

Ministry of Agriculture, Lands and Fisheries
Trinidad and Tobago

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[Part X

FLORA
OF
TRINIDAD AND TOBAGO

UNISEXUALES

EUPHORBIACEAE

(BY D. PHILCOX)



Price : \$1.00

GROUP 3. MONOCHLAMYDEAE

SERIES VII. UNISEXUALES

FAMILY—EUPHORBIACEAE

BY D. PHILCOX

Trees, shrubs, herbs or vines; stems frequently succulent, often with milky or coloured sap; leaves alternate, or occasionally opposite, rarely whorled, compound or simple, sometimes lobed, pinnately- or palmately-nerved, petiolate, stipulate; inflorescence spicate, racemose or cymose, sometimes aggregated into pseudanthia; flowers unisexual, usually actinomorphic; calyx 3-6-lobed; corolla 3-6-petalled or reduced or absent; disc often present; stamens (1-)3-20, filaments free or united, anthers usually bilocular; ovary superior, 3-4-carpellate, ovules 1 or 2 in each loculus; fruits capsular of 3 cocci, but sometimes drupaceous; seeds 1 or 2 in each coccus.

The family contains important cultivated plants such as *Hevea brasiliensis* (H.B.K.) Muell. Arg. (Para rubber), *Ricinus communis* L. (Castor Oil) and *Manihot esculenta* Crantz (Cassava); ornamentals such as *Euphorbia* spp. (Poinsettia) and *Codiaeum* spp. ("Croton"). Several species of *Acalypha* are grown for their decorative catkin-like inflorescences, e.g. *A. hispida* Burm. fil., while two further species of *Euphorbia*, *E. lactea* Haw. and *E. neriifolia* L., both natives of India, are frequently met with as succulent hedge plants. *Phyllanthus acidus* (L.) Skeels (Otaheite gooseberry) is sometimes cultivated for its fruit. *Aleurites* spp. are a source of drying oils.

KEY TO THE GENERA

- 1 Ovules paired in each cell of the ovary; leaves entire,
not lobed or glandular; sap never milky ... 2
- 1 Ovules solitary in each cell of ovary; leaves often lobed,
sometimes with or without petiolar glands and
marginal teeth ... 5
- 2 Indumentum of simple or branched hairs; fruits of 3 or
more carpels, dehiscent, each carpel 2-seeded ... 3
- 2 Indumentum lepidote; fruit of 2
carpels, drupaceous, 1-seeded... 4. **Hyeronima**
- 3 Fruit of 3 carpels, freely dehiscent ... 4
- 3 Fruit of 4 carpels, irregularly
dehiscent..... 2. **Margaritaria**
- 4 Seeds not fleshy or bony; stamens
3-7; monoecious or dioecious
herbs, shrubs or trees; each
carpel regularly 2-seeded..... 1. **Phyllanthus**
- 4 Seeds with fleshy outer coat,
woody inner; dioecious trees;
stamens 4-5; fruit usually
monospermous by abortion of
two cells..... 3. **Richeria**
- 5 Flowers not aggregated into pseudanthia ... 6
- 5 Flowers aggregated into pseudanthia ... 24
- 6 Inflorescence of small clusters of
stalked globose heads, each
enclosing 3-10 sessile flowers.... 5. **Pera**
- 6 Inflorescence not as above ... 7
- 7 Petals present at least in male flowers, often conspicuous
in both sexes ... 8
- 7 Petals reduced or absent in both sexes ... 11
- 8 Anthers more or less erect in bud, not distinctly
inflexed; indumentum not lepidote nor of branched
hairs ... 9

- 8 Anthers distinctly inflexed in bud; indumentum generally or partly of lepidote or branched hairs..... 8. *Croton*
- 9 Leaves palmately veined or lobed; inflorescence dichasial; seeds carunculate..... 9. *Jatropha*
- 9 Leaves finely serrate, pinnately veined; inflorescence racemose; seeds ecarunculate 10
- 10 Shrub, to 1(-4)m tall; young branches hirsute with scattered, long, non-glandular hairs..... 6. *Ditaxis*
- 10 Herb to about 1m tall; young branches hispid, with spreading gland-tipped hairs..... 7. *Caperonia*
- 11 Calyx distinctly petaloid; inflorescence dichasial..... 10. *Cnidoscolus*
- 11 Calyx not petaloid; inflorescence not clearly dichasial ... 12
- 12 Male flowers aggregated into pedunculate, cone-like spike; styles connate, columnar, 2.5-5 cm long, terminated by fleshy disc..... 19. *Hura*
- 12 Male flowers not aggregated as above; styles usually less than 2.5 cm long, never terminated by disc if columnar 13
- 13 Floral bracts without conspicuous paired basal glands; male calyx-lobes valvate (imbricate in *Omphalea*) ... 14
- 13 Floral bracts with conspicuous basal glands; male calyx-lobes open or imbricate 21
- 14 Not twining; without stinging hairs 15
- 14 Twining; with stinging hairs..... 18. *Tragia*
- 15 Carpels 2; styles elongated, free, more or less entire, unlobed; stamens usually 8..... 11. *Alchornea*
- 15 Carpels 3 or 4; styles various; stamens few or many, not regularly 8 16

- 16 Shrubs or trees, not lianas; styles free or at least not united for most of their length into column ... 17
- 16 Lianas; styles connate for greater part of length into column ... 20
- 17 Female bracts not conspicuously larger than or different from male; inflorescence racemose or thyrsoid, not truly spicate ... 18
- 17 Female bracts much larger than male; inflorescence spicate.....15. **Acalypha**
- 18 Stamens 8 or more.....14. **Adelia**
- 18 Stamens less than 8 ... 19
- 19 Stamens 2(-3); inflorescence appearing spicate with sessile male flowers with pedicellate female flowers below.....13. **Maprounea**
- 19 Stamens usually 6; inflorescence spiciform-racemose with male flowers pedicelled in glomerules, female flowers solitary.....12. **Alchorneopsis**
- 20 Stamens 12-30; carpels 4; leaves acuminate.....16. **Plukenetia**
- 20 Stamens 2-3; carpels 2-3; leaves obtuse.....17. **Omphalea**
- 21 Petiole eglandular, sometimes with cupular glands at base of lamina; seeds carunculate ... 22
- 21 Petiole usually biglandular with stipitate glands slightly below junction with lamina; seeds ecarunculate ... 23
- 22 Inflorescence spicate.....20. **Sebastiania**
- 22 Inflorescence paniculate.....21. **Mabea**
- 23 Fruit thin-walled, capsular; ovary 3-locular.....22. **Sapium**
- 23 Fruit fleshy, indehiscent, ovary 6-10-locular.....23. **Hippomane**

- 24 *Pseudanthium* bilabiate, flowers subtended by 2 large divergent palmately-nerved bracts; female flowers 3 at lower node, male 6-12; fruiting calyx bearing irritant hairs; vines.....24. **Dalechampia**
- 24 *Pseudanthium* radially symmetrical, or if bilaterally symmetrical then not subtended by divergent bracts; female flower solitary, terminal, male in 5 groups around female; herbs, shrubs or trees, never twining ... 25
- 25 *Cyathium* spurred, strongly zygomorphic; glands hidden with spur.....25. **Pedilanthus**
- 25 *Cyathium* not spurred, overall appearance more or less actinomorphic; glands on rim of cyathium.....26. **Euphorbia**

1. PHYLLANTHUS L.

Phyllanthus L., *Sp. Pl.*: 981 (1753), et *Gen. Pl.*, ed. 5: 422(1754)

Trees, shrubs or herbs; leaves alternate, entire, often distichous and appearing like leaflets of compound leaf; monoecious or dioecious; flowers small, solitary or in clusters in leaf axils or at nodes; petals absent; calyx-lobes 5-6, rarely 4; stamens 3 or 4(-7) (in local species), filaments free or connate into column; ovary 3-celled, ovules 2 in each cell; fruit capsular, 3-carpels splitting into 2-valved cocci; seeds usually 3-sided.

In addition to the species treated below, several have been recorded from cultivation in our islands. Of these, *P. fraternus* Webster and *P. emblica* L., both native to Asia, and *P. epiphyllanthus* L., a West Indian species, have at one time or another been cultivated in the Botanic Garden. *P. acidus* (L.) Skeels, a native of South America and widely cultivated in the West Indies, was collected from the St Clair Experimental Station.

- | | | | | | |
|---|--|----------------------|--|-----|---|
| 1 | Trees or shrubs up to 15m tall | ... | ... | ... | 2 |
| 1 | Herbs up to 1.5m tall | ... | ... | ... | 7 |
| 2 | Leaves broadly ovate to suborbicular; inflorescence cauliflorous 1. <i>P. elisiae</i> | | | | |
| 2 | Leaves and inflorescence not as above | ... | ... | ... | 3 |
| 3 | Trees, palm-like with branches clustered at apex | | 2. <i>P. juglandifolius</i>
ssp. <i>cornifolius</i> | | |
| 3 | Shrubs or small trees, not palm-like... | ... | ... | ... | 4 |
| 4 | Calyx-lobes large, lacerate..... | 3. <i>P. pulcher</i> | | | |
| 4 | Calyx-lobes small, entire | ... | ... | ... | 5 |
| 5 | Calyx-lobes 5; pubescence more or less reddish; leaves and female pedicels smooth, glabrous | | 4. <i>P. acacioides</i> | | |
| 5 | Calyx-lobes 6; pubescence not reddish; leaves (at least petioles) and female pedicels scabrid or hirsute | ... | ... | ... | 6 |

- 6 Flowers borne on all nodes of ultimate and primary axes of branches; leaf-blades elliptic, acute; male flower with cupuliform disc; female pedicels hirsute.....5. *P. subglomerata*
- 6 Flowers borne mainly on ultimate axes of branches; leaf-blades ovate, cuspidate-acuminate; male flower with 3 reniform disc segments; female pedicels scabrid.....6. *P. acuminatus*
- 7 Leaf-blades 5-10 mm long, orbicular to broader than long 7. *P. orbiculatus*
- 7 Leaf-blades not shaped as above 8
- 8 Branching not phyllanthoid (ultimate axes persistent, their subtending leaves not reduced to scales); leaves spirally or distichously arranged 9
- 8 Branching phyllanthoid (ultimate axes deciduous, their subtending leaves usually reduced to scales) 10
- 9 Capsule 2 mm or less in diameter; seeds 0.6-1 mm long; stems and branches not winged; strictly monoecious with bisexual cymules8. *P. caroliniensis*
- 9 Capsule about 3 mm in diameter; seeds 1.3-1.7 mm long; stems and branches flattened, sharply angled or winged; male and female flowers at separate axils 9. *P. hyssopifolioides*
- 10 Leaf-blades hispidulous near margins; seeds transversely ribbed, often foveolate on sides 10. *P. urinaria*
- 10 Leaf-blades never hispidulous; seeds mostly verruculose or longitudinally ribbed, never transversely ribbed or foveolate 11

- 11 Cataphyllary stipules linear-lanceolate; branchlet stipules more or less involute; leaves clearly oblique at base; seeds verruculose11. *P. mimicus*
- 11 Cataphyllary stipules broader; branchlet stipules not involute; leaves scarcely, if at all, oblique at base; seeds striate or ribbed 12
- 12 Seeds with 5-7 longitudinal ribs 12. *P. amarus*
- 12 Seeds with 9-12, scarcely raised, longitudinal striae ... 13
- 13 Plant 50(-100) cm tall; leaves glabrous; capsule about 2.5 mm diameter; seeds about 1.25 mm long13. *P. stipulatus*
- 13 Plant 10-30 cm tall; leaves minutely scabrid on both surfaces; capsule 1.5-2 mm diameter; seeds under 1 mm long14. *P. caribaeus*

1. *Phyllanthus elsiae* Urb. in Fedde, *Rep.* 15: 405 (1919); Webster in *Journ. Arn. Arb.* 38: 73 (1957)

Tree 8-12 m tall; leaves up to 4 cm long, 3.5 cm wide, sub-orbicular or broadly ovate, bluntly pointed at apex, entire, glabrous, drying dark greyish-brown above, grey-green beneath, shortly petiolate; petiole about 2 mm long; stipules about 1 mm long, scarious, subentire; dioecious; inflorescence cauliflorous on old wood, catkin-like; calyx-lobes 4, stamens 4 (rarely 3 or 5), filaments free; capsule to 8 mm long, 8 mm diameter, 3-celled, subspherical, obtusely and unclearly lobed; seeds 3-3.5 mm long, about 2 mm broad, flattened, dark reddish-brown.

Trinidad: Rousillae Swamp, 13.6.1931, Swabey (K, OXF, TRIN 12558); Erin, sea shore, 4.12.1929, Broadway 7795 (BM, K), 1.12.1931, Broadway 7845 (BM, K), 8.12.1932, Broadway 9112 (BM, K).

Tobago: Auchenskeoch Beach, 25.3.1914, Broadway 4789 (BM, K), 5910 (BM, K, OXF); Studley Park, near sea, 8.7.1913, Broadway 4557 (BM, P).

Mexico, Central America, Colombia, Venezuela and the Guianas.

2. *Phyllanthus juglandifolius* Willd., *Enum. Hort. Berol. Suppl.*: 64 (1813); Webster in *Journ. Arn. Arb.* 39: 146 (1958)

P. grandifolius sensu Muell. Arg. in DC., *Prodr.* 15, 2: 329 (1866) et auct. seq., non L.

Shrubs or trees 1.5–10 m tall; leaves 5–20 cm long, 2.5–6 cm wide, elliptic or oblong-lanceolate, short acuminate, obtuse to cordate at base, glabrous or minutely hirtellous on major nerves beneath, petiolate; stipules 1–2.5 mm long to 1.5 mm wide, triangular-lanceolate; monoecious; inflorescence cymose at most nodes of branchlets; calyx-lobes 5, stamens 3–7, filaments connate; capsule 8–12 mm long, 9–12 mm broad, smooth, glabrous; seeds 4–6 mm long, 3–4 mm broad, mottled brown and grey.

This species is represented in Trinidad by the following sub-species:

subsp. *cornifolius* (H.B.K.) Webster in *Journ. Arn. Arb.* 39: 151 (1958)

Phyllanthus cornifolius H.B.K., *Nov. Gen. & Sp.* 2: 115 (1817)

Shrub or palm-like tree to 10 m tall with branches clustered at apex; leaves 5–12 cm long, 1.5–5 cm wide, mostly oblong-lanceolate, rounded to cordate at base, glabrous or hirtellous beneath on main nerves; stamens usually 5 (in local plants) (–6 or 7); fruiting pedicels 15–30 mm long; capsule 12–15 mm diameter.

Trinidad: without locality, von Rohr 91 (BM); San Fernando Hill, 20.8.1912, Lewis (TRIN 9164); Penal Rock Road, milepost 12, 26.6.1929, Williams (TRIN 12172); Southern Watershed Reserve, 24.6.1929, Williams (K, TRIN 12179); Cedros, L'Enviense, 3.11.1916, Broadway (TRIN 8538).

Brazil, Ecuador, Peru and Venezuela.

3. *Phyllanthus pulcher* Wall. ex Muell. Arg. in *Linn.* 32: 49 (1863); Muell. Arg. in DC., *Prodr.* 15, 2: 421 (1866); Webster in *Journ. Arn. Arb.* 38: 360 (1957)

Shrub to 1.5 m tall, branches and younger parts covered with reddish-brown hairs; leaves 1.0–2.6 cm long, 0.4–1.0 cm wide, broadly oblong-elliptic, apex oblique, abruptly pointed with scarious tip especially when young, base inequilateral, drying greyish-green, glabrous; petiole very short, about 0.5–1.0 mm long, stipules about 2–3.5 mm long, 1.5 mm wide, triangular-lanceolate; monoecious; male flowers in cymules in lower axils of branches; pedicels 5–10 mm long, capillary, calyx-lobes 4, subequal, 2.5–3 mm long, acuminate, distinctly lacerate, dark red, stamens 2, filaments united; female flowers solitary at ends of branches, pedicels 12–24 mm long, capillary, calyx-lobes 6, 3–3.5 mm long, lacerate as in male, capsule not seen.

Trinidad: Caura River Valley in cacao plantation, 5.4.1920, Britton 1554 (K); near La Veronica, 5.4.1930, Freeman (TRIN 9053); Maracas, path to Falls, 7.11.1924, Broadway 5459 (BM, K), 30.12.1953, Baker (TRIN 15037); cultivated at Moruga, 28.1.1916, Broadway (TRIN 7605).

Native to Malaysia, introduced into the West Indies.

4. *Phyllanthus acacioides* Urb., *Symb. Ant.* 3: 287 (1902); Webster in *Journ. Arn. Arb.* 39: 177 (1958)

Shrubs or small trees 1–4 m tall, stem densely reddish-tomentose above, glabrous below, ultimate branches very fine and numerous; leaves 4–8 mm long, 1.5–3 mm wide, oblong, oblong-elliptic to subfalcate, entire, apex obtuse or subacute, base slightly inequilateral, drying brown above, grey beneath, shortly petiolate, glabrous or minutely scabrid beneath; petiole up to 0.5 mm long; monoecious; inflorescence of usually bisexual cymules on ultimate axes of branchlets; male flowers: pedicels 2–5 mm long, capillary, calyx-lobes 5, small, up to 1.5 mm long, entire, stamens 5 (4 or 6), filaments united; female flower: pedicel 0.5–1.5 mm long, calyx-lobes 5, up to 0.7 mm long, entire; capsule not seen; seeds (cf. Webster) about 1.5 mm long, trigonous, light brown.

Tobago: St George to Castara Road, 27.5.1930, Marshall (K, TRIN 12384); Morne d'Or, Eggers 5840 (K, holotype); lot 42, 21.4.1913, Broadway s.n. (BM), 4189 (P), 4189a (P).

Endemic to Tobago.

The related species of the Lesser Antilles, *Phyllanthus mimosoides* Sw., is recorded from Trinidad by Urban (1902) in observation without citation of collector or locality. We have no evidence of the occurrence of this species in our islands. The specimen seen by Urban may have been wrongly labelled, having been collected, perhaps for Sieber, in Martinique or Guadeloupe.

5. *Phyllanthus subglomeratus* Poir., *Encycl. Meth.* 5: 304 (1805); Webster in *Journ. Arn. Arb.* 38: 368 (1957)

Shrubs or small trees to 4 m tall; branches sparsely hirtellous, glabrescent with age; leaves 9-17(-21) mm long, 4-7(-10) mm wide, elliptic, gradually narrowing to acute apex, never attenuate, base cuneate, glabrous above and beneath except for occasionally minutely hirsute midrib, entire, crenulate, shortly petiolate; petiole up to 0.5 mm long; monoecious; inflorescence of contracted bisexual cymules on all nodes of upper branchlets of deciduous branches only, never on lower branchlets; male flowers: pedicels 5-6 mm long, capillary, glabrous, calyx-lobes 6, up to 1 mm long, 0.7 mm wide, entire, glabrous, stamens 3, filaments united; female flowers: pedicels about 1.5 mm long, shortly hirsute, calyx-lobes 6, up to 1.5 mm long, entire, glabrous to shortly hirsute or papillose; fruit not seen.

Trinidad: Valencia Road, 8.2.1953, Baker (K, TRIN 14864).

Lesser Antilles.

This plant is very similar in appearance to *P. acuminatus* Vahl and further collections from the area may show a much wider distribution of *P. subglomeratus* than is indicated above.

6. *Phyllanthus acuminatus* Vahl, *Symb.* 2: 95 (1791); Muell. Arg. in DC., *Prodr.* 15, 2: 381 (1866); Fawc. & Rendle, *Fl. Jam.* 4, 2: 254 (1920); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 16 (1932); Webster in *Journ. Arn. Arb.* 38: 364 (1957); Adams, *Fl. Pl. Jam.*: 408 (1972)

P. conami Sw., *Prodr.*: 28 (1788) as to description only; Griseb., *Fl. Brit. W. Ind.*: 33 (1859)

Shrubs or small trees to 5 m tall, branches angular, minutely puberulous; leaves 12–40 mm long, 5–20 mm wide, ovate or elliptic, apex bluntly cuspidate-acuminate, base obtuse, shortly scabrid above, subglabrous beneath, entire, petiolate; petiole 1.5–3 mm long, scabrid; monoecious; inflorescence of contracted bisexual cymules on all nodes on all branchlets of deciduous branches; male flowers: pedicels 3–4.5 mm long, capillary, glabrous, stamens 3, filaments united; female flowers: pedicels 5–12 mm long, slender, shortly scabrid or subglabrous, never hirsute; calyx-lobes 6, about 1.5 mm long, 1 mm wide; capsule oblate, about 4.5 mm diameter, markedly veiny, olive-green; seeds about 2.5 mm long.

Trinidad: without locality, Fendler 683 (BM, K, P), Lockhart s.n. (K), Ryan s.n. (BM, isotype), von Rohr 13 (BM); Port-of-Spain, 25.3.1920, Britton 990 (K); Laventille, Alexander 4555 (TRIN), 23.1.1893, Alexander (TRIN 4378); Arima, November 1883, Eggers 1184 (P), 1428 (K).

Tobago: Easterfield, 14.7.1913, Broadway 4555 (BM, K); 2 miles from Mason Hall, Easterville Road, 19.10.1937, Sandwith 1868 (K); road to Lambie, 20.10.1867, Finlay (TRIN 2464).

Cuba, Jamaica and St Vincent; Mexico to Argentina, Paraguay and central Brazil.

7. *Phyllanthus orbiculatus* L.C. Rich. in *Act. Soc. Hist. Nat. Paris* 1: 113 (1792); Pulle, *Enum.*: 256 (1906); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 22 (1932); Webster in *Journ. Arn. Arb.* 38: 371 (1957)

P. orbiculatus var. *genuinus* Muell. Arg. in DC., *Prodr.* 15, 2: 401 (1866)

Herb 20 cm to 1 m tall, unbranched to sparsely branched, somewhat woody; leaves 6–11 mm long, 7.5–14 mm wide, orbicular or broader than long, broadly obtuse, frequently apiculate at apex, base obtuse, glabrous, entire, shortly petiolate; petiole about 0.5 mm long; monoecious; inflorescence of bisexual cymules of usually one female and 2 male flowers in leaf axils; male flowers: pedicels 3–7 mm long, capillary, glabrous, calyx-lobes 6, up to 1 mm long, 0.4 mm wide, elliptic-oblong, glabrous, stamens 3, filaments free; female flowers: pedicels becoming up to 5 mm long in fruit, calyx-lobes 6, to 0.8 mm long, linear-oblong; capsule trigonous, about 2.5 mm diameter, compressed, smooth, pale brown; seeds about 1 mm long, trigonous, pale brown, verruculose with black dots arranged on all sides in irregular longitudinal rows.

Trinidad: San Juan, Broadway 5564 (BM, S); milepost 3½ on Lopinot Road, 16.7.1973, Philcox, Wood and Kalloo 7493 (K, P, TRIN); Cedros, near lagoon, Broadway (TRIN 8540); Icacos, Broadway (TRIN 7404, 8539), near the sea, St Quinton, 20.11.1931, Broadway 7833 (BM).

French Guiana and Surinam, Colombia, Venezuela and Brazil south to Bolivia and Paraguay.

8. *Phyllanthus caroliniensis* Walt., *Fl. Carol.*: 228 (1788); Muell. Arg. in DC., *Prodr.* 15, 2: 399 (1866); Fawc. & Rendle, *Fl. Jam.* 4, 2: 255 (1920); Webster in *Journ. Arn. Arb.* 37: 347 (1956); Adams, *Fl. Pl. Jam.*: 406 (1972)

Herb, annual, 10–30 cm tall, erect, much branched, stems terete or subflattened, not winged, brownish, glabrous; leaves 5–20 mm long, 3–8 mm wide, obovate, obtuse or rounded at apex, acutely wedge-shaped at base, glabrous, glaucous beneath, shortly petiolate; petiole up to 1 mm long; monoecious; inflorescence of bisexual axillary cymules; male flowers: pedicels 0.5–1 mm long, glabrous; calyx-lobes 6 or rarely 5, suborbicular to oblong, stamens 3, filaments free; female flowers: pedicels about 1 mm long, glabrous, reflexed in fruit, calyx-lobes 6, oblong to narrowly oblanceolate or linear; capsule subglobose 1.5–2 mm diameter, seeds 0.6–0.8(–1) mm long, greyish-brown, verruculose.

