

Ministry of Agriculture, Industry and Commerce
Trinidad and Tobago

Vol. II.]

[Part VII.

FLORA

OF

TRINIDAD AND TOBAGO

CURVEMBRYAE

NYCTAGINACEAE	(BY N. W. SIMMONDS)
AMARANTHACEAE	(BY N. W. SIMMONDS)
CHENOPODIACEAE	(BY N. W. SIMMONDS)
BASELLACEAE	(BY N. W. SIMMONDS)
PHYTOLACCACEAE	(BY N. W. SIMMONDS)
BATIDACEAE	(BY N. W. SIMMONDS)
POLYGONACEAE	(BY RICHARD A. HOWARD)

Price: — — 75c.



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GROUP 3. MONOCHLAMYDEAE

SERIES I. CURVEMBRYAE

Lvs opposite

Maritime shrub with terete lvs and fls in
tight, sessile, strobiliform spikes.....6. **Batidaceae**

Not as above

Herbs, sometimes slightly woody below

Fls coloured, per. segs united1. **Nyctaginaceae**

Fls green or whitish, per. segs free.....2. **Amaranthaceae**

Trees or shrubs.....1. **Nyctaginaceae**

Lvs alternate

Perianth uniseriate

Lvs ocreate7. **Polygonaceae**

Lvs not ocreate

Per. segs united in a tube.....1. **Nyctaginaceae**

Per. segs free

Per. petaloid, stams usu. indefinite 5. **Phytolaccaceae**

Per. not petaloid, stams as many as
per. segs and opposite to
them

Oily-aromatic herb, lower lvs
wavy-dentate3. **Chenopodiaceae**

Not oily-aromatic, lvs entire.....2. **Amaranthaceae**

Perianth apparently biseriate, (2 petaloid

bracteoles plus 5 per. segs)4. **Basellaceae**

FAMILY 1. NYCTAGINACEAE

BY N. W. SIMMONDS*

Herbs, shrubs or trees; lvs opposite or alternate, simple, entire, exstipulate; *fls* hermaphrodite or unisexual, usually in cymose clusters, sometimes involucrate; *perianth* uniseriate, often corolla-like, the lower part persisting on the fruit, the limb 3-5-lobed or -toothed; *stams* 2-10, the filaments free or more or less joined at the base, often unequal; *anthers* 2-celled, longitudinally dehiscent; *ovary* superior, 1-celled with a single basal ovule; *frt* (anthocarp) indehiscent, enclosed in the persistent leathery or fleshy base of the perianth which is variously smooth, ribbed or winged; *embryo* with large cotyledons enclosing the endosperm.

Several members of this family are cultivated as ornamentals, notably *Bougainvillea* spp., thorny shrubs or climbers with ornamental bracts, and the Four-o'clock (*Mirabilis jalapa*) with ornamental flowers.

Herbs, fls hermaphrodite

Fls 3 cm or more long1. *Mirabilis*

Fls minute2. *Boerhavia*

Shrubs or trees, fls dioecious3. *Pisonia*

1. MIRABILIS L.

Herbs, dichotomously or trichomously branched; *lvs* opposite; *infls* cymose; *involucre*s 1—many fld, calyx-like, 5-lobed, the lobes imbricate and not accrescent; *per.*, the long tube constricted and deciduous above the ovary, the limb spreading, 5-lobed; *stams* 5-6, unequal, the *fls* joined at the base into a fleshy cup; *style* exserted; *frt* dry; *testa* of seed adhering to pericarp.

1. *M. Jalapa* L.

Four-o'clock

Griseb. Fl. 69: Britt. & Wils. Sci. Surv. Porto Rico 5. 285: Fawc. & Rendl. Fl. Jam. 3 (1). 147: Urb. Symb. Ant. 4. 224, 8. 208: Heimerl in Engl. Bot. Jb. 21. 616: Kuntze Rev. Gen. 2. 534.

*The help of N.Y. Sandwith, with this and succeeding families, is gratefully acknowledged.

Herb 30–60 cm high, divaricately branched, the branches somewhat fleshy, swollen at the nodes, at first puberulent, later glabrous; *lvs* ovate, 4–10 x 1.5–6 cm, acuminate at the tips, rounded, truncate or even cordate at the base, glabrous or puberulent, the margins usually ciliate-fringed; *pets* of lower *lvs* about half as long as the blades, those of upper *lvs* much shorter; *involucres* cymosely clustered at the ends of the branches, each 1-flowered, 7–10 mm long, their lobes ovate, acute, ciliate-fringed; *per.* salver-shaped, about 5 cm long, white, pink purple or yellow, its *tube* slender, expanding gradually above to a diameter of 8 mm, pubescent, the *limb* 2.5–3.5 cm across, its lobes rounded or notched; *stams* 1–2 cm longer than the perianth, *anths* ca 1.5 mm, long; *frt* subglobose, 5–8 mm long, black, 5-ribbed, wrinkled and tubercled between the ribs.

Trinidad: Fendler 650 in Herb. Kew: Maraval (Herb. Trin. 5938, ann. 1891); Tunapuna (Herb. Trin. 7326, 27.10.1915); Tucuche trail, 500 ft (Herb. Trin. 14215, 18.4.1948).

Waste places.

West Indies, continental tropical America, widely cultivated and naturalized in the tropics.

The Kuntze record for Trinidad was interpreted by Heimerl, *loc. cit.*, to refer to the forma *odorata* (L.) Heimerl.

2. BOERHAVIA L.*

Herbs, sometimes woody at the base; *lvs* opposite, often unequal; *fls* hermaphrodite, small, subtended by minute non-involucrate bracts; *per.*, the *tube* ovoid below, constricted above the ovary, the *limb* minute, funnel-shaped, 5-lobed, fugacious; *stams* 1–5, joined at the base; *ovary* stipitate, the *style* filiform, the *stig.* peltate; *frt* obovoid, turbinate or club-shaped, 3–5-ribbed or angled.

Infl. leafy, young *lvs* not fringed, capitula

4–12 fld1. *B. coccinea*

Infl. leafless, young *lvs* with brown

septate hairs, capitula 2–4 fld2. *B. diffusa*

*I am much indebted to Mr. R. D. Meikle of Kew for help with this genus.

1. *B. coccinea* Mill*B. hirsuta* Jacq.*B. caribaea* Jacq.

Griseb. Fl. 69: Britt. & Wils. Sci. Surv. Porto Rico 5. 285: Fawc. & Rendl. Fl. Jam. 3 (1). 149: Standley in N. Amer. Fl. 21. 205: Urb. Symb. Ant. 8. 209: Meikle in Fl. W. Trop. Afr. ed. 2., 1 (1). 177: Sandwith in Kew Bull. 1938. 373.

Herb, perennial; *branches* commonly procumbent below, ascending in the flowering parts to 50 cm or more, variably pubescent especially below, sometimes viscid above, but the young lvs devoid or nearly so of long brown septate hairs at the margins; *lvs* broadly ovate, oblong or even suborbicular, in unequal pairs, the larger up to 6 x 5 cm, rounded or obtuse at the apex, rounded or subcordate at the base, margins commonly wavy; *pets* 1-4 cm. long; *infl.* a diffuse somewhat leafy panicle of umbellate 4-12 fld clusters; *per.*, the *tube* green, ovoid, the *limb* crimson (Sandwith *loc. cit.*) about 2 mm in diameter; *frt* narrowly obovoid, 2.5-4 mm long, deeply 5-grooved and viscid-glandular along the ridges.

Trinidad: Crueger 56 in Herb. Kew.

Tobago: Store Bay (Sandwith 1827, 17.10.1937, in Herb. Kew); Sandy Point (Herb. Trin. 11814, 15.9.1927).

Waste places, rare or uncommon.

Tropical America north to Florida and tropical West Africa.

Note: Flower colour of this species is variable, being "crimson" in one Tobago collection and "pink or mauve" in West African plants (Meikle, *loc. cit.*)

2. *B. diffusa* L.*B. paniculata* L.C. Rich.*B. adscendens* Willd.

Griseb. Fl. 69: Britt. & Wils. Sci. Surv. Porto Rico 5. 285: Urb. Symb. Ant. 4. 224, 8. 209: Heimerl in Engl. Bot. Jb. 21. 619: Fawc. & Rendl. Fl. Jam. 3 (1). 148: Meikle in Fl. W. Trop. Afr. ed. 2. 1 (1). 177.

Herb, more or less decumbent below, the branches ascending to 50 cm or more, usually glabrous; *lvs* orbicular or ovate, irregularly wavy-margined, obtuse, subsessile or petiolate, when young

fringed with brown septate hairs, up to 5 x 3-4 cm, usually less; *infl.* a diffuse leafless panicle of 2-4 fld umbels, variable in size, up to about 30 cm long; *fls* sessile; *per.* magenta, the limb fugacious, ca 2 mm broad; *frt* green, narrowly obconical, 5-ribbed, green, tapered to base, 4 mm long, minutely glandular-hairy.

Trinidad: Sieber 88 in Herb. Kew (cited by Heimerl and Grisebach, *loc. cit.*, as *B. paniculata* L.C. Rich., but not certainly of Trinidad origin); Port-of-Spain (Tredholm, *s.n.*, 28.10.1906); Tunapuna (Herb. Trin. 7315, 27.10.1915); Monos (Broadway, *s.n.*, 27.11.1915 and Williams, *s.n.*, Oct. 1917); Erin (Herb. Trin. 9124, 10.5.1920); Toco (Herb. Trin. 9418, 18.3.1917); St Clair (Herb. Trin. 10933, 23.10.1924); Woodbrook (Broadway 5847, 9.11.1925 and 6229, 24.5.1926, both in Herb. Kew); Patos (Herb. Trin. 13034, 19.11.1933); St Augustine (Herb. Trin. 15411, 20.11.1956).

Tobago: Urban, *loc. cit.*; Plymouth (Herb. Trin. 13493, 1.4.1940); Louis d'Or (Herb. Trin. 14980, 5.5.1953); Crown Point (airport) (Herb. Trin. 15171, 21.4.1954).

Waste places, common.

West Indies and continental America from Mexico to the Argentine; naturalized elsewhere in the tropics (*e.g.* in West Africa).

3. PISONIA L.

Shrubs or trees; lvs opposite or partly alternate, entire, petiolate; *fls* small, clustered in stalked or sessile cymes, dioecious; *male fls*, the *per.* tubular, bell- or funnel-shaped, 5-toothed, the *stams* 6-10, exserted, joined at the base; *female fls*, the *per.* tubular, often swollen at the base, 5-toothed, the *ovary* sessile, *stig.* exserted; *frt* (in the local species) fleshy, drupe-like.

Note on vernacular names: the species are not generally distinguished in the forest and vernacular names are not therefore of specific application. Marshall (Trees Trin. Tob. 77) says: "The timbers of the various species of *Pisonia* have a curious structure giving an open, evenly porous appearance when viewed on a cross section. This appearance has given rise to various names such as Goodbread and Bois cassave and, by an extension of the same idea, Bois viande and Beefwood. Alternatively the holes in the wood have been likened to the mark left when a jigger is removed from

one's flesh and the name Jiggerwood is often applied indiscriminately to any of the species."

Note on the genus: all the Trinidad species have at times been assigned to the genus *Torrubia*; for the argument for this view see Britton in Bull. Torr. Bot. Club 31. 611 (1904).

Lvs of dried specimens green; gnarled
shrubs of the Bocas Is.5. *P. pacurero*

Lvs of dried specimens (esp. young ones)
brownish, greyish or blackish;
inhabitants of moist areas, rare in or
absent from Bocas Is.

Large tree with large, asymmetrical lvs
(commonly 10 cm long) and pets 1-3
cm long.....4. *P. cuspidata*

Small trees with small, symmetrical lvs
(usu. less than 10 cm long) and short
pets (less than 1 cm)

Lvs greyish in dried specimens, very
leathery, broad (often orbicular).....3. *P. fragrans*

Lvs brown or black in dried specimens,
less leathery, elongate (rarely orbicular)

Secondary nervation obscure, peds
glabrous or sl. rusty-hairy1. *P. eggersiana*

Secondary nervation prominent, peds
rusty hairy, often densely so.....2. *P. salicifolia*

1. *P. eggersiana* Heimerl Jiggerwood, &c. (see above)
P. broadwayana Heimerl

Heimerl in Engl. Bot. Jb. 21. 327, and in Fedde. Rep. 17. 1:
Standley in Pub. Fd. Mus. 11. 90: Marshall Silv. Trin. Tob. 197.

Small tree, attaining a girth of about 60 cm; twigs somewhat gnarled with conspicuous lenticels; lvs ovate-lanceolate, acuminate, cuneate at base, petiolate, with variably recurved margins and obscure lateral nervation, up to 8 x 3-4 cm, commonly less; infls axillary, up to 7 cm long, cymose-umbellate, many-fld, rather

lax, the pedicels glabrous or slightly rusty-hairy at the nodes; *male fls.*, the *per.* funnel-shaped, ca 3 mm long, shorter than the extruded stamens; *female fls.*, the *per.* subcylindrical in the tube, expanded in the very short limb; *frt* scarlet (Marshall).

Trinidad: Fendler 432 and 443 in Herb. Kew; Caroni (Herb. Trin. 701, 15.5.1861=Cruiger 107); Valencia (Eggers 1391, Oct. 1883—TYPE in Herb. Kew); Cleaver wood nr. Arima (Broadway *s.n.*, 30.10.1925); Gravel pit, Mora Forest (Williams, Herb. Trin. 11863, 21.10.1927); Toco rd 8½ miles (Marshall, Herb. Trin. 12266, 15.10.1929); Forest 4 mi. east of Arima (Britton, Hazen and Mendelson 615, 15.3.1920); Valencia (Brooks, Herb. Trin. 12253, 28.9.1929); Arena forest (Marshall, Herb. Trin. 12137, 5.5.1929); Cat's Hill Reserve (Swabey, Herb. Trin. 12526, 22.4.1931); Valencia (Broadway 7169, 12.6.1929—det. Heimerl); Mora Forest via Sangre Grande (Broadway 5696, 26.5.1925—det. Heimerl and see note below); Aripo rd. 4–5 mi. (Broadway 5852, 13.11.1925—det. Heimerl); Long Stretch, 24 mi. (Broadway 6622, 22.4.1927—det. Heimerl); Tucuche, 9th mile (Broadway 7105, 19.4.1929—det. Heimerl); Arima (Herb. Trin. 4141, 17.3.1920); Arena forest (Herb. Trin. 15389, 15390, 6.4.1956).

Tobago: The Widow (Broadway 4155, 7.7.1920—TYPE of *P. broadwayana* in Herb. Kew and Herb. Trin.); Menna rd (Williams, Herb. Trin. 11118 and 11139, 6.6.1925); Mt St George-Castara rd (Marshall, Herb. Trin. 12382, 27.5.1930); Easterfield and Caledonia (Broadway 4158, 4379, 4623, not seen, cited by Heimerl).

Moist forests, northern Trinidad and Tobago.

Trinidad, Surinam and French Guiana.

Notes: Broadway 5904 (St Ann's, 11.6.1922) appears to be a large-leaved form of this species; it is cited by Standley as *Pisonia* (*Torrubia*) *olfersiana* Link, Kl. & Otto, to which species he reduces *P. eggersiana*, presumably on the basis of his identification of Broadway, 5696. He also (by implication) reduces *P. broadwayana* to the same species by citing the type under *P. olfersiana* though he does not formally place the name in the synonymy. I can find a difference neither in key characters nor in facies between *P. eggersiana* and *P. broadwayana* and therefore follow Standley in reducing the latter. Between *P. eggersiana* and the following species (*P. salicifolia*) there is, however, a real difference in facies which is apparent when many specimens are available for study—even though individual sheets are sometimes hard to assign to one or the other. I suspect that the best treatment for these difficult species—and for *P. fragrans* as well—would be as subspecies of *P. olfersiana*, thus combining the views of both Standley and Heimerl—which have each much to commend them.

The sex ratio of specimens in Herb. Trin. is 8 males to 4 females which is to be contrasted with the 5:25 ratio noted below for *P. salicifolia*.

2. *P. salicifolia* Heimerl

Jiggerwood, &c. (see above)

P. inermis Gr. Fl. in part

Heimerl in Urb. Symb. Ant. 7. 216: Griseb. Fl. 71: Standley in Pub. Fd. Mus. Chicago 11. 90: Marshall Trees Trin. Tob. 78 and Silvic. Trin. Tob. 196.

