

Flora of Panama. Part VII. Fascicle III



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FLORA OF PANAMA

Part VII. Fascicle 3*

MELASTOMATACEAE

By H. A. GLEASON

Flowers regular, perigynous or epigynous, usually 4- to 6-merous. Hypanthium cylindrical to saucer-shaped, bearing the sepals, petals and stamens on a terminal torus. Calyx usually small, in most genera open in the bud, in some genera calyprate. Petals distinct, large or small, usually white to pink or purple, rarely red or yellow, convolute in the bud. Stamens commonly twice as many as the petals, rarely more numerous, rarely fewer by abortion, isomorphic or dimorphic. Anthers basifixed, ovoid to subulate, 2-celled or 4-celled, opening by one (rarely two) terminal pores or in a few genera by short sub-terminal slits; connective often prolonged below the thecae or below the insertion of the filament into one or more lobes, spurs or appendages of various types. Ovary 1, 2- to several-celled, superior or inferior, commonly many-ovuled; style 1; stigma 1, punctiform to capitate. Fruit a loculicidal capsule more or less enclosed by the persistent hypanthium if from a superior ovary, or a berry if from an inferior ovary. Trees, shrubs, herbs or vines; leaves simple, opposite, often unequal, occasionally apparently alternate by abortion of one member of each pair, entire or toothed, usually 3- to several-nerved (1-nerved in *Mouriri* and a few species of other genera). Inflorescence always cymose, axillary or terminal, or flowers solitary.

About 200 genera and 4000 species, almost entirely tropical and most numerous in South America.

- a. Fruit a loculicidal capsule; ovary superior, free from the hypanthium.
- b. Connective of the anthers bearing one or more dorsal spurs or appendages.
- c. Flowers (in our species) 5- to 6-merous; seeds linear or cuneiform. (Tribe MERIANEAE.)
- d. Calyx open in the bud, exposing the corolla.
 - e. Climbing vines; leaves subtrotund; pubescence of Malpighian hairs; seeds linear, winged at both ends, the embryo near the center..... 1. ADELOBOTRYS.
 - ee. Trees; leaves ovate to oblong or elliptic; pubescence none or not Malpighian; seeds narrowly cuneiform, not winged, the embryo at the base.
 - f. Basal spur of the connective sharp or conic..... 2. MERIANIA.

* Assisted by a grant from The National Science Foundation.

- ff. Basal spur of the connective inflated, rounded..... 3. AXINAEA.
- dd. Calyx calyptrate in the bud, at anthesis deciduous at or near the torus.
- e. Petals obovate or rounded, in our species about 18 mm. long.
- ee. Petals lanceolate to ovate, acuminate, in our species up to 7 mm. long..... 4. CENTRONIA.
- cc. Flowers 4-merous; seeds short, cochleate. (Tribe RHEXIEAE.)..... 5. CALYPTRELLA.
- bb. Connective of the anthers with ventral lobes, spurs, or appendages, or rarely nearly simple. 6. MONOCHAETUM.
- c. Capsule in cross-section round, sulcate or prismatic, or obscurely angled; flowers very rarely spicate.
- d. Seeds not cochleate; fertile anthers 5 or leaves strongly dimorphic. (Tribe MICROLICIEAE.)
- e. Fertile anthers 5, each tipped by a sterile beak; leaves essentially isomorphic..... 7. RHYNCHANTHERA.
- ee. Fertile anthers 8; leaves strongly dimorphic..... 8. CENTRADENIA.
- dd. Seeds cochleate; stamens all fertile; leaves essentially isomorphic. (Tribe TIBOUCHINEAE.)
- e. Hairs of the upper leaf-surface (if present) not adnate to the epidermis for a portion of their length; ovary not setose at the summit (except in *Schwackaea*).
- f. Connective of the outer series of stamens bearing at its base a single ventral appendage which is 2- to 3-toothed or 2-3-setose at its apex..... 9. ARTHROSTEMA.
- ff. Connective of the outer series of stamens more or less evidently 2-lobed at base, or rarely (*Aciotis*) nearly simple.
- g. Stamens strongly dimorphic, the connective of the outer series, between the base of the thecae and the summit of the filament, several times as long as that of the inner series.
- h. Hypanthium wingless, campanulate to subglobose..... 10. HETEROCENTRUM.
- hh. Hypanthium narrowly 8-winged, nearly cylindrical..... 11. SCHWACKAEA.
- gg. Stamens weakly dimorphic, usually differing somewhat in size.
- h. Petals acute or acuminate.
- i. Connective prolonged at base into two conspicuous ascending spurs..... 12. NEPSERA.
- ii. Connective simple at base, or with two very short rounded lobes..... 13. ACIOTIS.
- hh. Petals obtuse or rounded..... 14. ACISANTHERA.
- ee. Hairs or scales of the upper leaf-surface adnate to the epidermis for a portion of their length; ovary setose at the summit.
- f. Hypanthium hirsute with stout hairs from a branched base; hairs of the stem mostly geniculate at base; flowers 4-merous.
- ff. Hypanthium pubescent with simple or glandular hairs or scales or nearly glabrous; flowers 4-merous or (in all common species) 5-merous..... 15. PTEROLEPIS.
- cc. Capsule in cross-section very strongly 3-winged, its distal margin much prolonged beyond the deeply concave summit; flowers sessile in dense secund spikes. (Tribe BERTOLONIEAE.)
- d. Connective of the anther with a single ventral spur; herbs with basal leaves..... 16. TIBOUCHINA.
- dd. Connective with 2 or 3 basal spurs; leaves cauline.
- e. Basal spurs of the connective 2; leaves commonly distinctly dimorphic..... 17. MONOLENA.
- ee. Basal spurs of the anther 3; leaves commonly isomorphic..... 18. DIOLENA.
19. TRIOLENA.
- aa. Fruit a berry; ovary wholly or partly inferior.
- b. Anthers opening by a terminal or nearly terminal pore or pores (or in one species by a longitudinal ventral cleft in each theca), minutely or not at all glandular; leaves in all our species with 3 or more primary nerves.
- c. Flowers individually subtended by two pairs of decussate bracts inserted at the base of the hypanthium; anthers coherent in a ring, each theca opening by a separate pore. (Tribe BLAKEAE.)

- d. Anthers short, oval, oblong, or elliptic, blunt or broadly rounded at the summit..... 20. BLAKEA.
- dd. Anthers linear to lanceolate or subulate..... 21. TOPOBEA.
- cc. Flowers not individually subtended by decussate bracts; anthers separate at anthesis, in most species opening by a single pore. (Tribe MICONIEAE.)
- d. Flowers lateral or axillary, solitary or cymose at the nodes of the stem.
- e. Petals obtuse or rounded.
- f. Anthers linear to oblong or subulate, opening by a single pore. (But see also *Clidemia pittieri*, with dimorphic, sessile, cordate-clasping leaves.)
- g. Flowers or flower-clusters from the axils of existing leaves. 22. CLIDEMIA.
- gg. Flowers from leafless nodes below the existing leaves..... 23. HENRIETTEA.
- ff. Anthers broadly oblong or dolabriform, more or less coherent in a ring.
- g. Anthers opening by two minute terminal pores..... 24. BELLUCIA.
- gg. Anthers opening by a single pore..... 25. LOREYA.
- ee. Petals acute or acuminate.
- f. Flowers arising from leafless nodes below the existing leaves. 26. HENRIETTELLA.
- ff. Flowers or flower-clusters arising from the axils of existing leaves..... 27. OSSAEA.
- dd. Flowers in terminal inflorescences.
- e. Petals acute or acuminate..... 28. LEANDRA.
- ee. Petals obtuse, rounded or retuse.
- f. Calyx calyptrate in bud, deciduous at the torus at anthesis. 29. CONOSTEGIA.
- ff. Calyx open in the bud, its lobes persistent at anthesis, but often minute.
- g. Formicaria present at the summit of the petioles of the larger leaves..... 30. TOCOCA.
- gg. Formicaria none.
- h. Younger stems and petioles (in the Panama species) at once stellate-tomentose, glandular-hirsute, and simply hirsute..... 31. HETEROTRICHUM.
- hh. Pubescence never of three types at once..... 32. MICONIA.
- bb. Anthers opening by two lateral slits, one on each side; connective bearing a large gland on the back near the middle of the anther; leaves (in our species) 1-nerved. (Tribe MEMECYLEAE.)..... 33. MOURIRI.

1. ADELOBOTRYS DC.

ADELOBOTRYS DC. Prod. 3:127. 1828.

Flowers 5-merous. Hypanthium campanulate to nearly tubular, becoming strongly ribbed at maturity. Calyx-tube spreading, its lobes short or obsolete. Petals obovate, conspicuous. Stamens isomorphic or dimorphic; filaments flattened, adherent to the base of the petals; anthers linear or subulate, deflexed, often arcuate; connective briefly prolonged below the thecae into a short, erect, conic or 2-toothed, basal spur, bearing a long, antrorse, dorsal appendage which is cleft at its apex and deflexed nearly parallel to the thecae. Ovary free, 3- to 5-celled; style elongate; stigma capitellate. Capsule many-seeded; seeds linear-cuneate, winged at the apex, winged or caudate at base, bearing the embryo near the center. Woody lianas, climbing by adventitious roots, with oblong to rotund leaves and pink, white, or yellow flowers in paniced umbels or capitate clusters.

About 20 species of tropical America, extending from Mexico and Jamaica to Bolivia.

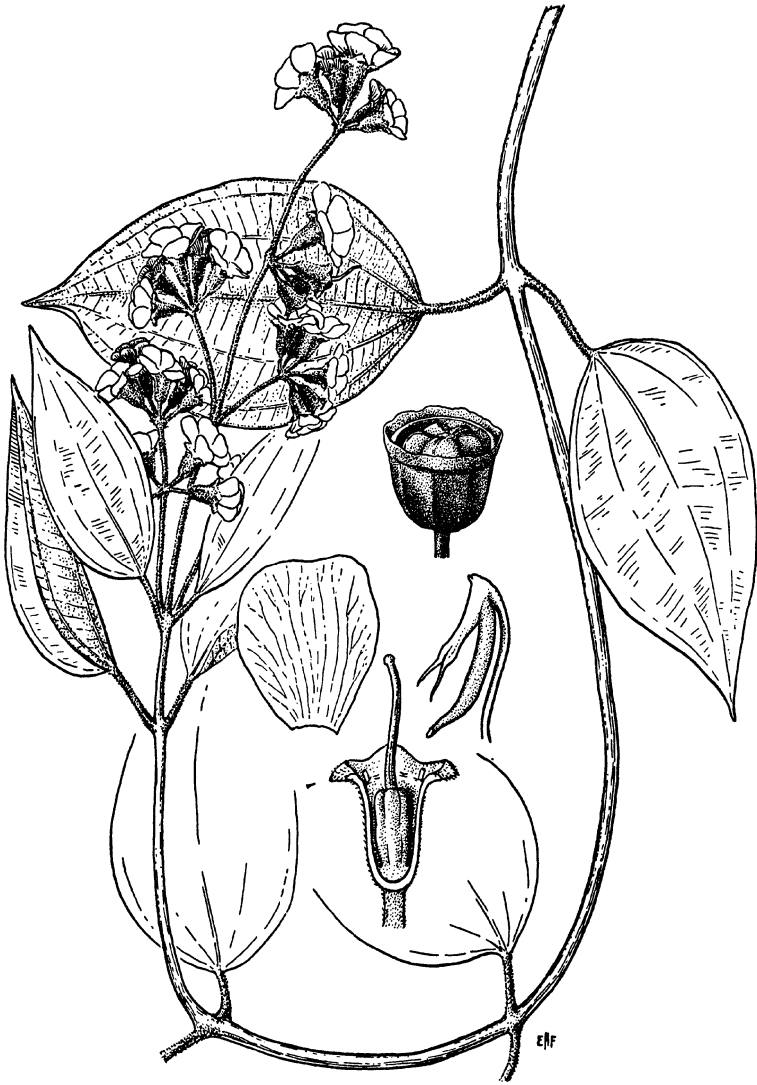


Fig. 63. *Adelobotrys ascendens*

1. *ADELOBOTRYS ADSCENDENS* (Sw.) Triana, in Journ. Bot. 5:210. 1867.

Melastoma adscendens Sw. Fl. Ind. Occ. 2:772. 1800.

Stems climbing several meters high, the younger parts, petioles, and inflorescence thinly brown-strigose; petioles 1–2 cm. long; leaf-blades firm or fleshy, subrotund, 6–10 cm. long, short-acuminate, entire or serrulate, rounded or truncate at base, 5-nerved, glabrous above; inflorescence a panicle 2–4 dm. long from the upper axils or terminal, each component umbel 2- to 6-flowered; pedicels 2–5 mm. long; hypanthium 5 mm. long; petals white, 10 mm. long; anthers 6–10 mm. long, the dorsal spur 3–4 mm. long.

Mexico to Panama; Jamaica.

BOCAS DEL TORO: Cricamola Valley, Almirante region, *Cooper 201*. CHIRIQUÍ: Río Chiriquí Viejo Valley, *White 79*. COLÓN: summit of Cerro Santa Rita, 360–450 m., *Allen 5106*.

2. *MERIANIA* Sw.

MERIANIA Sw. Fl. Ind. Occ. 2:823. 1800.

Flowers 5-merous or rarely 6-merous. Hypanthium campanulate to hemispheric, pubescent or glabrous. Calyx truncate to conspicuously lobed; exterior teeth often present and in some species exceeding the sepals. Petals large, purple to white. Stamens isomorphic or dimorphic; filaments elongate; anthers subulate to ovoid-lanceolate, declined in one direction transversely across the flower by the twisting of the filaments; connective sometimes prolonged at base and ending in a short, retrorse or divergent, basal spur, also in many species bearing a longer dorsal spur directed forward. Ovary superior, 3- to 5-celled; style elongate; stigma punctiform. Fruit a many-seeded capsule. Trees or shrubs, glabrous or variously pubescent, the flowers solitary in the axils or paniculate.

About 55 species; a few in the West Indies, others in southern Brazil, and most numerous in the mountains from Venezuela and Columbia to Peru. The following are the only known species in Central America.

- a. Leaves cuneate at base, glabrous beneath..... 1. *M. PANAMENSIS*.
 aa. Leaves rounded or subcordate at base, canescent beneath..... 2. *M. MACROPHYLLA*.

1. *MERIANIA PANAMENSIS* Gl. ex Woods. & Schery, in Ann. Mo. Bot. Gard. 28:436. 1941.

Tree up to 20 m. tall, smooth throughout; petioles 2.5–4 cm. long; leaf-blades ovate-elliptic, 8–13 cm. long, 4–7 cm. wide, shortly and obtusely cuspidate, entire, broadly cuneate at base, 5-nerved, the secondary veins 1–2 mm. apart; panicle large with widely diverging branches; hypanthium cup-shaped, 6.5 mm. wide; calyx spreading, 3–4 mm. wide, obscurely 5-lobed. Petals purple, 3 cm. long; stamens dimorphic; filaments 17 or 12 mm. long; anthers subulate, arcuate, 12 or 7 mm. long; connectives in one series merely dorsally gibbous at base, in the other series prolonged into a single spur 4 mm. long.

Endemic to Panama, so far as known.

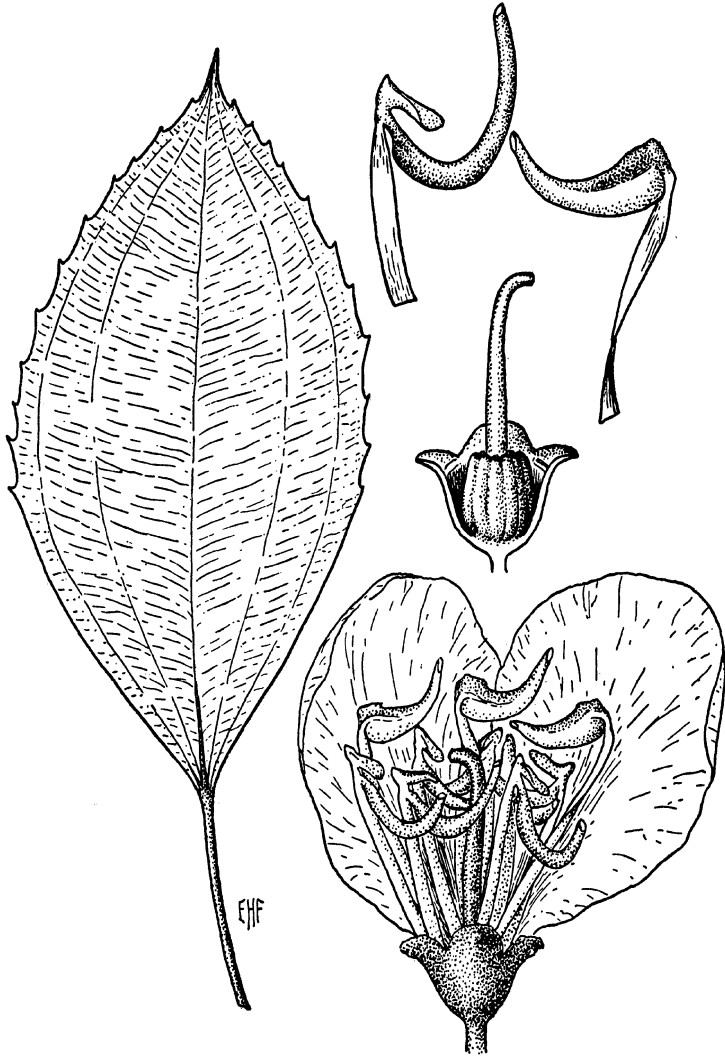


Fig. 64. *Meriania panamensis*

CHIRIQUÍ: Volcán de Chiriquí, 2300–3300 m., *Woodson & Schery 361*; vicinity of Cerro Punta, 2000 m., *Allen 3497*.

2. *MERIANIA MACROPHYLLA* (Benth.) Triana, in *Trans. Linn. Soc.* 28:66. 1871.

Davya macrophylla Benth. *Pl. Hartweg.* 75. 1839.

Conostegia excelsa Pittier, in *Journ. Wash. Acad. Sci.* 14:450. 1924.

Tree to 25 m. tall, the younger parts and petioles densely furfuraceous, glabrescent in age; leaves coriaceous, elliptic, up to 17 cm. long and 9 cm. wide, rounded or subcordate at base, where a transverse ridge crosses the petiole, glabrous above, canescent beneath; panicle widely branched; hypanthium and narrow truncate calyx glabrous; petals magenta, 12–15 mm. long; stamens dimorphic, the connective in the larger series prolonged into an erect bifurcate spur 7 mm. high.

Guatemala to Venezuela.

CHIRIQUÍ: Chiquero, Boquete district, 1650 m., *Davidson 506*; Las Siguas, *Pittier 3196*.

3. *AXINAEA* Ruiz & Pav.

AXINAEA Ruiz & Pav. *Fl. Peruv. & Chil. Prodr.* 68. 1794.

Flowers 4- to 5-merous. Hypanthium campanulate to saucer-shaped, glabrous or thinly pubescent. Calyx spreading, truncate or with short or depressed lobes; exterior teeth none. Stamens 8 or 10, nearly or quite isomorphic; filaments flattened, glabrous; anthers subulate, straight or somewhat arcuate; connective bearing at base a large, inflated, usually rounded, dorsal appendage. Ovary free, 5-celled; style usually slender and elongate; stigma truncate or punctiform. Fruit a many seeded capsule. Trees or shrubs with broad, usually petiolate leaves and large, white to purple flowers in terminal or axillary panicles; leaf-margins often somewhat dilated at base and more or less confluent over the petiole.

About 20 species of mountainous regions from Costa Rica to Venezuela and Bolivia; the following is the only known species in Central America.

1. *AXINAEA COSTARICENSIS* Cogn. in *DC. Monogr. Phan.* 7:1182. 1891.

Good-sized tree, the younger parts thinly furfuraceous but soon glabrescent. Petioles 1.5–3 cm. long. Leaf-blades oblong-elliptic, 10–15 cm. long, about half as wide, very abruptly acuminate, entire, minutely expanded at the obtuse base and bearing a median dorsal tubercle on the summit of the petiole, 5-nerved; panicle many-flowered, divergently branched, 1–3 dm. long, the flowers in terminal umbels on pedicels 5–10 mm. long; hypanthium and calyx together about 8 mm. wide; petals blood-red, 10–15 mm. long; anthers about 6 mm. long, the dorsal appendage white, rounded, nearly 4 mm. high.

Costa Rica and Panama.

BOCAS DEL TORO: Robalo Trail, northern slopes of Cerro Horqueta, 1800–2100 m., *Allen 4967*.

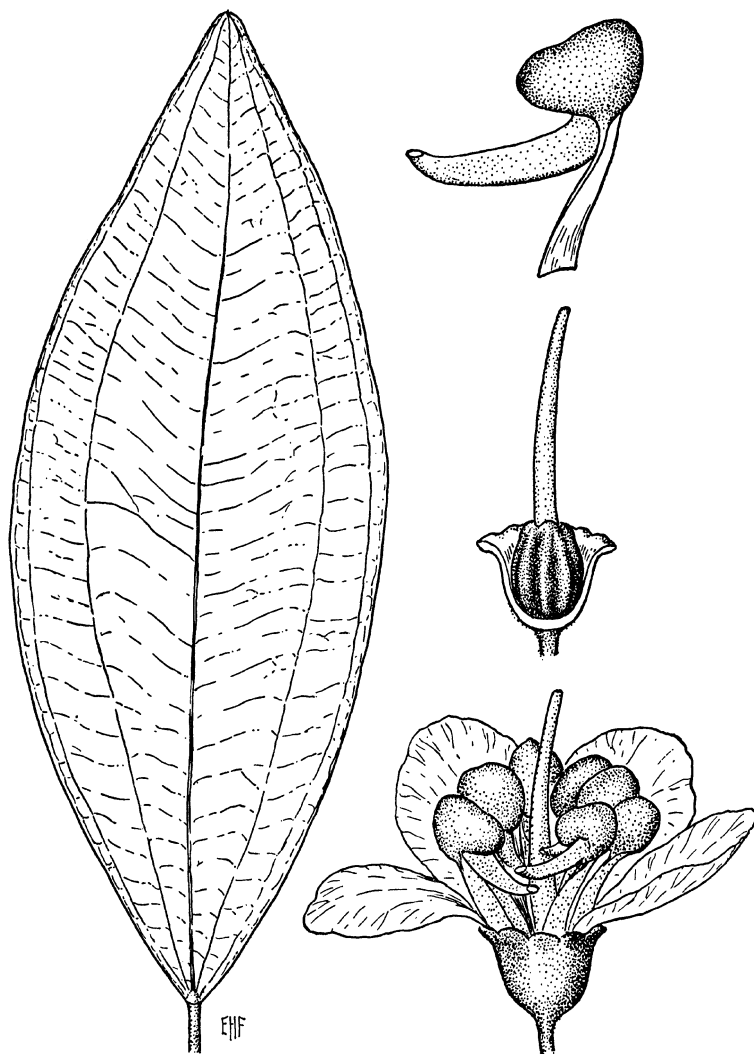
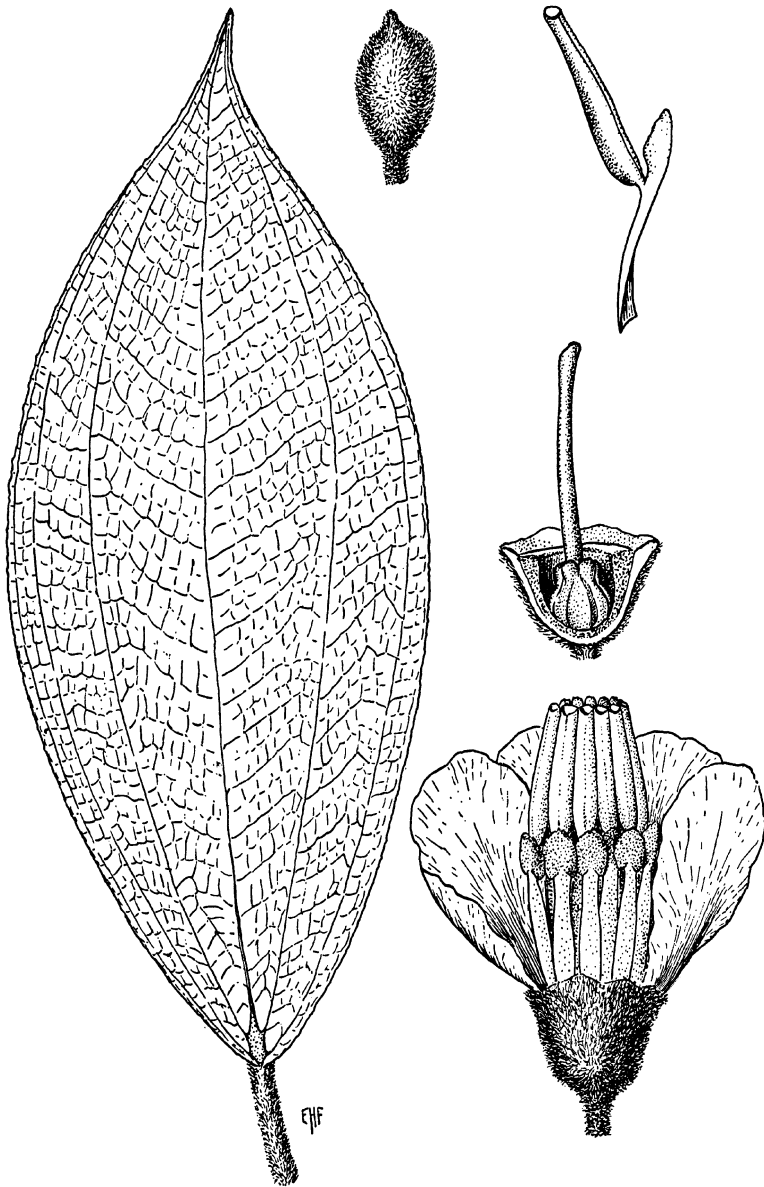


Fig. 65. *Aximaea costaricensis*

Fig. 66. *Centronia tomentosa*

4. CENTRONIA D. Don

CENTRONIA D. Don, in Mem. Wern. Soc. 4:314. 1823.

Flowers 5- to 7-merous. Hypanthium conic to hemispheric, pubescent or hirsute. Calyx calyptrate in bud, at anthesis breaking irregularly and soon deciduous. Petals large, red or purple. Stamens isomorphic or weakly dimorphic; filaments flat, more or less twisted at base; anthers subulate to lanceolate; connective often elevated along the thecae, at base bearing a conspicuous dorsal spur. Ovary free, 3- to 7-celled, often crowned with gibbosities or projecting appendages; style elongate; stigma truncate. Fruit a many-seeded capsule. Trees or shrubs with large leaves and large red or purple flowers usually disposed in terminal 3-flowered cymules in a large terminal panicle.

About 15 species in the mountains from Central America to Peru and eastward into Venezuela and British Guiana. *C. phlomoides* Triana, known from Costa Rica and Colombia, may be expected in Panama; it is at once distinguished from the following species by its strongly 5-plied-nerved leaves.

1. CENTRONIA TOMENTOSA Cogn. in Bull. Acad. Belg. III. 14:943. 1887.

Centronia grandiflora Standley, in Field Mus. Publ. Bot. 22:95. 1940.

Tree to 15 m. tall, the younger stems, petioles, and inflorescence rufous-tomentose; petioles 2-4 cm. long; leaf-blades ovate-lanceolate to elliptic, up to 15 cm. long and about half as wide, acuminate, denticulate, rounded or obtuse at base, 5-nerved or barely 5-plied-nerved, glabrous above, canescent on the surface beneath with minute stellate hairs ending in a long bristle; panicle long-peduncled, few-flowered, buds about 18 mm. long, short-rostrate; hypanthium about 1 cm. long, densely pubescent; petals white or greenish white, about 18 mm. long.

Panama to Ecuador.

BOCAS DEL TORO: Robalo Trail, northern slopes of Cerro Horqueta, 1800-2100 m., *Allen 4992*. CHIRIQUÍ: vicinity of Casita Alta, Volcán de Chiriquí, 1500-2000 m., *Woodson, Allen & Seibert 842*; vicinity of Bajo Chorro, 1900-2100 m., *Davidson 212, 360, Woodson & Schery 657*; Boquete region, *von Hagen & von Hagen 2102*; vicinity of Cerro Punta, 2000 m., *Allen 3492*.

5. CALYPTRELLA Naud.

CALYPTRELLA Naud. in Ann. Sci. Nat. Bot. III. 18:115. 1852.

Flowers 4- to 9-merous. Hypanthium cup-shaped to campanulate. Calyx calyptrate in the bud, at anthesis irregularly or regularly ruptured and soon deciduous at the torus. Petals small or medium-sized, lanceolate to obovate, commonly acute or acuminate. Stamens isomorphic or somewhat dimorphic; anthers linear; connective more or less prolonged below the thecae and extended beyond the apex of the filament into a single short dorsal spur. Ovary superior, 4- to 6-celled; stigma punctiform. Fruit a capsule; seeds linear with a central embryo. Trees or shrubs, with petiolate leaves and terminal paniculiform cymes, the white, yellow, or purple flowers often in small glomerules at the ends of the cyme-branches.

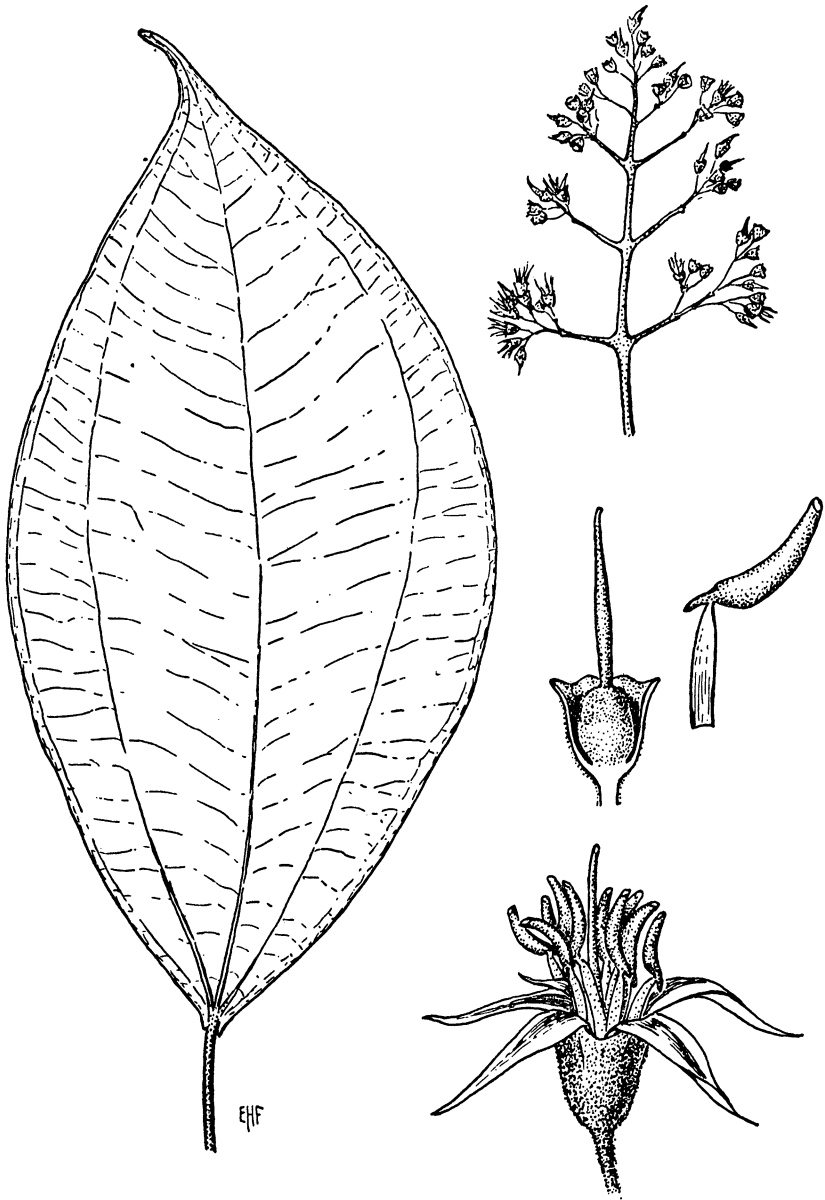


Fig. 67. *Calyptrella micrantha*

About 10 species of mountainous regions or adjacent lowlands from southern Mexico to Peru.

1. CALYPTRELLA MICRANTHA Gl. in *Phytologia* 3:346. 1950.

Shrub or tree 5–22 m. tall, essentially glabrous, but the hypanthium and lower leaf-surface thickly punctate with hyaline atoms; petioles 3–5 cm. long; leaf-blades thin, elliptic, up to 20 cm. long, two-fifths to half as wide, abruptly caudate-acuminate, entire, bearing a small retrorse appendage at each side of the obtuse base, 3-nerved; panicle divergently branched, 3–9 cm. long; flowers 5-merous, on pedicels 3–5 mm. long; hypanthium cup-shaped, 2 mm. long; calyx in bud slenderly conic, 3 mm. long, often falcate; petals white, narrowly lanceolate, long-acuminate, 3 mm. long.

Endemic to Panama.

BOCAS DEL TORO: Fish Creek Mountains, *von Wedel 2249*. COCLÉ: Cerro Pajita, north of El Valle de Antón, 1000–1200 m., *Allen 4175*. VERAGUAS: forested slopes of Cerro Tuté, vicinity of Santa Fé, 900 m., *Allen 4355*.

6. MONOCHAETUM Naud.

MONOCHAETUM Naud. in *Ann. Sci. Nat. Bot.* III. 4:48. *t. 2.* 1845.

Flowers 4-merous. Hypanthium tubular to narrowly campanulate. Calyx divided nearly or quite to the torus; sepals lanceolate to ovate, commonly acuminate, persistent (in our species) or deciduous after anthesis. Petals medium-sized, usually obovate. Stamens 8 and dimorphic, or rarely only 4 by abortion; filaments slender, smooth; anthers slender, linear or subulate, those of the larger series arcuate, bearing at base a single elongate, erect or ascending, dorsal appendage, those of the smaller series straight, the appendage commonly proportionately longer. Ovary superior, 4-celled, pubescent to setose at the summit; stigma punctiform. Fruit a 4-valved capsule; seeds cochleate. Small shrubs with comparatively small, linear to ovate, pinnately-nerved leaves and terminal cymes or cymules of pink, purple, or rarely white flowers.

About 35 species of the mountains from southern and western Mexico to Peru.

- | | |
|---|--------------------|
| a. Pubescence of the upper part of the stem distinctly spreading; leaves ovate or ovate-lanceolate, commonly two-fifths to two-thirds as wide as long; bracteal leaves of the inflorescence scarcely smaller than the foliage leaves..... | 1. M. RIVULARE. |
| aa. Pubescence of the upper part of the stem distinctly strigose, the hairs appressed or ascending at a narrow angle; leaves commonly a fourth to a third as wide as long. | |
| b. Flowers in a freely branched inflorescence; bracts ovate or oblong, much smaller than the leaves; large anthers 5–6 mm. long (excluding the spur). | |
| c. Leaves lanceolate, broadest well below the middle, firm, softly villous beneath..... | 2. M. CYMOSUM |
| cc. Leaves broadest near the middle, thin, sparsely strigose on the lower side..... | 3. M. BRACTEOLATUM |
| bb. Flowers few in terminal cymules, the uppermost leaves scarcely reduced in size; large anthers 9–12 mm. long..... | 4. M. MACRANTHERUM |

Fig. 68. *Monochaetum cymosum*

(215)

1. *MONOCHAETUM RIVULARE* Naud. in Ann. Sci. Nat. Bot. III. 4:50. 1845.

Shrub to 2 m. tall, laxly branched, the younger stems hirsute or hirsutulous with spreading, usually smooth hairs; leaves ovate, two-fifths to two-thirds as wide as long, hirsute above in poorly differentiated longitudinal strips, hirsute to villous beneath; hypanthium strigose.

Forma *RIVULARE*. Pubescence of simple hairs.

Guatemala to Panama.

CHIRIQUÍ: Bajo Chorro, Boquete district, 1800 m., *Davidson 88*.

Forma *GLANDULOSUM* Gl. in Am. Journ. Bot. 16:590. 1929.

Pubescence of the inflorescence and hypanthium very dense and partly glandular.

Costa Rica and Panama.

CHIRIQUÍ: Volcán de Chiriquí, 1500–2100 m., *Davidson 884*, *Woodson*, *Allen & Seibert 906 (in part)*.

2. *MONOCHAETUM CYMOSUM* Gl. in Am. Journ. Bot. 16:588. 1929.

Shrub to 3 m. tall; younger stems strigose with barbellate, appressed or somewhat ascending, eglandular hairs; leaves firm, lanceolate, 2–3 cm. long, a fourth to a third as wide, often acuminate, strigose above in four well-marked longitudinal strips each about as wide as the glabrous strip which parallels the conspicuously depressed primary nerves, hirsute or villous beneath, especially on the primary nerves; hypanthium strigose, eglandular; bracts ovate, 2–5 mm. long.

Endemic to Panama, so far as known.

CHIRIQUÍ: Volcán de Chiriquí, 1500–2000 m., *Woodson*, *Allen & Seibert 906 (part)*; Sierra del Boquete, *Maurice 746*, *Pittier 2861*; vicinity of Cerro Punta, 2000 m., *Allen 1513*.

3. *MONOCHAETUM BRACTEOLATUM* Triana, in Trans. Linn. Soc. 28:64. 1871.

Stem strigose with minutely barbellate eglandular hairs; leaves thin, narrowly elliptic or oblong, 3–5 cm. long, merely acute, sparsely strigose above in four strips between the nearly plane primary nerves, very sparsely strigose beneath; inflorescence and hypanthium strigose, eglandular; bracts ovate, 2–4 mm. long.

Endemic to Panama.

CHIRIQUÍ: vicinity of El Boquete, *Seemann 1668*.

4. *MONOCHAETUM MACRANTHERUM* Gl. in Am. Journ. Bot. 16:591. 1929.

Stem closely strigose with barbellate eglandular hairs, densely pilose at the nodes; leaves oblong-lanceolate, 2–3 cm. long, up to 1 cm. wide, subacute, very sparsely strigose on the upper side, often only toward the tip, sparsely strigose on the primary nerves beneath; inflorescence of mostly 3-flowered terminal cymules; hypanthium thinly strigose; large anthers 9–12 mm. long.

Panama and Costa Rica.

CHIRIQUÍ: Volcán de Chiriquí, *Maxon 5305*.

7. RHYNCHANThERA DC.

RHYNCHANThERA DC. Prod. 3:106. 1828.

Flowers 5-merous. Hypanthium ovoid to subglobose or campanulate, pubescent. Sepals erect or spreading, lanceolate to linear, often exceeding the hypanthium. Petals conspicuous, obovate. Fertile stamens 5, episealous; filaments glabrous, usually stout, somewhat flattened; anthers subulate, rounded at base, prolonged distally into a slender one-pored beak; connective slender, greatly prolonged below the thecae, straight or arcuate, bituberculate, bicalcarate, or rarely unappendaged at base. Sterile stamens 5, opposite the petals, reduced to slender filaments, or lacking. Ovary free, 3- to 5-celled, glabrous, or distally setose or glandular; style elongate, filiform, declined or somewhat sigmoid; stigma punctiform. Capsule thickly ovoid or subglobose; seeds ovoid to oblong, straight or nearly so, minutely foveolate. Herbaceous or partly woody plants, usually densely pubescent or pilose and often glandular; flowers large, in numerous few-flowered cymes forming a terminal leafy panicle.

About 50 species, the others all in tropical South America, extending as far as Paraguay.