This species is represented in Trinidad by the typical subspecies. This is distinguished from the other two found in the West Indies viz. subsp. *saxicola* (Small) Webster and subsp. *guianensis* (Klotzsch) Webster, in having a smooth, glabrous stem and usually linear calyx-lobes in the female flower.

subsp. *caroliniensis*

Phyllanthus graminicola Britton in *Bull. Torr. Bot. Club* 48: 333 (1922), non Hutchinson (1911)

Trinidad: without locality, Fendler 681 (BM), s.n. (K), Hooker s.n. (P), Lockhart s.n. (K); Woodbrook, 11.1.1928, Broadway 6675 (K); Santa Cruz, 1.8.1847, Crueger (TRIN 383); St Augustine, 16.2.1962, Richardson 2038 (K, TRIN), I.C.T.A., 17.1.1953, Baker (K, TRIN 14793), 24.7.1973, Adams 13371 (UCWI), 26.8.1973, Adams 13682 (K, UCWI); Caura Road, 30.11.1931, Broadway 7850 (BM); O'Meara Savanna, 22.3.1920, Britton & Britton 2502 (K, TRIN); milepost 2½ on Lopinot road, 16.7.1973, Philcox, Wood & Kalloo 7482 (K), milepost 4, Philcox, Wood & Kalloo 7495 (K, P, TRIN); Valencia, 16.4.1920, Britton (TRIN 9249); Mayaro, 16.3.1866, Finlay (TRIN 2465).

From the eastern United States, through Central America and south to Argentina and Paraguay; Martinique and Jamaica.

9. *Phyllanthus hyssopifolioides* H.B.K., *Nov. Gen. & Sp.* 2: 108 (1817); Muell. Arg. in DC., *Prodr.* 15, 2: 390 (1866) as *P. hyssopifolius*; Lanjouw in Pulle, *Fl. Surin.* 2, 1: 19 (1932); Webster in *Journ. Arn. Arb.* 37: 353 (1956)

P. monocladius Urb. in Fedde, *Rep.* 15: 404 (1919)

Herb, annual, 10–25 cm tall, erect, little branched; stems flattened above with thin wings on margins, terete below; leaves 6–12 mm long, 2.5–5 mm wide, ovate, oblong or elliptic, obtuse-apiculate at apex, obtuse at base, glabrous, shortly petiolate; petiole up to 0.8 mm long; monoecious; male and female flowers at separate axils; male flowers: usually in few-flowered clusters, shortly pedicellate, calyx-lobes 5, obovate to orbicular, stamens 3, free; female flowers: solitary, calyx-lobes 6, oblong to obovate-oblong; capsule subglobose about 3 mm diameter; seeds 1.5–1.8 mm long, chestnut-brown, smooth.

Trinidad: Piarco Savanna, 6.2.1953, Baker (TRIN 14854); O'Meara Savanna, 7.4.1920, Britton & Hazen 1573 (TRIN), 8.4.1920, Broadway (TRIN 9341).

Hispaniola and northern South America.

10. *Phyllanthus urinaria* L., *Sp. Pl.*: 982 (1753); Muell. Arg. in DC., *Prodr.* 15, 2: 364 (1866); Fawc. & Rendle, *Fl. Jam.* 4, 2: 255 (1920); Lanjouw in Pulle, *Fl. Surin.* 2, 1: (1932); Webster in *Journ. Arn. Arb.* 38: 194 (1957); Adams, *Fl. Pl. Jam.*: 407 (1972)

Annual herb, erect to 60 cm tall, lower branches decumbent; stems reddish-brown, terete, slightly hairy when young, somewhat square or acutely ridged above; leaves 6–20 mm long, 2.5–8 mm wide, elliptic, oblong or oblong-obovate, obtuse or acute, mucronulate at apex, obtuse and sometimes asymmetric at base, margins hispidulous, sensitive to touch, shortly petiolate; petioles about 0.5 mm long; monoecious; flowers solitary with male in lower nodes of branches, female in upper; male flowers: very shortly pedicellate, calyx-lobes 6, elliptic to oblong-obovate, stamens 3, filaments united; female flowers: shortly pedicellate, calyx-lobes 6, linear-oblong or lanceolate, persistent; capsule depressed-globose, 2 mm diameter; seeds 1–1.2 mm long, pale yellow-brown, transversely ridged with 10–15 ridges, 1–3 foveolate on sides.

Trinidad: without locality, Fendler 682 (BM, K, P); St Ann's, 20.5.1858, Cruieger 25 (K); St Joseph Government (Stock) Farm, 7.2.1958, Purseglove 6020 (K, TRIN), 2.6.1958, Purseglove 6151 (K, TRIN), 21.4.1975, Philcox & Andrews 7704 (K, P, TRIN); 5 miles south of Maracas Bay, 375 m, 26.5.1973, Philcox 7005 (K, P, TRIN); among rocks, foot of Maracas Falls, c. 300 m, Philcox & Andrews 7748 (K, P, TRIN); I.C.T.A. (U.W.I.) campus, 17.1.1953, Baker (K, TRIN 14792), 7.4.1975, Philcox 7652 (K, P, TRIN); Piarco Savanna, south of Dabadie, 21.3.1921, Britton & Britton 2476 (K, TRIN); milepost 2½ on Lopinot Road, 16.7.1973, Philcox, Wood & Kalloo 7486 (K, P, TRIN), milepost 4, Philcox *et al* 7496 (K, TRIN); Arima to Blanchisseuse Road, milepost 3¼, 22.5.1975, Philcox 7779 (K, P, TRIN), milepost 9, 11.4.1975, Philcox & Kalloo 7937 (K, P, TRIN); Valencia, 25.3.1920, Britton, Britton

& Hazen 997 (K); Valencia via Arima, 25.3.1920, Broadway (TRIN 8977); Mora forest at end of trace from milepost 5 $\frac{3}{4}$ on Valencia to Matura Road, Matura Forest Reserve, c. 150 m, 3.5.1975, Phileox & Wood 7755 (K, P, TRIN); Aripo Savanna, 14.8.1959, Richardson 674 (K, TRIN); milepost 1 on Plum to Mitán Road, 1.5.1975, Phileox & Andrews 7740 (K, P, TRIN); Cedros, Austin Road, 21.9.1915, Caroline King 7124 (TRIN).

Tobago: Parlatuvier to Roxborough, 8.4.1959, 450 m, Cowan 1498 (P, TRIN); Louis d'Or, Baker (TRIN 14965); Green Hill, 8.8.1958, Purseglove 6240 (K, TRIN).

Tropical Asia. Introduced into many West Indian islands and other tropical regions where it has become firmly established.

11. *Phyllanthus mimicus* Webster in *Contrib. Gray Herb.* 176: 52 (1955) et in *Journ. Arn. Arb.* 38: 303 (1957)

Annual herb, 8–25 cm tall, slender, erect; stems terete, glabrous; leaves 4–6 mm long, 1.5–2.5 mm wide, oblong, obtuse-apiculate at apex, mostly conspicuously oblique at base, glabrous, minutely petiolate; petioles up to 0.25 mm long; cataphyllary stipules up to 1.5 mm long, narrowly lanceolate; leaf stipules 1.3–1.8 mm long, very narrowly lanceolate, more or less involute; monoecious; flowers solitary, male in lower, female in upper leaf axils; male flowers: pedicels 1.5–2.5 mm long, calyx-lobes 5, obovate, stamens 3, filaments free; female flowers: pedicels 1.7–2 mm long, calyx-lobes 5, obovate; capsule 2 mm diameter, oblate; seeds not known when mature.

Tobago: Big River Bridge, Mason Hall, 13.9.1909, Broadway 3038 (K, isotype).

Known only from the type collection.

12. *Phyllanthus amarus* Schum., *Beskr. Guin. Pl.*: 421 (1827) et in *Kongl. Danske Vidensk. Selsk. Skr.* 4: 195 (1829); Webster in *Journ. Arn. Arb.* 38: 313 (1957); Adams, *Fl. Pl. Jam.*: 408 (1972)

Seed under leaf

Annual herb, erect, (12-)25-50(-80) cm tall, simple or branched, smooth, terete, glabrous; leaves 4-14 mm long, 2-6 mm wide, elliptic-oblong or obovate, obtuse or rounded at apex and base, equal or sometimes asymmetric at base, glabrous, shortly petiolate; petioles to 0.5 mm long; monoecious; flowers paired in bisexual axillary cymules except perhaps for lower nodes of each branchlet; male flowers: pedicels 0.5-1.5 mm long, calyx-lobes 5, elliptic or ovate, acute, stamens 3, filaments united; female flowers: pedicels up to 0.8 mm long in flowers, accrescent up to 2 mm long in fruit, calyx-lobes 5 (or 6), obovate-oblong, acute; capsule about 2 mm diameter, oblate; seeds with 5-6 longitudinal parallel ridges on back.

Trinidad: without locality, Fendler 680 (K); St Ann's, May 1858, Crueger 9 (K); Maraval, Baptiste (TRIN 5861); Experimental Farm, St Joseph, 2.6.1958, Purseglove 6147 (K, TRIN), 21.4.1975, Philcox & Andrews 7697 (K); Curepe, 5.4.1975, Philcox 7636 (K, P, TRIN); St Augustine, I.C.T.A. (U.W.I.), 17.1.1953, Baker (K, TRIN 14789), 7.4.1975, Philcox 7651 (K, P, TRIN); Blanchisseuse, 29.8.1967, Wong 38c (TRIN); Usine St Madelaine, San Fernando, 17.7.1926, Broadway 6361 (K); between mileposts 1 and 3, Guayaguayare to Rio Claro road, 13.6.1976, Philcox 7956 (K).

Tobago: without locality, 3.10.1879, Montgomery 31 (K); Little Rockley Bay, 31.7.1973, Philcox 7546 (K, P, TRIN); Scarborough, 5.5.1953, Baker (TRIN 14946); Bacolet, 5.10.1937, Sandwith 1619 (K).

Native of tropical America. Widespread throughout the tropics as a weed.

13. *Phyllanthus stipulatus* (Raf.) Webster in *Contr. Gray Herb.* 176: 53 (1955) et in *Journ. Arn. Arb.* 38: 315 (1957); Adams, *Fl. Pl. Jam.*: 408 (1972)

Moeroris stipulata Raf., *Sylva Tellur.*: 91 (1838)

Annual herb, erect to 50(-100) cm tall, simple or much branched; stems smooth, terete, glabrous; leaves (2-)3-10(-13) mm long, 2-4(-6) mm wide, oblong-elliptic to ovate or suborbicular, obtuse or rounded to subtruncate at apex, obtuse or rounded at base, not or scarcely at all oblique, glabrous, shortly petiolate; petioles up to 0.5 mm long; monoecious; male flowers: in cymules

of 3-5(-10), shortly pedicellate, calyx-lobes (4-)5(-6), obovate to broadly elliptic to orbicular, stamens 3, filaments completely united; female flowers: solitary in axils towards ends of branches and above male, pedicels up to 2.5 mm long, calyx-lobes 5, accrescent to up to 2 mm long in fruit, obovate, obtuse; capsule about 2.5 mm diameter; seeds about 1.25 mm long, light brown with 10-12 longitudinal striae.

Trinidad: Piarco Savanna, 17.8.1933, Wight 10 (TRIN), 6.2.1953, Baker (K, TRIN 14855); Erin Savanna, 26.8.1962, Pursglove 6491 (K, TRIN).

Widespread in tropical America.

14. *Phyllanthus caribaeus* Urb., *Symb. Ant.* 5: 382 (1908);
Webster in *Journ. Arn. Arb.* 38: 318 (1957)

Annual herb, erect, 10-30 cm tall; stems pale brown, smooth, glabrous; leaves 3-7.5 mm long, 1.5-3 mm wide, ovate-oblong to elliptic, somewhat narrowed from base to apex, obtuse at apex, rounded or subtruncate at base, minutely scabrid above and beneath, very shortly petiolate; monoecious; female flowers solitary in axils towards ends of branches, male flowers in cymes of 4-5 flowers below; male flowers: pedicels up to about 1 mm long, calyx-lobes 5, suborbicular or broader than long, obtuse, rounded at apex, stamens 3, filaments united in lower half only; female flowers: pedicels becoming 1.5-2 mm long, calyx-lobes 5, oblong to obovate; capsule 1.5-2 mm diameter, pale yellow; seeds just under 1 mm long, yellowish-brown with about 10 longitudinal striae.

Trinidad: road to Maracas Bay, south, 14.9.1927, Broadway 6756 (K); milepost 9, Arima to Blanchisseuse Road, c. 450 m, 11.6.1975, Philcox and Kalloo 7936 (K, TRIN); Morne Bleu, 27.1.1921, Freeman (TRIN 9566).

Tobago: Charlotteville to King's Bay, 24.10.1925, Freeman and Williams (TRIN 11387); Calder Hall, November 1889, Eggers 5733 (P).

Lesser Antilles.

2. MARGARITARIA L. fil.

Margaritaria L. fil., *Suppl. Pl.*: 66 (1781)

Trees or shrubs; leaves alternate, entire; dioecious; inflorescence of clustered flowers on short branches or in axils of lower leaves on floriferous branches; male flowers: pedicellate, calyx-lobes usually 4, stamens 4, filaments free; female flowers: short pedicellate, calyx-lobes 4, ovary with 2-5 carpels, each cell 2-seeded, styles free or united; capsule irregularly dehiscent; seeds with thick fleshy outer coat, woody inner.

1. *Margaritaria nobilis* L. fil., *Suppl.*: 428 (1781); Adams, *Fl. Pl. Jam.*: 410 (1972)

Cicca antillana Juss., *Tent. Euphorb.*: 108, t. 4, fig. 13B (1824)

Phyllanthus antillanus (Juss.) Muell. Arg. in *Linnaea* 32: 51 (1863)

P. nobilis (L. fil.) Muell. Arg. in DC., *Prodr.* 15, 2: 414 (1866); Fawc. & Rendle, *Fl. Jam.* 4, 2: 259 (1920); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 23 (1932)

Tree, 5-12 m tall; stems subterete, glabrous, usually conspicuously lenticelled; leaves alternate, 4-15 cm long, 2-5 cm wide, narrow- to oblong-elliptic, acute to subacuminate at both ends, glabrous above, shortly hairy on nerves beneath, shortly petiolate; petiole to 3.5 mm long; inflorescence of 2-several flowers in each cluster, or female solitary; male flowers: pedicels 2.5-5 mm long, calyx-lobes 4, subequal, 1-2 mm long; female flowers: pedicels 0.5-1.5 mm long, calyx-lobes 4, similar to male; ovary of 4-5 (rarely 3) carpels; capsule 10-12 mm diameter; seeds 3.5-4 mm long.

Trinidad: Maraval, Baptiste s.n. (TRIN 5618); Maracas trail, c. 450 m, 29.10.1950, Baker (TRIN 14647); saddle to Piedra Blanca, 27.8.1973, Adams 13699 (K, TRIN); San Fernando Hill, Finlay (TRIN 2470); Quinam Reserve, 27.8.1928, Williams (K, TRIN 12014), 4.11.1949, Simmonds (K, TRIN 14490); Cedros, Austin Road, Broadway (TRIN 8061), Beausejour, 18.11.1915, Broadway (TRIN 7411).

Tobago: Old Belmont, 13.5.1913, Broadway 4515b (K); Scarborough, 4.7.1910, Broadway 4043 (BM).

Mexico and Cuba, south to Peru and Brazil; West Indies.

3. *RICHERIA* Vahl

Richeria Vahl, *Ecolog. Amer.* 1: 30, t. 4 (1796)

Trees; leaves alternate, simple, entire or subentire, petiolate; dioecious; inflorescence axillary or clustered towards ends of branches; apetalous; male flowers: calyx 4-5-partite, stamens 4-5; female flowers: calyx 4-5-partite, ovary 3-celled, 2 ovules in each cell; fruit capsular, 3-valved usually monospermous by abortion of two cells.

- 1 Leaves less than 15 cm long, main lateral nerves 5-9 on each side of midrib; petiole 0.7-1.8 cm long.....1. *R. grandis*
- 1 Leaves more than 15 cm long, main lateral nerves 10-12 on each side of midrib; petiole 2.5-4 cm long.....2. *R. olivieri*

1. *Richeria grandis* Vahl, *Ecolog. Amer.* 1: 30, t. 4 (1797), emend. Muell. Arg. in DC., *Prodr.* 15, 2: 467, subvar. *genuina* p. 468 (1866); Griseb., *Fl. Brit. W. Ind.*: 32 (1859)

Bois bande

Tree; leaves 6-13 cm long, 2.5-5.5 cm wide, broadly elliptic or obovate, entire or weakly sinuate, rounded or rounded-emarginate or obtuse at apex, cuneate to obtuse at base, glabrous except for midrib beneath when young having adpressed pale hairs, 5-9 nerves on each side of midrib; petiole 0.7-1.8 cm long; flowers spicate; male flowers: stamens alternating with glands, anthers globose-bilocular, extrorse; female flowers: styles 3, short, somewhat revolute; capsule up to 1.5 cm long, glabrous, dull brown.

Trinidad: without locality, Sieber 131 (coll. Wrbna) (K, P); head of Lopinot Valley, c. 540 m, 22.7.1960, Snow 5 (K).

Lesser Antilles and northern tropical South America.

2. *Richeria olivieri* Philcox in *Kew Bull.* 32: 224 (1977)

Tree, up to 15 m tall but probably much taller; leaves (13-) 15-30(-35) cm long, 6.5-10(-15) cm wide, entire, ovate or obovate, glabrous above, glabrescent beneath, apex obtuse or obtusely

acute, base attenuate, 10–12 nerves on each side of midrib; petiole 2.5–4 cm long; male inflorescence slender up to 6 cm long; male flowers sessile, up to 2 mm broad, sepals 5, oblong or broadly obovate, about 1 mm long, externally brown-pubescent; stamens 5, extrorse, glands 5, alternating with stamens; female inflorescence 1.5–3.5 cm long, sepals 5, broadly ovate, 1.5–2 mm long, externally brown-pubescent; capsule (? immature) 1.4 cm long, 1.2 cm broad, subtrigonal, glabrescent.

Trinidad: Maraval, 2.9.1890, Baptiste (TRIN 4404), in 1891, Baptiste (TRIN 5852); Saut d'eau, 18.7.1844, Crueger s.n. (K); crest of Tunapuna-St Augustine ridge near summit of Parson's Peak, 14.12.1947, Simmonds 216 (TRIN); El Tucuche, 19.5.1920, Freeman (TRIN 9035); milepost 10, Arima to Blanchisseuse road, c. 500 m, 17.8.1947, Simmonds 149 (TRIN); near Textel approach 6.9.1973, Adams 13801 (K, UCWI); Andrew's Trace, Arima to Blanchisseuse Road, 18.4.1933, Marshall (TRIN 12821); near milepost 4, Aripo Road, 29.11.1927, Broadway 6631 (BM, K, P); heights of Northern Range, June 1941, Forest Dept. 5 (TRIN 13672).

Tobago: Roxborough to Parlatuvier Road, forest of Main Ridge, c. 390 m, 17.7.1961, Snow s.n. (K, holotype, isotype).

Endemic to Trinidad and Tobago.

4. *HYERONIMA* Allem.

Hyeronima Allem., *Dissert. Pl. Nov. Brasil* (1848)

Trees or shrubs, evergreen, young branches and leaves lepidote; leaves alternate, simple, entire, penninerved, petiolate; stipules often cochleate; dioecious; apetalous; inflorescence axillary-paniculate; male flowers: calyx campanulate, 3–6-dentate, stamens 3–6, filaments free; female flowers: calyx similar to male, ovary 2(–3)-celled with 2 ovules in each cell; fruit drupaceous 2-, or more usually 1-celled by abortion.

1. *Hyeronima laxiflora* (Tul.) Muell. Arg. in *Linnaea* 34: 67 (1865) et in DC., *Prodr.* 15, 2: 272 (1866); Pulle, *Enum.*: 257 (1906); Pax in Engl., *Pflanzenr.* 4, 147, 15: 39 (1922); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 26 (1932)

Stilaginella laxiflora Tul. in *Ann. Sci. Nat. sér.* 3, 15: 244 (1851)

Hyeronima caribaea Urb. in Fedde, *Repert.* 16: 139 (1919)

Tree up to 30 m tall with tall but slender buttresses; branches densely lepidote; leaves broadly ovate, (9-)12-20(-28) cm long, (7.5-)10-14.5 cm wide, apex blunt to short acuminate, base obtuse to subcuneate, densely to sparsely lepidote on both surfaces, nerves beneath brown-pubescent; petioles (2-)5-8.5 cm long, lepidote, somewhat thickened at apex and base, stipules oblong-ovate, cochleate, stalked, deciduous, stalks 5-8 mm long, limb 8-14(-22) mm long; panicles 8-11(-15) cm long; male flowers: calyx minutely 4(3-5)-dentate, lepidote; female flowers: calyx as in male, ovary lepidote; fruit 3-5 mm long, globose.

Trinidad: Maraval, Baptiste (TRIN 5811, 5859), 3.4.1902, Dannouse (TRIN 8940); Morne Gasparee to Verdant Vale, 27.8.1973, Adams 13723 (K, UCWI); Arima, 21.1.1861, Crueger 118 (K, TRIN 382); Aripo Road near milepost 5, 19.11.1927, Broadway s.n. (BM); Valencia, 25.3.1920, Britton, Britton & Hazen 1020 (K); Arena Forest Reserve, November 1933, Gill s.n. (OXF); Cunaripo, via Cumuto Road, 2.12.1931, Broadway 7801 (BM); Collector unknown, Irois, (TRIN 878).

Tobago: without locality, Williams s.n. in 1918 (TRIN).

Dominica, St Vincent, St Lucia and Grenada. Common in the Guianas, and also known from Colombia, Peru and Amazonian Brazil and Venezuela.

It has been found impossible to distinguish the West Indian species determined by Urban from the common species of the Guianas, *H. laxiflora*. Urban [*Symb. Ant.* 4: 341 (1905)] cites *H. clusioides* (Tul.) Muell. Arg. as occurring in Trinidad but this is surely a misidentification as this species is known only from Puerto Rico.

5. PERA *Mutis*

Pera Mutis in *Svensk. Akad. Handl.* 5: 299 (1784)

Trees or shrubs; leaves alternate or rarely opposite, simple, entire, penninerved, petiolate; flowers in globose involucre, fasciculated in leaf axils; monoecious; apetalous; involucre opening by two valves; male flowers: calyx small, stamens 2-5; female flowers: calyx absent, ovary 3-locular, ovules one in each cell; capsules globose or pyriform; seeds black.

1. *Pera glabrata* (Schott) Baill., *Etud. gen. Euphorb.*: 434 (1858); Muell. Arg. in DC., *Prodr.* 15, 2: 1030 (1866); Pax ex Pax & Hoffm. in Engl., *Pflanzenr.* 4, 147, 13: 11 (1919); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 63 (1932)

Peridium glabratum Schott in Spreng., *Syst.* 4, 2: 410 (1827)

Tree to 30 m tall; branches densely lepidote when young, glabrescent; leaves 4–10.5 cm long, 2.5–5 cm wide, elliptic to subobovate, apex rounded or obtuse, base acute, glabrous above except for occasional scales at base of midrib, sparsely lepidote beneath; petioles 5–8 mm long, channelled above; stipules absent; involucre peduncle about 5 mm long; male involucre: 3-flowered, flowers small, stamens 4; female involucre: 4-flowered, ovary 3-lobed, glabrous, styles 3; capsule globose-ellipsoid, about 1 cm long, 6–8 mm broad; seeds 5 mm long, blackish-brown, glossy.

Trinidad: Santa Cruz, 3.3.1907, Dannouse s.n. (TRIN); Arima, Eggers 1412 (K); Arena Reserve, 21.6.1934, Gill (K, TRIN 13005); Guanapo, 12.5.1904, McLean s.n. (TRIN); Brazil via Guanapo, 4.9.1925, Broadway 5761 (K); Guapo, 29.7.1904, Dannouse (TRIN 8935).

Surinam and eastern Brazil.

6. *DITAXIS* Vahl ex A. Juss.

Ditaxis Vahl ex A. Juss., *Euph. Tent.*: 27, t. 7 (1824)

Shrubs; leaves alternate, simple, entire or serrate, stipulate, penninerved, petiolate; monoecious or dioecious; flowers solitary or racemose; male flowers: often crowded at ends of racemes, calyx-lobes 4–5, valvate, petals 4–5, stamens 4–15, united into column; female flowers: calyx-lobes 4–5, imbricate, petals 4–5, smaller than in male; ovary 3-celled; capsule 3-lobed.

