, opposite or ternate spines, the branchlets reddish-brown, puberulent in lines; stipules minute, cuspidate; leaves mostly ternate, the petioles 2 mm. long or shorter, puberulent, the blades orbicular, rhombic-orbicular, oval, or rhombic-ovate, 7–15 mm. long, 5–12 mm. wide, sometimes broader than long, rounded to obtuse at the base, rounded to acute at the apex, usually broadly and acutely short-acuminate, membranaceous or chartaceous, glabrous, slightly paler beneath, the lateral nerves subimpressed, 2 or 3 on each side, the venation reticulate; inflorescence few- or many-flowered, 1–3.5 cm. wide, usually dense, the flowers sessile or short-pedicellate, the bracts often large and foliaceous; calyx and hypanthium 2–3 mm. long, densely short-pilose, the hypanthium turbinate, the 4 calyx-lobes oblong, obtuse or acute, about as long as the hypanthium, much shorter than the fruit; corolla white, 3–3.5 mm. long, glabrous outside, the lobes oval, half as long as the tube; anthers exerted; fruit turbinate, 3 mm. long, densely short-pilose.

TYPE LOCALITY: Puerto Rico.

DISTRIBUTION: Rocky woods and thickets at lower elevations, western and southwestern Puerto Rico.

ILLUSTRATION: Symb. Ant. 5: 513. *f. E.*

12. ***Machaonia subinermis*** Urban, Symb. Ant. 9: 530. 1928.

A shrub, the branches terete, the older ones grayish, the lateral branchlets elongate, widely divaricate, rarely subspinose at the apex, when young bifurcately pilosulous; stipules minute, annuliform, truncate; leaves of two forms, on petioles 1 mm. long or shorter; blades of the principal leaves ovate-orbicular or subtriangular, 5–8 mm. long, 4–7 mm. wide, acute

or short-acuminate, rounded at the base, sometimes slightly decurrent, the lateral nerves inconspicuous, usually 2 on each side; blades of the axillary leaves obovate-oblong or linear-oblong, 3–5 mm. long, 1–3 mm. wide, obtuse or rounded at the apex, gradually narrowed to the base, chartaceous; cymes laxly capitate at the ends of the branches, as much as 8 mm. in diameter, the flowers sessile or almost so; hypanthium obovate-orbicular, minutely pilosulous; calyx-lobes 1.3 mm. long, narrowly ovate, obtuse; corolla white, 3 mm. long, short-pilosulous, the tube ampliate upward, pubescent within, the lobes equaling the tube, ovate, obtuse; stamens shorter than the corolla; style 1.4 mm. long, bifid for one fifth its length; fruit obovate or short-obovate, 3–3.5 mm. long, 2.5 mm. wide, rounded at the base, minutely spreading-pilosulous.

TYPE LOCALITY: In subhumid savannas near Motembo, Santa Clara, Cuba.
DISTRIBUTION: Known only from the type locality.

13. *Machaonia variifolia* Urban, Repert. Sp. Nov. 19: 8. 1923.

A densely branched shrub or small tree, the branches terete, the young branchlets minutely spreading-pilosulous, the lateral ones excurrent into spines and bearing 1–3 pairs of divaricate lateral spines; stipules very short, scarcely semilunar; leaves opposite or ternate, pergamentaceous, on petioles 1 mm. long or shorter; leaf-blades obovate, obovate-oblong, or ovate, 3–13 mm. long, 2–5 mm. wide, rounded to acuminate at the apex, narrowed to the base, the margin minutely pilose, the lateral nerves 2 or 3 on each side; inflorescences terminal and on short lateral branches, densely many-flowered, subcorymbose, 1–5 cm. wide, the bracts linear, the flowers subsessile; calyx-lobes linear or lanceolate, obtuse, 0.5–1 mm. long; corolla white, 4 mm. long, the tube cylindric, pubescent within, the lobes slightly shorter than the tube, ovate-lanceolate, obtuse; anthers oval, shorter than the corolla-lobes; style 2.2 mm. long, glabrous, short-bifid; fruit obtriangular, 3–3.5 mm. long, 2–2.5 mm. wide, acute or subobtuse at the base, densely and shortly spreading-pilose.

TYPE LOCALITY: Near Playa Siboney, Oriente, Cuba.
DISTRIBUTION: In thickets, Oriente, Cuba.

14. *Machaonia velutina* Mart. & Gal. Bull. Acad. Brux. 11¹: 134.
1844.

Machaonia veracruzana Baillon, Bull. Soc. Linn. Paris 1: 204. 1879.
Machaonia Hahniana Baillon, Bull. Soc. Linn. Paris 1: 204. 1879.

A shrub, usually unarmed, the branches slender, dark-brown, sparsely lenticellate, the branchlets puberulent, the internodes elongate; stipules minute, long-cuspidate; leaves opposite, the petioles slender, 2–6 mm. long, puberulent, the blades broadly ovate, oval-ovate, or oblong-ovate, 2.5–3.5 cm. long and 1.2–1.8 cm. wide or larger, rounded or obtuse at the base, acute or short-acuminate at the apex, membranaceous, green above, scaberulous, paler beneath, copiously puberulent, the lateral nerves prominulous, 3 or 4 on each side; cymes many-flowered, 2.5–5 cm. broad, the flowers sessile or short-pedicellate, the bracts setaceous, 1–2 mm. long; calyx and hypanthium 2 mm. long, densely puberulent, the 4 calyx-lobes narrowly triangular, acute or acutish, about as long as the hypanthium; corolla ochroleucous; fruit turbinate, 4–5 mm. long, brown, puberulent.

