

Department of Agriculture
TRINIDAD AND TOBAGO.

VOL. 1.]

[PART 5.

FLORA
OF
TRINIDAD AND TOBAGO.

ROSALES (CONCL.)
MYRTALES (PARS.)

BY

R. O. WILLIAMS.

Price: - - 1s.



TRINIDAD :
PRINTED BY THE GOVERNMENT PRINTER,
GOVERNMENT PRINTING OFFICE,
POINT-OF-SPAIN.

1932.

*The Flora of Trinidad and Tobago is being issued in parts.
Obtainable from the Director of Agriculture, Port-of-Spain, Trinidad.*

Previously issued :—

<i>Vol. I Part 1. Ranales pp. 1-22.</i>	<i>Price 1s.</i>
<i>Vol. I Part 2. Parietales to Geraniales pp. 23-164.</i>	<i>Price 6s.</i>
<i>Vol. I Part 3 Olacales to Sapindales pp. 165-196</i>	<i>Price 1s. 3d.</i>
<i>Vol. I Part 4 Rosales (pars) pp. 197-308.</i>	<i>Price 4s. 6d.</i>
<i>Vol. II Part 1. Rubiales pp. 1-48</i>	<i>Price 2s.</i>

FAMILY 3. CRASSULACEAE.

Herbs, usually fleshy. *Stip.* none. *Fls.* regular, hermaphrodite, usually cymose. *Cal.* free, persistent, 4-lobed in the local species, valvate. *Pel.* 4, free or more or less united, the lobes valvate. *Stam.* as many, or twice as many as, the petals; *fil.* free; *anths.* 2-celled, longitudinally dehiscent. *Carp.* as many as the petals, free or united at the base, with a scale at the base of each; *ovules* numerous, attached to the ventral suture. *Follicles* 1-celled, dehiscent along the ventral suture. *Seeds* minute, dotted.

1. BRYOPHYLLUM Salisb.

Erect, fleshy, perennial *herbs*. *Lvs.* opposite, simple or imparipinnate with 1-5, elliptical, crenate leaflets. *Fls.* large, nodding, in paniculate, many-flowered cymes. *Cal.* bell-shaped, inflated, 4-toothed. *Cor.* urn-shaped or somewhat bell-shaped, with 4 short, spreading lobes. *Stam.* 8, in two series, joined to about the middle of the corolla-tube; *fil.* threadlike; *anths.* mostly exserted; *carp.* 4, distinct or partially united; *seeds* numerous.

1. *B. pinnatum* (Lam.) Kurz. Leaf of Life.

Cotyledon pinnata Lam.

B. calycinum Salisb.

Griseb. Fl. 303: Fawc. and Rendl. Fl. Jam. 3. 249: Britt. and Wils. Sc. Surv. Porto Rico, 5. 338.

Fleshy *herb* up to 1 m. high, glabrous; *lvs.* the lower simple, the upper pinnate, petioled; *lfts.* up to 14 cm. long and 7.5 cm. broad, the terminal ones much larger than the lateral ones; *panicle* 1-4 dm. long; *cal.* bladder-like, oblong-bell-shaped, 3-3.5 cm. long, shortly lobed, glabrous; *cor.* reddish, up to twice as long as the calyx, the tube constricted below the middle, the lobes triangular, acute; *fil.* free above the constriction of the corolla tube; *carp.* 12-15 mm. long; *styles* 2.5-3 cm. long.

The plant is notable for its ability to produce young plants on the margin of the leaves under extremely dry conditions.

Roadsides, naturalized, Trinidad and Tobago.
Cosmopolitan tropical.

FAMILY 4. **Rosaceae.**

Herbs, shrubs or trees. Lvs. various, simple or compound, alternate or rarely opposite, sometimes glandular-toothed. *Stip.* 2, free or united to the petiole, rarely none. *Infl.* various. *Fls.* mostly regular and perfect. *Cal.* free or joined to the ovary; lobes usually 5, imbricate. *Pet.* equal in number to the sepals, imbricate. *Stam.* numerous, rarely definite, or reduced to 1 or 2, free or sometimes united at the base; *anths.* small, 2-celled, longitudinally dehiscent. *Carp.* 1 or more, free or variously united, often more or less united to the calyx-tube; *styles* as many as the carpels, free or rarely united; *ovules* usually 2 in each carpel. *Fruit* various, superior or inferior.

This family is chiefly represented in Trinidad gardens by *Rosa* spp. and vars. Strawberries (*Fragaria*) are sometimes grown.

Carp. 1.

Ovules ascending.

Ovary inserted into the base of the calyx-tube.

Stam. included.

Stam. 15-numerous..... 1. *Chrysobalanus*.

Stam. 3-10 2. *Licania*.

Stam. exserted, 8-10-numerous..... 3. *Moquilea*.

Ovary unilaterally inserted on to the throat of the calyx.

Ovary 2-celled 4. *Parinari*.

Ovary 1-celled..... 5. *Hirtella*.

Ovules pendulous 6. *Prunus*.

Carp. numerous 7. *Rubus*.

1. **CHRYSOBALANUS L.**

Shrubs or small *trees*. *Lvs.* simple, alternate, leathery, glabrous, entire. *Stip.* small, deciduous. *Cymes* axillary and terminal, pubescent. *Fls.* small, white or greenish. *Cal.* bell-shaped or top-shaped; lobes 5. *Pet.* 5. *Stam.* 15 to numerous in a complete circle; *fil.* thread-like. *Carp.* solitary; *ovary* sessile, 1-celled; *style* basal or lateral; *ovules* 2, ascending. *Drupe* pulpy with a hard 5-6, ridged seed.

Drupe globose or ellipsoidal, 2-4 cm. long, pinkish or purplish when ripe 1. *C. icaco*.

Drupe oblong or narrowly oblong-obovoid up to 18 mm. long, purplish-black when ripe 2. *C. pellocarpus*.

1. *C. icaco* L. Coco Plum. Fat Pork. Icaque. Zicaque.

Griseb. Fl. 229: Fawc. & Rendl. Fl. Jam. 3. 253-254 in part :
Britt. & Wils. Sc. Surv. Porto Rico, 5. 345.

Shrub up to 10 m., *twigs* glabrous; *lvs.* elliptical, roundish or obovate, 3-11 cm. long, 2.5-7 cm. broad, rounded, notched or obtuse at the apex, rounded or somewhat narrowed at the base, glabrous; *petioles* up to 4 mm. long; *cymes* 3-6 cm. long; *cal.* about 3.5 mm. long, silky-pubescent to woolly, *lobes* short, broad, obtuse, about as long as the tube; *pet.* white, obovate-spathulate, about 5 mm. long; *fil.* shaggy; *ovary* and *style* shaggy; *drupe* pink or purplish, globose or ellipsoidal, 2-4 cm. long, *pulp* thick, white, edible; *seeds* about 2.5 cm. long, ridged longitudinally.

Arima, Cumuto and Icacos, and often cultivated. Trinidad and Tobago.

Florida, Bahamas, West Indies, S. America and Trop. Africa.

2. *C. pellocarpus* Mey.

C. savannarum Britt.

Britt. & Wils. Sc. Surv. Porto Rico, 5. 345: Bull. Torr. Bot. Club, 48. 331-332.

Shrub or small *tree* up to 16 m. high, irregularly branched, *twigs* glabrous, slender; *lvs.* obovate to elliptical-obovate, 1.5-7.5 cm. long, 1-4.5 cm. broad, obtuse or somewhat acute at the apex, narrowed at the base, *petioles* 1.5-3 mm. long; *fls.* few, in small axillary clusters shorter than the leaves or terminal; *pedi.* short, puberulous; *cal.* silky-pubescent to woolly, 2.5-3 mm. long; *lobes* short, broad, obtuse, about as long as the tube; *pet.* white, wedge-shaped to spatulate, rounded at the apex, 3-3.5 mm. long; *stam.* about 3 mm. long; *fil.* shaggy; *ovary* and *style* shaggy; *drupe* purplish-black, oblong or narrowly oblong-obovoid, obtuse, up to 18 mm. long and 8 mm. diam., *pulp* white, thin; *seed* ridged longitudinally.

