

# Department of Agriculture

TRINIDAD AND TOBAGO

Vol. II.]

[Part IV.

## FLORA

OF

TRINIDAD AND TOBAGO

**POLEMONIALES** (*Pars*)

**BORAGINACEAE**

**CONVOLVULACEAE**

**SOLANACEAE**

Price: — — \$1.20



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COHORT 8. POLEMONIALES (*Pars*)

## FAMILY 2. BORAGINACEAE

BY IVAN M. JOHNSTON

*Trees, shrubs and herbs*, usually hairy, epidermis of herbage frequently with evident groups of pale mineralized cells (cystoliths) forming pallid dots, pustules, or protuberances from which hairs may arise. *Leaves* simple, prevailing alternate, without stipules. *Inf.* cymose, loosely branched or more or less scorpioid. *Flowers* perfect, usually small and generally pentamerous, sometimes heterostyled. *Calyx* toothed or lobed, usually persistent. *Corolla* gamopetalous, prevailing regular, frequently with pleats or more or less hairy intruded appendages in the throat. *Stamens* usually 5 and equal, inserted on the tube of corolla and alternating with its lobes. *Ovary* superior, bicarpellate, ovules 1-4. *Style* present or suppressed, simple or bi-lobed or twice-forked, stigmas 1-4. *Fruit* simple or becoming lobed or divided into 2 or 4 biovulate or uniovulate parts; when simple frequently with a fleshy mesocarp and a simple or 2-4 lobed or divided stone. *Endosperm* thin or absent.

- Stigmas 4: style forked, with the branches  
again forked, each lobe of the style  
terminated by a stigma .....1. *Cordia*
- Stigmas 2: style simply forked or nearly  
entire .....2. *Bourreria*
- Stigmas solitary: style simple, frequently  
suppressed.  
Fruit a drupe; shrubs, frequently  
scandent or climbing .....3. *Tournefortia*
- Fruit dry, bony; herbs or small  
shrubby plants .....4. *Heliotropium*

## 1. CORDIA L.

*Trees or shrubs*, usually with broad leaves. *Inf.* cymose, variable in form, small to large, paniculate, corymbose, glomerate, capitate or even spicate. *Calyx* usually toothed or lobed, usually persistent. *Corolla* white, yellow or red, small to large, salver or funnel-shaped, subrotate or subtubular. *Stamens* exserted or included, filaments short or long. *Style* terminal, well developed, 2-lobed, or 2-parted, the branches each 2-lobed; stigmas 4, capitate or clavate, small. *Fruit* not lobed, usually a drupe but sometimes dry with bony or papery walls, 1-4 seeded, endosperm none, cotyledons plicate.



Inflorescence spicate, elongate; shrubs with red drupes.

Spikes axillary, base of peduncle adnate to the woody persistent basal portion of the subtending petiole .....1. *C. Schomburgkii*

Spikes terminal or arising from internodes along the twigs, never axillary; peduncles distinct from petioles .....2. *C. curassavica*

Inflorescence not elongate and spicate.

Cymes glomerate or capitate, before expansion of corollas 0.5-2 cm. broad; shrubs with red drupes.

Calyx-lobes lacking prolonged tips; inflorescence axillary; base of peduncle adnate to the woody persisting basal portion of the subtending petiole; cymes glomerate or inconspicuously branched, usually broader than long .....3. *C. polycephala*

Calyx-lobes with conspicuously prolonged filiform tips 2-7 mm. long; inflorescence terminal or arising from internodes on the twigs, never axillary; peduncles distinct from petioles; cymes capitate, as long as broad.

Corolla very large and showy, 35-50 mm. long, with distinct tube, throat and limb; fruit with elongate stone 7-9 mm. long; petioles 10-25 mm. long 4. *C. grandiflora*

Corolla much smaller, 5-8 mm. long, subtubular; fruit with ovoid stone 4-6 mm. long; petioles 2-14 mm. long .....5. *C. globosa*

Cymes large and loose, 5-20 cm. broad; trees.

Corollas 3-5 cm. long, usually vermillion; fruit dry, a nut tightly invested in a calyx that becomes white and fleshy at maturity .....6. *C. Sebestena*

Corollas very much smaller, white or yellowish; calyx not fleshy at maturity.

Pubescence stellate; corolla marcescent; calyx tubular and 10-ribbed; fruit dry, thin-walled, sausage-shaped,

developing inside the persisting calyx and corolla-tube, eventually falling from the tree still ensheathed by the floral parts .....7. *C. alliodora*

Pubescence of simple hairs; corolla not marcescent; fruit a drupe, maturing with only an explanate or cup-shaped calyx persisting at its base.

Flower-buds ribbed, appendaged at apex; corolla funnel-shaped with short broad emarginate lobes; leaves usually evidently white-pustulate on upper surface, margin usually toothed; petiole 8-30 mm. long .....8. *C. dentata*

Flower-buds not ribbed, unappendaged; corolla with narrow elongate lobes; leaves not pustulate above, margin almost always entire; petiole 3-15 mm. long.

Ovary and fruit strigose; stone of drupe rather smooth, longer than broad; leaves with pallid indumentum beneath; flowers perfect and all alike .....9. *C. bicolor*

Ovary and fruit glabrous; stone of drupe rough, broader than long; leaves not pallid beneath; flowers dimorphic, functionally unisexual; plant dioecious.

Fruit cherry red; leaves commonly broadest above middle, all similar, upper surface becoming lustrous and usually glabrous; inflorescence usually



appearing on leafless  
twigs and flowering as  
new leaves unfold .....10. *C. Collococca*

Fruit whitish or greenish;  
leaves broadest at or be-  
low middle, dimorphic,  
mostly decidedly elongate  
but about every fifth one  
short and rounded, upper  
surface pubescent and  
dull; inflorescence de-  
veloping on leafy twigs.

Upper leaf-surface de-  
cidedly harsh and  
scabrous; younger twigs  
usually bristly .....11. *C. panamensis*

Upper leaf-surface rather  
smooth; twigs not  
bristly .....12. *C. sericalyx*

1. *C. Schomburgkii* DC.

*C. tobagensis* Urban.

*C. tobagensis* var. *Broadwayi* Urban.

Urban in Fedde, Rep. 16. 39-40: Johnston in Pulle, Fl. Surinam. 4. 313: Johnston in Journ. Arn. Arb. 16. 39; 30. 119.

*Shrub* 1-4 m. tall; twigs slender, inconspicuously short-pubescent as well as puberulent, the hairs all short, curved and antrorsely ascending; *lvs.* ovate to elliptic or lance-elliptic, 5-11 cm. long, 2-7 cm. broad, apex acute, base obtuse or acute or rarely nearly rounded, margin subentire to sharply dentate, upper surface green and somewhat lustrous, bearing numerous short, stiff, straight, pale appressed hairs that frequently arise from a distinct pallid mineralized base, lower surface pale or somewhat brownish, densely puberulent especially when young, petioles with a thickened basal portion, 2.5-6mm. long, that becomes adnate to subtended twigs and peduncles and persists as a woody recurving spur, free deciduous portion of petiole 5-15 mm. long; *infl.* axillary, peduncle 3-8 cm. long, naked or exceptionally bearing a single reduced leaf below the middle, base adnate to the thickened basal portion of the subtending petiole, spike slender, elongate, interrupted, 4-10 cm. long; *flower buds* obovoid, puberulent or frequently somewhat strigose; *cal.* sessile, at anthesis with triangular lobes about 1 mm. long, accrescent, and becoming pale in color, sterile ones persisting, becoming vase- or funnel-shaped, 3-4 mm. long and having a narrow tube, flaring throat and ascending lobes, fertile ones

becoming deeply cup-shaped or short cylindrical, distended by the fruit; *cor.* white, 4 mm. long, tube funnel-shaped, open, lobes semicircular, entire, recurving, less than 1 mm. long; *drupe* red, only the tip protruding from the calyx, stone ovoid 4-5 mm. long.

Tobago: Mt. St. George-Castara Road (Herb. Trin. 13208, 18. 10. 1937); Menna Road, Mason Hall (Herb. Trin. 11140, 6. 6. 1925); beyond Caledonia, Broadway 3072 (Gray Herb., part of type of *C. tobagensis*); Dennet Estate, Broadway (Gray Herb., part of type of var. *Broadwayi*).

Known only from the Guianas and Tobago.

2. *C. curassavica* (Jacq.) R. & S.

Black Sage

*C. macrostachya* (Jacq.) R. & S.

*Lithocardium cylindrostachyum* var. *platyphyllum* Kuntze.

*C. curassavica* var. *platyphylla* (Kuntze) Johnston.

*C. cylindrostachya* of authors.

Griseb. Fl. 48: Johnston in Journ. Arn. Arb. 16. 36; 30. 120.

*Shrub* 1-4 m. tall, usually with an odour of sage; twigs slender, clad with minute curved hairs; *lvs.* usually lanceolate but at times ovate or elliptic, 5-25 cm. long, 1.5-10 cm. broad, margin usually evidently dentate or crenate especially above the middle, apex acute, base acute or less commonly obtuse or rounded, petioles 3-12 mm. long, partially winged; upper leaf-surface green, usually somewhat roughened by an abundance of minute mineralized wartlike protuberances or rarely with the protuberances conical or even prolonged into a very short stiff hair, or, in luxuriant forms, with the protuberances replaced by scattered minute flat mineralized dots; lower leaf-surface pale, clothed with an abundance of minute, soft, curved hairs, especially when young; *infl.* spicate, flowering from the apex downwards, 3-15 cm. long; peduncle 1-6 cm. long, terminal or borne along the leafy twig on internodes without any subtending leaf, never axillary; *cal.* sessile, pubescent, 2.5-3 mm. long, teeth about 1 mm. long; *cor.* white, funnel-shaped, 4-6 mm. long, lobes about 2 mm. broad and long, frequently somewhat dentate, usually recurving; *drupe* red, only the apical portion protruding from the distended cup-like calyx, stone ovoid, about 4 mm. long.

Trinidad: La Ventille (Herb. Trin. 586, 13. 5. 1845); Vistabella (Herb. Trin. 1846, 13. 9. 1864); Botanic Garden (Herb. Trin. 4512, 28. 4. 1891); Piarcó Savanna (Herb. Trin. 6034); St. Ann's Hill (1. 9. 1906); Cedros (Herb. Trin. 7154, 28. 9. 1915 and 7215, 16. 9. 1915); Pointe-a-Pierre (Herb. Trin. 7838, 26. 3. 1915); Balandra Bay (Herb. Trin. 10430, 21. 6. 1921).

Tobago: Orange Hill (Herb. Trin. 14764, 8. 9. 1952); Government Farm (Herb. Trin. 14765, 8. 9. 1952).



Common in second growth and on abandoned land; Trinidad and Tobago.

Northern South America north into Central America and the Lesser Antilles.

The typical form of the species has thickish lanceolate leaves 1.5-4 cm. broad, roughened by very abundant, crowded tuberculations on the upper surface. The var. *platyphylla* is the luxuriant form with thinner, darker green, broad leaves 4-10 cm. wide, tending to be smooth and nearly bare on the upper surfaces. The variety appears to be the more common form in Trinidad. The type specimen was collected there by Kuntze.

3. ***C. polycephala* (Lam.) Johnston**

*C. corymbosa* of authors.

*Varronia corymbosa* of authors.

*C. ulmigolia* of authors.

*Varronia ulmifolia* of authors.

Griseb. Fl. 480: Britton & Wils. Sci. Surv. Porto Rico 6. 127: Urban Symb. Ant. 8. 577: Johnston in Pulle, Fl. Surin. 4. 311 and in Jour. Arn. Arb. 16. 33; 30. 118.

*Shrub*, 1-3 m. tall or with elongate clambering stems reaching higher; twigs slender, commonly 1-3 mm. thick, usually pallid or tawny from a thin indument of minute appressed hairs; *lvs.* lanceolate to ovate or elliptic, 4-9 cm. long, 2-6 cm. broad, base acute to rounded, apex acute or somewhat acuminate, margin usually evidently dentate at least above the middle, upper surface green, glabrous or with some very scattered slender appressed hairs, usually with numerous minute mineralized dots, lower surface commonly somewhat pallid or tawny from a tomentulose indumentum and usually also provided with scattered appressed coarse hairs, but at times merely strigose or even nearly glabrous; petioles at the base decurrent for 2-8 mm. on the subtended peduncle or twig, the free portion 2-8 mm. long, the adnate portion woody, persisting as a woody decurved prong; *infl.* mostly axillary, only those first produced terminating the leafy shoots and being non-axillary; *peduncles* 1-10 cm. long, usually naked, simple or sometimes branched, thickened at the base and adnate to the persisting woody basal portion of the subtending petiole; *cymes* glomerate, subcapitate and 1 cm. or less thick, or becoming looser, more or less evidently forked, with branches as much as 1 cm. long; flower buds globose-obovate, densely strigose, usually tawny, obscurely if at all appendaged at the apex; *cal.* cup-shaped, sessile, 2-4 mm. long, lobes triangular; *cor.* 2.5-5 mm. long, greenish white, 4-5 mm. broad at summit, with obscure rounded lobes several times broader than long; drupe red, only apex protruded from the calyx; stone irregularly globose-ovoid, 4-5 mm. long.

Reported from Trinidad by Urban, Grisebach, and Britton and Wilson, *loc. cit.*, but not represented in Herb. Trin.

Northern South America and from Grenada and Barbados north to Hispaniola.

4. *C. grandiflora* (Desv.) HBK.

Johnston in Jour. Arn. Arb. 16. 32; 30. 116.

*Shrub*, 1-3.5 m. tall; twigs and foliage with slender, pale appressed or ascending hairs 0.5-1 mm. long; *lvs.* triangular-ovate to lanceolate, 4-10 cm. long, 1.5-5 cm. broad, margin sinuate or dentate, apex acute, base obtuse, upper surface green, beneath pale, petioles 1-2.5 cm. long; *infl.* terminal or internodal, never axillary, peduncle 2.5-15 cm. long, flower-cluster capitate, in bud 1.5-2 cm. thick; flower buds strigose, the body ellipsoidal, 3.5-4 mm. thick, 5-6 mm. long, crowned by free, much prolonged hairy, linear lobe-tips 2-4 mm. long; *cor.* large and conspicuous, white, 3.5-5 cm. long, with a tube 5-9 mm. long and 2 mm. thick abruptly expanding into a coarse cylindrical throat 9-14 mm. thick, and then into a flaring limb 2-4 cm. in diameter; ripe fruit unknown (a red drupe), stone irregularly lanceolate, 7-9 mm. long.

Trinidad: without locality (Herb. Trin. 12215, Aug. 1928); Caparo (Broadway, *sine num.*, June 1918).

Amazon Valley north into British Guiana and Venezuela.

Reported as "Frequently found in peasant gardens in southern Trinidad" (Williams & Williams, Useful and Orn. Pls. Trin. & Tob. ed. 4. 135).

5. *C. globosa* (Jacq.) HBK.

*Varronia globosa* Jacq.

*C. ordia dasycephala* (Desv.) HBK.

Griseb. Fl. 481: Britt. & Wils. Sci. Surv. Porto Rico 6. 127; Johnston in Jour. Arn. Arb. 30. 116.

*Shrub*, 1-3 m. tall; twigs slender 1-2.5 mm. thick, bearing short stiff ascending hairs that frequently arise from thickened bases; *lvs.* lanceolate or rarely ovate, conspicuously toothed, 2-14 cm. long, 1-6 cm. broad, apex acute, base acute, obtuse or rounded, surfaces with scattered short stiff appressed hairs, those on the upper face commonly arising from pallid thickened bases, petioles 2-14 mm. long; *infl.* globose, 1-2 cm. in diameter, the peduncle 0.5-6 cm. long, terminal or rarely borne on naked internodes along the leafy shoot, never axillary; *cal.* sessile, tube cup-shaped 2-5 mm. long, the lobes triangular or oblong, about 1 mm. long, with the tips prolonged into conspicuous bristly contorted filiform appendages 3-7 mm. long; *cor.* white 5-8 mm. long, tubular-funnel-shaped, lobes nearly 1 mm. long and about twice as broad, ascending; *drupe* red, only apical portion exposed at maturity; stone ovoid, 4-6 mm. long.



Patos (Herb. Trin. 11851, 9.9.1927 and Herb. Trin. 8886, May, 1915); Goose Island (Herb. Trin. 1847, Oct. 1864).

Lesser Antilles and south into northern South America.

Patos, or Goose Island, is no longer in our area, so that there is, strictly, no record for the Colony. It is likely to be found on one or other of the Bocas Islands.

#### 6. *C. Sebestena* L.

Sebesten Sebestena (L.) Britt.

Griseb. Fl. 478: Britt. & Wils. Sci. Surv. Porto Rico 6. 124: Johnston in Jour. Arn. Arb. 30. 115.

*Shrub* or small tree, commonly 1-5 m. tall, coarsely strigose; *lvs.* ovate to elliptic, 6-25 cm. long, 4-15 cm. broad, thickish, scabrous, the stiff appressed hairs on the upper surface frequently with thickened pale bases, leaf-apex acute, base acute to subcordate, petioles 1-4 cm. long; *infl.* terminal, strictly branched, corymbose; *cor.* very showy, trumpet-shaped, usually vermilion, 3-5 cm. long, several times longer than the cylindrical calyx; limb 2-5 cm. broad, usually with six broad spreading lobes that are frequently crisped, undulate or toothed on the margin; *fruit* a dry hard ovoid nut about 20 mm. long and 12 mm. thick, tightly invested by the accrescent calyx which becomes fleshy and white at maturity.

Cultivated in Trinidad and Tobago.

Native of the West Indies, now widely cultivated in the dry tropics.

#### 7. *C. alliodora* (R. & P.) Cham.

Cypre

Cerdana alliodora R. & P.

Cordia Gerascanthus of older authors.

Griseb. Fl. 478: Britt. & Wils. Sci. Surv. Porto Rico 6. 123: Urban Symb. Ant. 8. 574: Johnston in Jour. Arn. Arb. 30. 115: Marshall, Silvicult. Trin. & Tob. 167.

*Tree* up to 30 m. tall, younger parts clothed with abundant minute stellate hairs; *lvs.* lanceolate, 10-18 cm. long, 3-5 cm. broad, on petioles 1-2.5 cm. long, variable in pubescence, frequently with only scattered stellate hairs but at times these hairs numerous and the surfaces thinly tomentose; *infl.* a dense large abundantly flowered terminal panicle; flowers long persistent, fertilized ones falling only when the fruit is mature; *cal.* tubular, 10-ribbed, about 6 mm. long and 2 mm. thick, only obscurely distended by the ripening fruit it encloses; *cor.* marcescent, at first white but turning brown after anthesis, the tube equalling calyx in length, the 5 flat oblong divergent lobes about 6 mm. long; *fruit* dry, cylindric, thin-walled, inconspicuous and hidden, developing ensheathed by the corolla-tube and calyx, at extreme maturity falling from the tree still surrounded by the other flower parts with the flat spreading

unshrivelled lobes of the marcescent corolla functioning as a parachute and so acting in dissemination.

Trinidad: Gasparee (Herb. Trin. 1844, 26. 1. 1867); Heights of Aripo (Herb. Trin. 9845, 10-26. 1. 1922); Botanic Garden (Herb. Trin. 10147, 2.2.1922 and 11515, 15.2.1926).

Western portion of the Northern Range and the Southern Watershed chiefly in semi-deciduous and dry evergreen forests, Trinidad; also in the forests of Tobago and present on Chacachacare and the other Gulf Islands (Marshall, *loc. cit.*).

Cypre (pronounced "Sip") is one of the leading furniture woods of the colony.

Widely distributed in tropical America. On the mainland the twigs are usually swollen just below the terminal inflorescence and serve as domatia for the ants usually inhabiting the tree in great abundance.

#### 8. *C. dentata* Poir

*C. alba* of authors.

*Calyptrocordia alba* of authors.

Griseb. Fl. 478: Britt. & Wils. Sci. Surv. Porto Rico 6. 123: Johnston in Jour. Arn. Arb. 21. 347; 30. 122.

*Tree*, up to about 10 m.; twigs bearing short appressed soft hairs; *lvs.* ovate to elliptic, 5-12 cm. long, 3-7 cm. broad, margin usually evidently sinuate or toothed at least above middle, upper surface with scattered short stiffish appressed hairs, usually dotted with white pustules and somewhat scabrous, lower surface at first minutely hairy but glabrescent in age, apex and base acute to obtuse, petioles slender 8-30 mm. long; *fls.* very conspicuous, in a broad forking terminal panicle; *cal.* 10-ribbed, papery, with a short but distinctly appendage apex, opening irregularly, commonly more or less circumscissile above the middle with the apical portion calyptrate and deflexed; *cor.* white or pale yellow, broadly funnel-shaped, 10-17 mm. in diameter, the five short lobes 4-8 mm. broad and deeply emarginate; *drupe* white, watery, 8-14 mm. long, supported by an expanate calyx, stone symmetrical, rather smooth, evidently longer than broad.

Trinidad: Chacachacare (Herb. Trin. 1842, Oct. 1864); without locality or date (Herb. Trin. 10428).