Small tree, attaining a girth of 90 cm or more; *twigs* perhaps less gnarled than the preceding; *lvs* ovate, ovate-lanceolate or lanceolate, acuminate, tapered at the base into the short petiole, with recurved margins and lateral nervation more prominent than preceding sp., up to 10 x 4.5 or 13 x 3 cm, commonly less; *infls* axillary, 5-10 cm long, cymose-umbellate, dense at first, later diffuse, more frd than the preceding, the *peds* densely rusty-hairy and accrescent in frt; *female fls* with subcylindrical per. 3 mm long and extruded stigma; *male fls* about 4 mm long with green, then pinkish, funnel-shaped per. and 7-9 extruded anths.; *frt* red, then purple-black, narrowly ovoid to subglobose, 12 x 6 to 9 x 8 mm.

Trinidad: Lockhart in Herb. Kew (det. Heimerl); Fendler 419, 495 and 593; Aripo (Herb. Trin. 699, 8.8.1848); Cedros (Broadway 2578, 17.1.1908); Pt Galera (Broadway 2820, 7.9.1908) (both cited by Heimerl); Moruga (Britton and Broadway 2424, 21.3.1921); Erin (Broadway s.n., 9.5.1919); Couva bay (Britton, Freeman and Nowell 2590, 27.3.1921); St Ann's (Broadway s.n., 10.6.1921 and 6629, 20.5.1927); San Fernando hill (Broadway 6084, 5.4.1926); Caura Valley (Britton and Hazen 1196, 1.4.1920—det. Heimerl); St Ann's-Cascade (Broadway 6318, 24.6.1926—det. Heimerl); Maitland trace, Moruga rd (Swabey, Herb. Trin. 12557, 20.6.1931); Laventille (Herb. Trin. 700, 10.6.1845); Cedros (Herb. Trin. 3104); Hort. Trin. (Herb. Trin. 3773, April 1889 and 3794, 5.6.1889); St Ann's (Herb. Trin. 4499, 26.4.1891); Tabaquite (Dannouse, s.n., June 1902); Arima (Dannouse, s.n., 31.4.1904); Dabadie (Herb. Trin. 5345, ann. 1893); Hort. Trin. (Herb. Trin. 5538 and 5817, ann. 1892); Santa Cruz (Herb. Trin. 5997); Cedros (Herb. Trin. 7160, 28.9.1915; 7301, 2.10.1915 and 7416, 18.11.1915); Moruga (Herb. Trin. 8211, 7.6.1916); Guapo beach (Herb. Trin. 9134, 13.5.1920); Erin (Herb. Trin. 9697, 9.5.1919); Carenage (Britton, Seaver and Broadway s.n., 29.3.1921); Moruga (Britton

and Broadway s.n., 19.3.1921) ; Southern Watershed Reserve (Herb. Trin. 12395, 2.7.1930) ; Cat's Hill Reserve (Herb. Trin. 12526, 22.4.1931) ; St Augustine (Herb. Trin. 13394 and 13395, 8.6.1939) ; Caroni South Bank rd (Herb. Trin. 13401 and 13417, 29.6.1939 and 13659, 13667, 13668 and 13669, 1.7.1939) ; Guayaguayare (Herb. Trin. 14308, 15.4.1949) ; Tabaquite (Herb. Trin. 14379, 12.6.1949) ; Arena (Herb. Trin. 15389 and 15390, 6.4.1956).

General and common, Trinidad.

Trinidad and British Guiana.

Notes: Standley (*loc. cit.*) regards this species as probably no more than a form of *P. (Torrubia) olfersiana* Link, Kl. & Otto. *P. salicifolia* as here understood is evidently not the *P. salicifolia* of Marshall (Trees Trin. Tob. 78) which was described as "a large evergreen tree." The sex ratio of specimens in Herb. Trin. is 5 males: 25 females (cf. notes to preceding species).

3. *P. fragrans* Dum. Cours, *sensu* Heimerl et Urban

P. obtusata Sw. of Gr. Fl. in part, non Jacq.

P. inermis of Gr. Fl. in part, non Jacq.

Griseb. Fl. 71 : Britt. & Wils. Sci. Surv. Porto Rico 5. 287 : Fawc. & Rendl. Fl. Jam. 3 (1). 152 : Heimerl & Urb. Symb. Ant. 4. 225 : Heimerl in Urb. Symb. Ant. 7. 213 (var. *oblanceolata* Heimerl) and 8. 210 : Heimerl in Engl. Bot. Jb. 21. 624 (as *P. obtusata* Sw.) : Sandwith in Kew Bull. 1938, 373 : Standley in Publ. Fd. Mus. Chicago 11. 89.

Shrub or small tree, the youngest branches deciduously rusty-hairy ; *lvs* leathery, greyish in dried specimens, with variably recurved margins and venation prominent beneath, densely but deciduously rusty-pubescent when very young, very variable in shape, commonly ovate, shortly acuminate and symmetrically cuneate at the shortly petiolate base, up to 12 x 5 cm but not infrequently suborbicular and obtuse, or even retuse, at the apex, ca 3.5 x 4 cm ; *infls* at first densely many-flrd, later diffuse, on rusty hairy peds, up to 5 cm and probably more in length ; *male fls* funnel-shaped, 3 mm long, with exserted anths ; *female fls* 3 mm long, with exserted stigmas ; *frt* 7-10 x 3-4 mm, red (not seen—ex Fl. Jam.).

Trinidad : Moruga (Herb. Trin. 7908, 14.2.1916) ; near Maracas falls (Herb. Trin. 14361 and 14362, 6.6.1949).

Tobago : Providence and Calder Hall (Broadway 3541 and 3544, *vide* Standley *loc. cit.*, not seen) ; Pigeon Hill (Sandwith 1808, 16.10.1937).

West Indies, Florida, Guatemala, Colombia, Venezuela, Guiana.

Notes: The var. *oblanceolata* Heimerl is distinguished by its leaves cuneate-ob lanceolate, narrow or faintly acuminate at the base, acuminate (usually bluntly) at the tip. Heimerl gives Grenada and Tobago as the distribution and cites Broadway 3544 from the latter. Standley *loc. cit.* omits mention of the variety while treating this Broadway collection as typical *P. fragrans*. The only two specimens in Herb. Trin. which can be determined as to sex (14361 and 14362) are both male.

4. *P. cuspidata* Heimerl Jiggerwood, &c. (*see above*)

P. cuspidata var. *tobagensis* Heimerl.

Heimerl in Engl. Bot. Jb. 21. 628 and in Fedde Rep. 17. 2 : Marshall, Trees Trin. Tob. 78 and Silv. Trin. Tob. 197.

Large tree, to 25 m in height and 3 m in girth with gnarled twigs, prominent lenticels and the youngest branches conspicuously but deciduously rusty-hairy; *lvs* thin-leathery, large, ovate, usually asymmetric at base and apex, acuminate or subobtusate, rounded or shortly decurrent at the base, intensely but deciduously rusty-hairy when young, drying brownish or blackish, up to 15 x 7 cm, commonly 10 cm or more long, on petioles 1-3 cm long; *infls* cymose umbels, rather dense, even in age, on stout rusty hairy pedicels 5-10 cm long, the branches divaricate in age; *female fls* 3 mm long, with extruded stigmas; *male fls* funnel-shaped, 3 mm long with exerted anthers; *frts* long-ovoid, bluntly ribbed, 15 x 7 mm.

Trinidad : Caroni (Crueger 106 in Herb. Kew—presumably the TYPE, "ad Caroni flumen") : Arima (Eggers 1413 and 1430, Nov. 1883, cited by Heimerl) ; Blanchisseuse (Broadway *s.n.*, 14.6.1908) ; St Ann's (Broadway 6892, 19.4.1928, det. as var. *tobagensis* by Heimerl) ; Union Hall (Herb. Trin. 3040, 20.6.1866) ; Union Hall House (Herb. Trin. 3103, 2.6.1865) ; *sine loc.* (Herb. Trin. 5537) ; Botanic Gardens (Herb. Trin. 8607, 16.5.1907) ; *sine loc.* (Herb. Trin. 8236, 6.7.1916) ; Southern Watershed Reserve (Herb. Trin. 12396, 2.7.1930) ; Arena Forest Reserve (Herb. Trin. 15391, 6.4. 1956).

Tobago : Bacolet (Broadway 3790, not seen, the TYPE of var. *tobagensis* Heimerl).

Forests, a large tree.

Endemic to Trinidad and Tobago, so far as is known.

Note: The var. *tobagensis* Heimerl is distinguished by its narrower leaves (2-3 times as long as broad) acuminate at both ends and by the smaller female perianth (2-2.5 mm long). I reduce the variety on the basis of Broadway 6892 cited above which seems to me to fall within the range of variation of typical material. The sex ratio of specimens in Herb. Trin. is 1 male to 6 females.

5. *P. pacurero* H.B.K.

P. inermis of Gr. Fl. in part.

Griseb. Fl. 71 : Standley Pub. Fd. Mus. Chicago 11. 87.

Shrub or small *tree*, up to 7 m tall, the twigs gnarled, the branchlets glabrous or nearly so; *lvs* opposite or ternate, green when dried, petiolate (5-10 mm) the blades elliptical, 5.5-16 x 2-6.5 cm, acute or acuminate (sometimes obliquely so) at the apex, variably tapered or rounded at the base, glabrous; *male fls* in open or contracted, terminal, pedunculate cymes 5-8 cm long, the *per.* green, whitish or reddish, 2-3 mm long, the stamens 8; *female fls* fewer in number, with tubular *per.* 2 mm long; *frt* oblong, glabrous, conspicuously ribbed, 1 cm long, at maturity grouped in loose cymose pedunculate heads ca 4 cm in diam.

Trinidad : Monos (Britton, Britton and Brown 2740, 4.4.1921, det. Heimerl); Gasparee (Purdie, May 1848 in Herb. Kew).

Dry hillsides in the Bocas islands, Trinidad.

Venezuela (including Patos Island from which came Broadway 2714 (8.6.1908), 7225 and 7228 (7.6.1929), all in Herb. Kew).

DOUBTFUL RECORD

Pisonia helleri Standl. (see Standl. N. Amer. Fl. 21. 187 : Britt. & Wils. Sci. Surv. Porto Rico 5. 288) is recorded by Britton (MS List of Trinidad plants, in Herb. Trin., ined.) for "forests in southern districts". There is no other evidence of occurrence. Its distribution is West Indies from Jamaica to Martinique.

FAMILY 2. AMARANTHACEAE

BY N. W. SIMMONDS

Plants herbaceous, rarely shrubby; *lvs* simple, exstipulate, opposite or alternate; *fls* minute, inconspicuous, often green, massed in panicles or axillary heads, often diclinous; *bracts* scarious; *per.*, one whorl of (0-) 3-5 members, imbricate in bud, usu. distinct and subequal; *stams* 1-5, opposite the *per.* segs, usu. free but sometimes connate below, sometimes with staminodes; *anths* introrse; *ovary* superior, unilocular, uniovulate; *style* variable, stigs 1-5; *frt* a one-seeded utricle (rarely otherwise), variously circumscissile or indehiscent; *seeds* minute, endospermic, sometimes arillate.

Several members of the family are cultivated: *Alternanthera articulata* Stützer, *A. betzickiana* (Regel) Nichols., *Amaranthus tricolor* L. (*A. gangeticus* var. *tricolor* of Williams and Williams, Useful and Orn. Pls. Trin. Tob.), *Iresine lindenii* Hook. f. and *I. herbstii* Hook. f. are grown as foliage plants; *Amaranthus caudatus* L. (Love lies bleeding), *Celosia argentea* L. (Cockscomb—the cultivars with contorted inflorescences are often referred to *C. cristata* L.) and *Gomphrena globosa* L. (Bachelor's buttons) are grown for their ornamental inflorescences; several species, wild and cultivated, yield spinach from the leaves (e.g. *Amaranthus dubius* Mart., the commonest weed, and *A. gangeticus* L. sometimes grown at, e.g. the I.C.T.A. farm).

Leaves alternate

Climber, woody below.....1. **Chamissoa**

Herbs

Tall plants of brackish swamps.....3. **Acnida**

Weeds, usu. less than 1 m in height.....2. **Amaranthus**

Leaves opposite

Scramblers or sprawlers, usually woody below,
infrs paniculate.

Stigma capitate or shallowly bilobed, infr

a panicle of fl. clusters.....6. **Pfaffia**

- Stigma deeply 2-3-sect, infl. a loose panicle
(the commonest species) or a panicle of
fl. clusters.....7. **Iresine**
- Herbs, not scramblers, rarely slightly woody at
the base, infls not paniculate
- Spikes 3 or more times as long as broad
Imperfect fls reduced to clusters of hooked
awns (glochidia)4. **Cyathula**
- Glochidia wanting, bracteoles spiny.....5. **Achyranthes**
- Spikes capituliform, usu. less than 3 times
as long as broad
- Spikes sessile, axillary, often weeds.....8. **Alternanthera**
- Spikes pedunculate, terminal, a seashore
plant.....9. **Philoxerus**

1. CHAMISSOA H.B.K.

Vines, perennial, often woody; *lvs* alternate petiolate; *fls* hermaphrodite or unisexual, in terminal and axillary panicles; *bracts* 3, persistent; *per. segs* 5, persistent; *stams* 5, the filaments united below; *style* variable in length (short in the local species), *stigs* 2; *utricle* one-seeded, circumscissile; *seed* arillate.

1. *Chamissoa altissima* (Jacq.) H.B.K.

Griseb. Fl. 62: Britt. & Wils. Sci. Surv. Porto Rico 5. 275: Fawc. & Rendl. Fl. Jam. 3 (1). 128: Urb. Symb. Ant. 4. 218, 8. 201: Standley N. Amer. Fl. 21 (2). 101: Pulle Fl. Sur. 1/1.27.

Woody *scrambler*; older *branches* terete, younger ones somewhat angled, glabrous: *lvs* ovate to lanceolate, up to 16 x 6 cm, acuminate, broadly cuneate at base, margins wavy-entire, glabrous or nearly so; *pets* 2-3 cm long; *infls* up to 50 cm long, leafy below, paniculate, the minor branches hairy; *fls* hermaphrodite, in small, dense, distant clusters; *per. segs* 5, oblong, acute, greenish, spreading; *stams* 5, erect; *style* short, bilobed; *frt* circumscissile; *seed* lenticular-reniform, dark brown, minutely reticulate, 2 mm broad, aril white.

Trinidad : de Schack, Sieber 116, 120 (in Herb. Kew) ; Palo Seco (Herb. Trin. 12094, 27.11.1928) ; Mt Aripo (Herb. Trin. 14448, 22.10.1949) ; San Fernando Hill (Herb. Trin. 14850 and 14851, 1.2.1953) ; San Juan (Herb. Trin. 2249 and 2250, Jan. 1846) ; San Fernando Hill (Herb. Trin., 12.12.1864) ; Chaguanas (Herb. Trin. 3712, 17.4.1889) ; Erin (Herb. Trin. 7346 and 7347, 11-12.11.1915) ; Chatham (Herb. Trin. 8535 and 8536, 26.11.1916) ; Todd's rd (Broadway s.n., 30.1.1917 in Herb. Trin.) ; Sans Souci to Grande Riviere (Herb. Trin. 10849, 11.12.1924) ; Los Bajos (Herb. Trin. 10890, 31.12.1925) ; Palo Seco (Herb. Trin. 12094, 27.1.1928) ; Quinam (Herb. Trin. 13957, 31.10.1939) ; Southern Watershed Reserve (Herb. Trin. 14475, 4.11.1949) ; Chin Chin rd (Herb. Trin. 15111, 1.3.1954).

Tobago : North coast road (Herb. Trin. 14521, 6.11.1949) ; Easterfield rd (Herb. Trin. 13522, 31.3.1940).

A woody climber in forest and second growth, common.

West Indies, continental tropical America.

Note: *Chamissoa macrocarpa* H.B.K., from Colombia and Brazil, differs from *C. altissima* mainly in its large gourd-shaped fruits twice as long as the calyx. Fruiting material in Herb. Kew suggests that the character is variable and the species has been treated as a synonym of *C. altissima* by Schinz (Nat. Pflzfam. 16C. 13 (1934)). If it should turn out to be a good species, however, then it is probably represented in Trinidad by Crueger, 28.3.1846, from Caroni, in Herb. Kew, and in Cuba and Puerto Rico by Jack 4137 and 5018 and Heller 366 in Herb. Kew. (See also note by Standley, *loc. cit.*)

2. AMARANTHUS L.*

Herbs, annual, often weedy ; *lvs* entire, alternate, petiolate ; *fls* minute, diclinous or dioecious in axillary clusters, and terminal spikes or panicles ; *bracts* 3 ; *per. segs* 3-5, subequal ; *stams* opp. *per. segs*, the filis filiform, staminodes absent ; *style* short or wanting, *stigs* 2-3 ; *utricle* variously dehiscent or indehiscent, falling with the subtending *per. segs* ; *seed* solitary, minute, shiny.