Balandra, Aripo Savannah, Tabaquite, La Brea, Guapo, Irois, Trinidad.

Florida, Bahamas, Cuba, Hispaniola, Porto Rico, Guadeloupe, Northern South America.

The above two species are very much alike, except for size of flowers and leaves, and shape and size of fruit. Britt. & Wils. *loc. cit.* separates *C. icaco* L. from *C. pellocarpus* Mey. mentioning that *C. pellocarpus* is probably a race of the preceding species. Our small-fruited species answers to the description of *C. pellocarpus* Mey. given by Britt. & Wils. and I think that *C. savannarum* Britt. must be treated as a synonym. There is quite an appreciable leaf-variability even within the material included under *C. pellocarpus*.

2. LICANIA Aubl.

Shrubs or trees. Lvs. alternate, simple, entire, usually leathery, petiole usually short, sometimes 2-glandular at the apex. *Stip.* awl-shaped or lanceolate, deciduous or persistent, free or united. *Infl.* axillary or terminal, simple, paniculate or subcorymbose, the branches often spike-like. *Fls.* small, sessile or very shortly stalked. *Cal.* small, 5-lobed, imbricate or subvalvate, leathery. *Pet.* 5 or none. *Stam.* 3-10, rarely numerous, inserted on the calyx, short, included, usually unilateral. *Ovary* small, globose, inserted into the base of the calyx tube, 1-celled, hairy; *style* basilar, short or awl-shaped, included within the calyx; *ovules* 2, ascending. *Fruit* 1-seeded, leathery, woody or shell-like, obovate or globose, usually villose within.

Lvs. whitish mealy or mealy-woolly beneath.

Petioles wrinkled, glabrous1. *L. ternatensis*.

Petioles yellowish-woolly2. *L. Cruegeriana*.

Lvs. green beneath3. *L. biglandulosa*.

1. *L. ternatensis* Hook. f. Kew Bull. 1893. 251: Urb. Symb.

Ant. 5. 352-353.

L. hypoleuca Griseb. Fl. 230, non Benth.

Large tree; young twigs glabrous or minutely pilose at the apex; *stip.* narrowly linear, 1-5 mm. long, inserted at or above the base of the petiole, deciduous; *petioles* 5-7 mm. long, wrinkled, glabrous; *lvs.* ovate or oval, 6-15 cm. long, 3-7.5 cm. broad, obtusely acuminate at the apex, rounded or subtruncate at the base, glabrous, more or less whitish beneath and without glands at the base, leathery; *infl.* axillary and terminal, paniculate, covered with a very short whitish-yellow pubescence, 3-10 cm. long; *fls.* sessile or nearly so; *bracts*, the lower lanceolate, about 2 mm. long, the others triangular, scarcely 1 mm. long; *cal.* 2-2.5 mm. long, 5 (rarely 6)-lobed, woolly outside, thickly and shortly pubescent within; *pet.* none; *stam.* 4-5, unilateral; *ovary* very shortly brownish hairy; *style* inserted above the base of the ovary, whitish woolly; *fruit* not stalked, obovate-oblong or oblong, 1.5-1.8 cm. long, 5-7 mm. diam., often longitudinally ribbed.

Wood red or reddish-brown, very hard and durable, stated to be suitable for subterranean and aquatic constructions (*Urb. l.c.*).

Northern mountains, Trinidad.

Guadeloupe, Dominica, Martinique, St. Vincent, Grenada.

2. *L. Cruegeriana* Urb.*L. crassifolia* Griseb. Fl. 711, non Benth.

Urb. Symb. Ant. 5. 353-354.

Young twigs very shortly pilose or yellow-woolly, soon becoming glabrescent, older branches lenticellate; *stip.* linear-awl-shaped, 2.5-4 mm. long, inserted at the base of the petiole, deciduous entirely or the upper part only; *petioles* 4-6 mm. long, yellowish-woolly; *lvs.* ovate, ovate-oblong or elliptical-oblong, subgradually and acutely acuminate at the apex, rounded at the base, 3-8.5 cm. long, 1.5-3 cm. broad, glabrous above, thickly hairy with strongly appressed soft yellow wool beneath, leathery; *infl.* woolly, axillary and terminal, mostly paniculate, the branches spike-like; *fls.* sessile; *bracts* triangular, less than 1 mm. long; *cal.* woolly, about 2 mm. long; *fruit* (immature) obovate, smooth, very shortly woolly, the stalk thick, 4-7 mm. long.

L. crassifolia Benth. to which this plant was referred by Grisebach differs, according to Urban l.c., by the *fruit* which are obovate, gradually narrowed below, scarcely stipitate and irregularly ribbed as well as by other characters.

Cruieger 205, Las Cuevas (1861) and Herb. Trin. 2068, Maracas (1851), Trinidad. Endemic.

3. *L. biglandulosa* Griseb. ex Urb. Symb. Ant. 5. 354.

Wild Gasparee.

Tree up to 25 m. and 2 m. girth, young twigs yellow-pilose, becoming glabrescent or glabrous with age, lenticellate; *stip.* intrapetiolar, triangular-lanceolate, 7-10 mm. long, the acute apex often bifid, densely yellow-pilose outside, glabrous within, early deciduous; *petiole* 5-10 mm. long, with two conspicuous glands at about the middle; *lvs.* obovate, elliptical or elliptical-oblong, the apex scarcely or very shortly acuminate, the base obtuse or acute, up to 24 cm. long and 12 cm. broad, at first yellow-pilose on the nerves beneath, becoming more or less glabrous, papery-leathery or leathery; *infl.* axillary or terminal, simple, paniculate or subcorymbose, 10-25 cm. long; *fls.* yellowish-woolly, white, sessile, in 1-5-flowered sessile clusters on simple branches; *bracts* lanceolate, 1-3 mm. long; *cal.* 2-2.5 mm. long, yellow-woolly outside, shortly and adpressed pilose within, especially at the base, lobes triangular; *pet.* 1-1.5 mm. long, shortly oval, not clawed, shortly pilose on both sides; *stam.* 5-6, unilateral; *fil.* 0.5-1 mm. long; *anths.* ovate, the connective produced and shortly apiculate; *style* inserted above the base of the ovary, 1.3 mm. long, pubescent; *ovary* woolly; *fruit* globose, 1-2 cm. diam., ridged; *seed* 10-12 mm. diam.

Maraval, Maracas Bay, Arima, Valencia, Aripo Savannah, Central Range Reserve, Trinidad. Menna Road, and Morne d'Or, Tobago.

3. MOQUILEA Aubl.

Shrubs or trees. Lvs. alternate, simple, leathery; *petiole* usually 2-glandular. *Stip.* 2, awl-shaped, deciduous or rarely persistent. *Infl.* paniculate, terminal or axillary, usually woolly, the branches spicate, racemose or clustered. *Fls.* small in the Trinidad spp. *Cal.* usually 5-lobed, imbricate, the *throat* hairy. *Pel.* 4 or 5, or sometimes none. *Stam.* 10 to numerous; *fil.* threadlike, long-exserted. *Ovary* globose, hairy, inserted into the base of the calyx tube, 1-celled; *style* basilar, slender, long-exserted; *ovules* 2, ascending. *Fruit* various, more or less globose, 1-seeded, leathery.

Petioles 10-15 mm. long1. *M. pyrifolia*.

Petioles 3-7 mm. long.

Lvs. conspicuously net-veined2. *M. Kuntzeana*.

Lvs. not conspicuously net-veined3. *M. leucosepala*.

1. *M. pyrifolia* (Griseb.) *comb. nov.* Coolie Tamarind.
Indian Mango.

Licania pyrifolia Griseb. Fl. 230.

