

Ministry of Agriculture, Lands and Food
Production, Trinidad and Tobago

Vol. II]

[Part XI

FLORA

OF

TRINIDAD AND TOBAGO

UNISEXUALES (*Continued*)

URTICACEAE	(BY D. PHILCOX)
ULMACEAE	(BY D. PHILCOX)
MORACEAE	(BY C. C. BERG AND N. VAN HEUSDEN)
CANNABACEAE	(BY D. PHILCOX)
CASUARINACEAE	(BY D. PHILCOX)

ANOMALOUS FAMILIES

SALICACEAE	(BY D. PHILCOX)
LACISTEMATACEAE	(BY JEAN K. BOWDEN)
CERATOPHYLLACEAE	(BY D. PHILCOX)



Price — — \$1.00

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GROUP 3—MONOCHLAMYDEAE

SERIES VII. UNISEXUALES (Contd.)

FAMILY 2—URTICACEAE

By D. PHILCOX

Herbs, shrubs or small trees, sometimes armed with stinging hairs or spines; leaves alternate or opposite, simple, those of opposite pair often unequal, entire, variously dentate or lobed, usually bearing cystoliths, stipulate; monoecious or dioecious; flowers unisexual, small, greenish or greenish-white, usually in unisexual or androgynous clusters, perianth simple, 2-5-lobed or parted, or lacking; stamens as many as and opposite perianth lobes; ovary superior (or partly inferior), 1-celled; style undivided, stigma penicillate-capitate or filiform; fruit an achene, sometimes enclosed in perianth.

KEY TO THE GENERA

- | | | | |
|--|-----|---------------------|---|
| 1 Leaves opposite, those of pair often unequal | ... | ... | 2 |
| 1 Leaves alternate | ... | ... | 3 |
| 2 Stigma short-penicillate; inflorescence paniculate, cymose or capituliform | ... | 1. <i>Pilea</i> | |
| 2 Stigma filiform; flowers in sessile clusters in leaf axils or in spikes | ... | 2. <i>Boehmeria</i> | |
| 3 Female flowers with perianth | ... | ... | 4 |
| 3 Female flowers without perianth | ... | 5. <i>Phenax</i> | |
| 4 Stigma sessile; plants usually armed with stinging hairs | ... | ... | 5 |
| 4 Stigma filiform; plants without stinging hairs | ... | ... | 6 |

1. *Pilea microphylla* (L.) Liebm. in *Vidensk. Selsk. Skr.* ser. 5, 2: 296 (1851); Griseb., *Fl. Brit. W. Ind.*: 155 (1860); Fawc. & Rendle, *Fl. Jam.* 3, 1: 62 (1914); Gooding & Loveless in Gooding *et al.*, *Fl. Barbadoes*: 127 (1965); Adams, *Fl. Pl. Jam.*: 228 (1972)

Parietaria microphylla L., *Syst.* ed. 10: 1308 (1759)

Pilea aripoensis Britton in *Bull. Torr. Bot. Club* 50: 51 (1923)

Artillery plant, Smoke plant

Herb, erect up to 30cm tall or prostrate, densely branched, glabrous, usually succulent, sometimes woody at base; leaves 1-12mm long, 0.5-4mm wide, oblong to obovate or suborbicular, obtuse, those of pair usually markedly unequal, glabrous, tapering at base into relatively long or short petiole, cystoliths linear, prominent above, transverse on lamina; monoecious or rarely dioecious; flowers in small axillary sessile or subsessile clusters; achenes ovate, 0.3-0.5mm long.

Trinidad: without locality, Cartwright s.n. in 1890 (OXF), Fendler 709 (BM, K), 30.8.1864, Finlay (TRIN 2803), Lockhart s.n. (K), Prestoe (TRIN 1048); Pointe Gourde, 14.4.1975, Philcox & Andrews 7655 (K, TRIN); Diego Martin, Cascade, 28.10.1933, Broadway 9280 (BM, K), 9.6.1903, Johnston 13 (K); Belmont Hill, April 1890, Broadway (TRIN 4057); St Joseph, Government Farm, 21.4.1975, Philcox & Andrews 7709 (K, TRIN); Maracas, March 1911, Druce s.n. (OXF); foot of Maracas Falls, ca. 300m, 2.5.1975, Philcox & Andrews 7749 (K); St Augustine, 27.1.1953, Baker (TRIN 14820), U.W.I. (I.C.T.A.), 19.2.1948, Simmonds 282 (TRIN); Quare River Valley, 25.1.1931, Rogers s.n. (BM); about 2.8 miles along Aripo Heights road from Eastern Main Road, ca. 150m, 6.7.1973, Philcox, Kalloo & Jurawan 7394 (K, TRIN); Heights of Aripo, Broadway (K, TRIN 10008, type of *P. aripoensis*); mile post 2½ on Guanapo Heights road, 29.6.1975, Philcox 7817 (K, TRIN); Hollis Reservoir, 17.8.1973, Adams 13577 (UCWI); Oropouche Cave, ca. 200m, 2.1.1953, Baker (TRIN 14781).

Tobago: Fort George, October 1889, Eggers 5653 (K); Sandy Point, 15.9.1927, Williams (TRIN 11820); Sandy River Valley, 9.10.1937, Sandwith 1682 (K); about mile post 1 on road to Hillsborough Dam from Mount St George, ca. 150m, 4.6.1973, Philcox 7032 (K); Speyside, above Batteaux Bay, 1.7.1954, Tuley (TRIN 15239); point opposite Melville Island, on rocks near sea, 25.10.1925, Freeman & Williams (TRIN 11402); by Great Courland River, 15.12.1921, Freeman (TRIN 10969); Mason Hall, 6.5.1913, Broadway 4522 (BM, P); Orange Hill, 27.9.1912, Broadway 4248 (BM).

Southern United States, West Indies and continental tropical South America. Introduced into the Old World and frequently cultivated or found as a weed of hot-house cultivation in the more temperate regions of the world.

I have chosen here to consider *Pilea microphylla* in a very broad sense whereas other authors have taken the view that several varieties are apparent. Many more collections need to be made and studied from these islands to get a clearer picture of this rather diverse species. From the original description and the rather sparse isotype material available to me, I can see no reason to consider *P. aripoensis* other than a dense shade form of *P. microphylla*.

2. *Pilea ovalis* Griseb., *Fl. Brit. W. Ind.*: 159 (1860); Weddell in DC., *Prodr.* 16, 1: 158 (1869)

Herb, erect, stoloniferous, to about 10cm tall, stem usually unbranched, hirsute; leaves 0.5–3cm long, 0.5–2.5cm wide, ovate to obovate or orbicular, apex rounded, rounded at base or cuneate into short petiole, shallowly serrate in upper two-thirds only, sparsely pellucid-hirsute above, hispid on major nerves beneath, ciliate, 3(–5)-nerved from base, leaves of pair subequal, cystoliths absent above, dense, shortly linear beneath, irregularly arranged; petiole 0.5–0.7cm long; monoecious; stipules broadly-oblong, persistent; inflorescence cymose, pedunculate; achenes minute, obliquely roundish-ovoid.

Trinidad: Staubles to Teteron Bay, 12.7.1927, Williams (TRIN 11662); Broadway 6649 (K); Gasparee, 26.8.1848, Crueger s.n. (K, type of *P. ovalis*); path to Maracas Falls, 4.8.1937, Sandwith 999 (K); Botanic Garden, possibly wild, 5.2.1890, Broadway (TRIN 3960).

St Vincent and Trinidad only.

3. *Pilea inaequalis* (Juss. ex Poir.) Wedd. in *Ann. Sci. Nat.* ser. 3, Bot. 18: 229 (1852); Griseb., *Fl. Brit. W. Ind.*: 158 (1860); Wedd. in DC., *Prodr.* 16, 1: 151 (1869); Adams, *Fl. Pl. Jam.*: 234 (1972)

Urtica inaequalis Juss. ex Poir., *Encycl. Suppl.* 4: 222 (1816)

Pilea tenuicaulis Urb., *Symb. Ant.* 5: 324 (1907)

Herb, creeping, stems ascending to about 20cm, coarsely hirsute to subglabrous; leaves (0.4-)1.5-6.5cm long, (0.3-)1-4cm wide, broadly ovate, apex acute, obtuse to rounded, base shallowly cordate to rounded, coarsely crenate-dentate with (9-)11-21 teeth, 3-nerved from base, glabrous above, or with scattered, long, pellucid hairs, hirsute beneath mostly on major nerves, ciliate, cystoliths scattered, conspicuous on both surfaces, leaves of pair usually unequal; petiole 0.3-2.5cm long; stipules ovate, blunt; inflorescence cymose in upper axils, long pedunculate, peduncles up to 7cm long, slender or filiform; achenes about 0.5mm long.

Trinidad: without locality, Fendler 704 (BM, K); Botanic Gardens, Hart (TRIN 4132); Belmont Hill, Broadway (TRIN 4994), Diego Martin, 28.10.1933, Broadway 9268 (BM); near Coblenz, Dry River, 22.11.1889, Broadway (TRIN 3934); Santa Cruz, 8.7.1927, Broadway 6785 (K); Mount St Benedict, 3.6.1973, Philcox 7024 (K, TRIN); San Jose, 20.11.1923, Broadway 5311 (K); by path to Maracas Falls, 4.8.1937, Sandwith 998 (K); Maracas Falls, 12.7.1973, Philcox & Wood 7456 (K, TRIN), 30.5.1975, A. Raynal 15616 (K, P, TRIN), 13.5.1868, Finlay (TRIN 2801), 29.8.1924, Broadway 5373 (BM, K), 2.5.1975, Philcox & Andrews 7752 (K, P, TRIN); Verdant Vale, Blanchisseuse road, 16.5.1926, Broadway 6222 (BM, K); Caura River Valley, 1.4.1920, Britton & Hazen 1205 (K); near milepost 11½, Arima to Blanchisseuse road,

11.6.1975, Phileox & Kalloo 7952 (K, P, TRIN); Heights of Aripo, 10.1.1922, Broadway (TRIN 9875), 11.4.1922, Broadway (TRIN 11207); Heights of Guanapo road, 22.7.1973, Adams 13351 (UCWI); Quare River forests, 1.4.1928, Broadway 6841 (BM, K); San Fernando, 27.10.1867, Finlay (TRIN 2788).

Tobago: Caledonia, 11.10.1937, Sandwith 1725 (K); Mason Hall, 5.7.1913, Broadway 4488 (K, TRIN); Great Courland River, October 1889, Eggers 5951 (K, P, type of *Pilea tenuicaulis*); Griffin Road, Parlatuvier, 23.7.1913, Broadway (K, TRIN 4598); between Parlatuvier and Bloody Bay, 14.11.1912, Broadway 4275 (BM); 2 miles from Charlotteville, 24.10.1925, Freeman & Williams (TRIN 11400); Campbleton, Charlotteville, 18.9.1909, Broadway 3031 (BM).

Jamaica, Cuba, Puerto Rico and the Virgin Islands, St Lucia.

4. *Pilea tobagensis* Urb., *Symb. Ant.* 5: 316 (1907)

Herb, annual, creeping, rooting at nodes, ascending to about 3.5cm; stems short, up to 7cm long, finely and densely short white-hispid, leaves 0.25–1.4cm long, 0.2–0.7cm wide, narrowly ovate-elliptic, to obovate below, apex obtuse, base subcuneate, with 5–7 large lobular crenations, glabrous, 3-nerved from base, cystoliths small, linear, irregular and dense on both surfaces; petiole up to 6mm long, filiform, white-pubescent; monoecious; inflorescence pedunculate in upper leaf axils; peduncles up to 22mm long, glabrous, filiform; achenes shortly ovoid, about 0.7mm long.

Tobago: Caledonia, 11.10.1937, Sandwith 1729 (K); Great Dog River, November 1889, Eggers 5790 (K, P, type); Parlatuvier to Roxborough Trace, 450m, 8.4.1959, Cowan 1500 (TRIN).

Endemic.

There is one sheet of *Pilea repens* (Sw.) Wedd. in the Kew Herbarium attributed to collection by Lockhart in Trinidad. It is thought that this gathering was probably made in Jamaica by Bancroft, as these two collections were mounted on the same sheet by Hooker. *P. repens* is so far recorded only from Jamaica, Cuba and Hispaniola.

2. BOEHMERIA Jacquin

Boehmeria Jacq., *Enum. Pl. Carib.*: 9 (1760)

Shrubs or small trees or suffrutescent herbs, more or less pubescent, without stinging hairs; leaves opposite or alternate, dentate, 3-nerved; stipules free, deciduous; monoecious or dioecious; flowers in globose clusters, clusters usually unisexual, sessile in axils, at nodes or along rachis of spike; male perianth 3- or 4(-5)-partite, stamens 3 or 4(-5); female perianth tubular, 2-4-toothed; ovary included in perianth, stigma persistent, filiform; achene enclosed in enlarged perianth.

1 Leaves alternate throughout with one nerve of outer pair much shorter and midrib unilaterally branched except towards apex; flower clusters axillary 1. *B. ramiflora*

1 Leaves opposite, at least upper on main stem, outer pair of nerves equal and midrib regularly pinnately-nerved; flower clusters in spikes 2. *B. cylindrica*

1. *Boehmeria ramiflora* Jacq., *Enum. Pl. Carib.*: 31 (1760); Griseb., *Fl. Brit. W. Ind.*: 160 (1860); Weddell in DC., *Prodr.* 16, 1: 196 (1869); Fawc. & Rendle, *Fl. Jam.* 3, 1: 82 (1914); Gooding & Loveless in Gooding *et al.*, *Fl. Barbado.*: 125 (1965); Adams, *Fl. Pl. Jam.*: 235 (1972)

Shrub or small tree 2-3(-8)m tall; leaves alternate, 3.5-23cm long, 1-9.5cm wide, usually of two types, either rhombic-ovate to lanceolate, long acuminate at apex, caudate, oblique at base or ovate-lanceolate, subcordate at base, all leaves serrate, sparsely hairy above, soft pubescent beneath especially on major nerves, one nerve of outer pair much shorter and midrib unilaterally branched except towards apex, petiolate; petiole 0.5-9cm long; monoecious or dioecious; flowers in axillary clusters 4-6mm diameter, unisexual; male perianth 3-partite, stamens 3; female perianth 2-toothed, shortly pilose, style 3-5mm long.