Tobago: Botanic Station (Broadway, *sine num.*, 1932, in Gray Herb.).

Widely distributed and frequently cultivated in the West Indies, Mexico, Central America and northern South America.



9. *C. bicolor* A. DC.

Mapoo Lay-Lay

Lithocardium Lockhartii Kuntze (L. Lockartii Kuntze).

Cordia Lockhartii Kuntze (C. Lockartii Kuntze).

Kuntze, Rev. Gen. 2. 438: Johnston in Jour. Arn. Arb. 16. 23; 21. 349; 30. 124 and in Pulle, Fl. Sur. 4. 317: Marshall, Silvicult. Trin. Tob. 173.

*Tree* to 25 m. tall: young twigs tending to be regularly forked, usually clothed with minute soft brownish appressed hairs; *lvs.* elliptic to lanceolate-ovate, 10-20 cm. long, 5-10 cm. broad, above minutely strigose, green, dull, beneath gray or whitish, clad with abundant minute pale appressed hairs that converge concentrically over each of the numerous vein-areoles, leaf-apex long-acuminate, base rounded or obtuse or rarely acute, petioles 3-10 mm. long; *infl.* a loose flat-topped dichotomous cyme borne usually at the stem forks; flower buds obovoid, 2.5-3 mm. thick, strigose; *cal.* usually 5-toothed, strigose, in fruit enlarged, usually deeply saucer-shaped and with 5-angled rim; *cor.* white, with narrow lobes 2-3 mm. long, stamens evidently exserted, style exserted; *drupe* greenish or whitish, evidently strigose, ovoid, about 1 cm. long, stone longer than broad, rather smooth, slightly oblique.

"Widely distributed in the forest as a subdominant, but nowhere common" (Marshall, *loc. cit.*).

Trinidad: Botanic Garden (Herb. Trin. 1051; 1850, 8.2.1865; 3801, 5.6.1889; 4494, 14.3.1891; and 11516, 15.2.1926); St. Ann's (Herb. Trin. 587, 27.3.1847); Savana de Omora, Eggers 587 (Herb. Gray); O'Meara Savanna (Herb. Trin. 9555, 22.3.1921; and 10427, 22.3.1921); Siparia, Quarry Road (Herb. Trin. 10429, 8.4.1921); Siparia (Herb. Trin. 10118, Apr. 1922); Carmichael Road (Britton & Hazen, *ann.* 1926, in Herb. New York); Cumuto (Herb. Trin. 9218, 8.3.1920 and 9219, 15.3.1920); La Brea (Herb. Trin. 8803, Nov. 1918 and 14274, 10.3.1949); Moruga (Herb. Trin. 14574, 21.3.1950); Trinidad, Lockhart (type of *C. Lockhartii*, in Herb. Kew).

Central America and tropical South America.

10. *C. Collococca* L.

Clammy Cherry, Manjack

*C. glabra* of recent authors.

Griseb. Fl. 478: Britt. & Wils. Sci. Surv. Porto Rico 6. 125: Johnston in Jour. Arn. Arb. 21. 345; 30. 123: Marshall, Silvicult. Trin. Tob. 172.

*Tree*, 5-10 m. tall, functionally male or female; *lvs.* broadly oblanceolate or elliptic, 10-20 cm. long, 4-10 cm. broad, above usually somewhat lustrous and glabrous, below at first with abundant but later with scattered very minute appressed hairs, petioles 5-12 mm. long; *infl.* a loosely forking cyme, usually developing on the bare twigs of the previous season when the tree is leafless or nearly so, maturing its flowers as the new leaves

appear and expand; *fls.* strongly heterostylis and functionally unisexual; male flowers with nearly globose strigose buds 2.5-3 mm. thick, *cal.* strigose, opening irregularly, *cor.* with short tube, the elongate white lobes 3 mm. long, stamens well exerted, ovary and style small, included; female flowers slightly smaller, ovoid in the bud, with the tiny stamens surpassed by the evidently exerted style; *drupe* cherry red, up to 1 cm. in diameter, supported by an explanate circular and variously lobed calyx, stone very rough, more or less asymmetrical, broader than long.

Trinidad: Chacachacare, summit of hill (Herb. Trin. 2692); Botanic Garden (Herb. Trin. 6518); San Fernando, cultivated (Herb. Trin. 1848, 28. 4. 1865).

Tobago: without locality (Herb. Trin. 13647, 23. 4. 1941); also reported by Williams (Useful Orn. Pls. Trin. Tob. ed. 4, 135) and by Marshall, *loc. cit.*

Widely distributed in the West Indies, northern South America and Central America.

11. *C. panamensis* Riley

Hairy Lay-Lay

"*Cordia sulcata*" as to tree of our area.

Riley, Kew Bull. 1927. 125: Johnston in Jour. Arn. Arb. 21. 347; 30. 126: Marshall, Silv. Trin. Tob. 174.

*Tree*, usually less than 15 m., functionally male or female; twigs bristly and rarely retrorse-strigose also; *lvs.* strongly heteromorphic (about every fifth one differing from its neighbours in size and outline), upper surface harsh to the touch, decidedly scabrous from an abundance of minute short ascending stiff hairs, lower surface with an abundance of slender soft appressed hairs and at times even velvety; large leaves making up most of the foliage, several times longer than broad, broadly lanceolate, at times somewhat asymmetric, 15-40 cm. long, 6-16 cm. broad, apex acute or acuminate, base rounded obtuse or even acute, petioles 8-15 mm. long; small leaves proportionately broad and rounded, suborbicular to orbicular-ovate or broadly elliptic, 5-15 cm. long, 4-12 cm. broad; *infl.* a loosely forking flat-topped panicle borne at the stem-forks or along unbranched section of twig but always near one of the small leaves; *fls.* strongly heterostylis and functionally unisexual; male flowers with obovoid strigose buds 2.5-3 cm. thick; *cal.* with 5 triangular teeth; *cor.* white with elongate lobes about 2.5 mm. long, stamens well exerted, style included; female flowers with clavate-cylindrical strigose buds 1.5 mm. thick, the white smaller corolla with lobes 1.5 mm. long, stamens tiny and surpassed by the well-exserted style; *drupe* greenish or whitish, glabrous, 8-10 mm. long, supported by an explanate calyx with a 5-angled margin; stone rough, very asymmetrical, broader than long.

Trinidad: Southern Watershed Reserve, main ridge (Herb. Trin. 12410, 16.7.1930); Southern Watershed (Herb. Trin. 12433,



6.11.1930, and 12262, 2.10.1929); Quinam Road, Southern Range (Herb. Trin. 12186, 25.6.1929); Maracas Bay (Herb. Trin. 6749); Arima (Herb. Trin. 8986, 3.4.1904); St. Patrick (Herb. Trin. 11588, 29.10.1926); Monos (Herb. Trin. 1843, 20.5.1861 and Herb. Trin. 1845, *ann.* 1867); Botanic Garden (Herb. Trin. 1050; 3833, 24.6.1889; 5942, *ann.* 1891); Quinam (Herb. Trin. 14458, 4.11.1949); Erin (Herb. Trin. 14496, 6.11.1949); Cumaca rd. (Herb. Trin. 14577, 8.4.1950).

Tobago: Eggers 5590, in Gray Herb.

Central America.

12. *C. sericalyx* A. DC.

*C. ierensis* Britton.

Britton, Bull. Torr. Bot. Cl. 50. 54: Johnston in Pulle, Fl. Sur. 4. 321 and in Jour. Arn. Arb. 16. 25; 30. 127: Marshall. Silv. Trin. Tob. 175.

*Tree* to 10 m., probably functionally male or female; twigs minutely and antrorsely strigose, tending to be regularly forked; *lvs.* heteromorphic (about every fifth one short and rounded), very minutely strigose on both surfaces, dull but clean and smooth in appearance, to the touch scarcely if at all scabrous; large leaves ovate to broadly lanceolate, 15-25 cm. long, 6-12 cm. broad, tip usually acuminate, base usually obtuse, petioles 5-13 mm. long; small leaves usually suborbicular or orbicular-ovate, 6-10 cm. long, 7-10 cm. broad; *infl.* loosely branched, flat-topped, usually confined to the forks of the leafy branches; *fls.* apparently heterostylis and functionally unisexual; male flowers with narrowly obovoid, silky strigose buds 2.5 mm. thick; *cal.* with 5 triangular teeth; *cor.* white with elongate lobes 1.5-2 mm. thick, stamens much exserted, style included; female flowers not seen, probably similar to male but with elongate buds, smaller corollas and exserted style; *drupe* 8-10 mm. long, supported by a 5-angled explanate calyx; stone rough, asymmetric, broader than long.

Trinidad: Morne Bleu (Britton, Freeman & Bailey 2277, in Herb. New York, type of *C. ierensis*; Morne Bleu, Herb. Trin. 9604, 13. 3. 1921); Mount Tucuche (Britton, Hazen & Mendelson 1344, in Herb. New York); Tucuche (Herb. Trin. 9094, 4. 4. 1920); Tucuche (Herb. Trin. 11016, 28. 4. 1925); Arima-Blanchisseuse Road, 14th-15th mile (Herb. Trin. 12882, 4. 5. 1933); Blanchisseuse Road, near 9-mile post (Broadway 6000, in Herb. New York); St. Ann's (Herb. Trin. 1849, 10. 4. 1846); Maracas (Herb. Trin. 588, 20. 5. 1861); Maraval (Herb. Trin. 4533, July 1890).

All these localities are in the Northern Range, from Port-of-Spain to Morne Bleu.

Northern South America.

## 2. **BOURRERIA** (Browne) Jacq.

*Shrubs* or small *trees*, leaves small to large. *Inflorescence* a dichotomous corymbose cyme. *Calyx* campanulate, 5-toothed. *Corolla* white, salverform, texture usually slightly fleshy. *Stamens* exserted or included. *Style* terminal, well developed, exserted, bifid or rarely nearly entire. *Stigmas* 2, peltate. *Fruit* a drupe with distinctly fleshy to rather dry and fibrous mesocarp: stone roughened by innumerable close-set, deep, parallel grooves, breaking up into 4 single-seeded parts. Cotyledons flat. Endosperm present.

### 1. **B. succulenta** Jacq.

Griseb. Fl. 481: Britt. & Wils. Sci. Surv. Porto Rico 6. 129: O. E. Schulz in Urban Symb. Ant. 7. 129: Johnston in Jour. Arn. Arb. 30. 128.

*Shrub* or *tree*, to 5 m. tall, glabrous or practically so; *lvs.* lanceolate to elliptic or obovate, chartaceous, veiny, 6-15 cm. long, 2-10 cm. broad, apex acute, obtuse or rounded, base acute contracted into a petiole 8-15 mm. long, upper surface lustrous; *infl.* a loose much-branched terminal corymb; *pedicels* 5-10 mm. long; *cal.* campanulate, about 5 mm. long, glabrous outside, strigose within, disrupted and more or less explanate in fruiting state, base short-stiped, teeth triangular about 1.5 mm. long; *cor.* white, fragrant, glabrous, limb 8-14 mm. broad formed of spreading ovate lobes, stamens and style well exserted, glabrous, conspicuous; *drupe* globose, orange or reddish, 6-10 mm. in diameter, stone roughened by crowded lamelliform ridges, eventually breaking up into four single-seeded parts.

Trinidad: Maraval (Herb. Trin. 5860, ann. 1891). This one specimen from Trinidad is possibly from cultivated material.

Tobago: Little Tobago (Herb. Trin. 11444, 26.10.1925; 12944, 7. 9. 33; 13718, 2. 3. 1942); Store Bay (Herb. Trin. 11691, 8. 4. 1926); Pigeon Point (Herb. Trin. 13724, 22. 2. 1942).

Widely distributed in the West Indies ranging from Florida to Venezuela and Panama, chiefly in dry woodland near the coast.

## 3. **TOURNEFORTIA** L.

*Shrubs* or woody *vines*, with broad leaves. *Inflorescence* consisting of scorpioid racemes or spikes borne in dense to open dichotomous corymbs or panicles. *Calyx* persistent, usually 5-lobed. *Corolla* usually white or yellowish, small with cylindrical tube and spreading limb. *Stamens* not exserted; filaments short. *Style* terminal and simple, frequently suppressed. *Stigma* sessile or terminal on the style, peltate or conic or even cylindric, fertile on the side and usually only in a thickened zone at the base, the apical portions usually sterile and bifid. *Fruit* a drupe, lobed or unlobed;



the stone at maturity breaking up into 2-4 bony parts, each 1-2 seeded. Endosperm developed. Cotyledons flat.

Corolla white, lobes ovate; style short or none, the stigma persisting on fruit; drupe with a sub-globose or ovoid, merely sulcate stone that eventually breaks up into four parts; embryo straight.

Foliage and twigs glabrous or practically so; calyx-lobes 1-2 mm. long .....1. *T. bicolor*

Foliage and twigs evidently hairy.

Calyx-lobes lanceolate, 2-4 mm. long; stems bearing short grayish hairs about 1 mm. long; corolla-tube 4-5 mm. long .....2. *T. hirsutissima*

Calyx-lobes subulate, 5-9 mm. long, slender and long-attenuate; stems shaggy, bearing abundant slender brown hairs 2-4 mm. long; corolla-tube 5-8 mm. long .....3. *T. cuspidata*

Corolla greenish or yellowish, lobes very narrow and elongate, subulate, cuneate or lanceolate; style elongate, falling with the corolla; drupe with a prominently 2-4-lobed stone; embryo curved.

Corolla-tube 3-8 mm. long, with a moderately expanded throat, lobes not more than half the length of the tube, cuneate; fruit orange or yellow; leaves glabrous or practically so .....4. *T. maculata*

Corolla-tube 1.5-3 mm. long, constricted at the summit, lobes subulate, nearly as long as the tube; ripe fruit usually white.

Leaves 1-4 cm. broad, 3-8 cm. long, firm but not leathery; inflorescence loosely branched .....5. *T. volubilis*

Leaves 4-10 cm. broad, 8-18 cm. long, leathery, glabrous or practically so above; inflorescence stiff, the branches short, densely flowered and divaricate, borne along a nearly straight axis .....6. *T. subsessilis*

# 1. *T. bicolor* Sw.

Griseb. Fl. 483: Britt. & Wils. Sci. Surv. Porto Rico 6. 132: Johnston in Jour. Arn. Arb. 30. 133.

*Shrub*, frequently with elongate clambering stems, new growth with some minute appressed hairs but mature parts glabrous or practically so; leafy twigs 2.5-7 mm. thick; *lvs.* lanceolate to elliptic, 6-18 cm. long, 2.5-12 cm. broad, upper surface bright lustrous green, beneath paler and dull, apex acute, short acuminate, base acute to obtuse or rounded, abruptly contracted into the slender petiole 8-20 mm. long; *infl.* a dichotomous corymbose cluster of numerous cymes; cymes glomerate at first but becoming slender, elongate and 2-6 cm. long; *cal.* sessile, usually 1-1.5 mm. long, lobes lanceolate; *cor.* white and fragrant, tube about 5 mm. long and conspicuously surpassing the calyx, limb 4-7 mm. in diameter, with ovate lobes; drupe glabrous, about 5 mm. in diameter, white, stone subglobose 3-4 mm. long, eventually breaking up into four parts.

Trinidad: Arima (Herb. Trin. 1114, 17. 11. 1866); Oropouche, Caldwell's Island (Herb. Trin. 1859, Aug. 1864); Rd. to Mt. Pleasant from Claxton's Bay (Herb. Trin. 1859, 19. 12. 1867); Saut D'Eau (Herb. Trin. 6707, Apr. 1899); Heights of Aripo (Herb. Trin. 9844, 10-26. 1. 1922); Arima-Blanchisseuse Rd. (Herb. Trin. 10103, 24. 3. 1922; Matchepoorie (Herb. Trin. 10426, 11. 3. 1921); Morne Bleu (Herb. Trin. 11954, 23. 3. 1928); Cumuto (Herb. Trin. 12500, 15. 1. 1931); Arima-Blanchisseuse Rd. (Herb. Trin. 13297, 19. 3. 1938; 14722, 20. 1. 1952).

Tobago: Reported by Urban Symb. Ant. 8. 586; Lambeau Hill, Sandwith 1643 in Herb. Kew.

Fairly common in Trinidad in all districts; probably less so in Tobago.

Widely distributed in tropical America.

## 2. *T. hirsutissima* L.

Griseb. Fl. 483: Britt. & Wils. Sci. Surv. Porto Rico 6. 132: Johnston in Journ. Arn. Arb. 30. 133.

*Shrub* generally with elongate clambering stems, all parts with an abundance of stiff, erect or ascending hairs 0.5-1 mm. long; twigs coarse 3-7 mm. thick; *lvs.* very hairy lanceolate to ovate to elliptic, green above, paler beneath, 7-15 cm. long, 3-8 cm. broad, apex acute with an acuminate tip, base acute to obtuse or rounded, abruptly contracted into a petiole 5-15 mm. long; *infl.* a dichotomous corymbose cluster of numerous cymes; cymes dense, only in the fruiting state becoming 2-4 cm. long and evidently scorpioid; *cal.* sessile, 3-4 mm. long, the lobes evidently unequal lanceolate to ovate-lanceolate, 0.5-1.5 mm. broad, tending to recurve above the middle; *cor.* white, fragrant, tube 4-5 mm. long, limb with ovate lobes 5-7 mm. broad; *drupe* about 5 mm. in diameter, white, more or less hispidulous when immature, stone subglobose 2-3 mm. long, eventually breaking up into four parts.

Trinidad: La Ventille (Herb. Trin. 582, 2. 8. 1846); Chaguaramas (Herb. Trin. 3817, 10. 6. 1889); Belmont (Herb.



Trin. 3865, Apr. 1889); Maraval (Herb. Trin. 4229, July 1890); Palo Seco (Herb. Trin. 10879, 31. 12. 1924); Morne Diablo (Herb. Trin. 12036, 30. 8. 1928); Mt. Aripo (Herb. Trin. 14446, 20. 10. 1949).

Tobago: Hope River, Belle Garden, Sandy River Valley (Sandwith 1685 in Herb. Kew); Louis D'Or (Herb. Trin. 11837, 16. 9. 27 in Herb. Kew).

Fairly common in all districts of Trinidad and Tobago.

Widely distributed in tropical America.

### 3. *T. cuspidata* HBK.

*T. obscura* DC.

Johnston in Pulle, Fl. Sur. 4. 328 and in Jour. Arn. Arb. 30. 133.

*Shrub*, frequently with elongate scrambling stems; twigs coarse, 3-7 mm. thick, shaggy from an abundance of slender spreading tawny bristles 2-4 mm. long; *lvs.* lanceolate, 10-15 cm. long, 3-6 cm. broad, clad with many appressed slender hairs that may be very dense on the lower surface, apex acuminate, base acute, obtuse or rounded, abruptly contracted into a very hairy petiole 3-10 mm. long; *infl.* a corymbose cluster of crowded densely flowered cymes; *cal.* sessile, 5-9 mm. long, the lobes linear-subulate or lance-linear; *cor.* white, tube 5-8 mm. long, scarcely if at all surpassing the calyx, limb 3-6 mm. broad with suborbicular or ovate lobes; *drupes* white, glabrous, with an ellipsoidal stone 2.5-3 mm. long.

Trinidad: Irois forest (Herb. Trin. 12046, 28. 8. 1928); Cedros at St. Ann's, on low seashore cliff (Herb. Trin. 9407, 25. 5. 1915); Cap de Ville, shrub in roadside bush (Herb. Trin. 14205, 29. 2. 1948).

Tropical South America, southern Central America, Trinidad and Haiti.

### 4. *T. maculata* Jacq.

*T. syringaefolia* Vahl.

*T. peruviana* Poir.

*T. laurifolia* *sensu* Griseb. *pro parte*.

Griseb. Fl. 484: Britt. & Wils. Sci. Surv. Porto Rico 6. 133: Johnston in Pulle, Fl. Sur. 4. 325 and in Jour. Arn. Arb. 30. 130.

*Shrub*, much-branched, usually scandent or climbing, glabrous except for minute inconspicuous generally appressed hairs on petioles, inflorescence and young twigs; stems elongate, usually pallid and glabrous, 2.5-5 mm. thick; *lvs.* green, lanceolate to ovate or elliptic, 5-12 cm. long, 1.5-6 cm. broad, at times somewhat puberulent when young but in age always glabrous and generally

dotted with light-colored microscopic papillae, apex acute or somewhat acuminate, base acute to rounded, abruptly contracted into a petiole 5-15 mm. long; *infl.* loose, composed of slender loosely-flowered scorpioid cymes 2-8 cm. long; *cal.* 1-1.5 mm. long, sessile or short-pedicellate, lobes lanceolate; *cor.* greenish, tube 4-5 mm. long, narrowest at the middle, lobes cuneate or long-acuminate from a broadened base, 1-2 mm. long; *drupe* yellow usually with some black splotches, the stone prominently 2-4 lobed, stone 4-5 (rarely 6-7) mm. broad; pedicel supporting drupe commonly elongating, thickening, usually fleshy and 1-3 mm. long.