*This is a very difficult genus in which both taxonomy and nomenclature are much confused ; I am aware that the nomenclature adopted here disagrees in some particulars with recent authoritative treatments (*e.g.* the floras of Surinam, Malaysia and West Tropical Africa) ; but there is no general agreement as to specific limits and names, for nothing less than a monograph based on experimental investigations would suffice to disentangle them.

Plants not spiny

Per. segs 5, utricles smooth.....1. *A. dubius*Per. segs 3, utricles wrinkled.....2. *A. gracilis*Plants spiny.....3. *A. spinosus*1. *Amaranthus dubius* Mart.

Bhaji

A. tristis auct. non L.

Griseb. Fl. 69 : Urb. Symb. Ant. 4. 218, 8. 202 : Britt. & Wils. Sci. Surv. Porto Rico 5. 277 : Standley N. Amer. Fl. 21 (2). 114 : Sandwith in Kew Bull. 1938. 373 : Pulle Fl. Sur. 1/1.30.

Herb, often robust with strong taproot, *stems* variously little or much branched, erect or ascending, occ. semi-prostrate, green or pink, glabrous, 10-60 cm tall; *lvs* irregularly ovate, glabrous, obtuse, abruptly cuneate at the base, broadest below the middle, green, sometimes with a light purple smudge near the centre, very variable in size from 2 x 1 up to 10 x 6 cm; *pets* slender, 1-5 cm long; *infls* mostly condensed terminal panicles somewhat leafy below, up to 20 cm long, axillary fl. clusters also present: *fls* clustered, bracteolate, female in terminal parts, male below, greenish; *per. segs* 5, mucronate; *stams* 5; *styles* 3; *utricles* smooth, circumscissile; *seed* minute, dark brown, shining.

Trinidad : Lockhart, de Schack in Herb. Kew; Hort. Trin. (Herb. Trin. 3663, 22.3.1889; and 3823, 17.6.1889); Cedros (Herb. Trin. 7217, 16.9.1915); Tunapuna (Herb. Trin. 7308, 27.10.1915); Monos (Herb. Trin. 7451, 27.11.1915); St Augustine (Herb. Trin. 15425, 23.3.1957; 15453 and 15454, 6.1.1958; 15462-5, 17.1.1958).

Tobago : Bacolet (Eggers 5634, Oct. 1889); Great Dog River Valley (Sandwith 1742, 12.10.1937).

A common weed of cultivation, Trinidad and Tobago.

West Indies and tropical America generally; naturalized in Java (Backer, Fl. Males. I. 4/2. 79).

Much used as spinach locally, sometimes as a constituent of 'Calalu'.

2. *Amaranthus gracilis* Desf.

A. viridis auct. non L.

Britt. & Wils. Sci. Surv. Port Rico 5. 277 : Fawe. & Rendl. Fl. Jam. 3. 131 : Standley N. Amer. Fl. 21 (2). 117 : Pulle Fl. Sur. 1/1. 32.

Herb, less robust than the preceding, up to 50 cm tall, glabrous, branches erect or ascending; *lvs* irregularly ovate-rhomboid, up to 4-5 x 2-3 cm, obtuse or slightly notched at the tips, broadly cuneate below; *pets* slender, 1-3 cm long, green or pink; *infls* of axillary clusters and terminal leafy panicles of spikes, the latter up to ca 20 cm long, usu. much less; *fls* the upper ones predominantly female, green; *per. segs* 3, deciduous with the fruit; *stams* 3; *utricle* indehiscent, intensely wrinkled, sl. exceeding the clasping perianth; *seed* minute, dark brown, lenticular.

Trinidad: Botanic Gardens (Herb. Trin. 3398, 8.1.1889); Patos (Broadway s.n., 25.1.1921); a weed of mown grass, St Augustine (Herb. Trin. 14994, 9.5.1953); St Augustine (Herb. Trin. 15468, 15469, 1.2.1958); St Joseph (Herb. Trin. 15538, 10.2.1958).

Waste places, much less common than the preceding species.

Mexico, West Indies, Guiana, Brazil and Paraguay; originally native to West Africa according to Standley, *loc. cit.*; naturalized in Malaysia (Backer, Fl. Males. I. 4/2. 76).

3. *Amaranthus spinosus* L.

Griseb. Fl. 69: Britt. & Wils. Sci. Surv. Porto Rico 5. 277: Urb. Symb. Ant. 4. 218, 8. 202: Standley N. Amer. Fl. 21 (2). 114: Pulle Fl. Sur. 1/1. 30.

Herb, robust with strong taproot and ascending branches, up to 1 m tall, glabrous; *stems* green or pink; *lvs* irregularly ovate, obtuse, broadly cuneate at the base, up to 10 x 5 cm, usu. much less; *pets* slender, exceptionally 8-10 cm long on larger leaves, green or pink; *nodes* (except in upper parts of infl.) armed with pairs of stipular spines, each spine curved, spreading, tapered to a very sharp point, 3-10 mm long; *infls* of terminal panicles and

axillary clusters; *fls* green, mostly male in term. infl., female in axillary clusters and at base of panicle; *per. segs* 5, mucronate, with green midrib and translucent margins; *stams* 5; *utricle* circumscissile; *seed* minute, dark brown, shining, lenticular.

Trinidad: de Schack in Herb. Kew; St Joseph (Herb. Trin. 2253, 28.12.1845); Port-of-Spain (Herb. Trin. 2923, ann. 1864); Hort. Trin. (Herb. Trin. 3827, 17.6.1889); St Joseph (Herb. Trin. 4438, ann. 1890); St Clair (Tredholm *s.n.*, 17.10 1906); Tunapuna (Herb. Trin. 7320, 27.10.1915); St Augustine (Herb. Trin. 15470, 15471, 5.2.1958); St Joseph (Herb. Trin. 15539, 10.2.1958).

A weed of cultivation and waste places, often growing with but less common than *A. dubius*.

India, widely naturalized in the tropics.

Note: Four West Indian weed species of *Amaranthus* which have not yet been recorded might well be sought, especially perhaps in Tobago. They are: *A. crassipes* Schlecht. and *A. polygonoides* L., both sprawling plants, and *A. deflexus* L. and *A. lividus* L. which somewhat resemble *A. dubius* Mart. in habit (see Standley, N. Amer. Fl. 21 (2). 104 seq. (1917)). *A. lividus* is the common weed species of Surinam (Scheygrond in Pulle Fl. Sur. 1/1. 32).

3. ACNIDA L.

Herbs, erect, tall and copiously branched; *lvs* alternate, petiolate; *fls* dioecious, clustered, spicate or paniculate; *per. segs* 5 in staminate fls, lacking in pistillate fls; *stams* 5, free, staminodes 0; *stigs* 2-5, *style* wanting or very short; *utricle* dehiscent or not; *seed* minute, shiny.

1. *Acnida cuspidata* Bert. ex Spreng.

A. cannabina Gr. non L.

Griseb. Fl. 60: Urb. Symb. Ant. 8. 203: Fawc. & Rendl. Fl. Jam. 3 (1). 133: Pulle Fl. Sur. 1/1. 34.

Herb, robust, to 4 m tall (*fide* Scheygrond); *stems* swollen below; *lvs* lanceolate, up to 20 x 6 cm, broadest below the middle, tapered to the long acute tip, cuneate or rounded-cuneate at the base, glabrous; *infls* large, lax, leafy, terminal panicles; *fls* dioecious, the male with 5 *per. segs*, the female lacking a perianth; *stams* 5; *utricle* indehiscent, enclosed, until it is shed, in the persistent bracts; *seed* minute, dark brown, lenticular.

Trinidad: Mangrove swamps (Crueger in Herb. Kew and Herb. Trin. 2926); Lagoon, Icacos (Herb. Trin. 8907, 21.12.1914); Cedros (Herb. Trin. 9252, 29.7.1915); *sine loc.* (Herb. Trin. 13070, 7.11.1934).

In brackish swamps, apparently rare or very local.

Florida to Mexico, Jamaica, Santo Domingo, Trinidad and Surinam.

4. CYATHULA Bl.

Herbs, annual, sometimes somewhat woody at the base; *lvs* entire, opposite, petiolate; *fls* minute, hermaphrodite or variously reduced to rudiments or awns, densely clustered in axillary and terminal spikes; *per. segs* 5, developed into hooked awns (glochidia) in some sterile fls; *stams* 5, united at base, staminodes 5; *style* simple, stigma capitate; *utricle* indehiscent.

Leaves acuminate, glochidia longer than the

perianth1. *C. achyranthoides*

Leaves subacute, glochidia about equal to

the perianth2. *C. prostrata*

1. *Cyathula achyranthoides* (H.B.K.) Moq.

C. prostrata Gr. non L.

Griseb. Fl. 63: Fawc. & Rendl. Fl. Jam. 3 (1). 135: Standley Amer. Fl. 21 (2). 124: Pulle Fl. Sur. 1/1. 35.

Herb, erect and sparingly branched, up to 1 m tall; *lvs* ovate-lanceolate, up to 10 x 3-4 cm, subsessile, acuminate, sparsely hairy above and below; *infls* terminal and axillary leafless spikes, straight or deflexed at the tips, the larger ones up to 7 cm long; *peds* densely brownish-hairy, up to 15 cm in length; *bracts* acuminate, perst after fruiting, 2-3 mm long; *fls* at first erect, later reflexed, in clusters of one functional together with one sterile and two rudimentary fls, the functional fls hermaphrodite, the rudimentary ones represented by hooked awns (glochidia); *per. segs* of functional fls 5, hairy; *glochidia* longer than the per., with simple terminal hooks; *utricle* indehiscent; *seed* ellipsoid, compressed.

Trinidad: de Schaack, Crueger (in Herb. Kew, both cited by Grisebach as the following species); *sine loc.* (Herb. Trin. 2245, 2.2.1849); Hort. Trin. (Herb. Trin. 3426, 17.1.1889); Arima (Dannouse *s.n.*, ann. 1896); Moruga (Herb. Trin. 7614, 11.2.1916); Maraval (Herb. Trin. 7826, 30.12.1914); Maracas falls (Herb. Trin. 15409, 30.5.1956); St Joseph (Herb. Trin. 15618, 8.3.1958).

Waste places.

West Indies, tropical South America.

2. *Cyathula prostrata* (L.) Blume

Fawc. & Rendl. Fl. Jam. 3 (1). 134: Standley N. Amer. Fl. 2 (2). 124: Pulle Fl. Sur. 1/1. 35.

Differs from the preceding species in the key characters given above and (in respect of Herb. Trin. 14080, at least) in the less hairy leaves and pedis, in the minute (1–2 mm) bracts of the infl., and in the shorter hermaphrodite fls (2–3 as against 3–4 mm long).

Trinidad: Mt Tabor (Herb. Trin. 14080, 14.12.1947).

India, widely adventive throughout the tropics.

Note: Sheets cited by Grisebach under this species belong to the preceding. Standley and Fawcett and Rendle *loc. cit.* include Trinidad in the distribution of the species, presumably on the basis of the Grisebach record.

5. *ACHYRANTHES* L.

Herbs, often woody below; *lvs* entire, opposite, petiolate; *fls* hermaphrodite, deflexed, in terminal spikes; *bracts* 3, persistent, spiny; *per. segs* 4–5, persistent in frt; *stams* 2–5, united below, staminodes present; *ovary* compressed; *style* linear with a capitate stigma; *utricle* indehiscent.

Leaves broadly obovate, perianth about

4 mm long1. *A. indica*

Leaves lanceolate, acuminate, perianth about

6 mm long2. *A. aspera*

1. *Achyranthes indica* (L.) Mill.

Better man

A. aspera var. *obtusifolia* Lam. of Griseb. Fl.

A. aspera var. *indica* L.

Centrostachys indica (L.) Standley

Griseb. Fl. 62: Britt. & Wils. Sci. Surv. Porto Rico 5. 278: Urb. Symb. Ant. 4. 219, 8. 203: Standley N. Amer. Fl. 21 (2). 125: Sandwith in Kew Bull. 1938. 374.

Herb, erect, robust and straggling, somewhat woody below, up to 1 m tall; *branchlets* hairy; *lvs* densely hairy when young, less so in age, obovate-suborbicular, rounded at apex, sharply tapered below into the short petiole, up to 4 x 4 cm; *infls* spicate, erect, up to 30 cm long; *fls* hermaphrodite, solitary, erect at first, soon reflexed, each subtended by a persistent subspinous bract and 3 clasping spine-like bracteoles deciduous with the per. and somewhat shorter than it; *per. segs* 5, clasping, indurated, green, falling with the fruit; *stams* 5, connate, with staminodes; *utricle* indehiscent, ovoid-cylindrical, ca 2 mm long.

Trinidad: Mucurapo (Crueger 9.12.1856); *sine loc.* (Herb. Trin. 2248); Port-of-Spain (Herb. Trin. 2938); Hort. Trin. (Herb. Trin. 4485); Cedros (Herb. Trin. 7187, 15.9.1915); Erin (Herb. Trin. 7360, 12.11.1915); Tabaquite (Broadway *s.n.*, 25.10.1918); St Joseph (Herb. Trin. 15541, 10.2.1958).

Tobago: Bacolet (Sandwith 1796, 15.10.1937).

Waste places, Trinidad and Tobago; the vernacular name was recorded by Broadway on one of his collections.

India, widely adventive in the tropics.

2. *Achyranthes aspera* L.

A. argentea Lam.

Centrostachys aspera (L.) Standl.

Griseb. Fl. 62: Urb. Symb. Ant. 8. 204: Britt. & Wils. Sci. Surv. Porto Rico 5. 278: Standley N. Amer. Fl. 21 (2). 126: Pulle Fl. Sur. 1/1. 36.

Nearly allied to the preceding species from which it differs in the key characters given above and in the leaves twice as long as broad, or even more.

Tobago: Urban *loc. cit.*, the only record, but no specimen is cited.

Mediterranean, widely adventive in the tropics and subtropics. The plant in Surinam (Scheygrond in Pulle, *loc. cit.*) is described as having obovate leaves, being in this reminiscent of the preceding species

6. **PFAFFIA** Mart.

Perennial *herbs* or *subshrubs*, usually hairy; *lvs* entire, opposite, sessile or shortly petiolate; *fls* usu. hermaphrodite, in terminal panicles of subglobose, stalked heads; *per. segs* 5, free, hairy; *stams* 5, united into a tube; *style* short or none, the stigma capitate or bilobed; *utricle* indehiscent.

1. **Pfaffia iresinoides** (H.B.K.) Sprengel

Iresine luzuliflora Gr.

Griseb. Fl. 65: Stützer in Fedde Rep. 88. 32 (1935).

Herb or *subshrub*, sprawling but hardly climbing; *stems* slightly ribbed, the younger ones densely white-hairy; *lvs* ovate-lanceolate, entire, acuminate, broadly cuneate at the base, densely white-hairy beneath, less so above, the bases of the hairs on the upper surface conspicuously swollen-papillate, up to 7 x 2-3 cm, smaller and narrower in the upper parts; *infl.* a diffuse leafy panicle of subglobose fl. clusters; *fls* hermaphrodite in bracteate clusters 3-5 mm broad on hairy stalks usu. 1-2 cm long, the smallest clusters subsessile; *per. segs* 5, silky-hairy; *stams* 5, connate; *stigma* capitate; *utricle* indehiscent; *seed* lenticular, shining, minute (0.5 mm).

Trinidad: de Schack, Lockhart, Crueger in Herb. Kew; Hort. Trin. (Herb. Trin. 1922, 28.8.1888); *sine loc.* (Herb. Trin. 2252); Chacachacare (Herb. Trin. 2935, 29.9.1864); Monos (Herb. Trin. 3503 and 3504, 7.2.1889); Hort. Trin. (Herb. Trin. 3795, 5.6.1889); Arima (Dannouse, ann. 1903); *sine loc.* (Herb. Trin. 8823); Huevos (Herb. Trin. 12508, 9.5.1931; and 14708, 27.5.1951); Saddle rd (Britton and Hazen 159, 28.2.1920); St Augustine (Herb. Trin. 15399, 14.4.1956).

Ruderal or weed of shady places, also Bocas Islands, Trinidad.

Mexico and Tropical South America (fide Stützer)

7. **IRESINE** P. Br.

Herbs, annual or perennial, sometimes woody below, erect or sprawling; *lvs* opposite, petiolate, sometimes somewhat fleshy; *fls* clustered or paniculate, hermaphrodite, diclinous or dioecious,

white; *per. segs* 5, often (in pistillate fls) woolly; *stams* 5, united at base, staminodes present or absent; *style* short or wanting; *stigmas* 2 (-3); *utricle* minute, indehiscent, included.