Trinidad: without locality, Cartwright s.n. (OXF), Fendler 706 (K), Crueger (TRIN 3795); Botanic Gardens, 16.12.1890, Broadway (TRIN 4421); St Ann's Valley, Fontaine s.n. in 1937 (BM); Cascade, Diego Martin, 28.10.1933, Broadway 9276 (BM); Maraval Valley, 13.12.1865, Finlay (TRIN 2794); l'Orange road via Arima, 21.11.1924, Broadway 5498 (BM, K); near milepost 2½, Aripo road, 10.1.1930, Broadway 9215 (BM, K), 24.12.1947, Baker (TRIN 14150); Heights of Aripo, January 1926, Broadway (K, TRIN 9876), (K, TRIN 9877), 29.3.1959, Cowan 1363 (TRIN); Cedros, Austin Road, 21.9.1915, Caroline King (TRIN 7126).

Tobago: ascent of Pigeon Hill, 16.10.1937, Sandwith 1804 (K).

Mexico to Colombia and Venezuela; Lesser Antilles.

2. *Boehmeria cylindrica* (L.) Sw., *Prodr. Veg. Ind. Occ.*: 34 (1788); Griseb., *Fl. Brit. W. Ind.*: 160 (1860); Weddell in DC., *Prodr.* 16, 1: 202 (1869); Fawc. & Rendle, *Fl. Jam.* 3, 1: 83 (1914); Adams, *Fl. Pl. Jam.*: 235 (1972)

Urtica cylindrica L., *Sp. Pl.*: 984 (1753)

Shrubby perennial herb, 0.5–1(–1.5)m tall, stem simple or branched, angular, pubescent to subglabrous; leaves opposite at least on main stem, 3.5–15(–17.5)cm long, 1–7cm wide, ovate to ovate-lanceolate, acuminate, base rounded to subtruncate, coarsely dentate, glabrous, or pubescent beneath on major nerves, outer pair of nerves equal, midrib regularly pinnately-nerved, petiolate; petiole 0.5–3(–5.5)cm long; monoecious; flower clusters sessile in erect or ascending axillary, often leafy-tipped spikes; male perianth 4-partite, stamens 4; female perianth 4-toothed.

Trinidad: without locality, Crueger (TRIN 2793); savanna on eastern coast, 27.9.1849, Crueger s.n. (K).

Tropical and extra-tropical continental America and the Greater Antilles.

3. LAPORTEA *Gaudichaud* nom. cons.

Laportea Gaudich. in *Freye. Voy.*: 498 (1830)

Herbs or shrubs with irritant hairs; leaves alternate, simple, variously toothed, petiolate; stipules partially connate, apex bifid; monoecious; inflorescence usually axillary paniculate, flowers unisexual in small, lax glomerules; male flowers with 4-5 perianth lobes, stamens 4-5 with reflexed filaments; female flowers with 4 perianth lobes, unequal sized; ovary ovoid, style usually linear; achenes usually compressed, ovoid, sessile or stipitate.

Laportea aestuans (L.) Chew in *Gard. Bull. Sing.* 21: 200 (1965) and 25: 164 (1969); Adams, *Fl. Pl. Jam.*: 236 (1972)

Urtica aestuans L., *Sp. Pl.* ed. 2: 1397 (1763)

Fleurya aestuans (L.) Gaudich. in *Freye. Voy.*: 497 (1830); Griseb., *Fl. Brit. W. Ind.*: 154 (1860); Weddell in DC., *Prodr.* 16, 1: 71 (1869); Gooding & Loveless in Gooding *et al.*, *Fl. Barb.*: 126 (1965)

Herb up to 1(-2)m tall, annual; stems simple or slightly branched, succulent above, slightly woody at base, covered with simple, white, stinging hairs, rarely without, and long, up to 4mm, glandular hairs or glabrescent; leaves (3.5-)9-15(-20)cm long, (2-)7-12(-16)cm wide, ovate to broadly ovate, apex acuminate, base truncate or cordate, stinging hairs sparse on upper surface, more beneath mostly on veins, glandular hairs usually lacking on lamina, dentate with regular, large teeth, 3-nerved from base, pinnately-nerved above, long petiolate; petiole 1.5-15cm long, glandular hairs present with irritant hairs; stipules up to about 7mm long, bifid; panicles up to 15cm long, 10cm broad; male flowers: pedicels up to 1mm long, perianth 4-5-lobed, lobes about 1mm long, stamens 4-5; female flowers: pedicels short, about 0.5mm long, perianth 4-lobed, lobes free, unequal, lateral pair 0.5mm long, dorsal about 0.25mm long, ventral minute, about 0.1mm long; ovary about 0.5mm long; stigma linear about 0.3mm long, undivided; achenes 1-2mm long.

Trinidad: without locality, Bromfield s.n. in 1844 (K), Crueger, 284 (K); Woodbrook, 4.11.1923, Broadway 5304 (BM); St Clair, Emperor Valley Zoological Gardens, 18.4.1975, Philcox 7687 (K, P, TRIN); Experimental Station, 21.3.1915, McLean (TRIN 7886); Botanic Garden, 17.6.1889, Broadway (TRIN 3824); St Ann's, Cascade, 3.2.1925, Broadway 5550 (BM, K, P); Dry River, Alexander in 1893 (TRIN 5676); St Joseph, Stock Farm, 10.7.1958, Purselove P6184 (K, TRIN); St Augustine, U.W.I. (I.C.T.A.), 21.9.1957, Purselove P6203 (K, TRIN); Tunapuna, 4.9.1973, Adams 13790 (UCWI); gully near mile post 1½, Caura road, 25.5.1928, Broadway 6956 (BM, K); milepost 6½ on Aripo Heights road from Eastern Main Road, ca. 300m, 6.7.1973, Philcox, Kalloo & Jurawan 7413 (K, P, TRIN); milepost 5 on road from Redhead to Saut Bay, 18.7.1973, Philcox, Wood & Gibbs 7528, 7533 (K, P, TRIN).

Tobago: Scarborough, October 1889, Eggers 5582 (K); Great Dog River Valley, 12.10.1937, Sandwith 1736 (K).

Pan-tropic weed.

4. URERA *Gaudichaud*

Urera Gaudich. in Freyc. Voy.: 496 (1830)

Shrubs or small trees, usually with stinging hairs; leaves alternate, entire, dentate or lobate, pinnately- or 3-5-nerved at base, stipules intra-petiole, free or more or less connate; dioecious; flowers in small glomerules, laxly paniculate, panicles dichotomously branched, unisexual, usually solitary at leafless nodes on long or short peduncles; male perianth 4-5-partite, segments ovate, subimbricate, stamens 4-5; female perianth 4-partite, segments subequal or outer smaller; ovary straight or oblique, stigma usually sessile, penicillate-capitate, persistent; achene surrounded by enlarged fleshy perianth.

- 1 Leaves very coarsely dentate with teeth
 1-2(-4)cm broad at base; branches armed
 with stout spine-like hairs; achenes more
 than 2mm long, whitish 1. *U. baccifera*

- 1 Leaves crenate-dentate to subentire with teeth
3-8mm broad at base; branches without
spine-like hairs, all hairs slender; achenes
less than 2mm long, orange-red..... 2. *U. caracasana*

1. *Urera baccifera* (L.) Gaudich. in *Freye. Voy.*: 497 (1830);
Weddell in *Ann. Sci. Nat.* ser. 3, Bot. 18: 199 (1852);
Griseb., *Fl. Brit. W. Ind.*: 155 (1860); Weddell in DC.,
Prodr. 16, 1: 93 (1869); Fawc. & Rendle, *Fl. Jam.* 3, 1: 58
(1914); Adams, *Fl. Pl. Jam.*: 237 (1972)

Urtica baccifera L., *Sp. Pl.* ed. 2: 1398 (1763)

Stinging nettle, Scratch bush

Shrub or small tree 2-7m tall, sparsely to subdensely covered throughout with coarse, broad-based, stinging spine-like hairs; leaves 10-25(-42)cm long, 6-20(-30)cm wide, broad-ovate to roundish-ovate, acute or acuminate, rounded to subcordate at base, coarsely dentate or irregularly sinuate-dentate, scattered stinging hairs above, more densely so beneath particularly on major nerves, petiolate; petiole up to 8.5cm long; male flowers subsessile in small compact glomerules; female flowers shortly pedicellate; achenes 3-5mm long, white or pinkish-white, clearly exerted from calyx.

Trinidad: without locality, Freeman s.n. in 1913 (TRIN 8097); road to Maracas Bay via Santa Cruz, 18.4.1926, Broadway 6127 (BM, K); Dibi Valley, 26.8.1892, Broadway (TRIN 4777); Moruga, 27.1.1916, Broadway (TRIN 7602).

Tobago: between Parlatuvier and Bloody Bay, 23.10.1937, Sandwith 1889 (K); Cradley, October 1889, Eggers 5727 (K).

West Indies, Central and tropical South America.

2. *Urera caracasana* (Jacq.) Griseb., *Fl. Brit. W. Ind.*: 154
(1860); Weddell in DC., *Prodr.* 16, 1: 89 (1869); Fawc. &
Rendle, *Fl. Jam.* 3, 1: 57 (1914); Adams, *Fl. Pl. Jam.*:
237 (1972)

Urtica caracasana Jacq., *Hort. Schoenbr.* 3: 71, t. 386 (1798)

Stinging nettle, Scratch bush

Shrub or small tree, 2-10m tall, branches elongate; young branches, petioles, inflorescences and at least leaf-nerves usually armed with short, straight, slender stinging hairs; leaves 9-26cm long, 5.5-25cm wide, broadly ovate to ovate-lanceolate, acuminate, cordate to subcordate at base, crenate-dentate to subentire, scabrous above, more or less pubescent beneath, petiolate; petioles 3.5-10(-40)cm long; male flowers sessile in compact glomerules; female flowers sessile or shortly pedicellate; achenes 0.5-1mm long, orange-red.

Trinidad: without locality, Alexander (TRIN 5048), Fendler 707 (BM); Diego Martin, Blue Basin, December 1893 (TRIN); road to Maracas Bay, Williams, Freeman & Cheesman (TRIN 11235); Tucuche, track by side of stream, 21.9.1959, Richardson 738 (K, TRIN); saddle to Piedra Blanca, 27.8.1973, Adams 13694 (K, UCWI); Maracas, 18.5.1845, Crueger (K, TRIN 362); Maracas Falls, 12.11.1920, Williams s.n. (TRIN); 25.11.1927, Broadway 7266 (BM); road to Maracas Bay, 26.6.1929, Broadway 7280 (BM); Chaguanas, 10.2.1866, Finlay (TRIN 2796); San Fernando Hill, May 1865, Finlay (TRIN 2804); Tabaquite, El Paraiso, October 1918, Broadway (TRIN 8734); Erin, Los Bajos, 12.11.1915, Broadway (TRIN 7351).

Tobago: Mount St George—Castara road, above dam, ca. 300m, Baker (TRIN 15324); Castara, 12.8.1910, Broadway 4027 (BM); Roxborough to Parlatuvier road, 14.10.1937, Sandwith 1765 (K).

Mexico to Costa Rica; Puerto Rico, Jamaica, Lesser Antilles and continental South America.

5. PHENAX Weddell

Phenax Wedd. in *Ann. Sci. Nat.* ser. 4, 1: 191 (1854)

Mostly shrubs or (in our area) herbs with slender branches, lacking stinging hairs; leaves alternate, petiolate, crenate or serrate, 3-5-nerved; stipules distinct; monoecious or dioecious; flowers glomerate in leaf axils, bracts imbricate, apetalous, perianth present only in male flower, 4-lobed, stamens usually 4, ovary sessile or shortly stipitate, stigma persistent, elongate; achenes subcompressed.

Phenax sonneratii (Poir.) Wedd. in DC., *Prodr.* 16, 1: 235-237 (1869); Adams, *Fl. Pl. Jam.*: 236 (1972)

Parietaria sonneratii Poir., *Encycl.* 5: 15 (1804)

Phenax vulgaris Wedd. in *Ann. Sci. Nat. ser.* 4, 1: 192 (1854); Griseb., *Fl. Brit. W. Ind.*: 160 (1860)

Herb up to 1m tall, straggling to erect, much branched, stems reddish, semi-succulent above to slightly woody at base, antrorsely adpressed-hispid, densely so when young; leaves 1.0-9.5(-11)cm long, 0.3-5.5(-6)cm wide, narrow or broad elliptic or elliptic-lanceolate to ovate, long acuminate, cuneate to subtruncate at base, shortly hispid above and beneath, crenate-dentate, 3-nerved from base; petiole up to 8.0cm long, slender, hispid; stipules 2-3cm long, linear-lanceolate; bracts about 1mm long, broad, ciliate, reddish-brown; styles up to 2mm long; achenes about 1mm long, ovoid, acute, pale creamish-brown.

Trinidad: without locality, Crueger s.n. in 1857 (K), Fendler 705 (K); Woodbrook, 8.11.1929, Broadway 7656 (BM); Reservoir Hill, 3.10.1906, Fredholm s.n. (TRIN); St Joseph, Stock Farm, 10.2.1950, Purselove P6050 (K, TRIN); riverside, St Joseph's River, Curepe, 25.5.1975, Philcox 7793 (K, P, TRIN); St Augustine, U.W.I. (I.C.T.A.), 9.12.1947, Simmonds 212 (TRIN); Maracas, 2.5.1904, Dannouse s.n. (TRIN); Maracas Falls, in spray zone among rocks, 30.5.1975, Philcox 7826 (K, P, TRIN), 2.5.1975, Philcox & Andrews 7753 (K, P, TRIN); near mile post 8, Blanchisseuse road, 26.2.1926, Broadway 5986 (BM, K), mile posts 11-12, Simmonds & Baker 146 (TRIN); Morne Bleu, Arima, 27.1.1921, Freeman (TRIN 9584); Paria Road, Blanchisseuse, 28.4.1929, Broadway 7158 (BM); 5½ miles on road from Eastern Main Road to Heights of Guanapo, 26.6.1973, Philcox & Kalloo 7322 (K, P, TRIN), 22.7.1973, Adams 13350 (UCWI), 12.8.1973, Adams 13547 (K, UCWI); about mile post 5 on road from Redhead to Saut Bay, 18.7.1973, Philcox, Wood & Gibbs 7531 (K, P, TRIN); on Cumuto Main Road north of Hasnali, 30.4.1975, Philcox & Andrews 7722 (K, P, TRIN); Cumuto Railway, 5.1.1917, Broadway (TRIN 9596); Toco, near Galera Lighthouse, 8.12.1933, Broadway 7158 (BM); Matchepoorie, 11.3.1921, Britton & Britton 2211 (TRIN); Cocorite, 26.2.1920, Britton & Hazen 33 (K); Central Range Reserve, 1.8.1973, Adams 13382 (K, UCWI); Tamana, 14.1.1915, Broadway (TRIN 9595).