Useful and Ornamental Plants of Trinidad and Tobago, p. 99.

Tree; twigs whitish mealy-woolly; *lvs.* elliptical to elliptical-oblong or sometimes ovate, mucronate at the apex, shortly contracted at the base, 5-8 cm. long, 2.5-5 cm. broad, leathery, glabrous or with patches of deciduous mealy wool above and beneath, shining above; *petiole* 10-15 mm. long, slightly 2-glandular; *panicle* large, compound, spreading, whitish-pubescent, the branches horizontal, distant; *fls.* fascicled or solitary, 2-3 mm. long; *cal.* subglobose, about 5 mm. long including the short triangular lobes, whitish-woolly; *pet.* about 5 mm. long, clawed, the limb roundish; *stam.* 20-30, mostly fertile; *ovary* with dense, long, whitish-wool; *style* shortly exserted; *fruit* about the size and shape of a hen's egg, strongly scurfy, lenticellate, otherwise glabrous, *pulp* yellow, strong smelling.

The tree is only known to the writer from cultivated trees in the Royal Botanic Gardens, Trinidad, and the Purdie sheets in Herb. Trin. cited by Grisebach are without locality except "Trinidad."

Martinique.

2. *M. Kuntzeana* (Urb.) *comb. nov.*

Licania Kuntzeana Urb.

L. affinis O. Kze. non Fritsch.

Couepia guianensis of Griseb. Fl. 709 and of Hart, Herb. Trin. List, 19, non Aubl.

Shrub; lvs. lanceolate or ovate, acuminate at the apex, rounded at the base, 4-9 cm. long, 1.8-4.5 cm. broad, glabrous or

glabrescent; *petiole* about 3 mm. long; *infl.* paniculate spikes with spreading branches, whitish-pubescent; *fls.* white, small, subsessile; *cal.* greyish-tomentellous, up to 2.5 mm. long, the lobes ovate, rather longer than the obconic-campanulate tube; *pet.* none; *stam.* 8-10 or more, long-exserted, not unilateral; *fruit* obovoid-subglobose, 1.5 cm. long, 1.2 cm. diam., black, glabrous.

Very closely allied to *M. floribunda* (Benth.) Benth. ex Hook. fil., *Licania apetala* (Meyer) Kze., of Guiana and N. Brazil, and further collecting may prove it to be conspecific.

Herb. Trin. 569 and 2646, Crueger, 1861, O'Meara Savannah; 5700, Aripo Savannah, Trinidad.

3. *M. leucosepala* (Griseb.) comb. nov.

Licania leucosepala Griseb.

Griseb. Fl. 230.

Tree; *lvs.* elliptical to elliptical-oblong, acute at the apex, obtuse at the base, 5-10 cm. long, 2.5-4 cm. broad, leathery, glabrous or the mid-rib glabrescent above; *petioles* 3-7 mm. long; *panicles* large, spreading, compound, whitish-pubescent; "*fls.* pale yellow, sweet-smelling", ex Broadway, subsessile; *cal.* 3-3.5 mm. long, the tube bell-shaped, the lobes triangular, densely brownish-tomentellous; *stam.* numerous, 3-4 mm. long; *fruit* not seen.

Herb. Trin. 9069, Dannouse, Arima, Trinidad.* Broadway, 4483, Caledonia, Tobago, in Herb. Kew.

Guadeloupe, Dominica, St. Vincent, St. Lucia.

4. *PARINARI* Aubl.

Trees. *Lvs.* alternate, leathery, with or without 2 glands at the base, entire. *Stip.* awl-shaped or lanceolate. *Infl.* racemose-corymbose or paniculate. *Fls.* hermaphrodite. *Bracteoles* 2. *Cal.* lobes 5, imbricate. *Pet.* 5, rarely 4. *Stam.* 7-numerous. *Ovary* unilaterally inserted on the throat of the calyx, slightly exserted, 2-celled, often with an incomplete longitudinal partition; *style* basilar, threadlike, usually hirsute; *ovules* solitary in the cells. *Fruit* a drupe, dry, usually 2-celled, hairy within.

1. *P. campestris* Aubl.

Aubl. Pl. Guiane, t. 206: Griseb. Fl. 230-231.

Tree; *twigs* densely brownish-woolly, becoming glabrous; *lvs.* ovate or ovate-oblong, acuminate at the apex, heart-shaped at the base, 3-18 cm. long, 2-7.5 cm. broad, glabrous above except for hairs on the mid-rib, whitish or brownish mealy-woolly beneath and

with numerous pinnate nerves; *petioles* 2-5 mm. long, brownish-woolly when young; *stip.* foliaceous, ovate-lanceolate or oblong-lanceolate, 1.5-3 cm. long, up to 8 mm. broad, glabrous above, brownish-woolly beneath, deciduous; *infl.* corymbose; *cal.* 4-5 mm. long, including the triangular-acuminate teeth, shortly densely woolly outside, pubescent within; *pet.* spatulate, about as long as the calyx; *stam. fertile*, 7-8, unilateral, about 2 mm. long and as many sterile ones on the opposite side; *ovary* shaggy; *style* simple, glabrous; *drupe* obovoid, contracted at the base, 3 cm. long, glabrous and thickly lenticellate outside, brownish-woolly within.

St. Joseph and in Forests of Arima and Arena, Trinidad.
Guiana, Brazil.

5. HIRTELLA L.

Shrubs or trees. *Lvs.* simple, alternate, entire, shortly petiolate. *Stip.* caducous. *Fls.* hermaphrodite, in axillary and terminal panicles or racemes. *Cal. tube* bell-shaped or top-shaped, *lobes* 5, reflexed. *Pet.* 5, deciduous. *Stam.* 3-10 or more, the perfect stamens on one side only of the receptacle, the staminodes on the other side; *fil.* united at the base, long-exserted. *Ovary* 1-celled, inserted on one side of the receptacle; *ovules* 2; *style* arising from one side near the base. *Drupe* dry, one-seeded. *Seed* erect.

Racemes simple.

Lvs. with hispid mid-rib; *pet.* white1. *H. silicea*.

Lvs. with a few scattered bristles on the
mid-rib; *pet.* pale blue2. *H. racemosa*.

Racemes compound.

Racemes pubescent; *stam.* 3, perfect.....3. *H. triandra*.

Racemes hispid; *stam.* 5-6, perfect.....4. *H. paniculata*.

1. *H. silicea* Griseb. *Fl.* 229.

Tree 10 m.; young *stems* hirsute; *lvs.* oblong, 10-20 cm. long, 4-8 cm. broad, acuminate at the apex, rounded to slightly heart-shaped at the base, glabrescent, hispid on the mid-rib beneath, prominently nerved beneath; *petiole* 1-4 mm. long; *racemes* simple, 8-14 cm. long, pale-rusty with dense spreading bristles; *pedi.* 6-9 mm. long, with two stalked, sometimes deciduous, glands near the base; *bracts* threadlike, 1-4.5 mm. long, glandular; *cal. tube* bell-shaped, about 2 mm. long, the *lobes* ovate, obtuse, about 4 mm. long, bristly outside, pubescent within; *pet.* white,

4-5 mm. long; stam. usually 6, threadlike, 15-20 mm. long; style hairy below; drupe oblong, glabrous, about 16 mm. long, abruptly contracted at the base.

Forests, Northern Mountain Range, Trinidad. Eggers, 5818, Morne d'Or, 1889; Herb. Trin. 11136, Menna Road, and Herb. Trin. 4025, Broadway, Forest Reserve, Tobago. Endemic.

2. *H. racemosa* Lam.

H. americana Aubl. non L.

Griseb. Fl. 229; Fawc. & Rendl. Fl. Jam. 3, 256; Aubl. Pl. Guiane, 247, t. 98.