Trinidad: Cascade, St. Ann's (Broadway 6389 in Gray Herb.); without locality (Herb. Trin. 1856, 4575 and 5881).

Tobago: Gilpin Road, Parlatuvier (Broadway 4606, in Gray Herb.).

Widely distributed in tropical America.

5. *T. volubilis* L.

*T. caribaea* Griseb.

*T. ferruginea* Lam.

*T. tomentosa* Mill.

*T. trinitatis* Riley

Griseb. Fl. 484: Britt. & Wils. Sci. Surv. Porto Rico 6. 133: Johnston, Jour. Arn. Arb. 30. 131: Riley in Kew Bull. 1925. 139.

*Shrub* or *climber*, extremely variable as to color, quantity and distribution of pubescence and as to size and shape of leaves; younger parts with a pallid tawny indumentum of short appressed or spreading hairs, older parts more or less glabrescent; stems slender, elongate, loosely branched, frequently more or less twining, usually less than 3 mm. thick; *lvs.* usually lanceolate, ovate to elliptic and rarely even linear, usually 3-8 cm. long and 1-4 cm. broad, apex acute or short acuminate, base acute, obtuse or rounded, abruptly contracted into a petiole 2-10 mm. long, upper surface usually more or less green and rather sparingly hairy or even subglabrous, under surface generally pallid or tawny from a rather dense indumentum of short hairs; *infl.* a loose dichotomous cluster of scorpioid cymes; cymes becoming loosely flowered, slender and very elongate, in age 3-10 cm. long; *cal.* 1-2 mm. long, subsessile, lobes lance-subulate, *cor.* greenish, tube 1.5-2.5 mm. long, lobes linear-subulate, nearly as long as the tube; *drupe*, usually white and frequently with splotches of black, the stone prominently 2-4-lobed, 3-4 mm. broad.

Trinidad: St. Ann's (Herb. Trin. 594, 18. 7. 1846 and 595, 4. 4. 1847); Chacachacare (Herb. Trin. 1858, 3. 10. 1864); Botanic Garden (Herb. Trin. 3623, 20. 3. 1889; 4034, 22. 4. 1890; 8217, 18. 6. 1916); St. Ann's (Herb. Trin. 9203, March, 1920); Hillside



above St. Joseph (Herb. Trin. 14462, 15. 11. 1949); Patos (Herb. Trin. 13421, 7. 5. 39).

Tobago: Thomson River and Cullodon.

Bocas Islands and N. W. peninsula of Trinidad; also Tobago.

A variable species widely distributed in tropical America.

#### 6. *T. subsessilis* Cham.

Cham. Linnaea 8. 119; Johnston in Contr. Gray Herb. 92. 83; and Jour. Arn. Arb. 30. 131.

*Shrub*, probably somewhat scandent, younger parts (twigs, inflorescence and petioles) usually somewhat velvety from an abundance of short ascending slightly tawny hairs; twigs 3-4 mm. thick; *lvs.* ovate to elliptic, subcoriaceous, 8-18 cm. long, 4-10 cm. broad, apex short-acuminate, base obtuse or rounded and abruptly contracted into a petiole 3-11 mm. long, upper surface green, glabrous, or bearing scattered slender hairs and soon glabrescent, lower surface paler bearing many appressed hairs; *infl.* with a stiff central axis about 4 cm. long bearing crowded short usually densely flowered scorpioid cymes 1-3 cm. long; *cal.* 1-2.5 mm. long, subsessile, lobes subulate; *cor.* yellowish, tube 3 mm. long, lobes subulate, about 2-2.5 mm. long; *drupe* probably white, the prominently 2-4-lobed stone 4-5 mm. broad.

Trinidad: Balandra Bay near sea, Broadway 9331 (Gray Herb.); Balandra Bay (Herb. Trin. 10431, 21. 6. 1921); Toco Road near sea between Balandra and Toco (Herb. Trin. 13735, 20. 8. 1940).

Known only from north-eastern Trinidad and eastern Brazil.

#### 4. *HELIOTROPIUM* L.

*Herbs* or rarely *shrubs*; *leaves* small to large. *Inflorescence* of solitary, geminate or ternate scorpioid spikes or racemes, or the flowers cauline, solitary and internodal. *Calyx* persistent or deciduous, with 5 teeth or lobes. *Corolla* small, white, blue or yellow, with cylindrical tube and spreading limb. *Stamens* included, filaments short. *Stigma* one, sessile or borne terminal on a simple style, usually composed mostly of sterile tissue, the receptive surface lateral and annular, usually forming a thickened zone at the base of a well-developed, more or less conic or cylindric, usually bifid or bidentate thickened sterile apical appendage. *Fruit* dry, lobed or unlobed, at maturity breaking up into 2-4 bony nutlets. *Nutlets* 1-2 seeded, frequently with some sterile cavities. Endosperm developed. Cotyledons flat.

Corolla blue or purple, the tube conspicuously exserted from the calyx; fruit cleft with

ribbed divergent halves .....1. *H. indicum*

Corolla white or yellowish, the tube shorter than the calyx; fruit not cleft nor ribbed.

Flowers borne individually on internodes along leafy stems; fruit with pointed apex, borne on pedicels 1-5 mm. long

.....2. *H. lagoense*

Flowers borne crowded in scorpioid cymes; fruit rounded or emarginate at summit, borne on pedicels 0-1 mm. long.

Fruit with bladdery trichomes or apparently lepidote, laterally compressed, at maturity dividing into a pair of 2-seeded nutlets; leaves 10-50 mm. broad

.....3. *H. angiospermum*

Fruit strigose or rarely glabrous, symmetrical, at maturity dividing into 4 single-seeded nutlets.

Leaves usually evidently veined, 5-15 mm. broad; spikes frequently clustered on a peduncle, without bracts

.....4. *H. procumbens*

Leaves veinless, 1-4 mm. broad; spikes always borne singly, bearing scattered minute subulate bracts

...5. *H. filiforme*

# **1. *H. indicum* L.**

*Tiaridium indicum* (L.) Lehm.

Griseb. Fl. 485: Britt. & Wils. Sci. Surv. Porto Rico 6. 134: Johnston in Pulle, Fl. Sur. 4. 331 and in Jour. Arn. Arb. 30. 137.

Coarse annual herb 2-10 dm. tall, loosely branched above, more or less bristly especially on younger parts; *lvs.* ovate or elliptic, with numerous evident veins, 4-15 cm. long, 2-10 cm. broad, apex acute, base usually rather abruptly contracted into a well-developed partially winged petiole 2-10 cm. long, margin usually repand or undulate; *infl.* borne singly, a crowded elongate scorpioid cyme, bractless, becoming 1-2 dm. long; *cor.* salverform, tube elongate almost twice as long as calyx, limb blue or violet, 3-4 mm. broad; *fruit* glabrous, cleft, with left and right diverging halves, the latter strongly ribbed and cleft at the apex, eventually each breaking up into a pair of one-seeded nutlets; stigma sessile.

Trinidad: St. Ann's (Herb. Trin. 589, 23. 3. 1845); Botanic Garden (Herb. Trin. 3390, 7. 12. 1888); St. Clair (Herb. Trin. 3589, 12. 3. 1889); Chaguanas (Herb. Trin. 3713, 17. 4. 1889); Rifle range (25. 10. 1906); Cedros (Herb. Trin. 7280, 2. 10. 1915); Beausejour Rd. to Blue Basin (Herb. Trin. 7732, 12. 5. 1915).

Tobago: No record but must surely occur there.



Waste and cultivated land, Trinidad and Tobago.  
A pantropic weed, probably of American origin.

2. *H. lagoëense* (Warm.) Gürke

*H. trinitense* Urban

Urban Symb. Ant. 7. 352: Johnston in Pulle, Fl. Sur. 4. 331 and in Jour. Arn. Arb. 30. 134.

Annual herb, green, with few inconspicuous laxly appressed hairs, stems several, very slender, decumbent or prostrate, laxly branched, 1-3 dm. long; *lvs.* veinless, 1-2.5 mm. broad, 5-12 mm. long, broadest below the acute apex then gradually contracted into the slender petiole 1-2 mm. long, margins revolute; *fls.* borne on the internodes with subtending bracts, scattered along the leafy stem; *pedicels* 1-5 mm. long; *cor.* white, about 3 mm. in diameter; *fruit* about 2 mm. long and about as broad, shorter than the lanceolate sepals, glabrous, conic above the middle and terminated by a sessile stigma, tardily breaking up into 4 single-seeded nutlets.

Trinidad: Piarcó Savanna (Herb. Trin. 6030, *ann.* 1895, *isotype* of *H. trinitense* Urb.); Piarcó Aerodrome (Herb. Trin. 13375, 23.3.1939).

Bolivia and eastern Brazil north to Surinam and Venezuela, Costa Rica, Guatemala and Trinidad.

3. *H. angiospermum* Murray

*Schobera angiosperma* Murr. ex Scopoli.

*Heliotropium parviflorum* L.

Griseb. Fl. 485: Britt. & Wils. Sci. Surv. Porto Rico 6. 134: Johnston in Jour. Arn. Arb. 30. 138.

*Herb.* short-lived and mostly annual, 3-10 dm. tall, loosely branched, at times half-shrubby, sparsely short-hairy; *lvs.* ovate to lanceolate, 2-10 cm. long, 1-5 cm. broad, evidently veined, paler beneath, apex acute, margin entire or somewhat undulate, base usually obtuse and abruptly contracted into a more or less winged petiole 5-30 mm. long; *infl.* a slender scorpioid cyme, borne singly or occasionally in pairs, bractless, becoming 1-2 dm. long in fruit; *cor.* white, 2-lobed 1-2.5 mm. broad; *fruit* 1.5-2 mm. long, laterally compressed, 2-lobed, crowned by a sessile stigma, clothed with numerous minute bladder-like trichomes or these collapsed and the surface apparently lepidote, at maturity breaking in half to form a pair of 2-seeded nutlets.

Trinidad: La Ventille (Herb. Trin. 583, 2. 8. 1846); St. Joseph (Herb. Trin. 4723, Nov. 1890); Belmont (Herb. Trin. 4995, Dec. 1891); Dry River (Herb. Trin. 5679, 1893); Botanic Garden (Herb. Trin. 10433, 22. 2. 1921); Western Road (Herb. Trin. 13289, 17. 3. 1938); Teteron Bay (Herb. Trin. 13470, 22. 3. 1938).

Tobago: Store Bay (Herb. Trin. 11167, 7. 6. 1925).

Waste and cultivated ground, N.W. peninsula of Trinidad; also Tobago.

Widely distributed in tropical America.

4. **H. procumbens** Miller.

*H. inundatum* Sw.

Griseb. Fl. 485: Britt. & Wils. Sci. Surv. Porto Rico 6. 135: Johnston in Jour. Arn. Arb. 16. 60; 30. 137.

An ascendingly branched annual *herb* 1-4 dm. tall, clothed in a grayish indumentum of abundant slender appressed hairs; *lvs.* elliptic to oblanceolate or obovate, commonly 1-3 cm. long and 5-15 mm. broad, usually with several pairs of evident veins, apex obtuse or rounded, base obtuse to acute, petioles usually 5-15 mm. long; *infl.* a very dense scorpioid cyme, usually 2-5 cm. long, completely bractless, mostly single but on a given plant some always borne 2-4 together in a stalked cluster; *cor.* white or yellowish, usually 1-2 mm. broad; calyx-lobes slender, slightly surpassing the fruit, spreading in age; *fruit* hairy 0.5-1 mm. long, becoming 1.5 mm. broad, depressed, obscurely 4-lobed, crowned by the small sessile stigma, breaking up into 4 single-seeded nutlets.

Trinidad: Arouca (Herb. Trin. 1851, 17. 5. 1868); St. Clair (Herb. Trin. 3576, 12. 3. 1889); Carenage (Herb. Trin. 5596, Apr. 1893); Botanic Garden (Herb. Trin. 9442, 26. 6. 1918); St. Augustine (Wright, *sine num.*, 10. 2. 33, in Herb. Trin.); without locality (Herb. Trin. 584, 1115, 5395).

Wet or moist open situations, at times weedy in waste and cultivated grounds.

Widely distributed in tropical America.

5. **H. filiforme** Lehm.

Griseb. Fl. 486 in part: Johnston in Pulle, Fl. Sur. 4. 332 and Jour. Arn. Arb. 30. 137.

Annual *herb*, minutely strigose, 1-3 dm. tall, stems slender, one to many, sparingly branched, about 1 mm. thick; *lvs.* oblanceolate, veinless, 1-2 cm. long, 1-4 mm. broad, margin somewhat revolute, apex acute, base gradually contracted into a petiole 1-3 mm. long; *infl.* a slender scorpioid cyme, usually 2-5 but rarely up to 10 cm. long, borne singly, bearing scattered setaceous bracts 1-2 mm. long, flower subsessile; *cor.* white, 1-2 mm. broad; *fruit* 0.5-0.8 mm. long, much surpassed by the unequal calyx-lobes, depressed, 4-lobed, minutely strigose, crowned by a sessile stigma, breaking up into 4 single-seeded nutlets.

Trinidad: Icacos (Herb. Trin. 1852, 16. 4. 1861); Icacos (Herb. Trin. 7401, 17. 11. 1915).

Bolivia and Paraguay north to the Guianas and Trinidad; British Honduras.

Frequenting wet soil along streams and in savannas.



## FAMILY 3. CONVULVULACEAE

By A. W. HILL AND N. Y. SANDWITH\*

Annual or perennial twining *herbs*, sometimes undershrubs. *Leaves* alternate, exstipulate. *Flowers* solitary or in axillary cymes or aggregated into heads. *Bracts* usually small. *Flowers* hermaphrodite, usually regular. *Sepals* 5, free, rarely connate at the base, imbricate, equal or unequal, often accrescent in fruit. *Corolla* funnel-shaped or hypocrateriform, 5-lobed or almost entire, often with veined mid-petaline bands. *Stamens* 5, inserted in corolla tube. *Filaments* filiform, often dilated and hairy at base. *Anthers* introrse. *Pollen* smooth or spinose. *Disk* when present ring- or cup-shaped, sometimes 5-lobed. *Ovary* 2-3-locular, each loculus with 2 ovules, or 4-6-locular each loculus with 1 ovule. *Ovules* anatropous. *Style* filiform, simple or forked, or styles 2. *Stigma* capitate or bilobed. *Fruit* 4-1-locular, capsular, dehiscent by valves or transversely, or indehiscent. *Seeds* often triquetrous, glabrous or hairy.

A few species are economically important as ornamental climbers (e.g., *Ipomoea Nil* (L.) Roth and *I. alba* L., of which considerable numbers of horticultural variants exist) and one as a starchy root crop (*I. Batatas* (L.) Lam., the sweet potato).

Parasitic plants with filiform leafless or scale-bearing stems. Flowers small, clustered ...8. **Cuscuta**

Non-parasitic plants with leafy stems:

Capsule indehiscent:

Sepals and corolla glabrous .....7. **Turbina**

Sepals and corolla with fulvous hairs  
outside .....2. **Jacquemontia**  
(*J. luxurians*)

Capsule opening by valves or transversely  
dehiscent (indehiscent in *Jacquemontia*  
*luxurians*):

Capsule transversely dehiscent. Sepals  
large, exceeding 2 cm. ....6. **Operculina**

Capsule opening by valves:

Styles 2, free, forked, with linear  
stigmas. Small, erect or prostrate  
herbs .....1. **Evolvulus**

\*Manuscript completed in March, 1941, revised in July, 1948, with further subsequent emendations.

## Style 1:

- Stigmas elliptic or oblong,  
flattened .....2. **Jacquemontia**

## Stigmas globose or biglobose:

Leaves narrow, entire, attenuate  
to both ends, mucronate at  
the apex. Corolla with 5 hairy  
bands outside:

- Sepals very unequal, the 3  
outermost much the larger  
and more or less decurrent  
on the pedicel. Corolla in-  
conspicuously sub-  
adpressed-pilose outside ....3. **Aniseia**

- Sepals subequal. Corolla con-  
spicuously fulvous-pilose  
outside .....2. **Jacquemontia**  
(*J. luxurians*)

Leaves not as above, except some-  
times in *Ipomoea stolonifera*  
which has the corolla glabrous  
outside.

- Corolla scarlet or crimson,  
salver-shaped, with exserted  
stamens and style .....5. **Ipomoea**  
(*I. Quamoclit*,  
*I. angulata*,  
and *I. repanda*)

## Corolla not as above:

Leaves entire and corolla  
yellow, or leaves com-  
pound and corolla white.

- Pollen smooth .....4. **Merremia**

Leaves and corollas not in  
the above combinations  
of characters:

Leaves palmately parted  
with coarsely dentate or  
lobed segments resemb-  
ling leaves of oak or  
fig. Stems with spread-  
ing hairs. Corolla  
mainly white. Pollen  
smooth .....4. **Merremia**

(*M. dissecta*)

Species without the above  
combination of charac-  
ters. Pollen spinous ...5. **Ipomoea**



## 1. EVOLVULUS L.

Annual or perennial *herbs* or undershrubs. *Stems* prostrate or erect, not twining. *Leaves* small, simple, entire. *Flowers* in axillary, pedunculate, few-flowered dichasia, or solitary in leaf axils. *Sepals* 5, equal or subequal. *Corolla* rotate, funnel- or salver-shaped, small. *Stamens* inserted on corolla at mouth of tube. *Anthers* ovate to oblong or linear. *Ovary* globose or ovoid, glabrous, rarely pilose, 2-locular, 4-ovuled. *Styles* 2, each 2-cleft. *Stigmas* long, filiform or slightly clavate. *Capsule* globose or ovoid, 4-valved, 4-1-seeded. *Seeds* small, smooth or minutely verrucose.

Inflorescences 1-3-flowered dichasia, peduncles longer than the leaves:

Inflorescences 3-flowered. Leaves ovate-lanceolate, hairy above and below .....1. *E. tenuis*

Inflorescences 1-3-flowered, peduncles 1-2.5 cm. long. Leaves broadly obovate, more or less glabrous above, mucronulate .....2. *E. glaber*

Inflorescences 1-flowered, peduncles absent or very short, pedicels much shorter than the leaves:

Leaves linear, 2-3 mm. broad, silky pubescent both sides .....3. *E. sericeus*

Leaves ovate or elliptic-ovate, 1 cm. or more broad, subglabrous, or slightly pilose below .....4. *E. nummularius*

1. *E. tenuis* Mart. ex Choisy ssp. *longifolius* (Choisy) van Oostst.

*E. longifolius* Choisy

*E. bocasanus* Britton

Van Oostst. Mon. *Evolvulus* 61: Britton in Bull. Torr. Bot. Club 48. 337 (1921): Britt. & Wils. Sci. Surv. Porto Rico 6. 105 (1925).

*Shrubby perennial*, 40-50 cm. high, stems erect or ascending, branched, sparsely or densely pubescent; *leaves* lanceolate or ovate-lanceolate, broadest below the middle, 2.5-3 cm. long, 0.9-1.2 cm. broad, acute, mucronulate, rounded or narrowed at the base, sessile, or very shortly petiolate, the upper leaves smaller, varying from almost glabrous to densely pubescent above and below with silky appressed hairs, midrib and lateral veins prominent below; *peduncles* 1.5-3 cm. long, filiform, bearing 1-several flowers; *bracteoles* subulate-linear, pubescent; *sepals* lanceolate, acute or acuminate, pilose with long hairs, 2.5-3 mm. long; *corolla* blue or white, rotate, about 1 cm. in diameter;

*staminal filaments* about twice as long as the oblong anthers; *ovary* globose, glabrous.

Trinidad: Chacachacare, Crueger (17. 1. 1847), Herb. Kew; Trinidad, Lockhart, Herb. Kew; Monos, W. E. Broadway, Herb. Trin. 7434; Chacachacare (1864), Herb. Trin. 2971; Crueger (1847), Herb. Trin. 1027; Monos Island, R. O. Williams (1917); Santa Cruz, E. J. Sanku Alli (1916).

Haiti, Lesser Antilles, Colombia, Venezuela, Bolivia.

Ssp. *sericatus* (House) van Oostst.

*E. sericatus* House.

House in Torreya 7. 61 (1907): van Oostst. Mon. Evolvulus 63.

Differs from ssp. *longifolius* in the shape of the leaves which are oblong to linear-oblong, occasionally elliptic, very rarely linear-lanceolate, broadest at or near the middle; pubescence forming a dense, greyish to fulvous tomentum. Connected by intermediates with ssp. *longifolius*, and of rather doubtful taxonomic value.

Trinidad: Morrison Bay, Monos Island, Britton and Hazen 1695, Herb. Trin. 9523, Chacachacare Island, Britton 503 in Herb. Kew, also in Herb. Trin., no. 10028, with more elliptic leaves, is referred here by van Ooststroom.

Colombia, Venezuela.

## 2. *E. glaber* Spreng.

*E. mucronatus* Sw.

Griseb. Fl. 475: Britt. & Wils. l.c. 104: van Oostst. Mon. 95.