TYPE LOCALITY: Ravines of Puente Nacional, near Veracruz, Veracruz.
DISTRIBUTION: Veracruz.

15. *Machaonia acuminata* Humb. & Bonpl. Pl. Aequin. 1: 101.
1806.

A shrub or tree, sometimes 10 meters high, the branchlets densely short-pilose or tomentulose, the internodes elongate; stipules 2–4 mm. long, triangular, setaceous-acuminate; leaves opposite, the petioles stout, 3–10 mm. long, densely short-pilose, the blades ovate, oval-ovate, or ovate-elliptic, 5–10 cm. long, 2.2–5 cm. wide, rounded to acutish at the base, acute or short-acuminate at the apex, membranaceous, green above, glabrous or when young tomentulose, the venation mostly impressed, paler beneath, tomentulose when young, becoming short-pilose, the lateral nerves prominent, 5–7 on each side; inflorescence much branched, 6–10 cm.

broad, the flowers sessile or subsessile, densely glomerate, the bracts very small, subulate; calyx and hypanthium 2 mm. long, the hypanthium turbinate, densely white-pilose with incurved hairs, the 5 calyx-lobes oval or suborbicular, shorter than the hypanthium, puberulent; corolla 4-5 mm. long, sparsely puberulent outside, the lobes oval, half as long as the tube; anthers exserted; fruit turbinate, 5 mm. long, cinereous-puberulent.

TYPE LOCALITY: Near Guayaquil, Ecuador.

DISTRIBUTION: Usually in dry thickets, Veracruz (?) and Tabasco to British Honduras and Panama, and southward to Ecuador and southern Brazil.

ILLUSTRATIONS: Humb. & Bonpl. Pl. Aequin. 1: pl. 29; Mart. Fl. Bras. 6^e: pl. 89, f. 1.

16. *Machaonia rotundata* Griseb. Fl. Brit. W. Ind. 348. 1861.

A shrub or small tree, up to 3 meters high, unarmed, the branches brown, sparsely lenticellate, the branchlets stout, reddish-brown, minutely puberulent, the internodes elongate; stipules 3-4 mm. long, deltoid, subulate-acuminate; leaves opposite, the petioles stout, 3-10 mm. long, puberulent or glabrate, the blades oval, oval-elliptic, broadly ovate, elliptic-oblong, or suborbicular, 5-9 cm. long, 2-5.5 cm. wide, rounded to acutish at the base, broadly short-acuminate at the apex or rarely obtuse, membranaceous, green above, often lustrous, glabrous, the venation impressed, paler beneath, glabrous, or sparsely barbate in the axils of the nerves, the lateral nerves prominent, 5-8 on each side, arcuate; inflorescence a much-branched, pyramidal or hemispheric panicle, 6-13 cm. broad, the flowers densely glomerate, sessile or subsessile, the bracts usually linear and 2-5 mm. long, sometimes larger and foliaceous; calyx and hypanthium 3 mm. long, glabrous or sparsely puberulent or short-pilose, the 5 calyx-lobes oval-oblong to suborbicular, shorter than the hypanthium; corolla 4-5 mm. long, white, glabrous outside, the tube broadly turbinate, the lobes oblong, obtuse, equaling or slightly shorter than the tube, the throat densely white-barbate; anthers exserted; fruit cuneate-oblong, 4.5-6 mm. long, brown, glabrous or nearly so.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Jamaica; Costa Rica and Panama; growing usually in thickets near sea level.

ILLUSTRATION: Symb. Ant. 5: 513. f. G.

17. *Machaonia Pringlei* A. Gray, Proc. Am. Acad. 21: 380. 1886.

A shrub 1-2 meters high, unarmed, the branches reddish-brown, very sparsely lenticellate, the branchlets glabrous, the internodes short or elongate; stipules 3 mm. long, deltoid-acuminate, glandular-dentate; leaves opposite, short-petiolate, the petioles marginate to the base, the blades linear-lanceolate, 3-6 cm. long, 4-8 mm. wide, long-attenuate to each end, chartaceous, glabrous, the costa stout and very prominent beneath, the lateral nerves mostly obsolete, the margin often obscurely crispate; inflorescence many-flowered, 3-6.5 cm. broad, the branches sparsely puberulent, the flowers partly sessile and partly pedicellate, the bracts linear, often elongate and foliaceous; hypanthium turbinate, densely covered with short white subappressed hairs, the 4 or 5 calyx-lobes broadly cuneate, usually truncate at the apex, green, glabrous, nearly as long as the hypanthium; corolla 4 mm. long, glabrous outside, the lobes oval-obovate, longer than the tube, the margins undulate; anthers exserted.

TYPE LOCALITY: Limestone ledges of the mountains near Jimulco, Coahuila.

DISTRIBUTION: Known only from the type locality.

18. *Machaonia floribunda* Greenm. Proc. Am. Acad. 33: 488. 1898.

A small tree 3-4.5 meters high, unarmed, the branches dark reddish-brown, sparsely lenticellate, the branchlets slender, minutely puberulent, the internodes mostly elongate; stipules 3 mm. long, triangular, subulate-attenuate; leaves opposite, the petioles slender, 3-5 mm. long, puberulent, the blades ovate or ovate-lanceolate, 3-5 cm. long, 1-2 cm. wide, obtuse or acute at the base, acute or acuminate-attenuate at the apex, subchartaceous, green above, sparsely scaberulous, paler beneath, glabrous or sparsely puberulent along the costa, the lateral nerves inconspicuous, subimpressed, 3-5 on each side; inflorescence much-branched, many-flowered, 5-7 cm. wide, the branches cinereo-puberulent, the flowers sessile or subsessile, the bracts linear, 2-4 mm. long, green; calyx and hypanthium 1.5 mm. long, the hypanthium turbinate, densely covered with minute white incurved hairs, the 4 calyx-lobes oblong or ovate-

oblong, obtuse, sparsely puberulent, about as long as the hypanthium; corolla white, 2 mm. long, glabrous outside, the lobes oval, about as long as the tube.