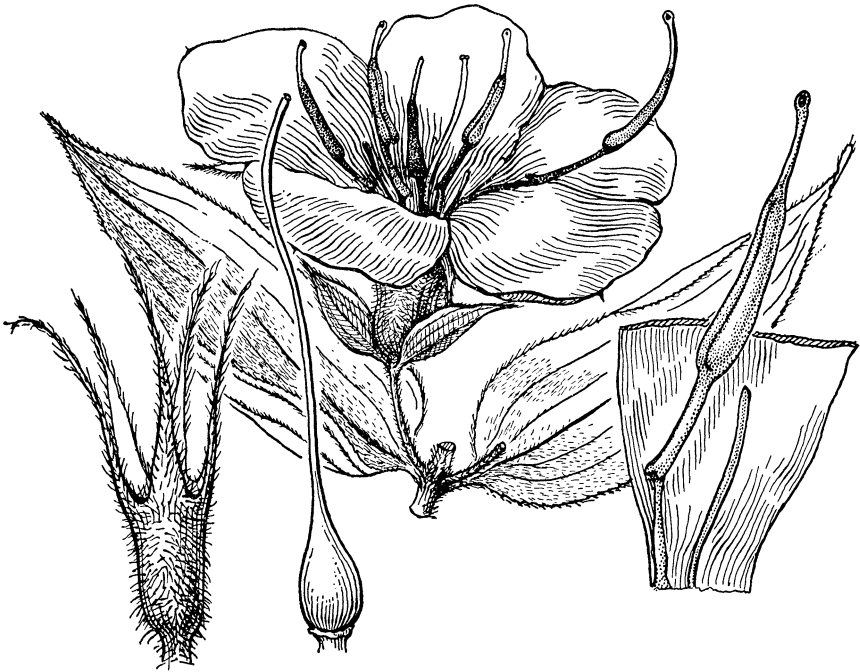


Fig. 69. *Rhynchanthera mexicana*

- a. Stamens all equal or approximately equal in length; hairs of the hypanthium 1.5 to 2 mm. long..... 1. R. PALUDICOLA.
 aa. Stamens unequal in length, the connective of one greatly prolonged; hairs of the hypanthium 0.5 mm. long or shorter..... 2. R. MEXICANA.

1. RHYNCHANThERA PALUDICOLA (Donn. Sm.) Gl. in Phytologia. 1:136. 1935.

Tibouchina paludicola Donn. Sm. in Bot. Gaz. 42:293. 1906.

Stems, petioles, pedicels, and hypanthia sparsely glandular-pilose with hairs 1.5–2 mm. long; stem erect, angular, freely branched; petioles slender, 10–15 mm. long; leaf-blades ovate or ovate-oblong, 4–8 cm. long, 2–4 cm. wide, acuminate, minutely denticulate, rounded to subcordate at base, 7-nerved, pilose on both sides; inflorescence large, freely branched, the pedicels 2 mm. long; hypanthium campanulate, 6 mm. long, 10-ribbed; sepals linear-subulate, 6 mm. long; petals purple, broadly obovate, setose at the tip, 14 mm. long; sterile stamens 4.5 mm. long; filaments 5.5 mm. long; anthers 6.5 mm. long, tipped with a bent beak 2 mm. long, the connective prolonged 3 mm. at base; ovary free, 3-celled, minutely glandular-pubescent at the summit; style 19 mm. long.

Costa Rica and Panama.

CHIRIQUÍ: llanos del Volcán, *Allen 1549*; vicinity of Boquete, 1200–1500 m., *Woodson & Schery 739b*, *Davidson 588*. PROVINCE UNKNOWN: *Pittier 4942*.

2. RHYNCHANThERA MEXICANA DC. Prod. 3:108. 1828.

Semi-frutescent, freely branched above, the stem, petioles, inflorescence, and hypanthium densely glandular-pubescent; petioles 8–12 mm. long; leaf-blades lanceolate to ovate-lanceolate, 5–8 cm. long, 2–3 cm. wide, slenderly acuminate, entire, rounded or broadly obtuse at base, 5- to 9-nerved, freely pubescent on both surfaces; bracteal leaves gradually reduced in size and proportionately narrower; inflorescence ample, many-flowered; pedicels mostly 2–5 mm. long; hypanthium narrowly campanulate, 4–5 mm. long; sepals linear-subulate, exceeding the hypanthium, pubescent; petals 25–30 mm. long, lavender or white to deep rose-purple; one connective much elongate; anthers, including the beak, 8–10 mm. long; capsule subglobose, glabrous, 5 mm. in diameter, 3-valved.

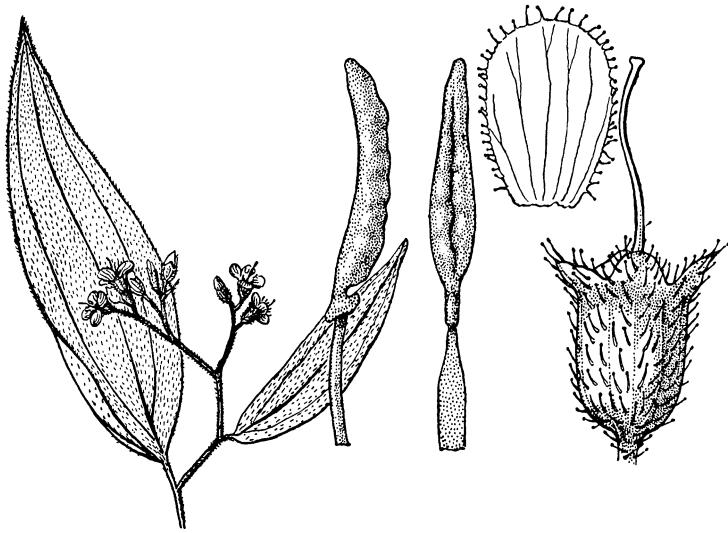
Southern Mexico and Panama.

COCLÉ: El Valle de Antón, 600 m., *Allen 2814*; vicinity of El Valle, *White & White 65, 66*; Penonomé and vicinity, *Williams 216*. HERRERA: vicinity of Ocu., *Allen 4044*. VERAGUAS: hills west of Soná, *Allen 1020*; vicinity of Santiago, about 50 m., *Allen 1014*; between Cañazas and the Cordillera Central, 300–600 m., *Allen 73*.

8. CENTRADENIA G. Don

CENTRADENIA G. Don, Gen. Syst. 2:755. 1832.

Flowers 4-merous. Hypanthium broadly campanulate, 8-ribbed, thin-walled, somewhat 4-angled. Calyx-tube briefly or not at all prolonged; sepals erect, ovate-triangular, acute or obtuse; exterior teeth none. Petals obovate or broadly elliptic, obtuse, entire or ciliate. Stamens dimorphic or isomorphic; filaments delicate, flat, glabrous; anthers ovoid to oblong, linear-oblong, or subulate, obtuse or acuminate,

Fig. 70. *Centradenia maxoniana*

opening by a minute terminal pore; connective prolonged below the thecae, bearing at its base an anterior tubercle or a 2- to 3-lobed, truncate or rounded appendage. Ovary free, 4-celled, often glandular or setose; style slender, glabrous; stigma truncate. Capsule 4-valved; seeds clavate-ellipsoid. Herbs with terete, angled, or winged stems and lanceolate to narrowly oblong dimorphic leaves, the smaller member of each pair early deciduous; flowers few to many, in small cymes terminating the stem and branches; petals white to pink-purple, 5–10 mm. long.

Seven species in Mexico and Central America, one of them extending into Colombia.

- | | |
|---|-------------------------------|
| a. Stamens strongly dimorphic; principal leaves 3–8 mm. wide..... | 1. <i>C. INAEQUILATERALIS</i> |
| aa. Stamens weakly dimorphic, differing chiefly in size; leaves 1.5–3.5 cm. wide..... | 2. <i>C. MAXONIANA</i> . |

1. *CENTRADENIA INAEQUILATERALIS* (Cham. & Schlecht.) G. Don. Gen. Hist. 2:765. 1832.

Rhexia inaequilateralis Cham. & Schlecht. in *Linnaea* 5:567. 1830.

Stems slender, subterete or obscurely 4-angled, pilosulous with spreading hairs; principal leaves straight or slightly falcate, thin, lanceolate, 25–50 mm. long, 3–8 mm. wide, acuminate, cuneate at base into a pilose petiole 1–3 mm. long, 3-nerved, minutely puberulous to almost completely glabrous; cymes laxly branched, often shorter than the upper leaves, thinly pilosulous; hypanthium broadly campanulate, 2.5 mm. long, sparsely pilose; sepals broadly ovate-triangular, obtuse, 0.8–1 mm. long; petals 6 mm. long, conspicuously ciliate; episepalous anthers 1.6 mm. long,

the connective prolonged 1.6 mm. to the filament and 1.6 mm. below the filament into a narrowly obtriangular, flat, truncate appendage; epipetalous anthers shorter, the connective prolonged 1 mm. to the filament, bearing on its base above the filament a flattened, ellipsoid, semi-adenate appendage.

Oaxaca and Veracruz to Panama.

CHIRIQUÍ: vicinity of El Boquete, 1000–1300 m., *Pittier 3040*. COCLÉ: vicinity of El Valle, 500–700 m., *Allen 766*, *Seibert 468*; hills north of El Valle, *Allen 2907*; El Valle de Antón, *Maurice 774*.

2. *CENTRADENIA MAXONIANA* Gl. in Bull. Torr. Bot. Club 65:571. 1941.

Stems slender, terete, sparsely branched, densely strigose; petioles 5 mm. long, strigose; leaf-blades lanceolate, straight or falcate, 8–15 cm. long, 1.5–3.5 cm. wide, inequilateral, acuminate, entire, at base cuneate on one side, acute to rounded on the other, 3-nerved, pubescent above, beneath strigose on the veins, thinly pilose to glabrous on the surface; smaller leaves linear-lanceolate, soon deciduous; panicle 2–3 cm. long, densely strigose; hypanthium 3.5 mm. long, glandular-pubescent; sepals triangular, 1 mm. long; petals oblong, 5 mm. long; anthers nearly isomorphic, 2.8 or 4 mm. long, linear-subulate; connective short, obliquely dilated at base, the anterior lobe ascending, truncate, the posterior descending, ovate.

Panama, Costa Rica and western Colombia.

CHIRIQUÍ: between Hato del Jobo and Cerro Vaca, 700–1000 m., *Pittier 5414*. COCLÉ: vicinity of El Valle, 600–1000 m., *Allen 112*, *1175*. Bismark, above Penonomé, *Williams 321*.

9. *ARTHROSTEMA* Ruiz & Pav.

ARTHROSTEMA Ruiz & Pav. Fl. Peruv. & Chil. 4: t. 326. 1802.

Flowers 4-merous. Hypanthium obconic to narrowly campanulate, elongate, ribless or obscurely ribbed, glabrous or sparsely glandular-setose. Calyx-tube erect or spreading, persistent; sepals broader than long, rounded, obtuse, or apiculate. Petals obovate, apiculate, caducous. Stamens more or less dimorphic; filaments flat; episepalous anthers linear or oblong, straight or curved, the connective prolonged below the thecae and bearing a short or elongate, truncate, 2- to 3-toothed or 2-setose, anterior appendage; epipetalous anthers shorter, the connective shorter or not prolonged, bearing a relatively short, 2-toothed or 2-setose, anterior appendage. Ovary 4-celled, usually glabrous at the summit; style elongate, somewhat sigmoid; stigma punctiform. Capsule 4-valved. Seeds flattened, semi-ovoid, cochleate, marked with about 8 longitudinal, sometimes tuberculate ridges, the flat sides smooth above the hilum. Erect or scandent, slender, sparsely branched herbs or shrubs, with 4-angled to 4-winged stems, small, petiolate, lanceolate to ovate, 3- to 5-nerved leaves, and sessile or pediceled, pink to purple flowers in loosely branched cymes.

About 8 species of tropical America.

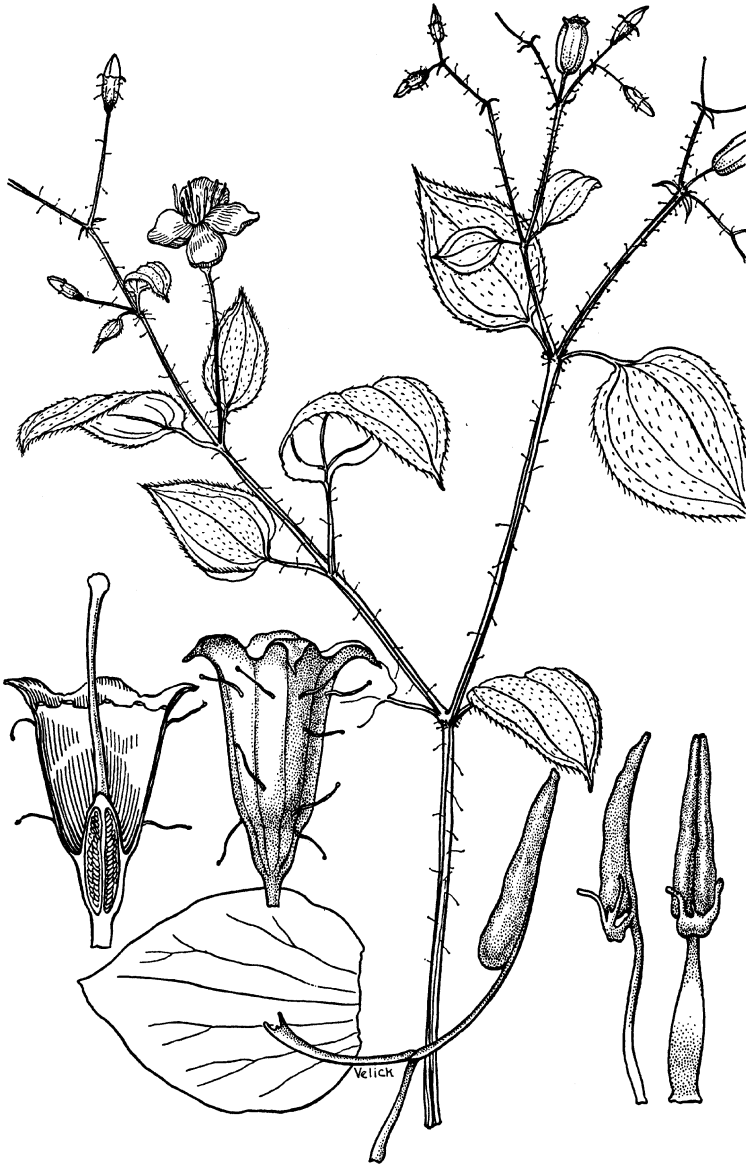


Fig. 71. *Artibrostema macrodesmum*

- a. Flowers and capsules sessile or nearly so; anthers nearly isomorphic, the connective very briefly prolonged..... 1. *A. ALATUM*.
 aa. Flowers pedicelcd; connective of the outer series of stamens prolonged 5-7 mm. below the anther..... 2. *A. MACRODESMUM*.

1. *ARTHROSTEMA ALATUM* Triana, in Trans. Linn. Soc. 28:35. 1871.

Stems erect, freely branched, narrowly 4-winged, 4-6 dm. tall, very sparsely glandular-setose; petioles 1-2 cm. long, winged distally; leaf-blades thin, bright green, ovate-oblong to broadly ovate, 3-7 cm. long, 2-4 cm. wide, acute, minutely ciliate-serrulate, rounded at base, 5-nerved, sparsely setose above, glabrous beneath; inflorescence many-flowered, divided into elongate spiciform branches; flowers sessile or nearly so; hypanthium narrowly campanulate, 4 mm. long, the erect calyx-tube obscurely lobed into depressed-triangular, minutely apiculate sepals 1 mm. long or shorter; petals pink, about 3 mm. long; stamens almost isomorphic; filaments 2 mm. long; anthers ovate, 0.8 mm. long; connective very briefly prolonged, bearing a single short, subulate, anterior spur; fruiting hypanthium long persistent, 10 mm. long, the flat sides of the seeds confluent over the end.

Southern Mexico, Salvador, Costa Rica, Panama, and Venezuela.

PANAMÁ: Punta Paitilla, *Heriberto 234*.

2. *ARTHROSTEMMA MACRODESMUM* Gl. in Williams, Fl. Trin. & Tob. 356, 357. 1934.

Arthrostema campanulare Triana, in Trans. Linn. Soc. Bot. 28:35. 1871. Not *A. campanulare* DC. 1828.

Stems climbing, 1-3 m. tall, sharply 4-angled or narrowly 4-winged, glabrous below, very sparsely glandular-setose above and in the inflorescence; leaves thin, bright green, ovate or ovate-lanceolate, 3-7 cm. long, 1.5-3 cm. wide, acuminate, truncate or subcordate at base, finely ciliate-serrulate, 5-nerved, glabrous or very sparsely setose; inflorescence loosely branched, few-flowered; pedicels about 5 mm. long, elongating in fruit; hypanthium glabrous, narrowly obconic, 8 mm. long; sepals triangular-subulate, about 1 mm. long, sometimes glandular-setose at the apex; petals pink to red or purple, 15-20 mm. long; episepalous anthers linear, nearly straight, 4-4.5 mm. long, the connective prolonged 5-7 mm. to the filament, its appendage 2.5-3 mm. long, 2- to 3-toothed at the apex; epipetalous anthers curved, 2.5-3 mm. long; connective not prolonged, bearing at its base two erect subulate appendages about 1 mm. long; fruiting hypanthium 15 mm. long.

From Chiapas southward through Central America and across northern South America to Peru and Trinidad.

BOCAS DEL TORO: vicinity of Chiriquí Lagoon, *von Wedel 1220, 1248, 1368, 1500, 2614*; Water Valley, *von Wedel 831, 928, 2746*; Shepherd Island, *von Wedel 2716*; between Finca St. Louis and Konkintöe, *Woodson, Allen & Seibert 1907*; Potrero, Changuinola Valley, *Dunlap 72*. CANAL ZONE: Chagres, *Fendler 112*; Colón to Empire, *Crawford 518*. CHIRIQUÍ: vicinity of Boquete, *Maurice 699, Woodson & Schery 739a, Davidson 589*; Finca Lérica to Boquete, 1300-1700 m., *Woodson, Allen & Seibert 1142*. COCLÉ: El Valle de Antón, 600-1000 m., *Allen 1638*.

10. HETEROCENTRON Hook. & Arn.

HETEROCENTRON Hook. & Arn. in Bot. Beech. Voy. 290. 1840.

Heeria Schlecht. in *Linnaea* 13:432. 1839.

Schizocentron Meissn. Gen. Comm. 355. 1843.

Flowers 4-merous. Hypanthium broadly campanulate, rarely subglobose, setose at least at the summit. Sepals erect or spreading, separate to the base, ovate to linear-lanceolate, acute or acuminate, often involute distally, few-nerved. Petals rotund to obovate or broadly cuneate, commonly glandular-ciliate, somewhat inequilateral, flabellately veined. Stamens 8, dimorphic. Filaments slender, flat, glabrous, longer in the outer series. Anthers linear or linear-subulate, straight or nearly so, 2-celled, opening by a minute terminal pore; connective in the episepalous stamens prolonged conspicuously below the thecae to the insertion of the filament, there continued in the same direction into two slender, parallel, anterior spurs; connective of the epipetalous stamens very briefly prolonged below the thecae, slightly swollen and sometimes minutely tuberculate on the anterior side.

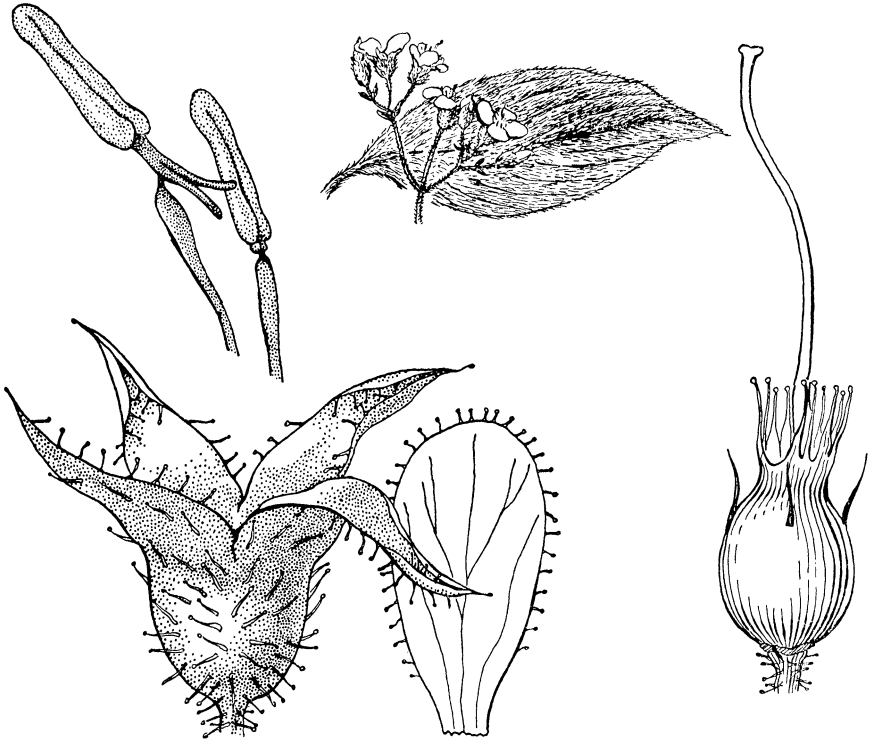


Fig. 72. *Heterocentron glandulosum*

Ovary free or adnate to the middle, 4-celled, its summit rounded or usually bearing 4 fleshy scales. Style slightly sigmoid, elongate, slender; stigma punctiform. Capsule about equaling the hypanthium, 4-valved. Seeds minute, obovoid, cochleate. Shrubs or half-shrubs, erect or rarely trailing, with 4-angled stems; leaves (in our species) multipli-nerved or apparently pinnately veined, the usual secondary veins lacking; inflorescence a terminal panicle or flowers rarely solitary; petals purple, rose-purple, or pink, 5–12 mm. long.

About 15 species of Mexico and Central America.

1. *HETEROCENTRON GLANDULOSUM* Schenck. in Regel, *Gartenfl.* 227. *t.* 169. 1856.

Stem erect, rather stout, obtusely 4-angled, densely strigose; leaf-blades oblong to obovate, 3–7 cm. long, 1.5–4 cm. wide, obtuse or acute, cuneate at base into a slender petiole, multipli-nerved, densely strigose above, subsericeous beneath; inflorescence ample, freely branched, rather crowded, strigose, becoming glandular above, the short pedicels and hypanthium densely glandular with spreading hairs; hypanthium broadly campanulate, 4 mm. long; sepals triangular-lanceolate, 4.5 mm. long, glabrous and entire; petals rotund, 7–8 mm. long; connective of the larger stamens 2.4 mm. long, tangentially flattened; ovary crowned with four quadrate scales nearly 1 mm. high and densely ciliate above.

Southern Mexico, Guatemala, Costa Rica, and Panama.

CHIRIQUÍ: near El Volcán, *White* 233, 233a; Boquete district, 1140 m., *Terry & Terry* 1638.

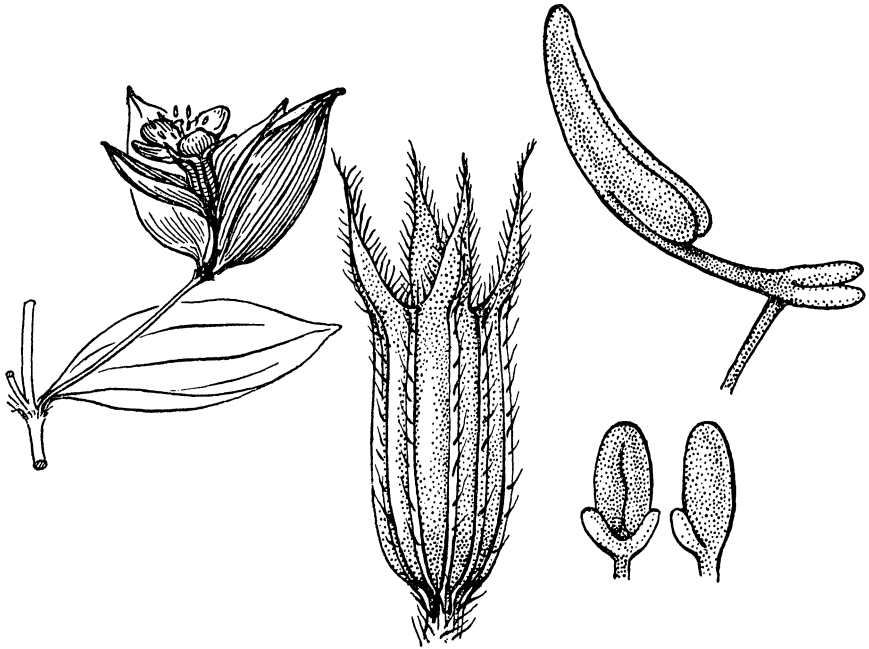
11. *SCHWACKAEA* Cogn.

SCHWACKAEA Cogn. ex Durand *Index Gen. Phan.* 132. 1888.—Nomen; DC. *Mon. Phan.* 7:182. 1891.

Flowers 4-merous. Hypanthium cylindrical, prominently 8-ribbed, the ribs somewhat tuberculate or papillose-strigose. Sepals linear-lanceolate, erect, pectinate-ciliate. Petals small, obovate, setose at the apex. Stamens 8, dimorphic; filaments glabrous, very slender; anthers of the outer series oblong-ovoid, somewhat curved, the connective horizontal or declined, arcuate, as long as or longer than the anther, bearing 2 short, blunt, basal, anterior spurs; anthers of the inner series ovoid, straight, truncate, the connective very short, bearing 2 short, blunt, anterior spurs. Ovary free, 4-celled, oblong, glabrous below, tipped with about 8 short setae. Style short, clavate, strongly incurved above to the broad stigma. Hypanthium enlarged and thickened in fruit, with 8 rounded, corky, tuberculate ribs. Capsule oblong, free. Seeds minute, cochleate. Annual, freely branched herb, the leaves soon deciduous, with numerous small pink flowers in leafy cymes.

Only the following species.

1. *SCHWACKAEA CUPHEOIDES* (Benth.) Cogn. ex Durand, *Index Gen. Phan.* 132. 1888.

Fig. 73. *Schwackaea cupbeoides*

Heeria cupbeoides Benth. Bot. Voy. Sulphur 93. t. 33. 1844.

Pterogastra cupbeoides (Benth.) Seem. Bot. Voy. Herald 122. 1853.

Stem repeatedly branched, 2–10 dm. tall, reddish, 4-angled, setose on the nodes and angles to nearly glabrous; petioles slender, 2–8 mm. long, leaf-blades oval or oblong, 1–6 cm. long, 0.5–3 cm. wide, acute, entire, acute or obtuse at the base, 3-nerved, minutely pubescent, especially on the veins, to nearly glabrous; flowers sessile; hypanthium 4 mm. long; sepals 2.5–3 mm. long; petals 5 mm. long; anthers 0.7 or 1.2 mm. long, the basal spurs of the connective 0.5 mm. long; fruiting hypanthium 1 cm. long; seeds 0.4–0.5 mm. long.

Southern Mexico to Panama and Colombia.

CANAL ZONE: Barro Colorado Island, Killip 40033, Shattuck 299, 485; Darién, Macbride 2702; Obispo, Hayes 151; Paraíso, Hayes 25; Chagres, Fendler 113; Río Grande near Culebra, Pittier 2108. PANAMÁ: near Alhajuela, Chagres Valley, Pittier 2395; San José Island, Johnston 176, 219, 936A.

12. NEPSERA Naud.

NEPSERA Naud. in Ann. Sci. Nat. Bot. III. 13:28. 1850.

Flowers 4-merous. Hypanthium campanulate to subglobose. Sepals triangular-ovate or triangular-lanceolate, about equaling the hypanthium, acuminate. Petals ovate to ovate-lanceolate, acute and apiculate. Stamens isomorphic, differing slightly in size; anthers erect, linear or linear-subulate; connective prolonged briefly below the thecae, somewhat expanded at the insertion of the filament, and bearing 2 erect slender anterior appendages. Ovary free, sub-globose, glabrous, 3-celled; style straight, slender; stigma punctiform. Capsule 3-valved, closely invested by the hypanthium; seeds stoutly semiovoid, cochleate, finely tuberculate. Slender, freely branched, erect herbs, with very numerous, small, white to pink flowers in a large, diffusely branched, terminal panicle.

Only the following species.

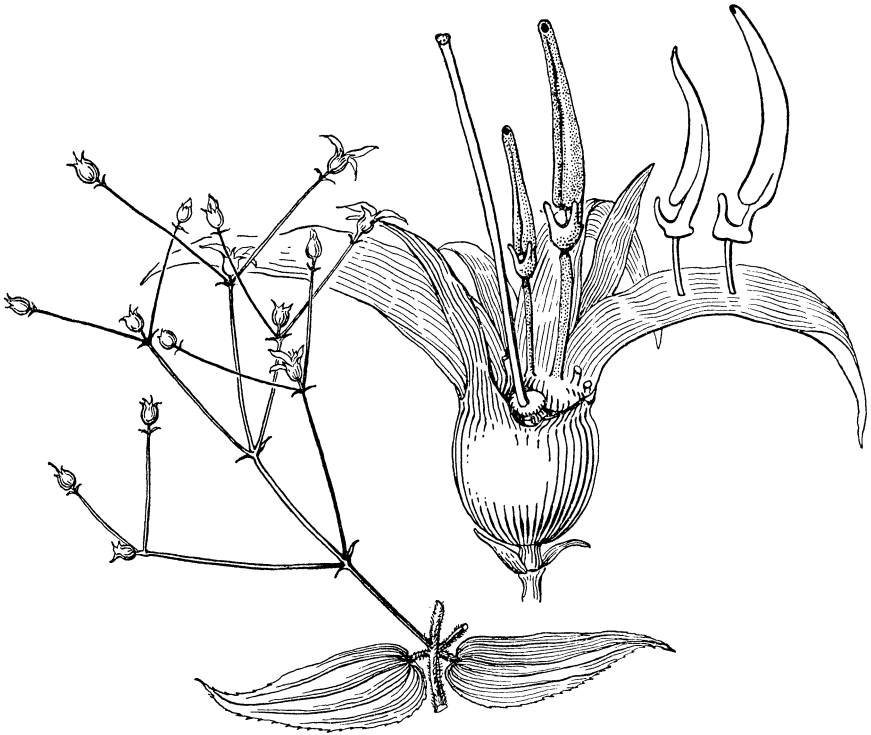


Fig. 74. *Nepsera aquatica*

1. *NEPSERA AQUATICA* (Aubl.) Naud. in Ann. Sci. Nat. Bot. III. 13:28. 1850.

Melastoma aquaticum Aubl. Pl. Guian. 1:430. t. 169. 1775.

Stems 3–10 dm. tall, 4-angled, glabrous to minutely pubescent; petioles slender, 5–10 mm. long; leaf-blades ovate or ovate-lanceolate, 2–6 cm. long, acute or acuminate, finely serrulate, rounded or subcordate at base, 5- to 7-nerved, glabrous or sparsely pubescent; panicle 1–4 dm. long, the pedicels slender and elongate; hypanthium about 3 mm. long; petals 5–7 mm. long.

British Honduras to Panama; Jamaica, Hispaniola, Puerto Rico, and the Lesser Antilles; widely distributed in tropical South America.

BOCAS DEL TORO: Water Valley, *von Wedel* 825; vicinity of Chiriqui Lagoon, *von Wedel* 1133, 2485, 2551; Columbus Island, *von Wedel* 33. PROVINCE UNKNOWN: *Moore* 21.

13. *ACIOTIS* D. Don

ACIOTIS D. Don, in Mem. Wern. Soc. 4:300. 1823.

Flowers 4-merous. Hypanthium thin-walled, narrowly campanulate at anthesis. Calyx-lobes minute, triangular, often glandular-setose at the apex. Petals lanceolate to obovate, acute or acuminate, commonly glandular-setose at the apex. Stamens 8, isomorphic or weakly dimorphic; anthers narrowly oblong to elliptic or nearly globose, blunt; connective somewhat prolonged below the thecae, articulate to the apex of the filament, either simple or with two minute ventral lobes. Ovary superior, 2-celled; stigma truncate or capitellate. Fruit a globose thin-walled capsule, rupturing irregularly at maturity; seeds rugose, cochleate. Erect or spreading herbs with lanceolate to ovate leaves and terminal, divaricately branched, paniculiform cymes of small, ephemeral, white or pink flowers.

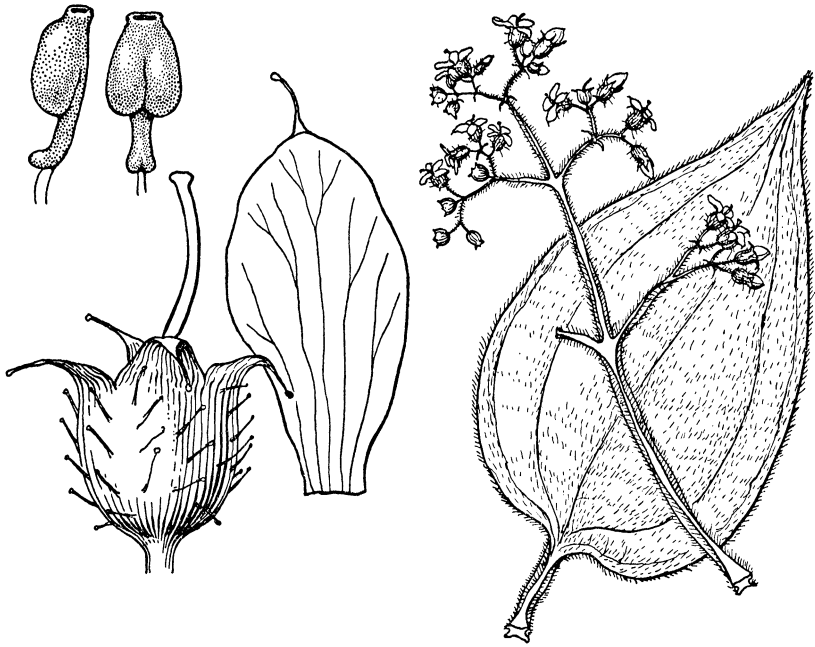
About 30 species, widely distributed in tropical America but most numerous in lowland forests of high rainfall.

- | | |
|--|-----------------------------|
| a. Leaves pubescent beneath. | |
| b. Stems winged, pubescent with mostly simple hairs 1–1.5 mm. long..... | 1. <i>A. LEVYANA</i> . |
| bb. Stems merely angled, pubescent with mostly glandular hairs 0.2–0.8 mm. long..... | 2. <i>A. ROSTELLATA</i> . |
| aa. Leaves glabrous beneath..... | 3. <i>A. PURPURASCENS</i> . |

1. *ACIOTIS LEVYANA* Cogn. in Mart. Fl. Bras. 14³:460. 1885.

Stems herbaceous, branched, up to 1 m. tall, prominently and often broadly winged, each wing ciliate and more or less hirsutulous on the surface with widely spreading hairs 1–1.5 mm. long, commonly simple but occasionally glandular; petioles winged, pubescent like the stem; leaf-blades oblong to oblong-lanceolate, to 1 dm. long, a third to half as wide, pubescent on both sides; fourth and fifth veins arising from the second and third just above the base; panicle-branches winged, hirsutulous, especially on the wings, with simple hairs commonly 1–1.5 mm. long.

British Honduras to Panama, chiefly at low elevations.

Fig. 75. *Aciotis levyana*

BOCAS DEL TORO: Water Valley, *von Wedel* 782, 1450. CANAL ZONE: Barro Colorado Island, *Bailey & Bailey* 581; Gatún, *Hayes* 105; vicinity of Porto Bello, *Pittier* 2440; Santa Rita trail, *Cowell* 139. COCLÉ: vicinity of El Valle, *Allen* 218.

2. *ACIOTIS ROSTELLATA* (Naud.) Triana, in *Trans. Linn. Soc.* 28:51. 1871.

Spenera rostellata Naud. in *Ann. Sci. Nat. Bot.* III. 14:143. 1850.

Similar to the preceding species in general habit and size; stem sharply 4-angled but not winged, densely and softly pubescent with spreading, mostly glandular hairs commonly about 0.5 mm., rarely as much as 1 mm. long; petioles wingless, pubescent like the stem; leaf-blades ovate or oblong, to 1 dm. long, about half as wide, pubescent on both sides, the five nerves all arising together at the base; panicle-branches merely angled, glandular-pubescent with hairs 0.2–0.5 mm. long.

Southern Mexico to Panama.

BOCAS DEL TORO: Nances Cay, *von Wedel* 582, 2863. COCLÉ: Bismarck, above Penonomé, *Williams* 289. DARIÉN; Cana and vicinity, *Williams* 735.

3. *ACIOTIS PURPURASCENS* (Aubl.) Triana, in *Trans. Linn. Soc.* 28:52. *t.* 3. 1871.

Melastoma purpurascens Aubl. *Pl. Guian.* 1:402. 1775.

Glandular pubescence lacking. Stems herbaceous, to 1 m. tall, simple or branched above, 4-winged, glabrous or ciliate on the wings with minute incurved

hairs; petioles winged; leaf-blades lanceolate to oblong, to 15 cm. long, a fourth to a third or even half as wide, glabrous beneath, glabrous or very sparsely pilosulous above, often ciliate with incurved hairs; panicle-branches winged, commonly glabrous; hypanthium glabrous.

Widely distributed in northern South America, northward to Trinidad and Panama. The Panama collection cited below is the type of variety *alata* Cogn., and has leaves half as wide as long, pilosulous above, and distinctly ciliate.

CANAL ZONE: Chagres, *Fendler 149*.

14. ACISANTHERA P. Br.

ACISANTHERA P. Br. Hist. Jamaic. 217. t. 22. 1756.

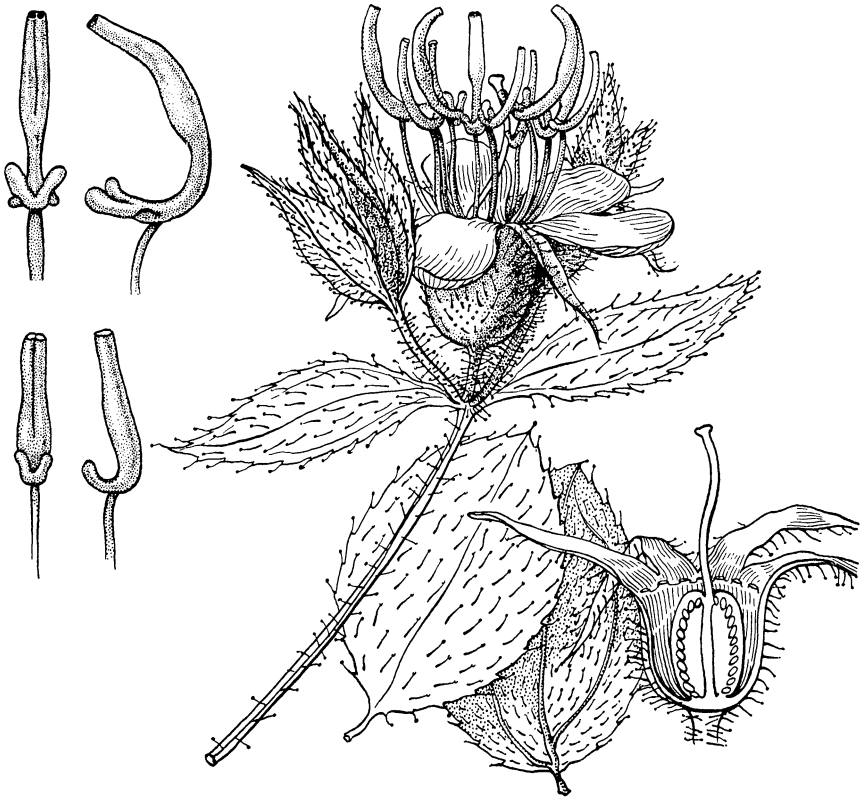
Flowers 4-merous or 5-merous. Hypanthium subglobose to broadly campanulate. Calyx-tube none or very short; sepals triangular to ovate or oblong, equaling or exceeding the hypanthium. Petals usually small, mostly obovate. Stamens dimorphic, the epipetalous series smaller or in some species imperfect. Anthers obovoid to subulate; connective in the episepalous series prolonged below the thecae, bearing at base two rounded to linear, anterior appendages; that of the epipetalous stamens shorter or not prolonged, with two short or tuberculiform appendages. Ovary free, usually subglobose, 2- to 4-celled; style slender; stigma punctiform or truncate. Capsule 2- to 4-valved; seeds ovoid or oblong, more or less cochleate, minutely foveolate. Herbaceous or suffrutescent, simple or freely branched plants, with small, dentate to entire leaves and small, axillary or paniculate, white to pink or purple flowers.

About 20 species, most numerous at low altitudes in South America; two others occur elsewhere in Central America and one in Cuba.