*Perennial*; stems several, prostrate and rooting, or ascending, pilose with appressed, strigose hairs, 15-60 cm. long; *leaves* shortly petioled, rounded-obovate, obovate or oblong, emarginate or obtuse, mucronulate, rounded at the base or narrowing, glabrous above, sparsely pilose beneath with scattered, strigose hairs, 1.5-2.2 cm. long, 1-1.8 cm. broad; *peduncles* 1-2.5 cm. long, appressed-pilose, 1-3 flowered; *bracteoles* linear, subulate; *sepals* oblong-lanceolate, acute or acuminate, 3-3.5 mm. long, pilose, with ciliate margins; *corolla* blue, with very short tube, about 1 cm. in diameter; *ovary* globose, glabrous; *capsule* globose or ovoid, 4-2-valved.

Patos, J. H. Hart (1906), Herb. Trin.; Patos Island, W. of landing bay, W. E. Broadway 8913, in Herb. Kew; *ibid.*, Broadway 2658, *vide* van Ooststroom.

West Indies, Cont. Trop. America; Galapagos Islands.

Patos is no longer in our area but the species is retained here as it probably occurs on other Bocas Islands.



3. *E. sericeus* Sw.

Griseb. Fl. 475: Britt. & Wils. l.c. 104: van Oostst. Mon. 126.

*Perennial herb; stems* ascending, finely silky-tomentose; *leaves* erect or spreading, 1-3 cm. long, 2-3 mm. broad, linear, acute, tapering at the base, glabrous above, silky-tomentose below, sessile or very shortly petiolate; *flowers* usually solitary in leaf axils, shortly pedicellate; *bracteoles* linear-subulate, 2-3 mm. long; *sepals* narrowly lanceolate, acuminate, 4-5 mm. long; *corolla* white, lilac or pink, rotate, about 1 cm. in diameter; *capsule* globose, 4-valved, 4-seeded; *seeds* glabrous.

Trinidad: St. Joseph, Natural Savannah, W. E. Broadway, Herb. Trin. 9313.

Tobago: Bacolet, dry hillside, N. Y. Sandwith 1878 in Herb. Kew; Eggers 5879, ann. 1889, *fide* van Ooststroom.

West Indies, Cont. Trop. America.

4. *E. nummularius* (L.) L.

*Convolvulus nummularius* L.

Griseb. Fl. 475: Britt. & Wils. l.c. 104: van Oostst. Mon. 114.

*Perennial; stems* prostrate, rooting at nodes, pilose with spreading hairs, 15-40 cm. long; *leaves* shortly petioled, petioles pilose, 3-5 mm. long; *lamina* elliptic, ovate or slightly obovate, rounded or emarginate at apex, rounded or sub-cordate at the base, 1.5-1.7 cm. long, 0.8-1.2 cm. broad, glabrous above, sparsely appressed pilose below, especially on the veins; *flowers* solitary in leaf axils, *pedicels* 5-8 mm. long, recurved in fruit; *bracteoles* linear, acute; *sepals* ovate-lanceolate, acute, 3.5-4 mm. long, sparsely pilose, margins ciliate; *corolla* funnel-shaped, about 1 cm. in diameter; *filaments* inserted about 2 mm. above base of corolla, 2-3 mm. long, as long as the oblong anthers; *ovary* globose, glabrous; *capsule* about as long as sepals, 4 or less seeded.

Trinidad: Herb. Trin. 1026; Fendler 591, in Herb. Kew; Broadway 7417, *fide* van Ooststroom; Imperial College Savannah, Feb. 1936, N. Wright, Herb. Trin. 14008.

West Indies, Cont. Trop. America, Tropical Africa, Madagascar, India.

2. *JACQUEMONTIA* Choisy

*Herbs or undershrubs*, generally twining, often pubescent. *Leaves* usually entire, often cordate at the base. *Flowers* blue or white, usually in axillary umbelliform or capitate cymes, with or without involucre. *Bracts* usually small, large in one species. *Sepals*

5, nearly equal, or the outer ones larger. *Corolla* campanulate or funnel-shaped, 5-toothed. *Stamens* and *style* included; *pollen* smooth. *Style* with 2 elliptic or oblong flattened, rarely with 2 globose, *stigmas*. *Ovary* 2-locular, 4-ovuled. *Capsule* globose, 2-locular, 4-seeded, dehiscent by valves, indehiscent in *J. luxurians*. *Seeds* glabrous, tubercled or velutinous.

Leaves narrow, wedge-shaped at the base, mucronate at the apex. *Corolla* fulvous-pilose outside. *Stigmas* globose .....5. *J. luxurians*

Leaves rounded or cordate at the base, not mucronate. *Stigmas* not globose:

Leaves ovate or elliptic-ovate, densely hairy on both sides; inflorescences in dwarf axillary clusters .....1. *J. nodiflora*

Leaves ovate-lanceolate, cordate at base; inflorescences as long as or longer than the petioles:

Bracts and sepals covered with long, brownish-red hairs .....4. *J. tamnifolia*

Bracts and sepals glabrous or slightly pubescent:

Sepals lanceolate, acute .....3. *J. pentantha*

Sepals obtuse, with ciliate margins .....2. *J. ciliata*

1. *J. nodiflora* (Desr.) G. Don

*Convolvulus nodiflorus* Desr.

Griseb. Fl. 475 : Britt. & Wils. Sci. Surv. Porto Rico 6, 106.

*Climber; stems*, petioles and leaves densely pubescent; *leaves* ovate or elliptic-ovate, 2.5-5 cm. long, 1.5-2.5 cm. broad, acute, mucronate, rounded or slightly cordate at the base, *petioles* 0.5-1.5 cm. long; *cymes* axillary, *peduncles* 3-6 mm. long; *sepals* 2-3 mm. long, rounded, glabrous, with membranous edges; *corolla* white, 1.5-2 cm. in diameter; *stigmas* slender; *capsule* globose, 3-4 mm. in diameter; *seeds* glabrous, rugulose.

Trinidad: Chacachacare (Jan. 17, 1847), Crueger in Herb. Kew; B. de Shack (1824) in Herb. Kew; Lockhart in Herb. Kew; Chacachacare (20 Nov. 1860), Herb. Trin. 2639 and Herb. Trin. 1024; Chacachacare, hillside, Britton, Freeman and Watts 2682, Herb. Trin. 10436; without collector, Herb. Trin. 8074; massed on bushes, W. E. Broadway, Herb. Trin. 11302; R. O. Williams and E. E. Cheesman, Herb. Trin. 11064; Crueger (Jan. 17. 47), Herb. Trin. 1021; (Oct. 1864), Herb. Trin. 2968.

West Indies and continental tropical America.



**2. *J. ciliata* Sandwith**

Sandwith in Kew. Bull. 1930, 156; 1937, 111.

*Climber; stems* finely hairy, internodes 3-6 cm. long; *leaves* broadly triangular-ovate to ovate-lanceolate, acuminate, rounded-cordate or almost truncate at the base, 3.5-7 cm. long, 2-5 cm. broad, margins often slightly sinuate, hairy on both sides with appressed hairs, glabrescent with age, reticulate venation somewhat conspicuous below; *petiole* hairy, 1-2.5 cm. long; *inflorescences* in dense, umbellate cymes, borne on long hairy peduncles, 4-11 cm. long; *bracts* setaceous, about 2 mm. long; *sepals* scarious, subequal, the 2 outer a little longer than the rest, obtuse (sometimes with a short recurved mucro), with ciliate margins, 4-5.5 mm. long, about 2 mm. broad; *corolla* pale blue, 1.2-1.8 cm. long, with acute, mucronate lobes; *stamens* inserted a little above the base of the corolla; *ovary* ovoid, subglobose, smooth, 1.5 cm. long; *style* about 1 cm. long; *fruit* globose, 5 mm. in diameter, surrounded by the enlarged sepals which are recurved at the apex.

Trinidad: Irois Forest, open places, W. E. Broadway 6718 in Herb. Kew and Herb. Mus. Brit. Irois Forest, R. O. Williams, Herb. Trin. 11923 and in Herb. Kew.

Costa Rica, Colombia, British Guiana, Peru (Klug 2098). Dr. C. O'Donnell has pointed out (*in litt.*) the probable identity of this species with *Ipomoea Gabrieli* Choisy in DC. Prodr. 9. 378 (1845), of French Guiana.

**3. *J. pentantha* (Jacq.) G. Don**

*Convolvulus pentanthus* Jacq.

*Jacquemontia violacea* (Vahl) Choisy

*Convolvulus violaceus* Vahl

*Jacquemontia elongata* Britton

Griseb. Fl. 474: Britt. & Wils. l.c. 105; Britton in Bull. Torr. Bot. Club 53. 470 (1926) (*J. elongata*).

*Climber; stems* finely pubescent when young, becoming glabrescent with age; *leaves* ovate-cordate, acuminate, slightly pubescent when young, 7-12 cm. long, 4.5-8.5 cm. broad, *petioles* 2-4 cm. long, slender; *inflorescences* in dense cymes, borne on long, stout, pubescent peduncles, 6-10 cm. long; *sepals* ovate to lanceolate, acute to acuminate, two large, two smaller and one usually intermediate or large, 4.5-7 mm. long; *corolla* purplish-blue, rarely white, 1-2 cm. broad; *stigma* clavate, with diverging lobes; *capsule* subglobose, 4-valved; *seeds* glabrous.

Trinidad: Manzanilla, N.L. & E.G. Britton 2191, Herb. Trin. 11535 and 9716; Herb. Trin. 4687; Look-out Hill, W. E. Broadway, Herb. Trin. 3697; Mud Volcanoes, Cedros (Nov. 1864), Herb. Trin. 2966; Paradise Estate (Dec. 1867), Herb. Trin. 2967;

St. Clair, Herb. Trin.; Fendler 590 in Herb. Kew and Herb. Mus. Brit.; Crueger 94 (Dec. 1858); Hill 148 in Herb. Kew.; Tunapuna, N. Wright, Herb. Trin. 13648.

Tobago: Bacolet, Eggers 5464; Slopes of French Hill, N. Y. Sandwith 1700 in Herb. Kew; Point opposite Melville Island to Charlotteville, W. G. Freeman and R. O. Williams, Herb. Trin. 11417; Botanic Station, wild on outer boundaries, W. E. Broadway 9050 in Herb. Mus. Brit.; Highmoor, W. E. Broadway 3124 in Herb. Mus. Brit.

West Indies and continental tropical America.

4. *J. tamnifolia* (L.) Griseb.

*Ipomoea tamnifolia* L.

*Thyella tamnifolia* (L.) Raf.

Griseb. Fl. 474; Britt. & Wils, l.c. 107; van Oostst. in Pulle, Fl. Surin. 4. 77 (1932).

Annual climber; stems, petioles and peduncles ciliate; leaves ovate to broadly ovate, acuminate, more or less cordate at the base, entire or slightly dentate, 3-9 cm. long, 1.5-5 cm. broad, ciliate above and below, petioles up to 7 cm. long; inflorescences axillary, densely capitate, on long stout peduncles 9-14 cm. long; bracts large, exterior ovate-lanceolate, the inner lanceolate to linear, fringed with brown, bristle hairs; sepals equal in length, linear-lanceolate, 7.5-12 mm. long, with long, bristle hairs; corolla funnel-shaped, 1.5 cm. long, blue or rose, more or less pilose outside; ovary glabrous, stigmas elliptic; capsule globose, 2-locular, 4-valved, 4-seeded; seeds scabrous.

Trinidad: Point Boyen, Labue (26 July, 1866), Herb. Trin. 2969; Granville (14 Dec. 1858), Crueger in Herb. Kew; Cedros, Lochnaben (Nov. 1864), Herb. Trin. 2970.

West Indies, Trop. and Subtrop. Cont. America, Trop. Africa.

5. *J. luxurians* (Moric.) Hallier f.

*Ipomoea luxurians* Moric.

*I. Grisebachiana* Meissn.

*I. sericantha* Griseb. Fl. 471, non Miq.

? *Aniseia trichantha* Pittier

Hallier f. in Engl. Bot. Jahrb. 16. 543 (1892); Meissn. in Mart. Fl. Bras. 7. 270, et 264 in obs. sub *I. sericantha* Miq.: Pittier in Journ. Wash. Acad. Sci. 17. 285 (1927).

Twiner; stems, petioles, peduncles, &c., densely pubescent, sometimes becoming glabrate; leaves oblong or lanceolate-oblong, more or less densely pubescent when young, later glabrescent, blunt or emarginate at apex and mucronulate, usually tapering to the base, petioles 1-2 cm. long; peduncles 2- several-flowered, 3-6 cm.



Stems, petioles and peduncles covered with long, spreading hairs:

Leaves palmately-parted, segments dentate or lobed; sepals glabrous .....2. *M. dissecta*

Leaves compound, leaflets 5, hairy; sepals densely hairy .....4. *M. aegyptia*

Stems, petioles and peduncles covered with stipitate glands and scattered hairs;

leaves compound, leaflets dentate .....5. *M. cissoides*

1. *M. umbellata* (L.) Hallier f.

*Convolvulus umbellatus* L.

*Ipomoea umbellata* (L.) G. F. W. Mey.

*I. polyanthes* R. et S.

Griseb. Fl. 470: Britt. & Wils. Sci. Surv. Porto Rico 6. 111: van Oostst. in Pulle, Fl. Surin. 4. 81.

*Climber*, glabrous or sparsely pubescent, with terete, brown stems; *leaves* ovate, acute or acuminate, deeply cordate at the base, 5-11 cm. long, 3-7.5 cm. broad, finely pubescent or glabrous, *petioles* 3-8 cm. long; *flowers* in axillary, peduncled, umbelliform, few- or many-flowered cymes; *peduncles* stout, 4-20 cm. long; *bracts* linear, deciduous; *sepals* subequal, 8-9 mm. long, glabrous, broadly ovate, obtuse, often mucronulate, concave; *corolla* funnel-shaped, yellow in local material (var. *occidentalis* Hall. f.), 2.5-3.5 cm. long; *disk* 1 mm. high; *ovary* glabrous, 2-locular; *capsule* subglobose, 4-seeded; *seeds* softly pubescent.

Trinidad: Fendler 584 in Herb. Kew, 586 in Herb. Mus. Brit.; Lockhart (Herb. Hook.) in Herb. Kew; St. Ann's, A. E. Collins (12. 11. 1911) Herb. Trin.; Hort. Trin., W. E. Broadway, Herb. Trin. 3512; Princes Town, W. E. Broadway, Herb. Trin. 4450; St. Clair, J. H. Hart, Herb. Trin. 6799; St. Ann's (9 Feb. 1861), Herb. Trin. 1019; Erin, W. E. Broadway, Herb. Trin. 7333.

Tobago: Great Dog river, Eggers 5754; Bacolet, dry roadside, N. Y. Sandwith 1615 in Herb. Kew; Botanic Station, wild on the upper boundaries, W. E. Broadway 9069 in Herb. Mus. Brit.

Tropical America, Old World tropics,

2. *M. dissecta* (Jacq.) Hallier f.

*Convolvulus dissectus* Jacq.

*Ipomoea dissecta* (Jacq.) Pursh

Griseb. Fl. 467: Britt. & Wils. l.c. 111: van Oostst. l.c. 82.

*Twiner*; stems striate, stems, petioles and peduncles covered with stiff, yellow-brown, spreading hairs; *leaves* palmately-parted

nearly to the base, with 5-7 lanceolate, coarsely-dentate or pinnately-lobed segments, glabrous, rarely a few hairs on veins beneath, middle segment 5-8 cm. long, lateral ones somewhat smaller; *petioles* 3-6 cm. long; *peduncles* 1-5-flowered, 5-10 cm. long; *sepals* subequal, ovate-lanceolate, acute, glabrous, 2-2.5 cm. long, becoming coriaceous and enlarging in fruit; *corolla* 3-4 cm. long, funnel-shaped, white, rose inside with 5 distinct bands; *ovary* glabrous, 2-locular; *fruit* globose; *seeds* glabrous.

Trinidad: Crueger 92 (Dec. 1858) in Herb. Kew; Woodbrook, W. E. Broadway 9005, in Herb. Kew and Herb. Mus. Brit.; San Fernando, Jan. 11. 1866, Herb. Trin. 2962; St. Anne (Feb. 9. 1861), Herb. Trin. 1023.

Tobago: Fort Hill, R. O. Williams, Herb. Trin. 11831 and in Herb. Kew; Bacolet, N. Y. Sandwith 1932 in Herb. Kew.

West Indies, continental tropical America and Old World tropics.

### 3. *M. glabra* (Aubl.) Hallier f.

*Convolvulus glaber* Aubl.

*Ipomoea glabra* (Aubl.) Choisy

Griseb. Fl. 468: van Oostst. l.c. 82.

*Twiner*, glabrous; *leaves* compound, palmate, with 5 (rarely fewer) leaflets, *petioles* 2.5-5 cm. long; *leaflets* ovate-oblong, lanceolate, entire, tapering to the base, acuminate and mucronate, 5-8 cm. long, 1-2.5 cm. broad; *inflorescences* axillary, several-flowered, dichotomously branched, exceeding the leaves; *peduncles* 5-10 cm. long; *sepals* subequal, oblong-lanceolate, subacute, 2 cm. long, much enlarging in fruit; *corolla* campanulate-funnel-shaped, white, yellowish inside, 3.5-4.5 cm. long; *anthers* often spirally twisted; *ovary* glabrous, 4-locular; *capsule* depressed-globose; *seeds* 4, very shortly appressed pilose.

Trinidad: La Brea (18. 12. 1847), Crueger in Herb. Kew; Knaggs Hill, St. Clair, back of reservoir, M. Dhein, Herb. Trin. 8868; Erin, Buenos Aires, W. E. Broadway, Herb. Trin. 7651; St. Ann's Heights (1. 12. 12), Herb. Trin. 8010; St. Ann's, Lady Chancellor Road, W. E. Broadway, Herb. Trin. 9198; road of Pointe-à-Pierre, Feb. 28, 1865, Herb. Trin. 2946; La Brea, Crueger, Herb. Trin. 1025.

Tropical S. America.

### 4. *M. aegyptia* (L.) Urban

*Ipomoea aegyptia* L.

*Convolvulus pentaphyllus* L.

*Ipomoea pentaphylla* (L.) Jacq.

Griseb. Fl. 467: Britt. & Wils. l.c. 111: van Oostst. l.c. 84.



*Twiner*; stems, petioles, peduncles and sepals covered with dense, spreading, yellow-brown hairs; leaves palmate, with 5, sessile, elliptic- or ovate-lanceolate leaflets, hairy on both sides, acute or acuminate, tapering to the base, 4-11 cm. long, 2-5 cm. broad; petioles slender, 5-15 cm. long; peduncles much longer than petioles, few- to several-flowered, flowers on long pedicels; bracts small, lanceolate, deciduous; sepals, 3 outer ovate-lanceolate, acute or acuminate, 2 cm. long, densely covered with yellow-brown hairs, 2 inner glabrous, ovate, acute, somewhat shorter; corolla white, funnel-shaped, 2.5-3.5 cm. long; anthers spirally twisted; ovary glabrous, 4-locular; capsule globose, 4-valved, 4-seeded; seeds glabrous.

Trinidad: Hort. Trin., W. E. Broadway, Herb. Trin. 3392; Road to Bonaventure, Feb. 5, 1866, Herb. Trin. 2951; Todd's Road, Railway Station, W. E. Broadway, Jan. 30, 1917, Herb. Trin.; Laventille, Alexander, Herb. Trin. 4560; St. Ann's, Feb. 11, 1861, Herb. Trin. 2642; Fendler 581 in Herb. Mus. Brit.; Orchard, Imperial College, St. Augustine, N. W. Simmonds 203, Herb. Trin. 13975.

Tobago: Montpelier "Fat and Marrow", W. E. Broadway 3990 in Herb. Mus. Brit.

Tropics.

5. *M. cissoides* (Vahl) Hallier f.

*Convolvulus cissoides* Vahl

*Ipomoea cissoides* (Vahl) Griseb.

Griseb. Fl. 473: van Oostst. l.c. 84.

*Twiner*; all parts covered with stipitate glands mixed with some long, bristle hairs; leaves compound, palmate, with 5 (rarely 3) leaflets; leaflets ovate-oblong to lanceolate, or linear-lanceolate, attenuate towards base and apex, with dentate margins, 2-4 cm. long, 0.5-1.5 cm. broad, petioles 0.5-5 cm. long; inflorescences few- or 1-flowered; peduncles 2-4 cm. long; bracts linear, 1-2 cm. long; sepals subequal, ovate or ovate-lanceolate, long-acuminate, 1.5 cm. long, covered with short stipitate glands mixed with long bristles; corolla funnel-shaped, white "or rose" (van Ooststroom), 2.5 cm. long; capsule globose, usually 4-seeded, 4-valved; seeds black, with minute fascicles of short hairs.

Trinidad: dry bank, Lockhart (Herb. Hook.) in Herb. Kew; Gasparil, Finlay, Jan. 26, 1867, Herb. Trin. 2955; Point Gourde, Dr. Britton, Herb. Trin. 11303; Gasparillo, W. G. Freeman, Herb. Trin. 8375; St. Ann's (Nov. 23, 1845), Herb. Trin. 1020; Herb. Trin. 697; St. Ann's, W. E. Broadway, 5. 1. 1920, Herb. Trin.; Fendler 582 in Herb. Mus. Brit.; Mt. Tabor, R. E. D. Baker, Herb. Trin. 14077.