1. *Ditaxis polygama* (Jacq.) L.C. Wheeler in *Contrib. Gray Herb.* 124: 39 (1939); Gooding & Loveless in Gooding, et al., *Fl. Barbado.*: 246 (1965)

Croton polygamus Jacq., *Enum.*: 32 (1762)

Ditaxis lancifolia Schlechtend. in *Linnaea* 26: 635 (1855);

Pax in Engl., *Pflanzenr.* 4, 147, 6: 55 (1912)

D. glabella Griseb. in *Abh. Gesellsch. Wiss. Götting.* 7: 171 (1857)

Argythamnia polygama (Jacq.) Kuntze, *Rev. Gen.* 2: 593 (1891)

Shrub to 1 m, or rarely 4 m tall; young branches hirsute with long scattered hairs; glabrescent; leaves 2.5–11 cm long, 0.5–4 cm wide, broadly elliptic to elliptic-ovate, apex acuminate or obtuse, cuneate at base, when young with long, scattered hairs, more numerous beneath, glabrescent above, serrate; petioles up to 5 mm long; stipules membranous, pointed, about 2 mm long; monoecious; inflorescence axillary-racemose, few flowered with 2–4 male flowers above, solitary female below but appearing terminal as borne on long drooping pedicel; male flowers: peduncles up to 1 cm long, pedicels absent, sepals 5, 3–5 mm long, obovate to broadly ovate, petals 5, 4–6 mm long, stamens 10; female flowers: pedicels at anthesis up to 1 cm long, up to 2 cm long in fruit, sepals 5, about 5 mm long, 2 mm wide at anthesis, persistent and accrescent up to 15 mm long, 5 mm wide in fruit, hirsute, petals 5, about 5 mm long; capsule shortly hairy, about 6 mm long, 8 mm diameter; seeds subglobose, about 4 mm diameter.

Trinidad: without locality, Fendler 702 (BM, K), Lockhart s.n. (K); Monos Island, 27.11.1915, Broadway (TRIN 7424), 6.7.1867, Finlay (TRIN 2447), 4.4.1921, Britton, Britton & Brown (K, TRIN 2727); Gasparce Island, 7.10.1934, Broadway 9425 (K, P), 31.3.1921, Britton & Broadway s.n. (TRIN); Five Islands, Purdie 22 (K); road from Staubles to Teteron Bay, 22.4.1925, Williams (TRIN 10985); Chaguaramas, 20.3.1920, Britton & Hazen 818 (K); Pointe Gourde, 31.3.1921, Britton & Broadway 2636 (TRIN); Morne Coco Road, 1.1.1949, Wilson (K, TRIN 14251), 22.5.1953, Baker (K, TRIN 15012), 9.4.1920, Britton & Hazen 1603 (K); Laventille, 2.12.1890, Alexander (TRIN 4410), 27.10.1933, Broadway 9257 (BM, K, P), 7.3.1930, Broadway 7711 (BM, K), 10.5.1845, Crueger s.n. (K), 390 (TRIN), 12.10.1906, Freeman s.n. (TRIN), road to Fort Picton, 15.6.1865, Finlay (TRIN 2445).

North-West peninsula and Bocas Islands only.

West Indies, Venezuela and Colombia.

Another species, *Ditaxis fendleri* (Muell. Arg.) Pax & Hoffm. occurs in Patos Island, but this is no longer included in the area covered by this Flora.

7. CAPERONIA St. Hil.

Caperonia St. Hil., *Hist. Pl. Remarq. Bresil* 244 (1824)

Annual or perennial herbs; leaves alternate, stipulate; monocious (in local species); inflorescence spicate or racemose; flowers bracteate, upper male, lower female; male flowers: sepals 5 or 6, petals 5, equal or occasionally unequal, stamens about 10, 2-seriate, filaments connate below; female flowers: sepals 5 or 6, usually unequal, outer smaller than inner, petals 5, narrower than those in male flowers, ovary 3-celled; fruit capsular splitting into three 2-valved cocci; seeds without caruncle.

1. *Caperonia palustris* (L.) St. Hil., *Pl. Remarq. Bresil* 245 (1824); Muell. Arg. in DC., *Prodr.* 15, 2: 744 (1866); Pulle, *Enum.*: 258 (1906); Pax in Engl., *Pflanzenr.* 14, 147, 6: 33, fig. 6 (1912); Urb., *Symb. Ant.* 8: 358 (1920); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 40 (1932)

Croton palustris L., *Sp. Pl.*: 1004 (1753)

Caperonia castaneifolia Griseb., *Fl. Brit. W. Ind.*: 42 (1859) non St. Hil. (1824)

Herb, erect to about 1 m tall; stem hispid with spreading gland-tipped hairs; glabrescent; stipules 3 mm long, subulate; leaves (2.5-)4.0-11.0(-12.0) cm long, (0.8-)1.4-1.8(-2.7) cm wide, narrowly lanceolate to ovate-lanceolate or oblong, subglabrous, apex obtuse or rarely acute in upper leaves, base rounded, acutely serrate, secondary nerves many, impressed above, markedly prominent beneath; petioles from 3 mm long on upper leaves to 2 cm long on lower, long-hispid; racemes terminal and axillary, 4-10 cm long; bracts ovate-acuminate, 1 mm long; male flowers: pedicels 1 mm long, sepals 5, lanceolate, acute, 1.5 mm long, petals white, spatulate-oblong, as long as sepals but appearing longer due to point of insertion on receptacle, rudimentary ovary as long as filaments of inner stamens; female flowers: subsessile, sepals 6, unequal, ovate, acute, with stalked glands on margins and near base beneath, petals white, as long as sepals but narrower, ovary 1.5 mm long, densely covered with gland-tipped processes; capsule 4-5 mm long, 5-7 mm broad, muricate.

Trinidad: without locality, Fendler 688 (BM, K), Finlay s.n. (TRIN 2430), von Rohr 75 (BM), de Schack s.n. (K); Belmont, McLean (TRIN 8601); Caroni Estate, 28.3.1846, Crueger s.n. (K); St Joseph Stock Farm, 10.2.1958, Purseglove 6060 (TRIN), Government Farm, 21.4.1975, Philcox & Andrews 7707 (K, P, TRIN); St Augustine, 23.3.1920, Freeman (TRIN 9016), I.C.T.A., 23.5.1939, Cheesman (TRIN 13436); Waller Field, 19.8.1973, Adams 13604 (K, UCWI); Chaguanas, 15.11.1887 (TRIN 1405), St. Charles Estate, 12.6.1890, Broadway (TRIN 4184); San Fernando, Usine Ste Madeleine, near large pond, 18.7.1926, Broadway 6418 (BM); Princes Town, 30.12.1890, Broadway (TRIN 4452); Nariva Swamp, milepost 46, sea level, 11.12.1961, Aitken 13 (K, TRIN), 7.12.1961, Aitken 31 (K, TRIN), 1.7.1928, Williams & Freeman (K, TRIN 11994), Cedros, Beaulieu Road, 19.11.1915, Broadway (TRIN 7417); Southern Watershed Reserve, 2.10.1947, Dale (TRIN 14003); border of Oropouche Lagoon, c. 1½ miles N.W. of Penal, 9.6.1975, Philcox 7932 (K, P, TRIN).

Tobago: Government Stock Farm, Scarborough, c. 60m, 14.8.1958, Purseglove 6374 (K, TRIN); The Whins, 24.10.1909, Broadway 3102 (BM).

West Indies, tropical Central and South America. Tropical Africa.

8. CROTON *L.*

Croton L., Sp. Pl.: 1004 (1753)

Trees, shrubs or herbs usually bearing brownish or whitish stellate hairs or scales; leaves usually alternate, entire or serrate, rarely lobed, often with 2 sessile or stipitate glands at base or at apex of petiole, petiolate, usually 3-several-nerved from base; monoecious in local species; inflorescence spicate or racemose, with male flowers above, female below; calyx 4-6-partite; petals usually present in male flowers, often absent or rudimentary in female; stamens 5 or more, usually 10-20, filaments erect in flower; ovary 3-celled, ovules solitary in cells; styles 1-many times bifid or parted; capsule splitting into 3 bivalved cocci; seeds smooth with small caruncle.

- | | | | | | | |
|---|--|-----|-------------------------|-----|-----|----|
| 1 | Annual weedy herbs or short-lived undershrubs, usually less than 80 cm tall | ... | ... | ... | ... | 2 |
| 1 | Perennial shrubs mostly more than 1 m tall or trees, often aromatic | ... | ... | ... | ... | 4 |
| 2 | Leaves 3-5-lobed | 1. | <i>C. lobatus</i> | | | |
| 2 | Leaves not lobed | ... | ... | ... | ... | 3 |
| 3 | Leaves doubly crenate-serrate; stamens 10-12; styles more than 1.5 mm long, suberect | 2. | <i>C. hirtus</i> | | | |
| 3 | Leaves coarsely serrate, major teeth not more than 10 mm each side, stamens 8-10; styles less than 1.5 mm long, subspreading | 3. | <i>C. trinitatis</i> | | | |
| 4 | Leaves 3-lobed, large, up to 30 cm long and broad | 4. | <i>C. gossypifolius</i> | | | |
| 4 | Leaves not 3-lobed | ... | ... | ... | ... | 5 |
| 5 | Plant lepidote | ... | ... | ... | ... | 6 |
| 5 | Plant stellate-hirsute | ... | ... | ... | ... | 8 |
| 6 | Scales whitish, not rusty-brown, multiradiate, adpressed | | | | | 7 |
| 6 | Scales rusty-brown, stellately fringed | 7. | <i>C. aripoensis</i> | | | |
| 7 | Leaves silvery beneath, scales densely imbricate over whole surface | 5. | <i>C. niveus</i> | | | |
| 7 | Leaves green beneath, scales scattered never imbricate | 6. | <i>C. choristolepis</i> | | | |
| 8 | Plant densely covered with a felt of short, yellowish, stellate hairs, leaves eglandular | 8. | <i>C. conduplicatus</i> | | | |
| 8 | Plant not densely covered with felt of short hairs or if so then not yellowish; leaves 2(-4)-glandular at base of lamina | ... | ... | ... | ... | 9 |
| 9 | Trees up to 10 m tall; leaves densely stellate-hairy beneath | 9. | <i>C. corylifolius</i> | | | |
| 9 | Shrubs, 1-3 m tall; leaves sparsely, not densely stellate-hairy beneath | ... | ... | ... | ... | 10 |

- 10 Leaves 4-10 cm long, 2-6.5 cm wide; petioles 2-7.5 cm long; stipules up to 10 mm long with several lobes 1.5-5 mm long towards base.....10. *C. hircinus*
- 10 Leaves smaller, 2-5.5 cm long, 0.75-3 cm wide; petioles 0.3-1 cm long; stipules 4-5 mm long, simple.....11. *C. guildingii*

1. *Croton lobatus* L., *Sp. Pl.*: 1005 (1753); Griseb., *Fl. Brit. W. Ind.*: 42 (1859); Muell. Arg. in DC., *Prodr.* 15, 2: 667 (1866); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 35 (1932); Gooding & Loveless in Gooding, et al., *Fl. Barbadoes*: 246 (1965); Webster in *Ann. Mo. Bot. Gard.* 54: 263 (1967)

Herb, annual, 50-100 cm tall, stellate hairy, glabrescent; leaves 2.5-8 cm long, 2.5-8 cm wide, deeply 3-5-lobed, lobes ovate-lanceolate to elliptic-lanceolate, acuminate, hispid-strigose on both surfaces with scattered stellate hairs beneath, margins coarsely serrate or crenate, leaf-base broadly cordate to subtruncate, petiolate; petioles 3-8 cm long, stellate-pubescent, glabrescent, with several minute, sessile, globular glands at apex and junction with lamina; stipules subulate, 3 mm long; inflorescence terminal or axillary racemose, 5-10 cm long; male flowers: pedicels about 1.5-2 mm long, glabrous, calyx 5-lobed, 1 mm long, lobes elliptic-ovate, rounded, membranous, petals equalling sepals, elliptic, stamens (8-)12-15; female flowers: subsessile, but pedicel becoming about 2.5 mm long in fruit, calyx 5-lobed, lobes 4-5.5 mm long, 1-1.5 mm wide, lanceolate to linear, acute, sparsely hispid, glandular on margins at base, petals absent; capsule 5-8 mm long and broad, subglobose, sparsely stellate, glabrescent; seeds 5 mm long, 3 mm broad, oblong, brownish, prominently rugose-costate.

Southern Florida and the Bahamas, south to Peru and Brazil.

This species is represented in our area by two distinct varieties which are separated as follows:

Stems, petioles, inflorescence and capsules with long-spreading hairs which are either simple or constitute main terminal portion of stellate hairs with shorter lateral branches; leaf-surfaces with long or short, more or less adpressed, mostly simple hairs var. **lobatus**

Stems glabrescent or, like petioles and inflorescences, shortly pubescent with small adpressed, stellate hairs; sepals of female flowers with short adpressed simple hairs; capsules glabrous; leaf-surfaces glabrescent or shortly pubescent with mostly simple adpressed hairs ... var. **seemannii**

Croton lobatus var. **lobatus**

Croton lobatus var. *genuinus* Muell. Arg. in DC., *Prodr.* 15, 2: 669 (1866)

Trinidad: without locality, Freeman (TRIN 8081), Lockhart s.n. (BM); Woodbrook, 8.11.1923, Broadway 5164 (K), 23.10.1932, Broadway 9040 (BM, K); Icacos, St Quinton, 20.11.1931, Broadway 7832 (BM); between Bonasse and Green Hill, 11.7.1973, Philcox, Wood and Kalloo 7443 (K, P, TRIN); Cedros, 28.2.1866, Finlay (TRIN 2436), 16.9.1915, Caroline King (TRIN 7197); Galfat, 16.11.1915, Broadway (TRIN 7385).

Tobago: without locality, October 1889, Eggers 5512 (K); Crown Point, 11.8.1958, Purseglove 6289 (K, TRIN); Bacolet, 6.10.1937, Sandwith 1633 (K); Plymouth, 4.5.1953, Baker (TRIN 14947).

Croton lobatus var. **seemannii** (Kl.) Muell. Arg. in DC., *Prodr.* 15, 2: 669 (1866)

Trinidad: without locality, Fendler 686 (K), Kuntze 907 (K), Lockhart 87 (K); Port-of-Spain, Purdie 100 (K); Belmont, McLean (TRIN 393), (TRIN 3867); St Ann's, 29.7.1912, Freeman (TRIN 7982); Dry River (TRIN 5672); Valsayn, near Curepe, 20.6.1973, Philcox 7224 (K, P, TRIN), 5.4.1975, Philcox 7641 (K, TRIN);

St Augustine, U.W.I. (I.C.T.A.), 23.5.1939, Cheesman 213 (TRIN 13433), 9.12.1947, Simmonds 211 (TRIN), 24.1.1953, Baker (TRIN 14795), 20.2.1958, Purseglove 6107 (TRIN), 7.4.1975, Philcox 7653 (K, P, TRIN); Las Cuevas to Maracas, 22.6.1973, Philcox, Kalloo and Jurawan 7258 (K, P, TRIN); $\frac{3}{4}$ mile on Lopinot Road, 16.7.1973, Philcox, Wood and Kalloo 7465 (K, P, TRIN); between milepost 27 on Valencia to Toco Road, and Savonette Point, 20.5.1975, Philcox and Andrews 7767 (K, TRIN); San Fernando, Usine Ste Madeleine, 17.7.1926, Broadway 6363 (BM, K).

2. *Croton hirtus* L'Herit., *Stirp. Nov.* 1: 17, t. 9 (1785); Griseb., *Fl. Brit. W. Ind.*: 42 (1859); Fawc. and Rendle, *Fl. Jam.* 4, 2: 285 (1920); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 37 (1932); Webster in *Ann. Mo. Bot. Gard.* 54: 262 (1967); Adams, *Fl. Pl. Jam.*: 413 (1972)

C. glandulosus L. var. *hirtus* (L'Herit.) Muell. Arg. in DC., *Prodr.* 15, 2: 684 (1866)

C. glandulosus L. subsp. *hirtus* (L'Herit.) Croizat in *Bull. Torr. Bot. Club* 75: 401 (1948)

Herb, annual, 20–100 cm tall; stem branched, retrorsely stellate-hispid with hairs up to 2.5 mm long; leaves (1–)2.5–4.5(–8) cm long, (0.7–)1.5–3.5(–7) cm wide, ovate or occasionally elliptic, doubly crenate-serrate, cuneate at base, acute or obtuse at apex, sparsely strigose-hispid above, with simple hairs mixed with stellate hairs, densely stellate-hispid beneath, 3–5-nerved from base, petiolate; petioles 3–10(–40) mm long, stellate with 2 stalked glands at apex, glands about 0.25 mm diameter, flattened at ends of stalks up to 1.5 mm long; stipules 2–4 mm long, subulate; inflorescence terminal, racemose 1.5–4.5 cm long, flowers subtended by linear-lanceolate bracts; bracts capitate-glandular with about 4 slender, stalked, ellipsoid glands with stalks up to 5 mm long; male flowers: pedicels about 1 mm long, calyx 5-lobed, lobes 1–1.5 mm long, hispid-stellate, petals 5, white, equalling sepals, stamens 10–12; female flowers: pedicels becoming 1.5–2 mm long in fruit, calyx 4(–rarely 5–) lobed, petals absent; capsule 3–4 mm diameter, subglobose, pale green, stellate-hispid; seeds 2.5–5 mm long, 2–2.5 mm broad, compressed, blackish-brown, minutely foveolate-reticulate.

Trinidad: without locality, Fendler 690 (BM, K), 692 (BM, K), Finlay (TRIN 2437), Kuntze 824 (K), de Schack s.n. (K); Fort George, 2.8.1847, Finlay (TRIN 2443); Botanic Garden, 17.9.1888, Broadway (TRIN 1941), 13.6.1889, Broadway (TRIN 3819), 17.6.1889, Broadway (TRIN 3822); St Ann's, 14.7.1848, Crueger (K, TRIN 2432), 29.7.1912, Freeman (TRIN 7983), 12.1.1915, Freeman (TRIN 8874); Dry River, Alexander (TRIN 5678); San Juan, 6.8.1926, Broadway 6378 (BM, K); Government Stock Farm, St Joseph, Purselove 6065 (K, TRIN), 6152 (K, TRIN), 2.4.1975, Philcox & Andrews 7698 (K, TRIN); St Augustine, Rogers 37006 (K), U.W.I. (I.C.T.A.) grounds, 7.5.1929, Broadway 7212 (BM), 23.5.1939, Cheesman 215 (TRIN 13535), 22.6.1950, Hosein (TRIN 14618), 20.8.1949, Simmonds (TRIN 14390), 7.4.1975, Philcox 7645 (K); Tunapuna, 27.10.1915, Broadway (TRIN 7316); O'Meara Savanna, Eggers 1146 (P); milepost 2 on Lopinot Road, 16.7.1973, Philcox, Wood & Kalloo 7474 (K, P, TRIN); between milepost 27 on Valencia to Toco Road and Savonette Point, 20.5.1975, Philcox & Andrews 7765 (K, P, TRIN); 2 miles along road from Eastern Main Road to Heights of Guanapo, 26.6.1973, Philcox & Kalloo 7294 (K, P, TRIN); Point-a-Pierre, Crueger (TRIN 1541); Erin Savanna, 26.8.1959, Richardson 722 (TRIN); Cedros, Bamboo Village, 10.6.1915, Broadway (TRIN 8060); between Bonasse and Green Hill, 11.7.1973, Philcox, Wood & Kalloo 7444 (K, TRIN); Icacos Point, Lockhart s.n. (K).

West Indies, tropical South and Central America. West Africa and Malaya.

Adams [*Fl. Pl. Jamaica* 413 (1972)] has followed Fawcett & Rendle (1920) in considering that the closely allied species *C. glandulosus* L. occurs in Trinidad. I have seen no material of this species and have no reason to include it here. As Webster (1967) stated, some botanists treat *C. hirtus* as a synonym of *C. glandulosus*, but the two species are quite distinct. The glands at the top of the petiole are sessile or subsessile and discoid in the case of *C. glandulosus* while in *C. hirtus* they are stipitate with slender stalks 1.5–2 mm long and cup-shaped in appearance. *C. glandulosus* also lacks glandular floral bracts.

3. *Croton trinitatis* Millsp. in *Publ. Field Mus. Nat. Hist. Bot.*
Ser. 2: 57 (1900); Webster in *Ann. Mo. Bot. Gard.* 54:
261 (1967)

C. miquelensis Ferguson in *Rep. Mo. Bot. Gard.* 12: 48 (1901)

C. tragioides Blake in *Contrib. U.S. Nat. Herb.* 24: 11 (1922)

C. miquelianus Lanjouw in *Pulle, Fl. Surin.* 2, 1: 38 (1932)

Herb, 20–70 cm tall, slightly woody below; stems sparsely to moderately adpressed stellate-pubescent with long-radiate hairs; leaves 1–5 cm long, 0.5–2 cm wide, hispid-stellate above, radiate-stellate beneath, coarsely serrate, ovate to oblong-deltoid, apex acute, base obtuse, petiolate; petioles 2–10(–30) mm long, stellate-pubescent with 2 shortly stalked glands at apex adjoining lower surface of lamina; inflorescence terminal or in fork of branches, about 1 cm long, usually bisexual with 2–4 female flowers below and 5–8 male flowers above, occasionally female spike with one or 2 flowers only; male flowers: pedicels about 0.5 mm long, calyx 5-lobed to 1 mm long, petals 5, equalling calyx, pointed, stamens 8–10; female flowers: pedicels to about 2.5 mm long in fruit, calyx-lobes 5, oblanceolate, about 3 mm long, stellate-hispid, petals about 3.5 mm long, subulate, style short, bifid; capsule 4.5 mm broad, stellate-pubescent, globose; seeds 3–3.5 mm long, 2–2.5 mm broad, compressed-cylindric, blackish-brown, minutely foveolate-reticulate, smooth.

Trinidad: without locality, Crueger s.n. (K), Fendler 691 (K); Monos, east side, 25.6.1930, Broadway 7575 (BM); St Augustine, 7.4.1975, Philcox 7646 (K, P, TRIN), 7648 (K, P, TRIN), 7650 (K, TRIN); Piareo Savanna, 2.6.1953, Baker (K, TRIN 14859); road from Arouca to Arima, 17.5.1868, Finlay (TRIN 2438); Arima, 26.10.1929, Broadway 7689 (K); Valencia, 25.3.1920, Broadway, Britton & Britton (TRIN 8993), Britton, Britton & Hazen 998 (K, TRIN); 1½ miles from main Matura Road along Orosco Road, 31.5.1973, Philcox & Kalloo 7013 (K, TRIN); side of road leading to Pitch Lake, Brighton, Freeman (TRIN 7944); Point Sable, La Brea, 15.8.1973, Adams 13563 (K, UCWI); Erin Savanna, 26.8.1959, Richardson 723 (TRIN), 25.8.1962, Purselglove 6469 (K, TRIN); Chatham, Cedros, 30.9.1915, Broadway (TRIN 7235).

West Indies, Central and South America.

4. *Croton gossypifolius* Vahl, *Symb. Bot.* 2: 98, t. 49 (1791);
Griseb., *Fl. Brit. W. Ind.*: 42 (1859) *Candle Tree*

Shrubs or trees up to 15 m tall; young branches densely stellate-tomentose, glabrescent, exuding red or yellow latex; leaves up to 26 cm long, 24 cm wide, 3- or rarely 5-lobed, acute or acuminate, cordate at base, irregularly serrate, densely stellate-tomentose beneath, much less so above, mixed with white, tubercle-based, long simple hairs, long petiolate; petioles up to 16 cm long, biglandular at top near junction with lamina; stipules 3-6 mm long, linear-lanceolate, stellate-tomentose, early caducous; inflorescence terminal, racemose, up to 30(-40) cm long, stout, stellate-tomentose; male flowers: pedicels 5-10 mm long, slender, sepals 5, 3 mm long, 2 mm wide, ovate-lanceolate, densely tomentose without, sparsely so within, petals 5, 3 mm long, 1-1.25 mm wide, narrowly ovate-elliptic, tomentose, stamens 18-25; female flowers: pedicels 1-2 mm long, stout, sepals 5, similar to male; capsule up to 1 cm diameter, yellowish-green, minutely verrucose, stellate-pubescent; seeds 1 in each coccus, 3-5 mm long, 2-3 mm broad, ellipsoid, grey, furrowed.