- | | |
|--|------------------|
| a. Leaves ovate to ovate-oblong, conspicuously denticulate or crenate, cuneate to the petiole; stems freely and diffusely branched. | |
| b. Appendages of the episepalous stamens lanceolate to linear, acute or subacute; connective of the epipetalous stamens straight to the filament, about 0.2 mm. long..... | 1. A. QUADRATA. |
| bb. Appendages of the episepalous stamens clavate or narrowly obovoid, blunt or rounded; connective of the epipetalous stamens at right angles to the anther, prolonged about 0.5 mm. to the filament..... | 2. A. UNIFLORA. |
| aa. Leaves ovate to subrotund, entire or essentially so, strictly sessile at the broad base; stems erect, simple or sparingly branched..... | 3. A. LIMNOBIOS. |

1. ACISANTHERA QUADRATA Pers. Syn. Pl. 1:477. 1805.

Stem freely branched, 2-4 dm. tall, sharply angled or narrowly 4-winged, setose at the nodes, on the internodes glabrous, pilosulous, or glandular-pubescent; leaf-blades ovate, ovate-oblong, or oblong, 1-2 cm. long by half as wide, acute or subacute, cuneate at base into a short petiole, 3-nerved, glabrous, pubescent, or glandular; flowers solitary in the axils, on pedicels 1-4 mm. long; hypanthium broadly campanulate, 2 mm. long, usually glabrous, sometimes sparsely pubescent or glandular; sepals triangular, equaling the hypanthium; petals 5-6 mm. long; episepalous anthers truncate, about equaling the connective, this bearing two

Fig. 76. *Acisanthera quadrata*

slender spurs about 1 mm. long; epipetalous anthers smaller, the connective barely prolonged and bearing two minute, rounded, basal tubercles.

Throughout Central America, north to Veracruz and Acapulco; Greater Antilles; South America, where it is less abundant than the next species; reported from Dominica.

CHIRIQUÍ: Boquete, *Davidson 599*. COCLÉ: El Valle de Antón, about 600 m., *Allen 1989*; vicinity of El Valle, *Allen 1174*; vicinity of Penonomé, *Williams 163*. VERAGUAS: hills west of Soná, about 500 m., *Allen 1071*. PANAMÁ: vicinity of Pacora, about 35 m., *Allen 987*; vicinity of Juan Díaz, *Killip 3262*; San José Island, *Johnston 823*. PROVINCE UNKNOWN: *Pittier 4906*.

2. ACISANTHERA UNIFLORA (Vahl) Gl. in *Phytologia* 3:346. 1950.

Rhexia uniflora Vahl, *Symb.* 2:48. 1791.

Rhexia recurva L. C. Rich. in *Act. Soc. Nat. Hist. Paris* 1792:108. 1792.

Acisanthera recurva of recent literature.

Much resembling the preceding in habit and foliage, but the leaves usually proportionately narrower and the leaves, pedicels, and hypanthium more densely

glandular-pubescent; sepals linear-oblong, obtuse, 3 mm. long; anthers of the episealous stamens linear-subulate, 2 mm. long, the erect appendages clavate or narrowly obovoid; anthers of the epipetalous stamens similar, 1.5 mm. long, the connective prolonged 0.5 mm. at base and bearing two erect, rounded appendages 0.2 mm. long.

Widely distributed in South America; reported from Panama and Costa Rica.

3. *ACISANTHERA LIMNOBIOS* (DC.) Triana, in Trans. Linn. Soc. 28:33. *t. II*. 1871.

Rhexia limnobios DC. Prodr. 3:117. 1828.

Stems stout, often inflated at base, 5–20 cm. tall, simple or sparingly branched, sharply 4-angled or narrowly 4-winged, increasingly glandular-pubescent above; leaves sessile, broadly ovate to subrotund, 5–10 mm. long, subcordate and clasping at base, entire to remotely denticulate or the uppermost glandular-ciliate, obscurely 5- to 7-nerved; pedicels 2–3 mm. long, glandular-pubescent; hypanthium campanulate, 2–2.5 mm. long, glandular-pubescent; sepals triangular-lingulate, 2.5–3 mm. long, obtuse, glandular-pubescent; petals obovate, 4 mm. long; filaments 2.6 or 2.2 mm. long; anthers narrowly oblong, 1.8 or 1.2 mm. long, the larger declined, the smaller erect; connective of the larger anthers horizontal, nearly 1 mm. long, with two erect, flattened, completely separate, obtuse appendages 0.8 mm. long; connective of the smaller anthers short, straight, with two rounded basal tubercles.

Panama and Colombia to Brazil; also known from Honduras.

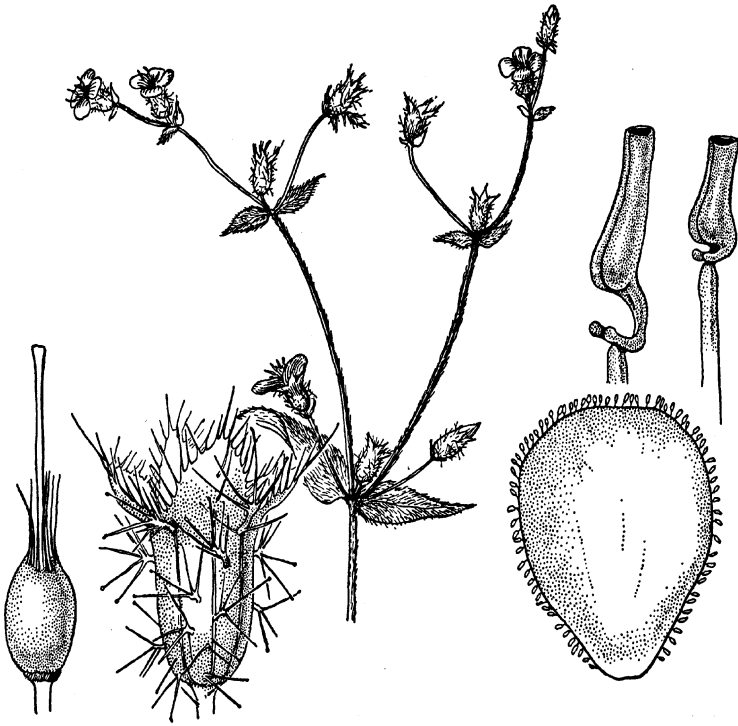
COCLÉ: El Valle de Antón, about 600 m., *Allen 1990*.

15. *PTEROLEPIS* (DC.) Miq.

PTEROLEPIS Miq. Comm. Phyt. 72. 1840.

Flowers 4-merous. Hypanthium broadly or narrowly campanulate, sometimes ribbed, pubescent with simple, branched, or glandular hairs, persistent and accrescent in fruit. Calyx-tube not prolonged; sepals erect, triangular, acute, ciliate. Petals small, obovate, often ciliate. Stamens dimorphic. Filaments slender, flat, straight, glabrous. Anthers subulate to ovoid or obovoid; connective more or less prolonged below the thecae, often horizontal or arcuate, terminating in two small anterior appendages or lobes. Ovary free, oblong to cylindrical, 4-celled, glabrous below, crowned with stiff erect setae surrounding the base of the straight slender style; stigma small, capitate. Capsule 4-valved, included by the hypanthium; seeds minute, cochleate, finely tuberculate. Erect, freely branched herbs, with ovate to linear leaves and cymose or glomerate, sessile or subsessile, pink or white flowers; hairs of the stem often geniculate or prolonged backward at base, those of the hypanthium often branched from the end of a conspicuous stipe.

About 30 species, chiefly in tropical South America; two others have been reported from Central America and a fourth from the Lesser Antilles.

Fig. 77. *Pterolepis pumila*

1. *PTEROLEPIS PUMILA* (Bonpl.) Cogn. in Mart. Fl. Bras. 14³:263. 1885.

Rhexia pumila Humb. & Bonpl. Rhex. t. 35. 1823.

Erect, freely branched, 1-6 dm. tall; stem strigose, the hairs geniculate or prolonged at base; petioles densely strigose, 1-5 mm. long; leaf-blades firm, lanceolate to elliptic or ovate, 20-45 mm. long, 6-17 mm. wide, acute or acuminate, rounded or obtuse at base, 3- to 5-nerved, pilose on both sides; flowers very numerous, terminating the stem and all its branches, soon appearing lateral from proliferation, on pedicels 1-3 mm. long; hypanthium narrowly campanulate, 3-3.5 mm. long at anthesis, pilose, some hairs usually with a stout stalk 0.5-1 mm. long and 3-6 slender terminal branches; sepals erect, persistent, ovate-lanceolate, long-ciliate, acute; petals pink, obovate, 4-5 mm. long, glandular-ciliate; filaments 2-2.5 mm. long; episepalous anthers 1-2 mm. long, narrowly oblong, truncate, the connective prolonged 1 mm. or less and bearing two minute lobed or short anterior spurs at its base; fruiting hypanthium 5 mm. long.

Southern Mexico southward through Central America and widely distributed in northern South America.

COCLÉ: El Valle de Antón, 600–800 m., *Allen 2860*. PANAMÁ: vicinity of Pacora, about 35 m., *Allen 988*; San José Island, *Johnston 824, 889*. PROVINCE UNKNOWN: *Halsted*.

16. TIBOUCHINA Aubl.

TIBOUCHINA Aubl. Pl. Guian. 1:445. *t. 177*. 1775.

Flowers 4- to 8-merous. Hypanthium tubular to broadly campanulate, thin-walled, often costate at maturity. Calyx-tube briefly prolonged, usually erect; sepals erect, spreading, or recurved, ovate to linear, small or large; exterior teeth none. Petals usually ciliate. Stamens isomorphic to strongly dimorphic. Filaments terete or flattened, in some species pubescent or glandular. Anthers subulate, linear, or narrowly ellipsoid or oblong, 2-celled; connective more or less prolonged at base and bearing two anterior lobes or short appendages. Ovary free, its locules isomerous with the petals, its summit pubescent or setose and often glandular. Style elongate, straight, sigmoid, or bent at the summit; stigma punctiform. Capsule 4- to 8-valved, enclosed by the persistent hypanthium. Seeds minute, cochleate, tuberculate. Herbs or shrubs, almost all pubescent or lepidote; leaves isomorphic; flowers medium-sized to large, sometimes enclosed by bracts, solitary or in terminal or axillary cymes; hairs of the upper leaf-surface adnate to the epidermis for a part of their length.

At least 250 species, most numerous in southern Brazil and in the Andes of Bolivia and Peru; about thirty species occur in other parts of Central America and Mexico and four in the West Indies.

- | | |
|--|------------------------------|
| a. Flowers 4-merous. | |
| b. Sepals triangular-lanceolate, 4.5–5 mm. long; connective of the episepalous stamens prolonged about 2 mm., much longer than that of the inner series..... | 1. <i>T. OERSTEDII</i> . |
| bb. Sepals triangular-ovate, 2–3 mm. long; connectives of both series of stamens about equal..... | 2. <i>T. NANA</i> . |
| aa. Flowers 5-merous. | |
| b. Stem and hypanthium lepidote; connective pilose..... | 3. <i>T. BIPENICILLATA</i> . |
| bb. Stem and hypanthium pubescent; connective glabrous..... | 4. <i>T. LONGIFOLIA</i> . |

1. TIBOUCHINA OERSTEDII (Triana) Cogn. in Mart. Fl. Bras. 14³:297. 1885.

Pterolepis oerstedii Triana, in Trans. Linn. Soc. 28:40. 1871.

Stems loosely spreading, freely branched, decumbent or prostrate, sharply 4-angled, thinly strigose; petioles 3–6 mm. long; leaf-blades ovate, 1.5–3 cm. long by half as wide, acute, entire, acute or broadly cuneate at base, 5- to 7-pleinerved, densely and softly pubescent above, more thinly so beneath; flowers usually few, on slender peduncles 2–3 cm. long; hypanthium narrowly campanulate-obconic, 4–4.5 mm. long, narrowly 4-winged, with 4 intermediate ribs, glabrous or setose on the sides, strigose on the wings, more or less setose at the summit; sepals triangular-lanceolate, 4.5–5 mm. long, spreading, acuminate, 1-nerved, densely ciliate, tipped with a stout seta 1–2 mm. long; petals narrowly obovate or almost spatulate, 11–

12 mm. long; filaments 5 or 4.3 mm. long; thecae linear-subulate, 5–5.5 or 3–3.5 mm. long; connective 2–2.5 or 0.7 mm. long, with two small, rounded, anterior lobes; ovary 4-celled, setose at the summit; style 8–10 mm. long.

Costa Rica, Panama, and northern Colombia.

CHIRIQUÍ: vicinity of Boquete, 1200–1500 m., *Woodson & Schery 769*. COCLÉ: vicinity of El Valle, *Allen 757*. PROVINCE UNKNOWN: *Pittier 5355*.

2. *TIBOUCHINA NANA* (Standley) Gl. in *Phytologia* 1:133. 1935.

Chaetolepis nana Standley, in *Field Mus. Publ. Bot.* 4:247. 1929.

Stems herbaceous, ascending, 2–3 dm. long, forming dense mats, the branches sparsely villous; petioles flattened, appressed-setose, 4–8 mm. long; leaf-blades thin, ovate to broadly elliptic, 10–25 mm. long, 6–15 mm. wide, acute, entire, broadly cuneate at base, 5- to 7-ply-nerved, above shortly soft-villous and sparsely setose, beneath subsericeous; flowers solitary, terminating the branchlets, on slender pedicels 5–8 mm. long; hypanthium obconic, 4–6 mm. long, obscurely 4-angled, sparsely pubescent; sepals ovate, 2–3 mm. long, ciliate; petals purple, 5–6 mm. long; stamens dimorphic; filaments 3.7 or 2.4 mm. long; thecae straight, 3.2 or 2.1 mm. long; connectives 0.6 or 0.3 mm. long, including the rounded basal appendages.

Costa Rica and Panama.

BOCAS DEL TORO: Almirante region, *Cooper 232, 233*.

3. *TIBOUCHINA BIPENICILLATA* (Naud.) Cogn. in *Mart. Fl. Bras.* 14⁸:385. 1885.

Lasiandra bipenicellata Naud. in *Ann. Sci. Nat. Bot.* III 13:156. 1849.

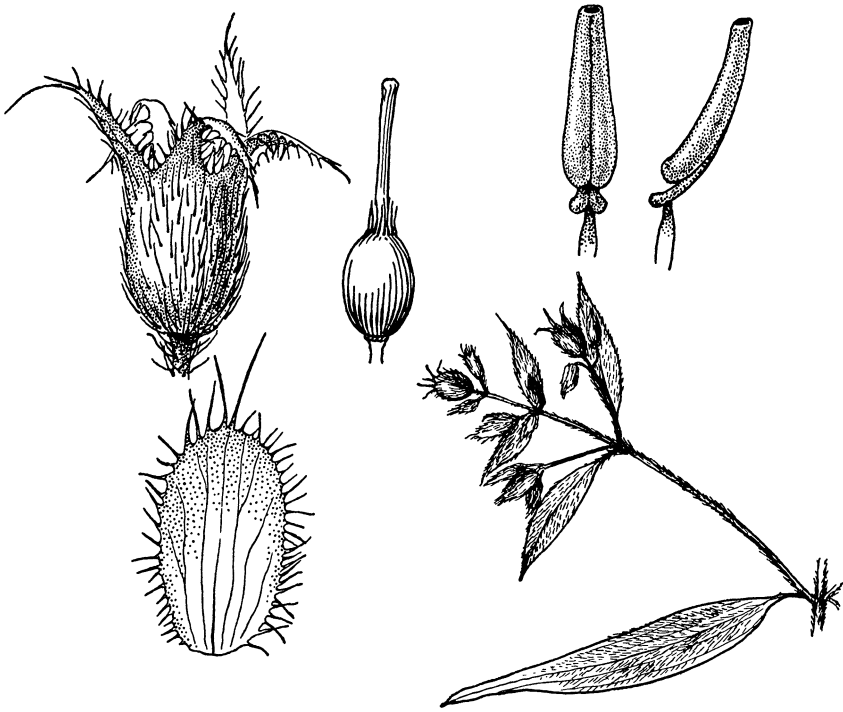
Stems erect, woody, sparsely branched, obscurely 4-angled, scabrous with brown, appressed, lanceolate scales; petioles 6–12 mm. long; leaf-blades subcoriaceous, oblong-lanceolate to ovate-oblong, 6–15 cm. long, 2–7 cm. wide, acute, rounded at base, 5-nerved, the lateral nerves separate, strigose above, beneath coarsely strigose on the nerves, softly pubescent on the surface; inflorescence many-flowered, 5–10 cm. long, becoming lepidote above; bracts broadly ovate, 1–3 mm. long; pedicels 1–3 mm. long; hypanthium narrowly campanulate, 8 mm. long, silvery or cinereous with appressed lanceolate scales; sepals erect or nearly so, triangular, about 3 mm. long, acute; petals triangular-obovate, purple, about 1 cm. long; stamens dimorphic; filaments about 1 cm. long, often pilose distally, thecae subulate, arcuate, 9–10 or 7 mm. long; connectives slender, prolonged 3.5 or 2 mm. to the filament, their appendages slender, 1–2 mm. long, densely long-pilose; style about 16 mm. long.

Costa Rica, Panama, Colombia, and Venezuela.

CHIRIQUÍ: Cerro Vaca, *Pittier 5304*. VERAGUAS: vicinity of Santiago, 50 m., *Allen 1013*.

4. *TIBOUCHINA LONGIFOLIA* (Vahl) Baill. in *Adansonia*. 12:74. 1877.

Rhexia longifolia Vahl *Eclog. Am.* 1:39. 1796.

Fig. 78. *Tibouchina longifolia*

Stems woody, erect, freely branched, densely pilose with stout, appressed, ascending, or spreading hairs mostly 1.5–3 mm. long; petioles slender, 5–20 mm. long; leaf-blades thin to firm, ovate-oblong to narrowly lanceolate, 3–10 cm. long, 1–3 cm. wide, acute or acuminate, essentially entire, at base narrowly to broadly cuneate or rarely obtuse, 5-nerved, the lateral nerves confluent toward the base, densely or sparsely, usually stiffly, pilose above, beneath softly villous on the surface, more or less strigose on the veins; flowers in small cymes terminating the stem and branches, often very numerous, forming large panicles; hypanthium broadly campanulate, 3–3.5 mm. long, 10-ribbed, densely setose, the hairs mostly ascending; sepals triangular-subulate to linear, setose and ciliate, shorter than, equaling, or slightly exceeding the hypanthium, usually recurved; petals white or purplish, 5–7 mm. long; stamens nearly isomorphic; thecae straight, 2–3 or 1.5 to 2.5 mm. long; connectives straight or curved, 0.3–0.7 mm. long, including the small or minute basal lobes; fruiting hypanthia nodding.

Southern Mexico to Panama and southward to Brazil and Bolivia; Cuba, Hispaniola, and occasional, possibly introduced in other parts of the West Indies; the most abundant and most widely distributed species of the genus.

BOCAS DEL TORO: *Carleton 127*; Changuinola Valley, Potrero Island, *Dunlap 73*. CANAL ZONE: Barro Colorado Island, *Aviles 105*, *Woodworth & Vestal 672*; Gatún, *Hayes 3*; Chagres, *Fendler 129*. CHIRIQUÍ: Boquete, *Davidson 626*, *Terry & Terry 1650*. COCLÉ: Valle de Antón, 600–800 m., *Allen 2855*. DARIÉN: Chepigana district, *Terry & Terry 1392*; Cana and vicinity, *Williams 733*. PANAMÁ: vicinity of San Carlos, 0–10 m., *Allen 1147*.

17. MONOLENA Triana

MONOLENA Triana, in Benth. & Hook. Gen. Pl. 1:756. 1867.

Flowers 5-merous. Hypanthium obconic, glabrous, 3-angled. Calyx-lobes short, obtuse. Petals obovate, ephemeral. Stamens nearly isomorphic, somewhat unequal in size; anthers linear or narrowly oblong, obtuse; connective prolonged below the thecae, minutely tuberculate dorsally at base, extended below the summit of the filament into a single ventral spur. Capsule trigonous, expanded laterally into a triangular summit depressed at the center; seeds obpyramidal. Rhizomatous herbs, often epiphytic, the leaves apparently all basal, one member of each pair minute and rarely persistent at anthesis; flowers few, pink or white, sessile in a second spike on an elongate scape.

Possibly 6 or 8 species, all poorly known and inadequately represented in herbaria, ranging from Guatemala to Peru.

1. MONOLENA OVATA Cogn. in Bull. Acad. Belg. III. 14:945. 1887.

Plant glabrous; petioles 1–1.5 dm. long; leaf-blades ovate, 1.5–2.5 dm. long, about three-fifths as wide, abruptly short-acuminate, broadly rounded at the base, 7-plei-nerved; scapes 2–4 dm. tall; spikes 4–6 cm. long, 3- to 5-flowered; petals white, bordered with pink, about 2.5 cm. long; capsule about 1 cm. wide.

Panama and Colombia.

DARIÉN: crest of the Cana–Cuasi trail, 1650 m., *Terry & Terry 1543*.

18. DIOLENA Naud.

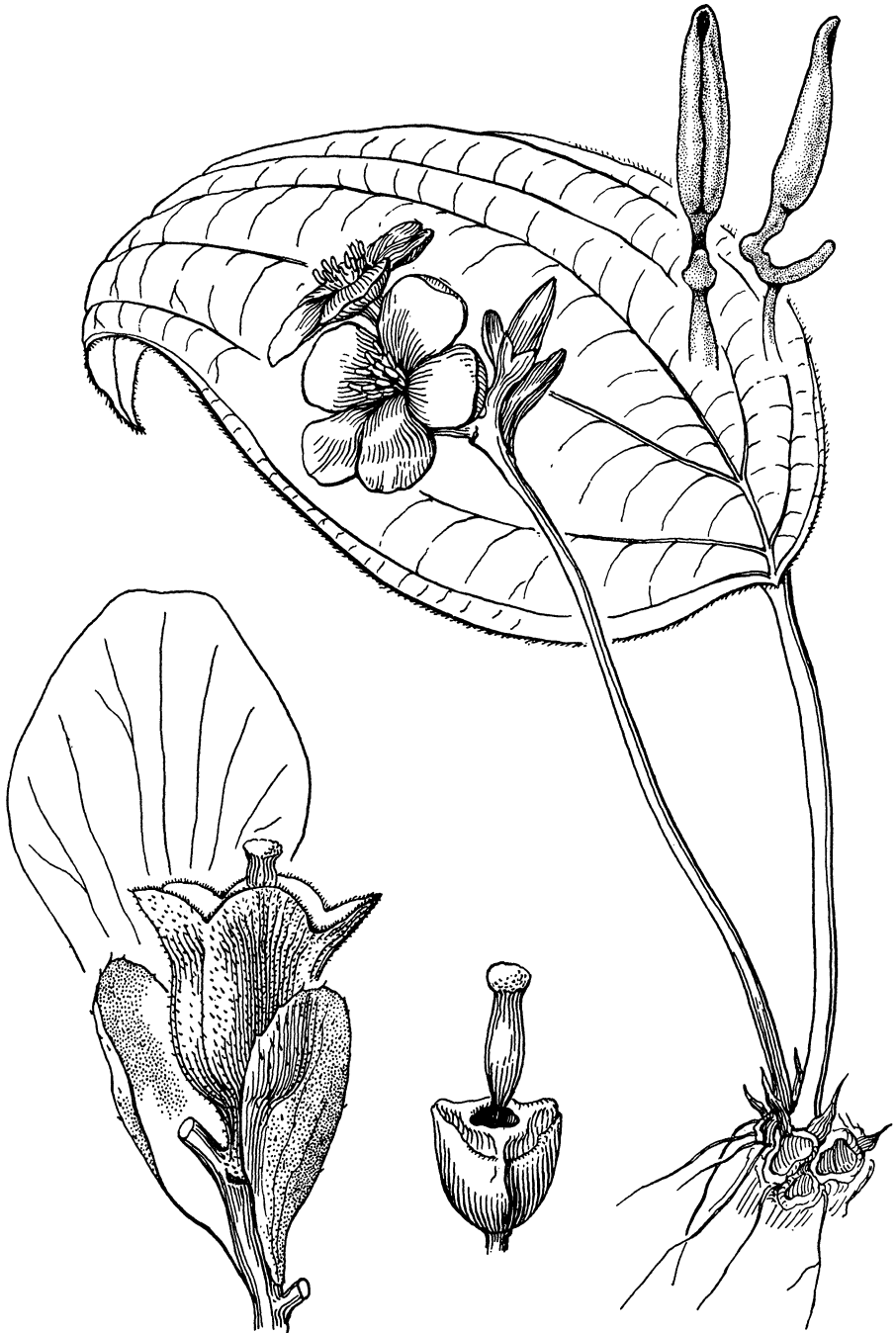
DIOLENA Naud. in Ann. Sci. Nat. Bot. III. 15:329. 1851.

Closely resembling *Triolena* in the structure of the inflorescence, fruit, and flowers, differing in the anthers which bear only two ventral spurs. Shrubs or herbs, often of considerable size, in most species with strongly dimorphic leaves.

About 10 species of Andean South America and Amazonia, extending north in Central America as far as Guatemala.

1. DIOLENA SPICATA Triana, in Trans. Linn. Soc. 28:81. 1871.

Shrub to 2.5 m. tall with densely strigose stems; larger leaves oblanceolate, acuminate, ciliate, denticulate above the middle, at base oblique and cordulate, tending to be convex on one margin toward the base and concave on the other, sparsely setose on both sides, 5-plei-nerved, the inner pair of nerves alternate; petiole 2–4 mm. long; smaller leaves deflexed, reniform, 4–8 mm. wide; spikes up to 10 cm. long.

Fig. 79. *Monolena ovata*

(237)

Western Colombia and Panama.

BOCAS DEL TORO: Water Valley, von Wedel 1510.

19. *TRIOLENA* Naud.

TRIOLENA Naud. in Ann. Sci. Nat. Bot. III. 15:328. 1851.

Flowers 5-merous. Hypanthium thin-walled, cup-shaped, usually strigose. Sepals small; exterior teeth present and projecting. Petals small, ephemeral. Stamens isomorphic, but some frequently partly abortive; anthers linear; connective prolonged briefly at base and bearing three filiform or clavellate, ventral spurs, each of them about as long as the anther and two of them usually curved-ascending past the anther. Ovary 3-celled, superior. Fruit a 3-celled capsule of peculiar structure; outer walls of the ovary growing laterally into three prominent longitudinal wings and distally much beyond the actual summit of the ovary; upper part of the ovary expanding into three slender lobes extending into the wings; dehiscence apparently circumscissile between the summit of the ovary and the lateral walls; capsule invested to its margin by the accrescent calyx. Seeds minute, pyramidal, not cochleate. Caulescent shrubs with small flowers in dense second

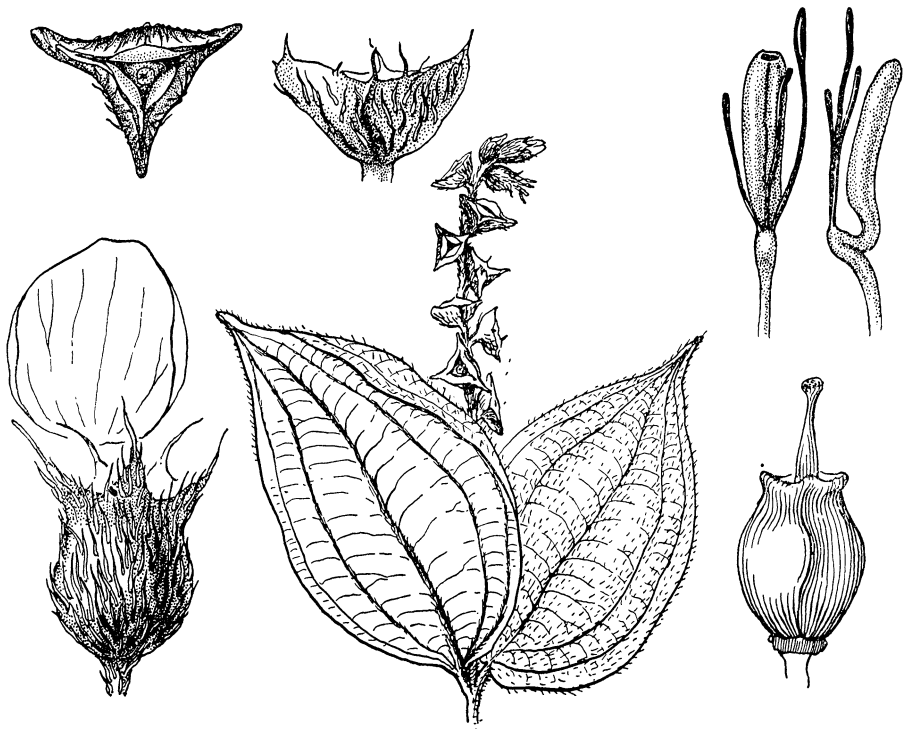


Fig. 80. *Triolena hirsuta*

spikes or spike-like racemes; leaves isomorphic but often unequal, the smaller one of each pair often deciduous.

About 8 species, chiefly in the mountains from southern Mexico to Peru. Flowers are rarely collected and the species are not well understood.

1. *TRIOLENA HIRSUTA* (Benth.) Triana, in Trans. Linn. Soc. 28:81. 1871.

Bertolonia hirsuta Benth. Bot. Voy. Sulphur 94. 1844.

Shrub up to 5 dm. tall; leaves essentially isomorphic; petioles strigose, 1–2 cm. long; leaf-blades elliptic or oblong, 5–15 cm. long, half to two-thirds as wide, abruptly acuminate, entire, rounded or broadly obtuse at base, 5- to 7-nerved, hirsutulous above, beneath strigose on the principal veins, sparsely pilose on the veinlets, glabrous on the surface; spike terminal, short-peduncled, 3–6 cm. long, densely flowered, secund; hypanthium strigose, about 2.5 mm. long; petals white, about 3 mm. long; capsule about 7 mm. wide.

Guatemala to Panama.

BOCAS DEL TORO: Water Valley, *von Wedel 702, 922*; Pumpkin River, *von Wedel 2568*; vicinity of Chiriquí Lagoon, *von Wedel 1020, 2613*; vicinity of Nievécita, 0–50 m., *Woodson, Allen & Seibert 1825*; without locality, *von Wedel 146, 291*; Changuinola Valley, *Dunlap 279, 558*. COCLÉ: vicinity of El Valle de Antón, 500–1000 m., *Allen 1204, Seibert 461*. DARIÉN: Chepigana district, 600 m., *Terry & Terry 1415, 1633*; Cana and vicinity, *Williams 757*. PROVINCE UNKNOWN: *Roulee & Stork 1022*.

20. BLAKEA P. Br.

BLAKEA P. Br. Hist. Jamaic. 323. 1756.

Flowers usually 6-merous, each closely subtended by two pairs of bracts. Hypanthium campanulate or cup-shaped, usually thick-walled. Calyx truncate to deeply lobed. Petals usually large, commonly unsymmetrical. Stamens isomorphic; filaments short; anthers coherent in a ring, short, oval or oblong, obtuse or rounded at the summit, laterally flattened, opening by two minute pores; connective usually slightly prolonged or dilated at base into a dorsal spur. Ovary wholly inferior, usually 6-celled; stigma punctiform or capitate. Woody plants, often epiphytic or climbing by adventitious roots when young, sometimes reaching a large size, with conspicuous flowers solitary or fascicled in the axils of the leaves; leaves with the secondary veins usually close together, straight, and parallel.

At least 50 species, most numerous in the northern Andes; several others occur in other parts of Central America.

- a. Bracts, both outer and inner pairs, connate almost to the summit.
- b. Bracts glabrous externally or essentially so..... 1. *B. WOODSONII*.
- bb. Bracts densely pubescent to hirsute externally.
- c. Petals coarsely tuberculate; sepals tipped with a reflexed foliaceous appendage; younger stems glabrous or merely furfuraceous..... 2. *B. CALYCOSA*.
- cc. Petals not tuberculate; sepals unappendaged; younger stems pubescent to hirsute.
- d. Flowers sessile; leaf-veins beneath coarsely hirsute..... 3. *B. CRINITA*.
- dd. Flowers on pedicel 5–20 mm. long; leaf-veins merely pubescent beneath..... 4. *B. BRUNNEA*.

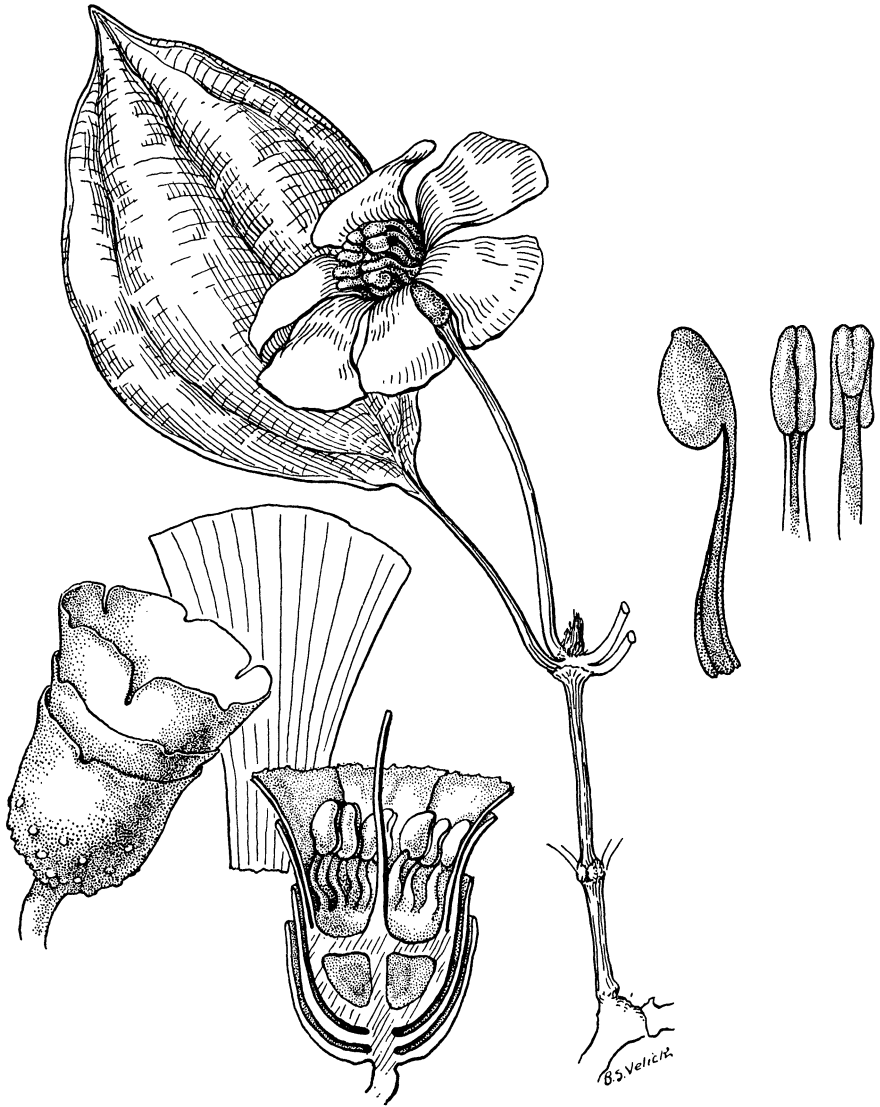


Fig. 81. *Blakea woodsonii*

- aa. Outer bracts, and usually also the inner, separate to the base. (Since the pedicel passes imperceptibly into the hypanthium, they may appear to be connate for a small part of their length.)
- b. Outer bracts conspicuously longer than the hypanthium and calyx combined.
- c. Calyx truncate, the lobes represented by 6 minute tubercles; pedicels glabrous; secondary veins about 0.5 mm. apart..... 5. *B. GRACILIS*.
- cc. Calyx-lobes manifest, triangular with concave sides, about 1.5 mm. long; pedicels stout, pubescent; secondary veins 1-1.5 mm. apart..... 6. *B. FOLIACEA*.
- bb. Outer bracts distinctly shorter than the hypanthium.
- c. Calyx truncate, the lobes represented by minute tubercles..... 7. *B. PAUCIFLORA*.
- cc. Calyx-lobes triangular, acute..... 8. *B. PARVIFOLIA*.
1. *BLAKEA WOODSONII* Gl. ex Woods. & Seib. in Ann. Mo. Bot. Gard. 26:296. 1939.

Shrub or small tree to 9 m. tall, the younger branches and petioles smooth to sparsely furfuraceous-hispid; petioles 1-3 cm. long; leaf-blades oblong-obovate to obovate, 7-12 cm. long, half to two-thirds as wide, rounded to a small triangular apex, entire, broadly cuneate to obtuse at base, glabrous above, essentially glabrous beneath, 3-nerved or barely 3-ple-nerved; pedicels solitary or rarely paired, stout, 1-5 cm. long; bracts connate nearly to the summit, the outer 12 mm. long, the inner about 15 mm., glabrous or nearly so at anthesis; petals white, 2.5-4 cm. long; anthers flattened, rounded, 5-7 mm. long.

Endemic to Panama.

CHIRIQUÍ: cloud forest on Cerro Horqueta, 1950 m., *von Hagen & von Hagen 2045, 2028, 2071*; vicinity of Casita Alta, Volcán de Chiriquí, 1500-2000 m., *Woodson, Allen & Seibert 951*; Casita Alta to Cerro Copete, 2300-3300 m., *Woodson & Schery 370*; vicinity of Bajo Mona and Quebrada Chiquero, 1500 m., *Woodson & Schery 573*; vicinity of Cerro Punta, 2000 m., *Allen 3483*; summit and southwest face of Cerro Copete, 2700 m., *Allen 4907*; Cerro Punta to headwaters of Río Caldera, 2250-2500 m., *Allen 1454*; Bajo Chorro, 2100 m., *Davidson 401, 401A, 401B*; Bajo Chorro, 1800 m., *Davidson 175*.

2. *BLAKEA CALYCOSA* Gl. in Phytologia 1:342. 1939.

Epiphytic shrub, the younger stems, petioles and leaf-blades glabrous or thinly furfuraceous; petioles rather slender, 2-4 cm. long; leaf-blades thin, elliptic, up to 25 cm. long, about a third as wide, abruptly and shortly caudate, acuminate, rounded at base, 3-nerved with an additional pair of marginal nerves; flowers few in the axils, on pedicels about 5 mm. long; bracts connate to the middle, pubescent on the outside and distally on the inside; calyx-tube widely spreading; sepals terminated by a foliaceous, reflexed, folded, broadly ovate, pubescent appendage; petals rose-red, 2-2.5 cm. long, tuberculate on both sides; anthers broadly elliptic, about 5 mm. long, the connective bearing a short, obtuse, basal spur.

Known only from the type specimen.

COCLÉ: north rim of El Valle de Antón, 600-1000 m., *Allen 1788*.

3. *BLAKEA CRINITA* Gl. in Phytologia 3:356. 1950.

Shrubs 3-6 m. tall, the younger stems and petioles densely long-hirsute; petioles very stout, 1-3 cm. long; leaf-blades coriaceous, broadly elliptic, up to 14 cm. long and 11 cm. wide, rounded at both ends, 5-nerved with an additional pair of

marginal veins, glabrous above, beneath densely long-hirsute on the principal veins, less so on the veinlets, and sparsely pilose on the surface; flowers solitary or paired, sessile or subsessile; bracts connate, densely hirsute with hairs about 4 mm. long; petals pink, about 2 cm. long; anthers broadly elliptic, about 6 mm. long, the connective bearing a very minute dorsal spur.

Known only from the type specimen.

COCLÉ: crest of Cerro Pajita, north of El Valle, 1200 m., *Allen 3956*.

4. *BLAKEA BRUNNEA* Gl. ex Woods. & Schery, in *Ann. Mo. Bot. Gard.* 28:435. 1941.

Tree to 12 m. tall or perhaps taller, also reported as an epiphyte, the younger stems, petioles, pedicels, and sepals coarsely pubescent; petioles stout, 3–6 cm. long; leaf-blades subcoriaceous, elliptic or elliptic-ovate, up to 25 cm. long and 15 cm. wide, acute or apiculate, broadly rounded at base, glabrous above, brown and glabrous on the surface beneath at maturity, permanently pubescent on the veins, 5-nerved, the outer pair diverging at right angles from the midvein and together forming the arc of a circle; pedicels solitary or rarely paired, stout, 1–2 cm. long; bracts connate, about 25 mm. long; petals large, white; anthers broadly rounded, about 7 mm. long.

Endemic to Panama.

CHIRIQUÍ: Bajo Chorro, Boquete District, 2100 m., *Davidson 332*; cloud forest on Cerro Horqueta, 1950 m., *von Hagen & von Hagen 2131*; Robalo Trail, northern slopes of Cerro Horqueta, 1800–2100 m., *Allen 4988*; vicinity of Bajo Chorro, 1900 m., *Woodson & Schery 618*.

5. *BLAKEA GRACILIS* Hemsl. *Diagn. Plant. Nov.* 13. 1878.