Small tree; young stems very sparsely bristly, soon becoming glabrous; lvs. mostly oblong, 8-13 cm. long, 3-4.5 cm. broad, acute or acuminate at the apex, obtuse to slightly heart-shaped at the base, glabrous on both sides except for a few bristles on the mid-rib beneath, leathery; petioles 3-4 mm. long; racemes simple, 1-3 dm. long, puberulous; bracts awl-shaped, 0.5-2 mm. long, glandular; pedi. about 5 mm. long without glands; cal. tube bell-shaped, about 2 mm. long, the lobes more or less ovate, obtuse, pubescent on both sides and with a few bristles outside, about 3 mm. long; pet. pale blue, about 3 mm. long; stam. 5-7, 8-12 mm. long; drupe obovate-oblong, glabrous, 8-12 mm. long.

Forests in wet or moist districts, Trinidad and Tobago.
St. Vincent. Cont. Trop. America.

3. *H. triandra* Sw.

H. americana Jacq.

Griseb. Fl. 230 in part; Britt. & Wils. Sc. Surv. Porto Rico, 5, 346.

Tree up to 15 m.; young stems having stiff appressed hairs; lvs. lanceolate to elliptical, 5-15 cm. long, 2.5-5.8 cm. broad, long-acuminate at the apex, acute at the base, with stiff appressed hairs on the mid-rib on both sides, slightly scabrous and glabrescent beneath, somewhat leathery; petioles 2-4 mm. long; racemes compound, 3.5-12 cm. long, pubescent; bracts 2-3 mm. long; cal. tube top-shaped, about 1 mm. long; lobes ovate or elliptical, 2-2.5 mm. long, pubescent; pet. obovate, 4-5 mm. long; stam. 3; fertile; drupe oblong, 1.5-2.5 cm. long, densely hairy when young.

Maracas, Chaguanas and Southern moist districts, Trinidad.
West Indies, Panama, Northern South America.

4. *H. paniculata* Sw.

H. hirsuta Lam.

Griseb. Fl. 230.

Tree 8 m.; young stems with brownish, spreading, stiff hairs; lvs. oblong or elliptical-oblong, 3-9.5 cm. long, 2-5.2 cm. broad,

abruptly pointed at the apex, rounded at the base, shining and glabrescent above and with long spreading hairs on the nerves beneath; *racemes* compound, 5-12 cm. long, hispid; *bracts* ovate-lanceolate, 3-10 mm. long; *cal. tube* obliquely bell-shaped, 1.5 mm. long, the lobes elliptical, 3.5 mm. long, hispid outside, pubescent within; *pet.* white; *stam.* 5 or 6, pink, 10-15 mm. long; *drupe* not seen.

Forests and Savannas in wet or moist districts, Trinidad.
St. Vincent, Guiana, and Rio Branco, Brazil.

6. PRUNUS L.

Shrubs or trees. *Lvs.* alternate, simple, entire in the local spp. *Fls.* solitary or racemose. *Cal.* deciduous, *tube* obconical, urn-shaped or tubular; *lobes* 5, imbricate. *Pet.* 5. *Stam.* 12-numerous; *fil.* threadlike, free. *Carp.* solitary; *style* terminal; *stig.* peltate or truncate; *ovules* 2, pendulous. *Drupe* fleshy with a bony endocarp, 1-seeded. *Seed* pendulous.

Drupe ellipsoid; *fls.* about 5 mm. long.....1. *P. occidentalis*.

Drupe subglobose; *fls.* about 3 mm. long. 2. *P. myrtifolia*.

1. *P. occidentalis* Sw.

Griseb. Fl. 231: Britt. & Wils. Sc. Surv. Porto Rico, 5:344: Fawc. & Rendl. Fl. Jam. 3. 257-258.

Tree up to 18 m.; *lvs.* oblong-elliptical or elliptical, sub-acuminate at the apex, rounded to wedge-shaped at the base, 1-2 dm. long, 4.5-7.5 cm. broad, glabrous; *racemes* lateral or axillary, solitary or in pairs, sometimes branched, 2-8 cm. long, much shorter than the leaves; *pedi.* 5-7 mm. long; *fls.* white, fragrant; *cal.* lobes triangular, about 2 mm. long; *pet.* rounded, obovate, about 3 mm. long; *stam.* 25 or more, 4 mm. long, exserted; *drupe* ellipsoid, 2-2.5 cm. long, 1.5 cm. or more diam.

Not seen. Purdie ex Griseb., Trinidad.
West Indies. Guatemala and Panama.

2. *P. myrtifolia* (L.) Urb.

Celastrus myrtifolius L.

P. pleuradenia Griseb.

P. sphaerocarpa Sw.

Griseb. Fl. 231: Urb. Symb. Ant. 5. 93: Fawc. & Rendl. Fl. Jam. 3. 258-259.

Tree up to 12 m.; *lvs.* elliptical to oblong-ovate, obtuse, acute or acuminate at the apex, mostly wedge-shaped at the base,

5-14 cm. long, 2.5-8 cm. broad, glabrous, shining above, entire, somewhat leathery, *petioles* about 1 cm. long; *racemes* axillary, usually solitary, much shorter than the leaves; *pedi.* 2-5 mm. long; *fls.* yellowish-white; *cal.* lobes about 1 mm. long; *pet.* rounded, slightly clawed, about 2.5 mm. long; *stam.* 12-20, exserted, about 2 mm. long; *carpels* subglobose, 9-13 mm. diam.

Purdie, Maracas Bay; Dannouse, Arima, May, 1904; Herb. Trin. 4170 and 4501, cultivated. Trinidad.

Haiti, Dominica, St. Vincent, Brazil.

7. RUBUS L.

Perennial *herbs* or *shrubs*, often prickly. *Lvs.* alternate, compound in the local species. *Stip.* joined to the petiole. *Fls.* solitary or in corymbs or panicles, terminal or axillary. *Cal.* persistent, *lobes* 5, joined only at the base. *Pet.* 5. *Stam.* numerous, inserted on the margin of the receptacle. *Carp.* numerous, inserted on a conical receptacle; *styles* subterminal; *ovules* 2, 1 abortive. *Achenes* drupaceous, crowded on the dry receptacle, one-seeded. *Seed* pendulous.

1. *Rubus rosaefolius* Smith. Mountain Raspberry. Fraise.

Britt. & Wils. Sc. Surv. Porto Rico, 5. 341.

Perennial *shrub*, about 1 m. high, *stems* erect or often recurved, pilose or glabrate, armed with small recurved prickles; *stip.* threadlike, about 1 cm. long or less; *lvs.* pinnate; *petiole* and *rhachis* spreading-pilose, sparsely prickly; *lflets.* usually 5 or 7, the lateral leaflets sessile or with very short petiolules, the terminal leaflet long-petioluled, lanceolate to ovate, 2-7 cm. long, 1-3 cm. broad, acute or acuminate at the apex, more or less rounded at the base, sparingly pilose to glabrate on both sides, compoundly toothed; *fls.* solitary or in few-flowered cymes, mostly terminal; *cal. lobes* lanceolate, long-acuminate, about 2 cm. long; *pet.* white, obovate, 1-2 cm. long; *fruit* thimble-shaped, 2-3.5 cm. long, bright red.

Only known from one locality on the mountain slopes of Tucuche, Trinidad, apparently planted, Broadway, 7135, in Herb. Kew and Herb. Trin. 12492, Pyke.

Naturalized in many West Indian Islands and Brazil. Native of S.E. Asia.

FAMILY 5. CUNONIACEAE.

Shrubs or trees. Lvs. opposite or whorled, simple or compound, with *stipules*. *Fls.* small, regular, hermaphrodite, sometimes polygamous or dioecious. *Sep.* 4 or 5. *Pet.* 4 or 5, usually small. *Stam.* 8 or 10, rarely 4 or 5, sometimes numerous, inserted under the margin of the disk; *anths.* 2-celled. *Carp.* usually 2, united into a 2-celled ovary; *ovules* usually numerous, in two rows. *Fruit* usually a 2-valved capsule. *Seeds* minute, several or numerous.