Tobago: Green Hill, 8.8.1958, Purselove P6248 (K, TRIN); Caledonia, 11.10.1937, Sandwith 1726 (K); Menna Road, Mason Hall, 6.6.1925, Williams (TRIN 11127); Hillsborough East River, about $\frac{1}{2}$ mile below Dam, 4.6.1973, Philcox 7041 (K, TRIN); Bloody Bay to roadhead above Roxborough, 8.4.1959, Cowan 1496 (P, TRIN).

Native of tropical Asia, now widely spread throughout tropical America.

POUZOLZIA *Gaudichaud*

Pouzolzia Gaudich. in Freyc. Voy.: 503 (1830)

The genus *Pouzolzia* is represented by collections made in Trinidad, by the species *P. occidentalis* (Liebm.) Wedd. This plant is a native of Central America from Honduras southwards to Colombia and Venezuela, but in the West Indies is known in the wild state only from Puerto Rico. As our material was all collected from or near the grounds of the University of the West Indies, St Augustine (I.C.T.A.), I have chosen not to include it in the general part of this treatment.

FAMILY 3—ULMACEAE

BY D. PHILCOX

Trees or shrubs, sometimes armed with stem spines; leaves alternate, simple, entire or serrate, often inequilateral, stipulate; stipules free, deciduous; flowers unisexual or (in our material) polygamous, small, actinomorphic, cymose, fasciculate or solitary; perianth sepaloid with 3-8 connate or free lobes; stamens same number as and opposite perianth lobes, filaments free, strict, anthers 2-locular, longitudinally dehiscent; ovary superior, 1(-2)-locular, ovule solitary, subapical, pendulous, anatropous; styles 2, divergent, stigmatose on inner surface; fruit a broadly winged samara or drupaceous; seeds usually lacking endosperm.

KEY TO THE GENERA

- Leaf-margin generally serrate or dentate, upper
surface usually scabrid 1. *Trema*
- Leaf-margin entire at least towards base, upper
surface usually smooth 2. *Celtis*

1. *TREMA* *Loureiro*

Trema Lour., *Fl. Cochinch.*: 562 (1790)

Trees or shrubs; leaves shortly petiolate, 3-nerved from base, usually serrate; flowers cymose, clustered in axils, polygamous; perianth 5-lobed, lobes free; stamens short, erect; ovary sessile, ovule solitary; style often persistent in fruit.

Trema micranthum (L.) Blume, *Mus. Bot. Lugd.-Bat.* 2: 58 (1856); van Ooststroom in Pulle, *Fl. Surin.* 1: 48, (1932); Adams, *Fl. Pl. Jam.*: 218 (1972)

Rhamnus micranthus L., *Syst.* ed. 10: 937 (1759)

Sponia micrantha (L.) Deene. in *Nouv. Ann. Mus. Paris* 3: 498 (1834); Griseb., *Fl. Brit. W. Ind.*: 150 (1859)

Shrub (1.5-) or small tree to 7m tall, branches densely short scabrid-pubescent; leaves 7-17cm long, 1.5-6.5cm wide, lanceolate to ovate-lanceolate, long acuminate, subcordate, subtruncate or rounded at base, densely scabrid on both surfaces, with sparse or dense short hairs especially on major nerves beneath, margin finely serrate throughout; petiole 5-8mm long, pubescent; inflorescence axillary, up to 1.5cm long, cymosely branched with 1-several branches; flowers small, greenish-white to pale yellow, perianth lobes about 1mm long, 0.5mm wide, lanceolate, pubescent, receptacle white-hairy; ovary in male flower rudimentary, otherwise fertile, glabrous; drupe about 3mm long, ovoid, orange to red.

Trinidad: without locality, Sieber 45 (K), 1.5.1846, Crueger s.n. (K); east of and above Scotland Bay, 30.8.1977, Philcox & Philcox 8240 (K, P, TRIN); St Ann's Valley, January 1848, Purdie 58 (K); Mt Tabor, north of St Joseph, 12.6.1975, Raynal 15687 (K,P); milepost 9, Arima-Blanchisseuse road, alt. ca. 490m, 11.6.1975, Philcox & Kalloo 7943 (K, P, TRIN); milepost 1½ on Heights of Guanapo road, alt. ca. 160m, 29.5.1975, Philcox 7808 (K, P, TRIN); milepost 1¾ on road from Eastern Main Road to Heights of Guanapo, alt. ca. 180m, 26.6.1973, Philcox & Kalloo 7281 (K, P, TRIN); milepost 4¼, Valencia to Cumaca road, alt. 245m, 18.6.1973, Philcox & Kalloo 7207 (K, P, TRIN); Tabaquite, near milepost 11, 29.11.1933, Broadway 9361 (K); Siparia Forest Reserve, 25.6.1929, Williams (K, TRIN 12201).

Tobago: Providence Road, 27.10.1910, Broadway 3543 (K); Belmont, 25.11.1910, Broadway 4055 (K); Sandy River Valley, 9.10.1937, Sandwith 1677 (K); Green Hill, alt. ca. 140m, 8.8.1958, Purselove P 6257 (K); Easterfield Road, between Caledonia and Green Hill, 11.10.1937, Sandwith 1713 (K); foot of quarry, east of Hillsborough road near milepost 2¼, alt. ca. 185m, 5.6.1975, Philcox & Raynal 7916 (K, P, TRIN); 7 miles from Roxborough on road to Bloody Bay, alt. ca. 425m, 7.6.1973, Philcox 7063 (K, P, TRIN).

Trinidad and Tobago. Florida, Central America to Brazil and Argentina. West Indies.

2. *CELTIS* Linnaeus

Celtis L., *Sp. Pl.*: 1403 (1753)

Trees or shrubs, usually armed with stem spines; leaves shortly petiolate, 3-nerved from base, simple, entire at least towards base; flowers small in axillary clusters or cymose; perianth 4-5-lobed, lobes free; stamens short, erect.

Celtis iguanaea (Jacq.) Sarg., *Silva* 7 : 64 (1895); Gooding *et al.*, *Fl. Barbado.*: 120 (1965); Adams, *Fl. Pl. Jam.*: 218 (1972)

Rhamnus iguanaeus Jacq., *Enum. Pl. Carib.*: 16 (1760)

Celtis aculeata Sw., *Prodr.*: 53 (1788); Griseb., *Fl. Brit. W. Ind.*: 149 (1859)

Momisia iguanaea (Jacq.) Rose & Standl. in *Contrib. U.S. Nat. Herb.* 16 : 8 (1912)

Shrub, scandent to 4m, or climbing to 8m tall; stems when young faintly adpressed-pubescent soon becoming glabrous, somewhat to densely lenticelled, usually armed with stout patent to recurved spines; leaves (2.5-) 4-9cm long, (1-) 1.5-4.5cm wide, ovate-lanceolate to oblong-elliptic, shortly acuminate or rounded at apex, shallowly cordate at base, entire or rarely with few obscure teeth towards apex, adpressed-pubescent when young, soon becoming glabrous except for persistent pubescence in axils of major veins beneath; petiole 3-6mm long; inflorescence in short paniculate axillary cymes, 1-1.5cm long; flowers 5-merous, greenish-yellow, stigma bifid, persistent in fruit; drupe about 8-10mm long, ovoid, slightly compressed laterally.

Trinidad: Erin, sea shore, 6.12.1933, Broadway 9334 (K)

In Trinidad, known only from the above collection. West Indies and continental tropical South America.

FAMILY 4—MORACEAE

BY C. C. BERG & N. VAN HEUSDEN

Trees or shrubs (often epiphytic and strangling) or herbs, laticiferous (except *Dorstenia* and *Cecropia*); leaves alternate, lamina entire or lobed, venation pinnate, palmate or radiate, stipules often amplexicaul; monoecious or dioecious; flowers unisexual, close together in bisexual or unisexual, unbranched and spicate, globose, discoid, cyathiform or urceolate inflorescences, but in *Cecropia* a digitate cluster of spikes enclosed by a spathe; tepals 4-0, stamens 4-1, stigmas 2-1, ovule 1, apical, or basal in *Cecropia*; fruit an achene enclosed by an enlarged perianth or in *Ficus* by the receptacle, or fruit adnate to the perianth and/or receptacle forming a drupaceous whole, or in *Dorstenia* the fruit a dehiscent drupelet.

Cecropia is here treated under the Moraceae instead of the recently established family Cecropiaceae (see *Taxon* 27 : 39, 1978).

Many Moraceae have been introduced into Trinidad and Tobago. The two common species of *Artocarpus*, the naturalized *Castilla elastica* Cerv. and the cultivated species of *Ficus* are treated here. Other taxa, occasionally cultivated, like *Chlorophora excelsa* (Welw.) Benth. & Hook. and *Treculia africana* Decaisne, are excluded.

KEY TO THE GENERA

- | | |
|--|---------------------|
| 1 Herbs with rosetted leaves | 5. <i>Dorstenia</i> |
| 1 Trees or shrubs | 2 |
| 2 Lamina peltate with radial incisions | 7. <i>Cecropia</i> |
| 2 Lamina basally attached, entire or pinnatifid | 3 |
| 3 Leaves distichous on the flowering (=ultimate) branches | 4 |
| 3 Leaves in spirals on the flowering (=ultimate) branches | 7 |
| 4 Stipules fused | 5 |

- 4 Stipules free 6
- 5 Stipules fully amplexicaul, longer than 2cm 3. **Castilla**
- 5 Stipules semi-amplexicaul, shorter than 1cm 1. **Chlorophora**
- 6 Lamina with a (waxy) glandular spot at the base of the midrib beneath or the lamina scabrous above; inflorescences urceolate 6. **Ficus** (introduced species only)
- 6 Lamina without glandular spot and smooth above; inflorescences (sub) globose or discoid to turbinate, covered with peltate bracts 4. **Brosimum**
- 7 Lamina with 1-2 (waxy) glandular spots at the base of the midrib beneath, or in the axils of the main lateral veins; inflorescences urceolate 6. **Ficus** (both indigenous and introduced species)
- 7 Lamina without glandular spots at the midrib; inflorescences cylindrical to globose 7. **Artocarpus**

1. **CHLOROPHORA** Gaudichaud

Chlorophora Gaudich. in Freycinet, *Voy. Uran Physic.*: 508 (1830)

Dioecious trees, often with axillary spines; leaves distichous, serrate-dentate, stipules semi-amplexicaul, fused; inflorescences solitary, axillary, pedunculate, bracteate, the bracts with 2 immersed yellow glands, staminate inflorescences spicate, flowers sessile, tepals 4, stamens 4, inflexed before anthesis, pistillode present; pistillate inflorescences globose-capitate, tepals 4, stigma 1; fruit an achene enclosed by the slightly fleshy, greenish to yellowish perianth.

Chlorophora tinctoria (L.) Gaudich. ex Benth. & Hook., *Gen. Pl.* 3: 363 (1880); Urban, *Symb. Ant.* 8: 166 (1920); Gooding et al, *Fl. Barbados*: 123 (1965); Kaastra, *Acta Bot.*

Neerl. 21: 657 (1972); Little *et al*, *Trees of Puerto Rico & Virgin Is.* 2: 108 (1974); Burger, *Fl. Costaricensis*, in *Fiediana* 40: 128 (1977); Fournet, *Fl. Guadeloupe & Martinique*: 966 (1978)

Fustic

ssp. tinctoria

Morus tinctoria L., *Sp. Pl.*: 986 (1753)

M. zanthoxylon L., *Syst. Nat.* 2: 1266 (1759)

Broussonetia tinctoria (L.) H.B.K., *Nov. Gen. Sp.* 2: 32 (1817)

B. plumieri Spreng., *Syst. Veg.*: 90 (1826)

Maclura tinctoria (L.) Steud., *Nomencl. ed. 2*, 2: 87 (1841);

Griseb., *Fl. Brit. W. Ind.*: 153 (1860); Corner in *Gard. Bull.*

Singapore 19: 236 (1962)

M. affinis Miq., *Fl. Bras.* 4, 1: 155 (1853)

M. subintegerrima Miq., *Fl. Bras.*, 4, 1: 157 (1853)

M. velutina Bl., *Mus. Bot. Lugd.-Bat.* 2: 83 (1856)

M. sieberi Bl., *Mus. Bot. Lugd.-Bat.* 2: 83 (1856)

For a complete list of synonyms see Kaastra in *Acta Bot. Neerl.* 21: 659 (1972).

Shrubs or trees up to 10m tall; leafy twigs 1-7mm thick, glabrous or puberulous, often with solitary (or sometimes paired) straight spines up to 3cm long; lamina 3-12cm long, 1-6cm wide, ovate to elliptic, chartaceous, apex acuminate to caudate, base rounded to subcordate, margin serrate-dentate to almost entire, in juvenile specimens often more or less deeply lobed, both surfaces glabrous except for veins beneath, 7-12 pairs of lateral veins; petiole 6-8mm long, glabrous or minutely puberulous to pubescent; stipules 2-6mm long, puberulous; staminate inflorescences up to 10cm long, *ca.* 3mm diameter, peduncle 2-5mm long; pistillate inflorescences globose to subglobose, 4-12mm diameter, peduncle 2-6mm long, style including filiform stigma up to 10mm long; fruit up to 4mm long.