TYPE LOCALITY: Hills near Tampico, Tamaulipas.

DISTRIBUTION: Known only from the type locality.

19. *Machaonia Lindeniana* Baillon, Bull. Soc. Linn. Paris 1: 204.

1879.

A shrub or tree 2-7.5 meters high, unarmed, the branches dark-brown, coarsely lenticellate, the branchlets slender, minutely and bifariously puberulent, the internodes mostly elongate; stipules 2 mm. long, subulate-cuspidate from a deltoid base; leaves opposite, the petioles slender, 2-4 mm. long, ciliolate, the blades broadly ovate, ovate-oblong, or elliptic-oblong, 2-4 cm. long, 0.8-1.8 cm. wide, acute or obtuse at the base, acute, short-acuminate, or obtuse at the apex, chartaceous, green above, glabrous, scarcely paler beneath, short-barbate in the axils of the nerves, elsewhere glabrous, the lateral nerves inconspicuous, 3 or 4 on each side; inflorescence branched, many-flowered, 4-7 cm. broad, the branches puberulent or glabrate, the flowers sessile or long-pedicellate, the bracts linear, sometimes 8 mm. long, green; calyx and hypanthium 1.5-2 mm. long, the hypanthium sparsely pilose with short spreading hairs or glabrate, the 4 or 5 calyx-lobes spatulate-obovate, rounded at the apex, about as long as the hypanthium, glabrous, usually ciliolate, accrescent and longer than the fruit; corolla 3 mm. long, ochroleucous, glabrous outside, the lobes ovate, obtuse, shorter than the tube; fruit obpyramidal, 2-2.5 mm. long.

TYPE LOCALITY: Campeche, Campeche.

DISTRIBUTION: In usually dry thickets or forests, Campeche and Yucatán to British Honduras.

20. *Machaonia Urbaniana* Standley, sp. nov.

Apparently a very densely branched shrub, the branches terete, grayish or brownish, with short internodes, the lateral branchlets short, terminating in a slender spinose tip and bearing 2 or more pairs of slender brownish spines as much as 1.5 cm. long, the young branchlets very densely pilosulous with short spreading hairs; stipules very short, annuliform, truncate; leaves chartaceous, opposite, often with fascicles of leaves in their axils, subsessile, the petioles less than 1 mm. long; leaf-blades obovate-oblong or oblanceolate-oblong, mostly 4-7 mm. long and 2-3 mm. wide, rounded or very obtuse at the apex, gradually attenuate to the base, densely and minutely spreading-pilosulous on both surfaces, the costa prominent beneath, the lateral nerves inconspicuous, usually 2 on each side; flowers and fruit unknown.

Frutex dense ramosus spinosus, ramulis novellis dense breviter patenti-pilosulis; folia parva brevissime petiolata chartacea obovata-oblonga vel oblanceolato-oblonga 4-7 mm. tantum longa apice rotundata vel obtusissima basin versus sensim attenuata utrinque dense breviter patenti-pilosula; flores ut fructus ignoti.

Type collected on dry hills at María Pilar, near Río Baconas, Oriente, Cuba, November 5, 1916, *F. L. Ekman 8234* (Herb. Field Mus. No. 605073, type).

Although known only from sterile material, examined but not determined specifically by the late Dr. I. Urban, this shrub is clearly distinct from all species of *Machaonia* previously described, especially in the fine dense pubescence of the small narrow leaves.

DOUBTFUL SPECIES

MACHAONIA GALEOTTIANA Baillon, Bull. Soc. Linn. Paris 1: 204. 1879. Type from Veracruz. The description suggests some of the West Indian species, but no Mexican one known to the writer.

SCHIEDEA MARTINICENSIS A. Rich. Mém. Soc. Hist. Nat. Paris 5: 186. 1834. *Tertrea martinicensis* DC. Prodr. 4: 481. 1830. Described from Martinique. Evidently of this genus, but the descriptions are not sufficient to determine the species. The writer has seen no specimens of *Machaonia* from Martinique.

72. *MALANEA* Aubl. Pl. Guian. 1: 106. 1775.

Small or large shrubs, often scandent, glabrous or pubescent, the branchlets terete. Leaves opposite, petiolate, coriaceous. Stipules interpetiolar, large, obtuse or acute, deciduous. Flowers small, bracteate, sessile, glomerate, paniculate, the panicles axillary or pseudo-terminal;

hypanthium short, turbinate; calyx very short, 4-dentate, persistent; corolla funnellform or subrotate, the tube short, the throat villous, the limb 4-lobate, the lobes valvate. Stamens 4, inserted in the corolla-throat; filaments very short, stout; anthers linear-oblong, dorsifixed, exerted, recurved. Disk pulvinate. Ovary 2-celled; style filiform, the stigma small, bilobate; ovules solitary, pendulous from the apex of the cell, the funicle stout. Fruit small, drupaceous, narrowly oblong, with thin flesh, the putamen ligneous, sulcate, 1-2-celled. Seed pendulous, cylindric, the testa thin; endosperm fleshy; embryo elongate, terete, the cotyledons small, the radicle superior.