Infl. a diffuse panicle2. *I. celosia*

Infl. a panicle of fl. clusters

Lvs ovate-lanceolate, linear in the infl....1. *I. angustifolia*

Lvs broadly ovate, even in the infl.3. *I. domingensis*

1. *Iresine angustifolia* Euphr.

I. elatior Rich.

Griseb. Fl. 64: Urb. Symb. Ant. 4. 222, 8. 206: Britt. & Wils. Sci. Surv. Porto Rico 5. 282: Standley N. Amer. Fl. 21 (2). 157: Fawc. & Rendl. Fl. Jam. 3 (1). 145.

Subshrub, sprawling, 1-2 m tall; *stems* ribbed, glabrous; *lvs* the lower ones ovate-lanceolate, acuminate, glabrous, 8-10 x 3-5 cm, much reduced in size and linear-lanceolate in the infl.; *infl.* a long (40 cm) panicle of elongate brownish heads each about 5 x 3 mm, increasing in fruit; *fls* hermaphrodite; *per. segs* 5, silky-hairy, the hairs apparently growing in fruit; *utricle* indehiscent; *seed* lenticular, brown, shiny, 1 mm broad.

Trinidad: Chacachacare (Herb. Trin. 2934, Oct. 1864; Herb. Trin. 8064, 4.12.1912; Britton 504, 12.3.1920); Monos (Herb. Trin. 7458, 27.11.1915).

Bocas Islands, Trinidad.

West Indies, Central and northern South America.

2. *Iresine celosia* L.

Iresine paniculata (L.) Ktze

Iresine celosioides L.

Iresine diffusa H.B.K.

Griseb. Fl. 64: Urb. Symb. Ant. 4. 222, 8. 207: Fawc. & Rendl. Fl. Jam. 3 (1). 145: Britt. & Wils. Sci. Surv. Porto Rico 5. 283: Standley N. Amer. Fl. 21 (2). 166.

Herb or *subshrub*, sprawling or scrambling to 1-3 m tall; *stems* ribbed, glabrous, somewhat swollen at the nodes; *lvs* the lower ones ovate-acuminate, long-petioled, at the base rounded-cuneate, up to 10 x 5 cm, reduced in size and lanceolate in the

upper parts, sparsely hairy; *infl.* golden yellow, paniculate, leafy, the lateral spikes elongating in age to 1-2 cm; *fls* dioecious; *per. segs* 5, those of female fls densely silky-hairy; *utricle* indehiscent; *seed* 0.5 mm, brown, shining.

Trinidad: de Schack in Herb. Kew; *sine loc.* (Herb. Trin. 2246); Chacachacare (Herb. Trin. 2933, 3.10.1864); Port-of-Spain (Herb. Trin. 4259, Sept. 1890); Moruga (Herb. Trin. 7917, 9.2.1916); Todd's rd (Broadway *s.n.*, 3.1.1917); Aripo (Herb. Trin. 9861, 10-26.1.1922); Sans Souci (Herb. Trin. 10847, 11.12.1924); St Augustine (Herb. Trin. 14075, 8.1.1948); Brigand Hill (Herb. Trin. 14287, 13.3.1949); Caroni South bank rd (Herb. Trin. 14871, 11.2.1953).

Tobago: Old road (Broadway 4400, 24.2.1913 in Herb. Kew); Roxburgh (Herb. Trin. 7998, 3.5.1912); Runnymede (Herb. Trin. 15087, 30.1.1954); Windward rd (Herb. Trin. 15166, 20.4.1954).

Southern U.S.A., Central America, West Indies, South America south to the Argentine.

3. *Iresine domingensis* Urb.

Urb. Symb. Ant. 5. 337.

Shrub, climbing or sprawling with terete branches and somewhat swollen nodes; *lvs* broadly ovate, thick, glabrous, subacute at the apex, rounded-cuneate at the base, the margins sl. incurved, shortly (1 cm) petioled, about 8 x 5 cm (perhaps larger below), somewhat reduced in size but not markedly changed in shape in the *infl.*; *infl.* a leafy panicle of subglobose clusters, the finer rachises densely brownish-hairy, individual clusters 4-5 mm broad; *per. segs* 5, those of female flowers densely silky-hairy.

Trinidad: St Ann's (Lockhart in Herb. Kew, det. Suessenguth); Maracas (Herb. Trin. 6619, 3.3.1900).

Santo Domingo.

DOUBTFUL SPECIES

Iresine argentata (Mart.) Dietr. (*I. aurata* Dietr. of Griseb. Fl. 65) is recorded for Trinidad by Grisebach *loc. cit.* on the basis of the Lockhart specimen here treated as *I. domingensis*. Trinidad records by Urban (Symb. Ant. 4. 223) and by Britton and Wilson (Sci. Surv. Porto Rico 5. 282) are not backed by citation of specimens

and are assumed to be taken from Grisebach. There remains therefore no good evidence of the presence of this species unless *I. domingensis* should prove to be not specifically distinct from it—the two are certainly very closely allied. It is significant that Britton determined Herb. Trin. 6619 as *I. argentata*.

8. ALTERNANTHERA Forsk.

Herbs, annual or perennial, sometimes woody at the base, often creeping or decumbent; *lvs* entire, opposite, sessile, petiolate; *fls* hermaphrodite or dioecious, clustered in axillary (less commonly, terminal) heads; *infls* sessile or pedunculate, solitary or in clusters of 2–3; *bracts* 3; *per. segs* 5, unequal, usu. white or straw-coloured; *stams* 2–5, shortly united at base, 2–5 staminodes usu. present; *style* short, stigma capitate; *utricle* indehiscent.

Heads sessile or subsessile

Per. hairy

Lvs in equal pairs, mostly more than

2 cm long.....1. *A. ficoidea*

Lvs in unequal pairs, less than 2 cm

long3. *A. peploides*

Per. glabrous2. *A. sessilis*

Heads pedunculate

Stems swollen, fleshy4. *A. philoxeroides*

Stems not fleshy, commonly more or less
woody and decumbent below

Spikes brownish5. *A. olivacea*

Spikes white or straw-coloured

Lvs nearly as broad as long (Tobago) 7. *A. ingramiana*

Lvs twice as long as broad or more

(Bocas Islands)6. *A. ramosissima*

1. *Alternanthera ficoidea* (L.) R. Br.

Rabbit meat

A. polygonoides of Gr. Fl. non L.

Achyranthes ficoidea (L.) Lam.

Griseb. Fl. 67: Britt. & Wils. Sci. Surv. Porto Rico 5. 280:
Urb. Symb. Ant. 4. 221, 8. 205: Standley N. Amer. Fl. 21 (2). 139:
Pulle Fl. Sur. 1/1. 40.

Herb, the branches prostrate and ascending; *stems* hairy, densely so above, the internodes commonly 10–12 cm long in lower parts, shorter above; *lvs* ovate, subacute, rounded-tapered at the base into a short (2–3 mm) petiole, densely white-hairy when young, less so in age, variable in size, ranging up to 7 x 3–4 cm, uncommonly less than 3–4 cm long; *infls* yellowish white, sessile, axillary spikes 4–5 mm long, solitary or 2–3 together; *fls* hermaphrodite, bracteate, the bracts with keeled midribs and shorter than the per.; *per. segs* 5, unequal, hairy without, the two outer members longer than the 3 inner, 3-nerved, acuminate; *stams* and *stamdes* 5; *stigma* capitate; *seed* brown, shining.

Trinidad: Lockhart, de Schack, Crueger in *Herb. Kew*; Saddle rd (Britton and Hazen 158, 28.2.1920); Maracas Bay (Broadway 6077, 28.3.1926); Manzanilla (Broadway 9390, 28.4.1934); San Fernando (*Herb. Trin.* 2928, ann. 1865); Hort. Trin. (*Herb. Trin.* 3395, 7.1.1889); Princes' Town (*Herb. Trin.* 4437, 20.12.1890); Cedros (*Herb. Trin.* 7185, 15.9.1915); St Augustine (*Herb. Trin.* 15424, 19.3.1957); St Joseph (*Herb. Trin.* 15534, 10.2.1958).

Tobago: Scarborough (Broadway 4387, 2.11.1912); Store Bay (Sandwith 1826, 7.10.1937); Scarborough (*Herb. Trin.* 15145, 20.4.1954).

A very common weed.

Tropical America generally.

2. *Alternanthera sessilis* (L.) DC.

Achyranthes sessilis (L.) Steud.

Griseb. *Fl.* 67: Urb. Symb. Ant. 4. 220, 8. 204: Britt. & Wils. *Sci. Surv. Porto Rico* 5. 280: Fawc. & Rendl. *Fl. Jam.* 3 (1). 140: Pulle *Fl. Sur.* 1/1. 41: Melville in *Kew Bull.* 1958. 171.

Prostrate *herb*; *stems* sl. hairy, internodes exceptionally 7–9 cm long below, generally much less; *lvs* very variable in shape and size, ovate, suborbicular or even oblanceolate, acute, subacute or obtuse, sharply narrowed or tapered below into the very short petiole, exceptionally 5 x 1.5 cm, commonly 2 cm or less long, glabrous or nearly so; *infls* white, sessile, usu. solitary, axillary heads subglobose at first, elongating to ca 5 mm in fruit; *fls* longer than the bracts, hermaphrodite; *per. segs* 5, subequal,

shining white, glabrous, one-nerved; *stams* 3; *utricle* obcordate, flattened, greyish, with short persistent style, sl. longer than the persistent appressed per. segs; *seed* brown, shining.

Trinidad: de Schack, Lockhart in Herb. Kew; Port-of-Spain (Broadway 9281, 8.10.1933); *sine loc.* (Herb. Trin. 2251 and 2931); St Clair (Herb. Trin. 3584, 12.3.1889); Monos (Herb. Trin. 7442, 27.10.1915); Moruga (Britton and Broadway *s.n.*, 19.3.1921); St Augustine (Herb. Trin. 15423, 19.3.1957); St Joseph (Herb. Trin. 15587, 13.2.1958).

Tobago: Gomez (?) Bay (Eggers 5491—'in rupestris maritimis repens').

A weed, common but less abundant than the preceding species.

India; widely adventive through the tropics, *e.g.* in Malaysia (Backer, Fl. Males. I. 4/2. 92).

3. *Alternanthera peploides* (Humb. & Bonpl.) Urban

A. parvifolia (Moq.) Fawc. & Rendle

Fawc. & Rendl. Fl. Jam. 3. 138: Melville in Kew Bull. 1958. 175.

Herb., with prostrate stems hairy when young; *lvs* slightly hairy when young, in unequal pairs, ovate, subacute, tapered at base into short petiole, up to 1.5 x 1 cm, usu. less; *infls* axillary, straw coloured, relatively large, up to 8 x 5 mm; *fls* longer than bracts; *per. segs* 5, very unequal, the 2 large outer ones 3.5 mm long, 3-nerved, spiny-acuminate, hairy from base to middle or above; *hairs* minutely barbed; *stams* 5; *utricle* shorter than per.; *seed* reddish-brown, somewhat compressed.

Trinidad: Chacachacare, sea shore (Herb. Trin. 2929, October 1864).

West Indies, trop. and subtrop. America, Azores, Madeira, Canary Is., Spain.

Note: nearly allied to the widely distributed *A. pungens* H.B.K. (*A. repens* (L.) Link) from which it was separated by Fawcett and Rendle on the symmetrical leaves and more hairy perianth segments. For nomenclature see Melville, *loc. cit.*

4. *Alternanthera philoxeroides* (Mart.) Griseb.

Pulle Fl. Sur. 1/1. 39.

Herb., with fleshy, erect stems, 20–30 cm tall, rooting at the lower nodes; *hairs* disposed in two longitudinal rows on the stems and on younger nodes; *lvs* sparsely hairy when young, lanceolate,

acute, tapered at the base into the short winged pet. which is expanded at the insertion on the swollen node, up to 9 x 2 cm (incl. pet.), commonly less; *infls* axillary, solitary, dense, 8-12 x 8 mm, on slender ped. 15-25 mm long; *brs* unequal, broadly ovate, much shorter than the per.; *fls* hermaphrodite, white and shining; *per. segs* oblong, mucronulate; *stams* 5, with staminodes; *utricle* indehiscent, compressed, with persistent style base.

Trinidad: Oropuche Lagoon (Herb. Trin. 2930, 5.4.1865); O'Meara rd (Herb. Trin. 13740, 19.8.1940).

Wet places, rare.

South America down to the Argentine, and in the southern U.S.A.; naturalized in Java (Backer, Fl. Males. I. 4/2. 93).

5. *Alternanthera olivacea* (Urb.) Urb.

Urb. Symb. Ant. 1. 302, 5. 340: Standley N. Amer. Fl. 21 (2). 141.

Herb, with stems more or less woody and decumbent below, ascending above, to 30 cm tall; *nodes* and leaf scars prominent; *stems* hairy when young, esp. at the nodes, later glabrate; *lvs* appressed-hairy when young, broadly ovate, acute, rounded-cuneate at the base, shortly (3 mm) petioled, up to 7 x 4 cm but commonly shorter and broader (5 x 3 cm or less); *infls* axillary, solitary, brownish, on slender hairy stalks commonly 1-1.5 cm (exceptionally 2 cm) long, the flowering part elongating in fruit to 1.5-2 cm; *bracts* suborbicular, keeled-mucronate, 1.5 mm long, much shorter than the per., persistent; *per. segs* 4 mm long, brownish, hairy, acute; *stams* connate, with staminodes; *seed* ovate, shining, blackish brown, 1.2 mm.

Tobago: Studley Park (Broadway 4561, 8.7.1913 in Herb. Kew and Herb. Trin.); Point opposite Melville Island (Herb. Trin. 11430, 25.10.1925); Belle Garden (Herb. Trin. 15312, 13.7.1954).

St. Vincent, Grenadines and Grenada.

6. *Alternanthera ramosissima* (Mart.) Fries

Mogiphanes ramosissima Mart.

Achyranthes ramosissima (Mart.) Standley

Alternanthera brasiliensis of Urb. Symb. Ant. non L.

Mogiphanes straminea Mart. of Gr. Fl. non Mart.

Britt. & Wils. Sci. Surv. Porto Rico 5. 281: Standley N. Amer. Fl. 21 (2). 145.

Herb, woody below, with erect or sprawling branched stems to 1.5 m tall, hairy in the younger parts, esp. at the nodes; *lvs* ovate to narrowly lanceolate, generally smaller and narrower in the upper parts, up to 8 x 3 or 7 x 2 cm, rounded or sharply cuneate at the base, tapered from about one third of the length from the base to a long acute point, sometimes somewhat curved-asymmetrical; *pets* up to 1 cm long, not at all swollen at base; *infls* solitary, axillary, borne on stout pedicels 6-12 cm long in age, the heads at first subglobose 1 cm diam., later elongating to 1.5-2 cm, white in colour; *bracts* ovate, aristate-acuminate, one third as long as the *fls*; *per. segs* 5, lanceolate, acute, finely hairy, 5 mm long; *staminodes* longer than stamens; *frt* not seen.

Trinidad: Bocas Islands (Lockhart 195 in Herb. Kew); Chacachacare (Britton 517, 12.3.1920; Britton, Freeman and Watts 2673, 3.4.1921=Herb. Trin. 10472); Monos (Broadway 7577, 25.6.1930); Patos (Broadway 7200, 9.6.1929); Chacachacare (Herb. Trin. 2936, 6.10.1864); Monos (Herb. Trin. 7438, 27.11.1915); Monos (Herb. Trin. 10471, 4.4.1921=Britton, Britton and Brown 2746); Chacachacare (Herb. Trin. 10473, 25.1.1921); Monos (Herb. Trin. 15704, 29.12.1958).

Dry places in the Bocas Islands.

Florida and Yucatan, discontinuously through the West Indies, northern South America.

Note: I accept Britton and Wilson's identification of Urban's *Alternanthera brasiliensis* with this species and treat Grisebach's *Mogiphanes straminea* as also the same on the basis of Lockhart 195 cited above, which I take to be the Lockhart specimen "on dry ground" cited by Grisebach.

7. *Alternanthera ingramiana* (Standl.) Schinz

Achyranthes ingramiana Standl.

Standley in Proc. Biol. Soc. Wash. 28. 87 (1915).

Herb, with decumbent and ascending stems, hairy in the younger parts, esp. at the nodes; *lvs* on *pets* 4-8 mm long, ovate-suborbicular 2.5-5 x 2-3 cm, rounded and shortly decurrent at the base, acute at the tip, sparsely hairy on both surfaces, densely so when young; *infls* solitary, 7-15 x 8 mm on hairy pedicels, short at first but lengthening in age to 6 cm; *bracts* broadly ovate, aristate-acuminate, about half as long as the *per. segs*; *fls* obscurely

pedicellate; *per. segs* straw-coloured, narrowly lanceolate or oblong, 3.5 mm long, acute, hairy; *frt* dark reddish-brown, 1.2 mm long.