Trinidad: without locality, Fendler 701 (BM, K), Lowe 361 (K), von Rohr 74 (BM), de Schack s.n. (K); Pointe Gourde, 14.4.1975, Philcox & Andrews 7656 (K, P, TRIN); St Ann's, 5.2.1920, Broadway (K, P, TRIN 9700), 16.1.1933, Broadway s.n. (BM), Hololo Road, above Port-of-Spain, 26.4.1913, Freeman (TRIN 8106), Fountain s.n. in 1937 (BM), 16.5.1930, Broadway 7579 (BM, K); St Clair, 2.12.1919, Broadway s.n. (K), Saddle Road, 28.2.1920, Britton & Hazen 153 (K), Lady Young Road, Purseglove 6408 (TRIN); Maraval, Baptiste (TRIN 5415), Broadway (TRIN 4748); North Coast Road, 15.11.1947, Simmonds 198 (TRIN), 30.12.1963, Hulsman & Saunders (K, TRIN 18869); Aripo Savanna, Eggers 1024 (P), 1387 (K); about milepost 1½ on road from Eastern Main Road to Heights of Guanapo, 26.6.1973, Philcox & Kalloo 7277 (K, P, TRIN); Arima, Eggers 1089 (P); Oropouche Local Road, via Valencia, 2.12.1927, Broadway 6671 (BM, K, OXF); San Fernando Hill, 26.11.1864, Finlay (TRIN 2434).

Tobago: Campbleton, 13.11.1912, Broadway 4267 (BM, K, P); Roxborough to Parlatuvier Road, 14.10.1937, Sandwith 1759 (K); Roxborough to Bloody Bay Road, 12.8.1958, Purseglove 6347 (K, TRIN).

Martinique, Venezuela and Colombia. A plant which appears to be a simple-leaved variety also occurs in Mexico.

5. *Croton niveus* Jacq., *Stirp. Amer.*: 255, t. 162, fig. 2 (1763); Muell. Arg. in DC., *Prodr.* 15, 2: 518 (1866)

C. pseudochina Schlecht. in *Linnaea* 5: 84 (1830); Griseb., *Fl. Brit. W. Ind.*: 39 (1859)

Shrubs or small trees, 1-4 m tall; leaves 4-8.5(-12) cm long, 2-4(-8) cm wide, ovate, entire, acuminate at apex, base cordate, densely silvery-lepidote beneath, sparsely so above, scales with rusty-brown centre, petiolate, basally 3-5-nerved, midrib pinnately nerved; petioles 0.5-3 cm long, lepidote, eglandular; stipules 3-4 mm long, acicular, early caducous; inflorescence axillary or terminal on short lateral branches, long or short racemose; male flowers: shortly pedicellate, pedicels to 1.5 mm long, calyx-lobes 5, about 1 mm long, broadly ovate, densely lepidote, petals 5, equalling or slightly longer than sepals, densely fringed with white hairs, oblong-spathulate, stamens 10-16(-20); female flowers: usually solitary, or one at base of raceme, pedicellate, pedicels becoming up to 6 mm long in fruit, sepals and petals similar to male flowers, styles 3, very deeply lacinate, persistent in fruit; capsule about 1 cm long, 0.8 cm wide, subellipsoid, stellate-pubescent.

Trinidad: without locality, Lockhart s.n. (K), de Schack s.n. (K); Chacachacare, 17.1.1847, Crueger (K, TRIN 877), 27.5.1925, Williams & Cheesman (TRIN 11067), 20.6.1927, Williams (K, TRIN 11729), 1.4.1951, Baker (K, TRIN 14689), 15.3.1953, Baker & Simmonds (K, TRIN 14879), 12.4.1961, Richardson 906 (K, TRIN 16069); Monos, 6.7.1867, Finlay (TRIN 2435), 27.11.1915, Broadway (TRIN 7422); Gasparée, 11.3.1920, Britton 474 (K), 31.3.1921, Britton s.n. (TRIN), 2784 (K); Carrera Island, Hart (TRIN 3893); Point Gourde Islands, 4.9.1917, McLean s.n. (TRIN); Staubles to Teteron Bay, 24.4.1925, Williams (TRIN 10980).

West Indies and continental tropical America. In our area this plant is known only from the Bocas Islands and the north-western peninsula.

6. *Croton choristolepis* Urb. in Fedde, *Repert.* 15: 407 (1919)

Shrubs; young branches densely whitish, multiradiate-lepidote; leaves 4–8 cm long, 1.5–4 cm wide, ovate to lanceolate, entire, base shallowly cordate to obtuse or rounded, 3–5-nerved from base, lepidote to varying degrees on both surfaces, apex short to long acuminate, petiolate, eglandular; petioles 4–6 mm long; stipules about 5 mm long, lanceolate-subulate; inflorescence terminal at ends of branches, 8–12 cm long; male flowers: shortly pedicellate, sepals 5, 2 mm long, 1.25 mm wide, broadly ovate-lanceolate, lepidote, petals 5, about 2 mm long, 0.75 mm wide, narrowly subelliptic, stamens 10–15; female flowers: pedicels to 5 mm long in fruit, sepals 5, about 2.5 mm long, 2.5 mm wide, broadly triangular, appearing wavy margined and subcordate at base, lepidote, petals absent; capsule about 5 mm diameter, lepidote; seeds 3 mm long, 2 mm diameter, pale brown.

Trinidad: San Fernando, 9.5.1865, Finlay (TRIN 2439), (TRIN 2440, type specimen); milepost 10½, Penal to Rock Road, 26.6.1929, Williams (K, TRIN 12174).

Margarita Island, Venezuela.

7. *Croton aripoensis* Philcox in *Kew Bull.* 32: 224 (1977)

Shrubs or small trees; leaves and young branches covered with reddish-brown, stellately fringed, adpressed scales; leaves up to 10 cm long, 6 cm wide, ovate, acuminate or rounded at apex, rounded or subcordate at base, serrate, sparsely covered with scales above becoming glossy, more densely so beneath, glandular at base of lamina with 2 glands 1 mm diameter, 3(–5)—nerved at base, pinnately-nerved above; petioles up to 6 cm long; stipules not seen; inflorescence terminal, racemose, up to 7 cm long; male flowers: pedicels up to 6 mm long, calyx 5-lobed, lobes 3 mm long, 2 mm wide, broadly ovate, obtuse, densely villous within, petals 5, 3 mm long, about 0.3 mm wide, narrowly linear, villous towards base, stamens about 15, filaments villous; female flowers and fruits not seen.

Trinidad: Heights of Aripo, 25.3.1934, Bruins-Lich in Broadway 9386 (K, holotype), Swabey (TRIN 12995).

Known only from these two collections made on the same day, in the same place and probably from the same plant.

8. *Croton conduplicatus* H.B.K., *Nov. Gen. & Sp.* 2: 80 (1817)

C. salviifolius H.B.K., *Nov. Gen. & Sp.* 2: 74 (1817) non Mill. (1768)

C. rhamnifolius H.B.K., *Nov. Gen. & Sp.* 2: 75 (1817) non Willd. (1803)

C. rhamnifolius H.B.K., var. *salviifolius* (H.B.K.) Muell. Arg. in DC., *Prodr.* 15, 2: 634 (1866)

Shrubs, 0.5–3 m tall; young stems, leaves, petioles and inflorescences densely covered with yellowish-white stellate hairs; leaves 4–9 cm long, 2–4.5 cm wide, broadly ovate, apex acute or obtuse, base rounded, indumentum sparser above, shortly serrate, petiolate; petioles 0.5–2 cm long, eglandular; stipules apparently absent; inflorescence terminal, racemose, 4–12 cm long; male flowers: shortly, 1 mm long pedicellate, calyx about 2 mm long, petals slightly longer, oblanceolate, stamens 12–16; female flowers: pedicels about 2 mm long, calyx as in male, petals minute, threadlike, styles elongate, ovary densely stellate-hairy; seeds ellipsoidal, 3–3.5 mm long, dark grey.

Trinidad: Monos Island, Williams s.n. in 1917 (TRIN).

Dutch West Indies, northern Venezeula and the adjacent islands, especially Patos, from which material the above description was prepared. To this species probably belongs the de Schack specimen from Trinidad cited by Grisebach (*Fl.* p. 38) under *C. flavens* L., a species which does not occur in our area.

9. *Croton corylifolius* Lam., *Encycl.* 2: 205 (1786); Griseb., *Fl. Brit. W. Ind.*: 39 (1859); Muell. Arg. in DC., *Prodr.* 15, 2: 549 (1866); Fawc. & Rendle, *Fl. Jam.* 4, 2: 283 (1920); Adams, *Fl. Pl. Jam.*: 414 (1971)

Trees up to 10 m tall, young branches, leaves, petioles and inflorescences covered to varying degrees with whitish stellate hairs; leaves 4–10(–13) cm long, 2.5–7(–11) cm wide, broadly ovate to elliptic, apex acute or obtuse, base obtuse, rounded to subcordate, irregularly serrate-dentate, densely stellate-hairy beneath, less so above, 3(–5)-nerved from base, pinnately-nerved

above, biglandular at top of petiole; petioles 1-6 cm long; stipules about 5 mm long, linear, early caducous; inflorescence terminal, racemose 10-20 cm long, flowers subsessile; male flowers: calyx about 2.5 mm long, lobes oblong-ovate, petals about 2 mm long, oblanceolate, pubescent within, stamens 16-18; female flowers: pedicels 2-3 mm long, calyx about 3 mm long, petals 1 mm long, linear; capsule about 1 cm diameter, obconic to ellipsoid, stellate-hairy; seeds 6 mm long, 4 mm broad, ellipsoid, glossy dark brown.

Trinidad: Morne Diablo, 30.8.1928, Williams (TRIN 12033).

Guadeloupe to St Vincent, Jamaica, Cuba and Hispaniola; Venezuela. In Trinidad, known only from the collection cited above.

10. ***Croton hircinus*** Vent., *Jard. Malm.* 1: 50 et icon. (1804); Webster in *Ann. Mo. Bot. Gard.* 54: 260 (1967)

C. populifolius Lam., *Encycl.* 2: 205 (1786) non Mill. (1768); Griseb., *Fl. Brit. W. Ind.*: 41 (1859); Fawc. & Rendle, *Fl. Jam.* 4, 2: 284 (1920)

Shrubs, 1-2 m tall; young stems coarsely stellate-hispid; leaves 4-10(-14) cm long, 2-6.5(-9) cm wide, ovate to elliptic, apex acuminate, base rounded or slightly cordate, coarsely dentate to crenate-serrate, sparsely stellate or stellate-hispid above, sparsely stellate beneath, basal'y 5-7-nerved, midrib pinnately-nerved, short to long petiolate; petioles 2-7.5(-12.5) cm long, sparsely stellate, glabrescent, glandular at top and junction with lamina with short stipitate glands about 1 mm long; stipules up to 1 cm long, linear, cylindric, gland-tipped with several glandular lobes 1.5-5 mm long towards base; inflorescence terminal, consisting of one central and several lateral racemes, 5-15 cm long; male flowers: pedicels to 5 mm long, pubescent, calyx 5-lobed, 4 mm long, ovate-lanceolate to oblong-lanceolate, stellate-pubescent, petals 5, slightly longer than sepals, elliptic to obovate, bearded at apex; female flowers: pedicels 1-2 mm long in fruit, calyx 5-lobed, to 5 mm long, lanceolate to linear, stellate-pubescent, margin glandular-stipitate below, petals rudimentary, 0.5-1 mm long, subulate; ovary about 2 mm broad, densely hairy; capsule 6-7 mm long, broadly ellipsoidal to subglobose; seeds to 4 mm long, 3 mm broad, compressed-ellipsoid, smooth.

Trinidad: without locality, Lockhart s.n. (K); Monos, east, 25.6.1930, Broadway 7576 (BM, K), west, 4.4.1921, Britton, Britton & Brown 2730 (K, TRIN); St Ann's, Crueger (TRIN 2442), 30.6.1856, Crueger s.n. (K), 25.6.1889, Broadway (TRIN 3838), 28.9.1927, Broadway 6683 (K); San Juan, 29.7.1927, Broadway 6386 (BM, K); St Joseph, 8.3.1958, Purseglove 6121 (K, TRIN), 24.3.1920, Broadway, Britton & Hazen (TRIN 9351), Santa Rita, 25.3.1922, Freeman (TRIN 10939), road to Maracas, 13.5.1868, Finlay (TRIN 2431); Maracas, 18.5.1905, Dannouse s.n. (TRIN); Santa Cruz, McLean (TRIN 5998); Mount St Benedict, 26.5.1939, Cheesman 226 (TRIN 13514), north of Monastery, 3.6.1973, Philcox 7026 (K, TRIN); $\frac{3}{4}$ milepost on Lopinot Road, 16.7.1973, Philcox, Wood & Kalloo 7466 (K, P, TRIN).

Lesser Antilles, northern South America and Panama.

The name *Croton hircinus* Vent. is used here, as the more popularly used *C. populifolius* Lam. is invalid because the name was earlier used by Miller (1768) for an entirely different plant from Jamaica.

The specimens described and cited from Trinidad as *C. urticifolius* Lam. by Grisebach (1859) are apparently a form of *C. hircinus* with small, shortly-petiolate leaves on woody apical shoots. Broadway 7576 is a similar form and on account of its small shortly-petiolate, glabrescent leaves which dry a dark brown colour, approaches very close to the var. *essequiboensis* (Klotzsch) Muell. Arg. of Guyana, but the indumentum of the young parts is much less dense and is not conspicuously adpressed.

11. *Croton guildingii* Griseb., *Fl. Brit. W. Ind.*: 38 (1859);
Muell. Arg. in DC., *Prodr.* 15, 2: 681 (1866)

C. wulschlaegelianus Muell. Arg. in *Flora* 55: 10 (1872)

Shrubs, 1-3 m tall, when young all parts hairy to varying degrees; leaves 2-5.5 cm long, 0.75-3 cm wide, elliptic or ovate, acuminate, cuneate at base, crenate to crenate-serrate, sparsely stellate-hairy above, sparsely to densely so beneath, petiolate, 2(-4)-glandular with shortly stipitate, cupular glands at base of lamina beneath; petiole 0.3-10 mm long; stipules 4-5 mm long, linear; inflorescence terminal, racemose, 2-4 cm long, flowers

subsessile; male flowers: calyx 1.5 mm long, lobes stellate-hairy, stamens 10-12(-16); female flowers: calyx 2 mm long, lobes oblong, stellate-hairy; capsule about 4 mm long, 3 mm broad, greyish-brown, stellate-hairy; seeds 3 mm long, 1.5 mm broad, ovoid.

Trinidad: Monos Island, Finlay s.n. in 1867 (TRIN 2441), Williams s.n. in 1917 (TRIN), 27.11.1915, Broadway (TRIN 7423), 25.6.1930, Broadway 7575 (K); Morris Bay, 14.6.1869 (TRIN 834).

The type specimen of *Croton guildingii* Griseb., seems to represent an extreme form of *C. wulfschlaegelianus* Muell. Arg. with subentire, densely stellate-hairy leaves, and I have chosen to place them together here under the earlier name for the taxon.

9. JATROPHA L.

Jatropha L., *Sp. Pl.*: 1006 (1753) et *Gen. Pl.* ed. 5: 437 (1754)

Herbs, shrubs or small trees; leaves alternate, often digitately-lobed, glabrous or pubescent, petiolate, stipulate; monoecious; flowers in terminal, dichotomous cymes with female flowers solitary and terminal, male lateral; male flowers: calyx 5-lobed, corolla 5-lobed, stamens 10 or less, filaments more or less united into column; female flowers: calyx and corolla as in male, ovary 2-3 celled, styles fused at base, ovules solitary in each cell; capsule-splitting into 2 or 3, 2-valved cocci.

1 Shrubs or small trees; leaves angular, not

digitately-lobed; petals green.....1. *J. curcas*

1 Large herbs, woody at base; leaves

digitately-lobed; petals red.....2. *J. gossypifolia*

1. *Jatropha curcas* L., *Sp. Pl.*: 1006 (1753); Griseb., *Fl. Brit. W. Ind.*: 36 (1859); Muell. Arg. in DC., *Prodr.* 15, 2: 1080 (1866); Pax in Engl., *Pflanzenr.* 4, 147, 1: 77 (1910); Fawc. & Rendle, *Fl. Jam.* 4, 2: 310 (1920); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 68 (1932); Gooding & Loveless in Gooding, et al., *Fl. Barb.*: 254 (1965); Adams, *Fl. Pl. Jam.*: 417 (1972) Physic Nut

Shrubs or small trees up to 4 m tall; leaves 4-12(-18) cm long, orbicular-ovate, almost as broad as long, obscurely 3-5-lobed or angular, apex acute or obtuse, base cordate, glabrous except on nerves, 5-7-palmately nerved from base; petioles about as long as blades; stipules rudimentary, early caducous; inflorescence axillary,

peduncle 2-7(-10) cm long; male flowers: calyx-lobes ovate-elliptic about 4 mm long; petals oblong-obovate, about twice as long as calyx, green, stamens 8, outer free, inner connate; female flowers: calyx as in male flowers, petals almost as long as calyx, ovary glabrous; capsule 3-lobed, up to 4 cm long, ellipsoid; seeds about 2 cm long, oblong.

Trinidad: without locality, May 1865, Finlay (TRIN 2457).

Probably introduced, but not uncommon in gardens and on sites of old houses. Pan-tropically introduced from tropical America.

2. *Jatropha gossypifolia* L., *Sp. Pl.*: 1006 (1753); Griseb., *Fl. Brit. W. Ind.*: 36 (1859); Muell. Arg. in DC., *Prodr.* 15, 2: 1086 (1866); Fawc. & Rendle, *Fl. Jam.* 4, 2: 312 (1920); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 66 (1932); Gooding & Loveless in Gooding, et al., *Fl. Barbado.*: 255 (1965); Adams, *Fl. Pl. Jam.*: 417 (1972)

Wild Cassava, Bellyache Bush

Herbs, to 1.5 m tall, woody below; branches, especially when young, sparingly covered with long glandular hairs; leaves 4.5-13 cm long, 4-19 cm wide, deeply 3-5-lobed, cordate at base, lobes bluntly pointed at apex, glabrous to pubescent above, more densely so beneath, margin serrulate or irregular, densely glandular-ciliate; petioles 4-6(-9) cm long, covered with coarse branched glandular hairs; stipules dissected, occurring as tufts of glandular bristles; inflorescence terminal-cymose, peduncle to 5 cm long, densely pubescent, bracts 8-10 mm long, linear-oblong, glandular; male flowers: calyx-lobes about 5 mm long, ovate, acute, glandular on margin, petals 6-7.5 mm long, purplish-red, stamens 8-12; female flowers: calyx and petals as in male flowers, ovary pubescent, styles 3, short, bifid; capsule 3-lobed, about 1 cm diameter, glabrescent; seeds about 7 mm long, 4 mm broad, oblong, brown.

Tropical America from the West Indies and Mexico to southern Brazil and Paraguay. In our area this species is represented by two distinct varieties which are separated as follows:

- 1 Leaves more or less copiously pubescent on
both surfaces.....2a *J. gossypifolia*
var. *gossypifolia*

- 1 Leaves glabrous or glabrate on both surfaces.....2b. *F. gossypiifolia* var. *elegans*

2a. *Jatropha gossypiifolia* L. var. *gossypiifolia*

J. gossypiifolia L. var. *staphysaegrifolia* (Mill.) Muell. Arg. in DC., *Prodr.* 15, 2: 1087 (1866); Pax in Engl., *Pflanzenr.* 4, 147, 1: 27 (1910); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 67 (1932)

Trinidad: Monos Island, October 1917, Williams s.n. (TRIN); Port-of-Spain, Mucurapo, 23.2.1956, Simmonds (TRIN 15377).

Tobago: Buccoo Bay, 10.7.1954, Baker (K, TRIN 15329); Scarborough, 6.6.1925, Williams (K, TRIN 11147).

This variety agrees with the Linnean type of the name.

2b. *Jatropha gossypiifolia* L. var. *elegans* (Klotzsch) Muell.

Arg. in DC., *Prodr.* 15, 2: 1087 (1866); Pax in Engl., *Pflanzenr.* 4, 147, 1: 26 (1910)

J. elegans Klotzsch in Seem., *Bot. Voy. Herald* 102 (1845-1851)

Trinidad: Chacachacare, Lunt (TRIN 6002), 5.8.1928, Williams (K, TRIN 12013), overlooking Perruquier and Coco Bays, about 30 m, Philcox & M. Olivier 7983 (K, P, TRIN); Chaguanas, St Giles Estate, 12.6.1890, Broadway (TRIN 4216).

Tobago: Crown Point, between airport and sea, 5.6.1975, Philcox & A. Raynal 7923 (K, P, TRIN); Salem Charleston Trace, 18.9.1927, Williams (K, TRIN 11780).

DOUBTFUL SPECIES

Jatropha multifida L., with deeply lobed and lobulate leaves, is cited from Trinidad by Pax (*loc. cit.* 41), on the strength of Sieber 382. There are no other records of this plant from our area and the Sieber plant may have been collected in Martinique. It could also have represented a cultivated plant as the author has seen this species under cultivation in gardens in and around Port-of-Spain, especially in St James.

J. hastata Jacq., an endemic species of Cuba, is cited from Trinidad by Grisebach (*loc. cit.* 36), on the strength of a collection made by de Schack. This specimen is in the herbarium of the Royal Botanic Gardens, Kew, and is clearly a specimen of *J. pandurifolia* Andr. which may have been cultivated in Trinidad at that time.

10. CNIDOSCOLUS Pohl

Cnidoscolus Pohl, *Pl. Bras. Icon.* 1: 56 (1827)

Herbs, shrubs or trees usually clothed in stinging hairs; leaves alternate, digitately lobed, petiolate, with glands at top of petiole, stipulate; monoecious; apetalous; inflorescence of terminal dichotomous cymes with female flowers solitary and terminal, male lateral; male flowers: calyx 5-lobed, corolla absent, stamens 10-15, outer filaments free, inner connate; female flowers: calyx as in male, ovary 2-3-celled, styles fused at base, ovules solitary in each cell; capsule splitting into 2 or 3, 2-valved cocci.

1. *Cnidoscolus urens* (L.) Arthur in *Torreya* 21: 11 (1921)

Jatropha urens L., *Sp. Pl.*: 1007 (1753); Muell. Arg. in DC., *Prodr.* 15, 2: 1100 (1866); Pax in Engl., *Pflanzenr.* 4, 147 1: 97 (1910); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 68 (1932,

Herbs up to 2 m tall; stems thick with copious white or watery, sap, all parts densely covered with long, sharp, stinging hairs 4-8 mm long, younger parts of stem, petioles and leaves also with shorter, softer hairs; leaves 5-20 cm long, 9-23 cm wide, irregularly 3-5-lobed, shallowly cordate at base, lobes ovate, lanceolate or oblong, sharply acuminate, irregularly and laxly serrate-dentate; petioles usually as long as or longer than leaf-blade, with two to several glands at junction with lamina above; stipules about 3 mm long, triangular; cymes shortly peduncled, flowers white; male flowers: calyx about 1 cm long, pubescent, cylindric, contracted at throat, stamens usually 10; female flowers: calyx as in male flowers, staminodes 2-3 or absent, ovary acute, puberulous, styles slender, connate 2-3-fid; capsule about 1 cm long, densely covered with stinging hairs; seeds about 7 mm long, 3 mm broad, flattened-ovoid.

Trinidad: without locality, Alexander (TRIN 5767), Finlay (TRIN 2429), Sieber 292 (P); Chacachacare, 15.3.1953, Baker & Simmonds (K, TRIN 14885), road from Perruquier Bay to lighthouse, c. 30 m, 22.3.1959, Cowan 1112 (TRIN), overlooking Perruquier and Cocos Bays, 26.6.1975, Philcox & M. Olivier 7981 (K, P, TRIN); Carrera Island, Hart s.n. in 1891 (TRIN 5947); Teteron Bay, 22.3.1938, Cheesman (TRIN 13469); Chaguaramas, 12.7.1927, Broadway 6650 (K); Cedros, 16.9.1915, Caroline King (TRIN 7205), L'Enviense, 3.11.1916, Broadway (TRIN 8541).

Tobago: Crown Point, between Airport and the sea, 5.6.1975, Philcox & A. Raynal 7924 (K, P, TRIN); Gomez Bay, 27.10.1889, Eggers 5524 (K, P).

West Indies, Mexico and tropical South America.

11. *ALCHORNEA* Sw.

Alchornea Sw., *Prodr.*: 98 (1788)

Trees or shrubs, evergreen; leaves alternate, penni- or palmately-nerved, simple, petiolate, stipulate; monoecious or dioecious; inflorescence spicate; flowers apetalous; male flowers: several together in axils of bracts, calyx 2-5-partite, stamens 8, rudimentary ovary absent; female flowers: calyx 3-6-partite, ovary 2-3-celled, 1 ovule in each cell; fruit capsular of 2-3 cocci.