Type species, *Malanea sarmentosa* Aubl.

Stipules acute, longer than the petioles; corolla glabrous outside.
Stipules obtuse, shorter than the petioles; corolla pubescent outside.

1. *M. erecta*.
2. *M. macrophylla*.

1. *Malanea erecta* Seem. Bot. Voy. Herald 136. 1854.

An erect shrub 1-2.5 meters high, the branches terete, the branchlets subtetragonous, appressed-pilose; stipules subfoliaceous, ovate-oblong, acute, much longer than the petiole; leaves petiolate, the blades ovate-elliptic, 7.5-10 cm. long, 5 cm. wide, acuminate at each end, lustrous above, paler beneath and appressed-pilose, becoming glabrate; panicles axillary, the branches appressed-pilose, the flowers short-pedicellate, the bracts linear; calyx and hypanthium appressed-pilose, the calyx-lobes acute; corolla white, glabrous outside, villous within, the lobes ovate, acute; anthers linear; fruit ovoid-oblong, glabrous, 2-celled.

TYPE LOCALITY: Taboga Island, Panama.

DISTRIBUTION: Known only from the type locality.

In spite of the considerable amount of botanical exploration about the Canal Zone in recent years, this plant has not been re-collected. The writer has seen no material of it.

2. *Malanea macrophylla* Bartl. (M. R. Schomb. Faun. Fl. Brit. Guiana 947, hyponym. 1848); Griseb. Fl. Brit. W. Ind. 337. 1861.

Malanea megalantha Wernham, Jour. Bot. 51: 221. 1913.

A large shrub, often scandent, the branches gray or brownish, the stout branchlets minutely strigillose; stipules oblong or oval, 9-12 mm. long, brown, rounded at the apex, strigillose outside; petioles stout, 12-18 mm. long, strigillose or glabrate; leaf-blades elliptic to rounded-oval, 8-12 cm. long and 4-8 cm. wide or larger, rounded at the apex and acutely short-acuminate, rounded to acute at the base and short-decurrent, subcoriaceous, green above, glabrous, the venation plane or subimpressed, paler beneath, sparsely strigillose or glabrate, appressed-pilose along the nerves, the lateral nerves 5-6 pairs, prominent, arcuate, the margin plane; panicles 1.5-4 cm. long, short-pedunculate, many-flowered, the branches minutely sericeous, the flowers yellowish-white, fragrant, sessile, the bractlets minute; calyx and hypanthium 1.5 mm. long, glabrous, the calyx obscurely dentate; corolla pubescent outside, the tube 4 mm. long, the lobes ovate-oblong, obtuse, half as long as the tube, villous within; fruit cylindric, 11-13 mm. long, 3-4 mm. thick, 1-celled, bluish-black, juicy.

TYPE LOCALITY: Banks of the Morocco, British Guiana.

DISTRIBUTION: St. Vincent, Tobago, Trinidad, and British and French Guiana; growing in forest or thickets.

73. *CHOMELIA* Jacq. Enum. Pl. Carib. 1, 12. 1760.

Shrubs or small trees, usually armed with stout axillary spines, the branchlets terete. Leaves opposite, petiolate. Stipules interpetiolar, acuminate, deciduous. Flowers small, white, in axillary pedunculate cymes, bracteolate; hypanthium oblong or turbinate; calyx 4-lobate, the lobes narrow and elongate, equal or unequal, persistent; corolla salverform, with slender elongate tube, the throat glabrous or pilose, the limb 4-lobate, the lobes elongate, valvate or with slightly imbricate margins. Stamens 4, inserted in the corolla-throat; anthers linear or sagittate, dorsifixed, sessile, included or subexserted, their basal lobes acute or attenuate. Disk swollen. Ovary 2-celled; style filiform, with 2 short branches; ovules solitary, pendulous from the apex of the cell, cylindric, the funicle thickened. Fruit drupaceous, small,

oblong, osseous, 2-celled. Seeds pendulous, cylindrical, the testa membranaceous; endosperm fleshy; embryo elongate, the cotyledons minute, the radicle elongate, terete, superior.

Type species, *Chomelia spinosa* Jacq.

1. *Chomelia spinosa* Jacq. Enum. Pl. Carib. 12. 1760; Sel. Stirp. Am. 18. 1763.

Ixora spinosa Lam. Encyc. 3: 344. 1789.

Guettarda armata Bartl.; DC. Prodr. 4: 457. 1830.

Chomelia filipes Benth.; Oerst. Vidensk Meddel. 1852: 41. 1852.

Caruelina filipes Kuntze, Rev. Gen. 277. 1891.

Caruelina spinosa Kuntze, Rev. Gen. 277. 1891.

Guettarda costaricensis K. Schumann; Tonduz, Bull. Herb. Boiss. 3: 7; hyponym. 1895.

Anisomeris Purpusii Brand. Univ. Calif. Publ. Bot. 6: 70. 1914.

Chomelia brachyloba Standley, Contr. U. S. Nat. Herb. 18: 136. 1916.

Chomelia Purpusii Rusby, Bull. Torrey Club 52: 138. 1925.

Anisomeris brachyloba Rusby, Bull. Torrey Club 52: 142. 1925.