Tobago: seashore, Little Tobago island (Broadway 4902, 26.7.1914, det. Standley, TYPE in U.S. Nat. Herb., not seen); Little Tobago (Herb. Trin. 11436, 26.10.1925); Speyside (Herb. Trin. 15257, 3.7.1954).

Coastal localities in and endemic to Tobago, so far as is known.

According to Standley, *loc. cit.*, differs from other members of *Mogiphanes* in the short flowers (less than 5 mm) and the leaves nearly as broad as long.

EXCLUDED SPECIES

Alternanthera bettzickiana (Regel) Nicholson is an ornamental edging plant represented by specimens in Herb. Kew (*e.g.* Broadway 2968, Botanic Station, Tobago, 7.9.1909). In Java and Sumatra used as a cover plant to prevent soil wash in exposed places (Backer, Fl. Males. I. 4/2. 93). *Alternanthera articulata* Stutzer (Fedde Repert. 88. 43. 1935) is also an edging plant; it was based on Broadway 2969, Botanic Station, Tobago, 27.3.1909 and on Broadway 5047, from Trinidad, both in Herb. Kew.

Mogiphanes jacquinii Schrad. (*Achyranthes jacquinii* (Schrad.) Standley—no combination in *Alternanthera* has been published) was recorded for Trinidad by Grisebach (Fl. 64) on the basis of a Sieber plant very doubtfully collected in Trinidad. Standley (N. Amer. Fl. 21 (2). 145) also gives Trinidad in the distribution of the species, possibly on the basis of the Grisebach record. This species is closely allied to *Alternanthera ramosissima* and is said to differ from it in having bractlets longer than the perianth; presumably it is the same as *A. dentata* (Moench) Stuhl. (Fedde Repert. 12. 354. (1913)) of Scheygrond in Pulle Fl. Suriname I (1). 39 (as *A. dentata* (Moench) Scheygrond). The taxonomy and nomenclature of this group are so confused that nothing less than a monograph would suffice to disentangle them.

9. PHILOXERUS R. Br.

Fleshy maritime herbs; *lvs* entire, opposite; *fls* hermaphrodite, in dense axillary heads or spikes; *per. segs* 5; *stams* 5, joined below; *ovary* compressed; *style* short, stigmas 2; *utricle* indehiscent.

1. *Philoxerus vermicularis* (L.) Nutt.

Griseb. Fl. 65: Britt. & Wils. Sci. Surv. Porto Rico 5. 284: Urb. Symb. Ant. 4. 223, 8. 207: Standl. N. Amer. Fl. 21 (2). 168: Sandwith in Kew Bull. 1938. 374.

Fleshy, maritime herb, with prostrate, creeping and leafy, ascending stems, sparsely hairy in youngest parts only; *lvs* linear, broadest towards the apex, obtuse or subacute, sessile, tapered below into the somewhat swollen insertion, exceptionally 7 cm x 0.5 cm, usu. much less; *infls* solitary, axillary, shining white, cylindrical, 10 x 8 mm, not elongated in age, on pedicels up to 15 mm long; *bracts* thin, ovate, obtuse, glabrous, sl. shorter than per.; *per. segs* ovate-lanceolate, obtuse, glabrous, 3-4 mm long; *frt* not seen.

Trinidad: Cruieger in Herb. Kew; Woodbrook seashore (Broadway 6604, 6.4.1927); Pointe-a-Pierre (Herb. Trin. 2932, 28.2.1865); Cedros (Herb. Trin. 7194, 16.9.1915); *sine loc.* (Herb. Trin. 8099); Cedros (Broadway *s.n.*, 18.12.1914); Gasparee (Freeman *s.n.*, 11.2.1921); Moruga (Britton and Broadway, 19.3.1921); Manzanilla (Herb. Trin. 13269, 9.2.1938); Moruga (Herb. Trin. 14571, 21.3.1950); Maracas Bay (Herb. Trin. 15446, 8.6.1957).

Tobago: Charlotteville (Freeman and Williams, 25.10.1925 in Herb. Kew); Buccoo Bay (Sandwith 1761, 8.10.1937 in Herb. Kew); cliff opposite Melville Island (Herb. Trin. 11432, 25.10.1925); Friendship (Herb. Trin. 13484, 2.4.1940).

Sea beaches, Trinidad and Tobago.

Caribbean generally, north-eastern South America and west tropical Africa from Senegal to Angola (Keay, Fl. W. Trop. Afr. ed. 2. 1/1. 153).

DOUBTFUL GENUS

Lithophila muscoides Sw., widely spread in coastal localities throughout the West Indies, is mentioned by Urban (Symb. Ant. 5. 337 (1907)) for Trinidad, but no specimen is cited. In a later work (Symb. Ant. 8. 207 (1920)) Trinidad is not included in the geographical distribution of this species. The genus is accordingly excluded from treatment here.

FAMILY 3. CHENOPODIACEAE

By N. W. SIMMONDS

Herbs or *shrubs*, sometimes fleshy, variously hairy or glabrous; *lvs* alternate, petiolate, exstipulate, simple, with variously toothed margins, occ. reduced to scales; *fls* hermaphrodite or female, sessile, clustered in the axils or in axillary or terminal cymes, spikes or panicles, ebracteolate, regular; *per.* 1-seriate, green, inconspicuous, 2-5 membered, free or connate below, occ. absent from female *fls*; *stams* as many as *per.* segs and opposite them, sometimes connate into a disc at the base; *ovary* unilocular, with one basal ovule and 2-5 stigmas; *frt* a utricle; *seed* small, with mealy endosperm.

1. CHENOPODIUM L.

Herbs, sometimes woody below, often oily-aromatic; *infls* various, axillary or terminal; *fls* hermaphrodite; *per.* 2-5-membered, free or connate often persistent in *frt*; *stams* as many as *per.* segs; *styles* 2-5; *utricle* indehiscent, enclosed in *perst per.*; *seed* lenticular.

1. *Ch. ambrosioides* L.

Worm bush

Griseb. Fl. 60: Urb. Symb. Ant. 4. 216, 8.200: Fawc. & Rendl. Fl. Jam. 3. 124: Standley N. Amer. Fl. 21 (1). 27: Britt. & Wils. Sci. Surv. Porto Rico 5. 272.

Aromatic *herb* to 1 m tall, much branched, with finely ribbed glabrous stems and yellow glands on young parts; *lvs* glabrous, lanceolate, acute, at the base decurrent into the short petiole, the margins undulate to irregularly dentate, tending to entire in the upper parts of the plant, up to 5 x 1.5 cm below, narrower above (5 x 0.8 cm); *infl.* leafy, of numerous irregular, axillary spikes, ca 20 cm long; *spikes* ca 2 cm long, *fls* solitary or few-clustered, internodes 1-3 mm long (*fls* or clusters distant); *fls* hermaphrodite, sometimes female; *per.* 4-5-membered (3 *vide* Britt. & Wils.), green, persistent in *frt*; *seed* slightly compressed, dark brown, shining, ca 0.8 mm diam.

Trinidad: Lockhart in Herb. Kew; San Fernando (Herb. Trin. 2129, Aug. 1864); Belmont, cultivated (Herb. Trin. 8869, 20.5.1920).

Waste places, rare. Sometimes used as a vermifuge.

North and South America, naturalized in Europe, Asia and Africa.

FAMILY 4. BASELLACEAE

BY N. W. SIMMONDS

Herbaceous *vines* with alternate, entire, exstipulate lvs; *fls* hermaphrodite, regular, small, in axillary or terminal spikes or racemes, each subtended by two (often tepaloid) bracts; *per. segs* 5, connate at the base, imbricate, persistent and often accrescent in frt; *stams* 5, opposite to and mounted on the tepals; *anths* versatile; *ovary* superior, 1-celled, with one basal ovule; *style* short; *stigmas* 3, entire or 2-3 lobed; *frt* indehiscent, 1-seeded, surrounded by the persistent (often accrescent) *per.* and bracteoles; *seed* globular, endospermic.

Basella alba L. (Poi spinach) is sometimes cultivated as a spinach plant in Trinidad gardens. It has many and complex uses in the East (see van Steenis Fl. Males. I. 5/3. 301).

1. ANREDERA

Vines, herbaceous, the aerial shoots springing from fleshy rhizomes; *fls* in axillary and terminal branching racemes; *bracteoles* 4, the lower pair connate, persistent or deciduous, the upper pair tepaloid, clasping the *per.* and persistent on it, smooth, keeled or winged; *per. segs* connate at base, persistent in frt; *style* 1, variously divided into 3 club-shaped stigmas; *frt* globose, fleshy, enclosed in the persistent *per.*

1. *A. leptostachys* (Moq.) van Steenis

Boussingaultia leptostachys Moq.

Fawc. & Rendle Fl. Jam. 3. 173: Britt. & Wils. Sci. Surv. Porto Rico 5. 301: van Steenis Fl. Males. I. 5/3. 302.

Vine, twining, glabrous, with slender herbaceous aerial shoots; *lvs* alternate, ovate, entire, acute, decurrent at the base into the short petiole, thin-papery when dry, up to 6 x 3-3.5 cm; *racemes* 4-12 cm long, rather lax; *fls* patent, on slender pedis 1-2 mm long, white, fragrant; upper *bracteoles* keeled, petaloid; *per. segs* 2 mm long; *frt* not seen.

Trinidad: St Joseph (Herb. Trin. 15027, 1.11.1953).

Waste places, Trinidad, rare.

Florida, Mexico, West Indies, Brazil.

FAMILY 5. PHYTOLACCACEAE

By N. W. SIMMONDS

Herbs or *shrubs* (the local species), sometimes scandent; *lvs* alternate, entire; *stipules* small or absent; *fls* hermaphrodite (in the local species), in terminal or axillary racemes, usually bracteolate; *perianth* uniseriate, of 4-5 usu. petaloid segments, imbricate in the bud, persistent; *stams* as many as the per. segments or more numerous, usu. inserted on a hypogynous disc, the filaments persistent after flowering; *ovary* superior of one or several free or joined carpels; *style* short or none; *ovules* solitary in the carpels; *frit* dry or fleshy; *seeds* endospermous.

Perianth segments 4

Fruit a globose berry; plant not smelling
of garlic

Stamens 4, style elongated1. *Rivina*

Stamens 8-16, style none2. *Trichostigma*

Fruit dry, bearing bristles at the top; plant
smelling strongly of garlic.....3. *Petiveria*

Perianth segments 5

Ovary one-celled, fruit dry

Stigmas 2, unarmed herbaceous weed....4. *Microtea*

Stigma solitary, produced into a ring-
like structure, prickly scrambling
shrub.....5. *Seguieria*

Ovary several-celled, fruit fleshy.....6. *Phytolacca*

1. RIVINA L.

Herbs, erect and woody at the base; *lvs* thin, petiolate; *stips* minute, caducous; *fls* in slender racemes, the *bracts* and *bracteoles* minute and deciduous; *per. segs* 4; *stams* 4, alternate with the per. segs; *ovary* of one carpel; *style* short; *stigma* capitate; *frit* a globose drupe; *seed* with a brittle testa and curved embryo surrounding mealy endosperm.

1. *R. humilis* L.

Bloodberry

R. laevis L.

Griseb. Fl. 59: Britt. & Wils. Sci. Surv. Porto Rico 5. 290: Fawc. & Rendl. Fl. Jam. 3 (1). 156: Urb. Symb. Ant. 4228, 8. 213: Wilson N. Amer. Fl. 21 (3). 258: Sandwith in Kew Bull. 1938. 374.

Herb. 30-100 cm tall, glabrous, finely or densely pubescent, branched; *stems* ribbed; *lvs* ovate, acuminate at the apex, rounded at the base, up to 10 x 6 cm, the margins entire or slightly wavy; *pets* slender, 2-4 cm long; *racemes* up to 10 cm long, several—to many-flowered; *peds* very slender, patent, 4-6 mm long; *per.* white or pinkish, its lobes elliptical, 2-2.5 mm long, increasing to 4 mm on the fruit; *drupe* globose, bright scarlet, 4-5 mm in diam.

Trinidad: de Schack in Herb. Kew; Fendler 642 in Herb. Kew; San Fernando hill (Broadway 6411, 18.7.1920, in Herb. Kew); *sine loc.* (Herb. Trin. 635, 29.1.1861); Mount Pleasant (Herb. Trin. 2710, 11.8.1866); Piareo savanna (Herb. Trin. 5145, 18.1.1893); Erin (Herb. Trin. 7345, 11.11.1915); Belmont (McLean *s.n.*, 3.2.1920); Sans Souci (Herb. Trin. 10850, 11.12.1924); Patos (Herb. Trin. 13031, 19.11.1933); Southern Watershed Reserve (Herb. Trin. 13685, 14.7.1939); Los Iros (Herb. Trin. 13690, 7.9.1940); Siparia (Herb. Trin. 14193, 29.2.1948).

Tobago: Feilden, May 1912, in Herb. Kew; Bacolet Point (Sandwith 1702, 10.10.1937 in Herb. Kew); *sine loc.* (Herb. Trin. 10476, Dec. 1921); Store Bay (Herb. Trin. 11168, 7.6.1925 and Herb. Trin. 15277, 10.7.1954); Plymouth (Herb. Trin. 13492, 1.4.1940).

Waste places and sea cliffs, Trinidad and Tobago.

Southern U.S.A., West Indies, tropical Central and South America; Old World tropics.

2. *TRICHOSTIGMA* A. Rich.

Subshrubs, erect or climbing; *lvs* petiolate; *stipules* minute and early deciduous; *fls* hermaphrodite, in many-fl'd racemes; *bracts* and *bracteoles* deciduous; *per. segs* 4, concave, spreading or reflexed; *stams* 8-16; *ovary* of one carpel with a terminal, sessile brush-like stigma; *drupe* globose.

1. *T. octandrum* (L.) H. Walt.

Rivina octandra L.

Villamilla octandra (L.) Hook. f.

Griseb. Fl. 59: Britt. & Wils. Sci. Surv. Porto Rico 5. 291: Fawc. & Rendl. Fl. Jam. 3 (1). 156: Urb. Symb. Ant. 4. 228, 8. 214: Wilson N. Amer. Fl. 21 (3). 258: Walter in Engl. Pflzr. 4 (83). 111: Sandwith in Kew Bull. 1938. 374.

Shrub, sometimes heavily woody below, scrambling to 6 m or more in height; *branches* glabrous, striate; *lvs* glabrous, ovate, elliptical or lanceolate, up to 8 x 4 cm, entire, acute, obtuse or shortly acuminate, rounded or shortly tapered at the base into the rather stout, channelled (1-3 cm) petiole; *infls* axillary racemes, at first shorter than the lvs, later much exceeding them, up to 15 cm long; *peds* red in colour, slender, patent, 2 mm long, rising to 7 mm in frt; *fls* ca 8 mm broad, the *per. segs* ovate, obtuse, white at first, later red and reflexed, perst in frt; *drupe* globose, purple, 5-6 mm in diam.

Trinidad: Sieber 194, *vide* Walter; Erin (Herb. Trin. 9123, 10.5.1920); St Joseph (Herb. Trin. 10988, 22.4.1925 and Herb. Trin. 11047, 11.5.1925); *sine loc.* (Herb. Trin. 774); Chaguanas (Herb. Trin. 2709, 14.6.1868); Golden Grove (Herb. Trin. 13431, 22.5.1939).

Tobago: Morne d'Or (Eggers 5829, *vide* Walter); Auchenskeoch (Eggers 5926 in Herb. Kew); Parlatuvier (Sandwith 1888, 22.10.1937 in Herb. Kew); Scarborough (Herb. Trin. 14553, 8.12.1949); Friendship Estate (Herb. Trin. 11028, 6.5.1925); Charlotteville (Herb. Trin. 11085, 4.6.1924); Government Farm (Herb. Trin. 13494 and 13703, 31.3.1940); Scarborough (Herb. Trin. 14553, 8.12.1949).

Roadsides, hedges, &c., Trinidad and Tobago.

Florida, West Indies, continental tropical Central and South America.

3. *PETIVERIA* L.

Herbs, erect, woody at the base; *lvs* shortly petiolate, with small stipules; *fls* hermaphrodite, almost sessile in slender erect or nodding racemes; *per.* 4-parted, the segments spreading in fl.,

erect and slightly accrescent in fruit; *stams* 4-8, the filaments unequal; *ovary* oblong, hairy, with 1-6 deflexed hook-like processes at the top; *stig.* brush-like, laterally inserted; *ovule* solitary, basal; *frt* dry, elongated, wedge-shaped, covered below by the persistent per., 2-lobed above and bearing 1-6 deflexed hooks; *seed* linear, adherent to the pericarp.