1. WEINMANIA L.

Shrubs or trees. Lvs. opposite, imparipinnate and with a winged rhachis in the local species. *Stip.* deciduous. *Fls.* small, white, clustered on terminal or axillary racemes. *Sep.* imbricate, persistent. *Pet.* inserted under the margin of a lobed disk, imbricate. *Fil.* exserted; *anths.* small. *Ovary* free, 2-celled, 2-beaked; *styles* 2, persistent; *stig.* simple; *ovules* few to numerous. *caps.* small, 2-celled, septically 2-valved. *Seeds* hairy.

1. *W. pinnata* L.

Griseb. Fl. 303; Fawc. & Rendl. Fl. Jam. 3, 251; Bull. Torr. Bot. Club. 56.372.

Young *twigs* and *rhachis* of the *inflorescence* densely covered with short brownish-yellow hairs; *lvs.* 1.5-7 cm. long; glabrous except for the rhachis and mid-rib which are more or less yellowish-woolly; *lfts.* 3 or 4 pairs or sometimes more, oblong-elliptical or elliptical, unequal and narrowed at the base, 8-15 mm. long, the terminal leaflet obovate-elliptical and slightly larger, serrate; *racemes* 2-7 cm. long; *pedi.* thread-like, about 3.5 mm. long; *sep.* persistent, about 1 mm. long; *caps. valves* oblong-ellipsoidal, 2-2.5 mm. long, persistent; *styles* about 1.5 mm. long.

Herb. Trin. 1132, no locality? Trinidad.

West Indies, Cent. America, Trop. S. America?

FAMILY 6. DROSERACEAE.

Perennial, insectivorous *herbs*, *stemless* and with rosettes of sticky glandular leaves in the local spp. *Infl.* usually simple, circinate cymes. *Fls.* regular, hermaphrodite. *Sep.* 4 or 5-lobed, rarely 8, more or less united at the base, imbricate, persistent. *Pet.* 5, rarely 4 or 8. *Stam.* 4-20, often 5, free or rarely united at the base; *anths.* 2-celled, extrorse, dehiscing by longitudinal slits. *Ovary* free, 1-celled; *ovules* many or rarely few; *styles* 3-5, mostly free. *Caps.* loculicidal. *Seeds* numerous.

1. DROSERA L.

Characters of the family.

1. *D. capillaris* Poir. Sundew.

D. longifolia and *D. tenella* of Griseb.

D. intermedia americana of Kuntze.

Lvs. up to 3.5 cm. long, the *blade* spatulate and covered above with long, red, sticky hairs; *infl.* up to 15 cm. long, consisting of a simple or forked circinate cyme; *pedi.* up to 2 mm. long; *cal.* 3-4 mm. long, glabrous; *pet.* white, exceeding the calyx lobes, open in the morning sun.

On boggy savannahs, Trinidad.

Canada to South Brazil.

COHORT 12. MYRTALES.

BY

R. O. WILLIAMS.*

- Ovules suspended from the apex or from the axis above the middle.
- Stip. present.....1. Rhizophoraceae.
- Stip. none.....2. Combretaceae.
- Ovules axile, rarely basal or parietal, sometimes hanging in foreign species of *Lecythidaceae*.
- Stam. numerous.
- Stam. free ; lvs. opposite3. Myrtaceae.
- Stam. united ; lvs. alternate.....4. Lecythidaceae.
- Stam. the same in number or twice as many as the calyx lobes.
- Lvs. opposite.
- Lvs. with converging parallel veins (exception *Mouriria*)5. Melastomaceae.
- Lvs. pinnately veined.....6. Lythraceae.
- Lvs. alternate7. Onagraceae.

FAMILY 1. RHIZOPHORACEAE.

Shrubs or trees. Lvs. opposite and stipulate, rarely alternate and without stipules, leathery, simple, mostly entire. *Stip.* interpetiolar, falling early. *Fls.* hermaphrodite, in axillary inflorescences, rarely solitary. *Cal.* tube united to the ovary or free, lobes 3-14, valvate, persistent. *Pet.* as many as the sepals, usually small, often notched or fringed. *Stam.* 2-4 times as many

* The writer hereby gratefully acknowledges considerable help in the revision of the manuscript by Mr. N. Y. Sandwith of Kew.

as the petals, often in pairs opposite the petals inserted at the base of a disk; *anths.* 2-celled, longitudinally dehiscent. *Ovary* usually inferior, 2-5 celled, or rarely 1-celled; *style* simple; *ovules* usually 2, pendulous from the axis above the middle. *Fruit* leathery, crowned with the calyx, indehiscent or tardily opening septicidally, 1-celled with one seed or 2-5 celled with one seed in each cell. *Seeds* pendulous.

- Fls. on branching peduncles1. *Rhizophora*.
 Fls. solitary or clustered2. *Cassipourea*.

1. RHIZOPHORA L.

Small trees, growing in swamps with many aerial roots descending from the branches. *Lvs.* opposite, entire, glabrous, with scattered dots beneath. *Stip.* elongated. *Infl.* 1-5-forked. *Bracteoles* 2, united at the base into a cup. *Cal.* tube short, united to the base of the ovary; *lobes* 4, leathery. *Pet.* 4, leathery, entire. *Stam.* 8-12, inserted with the petals; *fil.* very short; *ovary* 2-celled, half inferior, produced above the calyx into a fleshy cone; *stig.* 2-lobed. *Fruit* pendulous, surrounded above the base by the reflexed sepals, 1-celled. *Seed* solitary, germinating whilst still on the tree, the long radicle descending from the apex of the fruit.

- Infl.* simple, 2-3, rarely 4-fld.1. *R. Mangle*.
Infl. compound, many-fld.2. *R. Harrisonii*.

1. *R. Mangle* L. Red Mangrove.

Kew Bull. 1918, 4-8.

Shrub or *tree* up to 10 m. or more; *lvs.* mostly elliptical, obtuse at the apex, more or less narrowed at the base, up to 15 cm. long and 7.5 cm. broad; *petioles* 5-20 mm. long; *infl.* simple, few-flowered; (2-3, occasionally 4-fld.); *pedu.* 1-4 cm. long; *pedi.* 5-12 mm. long; *buds* wedge-shaped, yellow, about 15 mm long; *cal.* yellow, deeply 4-parted, persistent, the *lobes* lanceolate, about 12-13 mm. long, spreading or becoming recurved, keeled, within; *pet.* creamy-white, linear-lanceolate, shorter than the calyx and becoming deeply reflexed between its lobes, the margin cottony; *stam.* 8; *fruit* 1.5-3 cm. long, borne in profusion, the *radicle* up to 30 cm. long, the upper third of a brown colour.

Coastal Swamps, Trinidad and Tobago.
 Tropics.

2. *R. Harrisonii* Leechman. Red Mangrove.

Kew Bull. 1918, 4-8.

Tree up to 20 m.; *lvs.* mostly elliptical, obtuse at the apex, more or less narrowed at the base, 8.5-15 cm. long, 4-7.5 cm. broad; *petioles* 1.5-2.5 cm. long; *infl.* compound, about 5-forked, the internodes decreasing towards the apex from 20-7.5 mm. many-flowered; *pedu.* about 4 cm. long; *fls.* similar to the preceding species but slightly smaller; *buds* greenish-yellow, ovate or ovate-lanceolate, about 11 mm. long; *cal.* greenish-yellow, deeply 4-parted, persistent, *lobes* lanceolate-acuminate, about 12 mm. long, spreading; *pet.* white, linear-lanceolate, acuminate, becoming deeply reflexed between the calyx lobes, the margin cottony; *stam.* 8, shorter than the corolla, equal, caducous; *fruit* sparsely borne, ovate-lanceolate, 2.5-3.5 cm. long, about 1.5 cm. broad; *radicle* up to 30 cm. long.