Trinidad: without locality, Fendler 718 (K); 1.9.1847, Crueger (K); Sieber s.n. (B); Pointe Gourde, 29.5.1932, Broadway 8086 (B, K); Woodbrook, Ariapita Avenue, near Philipps Street, 14.5.1932, Broadway 8046 (B); St Ann's (TRIN 6555); near St Clair, 11.9.1918,

Broadway s.n. (K, TRIN); 1953, Bedell (TRIN 15314); Pitchwalk, Queen's Park Savannah, 11.9.1918, Broadway s.n. (TRIN); Arouca, 26.11.1904, Dannouse (TRIN); Burke's Pasture, 5.1865 (TRIN 2791); San Fernando Hill, 1.2.1953, Baker & Simmonds (K, TRIN 14824).

Tobago: Scarborough, Government Stock Farm, 14.8.1958, Purseglove P6375 (K, TRIN 17436); Goldsborough, 5.5.1953, Baker (TRIN 14959); Little Courland Bay, 11.7.1954, Baker (TRIN 15287); Queen's River, 21.7.1879, sub. no. 11, com. G.L. Keeger (K).

Widespread in tropical America.

2. *ARTOCARPUS* J. R. & G. Forster

Artocarpus J. R. & G. Forster, *Char. Gen. Pl.*: 101 (1776), *nom. cons.*

Monococious trees; leaves in spirals or distichous, entire, pinnatifid or pinnate; stipules free, amplexicaul or lateral; inflorescences unisexual, globose to cylindrical, bracteate; flowers close together, the staminate ones free, perianth tubular or 2-4-parted, stamen 1; pistillate flowers fused, perianth tubular, stigma 1 (or 2-3); fruits more or less drupaceous to achene-like, embedded in the more or less soft middle-layer of the infructescence.

1 Lamina pinnatifid; inflorescences in the leaf axils 1. *A. altilis*

1 Lamina entire; inflorescences on trunk and thick branches 2. *A. heterophyllus*

1. *Artocarpus altilis* (Parkinson) Fosberg in *Jour. Wash. Acad. Sci.* 31: 95 (1941)

Sitodinium altile Parkinson, *Journ. Voy. Endeavour* 45 (1773)

Artocarpus communis J. R. & G. Forster, *Char. Gen. Pl.*: 101 (1776)

A. incisus (Thunb.) L.f., *Suppl. Pl.*: 411 (1781)

Breadfruit (seedless form)

Breadnut, Chataigne (seeded form)

Trees up to 25 (-35)m tall; lamina pinnatifid, to 50 (-100)cm long, to 20 (-65)cm wide; stipules 10-25cm long; inflorescences solitary in leaf axils, staminate cylindrical to clavate, including peduncle 10-35cm long, pistillate inflorescences globose to ellipsoid, pedunculate; infructescences 15-30cm in diameter, covered with conical processes in the seeded form.

Both the seeded and seedless forms are widely cultivated in Trinidad and Tobago.

Introduced from Polynesia and commonly cultivated throughout the tropics.

2. *Artocarpus heterophyllus* Lam., *Encycl. Meth.* 3: 210 (1789)

A. integrifolia auct.

A. integer auct.

Jackfruit, Calah

Trees up to 10 (-15)m tall; lamina entire, elliptic to oblong or subobovate, to 25cm long, to 10cm wide; stipules 1-8cm long; inflorescences mostly on trunk and thick branches, staminate ones clavate, including peduncle to 12cm long, pistillate inflorescences ellipsoid to globose, pedunculate; infructescences ellipsoid to cylindrical to 60 (-100)cm long, covered with conical processes.

A form with firm fruiting perianths and another with soft fruiting perianths are both cultivated.

Introduced from Asia and commonly cultivated throughout the tropics.

3. *CASTILLA* Sesse

Castilla Sesse in Cervantes, *Suppl. Gaz. Lit. Mexico*, July 2 (1794)

Monoecious or dioecious trees with sparse permanent branches with the leaves in spirals and each axillary bud forming a horizontal self-pruning phyllomorphic branch with the leaves distichous; stipules fully amplexicaul, fused; inflorescences unisexual, involucrate with many small imbricate bracts, staminate ones fan-shaped and bivalvate or those accompanying pistillate inflorescences

often more or less cyathiform, stamens on radial ridges, intermixed with small bractlike structures, pistillate inflorescences discoid with several to many flowers, perianth tubular, stigmas 2; infructescence orange, containing fruits fused with fleshy perianths.

Castilla elastica Sesse in Cervantes, *Suppl. Gaz. Lit. Mexico*, July 2 (1794); Cook in *Science* 18: 438 (1903); Pittier in *Contr. U.S. Nat. Herb.* 13: 277 (1910); Woodson in *Ann. Missouri Bot. Gard.* 47: 139 (1960)

Castilloa elastica auct.

ssp. *elastica*

Berg, *Fl. Neotropica Monogr.* 7: 98 (1972)

Castilla lactiflua Cook in *Science* 18: 438 (1903)

C. nicoyensis Cook in *Science* 18: 438 (1903)

C. guatemalensis Pittier in *Contr. U.S. Nat. Herb.* 13: 272 (1910)

C. gummifera (Bertol.) Standl. in *Contr. U.S. Nat. Herb.* 20: 34 (1917)

Central American rubber, Panama rubber, Castilloa rubber

Trees up to 30m tall; leafy twigs yellow hirsute; leaves 15-40 (-55)cm long, 7-20(-25)cm wide, oblong, sometimes subpandurate, chartaceous, apex acuminate, base cordate to emarginate, denticulate to dentate, upper surface scabrous, lower surface yellow hirsute to subtomentose, 18-21(-25) pairs of lateral veins; petiole 0.5-2 (-10)cm long; stipules 2-11.5cm long, yellow strigose; staminate inflorescences (1-)4(-6) together, 10-25mm broad, bracts yellow strigose, peduncle 3-15mm long, inflorescences accompanying pistillate ones usually cyathiform, subsessile or up to 10mm pedunculate; pistillate inflorescences solitary or accompanied by staminate inflorescences, 1-2cm in diameter, sessile, bracts yellow strigose, 10-30 flowers, basally fused, perianth yellow short-velutinous, stigmas 1-3mm long; inflorescences 2.5-4.5cm in diameter.

Introduced from Central America as a rubber-yielding tree, now naturalized and common in Trinidad and Tobago.

4. *BROSIMUM* Swartz

Brosimum Sw., *Prod. Veg. Ind. Occ.*: 12 (1788), *nom. cons.*

Monoecious or dioecious trees; leaves distichous; stipules free, not fully amplexicaul; inflorescences bisexual or unisexual, axillary, globose, turbinate or discoid, pedunculate, with many peltate bracts; staminate flowers often with perianth strongly reduced or lacking, stamens often reduced to 1; pistillate flowers 1 or a few immersed in receptacle, stigmas 2; fruit a drupe with yellow or reddish fleshy receptacle.

1 Lamina glabrous 1. *B. alicastrum*

1 Lamina appressed-puberulous beneath 2. *B. guianense*

1. *Brosimum alicastrum* Sw., *Prod. Veg. Ind. Occ.*: 12 (1788); Trécul in *Ann. Sci. Nat. Bot. Ser.* 3, 8: 139 (1847); Griseb., *Fl. Brit. W. Ind.*: 152 (1860); Pittier, *Contr. U.S. Nat. Herb.* 20: 101 (1918); Léon & Alain, *Fl. Cuba* 2: 54 (1951); Woodson in *Ann. Missouri Bot. Gard.* 47: 132 (1960); Adams, *Fl. Pl. Jam.*: 224 (1972)

ssp. *alicastrum*

Moussara

Berg, *Fl. Neotropica Monogr.* 7: 169 (1972)

Helicostylis ojoche K. Schum. ex Pittier, *Plantas usuales de Costa Rica*: 119 (1908)

Brosimum terrabanum Pittier in *Contr. U.S. Nat. Herb.* 18: 69 (1914)

B. conzattii Standl. in *Contr. U.S. Nat. Herb.* 20: 211 (1919)

B. gentlei Lundell in *Wrightia* 3: 167 (1966)

Dioecious trees; leafy twigs 1.5–3mm thick, minutely puberulous or glabrous; lamina 5–17cm long, 2–6.5cm broad, oblong to elliptic, subcoriaceous, apex acuminate to acute, base often inequilateral, obtuse to acute, margin sometimes dentate towards the apex, both surfaces glabrous, 12–17 pairs of lateral veins; petiole 3–9mm long, glabrous or minutely puberulous; stipules 4–9mm long, minutely puberulous; inflorescences solitary or paired, unisexual, subglobose, 2–6mm in diameter, peduncle

1-10mm long, staminate flowers numerous, perianth lacking, stamen 1, anthers peltate and circular due to fusion of thecae, pistillate flowers 1 or a few, stigmas unequal in length; infructescence 1.5-2cm in diameter, yellow to orange at maturity.

Trinidad: without locality, 18.10.1921, Nowell (TRIN 9747); sub. no. 2, 3 and 4, 1.1880, com. H. Prestoe (K); Botanic Gardens, 6.6.1929, Broadway 7267 (K); Caura Royal Road, 15.2.1979, Berg s.n. (U); San Fernando, near Freemasons' Lodge, 8.8.1868 (TRIN 521); Tabaquite, 19.9.1918, Broadway (TRIN 8724); Southern Watershed Reserve, 20.11.1930, Russell (K, TRIN 12431).

Tobago: Beard, J. S., in *Ecol. Monogr.* 14 (2): 162 (1944).

Subspecies *alicastrum* occurs in the West Indies, Mexico and Central America; ssp. *bolivarensis* in South America, from Guyana, Venezuela and Colombia southwards to Bolivia.

2. *Brosimum guianense* (Aubl.) Huber in *Bol. Mus. Emilio Goeldi* 5: 337 (1909); Woodson in *Ann. Missouri Bot. Gard.* 47: 129 (1960); Berg, *Fl. Neotropica Monogr.* 7: 181 (1972)

Gatia

Piratinera guianensis Aubl., *Pl. Gui.* 2: 888 (1775)

Brosimum aubletii Poepp. & Endl., *Nov. Gen.* 2: 24 (1838); Griseb., *Fl. Brit. W. Ind.*: 152 (1860)

Piratinera scabridula Blake in *Jour. Wash. Acad.* 12: 398 (1922)

P. velutina Blake in *Jour. Wash. Acad.* 12: 398 (1922)

Brosimum rotundatum Standl. in *Bull. Torr. Bot. Club* 75: 293 (1948)

For a more complete list of synonyms see Berg, *Fl. Neotropica Monogr.* 7: 181 (1972)

Monoecious trees; leafy twigs 1.5-3mm thick, usually puberulous with periderm peeling off; lamina 2.5-11cm long, 1.5-4.5cm wide, oblong to elliptic, sometimes subobovate to almost orbicular, subcoriaceous, apex acuminate, sometimes obtuse or emarginate, base inequilateral, one side acute the other obtuse, upper surface glabrous, lower surface appressed-puberulous, 7-13

pairs of lateral veins; petiole 2-5mm long, puberulous; stipules 2-4mm long, puberulous; inflorescences usually solitary, discoid to turbinate, 3-4mm in diameter, subsessile to 20mm long pedunculate, staminate flowers with 3-lobed perianth, stamen 1, pistillate flower 1 or few; infructescence subglobose, 6-18mm in diameter, orange to reddish at maturity.

Trinidad: without locality, 1.1848, Purdie 1501 (K); sub. no. 1, 1.1880, com. H. Prestoe (K); Botanic Gardens, 3.6.1889, Broadway (TRIN 3914); 4.1.1890, Broadway (TRIN 4049); Arena, 6.4.1956, Simmonds (K, TRIN 15393).

Widespread throughout tropical America, from eastern Brazil to Mexico; Trinidad.

5. DORSTENIA Linnaeus

Dorstenia L., *Sp. Pl.*: 121 (1753)

Herbs with rhizomatous to tuberous stems; leaves rosetted, entire or lobed; inflorescences bisexual, long pedunculate; receptacle discoid to saucer-shaped, entire or lobed, with marginal bracts; staminate flowers with a 2-3-parted perianth and 1-2 stamens, pistillate flowers immersed in receptacle, ovary free, stigmas 2, short; fruit a free dehiscent drupelet, with white fleshy exocarp ejecting tuberculate endocarp body.

- 1 Lamina pinnately, subpalmately or subpedately lobed 1. *D. contrajerva*
 1 Lamina entire, oblong 2. *D. sabanensis*

1. *Dorstenia contrajerva* L., *Sp. Pl.*: 121 (1753); Griseb., *Fl. Brit. W. Ind.*: 154 (1860); Urban, *Symb. Ant.* 4: 196 (1905); Rossberg in *Notizbl. Bot. Gart. Berlin* 3: 170 (1934); Burger, *Fl. Costraricensis* in *Fieldiana* 40: 138 (1977); Carauta in *Rodriguesia* 29: 103 (1978); Fournet, *Fl. Guadeloupe & Martinique*: 958 (1978)

Contrajerva root

Lamina 4–23cm long, 3.5–22cm wide, pinnately to subpalmately or subpedately variously 3–8-lobed to partite, chartaceous, apex acute to faintly acuminate, base acute to cordate, crenate-dentate, upper surface with patent to appressed rigid hairs, scabrous to smooth, lower surface puberulous on the veins, 3–7 pairs of lateral veins; petiole 3–20cm long, puberulous, stipules triangular to ovate, up to 5mm long, persistent; inflorescences solitary, axillary, oeduncle 7–22cm long, densely to sparsely puberulous, broadened into flat, more or less distinctly rectangular to irregularly lobed receptacle, 1.5–3cm in diameter.