1. *P. alliacea* L.

Gully root, Mapourite

Griseb. Fl. 59: Britt. & Wils. Sci. Surv. Porto Rico 5. 291: Fawc. & Rendl. Fl. Jam. 3 (1). 157: Urb. Symb. Ant. 4. 229, 8. 214: Wilson in N. Amer. Fl. 21 (3). 260: Walter in Engl. Pflzr. 4 (83). 120: Sandwith in Kew Bull. 1938. 374.

Herb, 30-90 cm tall, smelling of garlic; *stems* finely hairy, esp. above, branched; *lvs* elliptical or elliptical-obovate, up to 15 x 6 cm, acute or acuminate at the apex, cuneate at the base, wavy-margined, glabrous or nearly so; *racemes*, the rachis pinkish, 10-40 cm long, with fls spaced 7-14 mm apart at anthesis, opposite or axillary; *bracts* 2 mm long, acute; *bracteoles* minute; *fls* subsessile, the *per.* white, turning greenish in frt. its segments linear, 4 mm long; *stams* pinkish, shorter than the per.; *frt* 6-8 mm long, appressed to the axis of the infl., the deflexed apical, bristles yellowish, 2-3 mm long.

Trinidad: Sieber 115 in Herb. Kew; *sine loc.* (Herb. Trin. 645, 12.2.1861); Cedros (Herb. Trin. 7101, 23.9.1915); Erin (Herb. Trin. 7361, 12.11.1915); Chacachacare (Herb. Trin. 8073, 4.12.1912 and 10477, 1.1.1923); St Augustine (Herb. Trin. 13981, 11.12.1947); Montserrat hills (Herb. Trin. 14777, 11.12.1952).

Tobago: Scarborough (Feilden, August 1912, in Herb. Kew); Castara (Sandwith 1832, 18.10.1937, in Herb. Kew); Goldsborough (Herb. Trin. 14952, 5.5.1953); Speyside (Herb. Trin. 15260, 4.7.1954).

Waste places, Trinidad and Tobago.

"For use in abortion" (Feilden); said also to be useful as a decoction for treating 'fever' and said to impart a taint to milk if eaten by cattle.

Southern U.S.A., West Indies, tropical Central and South America.

6. PHYTOLACCA L.

Herbs, perennial, erect (the local species), woody at the base; *stipules* none; *fls* hermaphrodite, racemose, *racemes* at first subterminal, later opposite to the leaves as consequence of continued stem growth; *peds* bracteate at the base, often bracteolate above; *per. segs* 5; *stams* 5-20; *ovary* of 5-20 distinct or united carpels; *styles* as many as the carpels; *ovules* solitary; *frt* baccate, subglobose-depressed; *seeds* one in each cell, compressed, reniform; *embryo* curved, surrounding a mealy endosperm.

Pedicels longer than the flowers1. *P. rivinoides*

Pedicels shorter than the flowers.....2. *P. icosandra*

1. *P. rivinoides* Kunth & Bouché

P. icosandra L. sensu Griseb. non L.

Griseb. Fl. 58: Britt. & Wils. Sci. Surv. Porto Rico 5. 293: Urb. Symb. Ant. 8. 215: Fawc. & Rendl. Fl. Jam. 3 (1). 159: Wilson in N. Amer. Fl. 21 (3). 265.

Erect *herb*, somewhat shrubby below, 1-2 m high, widely branched, glabrous; *lvs* elliptical, ovate or ovate-lanceolate, up to 18 x 9 cm, acuminate at the tips, cuneate at the bases; *pets* 2-6 cm long; *racemes* terminal and opposite, including the pink peduncle, up to 60 cm or more long; *peds* pink, 5-10 mm long with a linear bract 2 mm long at the base and usu. 2 bracteoles about the middle, accrescent in fruit up to 2 cm in length; *per. segs* pink, ovate 2-2.5 mm long, usually deciduous in fruit; *stams* 10-20 inserted on a conspicuous yellow disc, about equal in length to the perianth; *ovary* depressed-globose of 10-16 carpels, each uniovulate; *styles* recurved; *berry* blackish-crimson, depressed-globose, 5-7 mm in diam. and 3-5 mm high; *seeds* black, flattened, suborbicular-reniform, 2-2.5 mm long.

Trinidad: Fendler 641 in Herb. Kew; *sine loc.* (Herb. Trin. 644, Jan. 1861); Arima-Blanchisseuse rd, 11 miles (Broadway, 22.7.1927 in Herb. Kew); Dibe Valley (Herb. Trin. 4773, 26.8.1892); Diego Martin (Dannouse *s.n.*, ann. 1901); Caroni River (Leslie *s.n.*, 26.12.1903); Tamana (Broadway *s.n.*, 14.1.1915); Guapo (Williams *s.n.*, 21.6.1918); Aripo (Herb. Trin. 9862, 10-26.1.1922);

Maracas Bay (Herb. Trin. 13782, 30.3.1947); Southern Watershed Reserve (Herb. Trin. 14485, 5.11.1949).

Waste ground and early second growth, Trinidad.

West Indies, tropical Central and South America.

Note: Walter (Pflzr. 4 (83). 55), quoting Eggers, described this species as scandent to 2-5 m in height and Britton and Wilson (*loc. cit.*) say the same, perhaps quoting the same source. In my experience the plant is a robust erect herb with no climbing tendencies.

2. *P. icosandra* L.

P. octandra L. sensu Griseb. non L.

Griseb. Fl. 58: Britt. & Wils. Sci. Surv. Porto Rico 5. 293: Fawc. & Rendl. Fl. Jam. 3 (1). 160: Wilson in N. Amer. Fl. 21 (3). 264.

Stout, erect *herb* with angled glabrous branches, 1-3 m tall (Britt. & Wils.); *lvs* elliptical to ovate-lanceolate, 8-18 x 3-8 cm, acute or acuminate, cuneate at the base, on short *pet*s 1-5 cm long; *racemes* terminal and opposite, erect, densely many-fl'd, up to 30 cm long, much exceeding the *lvs*; *ped*s 4-5 mm long, about equal to the *fl*s, hardly increased in *frt*; *per. segs* greenish-white or yellowish, 4 mm long, broadly elliptical, persistent and not reflexed in *frt*; *stams* 8-20; *carpels* 8-20 (10-12, *fide* Fawc. & Rendle); *styles* recurved, 1.5 mm long; *frt* depressed-globose, 5-8 mm diam., black; *seed* obovoid-roundish, ca 2.5 mm.

Trinidad: Belmont (Herb. Trin. 2708, ann. 1861=Crueger 109); Britton and Wilson, *loc. cit.*, give Trinidad, perhaps on the basis of this specimen (which was annotated by Britton).

West Indies, tropical Central and South America, Old World Tropics.

FAMILY 6. BATIDACEAE

BY N. W. SIMMONDS

Shrub with prostrate stems and ascending branches; *lvs* opposite, sessile, fleshy, terete, entire; *infls* dense, bracteolate axillary spikes; *fls* dioecious; *per.* cup-shaped, 2-lobed in male fls, wanting in female; *stams* 4, with 4 staminodes; *ovary* 4-celled; *stigmas* sessile, 2-lobed; *ovules* solitary; *frt* fleshy, compound.

1. BATIS L.

The only genus (monospecific).

1. *B. maritima* L.

Griseb. Fl. 61 : Fawc. & Rendl. Fl. Jam. 3. 35 : N. Amer. Fl. 21 (4). 255 : Britt. & Wils. Sci. Surv. Porto Rico 5. 290 : Jonker in Pulle Fl. Suriname 1 (2). 91.

Shrub, glabrous, the erect, angular branches ascending to ca 1 m, *lvs* terete, subacute, 1-2.5 cm long; *spikes* very dense, strobiliform, 0.5-1 cm long, males sessile, females short-stalked; *bracteoles* scale-like, suborbicular, longer than fls, persistent on male, deciduous on female spikes; *frt* compound, 1-2 cm long, fleshy, drooping, composed of the axis, bracteoles and fruits of the whole female spike; *seeds* exendospermic, with large cotyledons.

Trinidad: Erin, by the sea (Broadway, Herb. Trin. 9652, without date).

Sea coasts, rare.

Caribbean and Gulf of Mexico generally, also Guiana, north-west South America, California, Galapagos Is and Hawaii.

FAMILY 7. POLYGONACEAE

BY RICHARD A. HOWARD

Herbs, shrubs, trees (often with scandent branches) or *lianes*; *lvs* alternate, usu. entire, simple with ochreate stipules; *nodes* commonly swollen; *stems* often sulcate, hollow and geniculate, short shoots often present; *fls* perfect or unisexual, monoecious or dioecious, on short usu. articulate pedis, solitary or fascicled within scarious usu. cylindrical ocreolae, in terminal, or terminal on lateral short shoots, racemes or panicles, often spicate, rarely cymose, solitary or fascicled in the axils; *per.* uniseriate, rarely biseriate, hypogynous of 3-6 (-8) free or partially united imbricated tepals, greenish to white or red; *stams* usu. 6-9, filaments often slightly united into a tube at the base and/or fused to the *per.*, filiform or flattened, sterile stams rudimentary but rarely reduced to staminodes; *ovary* superior, triquetrous or lenticular, unilocular, with a single erect ovule, styles variously developed, the stigmas capitate and entire to variously fringed; *achene* trigonous or lenticular with a crustaceous pericarp, often enclosed in a dry or fleshy modification of the hypanthium and/or *per.* lobes, these often much enlarged and alate; *embryo* with flat or convolute cotyledons, usually excentric in a mealy endosperm.

Three members of the fam. are cultivated: *Antigonon leptopus* H. & A. (Corallita) is frequently grown as a screening plant or as an ornamental vine notable for its masses of ornamental red, pink or white flowers—it is occasionally persistent after cultivation but hardly naturalized; *Triplaris cumingiana* Fisch. & Mey. (Long John) is occasionally cultivated as an ornamental tree notable for its tall, slender habit and conspicuous red female calyces, persistent in fruit; *Homalocladium platycladium* (Muell.) Bailey (*Muehlenbeckia platycladia* Meissn.) is also seen in gardens.

Herbs.....1. **Polygonum**

Trees or shrubs

Frt enclosed in a persistent winged

perianth2. **Ruprechtia**

Frt enclosed in a dry or fleshy persistent

unwinged perianth3. **Coccoloba**

1. POLYGONUM L.

Annual or perennial *herbs*, sometimes climbing or twining, occasionally shrubby; *lvs* alternate, mostly linear to ovate, occasionally sagittate, cordate or hastate; *ocreae* usu. conspicuous, often fringed with vascular strigose cilia; *infl.* of terminal spicate panicles, racemes or cymes; *fls* perfect, articulated to the peds in ocreolate fascicles; *per.* of 4-5 subequal tepals, more or less connate at the base, imbricate; *tepals* white, green, red or pink; *stams* 5-8, filaments distinct, equal or unequal in length, anthers small, versatile, introrse; *ovary* lenticular or trigonous, styles 2 or 3, stigma capitate; *achenes* included in a scarious perianth, lenticular or trigonous, often beaked.

Per. covered with black or red glandular

punctuations; perennial; fls in lax

racemes; frt lenticular or trigonous...2. *P. punctatum*

Per. without glandular punctuations; fls in

dense racemes; peds densely hirsute;

frt lenticular or biconvex1. *P. acuminatum*

1. *Polygonum acuminatum* H.B.K.

Water tobacco

Polygonum cuspidatum Willd.

Polygonum erectum Vellozo

Persicaria acuminata Maza

H.B.K. Nov. Gen. 2. 178: Griseb. Fl. 161: Urb. Symb. Ant.
4. 212: Fawc. & Rendl. Fl. Jam. 3 (1). 110: Pulle Fl. Sur. 1 (1). 55.

Robust perennial *herb*, often conspic. strigose or cinereous; *ocreae* 2-3 cm long, fringed with apical strigose cilia to 1.5 cm long; *lvs* punctate with inconspic. pellucid glands, strigose or cinereous, strigose on the margins, lanceolate, often falcate, 10-30 x 2-3.5 cm long and broad, apex long attenuate, base narrowed; *pets* to 1 cm long, or wanting; *infl.* terminal, racemose, densely flowered, occasionally paniculate; *peds* strigose; *ocreolae* 2-3.5 mm long, apically ciliate; *fls* fasciculate, peds 2-4 mm long, per. whitish; *tepals* 4-5, 2.5-3.5 mm long; *stams* 6, attached above the base of the per., filaments 3 mm long; *ovary* lenticular, styles 2, 2-3 mm long, connate at the base, stigmas minute, capitate; *achenes* lenticular, apical beak 0.5 mm long, the body 2-2.5 mm long x 1.5-2 mm broad, black or brown, lustrous.

Trinidad: Laventille (Crueger, 8.10.1847=Herb. Trin. 781); Caroni (Herb. Trin. 783, 26.1.1861); Oropuche lagoon (Herb. Trin. 2691, 14.2.1866); *sine loc.* (Herb. Trin. 5715, ann. 1892); Nariva swamp (Herb. Trin. 11990, 1.7.1928; 12356 and 12357, 2.3.1930; 13529, Sept. 1940; and Baker, *s.n.*, 8.10.1954); St Augustine rice lands (Herb. Trin. 14812, 23.1.1953).

Wet places, sometimes in 2-3 feet of water.

West Indies and C. America south to Argentina.

2. *Polygonum punctatum* Elliot

P. acre H.B.K., non Lam.

P. maritimum Vellozo

Persicaria punctata (Ell.) Small

Elliot Bot. S. C. and Ga. 1. 445: Griseb. Fl. 161: Urb. Symb. Ant. 4. 211: Fawc. & Rendl. Fl. Jam. 3 (1). 110: Pulle Fl. Sur. 1(1). 54.

Slender, glabrous annual or perennial *herb*, sometimes creeping and forming colonies; *ocreae* 0.5-1.5 cm long, strigose-ciliate apically; *lvs* punctate with dark glands, subglabrous, entire but minutely ciliate on the margins, apically attenuate, the base decurrent on the pet., lanceolate to narrowly ovate, 2-10 x 0.5-2 cm; *infl.* of terminal, interrupted, often drooping spikes, racemes or panicles, the peds glabrous, the flowering portion 5-15 cm long x ca 0.5 cm broad; *fls* fascicled in ciliate ocreolae 2-3 mm long, peds 3-5 mm long; *tepals* 5, whitish or greenish in colour, subequal, 3-4 mm long, strongly punctate; *stams* mostly 8, attached above the base of the per., filaments 1-5.5 mm long; *ovary* trigonous, styles 3, 1 mm long and connate in the basal half; *achenes* triquetrous, black or brown, 2.5-4 mm long, the beak inconspicuous.

Trinidad: Vivien Estate (Herb. Trin. 782, 28.12.1845); Caroni (Herb. Trin. 783, 26.1.1861); Marabella pasture (Herb. Trin. 2692, ann. 1865).

Trinidad, very rare, not seen for nearly a 100 years.

West Indies and Central America south to Argentina.

2. RUPRECHTIA C. A. Meyer

Trees or unarmed *shrubs*, dioecious; *lvs* deciduous, alternate, simple, glabrous or pilose, petioled; *ocreae* present; *infl.* racemose; *fls* sessile or pedicellate; *male fls* with 3 obtuse, rarely narrow sepals, more or less membranaceous, free or united at the base, petals obtuse or more or less narrowed, membranaceous, alternate with the sepals, stams in 2 whorls, the outer of 6 stams alternate with the petals, the inner of 3 stams opposite the petals, ovary aborted and reduced to a conical solid structure or wanting; *female fls* with 3 sepals, free or united in a short tube, petals 3, alternate, much smaller, glabrous or pilose, the androecium represented by 9 staminodes, ovary tricarpellate, unilocular, uniovulate, styles 3, stigmas 3, linear or globose; *achene* protected by the accrescent per. which forms a tri-winged structure; *seed* oblong, erect, endosperm ruminated.

1. Ruprechtia cruegeri Griseb. ex Lindau

Griseb. Fl. 710 (nomen): Lindau Notizbl. Berl. Bot. Gard. 1. 214: Urb. Symb. Ant. 1. 234: Coccuci Kurtziana 1. 254. f. 17.

Tree, young branches sulcate, cinereous pubescent to glabrate; *ocreae* not known, deciduous; *lvs* ovate to obovate, 7-14 x 4-9 cm long and broad, apex short acuminate, base narrowed or subrotund and slightly decurrent on the pet., subcoriaceous, glabrous except for the nerves; *pets* 5-7 mm long, pilose above; *female infl.* axillary, simple, 10-13 cm long, nodules several-fld, rachis pubescent, bracts broadly ovate, to 1 mm long, pubescent, ocreolae membranaceous, sepals narrowly oblong, 3-3.5 mm long, pubescent both surfaces, petals linear, 2 mm long, sparsely pubescent, staminodes minute, ovary densely pubescent; *male fls* unknown; *fruiting ped.* 2 mm long; *frt* with exterior wings spatulate-oblong, 2.5 cm long x 0.5 cm wide, obtuse at the apex, inner wings reduced, 1.5 mm long, basal tube 2 mm long, pubescent; *achene* 7 mm long x 2 mm diam.