Epiphytic shrub or vine, also becoming an independent tree and reported 12 m. tall, glabrous or nearly so; petioles 5–12 mm. long; leaf-blades commonly obovate-oblong, 5–10 cm. long, two-fifths to three-fifths as wide, rather gradually acuminate to a slender tip, cuneate to the base, apparently 3-ply-nerved but with another pair of submarginal veins; secondary veins about 0.5 mm. apart; pedicels solitary, slender, glabrous, 3–6 cm. long; outer bracts ovate, foliaceous, 2–3 cm. long, many-nerved, much exceeding the inner ones and the calyx; calyx truncate, the lobes represented by minute tubercles only; petals pink, broadly and obliquely obovate, 1.5–2 cm. long.

Costa Rica and Panama.

BOCAS DEL TORO: Robalo trail, northern slopes of Cerro Horqueta, 1800–2100 m., *Allen 4990*. CHIRIQUÍ: Valley of the upper Río Chiriquí Viejo, vicinity of Cerro Punta, *White 37, 154, 336, White & White 84*; trail from Bambito to Cerro Punta, 1400–2300 m., *Allen 315*; vicinity of New Switzerland, central valley of Río Chiriquí Viejo, 1800–2000 m., *Allen 1354*.

6. *BLAKEA FOLIACEA* Gl. in *Phytologia* 3:355. 1950.

Tree up to 18 m. tall, the younger stems, petioles, and pedicels closely red-brown-pubescent; petioles slender, 1–2 cm. long; leaf-blades oblong or oblong-

elliptic, 8–14 cm. long, about half as wide, abruptly acuminate to a slender tip, obtuse to rounded at base, glabrous, 5-ply-nerved, the secondary veins 1–1.5 mm. apart; peduncles stout, solitary, 3–6 cm. long; bracts foliaceous, spreading, separate to the base, the outer about 3 cm. long, 2 cm. wide, the inner somewhat smaller; calyx-lobes manifest, depressed-triangular; petals very obliquely cuneate-obovate, white, about 3 cm. long.

Endemic.

BOCAS DEL TORO: Fish Creek, vicinity of Chiriquí Lagoon, *von Wedel 2219*; Fish Creek Mountains, *von Wedel 2277*. COCLÉ: vicinity of La Mesa, altitude 1000 m., *Allen 2312*.

7. *BLAKEA PAUCIFLORA* Gl. in *Phytologia* 3:357. 1950.

Small tree 6–7 m. tall, glabrous throughout. Petioles 8–10 mm. long. Leaf-blades broadly elliptic-obovate, up to 5 cm. long and 3 cm. wide, rounded above to an apiculum 6–10 mm. long, broadly cuneate at base, 5-nerved. Flowers solitary in the axils on pedicels about 2 cm. long. Bracts separate to the base, broadly triangular, the outer 2.5 mm. long, the inner a little longer. Hypanthium 3 mm. long. Calyx widely flaring, almost truncate, its lobes reduced to minute tubercles. Petals white, semi-obovate, 9 mm. long. Anthers broadly oval, 2.5–3 mm. long, the connective neither elevated nor spurred.

Known only from the type specimen.

CHIRIQUÍ: foot of Sierra del Boquete, *Maurice 744*.

8. *BLAKEA PARVIFOLIA* Gl. in *Phytologia* 3:357. 1950.

Small tree, up to 10 m. tall, glabrous throughout. Petioles 5–8 mm. long. Leaf-blades cuneate-obovate, 2.5–4 cm. long, about half as wide, rounded above to a short apiculum, long-cuneate at base, 3-nerved. Flowers solitary in the axils on pedicels about 1 cm. long. Bracts separate to the base, oblong-ovate, very blunt, much shorter than the hypanthium. Hypanthium almost spherical, 3 mm. long. Calyx-lobes depressed triangular, about 1 mm. long, acute. Petals pink, oblong-obovate, 8–9 mm. long. Anthers semi-ovate, about 3 mm. long, the connective neither elevated nor spurred.

Known only from the type specimen.

COCLÉ: crest of Cerro Pajita, El Valle de Antón, 1100 m., *Allen 3761*.

21. *TOPOBEA* Aubl.

TOPOBEA Aubl. *Pl. Guian.* 1:476. *t. 189*. 1775.

Stamens isomorphic; filaments relatively short; anthers coherent in a ring, often laterally flattened, subulate or lanceolate, often somewhat cleft at the summit, opening by two minute pores; connective in most species prolonged straight back into a short, slender, dorsal spur. Otherwise precisely as in *Blakea*.

Probably 50 species of northern South America and Central America, especially

in regions of high rainfall. Every type of leaf, inflorescence, bract, and calyx known in the genus occurs also in *Blakea*, and the two genera can be accurately distinguished only by the anthers. Besides the species described below, *T. superba* Naud. was reported from Panama by Cogniaux. No specimen has been seen, during the preparation of this treatment, which can be referred to it.

- a. Leaves sessile or subsessile, rounded to cordate at base.
 - b. Blades oblong or oblong-obovate, obtuse, obscurely 3-nerved; younger parts pubescent; pedicels 2-4 cm. long..... 1. *T. ELLIPTICA*.
 - bb. Blades cordate-ovate, 5-nerved; plant glabrous; flowers sessile or subsessile..... 2. *T. CORDATA*.
- aa. Leaves distinctly petioled.
 - b. Outer bracts acute to acuminate, distinctly surpassing the inner ones.
 - c. Younger parts pubescent with barbellate hairs up to 1 mm. long; sepals 2-4 mm. long..... 3. *T. UROPHYLLA*.
 - cc. Younger parts barely furfuraceous.
 - d. Leaves thin and dull, pli-nerved; secondary veins about 1 mm. apart; calyx-lobes minute..... 4. *T. PLUVIALIS*.
 - dd. Leaves shining, 3-nerved, secondary veins 0.3-0.5 mm. apart; calyx at anthesis ruptured nearly to the torus..... 5. *T. COOPERI*.
 - bb. Outer bracts broadly rounded at the summit, equaling or shorter than the inner.
 - c. Leaves appearing when the leaves are lacking or at least not fully expanded; sepals triangular-ovate..... 6. *T. PRAECOX*.
 - cc. Flowers appearing while the leaves are fully expanded; sepals almost obsolete.
 - d. Leaves thinly coriaceous; flowers 1-2 per leaf axil on pedicels 3-6 mm. long..... 7. *T. REGELIANA*.
 - dd. Leaves membranaceous; flowers 4-6 per leaf axil on pedicels 10-15 mm. long..... 8. *T. MEMBRANACEA*.

1. *TOPOBEA ELLIPTICA* Gl. in *Phytologia* 3:353. 1950.

Epiphytic shrub about 2 m. tall, the younger parts sparsely pubescent with both simple and glandular hairs; leaves sessile, oblong or obovate-oblong, up to 7 cm. long and 4.5 cm. wide, rounded at the summit, subcordate and clasping at base, 3-nerved; pedicels solitary in the axils, up to 4 cm. long; flowers small; bracts foliaceous, separate to the base, broadly rounded, about equaling the hypanthium; sepals triangular, recurved after anthesis.

Endemic.

BOCAS DEL TORO: Robalo trail, northern slopes of Cerro Horqueta, 1800-2100 m., *Allen 5001*.

2. *TOPOBEA CORDATA* Gl. in *Phytologia* 3:354. 1950.

Small epiphytic shrub, glabrous throughout; leaves sessile, ovate, up to 8 cm. long, about two-thirds as wide, acute, broadly rounded to the subcordate base, 5-nerved with an additional pair of marginal veins; flowers solitary in the axils, on pedicels about 1 mm. long; bracts free to the base, broadly elliptic, rounded at both ends, the outer subcoriaceous, about 11 by 8 mm., the inner thinner, somewhat smaller; hypanthium nearly 4 mm. long; sepals broadly elliptic-ovate, somewhat imbricate at base, about 4 mm. long and 3 mm. wide.

Endemic.

COCLÉ: Cerro Pajita, hills north of El Valle de Antón, 1000–1200 m., *Allen & Allen 4178*.

3. *TOPOBEA UROPHYLLA* Standl. in *Field Mus. Pub. Bot.* 22:162. 1940.

Shrub to 3.5 m. tall, the younger parts, petioles, and peduncles pubescent with short, stout, rough hairs; petioles 1–2 cm. long; leaf-blades oblong or elliptic, up to 13 cm. long, about half as wide, abruptly acuminate to a slender tip, rounded to broadly obtuse at base, 5-ply-nerved, the outer pair of nerves submarginal, glabrous above, sparsely pubescent on the veins beneath; pedicels solitary or few in each axil, 4–8 mm. long; bracts separate to the base, thinly stellate-pubescent, the outer ovate, acuminate, about equaling the hypanthium, the inner slightly shorter; hypanthium stellate-pubescent; calyx-lobes triangular-ovate, 1.5–2.5 mm. long; Petals pale pink, about 1 cm. long, pubescent externally.

Nicaragua and Panama.

DARIÉN: Río Balsa, above Tucutí, 30 m., *Terry & Terry 1411*; Cana-Cuasi trail, Chepigana district, 1200 m., *Terry & Terry 1517*.

4. *TOPOBEA PLUVIALIS* Standl. in *Field Mus. Pub. Bot.* 22:162. 1940.

Shrub up to 3.5 m. tall, the younger parts minutely furfuraceous, otherwise glabrous throughout; internodes frequently clavate-thickened; petioles 1–2 cm. long; leaf-blades elliptic to broadly oblanceolate, up to 17 cm. long, about two-fifths as wide, acuminate to a slender tip, cuneate to the base, 5-ply-nerved, the outer pair submarginal; flowers solitary or few in the axils, on pedicels 1–1.5 cm. long; bracts free to the base, the outer acuminate, about equaling the hypanthium, the inner somewhat shorter; calyx nearly truncate at the summit, the lobes represented by six minute teeth; petals white, about 1 cm. long.

Endemic.

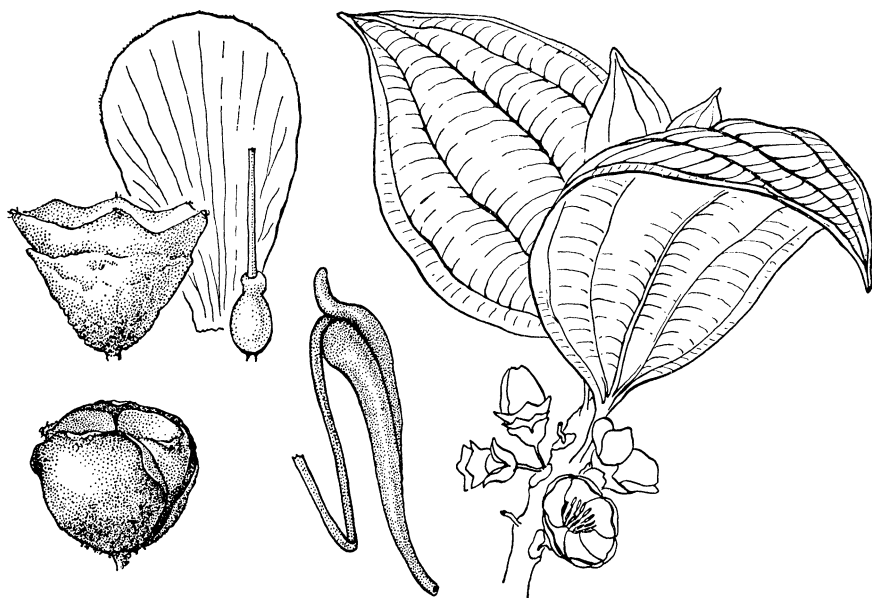
DARIÉN: Cana-Cuasi trail, Chepigana District, 1200–1650 m., *Terry & Terry 1557, 1560*.

5. *TOPOBEA COOPERI* Gl. in *Phytologia* 3:354. 1950.

Small epiphytic shrub, glabrous except on the youngest parts and the bracts; stems thickened at the nodes; petioles stout, 1–2 cm. long; leaf-blades elliptic to elliptic-obovate, up to 10 cm. long, half to two-thirds as wide, abruptly narrowed to a short slender tip, very broadly cuneate at base, 3- to 5-nerved or barely 3-ply-nerved, the secondary veins 0.6 mm. apart; pedicels fascicled in the axils, 2–11 mm. long; bracts distinct, thinly furfuraceous, the outer oblong-obovate, acute, 8 mm. long, the inner broadly rounded at the summit, about two-thirds as long; hypanthium glabrous, 6 mm. long; calyx nearly closed in bud, at anthesis irregularly ruptured; petals pink, about 12 mm. long, unsymmetrically oblanceolate.

Endemic.

BOCAS DEL TORO: Cricamola valley, region of Almirante, *Cooper 199*. COCLÉ: vicinity of La Mesa, north of El Valle de Antón, about 1000 m., *Allen 2837*.

Fig. 82. *Topobea praecox*6. *TOPOBEA PRAECOX* Gl. in *Phytologia* 3:355. 1950.

Shrub or tree 6–20 m. tall, with thick stems and on the flowering branches very short internodes; leaves lacking or very immature at anthesis; petioles 1–2 cm. long; leaf-blades elliptic, certainly up to 10 cm. long and about three-fifths as wide, abruptly acuminate, broadly cuneate to subrotund at base, 5-nerved, the secondary veins 1–2 mm. apart; flowers several in a fascicle, on slender pedicels up to 1 cm. long; bracts distinct to the base, nearly equal, rotund or even wider than long, 7–8 mm. long, glabrous or nearly so; hypanthium 4–5 mm. long; sepals depressed-ovate, rounded at the summit, 3–3.5 mm. long from the torus; petals rose-purple, narrowly and obliquely obovate, about 17 mm. long.

COCLÉ: vicinity of La Mesa, north of El Valle de Antón, 1000 m., *Allen 2788*; vicinity of El Valle de Antón, 600 m., *Allen 2067, 1742*. DARIÉN: trail between Pinogana and Yavisa, about 15 m., *Allen 294*.

7. *TOPOBEA REGELIANA* Cogn. in DC. *Monogr. Phan.* 7:1085. 1891.

Tree 10 m. tall, the youngest parts coarsely fuffuraceous, otherwise glabrous; petioles slender, 2–4 cm. long; leaf-blades broadly elliptic to obovate-rotund, up to 11 cm. long, half to three-fourths as wide, apiculate, obtuse to subrotund at base, 5-nerved, the outer pair submarginal, the secondary veins 2–3 mm. apart; flowers solitary or paired, on pedicels 3–6 mm. long; bracts distinct to the base, the outer obovate-oblong, obtuse, 4–6 mm. long, the inner much broader and

slightly longer; hypanthium about 7 mm. long; calyx nearly erect, about 2 mm. long, its lobes obscure or obsolete.

Panama and probably also Costa Rica.

CANAL ZONE: vicinity of Salamanca Hydrographic Station, Río Pequení, 80 m., *Woodson, Allen & Seibert 1589*; Chagres, *Fendler 295*.

8. *TOPOBEA MEMBRANACEA* Wurdack, in *Brittonia* 9:108. 1957.

Tree or large vine, the young parts puberulous, the leaves as in *T. regliana* but membranous rather than thin-coriaceous at anthesis; flowers 4–6 per upper leaf axil on slender pedicels about 1–1.5 cm. long, otherwise as in *T. regliana*.

Eastern Panama to northwestern Colombia.

DARIÉN: Ensenada Guayabo, *Stern & Chambers 175*.

22. *CLIDEMIA* D. Don

CLIDEMIA D. Don, in *Mem. Wern. Soc.* 4:306. 1823.

Flowers 4- to 7-merous. Hypanthium cup-shaped to tubular; sepals erect or spreading, of various shapes and sizes, in some species obsolete; exterior teeth present, in many species exceeding and more or less concealing the sepals; petals small, obtuse, mostly white; stamens isomorphic; anthers subulate, linear, semi-ovoid, or rarely obovoid; connective usually simple, or briefly prolonged below the thecae, or rarely prolonged into a short dorsal appendage; ovary partly or wholly inferior, its cells commonly isomerous with the petals; style slender; stigma capitate to punctiform; fruit a globose many-seeded berry. Herbs, shrubs, or rarely even trees, with axillary flowers or flower-clusters of various types.

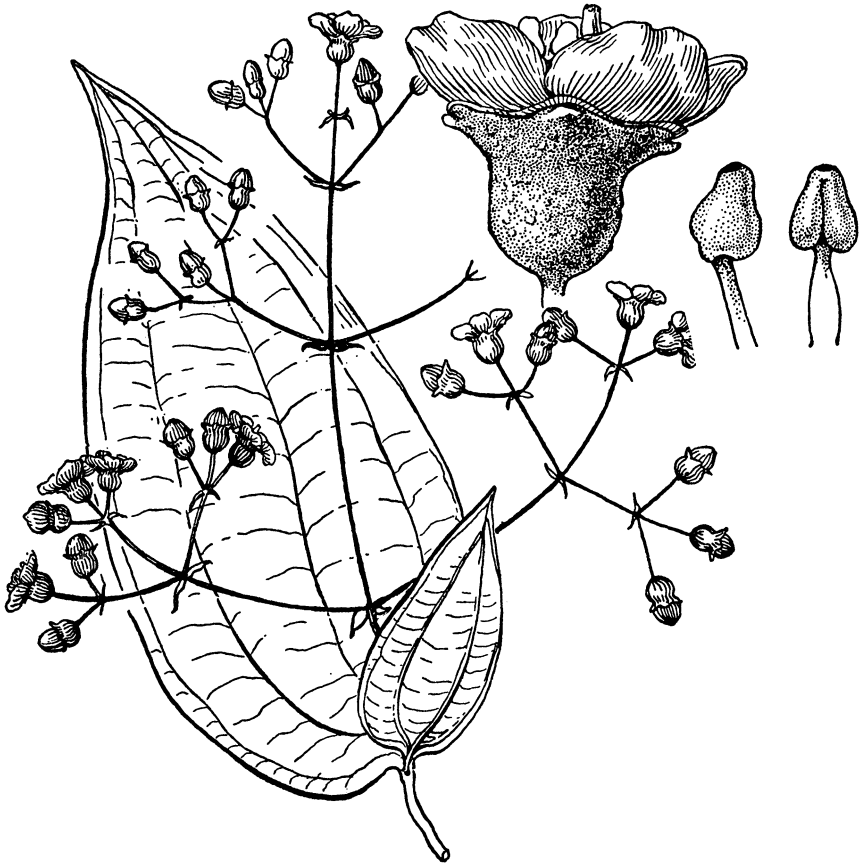
About 160 species, widely distributed throughout tropical America. Several other species are known from Costa Rica and some of them may be expected in Panama.

- a. Flowers 5- to 7-merous.
 - b. Leaves regularly dimorphic, one member of each pair always 2–12 times as long as the other.
 - c. Leaves sessile, glabrous on both sides.
 - d. Leaves obtuse or rounded at the base..... 1. *C. GRACILIS*.
 - dd. Leaves cordate and clasping at base..... 2. *C. PITTIERI*.
 - cc. Leaves short-petioled, more or less pubescent beneath..... 3. *C. OBLONGA*.
 - bb. Leaves isomorphic (in lateral branches the leaves of each alternate pair may be somewhat unequal in size.).
 - c. Torus bearing a ring of fimbriate or ciliate scales; hypanthium hirsute with simple hairs.
 - d. Leaves pli-nerved, the inner pair of lateral veins usually alternate; blades usually acute or obtuse at base, averaging nearly three times as long as wide; connective not prolonged below the summit of the filament..... 4. *C. DENTATA*.
 - dd. Leaves 5- to 9-nerved, usually rounded or subcordate at base, averaging less than twice as long as wide; connective minutely prolonged into a short dorsal spur..... 5. *C. HIRTA*.
 - cc. Toral scales none.
 - d. Inflorescence distinctly pedunculate, elongate, with a well defined central axis.

- e. Principal leaves 7- to 9-nerved, cordate or rounded at base; anthers slenderly subulate, not convolute; connective prolonged 0.3-1 mm. between the thecae and the filament.
- f. Exterior teeth conspicuously surpassing the sepals..... 6. *C. STRIGILLOSA*.
- ff. Exterior teeth equaling or barely surpassing the sepals..... 7. *C. NOVEMNERVIA*.
- ee. Principal leaves 5-nerved, obtuse or rounded at base; anthers stoutly subulate with convolute thecae; connective simple.
- f. Leaves stellate-tomentose on the actual surface beneath..... 8. *C. NEGLECTA*.
- ff. Leaves pubescent beneath with curled simple bristles which obscure or conceal the underlying stellate hairs.
- g. Inflorescence elongate, the flexuous internodes mostly 1-2 cm. long, sparsely hirsute with simple hairs 1-3 mm. long and conspicuously glandular; hairs of the hypanthium mostly 1-3 mm. long..... 9. *C. CAPITELLATA*.
- gg. Inflorescence short and compact, the internodes rarely as much as 1 cm. long, densely hirsute with simple hairs up to 6 mm. long and nearly or quite concealing the few glandular hairs; hairs of the hypanthium up to 6 mm. long..... 10. *C. DEPENDENS*.
- dd. Inflorescence not distinctly pedunculate or elongate, or rarely with a short peduncle, more or less trichotomous from the base, without a distinct central axis.
- e. Formicaria none; pubescence of the stem tomentose, hirsute, or substrigose.
- f. Exterior teeth equaling or shorter than the sepals; stem and hypanthium hirsute above a dense furfureaceous tomentum..... 11. *C. REITZIANA*.
- ff. Exterior teeth distinctly surpassing the sepals; young stems densely substrigose..... 12. *C. DEPPEANA*.
- ee. Formicaria present on the petioles; pubescence of the stem reflexed-setose.
- f. Lower leaf-surface glabrous, setose on the veins and veinlets; setae of the hypanthium 8-10 mm. long..... 13. *C. COLLINA*.
- ff. Lower leaf-surface hirsute throughout; setae of the hypanthium about 3 mm. long..... 14. *C. TAURINA*.
- aa. Flowers 4-merous.
- b. Leaves or petioles bearing formicaria.
- c. Formicaria pendent at the base of the petiole..... 15. *C. TOCOCOIDEA*.
- cc. Formicaria at the summit of the petiole..... 16. *C. SETOSA*.
- bb. Formicaria lacking.
- c. Exterior teeth foliaceous, hispid-ciliate, equaling or exceeding the hypanthium; leaves strongly dimorphic..... 17. *C. EPIPHYTICA*.
- cc. Exterior teeth conic to subulate, much shorter than the hypanthium.
- d. Flowers sessile or nearly so in dense axillary clusters.
- e. Leaves densely hirsute above, 5-plexi-nerved..... 18. *C. RUBRA*.
- ee. Leaves glabrous on the surface above, 3-nerved..... 19. *C. DENSIFLORA*.
- dd. Flowers in branched cymes.
- e. Leaves broadly ovate, acuminate..... 20. *C. PURPUREO-VIOLACEA*.
- ee. Leaves elliptic, abruptly contracted into a slender linear apiculum 2-3 cm. long..... 21. *C. OMBROPHILA*.

1. *CLIDEMIA GRACILIS* Pittier, in Journ. Wash. Acad. Sci. 13:390. 1923.

Shrub, up to 1.5 m. tall, the younger stems flattened and two-edged, furfureaceous when young, later glabrous; leaves dimorphic, the larger sessile, ovate-lanceolate, 1-2 dm. long, 3-7 cm. wide, acuminate, entire, obtuse or rounded at base, 3-nerved, glabrous and shining above, puberulent on the veins beneath, the smaller leaves lanceolate, 1-3 cm. long, soon deciduous; inflorescences long-peduncled, much-branched, many-flowered, up to 18 cm. long; hypanthium campanulate, 3 mm. long; sepals scarcely differentiated, the exterior teeth stoutly subulate, scarcely surpassing the sepals; anthers linear, the connective

Fig. 83. *Clidemia pittieri*

prolonged briefly below the filament into a minute subrotund dorsal appendage.

Panama and Colombia.

BOCAS DEL TORO: Water Valley, *von Wedel* 715, 962; Fish Creek Mountains, *von Wedel* 2339. CANAL ZONE: lake shore along Gatún River valley, *Pittier* 6748. COCLÉ: El Valle, 500–700 m., *Seibert* 467; western slope and summit of Cerro Valle Chiquito, 700–800 m., *Seibert* 498. DARIÉN: Chepigana district, 600 m., *Terry & Terry* 1439.

2. *CLIDEMIA PITTIERI* Gl. in Bull. Torr. Bot. Club 68:252. 1941.

Shrub to 8 m. tall, glabrous throughout, the young stems terete; leaves sessile, cordate-clasping, abruptly acuminate, entire, strongly dimorphic, the larger ovate-lanceolate, 8–15 cm. long, 3–7 cm. wide, 5-nerved, the smaller broadly ovate to rotund, 2–3 cm. long, nearly or quite as wide; cymes pedunculate, trichotomous, 3–6 cm. long, few-flowered; flowers 5-merous; hypanthium subglobose, 3.3 mm. long; sepals about 0.6 mm. long, depressed-triangular; exterior teeth resembling the sepals but slightly smaller; petals red, subrotund, 4 mm. long; anthers thickly ovoid, the connective elevated into a prominent dorsal ridge.

Endemic to Panama, so far as known.

CHIRIQUÍ: southern slope of Cerro de la Horqueta, 1700 m., *Pittier* 3177; cloud forest, Cerro Horqueta, 1950 m., *von Hagen & von Hagen* 2039; Finca Lérída to Peña Blanca, 1750–2000 m., *Woodson & Schery* 289; vicinity of Bajo Mona and Quebrada Chiquero, 1500 m., *Woodson & Schery* 562; Bajo Chorro, Boquete district, 1800 m., *Davidson* 397.

3. *CLIDEMIA OBLONGA* Gl. in Brittonia 3:106. 1939.

Shrub climbing by roots; stems at first paleaceous, soon becoming glabrous; petioles paleaceous, about 4 mm. long; leaf-blades narrowly obovate-oblong, up to 18 cm. long and 7.5 cm. wide, one member of each pair about half as long as the other, short-acuminate, entire, narrowed to a rounded base, 3-nerved, glabrous above, glabrous beneath on the surface, paleaceous on the nerves; flowers in clusters 1–3 cm. long; hypanthium tubular, about 2.5 mm. long, very minutely puberulent; sepals very short, depressed semi-circular; anthers stoutly subulate, 2 mm. long, the connective prolonged below the filament into an ovate dorsal lobe 0.4 mm. long; ovary wholly inferior.

Known only from the type collection.

SAN BLAS: forests around Puerto Obaldía, San Blas coast, *Pittier* 4304.

4. *CLIDEMIA DENTATA* D. Don, in Mem. Wern. Soc. 4:308. 1823.

Shrub 1–4 m. tall, densely hirsute throughout with simple hairs; petioles stout, 1–1.5 cm. long; leaf-blades thin, oblong-ovate to ovate-lanceolate, often unequal in each pair, commonly 8–20 cm. long, 3–8 cm. wide, acuminate, entire or minutely serrulate, acute to rounded and usually oblique at base, sparsely pilose on both sides, 5-ply-nerved, the inner pair usually alternate; inflorescence 1–3 cm. long, few-flowered, short-stalked; hypanthium campanulate, about 3 mm. long; calyx truncate; exterior teeth subulate, erect, 2–5 mm. long, hirsute; petals white, obovate, 6–7 mm. long; filaments arcuate near the summit; anthers subulate, the connective not prolonged.

Southern Mexico to Panama, Bolivia, and southern Brazil.

BOCAS DEL TORO: Water Valley, *von Wedel 953*; Nances Cay, *von Wedel 582A*; Old Bank Island, *von Wedel 1915*; Sansan Swamp, Almirante region, *Cooper 192*; Changuinola Valley, *Dunlap 102a, 378*. CANAL ZONE: Chagres, *Fendler 37*; old Fort Lorenzo, mouth of Río Chagres, *Piper 5956*; Barro Colorado Island, *Woodworth & Vestal 607, Wilson 59, Aviles 912*; Cerro Ancón, *Heriberto 134*; between Mt. Hope and Santa Rita trail, *Cowell 75*. COCLÉ: Bismarck, *Williams 287*.

5. *CLIDEMIA HIRTA* (L.) D. Don, in Mem. Wern. Soc. 4:309. 1823.

Melastoma hirtum Linn. Sp. Pl. 390. (*Partim*). 1753.

Shrub 1–3 m. tall, hirsute throughout with simple hairs; petioles 0.5–3 cm. long; leaf-blades ovate, 5–15 cm. long, often unequal in each pair, short-acuminate, serrulate or entire, rounded to subcordate at base, 5- to 7-nerved; flowers numerous in loosely branched cymes 3–5 cm. long, 5-merous or more commonly 6-merous; hypanthium campanulate, about 5 mm. long; calyx about 1 mm. long, truncate or obscurely lobed, the exterior teeth slender, projecting about 3 mm.; petals white, oblong-obovate, 8–11 mm. long; anthers about 5 mm. long, the connective minutely prolonged below the filament into a dorsal spur; ovary glabrous.

Southern Mexico, throughout the West Indies and Central America, southward in South America to Bolivia and southern Brazil; introduced as a weed in the Old World tropics.

BOCAS DEL TORO: vicinity of Chiriquí Lagoon, *von Wedel 118*. CANAL ZONE: Ancón Hill, *Woodson, Allen, & Seibert 1334, Seibert 401*. PANAMÁ: near Arraiján, *Woodson, Allen & Seibert 1336*; Isla Taboga, *Woodson, Allen & Seibert 1546*.

6. *CLIDEMIA STRIGILLOSA* (Sw.) DC. Prodr. 3:159. 1828.

Melastoma strigilloso Sw. Prodr. Veg. Ind. Occ. 71. 1788.

Shrub 1–2 m. tall; stems densely stellate-tomentose and sparsely glandular. Petioles pubescent like the stem, about 1 cm. long. Leaf-blades firm, ovate-lanceolate, 8–14 cm. long, 3–6 cm. wide, acuminate, minutely serrulate, cordate or subcordate at base, 7-nerved, densely setose above, the hairs rising from conic bases, beneath reticulate-veined, densely stellate-tomentose, and more or less setose on the nerves; inflorescence with a distinct central axis 3–5 cm. long; flowers 5-merous; hypanthium hemispheric, 3 mm. long, glandular-hirsute and densely stellate-tomentose; sepals oblong, about 2 mm. long, surpassed by the subulate exterior teeth; petals white, 4–5 mm. long; ovary glandular-setose at the summit.

Guatemala, British Honduras, West Indies, and northern South America; reported from Panama.

7. *CLIDEMIA NOVENNERVIA* (DC.) Triana, in Trans. Linn. Soc. 28:136. 1871.

Heterotrichum novemnervium DC. Prodr. 3:173. 1828.

Shrub, the stems and petioles densely stipitate-stellate-tomentose, also with spreading glandular hairs; petioles 1.5–4 cm. long; leaf-blades ovate to ovate-oblong, 10–15 cm. long, about half as wide, falcately acuminate, bullate-hirsute and sparsely stellate-pubescent above, beneath foveolate, densely stellate-tomentose;

inflorescence racemose, up to 10 cm. long, with a well developed central axis and stalked lateral branches; flowers sessile; hypanthium 4–4.5 mm. long, densely stellate-tomentose and glandular-hirsute; sepals round-ovate, 1–1.5 mm. long and about as wide; exterior teeth triangular, stellate on the back, barely surpassing the sepals; petals oblong-obovate, 4.5–5 mm. long; anthers subulate, 2.5–3 mm. long; connective very briefly prolonged below the thecae; ovary villous and glandular at the summit.

Costa Rica and Panama.

PANAMÁ: exact locality lacking, *Piper* 5568.

8. *CLIDEMIA NEGLECTA* D. Don, in Mem. Wern. Soc. 4:307. 1823.

Shrub 1–2 m. tall, densely glandular pubescent, stellate-tomentose, and also setose on the stems, petioles, inflorescence, and hypanthia; petioles 5–15 mm. long; leaf-blades oblong-ovate, rather thick, 7–15 cm. long, about half as wide, acuminate, serrulate, broadly rounded at base, 5-nerved, more or less rugose or bullate above, densely pubescent on both sides, more or less stellate beneath; hypanthium broadly tubular, densely stellate beneath the longer simple hairs; sepals oblong-ovate, 2.5–3 mm. long, slightly exceeded by the subulate exterior teeth; petals white or greenish, oblong-obovate, 6–7 mm. long; anthers stoutly subulate, 3.5–4 mm. long; ovary glandular-pilose at the summit.

British Honduras to Panama; Cuba; northern South America to Brazil.

BOCAS DEL TORO: Big Bight, *von Wedel* 2885. CANAL ZONE: Old Fort Lorenzo, mouth of Río Chagres, *Piper* 5068. COCLÉ: hills south of El Valle de Antón, *Allen* 2509. PANAMÁ: Cerro Campana, 800 m., *Allen* 3988; San José Island, *Andersson s. n.* PROVINCE UNKNOWN: *Fendler* 34.

9. *CLIDEMIA CAPITELLATA* (Bonpl.) D. Don, in Mem. Wern. Soc. 4:310. 1823.

Melastoma capitellata Humb. & Bonpl. *Melast. t.* 3. 1816.

Shrub 1–3 m. tall; stems thinly stellate-tomentose and pilose with simple hairs 1–2 mm. long, often more or less glandular distally; petioles 1–2 cm. long; leaf-blades firm, ovate-oblong to ovate-lanceolate, 1–2 dm. long, 4–9 cm. wide, acuminate, minutely serrulate, obtuse to rounded at base, 5- to 7-nerved, hirsute above and below; inflorescence spicate with well defined central axis, up to 15 cm. long, its internodes conspicuously glandular and hirsute; hypanthium 3.5–4 mm. long, short-hirsute and also thinly stellate; sepals broadly quadrate, 1–1.5 mm. long; exterior teeth about 1 mm. longer, conic or stoutly subulate; petals white, obovate-oblong, 4–5 mm. long; anthers stoutly subulate.

Southern Mexico to Panama and Colombia.

CANAL ZONE: Gatún, *Hayes* 575. DARIÉN: Cana and vicinity, *Williams* 738, 769.

10. *CLIDEMIA DEPENDENS* D. Don, in Mem. Wern. Soc. 4:307. 1823.

Shrub 1–3 dm. tall; stems thinly stellate-tomentose and densely hirsute with non-glandular hairs 2–4 mm. long; petioles densely hirsute, 5–20 mm. long; leaf-blades ovate to ovate-oblong, 7–12 cm. long, 3–7 cm. wide, abruptly short-

acuminate, entire or minutely serrulate, broadly rounded at base, 5-nerved, hirsute above, densely pubescent beneath with both stellate and simple hairs; inflorescence 2-6 cm. long, with a well defined central axis, densely villous with non-glandular hairs 3-6 mm. long, the glomerules nearly or quite contiguous; hypanthium campanulate, about 3 mm. long, densely long-hirsute; sepals depressed-ovate, about 1 mm. long from the sinus, exceeded by the exterior teeth; petals white, oblong-obovate, about 6 mm. long; anthers stoutly subulate; connective simple.

Southern Mexico to Panama and southward to Bolivia and northern Argentina; western Cuba.

CANL ZONE: west slope of Ancón Hill, near Balboa, *Seibert 395*. COCLÉ: between Las Margaritas and El Valle, *Woodson, Allen & Seibert 1237*. PROVINCE UNKNOWN: *Seemann 72*.

11. *CLIDEMIA REITZIANA* Cogn. & Gl. ex Gl. in *Brittonia* 3:115. 1939.

Shrub about 1 m. tall, the younger stems densely or sparsely hirsute with simple hairs projecting from a dense furfuraceous tomentum; petioles 1-3 cm. long, pubescent like the stem; leaf-blades ovate, 8-17 cm. long, about half as wide, short-acuminate, broadly obtuse to rounded at base, 5-nerved, sparsely hirsute above, beneath densely pilose on the surface and also furfuraceous on the veins; hypanthium densely hirsute and also minutely stellate; calyx spreading, the minute sepals depressed-triangular, the exterior teeth slightly shorter; petals quadrate, about 1.5 mm. long; anthers stoutly subulate, the connective prolonged into an oblong dorsal spur about 0.4 mm. long.

Costa Rica and Panama.

BOCAS DEL TORO: Fish Creek Mountains, *von Wedel 2307*. DARIÉN: Cana-Cuasi trail, *Terry & Terry 1460*.

12. *CLIDEMIA DEPPEANA* Steud. *Nom. Bot. ed. II.* 1:384. 1841.

Shrub 1-2 m. tall; stems loosely hirsute with ascending or somewhat appressed hairs. Petioles hirsute, about a third as long as the blade. Leaf-blades ovate-oblong to obovate-oblong, 6-10 cm. long, about half as wide, acute or acuminate, distinctly serrulate, ciliate, obtuse or rounded at base, 3-nerved, densely pilose on both sides, often with purplish hairs; cymes short-peduncled, branched from near the base, 2-4 cm. long, hirsute; hypanthium urceolate to tubular, 3-3.5 mm. long, densely hirsute, some of the hairs occasionally gland-tipped; sepals ovate, obtuse, about 1 mm. long; exterior teeth slenderly subulate, 1.5-2.5 mm. long; petals white, obovate-oblong, about 4 mm. long; anthers stoutly subulate, about 2 mm. long, notched at the apex, the connective minutely prolonged at base.

Southern Mexico to Panama, at low or moderate altitudes.

BOCAS DEL TORO: Isla Colón, *von Wedel 2982*; Water Valley, *von Wedel 604, 947*; vicinity of Almirante, *Cooper 108, 150*.

13. *CLIDEMIA COLLINA* Gl. in *Phytologia* 3:359. 1950.

Shrub to 2 m. tall, the stem densely setose with stiff reflexed hairs up to 6 mm.

long; petioles 1–2 cm. long, almost completely occupied by a densely setose formicarium; leaf-blades obovate-oblong, up to 2 dm. long, sparsely setose above, densely hirsute on the veins beneath, almost glabrous on the surface, 7-plexi-nerved; flowers 5-merous, in a densely setose cluster; hypanthium campanulate, setose with spreading hairs up to 10 mm. long; sepals oblong, obtuse, nearly 2 mm. long from the torus; exterior teeth slender, sparsely long-setose, surpassing the sepals by 2 mm.; petals white, 5–6 mm. long.

Endemic to Panama, so far as known.

COCLÉ: vicinity of El Valle, 800–1000 m., *Allen 1820*.

14. *CLIDEMIA TAURINA* Gl. in *Phytologia* 3:360. 1950.

Shrub to 3 m. tall, the stem densely setose with stiffish reflexed hairs 4–7 mm. long; petioles similarly setose, 1–3 cm. long, the distal half occupied by a didymous long-setose formicarium; leaf-blades oblong-ovate, up to 25 cm. long and three-fifths as wide, 5- to 7-nerved, hirsutulous above, densely hirsute over the whole lower side; inflorescence compact, few-flowered; flowers 5-merous; setae of the hypanthium and exterior teeth rarely more than 3 mm. long; sepals oblong, obtuse, much exceeded by the slender exterior teeth.

Endemic to Panama, so far as known. This and the preceding species are closely related to *C. reflexa* Gl. and *C. spectabilis* Gl. of Costa Rica and to *C. myrmecina* Gl. of Colombia. A re-alignment of species may be necessary when more and better material is available.

BOCAS DEL TORO: Water Valley, *von Wedel 703, 925*; Old Bank Island, *von Wedel 1917*.

15. *CLIDEMIA TOCOCOIDEA* (DC.) Gl. in *Bull. Torr. Bot. Club* 58:81. 1931.

Calophysa tococoidea DC. *Prodr.* 3:166. 1828.

Maieta tococoidea Cogn. in *Mart. Fl. Bras.* 14⁴:465. 1888.

Small shrub, long-hirsute throughout; petioles 1–4 cm. long, bearing formicaria at the base; leaf-blades thin, ovate or ovate-oblong, 1–2 dm. long, 7–12 cm. wide, more or less unequal in each pair, abruptly acuminate, finely serrulate, ciliate, rounded to subcordate at base, 5- to 7-nerved, thinly pilose on both sides; cymes small, compact, few-flowered, sessile or nearly so in the upper axils; hypanthium cylindrical, 3–3.5 mm. long, sparsely hirsute; sepals minute; exterior teeth widely spreading, stout, about 1 mm. long; petals 4, white, about 2 mm. long; anthers linear.

British Honduras to Panama and the upper Amazon Valley.

BOCAS DEL TORO: vicinity of Almirante, *Cooper 480*. DARIÉN: Cana-Cuasi Trail, *Terry & Terry 1514*.

16. *CLIDEMIA SETOSA* (Triana) Gl. in *Bull. Torr. Bot. Club* 58:82. 1931.

Calophysa setosa Triana, in *Journ. Bot.* 5:209. 1867.