A shrub or tree, sometimes as much as 9 meters high, the branches stout or slender, often rigid, brown or reddish-brown, conspicuously lenticellate, pilose when young with mostly appressed, whitish or fulvous hairs, armed in the axils with stout spines 0.6–2.5 cm. long; stipules 4–8 mm. long, subulate-acuminate from a triangular base, thin, sparsely pilose; leaves often crowded on short lateral branches, the petioles slender, 3–12 mm. long, short-pilose, the blades variable in outline, ovate-orbicular to oval, elliptic, or oblong-ovate, 3.5–8 cm. long, 2–4 cm. wide, rounded to acute at the apex, usually abruptly short-acuminate, broadly rounded to acute at the base, firm-membranaceous, bright-green above and usually sublustrous, thinly pilose, somewhat paler beneath, pilose, especially along the nerves, with appressed or spreading hairs, the venation prominent, the lateral nerves 6–8 on each side, usually arcuate; cymes few-flowered, the very slender peduncles 1.5–3.5 cm. long, shortly appressed-pilose, the flowers sessile or subsessile, the bractlets small, subulate; calyx and hypanthium 2–3 mm. long, cylindrical, appressed-pilose, the calyx-lobes lanceolate or triangular-subulate, unequal, half as long as the hypanthium or shorter, rarely elongate; corolla yellowish-white, salverform, sericeous outside, the slender tube 12–22 mm. long, the lobes linear-lanceolate, 4–6 mm. long, each with a slender elongate hornlike appendage at or just below the apex, the throat glabrous; fruit black at maturity and juicy, oval-oblong, 9–12 mm. long, sparsely strigillose; seeds brown.

TYPE LOCALITY: Near Cartagena, Colombia.

DISTRIBUTION: Oaxaca and Chiapas, along the Pacific coast of Central America to Panama; Colombia and Venezuela to northern Brazil; growing chiefly in dry thickets or open forest.

ILLUSTRATION: Jacq. Sel. Stirp. Am. pl. 13; Jacq. Sel. Stirp. Pict. pl. 17.

74. *ANISOMERIS* Presl, Symb. Bot. 2: 5. 1834.

Shrubs or small trees, often with spinose branchlets, sometimes scandent, the branchlets terete. Leaves opposite, sessile or petiolate, membranaceous or coriaceous. Stipules interpetiolar, acuminate, deciduous. Flowers small, white or yellowish, commonly in axillary pedunculate cymes, rarely solitary, bracteolate; hypanthium oblong or turbinate; calyx 4-lobate, the lobes usually elongate, equal or unequal, persistent; corolla salverform or funnel-form, with slender, usually elongate tube, the throat glabrous or pilose, the limb 4-lobate, the lobes usually short, unappendaged, valvate or with slightly imbricate margins. Stamens 4, inserted in the corolla-throat; anthers linear-oblong or sagittate, dorsifixed, sessile, included or subexserted, the basal lobes obtuse or rounded. Disk tumid. Ovary 2-celled; style filiform, with 2 short branches; ovules solitary, pendulous from the apex of the cell, cylindrical, the funicle thickened. Fruit drupaceous, small, oblong or ovoid, osseous, 2-celled. Seeds pendulous, cylindrical, the testa membranaceous; endosperm fleshy; embryo elongate, with minute cotyledons, the radicle elongate, terete, superior.

Type species, *Anisomeris spinosa* Presl.

Inflorescence terminal, cymose-paniculate; leaves glabrous.

Inflorescence axillary, or the flowers clustered and sessile at the ends of the branchlets.

Corolla-tube glabrous outside.

1. *A. sylvicola*.

2. *A. brachypoda*.

Corolla-tube pilose outside.

Calyx-lobes minute, as broad as long.

Leaves sericeous beneath, at least along the nerves; flowers secund. 3. *A. protracta*.

Leaves glabrous beneath except for tufts of hairs in the axils of the nerves.

Corolla-tube 8-10 mm. long; cymes open, many-flowered. 4. *A. microloba*.

Corolla-tube 15 mm. long; cymes dense, few-flowered. 5. *A. barbata*.

Calyx-lobes linear or oblong, much longer than wide.

Flowers in pedunculate cymes.

Leaves velutinous-pilose beneath; cymes 1-3-flowered. 6. *A. fasciculata*.

Leaves appressed-pilose beneath along the nerves; cymes mostly with more than 3 flowers. 7. *A. Pringlei*.

Flowers sessile at or near the ends of the branchlets. 8. *A. Recordii*.

1. *Anisomeris sylvicola* (Standley).

Chomelia sylvicola Standley, Jour. Wash. Acad. 18: 182. 1928.

A shrub, glabrous throughout, the slender branches subterete, the older ones grayish, rimose, the internodes 1.5-6.5 cm. long; stipules distinct, ovate-oval, 3 mm. long, obtuse, green, deciduous; petioles slender, 7-12 mm. long; leaf-blades elliptic-oblong, 6.5-8 cm. long, 2-3 cm. wide, rather abruptly attenuate to an obtuse tip, acute and decurrent at the base, subcoriaceous, deep-green and dull above, the venation inconspicuous, somewhat paler beneath, domatiate in the axils of the nerves, the slender costa prominent, the lateral nerves about 6 on each side, ascending, arcuate, the margin plane; inflorescence terminal, cymose-paniculate, open, rather few-flowered, the peduncle 2 cm. long, the branches slender, stiff, the bracts triangular, 1-1.5 mm. long, green; pedicels slender, 10-12 mm. long, stiff; fruit obovoid, terete, finely costate, about 18 mm. in total length and 7 mm. in diameter, acute at the base, lustrous, prolonged within the calyx into a conic obtuse projection 4-5 mm. long, 2-celled, the endocarp hard and osseous; calyx persistent, cupular, 2 mm. long, green, the margin undulate.