1. *Alchornea triplinervia* (Spr.) Muell. Arg. in DC., *Prodr.*, 15, 2: 909 (1866); Pulle in *Rec. Trav. Bot. Neerl.* 9: 145 (1912); Pax in Engl., *Pflanzenr.* 4, 147, 7: 227 (1914); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 44 (1932)

Antidesma triplinervia Spreng., *Neue Entd.* 2: 116 (1821)

Trees up to 25 m tall; young branches densely covered with minute stellate hairs, glabrescent; leaves (2.5-)9-15 cm long 2.5-10 cm wide, ovate to elliptic, apex acute or acuminate, base obtuse or acute, subcoriaceous, laxly dentate, trinerved from base with 3-6 pairs of lateral nerves arising from midrib, glabrous above, sparsely stellate-pubescent beneath, with 2-4 dark glandular areas on lamina immediately above insertion of petiole; petioles 1.5-4.5 cm long, somewhat swollen to geniculate at apex; inflorescence densely

stellate-pubescent, spikes axillary, simple or paniculate; dioecious; male flowers: several together in axil of bract, shortly pedicellate, often borne on fasciculate spikes, sepals 2, glabrous, stamens 8; female flowers: sepals 4, triangular, pubescent, ovary pilose to glabrous, styles 2, 5–15 mm long, persistent in fruit; capsule to 6 mm long, brownish-black.

Tropical South America.

The Trinidad plant has been described as var. *trinitensis* Riley (*Kew Bull.* 1925, p. 141), but the material does not seem to differ from that of var. *laevigata* Muell. Arg. of Amazonian Brazil and the Guianas as understood by Lanjouw.

var. *laevigata* Muell. Arg. in DC., *Prodr.* 15, 2: 910 (1866); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 45 (1932)

Leaves 5–13 cm long, 2.5–5.5 cm wide, ovate, acuminate; ovary glabrous, styles 5–7 mm long.

Trinidad: Arima, 15.11.1861, Crueger 283 (K, TRIN 879); Arima Valley, 600 m, 24.3.1959, Cowan & Simmonds 1204 (P, TRIN); Arima to Blanchisseuse Road, near Textel approach, 6.9.1973, Adams 13798 (K, UCWI), c. 650 m, 27.5.1924, Riley 84 (BM, K) near milepost 10½, 29.1.1926, Broadway 5918 (BM, K), 16.4.1926, Broadway 6113 and 6114 (BM, K); Morne Bleu, 13.3.1921, Freeman, 2280 (K, TRIN 9602); Cumuto, 10.7.1925, Broadway s.n. (K); Arena Forest Reserve, 6.4.1956, Simmonds (K, TRIN 15396), 17.1.1930, Brooks (K, TRIN 12331), 30.1.1932, Gill (K, TRIN 12622); Irois, 22.11.1916, Broadway (TRIN 8576).

Trinidad, Amazonian Brazil and the Guianas.

12. *ALCHORNEOPSIS* Muell. Arg.

Alchorneopsis Muell. Arg. in *Linnaea* 34: 156 (1865)

Trees; leaves alternate, trinerved, simple, petiolate; dioecious; flowers apetalous; inflorescence axillary, spiciform, not truly spicate; male flowers: subsessile or shortly pedicellate, solitary or clustered in glomerules on spike, calyx 3–4-partite, stamens 5–8,

filaments free, rudimentary ovary present, glabrous, tripartite; female flowers: solitary on spike, sepals 3-4, ovary 3-celled, styles 3, short, simple, 1 ovule in each cell; capsule subglobose.

1. *Alchorneopsis floribunda* (Benth.) Muell. Arg. in *Linn.* 34: 156 (1865) et in DC., *Prodr.* 15, 2: 765 (1866)
Alchornea glandulosa Poepp. & Endl. var. *floribunda* Benth.
 in Hook. *Lond. Journ. Bot.* 6: 331 (1854)

Trees up to 20 m tall; young branches glabrous; leaves 5-13 cm long, 3-6.5 cm wide, elliptic, glabrous, apex acuminate, base obtuse or occasionally acute, laxly and shallowly denticulate to subentire, domatia frequently and irregularly present in axils of main nerves beneath; petioles 6-25 mm long, glabrous; inflorescence densely and minutely yellow tomentose; male flowers: calyx 3-lobed, stamens usually six; female flowers: not seen; developing capsule yellowish-grey pubescent.

Trinidad: Arena Forest Reserve, 6.4.1956, Simmonds (K, TRIN 15395).

This is the first record of this plant from Trinidad, hitherto known only from Amazonian Brazil and the Guianas.

The genus *Alchorneopsis* is distinguished from *Alchornea* especially by the presence of a rudimentary ovary in the male flower and the absence of stellate indumentum on the lower leaf surface.

13. MAPROUNEA Aubl.

Maprounea Aubl., *Pl. Guian.* 2: 895, tab. 342 (1775)

Trees, evergreen; leaves alternate, simple, entire, glabrous, stipulate, petiolate; monoecious; inflorescence terminal on much contracted branchlets; flowers apetalous, male flowers numerous, spicate with 1-3 female flowers below on spike; male flowers: sessile, calyx 2-3-lobed, stamens 1-3, exserted, filaments united into column; female flowers: shortly pedicellate, calyx 3-lobed, ovary 3-celled, ovules solitary in cells; capsule globose to triangular, splitting into three 2-valved cocci; seeds ovoid with large caruncle.

1. *Maprounea guianensis* Aubl., *Hist. Pl.* 2: 895, tab. 342 (1775); Muell. Arg. in DC., *Prodr.* 15, 2: 1191 (1866); Pulle, *Enum.*: 262 (1906); Pax in Engl., *Pflanzenr.* 4, 147, 5: 177 (1912); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 85 (1932)

Trees up to 20 m tall; leaves 2–4.5 cm long, 1–2.5 cm wide, ovate or elliptic, acuminate, cuneate at base; petioles up to 1.5 cm long; stipules small, triangular; inflorescence about 1 cm long, male spike up to 3 mm long, ovoid; male flowers: calyx irregularly 2–3-lobed, lobes less than 1 mm long, stamens 2; female flowers: pedicels 3–4 mm long, to about 7 mm in fruit; capsule 4–5 mm long, globose; seeds dark brown.

Trinidad: Blanchisseuse Road, 26.3.1933, Broadway 9158 (BM, K); Oropouche Local Road, via Valencia, 7.5.1926, Broadway 6182 (K); Guanapo, 14.8.1961, ? Finlay (TRIN 876); Aripo Road via Arima, mileposts 4–5, 2.10.1925, Broadway 5790 (K); edge of gravel pit near milepost 5, Mora Forest, 27.9.1931, Broadway 7746 (BM, K); Long Stretch, mileposts 23–24, 4.2.1927, Broadway 7287 (BM); Arena Forest Reserve, 6.9.1956, Simmonds (K, TRIN 15394), 25.5.1933, Swabey (K, OXF, TRIN 12900).

Tropical South America.

14. *ADELIA* L.

Adelia L., *Syst. Nat.* ed. 10: 1298 (1759)

Shrubs, more or less spiny, glabrous except for inflorescences; leaves alternate or crowded at nodes, entire, petiolate; dioecious; flowers clustered in leaf-axils, apetalous; male flowers: short pedicellate or sessile, sepals 5, disc attached to base of calyx, stamens 8–15; female flowers solitary or in clusters of 2–3, sepals 5, disc flattened, ovary 3-celled, styles 3, much divided, reflexed, spreading, ovules solitary; capsule splitting into three 2-valved cocci; seeds subglobose.

1. *Adelia ricinella* L., *Syst. ed.* 10: 1298 (1759); Griseb., *Fl. Brit. W. Ind.*: 45 (1859); Pax ex Pax & Hoffm. in Engl., *Pflanzenr.* 4, 147, 7: 66 (1914); Fawc. & Rendle, *Fl. Jam.* 4, 2: 292 (1920); Adams, *Fl. Pl. Jam.*: 418 (1972)

A. macrophylla Urb. in Fedde, *Repert.* 15: 409 (1919)

Shrubs or small trees 2-3(-10) m tall; branches with white bark, spreading, spine-tipped; leaves 2-9 cm long, 0.5-4 cm wide, elliptic, oblong-obovate to obovate, apex obtuse, rounded to emarginate, base cuneate; petioles short, 1-5 mm long; male flowers: pedicels 2-4 mm long, sepals 2.5-3 mm long, unequal, oblong; female flowers: pedicels 1-5 cm long, sepals up to 3 mm long, linear to lanceolate, reflexed in fruit, ovary tomentose; capsule 8-9 mm diameter, about 5 mm long, grey-brown; seeds about 3 mm diameter.

Tobago: Store Bay, 8.4.1926, Williams & Cheesman (K, TRIN 11692); Spring Garden, 28.2.1910, Broadway 3491 (BM), 4.4.1910, 3573 (BM) (types of *A. macrophylla*).

West Indies from Cuba to Curacao.

15. ACALYPHA L.

Acalypha L., *Sp. Pl.*: 1003 (1753) et *Gen. Pl.* ed. 5: 436 (1754)

Herbs or shrubs; leaves alternate, entire, serrate, petiolate, stipulate; monoecious or dioecious; inflorescence spicate or spike-like racemose, axillary or terminal; flowers apetalous; male flowers small, clustered in axils of small inconspicuous bracts, arranged in catkin-like spikes or racemes; female flowers solitary or few together in axils of bracts; male flowers: calyx 4-partite, valvate, stamens usually 8; female flowers: calyx 3-5-lobed, imbricate, lobes small, ovary 3-celled, ovules solitary in each cell, styles 3, free; capsule splitting into three 2-valved cocci; seeds without caruncle.

- | | | | | | |
|--------------------------|-----|-----|-----|-----|---|
| 1 Herbs to 40 cm tall | ... | ... | ... | ... | 2 |
| 1 Shrubs to 2(-4) m tall | ... | ... | ... | ... | 3 |
- 2 Inflorescence always of axillary spikes; leaves not conspicuously acuminate, mostly obtuse..... 1. *A. arvensis*
- 2 Inflorescence partly terminal; leaves distinctly and abruptly acuminate..... 2. *A. alopecuroidea*
- 3 Inflorescence unisexual, (2-)6-25(-40) cm long, male 2-5 mm thick, female 5-12 mm thick..... 3. *A. grisebachiana*
- 3 Inflorescence usually bisexual, if unisexual then only with male flowers in spike, female flowers never on separate inflorescences; spikes 2-6(-10) cm long, up to 2 mm thick..... 4. *A. diversifolia*

1. ***Acalypha arvensis*** Poepp. & Endl., *Nov. Gen. Sp.* 3: 21 (1845); Muell. Arg. in DC., *Prodr.* 15, 2: 884 (1866); Standley in *Contrib. U.S. Nat. Herb.* 23: 628 (1923); Pax & K. Hoffm. in Engl., *Pflanzenr.* 4, 147, 17: 99 (1924); Standley & Steyermark in *Fieldiana* 24: 31 (1949)

Annual herbs, erect 30-40(-80) cm tall; stems simple or branched, densely short-pubescent when young becoming pilose, glabrescent; leaves 2.5-7.5 cm long, 1.5-4.5 cm wide, broadly ovate, obtusely pointed at apex, base rounded or subcordate, hairy on both surfaces especially on main nerves; petioles 0.5-3(-4) cm long; stipules up to 3 mm long, narrowly triangular, densely hirsute, persistent; monoecious; inflorescence axillary, slender pedunculate; upper spikes almost wholly female with perhaps occasional spikes bearing few male flowers at apex, 1.5-3.5 cm long, 1-1.3 cm thick, peduncles 1.5-3 cm long in fruit; lower spikes male, brick-red, up to 3.5 cm long, 2 mm thick; male flowers: minute, crowded, short-pedicellate, calyx 4-lobed, about 0.5 mm long, stamens about 12; female flowers: sessile, bracts 3-6-lobed, lobes long-awned, hirsute, accrescent to 10 mm long, 7 mm broad in fruit, calyx unequally 5-6-lobed, about 1 mm long, green, hirsute with few hairs gland-tipped, ovary hairy, styles 3, much branched, 5 mm long; capsule about 1 mm diameter, hairy; seeds grey, about 0.5 mm long.

Trinidad: St Augustine, 24.1.1953, Baker (K, TRIN 14796), 27.5.1975, A. Raynal 15572 (K, P, TRIN); Valsayn, by St Joseph's River, 19.6.1973, Philcox 7233 (K, TRIN); milepost $3\frac{1}{2}$, Arima to Blanchisseuse Road, 22.5.1975, Philcox 7778 (K, P, TRIN), milepost 9, 11.6.1975, Philcox & Kalloo 7935 (K, P, TRIN); milepost 2, Heights of Guanapo Road, Philcox & Kalloo 7293 (K, P, TRIN), 29.5.1975, Philcox 7807 (K, P, TRIN), 12.8.1973, Adams 13549 (K); O'Meara Ferry, 18.10.1953, Baker (TRIN 15029); San Rafael Cemetery, 21.9.1932, Lich (TRIN 12722); San Rafael to Talparo Road, 25.1.1948, Baker (TRIN 14154); San Fernando, September 1921, Latour (TRIN 14085).

Greater Antilles, Grenada, tropical Central and South America.

2. *Acalypha alopecuroides* Jacq., *Collect.* 3: 196 (1790) et *Icon. Pl. Rar.* 3: 19, pl. 620 (1792); Muell. Arg. in DC., *Prodr.* 15, 2: 882 (1866); Fawc. & Rendle, *Fl. Jam.* 4, 2: 300 (1920); Pax & K. Hoffm. in Engl., *Pflanzenr.* 4, 147, 17: 22 (1924); Standley & Steyermark in *Fieldiana* 24: 31 (1949); Adams, *Fl. Pl. Jam.*: 423 (1972)

Annual herb 15-50(-80) cm tall, simple or branched from near base; stems pubescent, glandular-pilose; leaves up to 5.5 cm long, 3.5 cm wide, triangular- or rounded-ovate, acuminate, rounded to subcordate at base, serrate-dentate, sparsely hirsute on both surfaces, glabrescent, margins glandular-pilose; petiole up to 1.5 cm long, slender, glandular-pilose; male spikes axillary, 3-10 mm long, 1.5-2 mm thick; female spikes terminal or axillary, up to 5 cm long, 1.5 cm thick in fruit, occasionally with few male flowers at apex, bracts 1-flowered, 7-9 mm long, 3-5-lobed, lobes triangular-ovate, long pilose, glandular, ovary pilose, styles bifid or entire; capsule 1.25-2 mm long; seeds ellipsoid, brown, about 1 mm long.

Trinidad: Usine Ste Madeleine, San Fernando, in cane field, 17.7.1926, Broadway 6360 (K).

West Indies, tropical Central and South America.

3. *Acalypha grisebachiana* (Kuntze) Pax & K. Hoffm.
in Engl., *Pflanzenr.* 4, 147, 17: 148 (1924)

Ricinocarpus grisebachianus Kuntze, *Rev.* 2: 616 (1891)

Acalypha macrostachya Jacq., sensu Griseb., *Fl. Brit.*
W. Ind.: 47 (1859) non Jacq.

Shrubs, 2(-4) m tall, little branched; leaves (10-)15-24(-36) cm long, (3.5-)8-11(-15) cm wide, broadly ovate to elliptic, serrate, young leaves shortly hirsute-pubescent especially on major nerves, early glabrescent on both surfaces, acuminate, base tapering into petiole; petioles (1-)4-10(-15) cm long; stipules 3-10 mm long, 2 mm wide at base, shortly pubescent; inflorescence axillary, catkin-like, either wholly male or wholly female, drooping especially male; male inflorescences: more numerous, shortly pedunculate, up to 25(-40) cm long, flowers numerous, peduncles about 0.5 cm long; female inflorescences pedunculate, 7-15 cm long, laxly flowered, peduncles 2-4 cm long; female flowers: bracts up to 3 mm long, 8 mm wide in fruit, 1-flowered, broadly ovate, hispid when young, quickly glabrescent, about 15-dentate (our material), calyx-lobes broadly ovate, subciliate, ovary hispid, styles 4-5 mm long, much divided; capsule about 4 mm diameter; seeds 7 mm long.

Trinidad: without locality, Fendler 708 (K, P), Lockhart s.n. (K), de Schack, s.n. (K); Maraval, 1891, Baptiste (TRIN 5815), Purdie 61 (K); St Ann's, 9.5.1930, Broadway 7557 (BM), 26.5.1846, Crueger s.n. (K); Botanic Gardens, January 1865, Finlay (TRIN 2425); Blue Basin Falls, Diego Martin, 13.5.1915, Mc Lean (TRIN 7746); Morne d'Enfer, 4.6.1868, Finlay (TRIN 2426); Maracas, Road to Bay, 18.4.1926, Broadway 6130 (BM, K); Maracas Bay, Dannouse (K, TRIN 6753); Maracas Valley, 210 m, 16.5.1947, Simmonds 102 (TRIN); Maracas Falls, 2.4.1893, Broadway (TRIN 5350); near milepost 1 $\frac{1}{2}$, Caura Road, 25.5.1928, Broadway 6957 (BM, K); near milepost 9, Arima to Blanchisseuse Road, 17.4.1925, Broadway 5588 (BM, K, OXF); Mt Aripo, 300 m, 22.10.1949, Simmonds 412 (K, TRIN 14449), Cowan 1381 (TRIN), 11.4.1922, Broadway (K, TRIN 10937); Tabaguite, 26-28.3.1921, Britton & Freeman 2611 (K, TRIN); San Fernando, 1874, Kuntze 237 (K, type of *Ricinocarpus grisebachianus*); Caroni, May 1868, Devenish (TRIN 2427); Chatham Woods, Lunt (TRIN 6060).

Endemic.

4. *Acalypha diversifolia* Jacq., *Pl. Hort. Schonbr.* 2: 63, tab. 244 (1797); Muell. Arg. in DC., *Prodr.* 15, 2: 853 (1866); Pulle, *Enum.*: 259 (1906); Standley in *Contrib. U.S. Nat. Herb.* 23: 627 (1923); Pax & K. Hoffm. in Engl., *Pflanzenr.* 4, 147, 17: 107 (1924); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 50 (1932); Standley & Steyermark in *Fieldiana* 24: 33 (1949)

Shrubs or small trees, 3-6(-10) m tall; branches pubescent, glabrescent, leaves 5-10(-20) cm long, 1.5-4(-10) cm wide, ovate to ovate-lanceolate, acuminate, subcordate or acute at base, shallowly denticulate, upper surface glabrous, pubescent, glabrescent beneath; petioles 0.5-2 cm long, stipules about 5 mm long, linear; inflorescence spicate, axillary, catkin-like, male or with few female at base of spike; male flowers: bracts ovate, sepals linear or oblong, filaments pilose; female flowers: bracts 1-3-flowered, small, ovate, acute, sepals ovate, acute, externally pilose, ovary hispid, styles 2-3 mm long, divided; capsule about 3 mm diameter; seeds 1.5 mm long.

Tobago: Trafalgar River, 8.4.1926, Williams & Cheesman (K, TRIN 11680); Mason Hall, 7.5.1913, Broadway 4480 (BM).

The two collections to date from Tobago may represent an introduction to our islands, but it is thought better to include the species here.

West Indies, tropical Central and South America.

16. *PLUKENETIA* L.

Plukenetia L., *Sp. Pl.*: 1192 (1753) et *Gen. Pl.* ed. 5: 438 (1754)

Climber, leaves alternate, simple, petiolate, stipulate; inflorescence subspicate; monoecious; apetalous; calyx 4-lobed, stamens 12-30, ovary 4-celled, 4-winged, one ovule in each cell; capsule dehiscent.

1. *Plukenetia verrucosa* Smith in *Nov. Act. Upsal.* 6: 4 (1799); Muell. Arg. in DC., *Prodr.* 15, 2: 771 (1866); Pulle, *Enum.*: 259 (1906); Pax ex Pax & K. Hoffm. in Engl., *Pflanzenr.* 4, 147, 9: 16 (1919); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 53 (1932)

P. volubilis L.f., *Suppl.*: 421 (1781) non L. (1753)

Stems slender, pubescent when young; leaves 7–12 cm long, 4–10.5 cm wide, broadly ovate, acuminate, cordate at base, subglabrous above, trinerved from base, with 2–3 pairs of lateral nerves, sparsely simple hirsute beneath especially on major nerves, entire, glandular at base; petioles 15–55 mm long, pubescent; stipules small, lanceolate; inflorescence densely pubescent, of male flowers with solitary female flower at base; male flowers: sessile, calyx-lobes ovate-lanceolate, pubescent, stamens about 12; female flowers: pedicels 3–4 mm long, calyx-lobes ovate, styles connate into column up to 20 mm long; capsule 15 mm long, 20 mm broad, 4-celled, pale brown when mature.

Trinidad: Siparia, 31.5.1865, Finlay (TRIN 2466); Chatham, Cedros, 30.9.1915, Broadway (TRIN 7236); Erin Savanna, 15.9.1947, Baker (TRIN 13762).

Lesser Antilles, the Guianas, Brazil (lower Amazon).

17. OMPHALEA L.

Omphalea L., *Syst. Nat.* ed. 10: 1264 (1759)

Trees or shrubs, often climbing; leaves alternate, simple, petiolate, stipulate; petioles biglandular at apex; monoecious; apetalous in small cymes along branches of terminal panicle, with or without central female flower, cymes subtended by leaf-like bracts; calyx 4–5-lobed; stamens 2–3, filaments connate; ovary 2–3-celled, one ovule in each cell; fruit thick, fleshy; seeds without caruncle.

- 1 Leaves broadly elliptic to orbicular-ovate, markedly tomentose-pubescent beneath, coriaceous.....1. *O. diandra*
- 1 Leaves lanceolate-acuminate, glabrous or subglabrous, membranaceous.....2. *O. megacarpa*

1. *Omphalea diandra* L., *Syst.* ed. 10: 1264 (1759); Aubl., *Pl. Guian.* 2: 843, t. 328 (1775); Griseb., *Fl. Brit. W. Ind.*: 50 (1859); Pax in Engl., *Pflanzenr.* 4, 147, 5: 20 (1912); Fawc. & Rendle, *Fl. Jam.* 4, 2: 321, fig. 107 (1920); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 77 (1932); Adams, *Fl. Pl. Jam.*: 418 (1972)

Climbing shrub; young branches rusty-pubescent, glabrescent; leaves 10–24 cm long, 6–15 cm wide, broadly-elliptic or ovate, apex bluntly acuminate, base cordate to subtruncate, glabrous above except on major nerves, tomentose-pubescent beneath, entire, 3–5-nerved from base, with 2–4 pairs of lateral nerves; petioles 1.5–9 cm long, tomentose-pubescent with glands about 1.5 mm diameter, glabrous, drying yellow; stipules triangular; inflorescence up to 40 cm long; bracts leaf-like, up to 3 cm long, 5 mm wide, narrowly linear-elliptic, subglabrous; male flowers: sepals 4–5, stamens 2, filaments united; female flowers: calyx as in male, ovary tomentose; fruit large, up to 10 cm long, 7 cm diameter, fleshy, 3-locular, pear-shaped; seeds 3–4 cm long, 2–3 cm broad.

Trinidad: without locality, Guppy (TRIN 20799); cultivated in Botanic Garden, St Clair, 28.1.1904, Hart s.n. (K); St Ann's, cultivated, 2.1.1930, Broadway s.n. (BM, K); Whitelands, 10.2.1935, Williams (TRIN 13089); El Tucuche, Dannouse (K, TRIN 6431), (TRIN 20800, 20801, 20802, 20803); Windbelt Forest Reserve, 3.1.1954, Baker & Simmonds (K, TRIN 15053); Rio Claro to Mayaro Road, 15.4.1949, Baker (TRIN 14297).

West Indies, Brazil, Colombia, Peru, Bolivia and the Guianas.

2. **Omphalea megacarpa** Hemsl. in Hook. *Ic. Pl. tab. 2537*
(1897) *Hunterman's Nut*

Climbing shrubs; very young branches rusty-pubescent, glabrescent; leaves 12–24 cm long, 4–10 cm wide, lanceolate-acuminate, wedge-shaped or rounded at base, glabrous on both surfaces, entire, 3–5-nerved from base, with 3–4 pairs of lateral nerves; petioles 4–10 cm long, totally glabrous or sparsely pubescent near junction with lamina, glands 0.2–1 mm diameter, drying dull yellow; flowers not seen; fruit large, fleshy; seeds about 3.5 cm diameter, 2.75 cm broad.

Trinidad: Herb. Trin. no. 6614 (TRIN) without further information; Tabaquite, 3.12.1955, Simmonds (K, TRIN 15366).

Tobago: without locality, 12.12.1892, McGillivray, (TRIN 5071), seed material only, Gillespie s.n. (K).

Endemic.