Trinidad: without locality, Broadway s.n. (K), Fendler 710 (K, NY); Chacachacare, 4.10.1864, (US), Britton, Freeman & Brown, 5.4.1921, (NU, US); St Ann's, Cascade, 24.10.1924, Broadway 5452 (K, MO, S); Coblenz, 22.11.1889, Broadway (TRIN 3933); Diego Martin, 11.5.1915, McLean (TRIN 7745); El Tucuche, Hubbard 5 (TRIN); Mt St Benedict, $1\frac{1}{2}$ miles N of St Joseph and Tunapuna, 12.6.1976, Raynal 15669 (K, TRIN 21739); Tacarigua, Crueger (K); Blanchisseuse, 31.10.1967, Wesley Wong W87a (TRIN 19340); Ortinola Estate, Britton & Hazen 247 (K, NY, US); Dibe Valley, 26.8.1892, Broadway *et al* (TRIN 4772); 15.4.1920, Britton, Hazen & Mendelson 1759 (GH, NY, US); Moruga, L'Anse Mitan, 7.6.1916, Broadway (TRIN 8194).

From Mexico to Peru, through northern Venezuela to Trinidad, also in several islands of the West Indies.

2. *Dorstenia sabanensis* Cuatrec. in *Bol. Soc. Venez. Cienc. Nat.* 17: 93 (1956); Carauta in *Rodriguesia* 29: 118 (1978)
- D. tubicina* sensu Griseb., *Fl. Brit. W. Ind.*: 154 (1860), non Ruiz & Pavon.

Lamina 2–10cm long, 1–2.5cm wide, oblong to subobovate or to elliptic, chartaceous, apex rounded to obtuse, base subcordate to truncate, crenate-dentate to repand, upper surface with appressed rather soft hairs, lower surface puberulous on veins, 5–8 pairs of lateral veins; petiole 0.5–7cm long, puberulous; stipules ovate to triangular, up to 3mm long, persistent; inflorescence solitary, axillary, peduncle 1.5–5cm long, puberulous to hirtellous; receptacle saucer-shaped, entire, 5–12mm in diameter; stamens 1–2(–3).

Trinidad: St Joseph Savanna, St Augustine, 8.8.1973, Adams & Bhorai 13482 (TRIN 21249, UCWI); Arima, 6.1878, Purdie 93 (K).

In Venezuela, Trinidad, French Guiana, Brazil (Amazonas & Mato Grosso) and Bolivia.

6. *FICUS* Linnaeus

Ficus L., *Sp. Pl.*, ed. 5: 482 (1754)

Trees or shrubs, often with aerial roots, terrestrial or often epiphytic and strangling; leaves alternate, with basal pair of lateral veins often distinct, glandular spot(s) at base of midrib or, in some introduced species, in axils of lower lateral veins; stipules often fully amplexicaul; inflorescences (in indigenous species) bisexual, axillary or on short-shoots below leaves (in some introduced species on special branches on older wood), receptacle urceolate (in indigenous species) with 2 or 3 basal bracts and interlocking ostiolar bracts; staminate flowers with 1 or 2 stamens, perianth membranous, pistillate flowers more or less distinctly differentiated into seed-flowers (of which the ovary produces a seed) with a relatively long style and sessile or short-pedicellate, and into gall-flowers (in which larvae of the pollinating wasp are incubated in the ovary) with a relatively short style and long-pedicellate; fruit an achene.

The subgenus *Pharmacosycea* is represented by *Ficus maxima* and *F. yoponensis*. The other indigenous species belong to the subgenus *Urostigma*.

INDIGENOUS SPECIES

- | | |
|--|-------------------------|
| 1 Lamina with more than 20 pairs of lateral veins; figs with protracted apex | 2. <i>F. yoponensis</i> |
| 1 Lamina with less than 20 pairs of lateral veins; figs with rounded apex | 2 |
| 2 Periderm of petiole peeling off; figs scabrous | 1. <i>F. maxima</i> |
| 2 Periderm of petiole not peeling off; figs smooth | 3 |

- 3 Lamina beneath distinctly hairy and the smaller veins prominent; figs pedunculate and with a circular or triangular rim round the ostiole 5. *F. gomelleira*
- 3 Lamina beneath glabrous or at most minutely puberulous on the midrib, smaller veins slightly prominent to plane; figs if pedunculate, then without a distinct rim round the ostiole 4
- 4 Leafy twigs at least 5mm thick, lamina mostly longer than 10cm; figs over 10mm diameter, sessile to subsessile, or if pedunculate, then the ostiole sunken 5
- 4 Leafy twigs at most 5mm thick, lamina often less than 10cm long; figs mostly less than 10mm diameter, pedunculate 8
- 5 Lamina with rounded apex 6
- 5 Lamina with acuminate apex 7
- 6 Petiole longer than 3.5cm, lamina with 7-9 pairs of lateral veins; basal bracts 10-20mm long 3. *F. nymphaeifolia*
- 6 Petiole usually shorter than 3.5cm, lamina with 7-12 pairs of lateral veins; basal bracts less than 5mm long 4. *F. trigonata*
- 7 Vegetative parts glabrous; figs pedunculate, ostiole sunken 7. *F. broadwayi*
- 7 Leafy twigs, petiole, stipules or midrib beneath at least minutely puberulous; figs sessile, ostiole surrounded by a circular to triangular rim 4. *F. trigonata*
- 8 Petiole up to 2cm long, lamina rarely longer than 10cm with an acute to rounded base and a rounded, subacute or shortly acuminate apex 9

- 8 Petiole often longer than 2cm; lamina often longer than 10cm, usually with a subcordate to truncate base and an acuminate apex ... 11
- 9 Lamina narrowly lanceolate to lanceolate; figs in the leaf axils, peduncle 1.5-2mm long 9. *F. schumacheri*
- 9 Lamina elliptic to oblong or oblong to lanceolate; figs also below the leaves and/or the peduncle longer than 2mm ... 10
- 10 Lamina coriaceous, elliptic to oblong; figs also below the leaves 10. *F. guianensis*
- 10 Lamina subcoriaceous, oblong to lanceolate; figs confined to the leaf axils 8. *F. pallida*
- 11 Lamina with 8-10 pairs of lateral veins; peduncle 5-15mm long, ostiole sunken 7. *F. broadwayi*
- 11 Lamina with 9-14 pairs of lateral veins; peduncle 1.5-5mm long, ostiole plane 6. *F. amazonica*

1. ***Ficus maxima*** P. Miller, *Gard. Dict.* ed. 8 (1768); De Wolf in *Elliottia* 4: 11 (1965); Adams, *Fl. Pl. Jam.*: 222 (1972); De Wolf in Lanjou & Stoffers, *Fl. Suriname* 5, 1: 229 (1975); Burger, *Fl. Costaricensis* in *Fieldiana Bot.* 40: 169 (1977)

Ficus radula H. & B. ex Willd., *Sp. Pl.* 4, 2: 1144 (1806)

Pharmacosycea guayanensis Miq. in *London Jour. Bot.* 7: 70 (1848)

P. glaucescens Liebm. in *Kong. Danske Vidensk Selsk. Skr.* Ser. 5, 2: 332 (1851)

Ficus suffocans Griseb., *Fl. Brit. W. Ind.*: 150 (1860)

F. parkeri Miq., *Ann. Mus. Lugd.-Bat.* 3: 300 (1867) pro syn

F. glaucescens (Liebm.) Miq., *Ann. Mus. Lugd.-Bat.* 3: 300 (1867)

F. finlayana Warb. in Urb., *Symb. Ant.* 3: 487 (1903) p.p.

F. picardae Warb. in Urb., *Symb. Ant.* 3: 484 (1903)

F. rubricosta Warb. in Urb., *Symb. Ant.* 3: 486 (1903)

F. subscabrida Warb. in Urb., *Symb. Ant.* 3: 485 (1903)

F. plumierii Urb. in Fedde, *Repert. Sp. Nov.* 15: 158 (1918)

Trees up to 25m tall; leafy twigs 1.5–5mm thick, puberulous to pubescent; lamina 4.5–16.5cm long, 3.5–7cm wide, oblong to elliptic, subcoriaceous, apex shortly acuminate to acute, base acute, upper surface smooth, lower surface scabrous to scabridulous, veins more or less prominent, 10–12 pairs of lateral veins, including 1 pair of basal veins; petiole 0.5–2.5cm long, glabrous or minutely puberulous, periderm peeling off; stipules 0.5–1.5cm long, glabrous; figs solitary, axillary, 7–15mm long pedunculate, subglobose, when dry about 1–2cm in diameter, scabrous, green at maturity, basal bracts 3, 1.5mm long, 1mm broad, ostiole plane.

Trinidad: without locality, Fendler 716 (K), Alexander (TRIN 5401); Woodbrook, 28.3.1935, Broadway 5613 (K); foot of El Tucuche facing Las Cuevas Bay, 17.5.1975, Philcox & Olivier 7763 (K, P, TRIN); Valencia, 25.3.1920, Britton, Britton & Hazen 1022 (K); 3 miles on Valencia-Cumaca Road, alt. 350 ft, 15.6.1973, Philcox & Kalloo (K, P, TRIN); Valencia via Arima, 25.3.1920, Broadway (TRIN 8985); Arima-Blanchisseuse Road ca. 3km N of Arima, 16.2.1979, Berg 982 (TRIN, U); Churchill-Roosevelt Highway, milepost 17½, 15.4.1975, Philcox 7665 (K, P, TRIN); ½ mile on Plum-Mitan road, alt. 100ft, 1.5.1975, Philcox & Andrews 7738 (K, P, TRIN); Plum-Mitan road, opposite Presbyterian School, 29.3.1978, Ramcharan 462 (TRIN 22190); Nariva Swamp, Biche-Ortoire Lagoon, 31.1.1978, Ramcharan 420 (TRIN 22173); San Fernando, 4.1865, ? Finlay (TRIN 2806); Guayaguayare, 15.4.1949, Simmonds (TRIN 14299).

Widespread in tropical America; in the West Indies, in the Greater Antilles and Trinidad (not in the lesser Antilles).

2. *Ficus yoponensis* Desv. in *Ann. Sci. Nat. Bot.* Ser. 2: 18: 310 (1842); De Wolf in *Elliottia* 4: 20 (1965); Burger, *Fl. Costaricensis*, in *Fiediana Bot.* 40: 186 (1977)

Ficus tobagensis Urb. in Fedde, *Repert. Sp. Nov.* 15: 110 (1917).

Trees up to 25m tall; leafy twigs 1–3.5mm thick, glabrous; lamina 4.5–5.5cm long, 1–4.5cm wide, lanceolate to oblong, subcoriaceous, apex faintly acuminate to subacute, base acute, both surfaces glabrous, veins plane to slightly prominent above, more or

less prominent beneath, 23-28 pairs of lateral veins; petiole 0.5-2cm long, glabrous; stipules 1-2.5cm long, glabrous; figs solitary, axillary, 0.5-1.5cm long pedunculate, subglobose, when dry 10-15mm in diameter, minutely puberulous, green at maturity with longitudinal stripes or with pale spots, basal bracts 3, semi-orbicular, 1mm long, 1.2mm broad, ostiole at a more or less protacted apex of the fig.

Trinidad: without locality, Fendler 717 (K); Maracas Road to the Bay, 26.6.1929, Broadway 7249 (K, Z); Arima-Blanchisseuse Road, milepost 10½, alt. 1650 ft, 11.6.1975, Philcox & Kalloo 7949 (K, P, TRIN), ca. 3 km N of Arima, 16.2.1979, Berg 981 (TRIN, U).

Tobago: Roxborough-Bloody Bay road, alt. 1,000ft, 12.8.1958, Purseglove P6321 (K, TRIN); Parrot Hall, Parlatuvier, 22.7.1913, Broadway 4581 (B, L, U), (type collection of *F. tobagensis*); Central Range Reserve, 22.4.1931, Gibon (K, TRIN 12533).

From Mexico through Central America, Colombia and northern Venezuela to Trinidad and Tobago.

3. *Ficus nymphaeifolia* P. Miller, *Gard. Dict.*, ed. 8, *Ficus* no. 9 (1768); Pittier in *Bol. Soc. Venez. Cienc. Nat.* 4: 56 (1937); De Wolf in Lanjouw & Stoffers, *Fl. Suriname* 5, 1: 252 (1975); Burger, *Fl. Costaricensis* in *Fieldiana Bot.* 40: 171 (1977)

Ficus urbaniana Warb. in Urb., *Symb. Ant.* 3: 499 (1903)

F. ierensis Britton in *Bull. Torr. Bot. Club* 48: 329 (1921)

F. anguina R. Benoist in *Bull. Mus. Hist. Nat. Paris* 30: 104 (1924)

F. cabusana Standl. & Steyerl. in *Publ. Field Mus. Bot.* 22: 226 (1940)

F. duquei Dugand in *Caldasia* 1: 42 (1942)

Trees up to 20m tall, leafy twigs 5-8mm thick, glabrous or sometimes minutely puberulous; lamina (6.5-)10-25cm long, (3.5-)6-19.5cm wide, elliptic to broadly ovate or suborbicular, coriaceous, apex rounded, base deeply cordate to truncate or sometimes rounded, both surfaces glabrous, veins slightly prominent to plane, 7-9 pairs of lateral veins, including 1-2 basal pairs; petiole 3.5-7cm long, glabrous or minutely puberulous; stipules

0.5–2cm long, minutely puberulous or glabrous; figs axillary, sessile, subglobose, when dry 18–25mm in diameter, densely puberulous, greenish at maturity, basal bracts 2, broadly ovate, 10–22mm long, 10–15mm broad, ostiolar bracts raised.

Trinidad: without locality, 5.1861, ? Crueger 98 (K—mixed with *F. trigonata*); Five Islands, 6.1891, Broadway (TRIN 5015); North Post Road, 19.3.1920, Britton, Hazen & Mendelson 774 (TRIN 10036—type collection of *F. ierensis*); North Post, Diego Martin, 3.1920, Freeman (TRIN 8967); Mucurapo Pasture, St James, 8.12.1924, Broadway 5499 (K); Port-of-Spain, St Clair, Botanic Gardens, 18.4.1975, Philcox 7690 (K); Lopinot Road, alt. 500 ft, 8.3.1962, Kalloo B276 (TRIN 22198); $\frac{1}{2}$ mile from Main Road, on Oroscó Road, Matura, alt. 500 ft, 31.5.1973, Philcox & Kalloo 7008 (K, P, TRIN); Guaico-Tamana Road, alt. 100–200 ft, 7.5.1953, Baker & Simmonds (K, TRIN 15007); Nariva Swamp, Sand Hill, 5.4.1977, Adams 14262 (TRIN 22437); Irois, 1.10.1861 (TRIN 540).