Tropical America.

## Introduced Species

*M. hederacea* (Burm. f.) Hallier f. (*Ipomoea chryseides* Ker-Gawl.). Erin, Los Iros road, near the bridge, Broadway in Herb. Trin. 7634.

## 5. IPOMOEA L.

*Herbs or woody plants, usually twining, sometimes prostrate and creeping or erect. Leaves variable. Flowers solitary or in few or many-flowered inflorescences. Sepals 5, equal or unequal, herbaceous, cartilaginous or coriaceous, persistent, often enlarged in fruit. Corolla campanulate, funnel-shaped or salver-shaped with long tube. Pollen globular, spinose. Ovary 2-4-locular. Style filiform. Stigma capitate, entire, 2-3-globose or 2-3-lobed. Capsule 4-6-valved. Seeds 4-6.*

- A. Leaves pinnately-partite, segments linear ...1. *I. Quamoclit*  
 Leaves 5-partite, with 5 distinct leaflets ...14. *I. subrevoluta*  
 Leaves entire, or more or less deeply lobed .....B
- B. Stems trailing and rooting, or floating ...C  
 Stems twining .....D, E
- C. Stems glabrous; leaves thick:  
 Leaves obovate-orbicular or reniform, emarginate or bilobed at apex; corolla purple .....11. *I. pes-caprae*  
 Leaves oblong- or ovate-lanceolate to linear, obtuse, emarginate; corolla white with purple centre .....12. *I. stolonifera*
- Stems sometimes hairy at the nodes; leaves thin:  
 Leaves lanceolate to ovate, more or less sagittate; sepals obtuse .....13. *I. aquatica*  
 Leaves ovate-orbicular, cordate or truncate at base, or deeply 5-7-lobed; sepals acute or mucronate-acuminate .....10. *I. Batatas*
- D. Leaves deeply palmately 5-7-lobed; sepals rounded:  
 Corolla tubular, with narrow lobes and exserted style .....3. *I. repanda*  
 Corolla funnel-shaped, with broad lobes and included style:  
 Sepals coriaceous, very concave within, 8-10 mm. long .....16. *I. digitata*  
 Sepals membranous, not concave, about 6 mm. long .....15. *I. cairica*



E. Leaves entire, varying from ovate and cordate to sagittate, or more or less deeply 3-lobed, the lateral lobes sometimes themselves lobed:

Corolla scarlet or crimson, tubular, with exserted style:

Annual twiner; sepals with long appendage; corolla limb salver-shaped .....2. *I. angulata*

Perennial climber; sepals rounded, without appendage; corolla limb not salver-shaped .....3. *I. repanda*

Corolla white with greenish bands, large, upwards of 6 cm. long, salver-shaped with long narrow tube:

Sepals lanceolate or ovate, the outer with long linear acumen; stamens and style shortly exserted; seeds glabrous .....19. *I. alba*

Sepals ovate, obtuse, mucronulate; stamens and style included; seeds pubescent .....20. *I. tuba*

Corolla pink, purple or blue, if white less than 6 cm. long, not salver-shaped:

Plant greyish-villous; corolla with pilose bands outside .....7. *I. riparia*

Plant not greyish-villous; corolla glabrous:

Sepals linear-lanceolate, hairy at the base, more than 1 cm. long:

Peduncles not very short; bracts less than 1 cm. long; corolla more than 3 cm. long .....4. *I. Nil*

Peduncles very short; bracts long and conspicuous; corolla up to 3 cm. long .....5. *I. Meyeri*

Sepals not as above:

Bracts broad, persistent; sepals with prominent toothed nerves .....6. *I. setifera*

Bracts narrow, deciduous; sepals without prominent toothed nerves:

Corolla small, up to 2 cm. long .....8. *I. triloba*

Corolla larger, more than 2 cm.  
long:

Sepals attenuate to a fine  
point, or the inner  
rounded and con-  
spicuously mucronate ....9. *I. tiliacea*

Sepals rounded, very incon-  
spicuously mucronate:

Calyx up to 1 cm. long;  
outer sepals much  
shorter than the inner,  
all with scarious  
margins .....17. *I. squamosa*

Calyx much exceeding  
1 cm.; outer sepals  
longer than the inner,  
without scarious  
margins .....18. *I. phyllomega*

# **1. *I. Quamoclit* L.**

*Quamoclit vulgaris* Choisy

*Q. Quamoclit* (L.) Britton

Griseb. Fl. 472 : van Oostst. in Pulle, Fl. Surin. 4, 98 (1932):  
Britt. & Wils. l.c. 108.

*Twiner*, herbaceous, glabrous; *leaves* ovate in outline,  
pinnately-partite, 2.5-10 cm. long, with 8-15 pairs of linear  
segments, the inferior often bifid; *inflorescences* 1-few-flowered,  
*peduncles* generally longer than leaves; *pedicels* 0.5-1.5 cm. long  
thickening as fruit ripens; *sepals* unequal, elliptic-oblong, obtuse,  
mucronulate, 5-7 mm. long; *corolla* scarlet or white, salver-shaped,  
tube 2-2.5 cm. long, the limb patent, 1.5-2 cm. in diameter with  
5 acute lobes; *stamens* and *style* exserted; *filaments* inserted in  
lower part of tube; *ovary* glabrous, 4-locular, 4-ovuled; *seeds* 4,  
conical, tubercled.

Sometimes known as "Sweet William".

Not uncommon in waste and cultivated grounds as an escape  
from gardens, Trinidad and Tobago. Naturalized on roadside far  
from cultivation, O'Meara Savannah, Trinidad, Sept. 1947,  
R. E. D. Baker and N. W. Simmonds, Herb. Trin. 13700.

Throughout the tropics.

# **2. *I. angulata* Lam.**

*I. coccinea* L. of Griseb. Fl. 472. Not *Ipomoea coccinea* L.  
*Quamoclit coccinea* (L.) Moench of Britt. & Wils. l.c. 108.



*Q. angulata* (Lam.) Boj.; Hallier f. in Bull. Herb. Boiss. 7. 415 (1899).

van Oostst. in Blumea, 3. 553 (1940).

*Annual twiner; stems* 4-angled, glabrescent, pubescent at nodes; *leaves* thin, broadly ovate-cordate, acute to acuminate, entire or angulate-lobed, 4.5-7.5 cm. long, 3.4-6 cm. broad, glabrous above, hairy below at the junction of veins at base of leaf, *petioles* slender, 3-7 cm. long, glabrescent; *peduncles* stout, 4-angled, finely tomentose, much longer than leaves, bearing several flowers in a dichotomous inflorescence, the first forking being dichasial with a terminal flower, the second monochasial and elongate in fruit; *pedicels* erect; *sepals* obcordate-oval, with a long awn or appendage rising below the apex, limb of lobe about 3 mm., appendage up to 5 mm. long; *corolla* tubular with shortly and broadly lobed salver-shaped limb, scarlet and orange, up to 4 cm. long; *style* exserted, 3.5-4 cm. long; *ovary* globose, glabrous; *capsule* 4-locular; *seeds* 3-angled, rugose, puberulous.

Trinidad: San Fernando Hill, Dec. 1864, Herb. Trin. 2952; R. O. Williams, Herb. Trin. 10909; Gasparillo, W. G. Freeman, Herb. Trin. 8374; Dec. 1858, Crueger 91 in Herb. Kew.

West Indies, Cont. Trop. America and Old World tropics.

*Note:* We have followed van Ooststroom and Hallier in segregating this species from the true *I. coccinea*, of which Hallier had seen specimens only from North America and from various botanic gardens.

### 3. *I. repanda* Jacq.

*Exogonium repandum* (Jacq.) Choisy

Griseb. Fl. 472: House in Bull. Torr. Bot. Club 35. 104 (1908): Britt. & Wils. l.c. 109.

*Perennial climber; stems* woody, striate, climbing, glabrous; *leaves* coriaceous, glabrous, ovate-lanceolate, acuminate, mucronulate, more or less deeply cordate at the base, margins entire, sometimes sinuate or more or less deeply palmately 3-7-lobed, 6-7 cm. long, 3.5-4.5 cm. broad, *petioles* 2-3 cm. long; *peduncles* bearing thyrses of flowers, about 5 cm. long; *sepals* nearly equal, ovate-rotund, obtuse, 6-9 mm. long, 5 mm. broad, somewhat coriaceous; *corolla* 4-5 cm. long, crimson, tubular, with relatively narrow, ovate-lanceolate, slightly spreading, sometimes recurved, lobes; *stamens* and *style* reaching above the base of the corolla lobes; *ovary* 2-locular, 4-ovuled; *capsule* ovoid, glabrous, 1 cm. long; *seeds* densely setose on the margins with long brownish, strigose hairs, 8 mm. long.

Tobago: John Greg in Herb. Mus. Brit.

Porto Rico and the Lesser Antilles.

4. **I. Nil** (L.) Roth

Convolvulus Nil L.

Griseb. Fl. 473; Britt. & Wils. l.c. 112; van Oostst. l.c., 90, and in Blumea, 3. 497.

*Twiner*, stems pilose with appressed and retrorse hairs; *leaves* broadly ovate or ovate-lanceolate in outline, deeply cordate at the base, 3-lobed, the lobes, especially the median one, acuminate, appressed pilose above and below, 6-15 cm. long, 5-11 cm. broad, *petioles* slender, hirsute, 3-10 cm. long; *peduncles* stout, hirsute, 1-5-flowered, shorter than the petioles; *bracts* linear-subulate, hirsute; *pedicels* 1-1.5 cm. long; *sepals* equal, lanceolate or linear-lanceolate, acuminate, with spreading tuberculate-based hairs at the base and on the margins towards the base, 2-2.5 cm. long, 2-4 mm. broad; *corolla* funnel-shaped, 5 cm. or more long, light blue or purple, the tube nearly white; *capsule* glabrous, globose-ovoid; *seeds* 4, densely and minutely tomentose.

Trinidad: Hort. Trin., W. E. Broadway, Herb. Trin. 4505, and in Herb. Kew; Monos, Jan. 30, 1867, Herb. Trin. 2956; Brechin Castle, D. Vesey-Fitzgerald 4515 in Herb. Mus. Brit.; locally abundant around St. Augustine, 1947, N. W. Simmonds 196, Herb. Trin. 13976.

Throughout the tropics.

5. **I. Meyeri** (Spreng.) G. Don

Convolvulus Meyeri Spreng.

*I. purpurea* Lam. sens. Griseb. Fl. 473, non Lam.

*I. brachypoda* Benth., Voyage of the Sulphur, p. 135.

Urb. Symb. Ant. 4, 510 and 8, 564: Britt. & Wils. l.c., 113.

*Twiner*, stems glabrous or sparingly pilose, the hairs with tuberculate bases; *leaves* thin, broadly ovate to ovate-lanceolate, long-acuminate, entire and deeply cordate or sagittate and more or less 3-lobed at the base, 4-12 cm. long, up to 7 cm. broad, thinly hairy above, glabrous beneath; *petioles* slender, pilose, commonly 2-5.5 cm. long; *peduncles* short, 0.5-2.5 cm. long, bearing a solitary flower or several congested flowers on short *pedicels* usually 5-7 mm. long; *bracts* linear, long and conspicuous, often 1.5-2.5 cm. long; *sepals* linear-lanceolate, usually 1.5-2 cm. long, conspicuously villous at the base with soft hairs with tuberculate bases; *corolla* blue or violet with white throat, 2-3 cm. long; *capsule* subglobose, 4-valved, 4-seeded, 6-8 mm. diam.; *seeds* triangular, brownish-chocolate, sericeous-pubescent with deciduous yellowish-white hairs.

Trinidad: without locality, Fendler 587 in Herb. Kew and Herb. Mus. Brit.



Cuba, Hispaniola, Porto Rico and Jamaica. Mexico to Colombia and Venezuela (*Ipomoea brachypoda* Benth., of Mexico, Panama and Colombia, is certainly conspecific; while *I. iostemma* House, of Costa Rica, seems to be a form with glabrous calyx).

6. *I. setifera* Poir.

*Convolvulus ruber* Vahl

*Ipomoea rubra* (Vahl) Millsp., non *I. rubra* Murr.

*Calystegia setifera* (Poir.) Meissn.

van Oostst. l.c. 91 : Britt. & Wils. l.c. 112.

*Herbaceous twiner*, stems densely covered with yellow-brown spreading hairs; leaves ovate, deeply cordate at the base or sagittate with broad obtuse or acute lobes, apex usually emarginate, sometimes mucronulate, glabrous above, sometimes slightly hairy along the veins below, 5-10 cm. long, 3.5-5.5 cm. broad; petioles slender, 3-4.5 cm. long; peduncles stout, much longer than petioles, 1-5-flowered, with large, ovate, acuminate bracts at the base of the pedicels; pedicels 1.5-2 cm. long, sometimes hirsute; sepals unequal, the shorter about 1 cm. long, the longer 1.5-1.8 cm. long, broadly ovate, obtuse, or acute with a long bristle point, the nerves very prominent and toothed on the back, sometimes hirsute on margins and nerves; corolla purple, funnel-shaped, 7-8 cm. long; ovary glabrous, 2-locular.

Trinidad : Erin, R. O. Williams, Herb. Trin. 12097; Moruga, W. E. Broadway, Herb. Trin. 7922; Moruga beach, R. E. D. Baker, March 21, 1950, Herb. Trin. 14570; Near 'Buenos Aires', roadside, W. E. Broadway, Dec. 8, 1932, in Herb. Kew. and Mus. Brit.; 'Buenos Aires', Erin, W. E. Broadway 7511 in Herb. Kew. and Mus. Brit.

West Indies, Cont. trop. America, trop. Africa.

7. *I. riparia* G. Don

*Pharbitis fragrans* Boj. ex Choisy

*Ipomoea lilacina* Blume, *vide* Merrill

*I. Parkeri* Choisy

*I. fragrans* (Boj. ex Choisy) Boj. ex Hallier f.

*I. villosa* "Ruiz & Pavon" of Griseb. Fl. 473, non R. et P.

Exell, Cat. Vasc. Pl. S. Tomé, 251 (1944): Hallier f. in Engl. Jahrb. 18. 153 (1893): Merrill, Enum. Philipp. Fl. Pl. 3. 365 (1923): van Oostst. l.c. 92 and in Blumea, 3. 564 (1940): Meissn. in Mart. Fl. Bras. 7. 284.

*Twiner*, stems and all parts densely sericeo-tomentose; leaves broadly ovate-cordate in outline, 3-lobed or entire, densely sericeo-tomentose on both sides, 4-6 cm. long, 3-5 cm. broad, lobes entire, median one ovate-lanceolate, acuminate, 2.5-4 cm. long, lateral rounded or rhombic; sepals subequal, ovoid-oblong or ovate-lanceolate, the outer acute, the inner less so, 1 cm. long, densely

whitish villous-tomentose; *corolla* purple, up to 5 cm. long, with villous or sericeous-pilose bands outside especially in the upper portion; *stamens* with flat filaments fimbriated on the sides near the base, inserted near the base of the tube; *style* 2 cm. long, *stigma* globose; *ovary* glabrous, 3-locular, 6-ovulate.

Trinidad: Chacachacare, Jan. 17, 1847, ? Crueger, Herb. Trin. 1018; Savannah, Eastern Coast, Oct. 4, 1849, Crueger in Herb. Kew.

British Guiana, Surinam. Tropical Africa and Mascarene Islands. Tropical Asia, from India to New Guinea.

The Trinidad material has the leaves densely villous-sericeous and is perhaps referable to the var. *subsericea* Meissn. of *I. Parkeri* which, as van Ooststroom remarked, is hardly worth distinguishing.

### 8. *I. triloba* L.

Griseb. Fl. 470: Britt. & Wils. l.c. 116: van Oostst. in Blumea, 3. 509.

*Twiner* or creeper; *stems*, petioles and peduncles with whitish, strigose, spreading hairs; *leaves* glabrous or hairy, or hairy on both sides, deeply palmatifid, lobes 3-5, the central one ovate to ovate-lanceolate, obtuse or emarginate, mucronulate, 1.7-3 cm. long, the lateral ones wing-like, more or less deeply bilobed, *petioles* 2-5 cm. long, hairy; *peduncles* hairy, 1-few-flowered, 2-4 cm. long; *pedicels* glabrous, about 1 cm. long; *bracts* subulate, deciduous; *sepals* equal, ovate-oblong, 6-7 mm. long, obtuse or acutish, mucronate, pilose on the margins; *corolla* narrowly campanulate, pinkish-mauve to purple, 1.5-2 cm. long; *capsule* 2-locular, pilose; *seeds* glabrous.

Trinidad: Cedros, Perseverance Road, C. King, Herb. Trin. 7144.

Tobago: Sandy Point, R. O. Williams, Herb. Trin. 11817; Store Bay, creeping on low coral cliffs, N. Y. Sandwith 1818 in Herb. Kew.

Throughout the tropics.

The form with the lateral lobes of the leaves deeply bilobed has been named var. *quinqueloba* by O. Kuntze, Rev. Gen. 446, and was cited by him from San Fernando, Trinidad. It is, however, of no taxonomic significance.

### 9. *I. tiliacea* (Willd.) Choisy

*I. fastigiata* (Roxb.) Sweet

*Convolvulus tiliaceus* Willd.

*C. fastigiatus* Roxb.

Griseb. Fl. 468 (as *I. fastigiata*): Britt. & Wils. l.c. 116: van Oostst., l.c. 93.

*Twiner*, *stems* slender, finely striate, hirsute or glabrous; *leaves* membranous, broadly ovate-cordate, or sagittate and sometimes



trilobed (*I. fastigiata* var. *platanifolia* (Vahl) Griseb. Fl. 468), apex lobes and angles acute, appressed pilose below, becoming glabrous later, sparsely hairy above especially along the veins, glabrescent later; *petioles* hirsute, slender, 2-8 cm. long; *peduncles* stout, pilose or glabrescent, many-flowered, much longer than *petioles*; *bracts* subulate, caducous; *pedicels* 0.5-1 cm. long, glabrous; *sepals* thinly coriaceous, usually unequal, the outer narrower and 5-7 mm., the inner 8-10 mm. long, ovate-oblong or ovate-lanceolate, glabrous or with bristles on the margins, acute or the inner rounded and mucronate, mucronulate; *corolla* funnel-shaped, somewhat abruptly narrowed towards the base, purple, pink or white, 5-6 cm. long; *ovary* glabrous, 2-locular; *capsule* globose, 4-valved, 4-seeded; *seeds* triangular, glabrous or pilose on the edges.

Trinidad : Marabella, Jan. 31, 1866, Herb. Trin. 2957; Moruga Village, W. E. Broadway, Herb. Trin. 7619; Chatham Road, W. E. Broadway, Herb. Trin. 8524; Trinidad, Fendler 583 in Herb. Kew and Mus. Brit.; Fendler 585 in Herb. Mus. Brit.; Aripo Road, 7th mile, E. E. Cheesman, Herb. Trin. 13388.

Tobago : Bacolet, W. E. Broadway 4395 in Herb. Mus. Brit.

West Indies, Cont. trop. America, and spread over other tropical countries.

*Note* : Fendler 583, from Trinidad, without locality, is a form or variety with hairy stems, leaves, peduncles and sepals, the latter pale straw-coloured, thin, very unequal and conspicuously aristate-mucronate. It also has a pilose ovary. It agrees with material from Venezuela, Colombia and Central America, some of which has been identified with *I. trifida* (H.B.K.) G. Don. The type of the latter species has been examined and agrees fairly well in characters of the indumentum, leaves, sepals and pilose ovary, but the inflorescences are 2-3-flowered and on shorter, more slender peduncles. The probability is that *I. trifida* is only one of a number of difficult forms or varieties of *I. filiacea*, often presenting a distinct enough facies but with individual characters (e.g. shape of leaves, indumentum, length of peduncle, shape, texture and size of sepals, size of corolla, glabrous or hairy ovary) found in a perplexing series of combinations.

#### 10. *I. Batatas* (L.) Lam.

Sweet Potato

*Convolvulus Batatas* L.

Griseb. Fl. 468 : Britt. & Wils. l.c. 116 : van Oostst. l.c. 94.

*Stems* trailing, thick, angular, rooting at the nodes, glabrous or hairy; *roots* tuberous, edible; *leaves* variable, ovate or orbicular, cordate or truncate at the base, acute or acuminate, mucronulate, or lobed nearly to the base with 5-7 oval-lanceolate to linear-lanceolate segments, 6-12 cm. or more long, obtuse or tapering to

the apex, mucronulate, *petioles* long and slender; *peduncles* about as long as *petioles*, few- or several-flowered; *pedicels* 5-12 mm. long; *sepals* unequal, subcoriaceous, glabrous, ovate-oblong, acute or acuminate, mucronate, the interior ones 1.2 cm. long, the outer rather shorter; *corolla* campanulate, purple or white, 5 cm. long; *ovary* slightly hairy or glabrous, 2-locular; *capsule* 4- or less-seeded; *seeds* glabrous, or pubescent on edges.