Maieta setosa (Triana) Cogn. in *Mart. Fl. Bras.* 14⁴:462. 1888.

Low shrub, the stems and petioles densely covered with stiff retrorse setae 7–10

mm. long; petioles 2–5 cm. long, bearing the formicarium at the summit; leaf-blades ovate or ovate-oblong, 1–2 dm. long, about half as wide, short-acuminate, entire or serrulate, ciliate, rounded to subcordate at base, 5- to 7-nerved, long-hirsute above, densely setose near the base beneath; inflorescence long-peduncled, trichotomous, 3–8 cm. long; hypanthium 2–2.5 mm. long, 4-angled, minutely puberulent, usually sparsely setose near the summit; exterior teeth subulate, about 1.5 mm. long; petals 4, about 5 mm. long; anthers linear.

Southern Mexico to Panama.

COCLÉ: El Valle de Antón, near Cerro Turrega, 700 m., *Woodson & Schery 200*.

17. *CLIDEMIA EPIPHYTICA* (Triana) Cogn. in DC. Monogr. Phan. 7:1025. 1891.

Sagraea epiphytica Triana, in Trans. Linn. Soc. 28:139. 1871.

Prosanerpis panamensis Blake & Standley, in Field Mus. Pub. Bot. 4:245. 1929.

A root-climbing or epiphytic shrub; stems nearly glabrous; petioles of the larger leaves 4–10 cm. long; leaf-blades thin, ovate or ovate-oblong, 12–20 cm. long, about two-thirds as wide, sharply acuminate, conspicuously serrate, cordate at base, 7-nerved, essentially glabrous; smaller leaves 1–5 cm. long; cymes usually 3-flowered, branched at base; hypanthium urceolate, 2–2.5 mm. long, bristly; sepals triangular-ovate about 1 mm. long from the torus; exterior teeth foliaceous, oblong, up to 5 mm. long, long-ciliate.

Panama and at low elevations in northwestern South America.

DARIÉN: Cerro de Garagará, 500–974 m., *Pittier 5611*.

18. *CLIDEMIA RUBRA* (Aubl.) Mart. Nov. Gen. & Spec. 3:152. t. 281. 1829.

Melastoma rubra Aubl. Pl. Guian. 1:416. 1775.

Suffrutescent or woody, up to 2 m. tall, often blooming when young and herbaceous, the stem and foliage densely hirsute or villous throughout; petioles none, or up to 3 cm. long, usually manifest but short; leaf-blades thick, oblong-lanceolate to broadly elliptic, commonly 6–12 cm. long and about half as wide, obtuse to short-acuminate, at base cuneate to subcordate, 5-plexi-nerved; flowers few, sessile in dense axillary glomerules, 4-merous; hypanthium cylindrical, 3–4 mm. long; exterior teeth triangular below, narrowed to a short, divergent, subulate tip, equaling or slightly exceeding and more or less concealing the sepals; petals obovate-oblong, 2–3 mm. long, white or pinkish; anthers subulate, 3–4 mm. long.

Tropical Mexico to Panama, chiefly at low altitude; very abundant in the lowlands of South America as far south as southern Brazil and Bolivia.

CANAL ZONE: Ancón Hill, *Williams 1*, *Killip 12101*, *Piper 5558*. CHIRIQUÍ: Boquete, *Davidson 676*, *Woodson & Schery 784*. COCLÉ: vicinity of Natá, 50 m., *Allen 843*; vicinity of Penonomé, *Williams 92*; between Olá and Corteza, *Pittier 5097*. PANAMÁ: San José Island, *Jobnston 34*, *Erlanson 382, 428*; Taboga Island, *Macbride 2824*. VERAGUAS: between Cañazas and the Cordillera Central, 300–600 m., *Allen 165*.

19. *CLIDEMIA DENSIFLORA* (Standley) Gl. in Phytologia 3:346. 1950.

Henriettella densiflora Standley, in Field Mus. Pub. Bot. 4:247. 1929.

Shrub 1–3 m. tall, the younger stems and petioles densely furfuraceous-tomentose; petioles 1–3 mm. long; leaf-blades thin, narrowly elliptic to oblong, 12–20 cm. long, about a third as wide, acuminate, gradually narrowed to the base, 3-nerved, glabrous and shining above, beneath glabrous on the surface, densely furfuraceous on the primary nerves; flowers few, crowded and sessile in small axillary clusters; hypanthium cup-shaped 2–2.5 mm. long; sepals triangular; exterior teeth minute; petals oblong, 2.8 mm. long; connective of the anthers prolonged at base into a minute, glandular, dorsal appendage.

British Honduras and Panama.

BOCAS DEL TORO: Almirante region, *Cooper* 575. DARIÉN: Cana-Cuasi Trail, 600 m., *Terry & Terry* 1424.

20. CLIDEMIA PURPUREO-VIOLEACEA Cogn. in Bull. Soc. Bot. Belg. 30¹:263. 1891; in Dur. & Pitt. Fl. Cost. 166. 1891.

Shrub 1–5 m. tall, the stems, petioles, lower leaf-surface, and hypanthia apparently glabrous, actually very minutely furfuraceous-puberulent; petioles 2–8 cm. long; leaf-blades thin, bright green above, purple beneath, broadly ovate, 12–22 cm. long, 6–13 cm. wide, acuminate, minutely ciliate-denticulate, cordate or subcordate at base, 5- to 7-nerved; inflorescences mostly below the leaves, about 1 cm. long, few-flowered; hypanthium urceolate, 2–2.5 mm. long; sepals depressed-triangular, about 0.5 mm. long; exterior teeth ending in a deflexed seta about 0.5 mm. long; petals oblong, about 2 mm. long; anthers obovate, 2 mm. long.

Costa Rica and Panama.

CANAL ZONE: Chagres, *Fendler* 38. DARIÉN: Cana and vicinity, about 750 m., *Williams* 956; Ensenada Guayabo, *Stern & Chambers* 182. SAN BLAS: San Blas district, *Cooper* 235.

21. CLIDEMIA OMBROPHILA Gl. in Brittonia 3:138. 1939.

Stems slender, essentially glabrous; petioles 8–12 mm. long; leaf-blades firm, shining, elliptic, 6–9 cm. long, 2.5–4 cm. wide, abruptly contracted at the apex into a linear tip 2–3 cm. long, entire, cuneate at base, 3-plexi-nerved, essentially glabrous; panicle sessile, trichotomous from the base, its divaricate branches 3–5 cm. long, each bearing 3–5 short-pedicel flowers; hypanthium subglobose, about 2 mm. long, very minutely lepidote; sepals triangular, subacute, 0.9 mm. long; exterior teeth adnate and exactly equaling the sepals.

Known only from the type collection.

DARIÉN: foothills of Garagará, *Pittier* 5610.

23. HENRIETTEA DC.

HENRIETTEA DC. Prodr. 3:178. 1828.

Flowers 5- to 6-merous. Hypanthium campanulate, thick-walled. Calyx-tube distinctly prolonged; sepals small or large, ovate or triangular or nearly obsolete; exterior teeth minute or concealed. Stamens isomorphic; filaments

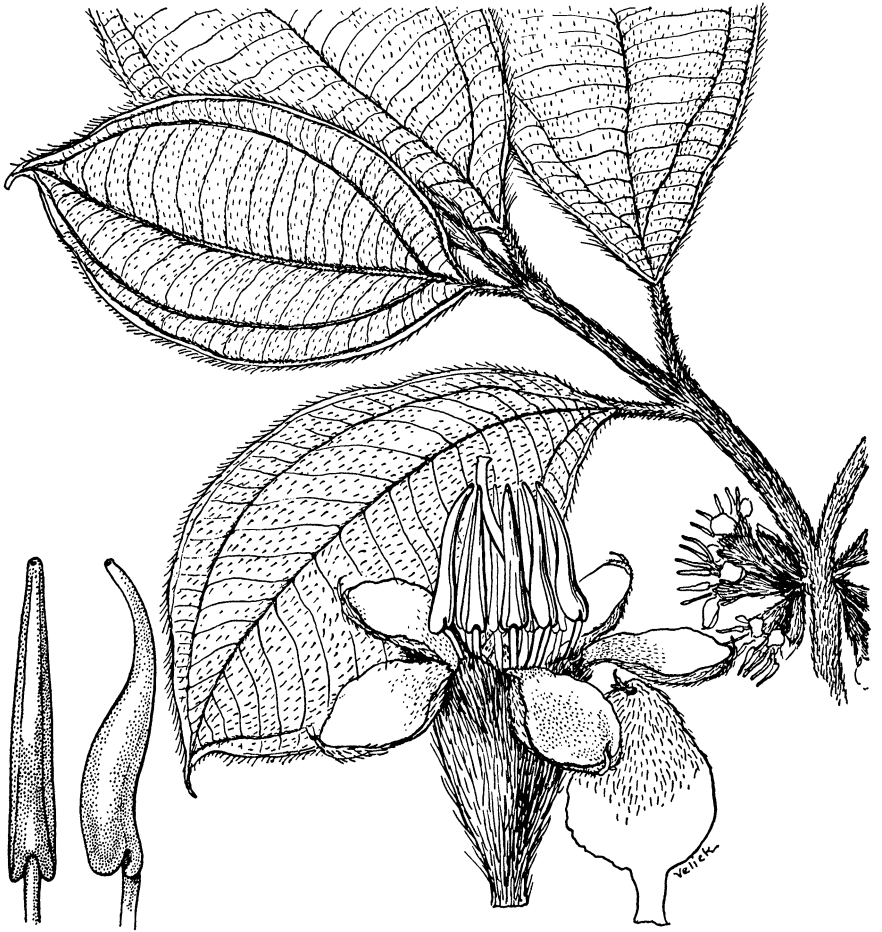


Fig. 84. *Henriettea succosa*

slender, glabrous; anthers subulate or linear, often beaked; connective neither appendaged nor prolonged. Ovary inferior, 5- to 6-celled; style stout, enlarged toward the summit; stigma punctiform or truncate. Fruit a many-seeded berry. Trees or shrubs with large, usually pli-nerved leaves and medium-sized flowers borne in small axillary clusters below the existing leaves.

About 16 species, mostly in Amazonia but extending through the West Indies and Central America, usually at low altitudes.

1. HENRIETTEA SUCCOSA (Aubl.) DC. Prodr. 3:178. 1828.

Melastoma succosa Aubl. Pl. Guian. 1:418. 1775.

Small tree to 10 m. tall, the younger stems and petioles densely strigose; petioles stout, 5–15 mm. long; leaf-blades firm in texture, narrowly obovate, up to 2 dm. long, a third or nearly half as wide, abruptly acuminate or apiculate, entire, cuneate at base, 3-ply-nerved, scabrously pilose above, beneath strigose on the veins, stellate-pubescent and rather canescent on the surface; flowers few, short-pedicel; hypanthium densely strigose, 8–9 mm. long; sepals ovate, 4–5 mm. long; petals white or pink.

Central America, Trinidad, the Guianas, and eastern Brazil.

BOCAS DEL TORO: Old Bank Island, vicinity of Chiriquí Lagoon, *von Wedel 2113*. CANAL ZONE: Barro Colorado Island, *Shattuck 1093*. PANAMÁ: San José Island, *Johnston 740*, *Erlanson 340*, *502*.

24. BELLUCIA Neck.

BELLUCIA Neck. Elem. Bot. 2:142. 1790.

Flowers 5- to 8-merous. Hypanthium thick-walled, hemispheric. Calyx large, at anthesis divided into 2–8 regular or irregular lobes. Petals large, leathery, oblong or obovate. Stamens isomorphic; filaments short and stout; anthers more or less coherent in a ring, laterally compressed, broadly oblong, elliptic, or dolabriliform, opening by two terminal pores; connective neither prolonged nor appendaged. Ovary inferior, 5- to 15-celled; style stout; stigma large, capitate. Fruit a large many-seeded berry. Trees or tall shrubs, with large ovate or oblong leaves and large white or pink flowers on short pedicels solitary or few in the leaf-axils.

About 10 species of low altitudes, most numerous in northern South America. *B. grossularioides* (L). Triana is widely distributed and has been reported from Panama: its calyx exhibits two to five lobes of irregular shape and size at anthesis.

1. BELLUCIA COSTARICENSIS Cogn. in Bull. Soc. Bot. Belg. 30¹:264. 1891. in Dur. & Pitt. Fl. Cost. 167. 1891.

Small tree, glabrous throughout; petioles stout, 2–4 cm. long; leaf-blades firm, broadly elliptic, commonly 1.5–3 dm. long and about two-thirds as wide, obtuse or short-acuminate, entire, obtuse or rounded at base, 5-ply-nerved, the outer pair submarginal; cymes axillary, sessile, trichotomous from the base, 3- to 7-flowered; pedicels about 1 cm. long; hypanthium hemispheric; calyx spreading, nearly 2 cm. wide; petals about 15 mm. long.

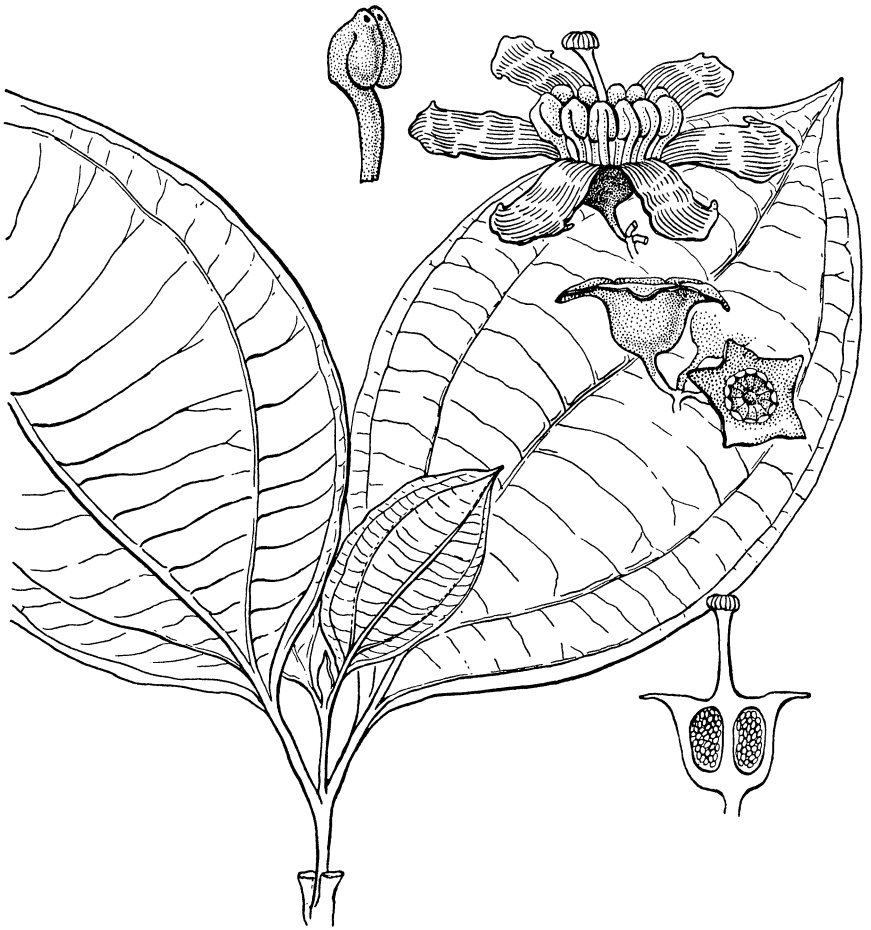


Fig. 85. *Bellucia costaricensis*

Costa Rica and Panama.

CANAL ZONE: near Ferry along Thatcher Highway, *White & White 140*; Barro Colorado Island, *Shattuck 1119*. CHIRIQUÍ: vicinity of Remedios, 0-150 m., *Allen 3669*. DARIÉN: Cana and vicinity, 750 m., *Williams 808*. PROVINCE UNKNOWN: *Pittier 5459*.

25. LOREYA DC.

LOREYA DC. 3:178. 1828.

Flowers 5- to 6-merous. Hypanthium cup-shaped to broadly campanulate. Calyx more or less spreading, its lobes shorter than the tube or lacking. Petals obtuse, oblong-obovate or obovate. Stamens isomorphic; filaments short; anthers often coherent in a ring, oblong or ovoid, blunt, opening by a minute terminal pore; connective simple at base, often thickened or elevated along the back of the anther. Ovary wholly inferior, 3- to 6-celled; style elongate; stigma capitate. Trees, often of large size, with broad, usually pli-nerved leaves and small or medium-sized flowers in axillary cymes or fascicles from the leafless nodes.

About 10 species, the others all in lowland forests of Amazonia.

1. LOREYA BRUNNESCENS (Standley) Gl. in *Phytologia* 3:346. 1950.

Henriettea brunnescens Standley, in *Field Mus. Publ. Bot.* 4:247. 1929.

Small tree to 8 m. tall, the younger stems, petioles, pedicels, and hypanthia densely brown-hirsute; petioles 3-5 cm. long; leaf-blades rhombic-elliptic, up to 2.5 dm. long, about half as wide, abruptly acuminate, obtuse at base, 5-ply-nerved with an additional pair of marginal nerves, the inner pair arising 3-5 cm. from the base, above glabrous on the surface, strigose on the veins, beneath roughly pubescent; flowers several in axillary clusters, on pedicels about 2 cm. long; hypanthium deeply cup-shaped, about 8 mm. long; sepals triangular, about 2 mm. long; petals and stamens unknown.

Known only from the type collection.

BOCAS DEL TORO: Buena Vista Camp, Chiriquí Trail, 375 m., *Cooper 594*.

26. HENRIETTELLA Naud.

HENRIETTELLA Naud. in *Ann. Sci. Nat. Bot.* III. 18:107. 1852.

Flowers 4- to 5-merous. Hypanthium small, globose to cup-shaped. Sepals small, triangular or ovate to depressed or obsolete; exterior teeth usually present, conic or subulate, small. Petals ovate to lanceolate or triangular, usually acute or subacute, commonly cucullate at the summit and often exceeded by a minute exterior tooth. Stamens isomorphic; filaments slender, glabrous; anthers oblong, usually obtuse, opening by a large terminal pore; connective simply or briefly prolonged below the thecae, rarely with minute basal lobes. Ovary inferior, 4- to 5-celled; style slender; stigma truncate to capitate. Fruit a many-seeded berry. Shrubs or trees with small cluster of flowers at the leafless nodes or rarely in the axils of the leaves.

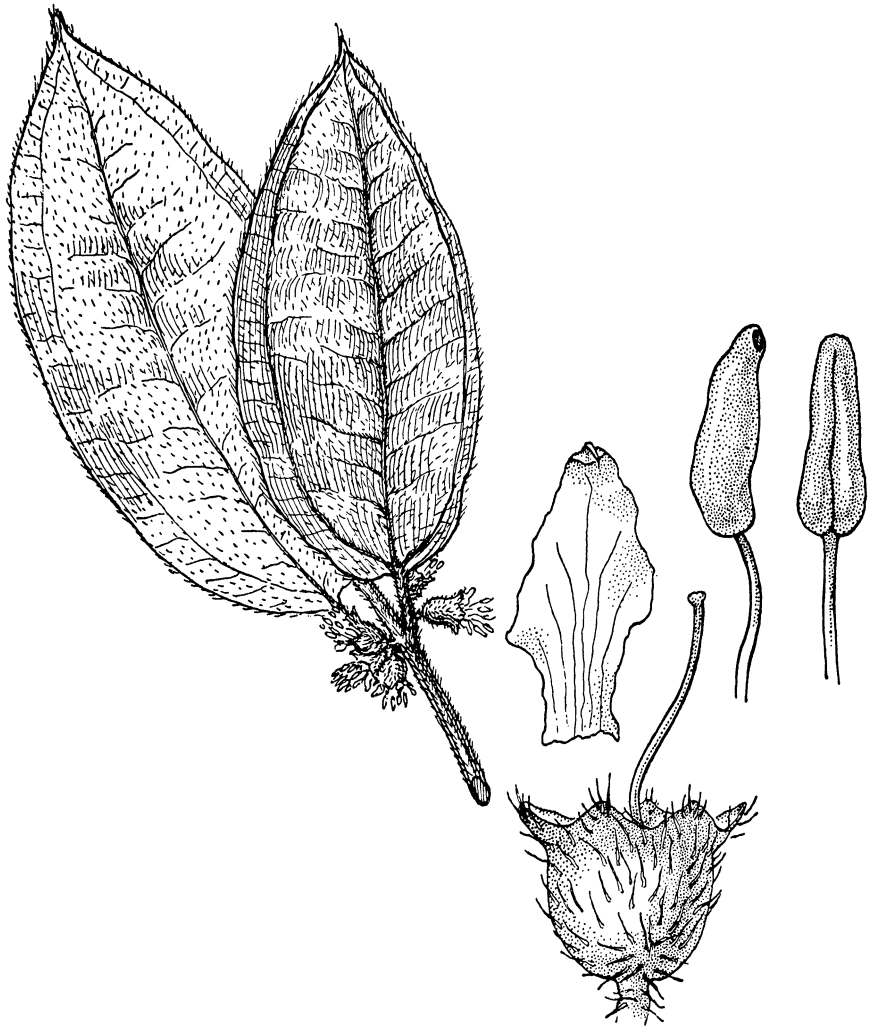


Fig. 86. *Henrietella seemanii*

About 40 described species, chiefly in the West Indies and northern South America.

- | | |
|---|--------------------|
| a. Leaves long-tapering at base, strongly pli-nerved..... | 1. H. TUBERCULOSA. |
| aa. Leaves rounded or obtuse at base, 3-nerved or obscurely pli-nerved. | |
| b. Pedicels about 1 mm. long; hypanthium densely pubescent..... | 2. H. SEEMANNII. |
| bb. Pedicels 4-8 mm. long; hypanthium essentially glabrous..... | 3. H. FLAVESCENS. |

1. HENRIETTELLA TUBERCULOSA Donn. Sm. in Bot. Gaz. 27:335. 1899.

Shrub or tree up to 8 m. tall; younger stems and petioles densely strigose; leaf-blades oblanceolate, up to 15 cm. long and about a third as wide, slenderly acuminate, long-tapering at base, strongly 5-ply-nerved, scabrous above with short stiff hairs from conic bases, densely pubescent beneath; flowers sessile; hypanthium densely strigose, about 2 mm. long; sepals minute, triangular; petals white, about 2 mm. long, the blade ovate, subacute.

Costa Rica and Panama.

BOCAS DEL TORO: Old Bank Island, Isla Colón, 0-120 m., von Wedel 1933.

2. HENRIETTELLA SEEMANNII Naud. in Ann. Sci. Nat. Bot. III. 18:108. 1852.

Small tree, the younger stems and petioles very densely pubescent with ascending hairs 1-1.5 mm. long; petioles 8-15 mm. long; leaf-blades oblong-lanceolate, up to 13 cm. long, about a third as wide, acute, ciliate, rounded at base, 3-nerved, scabrous above, pilose beneath; flowers several in a cluster, 5-merous, on pedicels about 1 mm. long; hypanthium about 3 mm. long, densely pubescent with ascending hairs from swollen bases; sepals depressed-triangular, about 0.4 mm. long; petals lanceolate, nearly 5 mm. long, acuminate, irregular on the margins.

Costa Rica and Panama to northern Colombia.

CANAL ZONE: near Las Cruces, *Seemann s. n.*

3. HENRIETTELLA FASCICULARIS (Sw.) Triana, in Trans. Linn. Soc. 28:143. 1871.

Melastoma fascicularis Sw. Prodr. Veg. Ind. Occ. 71. 1788.

Small tree, up to 10 m. tall, with densely hirsute stems and petioles; petioles stout, 6-12 mm. long; leaf-blades elliptic, oblong, or oblong-obovate, 8-15 cm. long, about half as wide, acute, obtuse or subacute at base, weakly 3-ply-nerved with an additional pair of marginal nerves, scabrously pubescent on the surface and hirsute on the nerves above, densely pubescent beneath; pedicels slender, 3-6 mm. long; hypanthium campanulate, 3 mm. long, essentially glabrous; sepals minute, depressed-ovate; petals white, ovate, acute, about 4 mm. long.

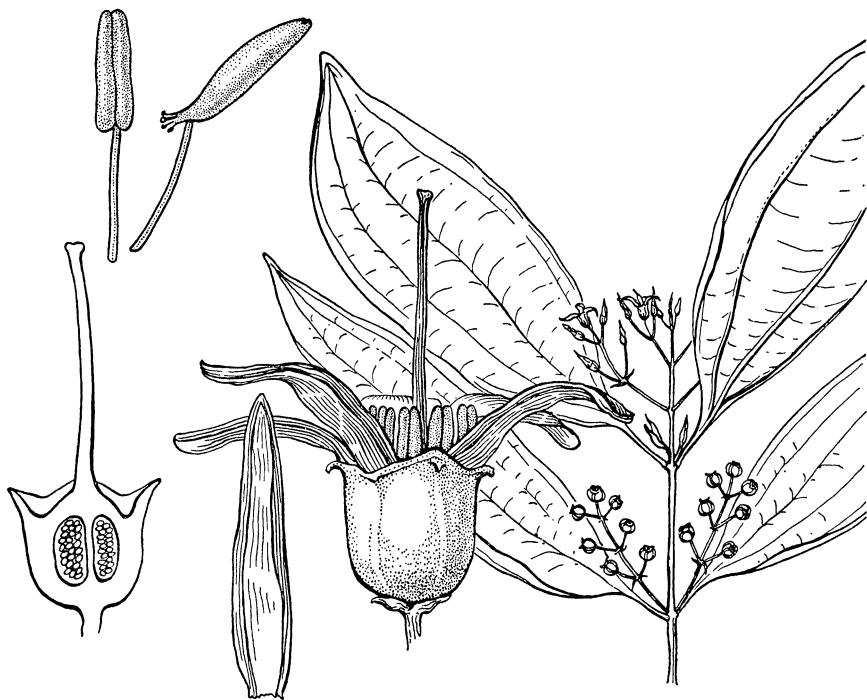
British Honduras, Panama, Guatemala, and the West Indies.

DARIÉN: Cana and vicinity, *Williams 753.*

27. OSSAEA DC.

OSSAEA DC. Prodr. 3:168. 1828.

Flowers 4- to 5-merous. Hypanthium urceolate or subglobose to campanulate

Fig. 87. *Ossaea micrantha*

or nearly tubular. Calyx-tube often conspicuously prolonged; sepals minute or obsolete; exterior teeth varying from minute tubercles to long subulate appendages often simulating a sepal. Petals small, lanceolate to ovate, acute or acuminate, usually with an infra-apical exterior tooth. Stamens isomorphic, erect; filaments slender; anthers linear to oblong; connective simple or very briefly prolonged below the thecae and in a few species continued below the filament into a minute dorsal appendage. Ovary inferior, 3- to 5-celled; style filiform; stigma punctiform or capitellate. Fruit a many-seeded berry, often terminated by the enlarged calyx-tube. Small trees or shrubs with white flowers in fascicles or paniculiform cymes in the axils of existing leaves.

About 90 species, distributed from southern Mexico to Bolivia and southern Brazil but probably most numerous in the West Indies.

- | | |
|---|-----------------------------|
| a. Flowers in open, repeatedly branched clusters 2-6 cm. long; fruiting hypanthium distinctly ribbed. | |
| b. Flowers 4-merous; fruit 8-ribbed; leaves acute to obtuse at base..... | 1. <i>O. MICRANTHA</i> . |
| bb. Flowers 5-merous; fruit obscurely 10-ribbed; leaves typically cuneate at base and more or less decurrent along the petiole..... | 2. <i>O. DIVERSIFOLIA</i> . |
| aa. Flowers subsessile, few, closely crowded in clusters up to 1.5 cm. in diameter; fruiting hypanthium ribless..... | 3. <i>O. TRICHOCALYX</i> . |

1. *OSSAEA MICRANTHA* (Sw.) Macfadyen, Fl. Jamaic. 2:49. 1850.

Melastoma micrantha Sw. Prodr. Veg. Ind. Occ. 71. 1788.

Shrub or small tree to 10 m. tall; young stems, petioles, and inflorescence nearly or quite glabrous; petioles slender, 1.5–3 cm. long; leaf-blades thin, narrowly oblong-elliptic, 10–17 cm. long, about a third as wide, long-acuminate, entire or nearly so, broadly cuneate to the base but not decurrent, 3-ply-nerved with an additional pair of marginal nerves, the lateral nerves often alternate, essentially glabrous on both sides; panicles loosely branched, 2–5 cm. long; flowers 4-merous; hypanthium subglobose, about 2 mm. long; exterior teeth minute tubercles or lacking; petals narrowly lanceolate, 3–4 mm. long; fruiting hypanthium with 8 rounded elevated longitudinal ribs.

Southern Mexico to Panama and Peru; Jamaica.

BOCAS DEL TORO: Cricamola Valley, region of Almirante, *Cooper 478*; Fish Creek Mountains, *von Wedel 2354*; locality not stated, *von Wedel 192*; Changuinola Valley, *Cooper & Slater 115*. CHIRIQUÍ: Quebrada Velo, 1800 m., *Woodson & Schery 267*; Bajo Chorro, Boquete District, 1800 m., *Davidson 105*.

2. *OSSAEA DIVERSIFOLIA* (Bonpl.) Cogn. in Bull. Acad. Belg. III. 14:968. 1887.

Melastoma diversifolia Humb. & Bonpl. Melast. 138. t. 59. 1816.

Shrub to 1.5 m. tall, the younger stems, petioles, and inflorescence densely but finely stellate-furfuraceous; petioles 1.5–5 cm. long; leaf-blades thin, ovate to ovate-lanceolate, 8–20 cm. long, half to two-thirds as wide, abruptly acuminate or apiculate, ciliate, often conspicuously dentate, abruptly narrowed at base and decurrent along the petiole almost to the stem, 5- to 7-ply-nerved, sparsely pilose above, glabrous beneath or furfuraceous on the veins; inflorescence loosely branched, 2–5 cm. long; flowers 5-merous; hypanthium subglobose, about 2 mm. long, in fruit shallowly 5-sulcate and obscurely ribbed; petals lanceolate.

Costa Rica, Panama, and northwestern South America.

BOCAS DEL TORO: Lincoln Creek, *Carleton 87*; region of Almirante, *Cooper 410*. CANAL ZONE: Barro Colorado Island, *Chrysler & Roever 4819, 4870*; Gatún, *Hayes 176*; between Juan Mina and El Vigía, *Pittier 2401*; vicinity of Madden Dam, *Allen 2009*; Ahorca Lagarto, *Cowell 250*. CHIRIQUÍ: vicinity of Puerto Armuelles, *Woodson & Schery 855*. DARIÉN: headwaters of Río Chico, 150–225 m., *Allen 4612*; Río Sabana, *Leopold III 189*. PROVINCE UNKNOWN: *Kuntze 194*.

3. *OSSAEA TRICHOALYX* Pittier, in Journ. Wash. Acad. Sci. 13:391. 1923.

Shrub or small tree to 6 m. tall, the younger stems and petioles very finely furfuraceous; petioles 1–5 cm. long; leaf-blades thin, ovate-lanceolate to oblong, 10–22 cm. long, 4–10 cm. wide, long-acuminate, entire, abruptly narrowed below to a long cuneate base, glabrous above, essentially glabrous beneath, 5- to 7-ply-nerved, the inner pair arising 2–5 cm. from the base; flowers 4-merous, subsessile or very short-pedicel, densely crowded in clusters 10–15 mm. wide at leafless nodes; hypanthium urceolate, 2.5 mm. long, essentially glabrous; exterior teeth subulate, spreading, about 1.5 mm. long, glandular-setose; petals 1.6 mm. long.

British Honduras to Ecuador, chiefly at low altitudes.

BOCAS DEL TORO: vicinity of Chiriquí Lagoon, *von Wedel 2197A, 2911*; Water Valley, *von Wedel 1462*. DARIÉN: Cana-Cuasi Trail, 900 m., *Terry & Terry 1450*; above Paca, *Williams 742*.

28. LEANDRA Raddi

LEANDRA Raddi, in Mem. Mod. 18 Fis.: 385. 1820.

Flowers 4- to 8-merous. Hypanthium globose to tubular, often constricted at the mouth. Sepals small or obsolete; exterior teeth present, minute to elongate. Petals ovate to narrowly lanceolate, rarely obovate, acute to acuminate, the covered side often much the wider, usually erect at anthesis. Stamens nearly or quite isomorphic; filaments slender, smooth; anthers linear to oblong or rarely subulate, 2-celled or 4-celled; connective simple or rarely slightly prolonged at base, never appendaged, often gibbous on the back near the base. Ovary mostly or wholly inferior, its cells often isomerous with the petals; style slender; stigma capitellate to punctiform. Fruit a many-seeded berry. Shrubs or small trees, almost always pubescent, often hirsute or hispid, with terminal panicles or bracteate heads of small, usually white flowers.

More than 200 species, extending from Mexico to Bolivia and southern Brazil, avoiding the West Indies.

- | | |
|--|--------------------|
| a. Pubescence of younger parts of the stem and axis of the inflorescence of short, spreading, simple hairs surpassed by projecting, stouter, glandular hairs; leaves 7-nerved..... | 1. L. MEXICANA. |
| aa. Pubescence of the stem never glandular. | |
| b. Indument of the younger parts of the stem and the axis of the inflorescence a dense mass of strongly barbellate hairs, commonly with projecting simple bristles; leaves all or mostly 5-nerved. | |
| c. Leaves sparsely hirsute on the surface beneath with straight or curved simple bristles (commonly more or less stellate on the principal veins)..... | 2. L. MELANODESMA. |
| cc. Leaves stellate-pubescent on the surface beneath..... | 3. L. SUBSERIATA. |
| bb. Indument of the stem and axis of the inflorescence composed entirely of simple bristles. | |
| c. Hairs of the stem more or less retrorse, at least at their bases..... | 4. L. DICHOTOMA. |
| cc. Hairs of the stem antrorse, distinctly appressed or ascending. | |
| d. Flowers 5-merous; exterior teeth none or very short and inconspicuous..... | 5. L. STRIGOSA. |
| dd. Flowers 4-merous; exterior teeth subulate, 5-6 mm. long..... | 6. L. SUBULATA. |
| bbb. Indument of the younger parts of the stem and the axis of the inflorescence merely brown-pulverulent; leaves strongly 5-ple-nerved. | 7. L. CONSIMILIS. |

1. LEANDRA MEXICANA (Naud.) Cogn. in Mart. Fl. Bras. 14⁴:77. 1886.

Clidemiastrum mexicanum Naud. in Ann. Sci. Nat. Bot. III. 17:87. 1852.

Shrub 1-3 m. tall, the stems pubescent with slender simple hairs slightly surpassed by glandular ones; petioles 2-6 cm. long, similarly pubescent; leaf-blades thin, ovate, 1-2 dm. long, 4-15 cm. wide, acuminate, serrulate, broadly rounded to subcordate at base, 7-nerved, hirsutulous above and also sparsely pilose with longer stiff hairs; panicle 6-10 cm. long, its branches eventually greatly elongate, divaricate, and more or less flexuous; flowers commonly 7-merous; hypanthium broadly tubular, 3-3.5 mm. long, densely villosulous with simple hairs and sparsely

glandular-hirsutulous, the hairs up to 0.5 mm. long; petals about 3 mm. long; sepals depressed-ovate, 1–1.5 mm. long.

Southern Mexico to Panama, usually at low altitudes.

BOCAS DEL TORO: Water Valley, *von Wedel 1903, 1913*; Little Bocas, *von Wedel 2493*; Big Bight, *von Wedel 2890*. CHIRIQUÍ: San Félix, *Pittier 5201*. CANAL ZONE: Colón, *Kuntze*; Monkey Hill, *Cowell 43*. PANAMÁ: San José Island, *Johnston 461*.

2. *LEANDRA MELANODESMA* (Naud.) Cogn. in Mart. Fl. Bras. 14⁴:115. 1886.
Clidemia melanodesma Naud. in Ann. Sci. Nat. Bot. III. 17:353. 1852.

Shrub or small tree up to 5 m. tall; younger stems, petioles, and inflorescence densely covered with a mass of strongly barbellate or plumose hairs surpassed by projecting simple bristles; petioles slender, up to 4 cm. long; leaf-blades ovate-lanceolate or oblong-ovate, 8–15 cm. long, 2–7 cm. wide, acuminate, entire, obtuse to rounded at base, 5-nerved, very sparsely and minutely hispidulous above, sparsely hirsute beneath with simple bristles, the barbellate pubescence of the petiole continuing along the primary nerves and to some extent along the secondaries; panicle slender with ascending branches, 5–15 cm. long; flowers 5-merous; hypanthium subglobose, minutely stellate and hirsutulous; sepals depressed-triangular, very short, the exterior teeth minute; petals white, about 3 mm. long.

In mountainous regions, southern Mexico to Colombia.

CHIRIQUÍ: Finca Lérica to Peña Blanca, *Woodson & Schery 309*; vicinity of Finca Lérica, 1750 m., *Woodson & Schery 213*; vicinity of Casita Alta, 1500–2000 m., *Woodson, Allen, & Seibert 800*; Sierra del Boquete, *Maurice 719*; vicinity of Cerro Punta, 1500–2000 m., *Seibert 253, White 32*; valley of the upper Río Chiriquí Viejo, *White 23*; Boquete, *Davidson 857*; Volcán de Chiriquí, *Davidson 919*.

3. *LEANDRA SUBSERIATA* (Naud.) Cogn. in Mart. Fl. Bras. 14⁴:73. 1886.
Clidemia subseriata Naud. in Ann. Sci. Nat. Bot. III. 17:354. 1852.

Very like *L. melanodesma* in all features except the pubescence; lower surface of the leaves sparsely pubescent with short-stipitate stellate hairs; hypanthium often stellate only without simple bristles.

Southern Mexico to Panama; also in Venezuela, Colombia, and Ecuador.

CHIRIQUÍ: vicinity of New Switzerland, 1800–2000 m., *Allen 1343*.

4. *LEANDRA DICHOTOMA* (D. Don) Cogn. in Mart. Fl. Bras. 14⁴:200. 1886.
Clidemia dichotoma D. Don, in Mem. Wern. Soc. 4:307. 1823.

Shrub 1–3 m. tall; younger stems, petioles, and axis of the inflorescence densely hirsute with straight or curved, distinctly retrorse or retrorsely outwardly curved, simple bristles; petioles 2–5 cm. long; leaf-blades ovate-lanceolate to ovate-oblong or oblong, 1–2 dm. long, 5–12 cm. wide, acuminate, denticulate and strongly ciliate, broadly obtuse to rounded at base, commonly 7-nerved, more or less hirsute on both sides, especially on the nerves beneath; panicles 1–2 dm. long, the branches becoming widely divaricate and crooked, with secund 5-merous flowers; hypanthium subglobose, densely hirsute; sepals minute, depressed-triangular, the exterior teeth subulate, about 1 mm. long; petals white, 2.5–3 mm. long.

Fig. 88. *Leandra melanodesma*

Guatemala and British Honduras to Panama and Bolivia.

BOCAS DEL TORO: Water Valley, *von Wedel 1419*; Old Bank Island, *von Wedel 1971*; vicinity of Chiriquí Lagoon, *von Wedel 1075*; Fish Creek Mountains, *von Wedel 2370*; Cricamola, Almirante region, *Cooper 514*. CANAL ZONE: Barro Colorado Island, *Aviles 913, Bailey & Bailey 470*.

5. *LEANDRA STRIGOSA* Gl. in *Phytologia* 3:345. 1950.

Shrub up to 2 m. tall; younger stems, petioles, and axis of the inflorescence densely strigose with appressed or closely ascending hairs 0.5–1.5 mm. long; petioles 1–3 cm. long; leaf-blades ovate-lanceolate or ovate, up to 15 cm. long and 10 cm. wide, acuminate, denticulate, densely ciliate, rounded at base, 5-nerved, densely pubescent on both sides; panicle 6–20 cm. long; flowers 5-merous, sessile, secund; hypanthium cup-shaped, densely strigose, some of the hairs gland-tipped; sepals triangular, about 0.5 mm. long; exterior teeth none; petals white, about 2.3 mm. long.

Panama and Colombia.

CHIRIQUÍ: between Río Tinta and Río Tabasará, *Allen & Seibert 415*. COLÓN: vicinity of Camp Pina, 25 m., *Allen 3672*.

6. *LEANDRA SUBULATA* Gl. in *Phytologia* 3:345. 1950.

Epiphytic shrub up to 2 m. tall; stem, petioles, inflorescence, and hypanthia densely covered with straight, appressed, spinulose hairs 1–2 mm. long; leaves long-petioled, the blades ovate, 2–3.5 cm. long, about half as wide, acute, spinulose-ciliate, rounded at base, obscurely 5-nerved or weakly 7-plied, strigillose on both sides; flowers 4-merous, in terminal cymules; hypanthium obconic; sepals very short, acute, triangular, the exterior teeth subulate, erect, 5–6 mm. long; petals ovate, pink, 4 mm. long.