TYPE LOCALITY: In wet forest at Yerba Buena, northeast of San Isidro, Heredia, Costa Rica, altitude about 2000 meters.

DISTRIBUTION: Known only from the type locality.

Because of its terminal inflorescence, it is improbable that the plant belongs properly in this genus, but it is, at least, of this general relationship. For a more accurate disposition of the species, a knowledge of the flowers is necessary.

2. *Anisomeris brachypoda* (Donn. Smith) Standley, Field Mus.

Publ. Bot. 4: 293. 1929.

Chomelia brachypoda Donn. Smith, Bot. Gaz. 47: 255. 1909.

An unarmed shrub, the branches slender, grayish, the branchlets minutely appressed-pilose, with short internodes; stipules narrowly triangular, 6-8 mm. long, subulate-attenuate, reddish-brown, sericeous outside, glabrous within; petioles slender, 3-6 mm. long, appressed-pilose; leaf-blades lance-oblong or elliptic-lanceolate, 6-10 cm. long, 1.5-3 cm. wide, long-acuminate, acute or short-acuminate at the base, chartaceous, green above, glabrous, or sparsely appressed-pilose along the costa, finely lineolate, the venation subimpressed, paler beneath, appressed-pilose along the nerves, the lateral nerves prominent, 4-5 on each side, subarcuate, ascending at an acute angle; cymes 4-8-flowered, the stout peduncles 5-8 mm. long, the flowers sessile, the bracts small, lance-triangular; calyx and hypanthium 2.5-3 mm. long, minutely strigillose, the calyx-lobes minute, triangular; corolla salverform, the tube 11-12 mm. long, glabrous outside, the lobes oval, 2 mm. long, rounded, sparsely strigillose outside; anthers semi-exserted, 2 mm. long.

TYPE LOCALITY: Banks of the Río Ogewaj, near Sasís, Alta Verapaz, Guatemala, altitude 900 meters.

DISTRIBUTION: Known only from the type locality.

3. *Anisomeris protracta* (Bartl.) Standley, Field Mus. Publ. Bot. 4:

293. 1929.

Guettarda protracta Bartl.; DC. Prodr. 4: 457. 1830.

Guettarda protracta α *brevipes* DC. Prodr. 4: 457. 1830.

Guettarda protracta β *longipes* DC. Prodr. 4: 457. 1830.

Antirrhoea protracta Hemsl. Biol. Centr. Am. Bot. 2: 42. 1881.

Chomelia protracta Standley, Contr. U. S. Nat. Herb. 23: 1384. 1926.

A shrub or small tree 1–10 meters high, unarmed, the branches gray or brownish, conspicuously lenticellate, the branchlets slender or stout, densely whitish- or fulvous-sericeous; stipules 5–9 mm. long, triangular-lanceolate, long-attenuate, brown, sericeous outside; leaf-blades narrowly elliptic-lanceolate, oblong-lanceolate, or oblong-elliptic, 7–16 cm. long, 2.5–5.5 cm. wide, long-acuminate with a narrow, often falcate tip, attenuate to subobtuse at the base, membranaceous, green above, often sublustrous or transverse-lineolate, appressed-pilose with very slender, long hairs, or glabrate, paler beneath, sericeous, especially along the nerves, usually barbate in the axils of the nerves, with prominent venation, the lateral nerves slender, 6–9 on each side, subarcuate, ascending at a very acute angle; cymes 1–2.5 cm. long, sericeous, the flowers sessile, secund, the bractlets minute; calyx and hypanthium 1.5–2.2 mm. long, the hypanthium densely short-pilose, the calyx equaling or shorter than the hypanthium, brown, thinly short-pilose, the lobes minute, rounded; corolla white, densely sericeous outside, the tube 7–10 mm. long, the lobes rounded, obtuse, 1–1.7 mm. long; anthers included; fruit dark-blue, oval, 4–5 mm. long, thinly sericeous.

TYPE LOCALITY: Mexico.

DISTRIBUTION: Guerrero to British Honduras, Guatemala, and Honduras, in open forest or thickets.

4. *Anisomeris microloba* (Donn. Smith) Standley, Field Mus.

Publ. Bot. 4: 293. 1929.

Chomelia microloba Donn. Smith, Bot. Gaz. 31: 114. 1901.

An unarmed shrub, the branches slender, gray or brownish, conspicuously lenticellate, the branchlets short-pilose with ascending hairs, the internodes short; stipules 3–4 mm. long, deltoid, long-cuspidate, appressed-pilose outside; petioles stout, 3–6 mm. long, pilose with short spreading hairs; leaf-blades elliptic-oval, oval-oblong, or ovate-oblong, 5–10 cm. long, 3–4.5 cm. wide, very obtusely short-acuminate, rounded or very obtuse at the base, coriaceous, green and glabrous above, paler beneath, short-barbate in the axils of the nerves, elsewhere glabrous, the venation prominent, the lateral nerves 4–5 on each side, arcuate-ascending, the margin plane or subrevolute; cymes axillary, few- or many-flowered, 3.5 cm. wide, the slender peduncles 2–3.5 cm. long, glabrous, the flowers sessile or subsessile, ebracteolate, not secund or only obscurely so; hypanthium turbinate-cylindric, 3 mm. long, sparsely puberulent or glabrous, the calyx-lobes minute, obtuse; corolla densely strigillose outside, the slender tube 8–10 mm. long, slightly dilated upward, glabrous within, the lobes ovate, obtuse, 3 mm. long; anthers 2 mm. long, semi-exserted; stigma-lobes 1 mm. long.