Tobago: Store Bay, 10.7.1954, Baker (K, TRIN 15338).

Brazilian Amazonia, the Guianas, Venezuela, through Trinidad and Tobago to Saint Lucia, and through Colombia to Guatemala.

In Venezuela, Trinidad and the Lesser Antilles the typical form of *F. nymphaeifolia* passes into what may be regarded as a different form with narrower leaves (to oblong) with a leaf base passing into rounded. The latter form is often ranked under *F. urbaniana*.

4. *Ficus trigonata* L., *Pl. Suriname* 17 (1775); De Wolf in Lanjouw & Stoffers, *Fl. Suriname* 5, 1: 264 (1975); Burger, in *Fl. Costaricensis* in *Feldiana Bot.* 40: 181 (1977)

Ficus crassinervia Desf. ex Willd., *Sp. Pl.* 4, 2: 1138 (1806)

F. berteroi Warb. in Urb., *Symb. Ant.* 3: 468 (1903)

F. combsii Warb. in Urb., *Symb. Ant.* 3: 456 (1903)

F. eggersii Warb. in Urb., *Symb. Ant.* 3: 469 (1903)

F. hartii Warb. in Urb., *Symb. Ant.* 3: 458 (1903)

F. mamillifera Warb. in Urb., *Symb. Ant.* 3: 470 (1903)

F. mitrophora Warb. in Urb., *Symb. Ant.* 3: 457 (1903)

F. stahlii Warb. in Urb., *Symb. Ant.* 3: 470 (1903)

F. ernestiana Pittier in *Bol. Soc. Venez. Cienc. Nat.* 4: 55 (1937)

F. iturbei Pittier in *Bol. Soc. Venez. Cienc. Nat.* 4: 68 (1937)

F. infector Pittier in *Bol. Soc. Venez. Cienc. Nat.* 7: 133 (1941)

F. perez-arbelaezii Dugand in *Caldasia* 1: 60 (1942)

Trees up to 20m tall; leafy twigs 5–7mm thick, glabrous or sparsely minutely puberulous; lamina 9–22cm long, 5–9cm wide, oblong to subovate or to elliptic, coriaceous, apex subacute to shortly acuminate or rounded, base rounded to subcordate or sometimes cordate, midrib puberulous beneath, rest glabrous; veins more or less prominent, 7–12 pairs of lateral veins including 1–2 basal pairs; petiole 0.5–3(–4.5)cm long, glabrous; stipules 3–6mm long, glabrous or minutely puberulous to subsericeous; figs axillary, sessile, subglobose, when dry 15–20mm in diameter, glabrous or minutely puberulous, greenish at maturity, basal bracts 3, often divided into 3 lobes, semi-orbicular, 3–3.5mm long, 3–5mm broad, ostiole surrounded by a triangular (or circular) rim.

Trinidad: without locality, Alexander (TRIN 5043, B, K—photograph ex B—type collection of *F. hartii*); 5.1861, ? Crueger 98 (K—mixed with *F. nymphaeifolia*); Marabella, 5.1865 (TRIN 2805); Galfat, Cedros, 2.10.1915, King (TRIN 7304).

Tobago: Store Bay, 7.6.1925, Williams (K, TRIN 11166), on rocks, 3.6.1975, Philcox & Raynal 7864 (K, P, TRIN).

The West Indies, Central America and northern South America.

5. *Ficus gomelleira* Kunth & Bouché, *Index Sem. Hort. Berol.* 18 (1864); De Wolf in Lanjuow & Stoffers, *Fl. Suriname* 5, 1: 246 (1975)

Urostigma doliarium Mart. ex Miq. in *London Jour. Bot.* 6: 527 (1847)

Ficus doliaria (Mart. ex Miq.) Miq. in *Ann. Mus. Lugd.-Bat.* 3: 297 (1867)

F. acarouaniensis Benoist in *Arch. Bot. Caen* 3, Bull.: 170 (1929)

F. squamulosa Pittier in *Bol. Soc. Venez. Cienc. Nat.* 7: 134 (1941)

F. pakkensis Standl. in *Bull. Torr. Bot. Club* 75: 297 (1948)

Trees up to 20m tall; leafy twigs 4–8mm thick, brown- to yellowish-hirsute to hirtellous; lamina 9–22cm long, 4–12cm broad, oblong to elliptic, often more or less inequilateral, subcoriaceous to coriaceous, apex acuminate to rounded, base subcordate to truncate, upper surface puberulous to hirtellous on the main veins, lower surface hirsute on the main veins to puberulous on the reticulum; main veins above often more or less impressed; venation, also the reticulum, prominent beneath, (5)–7–14 pairs of lateral veins, including 1–2 basal pairs; petiole 1–3cm long, hirsute to hirtellous; stipules 1–3cm long, brown to yellow subsericeous; figs axillary, to 1cm long pedunculate, when dry ca. 1.5cm in diameter, puberulous to hirtellous, basal bracts 2, semi-orbicular, 2–3mm long, 3–4mm broad, ostiole surrounded by a low circular to triangular rim.

Trinidad: Botanic Gardens, 1890 (TRIN 4343), 27.11.1891, Warming (C); St Joseph Stock Farm, 3.1958, Purselove P6164 (TRIN 15649); Arima-Blanchisseuse Road, ca. 6km NW of Arima, 16.2.1978, Berg 983 (TRIN, U); Nariva Swamp, Sand Hill, 5.4.1977, Adams 14263 (TRIN 22435).

Venezuela, Trinidad, the Guianas and Brazil.

6. *Ficus amazonica* (Miq.) Miq. in *Ann. Mus. Bot. Lugd.-Bat.* 3: 298 (1867); De Wolf in Lanjouw & Stoffers, *Fl. Suriname* 5 (1): 242 (1975)

Urostigma amazonicum Miq. in *Lond. Jour. Bot.* 6: 541 (1847)

U. angustifolium Miq. in *Lond. Jour. Bot.* 6: 539 (1847)

Ficus angustifolia (Miq.) Miq. in *Ann. Mus. Bot. Lugd.-Bat.* 3: 298 (1867), *non* Blume (1825)

Trees up to 20m tall; leafy twigs 1–5mm thick, glabrous or sometimes minutely puberulous; lamina 4.5–18cm long, 1.2–6.5cm wide, oblong to lanceolate or subovate, subcoriaceous to chartaceous, apex acuminate, base rounded to subcordate, both surfaces glabrous, veins slightly prominent above, slightly prominent to plane beneath, 9–14 pairs of lateral veins, including 1(–3) basal pairs; petiole 0.8–2.5(–4)cm long, glabrous; stipules 0.5–1.5cm long, glabrous; figs axillary, 1.5–5mm long pedunculate, subglobose

to globose, when dry 2-9mm in diameter, glabrous or minutely puberulous, greenish at maturity, basal bracts 2, broadly ovate, 1-2mm long, *ca.* 2mm broad, ostiole plane or slightly raised.

Trinidad: Hillside, 19.4.1920, Britton 1984 (TRIN 9468); Arima Valley, alt. 500ft., 11.2.1961, Snow 4 (K), 3.5.1961, Snow s.n. (TRIN 16933); Aripo Savanna, 1.1893, Alexander (TRIN 5686); Heights of Aripo, 10-26.1.1922, Broadway (K, TRIN 9878); Mora Forest, 23.9.1927, Broadway 6679 (K); O'Meara Ferry, 26.6.1950, Baker (K, TRIN 14622); Sangre Grande, 2.8.1908, Broadway 2366 (Z); Tabaquite, 10.10.1918, Broadway s.n. (K, TRIN 8740); Guaico-Tamana Road, alt. 100-200 ft., 7.5.1953, Baker & Simmonds (K, TRIN 14991); near Plum-Mitan Presbyterian School, 29.3.1978, Ramcharan 461 (TRIN 22130); Manzanilla-Mayaro Road, milepost 41, 16.2.1978, Ramcharan 433 (TRIN 22174), 437 (TRIN 22171); Nariva Swamp, the Large Canal, 6.11.1977, Ramcharan 108 (TRIN 22342); Cedros, Prospect Lagoon, 2.11.1916, Broadway (TRIN 8544); Cedros, Chatham, 30.9.1915, Broadway (TRIN 7240); Icacos, in swamp near Colombia, 4.12.1933, Broadway 9333 (K).

Tobago: The Widow, 20.12.1912, Broadway 4367 (U).

From Brazil (Amapa and Para) through the Guianas to northern Venezuela, Trinidad and Curacao.

The species concept adopted here is narrower than that of De Wolf (*c.f.* *Fl. Suriname* 5 (1): 241 (1975)). *Ficus citrifolia* P. Miller, in the form as occurs in the Antilles, differs from *F. amazonica* in the longer petiole, the common presence of a subovate lamina and the maculate receptacle.

7. *Ficus broadwayi* Urb. in Fedde, *Repert. Sp. Nov.* 15: 110 (1917); De Wolf in Lanjouw & Stoffers, *Fl. Suriname* 5, (1): 237 (1975)

Urostigma leucostictum Miq. in *London Jour. Bot.* 6: 535 (1847)

Ficus leucosticta (Miq.) Miq. in *Ann. Mus. Lugd.-Bat.* 3: 297 (1867) non Sprengel (1826)

F. mendelsonii Britton in *Bull. Torr. Bot. Club* 48: 333 (1921)

F. manicariarum Standl. in *Bull. Torr. Bot. Club* 75: 297 (1948)

F. savannarum Standl. in *Bull. Torr. Bot. Club* 75: 298 (1948)

Trees up to 15m tall; leafy twigs 2.5–7mm thick, glabrous; lamina 12–23cm long, 5–9.5cm wide, elliptic to oblong, coriaceous, apex acuminate, base rounded to truncate to subcordate or to subacute, both surfaces glabrous, veins more or less prominent, 8–10 pairs of lateral veins, including 1–2 basal pairs; petiole 1.5–5.5cm long, glabrous; stipules 1–1.5cm long, glabrous; figs axillary, 5–15mm long pedunculate, subglobose, when dry 12–20mm in diameter, glabrous, greenish at maturity, basal bracts 2, semi-orbicular, 1–2mm long and broad, ostiole sunken in a 2–4mm wide crateriform apex.

Trinidad: North Post to Macqueripe, 22.3.1920, Britton, Hazen & Mendelson 879 (TRIN 9466—type collection of *F. mendelsonii*); Maracas Waterfall, alt. 500 ft, 24.2.1962, Kalloo B155 (TRIN); Maracas foothpath from Santa Cruz Valley, alt. 1,000 ft, 7.3.1954, Baker (K, TRIN 15114); Valencia Road, 8.2.1953, Simmonds (K, TRIN 14863); Long Stretch, near milepost 24, 22.4.1927, Broadway 6618 (K); 4½ miles along Valencia-Cumaca road, alt. 850 ft, 18.6.1973, Philcox & Kalloo 7204 (K, P, TRIN); Mora Forest, near milepost 5, 7.9.1931, Broadway 7753 (B, K); Toco Road, Valencia, 16.4.1920, Britton, Hazen & Mendelson 1789 (TRIN 9512).

Tobago: Scarborough, Burnett Street, 13.2.1914, Broadway 4768 (K); Lambeau, King's Bay River, 12.11.1913, Broadway 4382 (B, K—type collection of *F. broadwayi*).

Venezuela, Trinidad and Tobago, the Guianas to Brazil (Para)

8. *Ficus pallida* Vahl, *Enum.* 2: 194 (1805)

Ficus prinoides Willd., *Sp. Pl.* 4, 2: 1149 (1806); Pittier in *Bol. Soc. Venez. Cienc. Nat.* 4: 71 (1937)

Trees up to 15m tall; leafy twigs 1–2.5mm thick, subglabrous; lamina 3.5–9cm long, 1.2–3.5cm wide, oblong to lanceolate, subcoriaceous, apex acuminate to subacute, base acute to subobtuse,

both surfaces glabrous, veins almost plane above, slightly prominent beneath, *ca.* 10 pairs of lateral veins; petiole (0.3–)0.8–2cm long, glabrous; stipules 0.5–1cm long, sparsely minutely puberulous or glabrous; figs axillary, 2–10mm long pedunculate, subglobose, when dry *ca.* 5–7mm in diameter, greenish at maturity with dark spots, sparsely minutely puberulous to glabrous, basal bracts 2, broadly ovate, *ca.* 2mm long, *ca.* 2mm broad, ostiole plane.

Trinidad: Port-of-Spain, Broadway 6531 (B); Botanic Gardens, 4.1911, Broadway (TRIN 8169), 11.1.1934, Broadway 9350 (K, U); Caledonia Island, 6.1891, Broadway (TRIN 5434).

Northern Colombia through northern Venezuela to Trinidad.

9. *Ficus schumacheri* (Liebm.) Griseb., *Fl. Brit. W. Ind.*: 151 (1860); Warb. in Urb., *Symb. Ant.* 3: 482, 483 (1903)

Urostigma schumacheri Liebm. in *Vidensk. Selsk. Skr.* ser. 5, 2: 328 (1851)

Trees up to 25m tall; leafy twigs 1–2mm thick, glabrous or minutely puberulous; lamina 2.5–9cm long, 0.7–2cm broad, narrowly lanceolate to lanceolate, chartaceous to subcoriaceous, apex subacute to subobtuse or to faintly acuminate, base rounded to acute, both surfaces glabrous, veins slightly prominent to plane, 8–15 pairs of somewhat inconspicuous lateral veins, including 1–2 pairs of basal veins; petiole 0.3–1(–1.3)cm long, glabrous or minutely puberulous; stipules 3–6mm long, minutely puberulous or glabrous; figs axillary, 1.5–2mm long pedunculate, subglobose, when dry 3–4mm in diameter, subglabrous, greenish with dark red spots at maturity, basal bracts 2, broadly ovate, 1–2mm long, 1.5–2mm broad, ostiole plane to slightly impressed.