Trinidad: Caroni (Crueger 278=Herb. Trin. 784, 15.9.1861 - type collection); Les Efforts Estate (Herb. Trin. 2697, ann. 1864-coll. Finlay, presumably the collection cited by Lindau as Cruegar 2697); Guapo (Dannouse s.n., 29.7.1914); Pointe-a-Pierre (Herb. Trin. 7839, 26.3.1915 and 13087, 15.12.1934); Arima (Herb. Trin.

8910, ann. 1900—coll. Dannouse, locality doubtful); Government House grounds (Broadway 2416, 2417, 23.9.1908).

Mangrove swamps (improbably also in moist places inland), Trinidad, endemic.

Note: Although Grisebach reduced this species to synonymy under *R. jagifolia*, Coccuci recognizes *R. cruegeri* as a distinct species, suggesting its affinities to *R. costata* and *R. coriacea*.

DOUBTFUL SPECIES

A fragmentary and sterile collection (Herb. Trin. 777 from Chacachacare, 20.10.1861) may represent *R. coriacea* (Karsten) Blake, known from Curacao and Venezuela but not reported from Trinidad. The thin leaves with acuminate to attenuate apices suggest that the collection was made from vigorously growing shoots.

3. COCCOLOBA *P. Brown ex Linn.*

Shrubs or *trees*, often with scrambling branches, or *lianes*, occasionally with bilaterally developed secondary xylem in the stem; *branchlets* terete or striate, sometimes geniculate, occasionally with short-shoot lateral stem development associated with flowering; *nodes* often enlarged; *ocreae* characteristically developed, membranaceous or coriaceous in full or the basal portion coriaceous and persistent, the upper membranaceous and deciduous, glabrous, puberulent, or pilose; *lvs* alternate, deciduous or persistent, membranaceous, chartaceous, coriaceous or sometimes nearly fleshy, the margin entire, flat, revolute or undulate, the midrib and primary veins usu. impressed above, prominent below and often characteristically sharply keeled, the primary veins decurrent along the midrib or abruptly divergent, straight or arcuate, bifurcate or anastomosing near the margin, secondary venation obscure to minutely reticulate, surface minutely pitted, glandular or pubescent; *pets* arising from the base of the ocrea or above, terete to stout, generally broadly and shallowly canaliculate above, pilose to glabrous; *infl.* terminal or on lateral shoots, racemose, subspicate or paniculate, solitary or clustered, rachis glabrous, puberulent or rarely pilose; *fls* functionally or completely unisexual, the staminate fls usually clustered, the clusters often widely spaced, the pistillate fls usually borne singly at the nodules, flr clusters subtended by a bract, fls at first invested and then later subtended by an ocreola, *peds* shorter than or exceeding the

ocreolae; *per.* with a hypanthium and (4) 5 (6) oblong, obtuse lobes, imbricate in the bud, the outer 3 usu. larger than the inner; *stams* 7 or 8, borne on the hypanthium, the fls slightly united at the base, sterile stams rarely reduced to staminodes; *fertile pistil* strongly trigonous, styles 3, stigmatic surfaces commonly flattened (sterile pistil of staminate flowers comparable but smaller and without single locule), ovule 1, usu. borne basally; *per.* expanded in *frt* with either the hypanthium surrounding the achene and the *per.* lobes imbricate and appressed or coronate at the apex of the achene, or the hypanthium not expanded in *frt* with the imbricate fleshy *per.* lobes appressed against the achene; *achene* often trigonous, outer layer usu. hard and shiny, the inner layer papery; *seed* with a ruminated endosperm, the whole commonly 3-lobed with numerous minor involutions; *embryo* centrally located; *cotyledons* orbicular, flat, rarely folded; *radicle* small, terete.

Notes: A large genus of perhaps 250 spp., many of which are incompletely known. The extreme morphological variation necessitates extensive field study more of which is required for the Trinidad spp. Characterization of individual sp. is made difficult because of the variation in lf size and shape found on single plants. With only one exception (a Hispaniolan sp.) the lvs of the adventitious or fast-growing shoots may be several times as large and of different shape from those of mature branches or shoots of slower growth. Lvs on lateral branches, which may be short shoots of restricted growth, are commonly smaller than those of normal growth. Plants may flower once or several times on adventitious shoots with abnormally large lvs. In most spp. studied the plants are functionally to completely dioecious. Staminate fls are usu. borne in clusters on the infl. rachis, while pistillate fls are normally borne singly. In *Coccoloba uvifera*, at least, staminate fls may produce hollow sterile "frts."

The genus was monographed by Lindau who published two pertinent studies (i) in Engler's Bot. Jahrb. 13. 106-229. (1890), and (ii) in Urban's Symb. Ant. 1. 215-233. (1899). For more recent treatments, see Howard, J. Arnold Arbor. 30, 37-42, particularly 40. 68-93. (1959) for the spp. from the Lesser Antilles, Trinidad and Tobago.

Infl. paniculate, stems thick, striate-angled,
hollow; lvs bullate between the conspic.

reticulate veins.....6. *C. latifolia*

Infl. racemose, solitary or fascicled

Infl. generally fasciculate; ocreae large,

flaring, conspic. striate.....5. *C. fallax*

Infl. solitary, rarely with smaller one at the base

Lianes or woody plants with scrambling branches

Branches scandent or entire plant with flattened stems through bilateral cambial activity, fls and frt on peds longer than ocreolae.....4. *C. dussii*

Branches uniformly thickened; peds scarcely if at all exceeding ocreolae in fl.; frt on conspic. peds

Lvs of normal shoots usu. oblong-elliptic, coriaceous, shining when dry, flat, coarsely and conspic. reticulate veined, the apex rounded to emarginate; frt large, 1.8-2 cm long x 1-1.2 cm thick; frting hypanthium rugose when dry, thick and brittle.....1. *C. ascendens*

Lvs of normal shoots not oblong-elliptic, thinner in texture, usu. acute or acuminate at the apex; frt smaller, hypanthium thin and vascular

Lvs ovate, chartaceous, flat, apex acuminate, the ultimate venation finely reticulate; stems hollow; infl. slender9. *C. striata*

Lvs ovate to obovate-oblong on normal branches, the blades usu. bullate between the veins, the apex acute; branches solid; infl. stout ...7. *C. marginata*

Trees or shrubs, branches not noticeably
scandent

Peds conspic. longer than ocreolae in fl.
and frt; lvs fleshy, glabrate, not
rugose; frt obpyriform 1.2-2 cm

long10. *C. uvifera*

Peds shorter than or scarcely exceeding
ocreolae in fl. and frt

Lvs deciduous; ocrea membranaceous,
translucent and usu. deciduous for
all its length

Lvs of normal shoots usu. broadest
above the middle, narrowed
toward the base, the midrib not
sharply keeled below, blades
turning black on drying.....8. *C. nigrescens*

Lvs of normal shoots usu. broadest
below the middle, round to cor-
date at the base, the midrib
sharply keeled, the blades at
most darkening slightly on
drying3. *C. cruegeri*

Lvs. not noticeably deciduous; ocrea not
membranaceous, at least the base
coriaceous and persistent

Achene surrounded by per. lobes, the
ocreolar sheath commonly
elongating with the peds, the
bracts usu. black.....11. *C. venosa*

Achene surrounded by the hypan-
thium, the per. lobes appressed
and imbricate or coronate on the
achene, the bracts not conspic.
dark in colour2. *C. coronata*

1. *Coccoloba ascendens* Duss ex Lindau

Cuchape

Coccolobis quadrifida Britton*Coccoloba urbaniana* Lindau (in part)

Duss ex Lindau Engl. Bot. Jahrb. 13. 156: Duss Ann. Inst. Col. Marseille 3. 168. in part: Britton Bull. Torrey Bot. Club 53. 467: Lindau Engl. Bot. Jahrb. 13. 155. in part.

Much branched climbing shrub or liane; branches to 16 m long, glabrous, occasionally hollow; ocreae membranaceous, deciduous, 17-20 mm long, acuminate, mostly glabrous; *pets* inserted below the ocrea, 1-2.5 cm long, glabrous; *lf blades* elliptic, obovate, oblong or rarely ovate, 11 x 6 to 17 x 4.5 cm long and broad, coriaceous, glabrous, apex rounded, acute or emarginate, base rounded to cordate, primary veins 5-7 pairs; *juvenile lvs* or those of current year's lateral branches elliptic-lanceolate, 14 x 7 to 20 x 8.5 cm long and broad, apex and base acute; *lvs of advent. shoots* on *pets* 3-5 cm long, blades ovate to elliptic-ovate, 30 x 20 to 45 x 30 cm long and broad; *infl.* axillary or terminal, 13-17 cm long, rachis puberulent; *fl. peds* to 2 mm long, not exceeding the ocreolae; *frt peds* 3-4 mm long; *frt* 1.8-2.4 cm diameter, per. lobes imbricate, the hypanthium thick, slightly woody, with 11 bundles; *achene* chestnut-brown, smooth and shiny.

Trinidad: Arima valley nr Simla (A. C. Smith 10103, 10.3.1956); Aripo savannah at Waller Field (Howard 10316, 10341, 10452, 10507, 9.2.1950); Aripo rd near 3/4 mile-post (Broadway 5592); Blanchisseuse rd north of Arima (Broadway 7467; Howard 10371, 10.2.1950); Brazil (Britton, Britton and Freeman 2139, 6.3.1921); Caparo (Broadway 2760); Cleaver wood west of Arima (Simmonds 189, 25.10.1947=Herb. Trin. 13799); Cumaca rd (Simmonds 322, 27.12.1948=Herb. Trin. 14235); between La Brea and Irois (Crueger s.n.,=Herb. Trin. 2694, 6.6.1868; 2696, 28.2.1866=Herb. Trin. 2696; Finlay 2695, 6.6.1868=Herb. Trin. 2695); Long Stretch, 22-23 mile-post (Broadway 6942, 18.5.1925); Maraval (Herb. Trin. 5853); El Tucuche (Baker, Herb. Trin. 14329, 12.5.1949; 14816, 25.1.1953; Williams, Herb. Trin. 11012, 28.4.1925, type of *C. quadrifida*); Southern Guyap rd (Broadway 6142, 28.4.1926); Toco rd nr Sangre Grande (Howard 10367, 14.2.1950).

Notes: The type has been designated as Hahn 1005 from Martinique. The sp. has been collected from Guadeloupe, Dominica, Martinique, St. Lucia and Grenada. It is reported from British Guiana and Brazil, but these records are questionable.

Britton's *Coccoloba quadrifida* is a restricted or non-scrambling growth form of this sp. In the original description *Coccoloba urbaniana* was based on material from Trinidad and Puerto Rico, although the description fits only the specimens from Puerto Rico. Lindau, the original author, subsequently restricts the sp. to Puerto Rico, but Britton described the Puerto Rican collections as a new sp. *Coccoloba urbaniana* Lindau as to name and the Trinidad specimens cited (Crueger 2694 and 2696) is to be referred to the synonymy of *C. ascendens*. The description and Puerto Rican specimens cited have been referred to *Coccoloba swartzii forma urbaniana* (Lindau) Howard.

2. *Coccoloba coronata* Jacquin

Coccoloba novogranatensis Lindau

Coccoloba caribaea Urban

Jacquin Enum. Pl. Carib. 19: Select Stirp. Am. Hist. 114. t. 77: Dugand Caldasia 4. 427: Howard J. Arnold Arbor. 41. 40-41: Lindau Bot. Jahrb. 13. 192: Urban Symb. Ant. 5. 337.

Shrub of 2 m to *tree* of 27 m; *trunk* commonly muscular, the bark red; *branchlets* terete, glabrous, the nodes slightly swollen; *ocreae* cylindrical, appressed, the upper portion membranaceous and deciduous, the lower coriaceous and persistent; *pets* arising above the base of the ocreae, 8-11 mm long, puberulent becoming glabrate; *lf blades* ovate to ovate-elliptic 6 x 4 to 10.5 x 5.5 cm long and broad, thin coriaceous, glabrous above, glabrate below except for long hairs along the midrib, the apex attenuate, the base narrowly cordate, margin entire, primary veins 5 or 6 pairs; *lvs of adventitious shoots* similar or obovate and narrowed at the base or ovate-lanceolate or lanceolate-elliptic, 11 x 7 to 18 x 5 cm long and broad, the basal lobes often overlapping; *infl.* terminal on short lateral shoots, 3-9 cm long, rachis glabrous, firing ocreolae 3 mm long, membranaceous and persistent, bilobed, *peds* 2.5-4 mm long; *frt* generally spherical with coronate per. lobes, 1 cm long x 5-9 mm diam., bright red when fresh; *achene* brown, shining.

Trinidad: Southern Watershed Reserve (Webster, Ellis and Miller 9895, 26.8.1959); Mayaro (Herb. Trin. 5748, 19.9.1893); Caledonia Island (Hart *s.n.*, ann. 1890=Herb. Trin. 5834); Carrera Island (Broadway *s.n.*).

Tobago: Bacolet (Purse-glove 6214, 7.8.1958=Herb. Trin. 17278); The Lodge (Broadway 4019; Howard 10453, 10454, 10458, 9-23.2.1950).

St Vincent, Grenadines, Grenada, Margarita, Venezuela, Colombia (type locality), Ecuador, Peru and Panama.

Note: *C. coronata* shows considerable morphological variation of an ecological nature. The size, colour, texture and attitude of the lvs on the shoots seem to depend on whether the populations sampled were growing in full sunlight, or in the shade, or in an area subject to salt spray, or in protected and moist locations.

3. *Coccoloba cruegeri* Lindau

Grape

Coccoloba ernstii Johnston

Lindau Engl. Bot. Jahrb. 13. 209: Johnston Proc. Amer. Acad. 40. 685.

Tree to 12 m tall; *young branches* glabrous, ash-coloured, striate, solid; *ocreae* membranaceous, translucent when dry, deciduous; *lvs* deciduous; *pets* 2-3 cm long, glabrous, inserted at the base of the ocrea; *lf blade* ovate-elliptic to suborbicular, 14 x 12 to 22 x 16 cm long and broad, coriaceous, glabrous, the apex acute to rounded, the base rounded, primary veins 6-8 pairs, sharply keeled and prominent below, slightly decurrent on the midrib, straight and becoming arcuate and anastomosing near the margin; *lvs of advent. shoots* with *pets* to 7 cm, blade mostly elliptic to 54 x 32 cm long and broad; *infl.* racemose, laxly flowered, to 7 cm long; *fl. ped.* to 0.75 mm long.

Trinidad: Aripo savannah (Howard 10505, 9-23.2.1950); Monos (Howard 10415, 9-23.2.1950); Toco rd between Arima and Sangre Grande (Howard 10365, 9-23.2.1950) *sine loc.* (Crueger 113 =Herb. Trin. 778, 16.5.1861—type coll.).

Venezuela and British Guiana.

Note: The type of *Coccoloba ernstii*, Johnston 250, from Margarita Island has been referred to this species which is known only from staminate flowering material. Lindau's description of immature fruit is to be questioned. Additional material and information regarding this species are much desired.

4. *Coccoloba dussii* Lindau*Coccoloba scandens* Benth. (nomen)*Coccoloba excelsa* Smith, not Benth.

Lindau Notizblatt Berlin 1. 213: Symb. Ant. 1. 226: Duss Ann. Inst. Col. Marseille 3. 167: Benth. Lond. Jour. Bot. 4. 625: Smith Kew Bull. 1893. 272.

Woody *shrub* with scrambling branches or a *vine*; *young stems* terete, short pilose becoming glabrate; *older stems* flattened through bilateral cambial activity; *ocreae* membranaceous, deciduous; *pets* inserted below the ocrea, 2.5–4 cm long, minutely pilose; *lf blade* ovate to oblong, 6.5 x 4.5 to 17 x 10.5 cm long and broad, thin coriaceous, glabrous, apex acute to short-acuminate, base rounded to slightly cordate, primary veins 7–8 pairs, arcuate, anastomosing; *lvs on advent. shoots* with *pets* 3.5 cm long, blade broadly ovate to elliptic-ovate, to 30 x 18 cm long and broad, apex rounded or acute, base broadly cordate; *infl.* terminal, 9–15 cm long, rachis minutely pilose or puberulent, fl. *peds* to 3 mm long, *frt peds* 4–6 mm long, usu. slightly reflexed, slender; *mature frt* short stipitate, spherical, *frting per.* adherent to the achene; *achene* dull brown, rugose.