Occasional as an escape from cultivation.

Cultivated and run wild in all tropical countries. Native in Tropical America.

11. *I. pes-caprae* (L.) R. Br.

*I. biloba* Forssk.

*Convolvulus pes-caprae* L.

Griseb. Fl. 470 : Britt. & Wils. l.c. 113 : van Oostst. l.c. 96 and in Blumea 3. 533 (1940).

*Perennial*, stems trailing, angular, often flattened, glabrous; *leaves* rather thick, obovate, ovate, orbicular or reniform, emarginate or bilobed at apex, rounded or attenuate at the base, 2.5-10 cm. long and broad, *petiole* 2.5-10 cm. long; *peduncles* 2.5-10 cm. long, 1-several-flowered; *pedicels* 2-3 cm. long; *bracts* lanceolate; *sepals* unequal, exterior shorter, ovate or elliptic, obtuse, mucronulate, subcoriaceous, 7.5-10 mm. long; *corolla* funnel-shaped, purple, 4-5 cm. long; *ovary* 2-locular, glabrous; *capsule* more or less globose, 1-1.5 cm. high, 4-valved, 4- or fewer-seeded; *seeds* tomentose.

Our plant is the common form of the species, viz. ssp. *brasiliensis* (L.) van Oostst. (*Convolvulus brasiliensis* L.), see Blumea, 3. 533 (1940).

Trinidad : Cedros, R. C. Marshall and C. Swabey, Herb. Trin. 12288 and in Herb. Kew.; Salybia beach, W. G. Freeman and R. O. Williams, Herb. Trin. 11211; Irois, Cedros, W. E. Broadway, Herb. Trin. 8271; Cedros, C. King, Herb. Trin. 7200; Herb. Trin. 2958; Herb. Trin., without locality or number.

Tobago : Hope River, Eggers 5624 in Herb. Kew.

Tropics of both worlds, on sandy seashores.

12. *I. stolonifera* (Cyrill.) J. F. Gmel.

*I. acetosifolia* (Vahl) R. & S.

*Convolvulus stoloniferus* Cyrill.

*C. littoralis* L.

*C. acetosifolius* Vahl

Griseb. Fl. 471 (as *I. acetosifolia*): Britt. & Wils. l.c. 113: van Oostst., l.c. 95.



16. *I. digitata* L.

Griseb. Fl. 469 : van Oostst. l.c. 100, and in Blumea, 3. 558.

*Twiner*, stems sparsely pubescent, ribbed, woody; *leaves* palmately divided, sometimes nearly to the base, somewhat cordate or truncate at the base, segments 5-7, ovate- or oblong-lanceolate, entire, acuminate with blunt tip, middle one 5-10 cm. long, 1.5-2.5 cm. broad, glabrous below, sparsely pilose especially on veins above, *petioles* 3-9 cm. long, grooved, pubescent; *peduncles* and *pedicels* pubescent, generally longer than petioles, dichotomously ramifying and bearing several flowers; *bracts* minute; *sepals* equal, orbicular, obtuse, concave, coriaceous, 0.8-1 cm. long, glabrous, or exterior ones slightly pubescent; *corolla* lilac, 4-6 cm. long, funnel-shaped or campanulate- funnel-shaped, the tube very narrow below; *ovary* glabrous, 2-locular; *capsule* glabrous, 4-seeded; *seeds* long-hairy.

Trinidad: Irois beach, R. O. Williams, Herb. Trin. 12038, &c., in Herb. Kew.; Near sea shore, June 10, 1865, Herb. Trin. 2941; Staubles to Teteron Bay, R. O. Williams, Herb. Trin. 11671; Cedros, sea shore, C. King, Herb. Trin. 7209; Mosquito Creek, Oropuche Lagoon, Sept. 1947, R. E. D. Baker, Herb. Trin. 13765.

Throughout the tropics.

17. *I. squamosa* Choisy

*I. trinitensis* Urban, Symb. Ant. 3.346.

Meissn. in Mart. Fl. Bras. 7. 269 : van Oostst. in Pulle, Fl. Surin. 4. 469 (1937).

*Twiner*, stems striated, often verruculose, sparsely pubescent with spreading hairs especially by the leaf axils, or glabrous; *leaves* broadly ovate, deeply cordate at the base, the basal lobes rounded or sagittate, entire or slightly lobed above the middle, acuminate, either densely and softly pubescent below and above, but becoming glabrescent with age above, or quite glabrous, 7-11 cm. long, 4-8 cm. broad, *petioles* slender, pubescent, 3-6 cm. long; *inflorescences* many-flowered; *peduncles* glabrescent, stout, elongated, bearing a corymb of flowers; *pedicels* 1-2 cm. long, glabrous; *bracts* subulate, caducous; *sepals* unequal, glabrous, outer 4-5 mm. long, inner 7-10 mm. long, broadly ovate, rounded, often mucronate, scarious margins conspicuous; *corolla* funnel-shaped, lilac, 5-6 cm. long, thin; *style* about 2 cm. long; *ovary* shortly ovoid.

Trinidad: Road to Mount Pleasant, Dec. 19, 1867, Herb. Trin. 2945 (type coll. of *I. trinitensis*); St. James, Circular Road, W. E. Broadway, Herb. Trin. 4484; Herb. Trin. 2940; Herb. Trin. 1638, 1119; Maraval, W. E. Broadway, Herb. Trin. 7824; Nariva swamp-savannah, R. C. Marshall in Herb. Trin. 12362, a form with glabrous leaves with sagittate basal lobes.

Widely distributed over continental tropical America. Frequently misidentified with *I. tiliacea* and other species. No authentic specimen of *I. squamosa* has been examined, and van Ooststroom's interpretation of the species has therefore been accepted.

The material with densely sericeous-pubescent leaves, i.e., *I. trinitensis* Urb. (especially Herb. Trin. 1119, 2940, 2945), is apparently referable to the var. *villosa* van Oostst. in Rec. Trav. Bot. Néerl. 30. 211 (1933), which was based on Peruvian specimens.

18. *I. phyllomega* (Vell.) House

*Convolvulus phyllomega* Vell.

*Ipomoea capparoides* Choisy

*I. demerariana* Choisy of Griseb. Fl. 471, not of Choisy.

Meissn. in Mart. Fl. Bras. 7. 262 : van Oostst. l.c. 101.

*Twinner*, stems stout, woody, glabrous; leaves broadly ovate- or orbicular-cordate, not lobed, acuminate, glabrescent or sparsely pilose above, appressed pilose beneath, especially along veins, 8-25 cm. long, 5-20 cm. broad, petioles 3-10 cm. long, glabrescent; peduncles stout, generally longer than petioles, many-flowered; flowers often in large corymbose thyrses; bracts large, oblong, deciduous; sepals unequal, the two outer larger, all reddish-brown, thick, ovate or orbicular, rounded at apex, usually ciliate on the margins and sometimes pubescent on the back, without scarious margins, 1-1.5 cm. long, slightly cordate at the base; corolla campanulate, red or purple, 4-6 cm. long, quite thick, with 5 transversal glandular processes between the broad glandular bases of the filaments; ovary glabrous, 2-locular; capsule 4-seeded.

Trinidad : Valencia Road, Mora Forest and Cumuto, Freeman, Williams and Cheesman, Herb. Trin. 11331 and 10754; Long Stretch forest, Aug. 1940, Cheesman and Baker, Herb. Trin. 13741; *ibid.*, Sept. 1947, Simmonds and Baker, Herb. Trin. 13769; Cocorite, Jan. 31, 1869, Herb. Trin. 1118; Blanchisseuse Road, W. E. Broadway 6662 in Herb. Kew. and Mus. Brit.; St. Ann's, Purdie in Herb. Kew.

Tobago : Lambeau, W. E. Broadway 4283 in Herb. Kew. and Mus. Brit.

West Indies, Central America to Brazil.

19. *I. alba* L.

*I. bona nox* L.

*Convolvulus aculeatus* L.

*Calonyction aculeatum* (L.) House



van Oostst. *l.c.* 98: Griseb. Fl. 466 (as *I. bona nox*):  
Britt. & Wils. *l.c.* 107 (*Calonyction aculeatum*).

*Herbaceous twiner*, glabrous; *stems* smooth or muricated, with milky juice; *leaves* membranous, broadly ovate-cordate or orbicular, entire or with large angular lobes, acuminate, usually glabrous, 10-18 cm. long, 8-15 cm. broad, *petioles* long and slender, 5-15 cm. long; *peduncles* stout, usually exceeding the *petioles* in length, 1-several-flowered; *bracts* small, deciduous; *pedicels* thickened in fruit; *sepals*, 2 or 3 outer, lanceolate or ovate, tapering into a long, linear acumen, inner ones ovate, mucronulate; *corolla* white with greenish bands, large, salver-shaped, tube narrow, 8-10 cm. long suddenly expanding into the limb 7-15 cm. broad; *stamens* and *style* shortly exerted, *filaments* inserted in upper part of the tube, *ovary* glabrous, 2-locular; *capsule* ovoid-oblong, 2-locular, about 3 cm. long, 4- or less-seeded; *seeds* glabrous, 1 cm. long.

Trinidad: Cedros, Beausejour, W. E. Broadway, Herb. Trin. 7406; Moruga, N. L. Britton and W. E. Broadway 2428, Herb. Trin. 10437; Dec. 9, 1864, Herb. Trin. 2953; Herb. Trin. 6913; Fendler 589 in Herb. Kew. and Mus. Brit.; Crueger, Feb. 2, 1845, in Herb. Kew.

Throughout the tropics.

20. *I. tuba* (Schlecht.) G. Don

*Convolvulus tuba* Schlecht.

*Calonyction tuba* (Schlecht.) Colla

*C. grandiflorum* (Jacq.) Choisy

Griseb. Fl. 467: van Oostst. *l.c.* 99: Britt. & Wils. *l.c.* 108 (*Calonyction tuba*).

*Twiner*, glabrous; *leaves* broadly ovate or orbicular, entire, deeply cordate at the base, acuminate or acute at apex, 7-13 cm. or more long, 6-13 cm. broad, *petioles* slender, 6-10 cm. long; *peduncles* stout, 2-6 cm. long, 1-2-flowered; *pedicels* thickened above, 2-3 cm. long; *sepals* equal or the exterior ones a little shorter, ovate, obtuse, mucronulate, subcoriaceous, 1.5-2 cm. long, enlarging as fruit ripens; *corolla* white with greenish bands, salver-shaped, tube narrow, 6-8 cm. long, limb 6 cm. or more in diameter; *stamens* and *style* included, *filaments* inserted in lower part of tube; *ovary* glabrous, 2-locular; *capsule* globose, 2-2.5 cm. in diameter; *seeds* pubescent, villose at the angles.

Trinidad: Balandra, sea shore under coconuts, R. O. Williams, Herb. Trin. 12604; Herb. Trin. 2954, 2961.

Tobago: near Scarborough, June 6, 1925, R. O. Williams, Herb. Trin. 11159.

Circumtropical.

6. OPERCULINA *Silva Manso*

Large woody twiners. Stems, petioles and peduncles often winged. Leaves entire, angular or palmately-parted, often cordate at the base. Flowers large, solitary or in few-flowered cymes in leaf axils. Sepals large, scarious, glabrous, enlarging in fruit and becoming somewhat coriaceous, often irregularly erose at margin. Corolla large, broadly funnel-shaped or campanulate. Stamens and style included. Ovary glabrous, 2-locular. Fruit large, 4-1-seeded, with circumscissile epicarp and irregularly splitting endocarp. Seeds trigonous or globular, glabrous.

Stems and petioles ribbed or winged,  
more or less 4-angled; flowers  
yellow, tube short .....1. *O. alata*

Stems rounded without wings, petioles  
ribbed without wings; peduncles with  
a broad membranous wing on each  
side; flowers salmon-pink, tube  
long .....2. *O. pteripies*

Stems and petioles somewhat angular  
without wings, petioles and peduncles  
pubescent; flowers white .....3. *O. ventricosa*

1. *O. alata* (Ham.) Urban

*Convolvulus alatus* Ham.

*Ipomoea pterodes* Choisy

*Operculina pterodes* (Choisy) Meissn.

House in Bull. Torr. Bot. Club, 33, 497 (1906): van Oostst.  
l.c. 86: Hamilton, Prodr. Fl. Ind. Occ. 24 (1824): Griseb. Fl.  
467 (as *I. pterodes*).

Twinner, stems more or less 4-angled, with conspicuous ribs or narrow wings, usually glabrous; leaves ovate or ovate-oblong, entire or sometimes slightly or deeply palmately-lobed, 10-18 cm. long, 3-10 cm. broad, acuminate and mucronulate at apex, cordate at the base, glabrous or pubescent below, petioles winged, 1-6 cm. long; flowers solitary on long winged peduncles; bracts membranous, lanceolate, acuminate; pedicels becoming thickened as fruit ripens; sepals broadly ovate, obtuse, mucronulate or acute, 2.5-3 cm. long, enlarging in fruit and becoming somewhat coriaceous; corolla large, broadly campanulate, yellow, 4-5 cm. long; capsule 2-locular; seeds glabrous, black.

Trinidad: ? Cruieger (12 Dec. 1858) (Herb. Hook.) in Herb. Kew.; Trinidad Botanic Garden, J. H. Hart (June 1889), 2172 in Herb. Kew.; Chancellor Road (Nov. 8, 1934), W. E. Broadway; Look-out Hill, H. Bruins-Lich, Herb. Trin. 12689 and in Herb. Kew.; Herb. Trin. 2960; Botanic Garden (17, 10, 88) near Look-out, W. E. Broadway, Herb. Trin. 3597: Lopinot Valley, R. E. D. Baker, Herb. Trin. 14000.



Tobago: Eggers 5471 in Herb. Kew; Bacolet, dry open hill-sides, trailing over bushes, N. Y. Sandwith 1621 in Herb. Kew; Scarborough, W. E. Broadway 4801 in Herb. Mus. Brit. Scarborough is also the type locality of the species, *vide* Hamilton, *l.c.* supra.

West Indies, Cont. Trop. America.

2. *O. pteripes* (Don) O'Donell

*Calonyction pteripes* Don

*Ipomoea alatipes* Hook

*I. ventricosa* (Bert.) Choisy

*Operculina alatipes* (Hook.) House

Griseb. Fl. 467 as to the Crueger specimen cited under *Ipomoea ventricosa*; Don, Gen. Syst. 4. 264 (1838): House *l.c.* 499: Hook. Bot. Mag. t. 5330: O'Donell in Lilloa, 23. 435 (1950).

*Climber*, stems rounded and ribbed, glabrous; *leaves* ovate-cordate, acuminate, 5-8 cm. long, *petioles* 4-5 cm. long; *peduncles* conspicuously winged, with a broad membranous wing on each side about the middle, bearing 2-4 flowers on pedicels 2-4 cm. long; *pedicels* unwinged, tortuous; *sepals* membranous, ovate, subacute or rounded, 2.5-3 cm. long; *corolla* salmon-coloured, 7-8 cm. long, with a long tube and rotate limb, 7-8 cm. across; *ovary* 2-locular.

Trinidad: La Retraite grounds, Dec. 8, 1865, Herb. Trin. 2952; St. Joseph, Champ Fleurs, Crueger, Oct. 22, 1848, in Herb. Kew.

S. Mexico to Colombia, Venezuela and Ecuador,

3. *O. ventricosa* (Bert.) Peter

*Convolvulus ventricosus* Bert.

*Ipomoea ventricosa* (Bert.) G. Don, Syst. 4. 274; Choisy in DC. Prodr. 9. 360; Griseb. Fl. 467, excluding the Trinidad (Crueger) specimen.

*I. demerariana* Choisy, *l.c.* 361; Meissn. in Mart. Fl. Bras. 7, 264; *non* Griseb. Fl. 471.

Peter in Engler et Prantl, Pflanzenfam. 4. IIIa, 32 (1897): House *l.c.* 498: Britt. & Wils. *l.c.* 118: van Oostst. *l.c.* 88.

*Twiner*, stems terete or somewhat angular, pubescent when young; *leaves* broadly ovate-cordate, acuminate, glabrescent above, hairy below especially along the veins, 8-16 cm. long, 8-12 cm. broad, *petioles* slender, pubescent, about 5 cm. long; *peduncles* stout, pubescent, few- or several-flowered, 5-12 cm. long; *pedicels* thickened above, pubescent, becoming much enlarged as fruit ripens; *sepals* ovate, obtuse, mucronate, about 3 cm. long, pubescent, enlarging to double the size in fruit; *corolla* broadly funnel-shaped, white, 7.5 cm. long (in Trinidad spec. about 5 cm.);

*bracts* oblong, acuminate, pubescent; *capsule* 4-valved, 4-seeded; *seeds* globular, black, smooth, with large rounded hilum.

Herb. Trin., specimen without number, collector or locality.

Lesser Antilles, British Guiana, Surinam. Planted for ornament in Porto Rico and the Virgin Isles.

## 7. *TURBINA* Raf.

*Climbers, stems* pubescent or glabrous. *Leaves* cordate. *Flowers* fairly large, in axillary peduncled clusters. *Sepals* ovate to lanceolate, spreading and slightly enlarged in fruit. *Corolla* campanulate or funnel-shaped. *Ovary* 2- or 4-locular. *Stigmas* 2. *Fruit* woody, indehiscent, subglobose or ovoid, 1-locular, usually 1-seeded. *Seeds* smooth.

### 1. *T. corymbosa* (L.) Raf.

*Convolvulus corymbosus* L.

*C. sidifolius* H.B.K.

*Ipomoea sidifolia* (H.B.K.) Choisy

*Rivea corymbosa* (L.) Hallier f.; Schultes, 'Contr. to our knowledge of *R. corymbosa*', p. 15, Bot. Mus. Harvard Univ. (1941).

Griseb. Fl. 468 (as *I. sidifolia*): Britt. & Wils. l.c. 119.

A rambling climber; *stems* pubescent, with fine, white spreading hairs, becoming glabrescent; *leaves* ovate-cordate, 3.5-5.5 cm. long, 3-5 cm. broad, acute to acuminate, finely pubescent above and below, *petioles* 2-5 cm. long, grooved, finely pubescent; *peduncles* many-flowered, pubescent, as long as the leaves or longer, bearing thyrses of flowers on slender *pedicels* 1-2 cm. long; *sepals* unequal, oblong, persistent, 1-1.2 cm. long, the 3 inner much longer than 2 outer, subacute, coriaceous, glabrous; *corolla* white, the tube greenish-yellow with dark patches at base, about 3 cm. long; *capsule* ovoid, acute, about 5 mm. long, 1-seeded.

Trinidad: without locality or number, W. E. Broadway, Herb. Trin.

Tobago: Fort Hill, R. O. Williams, Herb. Trin. 11835 and in Herb. Kew; Botanic Station, W. E. Broadway 2484 in Herb. Kew; Eggers 5505 in Herb. Kew.

West Indies, Cont. trop. America.

## 8. *CUSCUTA* L.

*Parasitic herbs*, with slender twining *stems* bearing haustoria. *Leaves* reduced to scales or absent. *Flowers* usually in clusters. *Calyx* 5-lobed, or 5 sepals free. *Corolla* tubular, campanulate, urceolate or globose, 5-lobed, with 5 crenate or fimbriate epispalous scales inside the tube. *Stamens* 5, inserted on the



corolla above scales. *Ovary* perfectly or imperfectly 2-locular, 4-ovuled. *Styles* 2, free or connate, *stigmas* capitate or elongate. *Capsule* ovoid or globose, opening irregularly or circumscissile. *Seeds* 4-1, generally glabrous.

Calyx and corolla tubular, lobes in both shorter than tube; stamens subsessile; styles 2-2.5 mm. long .....1. *C. globulosa*

Calyx and corolla campanulate, lobes equal to or longer than tube; stamens on long filaments; styles 1 mm. long or less .....2. *C. umbellata*

1. *C. globulosa* Bth.

*C. americana* L. of most authors.

*C. americana* var. *spectabilis* (Choisy) Progel, *partim*.

Yuncker, Rev. N. Amer. & West Indian Cuscuta, 34 (1921) and in Mem. Torr. Bot. Club, 18. 221 (1932).

*Stems* slender; *flowers* in many-flowered clusters, subsessile; *bracts* ovate, acute; *calyx* tubular, 2.5 mm. long, tube 2 mm. long, lobes ovate, rounded; *corolla* tubular, 3.75-4 mm. long, tube 2-2.5 mm. long, lobes obtuse; *scales* triangular, laciniate; *stamens* subsessile, *filaments* 0.25 mm. long; *ovary* globose; *styles* 2-2.5 mm. long, *stigmas* globose; *capsule* depressed-globose, circumscissile, 1-2-seeded.

Trinidad: Woodbrook, on *Hibiscus rosa-sinensis*, W. E. Broadway, Jan. 22, 1931, in Herb. Kew; on *Bauhinia* sp., without locality or number, in Herb. Trin.; Tunapuna, W. E. Broadway, Herb. Trin. 7310; St. Augustine, Britton, Hazen and Freeman 947, *vide* Yuncker.

Tobago: W. E. Broadway 2464, *vide* Yuncker.