Herb. Trin. 5220, Broadway and Alexander, Blue River; Herb. Trin. 8062, Broadway, Cedros; Herb. Trin. 6920, Alexander, Arima; Herb. Trin. 11216, Freeman and Williams, Cocorite; Herb. Trin. 12611, Williams, Cocorite, Trinidad.

British Guiana. ? Nicaragua (specimen in Herb. Kew) perhaps elsewhere.

2. *CASSIPOUREA* Aubl.

Shrubs or *trees*, glabrous. *Lvs.* opposite. *Stip.* short. *Fls.* solitary or clustered in the axils. *Cal.* bell-shaped, 4-5 lobed, *lobes* valvate. *Pet.* 4-5, clawed, fringed. *Stam.* 10-30; *fil.* threadlike. *Ovary* 2-4-celled; *style* threadlike; *stig.* 3-4 lobed. *Fruit* somewhat fleshy, 2-4 celled, tardily opening septicidally; *cells* 1-seeded. *Seeds* pendulous, with arils.

Lvs. ovate-lanceolate to oblong-lanceolate. 1. *C. guianensis*.

Lvs. elliptical, oblong-elliptical or rounded.

Fls. with pedicels 2-6 mm. long 2. *C. elliptica*.

Fls. mostly sessile or subsessile 3. *C. latifolia*.

1. *C. guianensis* Aubl.

Kew Bull. 1925, 269-270.

Small *tree* about 8 m. high; *stems* glabrescent; *lvs.* ovate-lanceolate to oblong-lanceolate, mostly long-acuminate at the apex, wedge-shaped or sometimes rounded at the base, membranous,

glabrous, 11-21 cm. long, 3.5-6.7 cm. broad, entire or distantly and minutely serrate, prominently reticulate-veined on both sides, the lateral nerves distant and very prominent beneath, anastomosing far from the margin; *petioles* 4-9 mm. long, at first bristly, becoming glabrous; *stip.* lanceolate, 5-9 mm. long, pilose; *fls.* few together, sessile or nearly so; *bracts* minute; *cal.* bell-shaped, about 5 mm. long, 4-5-lobed, slightly pilose outside, densely silky-shaggy within, *lobes* triangular, subacute; *pet.* and *stam.* not seen; *ovary* and *style* densely shaggy-silky.

Crueger, 212, Diego Martin; Crueger 1849, Swamps near Bande de l'Est, Trinidad; Herb. Trin. 1655, and 3068 Hart in Herb. Trin., without date or locality. I have not seen the Crueger specimens.

Guiana. Brazil.

2. *C. elliptica* Poir.

C. alba Griseb.

C. cubensis Urb.

Kew Bull. 1925, 267-268.

Shrub or *tree* about 9 m.; *lvs.* elliptical, more or less abruptly acuminate at the apex, wedge-shaped or rounded at the base, 4-14 cm. long, 2-5.7 cm. broad, entire or distantly serrate, glabrous above, glabrous or with a few scattered hairs beneath, thinly leathery, the lateral nerves often very prominent beneath, anastomosing far from the margin; *petiole* 2-15 mm. long, glabrescent; *stip.* 4-10 mm. long, appressed-pilose outside; *fls.* numerous to solitary; *pedi.* 2-6 mm. long, puberulous or pubescent; *bracts* minute; *cal.* bell-shaped, 4-5 lobed, glabrous or puberulous outside, densely shaggy-silky within, 5-6 mm. long, *lobes* triangular; *pet.* 4-5, broadly spatulate, fringed, densely white-pilose; *stam.* 12-30; *ovary* 3-celled, appressed-pilose; *fruit* oblong, sparsely pilose.

Herb. Trin. 8893, Dannouse, Guapo; Herb. Trin. 9048, Freeman, and 10053 Freeman and Williams, Tucuche, Trinidad.

West Indies and Central America.

3. *C. latifolia* Alston. Wild Mangue.

C. Broadwayi Briq.

Kew Bull. 1925, 266.

Small tree; *lvs.* oblong-elliptical, broadly elliptical or rounded, obtuse, subacute or somewhat acuminate at the apex, wedge-shaped or rounded at the base, leathery, glabrous or with a few hairs on the midrib, 5-15 cm. long, 2.5-8 cm. broad, entire or distantly and minutely serrate, prominently reticulate-veined on both sides, the lateral nerves branched and anastomosing at some distance from the margin, *petiole* 4-8 mm. long, glabrous or puberulous;

stip. 3-6 mm. long, often pilose when young; *fls.* 1-3-numerous; *pedi.* 2 mm. long or less; *bracts* minute; *cal.* bell-shaped, 4-6 mm. long, 5-lobed, glabrous outside or sometimes puberulous, densely silky-pilose within, *lobes* triangular, subacute; *pet.* broadly spatulate, fringed, densely white-pilose, twice as long as the calyx; *stam.* about 15; *ovary* 3-celled, densely shaggy-silky; *style* shaggy.

This species shows considerable variation as regards shape of leaf and is very closely related to *C. elliptica* Poir.

Herb. Trin. 6743 (type) in Herb. Kew, and in Herb. Trin. and Herb. Trin. 6745, both from Aripo; Dannouse, Arima, 1905; Herb. Trin. 5374, North Post, Broadway; 4517, Baptiste Maraval; 8942, Dannouse, Santa Cruz, 1902; 8974, Freeman, North Post; 11931, Central Range Reserve; 12255, Valencia Forest, Trinidad. Broadway 5879, near Caledonia; Broadway 3841 and 4631, The Widow, Easterfield, Tobago. Endemic.

FAMILY 2. COMBRETACEAE.

Shrubs, vines or trees. *Lvs.* opposite, alternate or rarely whorled, simple. *Stip.* none. *Fls.* hermaphrodite, rarely unisexual, in spikes, heads or racemes. *Cal. tube* united to the ovary; *lobes* 4-8, valvate. *Pet.* 4-5, or none, small, imbricate or valvate. *Stam.* 4-10; *fil.* incurved in the bud; *anths.* versatile, opening lengthwise by slits. *Ovary* inferior, 1-celled; *style* simple; *ovules* 2-6, suspended from the apex of the ovary. *Fruit* leathery or drupe-like, angled or winged, 1-seeded, rarely dehiscent. *Seed* pendulous.

Quisqualis indica L. a native of Malaya and Northern India is commonly grown in gardens.

Pet. none.

Fls. in spikes.....1. *Terminalia*.

Fls. in heads.

Fruit forming a cone-like head.....2. *Conocarpus*.

Fruit an oblong or ovoid drupe.....3. *Buchenavia*.

Pet. present.

Cal. persistent.....4. *Laguncularia*.

Cal. deciduous.....5. *Combretum*.

1. *TERMINALIA* L.

Erect *shrubs or trees.* *Lvs.* alternate, often crowded at the ends of the branches. *Fls.* small, in spikes. *Cal.* bell-shaped; *lobes* 4-5, deciduous. *Pet.* none. *Stam.* 10 or 8 in 2 series. *Fruit* flattened-ellipsoidal, the margins angled or 2-5-winged, sometimes samara-like, 1-seeded, sometimes with thin flesh outside, leathery or bony.

T. arjuna Bedd., known as the Raw Beef tree, native of the East Indies and *T. belerica* Roxb., the Beleric Myrobalan of India, Ceylon, and Malaya are both grown in the Botanic Gardens.

Lvs. eared at the base1. *T. Catappa*.

Lvs. tapering into the petiole.

Lvs. pitted or barbate-pitted in the vein axils beneath, reticulation inconspicuous above2. *T. obovata*.

Lvs. neither pitted nor barbate, reticulation very prominent above.

Fruit with thin wings3. *T. nyssaefolia*.

Fruit 2-angled, barely winged or with coriaceous wings4. *T. Tanibouca*.

1. *T. Catappa* L. Indian Almond.

Griseb. Fl. 276: Fawc. & Rendl. Fl. Jam. 5. 305-306: Record & Mell, Timbers of Trop. Amer. 474-475.