Trinidad: Between Arima and Sangre Grande (Howard 10362, 9-23.2.1950); Blanchisseuse rd (Broadway 6456, 31.12.1926); Morne Bleu (Britton, Freeman and Bailey 2271, 13.3.1921).

Tobago: Easterfield (Broadway 4371); The Widow (Broadway 4653).

Guadeloupe (Duss 2180, lectotype), St Lucia, St Vincent and Grenada.

Note: An uninhibited liane often covering other trees. The sp. characteristically develops flattened stems 5–6 times as wide as thick. It is imperfectly known from staminate fls and frts only.

5. *Coccoloba fallax* Lindau

Black Grape

Coccoloba crescentifolia Griseb. not Cham.

Lindau Engl. Bot. Jahrb. 13. 172: Griseb. Fl. 163.

Tree to 10 m tall; *branches* strongly striate; *ocreae* coriaceous, flaring, strongly bilobed, striate, glabrous; *pets* arising from the base of the ocreae, 2.5–4.5 cm long, stout, glabrous; *lf blade*

oblong-ovate to oblong-obovate, 14 x 5 to 36 x 13 cm long and broad, thick-coriaceous, glabrous, apex acute to acuminate, base rounded or narrowed, the ultimate base slightly cordate, midrib conspic. above, strongly keeled below, veins 7-10 pairs; *infl.* lateral, fascicled, racemose, laxly flowered, basal ocreae conspic., coriaceous, commonly strongly keeled or striate, glabrous or puberulent, rachises 7-23 cm long, puberulent, peds of staminate fls 2-3 mm long, peds of frts 2-3 mm long.

Trinidad: *sine loc.* (Crueger 114, holotype, Aug. 1861=Herb. Trin. 779); Black River (Freeman *s.n.*, 10.4.1913=Herb. Trin. 8102); Cat's Hill Reserve (Swabey *s.n.*=Herb. Trin. 12536 and 12543, 22.4.1931); S.W. Reserve (Swabey *s.n.*=Herb. Trin. 12292, 4.11.1929); Windbelt Reserve (Brooks *s.n.*=Herb. Trin. 12502, 23.4.1931); Chacachacare (Britton, Freeman and Watts 2694=Herb. Trin. 10479, 3.4.1921).

Known also from Venezuela.

Note: The material representing this sp. at present is inadequate. Pistillate fls are not known, and all the frts seen are immature and have been crushed in pressing. A full diagnosis is much desired.

6. *Coccoloba latifolia* Lamarck

Grape, eucchape, stave-wood, big leaf

Lamarck Encycl. 6. 61. t. 316. f. 4: Lindau Engl. Bot. Jahrb. 13. 133: Griseb. Fl. 162.

Small tree, often of several trunks, to 15 m tall; *branches* thick, angular and vertically ridged when dry, hollow but septate at the nodes, glabrous; *ocreae* large, conspic., coriaceous, tubular or subcampanulate 3-7 cm long, glabrous, acute to strongly bilobed; *pets* arising above the base of the ocreae, 2-3 cm long, glabrous, puberulent or with long pilose hairs; *lf blade* orbicular to obovate, 13 x 10 to 28 x 28 cm long and broad, coriaceous, glabrous or with scattered pilose pubescence, apex rounded or emarginate to short acuminate, base rounded to deeply cordate, margin flat or strongly recurved, often undulate, primary veins 9-12 pairs, the surface bullate between the veins; *lvs of advent. shoots* similar, to 48 x 50 cm long and broad; *infl.* terminal, panicles to 30 cm long and broad with solitary or 2-3 fascicled undivided pseudo-racemose branches, rachis puberulent, peds 1-2 mm long; *frt* ovoid, 7-10

mm long x 5-6 mm diam., base rounded to slightly attenuate, apex rounded with imbricate per. lobes, fringing per. black; *achene* dark brown, shining, smooth.

Trinidad: San Fernando, La Retraite (Crueger *s.n.* = Herb. Trin. 2690, 18.7.1865); Tamana (Marshall *s.n.* = Herb. Trin. 12313, 3.12.1929); St Joseph (Dannouse *s.n.* = Herb. Trin. *s.n.*, 3.4.1904); Aripo savannah (Britton, Broadway and Hazen 316, 5.4.1920; Howard 10355, 9-23.2.1950); Talparo (Simmonds *s.n.*, = Herb. Trin. 14652, 22.10.1950); Arima (Eggers 1377); Piarco savannah (Britton, Britton and Hazen 113); Lady Chancellor rd, St Ann's (Broadway *s.n.* = Herb. Trin. 8989, March 1920); Caroni (Eggers 912); Monos (Howard 10416, 9-23.2.1950).

Brazil (Ceara, Maranhao), British Guiana, French Guiana, Surinam and Venezuela.

Note: A common and easily recognised sp. of savannah areas which is poorly represented in herbaria. The wood tends to be soft, and the branches are fragile. Colonies of stinging and biting ants occur in the hollow pith and in the ocreal sheath.

7. *Coccoloba marginata* Bentham

Black Grape

Coccoloba guianensis Meisner

Coccoloba nitida Howard, not H.B.K.

Coccoloba trinitatis Lindau

Bentham Lond. Jour. Bot. Hooker 4. 626; Meisner Linnaea 21. 264; Howard J. Arnold Arbor. 40. 83-85; 41. 40-46; 41. 250-251; Lindau Bot. Jahrb. 13. 182.

Plants of variable habit, most commonly *tree-like* at the base with scrambling, *liane-like branches*, internodes extremely long and the lvs much reduced at the ends of the scrambling branches, or *shrub-like*; *branches* terete, smooth or striate, minutely puberulent; *ocreae* obliquely truncate 1-1.5 cm long, ferruginous puberulent becoming glabrate; *pets* arising from the base of the *ocreae*, usu. 1.5-2 cm long, minutely puberulent; *lvs of flring stems* ovate, elliptic, oval-oblong or obovate-oblong, 10 x 5 to 20 x 8 cm long and broad, coriaceous, shining or dull, usu. drying darker above, glabrous, apex acute, rarely acuminate or almost rounded, base rounded to cordate, margin flat or slightly recurved, primary veins 8-10 pairs; *lvs of scrambling shoots* either much smaller or occasionally much larger, i.e. 24 x 10 cm; *lvs of advent. shoots*

generally oblong or elliptic-oblong, 17 x 10 to 21 x 12 cm long and broad; *infl.* generally terminal but often lateral, a solitary raceme 7-36 cm long, occasionally fascicled, rachis puberulent, pedicels scarcely exceeding the ocreolae, in fl. 1.5-2 mm long, in frt 2-2.5 mm long; *frt* ovoid, usu. 12 mm long, 9 mm diam., per. lobes slightly coronate; *achene* dark brown, smooth.

Trinidad: Arima (Howard 10359, 10368 and 10506, 9-23.2.1950); Aripo savannah (Creuger *s.n.*—type of *C. trinitatis*=Herb. Trin. 2693, 19.5.1868; Howard 10507, 9-23.2.1950; Britton, Broadway and Hazen 272, 5.3.1920; Baker *s.n.*=Herb. Trin. 15122, 28.3.1954; Broadway *s.n.*=Herb. Trin. 5315, 26.3.1893; Broadway *s.n.*=Herb. Trin. 10480, 21.3.1922; Richardson 600, 9.4.1959; 693, 19.8.1959; 817, 9.3.1960; Blanchisseuse rd (Broadway 6456); Caroni (Crueger *s.n.*=Herb. Trin. 671, March 1858; Simmonds *s.n.*=Herb. Trin. 15378, 26.2.1956); Mausica savannah (Webster 9885, 25.8.1959); Santa Cruz (Dannouse *s.n.*=Herb. Trin. *s.n.*, June 1900); Valencia (Broadway 5584, 13.3.1925; 6652, 3.6.1927; 8988, 25.3.1920; Britton, Britton and Hazen 1023, 25.3.1920; Britton and Britton 2103, 4.3.1921); *sine loc.* (Fendler 1010).

Brazil, British Guiana (Schomburgk 118—type), French Guiana, Surinam and Venezuela.

Note: The variation in habit found on a single plant must be seen in the field to be fully appreciated. Small samples from different parts of one plant often appear to be very different.

8. *Coccoloba nigrescens* Lindau

Lindau Engl. Bot. Jahrb. 13. 192: Howard J. Arnold Arbor. 40. 82-83.

Tree to 10 m tall, youngest stems pubescent with long strigose hairs becoming glabrate; *ocreae* membranaceous to extremely thin and subtranslucent when fresh, to 3.5 cm long, divided most of its length, pubescent, deciduous; *pets* attached at the base of the *ocreae*, 5-7 mm long, densely pubescent becoming glabrate; *lf blade* obovate-oblong to ovate-oblong 12 x 7 to 16 x 9 cm long and broad, thin coriaceous when mature, glabrous, apex acute to rounded or rarely short acuminate, base cuneate to rounded, primary veins 6-9 pairs, mostly straight becoming arcuate and

anastomosing near the margin; *infl.* terminal or lateral to 10 cm long, the rachis strigose pubescent becoming glabrate; *peds* shorter than the ocreolae; pistillate fls and frt unknown.

Trinidad: Chacachacare (Crueger 116—type collection=Herb. Trin. 780, 5.5.1861; Howard 10440, 9-23.2.1950); Monos (Crueger s.n.—Herb. Trin. 3044, 14.6.1869; Britton and Hazen 1742, 14.4.1920; Broadway s.n.=Herb. Trin. 7457, 27.11.1915; Howard 10442, 9-23.2.1950).

Note: This endemic sp. is one of the few which loses all of its lvs in certain seasons. Lindau described the sp. from a specimen collected in May with immature lvs which had turned black on drying. Britton and Hazen obtained comparable material in April. The collections by Broadway and by Howard made in November and February respectively show mature leaves which still turn black on drying. The fls are imperfectly known and the frts are unknown.

9. *Coccoloba striata* Benth

Coccoloba guianensis Griseb. not Meisner

Coccoloba grisebachiana Lindau

Hooker Lond. Journ. Bot. 4. 626: Griseb. Fl. 163: Lindau Bot. Jahrb. 13. 195.

Tree with scrambling, hollow, glabrous, striate branches; *ocreae* membranaceous above, coriaceous and persistent below; *pets* arising above the base of the ocrea, 1.5-2 cm long, glabrous; *lf blade* ovate to ovate-elliptic, 9 x 5.5 to 14 x 8 cm long and broad, chartaceous, turning black on drying, apex shortly and obtusely acuminate, base rounded to cordate or slightly cordate-auriculate, primary veins 6-8 pairs, arcuate; *lvs of scrambling shoots* broadly ovate, to 23 x 18 cm long and broad; *infl.* to 27 cm long, rachis thin and glabrous or slightly puberulent, firing nodules widely separated, firing *peds* equalling the ocreolae to 1 mm long, firing *peds* 2-2.5 mm long; *mature frt* red, ovoid, 9 mm long x 6 mm diam., apex acuminate, lobes inconspicuous, slightly stalked at the base, obscurely 3-angled.

Trinidad: El Tucuche (Crueger s.n.=Herb. Trin. 776, 27.9.1846—type coll. of *C. grisebachiana*; Baker s.n.=Herb. Trin. 14804, 25.1.1953; Freeman s.n.=Herb. Trin. 9045, 4.4.1920; Britton, Hazen and Mendelson 1262, 3.4.1920).

British Guiana (type) and Venezuela. Known from Trinidad through pistillate and fruiting specimens.

10. *Coccoloba uvifera* (L.) Linn.

Seaside Grape

Polygonum uvifera L.

Linnaeus Sp. Pl. 365: Linnaeus Syst. Nat. ed. 10. 1007

Tree of strand areas, 2-17 m tall; *branches* terete, stout, papillose to pilose; *ocreae* rigid, coriaceous at the base; *pets* arising from the base of the ocreae, stout, 7-10 mm long, papillose to pilose; *lvs on normal shoots* orbicular to reniform, 6 x 8 to 13 x 18 cm long and broad, thick and fleshy when fresh, coriaceous when dry, glabrous or minutely punctate on both surfaces, apex rounded, truncate or emarginate, base rounded to broadly cordate, one lobe often extending around the pet., primary veins 3-5 pairs often brightly coloured, usu. straight, bifurcate and weakly anastomosing near the margin, commonly barbate in the axils of basal veins; *lvs of advent. shoots* usu. variable in size and shape, commonly obovate; *infl.* racemose, stout, to 30 cm long, firing peds 1-2 mm long, frting peds 3-4 mm long; *frt* obpyriform, 1.2-2 cm long x 8-10 mm diam., narrowed at the base, rounded-truncate at the apex, the per. lobes appressed against the apex of the achene, per. rose-purple when mature; *achene* black.

Trinidad: Galera Point (Broadway s.n., 11.3.1934); Mayaro (Marshall, Herb. Trin. 10962, 19.10.1924); Crown lands, Palo Seco (Russell, Herb. Trin. 13011, 4.7.1934); Monos (Williams s.n.=Herb. Trin. s.n., Oct. 1917).

Tobago: Buccoo Bay (Elmore V-4); Farm Rd (Williams s.n.=Herb. Trin. 11143, 6.6.1925); Lower Scarborough (Broadway 3617); Mt St George (Howard 10480, 9-23.2.1950); Speyside (Tuley s.n.=Herb. Trin. 15244, 2.7.1954; Purseglove 6361=Herb. Trin. 17422, 13.8.1958).

A beach plant of Florida, the Bahamas, and throughout the Greater and Lesser Antilles; known from the Atlantic coast of Mexico and C. America and from Colombia, Curacao, Surinam and Venezuela. Since it is well known, collectors may have avoided preparing specimens, and the herbarium vouchers may not give a true picture of its distribution in tropical America.

11. *Coccoloba venosa* Linn.*Coccoloba punctata* L.*Coccoloba nivea* Jacq.

Linnaeus Syst. Nat. ed. 10. 1007: Fawc. & Rendl. Jour. Bot. 51. 123: Linnaeus Sp. Pl. ed. 2. 523: Jacquin Enum. Pl. 19: Hist. Stirp. Amer. 115. pl. 78.

Tree to 15 m tall; *branches* terete, glabrous; *ocreae* membranaceous, deeply cleft, to 2 cm long, glabrous or with flattened glands; *pets* arising at the base of the ocrea, on normal shoots 5-10 mm long, glabrous; *lf blade* oblong-lanceolate to elliptic, 8 x 4 to 27 x 10.5 cm long and broad, membranaceous, glabrous except for clusters of hairs in the axils of the veins, sparsely glandular below, apex short acuminate, base narrowed and slightly cordate or cuneate or obtuse at the pet., primary veins 8-13 pairs, straight or arcuate, bifurcate and anastomosing at the margin; *lvs of advent. shoots* similar but stems with much longer internodes; *infl.* terminal or terminal on short lateral branches, rachis puberulent, 14 cm long, *peds* 1-2.5 mm long only slightly exceeding the ocreae; *frit* 3-4 mm long and broad, the hypanthium scarcely evident, white or pink, fleshy, the per. lobes surrounding the shiny black *achene*.

Trinidad: Cat's Hill Reserve (Swabey *s.n.*=Herb. Trin. 12535, 22.4.1931); Galera Point (Broadway 2788=Herb. Trin. *s.n.*, 7.9.1908); Guanapo (Dannouse *s.n.*=Herb. Trin. *s.n.*, 2.3.1904); Los Iros beach (Webster, Ellis and Miller 9903, 26.8.59); Quinam Reserve (Williams *s.n.*=Herb. Trin. 12015, 27.8.1928); Southwest Reserve (Marshall *s.n.*=Herb. Trin. 12404, 16.7.1930; Swabey *s.n.*=Herb. Trin. 12271, 16.10.1929); Southern Watershed Reserve (Russell *s.n.*=Herb. Trin. 12261, 2.10.1929); Toco (Freeman and Williams *s.n.*=Herb. Trin. 11768, 21.8.1925).

Tobago: Castara (Sandwith 1831, 18.8.1937); Mason Hall (Broadway 4160=Herb. Trin. *s.n.*, 25.8.1910; Howard 10470, 9-23.2.1950); point opposite Melville Island (Freeman and Williams *s.n.*=Herb. Trin. 11422, 25.10.1925); Little Tobago (Swabey *s.n.*=Herb. Trin. 12959, 7.9.1933; Purseglove 6355=Herb. Trin. 17416, 13.8.1958).

A widely distributed sp. known from Hispaniola and Puerto Rico, the Lesser Antilles, C. America including Mexico, Colombia and Venezuela.