W. Indies and Mexico.

2. *C. umbellata* H.B.K.

Griseb. Fl. 476: Britt. & Wils. l.c. 121: van Oostst. l.c. 69: Yuncker, ll.cc. 41 and 236.

*Stems* very slender; *flowers* in small clusters; *bracts* oblong, subacute; *calyx* turbinate, 2 mm. long, lobes ovate, acute, tube 1 mm. long; *corolla* 2.75 mm. long campanulate, tube 1 mm. long, lobes reflexed, triangular, ovate, acute; *scales* somewhat obovate or spatulate, fringed; *staminal filaments* 1 mm. long; *ovary* globose, 1 mm. in diameter; *styles* unequal, 0.75-1 mm. long; *capsule* circumscissile.

Trinidad: Oropuche Lagoon, April 5, 1865, Herb. Trin. 2965.

S. United States, Central America, W. Indies, Northern S. America.

## FAMILY 4. SOLANACEAE

BY R. E. D. BAKER AND N. W. SIMMONDS\*

*Herbs*, erect or scandent *shrubs*, or small trees. *Leaves* usually alternate, sometimes in the flowering parts in equal or unequal pairs, never truly opposite. *Stipules* none. *Infl.* cymose, sometimes reduced to solitary flowers. *Flowers* hermaphrodite, regular or slightly irregular. *Calyx* usually 5-lobed. *Corolla* of various forms, usually 5-lobed, valvate, imbricate or plaited in the bud. *Stamens* as many as the corolla lobes and alternating with them, or fewer in zygomorphic flowers, inserted on the tube; *anthers* dehiscent by apical pores or longitudinal slits. *Ovary* superior, 2-locular or rarely 3-5-locular; *style* terminal and simple. *Fruit* a berry or capsule; seeds numerous.

A family including a number of economically important plants, such as *Solanum tuberosum* L. (potato), *Solanum Melongena* L. (egg plant), *Lycopersicon esculentum* Mill. (tomato), *Nicotiana Tabacum* L. (tobacco). Many have narcotic or poisonous properties; thus species of *Atropa*, *Datura*, *Hyoscyamus*, &c., are medicinal. Cultivated in Trinidad gardens as ornamentals are species of *Browallia*, *Datura*, *Brunfelsia*, *Petunia* and *Solandra*.

Fruit a berry

Berry enclosed in an inflated calyx .....1. **Physalis**

Berry not enclosed in an inflated calyx

Leaves sessile; small-leaved spiny shrubs ...2. **Lycium**

Leaves petiolate

Flowers in sessile lateral fascicles .....3. **Acnistus**

Flowers not fascicled

Fls. very large (corolla exceeding 5 cm. long)

Fls. 15-20 cm. long, solitary .....4. **Solandra**

Fls. about 6 cm. long, in short racemiform cymes .....5. **Markea**

Fls. not very large (less than 5 cm. long)

Corolla salver-shaped, with a long slender tube .....6. **Cestrum**

Corolla rotate or open bell-shaped, with a short tube

Cor. not plaited .....7. **Capsicum**

\*Original draft by R. O. Williams, partially by E. E. Cheesman, revised and completed by the authors. Valuable help has been given by N. Y. Sandwith, C. V. Morton and T. H. Goodspeed. Their assistance is gratefully acknowledged.



- Cor. plaited  
 Calyx with appendages below  
   the truncate margin .....8. **Lycianthes**  
 Calyx without appendages  
 Anther connective thin or  
   obsolete .....9. **Solanum**  
 Anther connective thickened  
   on the back .....10. **Cyphomandra**
- Fruit a capsule  
 Flowers in elongated terminal panicles .....11. **Nicotiana**  
 Flowers solitary  
 Annual herbs .....12. **Browallia**  
 Shrubs or trees  
 Flowers small, blue .....13. **Brunfelsia**  
 Flowers large, white, veined with  
   green .....14. **Datura**

# 1. **PHYSALIS L.**

*Herbs. Fls.* solitary in the axils. *Calyx* bell-shaped or pyramidal, shortly or more deeply 5-fid, on the fruit inflated membranous, 5-angled or 10-ribbed, entirely enclosing the globose, pulpy berry. *Corolla* broadly bell-shaped or almost rotate, the limb plaited, 5-angled or shortly and broadly 5-toothed, mostly yellow with a brownish or purplish centre, *Stamens* 5, inserted near the base of the corolla. *Ovary* 2-locular; *style* slender; *ovules* numerous. *Seeds* numerous, flattened.

- Plant densely pubescent .....1. *P. pubescens*  
 Plant glabrous, or pubescent only on younger  
   parts  
 Leaves entire or barely uneven .....2. *P. Lagascae*  
 Leaves toothed, sometimes only slightly  
 Fruiting calyx globose, hardly narrowed  
   at the apex .....3. *P. turbinata*  
 Fruiting calyx distinctly tapering at the  
   apex .....4. *P. angulata*

## 1. ***P. pubescens* L.**

Griseb. Fl. 435 : O. E. Schulz in Urb. Symb. Ant. 6. 143 :  
*ibid.* 8. 161 : Britt. & Wils. Sci. Surv. Porto Rico 6. 164.

*Annual herb*, densely sticky-pubescent, erect or spreading,  
 30-50 cm. high; *stems* sharply angled; *lvs.* heart-shaped, 3-6 cm.

long, acute or abruptly acuminate at apex, usually shortly and sharply toothed, *petioles* 2-6 mm. long; *peduncles* slender, densely hairy, 3-5 mm. long, increasing to 1-1.5 cm. on the mature fruit; *cal.* densely hairy, the lobes lanceolate, acuminate; *cor.* 5-10 mm. across, yellow with a purplish eye; *fruiting cal.* 2-3 cm. long; *berry* 6.5-7.5 mm. in diameter.

Trinidad: Buen Intento Mission (Herb. Trin. 1918, Jan. 1865); Herb. Trin. 4236 and 5674; Chatham (Herb. Trin. 8528, 18. 11. 1916); Arima-Blanchisseuse Rd. (Herb. Trin. 13584, 17. 8. 47); Aripo Road (Herb. Trin. 13585, 14. 4. 1940).

Tobago: Charlotteville-Speyside Road (Herb. Trin. 11433, 26. 10. 25); Urban *loc. cit.*

Waste and cultivated ground, Trinidad and Tobago.

West Indies, southern U.S.A. and continental tropical America.

2. **P. Lagascae** R. & S. var. **glabrescens** O. E. Schulz.

P. minima L. *sec.* Nees, *pro parte, non* L.

Griseb. Fl. 436: O. E. Schulz in Urb. Symb. Ant. 6. 147.

*Annual herb* 30-60 cm. high, *stems* glabrous or with a few short hairs; *lvs.* ovate or heart-shaped, pointed, the margin entire or slightly uneven, membranous, nearly glabrous on both sides, 1.5-3.5 cm. long, the inferior ones 2.5-6.5 cm.; *peduncles* 2-3 mm. long, slender, sparsely hairy, increasing to 3-3.5 mm. long on the mature fruit; *cal.* with a few hairs on the ribs, persisting when in fruit; lobes somewhat ovate, rounded; *cor.* 6-6.5 mm. long, yellow, the margins shortly fringed, glabrous within; *fruiting cal.* 16-18 mm. long ovate, 5-angled; *berry* 8 mm. diam.

Trinidad: Matelot (Herb. Trin. 6747, 1900); St. Augustine (Herb. Trin. 14785, 17.1.1953).

Cuba, Mexico, Colombia.

3. **P. turbinata** Medik.

O. E. Schulz in Urb. Symb. Ant. 6. 145: Britt. and Wils. Sci. Surv. Porto Rico 6. 165.

*Annual herb*, glabrous or minutely puberulent when young; *stems* acutely angled; *lvs.* broadly ovate, shortly acuminate at apex, wavy-toothed; *peduncles* about 8 mm. long, increasing to about 2 cm. on the fruit; *calyx* 6 mm. long, the lobes lanceolate, acuminate; *corolla* 8 mm. across, yellow with a brownish-purple eye; *fruiting calyx* 5-angled, 3-3.5 cm. long, tapering at apex; *berry* ovoid.

Trinidad: St. Clair Experiment Station (Herb. Trin. 11539, 11540, 23. 2. 26); Woodbrook (Broadway 6392 in Herb. Kew).

West Indies, Southern U.S.A., Venezuela and Colombia.



4. *P. angulata* L.

*P. Linkiana* Dunal in DC.

Griseb. Fl. 436 : O. E. Schultz in Urb. Symb. Ant. 6. 140 : Britt. and Wils. Sci. Surv. Porto Rico 6. 164.

*Annual herb* 1 m. or less, glabrous or minutely hairy on the young leaves, *stems* angled; *lvs.* ovate, usually sharply angled with acuminate teeth, membranous, 4-13 cm. long, *petioles* slender 1.5-6 cm. long; *peduncles* 5-14 mm. long, slender increasing to 1-3 cm. at maturity when they are often reflexed; *cal.* minutely hairy on the flower, becoming almost glabrous in fruit, lobes triangular to lanceolate; *cor.* yellow 5-10 mm. long; *fruiting cal.* about 3 cm. long, ovoid, not prominently 5-10 angled; *berry* 8.5 mm. diam. yellow.

Trinidad : San Fernando (Herb. Trin. 1909, 15. 8. 1864); Paradise Canefields (Herb. Trin. 1915); Chaguanas (Herb. Trin. 4207, 1890); Herb. Trin. 5721, 6052 and 6719; Cedros (Herb. Trin. 7192, 16. 9. 1915); Las Lilas (Britton 2583, in Herb. Trin.).

Tobago : Arden (Herb. Trin. 11800, 11. 9. 27).

Waste and cultivated ground, Trinidad and Tobago.

Tropics generally.

O. E. Schulz (Urb. Symb. Ant. 6, 143) cites 6052 and Eggers 5578, Bacolet, Tobago, as var. *ramosissima* (Mill.) O. E. Schulz (*P. ramosissima* Mill.) with more or less entire, narrower and oblong leaves. Britton and Wilson (*loc. cit.*) reduce the variety.

2. *LYCIUM* L.

*Shrubs* or small *trees*, often spiny at the nodes. *Lvs.* entire, small often clustered at the nodes. *Fls.* solitary or rarely clustered. *Calyx* bell-shaped, truncate and irregularly 3-5-toothed or 5-fid, not or scarcely enlarged on the fruit. *Corolla* with a very short or an elongated tube, often widened at the throat, the limb 5-lobed. *Stamens* 5. *Ovary* 2-locular. *Berry* globose, ovoid or oblong; *seeds* numerous.

*Calyx* about 3 mm. long .....1. *L. carolinianum*

*Calyx* 1-2 mm. long .....2. *L. Tweedianum*  
(var. *chrysocarpum*)

1. *L. carolinianum* Walt.

C. L. Hitchcock in Ann. Missouri Bot. Gard. 19. 238 (1932).

*Shrub*, erect or slightly spreading 0.3-1 m. high, glabrous, armed; the young branchlets often with short thick spines about 1 cm. long; *lvs.* 3-10 in a fascicle, spatulate, somewhat succulent, 1-2.5 cm. long, 1-2 mm. broad, rounded or occasionally acute at the apex, attenuate at the base, almost sessile, glabrous, the midrib

scarcely visible. *Fls.* with *pedicels* 0.5-3 cm. long; *cal.* cup-shaped, glabrous, about 3 mm. long, 4-lobed, the lobes triangular, obtuse, nearly equalling the tube; *cor.* lavender to purple, rotate-campanulate, 7-10 mm. long incl. lobes, the tube about equal to the lobes; lobes 4, rarely 5, ovate; *stams.* exserted, *fls.* adnate to corolla half way up the tube, *anths.* 1-1.5 mm. long; *style* scarcely as long as the filaments; *berry* ovoid, fleshy, red, about 1 cm. diam.; *seeds* 50 or more, purple in old dried material.

Patos, Broadway 7201, *vide* Hitchcock, *loc. cit.*; Williams, Patos (Herb. Trin. 12519, 9. 5. 31) may be the species but is not in flower.

S.E. United States, West Indies.

Patos is no longer in our area, so that there is, strictly, no record for the Colony; the species, however, may well occur and should be sought in other Bocas Islands.

2. ***L. Tweedianum* Griseb. var. *chrysocarpum* (Urb. & Ekm.) C. L. Hitchc.**

*L. americanum* Jacq. var. *chrysocarpum* Urb. & Ekm.

Urban and Ekman in Arkiv. Bot. 22A. 10 p. 49 (1929): C. L. Hitchcock in Ann. Missouri Bot. Gard. 19. 224 (1932).

*Shrub*, 1-3 m. high, armed by the pointed, short branchlets; *lvs.* 1-5 in a fascicle, spatulate or oblong-obovate 4-10 mm. long, 1-2.5 mm. broad, apex rounded, base tapering, midrib evident. *Fls.* few, on very slender pedicels 4-15 mm. long, borne singly at the nodes; *cal.* cup-shaped, 1-2 mm. long, 4-5 lobed; *cor.* tube 4-5 mm. long, lobes 4-5, oblong-ovate, 3-3.5 mm. long, spreading; *stams.* 4-5, exserted 3-4 mm., *fls.* adnate near the middle of the corolla tube, densely pubescent with branched hairs just above the free bases, adjacent corolla tube also pubescent; *anths.* 1-1.5 mm. long; *style* equalling or slightly longer than the stamens; *berry* red black with age, ovoid or subglobose, 6 mm. long, 15-25 seeded.

Trinidad: Monos Is. (Britton, Britton and Brown, 4. 4. 1921), *vide* Hitchcock, *loc. cit.*; Williams, Patos, (Herb. Trin. 12518, 9. 5. 31), is probably the same.

West Indies.

3. **ACNISTUS Schott**

*Shrubs* or small *trees*. *Lvs.* entire. *Fls.* (in the local species) clustered. *Calyx* bell-shaped, truncate or shortly 5-lobed. *Corolla* tubular, funnel-shaped or almost bell-shaped, 5-lobed. *Stamens* 5, inserted on the corolla tube. *Ovary* 2-locular. *Berry* globose, fleshy or pulpy; *seeds* numerous, flattened.



1. *A. arborescens* (L.) Schlecht. Wild Tobacco.*Atropa aborescens* L.*Acnistus punctatus* Riley

Griseb. Fl. 435 : Britt. and Wils. Sci. Surv. Porto Rico 6. 163 : Riley in Kew Bull. 1925, p. 141 : Sandwith in Kew Bull. 1938, p. 370 : Marshall, Sylv. Trin. Tob. 176.

*Shrub* or small *tree*, 5-7 m.; *lvs.* elliptical or elliptical oblong, 35 cm. long or less, pointed at both ends, the young ones densely whitish pubescent, soon becoming glabrous, *petioles* 1-6 cm. long. *Fls.* very numerous, clustered on the stem, *pedicels* threadlike, 1-1.5 cm. long; *cal.* 2 mm. long, lobes rounded or acute; *cor.* green within margined with white, 7 mm. diam., and about 8 mm. long, lobes 5, recurved; *stams.* exserted; *style* white, exceeding the stamens; *stigma* green; *berry* about 7 mm. diam., orange-coloured, *seeds* numerous.

Trinidad : Herb. Trin. 1122; San Fernando (Herb. Trin. 1908, 28. 3. 1865); Maracas falls (Herb. Trin. 5353, 2. 4. 1893); Blue Basin (Herb. Trin. 7733, 13. 5. 1915); Piarco (Herb. Trin. 8021, 18. 3. 1920); Grande Riviere (Herb. Trin. 8094, 1913); St. Ann's (Herb. Trin. 10975, 13. 4. 1925); Morne Bleu (Herb. Trin. 11566, 30. 4. 1926); Morne Diablo (Herb. Trin. 12037, 30. 8. 1928); Southern Watershed Reserve (Herb. Trin. 13467, 6. 4. 1938).

Tobago : Menna Road, Mason Hall (Herb. Trin. 11124, 6. 6. 1925); Mt. St. George-Castara Road (Sandwith 1838 in Herb. Kew).

Second growth, generally distributed in Trinidad and Tobago. West Indies, tropical Central and South America.

4. *SOLANDRA* Sw.

High climbing *shrubs*, glabrous. *Lvs.* entire, leathery, shining. *Fls.* very large, white or yellow, solitary on thick pedicels. *Calyx* long tubular, 2-5-fid, at apex. *Corolla* funnel-shaped with a cylindrical tube, throat broadly and obliquely bell-shaped, lobes 5, broad, imbricate. *Stamens* 5, inserted near the base of the corolla. *Ovary* 2-locular, by false septa imperfectly 4-celled. *Berry* globose, pulpy, half-exserted from the split calyx; *seeds* numerous, compressed.

1. *S. grandiflora* Sw.*Swartzia grandiflora* Gmel.

Griseb. Fl. 433 : Britt. & Wils. Sci. Surv. Porto Rico 6. 173. Climbing *shrub*; *lvs.* elliptical or elliptical-oblong, acute, 10-12 cm. long, the *petiole* 2-4 cm. long. *Fls.* yellow at first,

changing to white with age; *pedicel* about 1 cm. long; *cal.* about 7 cm. long, 2-3 lobed, the lobes lanceolate; *cor.* 15-20 cm. long, the tube 5 mm. wide for about 7 cm. then gradually broadening into funnel-shape, 7-8 cm. broad at the top; *berry* hard, leathery, up to 5 cm. broad, 4.5 cm. long, yellow when fully mature, inverted turbinate, tapering to a persistent style, with persistent accrescent calyx irregularly split into 2-4 lobes; *receptacle* accrescent, up to 3 x 2.5 cm., warty, hard and woody, conical and tapered to the base; locules 4, with swollen placentas; *seeds* pale brown, kidney shaped, 5 x 2.5 mm.

Trinidad: San Fernando (Herb. Trin. 1910, Oct. 1865); Hart, 26. 9. 1901; top of divide between Diego Martin and Tucker Valley (Freeman, 9. 12. 1923); Tamana (Herb. Trin. 10802, 9. 10. 1924); Mt. Aripo (Herb. Trin. 14442, 22. 10. 49); San Rafael (Herb. Trin. 14646, 7. 10. 50 and Herb. Trin. 14659, 21. 1. 51 in fruit); also cultivated.

Forests and second growth, locally common, as on Mt. Aripo; flowering markedly seasonal, Trinidad.

West Indies and continental tropical America.

### 5. MARKEA Rich.

Climbing or epiphytic *shrubs*. *Lvs.* entire, often in threes. *Fls.* rather large, in short racemiform inflorescences. *Calyx* 5-angled, 5-fid or 5-parted, with acuminate, valvate lobes. *Corolla* funnel-shaped or salver-shaped, plaited in the bud, lobes 5, imbricate. *Stamens* inserted below the middle of the tube. *Ovary* 2-locular; *style* filiform, dilated above. *Berry* almost dry, oblong or globose, with a thin membranous pericarp.

#### 1. *M. longiflora* Miers.

Griseb. Fl. 433.

*Lvs.* elliptical or elliptical-oblong, 12-24 cm. long, shortly pointed at apex; *petioles* about 1.2 cm.; *infl.* axillary, about 4 cm. long; *pedicels* 1.5-2 cm.; *cal.* segments broadly ovate-oblong, up to 3 cm. in length, conspicuously caudate-acuminate, net-veined; *cor.* 6-7 cm. long, bell-shaped-cylindrical in the upper two-thirds, contracted below into a narrowly cylindrical base about 2 mm. in diameter, its lobes roundish, cream in colour, veined with purple-brown.

Trinidad: On trees, Oropouche Lagoon (Purdie 62 in Herb. Kew, the *type*, collected in 1847.).

British Guiana and Amazonian Brazil.



## 6. CESTRUM L.

*Shrubs* or small *trees*. *Lvs.* entire. *Fls.* in axillary cymes or fascicles, sometimes in the upper axils forming corymbs or panicles at the ends of the branches, sometimes at lower nodes, below the leaves. *Calyx* bell-shaped to tubular, 5-toothed or 5-fid, the lobes valvate. *Corolla* salver-shaped or funnel-shaped, with a long slender tube and 5 spreading lobes. *Stamens* inserted on the corolla tube, included. *Ovary* 2-locular, often shortly stipitate. *Berry* globose, ovoid or oblong, rather dry; *seeds* few.

*C. nocturnum* L. ("Lady of the Night") and *C. diurnum* L. are cultivated in gardens.

Leaves usually more than 10 cm. long, acute  
or acuminate

Corolla greenish-yellow 15-20 mm. long ....1. *C. latifolium*

Corolla, the tube white, lobes violet, about

10 mm. long .....2. *C. Baenitzii*

Leaves up to 5 cm. long, apex bluntly

pointed .....3. *C. alternifolium*

1. *C. latifolium* Lam.

*C. vespertinum* L. of Griseb. Fl. 443 *pro parte*.