The author agrees that this treatment of *Omphalea* is open to further question. Clarification of the genus in Trinidad and Tobago has been made difficult over the years as two species appear to be represented here. *O. diandra* is easily defined as bearing broadly elliptic, coriaceous leaves which are densely tomentose-pubescent, while another plant described by Hemsley (1897) as *O. megacarpa* clearly appears to be different. Hemsley described his plant from material from Tobago and Grenada consisting of leaves, fruit and seeds. He admitted that the seeds of *O. diandra* were very similar and from material available to the author, he agrees with Hemsley on this point. Hemsley distinguishes his species solely on leaf size, shape and texture, and although there are striking differences, it has been suggested that in the absence of any flowering specimen, this material could be considered to represent that from young plants or seedlings.

However, having studied all the material available to him along with much correspondence on the subject of the Trinidad plant, the author considers that until further collections are made which can clarify this complex, it is better here to consider two species separated on the characters given above.

EXCLUDED SPECIES

Omphalea trinitatis Pax & K. Hoffm. in Engl., *Pflanzenreich* 4, 147, 5: 16 (1912)

This is based on TRIN 1924, a specimen in the herbarium of Krug and Urban which was formerly at Berlin. A duplicate specimen in the Kew herbarium bears a label proving what was apparently unknown to Pax, that the material was from cultivated stock, "Hort. Trin." collected from the Botanic Gardens in Trinidad on August 28, 1888. This material is indistinguishable from *O. triandra* L., a native of Jamaica and Hispaniola which has been cultivated in these Gardens. This plant must then be excluded from further treatment within the limits of this "Flora".

18. *TRAGIA* L.

Tragia L., *Sp. Pl.*: 980 (1753) et *Gen. Pl.* ed. 5: 421 (1754)

Perennial herbs or shrubs with stinging hairs, often climbing and twining; leaves alternate, cordate, penninerved, stipulate; monoecious; apetalous; inflorescence terminal or axillary racemose with male flowers above and few female at base; male flowers: calyx 3-5-lobed, globose in bud, stamens 1-3; female flowers: calyx 3-6-lobed, ovary 3-celled, ovules solitary, styles 3, united into column; capsule splitting into three 2-valved cocci; fruits globose.

1. *Tragia volubilis* L., *Sp. Pl.*: 980 (1753); Griseb., *Fl. Brit. W. Ind.*: 48 (1859); Muell. Arg. in DC., *Prodr.* 15, 2: 935 (1866); Pulle, *Enum.*: 259 (1906); Pax ex Pax & K. Hoffm. in Engl., *Pflanzenr.* 4, 147, 9: 47 (1919); Fawc. & Rendle, *Fl. Jam.* 4, 2: 305 (1920); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 54 (1932); Gooding & Loveless in Gooding, et al., *Fl. Barbadoes*: 262 (1965); Adams, *Fl. Pl. Jam.*: 420 (1972)

Twining cowitch, Stinging Nettle, Nettle Vine

Herbs, slender, twining, all aerial parts covered with stiff stinging hairs; stems glabrescent; leaves (1.8-)3-7(-9) cm long, (0.4-)1-3(-3.5) cm wide, oblong-lanceolate to oblong, acute to acuminate, base cordate to rounded, serrate, petiolate; petioles up to 3.5 cm long; stipules triangular, about 2 mm long; inflorescence axillary, slender, 1-4 cm long, with numerous orange- to reddish-brown male flowers, with usually a solitary female at base; male flowers: pedicels 0.5-2 mm long; sepals 3, minute, stamens 3; female flowers: pedicels accrescent, up to 3 cm long, sepals 6, about 2 mm long, lanceolate, ovary hairy, styles 3, glabrous; capsule about 5 mm diameter, deeply 3-lobed.

Trinidad: without locality, Fendler 689 (BM, P), Finlay (TRIN 2469), Kuntze s.n. in 1874 (K), Warming s.n. (C); Woodbrook, Broadway 6308 (K); St Ann's, Purdie 95 (K); Emperor Valley Zoological Gardens, St Clair, 18.4.1975, Philcox 7688 (K, TRIN); milepost 2, Lopinot Road, c. 125 m, 16.7.1973, Philcox, Wood & Kalloo 7473 (K, P, TRIN); San Fernando Hill, 150 m, 1.2.1953, Baker & Simmonds (K, TBIN 14828).

Tobago: near milepost $7\frac{1}{2}$ between Canaan and Pigeon Point, 7.6.1975, Philcox & A. Raynal 7896 (K, P, TRIN); near Bacolet, Eggers 5504 (K), 5.10.1937, Sandwith 1616 (K); Green Hill, c. 150 m, Purselove 6239 (K, TRIN); Speyside, 4.7.1954, Tuley (TRIN 15264).

West Indies, tropical South America and also West Africa.

19. HURA L.

Hura L., *Sp. Pl.*: 1008 (1753) et *Gen. Pl.* 5: 439 (1754)

Trees; leaves alternate, petiolate, stipulate, biglandular at base of lamina; monoecious; apetalous; male flowers spicate at ends of branches, each flower completely enclosed by bract when in bud; female flowers solitary in upper leaf axils or at base of male spikes; male flowers: calyx membranous, cupuliferous, irregularly toothed, stamens numerous with filaments and connective joined into thick column, anther cells distinct, attached in 2-5 whorls on outside of column under top; female flowers: calyx broadly cupuliferous, truncate, entire, ovary 5-20-celled, ovules solitary in cells, styles joined into fleshy column, funnel-shaped above, spreading star-like at apex; capsule large, depressed, splitting explosively and scattering numerous woody 2-valved cocci; seeds laterally compressed, without caruncle.

1. *Hura crepitans* L., *Sp. Pl.*: 1008 (1753); Griseb., *Fl. Brit. W. Ind.*: 50 (1859); Muell. Arg. in DC., *Prodr.* 15, 2: 1229 (1886); Urb., *Symb. Ant.* 4: 352 (1905); Pulle, *Enum.*: 262 (1906); Pax in Engl., *Pflanzenr.* 4, 147, 5: 272 (1912); Fawc. & Rendle, *Fl. Jam.* 4, 2: 334, fig. 112 (1920); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 91 (1932); Gooding & Loveless in Gooding, et al., *Fl. Barb.*: 253, fig. 15 (1965); Adams, *Fl. Pl. Jam.*: 420 (1972)

Sandbox Tree

Trees, 30-40 m tall; leaves 5-18 cm long, 4-14 cm wide, orbicular or broadly ovate, apex abruptly acuminate, base cordate or rounded, glabrous above, long hirsute with multicellular hairs beneath, glabrescent, crenate to subentire; petioles 4-18 cm long, equalling or longer than lamina; stipules linear-lanceolate, early caducous; male spikes crimson, 3-6 cm long, 2-2.5 cm thick on

peduncles longer than themselves, anther cells usually in 2 (but up to 5) whorls; female flowers on peduncles about 2 cm long, calyx 1 cm long enclosing ovary, ovary with style about 5 cm long, stigma about 2 cm diameter, dull red, margin stellately lobed; capsule 6-8 cm diameter, 3-4 cm high, concave above and below, furrowed between cocci, dehiscing with loud report; seeds about 2 cm diameter.

Trinidad: without locality, Fendler 687 (BM, K, P); Queen's Park, Port-of-Spain, 21.7.1890, Broadway (TRIN 4233), 18.7.1916, Pinder (TRIN 8289); Las Cuevas to Maracas Bay, 22.6.1973, Philcox, Kalloo & Jurawan 7247 (K, P, TRIN); about milepost 2½ on road from Manzanilla to Plum at foot of Brigand Hill, 21.6.1973, Philcox & Wood 7230 (K, P, TRIN); above beach about 1 mile west of Siparia Point, South Coast, 9.6.1975, Philcox 7930 (K, P, TRIN).

Tobago: Highmoor, near Scarborough, 3.10.1909, Broadway 3050 (BM).

Native from Costa Rica to Peru and Brazil, and the West Indies; introduced into Florida and California and the Old World tropics.

20. SEBASTIANIA Spreng.

Sebastiania Spreng., *Neue Entd. Pflanzenk.* 2: 118 (1821)

Herbs, trees and shrubs; leaves alternate, entire or serrulate, penninerved; monoecious; inflorescence terminal or axillary or leaf-opposed racemose, male flowers above, female flowers at base of male racemes or leaf-opposed; male flowers: calyx 3-5-lobed, stamens 3, filaments free or connate at base; female flower: calyx 3-lobed, ovary 3-celled, one ovule in each cell; capsule with horn-like processes at each end.

1. *Sebastiania corniculata* (Vahl) Muell. Arg. sensu Pax in Engl., *Pflanzenr.* 4, 147, 5: 96 (1912); Pulle, *Enum.*: 262 (1906); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 83 (1932)

Tragia corniculata Vahl, *Eclog. amer.* 2: 55, t. 19 (1798)

Cnemidostachys tragioides Mart., *Nov. Gen. & Spec.* 2: 70 (1824)

Sebastiania corniculata var. *genuina* Muell. Arg. in DC., *Prodr.* 15, 2: 1173 (1866)

S. corniculata var. *tragioides* (Mart.) Pax in Engl., *Pflanzenr.* 4, 147, 5: 98 (1912)

Annual herb, 20–60 cm tall, erect, lower branches spreading, pubescent; leaves 1.5–5.5 cm long, 0.5–3 cm wide, linear-lanceolate to broadly lanceolate, serrulate, subglabrous above, sparsely pubescent beneath, apex acute, base cordate, subtruncate or rounded; stipules small; petioles up to 2.5 cm long; inflorescences near but not in leaf-axils; male spikes usually leaf-opposed, about 1 cm long, rhachis pubescent, glabrescent; bracts minute, less than 1 mm long, 3-lobed, 1–2(–3)-flowered, sepals 3, obovate-rounded, stamens 3; female flowers solitary at base of male spikes or on stem short distance below; bracts as in male flower but broader, ovary subcylindric with 6 horn-like tubercles at each end, styles 3, free, revolute; capsules 3–4 mm long, 2–3(–4) mm diameter, glabrous to very sparsely puberulent on or between tubercles, ripening pal-brown with tubercles dark to black up to 1 mm long; seeds subcylindric.

Trinidad: without locality, Fendler 693 (BM, K), Finlay (TRIN 2460), Lockhart 37 (K), Ryan 17 (C, type of *Tragia corniculata*), Rohr 101 (C); road to Fort George, 28.9.1845, Crueger (K, TRIN 388); Botanic Garden, Broadway (TRIN 3930); Cocorite, St James, 14.8.1889, Broadway (TRIN 3879); St Ann's Heights, 29.7.1912, Freeman (TRIN 7979); St Ann's, Purdie 91 (K); St Augustine, I.C.T.A., 7.4.1956, Simmonds (TRIN 15397), 23.5.1939, Cheesman (TRIN 13437); road to Maracas Bay, 14.9.1927, Broadway 6732 (BM); Aripo Savanna, 14.8.1959, Richardson 678 (K, TRIN), 4.11.1960, Richardson 842 (TRIN); O'Meara Savanna, 3.8.1973, Adams 13416 (K, UCWI), 13425 (K, UCWI); Piarcó Savanna, 18.1.1893, Alexander (TRIN 5141); milepost 2½ on Lopinot Road, 120 m, 16.7.1973, Philcox, Wood & Kalloo 7484 (K, P, TRIN); 2 miles on road from Eastern Main Road to Guanapo Heights, about 165 m, 26.6.1973, Philcox & Kalloo 7295 (K, P, TRIN); milepost 1½ on Guanapo Heights Road, 29.5.1975, Philcox 7806 (K, P, TRIN), 22.7.1973, Adams 13343 (K, UCWI); 1½ miles on Aripo Heights Road, 90 m, 6.7.1973, Philcox, Kalloo and Jurawan 7384 (K, P, TRIN), 7384a (K); between milepost 27 on Valencia to Toco Road and Savonette Point, 20.5.1975, Philcox & Andrews 7766 (K, P, TRIN); Erin Savanna, 26.8.1959, Richardson 701 (TRIN); Pitch Lake, Brighton, 25.9.1932, Broadway s.n. (BM); between Fullarton

and Icacos Point across swamp, 11.7.1973, Philcox, Wood & Kalloo 7439 (K, P, TRIN); Icacos, St Quinton, near sea, 6.12.1932, Broadway s.n. (BM); Cedros, 28.9.1915, Gladys King (TRIN 7153), Austin Road, 21.9.1915, Caroline King (TRIN 7123), Prospect, near the Lagoon, 2.11.1916, Broadway (TRIN 8542).

West Indies and tropical South America.

The Trinidad material cited by Pax (viz. Herb. Trin. 2451, Broadway 2742) in Engl., *Pflanzenreich* 4, 147, 5: 98 (1912), was referred to var. *tragioides* (Mart.) Pax. It may be noted however that Vahl's type material was collected in Trinidad by Ryan, and the Trinidad specimens, especially those of Lockhart and Purdie, agree with his description and plate except for the very sparse pubescence on the capsule which he may well have missed. Presumably most, if not all, of the Trinidad specimens should be referred to the typical variety, var. *corniculata*.

21. MABEA Aubl.

Mabea Aubl., *Hist. Pl. Guian.*: 867 (1775)

Trees or shrubs, bearing white latex, leaves alternate, simple, short petiolate, stipulate; monoecious; inflorescence terminal, paniculate, flowers apetalous; male flowers short pedicellate in 3-5-flowered pedunculate clusters, bracts often biglandular, usually with a few female flowers at base of panicle below male, calyx 3-5-lobed, stamens numerous; female flowers: 5-6-partite, ovary 3-celled, one ovule in each cell, styles connate into long column; capsule globose, seeds ovoid, smooth, carunculate.

1 Stems and leaves glabrous to subglabrous; leaves usually lanceolate, long-acuminate.....1. *M. occidentalis*

1 Stems, inflorescences and veins on lower leaf surface rusty-hairy; leaves usually elliptic, abruptly and shortly acuminate 2. *M. taquari*

1. *Mabea occidentalis* Benth. in Hook. *Lond. Journ. Bot.* 6: 364 (1854), Griseb., *Fl. Brit. W. Ind.*: 43 (1859)

M. verrucosa Pax & K. Hoffm. in Engl., *Pflanzenr.* 4, 147, 5: 37 (1912)

Small trees to 5 m tall; leaves 4–12 cm long, 1.5–3.5 cm wide, lanceolate-acuminate to elliptic-lanceolate, obtuse to rounded at base, glabrous to subglabrous above and beneath, glaucous beneath, serrulate, sometimes obscurely so; petioles 0.5–1.5 cm long; stipules early caducous; female flowers: calyx of 3 large deltoid sepals up to 3 mm long and 1–3 smaller about 1 mm long, ovary spherical with 3 styles about 8 mm long, connate to about half their length; capsule spherical, 10–15 mm diameter, smooth, tomentellous, pedicels accrescent to 3 cm in fruit; seeds dark brown, glossy, 7 mm long, 4 mm diameter.

Trinidad: Monos, January 1867, collector unknown (TRIN 831); Carenage, on cliffs, Broadway 2738 (K, type of *M. verrucosa*); St Ann's, 30.12.1860, Crueger 117 (K, TRIN 385), alt. 240 m, Beard (TRIN 13720), 17.3.1920, Britton (TRIN 9140), Lady Chancellor Road, 22.2.1934, Broadway 9417 (K); Maraval, 17.2.1891, Baptiste (TRIN 4476); Mount St Benedict, 14.12.1947, Baker (TRIN 14079), 14.5.1953, Baker (TRIN 14999); Tunapuna, Broadway (TRIN 3985); Arima, 10.2.1905, Dannouse s.n. (TRIN).

Northern South America.

Pax suggested that the Crueger collection in Trinidad which Grisebach identified with *Mabea occidentalis*, was *M. pallida* Muell. Arg., a species collected by Karsten on the coast of Venezuela and placed by Pax next to his *M. verrucosa*. The type of *M. pallida* (probably destroyed in Berlin) has not been seen, but it seems very likely that it is no more distinguishable from *M. occidentalis* than is *M. verrucosa*.

2. *Mabea taquari* Aubl., *Pl. Guian.*: 870, t. 334, fig. 2 (1775); Benth. in Hook. *Journ. Bot.* 6: 364 (1854); Griseb., *Fl. Brit. W. Ind.*: 43 (1859); Pulle, *Enum.*: 26 (1906); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 80 (1932)

M. taquari var. *genuina* Muell. Arg. in DC., *Prodr.* 15, 2: 1149 (1866)

Small trees up to 5 m tall; young branches, inflorescences and nerves on lower surface of leaves covered with rusty-brown, branched, scurfy hairs; leaves 3–10 cm long, 1–4.5 cm wide, elliptic to lanceolate-elliptic, base rounded to subtruncate or subcordate, variable but often shortly and abruptly acuminate at apex, somewhat glossy above, brown-pruinose beneath, shallowly serrulate to subentire; petioles 4–8 mm long; stipules about 2.5 mm long, narrowly lanceolate; male flowers: usually 3 to each peduncle, peduncles about 2 mm long with 2 glands at apex drying black, pedicels 2.5–5 mm long, connate at base, pale brown- to fawn-scurfy; female flowers: pedicels 10–15 mm long, calyx of 3 large sepals, broadly lanceolate to 2.5 mm long and 2–3 smaller about 1 mm long, ovary spherical, styles 3, about 1 cm long, connate for half their length, pedicels accrescent to 1.5 cm long in fruit; capsule globose, to about 1 cm diameter, smooth, tomentose, rusty-brown; seeds olive-brown, somewhat shiny to about 6 mm long, 4 mm diameter.

Trinidad: without locality, 27.4.1928, Freeman (K, TRIN 11979); Waller Field, February 1950, Howard 10331 (BM), 11.9.1962, Purselove 6403 (K, TRIN); near Cumuto Railway Station, 26.4.1924, Broadway 5290 (BM, K); milepost 19½ towards Valencia from Churchill-Roosevelt Highway, 25.6.1973, Philcox 7267 (K, P, TRIN), 7268 (K, P, TRIN); Aripo Savanna, 9.1.1893, Alexander (TRIN 5104), February 1891, Crueger (K, TRIN 385a), 23.1.1928, Williams (TRIN 11914), 16.5.1929, Williams (TRIN 12146), 20.4.1960, Richardson 822 (K, TRIN), 23.5.1975, Philcox 7786 (K, P, TRIN); between Cumuto and Guaico, 4 miles W. of Sangre Grande, 18.6.1975, A. Raynal 15745 (K, P, TRIN); old railway line E. of Cumuto, 29.8.1973, Adams 13758 (K, UCWI).

Northern South America.

22. *SAPIUM* P. Browne

Sapium P. Br., *Civ. Nat. Hist. Jam.*: 338 (1756)

Trees, laticiferous; leaves alternate, simple, entire to serrulate, glabrous, long-petiolate; petioles biglandular towards apex; monocious; apetalous; inflorescence terminal, spicate usually with male

above, female below; male flowers: calyx 2-lobed, stamens 2; female flowers: calyx 3-lobed, ovary 3-4-celled, 1 ovule in each cell; capsule globose; seeds subglobose, without caruncle.

1. *Sapium glandulosum* (L.) Morong in *Ann. N.Y. Acad. Sci.* 7: 227 (1893); Croizat in *Journ. Arn. Arb.* 24: 176 (1943)
Gum Tree, Bird Lime

Hippomane glandulosa L., *Sp. Pl.*: 1191 (1753), pro parte
Sapium hippomane G.F.W. Meyer, *Prim. Fl. Esseq.*: 275 (1818); Urb., *Symb. Ant.* 3: 305 (1902); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 89 (1932); Gooding & Loveless in Gooding, et al., *Fl. Barbado.*: 261 (1965)

S. aucuparium Jacq. var. *hippomane* (G.F.W. Meyer) Griseb.
Fl. Brit. W. Ind.: 49 (1859)

S. hemsleyanum Huber in *Bull. Herb. Boiss. Sér.* 2, 6: 362, fig. 22 (1906)

S. fendleri Hemsl. in Hook., *Ic. Pl.* 29, sub tab. 2888 (1909)

Trees, evergreen, up to 30 m tall; leaves 3.5–22 cm long, 2.5–5.5 cm wide, simple, oblong-elliptic or obovate, leathery, glabrous, apex bluntly pointed with conspicuous hood-like inflexion at tip, margin revolute and subentire to serrulate with few scattered blunt glands; petioles 0.75–3.5 cm long with 2 prominent glands towards base of lamina; stipules small, triangular; capsule woody up to 1 cm diameter, 3-lobed; seeds about 4 mm long, red.

Trinidad: without locality, 1.8.1853, Crueger s.n. (K), Fendler 1012 (K, P, type of *S. fendleri*), 7.7.1922, Stell (TRIN 10160); Botanic Garden (TRIN 4243); St Joseph Stock Farm, 10.7.1958, Purseglove 6188 (K, TRIN); Southern Watershed Reserve, 16.7.1930, Marshall (K, TRIN 12408); North Manzanilla Bay, 22.1.1954, Baker & Simmonds (K, TRIN 15078).

Tobago: Flagstaff Hill, 13.7.1954, Baker (K, TRIN 15334); Roxborough to Bloody Bay Road, about 300 m, 12.8.1958, Purseglove 6326 (K, TRIN); Louis d'Or, 24.6.1913, Broadway 4527 (BM).

Southern West Indies, Venezuela and the Guianas. Very closely related species occur in Amazonian Brazil and Peru.

The type of *S. fendleri* Hemsl. seems to represent nothing more than small-leaved *S. glandulosum*, and it is unaccountable that Hemsley allied his new species to *S. laurocerasus* Desf. which has leaves with horizontal straight lateral nerves and very short glands near the base of the lamina. Pax (1912) noted the probable affinity of *S. fendleri* with *S. hippomane*.

23. HIPPOMANE L.

Hippomane L., *Sp. Pl.*: 1191 (1753) et *Gen. Pl.* ed. 5: 499 (1754)

Trees, laticiferous; leaves alternate, simple, entire to subentire, glabrous, stipulate, petiolate; monoecious; inflorescence terminal, spicate with male flowers above, female below; male flowers: 3-many in axil of each bract, calyx shortly 2-3-lobed, stamens 2-3; female flowers: solitary in axils of lower bracts, calyx 3-lobed, ovary 6-9-celled, 1 ovule in each cell, styles 6-9, united at base, free spreading above; fruit a several-seeded black berry.

1. *Hippomane mancinella* L., *Sp. Pl.*: 1191 (1753); Griseb., *Fl. Brit. W. Ind.*: 50 (1859); Muell. Arg. in DC., *Prodr.* 15, 2: 1200 (1866); Urb., *Symb. Ant.* 4: 351 (1905); Pax in Engl., *Pflanzenr.* 4, 147, 5: 262 (1912); Fawc. & Rendle, *Fl. Jam.* 4, 2: 327, fig. 110 (1920); Gooding & Loveless in Gooding, et al., *Fl. Barbado.*: 252 (1965); Adams, *Fl. Pl. Jam.*: 420 (1972) *Manchineel*

Trees, up to 20 m tall, spreading; leaves 4.5-15 cm long, 2-7.5 cm wide, ovate, base rounded, apex acuminate, crenate to entire; petioles 1-6 cm long, slender, with large red (drying black) gland at apex; stipules about 2 mm long, triangular, early deciduous; inflorescence up to 8 cm long; male flowers: calyx 3-lobed, acute, subequal, stamens 2-3, exserted; female flowers: calyx lobes ovate to suborbicular, ovary 6-8-celled, styles 6-8, recurved; fruit 2.5-3.5 cm diameter, 6-8-celled, resembling small green apple; seeds about 4 mm long, elongated, flattened.

Trinidad: Chacachacare, 1.4.1951, Simmonds (TRIN 14696), 12.4.1961, Richardson 887 (K, TRIN); Perruquier Bay, foreshore, 26.6.1975, Philcox & M. Olivier 7981 (K, P, TRIN); opposite Gasparce, 20.3.1877, Finlay (TRIN 772); far eastern end of Toco Bay, on beach, 18.7.1973, Philcox, Wood & Gibbs 7536 (K); Nariva Swamp, 2.3.1930, Marshall (K, TRIN 12358).

Tobago: without locality, 28.5.1927, Marshall (TRIN 11909); Crown Point, 11.8.1958, Purseglove 6282 (K, TRIN); Rockley Bay, between Lambeau and Scarborough, 2.6.1975, Philcox & A. Raynal 7849 (K, P, TRIN).

Florida, Bahamas, West Indies and Mexico to Venezuela; also Pacific Coast of Central America and introduced into West Africa.

All parts of this tree contain a highly poisonous milky latex which should be treated with great care. Bathers who have left towels or clothing under these, machineel, trees, have been severely burnt and blistered, particularly if a shower of rain has fallen and water has dropped through the foliage onto their clothing. Children unwise enough to bite into the fruit may be made seriously ill besides being terribly blistered about the mouth. Saline or even sea-water applied quickly and liberally is probably the best first-aid treatment in such cases.