Trinidad: without locality, Fendler 713 (K); 3.1861, Crueger 101 (K); herb. d'Alleizette s.n. (L); Thompson (C); Maraval, 4.5.1904, Dannouse (TRIN); St Clair Bridge, Leslie (TRIN 5781).

From Brazil (Para) through the Guianas to Trinidad and northern Venezuela.

10. *Ficus guianensis* Desv. ex Ham., *Prod. Fl. Ind. Occ.*: 62 (1825)

Ficus clusiifolia Schott in Spreng., *Syst. Veg.* 4, Curr. Post. App.: 409 (1827)

F. martinii Miq. in *Ann. Mus. Lugd.-Bat.* 3: 219 (1867)

F. grenadensis Warb. in Urb., *Symb. Ant.* 3: 481 (1903)

F. umbonigera Warb. in Urb., *Symb. Ant.* 3: 480 (1903)

F. myriasycea Pittier in *Bol. Soc. Venez. Cienc. Nat.* 4: 75 (1937)

F. obovata Pittier in *Bol. Soc. Venez. Cienc. Nat.* 4: 77 (1937)

F. rigidifolia Pittier in *Bol. Soc. Venez. Cienc. Nat.* 4: 79 (1937) non Bur. (1872)

F. maroana Pittier in *Bol. Soc. Venez. Cienc. Nat.* 9: 120 (1944)

F. gleasonii Standl. in *Publ. Field Mus. Bot.* 17: 170 (1937)

F. erratica Standl. in *Bull. Torr. Bot. Club* 75: 295 (1948)

F. mensalis Standl. in *Bull. Torr. Bot. Club* 75: 297 (1948)

Trees up to 15m tall; leafy twigs 1-5mm thick, usually minutely puberulous; lamina 4-15cm long, 2-8cm wide, elliptic to oblong or subobovate, coriaceous, apex rounded to shortly acuminate, base acute to rounded, both surfaces glabrous, veins more or less prominent, 9-13 pairs of lateral veins, including 1-2 basal pairs; petiole 0.5-2cm long, minutely puberulous or glabrous; stipules 3-9mm long, minutely puberulous; figs axillary and on short-shoots below the leaves, 2-5mm long pedunculate, subglobose, when dry 4-9mm in diameter, minutely puberulous, pink to red at maturity, basal bracts 2-3, ovate, 1-2mm long, 1-2mm broad, ostiole plane.

Trinidad: Maraval, 1891 (TRIN 5650); Mt St Benedict, near Pax Gate, alt. 300 ft, 14.12.1947, Simmonds 220 (TRIN 13964); Caura Royal Road, 15.2.1979, Berg 980 (TRIN, U); Aripo Savanna, 16.8.1922, Broadway (TRIN 10173); Main Road near Valencia from Arima, 19.11.1926, Broadway 6476 (K); Arima Valley, alt. 600 ft, 2.1961, Snow 3 (K); Orosco Road, 2½ miles from Matura Main Road, alt. 50 ft, 31.5.1973, Philcox & Kalloo 7014 (K, P, TRIN); Toco, Point Galera, near lighthouse, 11.3.1934, Broadway 9380 (K); Las Cuevas to Maracas, 22.6.1973, Philcox, Kalloo & Jurawan 7251 (K, P, TRIN); Guapo Beach, near Point Fortin, 8.5.1919, Broadway (TRIN); Guapo, seashore, 6.6.1868, Finlay

(TRIN 2808—type collection of *F. umbonigera*); Pitch Lake, 27.12.1957, Ross 1035 (TRIN 20017); Tamana, Sta Marta Estate, 15.3.1906, Leslie (TRIN); Tamana, alt. 300–400 ft, 22.10.1950, Simmonds (K, TRIN 14645); Irois, seashore, 22.11.1916, Broadway (TRIN 8543); Moruga, 5.6.1908, Broadway 2684 (Z); near Talparo, 25.1.1948, Simmonds 262 (TRIN 14125).

Tobago: Flagstaff Hill, alt. 1,100 ft, 13.7.1954, Baker (K, TRIN 15310); Roxborough-Parlatuvier road, alt. 1,000 ft, 25.10.1937, Sandwith 1923 (K); Main Ridge, 29.1.1910, Broadway 3910 (C).

Brazil, Amazonian Peru, the Guianas, through Trinidad and Tobago to Grenada and Saint Vincent.

INTRODUCED SPECIES

1 Root-climber, figs pyriform to 7cm long	11. <i>F. pumila</i>
1 Not climbing, if the figs large and pyriform	
then the leaves lobed	2
2 Base of the lamina inequilateral	3
2 Base of the lamina (almost) equilateral	4
3 Base of the lamina strongly inequilateral,	
lateral veins ca. 14 pairs	13. <i>F. semi-cordata</i>
3 Base of the lamina more or less inequilateral,	
lateral veins ca. 8 pairs	1. <i>F. aspera</i>
4 Base of the lamina cordate	5
4 Base of the lamina not cordate	7
5 Upper surface of the lamina scabrous	6
5 Upper surface of the lamina smooth	8. <i>F. lyrata</i>
6 Margin of the leaf lobed	4. <i>F. carica</i>
6 Margin of the leaf crenate-dentate	6. <i>F. fraseri</i>
7 Apex of the lamina truncate	10. <i>F. natalensis</i>
7 Apex of the lamina not truncate	8
8 Base of the lamina truncate, and the apex	
caudate	12. <i>F. religiosa</i>
8 Lamina of a different shape	9

- 9 Lamina small, usually to 8cm long ... 10
 9 Lamina longer, usually longer than 10cm ... 11
 10 Lamina with a distinctly acuminate apex;
 figs at maturity yellow to orange 3. *F. benjamina*
 10 Lamina with a shortly and faintly acuminate
 apex; figs at maturity bluish-black 9. *F. microcarpa*
 11 Lamina ovate, apex rounded or nearly so 2. *F. benghalensis*
 11 Lamina oblong or subobovate, apex acuminate ... 12
 12 Lateral veins 5-6 pairs 7. *F. lutea*
 12 Lateral veins numerous 5. *F. elastica*

1. *Ficus aspera* Forst. f., *Pl. Excul.*: 36 (1786)

Lamina to 2cm long, elliptic to ovate, base cordate, more or less inequilateral, apex acuminate, ca. 8 pairs of lateral veins; figs axillary, pedunculate, ca. 6mm diameter.

Introduced from the New Hebrides; occasionally cultivated (hort. Trin.)

2. *Ficus benghalensis* L., *Sp. Pl.*: 1059 (1753)

Indian banyan

Lamina to 13.5cm long, to 9cm wide, ovate, apex rounded to obtuse, base rounded; figs axillary, sessile, subglobose, 7-18mm diameter, reddish at maturity.

Introduced from Asia; occasionally cultivated.

3. *Ficus benjamina* L., *Mant. Pl.*: 129 (1767)

Ceylon Willow

Tree; lamina to 10.5cm long, elliptic to ovate, apex acuminate, base acute to rounded, lateral veins more than 15, close together; figs axillary, sessile, 6-12mm diameter, yellowish, orange or reddish at maturity.

Introduced from Asia; rather common.

4. *Ficus carica* L., *Sp. Pl.*: 1059 (1753)

Edible fig

Shrub or small tree; lamina to 25cm long, suborbicular to broadly ovate, 3-(5-)lobed, base mostly cordate, upper surface scabrous; figs axillary, globose to obovate to pyriform, to 5cm diameter, yellowish to brownish-purple at maturity.

Introduced from the Mediterranean; occasional in cultivation.

5. *Ficus elastica* Roxb., *Fl. Ind.* ed. 2, 3: 541 (1832)

Rubber-tree plant

Tree; lamina to 30cm long, oblong to elliptic, apex short-acuminate, base mostly rounded, lateral veins numerous; figs axillary, sessile, oblongoid, 5-8mm diameter, greenish-yellow at maturity.

Introduced from Asia; common as ornamental tree.

6. *Ficus fraseri* Miq. in *London Jour. Bot.* 7: 235 (1848)

Tree; lamina to 12cm long, oblong to elliptic, apex sub-acuminate, base subacute, margin crenate-dentate, ca. 6 pairs of lateral veins, upper surface scabrous; figs axillary, pedunculate, ovoid, ca. 5mm diameter.

Introduced from Australia (?); occasionally cultivated (hort. Trin.)

7. *Ficus lutea* Vahl, *Enum.* 2: 185 (1805)

F. vogelii (Miq.) Miq. in *Ann. Mus. Bot. Lugd.-Bat.* 3: 288 (1867)

F. arimensis Britton in *Bull. Torr. Bot. Club* 48: 330 (1922)

Tree; lamina to 20(-40)cm long, elliptic to oblong to sub-obovate, apex shortly acuminate, base rounded, 4-8 pairs of lateral veins; petiole to 13(-17)cm long; figs in pairs or clusters in the leaf axils and below the leaves, sessile, 6-10mm diameter, yellow to orange at maturity.

Introduced from Africa; occasionally cultivated. A specimen collected by Dannouse in Arima in 1905 was used to describe *F. arimensis*.

8. *Ficus lyrata* Warb. in Engl., *Bot. Jahrb.* 20: 172 (1894)

Tree; lamina to 40 cm long, pandurate, base cordate, stipules persistent; figs axillary, subglobose, 3-4 cm in diameter.

Introduced from Africa; occasional.

9. *Ficus microcarpa* L.f., *Suppl. Pl.*: 442 (1781)

Tree; lamina to 10 cm long, elliptic to oblong to obovate, apex acute to shortly and faintly acuminate, base acute, 4-10 pairs of lateral veins; figs axillary, sessile, ca. 5-10 mm diameter, purplish-black at maturity.

Introduced from Asia; rather common in cultivation.

10. *Ficus natalensis* Hochst. in *Flora* 28: 88 (1845)

F. lepriuri Miq. in *Ann. Mus. Bot. Lugd.-Bat.* 3: 219 (1867)

Tree; lamina to 11 cm long, to 8 cm wide, obtriangular, apex truncate, base acute; figs axillary, pedunculate, ca. 6 mm diameter, reddish or orange at maturity.

Introduced from Africa; occasionally cultivated.

11. *Ficus pumila* L., *Sp. Pl.*: 1060 (1753) *Creeping fig*

Root-climber or sometimes a small shrub; leaves of climbing branches to 3 cm long, fertile branches with leaves to 10 cm long; figs axillary, shortly pedunculate, pyriform, to 7 cm long.

Introduced from Asia; rather common.

12. *Ficus religiosa* L., *Sp. Pl.*: 1059 (1753)

Bo tree, Pipal tree

Tree; lamina ovate, to 25 cm long, apex caudate, base truncate, petiole to 10 cm long; figs axillary, sessile, depressed globose, to ca. 5-8 mm diameter, purplish-black at maturity.

Introduced from Asia; uncommon in cultivation.

13. *Ficus semicordata* B. Ham. ex J. E. Smith in *Rees Cyclopaedia* 14, n. 71 (1810); Corner in *Gard. Bull. Singapore* 21: 62 (1965)

Tree; lamina to 35 cm long, elliptic to oblong, apex acuminate, base strongly inequilateral, semi-cordate, ca. 14 pairs of lateral veins; figs on leafless shoots, pedunculate, subglobose, 3-7 cm diameter.

Introduced from Asia; occasionally cultivated (hort. Trin.)

7. *CECROPIA* Loeftling

Cecropia Loebl., *Iter Hisp.* 272 (1758), *nom. cons.*

Trees, often with stilt roots, internodes usually hollow and inhabited by ants; leaves peltate, radially incised, normally at the base of the long petiole a trichilium, formed by dense hairs and producing food bodies for ants; stipules large, fused and fully amplexicaul; inflorescences pedunculate digitate clusters of few spikes in pistillate, and many spikes in staminate inflorescences, initially fully enclosed by a caducous spathe; flowers sessile, perianth tubular, formed by 2 tepals, stamens 2, stigma peltate or comose; fruit an achene, often tuberculate.

Cecropia peltata L., *Syst. Nat.* ed. 10: 1286 (1759); Urban, *Symb. Ant.* 4: 199 (1905); Fawcett & Rendle, *Fl. Jamaica* 3: 53 (1914); Snethlage in *Notizbl. Bot. Gart. Berlin* 8: 364 (1923); Velasquez in *Acta Bot. Venez.* 6: 51 (1971); Adams, *Fl. Pl. Jam.*: 221 (1972); Burger, *Fl. Costaricensis*, in *Fieldiana Bot.* 40: 127 (1977)

Cecropia surinamensis Miq., in *Fl. Bras.* 4 (1): 143 (1853)

C. arachnoidea Pittier in *Contr. U.S. Nat. Herb.* 18: 226 (1917)

C. asperrima Pittier in *Contr. U.S. Nat. Herb.* 18: 227 (1917)

Bois canot, Bois canon, Trumpet tree

Trees up to 25 m tall; lamina to ca. 55×55 cm, (8-)10(-11)-lobed, in the upper part of the lamina incisions down to about halfway, upper surface scabrous, when young with sparse white arachnoid indument, lower surface densely hirtellous with curved to uncinatate or straight, often more or less retrorse hairs, puberulous

with such hairs on the smaller veins, but in young leaves often also the secondary veins covered with white arachnoid indument; the free part of the midsegment with *ca.* 10 pairs of lateral veins, running straight or slightly curved into a marginal vein (in juvenile specimens submarginal), petiole to 55 cm long, trichilium well developed, stipules to 12 cm long (greyish-)red, outside with short to long more or less appressed straight hairs, intermixed with white arachnoid hairs, inside with rather soft long hairs; staminate inflorescences patent, peduncle 7-12 cm long, spathe 4-10 cm long, white to yellowish, covered with more or less dense white arachnoid indument, spikes 10-30, unequal in length, 1-8 cm long, *ca.* 2-5 mm thick, on 2-10 mm long stipes, perianth with a flat apex, glabrous; pistillate inflorescences like the staminate ones, but at least when fruiting more or less pendulous, spikes 4, sessile, in fruit to 10 cm long and to 1.3 cm in diameter, perianth apex covered with dense white arachnoid hairs and sparse straight white hairs, stigma peltate.