TYPE LOCALITY: Coastal thickets, Santo Domingo de Golfo Dulce, Costa Rica.

DISTRIBUTION: Known only from the type locality.

5. *Anisomeris barbata* (Standley).

Chomelia barbata Standley, Jour. Wash. Acad. 13: 7. 1923.

An unarmed shrub or small tree, the slender branchlets appressed-pilose; stipules 3 mm. long, deltoid, cuspidate, appressed-pilose outside; petioles slender, 5–8 mm. long, puberulent; leaf-blades oblong-ovate to elliptic or rounded-elliptic, 3.5–5.5 cm. long, 2–3.5 cm. wide, obtuse or acutish, rounded to acute at the base, glabrous above except along the costa, beneath densely barbate along the costa, elsewhere puberulent or glabrate, the lateral nerves inconspicuous; cymes lateral, dense, few-flowered, the peduncles very slender, 2.5–3.5 cm. long, pilosulous with whitish subappressed hairs, the flowers sessile or subsessile, ebracteolate, not at all secund; hypanthium and calyx cylindric, 2–2.5 mm. long, appressed-pilosulous, the calyx-lobes minute, obtuse; corolla densely appressed-pilosulous outside, the slender tube 15 mm. long, very slightly dilated upward, the lobes oblong-ovate, obtuse, 2.5 mm. long; anthers semi-exserted; fruit white, 2-celled, oblong, glabrate, 1–1.5 cm. long.

TYPE LOCALITY: Vicinity of Chacahua, Distrito de Juquila, Oaxaca.

DISTRIBUTION: Sinaloa to Oaxaca.

6. *Anisomeris fasciculata* (Sw.) K. Schumann, in E. & P. Nat.
Pfl. 4⁺: 98. 1891.

Ixora fasciculata Sw. Prodr. 30. 1788.
Chomelia fasciculata Sw. Fl. Ind. Occ. 238. 1797.
Caruelina fasciculata Kuntze, Rev. Gen. 277. 1891.
Guettarda fasciculata Maza, Anal. Soc. Esp. Hist. Nat. 23: 290. 1895.

A shrub, the slender branches brown or gray, short-pilose when young, with mostly elongate internodes, the branchlets often spinose; stipules small, triangular-acuminate; petioles stout, 1-3 mm. long, short-pilose; leaf-blades rounded-ovate, elliptic, or elliptic-oval, 1.2-3.5 cm. long, 0.7-2 cm. wide, obtuse, acute, or broadly short-acuminate, rounded to acute at the base, chartaceous, deep-green above, glabrous or sparsely pilose along the costa, paler beneath, appressed-pilose along the nerves, the lateral nerves prominulous, 3-5 on each side, arcuate-ascending, the margin plane or subrevolute; cymes 2-3-flowered, or 1-flowered, the flowers sessile, the peduncles filiform, 1-3 cm. long, glabrous or nearly so, usually longer than the leaves; calyx and hypanthium sparsely pilose, the hypanthium narrowly turbinate, 2 mm. long, the calyx-lobes oblong or linear, obtuse, 2-3 mm. long; corolla white, salverform, sparsely short-pilose outside, the tube 7-12 mm. long, the lobes oblong, 2.5 mm. long, obtuse; anthers included; fruit narrowly oblong, 8 mm. long, glabrate.

TYPE LOCALITY: Grenada.

DISTRIBUTION: Grenada, St. Vincent, Barbados, and Martinique.

7. *Anisomeris Pringlei* (S. Wats.) Standley, Field Mus. Publ. Bot.
4: 293. 1929.

Chomelia Pringlei S. Wats. Proc. Am. Acad. 26: 137. 1891.

An unarmed shrub or small tree 4.5 meters high, the branches brownish-gray, conspicuously lenticellate, the branchlets densely pilose with spreading yellowish hairs; stipules 7 mm. long, lance-triangular, subulate-acuminate; petioles 2-3 mm. long; leaf-blades elliptic, oval-ovate, or oval, 4.5-7.5 cm. long, 2-3.5 cm. wide, acute or very short-acuminate, rounded at the base, membranaceous, bright-green above, sparsely villosulous when young, becoming glabrate, densely short-pilose beneath; cymes 3-6-flowered, the slender peduncles 1.5-2.5 cm. long, the flowers sessile or subsessile; calyx and hypanthium 3 mm. long, densely pilose, the calyx-lobes lance-oblong, equal, half as long as the hypanthium; corolla 8-9 mm. long, rather sparsely short-pilose outside, the lobes obtuse, 2 mm. long; fruit oblong, 5-6 mm. long, sparsely pilose.

TYPE LOCALITY: Tamasopo Canyon, San Luis Potosí.

DISTRIBUTION: Known only from the type locality.

8. *Anisomeris Recordii* (Standley).

Chomelia Recordii Standley, Trop. Woods 7: 9. 1926.
Chomelia Englesingii Standley, Trop. Woods 16: 45. 1928.
Anisomeris Englesingii Standley, Field Mus. Publ. Bot. 8: 360. 1931.