24. DALECHAMPIA *Plum. ex L.*

Dalechampia L., *Sp. Pl.*: 1054 (1753) et *Gen. Pl.* ed. 5: 473, (1754)

Shrubs, climbing or scandent; leaves alternate, 3-5-lobed, stipulate, petiolate; monoecious; inflorescence terminal or axillary enclosed in involuere of two leafy bracts, flowers apetalous; male flowers: calyx 4-6-lobed, stamens numerous; female flowers: calyx 5-12-lobed, ovary 3-4-celled, 1 ovule in each cell, styles united; capsule 3-4-lobed, splitting into 2-valved cocci.

- 1 Involucral bracts 1.5–3 cm long, deeply 3-lobed to about half their length, 5(–7)-nerved1. *D. scandens*
- 1 Involucral bracts 3–6.5 cm long, shortly tridentate to subentire, 7–9-nerved2. *D. tiliifolia*

1. *Dalechampia scandens* L., *Sp. Pl.*: 1054 (1753); Muell. Arg. in DC., *Prodr.* 15, 2: 1244 (1866); Urb., *Symb. Ant.* 4: 348 (1905); Pax ex Pax & K. Hoffm. in Engl., *Pflanzenr.* 4, 147, 12: 32 (1919); Lanjouwin Pulle, *Fl. Surin.* 2, 1: 60 (1932)

Shrub climbing by means of twining stem; branches hispid-hirsute, hairs yellow when young becoming paler; leaves 3.5–13 cm long, 4–14 cm wide (overall), very deeply 3(–or rarely 5–) lobed, base cordate, lobes ovate to ovate-lanceolate, apex acute, short acuminate, shallowly serrate, sparsely hirsute above, densely so beneath when young, becoming sparser; petioles up to 11 cm long; stipules 3–4 mm long, lanceolate to ovate-lanceolate; inflorescence axillary; involucral bracts 1.5–3 cm long and wide, rounded at base, deeply 3-lobed to about half their length, 5(–7) nerved, hispid-hirsute, enclosing inflorescences of about 3 female flowers and more numerous male flowers; male flowers: stamens 20–30; female flowers: sepals about 10, 6–10 mm long, pinnately lobed, ovary pilose, style persistent; capsule 3-lobed, pilose, about 6 mm long, 1 cm diameter; seeds globose, 3–4 mm diameter.

Trinidad: without locality, Fendler 697 (B, K, P); Chacachacare, 30 m, 2.1.1954, Baker (K, TRIN 15045); Teteron Bay, 15.4.1928, Broadway 6918 (K), 6929 (BM); Mount St Benedict, 2.2.1930, Clark (TRIN 12338); St Ann's, 10.1.1933, Broadway 9142 (BM); Chaguanas, 6.4.1904, Dannouse (TRIN 8904); San Fernando Hill, Finlay in 1865 (TRIN 2446).

West Indies, Central and tropical South America.

It must be mentioned here that the Trinidad plant represents the typical variety *D. scandens* L. var. *scandens* (syn. var. *genuina* Muell. Arg.).

2. *Dalechampia tiliifolia* Lam., *Encycl.* 2: 257 (1786); Muell. Arg. in DC., *Prodr.* 15, 2: 1246 (1866); Griseb., *Fl. Brit. W. Ind.*: 51 (1859); Pax ex Pax & Hoffm. in Engl., *Pflanzenr.* 4, 147, 12: 37 (1919) Covitch

D. pruriens Griseb., *Fl. Brit. W. Ind.*: 51 (1859)

Climbing by means of twining stem; young branches yellow tomentose, markedly striate; leaves 4–14 cm long, 4–15 cm wide (overall), very deeply 3-lobed, base cordate, lobes ovate to ovate-lanceolate, apex acute or obtuse, obscurely and shallowly serrate-dentate to subentire, shortly hirsute above, densely so on nerves, densely pubescent beneath; petioles 2.5–7(–12) cm long; stipules 3–5 mm long, subulate-linear; inflorescence terminal at ends of short branches; involucre bracts 3–5 cm long and broad, broadly ovate, rounded at base, apex shortly 3-dentate, clearly 7–9-nerved, densely yellow-tomentose enclosing inflorescence of 3 female flowers and more numerous male flowers; male flowers: stamens about 40; female flowers: sepals 9–13, 10–15 mm long, pinnately-lobed, ovary white villous; capsule 3-lobed, about 6 mm long, 11–12 mm diameter; seeds 5 mm diameter.

Trinidad: without locality, Crueger s.n. (K, type of *D. pruriens*), Fendler 698 (BM, K, P), 2.12.1912, Freeman (TRIN 7972), Prestoe (TRIN 1452); St Ann's, 12.1.1915, Freeman (TRIN 8878), 22.2.1933, Broadway 9146 (BM); Lady Chancellor Road, Broadway (TRIN 9205); Cascade, 11.12.1923, Broadway 4145 (BM); Caura River Valley, 1.4.1920, Britton & Hazen 1207 (K); Mount St Benedict, 2.2.1930, Clark (TRIN 12339); Piarco Savanna, 6.2.1953, Baker (K, TRIN 14857); Lopinot Valley, 120 m, 6.2.1953, Baker (K, TRIN 14924); Arima, December 1945, Thorold (TRIN 13687); Oropouche, Bellevue pasture, 5.4.1865, Crueger (TRIN 2444).

Tropical America from Honduras to southern Brazil.

25. PEDILANTHUS Neck.

Pedilanthus Neck., *Elem. Bot.* 2: 354 (1790)

Trees or shrubs, woody or succulent, laticiferous; leaves alternate, entire, midrib thickened beneath; stipules small, blunt, spur-like; monoecious; inflorescence cymose, axillary or terminal,

several male and one female pedicellate flowers enclosed within shoe-shaped involucre of partly connate bracts; male flowers: perianth absent, stamen 1; female flowers: perianth absent or of 3 minute scales, ovary 3-celled, styles 3, largely connate, ovules 1 in each cell; capsule splitting into 3, 2-valved cocci; seeds carunculate.

1. *Pedilanthus tithymaloides* (L.) Poit. in *Ann. Mus. Paris* 19: 390 (1812); Griseb., *Fl. Brit. W. Ind.*: 52 (1859); Boiss. in DC., *Prodr.* 15, 2: 5 (1862); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 101 (1932); Dressler in *Contrib. Gray Herb.* 182: 137 (1957); Adams, *Fl. Pl. Jam.*: 431 (1972)

Slipper Flower

Euphorbia tithymaloides L., *Sp. Pl.*: 453 (1753)

Pedilanthus ierensis Britton in *Bull. Torr. Bot. Club* 53: 468 (1926)

Tithymalus tithymaloides (L.) Croiz. in *Amer. Journ. Bot.* 24: 704 (1937)

Shrubs 0.5–2 m tall, much branched; stems slender, woody or thick-succulent, pubescent when young, glabrescent; leaves up to 10(–16) cm long, 4 cm wide, ovate, elliptic to oblong, cuneate at base, apex acute or narrowly obtuse, midrib keeled or winged, glabrous to pubescent on both surfaces, petiolate; petiole 2–10 mm long; inflorescence terminal or axillary; involucre red or purple, 10–15 mm long, tube glabrous, margin of main lobes pilose; pedicels of male and female hirsute; ovary glabrous, styles about 8 mm long, shortly bifid; capsule about 5–6(–8) mm diameter, deeply 3-lobed; seeds ovoid or subglobose, 3–5 mm long.

Trinidad: without locality, Fendler 699 (BM, K); Little Gasparee, 6.4.1920, Britton 2789 (TRIN); Gasparee, 10.11.1938, Dean (TRIN 13335); between Toco and Morne Cabrite, 31.5.1973, Philcox & Kalloo 7023 (K); North Manzanilla, headland east of bay, 22.1.1954, Baker (K, TRIN 15079); Penal Rock Road, 28.3.1920, Britton, Hazen & Mendelson 1093 (K, TRIN).

Tobago: Mount St George to Castara Road, above dam, 12.7.1954, Baker (TRIN 15332).

Mexico to Surinam and the West Indies. Commonly cultivated elsewhere in the tropics.

This plant has been a source of constant confusion over a large number of years and even here its status within these islands is uncertain in the view of the author. It is a species with its centre of distribution in Central America and is said to occur in very diverse habitats from arid rocky areas to humid tropical forests. It is also a plant which is commonly cultivated for its attractive foliage and unusual flowers. The author has seen it cultivated widely throughout Trinidad and Tobago and as the collectors' information is sparse on the specimens cited above, there is no guarantee that any of the collections were made from plants native to the islands. However, as it is frequently met with, it has been thought wise to include it in the general treatment.

Pedilanthus ierensis Britton which is included in synonymy here was considered by Britton to be a distinct species by reason of its very flanged or broadly winged midrib and densely pubescent undersurface of the much larger and thinner leaves. Dressler however, although considering this plant to be very close to the Lesser Antillean subsp. *padifolius*, has included it in his wider concept of the typical subspecies. I have followed him in this case and all of the material cited would be accepted by him as *P. tithymaloides* subsp. *tithymaloides*.

26. EUPHORBIA L.

Euphorbia L., *Sp. Pl.*: 450 (1753) et *Gen. Pl.* ed. 5: 208 (1754)

Herbs or shrubs with milky latex; leaves alternate or opposite, or only upper leaves opposite or whorled, simple, entire or toothed, or somewhat lobed; several male flowers and one female enclosed within a 4-5-lobed calyx-like involucre or cyathium; male flowers: usually calyx absent, stamen 1 jointed to pedicel, soon deciduous; female flowers: pedicellate in centre of involucre, with or without minute 3-lobed calyx, ovary sessile at top of pedicel, 3-celled, 1 ovule in each cell, styles 3, frequently bifid; capsule of three 2-valved cocci; seeds without caruncle.

Four species of this genus are found in cultivation, but within the islands three of these are grown as hedge plants viz. *E. lactea* Haw. and *E. nerifolia* L. both natives of India and *E. tirucalli* L.

from Africa. The very attractive shrub *E. pulcherrima* Willd. ex Klotzsch is however frequently grown in cultivation. Poinsettia, as this plant is commonly known, is cultivated for its brilliant red bracts and is a native of Mexico. A variety with creamy white bracts is also grown but less commonly so.

- | | | |
|--|---------------------------|----|
| 1 Shrubs erect to 3 m tall, never prostrate | 1. <i>E. cotinoides</i> | |
| 1 Annual herbs less than 1.5 m tall, sometimes woody at base, or small prostrate shrubs | ... | 2 |
| 2 Erect or nearly so | ... | 3 |
| 2 Prostrate or nearly so | ... | 12 |
| 3 Leaves polymorphous, often lobed or pandurate | ... | 4 |
| 3 Leaves regularly elliptic or ovate, or if irregular then only at inequilateral base | ... | 5 |
| 4 Involucral gland narrow, stipitate, opening circular; upper leaves and bracts pale green or cream, never red | 2. <i>E. heterophylla</i> | |
| 4 Involucral gland broad, sessile, opening narrowly oblong; upper leaves and bracts usually red..... | 3. <i>E. cyathophora</i> | |
| 5 Markedly hairy including capsule | ... | 6 |
| 5 Glabrous, glabrescent or with scattered hairs only | ... | 8 |
| 6 Small herb up to 40 cm tall, pilose with spreading, usually yellowish hairs | ... | 7 |
| 6 Larger herb to about 1 m tall, hoary grey tomentose..... | 6. <i>E. lasiocarpa</i> | |
| 7 Stems sparingly branched above base, unbranched at tip | 4. <i>E. hirta</i> | |
| 7 Stems generally much branched, often forking subsymmetrically at tip | 5. <i>E. ophthalmica</i> | |
| 8 Leaves serrate | ... | 9 |

- | | | | | | | | |
|----|---|-----|-----|-----|-----|-----|------------------------------------|
| 8 | Leaves entire | ... | ... | ... | ... | ... | 10 |
| 9 | Stems strictly erect; inflorescence glomerulate; capsule 1-1.5 mm long, broadest at or about middle; seeds pale brown..... | | | | | | 7. <i>E. glomerifera</i> |
| 9 | Stems flexuose; inflorescence diffuse; capsule 1.5-2 mm long, broadest below middle; seeds brownish-black or grey | ... | | | | | 8. <i>E. hyssopifolia</i> |
| 10 | Erect herbs; leaves opposite, or whorled above only, up to 9 cm long..... | | | | | | 9. <i>E. oerstediana</i> |
| 10 | Erect or simi-prostrate shrubs; leaves all opposite, up to 2 cm long | ... | ... | ... | ... | ... | 11 |
| 11 | Branches strict; leaves somewhat fleshy, base subequally cordate, usually drying inrolled or folded; stipules about 2 mm long, long fimbriate, persistent on old wood | | | | | | 10. <i>E. mesembrianthemifolia</i> |
| 11 | Branches flexuose; leaves not fleshy, base conspicuously obliquely cordate, usually drying flat; stipules 0.5 mm long, short fimbriate, not usually persistent on old wood | | | | | | 11. <i>E. flexuosa</i> |
| 12 | Plant pilose, usually with yellowish hairs..... | | | | | | 5. <i>E. ophthalmica</i> |
| 12 | Plant pubescent or glabrous, never pilose, never with yellowish hairs | ... | ... | ... | ... | ... | 13 |
| 13 | Stem pubescent to glabrescent on upper side; capsule hairy | ... | ... | ... | ... | ... | 14 |
| 13 | Stem and capsule glabrous..... | | | | | | 14. <i>E. serpens</i> |
| 14 | Capsule deflexed, with short bristly spreading hairs on keeled margins only | | | | | | 12. <i>E. prostrata</i> |

- 14 Capsule more or less erect, only partially exerted from involucre, generally covered with ascending hairs 13. *E. thymifolia*

1. *Euphorbia cotinoides* Miq., *Stirp. Surinam.*: 96 (1851); Boiss. in DC., *Prodr.* 15, 2: 60 (1862); Pulle, *Enum.*: 263 (1906); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 93 (1932)

E. cotinifolia L. sensu Griseb., *Fl. Brit. W. Ind.*: 52 (1859) non L.

Shrubs up to 3 m tall; branches erect, thickened at nodes; leaves opposite or ternate, 1.5–7.5(–10) cm long, 1–6(–7) cm wide, glabrous, ovate or ovate-roundish, rounded or acute at apex, rounded at base, entire, glabrous, glaucous beneath, petiolate; petioles long, 1–6(–8) cm long, slender; stipules subtending leaves rounded, those subtending involucre bracts subulate; inflorescence cymose, axillary, peduncles up to 4 cm long; involucres about 2 mm long, cup-shaped, subhirsute without, glabrous within; capsule 3.5 mm long, 4 mm broad, grey-brown; seeds ovoid, 2 mm long, cream (? immature).

Trinidad: without locality, Fendler 685 (BM); Bocas Islands, Lockhart 194 (K); Chacachacare, 20.4.1866, Finlay (TRIN 2450); Monos, October, 1917, Williams (TRIN 9158); San Fernando, 24.11.1917, Broadway s.n. (TRIN); Port-of-Spain, cultivated in garden in Cascade, 31.10.1954, Bedell (TRIN 15360); Laventille, 2.8.1846, Creuger (TRIN 391).

Tobago: Arnos Vale Road, 28.10.1925, Freeman & Williams (TRIN 11458); Moriah, 8.4.1926, Williams & Cheesman (TRIN 11687); Indian Walk, 6.5.1913, Broadway 4518 (BM).

Barbados, Colombia, Venezuela, Amazonian Brazil, the Guianas, Peru.

2. *Euphorbia heterophylla* L., *Sp. Pl.*: 453 (1753); Griseb., *Fl. Brit. W. Ind.*: 54 (1859); Boiss. in DC., *Prodr.* 15, 2: 72 (1862); Urb., *Symb. Ant.* 4: 357 (1910) et 8: 374 (1920); Fawc. & Rendle, *Fl. Jam.* 4, 2: 343 (1920); Adams, *Fl. Pl. Jam.*: 428 (1972) *Joseph's Coat*

E. geniculata Ort., *Hort. Matr. Dec.*: 18 (1797); Fawc. & Rendle, *Fl. Jam.* 4, 2: 344 (1920)

E. prunifolia Jacq., *Hort. Schoenb.* 3: 15, tab. 277 (? 1798)

E. heterophylla L. var. *prunifolia* (Jacq.) Griseb., *Fl. Brit. W. Ind.*: 54 (1859)

Poinsettia heterophylla (L.) Klotzsch & Garcke in *Monatsb. Akad. Berl.*: 253 (1859)

P. geniculata (Ort.) Klotzsch & Garcke in *Monatsb. Akad. Berl.* 253 (1859)

Annual or biennial herbs to 90 cm tall, erect or suberect; stems erect or spreading, particularly lower, variously hirsute to subglabrous; leaves opposite or whorled above, alternate below, 3–12 cm long, 1.5–5.5 cm wide, variously shaped from linear, through elliptic to rhomboidal or pandurate, glabrous to pubescent on both surfaces, entire, dentate or sinuate, uppermost with pale green or white blotch at base, petiolate; petioles 0.5–3 cm long; bracts pale green or white; stipules gland-like; inflorescence cymose-corymbose, terminal; involucres sessile to pedunculate, campanulate, glabrous, glands stipitate, more or less funnel-shaped with circular opening, lacking petaloid appendage; capsule 4–6 mm diameter, glabrous; seeds about 2 mm long, black, angled, minutely tuberculate.

Trinidad: without locality, Fendler 695 (BM, P), s.n. (K); St Clair Experimental Station, 27.4.1922, Williams (TRIN 10115); Cascade Valley, north of Port-of-Spain, 26.7.1973, Wood 1725 (K, TRIN); St Ann's, 29.7.1912, Freeman (TRIN 7981); St Joseph, Government Farm, 21.4.1975, Philcox 7699 (K, P, TRIN); Curepe, Valsayn, 20.6.1973, Philcox 7225 (K, P, TRIN), 5.4.1975, Philcox 7638 (K, TRIN); St Augustine, I.C.T.A., 23.5.1939, Cheesman 217 (TRIN 13683), 17.1.1953, Baker (K, TRIN 14799), 27.5.1975, A. Raynal 15573 (K, P); Santa Cruz Valley, 29.5.1939, Cheesman 227 (TRIN); Las Cuevas to Maracas Bay, 22.6.1973, Philcox, Kalloo & Jurawan 7244 (K, P, TRIN); Maracas Bay, Dannouse (TRIN 6748); Cocorite, 12.9.1906, Fredholm (TRIN 9155); Hololo Pass, January, 1893, Broadway (TRIN 5118); Tabaquite, March, 1913, Druce s.n. (OXF).

Tobago: Crown Point, 11.8.1958, Purselove 6293 (K, TRIN); Scarborough, 5.5.1953, Baker (K, TRIN 14944); Easterville Road near Mason Hall, 31.3.1940, Cheesman 283 (TRIN 13523).

Widely distributed throughout the tropics and subtropics.

Hitherto the treatment of *E. heterophylla* L. *sens. lat.* has been very varied and complex. For the purpose of this work, I have taken a concept broad enough to encompass most of those taxa considered by various authors to be either distinct but allied species, or varieties of one of these species. It is possible that further study will prove them to be distinct but from the evidence of my studies of this complex in the field, I consider only one single species to be represented in these islands, albeit in several clearly marked states. I have decided against separating varieties within the species as I have frequently found several of the characters previously used to distinguish them, present in the same population or even the same specimen. However, on microscopic examination, I have found that the Crueger specimen cited by Grisebach (1859) under the variety *pruinifolia* (Jacq.) Griseb., clearly represents the following species.

3. *Euphorbia cyathophora* Murr. in *Comm. Gott.* 7: 81 (1786);
Adams, *Fl. Pl. Jam.*: 428 (1972)

E. graminifolia Michx., *Fl. Bor.-Amer.* 2: 210 (1803)

E. heterophylla L. var. *cyathophora* (Murr.) Griseb., *Fl. Brit. W. Ind.*: 54 (1859); Fawc. & Rendle, *Fl. Jam.* 4, 2: 344 (1920); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 470 (1939)

E. heterophylla L. var. *graminifolia* (Michx.) Engelm. in *Torr. Bot. Mex. Bound. Surv.* 2: 190 (1859); Fawc. & Rendle, *Fl. Jam.* 4, 2: 344 (1920)

Annual or perennial herb to 50 cm tall, erect, little branched, glabrous to very sparsely pubescent; leaves opposite or whorled above, alternate below, like *E. heterophylla* but usually with red blotch on leaves and red, not white bracts; involucre gland sessile, more or less bilabiate with narrowly oblong or slit-like opening, lacking petaloid appendage; seeds about 2 mm long, grey-black, rounded, minutely and sharply tuberculate.

Trinidad: without locality, Fendler 694 (BM, P); Lady Chancellor Road, 18.8.1953, c. 150 m, Forsyth (TRIN 15020); Laventille, 2.8.1846, Crueger s.n. (K).

Tobago: Montgomery, 3.7.1879, Meyer 9 (K); Louis d'Or, 5.5.1953, Baker (TRIN 14963).

Eastern United States, Central and South America. Widely cultivated and naturalised in the Old World tropics.

I have followed Adams (1972) in keeping *E. cyathophora* Murr. as a distinct species. This is separated by reason of the appearance of the involucre gland which is sessile with an oval or slit-like opening, whereas in *E. heterophylla* the gland is clearly stipitate with a circular opening.

4. *Euphorbia hirta* L., *Sp. Pl.*: 454 (1753); Fawc. & Rendle, *Fl. Jam.* 4, 2: 337 (1920); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 95 (1932); Wheeler in *Rhodora* 43: 170 (1941); Gooding & Loveless in Gooding, et al., *Fl. Barbado.*: 249 (1965); Adams, *Fl. Pl. Jam.*: 430 (1972)

Milk Weed, Queensland Asthma Plant

E. pilulifera L., *Sp. Pl.*: 454 (1753), pro parte

Chamaesyce hirta (L.) Millsp. in *Publ. Field Mus. Bot.* 2: 303 (1909)

Herb, usually robust, erect or infrequently decumbent to 40 cm tall; stems sparingly branched above base, unbranched at tip, pilose with long, yellowish, patent hairs with under-pubescent of adpressed strict or crisped white hairs; leaves opposite, 10–45 mm long, 3–17 mm wide, unevenly ovate to ovate-oblong, apex bluntly pointed, base unequally cuneate or rounded, finely serrate, with scattered hairs above, more numerous and longer beneath, petiolate; petioles 2–3 mm long; stipules subulate, 1–2 mm long, hairy; inflorescence axillary or terminal in peduncled globose clusters up to 1 cm diameter, peduncles leafless, puberulous; involucres minute, shortly pedicellate, cup-like with 4 glands and 5 acute-fringed lobes; capsule 1 mm diameter, globose-trigonal, shortly strigose; seeds oblong, tetragonal, pale reddish.

Trinidad: without locality, de Schack s.n. (K), Fendler 679 (BM), Finlay (TRIN 2454); Botanic Gardens, 22.3.1889, Broadway (TRIN 3660); St Clair Experimental Station, 15.10.1906, Fredholm (TRIN 9156); Colonial Hospital Grounds, 2.11.1927, Williams (K, TRIN 11867); Belmont Hill, Broadway (TRIN 4997); Maraval, Baptiste (TRIN 5865); Dry River, Tullock (TRIN 5673); Laventille, 2.8.1846, Crueger (TRIN 873); St Joseph Stock Farm, Pursglove 6074 (TRIN 15559); Curepe, Valsayn, 20.6.1973, Philecox 7226 (K, P, TRIN), 5.6.1975, Philecox 7639 (K, TRIN); St Augustine, Smart 37008 (K), I.C.T.A., 24.5.1939, Cheesman 218 (TRIN), 17.1.1953, Baker (K, TRIN 14790); Piarcó Savanna, 18.1.1893, Alexander (TRIN 5144); Blanchisseuse, 3.8.1967, Wong 18b (TRIN); Tabaquite, March 1913, Druce s.n. (OXF); Erin, 12.11.1915, Broadway (TRIN 7363); Cedros, Austin Road, 21.9.1915, Caroline King (TRIN 7116).

Tobago: Scarborough, 5.5.1953, Baker (TRIN 14942); Bacolet, 7.8.1958, Pursglove 6223 (K, TRIN).

Widely distributed throughout the tropics.