Tree up to 24 m. with whorled horizontal branches; *lvs.* obovate, rounded or shortly pointed at the apex, tapering to the eared base, 2-3 dm. long, 6-18 cm. broad, glabrous above, brownish-pubescent or glabrescent beneath, *petioles* pubescent, 5-10 mm. long; *fl. spikes* axillary, slender, many-fl'd., 5-15 cm. long, the *male fls.* at the apex, the *hermaphrodite fls.*, few, at the base; *cal.* more or less brownish-woolly; *drupe* ellipsoidal, pointed, compressed, 4-7 cm. long, about 3 cm. broad, the margins more or less winged; *pericarp* corky.

A popular shade tree, especially for sea beaches. The ripe seeds are eaten as almonds and the wood is reported to be rather hard, open-textured and with a general resemblance to Mahogany. The bark and leaves contain tannin.

Naturalized mostly by the seaside, Trinidad and Tobago.

Native of the Tropics of the Old World. Naturalized in Trop. Cont. America and the West Indies.

2. *T. obovata* (R. & P.) Steud. White Olivier.

Gimbernata obovata R. & P.

Chuncoa obovata Poir.

Myrobalanus obovata Kuntze.

Griseb. Fl. 276: Marshall, Silv. Notes of Trin. & Tob. 34.

Tree; *twigs* rusty-pubescent, soon glabrate; *lvs.* obovate, the apex usually more or less conspicuously cuspidate, sometimes merely obtuse, tapering at the base, 2.5-14 cm. long, 1.5-6 cm. broad, hairy at first, very soon glabrous, pitted or barbate-pitted

in the vein axils beneath, the reticulation inconspicuous above; *petiole* 2-8 mm. long, rusty-pubescent at least when young; *fl. spikes* terminal or axillary at the tops of the branches, 2-7 cm. long, slender, many-fld., woolly; *cal.* hairy on both sides, about 3 mm. long; *stam.* and *style* about twice as long as the calyx; *fruit* 2-crested and broadly 2-winged, 5-7 mm. long, 12-20 mm. broad, including the membranous wings.

The wood is hard, pale-yellowish-brown, often with red markings.

Forests in wet or moist districts.

Panama and Northern South America.

3. *T. nyssaefolia* Britt.

Bull. Torr. Bot. Club 48, 333-334.

Tree up to 20 m.; *twigs* slender, glabrescent; *lvs.* obovate, abruptly short-acuminate at the apex, wedge-shaped at the base, 7-12 cm. long, 4-6 cm. broad, prominently reticulate-veined on both sides, papery, glabrous and bright green above, pale green, dull and brownish-hairy or glabrous on the veins beneath; *petioles* 5-24 mm. long, brownish-hairy or glabrescent; *fls.* not known with certainty; *fruit* compressed, 2-winged, 1.5-2.5 cm. long, 2-4 cm. broad, notched at the apex, abruptly contracted at the base into a stalk about 2 mm. long, the thin striate wings about one-half as broad as the seed-bearing part.

Britton 2177, Coastal woods, Manzanilla: Herb. Trin. 829, no locality: Herb. Trin. 8846, Broadway L'Islet, Cedros-Chatham: Herb. Trin. 12561, Swabey, Erin Bay; Trinidad. Endemic.

4. *T. Tanibouca* Rich. Poirier. Olivier.

T. guianensis Aubl. Pl. Guiane 448, t. 178.

Kew Bull. 1931, 468-469.

Large tree; *lvs.* obovate to oblanceolate, more or less abruptly acute or acuminate at the apex, tapered to the base, somewhat unequal-sided, 11-18 cm. long, 4.5-6.5 cm. broad, glabrous on both sides, prominently reticulate-veined on both sides, sub-leathery; *petioles* 1.2-3 cm. long, glabrous; *fls.* (not seen), sessile, in long, terminal and axillary spikes; *fruit* compressed, 3-4 cm. long, 3-4 cm. broad, notched at the apex, rounded at the base, 2 or occasionally 3-angled, the angles barely winged or with leathery wings, glabrous, shining.

Herb. Trin. 12437, Marshall and Swabey, S. Watershed Reserve: Herb. Trin. 12366, Brooks, Guayaguayare: Herb. Trin. 12569, Brooks, Guapo River: Trinidad.

Guiana, Amazonian Brazil.

2. CONOCARPUS L.

Shrubs or small *trees*. *Lvs.* alternate, entire, biglandular at the base, sometimes also with glands in the axils of the nerves beneath. *Fls.* hermaphrodite and male, minute, densely crowded in heads borne on terminal panicles. *Cal.* cup-shaped, 5-lobed to the middle, deciduous. *Pet.* none. *Stam.* 5-10; *fil.* slender; *anths.* heart-shaped. *Ovary* 1-celled, hairy; *ovules* 2, pendulous from the apex of the cell. *Fruits* scale-like, winged, overlapping, 1-seeded, forming a cone-like head.

1. *C. erectus* L. Button Mangrove.

Griseb. Fl. 277: Fawc. & Rendl. Fl. Jam. 5. 309-310. Urb. Symb. Ant. 8. 475-476.

Shrub or *tree* up to 20 m.; *twigs* angled or somewhat winged; *lvs.* lanceolate to elliptical, acute or rarely rounded at the apex, narrowed into the short petiole, 3-8 cm. long, 10-28 mm. broad, membranous, glabrescent or glabrous; *cal.* about 1 mm. long; *stam.* and *style* conspicuously exserted; *fruit heads* 8-15 mm. long, *drupes* 2-winged, 4-7 mm. long.

Used for fuel purposes. The bark contains tannin.

Coastal Swamps, Trinidad and Tobago.

West Indies, Florida and Keys, Bahamas, Trop. Cont. America and West Trop. Africa.

3. BUCHENAVIA Eichl.

Shrubs or *trees*. *Lvs.* alternate or clustered at the ends of the branches. *Fls.* hermaphrodite or male, irregularly mixed in heads (in the Trinidad sp.), arising from the axils of leaves or scales. *Cal.* broadly cup-shaped, minutely 5-toothed. *Pet.* none. *Stam.* 10, in two series, barely exserted. *Disk* shaggy. *Fruit* an oblong or ovoid drupe; *stone* bony.

1. *B. capitata* (Vahl.) Eichl. Yellow Olivier. Yellow Sanders. *Bucida capitata* Vahl.

Griseb. Fl. 227: Fawc. & Rendl. Fl. Jam. 5. 308: Record & Mell, Timbers of Trop. Amer. 478.

Large *tree* up to 25 m. or more; young *stems* pubescent; *lvs.* obovate or spatulate, rounded or sometimes emarginate at the apex, tapering into the petiole, 3-6 cm. long, 1-2.5 cm. broad, leathery, shining and prominently reticulate-veined above, appressed rusty-pubescent and fringed on the margins when young, becoming more or less glabrous; *petioles* 5-10 mm. long; *pedu.* 1-3 cm. long, pubescent; *fl. heads* somewhat oblong or globose, 10-18 mm. long; *cal.* glabrous outside, about 1.5 mm. long; *drupe* 1.5-2.5 cm. long, glabrous.

The tree is apt to be confused with *T. obovata* Steud. by woodcutters. "The yellowish wood is moderately hard, often wavy-grained and takes a beautiful satiny polish. It is used for furniture and cabinet work." (Record and Mell.)

Forests, Trinidad.

West Indies, Trop. South America.

4. LAGUNCULARIA Gaertn. f.

Shrub or tree. Lvs. opposite, leathery, with minute glands on both sides near the margin; *petiole* 2-glandular at the apex. *Fls.* small, sessile, white, mostly hermaphrodite, a few male flowers sometimes intermixed, on axillary spikes or the spikes forming a terminal panicle; *infl.* pubescent. *Cal.* cup-shaped, 5-lobed, persistent. *Pet.* 5, minute, caducous. *Stam.* 10, in two series; *anths.* heart-shaped, versatile. *Ovary* crowned with the disk; *stig.* slightly 2-lobed; *ovules* 2. *Fruit* crowned by the calyx, obovoid, unequally ribbed, the two lateral ribs produced into narrow wings, 1-seeded.