A small unarmed tree, the branchlets slender, terete, grayish, hirtellous or glabrate, with short internodes; stipules 2.5-5 mm. long, triangular or ovate, acuminate or cuspidate, appressed-pilose; petioles 2-3 mm. long, hirtellous; leaf-blades broadly ovate or ovate-elliptic, 3-8.5 cm. long, 2-5 cm. wide, obtuse or abruptly acute, with obtuse tip, rounded or obtuse at the base, green above, sparsely pilose along the costa, elsewhere glabrous, the costa and nerves impressed, beneath slightly paler, copiously short-pilose with spreading or appressed hairs, the lateral nerves about 6 pairs, arcuate; flowers clustered and sessile at the ends of the branches; calyx and hypanthium 5-6 mm. long, tubular-campanulate, densely pilose with long appressed white hairs, the calyx-lobes oblong-linear, equaling the hypanthium; corolla white, densely pilose-sericeous with white hairs, the very slender tube 2 cm. long, the lobes oblong, obtuse, 4 mm. long, sericeous outside, glabrous within.

TYPE LOCALITY: In high forest between Los Andes and Entre Ríos, lower Río Motagua Valley, Guatemala.

DISTRIBUTION: In deep forest, along the Atlantic coast, Guatemala, Nicaragua, and Panama.

75. PITTONIOTIS Griseb. Bonplandia 6: 8. 1858.

Small unarmed trees, pubescent, the branchlets terete or obtusely angulate. Leaves opposite, membranaceous, petiolate. Stipules intrapetiolar, acuminate, persistent. Flowers small, sessile, secund along the slender scorpioid branches of the paniculate cymes, ebracteolate; hypanthium oblong, the small calyx 4-5-lobate, persistent; corolla salverform, pubescent outside, the tube cylindrical, the throat pilose, the limb 5-lobate, the lobes linear-oblong, obtuse, as long as the tube or longer, imbricate, 2 of them exterior. Stamens 5, inserted in the corolla-throat; filaments slender, elongate; anthers oblong-linear, dorsifixed near the base, obtuse, exerted. Ovary 2-3-celled; style stout, the stigma bilobate, exerted, the lobes almost as long as the style; ovules solitary, cylindrical, pendulous from the apex of the cell. Fruit drupaceous, small, elliptic-oblong, 2-3-celled, with very thin flesh, the putamen osseous. Seeds cylindrical, elongate, with thin testa; endosperm none; embryo terete, the radicle elongate, superior.

Type species, *Pittoniotis trichantha* Griseb.

The genus consists of a single species.

1. *Pittoniotis trichantha* Griseb. Bonplandia 6: 8. 1858.

Antirrhoea trichantha Hemsl. Biol. Centr. Am. Bot. 2: 42. 1881.

A small tree, sometimes 7 meters high, with a trunk 25 cm. in diameter, the bark light-gray, rather smooth, the branches stout, dark reddish-brown, the branchlets thick, densely leafy, densely short-pilose with grayish, appressed or ascending hairs; stipules narrowly or broadly triangular, 5-11 mm. long, acuminate or attenuate, finely appressed-pilose outside, sericeous within, usually persistent; petioles slender, 0.6-3 cm. long, puberulent or short-pilose; leaf-blades elliptic-oblong, oval-elliptic, oval, broadly ovate, or rhombic-orbicular, 5.5-14.5 cm. long, 2.5-7 cm. wide, abruptly short-acuminate, rounded to acuminate at the base, green above, at first appressed-pilose with short stiff hairs, glabrate in age, beneath paler, finely grayish-sericeous, usually short-pilose on the nerves, the costa and lateral nerves prominent, the latter 5-9 on each side, ascending at an acute angle, the transverse veins prominent and laxly reticulate, the margin plane; panicles laxly branched, 3-7 cm. broad or larger, the ultimate branches short or elongate, densely short-pilose, the slender peduncles 2.5-8 cm. long; calyx and hypanthium 1.3 mm. long, densely pilose with short sordid hairs, the calyx-lobes deltoid, acute or acutish; corolla 4-5 mm. long, loosely tomentose outside, white, the lobes equaling or longer than the tube, tomentulose within; anthers 1.5-2 mm. long; fruit 5-6 mm. long, 3 mm. thick, sparsely appressed-pilose.

TYPE LOCALITY: Panama.

DISTRIBUTION: In forest, Panama and northern coast of Colombia.

76. GUETTARDA L. Sp. Pl. 991. 1753.

Matthiella L. Sp. Pl. 1192. 1753.

Halesia P. Br. Hist. Jam. 205. 1756.

Laugieria Jacq. Enum. Pl. Carib. 2. 1760.

Laugeria L. Syst. ed. 12. 177. 1767.

?*Viviania* Raf. Specchio 1: 117. 1814.

Donkelaaria Lemaire, Ill. Hort. 2: Misc. 72. 1855.

Trees or shrubs. Leaves opposite or ternate, petiolate or subsessile, small or large, membranaceous to rigid-coriaceous. Stipules intrapetiolar, deciduous. Flowers small or large, bracteolate or ebracteolate, arranged in axillary, bifurcate or congested cymes, or sometimes solitary, usually secund, perfect or polygamo-dioecious; hypanthium ovoid or globose, the calyx tubular, cupular, or campanulate, truncate or obscurely 2-9-dentate, deciduous; corolla funnelliform or salverform, commonly white, the tube elongate, with naked throat, the limb 4-9-lobate, the lobes obtuse, imbricate, 2 of them exterior. Stamens 4-9, inserted in the tube of the corolla; filaments very short or wanting; anthers dorsifixed, linear, included. Ovary usually 2-9-celled, the cells tubular, elongate; style filiform, the stigma capitate or shallowly bilobate; ovules solitary, pendulous from the apex of the cell, anatropous. Fruit drupaceous, globose or ovoid or oblong, sometimes acutely angulate, small or large, the flesh very thin, the putamen ligneous or osseous, commonly 2-9-celled, the cells straight or excurved. Seeds

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