Known only from the type specimen.

BOCAS DEL TORO: northern slopes of Cerro Horqueta, 1800–2100 m., *Allen 4804*.

7. *LEANDRA consimilis* Gleason, spec. nov.

Arbuscula, caulibus 4-sulcatis, petiolis, et ramis inflorescentiae minute pulverulento; folia petiolata, anguste elliptica, utrinque acuminata, valde 5-plinervia, supra glabra, subtus ad venas pulverulenta caeterum glabra.

Small tree 5 m. tall, the younger parts of the 4-sulcate stems, petioles, and branches of the inflorescence minutely brown-pulverulent; petioles about 1 cm. long; leaf-blades thin, narrowly elliptic, up to 2 dm. long, about a third as wide, equally and gradually tapering to both ends, strongly 5-plied, pulverulent on the veins beneath, otherwise glabrous; panicle widely branched, about 1 dm. long; flowers 5-merous; hypanthium 1.4 mm. long, nearly glabrous; calyx about 0.8 mm. long, the acute triangular lobes about equaling the tube, barely exceeded by the minute, subulate, exterior teeth; petals oblong-lanceolate, about 3.5 mm. long; anthers short, oblong; style about 4 mm. long; stigma rounded, not dilated.

Known only from the type specimen.

PANAMÁ: Las Minas, *Allen 2702*. (Herb. New York Bot. Gard., HOLOTYPE).

The plant exhibits a striking superficial similarity in leaves, pubescence, and inflorescence to *Conostegia micromeris* Standl.

29. CONOSTEGIA D. Don.

CONOSTEGIA D. Don, in Mem. Wern. Soc. 4:316. 1823.

Flowers 5- to 10-merous. Calyx calyptrate, deciduous at or near the torus in anthesis, the flower-buds globose to pyriform or obovoid. Petals white or pink, often very inequilateral or conspicuously retuse. Stamens isomorphic, two to five times as many as the petals; filaments slender, glabrous; anthers linear or oblong, 4-celled, more or less laterally compressed, opening by a terminal or ventro-terminal pore; connective neither appendaged nor prolonged; thecae often prolonged a short distance below the apex of the filament. Ovary wholly inferior, 5- to 12-celled; style straight or bent; stigma punctiform, truncate, capitate, or broadly peltate and retuse. Fruit a many-seeded berry. Trees or shrubs, with usually pli-nerved leaves and terminal panicles of small or medium-sized white or pink flowers.

More than 50 species have been described, ranging from southern Mexico and the West Indies to Ecuador and Brazil but most numerous in Central America. The key which follows is largely artificial, since a reasonable classification of the species has not yet been achieved.

- | | |
|---|----------------------------|
| a. Buds globose, apiculate or not, uniformly thick-walled, with no distinction between the hypanthial and calycine portions; stigma (so far as known) broad, retuse, radially lobed. | |
| b. Hypanthium about 7 mm. long (measured on the axis), commonly verrucose; leaves very weakly pli-nerved; anthers elliptic, about half as wide as long..... | 1. <i>C. MACRANTHA</i> . |
| bb. Hypanthium about 4 mm. long, smooth; leaves strongly pli-nerved; anthers about a third as wide as long..... | 2. <i>C. OERSTEDIANA</i> . |
| aa. Buds pyriform to obovoid, rarely obtuse, commonly acute, acuminate, or apiculate, with obvious superficial distinction between the hypanthial and calycine portions; stigma neither lobed nor retuse. | |
| b. Pubescence of the lower leaf-surface entirely or chiefly of slender simple setae. | |
| c. Leaves pli-nerved, bearing petiolar formicaria; buds about 5-6 mm. long. | |
| d. Petioles 1.5-5 cm. long; leaf-blades basally rounded..... | 3. <i>C. HIRSUTA</i> . |
| dd. Petioles at most 1 cm. long; leaf-blades basally attenuate..... | 4. <i>C. SETOSA</i> . |
| cc. Leaves 3-nerved; formicaria none; buds about 8 mm. long..... | 5. <i>C. BRACTEATA</i> . |
| bb. Pubescence of lower leaf-surface, petioles, stems, and hypanthia of long-stipitate stellate hairs..... | 6. <i>C. SPECIOSA</i> . |
| bbb. Pubescence of lower leaf-surface of sessile stellate hairs, often minute or scanty, or wholly lacking at maturity. | |
| c. Lower leaf-surface completely concealed by a fine, close, canescent tomentum..... | 7. <i>C. XALAPENSIS</i> . |
| cc. Lower leaf-surface not concealed by the indument. | |
| d. Style narrowed distally to a truncate or punctiform stigma. | |
| e. Leaves 3-nerved, short-apiculate at the obtuse or rounded summit; buds about 10 mm. long, acuminate..... | 8. <i>C. POLYANDRA</i> . |
| ee. Leaves 5-ply-nerved, acuminate; buds obtuse, 3.5 mm. long..... | 9. <i>C. MICROMERIS</i> . |
| dd. Style of uniform diameter or widened distally; stigma capitate to peltate. | |
| e. Leaves of an oblanceolate type, broadest well above the middle. | 10. <i>C. PUBERULA</i> . |
| ee. Leaves of an ovate or oblong type, broadest near or below the middle. | |

- f. Leaves hirsutulous above, conspicuously dentate and ciliate. 11. *C. SUBCRUSTULATA*.
 ff. Leaves glabrous above, entire or nearly so, never ciliate.
 g. Buds acuminate or rostrate, 7–13 mm. long.
 h. Petals 4–6 mm. long; buds 7–8 mm. long; leaves stellate-tomentulose on the veins beneath..... 12. *C. MONTANA*.
 hh. Petals 10–15 mm. long; buds 10–13 mm. long; leaves glabrous beneath..... 13. *C. CHIRIQUENSIS*.
 gg. Buds rounded at the summit, 3.5–4 mm. long..... 14. *C. MICRANTHA*.

1. *CONOSTEGIA MACRANTHA* Berg, ex Triana, in Trans. Linn. Soc. 28:97. 1871.

Tree to 10 m. tall, usually more or less furfuraceous, especially about the inflorescence; petioles 2–4 cm. long; leaf-blades elliptic, 10–15 cm. long, half to two-thirds as wide, obtuse or apiculate, at base obtuse or rounded, 5-nerved or barely 5-ply-nerved, glabrous on both sides or minutely stellate beneath; panicle widely branched, few-flowered; buds globose, 10–15 mm. long; hypanthium at anthesis about 7 mm. long, usually verrucose; flowers white, usually 7-merous; anthers oval, about half as wide as long.

Costa Rica and Panama.

CHIRIQUÍ: Río Chiriquí Viejo Valley, near El Volcán, *White & White 194*.

2. *CONOSTEGIA OERSTEDIANA* Berg, ex Triana, in Trans. Linn. Soc. 28:98. 1871.

Tree to 15 m. tall, glabrous throughout; petioles 1–3 cm. long; leaf-blades varying oblong-ovate to oblanceolate or obovate, 6–15 cm. long, usually less than half as wide, apiculate or acuminate, at base cuneate, acute, or rarely obtuse, 3- to 5-ply-nerved; panicle small, widely branched; buds globose, 7–10 mm. long, usually apiculate; hypanthium at anthesis about 4 mm. long; flowers white, commonly 7-merous; anthers elliptic, about a third as wide as long.

Costa Rica and Panama.

CHIRIQUÍ: Valley of the upper Río Chiriquí Viejo, *White & White 98*.

3. *CONOSTEGIA hirsuta* Gl. nom. nov.

Cryptophysa setosa Standley & Macbride, in Field Mus. Pub. Bot. 4:244. 1929. Not *Conostegia setosa* Triana 1871.

Shrub, the stem, leaves, panicle, and hypanthium setose with simple bristles; petioles up to 5 cm. long, the upper half and a portion of the midnerve occupied by a slender formicarium; leaf-blades obovate-oblong, up to 2 dm. long and half as wide, abruptly acuminate, shallowly undulate-dentate, obtuse or rounded at base; panicle small, many-flowered; buds 4–4.5 mm. long, the pyriform body tipped by a slender beak; petals white, about 5 mm. long; style straight; stigma capitate.

Endemic to Panama, so far as known.

BOCAS DEL TORO: Buena Vista, *Cooper 219*.

4. *CONOSTEGIA SETOSA* Triana, in Trans. Linn. Soc. 28:99. 1871.

Shrub, similar to *C. hirsuta* but the petioles only 0.5–1 cm. long, the formicaria short and broad, the leaf-blades attenuate basally, the buds 5–6 mm. long.

Eastern Panama to northwestern Colombia.

DARIÉN: Ensenada Guayabo, *Stern & Chambers 178*.

5. *CONOSTEGIA BRACTEATA* Triana, in *Journ. Bot.* 4:209. 1867.

Shrub to 3 m. tall, the younger stems hirsute; petioles 5–12 mm. long; leaf-blades narrowly elliptic to oblanceolate, 8–15 cm. long, a fourth to a third as wide, acuminate, obscurely serrulate, hirsutulous on both sides, 3-nerved; panicle small, the glomerulate flowers subtended by oblong-obovate bracts 8 mm. long and by smaller bractlets; buds pyriform, about 8 mm. long, abruptly acuminate, hirsute; hypanthium at anthesis about 3 mm. long; petals white, 7–8 mm. long; style straight; stigma ovoid, scarcely wider than the style.

Nicaragua to Panama. The species exists in two forms: plants of the lowlands have leaves distinctly acuminate to a narrow base; plants of the highlands have leaves convexly narrowed to an obtuse base.

CANAL ZONE: between Frijoles and Monte Lirio, 30 m., *Killip 12158*; Barro Colorado Island, *Aviles 876*. COLÓN: Río Lagarto region, Gatún Lake, *Seibert 1530*. DARIÉN: Cana-Cuasi trail, Chepigana district, 600 m., *Terry & Terry 1462*. PROVINCE UNKNOWN: *Pittier 5619*.

6. *CONOSTEGIA SPECIOSA* Naud. in *Ann. Sci. Nat. Bot.* III. 16:109. 1851.

Shrub to 7 m. tall, the stems, petioles, lower leaf-surface, panicles, and hypanthia softly pubescent with stellate hairs on stipes 1–2 mm. long; petioles stout, 1–2 cm. long; leaf-blades ovate, oblong-ovate, or oblong-obovate, up to 25 cm. long, half to two thirds as wide, acuminate, usually serrate, obtuse or rounded at base, 5- to 7-plex-nerved, hirsute above with simple bristles; panicle many-flowered, divaricately branched, up to 15 cm. long; buds pyriform, subacute, about 7 mm. long; hypanthium at anthesis 3–4 mm. long; petals pink, 5–7 mm. long; style 3–4 mm. long, abruptly bent near the summit beneath the expanded flat stigma.

BOCAS DEL TORO: Bastimentos, Mariano Creek, *von Wedel 2904*. CANAL ZONE: Ancón Hill, *Killip 3011*, *Williams 16*, *Woodson*, *Allen & Seibert 1332*; Barro Colorado Island, *Aviles 892*, *Bailey & Bailey 6*, 232, *Bangham 391*, 412, *Brown 134*, *Fairchild*, *Sbattuck 707*, *Starry 123*, *Wetmore & Abbe 9*, *Wheeler 83*, *Woodson & Seibert 972*, *Woodworth & Vestal 341*; vicinity of Gamboa, *Allen 197*; Gatún, *Hayes 239*; Madden Dam, *Seibert 551*; vicinity of Miraflores, *White 137*; Corundu, *Harvey 5186*; east of Fort Clayton, *Harvey 5109*; between Mt. Hope and Santa Rita trail, *Cowell 86*, 87; Las Sabanas, *Pittier 6709*; Santa Rita trail, *Cowell 152*. COCLÉ: Llano Bonito, north of Las Margaritas, 400–500 m., *Seibert 532*; between Las Margaritas and El Valle, *Woodson*, *Allen & Seibert 1742*. DARIÉN: *Macbride 2710*. PANAMÁ: forests near Arraiján, *Woodson*, *Allen & Seibert 1361*; Isla Taboga, 0–186 m., *Woodson*, *Allen & Seibert 1524*; vicinity of Pacora, 35 m., *Allen 1118*; San José Island, *Johnston 446*, 1166, *Erlanson 567*, *Harlow 69*. PROVINCE UNKNOWN: *Duchassaing s. n.*, *Halsted s. n.*, *Hayes 833*.

7. *CONOSTEGIA XALAPENSIS* (Bonpl.) D. Don, in *Mem. Wern. Soc.* 4:317. 1823.

Melastoma xalapense Humb. & Bonpl. *Melast.* 126. *t.* 54. 1816.

Conostegia lanceolata Cogn. in *DC. Monogr. Phan.* 7:708. 1891.

Shrub or small tree to 10 m. tall, the younger stems thinly but closely tomentulose; petioles 1–1.5 cm. long; leaf-blades variable in shape, commonly narrowly lanceolate, up to 15 cm. long and 4 cm. wide, occasionally oblanceolate or ovate-

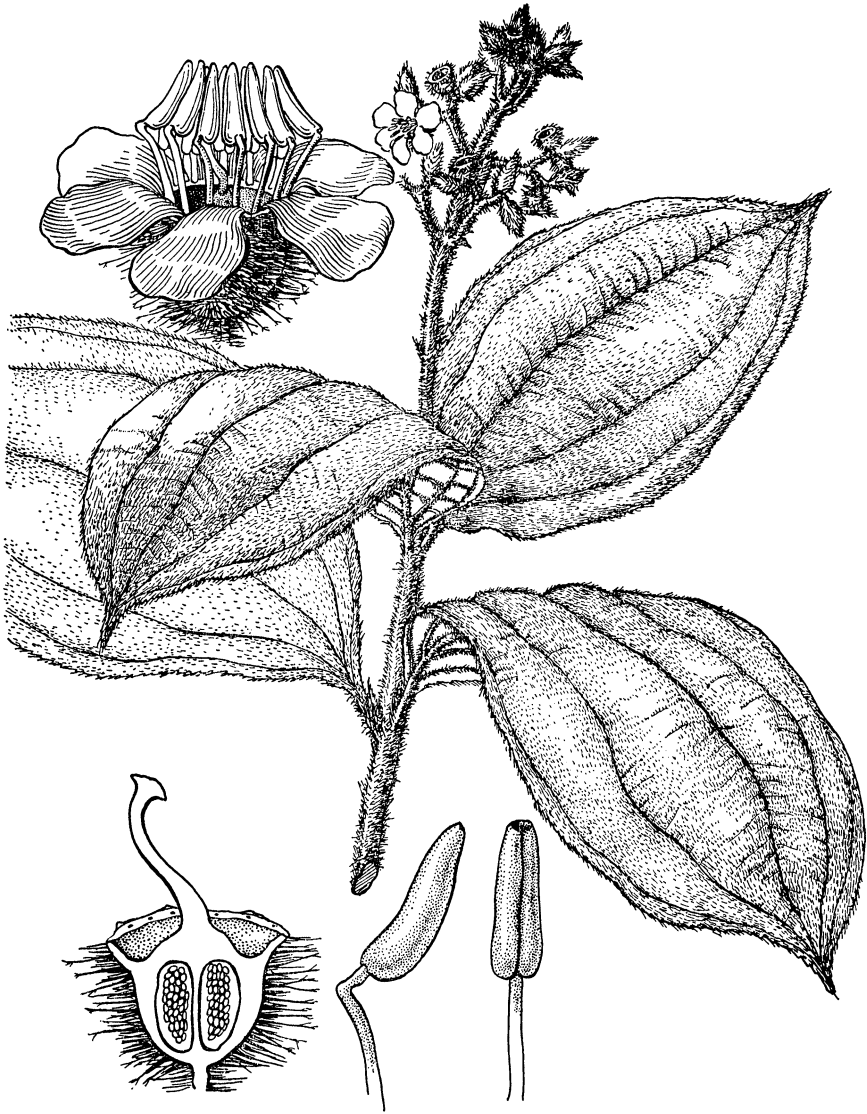


Fig. 89. *Conostegia speciosa*

lanceolate, acuminate, commonly dentate at least beyond the middle, obtuse to cuneate at base, glabrous above when mature, permanently canescent beneath with a fine close tomentum, 3- to 5-ply-nerved; panicle up to 1 dm. long; buds pyriform, acute, 5-6 mm. long, tomentose; petals pink or white, 5-8 mm. long; style 4-5 mm. long, abruptly bent and slightly dilated below the capitate stigma.

Abundant and widely distributed from southern Mexico into northern South America. Narrow-leaved plants, distinguished by Cogniaux as *C. lanceolata*, are the most abundant in Panama.

BOCAS DEL TORO: southwest of Bocas at Macaw Hills, *von Wedel 530*; without locality, *von Wedel 334*; Changuinola Valley, *Dunlap 143*. CANAL ZONE: Barro Colorado Island, *Aviles 99*, *Shattuck 857, 1062*; Chagres, *Fendler 30*; Gatún, *Hayes 252*; between Mt. Hope and Santa Rita trail, *Cowell 93*. CHIRIQUI: Bajo Mono, Boquete district, 1350 m., *Davidson 517*; vicinity of El Boquete, 1000-1300 m., *Maxon 4930*; Finca Lériða to Boquete, 1300-1700 m., *Woodson, Allen & Seibert 1122*; Río Chiriquí Viejo Valley, near El Volcán, *White 210*. COCLÉ: vicinity of El Valle de Antón, *Allen 1771, 2502, 3546, Maurice 778, Seibert 494*. COLÓN: along Río Fató, 10-100 m., *Pittier 3883*. PANAMÁ: hills above Campana, 600-800 m., *Allen 1693*.

8. *CONOSTEGIA POLYANDRA* Benth. Bot. Voy. Sulphur 96. t. 35. 1844.

Shrub or small tree to 6 m. tall, the younger parts minutely stellate-puberulent, soon glabrescent; petioles slender, 1-2.5 cm. long; leaf-blades elliptic or oblong, 5-9 cm. long, about half as wide, obtuse or short-apiculate, entire, obtuse to rounded at base, 3-nerved, essentially glabrous at maturity; panicle widely branched, 5-10 cm. long; buds pyriform, acuminate, glabrous, about 10 mm. long; hypanthium about 4 mm. long at anthesis; petals white, about 10 mm. long; style straight, 8-10 mm. long, tapering distally to a punctiform stigma.

Costa Rica, Panama, and Colombia.

BOCAS DEL TORO: Old Bank Island, *von Wedel 1876, 1920*; Bastimentos, Mariano Creek, *von Wedel 2895*; Isla de Colón, *von Wedel 75, 102, 531*; Fish Creek Hills, *von Wedel 2416*; Nances Cay, *von Wedel 2935*; without locality, *von Wedel 341*.

9. *CONOSTEGIA MICROMERIS* Standley, in Contr. Arn. Arb. 5:117. pl. 15. 1933.

"Tall tree," the younger parts minutely furfuraceous, soon glabrescent; petioles 2-5 mm. long; leaf-blades thin, oblanceolate, up to 22 cm. long, about a third as wide, acuminate, entire, long-cuneate to the base, 5-ply-nerved, glabrous above at maturity, minutely furfuraceous on the veins beneath; panicle 3-6 cm. long, divaricately branched; buds 3-3.5 mm. long, minutely furfuraceous; hypanthium 2-2.5 mm. long at anthesis; petals white, 3-3.5 mm. long; style about 5 mm. long, narrowed above to a small truncate or punctiform stigma.

Panama and western Colombia.

CANAL ZONE: Barro Colorado Island, *Killip 39988, Woodworth & Vestal 602*.

10. *CONOSTEGIA PUBERULA* Cogn. in DC. Monogr. Phan. 7:703. 1891.

Conostegia sororia Standley, in Field Mus. Pub. Bot. 22:161. 1940.

Tree to 12 m. tall, the younger parts finely but completely brown-stellate-

tomentulose; petioles slender, 2–3 cm. long, tomentulose; leaf-blades oblanceolate, up to 2 dm. long, a third to two-fifths as wide, caudate-apiculate or abruptly short-acuminate, entire, gradually narrowed to an acute or cuneate base, glabrous above, thinly stellate beneath and along the veins and veinlets; panicle 1–1.5 dm. long; buds pyriform, obtuse or subacute, never apiculate, about 8 mm. long, completely and permanently brown-stellate-tomentulose; hypanthium at anthesis about 4 mm. long; petals white, 6–8 mm. long; style stout, columnar, 4–5 mm. long; stigma hemispheric-capitate.

Costa Rica and Panama.

BOCAS DEL TORO: Almirante region, *Cooper* 412, 487, 581; Cricamola Valley, *Cooper* 486; Changuinola Valley, *Cooper* & *Slater* 91, *Dunlap* 412, 508. COLÓN: around Dos Bocas, Río Fató Valley, 40–80 m., *Pittier* 4218. DARIÉN: Chepigana district, 240 m., *Terry* & *Terry* 1414.

11. *CONOSTEGIA SUBCRUSTULATA* (Beurl.) Triana, in Trans. Linn. Soc. 28:98. 1871.

Miconia subcrustulata Beurl. Prim. Fl. Portob. 130. 1854.

Shrub or small tree, up to 8 m. tall, the younger parts of the stem, petioles, panicle, and lower leaf-surface floccose-tomentulose with stellate hairs; petioles 1–4 cm. long; leaf-blades usually ovate, varying to ovate-oblong, up to 2 dm. long, half to two-thirds as wide, acute or short-acuminate, conspicuously serrate and ciliate, rounded to subcordate at base, 7- to 9-ple-nerved, sparsely hirsutulous above with simple hairs; panicle many-flowered, 1–2 dm. long; buds pyriform, 4–5 mm. long, acuminate and often falcate, the hypanthial portion stellate-tomentulose, the calycine portion nearly glabrous; hypanthium 2.5 mm. long at anthesis; petals pink, 4–5 mm. long; style about 4 mm. long, abruptly dilated and bent just below the capitate stigma.

Nicaragua to Colombia.

BOCAS DEL TORO: Almirante region, *Cooper* 341; Fish Creek lowlands, *von Wedel* 2386; Little Bocas, *von Wedel* 2548; vicinity of Nievecita, *Woodson, Allen* & *Seibert* 1874; Old Bank Island, *von Wedel* 2178; banks of the Changuinola River, *Dunlap* 297; without locality, *Carleton* 172. CHIRIQUÍ: Cerro Galera Chorchá, vicinity of Gualaca, 300 m., *Allen* 5064; vicinity of San Félix, 100 m., *Allen* 3653; Río Chiriquí to Remedios, 15–50 m., *Woodson, Allen* & *Seibert* 1183. COCLÉ: vicinity of El Valle de Antón, 500–1000 m., *Allen* 1152, *Seibert* 484; between Las Margaritas and El Valle, *Woodson, Allen* & *Seibert* 1740; Bismarck, above Penonomé, *Williams* 288, 575. DARIÉN: headwaters of the Río Chico, 150–225 m., *Allen* 4502. VERAGUAS: hills west of Soná, 500 m., *Allen* 1031.

12. *CONOSTEGIA MONTANA* (Sw.) D. Don, in Mem. Wern. Soc. 4:317. 1823.

Melastoma montana Sw. Prodr. Veg. Ind. Occ. 69. 1788.

Small tree to 10 m. tall, the younger parts of the stem, petioles, and veins of the lower leaf-surface thinly but distinctly stellate-tomentulose; petioles slender, 2–4 cm. long; leaf-blades thin, up to 15 cm. long, about a third as wide, acuminate, entire, obtuse at the base, glabrous above, 5-ple-nerved; panicle 10–15 cm. long, widely branched, many-flowered; buds pyriform, 7–8 mm. long, acute or short-apiculate, glabrous; hypanthium at anthesis 2.5–3 mm. long; petals white, 4–6 mm.

long; style 4–5 mm. long; stigma capitate, 1–1.3 mm. in diameter.

Costa Rica, Panama, and the West Indies.

BOCAS DEL TORO: Robalo trail, northern slopes of Cerro Horqueta, 1800–2100 M., *Allen 4942, 5006*. CHIRIQUÍ: Quebrada Velo, vicinity of Finca Lériða, 1500 m., *Allen 4684*; between Alto de las Palmas and top of Cerro de la Horqueta, 2100–2268 m., *Pittier 3281*.

13. *CONOSTEGIA CHIRIQUENSIS* Gl. ex Woods. & Schery, in *Ann. Mo. Bot. Gard.* 28:436. 1941.

Tree to 20 m. tall, glabrous except the very youngest stems and unfolding leaves; petioles slender, 1–3 cm. long; leaf-blades firm, elliptic or obovate-oblong, up to 15 cm. long, a third to half as wide, apiculate or abruptly short-acuminate, entire, obtuse at the base, 5-plei-nerved; panicle 5–15 cm. long, few-flowered, the branches ascending; buds pyriform, apiculate, 10–13 mm. long; hypanthium at anthesis 3–4 mm. long; petals white, more or less unguiculate, 10–15 mm. long; style stout, 4–5 mm. long; stigma hemispheric, capitate, about 1.5 mm. in diameter.

Endemic to Panama, so far as known.

CHIRIQUÍ: Río Chiriquí Viejo valley, *White 47, 324*; trail from Paso Ancho to Monte Lirio, valley of Río Chiriquí Viejo, 1500–2000 m., *Allen 1480*; vicinity of Callejón Seco, Volcán de Chiriquí, 1700 m., *Woodson & Schery 479*; forests around El Boquete, 1000–1300 m., *Pittier 3142*.

14. *CONOSTEGIA MICRANTHA* Standley, in *Trop. Woods* 16:18. 1928. Nomen; *Field Mus. Pub. Bot.* 4:246. 1929.

Tree to 10 m. tall, the younger parts of the stem, petioles, and panicle loosely stellate-pubescent; petioles 2.5–3.5 cm. long; leaf-blades elliptic, varying to somewhat ovate or obovate, up to 18 cm. long, about half as wide, abruptly caudate-acuminate, entire or undulate, broadly obtuse at base, barely to distinctly 5-plei-nerved, glabrous above, stellate-pubescent beneath; panicle pyramidal, many-flowered, 3–12 cm. long; buds obovoid, 3.5–4 mm. long, rounded at the summit, truncate or retuse at the base, glabrous or nearly so; hypanthium 2 mm. long at anthesis; petals white, about 4 mm. long; style columnar, 3–4 mm. long; stigma capitate.

Costa Rica and Panama.

BOCAS DEL TORO: Buena Vista Camp on the Chiriquí trail, 375–540 m., *Cooper 578, 619*.

30. *TOCOCA* Aubl.

TOCOCA Aubl. *Pl. Guian.* 1:437. *t. 174.* 1775.

Flowers usually 5-merous. Hypanthium obconic to campanulate. Calyx-tube more or less prolonged, erect to flaring; sepals usually short or obsolete; exterior teeth often conspicuous. Petals obovate to oblong, inequilateral, usually retuse. Stamens isomorphic or nearly so; filaments stout; anthers erect, linear or subulate, always more or less incurved at the summit; connective elevated into a low ridge

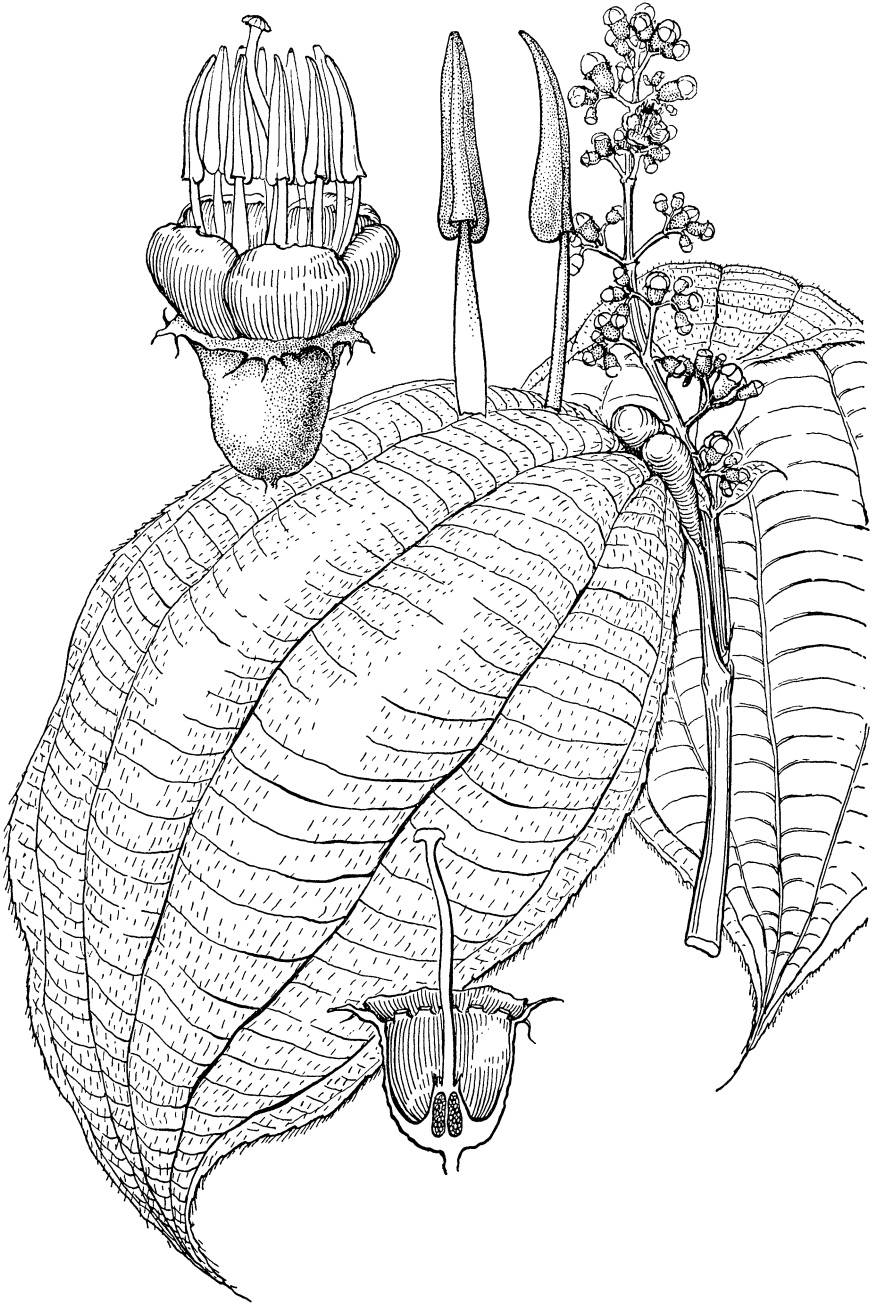


Fig. 90. *Tococa guyanensis*

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along the thecae and often gibbous near their base, below the thecae neither prolonged nor appendaged. Ovary half-inferior, 3- to 5-celled; style stout, glabrous or pubescent; stigma capitate, often large. Fruit a many-seeded berry. Shrubs or even small trees with broad leaves often unequal in each pair and in many species bearing formicaria at the summit of the petiole or base of the blade; flowers medium-sized, white to pink, in terminal panicles.

About 60 species, most numerous in Amazonia.

1. *TOCOCA GUYANENSIS* Aubl. Pl. Guian. 1:438. *t.* 174. 1775.

Shrub 1-3 m. tall, the younger stems strongly flattened, glabrous to setose; petioles stout, 1-6 cm. long, pubescent on the back, many of them bearing an inflated formicarium at the summit; leaf-blades ovate-lanceolate to oblong or elliptic, 10-25 cm. long, half to two-thirds as wide, usually ciliate, 5-nerved, sparsely setose above, thinly pubescent beneath; panicle 1-2 dm. long; flowers sessile; hypanthium about 5 mm. long; calyx almost truncate, with broadly triangular glandular-setose exterior teeth; petals about 8 mm. long.

British Honduras and Panama; widely distributed in South America from Columbia to the Guianas and Bolivia.

BOCAS DEL TORO: vicinity of Chiriquí Lagoon, *von Wedel 1139*. COCLÉ: Bismarck, above Penonomé, *Williams 586*; locality not stated, *Cooper & Slater 151*.

31. *HETEROTRICHUM* DC.

HETEROTRICHUM DC. Prodr. 3:173. 1828.

Flowers 5- to 9-merous. Hypanthium campanulate to cup-shaped, always pubescent. Sepals usually short, conspicuously exceeded by the exterior teeth. Petals obovate. Stamens isomorphic; filaments smooth, slender; anthers subulate or linear, 2-celled; connective more or less elevated along the thecae, unappendaged, not prolonged at base or very briefly so. Ovary inferior only at base, 5- to 9-celled; style slender, elongate; stigma capitate to punctiform. Fruit a berry with numerous minute seeds. Shrubs or small trees of various aspect, with petiolate leaves and terminal panicles of large or medium-sized flowers.

Twelve species of tropical America, each of them, except the following, restricted in distribution.

1. *HETEROTRICHUM OCTONUM* (Bonpl.) DC. Prodr. 173. 1828.

Melastoma octonum Humb. & Bonpl. Melast. 7. *t.* 4. 1816.

Shrub 1-5 m. tall; stem, petioles, panicle, and hypanthium densely covered with three types of pubescence, short, nearly sessile, stellate hairs, somewhat longer, projecting, glandular bristles, and elongate (4-8 mm.) simple bristles; petioles 3-8 cm. long; leaf-blades thin, ovate, 12-18 cm. long, half to two-thirds as wide, acuminate, denticulate, cordate at base, 7-nerved, setose above with long hairs, conescent-stellate beneath; panicle many-flowered, 5-10 cm. long; flowers 5- to 8-merous; sepals triangular-ovate, very short; exterior teeth subulate, 3-4 mm.

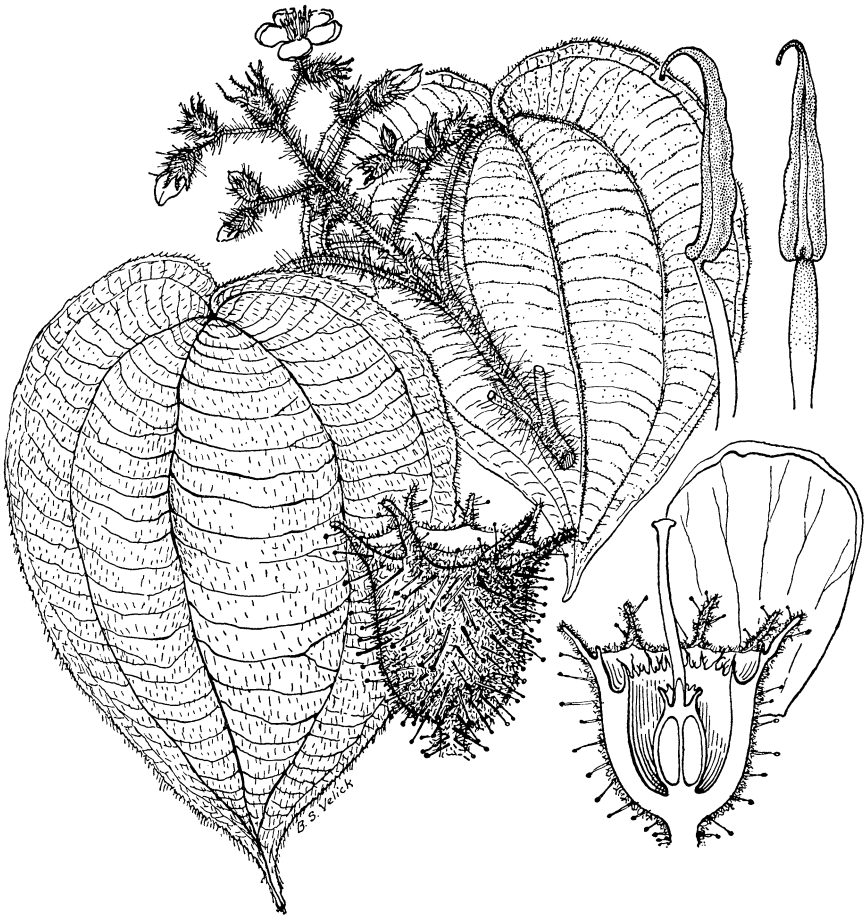


Fig. 91. *Heterotrichum octonum*

long; petals white, 8–10 mm. long; anthers subulate, 5–6 mm. long.

Southern Mexico to Peru and Brazil, at low or moderate elevations; also in Cuba.

BOCAS DEL TORO: Little Bocas, vicinity of Chiriquí Lagoon, *von Wedel 2492*. CANAL ZONE: Ancón Hill, vicinity of Balboa, *Seibert 400*, *Woodson, Allen & Seibert 1321*; Barro Colorado Island, *Aviles 22*, *Bangham 485*. CHIRIQUÍ: San Félix to Cerro Flor, 100–850 m., *Allen 1919*. DARIÉN: Marragantí and vicinity, *Williams 664*. PANAMÁ: San José Island, *Jobnston 75, 1027, 1349, Erlanson 262*. PROVINCE UNKNOWN: *Hayes 223*.

32. MICONIA Ruiz & Pav.

MICONIA Ruiz & Pav. Fl. Peruv. & Chil. Prodr. 60. 1794.

Flowers 4- to 7- (commonly 5-)merous, in terminal paniculiform, spiciform, or rarely corymbiform inflorescences. Calyx open in the bud, usually with small but evident lobes and short, more or less adnate exterior teeth. Petals commonly white, mostly small, often inequilateral or retuse. Stamens isomorphic or dimorphic; anthers of various shapes, subulate, linear, oblong, or obovate, 2-celled or 4-celled, opening by 1, 2, or 4 terminal pores or the pore extended into 1 or 2 longitudinal slits; connective simple or variously lobed or appendaged. Ovary partly to wholly inferior; stigma truncate, capitate, or peltate. Fruit a many-seeded berry. Trees or shrubs of diverse size and habit.

At least 900 valid species, distributed throughout tropical America. The genus is ordinarily divided into twelve sections characterized by the shape and mode of dehiscence of the anthers and by the nature of the calyx; three of these are not represented in Panama. *Miconia* is closely related to several other genera, especially *Conostegia*, *Heterotrichum*, and *Tococa*. The characters by which these are distinguished from *Miconia* are far weaker than those which separate certain sections within the genus. Species of *Miconia* can seldom be identified satisfactorily without recourse to the structure of the anthers, although many of them may be recognized by various intangible characters not easily expressed in words. Two keys are provided below, the first almost wholly artificial, the second more technical; the two should be used together. Besides the species described here, a few others may be represented by flowerless material now in herbaria. No attempt has been made to include them in the keys. The flowers of one admitted species, *M. sbattuckii*, are unknown and it is placed at the end without assignment to a section.

ARTIFICIAL KEY

- a. Lower surface of the leaves distinctly and permanently pubescent or lepidote.
- b. Pubescence of stellate hairs or scales.
- c. Leaves sessile.
 - d. Hypanthium and calyx together 2–3 mm. long; petals about 2.5 mm. long..... 11. *M. IMPETIOLARIS*.
 - dd. Hypanthium and calyx together 7–9 mm. long; petals about 7 mm. long..... 5. *M. AMPLEXANS*.
- cc. Leaves petiolate.
 - d. Flowers more or less secund along the branches of the inflorescence.
 - e. Younger branches strongly flattened and sharply two-edged..... 10. *M. ARGENTEA*.
 - ee. Younger branches terete or angled.