1. *L. racemosa* (L.) Gaertn. f. White Mangrove.

Conocarpus racemosus L.

Griseb. Fl. 276: Fawc. and Rendl. Fl. Jam. 5. 310-311: Record and Mell, Timbers Trop. Amer., 479.

Tree up to 20 m.; *lvs.* oblong, ovate-oblong or elliptical, rounded or notched at the apex, wedge-shaped to rounded at the base, 5-11 cm. long, 2.5-6 cm. broad, finely-veined; *petioles* 5-20 mm. long; *cal.* 2 mm. long; *pet.* roundish; *fruit* 1.5-2 cm. long, pubescent.

The wood is rather heavy, hard, and strong and is used for fuel. The bark contains a large amount of tannin.

Coastal Swamps, Trinidad and Tobago.

West Indies, Eastern Trop. America and Trop. W. Africa.

5. COMBRETUM L.

Shrubs, rarely trees, usually climbing or trailing, sometimes spiny. Lvs. opposite, rarely in whorls of 3 or 4, rarely alternate, usually membranous, entire. *Fls.* hermaphrodite and male irregularly mixed, in spikes or racemes, sometimes on one side only of the rachis, the spikes or racemes often paniculate. *Cal.* tube cylindrical or 4-6-angled, constricted above the ovary; *limb* bell-shaped, 4-5-lobed or toothed. *Pet.* 4-5, small, inserted between the lobes of the calyx. *Stam.* 8 or 10 in two series; *fil.* thread-like, elongated; *anths.* small. *Ovary* ovoid or oblong, 4-5 angled; *ovules* 2-6. *Fruit* leathery or somewhat spongy, indehiscent, 4-6-angled or 4-6-winged; *wings* usually membranous, 1-seeded. *Seeds* elongate, angular or grooved.

Fruit winged.

Lvs. with tufts of rusty-brown hairs in the axils of the lateral veins1. *C. eriopetalum*.

Lvs. glabrous beneath.

Fruit ovate, the wings rigid2. *C. laxum*.

Fruit oblong-ellipsoidal, the wings membranous.

Wings 6-8 mm. broad.....3. *C. fruticosum*.

Wings 3-4 mm. broad.....4. *C. trinitense*.

Fruit angled.....5. *C. Cacoucia*.

1. *C. eriopetalum* (P.DC.) G.Don.

Poivreia eriopetala P.DC.

Griseb. Fl. 275: Urb. Symb. Ant. 8. 477.

Trailing *shrub*; young *stems* cylindrical, the older armed with stout, straight spines 1.5-2 cm. long; *lvs.* opposite, subopposite or alternate, elliptical or elliptical-oblong, the apex rounded, obtuse or acute, 5-8.5 cm. long, 2-5 cm. broad, glabrous except for tufts of rusty-brown hairs in the axils of the lateral nerves beneath; *petioles* 3-7 mm. long; *spikes* cylindrical, lax; *cal. limb* cup-shaped, 1.5-2 mm. long, as long as the tube, the teeth distinct, triangular; *pet.* 5, oblong, shaggy, twice as long as the calyx limb; *stam.* exceeding the petals; *fruit* oblong-linear, up to 16 mm. long in the few fruit seen, *wings* linear, 1.5-2 mm. long.

Woodbrook and Cocorite, Trinidad.

Cuba, Santo Domingo, St. Vincent.

2. *C. laxum* Jacq. Enum. 19 (1760).

C. Jacquini Griseb. excl. pl. Jam.

Fawc. and Rendl. in Journ. Bot. 63. 115 (1925): Griseb. Fl. 275: Urb. Symb. Ant. 8. 476.

Climbing *shrub*; *branches* cylindrical, rusty-pubescent above; *lvs.* opposite, broadly elliptical or oblong, rounded or notched at the apex on the single sheet seen, rounded at the base, 8.5-14 cm. long, glabrous, punctate or scaly; *bracts* deciduous, thread-like, half as long as the pubescent ovary; *cal. tube* about 2 mm. long, *teeth* shorter, minute; *pet.* 4, roundish, glabrous, exerted, about 1 mm. diam.; *stam.* about 4 mm. long; *fruit* ovate or oblong, 16-20 mm. long, about 1 cm. diam., including the narrow, rigid wings.

I have seen only one fragmentary specimen, viz. 2055, and have adapted the above description almost entirely from Griseb.

Sandwith states that Lockhart, in Herb. Kew, differs widely from 2055. Pending revision of this group of species this name is treated *sensu lato*.

Lockhart in Herb. Kew (not seen): Herb. Trin. 2055, Finlay Sea Coast, Erin, 1866: Trinidad.

Haiti, Santo Domingo, Cont. Trop. America.

3. *C. fruticosum* (Loefl.) Stuntz in U.S. Dept. Agric., Bur. Pl. Ind., Invent. Seeds and Pl. Import, No. 31, 86 (1914).

Fawe. and Rendl. in Journ. Bot. 63, 115 (1925): *C. laxum* L. partim, non Jacq.: Griseb. Fl. 275, partim, non Jacq.: *Gaura fruticosa* Loefl.: *C. secundum* Jacq.

Climbing shrub; branches usually tetragonal, pubescent above or glabrate; lvs. opposite, oblong or elliptical, mostly pointed at the apex, narrowly to broadly wedge-shaped at the base, up to 15 cm. long and 6.5 cm. broad, glabrous; fl. spikes orange-yellow, half-cylindrical, 7-17 cm. long, scaly; cal. limb 4-5 mm. long, top-shaped, shaggy within; lobes 4, triangular, tube slender, 8-10 mm. long; pet. small, elliptical, glabrous, slightly exceeded by the calyx lobes; stam. showy, long-exserted, about 2.5 cm. long; fruit reddish, oblong-ellipsoidal to roundish, 4-winged, wings thin, glandular, 6-8 mm. broad, fruiting pedi. 2-4 mm. long.

Hillsides and thickets in moist or dry districts and Chacachacare. Cont. Trop. America.

4. *C. trinitense* Britt.

Bull. Torr. Bot. Club, 48, 334.

Woody vine; stems up to 6 m. long, branches long and slender, twigs glandular; lvs. elliptical or elliptical-lanceolate, 8-12 cm. long, up to 5 cm. broad, papery, glabrous and reticulate-veined above, impressed glandular beneath; petioles glandular, 6-7 mm. long; fruiting racemes 6-10 cm. long; fruit oblong-ellipsoidal, 10-15 mm. long, 4-winged, wings thin, glandular, 3-4 mm. broad, fruiting pedi. about 2 mm. long.

Hillside thicket, Chacachacare. Endemic.

5. *C. Caeoucia* Exell.

C. coccinea Aubl.

Combretum coccineum Engl. and Diels.

Aubl. Pl. Guiane, 1.450 t. 179: Griseb. Fl. 275: Kew Bull. 1931, 469.

Stout climbing shrub; lvs. opposite, elliptical, abruptly pointed at the apex, rounded at the base, 10-14 cm. long, 6-9 cm. broad, glabrous or pubescent on the nerves beneath, leathery; petioles 5-10 mm. long, rusty-woolly; raceme stout, 3.6 dm. long, densely rusty-woolly; bracts lanceolate-linear, equalling or exceeding the shortly-stalked calyx tube; calyx tube about 6 mm. long, the limb 12 mm., shortly 5-fid.; pet. 5, red, elliptical, shortly exserted; stam. about 24 mm. long; drupe ellipsoidal, corky, obtusely 5-angled, 3.2 cm. diam. in the specimen seen.

Purdie according to Griseb.: Herb. Trin. 5070, Alexander, no locality, Trinidad.

Guiana, Brazil (Lower Amazon), Panama, Central America.