Trinidad: Morne Coco Road, 9.7.1920, Freeman (TRIN 9376); Maraval, Warming (C); Aripo Savanna, 19.8.1959, Richardson 683 (TRIN 17914); Arima-Blanchisseuse Road, *ca.* 6 km NW of Arima, 16.2.1979, Berg 984 (TRIN, U); Caura Royal Road, 15.2.1979, Berg 978, 979 (TRIN, U); San Fernando Hill, 5.1865, (TRIN 2790); Central Range, Marshall (TRIN 11591); Tamana, 14.1.1915, Broadway s.n. (TRIN).

Tobago: Beard, J. S., in *Ecol. Monogr.* 14 (2): 162 (1944).

From Suriname through northern South America and Central America; in the West Indies in Trinidad and Tobago, otherwise probably only in Jamaica.

The taxonomy of *Cecropia peltata* in the West Indies is not well understood. The material from this area seems to be too heterogeneous to justify the use of the single name *C. peltata* L. (cf. Snethlage in *Notizbl. Bot. Gart. Berlin* 8: 357-369, 1923).

FAMILY 5—CANNABACEAE

BY D. PHILCOX

Erect or scandent herbs; stems and leaves scabrous or with rigid climbing hairs; leaves palmate or lobed; male flowers in loose cymose panicle, each with 5 free sepals, petals absent; stamens 5, opposite sepals; anthers 2-locular, longitudinally dehiscent; female flowers spicate or clustered-axillary, calyx lobes joined forming cupule enclosing superior, 1-locular ovary; ovules 1; style bifid, filiform; fruit an achene covered by persistent perianth.

CANNABIS *Linnaeus*

Cannabis L., *Sp. Pl.*: 1027 (1753)

This genus for convenience is here considered to accommodate only one diverse species, and the following can be considered to act as the generic description as well as for the species.

Cannabis sativa L., *Sp. Pl.*: 1027 (1753); Miller in *Journ. Arn. Arb.* 51: 188 (1970); Adams, *Fl. Pl. Jam.*: 219 (1972)

Ganja, Indian hemp, Marijuana

Erect annual herb up to 5 m tall; stem more or less ribbed or channelled, scabrous, sparsely covered with resinous dots, especially on younger parts of plant; leaves opposite below, alternate above, palmately compound with usually 5-9 lanceolate, serrate leaflets up to 15 cm long, 1.5 cm wide, scabrid above, strigose, gland-dotted beneath; plants dioecious; male flowers greenish yellow; female flowers green, clustered-axillary; calyx densely glandular; fruit ca. 3 mm long, broadly ovoid-compressed, glossy pale brown.

This species was originally indigenous to temperate Asia, but now occurs throughout the world as an adventive or naturalised weed. It is however included here because of its frequent cultivation within our islands.

FAMILY 6—CASUARINACEAE

BY D. PHILCOX

Trees or shrubs; branches very slender, angled, jointed; leaves reduced to minute verticillate scales at nodes; flowers unisexual, monoecious or dioecious, in terminal spikes or cone-like heads; male flowers with 1-2 perianth segments; 1 stamen with large anther, longitudinally dehiscent; female flowers without perianth; ovary small, 1-locular; style short, branches 2, linear; ovules 2; fruit cone-like, ovoid, cylindric, composed of mass of accrescent bracts, subtending winged achenes.

CASUARINA Adanson

Casuarina Adans., *Fam.* 2: 481 (1763)

As this is the only genus in the family, the above description is so formed as to act for both.

Casuarina equisetifolia Forst., *Char. Gen. Pl.*: 104 (1776); Griseb., *Fl. Brit. W. Ind.*: 177 (1859); Britton & Wilson, *Bot. Porto Rico & Virg. Isl.*, Pt. 1:219 (1924); Standl. & Steyerl. in *Feldiana* 24, 3:227 (1952); Gooding & Loveless in Gooding *et al.*, *Fl. Barbado.*: 115 (1965); Adams, *Fl. Pl. Jam.*: 202 (1972); Fournet, *Fl. Guadel. & Martin.*: 54 (1978)

Whistling pine, Willow

Tree to ca. 20 m tall (in our area) with dark brown, furrowed bark; branches long, slender; leaves or scales 1-2 mm long, 6-8 in each whorl, adpressed, ciliate; flowers monoecious; male flowers in slender, cylindric, terminal spikes up to 2(-4) cm long; female flowers in dense globose or subglobose heads; heads becoming up to 2 cm diam. in fruit.

This species, a native of Australia and tropical Asia, is commonly cultivated in Trinidad and Tobago and throughout the West Indies, especially along the coasts.

GROUP 3. MONOCHLAMYDEAE

SERIES VIII. ANOMALOUS FAMILIES

FAMILY 1—SALICACEAE

BY D. PHILCOX

Deciduous, dioecious trees and shrubs; leaves alternate; stipules free, often minute, caducous; flowers unisexual, aggregated into erect or pendulous catkins, each solitary in axil of small membranaceous bract; perianth absent or reduced to cupular disc or glands; male flowers of 1 to numerous stamens on receptacle, subtended by gland-like or cup-shaped disk; filaments slender, free or more or less united; anthers 2-celled, opening longitudinally; female flowers with superior, sessile or shortly stalked, 1-celled ovary with 2-4 basal or parietal placentas; ovules numerous; styles simple or 2-4-fid; fruit capsular, 2-4-valved; seeds small, covered with fine silky hairs.

SALIX *Linnaeus*

Salix L., *Sp. Pl.*: 1015 (1753)

Trees or shrubs; male catkins with entire bracts, flowers usually with 2(-10) stamens; filaments free or sometimes united; style 1 with 2, usually bifid stigmas or with stigmas sessile; fruit 2-valved.

Salix chilensis Molina, *Sagg. Chil.*: 169 (1782); Britton & Wilson, *Bot. Porto Rico & Virg. Is.*, Pt. 1: 231 (1924); Standl. & Steyererm. in *Fieldiana* 24, 3: 345, fig. 48 (1952)

S. humboldtiana Willd., *Sp. Pl.* 4: 657 (1805); Griseb., *Fl. Brit. W. Ind.*: 113 (1859); Adams, *Fl. Pl. Jam.*: 216 (1972); Fournet, *Fl. Guadeloupe & Martinique*: 950 (1978).

Shrubs, or more usually trees, up to 18 m tall; leaves 5-15 cm long, 3-12 mm wide, short petiolate, linear or lanceolate-linear, acuminate, acute at base, serrulate, glabrous; catkins 5-7 cm long; stamens 4-7; capsule up to 5 mm long, ovoid, short-stipitate, glabrous.

Probably a native of Chile; but widely introduced, from Mexico to Argentina; Florida and the West Indies.

The inclusion of this species here is on the basis of a sterile specimen collected by W. G. Freeman from Arima on 19th June 1916 (TRIN 8222). The author feels that our plant certainly belongs to this taxon and as there is no indication that the specimen is of garden origin, considers it correct to include it in the "Flora".

FAMILY 2—LACISTEMATACEAE

BY JEAN K. BOWDEN

Shrubs or small trees; young shoots glabrous or pubescent; leaves alternate, distichous, lanceolate to elliptic-lanceolate, margins entire or serrate, glabrous or pubescent, with or without deciduous stipules; stipule scars short or almost encircling the stem; inflorescence axillary, fasciculate (1-30), short, densely cylindric-spicate or longer, more laxly racemose or paniculate; flowers sessile or short pedicellate, zygomorphic, hermaphrodite or unisexual; bracts conspicuous; bracteoles free or connate; calyx lobes 4-6 or absent, equal or unequal, erose or entire, free or connate at the base; corolla absent; axis expanded into a fleshy, concave disc; anther 1, with 2 loculi, apex of filament bifurcate or not; ovary superior, globose, unilocular with 2-3 parietal placentas with 1-2 pendulous, anatropous ovules on each; stigmas 2-3, short; fruit capsular, 3-valved dehiscent; seeds endospermic.

Lacistemataceae is a small family closely allied to the Flacourtiaceae, comprising two genera, *Lacistema* (20 species) and *Lozania* (7 species). It occurs in tropical America and the West Indies, and is represented in Trinidad and Tobago by one species only, *Lacistema aggregatum*.

LACISTEMA Swartz

Lacistema Sw., *Prod. Veg. Ind. Occ.*: 12 (1788)

Shrubs or small trees; young shoots and leaves glabrous or pubescent; leaves simple, entire or serrate, stipulate; stipules deciduous, scars almost encircling the stem; inflorescence 1-(or more usually) many-fascicled, with short dense spikes or more rarely longer lax racemes; flowers hermaphrodite, shortly pedicellate or sessile; bracteoles free; perianth when present free, usually unequal, margins often erose; anther connective bifurcate; fruit globose or subglobose, sessile or shortly stalked.

Lacistema aggregatum (Berg.) Rusby in *Bull. N.Y. Bot. Gard.* 4 : 447 (1907); Fawc. & Rendle, *Fl. Jam.* 3 : 30 et fig. 4 (1914); Vaandrager in Pulle, *Fl. Surin.* 1 : 260 (1938); Adams, *Fl. Pl. Jam.*: 490 (1972)

Piper aggregatum Berg. in *Act. Helv.* 7 : 181, t. 10 (1777)

Lacistema myricoides Sw., *Prodr. Veg. Ind. Occ.* : 12 (1788);

Griseb., *Fl. Brit. W. Ind.* : 25 (1859)

Shrub or small tree up to 10(-18) m tall, trunk to 20 cm diameter; bark smooth, thin, greenish; young shoots glabrous, rarely pubescent; leaves up to 17 cm long, 7 cm wide, alternate, elliptic-lanceolate, entire, membranous or coriaceous, apex attenuate, pinnately-nerved, petiolate, stipulate; petiole 5-13 mm long; stipules up to 1 cm long, linear-lanceolate, early deciduous leaving narrow transverse scars almost encircling the stem at node; flowers sessile, green to cream or yellow, each subtended by 2 free bracteoles and 1 fleshy concave bract with thin erose margins; sepals 4, 1 mm long, 0.5 mm wide, unequal, lateral 2 somewhat concave with upper margins erose; petals absent; axis expanded into fleshy concave 4-angled disc; stamen 1, inserted on anterior edge of disc, filament 1 mm long, curved over ovary, apex bifurcate with 2 introrse loculi; ovary globose, gynophore up to 3 mm long; fruit capsular, shortly stalked, bright- or brownish-red, succulent, dehiscent into 3 valves exposing white or brown seed.

Trinidad: St Ann's, Hololo Mountain road, 24.4.1930, Broadway 7571 (K); St Ann's, 9.5.1930, Broadway 7583 (K); road to Maracas Falls, 12.3.1926, Broadway 6028 (K); Mount St Benedict, 14.5.1953, Baker (TRIN 14997); Arima, 28.2.1852, Crueger s.n. (K) 4 miles E of Arima, 15.3.1920, Britton, Hazen & Mendelson 598 (K); near mile post 10, Arima-Blanchisseuse Road, 29.1.1926, Broadway 5917 (K); Arima Valley to La Laja Road, ca. 520 m, 12.6.1973, Philcox & Wood 7085 (K, P, TRIN); milepost 3½ along Aripo Heights Road, ca. 270 m, 6.7.1973, Philcox, Bhorai & Jurawan 7400 (K, TRIN); milepost 1½ on road to Heights of Guanapo from Eastern Main Road, ca. 160 m, Philcox & Razak 7284 (K, TRIN); mile post 24½, Valencia Long Stretch Road, 4.6.1962, Purselglove P6444 (K, TRIN 17617); along Valencia to Cumaca Road, ca. 20 m, 15.6.1973, Philcox & Bhorai 7126, 7127 (K, TRIN).

Trinidad, almost restricted to the Northern Range. Mexico and Central America south to Bolivia. Jamaica.

FAMILY 3—CERATOPHYLLACEAE

BY D. PHILCOX

Perennial, submerged aquatic herbs; stems branched; leaves whorled, sessile, rigid, finely divided into serrulate-margined segments; flowers unisexual, monoecious, minute, regular, solitary, sessile at nodes; perianth 6–12 segments joined at base; male flowers with many stamens spirally arranged on flat or convex receptacle; anthers erect, sessile or nearly so, 2-locular, opening lengthwise, connective produced into toothed, fleshy appendage; female flowers with sessile, 1-locular, superior, ovoid ovary; ovule 1, pendulous; style filiform, persistent; fruit an indehiscent nut, often spiny.

CERATOPHYLLUM *Linnaeus*

Ceratophyllum L., *Sp. Pl.*: 992 (1753)

As the family contains only one genus the above family description is so formed as to act for both.

Ceratophyllum demersum L., *Sp. Pl.*: 992 (1753); Griseb., *Fl. Brit. W. Ind.*: 12 (1859); Urb., *Symb. Ant.* 4:236 (1905) et 8: 223 (1920), excl. syn.; Britton & Wilson, *Pl. Porto Rico & Virg. Isl.*, Pt.1 :302 (1924), excl. syn.; Gooding & Loveless in Gooding *et al.*, *Fl. Barbadoes*: 155 (1965); Adams, *Fl. Pl. Jam.*: 291 (1972); Fournet, *Fl. Guadel. & Martin.*: 510, fig. 242 (1978), excl. syn.

Stems up to 1 m or more long, trailing; leaves 1–2 cm long, crowded in whorls of 6–12, rigid, 1–2-forked, dark green; flowers pinkish; fruit *ca.* 4 mm long, 3.5 mm broad, flattened-ellipsoid, with 2 spines at base, tipped by longer persistent style.

Trinidad: Nariva River, milepost 41, Manzanilla-Mayaro road, 16.2.1978, Ramcharan 430 (TRIN 22143); Nariva Swamp, 1½ miles into swamp from milepost 46, Manzanilla-Mayaro Road, 11.4.1977, Singh s.n. (TRIN 21275); edge of swamp, Icacos Point, Icacos to Fullerton Road, 27.3.1979, Philcox & Gillies 8298 (K, TRIN).

Cosmopolitan.