- f. Petals entire..... 19. *M. ALBICANS*.
 ff. Petals minutely glandular-ciliate..... 9. *M. STENOSTACHYA*.
 dd. Flowers not at all secund.
 f. Petals 8-10 mm. long; flowers commonly 6-merous; leaves usually pli-nerved.
 g. Calyx-tube truncate or undulate; anthers oblong, blunt.... 28. *M. SCHLIMII*.
 gg. Calyx-lobes about 3 mm. long, deciduous at anthesis; anthers subulate..... 2. *M. MUCRONATA*.
 ff. Petals 2-3.5 mm. long; flowers 5-merous.
 g. Leaves 5-nerved, caudate-acuminate, glabrous above..... 3. *M. CAUDATA*.
 gg. Leaves 3-nerved, short-acuminate.
 h. Leaves stellate above when young, soon glabrescent, permanently and densely ferruginous-stellate beneath. 22. *M. RUBIGINOSA*.
 hh. Leaves minutely setose above, very sparsely stellate on the actual surface beneath..... 23. *M. RUFOSTELLULATA*.
 bb. Pubescence entirely or chiefly of simple bristles (underlaid by stellate hairs in certain species; frayed or split at the apex in *M. barbinervis*).
 c. Petals deep red, 6-8 mm. long; filaments 13-18 mm. long; style 15-25 mm. long..... 35. *M. MELANOTRICHA*.
 cc. Petals white or pale, less than 5 mm. long; filaments and style much shorter.
 d. Flowers sessile and secund along the branches of the inflorescence; hairs on the stem up to 8 mm. long; hypanthium glabrous; style bent to one side..... 27. *M. LACERA*.
 dd. Flowers sessile in sessile, lateral, nearly or quite contiguous glomerules along the few branches of the inflorescence, forming a compound spiciform inflorescence; hypanthium pubescent; style straight..... 7. *M. AERUGINOSA*.
 ddd. Flowers in paniculiform inflorescences, although often glomerulate; hypanthium glabrous or pubescent; style straight.
 e. Pubescence of the stem, petioles, and primary veins distinctly ascending-strigose; leaves long-tapering to the base, the lateral veins arising 3-8 cm. from the base..... 19. *M. NERVOSA*.
 ee. Pubescence of the stem retrorse-strigose; leaves 5-nerved..... 32. *M. PITTIERI*.
 eee. Pubescence of the stem more or less spreading, certainly never conspicuously ascending or retrorse.
 f. Leaves 7-nerved, cordate at the base..... 36. *M. SHATTUCKII*.
 ff. Leaves 3- to 5-nerved or 3- to 5-ply-nerved, obtuse or rounded at the base.
 g. pubescence of both stellate and simple hairs; leaves distinctly 5-ply-nerved..... 12. *M. IBAGUENSIS*.
 gg. Pubescence of elongate matted hairs frayed or divided at the apex..... 13. *M. BARBINERVIS*.
 ggg. Pubescence entirely of simple bristles.
 h. Plants densely hirsute with red-purple hairs up to 3 mm. long; stigma minute, truncate..... 29. *M. COSTARICENSIS*.
 hh. Plants hirsutulous with hairs up to 1 mm. long; stigma large, peltate, 4- to 5-angled or lobed..... 30. *M. GONIOSTIGMA*.
 aa. Lower surface of mature leaves glabrous or essentially so. (Almost every species is somewhat stellate when young and a few minute hairs often persist on the veins.)
 b. Leaves 3- to 5-ply-nerved.
 c. Leaves long-tapering to the base.
 d. Calyx-lobes sharply triangular..... 15. *M. PRASINA*.
 dd. Calyx-lobes depressed-semicircular..... 16. *M. PTEROPODA*.
 cc. Leaves acute to rounded at the base.
 d. Petals 5-10 mm. long; anthers 4-6 mm. long.
 e. Plants glabrous throughout; anthers subulate..... 4. *M. HONDURENSIS*.
 ee. Plants more or less stellate-pubescent on the younger stems, petioles, and hypanthium; anthers blunt..... 28. *M. SCHLIMII*.
 dd. Petals 2-3 mm. long; anthers 2 mm. long or shorter.

* See footnote on p. 296.

- e. Anthers less than 1 mm. long..... 34. *M. RUBENS*.
 ee. Anthers about 2 mm. long..... 33. *M. CUSPIDATISSIMA*.
 bb. Leaves 3- to 5-nerved.
 c. Flowers 4-merous.
 d. Stem and leaves glabrous..... 1. *M. LATERIFLORA*.
 dd. Stem and lower side of the leaf stellate..... 23. *M. RUFOTELLULATA*.
 cc. Flowers 5-merous.
 d. Flowers secund along the branches of the inflorescence; style bent near the summit.
 e. Leaves green, two-fifths to half as wide as long..... 25. *M. CILIATA*.
 ee. Leaves purple-red beneath, a fourth to a third as wide as long. 26. *M. OINOCROPHYLLA*.
 dd. Flowers not at all secund.
 e. Inflorescence slender and elongate.
 f. Flowers sessile along the central axis of the spike-like inflorescence..... 6. *M. TRIPLINERVIS*.
 ff. Flowers (at least the lower) sessile on short lateral branches, the uppermost often solitary on a lateral branch..... 8. *M. GRACILIS*.
 ee. Inflorescence paniculiform.
 f. Leaf-blades comparatively large, commonly half to two-thirds as wide as long.
 g. Flowers pediceled; leaves caudate; anthers subulate..... 3. *M. CAUDATA*.
 gg. Flowers sessile; leaves short-acuminate; anthers linear..... 14. *M. CALVESCENS*.
 ff. Leaf-blades comparatively small, rarely up to 6 cm. wide, rarely as much as half as wide as long.
 g. Leaves of an oblong or oblong-lanceolate type, commonly widest distinctly below the middle.
 h. Fourth and fifth veins submarginal and relatively prominent..... 24. *M. BOREALIS*.
 hh. Fourth and fifth veins strictly marginal and obscure..... 21. *M. PANAMENSIS*.
 gg. Leaves of an oblong to obovate type, commonly broadest near or above the middle.
 h. Lobes of the calyx small, but distinctly developed.
 i. Nodes of the inflorescence marked by a ring of minute setae; anthers linear..... 17. *M. HYPERPRASINA*.
 ii. Nodes of the inflorescence lacking setae; anthers oblong to obovate.
 j. Smaller branches of the inflorescence angular and bisulcate..... 31. *M. THEAEZANS*.
 jj. Smaller branches of the inflorescence terete or nearly so..... 33. *M. CUSPIDATISSIMA*.
 hh. Lobes of the calyx obsolete..... 18. *M. INSULARIS*.

KEY TO THE SECTIONS

- a. Anthers subulate, tapering to the summit, opening by a minute terminal pore; thecae commonly convolute.
 b. Leaves petioled; connective glandular or glabrous.
 c. Sepals or exterior teeth or both well developed in comparison with the hypanthium..... I. *JUCUNDA* (spp. 1-2).
 cc. Sepals and exterior teeth poorly developed in comparison with the hypanthium..... II. *TAMONEA* (spp. 3-4).
 bb. Leaves sessile; connective always dilated and glandular..... III. *ADENODESMA* (sp. 5).
 aa. Anthers linear or broader, not tapering to the summit.
 b. Anthers opening by a terminal pore.
 c. Anthers slender, linear or slightly widened distally.
 d. Pore minute, rarely more than half the width of the anther..... IV. *MICONIA* (spp. 6-23).
 dd. Pore conspicuous, about as wide as the anther..... V. *GLOSSOCENTRUM* (sp. 24).
 cc. Anthers oblong to obovate or obovoid.
 d. Pore minute, much less than half as wide as the anther.
 e. Anthers 2-celled; style abruptly bent near the summit. VI. *HARTIGIA* (spp. 25-27).
 ee. Anthers 4-celled; style straight..... VII. *AMBLYARRHENA* (spp. 28-30).
 dd. Pore at least half as wide as the anther, the septum between the thecae commonly protruding..... VIII. *CREMANIUM* (spp. 31-34).
 bb. Anthers opening by two longitudinal clefts..... IX. *CHAENOPLLEURA* (sp. 35).

I. Section JUCUNDA (Cham.) Tr. ex Benth. & Hook. f. Gen. Pl. 1:764. 1867

Anthers subulate, usually with convolute thecae, opening by a minute pore; connective simple or variously lobed or prolonged; either the sepals or the exterior teeth greatly developed and the calyx therefore apparently deeply lobed; exterior teeth often much exceeding the sepals and mistaken for them; leaves petioled (in our species).

Twenty known species, most numerous in Amazonia.

- | | |
|--|----------------------------|
| a. Sepals proper nearly obsolete, much surpassed by the narrowly triangular exterior teeth; flowers 4-merous; leaves 3-nerved..... | 1. <i>M. LATERIFLORA</i> . |
| aa. Sepals 3-4 mm. long from the torus; exterior teeth minute; flowers mostly 6-merous; leaves 3- to 5-ple-nerved..... | 2. <i>M. MUCRONATA</i> . |

1. *MICONIA LATERIFLORA* Cogn. in Bol. Mus. Goeldi 5:255. 1909.

Ossaea disparilis Standley, in Contr. Arn. Arb. 5:120. *pl.* 17. 1933.

Miconia disparilis (Standley) R. O. Williams, in Dept. Agric. Trinidad & Tobago 1:388. 1934.

Shrub to 3 m. tall, the stems and leaves glabrous; petioles slender, 5-25 mm. long; leaf-blades shining, thin, elliptic, 10-25 cm. long, two-fifths to half as wide, slenderly acuminate or caudate, obscurely crenulate and sparsely ciliate, obtuse to broadly cuneate at base, 3-nerved; panicle loose and open, sparsely branched; flowers predominantly 4-merous, sessile in small terminal glomerules; hypanthium tubular, becoming ovoid in fruit, glabrous or minutely punctate, 3.5-4 mm. long; calyx-lobes nearly obsolete; exterior teeth narrowly triangular, 1.5-2 mm. long; petals obovate, 1.5-2 mm. long; stamens isomorphic, the anthers subulate, 3-3.5 mm. long; connective minutely 4-lobed at base; ovary nearly free, 4-celled; stigma truncate; fruit strongly 8-costate, sometimes glandular-pilose.

British Honduras to Panama, Colombia, Trinidad, Surinam, and northern Brazil.

BOCAS DEL TORO: Fish Creek, *von Wedel* 2230; Water Valley, *von Wedel* 1470; Buena Vista Camp on the Chiriquí trail, 375 m., *Cooper* 593. CANAL ZONE: Barro Colorado Island, *Aviles* 21, *Bailey & Bailey* 201, 506; Frijoles, *Standley* 27553. DARIÉN: Cana-Cuasi trail, Chepigana district, 600 m., *Terry & Terry* 1455.

2. *MICONIA MUCRONATA* (Desr.) Naud. in Ann. Sci. Nat. Bot. III. 16:120. 1851.

Melastoma holosericea L. Sp. Pl. 390. 1753.

Melastoma mucronata Desr.; Lam. Encyc. 4:46. 1796.

Miconia holosericea Triana, Trans. Linn. Soc. 28:101. 1871. Not *M. holosericea* DC. 1828.

Shrub or small tree to 5 m. tall, the smaller twigs somewhat flattened, very finely tomentulose, as are also the petioles, lower leaf-surface, panicle, and hypanthia; petioles 1.5-2.5 cm. long; leaf-blades broadly elliptic, varying to ovate or obovate, up to 4 dm. long, a third to half as wide, abruptly short-acuminate, entire, obtuse to rounded at base, glabrous above, 3- to 5-nerved or 3- to 5-ple-nerved; panicle to 15 cm. long, rather few-flowered; flowers commonly 6-merous, sessile; hypanthium tubular, about 6 mm. long; sepals ovate to lanceolate, 2.5-3.5 mm. long, deciduous at anthesis; petals obovate-oblong, 8-10 mm. long; stamens iso-

morphic; anthers subulate, 6–8 mm. long, the connective prolonged into two obtuse basal lobes and a short erect dorsal spur; ovary almost free; style about 18 mm. long; stigma truncate.

British Honduras and Panama; in South America south to southern Brazil and Bolivia.

CHIRIQUÍ: vicinity of San Félix, 0–120 m., *Pittier 5261*.

II. Section TAMONEA Cogn. in Mart. Fl. Bras. 14⁴:238. 1887.

Anthers subulate, usually with convolute thecae, opening by a minute terminal pore; connective usually simple, occasionally very briefly prolonged and lobed, rarely glandular; calyx-tube well developed but scarcely lobed, the exterior teeth none or minute.

About 50 species, most numerous in Amazonia.

- | | |
|--|--------------------|
| a. Leaves ovate, usually (not always) cinereous beneath, glabrous above; hypanthium cinereous-tomentose..... | 3. M. CAUDATA. |
| aa. Leaves oblong or oblong-obovate; plant glabrous throughout..... | 4. M. HONDURENSIS. |

3. MICONIA CAUDATA (Bonpl.) DC. Prodr. 3:187. 1828.

Melastoma caudata Humb. & Bonpl. Melast. 13. t. 7. 1807.

Shrub or small tree to 12 m. tall, the younger stems ferruginous-stellate-tomentose, glabrescent in age; petioles slender, 2–5 cm. long; leaf-blades firm, ovate, 1–2 dm. long, about half as wide, caudate-acuminate, entire, broadly rounded at base, 5-nerved, glabrous and dull green above, beneath varying from cinereous with a close tomentum of stellate hairs to completely glabrous; panicle 5–10 cm. long, compact, much branched, the flowers in small terminal glomerules; hypanthium campanulate, about 2.5 mm. long to the torus, cinereous-stellate, calyx-tube about 0.5 mm. long, obscurely 5-lobed; petals white, obovate, 3–3.5 mm. long, stellulate externally; stamens isomorphic or somewhat dimorphic; anthers stoutly subulate, 4–4.5 mm. long, somewhat incurved, with convolute thecae; connective simple or elevated into a dorsal ridge near the base, smooth or beset with sessile glands; filaments smooth or villosulous; style often villosulous.

Southern Mexico to Ecuador.

CHIRIQUÍ: Boquete, 1350 m., *Maxon 5145*, *Terry 1278*. COCLÉ: region of El Valle de Antón, 1000 m., *Allen 3734*.

4. MICONIA HONDURENSIS Donn. Sm. in Bot. Gaz. 40:3. 1905.

Miconia gatunensis Pittier, in Journ. Wash. Acad. Sci. 14:447. 1924.

Shrub to 4 m. tall, glabrous throughout; petioles 1–2 cm. long; leaf-blades oblong to oblong-obovate, up to 20 cm. long and 8 cm. wide, abruptly caudate-acuminate, entire, narrowed to an obtuse base, minutely but densely verruculose-punctulate above, slightly 3-plexi-nerved; panicle pyramidal, 5–15 cm. long, the flowers mostly in clusters of three at the end of the branches, the terminal on a pedicel about 2 mm. long, the lateral sessile at the end of a very short branch; hypanthium narrowly campanulate, 3.5–4 mm. long; calyx-tube slightly flaring,

about 1 mm. long, the lobes nearly obsolete, the exterior teeth lacking; petals white, oblong-elliptic, retuse, about 5 mm. long; stamens dimorphic; filaments about 6 or about 3.5 mm. long; anthers subulate, with obscurely convolute thecae, the larger nearly straight, about 6 mm. long, the smaller incurved, about 5 mm. long; connective thickened toward the base and curved around the base of the thecae as two small lateral lobes; style slender, about 12 mm. long; stigma capitellate.

British Honduras to Panama.

CANAL ZONE: along the Río Indio de Gatún, near sea-level, *Pittier 2786*. DARIÉN: Tucuti, Chepigana district, about 15 m., *Terry & Terry 1373*.

III. Section ADENODESMA Naud. ex Cogn. in Mart. Fl. Bras. 14⁴:253. 1887.

Anthers subulate, usually strongly arcuate, opening by a small terminal pore; thecae convolute; connective expanded at the base, prolonged and variously lobed below the filament, glandular; leaves pli-nerved, usually sessile.

Eleven known species, all but two Amazonian. Only the following species in Panama.

5. MICONIA AMPLEXANS (Crueg.) Cogn. in Mart. Fl. Bras. 14⁴:256. 1887.

Pogonorbynchus amplexans Crueg. in *Linnaea* 20:107. 1847.

Shrub or small tree to 8 m. tall, the younger stems closely brown-tomentose with stellate hairs; leaves sessile, firm in texture, obovate, up to 4 dm. long and about half as wide, abruptly acuminate, narrowed from above the middle to a rounded or auriculate base, 3-ply-nerved, the lateral nerves arising 5–10 cm. above the base, soon glabrescent above, beneath permanently thinly stellate-pubescent; inflorescence narrow, 1–2 dm. long, stellate-tomentose; hypanthium tubular-campanulate, 5.5–6 mm. long to the torus, finely stellate-tomentose; calyx-tube prolonged 1–1.5 mm.; sepals 0.5–1 mm. long from the sinus, semicircular; petals white, inequilateral, oblong-obovate, about 7 mm. long; stamens only slightly dimorphic; anthers slenderly subulate, about 6 or about 8 mm. long, the connective at base glandular-pubescent and curved into a half-circle below the thecae; filaments sparsely glandular; ovary glandular; stigma truncate.

British Honduras, Trinidad, and Panama, and southward at low elevations in South America to Bolivia.

PROVINCE UNKNOWN: *Hayes 972*.

IV. Section MICONIA

Anthers elongate, linear, opening by a terminal pore seldom half as wide as the anther, 2-celled; connective simple in a few species, usually more or less prolonged below the thecae into various types of lobes or appendages.

About 250 species, distributed over the entire range of the genus but most numerous in Amazonia. The nature of the connective, upon which the major divisions of the key are based, can not be determined from dried anthers; they must first be restored to natural form by brief boiling.

- a1. Connective of the episepalous stamens simple at the base, not prolonged below the thecae..... 6. *M. TRIPLINERVIS*.
- a2. Connective of the episepalous stamens prolonged below the thecae into two deflexed lateral lobes.
- b. Lateral branches from the central axis of the inflorescence themselves unbranched.
- c. Lateral branches of the panicle bearing sessile (often contiguous) glomerules of flowers; pubescence of simple bristles..... 7. *M. AERUGINOSA*.
- cc. Lateral branches of the panicle bearing a few sessile solitary flowers; plants nearly or quite glabrous throughout..... 8. *M. GRACILIS*.
- bb. Lateral branches from the central axis of the inflorescence also branched.
- c. Flowers secund along the ultimate branches of the panicle; leaves cinereous beneath.
- d. Petals glandular-ciliate; upper internodes strongly angled but not two-edged..... 9. *M. STENOSTACHYA*.
- dd. Petals not glandular; upper internodes strongly flattened and sharply two-edged..... 10. *M. ARGENTEA*.
- cc. Flowers not secund; leaves glabrous, stellate, or pubescent beneath, or ferruginous in one species only.
- d. Leaves closely sessile by a broad base, permanently stellate beneath..... 11. *M. IMPETIOLARIS*.
- dd. Leaves petioled, or the blade long-cuneate at base and decurrent along the petiole.
- e. Younger stems and lower leaf-surface hirsute (the bristles may be stellate or branched at the summit).
- f. Leaves 5-plex-nerved, glabrous or nearly so above..... 12. *M. IBAGUENSIS*.
- ff. Leaves 3-nerved, hirsute above..... 13. *M. BARBINERVIS*.
- ee. Younger stems and lower leaf-surfaces glabrous or obscurely pubescent with minute stellate hairs.
- f. Leaves broadly rounded to cordate at base, 3- to 5-nerved; stigma capitate..... 14. *M. CALVESCENS*.
- ff. Leaves gradually narrowed at base and cuneate into a decurrent petiole; stigma truncate.
- g. Calyx-lobes triangular, nearly or quite equaled by the triangular external teeth..... 15. *M. PRASINA*.
- gg. Calyx-lobes depressed-semicircular; exterior teeth obsolete or represented by minute thickenings..... 16. *M. PTEROPODA*.
- a3. Connective of the episepalous stamens dilated at base to the width of the thecae, decurved around the filament and prolonged below the thecae as a more or less tubular organ.
- b. Leaves sessile by a broad base, permanently stellate beneath..... 11. *M. IMPETIOLARIS*.
- bb. Leaves petioled, glabrous or obscurely and minutely stellate beneath.
- c. Inflorescence branches and branchlets usually opposite; calyx lobes distinct, the external teeth projecting..... 17. *M. HYPERPRASINA*.
- cc. Inflorescence branches and branchlets whorled, 3-6 per node; calyx truncate, the external teeth nearly obsolete..... 18. *M. INSULARIS*.
- a4. Connective not dilated at base, prolonged straight back above the filament as a single dorsal lobe..... 19. *M. NERVOSA*.
- a5. Connective of the episepalous stamens prolonged below the thecae and dilated into a broad, oblique, cordate structure with the apex of the filament in its sinus.
- b. Stamens isomorphic or nearly so; flowers secund on the ultimate branches of the panicle; leaves closely cinereous-tomentose beneath..... 20. *M. ALBICANS*.
- bb. Stamens dimorphic; flowers not secund.
- c. Panicle large and well developed, terminating the main axis of the leafy branches.
- d. Younger stems and lower leaf-surfaces thinly and sparsely pubescent with stellate hairs..... 21. *M. PANAMENSIS*.
- dd. Stems and lower leaf-surfaces densely and permanently pubescent with ferruginous stellate hairs..... 22. *M. RUBIGINOSA*.
- cc. Panicles small and several, terminating short, divaricate, two-leaved, lateral branches..... 23. *M. RUFOSTELLULATA*.

6. *MICONIA TRIPLINERVIS* Ruiz & Pav. Syst. Veg. 1:105. 1798.

Miconia angustispica Blake, in Contr. U. S. Natl. Herb. 24:15. pl. 5. 1922.

Shrub or small tree to 10 m. tall, the younger parts, including the leaves, more or less stellate-tomentose when young, glabrescent in age; petioles slender, 5–15 mm. long; leaf-blades thin, oblanceolate to obovate, up to 25 cm. long, a third to half as wide, abruptly but conspicuously acuminate, entire, gradually narrowed below to an obtuse or acute base, 3-nerved; inflorescence normally a single, elongate, spiciform cluster 1–2 dm. long, floriferous nearly to the base, the flowers sessile in lateral glomerules of 2–4; hypanthium campanulate, 2.5 mm. long to the torus, thinly stellate-pubescent; calyx about 0.5 mm. long, nearly truncate; exterior teeth none; petals white, 1.5–2 mm. long, thinly stellulate on both sides; stamens isomorphic; anthers 2.5–3 mm. long, somewhat incurved, with convolute thecae and simple connective.

Southern Mexico and Jamaica to Brazil. Panama plants, segregated as a distinct species by Blake, have in general larger, proportionately broader leaves and a denser tomentum than typical plants of Amazonia.

BOCAS DEL TORO: Fish Creek, von Wedel 2197; Isla Colón, von Wedel 1929; region of Almirante, Cooper 161.

7. *MICONIA AERUGINOSA* Naud. in Ann. Sci. Nat. Bot. III. 16:135. 1851

Shrub or small tree to 6 m. tall, the stems, petioles, both sides of the leaves, panicle, and hypanthia more or less hirsute with straight simple hairs, also (except the upper side of the leaf) more or less finely stellate-tomentulose; petioles stout, 1–3 cm. long, more densely hirsute on the upper side; leaf-blades ovate or oblong-ovate, up to 20 cm. long, half to two-thirds as wide, acuminate, commonly dentate, broadly rounded or subcordate at base, 7-nerved, the outer pair nearly marginal, sparsely hirsute above; panicle with a central axis up to 15 cm. long, with several simple branches bearing small sessile glomerules, often contiguous, of sessile flowers; hypanthium obconic, about 2 mm. long to the torus; calyx-tube prolonged about 0.5 mm., its lobes depressed-triangular, minute; exterior teeth subulate, barely surpassing the lobes; petals white, obovate-oblong, 3.5–4 mm. long; stamens dimorphic; anthers linear, about 2 or about 2.5 mm. long, connective of the smaller ones simple, that of the larger prolonged at base into two small lateral lobes; stigma truncate.

Southern Mexico to Colombia and Venezuela.

CHIRIQUÍ: vicinity of El Boquete, 1140–1300 m., Davidson 604, 724, Pittier 2997; Finca Lérica to Boquete, 1300–1700 m., Woodson, Allen & Seibert 1143. COLÓN: Monk[ey?] Hill, Kuntze s. n.

8. *MICONIA GRACILIS* Triana, in Trans. Linn. Soc. 28:107. 1871.

Shrub to 5 m. tall, glabrous or essentially so throughout; petiole 5–10 (rarely 25) mm. long; leaf-blades thin, bright green up to 10 cm. long, oblong or elliptic, a third to nearly half as wide, the members of a pair often unequal, acuminate to a blunt tip, entire, acute at the base, 3-nerved; panicles slender, up to 15 cm. long

and 2 cm. in diameter, the numerous short branches seldom again branched and bearing 1–5 sessile flowers; hypanthium campanulate, 3 mm. long, costate in fruit; calyx closed in bud, at anthesis ruptured nearly to the torus into 3–5 broadly triangular lobes; exterior teeth none; petals white, obovate-oblong, 3 mm. long; stamens nearly isomorphic, differing in size; anthers linear, 2.5–3 or 3.5–4 mm. long, the connective very briefly prolonged below the thecae into two lateral lobes, stigma capitate.

Nicaragua to Colombia.

BOCAS DEL TORO: Fish Creek, *von Wedel 2190, 2196, 2234*; Old Bank Island, *von Wedel 1922, 2166*. COCLÉ: vicinity of El Valle, *Allen 237*.

9. *MICONIA STENOSTACHYA* DC. Prodr. 3:181. 1828.

Shrub or small tree to 6 m. tall, the younger branches, petioles, lower leaf-surface, panicle, and hypanthia thinly cinereous-tomentulose; branches strongly angled; petioles 1–4 cm. long; leaf-blades thin, oblong or ovate-oblong, 8–18 cm. long, about two-fifths as wide, obtuse to abruptly short-acuminate, entire, rounded at the base, glabrous above, 3- to 5-nerved; panicle usually dense, up to 15 cm. long; flowers sessile and secund; hypanthium campanulate, about 3 mm. long; calyx-tube scarcely prolonged, the calyx-lobes broadly triangular; petals 3–5 mm. long, ovate, minutely glandular-ciliate; stamens isomorphic; anthers linear, about 4 mm. long, the connective barely prolonged below the thecae into two deflexed lateral lobes and one minute dorsal lobe; stigma conic or punctiform.

Southern Mexico and Trinidad to Bolivia and southern Brazil.

CANAL ZONE: vicinity of Summit, *Allen 4556*; road to Corozal, *Gervais 142*.

10. *MICONIA ARGENTEA* (Sw.) DC. Prodr. 3:182. 1828.

Melastoma argentea Sw. Prodr. Veg. Ind. Occ. 70. 1788.

Tall shrub or tree to 15 m. tall, the younger stems, petioles, lower leaf-surface, panicle, and hypanthia thinly but completely canescent with stellate hairs; younger stems strongly flattened and two-edged; petioles stout, 2–6 cm. long; leaf-blades firm, broadly elliptic, up to 25 cm. long, about half as wide, abruptly short-acuminate, entire or denticulate, obtuse to rounded at base, 5-nerved, glabrous above; panicle widely branched, 1–2 dm. long; flowers sessile, 5-merous; hypanthium obconic, about 2 mm. long; calyx almost truncate, the obscure lobes 0.2 mm. long; petals inequilateral, obovate-oblong, 3 mm. long; connective of the larger stamens prolonged at base into two small lateral lobes, that of the smaller stamens unlobed at base or with a minute dorsal lobe only; terminal pore large, as wide as the anther; stigma capitate.

Southern Mexico to Panama.

CANAL ZONE: Barro Colorado Island, *Aviles 31, Brown 133, 150, Wilson 104, Woodworth & Vestal 315, Zetek 4636*; Río Agua Salud, near Frijoles, *Piper 5854*; Gatún, *Cowell 295, Hayes 6, 469, Maxon 4792*; Cerro Galero, *Stern & Chambers 30*. CHIRIQUÍ: Boquete district, 1200 m., *Davidson 690*; El Pedregal de David, near sea-level, *Pittier 5116*. COCLÉ: vicinity of El Valle de Antón, 700–1000 m., *Allen 102, 2480*; Penonomé and vicinity,

Williams 215. COLÓN: Juan Mina plantation, Río Chagres above Gamboa, 25 m., *Allen 4154*. DARIÉN: vicinity of La Palma, 0-50 m., *Pittier 5492*. PANAMÁ: Trapiche, Perlas Islands, on sea beaches, *Allen 2615*; San José Island, *Johnston 536, 637, 766, Erlanson 28, 175, 218*. SAN BLAS: Permé, *Cooper 657*. VERAGUAS: Santa Fé to Río Santa Marta, 300 m., *Allen 4418*.

11. *MICONIA IMPETIOLARIS* (Sw.) D. Don, in Mem. Wern. Soc. 4:316. 1823.

Melastoma impetiolaris Sw. Prodr. Veg. Ind. Occ. 70. 1788.

Shrub or small tree, the younger stems, petioles, lower leaf-surface, inflorescence, and hypanthia cinereous or ferruginous with stellate hairs; leaves sessile, oblanceolate to obovate, up to 4 dm. long, a third to half as wide, abruptly short-acuminate, entire or denticulate, rounded to a cordate-clasping base, glabrous above at maturity; panicle large, divaricately branched; flowers 5-merous, sessile in small glomerules; hypanthium cup-shaped to obconic, 1.5-2.5 mm. long; calyx-tube prolonged about 0.5 mm., nearly truncate, often erose; exterior teeth broadly triangular, adnate, projecting about 0.2 mm.; petals white, about 2.5 mm. long; stamens weakly dimorphic; ovary 3-celled, half-inferior; style slender, 8-10 mm. long; stigma truncate.

Southern Mexico to Panama; West Indies and (in a variety) northwestern South America. The two varieties described below are clearly distinct in Panama and other parts of Central America but intergrade almost completely in the West Indies.

Var. *IMPETIOLARIS*.

Leaves 3-nerved or 3-ply-nerved with an additional marginal pair; hairs of the lower leaf-surface not contiguous, exposing the surface; secondary veins commonly 35 or fewer on each side of the midvein, the middle ones diverging at an angle of about 75°; upper leaf-surface not punctate; connective dilated at base into two small lateral lobes.

BOCAS DEL TORO: banks of the Chaguinola River, *Dunlap 522*. CANAL ZONE: Barro Colorado Island, *Wilson 62, Woodworth & Vestal 597*; between Mt. Hope and the Santa Rita Trail, *Cowell 66*; Santa Rita Trail, *Cowell 112*.

Var. *PANDURIFOLIA* Naud. in Ann. Sci. Nat. ser. 3. 16:137. 1851.

Leaves 5-nerved or 5-ply-nerved with an additional marginal pair; hairs of the lower leaf-surface with interlaced arms, forming a continuous indument; secondary veins commonly 40 or more on each side of the midvein, the middle ones diverging almost at right angles; upper leaf-surface minutely verruculose-punctate; connective dilated into a large, more or less erose-margined lobe extending over the back and deflexed over the sides of the base of the anther.

BOCAS DEL TORO: Quebra Nigua, *von Wedel 2740*; Snapper Point, *von Wedel 2643*; Water Valley, *von Wedel 816, 890, 1412, 1734, 1742*. CANAL ZONE: Chagres, *Fendler 29*; vicinity of Summit, 150 m., *Allen 4518*; Naval Amm. Depot, Group 300 Road, *Stern & Chambers 37*. DARIÉN: headwaters of Río Chico, 150-225 m., *Allen 4599*. PANAMÁ: vicinity of Bella Vista, *Macbride 2747, Piper 5332*; San José Island, *Johnston 690, Erlanson 72, 239*. PROVINCE UNKNOWN: *Kuntze s. n., von Wedel 816*.

12. *MICONIA IBAGUENSIS* (Bonpl.) Triana, in Trans. Linn. Soc. 28:110. 1871.

Melastoma ibaguense Humb. & Bonpl. Melast. 105. t. 45. 1816.

Shrub to 6 m. tall, the younger stems and petioles stellate-tomentose and also more or less densely hirsute; petioles 3–10 mm. long; leaf-blades firm, oblong to oblong-lanceolate, up to 15 cm. long, a third to nearly half as wide, acuminate, entire to minutely serrulate, obtuse or rounded at the base, 5-plexi-nerved, the veins usually conspicuously impressed, sparsely stellate above when young, later nearly or quite glabrous, below hirsutulous with simple hairs; panicle compact, up to 1 dm. long, more or less hirsute, the sessile flowers commonly crowded toward the ends of the branches; hypanthium campanulate, 2.5–3 mm. long, finely stellate and sparsely hirsute; calyx-tube about 0.7 mm. long, its lobes minute, triangular, about equaled by the exterior teeth; petals white, obovate, about 4 mm. long; stamens somewhat dimorphic; anthers linear 3–3.5 or 4–4.5 mm. long, the connective expanded below the thecae into two lateral lobes, somewhat deflexed on the smaller anthers, curved forward on the larger ones; summit of the ovary commonly setose; stigma capitate.

Widely distributed from southern Mexico and Cuba to southern Brazil and Bolivia.

CHIRIQUÍ: savannas, Boquete district, 1200 m., *Davidson 687*; rocky plains near Boquete, *Allen 4688*. PANAMÁ: San José Island, *Erlanson 281*. VERAGUAS: trail between Cañazas and the foot of the Cordillera Central, 300–600 m., *Allen 170*.

13. *MICONIA BARBINERVIS* (Benth.) Triana, in Trans. Linn. Soc. 28:113. 1871.

Clidemia barbinervis Benth. Bot. Voy. Sulphur 95. 1844.

Shrub to 4 m. tall, the stems, petioles, lower leaf-surface, panicle, and hypanthia densely hirsute or tomentose with straight or matted bristles 0.7–4 mm. long and stellate or frayed at the summit; petioles stout, 5–20 mm. long; leaf-blades ovate-lanceolate, oblong, or somewhat obovate-oblong, a third to two-fifths as wide, acuminate, more or less saliently dentate, 3-nerved, hirsute above with usually simple, rarely stipitate-stellate hairs; panicle pyramidal, up to 1 dm. long; flowers 5- to 6-merous, sessile in terminal few-flowered glomerules, each subtended by a small obovate-oblong bract; hypanthium nearly cylindrical, 3.7 mm. long; calyx-tube prolonged about 0.5 mm.; calyx-lobes triangular, blunt, considerably surpassed by the subulate exterior teeth; petals oblong-obovate, about 4 mm. long, unsymmetrical; stamens essentially isomorphic but unequal, the anthers 4–5 mm. or 3–4 mm. long; connective continued at base into two rounded lateral lobes; stigma capitate, about 1 mm. wide.

Nicaragua to Panama; at low elevations in northern South America to Peru and Pará.

BOCAS DEL TORO: Water Valley, *von Wedel 905, 1581*.

14. *MICONIA CALVESCENS* DC. Prodr. 3:185. 1828.

Small tree to 10 m. tall, the younger branches and base of the panicle some-

what flattened, thinly cinereous with minute stellate hairs; petioles 3–6 cm. long; leaf-blades elliptic to obovate-oblong, 15–35 cm. long, half to two-thirds as wide, abruptly short-acuminate, entire or undulate, obtuse to broadly rounded at base, 3-nerved with an additional pair of marginal veins, pubescent when young, soon glabrescent, or with a few stellate hairs persistent along the veins beneath; panicles 1–3 dm. long, divaricately branched, thinly cinereous-tomentulose; flowers sessile in small lateral and terminal glomerules, 5-merous; hypanthium about 2 mm. long, thinly tomentulose; calyx-tube prolonged about 0.5 mm., sepals broadly triangular, about 0.3 mm. long; petals obovate, white, 2.5–3 mm. long; stamens nearly isomorphic; anthers linear, 2–2.5 or 3–3.5 mm. long; connective very briefly prolonged below the thecae into two deflexed lateral lobes; stigma capitate.

British Honduras to Panama, and southward to Bolivia and southern Brazil.

DARIÉN: Cana-Cuasi trail, Chepigana district, 600 m., *Terry & Terry 1492*.

15. *MICONIA PRASINA* (Sw.) DC. Prodr. 3:188. 1828.

Melastoma prasina Sw. Prodr. Veg. Ind. Occ. 69. 1788.

Miconia darienensis Pittier in Contr. U. S. Natl. Herb. 18:248. 1917.

Shrub or small tree, reported to 10 m. tall, the younger branches, lower leaf-surface, panicle, and hypanthia very minutely and sparsely stellate-furfuraceous; petioles 5–20 mm. long; leaf-blades firm in texture, oblong or lanceolate, commonly 1–2 dm. long and a third to two-fifths as wide, acuminate, entire or somewhat undulate, acuminate or acute at base and often decurrent on the petiole, usually completely glabrous above, 3- to 5-plied-nerved; panicle pyramidal, up to 15 cm. long; flowers sessile or nearly so, tending to be crowded toward the ends of the branches; hypanthium narrowly campanulate, 2–2.5 mm. long; calyx-tube prolonged about 0.5 mm.; calyx-lobes triangular, acute or obtuse, 0.2–0.4 mm. long; petals white, obovate, 2.5–3 mm. long; stamens somewhat dimorphic; anthers linear, 3–3.5 or 2.5–3 mm. long, the connective prolonged at base below the thecae into two deflexed lateral lobes; style slightly dilated upward to the truncate stigma.

Abundant, widely distributed, and highly variable throughout tropical America from southern Mexico and the West Indies to Paraguay and Bolivia.

BOCAS DEL TORO: Fish Creek Mountains, *von Wedel 2293*. CANAL ZONE: Chagres, *Fendler 32*; Río Gatún, *Hayes 390*. DARIÉN: Garachiné, *Pittier 5478*.

16. *MICONIA PTEROPODA* Benth. in Hook. Journ. Bot. 2:314. 1840.

Shrub to 9 m. tall, the younger parts of the stem, panicle, and hypanthia tomentulose with minute brown stellate hairs; leaves firm in texture, narrowly oblong-elliptic, up to 25 cm. long, a fifth to a third as wide, acuminate to a blunt tip, entire or somewhat undulate, abruptly cuneate below into a narrow wing extending to the stem, strongly 5-plied-nerved, at maturity glabrous above and on the surface beneath, minutely furfuraceous along the veins beneath; panicle 1–2 dm. long; flowers sessile; hypanthium cup-shaped, 2.5–3 mm. long to the torus; calyx-tube prolonged about 0.5 mm., its lobes depressed-semicircular, about 0.2 mm. long from the sinuses; petals obovate, about 3 mm. long, densely furfura-

ceous; stamens slightly dimorphic; anthers 3.2–3.7 mm. or 2.6–3 mm. long, linear; connective prolonged into two lateral lobes at base, slender and rounded on the smaller anthers, on the larger flat and truncate; stigma truncate. Perhaps not distinct from the preceding species.

British Honduras to Panama; widely distributed in northern South America.

CANAL ZONE: vicinity of Summit, 150 m., *Allen 4510*. CHIRIQUÍ: Boquete, *Davidson 679, 838*; San Félix, *Pittier 5258*. COCLÉ: south of El Valle de Antón, 600–800 m., *Allen 2852*; between Las Margaritas and El Valle, *Woodson, Allen & Seibert 1307*; Bismarck above Penonomé, 600–900 m., *Williams 552*. PANAMÁ: Bella Vista, *Macbride 2742*; San José Island, *Johnston 760, 770, 1111, Erlanson 89, 265*.

17. *MICONIA HYPERPRASINA* Naud. in *Ann. Sci. Nat. Bot.* III. 16:186. 1851.

Shrub or small tree to 8 m. tall, the younger stems, petioles, inflorescence, and hypanthia thinly but closely stellate with minute brownish hairs; petioles 1–2 cm. long; leaf-blades commonly oblong-lanceolate, varying to oblong or somewhat oblanceolate, 1–2 dm. long, a fourth to a third or rarely half as wide, acuminate, entire or undulate, acute or somewhat obtuse at base, glabrous above, glabrous or very sparsely furfuraceous along the veins beneath, 3-nerved, often also with conspicuous marginal veins, the veins beneath often pale; panicle widely branched, up to 10 cm. long, always minutely setulose at the nodes, bractless; flowers sessile; hypanthium cup-shaped, about 2 mm. long to the torus; calyx-lobes nearly semi-circular, 0.5–0.8 mm. long; exterior teeth small, conic; petals white, obovate, 2–2.5 mm. long; anthers dimorphic; anthers about 3 or about 2.5 mm. long, the connective of the larger expanded at base into a large lobe with its sides curved around the filament and its margins meeting beneath, that of the smaller prolonged at base into a narrow short dorsal lobe and two minute lateral lobes; stigma truncate.

Southern Mexico to Panama.

BOCAS DEL TORO: Old Bank Island, *von Wedel 1881, 1973, 2065*; vicinity of Chiriquí Lagoon, *von Wedel 1244*; Water Valley, *von Wedel 1711*; Buena Vista Camp on the Chiriquí trail, 375 m., *Cooper 580*. CANAL ZONE: Barro Colorado Island, *Frost 224, Woodworth & Vestal 434*; Frijoles, *Piper 5825*. COCLÉ: Bismarck, above Penonomé, *Williams 553*. DARIÉN: Cana and vicinity, 600–1950 m., *Williams 981*. PANAMÁ: San José Island, *Johnston 668, 762, 1133, Erlanson 88, 96, 138, 229, 266*. SAN BLAS: Permé, *Cooper 635, 635a*.

18. *MICONIA INSULARIS* Gl. in *Sargentia* 8:234. 1949.