5. *Euphorbia ophthalmica* Pers., *Synops. Pl.* 2: 13 (1806); Adams, *Fl. Pl. Jam.*: 431 (1972)

E. procumbens DC., *Cat. Pl. Hort. Monsp.*: 111 (1813) non Miller (1768)

E. pilulifera L. var. *procumbens* (DC.) Boiss. in DC., *Prodr.* 15, 2: 21 (1862)

E. hirta L. var. *procumbens* (DC.) N.E. Br. in Thisselton-Dyer, *Fl. Trop. Afr.* 6, 1: 497 (1911); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 96 (1932); Wheeler in *Rhodora* 43: 172 (1941)

Chamaesyce ophthalmica (Pers.) Burch in *Ann. Mo. Bot. Gard.* 53: 98 (1966)

Herb, usually prostrate or decumbent, or rarely suberect to 15 cm tall; stems generally much branched and often forking subsymmetrically at tip, pilose with yellowish or white patent hairs about 0.5 mm long, with under-pubesence of adpressed, crisped hairs; leaves opposite, 5-10(-18) mm long, 2-4(-7) mm wide, unevenly ovate-rhombic, apex bluntly pointed, base cuneate or rounded, serrulate, hairy on both surfaces, petiolate; petioles 0.5-1 mm long; stipules minute; inflorescence mostly terminal at

ends of leafy branches in usually paired, globose clusters up to 0.5 cm diameter; involucre minute; gland-appendages absent; capsule less than 1 mm diameter, globose-trigonal, shortly strigose; seeds about 0.5 mm long, oblong, obscurely tetragonal, pinkish.

Trinidad: without locality in 1844, Bromfield s.n. (K); Port-of-Spain, 28.10.1906, Fredholm s.n. (TRIN); Colonial Hospital Grounds, 2.11.1927, Williams (K, TRIN 11867); Summit of Brigand Hill, 1.5.1975, c. 230 m, Philcox & Andrews 7744 (K, P, TRIN).

Southern Florida, West Indies and Mexico.

6. *Euphorbia lasiocarpa* Klotzsch in *Nov. Act. Acad. Caes. Leop.-Carol. Nat. Cur.* 19, Suppl. 1: 414 (1843); Boiss. in DC., *Prodr.* 15, 2: 23 (1862); Urb., *Symb. Ant.* 4: 354 (1910) et 8: 371 (1920); Fawc. & Rendle, *Fl. Jam.* 4, 2: 338 (1920); Gooding & Loveless in Gooding, et al, *Fl. Barbado.*: 249 (1965); Adams, *Fl. Pl. Jam.*: 430 (1972)

E. hypericifolia L. var. *lasiocarpa* (Klotzsch) Griseb., *Fl. Brit. W. Ind.*: 54 (1859), pro parte excl. synonym.

Chamaesyce lasiocarpa (Klotzsch) Arthur in *Torreyia* 11: 260 (1911)

Erect annual herb up to about 1 m tall, branched, whole plant densely grey-pubescent; leaves 8–30 mm long, 3–10 mm wide, opposite, oblong-ovate to elliptic, rounded or bluntly pointed at apex, rounded or unequal at base, serrate, petiolate; petioles up to 1.5 mm long; stipules about 1 mm long, triangular; inflorescence densely corymbose, cymes small, terminal with pair of bracts at base; involucre narrowly campanulate; appendages of glands suborbicular, white, entire to somewhat lobed; capsule tomentose, 2 mm long; seeds ovoid, tetragonal, about 1 mm long.

Tobago: Scarborough, Broadway (TRIN 9157), French Fort, 6.2.1913, Broadway 4415 (P); Botanic Station, wild, 6.11.1932, Broadway 9066 (BM, K); Friendship Estate, 6.5.1925, Williams (TRIN 11040); Bacolet, October, 1889, Eggers 5477 (K, P), 5.10.1937, Sandwith 1614 (K); Barbados Bay, on beach south of Studley Park, 4.6.1975, Philcox & A. Raynal 7874 (K, NY, P, TRIN).

Florida, West Indies, Central America and northwestern South America.

7. *Euphorbia glomerifera* (Millsp.) L.C. Wheeler in *Contrib. Gray Herb.* 127: 78 (1939) et in *Rhodora* 43: 168, tab. 656c (1941); Gooding & Loveless in Gooding, et al., *Fl. Barbado.*: 248 (1965); Adams, *Fl. Pl. Jam.*: 430 (1972)

Chamaesyce glomerifera Millsp. in *Publ. Field Mus. Nat. Hist., Bot. Ser.* 2: 377 (1913)

Euphorbia hypericifolia L., *Sp. Pl.*: 454 (1753), pro parte (as to Sloane reference) et auct. plur. excl. L.C. Wheeler

E. hypericifolia Fawc. & Rendle, *Fl. Jam.* 4, 2: 340 (1920) non L.

Herb, annual or occasionally short-lived perennial, 10–50 cm tall, erect, glabrous; leaves 1–4 cm long, 0.35–1 cm wide, oblong, oblong-lanceolate or elliptic, subacute to rounded at apex, rounded at base, serrulate, glaucous beneath, shortly petiolate; petioles 1–2 mm long; stipules 1–2 mm long, sub lanceolate; inflorescence of axillary cymes of few to many cyathia; peduncles up to 2.5 cm long with pair of leaf-like bracts at apex; cyathia about 1 mm long, cup-shaped with 5 fringed lobes and 4 glands each with white appendage resembling a petal, giving inflorescences overall white colour; styles deeply and subparallel bifid; capsule 1–1.5 mm long, broadest at or about middle; seeds 4-angled, transversely ridged, pale- to reddish-brown.

Trinidad: without locality, Druce s.n. (OXF), Finlay (TRIN 2452); Chacachacare, 25.1.1921, Broadway (TRIN 10936); Gasparee, 7.10.1934, Broadway 9428 (K); Botanic Gardens, 6.10.1888, Broadway (TRIN 2156); St Ann's, Cascade, 27.11.1923, Broadway 5131 (K), Lady Chancellor Road, milepost 2½, 25.7.1973, Wood 1719 (K, TRIN); Maraval, 1891, Baptiste (TRIN 5862); Valsayn, near Curepe, 20.6.1973, Philcox 7227 (K, P, TRIN); St Augustine, 17.1.1953, Baker (K, TRIN 14794), 24.5.1939, Cheesman 219 (TRIN), Smart s.n. in 1928 (K); Piarco Savanna, 18.1.1893, Alexander (TRIN 5143), 5.11.1963, Carrick 1190 (K); milepost 2½, Heights of Guanapo Road, 29.5.1975, Philcox 7813 (K), 7816 (K); Tabaquite, 3.10.1918, Broadway (TRIN 8737); Gasparillo, 30.12.1914, Freeman (TRIN 8378); Usine St Madelaine, San Fernando, 17.7.1926, Broadway 6359 (BM, K); Farallen Rock, 2 miles off San Fernando, 20.3.1932, Broadway 7968 (BM); Princes Town, 20.12.1890, Broadway (TRIN 4453).

Tobago: without locality, Druce s.n. (OXF); Scarborough, 5.5.1953, Baker (TRIN 14943); near Little Rockley Bay, 31.8.1973, Philcox 7547 (K); near milepost 1 on road to Hillsborough Dam from Mount St George, 4.6.1973, Philcox 7034 (K, TRIN); Windward Road, 20.4.1954, Shepherd & Holliday (TRIN 15159).

Tropics and subtropics of the New World and introduced into the Old World.

8. *Euphorbia hyssopifolia* L., *Syst. Nat.* ed. 10: 1048 (1759); Urb., *Symb. Ant.* 4: 355 (1910) et 8: 371 (1920); Fawc. & Rendle, *Fl. Jam.* 4, 2: 339 (1920); L. C. Wheeler in *Rhodora* 43: 140 (1941); Gooding & Loveless in Gooding, et al., *Fl. Barbado.*: 249 (1965); Adams, *Fl. Pl. Jam.*: 450 (1972)

E. hypericifolia L. var. *hyssopifolia* (L.) Griseb., *Fl. Brit. W. Ind.*: 54 (1859)

Herb, annual, 20–60(–110) cm tall, erect, glabrous, simple or branched from base; stems dichotomous, flexuous; leaves 1–4.5 cm long, 0.2–1.75 cm wide, oblong to narrowly obovate to linear, serrate, subacute to rounded at apex, base inequilateral, rounded or subcuneate, shortly petiolate; petioles 1–2 mm long; stipules about 1 mm long, broadly triangular; inflorescence of axillary or terminal leafy cymes of few to many cyathia; cyathia about 1 mm long, similar to previous species; styles shallowly and divergently bifid; capsule ovoid globose, 1.5–2 mm long, widest below middle; seeds 4-angled, transversely ridged, dark brownish-black or grey.

Trinidad: without locality, Fendler 678 (BM, K); Laventille, 2.8.1846, Crueger (K); Valsayn, near Curepe, 20.6.1973, Philcox 7228 (K, P, TRIN); savanna above St Joseph, about 450 m, 14.12.1947, Simmonds 218 (TRIN); Antigua Road, junction at end of Churchill-Roosevelt Highway and Eastern Main Road, 15.6.1975, Philcox 7666 (K, P, TRIN); Aripo Savanna, 25.3.1953, Baker (K, TRIN 14913), 14.8.1959, Richardson 679 (K, TRIN); milepost $\frac{3}{4}$ on Lopinot Road, 16.7.1973, Philcox, Wood & Kalloo 7464 (K, P, TRIN); Cumuto, 27.11.1925, Broadway 5860 (BM, K); Coco Bay, Mayaro, 21.8.1973, Adams 13659 (K, UCWI).

Tobago: Bacolet, 7.8.1958, Purselove 6224 (K, TRIN), 8.3.1958, Purselove 6231 (K, TRIN); about milepost 2½, east of Hillsborough Road at foot of quarry, 4.6.1973, Philcox 7036 (K, P, TRIN).

Florida, United States and Bermuda, and throughout tropical America.

9. *Euphorbia oerstediana* (Klotzsch & Garcke) Boiss. in DC., *Prodr.* 15, 2: 59 (1862); Urb., *Symb. Ant.* 5: 393 (1908), et 6: 90 (1909); Fawc. & Rendle, *Fl. Jam.* 4, 2: 343 (1920); Gooding & Loveless in Gooding, et al., *Fl. Barbado.*: 250 (1965); Adams, *Fl. Pl. Jam.*: 428 (1972)

Urine Bush

Poinsettia oerstediana Klotzsch & Garcke in *Abh. Akad. Berl.* 1859: 103 (1860)

Dichyllum oerstedianum (Klotzsch & Garcke) Britton in Britton & Wilson, *Sci. Surv. Puerto Rico & Virg. Isl.* 5: 499 (1924)

Annual herb, up to 50 cm tall, glabrous or glabrescent; stem internodes hollow; leaves 1.8–9(–10) cm long, 1–4.5 cm wide, alternate below, opposite or whorled above, ovate to oblong-elliptic, apex acuminate, wedge-shaped or rounded at base, entire, shortly pubescent, glabrescent above and beneath; petioles up to 2.5 cm long; stipules rudimentary; inflorescence terminal, cymes few-flowered, peduncles up to 1.5 cm long; involucre 2–3 mm long, narrowly campanulate, with slender pedicels about 4 mm long; capsule about 3 mm long, 4 mm diameter, puberulent; seeds 1.5–2 mm long, ellipsoid, greyish, verrucose.

Trinidad: without locality, Finlay (TRIN 2455); Diego Martin, River Estate, 22.5.1953, Baker (K, TRIN 15013), 25.5.1939, Cheesman 222 (TRIN); St Joseph, Hosein (TRIN 14621); Lopinot Valley near La Pastora, c. 240 m, 1.11.1947, Simmonds 190 (TRIN); Las Hermanas, 29.4.1958, Simmonds (K, TRIN 15484); milepost 3½, Heights of Guanapo Road, below rock-face, about 180 m, 29.5.1975, Philcox 7820 (K, TRIN); Penal, 17.1.1952, Baker (TRIN 14720); about milepost 9, Guayaguayare to Rio Claro (Texaco) Road, 31.6.1975, Philcox 7958 (K, P, TRIN); McBean, Southern Main Road, 24.11.1932, Broadway s.n. (BM).

Tobago: Easterville Road, between Green Hill and Caledonia, 11.10.1937, Sandwith 1715 (K); Menna Road, Mason Hall, 6.6.1925, Williams (TRIN 11123); milepost 2, Hillsborough Dam to Mason Hall Road, 31.7.1973, Philcox 7553 (K, P, TRIN); Mount St George to Castara, above dam, about 300 m, 12.7.1954, Baker (TRIN 15341); Great Courland River, 15.11.1921, Freeman (TRIN 10935); Great Dog River Valley, 12.10.1937, Sandwith 1743 (K); Roxborough to Bloody Bay Road, 12.8.1958, Purseglove 6306 (K, TRIN); Parrot Hall, Parlatuvier, 22.7.1913, Broadway 4626 (BM).

West Indies, Central America and the Guyanas (*vide* Britton & Wilson).

10. *Euphorbia mesembrianthemifolia* Jacq., *Enum. Syst. Pl. Carib.*: 22 (1760); Dugand in *Caldasia* 2: 295 (1943); Gooding & Loveless in Gooding, et al., *Fl. Barbado.*: 250 (1965); Adams, *Fl. Pl. Jam.*: 429 (1972)

E. buxifolia Lam., *Encycl.* 2: 421 (1788); Griseb., *Fl. Brit. W. Ind.*: 53 (1859); Fawc. & Rendle, *Fl. Jam.* 4, 2: 336 (1920)

Chamaesyce buxifolia (Lam.) Small in *Fl. S.E. United States*: 711 (1903)

Shrubs or shrubby herbs up to 50 cm tall, erect or decumbent, much branched; branches strict, internodes (2-)8-10(-15) mm long, nodes markedly swollen; leaves opposite, 7-12(-15) mm long, 3-8 mm wide, elliptic to obovate, entire, somewhat fleshy, glabrous, glaucous, usually drying inrolled or folded, apex pointed or rounded, base subequally cordate, 3-nerved from base, shortly petiolate; petioles about 1 mm long; stipules about 2 mm long, 1.5 mm wide, broadly triangular, whitish, long fimbriate, persistent; inflorescence in axils of upper leaves; peduncles about 1.5 mm long; involucre campanulate, about 1.5 mm long, solitary; glands transversely elliptic, appendages 0.5 mm wide, white; capsule 2 mm broad, glabrous; seeds about 1 mm long, ovoid, greyish- to pale-brown.

Trinidad: Sena Bay, about $\frac{1}{2}$ mile south of Rampanalgas, 2.4.1975, Philcox 7633 (K, TRIN); Islet-à-bateau, between Sena and Balandra Bays, 2.4.1975, Philcox 7634 (K); Balandra Bay,

12.5.1939, Cheesman 204 (TRIN 13429), 18.7.1973, Philcox, Wood & Kalloo 7520 (K, P, TRIN), 27.6.1975, Philcox & M. Olivier 7993 (K, TRIN); Manzanilla Beach, 27.3.1925, Broadway 5612 (BM, K); Mayaro, 15.3.1922, Broadway (TRIN 10934 p.p.); Galeota Point, 9.11.1963, Carrick 1205 (K); East Coast, 24.4.1932, Broadway 8015 (BM).

West Indies and continental tropical America.

11. *Euphorbia flexuosa* H.B.K., *Nov. Gen. & Sp.* 2: 55 (1817); Griseb., *Fl. Brit. W. Ind.*: 53 (1859)

E. buxifolia Lam. var. *flexuosa* (H.B.K.) Boiss. in DC., *Prodr.* 15, 2: 15 (1862)

Shrubs or shrubby herbs up to 30 cm tall, erect or decumbent, much branched; branches flexuous, internodes (5-)12-15(-25) mm long, nodes not markedly swollen except on old stems; leaves opposite 8-18 mm long, 3-9 mm wide, ovate-oblong to obovate, entire, glabrous, glaucous, not fleshy, usually drying flat, 3-nerved from base, base conspicuously obliquely cordate, apex rounded, occasionally minutely emarginate, shortly petiolate; petioles up to 1 mm long; stipules about 0.5 mm long, 1 mm wide, whitish, broadly triangular, shortly fimbriate, not generally persistent on old wood; inflorescence in axils of upper leaves; peduncles up to 2.5 mm long; involucre campanulate about 1.5 mm long; glands transversely elliptic, appendages 0.5 mm wide, white with yellow base; capsule 3 mm broad, glabrous; seeds about 1 mm long, ovoid, greyish-brown.

Trinidad: without locality, Purdie s.n. (K); Balandra Bay, Freeman s.n. (TRIN), 18.7.1973, Philcox, Wood & Gibbs 7521 (K, TRIN), 2.4.1975, Philcox 7635 (K, TRIN), 27.6.1975, Philcox & M. Olivier 7993 (K, TRIN); Mayaro, 15.3.1922, Broadway (TRIN 10934 p.p.); Nariva, seashore, 14.3.1866, Finlay (TRIN 2448).

Trinidad, Venezuela and French Guiana.

12. *Euphorbia prostrata* Aiton, *Hort. Kew.* ed. 1, 2: 139 (1789); Griseb., *Fl. Brit. W. Ind.*: 53 (1859); Boiss. in DC., *Prodr.* 15, 2: 47 (1862); Urb., *Symb. Ant.* 4: 356 (1910), et 8: 372 (1920); Fawc. & Rendle, *Fl. Jam.*

4, 2: 341 (1920); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 97 (1932) Gooding & Loveless in Gooding, et al., *Fl. Barbado.*: 251 (1965); Adams, *Fl. Pl. Jam.*: 429 (1972)

Chamaesyce prostrata (Ait.) Small, *Fl. S.E. United States*: 713 (1903)

Herb, prostrate, much branched; branches reddish, minutely puberulous above; leaves 1.5–6 mm long, 1–3 mm wide, broadly elliptic, rounded at apex, unequal, rounded to obtuse at base, glabrous to shortly pubescent beneath, shortly petiolate, minutely serrulate; petioles up to 0.5 mm long; stipules triangular, minute; inflorescence in short axillary racemes; involucre small, campanulate, lobes ovate, glands 4, minute; capsules 1–1.5 mm long and broad, hairy on back of cocci, glabrous elsewhere; seeds pale reddish.

Trinidad: without locality, Lockhart s.n. (P); Carrera Island, 19.6.1916, Fraser (TRIN 8220); Port-of-Spain, 14.9.1865, Finlay (TRIN 2449), 1.8.1924, Broadway 5338 (K); St Augustine, Baker (K, TRIN 14818), I.C.T.A., 24.5.1939, Cheesman (TRIN 13438), 7.10.1960, Dingle 53 (TRIN), 28.10.1958, Cruickshank *et al.* (TRIN 20339); San Fernando, 16.8.1932, Broadway 8986 (BM, K).

Tobago: Pigeon Point, 11.10.1909, Broadway 3063 (BM); Scarborough, October, 1889, Eggers 5644 (K, P), 5.5.1953, Baker (TRIN 14945).

Tropical America. Introduced into the Old World tropics and subtropics.

13. *Euphorbia thymifolia* L., *Sp. Pl.*: 454 (1753); Boiss. in DC., *Prodr.* 15, 2: 47 (1862); Urb., *Symb. Ant.* 4: 356 (1910); Fawc. & Rendle, *Fl. Jam.* 4, 2: 342 (1920); Lanjouw in Pulle, *Fl. Surin.* 2, 1: 98 (1932); Adams, *Fl. Pl. Jam.*: 429 (1972)

Chickenweed

E. maculata L. var. *thymifolia* (L.) Griseb., *Fl. Brit. W. Ind.*: 53 (1859)

Chamaesyce thymifolia (L.) Millsp. in *Publ. Field Mus. Nat. Hist., Bot. Ser.* 2: 412 (1916)

Herbs, prostrate or decumbent, much branched; branches glabrous or pubescent on upper surface, often reddish-brown; leaves 2-5(-9) mm long, 1-2.5(-3.5) mm wide, elliptic to oblong-elliptic, bluntly pointed or rounded at apex, unequal, rounded to subcordate at base, crenate to serrate at least towards apex, glabrous or with short hairs beneath, petiolate; petioles 0.5-1 mm long; stipules about 1 mm long, triangular, pubescent; inflorescence axillary in upper leaf axils; involucre sessile, campanulate, puberulous, inequilaterally deeply divided; glands small, stipitate; capsule about 1 mm long and broad, erect, shortly stalked, strigosely hairy; seeds about 1 mm long, pink.

Trinidad: without locality, Bromfield s.n. in 1844 (K), Fendler 676 (BM, K), Lockhart s.n. (P); St Clair, 2.3.1921, Britton 2081 (TRIN 10489); Botanic Gardens, Hart (TRIN 3891); Curepe, 5.4.1975, Philcox 7637 (K, TRIN); St Augustine, 27.1.1953, Baker (TRIN 14819), Rogers 37024 (K), 9.4.1921, Britton 2824 (TRIN 10490), University Campus (I.C.T.A.), 24.1.1953, Baker (K, TRIN 14797), 17.6.1950, Baker (TRIN 20521), 24.5.1939, Cheesman (TRIN 13439), 7.4.1975, Philcox 7647 (K, P, TRIN); Blanchisseuse, 16.9.1967, about 25 m, Wong 54a (TRIN 19372); Toco, near Galera lighthouse, 8.12.1933, Broadway 9301 (BM); Tabaguite to Rio Claro Road, near 4½ milepost, 19.7.1926, Broadway 6343 (K); Cedros, Austin Road, 21.9.1915, Caroline King (TRIN 7117); Southern Watershed Reserve, South Coast, 26.8.1959, Webster, Ellis & Miller 9899 (TRIN 19275); Guayaguayare, 21.8.1973, Adams 13630 (UCWI).

Tobago: Government House grounds, 20.11.1913, Broadway 4846 (BM, K); Mason Hall, by Courland River, 19.10.1937, Sandwith 1862 (K); in Hillsborough River on rocks, about ½ to ¾ mile below dam, about 200 m, 5.6.1975, Philcox & A. Raynal 7913 (K); milepost 2½, east of Hillsborough Road at foot of quarry, 4.6.1973, Philcox 7039 (K, TRIN).

West Indies, continental tropical America and Old World tropics.

14. *Euphorbia serpens* H. B. K., *Nov. Gen. & Sp.* 2: 52 (1817); Griseb., *Fl. Brit. W. Ind.*: 53 (1859) pro parte; Boiss. in DC., *Prodr.* 15, 2: 29 (1862); Urb., *Symb. Ant.* 4: 355 (1910) et 8: 372 (1920); Wheeler in *Rhodora* 43: 198 (1941); Gooding & Loveless in Gooding, et al., *Fl. Barbado.*: 251 (1965); Adams, *Fl. Pl. Jam.*: 429 (1972)
Chamaesyce serpens (H.B.K.) Small, *Fl. S.E. United States*: 709 (1903)

Herb, prostrate, much branched, totally glabrous; stems and leaves frequently tinged dull red; leaves 1.5–4 mm long, 1–3 mm wide, ovate-orbicular to oblong, apex rounded to rarely subemarginate, base oblique to obtuse and rounded when young, glaucous, shortly petiolate; petioles up to 0.5 mm long; stipules triangular, about 0.5 mm long, white, lacerate; inflorescence axillary; capsules about 1 mm long, cocci sharply keeled; seeds pale pinkish-brown.

Trinidad: Pointe-à-Pierre, 25.3.1959, Cowan 1245 (P, TRIN), 9.6.1975, Philcox 7931 (K, P, TRIN); about milepost 3½, Plum to Manzanilla Road, Brigand Hill, 21.5.1973, Philcox & Wood 7240 (K, P, TRIN); summit of Brigand Hill, about 230 m, 1.5.1975, Philcox & Andrews 7743 (K, P, TRIN); Guayaguayare to Rio Claro (Texaco) Road, 13.5.1975, Philcox 7957 (K, P, TRIN).

Tobago: between Lambeau and Scarborough, 2.6.1975, Philcox & A. Raynal 7846 (K, P, TRIN).

West Indies, tropical and subtropical America, southern Europe and West Africa.

DOUBTFUL RECORDS

Amanoa guianensis Aubl.

A South American species included on the strength of an old specimen (TRIN 978) without collector's name, locality or date.

Ditaxis fendleri (Muell. Arg.) Pax & K. Hoffm.

Only recorded from Patos and therefore no longer in our area. Should be sought on Chacachacare.

Manihot carthaginensis (Jacq.) Muell. Arg.

Only recorded from Patos, but may be found on Chacachacare.

Ricinus communis L.

Probably African in origin; introduced to and escaping from cultivation in both Trinidad and Tobago.

Actinostemon concolor (Spreng.) Muell. Arg. var. *caribaeus* (Griseb.) Muell. Arg.

This is recorded from Trinidad by Pax, in Engl. *Pflanzenreich* 4, 147, 78 (1912) on the strength of a Sieber specimen. No duplicate of this collection has been seen and no other local specimens found. It may be suspected that Sieber's specimen was collected in Martinique where this taxon is known to occur.