Shrub to 4 m. tall, the younger branches minutely and sparsely stellate-canescenscent; petioles 1–2 cm. long; leaf-blades elliptic or oblong, 10–16 cm. long, about two-fifths as wide, acuminate to a blunt tip, entire or somewhat sinuate, acute at the base, glabrous and punctulate above, glabrous beneath, 3-nerved; panicle about 1 dm. long and usually somewhat wider, branched from the base; flowers sessile or very shortly pediceled; hypanthium 1.3 mm. long to the torus, sparsely and minutely stellate; calyx-tube prolonged 0.4 mm., truncate, the minute exterior teeth scarcely projecting; petals white, oblong, 3–3.5 mm. long; anthers dimorphic, about 3 or about 2.5 mm. long, the connective of the larger expanded at base into a large dorsal lobe with its sides deflexed around the filament, that of the smaller

prolonged at base into one dorsal and two lateral lobes about equal in size; stigma truncate.

Endemic to Panama.

PANAMÁ: San José Island, *Johnston 448*, *Erlanson 403*, *573*.

19. *MICONIA NERVOSA* (Sm.) Triana, in *Trans. Linn. Soc.* 28:111. 1871.

Melastoma nervosum Sm. in Rees, *Cycl.* 23: *Melastoma* n. 31. 1819.

Miconia septuplinervia Pittier, in *Bol. Soc. Venez. Cienc. Nat.* 11:26. 1947.

Shrub to 6 m. tall, the younger stems, petioles, panicle, and primary nerves of the leaves densely strigose; petioles 1–2 cm. long; leaf-blades thin, elliptic or oblong, up to 25 cm. long, a third to half as wide, often unequal in each pair, acuminate or rarely acute, entire or nearly so, long-cuneate at the base, 5- to 7-pinnerved, the inner pair of lateral nerves arising 2–8 cm. from the base, sparsely pubescent on the upper surface, softly pubescent or subsericeous on the lower; panicle commonly elongate, 5–15 cm. long, the flowers mostly sessile in lateral glomerules, occasionally on short lateral branches; hypanthium narrowly campanulate, 3.5–4 mm. long, densely strigose; calyx-tube about 0.5 mm. long; sepals minute, triangular; petals white, oblong-obovate, 3–3.5 mm. long; stamens isomorphic; anthers linear, straight, 3.5–4 mm. long, the connective prolonged straight back into a single dorsal appendage 0.2–0.3 mm. long; ovary pubescent; style about 6 mm. long; stigma truncate.

In regions of heavy rainfall, southern Mexico to Panama; southward to Peru and eastward through the Amazon valley.

BOCAS DEL TORO: Water Valley, *von Wedel 804*, *1425*, *1467*; Changinola Valley, *Dunlap 131*; Talamanca Valley, *Carleton 131*. CANAL ZONE: Chagres, *Fendler 35*; Gatún, *Hayes 224*. CHIRIQUÍ: San Félix, *Pittier 5175*. DARIÉN: Cana-Cuasi trail, Chepigana district, 600 m., *Terry & Terry 1521*. PROVINCE UNKNOWN: *Moore 23*.

20. *MICONIA ALBICANS* (Sw.) Triana. *Trans. Linn. Soc.* 28:116. 1871.

Melastoma albicans Sw. *Prodr. Veg. Ind. Occ.* 70. 1788.

Shrub or small tree to 6 m. tall; younger branches finely cinereous-tomentulose, soon glabrescent; petioles stout, tomentulose, 5–15 mm. long; leaf-blades subcoriaceous, oblong, ovate-oblong, or elliptic, 7–15 cm. long, about two-fifths as wide, obtuse to short-acuminate, entire, emarginate or subcordate at base, 5-nerved, the outer pair commonly submarginal, above when mature glabrous, dark green, and shining, beneath closely and finely cinereous-tomentulose; panicle 8–20 cm. long, freely branched, cinereous or ferruginous; flowers 5-merous, sessile, secund and alternate on the ultimate branches of the panicle; hypanthium about 2 mm. long, densely tomentose; calyx-tube prolonged about 0.5 mm., its lobes very short, triangular; petals obovate, about 3 mm. long; stamens nearly isomorphic; connective briefly prolonged below the thecae and dilated into an oblique cordate organ; stigma capitate.

Widely distributed from southern Mexico and the West Indies to Bolivia and southern Brazil.

CHIRIQUÍ: Boquete, 1200 m., *Davidson 678*. COCLÉ: between Las Margaritas and El Valle, *Woodson, Allen & Seibert 1250*. PANAMÁ: in llanos at Chorrera, *White 178*; Isla Taboga, *Woodson, Allen & Seibert 1445*; San José Island, *Erlanson 230, 283*. VERAGUAS: trail between Cañazas and the Cordillera Central, 300–600 m., *Allen 204*.

21. *MICONIA PANAMENSIS* Gl. in *Phytologia* 1:341. 1939.

Shrub, the younger stems and petioles very thin and sparsely stellate-furfuraceous, eventually glabrescent; petioles stout, 3–5 mm. long; leaf-blades firm in texture, ovate-lanceolate or oblong-lanceolate, up to 16 cm. long, a third to two-fifths as wide, long-acuminate, entire, rounded to subcordate at the base, 3-nerved with an additional pair of submarginal nerves, glabrous above, very sparsely stellate on the primaries beneath; panicle many-flowered with ascending branches, to 15 cm. long; flowers sessile; hypanthium campanulate, 2 mm. long to the torus, very thin and minutely stellate; calyx-tube prolonged 0.4 mm., sepals triangular, 0.2 mm. long from the sinuses; exterior teeth minute conic thickenings; petals elliptic, about 2.5 mm. long, white; stamens dimorphic; anthers linear, about 3.5 mm. or 2.7 mm. long, the connective of the larger prolonged below the thecae into a relatively large, cordate organ, the sides deflexed and antrorse, connective of the smaller anthers smaller, prolonged into a narrow dorsal lobe and two small deflexed lateral lobes; stigma capitellate.

Endemic to Panama. Perhaps to be combined with *Miconia chamissois* Naud. which scarcely differs except in its 3-plied-nerved leaves.

BOCAS DEL TORO: vicinity of Macaw Hills, *von Wedel 6, 528*.

22. *MICONIA RUBIGINOSA* (Bonpl.) DC. *Prodr.* 3:183. 1828.

Melastoma rubiginosa Humb. & Bonpl. *Melast.* 109. *t.* 47. 1816.

Shrub to 5 m. tall, the stems, petioles, lower leaf-surface, panicle, and hypanthia tomentose with ferruginous stellate hairs; petioles stout, 5–10 mm. long; leaf-blades firm in texture, oblong, 8–15 cm. long, two-fifths to half as wide, acuminate, entire, broadly rounded to subcordate at base, above sparsely stellate when young, soon glabrescent and somewhat shining, 3-nerved, often with an additional conspicuous pair of marginal nerves; panicle up to 15 cm. long, commonly with superposed branches; hypanthium campanulate, 2–2.5 mm. long to the torus; calyx-tube slightly flaring, prolonged about 0.7 mm.; calyx-lobes obscure, depressed-semicircular; petals obovate, white, about 3 mm. long; stamens dimorphic; anthers linear, about 3 or about 2.5 mm. long, the connective of the larger prolonged dorsally and laterally into a heart-shaped organ oblique to the axis, the lateral lobes antrorse and bearing the filament in the sinus, that of the smaller anthers prolonged into a minute dorsal lobe and two minute deflexed lateral lobes; stigma truncate.

Puerto Rico and Panama to southern Brazil.

COCLÉ: between Agua Dulce and the Río Chico, near sea level, *Pittier 5001*; between Las Margaritas and El Valle, *Woodson, Allen & Seibert 1285*. PANAMÁ: Isla Toboga, 0–186 m., *Woodson, Allen & Seibert 1442*.

23. *MICONIA RUFOSTELLULATA* Pittier, in Journ. Wash. Acad. Sci. 13:390. 1923.

Shrub 1.5 m. tall, the younger stems, petioles, panicle, and hypanthia rufous-tomentose with stellate, often stipitate hairs; stems later glabrescent; petioles 5–8 mm. long; leaf-blades lanceolate, up to 8 cm. long, a third to two-fifths as wide, acuminate, entire, rounded at base, 3-nerved, minutely setose above, beneath stellate densely on the primary veins, very sparsely so on the surface; panicles 2–3 cm. long, terminating short bifoliate divaricate branches; flowers 4-merous, sessile, each (and each node of the panicle) subtended by a short subulate bract; hypanthium cup-shaped, about 1.5 mm. long to the torus; calyx-tube very short, its lobes triangular, acute, 0.7 mm. long from the sinus; exterior teeth adnate almost to the summit of the sepals, thence divergent, subulate, 0.5 mm. long; petals white, obovate-oblong, about 2.5 mm. long; stamens dimorphic; anthers linear, about 2.5 or about 2 mm. long, the connective of the larger broadly dilated below the thecae into a cordate organ, its sides folded around the sides and meeting at the apex of the filament; connective of the small anthers scarcely dilated, prolonged into one minute dorsal and two small lateral lobes; stigma capitate.

Known only from the type collection.

DARIÉN: in clearings around Pinogana, *Pittier 6535*.

V. Section *GLOSSOCENTRUM* Triana, ex Benth. & Hook. f. in
Benth. & Hook. Gen. 1:764. 1867.

Anthers linear or slightly dilated distally, opening by a terminal pore about as wide as the anther; connective variously prolonged or lobed; exterior teeth small or obsolete; flowers usually small.

About 80 species, chiefly in southern Brazil. Only the following species in Panama.

24. *MICONIA BOREALIS* Gl. in Bull. Torr. Bot. Club 55:118. 1928.

Shrub or small tree, reported to 15 m. tall, the young stems finely stellate-tomentulose, soon glabrescent; petioles 5–15 mm. long; leaf-blades lanceolate to oblong, 8–15 cm. long, a fourth to a third or rarely two-fifths as wide, long-acuminate, entire, rounded at the base, sparsely stellate on both sides when young, soon glabrescent, 3- (rarely 5-) nerved; panicle much branched, often as wide as long, its axes thinly stellate; hypanthium 1–1.5 mm. long, cup-shaped, glabrous or nearly so; calyx-lobes broadly triangular, only 0.2 mm. long; petals obovate-oblong, 2–2.5 mm. long; stamens dimorphic; anthers opening by a wide terminal pore, 2–2.5 or 1.5–2 mm. long, the connective of the larger prolonged into a single flat dorsal lobe wider than the filament, that of the smaller scarcely expanded; style slightly dilated distally to a truncate stigma.

Southern Mexico to Panama; western Cuba.

CANAL ZONE: Barro Colorado Island, *Bangham 486*, *Shattuck 701*; east of Fort Clayton, *Harvey 5123*; near Miraflores Lake, *Harvey 5132*, *White 251*. CHIRIQUÍ: San Félix, *Pittier 5138*. COCLÉ: vicinity of El Valle, *Allen 776*. PANAMÁ: west of Chorrera,

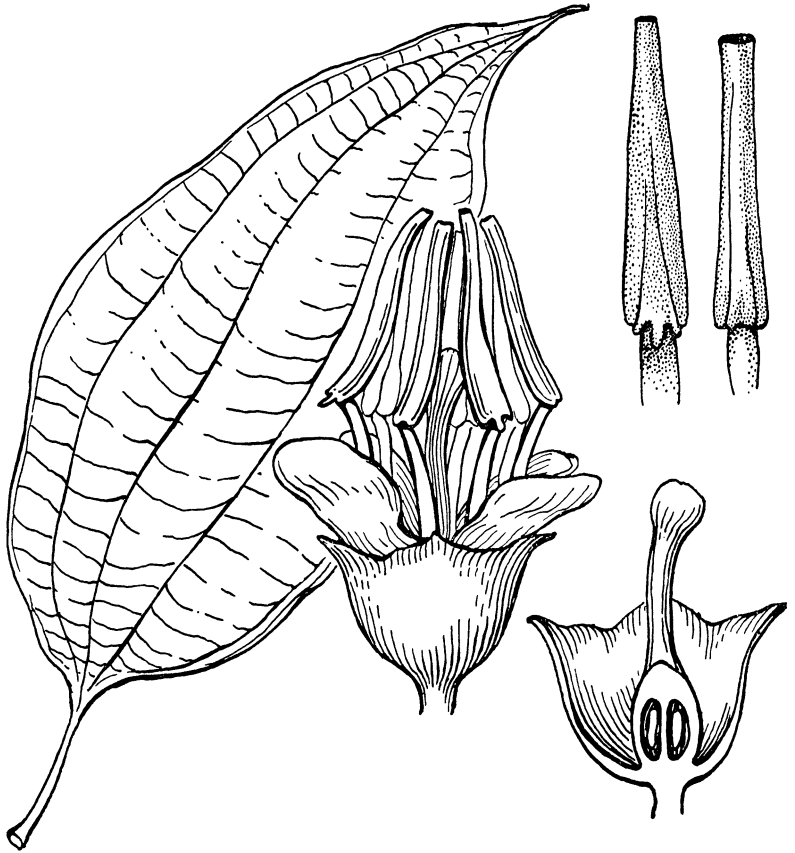


Fig. 92. *Miconia borealis*

Woodson, Allen & Seibert 1677, Paul 499; Isla Taboga, Woodson, Allen & Seibert 1462; Bella Vista, Macbride 2744; San José Island, Johnston 32, 1097, 1210, 1394. VERAGUAS: west of Soná, Woodson, Allen & Seibert 513; trail between Cañazas and the foot of the Cordillera Central, 300–600 m., Allen 161. PROVINCE UNKNOWN: Allen 2678.

VI. Section HARTIGIA (Miq.) Griseb. Fl. Br. W. Ind. 258. 1860.

Anthers short, oblong, about as thick as wide, 2-celled, opening by a minute terminal pore; connective simple; style abruptly bent near the summit.

About 30 species, a few widely distributed, the others chiefly in northwestern South America. The species have been distributed by earlier students in sections Tamonea, Miconia, and Amblyarrhena.*

- a. Calyx truncate or merely undulate at the summit, glabrous.
 b. Leaves green beneath, two-fifths to half as long as wide..... 25. *M. CILIATA*.
 bb. Leaves red-purple beneath, a fourth to a third as long as wide..... 26. *M. OINOCHROPHYLLA*.
 aa. Calyx conspicuously lobed and ciliate..... 27. *M. LACERA*.

25. *MICONIA CILIATA* (Rich.) DC. Prodr. 3:179. 1828.

Melastoma ciliata Rich. in Act. Soc. Hist. Nat. Par. 1:109. 1792.

Shrub to 3 m. tall, the younger branches glabrous, or rarely with a few setae at the nodes; petioles slender, 1–3 cm. long, usually setose near the summit on the upper side; leaf-blades firm in texture, oblong, varying toward ovate or obovate, up to 15 cm. long, two-fifths to half as wide, acute or abruptly acuminate, conspicuously ciliate and commonly serrulate, glabrous, 3-nerved; panicle pyramidal, divaricately branched; flowers sessile and secund; hypanthium globose or urceolate, 2–2.5 mm. long; calyx-tube short, erect, truncate; petals about 3 mm. long; stamens isomorphic; anthers stoutly oblong, 1.5 mm. long, 2-celled, the connective simple.

Abundant and widely distributed from southern Mexico and the West Indies to central Brazil and Peru.

CANAL ZONE: Ancón Hill, Killip 3007.

26. *MICONIA OINOCHROPHYLLA* Donn. Sm. in Bot. Gaz. 40:4. 1905.

Glabrous shrub 1–3 m. tall; petioles stout, 1–3 cm. long; leaf-blades red-purple beneath, narrowly oblong to lanceolate, 12–25 cm. long, a fourth to a third as wide, acuminate, entire but ciliate, acute at the base, 3-nerved with a conspicuous pair of submarginal nerves; panicle small, 5–10 cm. long, sparingly branched; flowers sessile, secund, subtended by triangular bracts about 1 mm. long; hypanthium subglobose, 2–2.5 mm. long at anthesis; calyx-tube very short, truncate or nearly so around the summit; petals white to pink, oblong-obovate, 2.5–3 mm.

* Stern & Chambers 193 and 187, both from Piñas Bay, Darién, have recently been referred by Wurdack to *M. robinsoniana* Cogn., a species otherwise endemic to the Galapagos Islands. In the artificial key to the genus *Miconia*, this species would fall next to *M. bondurensis*, differing however in the quadrate branches, denser leaf blade venation, secund flowers, and eglandular stamen connective. The affinities of *M. robinsoniana* are with species 40–45 of Cogniaux' familial monograph, as well as with *M. curvipetiolata* Cogn. & Gl. ex Gl., *M. blakeaefolia* Gl., and *M. transversa* Gl. With such an obvious superfluity of epithets, no phytogeographic speculations concerning the apparent distributional disjunction of *M. robinsoniana* would be valid at present.

long, oblique; stamens isomorphic; anthers slenderly oblong, 1.7 mm. long, 2-celled; connective simple; ovary almost completely inferior, 5-celled; style stout, 2.5 mm. long, abruptly bent near the summit; stigma punctiform.

British Honduras to western Colombia.

COCLÉ: north rim of El Valle de Antón, near Cerro Turrega, 650–700 m., *Allen 174*. COLÓN: summit of Cerro Santa Rita, 360–500 m., *Allen 5098*. PANAMÁ: Cerro Campana, 600–800 m., *Allen 2642*.

Allen 5098 is referred here with some doubt, since it was described by the collector as a vine and the panicle is more widely branched than in typical plants.

27. *MICONIA LACERA* (Bonpl.) Naud. in *Ann. Sci. Nat. Bot.* III. 16:152. 1851. *Melastoma lacera* Humb. & Bonpl. *Melast.* 9. t. 5. 1816.

Shrub to 4 m. tall, the stems, petioles, and panicle more or less hirsute with purple hairs as much as 10 mm. long; petioles 1–3.5 cm. long; leaf-blades thin, lanceolate to oblong or ovate-lanceolate, up to 15 cm. long and 6 cm. wide, entire or serrulate, acuminate, conspicuously ciliate, obtuse or rounded at base, more or less pilose on both sides, especially on the veins, 3- to 5-nerved; panicle small and compact, commonly 4–8 cm. long, the sessile flowers secund along the branches; hypanthium cup-shaped, about 2 mm. long to the torus, glabrous; calyx-tube prolonged nearly 1 mm.; sepals broadly ovate or nearly semicircular, about 0.5 mm. long from the sinus, conspicuously ciliate with long hairs; exterior teeth triangular, almost completely adnate, the slender free tip about 0.4 mm. long; petals white to pink, oblong-obovate, about 4 mm. long, distinctly retuse; stamens isomorphic; anthers oblong, about 1.5 mm. long, 2-celled, the connective simple; style slender, bent or hooked at the summit, about 3 mm. long.

Abundant in Central America from southern Mexico to Panama; also in the West Indies and Trinidad, and southward to Peru.

BOCAS DEL TORO: Little Bocas, *von Wedel 2492A*; southwest of Bocas at Macaw Hills, *von Wedel 520*; Nances Cay Island, *von Wedel 581*; Shepherd Island, *von Wedel 2726*. CANAL ZONE: Ancón Hill, *Killip 12070*, *Piper 5566*, *Seibert 393*, *Williams 10*; Barro Colorado Island, *Bailey & Bailey 246, 376*, *Shattuck 317, 1072*; Chagres, *Fendler 33*; vicinity of Gatún Lake, *Chrysler & Roever 4874*, *Hayes 251, 560*; near Old Fort Lorenzo, *Piper 5992*; Monk[ey?] Hill, *Kuntze s. n.* CHIRIQUÍ: between Río Tinta and Río Tabasará, *Woodson, Allen & Seibert 419*. COCLÉ: vicinity of El Valle, *Allen 755*; between Las Margaritas and El Valle, *Woodson, Allen & Seibert 1273*; Bismarck, above Penonomé, *Williams 290, 1159*; La Chorrera, *Paul 507*. PANAMÁ: thickets and forests near Arraiján, *Woodson, Allen & Seibert 1352*; Cerro Campana, vicinity of Chica, 600–800 m., *Allen 2651*; Trapiche, Perlas Islands, *Allen 2617*; Isla Taboga, 0–186 m., *Woodson, Allen & Seibert 1437*; San José Island, *Johnston 35, 61, 1110, Erlanson 496*.

VII. Section *AMBLYARRHENA* Triana, ex Benth. & Hook. f. *Gen. Pl.* 1:763. 1867.

Anthers oblong or ovoid, thick and stout, as thick as wide, 4-celled, opening by a minute terminal pore; style straight; connective in most species not prolonged below the thecae.

About 130 species, most numerous in the northern Andes mountains from Colombia to Peru.

- a. Connective simple, without lobes or appendages; filaments glabrous; stigma small, capitate or truncate.
 b. Pubescence thin and sparse, of minute stellate hairs..... 28. *M. SCHLIMII*.
 bb. Pubescence dense, of long simple bristles..... 29. *M. COSTARICENSIS*.
 aa. Connective prolonged as a short truncate lobe over the summit of the glandular filament; stigma peltate, conspicuously lobed..... 30. *M. GONIOSTIGMA*.

28. *MICONIA SCHLIMII* Triana, in Trans. Linn. Soc. 28:102. 1871.

Small tree, up to 10 m. tall, the younger stems, petioles, lower leaf-surface, panicle, and hypanthia thinly stellate-tomentose; petioles about 1 cm. long; leaf-blades lanceolate, as much as 17 cm. long but usually much shorter, about two-fifths as wide, acuminate, remotely denticulate, more or less ciliate, acute at the base, 5-ply-nerved, glabrous above; panicles relatively few-flowered, 3–8 cm. long, divaricately branched; flowers 6-merous, sessile at the end of the branchlets; hypanthium broadly campanulate, about 3.5 mm. long (measured on the axis); calyx-tube flaring, about 2 mm. long, truncate or undulate, stellate within and without; exterior teeth minute, conic; petals white, about 10 mm. long, broadly obovate; stamens isomorphic; anthers oblong, blunt, 4-celled, 4.5–5 mm. long, opening by one minute terminal pore; connective simple; ovary 5-celled; style elongate; stigma capitate.

British Honduras to Colombia.

BOCAS DEL TORO: Changuinola Valley, *Dunlap 103*. CHIRIQUÍ: between Concepción and El Volcán, *White 312*; Progreso, *Cooper & Slater 297*. COCLÉ: vicinity of El Valle de Antón, *Allen 1774, 2496*; between Las Margaritas and El Valle, *Woodson, Allen & Seibert 1241*. DARIÉN: Cana and vicinity, 600–1650 m., *Williams 759*.

29. *MICONIA COSTARICENSIS* Cogn. in DC. Monogr. Phan. 7:887. 1891.

Shrub to 4 m. tall, the stems, petioles, leaves, inflorescence, and hypanthia densely hirsute with simple red-purple bristles up to 3 mm. long; petioles 5–20 mm. long; leaf-blades ovate-lanceolate to oblong-elliptic, up to 15 cm. long, two-fifths to half as wide, acuminate, obscurely denticulate or crenulate, obtuse to rounded at base, 5-ply-nerved or sometimes merely 5-nerved; panicles 2–5 cm. long, congested; hypanthium cup-shaped, about 2.5 mm. long to the torus; calyx-tube prolonged about 0.5 mm.; calyx-lobes depressed-triangular, about 0.5 mm. long from the sinus; exterior teeth stoutly subulate, hirsute, about 2 mm. long; petals pink, about 3 mm. long; stamens isomorphic; anthers oblong, blunt, 4-celled; stigma truncate.

Costa Rica and Panama.

CHIRIQUÍ: Bajo Chorro, Boquete district, *Davidson 239*; Bajo Mono-Robalo trail, 1500–2100 m., *Allen 4823*.

30. *MICONIA GONIOSTIGMA* Triana, in Trans. Linn. Soc. 28:124. 1871.

Shrub 1–2 m. tall; all parts of the plant to the hypanthia more or less hirsute or hirsutulous with slender simple hairs seldom more than 1 mm. long; petioles 3–8 mm. long; leaf-blades oblong or elliptic, up to 10 cm. long, two-fifths to half as wide, short-acuminate, entire or denticulate, rounded at the base, 5-nerved or

somewhat 5-ply-nerved; panicle small, sparingly branched and few-flowered; flowers 4-merous or 5-merous, sessile; hypanthium broadly cup-shaped, 2–2.5 mm. long to the torus; calyx glabrous, the tube prolonged 0.4 mm., the lobes semi-circular, 0.7 mm. long from the sinus; exterior teeth reduced to minute thickenings; petals subrotund, 3.5–4 mm. long; stamens isomorphic; filaments very broad, glandular on the outer face at the summit; anthers oblong, 4-celled, nearly 2 mm. long, opening by a dorso-terminal pore; connective widened toward the base and projecting as a short truncate body over the summit of the filament; ovary completely inferior; stigma peltate, 2.5 mm. wide, 4 to 5-angled or lobed.

Panama to Ecuador.

DARIÉN: Cana-Cuasi trail, Chepigana district, 600 m., *Terry & Terry 1518*.

VIII. Section CREMANIUM (Don) Triana, ex Benth. & Hook. f. Gen. 1:764. 1867

Anthers oblong to obovate or obovoid, often flattened, commonly widest above the middle, 2-celled or 4-celled, opening by a wide terminal pore through which the septum separating the thecae commonly protrudes; filaments usually permanently geniculate above the middle.

About 150 species, throughout the range of the genus but most numerous in the Andes mountains from Colombia to Bolivia.

- | | |
|--|--------------------------------|
| a. Anthers 4-celled, the two thecae separated by a radial septum, each theca also divided by a tangential septum; septa extending into the terminal pore and dividing it into four segments..... | 31. <i>M. THEAEZANS</i> . |
| aa. Anthers 2-celled or 4-celled only below the middle, only the radial septum extending into the terminal pore and dividing it into two segments. | |
| b. Connective at base elevated into a dorsal protuberance and prolonged around the base of the thecae into two lateral lobes. | |
| c. Pubescence of simple unbranched hairs..... | 32. <i>M. PITTIERI</i> . |
| cc. Pubescence of stellate hairs..... | 33. <i>M. CUSPIDATISSIMA</i> . |
| bb. Connective at base widened and thickened but not lobed, prolonged distinctly below the thecae and constituting fully half of the minute anther..... | 34. <i>M. RUBENS</i> . |

31. *MICONIA THEAEZANS* (Bonpl.) Cogn. in Mart. Fl. Bras. 14⁴:419. 1888.

Melastoma theaezans Humb. & Bonpl. Melast. 17. *t. g.* 1816.

Younger stems more or less sparsely stellate-pubescent, commonly glabrous at maturity; petioles slender, 1–2 cm. long; leaves varying from lanceolate to obovate-oblong, as much as 15 cm. long, commonly smaller, always acuminate and entire, commonly acute but varying to obtuse or even subrotund at base, 3-nerved, rarely 3-ply-nerved, glabrous above, glabrous beneath or retaining more or less stellate pubescence along the veins; panicle 5–15 cm. long, glabrous to stellate-pubescent, widely branched; flowers mostly short-pedicel; hypanthium cup-shaped, glabrous or sparsely stellate, 2–3 mm. long; calyx-tube briefly prolonged, its lobes depressed-semicircular to triangular, 0.3–0.5 mm. long from the sinus; exterior teeth minute conic thickenings; petals white, broadly elliptic to subrotund, commonly somewhat inequilateral and retuse; stamens isomorphic; filaments flat, gradually narrowed to the summit, geniculate above the middle; anthers obovate or obovate-oblong,

flattened tangentially, opening by a wide terminal pore, 4-celled, the septa at right angles to each other and commonly visible through the pore; connective prolonged 0.3–0.5 mm. below the thecae, elevated into a prominent dorsal protuberance and extending below the thecae into two lateral lobes; stigma capitate.

Southern Mexico and the West Indies to southern Brazil and Bolivia. A highly polymorphic species, variable in size and shape of leaves and somewhat in size of flowers but constant in the structure of its anthers; Cogniaux distinguished seventeen varieties.

BOCAS DEL TORO: Buena Vista Camp, Chiriquí trail, 900 m., *Cooper 614*. CHIRIQUÍ: Bajo Chorro, 1800 m., *Davidson 96, 97, 344*; Chiquero, Boquete district, *Davidson 507*; Cerro Horqueta, 1950 m., *von Hagen 2014*; valley of the upper Río Chiriquí Viejo, *White & White 117*. COCLÉ: crest of Cerro Pajita, 1200 m., *Allen 3955*.

32. *MICONIA PITTIERI* Cogn. in DC. Monogr. Phan. 7:1191. 1891.

Tall shrub, the stems densely retrorse-strigose with brownish hairs; petioles 1–3 cm. long, densely hirsute; leaf-blades ovate-oblong, up to 13 cm. long and about half as wide, short-acuminate, obscurely denticulate, obtuse to subrotund at base, 5-nerved, densely pubescent with simple hairs on both sides; panicle up to 17 cm. long, densely pubescent; pedicels about 1 mm. long; hypanthium cup-shaped, about 2 mm. long to the torus, densely hirsute, the hairs 1–1.5 mm. long; calyx-tube very short, its lobes semicircular, about 0.5 mm. long from the sinus, barely surpassed by the triangular-acuminate exterior teeth; petals white, suborbicular, inequilateral, retuse, 1.6 mm. long; stamens isomorphic; anthers obovoid-oblong, 1.6 mm. long, opening by a wide terminal pore, the connective elevated at base dorsally and prolonged 0.3 mm. below the thecae into two lateral lobes; stigma capitate.

Costa Rica and Panama.

CHIRIQUÍ: vicinity of Bajo Chorro, 1900 m., *Woodson & Schery 630*.

33. *MICONIA CUSPIDATISSIMA* Pittier, in Journ. Wash. Acad. Sci. 14:449. 1924.

Small tree, reported up to 7 m. tall, the younger parts, petioles, panicle, and hypanthium thinly tomentose with stellate hairs; petioles 1–2 cm. long; leaf-blades oblong to oblong-elliptic, up to 15 cm. long, two-fifths to half as wide, abruptly narrowed above into a caudate tip 1–2 cm. long, entire, obtuse to rounded at base, 3-nerved with an additional pair of marginal nerves (in one specimen 5-plinerved!), glabrous above, stellate-tomentose on the primary nerves beneath, thinly so on the veinlets, glabrous or nearly so on the surface; panicle to 15 cm. long, widely branched; actual pedicels about 1 mm. long; hypanthium cup-shaped, 2–2.5 mm. long to the torus; calyx-tube prolonged about 0.4 mm., the lobes semicircular, about 0.5 mm. long from the sinus, surpassing the triangular adnate exterior teeth; petals white, broadly obovate, 2–3 mm. long; stamens isomorphic; anthers oblong or oblong-obovate, about 2 mm. long; connective dilated toward the base, elevated into a conspicuous dorsal protuberance, and prolonged below the thecae into two deflexed lateral lobes; stigma capitate.

Endemic to Panama, so far as known.

CHIRIQUÍ: Bajo Chorro, Boquete district, 1800 m., *Davidson 387, 715*; between Alto de las Palmas and Cerro de la Horqueta, 2100–2268 m., *Pittier 3224*; upper Caldera watershed, above El Boquete, 1650–1925 m., *Maxon 5654*.

34. *MICONIA RUBENS* (Sw.) Naud. in Ann. Sci. Nat. Bot. III. 16:169. 1851.

Melastoma rubens Sw. Prodr. Veg. Ind. Occ. 71. 1788.

Topobea micrantha Pittier, in Journ. Wash. Acad. Sci. 14:451. 1924.

Shrub or tree, reported to 18 m. tall, glabrous or essentially so throughout; petioles slender, 1–2 cm. long; leaf-blades thin, elliptic or oblong, varying to obovate-oblong, 3–10 cm. long, a third to half as wide, conspicuously acuminate or caudate to a blunt point, entire, acute, obtuse, or cuneate at base, 3-ply-nerved; panicle small, 3–6 or rarely 10 cm. long, many-flowered; hypanthium cup-shaped, 1.5–2 mm. long to the torus; calyx-tube scarcely prolonged, its lobes semicircular or depressed-triangular, about 0.5 mm. long; exterior teeth varying from a minute thickening to conic, subulate, and 0.5 mm. long; petals white, suborbicular, about 2 mm. long; stamens isomorphic; anthers oblong, about 0.7 mm. long; thecae about 0.4 mm. long, opening by a large ventro-terminal pore; connective conspicuously prolonged below the thecae, more or less dilated, not lobed.

Jamaica, Costa Rica, and Panama.

CHIRIQUÍ: vicinity of Bajo Chorro, 1800–1900 m., *Davidson 181, 334, 390, Woodson & Schery 665*; Bajo Mono–Robalo trail, 1500–2100 m., *Allen 4843*; La Peña Blanca, 1650 m., *von Hagen 2002*; between Alto de las Palmas and Cerro de la Horqueta, 2100–2268 m., *Pittier 3276*; Cerro Horqueta, 1950 m., *von Hagen 2042*.

IX. Section CHAENOPLEURA (Rich. ex DC.) Triana, ex
Benth. & Hook. f. Gen. 1:764. 1867.

Anthers oblong to obovate or obovoid, the terminal pore tending to elongate toward the base into clefts.

A section of doubtful validity. Most species may possibly be regarded as members of section CREMANIUM with large ventro-terminal pore. About 50 species have been referred here, chiefly from the West Indies and the Andes mountains. Only the following species in Panama.

35. *MICONIA MELANOTRICHA* (Triana) Gl. in Brittonia 3:101. 1939.

Clidemia melanotricha Triana, in Trans. Linn. Soc. 28:136. 1871.

Miconia atrosanguinea Cogn. in Engl. Bot. Jahrb. 8:23. 1886.

Shrub to 2 m. tall, the stem densely pubescent or hirsute; petioles 1–3 cm. long, pubescent like the stem; leaf-blades dark green, ovate or ovate-lanceolate, 5–9 cm. long, two-fifths to half as wide, acuminate, rounded or subcordate at base, pubescent on both sides, 5-nerved; panicle trichotomous from the base, broader than long, 1–2 dm. wide, with linear bracts at each node; hypanthium cup-shaped, 3.5–4 mm. long to the torus; sepals oblong, rounded at the summit, about 1.5 mm. long; petals deep red, 6–8 mm. long; stamens isomorphic; filaments 13–18 mm. long; anthers oblong, 3–3.5 mm. long, each theca dehiscing by a longitudinal slit; style 15–25 mm. long; stigma capitate.

Costa Rica, Panama, and western Colombia. The species exists in Panama in two well-marked varieties.

Var. *MELANOTRICHA*. Stem densely hirsute, the hairs 3–4 mm. long; hairs of the upper leaf-surface 3–4 mm. long, those of the lower surface 1–1.5 mm. long; panicle and hypanthium long-hirsute like the stem.

CHIRIQUÍ: Bajo Chorro, Boquete district, 1800 m., *Davidson 75*; vicinity of Cerro Punta, 1800 m., *Allen 3489*; Bajo Mono–Robalo trail, 1500–2100 m., *Allen 4819*.

Var. *panamensis* Gl. var. nov. Caules densissime pubescentes pilis vix 0.5 mm. longis eis superficie superioris foliorum usque 1 mm. longis inter se vix 0.2 mm. distantibus eis superficie inferioris similiter densis sed tantummodo 0.2 mm. longis.

CHIRIQUÍ: above El Boquete, 1650–1925 m., *Maxon 5653* (Herb. N. Y. Bot. Gard. HOLOTYPE); Bajo Mono–Robalo trail, 1500–2100 m., *Allen 4817*.

SECTION UNKNOWN

36. *MICONIA SHATTUCKII* Standley, in *Contr. Arn. Arb.* 5:119. *pl. 16*. 1933.

A shrub or small tree; younger stems, petioles, and panicle thinly pubescent with very short simple hairs; petioles stout, 1–2 cm. long; leaf-blades broadly elliptic, up to 3 dm. long, half to two-thirds as wide, short-acuminate, entire, rounded below to a shallowly cordate base, 7-nerved, glabrous above, sparsely and shortly pubescent beneath; mature inflorescence paniculiform, about 1 dm. long; flowers not seen, but, fide Standley, on pedicels 1–2 mm. long; petals white, 4 mm. long; anthers linear-attenuate, biprose; berries depressed-globose 4.5 mm. diam.

Apparently endemic to Panama.

CANAL ZONE: Barro Colorado Island, *Shattuck 335*.

Terry & Terry 1444, an immature plant from rain-forest on the Cana-Cuasi trail, Darién Province, altitude 600 m., is questionably referred here also.

33. *MOURIRI* Aubl.

MOURIRI Aubl. *Pl. Guian.* 1:452. 1775.

Flowers 5-merous. Hypanthium obconic to pyriform or cup-shaped. Sepals commonly coherent in the bud, at anthesis separating nearly or quite to the torus. Petals mostly yellow, ovate to lanceolate, acute or acuminate, often very unsymmetrical. Stamens isomorphic; anthers stout, blunt; thecae much shorter than the anther, opening by a lateral longitudinal cleft on both sides of the anther; connective thickened toward the base, bearing a conspicuous dorsal gland near the middle, often prolonged at base into a short, stout, dorsal spur. Ovary wholly inferior, 1- to 5-celled; stigma punctiform; ovules few in each locule, basal or nearly so. Fruit a berry. Trees or shrubs, usually glabrous, with 1-nerved (in our species) leaves and small axillary cymes.

About 65 species, distributed throughout tropical America, mostly at low elevations and most numerous in Amazonia.

Fig. 93. *Mouriri parvifolia*

- a. Leaves sessile, up to 7 cm. long; hypanthium and sepals each 2.5–3 mm. long..... 1. *M. PARVIFOLIA*.
 aa. Leaves short-petioled, 10–25 cm. long; hypanthium and sepals each 5–6 mm. long.
 b. Leaf blades papyraceous, the tertiary veins evident; hypanthium brown-tomentulose..... 2. *M. BRUNNEICALYX*.
 bb. Leaf blades coriaceous, the tertiary veins not visible; hypanthium (fide Pittier) glabrous..... 3. *M. COMPLETENS*.

1. *MOURIRI PARVIFOLIA* Benth. Bot. Voy. Sulphur 97. t. 36. 1844.

Shrub 2–6 m. tall with divaricately branched twigs; leaves sessile, lanceolate or ovate-lanceolate, 3–7 cm. long, a third to half as wide, broadest much below the middle, acute or acuminate, rounded at base; secondary veins obscure or obsolete; flowers few in a fascicle; pedicels 2–4 mm. long, bracteolate near the summit; hypanthium glabrous, 2.5–3 mm. long; sepals narrowly triangular, to 3 mm. long; petals 5–6 mm. long.

Southern Mexico to Bolivia.

CHIRIQUÍ: Cierito, *Cooper & Slater 248*. COCLÉ: mountains beyond Pintada, 400–600 m., *Hunter & Allen 516*; Penonomé and vicinity, *Williams 84, 579*. PANAMÁ: Río Las Lajas, 20 m., *Allen 1609*; lower Río Cabra, 30 m., *Paul 794*.

2. *MOURIRI BRUNNEICALYX* Standley, ex Woods. & Seibert, in Ann. Mo. Bot. Gard. 24:193. 1937.

Small tree to 7 m. tall; petioles 2–3 mm. long; leaf-blades thin, oblong or barely ovate-oblong, 1–2 dm. long, a third to two-fifths as wide, rounded at the summit to a triangular cusp 5–10 mm. long, broadly rounded at the base; secondary veins prominulous; flowers apparently solitary, on a glabrous peduncle 8 mm. long and a shorter tomentulose pedicel; hypanthium brown-tomentulose, 6 mm. long; sepals triangular-ovate, 5 mm. long; petals at least 8 mm. long.

Endemic to Panama.

PANAMÁ: vicinity of Arenoso, 26–50 m., *Seibert 609*.

3. *MOURIRI COMPLETENS* (Pittier) Burret, in Notizbl. 11:151. 1931.

Aulacocarпус completens Pittier, in Smiths. Misc. Coll. 63, No. 4:2. 1914.

Tree to 18 m. tall, glabrous; petioles 4–5 mm. long; leaf-blades coriaceous, oblong to ovate-oblong, 14–25 cm. long, 5–11 cm. wide, abruptly short-acuminate at the apex, shortly cordate at the base, the secondary veins subprominulous, the tertiaries not visible; flowers solitary or aggregate on bibracteolate pedicels 12–15 mm. long; hypanthium and sepals each about 5–6 mm. long; petals pink, about 10 mm. long.

Panama and (fide Morley) Colombia.

DARIÉN: El Real de Sta. Maria, *Pittier 6974*; Pinogana, *Pittier 6573*. SAN BLAS: Puerto Obaldía, *Pittier 4310*.