O. E. Schulz in Urb. Symb. Ant. 6. 269: Francey in Candollea 6. 289 (1935).

*Shrub* 1.8-3 m., minutely woolly on the younger branches, petioles and lower ribs of the leaves; *petioles* 8-25 mm. long, leaf-blades ovate-oblong, shortly acuminate at the apex, the base rounded or slightly tapering into the petiole, 7.5-15 cm. long. *Infl.* many fld., minutely woolly, *peduncles* branched at the base, 6-20 mm. long; *fls.* shortly pedicellate, sweetly scented, nocturnal; *cal.* 2-2.5 mm. long, lobes triangular, hairy without, glabrous within; *cor.* greenish yellow, club-shaped, the tube thread-like, 15-20 mm. long, gradually tapering to the base, glabrous, lobes lanceolate-linear, 4-6 mm. long; *stams.* adhering to the tube below, free above for about 2 mm.; *berry* ovate, 7.5-9 mm. long, 4-5 mm. diam.; *seeds* 3 or 4, 4 mm. long.

Trinidad: San Fernando (Herb. Trin. 1912, 12. 12. 1864); St. Ann's (Herb. Trin. 2249, 10. 4. 1846); Tunapuna (Herb. Trin. 4257, June, 1890); Diego Martin (Herb. Trin. 5196, 1892); Maraval (Herb. Trin. 5424, Jan. 1893); Cedros (Herb. Trin. 7136, 21. 9. 1915); Cedros (Herb. Trin. 8525, 7. 11. 1916); Irois Forest (Herb. Trin. 8527, 14. 11. 1916); Talparo (Herb. Trin. 10824, 24. 10. 1924); Knagg's Hill (Broadway, 24. 10. 1911); Aripo district (Broadway, 21. 3. 1922); S. W. Reserve (Herb. Trin. 14488, 6. 11. 49).

Roadsides and forest borders, Trinidad.

West Indies, northern South America.

**2. C. Baenitzii Lingels.**

*C. silvicola* Britton mss.

Lingelsheim in Fedde, Rep. Sp. Nov. 7. 248 (1909): Francey l.c. 309.

*Tree* 7 m. the twigs glabrous or with minute hairs at the apex; *petioles* 8-15 mm. long, *lvs.* membranous, glabrous or occasionally with a few minute hairs on the midribs of the young ones, oblong-elliptical, the branches minutely and densely woolly; *fls.* shortly pedicellate; usually acute, 7-18 cm. long. *Inf.* usually branched at the base; *cal.* 2-3 mm. long, woolly within, more especially on the lobes and with scattered hairs without, lobes triangular, 5 mm. long; *cor.* tube white, club shaped, 11 mm. long, glabrous, lobes violet, oblong-linear, 3-4 mm. long, unequal; *fls.* adhering to the tube at the base, the free part 3-3.5 mm. long; *berry* ellipsoidal, about 7 mm. long.

Trinidad: Tucuche (Herb. Trin. 9061, 4. 4. 1920); Tucuche (Britton, Hazen and Mendelson 1340, 3-5. 4. 1920); Heights of Aripo (Britton 2358, 16. 3. 1921); El Tucuche (Herb. Trin. 10082, 10. 1. 1922); Plum Road (Herb. Trin. 11993, 30. 6. 1928); Maracas (Broadway 6012 and 7250 in Herb. Kew).

Tobago: Caledonia (Broadway 3079 in Herb. Kew).

Forests in moist northern districts, Trinidad and Tobago.

Continental tropical America.

**3. C. alternifolium (Jacq.) O. E. Schulz**

*Ixora alternifolia* Jacq.

*Cestrum vespertinum* L. of Griseb. Fl. 443 *pro parte*.

O. E. Schulz in Urb. Symb. Ant. 6. 270: Francey l.c. 211: Britt. and Wils. Sci. Surv. Porto Rico 6. 176.

*Shrub*, 0.5-3.5 m., twigs hairy at the apex; *petioles* 5-7.5 mm. long, minutely hairy; *lvs.* ovate or oblong-ovate, rarely oblong-elliptical, bluntish at the apex, membranous, the younger leaves minutely hairy, the older somewhat glabrous, 5-8 cm. long. *Inf.* about 10-fid.; *fls.* very shortly pedicellate, nocturnal; *cal.* 2-3 mm. long, glabrous within, the teeth awl-shaped to triangular, 0.5 mm. long; *cor.* 12 mm. diam., greenish inside, purplish without, the tube threadlike about 2 cm. long, abruptly inflated, somewhat globose at the throat, glabrous, lobes unequal, 3.5-5 mm. long, oblong-linear; *fls.* adhering to the tube throughout or barely free above (1 mm.); *berry* ellipsoidal, about 10 mm. long, black.

Trinidad: Cruieger (*vide* Francey); Monos Is. (Britton, Britton and Brown 2741, 4. 4. 1921); Staubles to Teteron Bay (Herb. Trin. 10983, 22. 4. 25); Bande de L'Est (Herb. Trin. 1911, 16. 3. 1866). The last three sheets lack flowers but are probably to be referred here.

West Indies, Central America.



*var. pendulinum* (Jacq.) O. E. Schulz

*Cestrum pendulinum* Jacq.

O. E. Schulz, *loc. cit.* 272; Francey *loc. cit.* 214: Sandwith in Kew Bull. 1938. p. 370.

The variety differs in having *fls.* congested at the apex of branchlets, longer, 2.5-3.1 (rarely 3.4) cm. long; *cor.* lobes acuminate 5-7 (rarely 9) mm. long, tube at base 1 mm., below the limb 2 mm. in diam.; *cal.* 3 mm. long.

"Jumbey Pepper" of Tobago according to Eggers.

Tobago: *vide* Schulz *loc. cit.*; Charlotteville (Herb. Trin. 11084, 4. 6. 25); Little Tobago (Herb. Trin. 11439, 26. 10. 25); Bacolet (Sandwith 1631, 6. 10. 1937 in Herb. Kew); Scarborough (Herb. Trin. 14519, 5. 12. 49); Mt. Dillon (Herb. Trin. 14543, 7. 12. 49).

West Indies, N. South America.

### Doubtful Records

*C. laurifolium* L'Her. is recorded from Trinidad by O. E. Schulz (*l.c.* 259), citing Sieber 180. Francey *l.c.* 339 also gives this Sieber record. The species is not otherwise known from the Colony.

*C. megalophyllum* Dun. (*C. macrophyllum* Vent. of Griseb. Fl. 443, *non* Vent.) is recorded from Trinidad by Grisebach on the strength of Sieber 176 and a collection by de Schack. Francey *l.c.* 312-4 gives the same two records but no others. The Sieber record may perhaps be ignored, and the de Schack specimen, not seen by us and apparently not by Francey, may well be referable to *C. Baenitzii*, which is an extremely closely allied species. Broadway 3079 was once referred by Urban to *C. megalophyllum* but is identified by Francey with *C. Baenitzii*. The distribution of *C. megalophyllum* is Lesser Antilles and Colombia.

*C. laevigatum* Schl. *var. puberulum* Sendtn. in Mart. Fl. Bras. 10. 216. Francey *l.c.* 299, cites Broadway 2741 "cultd." from Trinidad, and Broadway 4241 from Courland Estate, Plymouth, Tobago. This species has a natural distribution in Brazil, Paraguay and Argentina, and is widely cultivated in both hemispheres. Presumably it occurs in our area only in cultivation.

### 7. CAPSICUM L.

Annual or perennial *herbs* or *shrubs*, with forking stems. *Lvs.* entire or slightly sinuate. *Fls.* solitary in the axils or sometimes 2-3. *Calyx* short, scarcely increasing on the fruit, truncate or with 5 small teeth, *Corolla* nearly rotate, deeply 5-fid. *Stamens* 5. *Ovary* 2-locular (sometimes 3-locular). *Berry* erect or pendulous, of various shapes, pungent; *seeds* numerous, flattened.

- Fruit elongated conical .....1. *C. frutescens*  
Fruit globose to elliptical .....2. *C. baccatum*

1. *C. frutescens* L.

Bird pepper

Gr. Fl. 436 : Britt. & Wils. Sci. Surv. Porto Rico 6. 165 :  
Urb. Symb. Ant. 8. 616.

*Shrub*, 1-3 m., *lvs.* ovate, pointed, glabrous, or with the ribs hairy, 9 cm. long or less, *petioles* 10-24 mm. long; *pedicels* about 1 cm. lengthening to about 2.5 cm. in the fruit; *cal.* green, nearly truncate, 2-3 mm. long; *cor.* pale green, about 1 cm. diam., the lobes ovate, 3 mm. long, the tube 1.5 mm. long; *berry* elongated-conical, 2.6 cm. long or less, red or orange.

Trinidad : Botanic Gardens (Herb. Trin. 1917); Botanic Gardens (Herb. Trin. 4760, 22. 8. 92); Tabaguite (cultivated) (Broadway 19. 9. 18); St. Joseph (Herb. Trin. 9538, 24. 3. 20).

Tobago: Fort Hill (Herb. Trin. 11830, 13. 9. 27); Urban, *loc. cit.*

Cultivated and waste grounds, probably naturalized, Trinidad and Tobago.

Tropics generally.

2. *C. baccatum* L.

Bird pepper

Gr. Fl. 436 : Britt. & Wils. Sci. Surv. Porto Rico 6. 165 :  
Urb. Symb. Ant. 8. 617 : Britt. & Millsp. Bah. Fl. 385.

*Shrub* 1-3 m.; *lvs.* ovate, pointed, glabrous or nearly so, 2-5 cm. long, *petioles* 1-2 cm. long; *cal.* 2.5-3 mm. long; *cor.* white, fringed; *berry* globose to ellipsoidal 5-10 mm. long, red, obtuse.

Trinidad : Botanic Gardens (Herb. Trin. 4761, 22. 8. 92); Patos (R. O. Williams, 25. 6. 17).

Tobago : Little Tobago (Herb. Trin. 11437, 26. 10. 25); Sandy Point (Herb. Trin. 11816, 15. 9. 27); Urban, *loc. cit.*

Waste ground and cultivated, ? naturalized, Trinidad and Tobago.

Tropics generally.

8. LYCIANTHES (Dunal) Hassler

*Shrubs*, rarely *herbs*. *Lvs.* mostly entire. *Fls.* axillary. *Calyx* bell-shaped, truncate, often 10-toothed, the teeth linear awl-shaped. *Corolla* rotate or broadly bell-shaped, plaited. *Filaments* short; *anthers* mostly ellipsoidal, dehiscent by small apical pores. *Fruit* a berry.



The genus is closely allied to *Solanum* but differs essentially in the presence of appendages on the outside of the calyx, just below the truncate margin.

1. *L. pauciflora* (Vahl) Bitter subsp. *tobagoensis* Bitter.

*Solanum lentum* Cav. sens. Griseb. non Cav.

*S. virgatum* Lam. var. *caracasenum* O. E. Schulz quoad  
*pl. trinit.*

Gr. Fl. 439: O. E. Schulz in Urb. Symb. Ant. 6, 190:  
Sandwith in Kew Bull. 1938. p. 369.

*Climbing shrub*; young *branches* with stellate pubescence, later becoming glabrous; *lvs.* single or in pairs, ovate or ovate-oblong, 7-14 cm. long, pointed, thin, glabrous or with a few scattered hairs above, minutely hairy beneath. *Fls.* in 1-5 fld. axillary sessile umbels; *pedicels* 6.5-15 mm. long; *cal.* 5 mm. long, sparsely stellate pubescent, with 10 linear blunt appendages produced below the truncate margin, each 2 mm. long; *cor.* white, glabrous or slightly hairy; *stam.* 5, 4 sub-equal with filaments 1 mm. long, 1 with filament 3.5 mm. long; *berry* red, globose, 10-15 mm. in diameter.

Trinidad: Maracas Heights (Crueger 148, Herb. Trin. 1898, July, 1860, cited by Bitter *loc. cit.*); Arima (Herb. Trin. 10792, 25. 9. 24); Morne Bleu (Herb. Trin. 11879, 15. 11. 27); Morne Bleu (Herb. Trin. 12453, 10. 1. 31); Piedra Blanca (Herb. Trin. 14225, 18. 4. 48); Arima-Blanchisseuse Rd. (Herb. Trin. 14425, 25. 9. 49).

Tobago: Caledonia (Broadway 4523, in Herb. Berlin); Roxborough-Parlatuvier Road (Sandwith 1764, 14. 10. 1937 in Herb. Kew).

Trinidad and Tobago in forests, usually montane.

The typical form is Lesser Antillean in distribution. The only evidence for its occurrence in our area is Sieber 358 cited by Bitter, *loc. cit.*, which may have come from Martinique.

## 9. SOLANUM L.

*Herbs, shrubs* or small *trees*, sometimes climbers, armed or unarmed, often stellate-hairy, sometimes with simple hairs, or glabrous. *Lvs.* alternate or in pairs, the pairs usually of different forms, entire, lobed or rarely pinnately divided. *Fls.* yellow, blue or white in cymes, umbels, panicles, racemes, usually lateral, sometimes terminal. *Calyx* bell-shaped or rotate, mostly 5-toothed or cleft. *Corolla* rotate, the limb plaited, 5-angled or 5-lobed, the tube very short. *Stamens* inserted on the throat of the corolla; *filaments* short, *anthers* linear or oblong, acute or acuminate, united or in contact forming a cone, each sac dehiscent by a terminal pore, or

sometimes by a short introrse terminal slit, or sometimes also longitudinally. *Ovary* usually 2-locular; *stigma* small. *Berry* usually globose, with persistent calyx; *seeds* compressed, roundish or somewhat kidney-shaped, granulate or pitted.

The most important cultivated species of the genus in Trinidad is *S. Melongena* L., the egg-plant. Two other exotic species are grown as ornamentals: *S. Wrightii* Bth. (*S. macranthum* Hort. ex Carr.) known as the Potato Tree is a soft-wooded tree of rapid growth, native of Bolivia and widely cultivated in Botanic Gardens in the Tropics; *S. Wendlandii* Hook. f. is an ornamental climber, native of Costa Rica.

Plant armed

Infl. 1-5-fld.

Calyx hairy, not prickly

Lvs. toothed, spiny .....1. *S. mammosum*

Lvs. entire unarmed .....13. *S. ierense*

Calyx armed

Fruit yellow, its calyx lobes ovate,  
obtusely mucronate, 1.5 mm. long...2. *S. quinquangulare*

Fruit scarlet, its calyx lobes triangular,  
acute, 3 mm. long, much accrescent  
in fruit .....3. *S. ciliatum*

Infl. 5-many-fld.

Lvs. armed with numerous straight spines

Calyx 9 mm. long

Fruit densely hairy .....4. *S. hirtum*

Fruit more or less glabrous when ripe ...5. *S. hyporrhodium*

Calyx 1-2.5 mm. long .....6. *S. stramonifolium*

Lvs. unarmed or with short recurved  
prickles mostly on the midrib

Lvs. entire

Calyx lobes triangular, 2 mm. long .....7. *S. lanceifolium*

Calyx lobes linear, 10 mm. long .....8. *S. aripoense*

Lvs. some at least with wavy-toothed  
margins

Midribs armed with few to many prickles

Erect shrub with woolly leaves, petals

7-9 mm. long .....9. *S. jamaicense*

Sprawling climber with coarsely hairy

leaves, petals 15-17 mm. long .....10. *S. scabrum*

Midribs unarmed

Lvs. densely woolly, petals white,

8 mm. long .....11. *S. torvum*



- Lvs. coarsely hairy, petals mauve,  
15-20 mm. long .....12. *S. subinerme*
- Plant unarmed
- Lvs. stellate-hairy
- Infl. 1-6 fld.
- Lvs. ovate, 5 cm. long or less .....13. *S. ierense*
- Heterophyllous, the larger leaves  
6-12 cm. long .....14. *S. Karstenii*
- Infl. many fld.
- Lvs. lanceolate or oblong-lanceolate ....15. *S. asperum*
- Lvs. broadly elliptical or ovate, some-  
times wavy toothed
- Lvs. at least the lower ones wavy  
toothed .....12. *S. subinerme*
- Lvs. entire
- Lvs. tapering into the petiole .....16. *S. bicolor*
- Lvs. rounded at the base .....17. *S. erianthum*
- Lvs. glabrous or with simple hairs
- Plant climbing, flrs. blue, in drooping  
panicles
- Lvs. pinnately divided .....18. *S. Seaforthianum*
- Lvs. entire .....19. *S. sempervirens*
- Annual herb, somewhat woody at the  
base .....20. *S. nigrum*
- Shrubs or small trees
- Heterophyllous
- Stylar base prominent on the berry ...21. *S. dolichostylum*
- Stylar base not prominent
- Lvs. 12-24 cm. long, fruits 10-12  
mm. in diam., pedicels robust 22. *S. arboreum*
- Lvs. 6-16 cm. long, fruits 7-9 mm.  
in diam., pedicels (dried) v.  
slender at base .....23. *S. micranthum*
- Lvs. of one form
- Tree 7m., pedicel and calyx pube-  
scent .....24. *S. cataractae*
- Shrub 2m., pedicel and calyx  
glabrous .....25. *S. capillipes*

# 1. *S. mammosum* L.

Gr. Fl. 442 : O. E. Schulz in Urb. Symb. Ant. 6, 204 : Britt. & Wils. Sci. Surv. Porto Rico 6, 168.

*Shrub* 1-1.5 m. high, densely hairy; prickles yellow, those on the stem distant, 8-15 mm. long by 5-7 mm. broad at the base, often recurved; those on the lvs. up to 2 cm. and not broadened so much at the base; *lvs.* ovate, 10-15 cm. long, angularly lobed. *Fls.* in

lateral few-fl. cymes; *pedicels* 6-10 mm. long; *cal.* lobes 5, awl-shaped, 5-8 mm. long, hairy but not prickly; *cor.* blue, lobes 5, oblong-lanceolate 18-24 mm. long; *berry* yellow, rounded, often constricted towards the apex, 3-6 cm. long, by 3-4 cm. diam., glabrous.

Trinidad : Herb. Trin. 2662, May 1865.

Waste ground, Trinidad.

West Indies, Central and Northern South America.

2. *S. quinquangulare* Willd. ex R. & S.

D.C. Prodr. 13. 239.

*Shrub*, 1-2 m. high; *branches* hirsute and armed with numerous yellowish, awl-shaped, somewhat flattened, straight or slightly reflexed prickles of unequal length, the longest 1 cm. long; *lvs.* usually 3-lobed, the middle lobe largest, truncate or wedge-shaped at the base, the lobes acute at the apex, 10-15 cm. long, including the petiole, 7-11 cm. broad, hirsute and prickly on both sides, the hairs adpressed and mostly simple, though sometimes stellate. *Cymes* 4-5 fl., 2-2.5 cm. long; *peduncles* about 1 cm. long, hirsute and prickly; *pedicels* slender, thickened at the apex, about 1 cm. long; *fls.* about 1 cm. diam.; *cal.* somewhat bell-shaped, about 4 mm. broad, lobes 5, ovate, obtuse, cuspidate, sometimes with a few prickles; *cor.* 5-lobed, lobes oblong-linear, acute, about 8 mm. long; *stam.* 5, about 6 mm. long; *fruits* yellow, glabrous.

Trinidad : Arima-Blanchisseuse Road, 7th mile (Herb. Trin. 11777, 29. 7. 27); Morne Bleu (Herb. Trin. 12307, 2. 12. 29); Arima-Blanchisseuse Road, 9th mile (Herb. Trin. 13581, 20. 4. 47); Broadway, 6735, 6467 in Herb. Kew; Fort George (Crueger, 1846) in Herb. Kew.

Roadsides Northern Range, Trinidad.

Venezuela, Colombia.

3. *S. ciliatum* Lam.

*S. aculeatissimum* Jacq. *sens. auct. et* O. E. Schulz, *non* Jacq., *teste* Bitter *in litt. ad Urb.*

Griseb. Fl. 442: O. E. Schulz in Urb. Symb. Ant. 66. 206; *ibid.* 8. 622 : Britt. and Millsp. Bah. Fl. 382 : Britt. & Wils. Sci. Surv. Porto Rico 6. 169.

*Shrub*, 0.5-1.5 m. high, the branches, petioles and leaf ribs thickly armed with straight, yellow spines, 2-16 mm. long; *lvs.* ovate in outline with angular lobes, 7-23 cm. long by 9-22 cm. broad, with scattered, stiff hairs on both sides or almost glabrous. *Fls.* in lateral few-fl. cymes; *cal.* lobes 5, ovate, acute, about one-third as long as the corolla accrescent on the fruit to 9 mm. strongly



armed with stout prickles; *cor.* white about 12 mm. broad; *berry* globose, scarlet, glabrous, 1-3.5 cm. diam.

Trinidad : Heights of Naranjo (Herb. Trin. 1900, 7. 9. 1862); Botanic Gardens (Herb. Trin. 5913, 20. 8. 1895); Heights of Oropouche (Herb. Trin. 7758, 23. 4. 1916); San Fernando (Herb. Trin. 11764, 14. 4. 26); Santa Cruz Valley (Herb. Trin. 13580, 12. 8. 47); St. Augustine (Herb. Trin. 13692, 11. 9. 47).

Roadsides and waste ground, Trinidad.

Southern U.S.A., Bermuda, West Indies, continental tropical America, Tropics of old world (*vide* Schulz).

#### 4. *S. hirtum* Vahl.

Gr. Fl. 441 : O. E. Schulz in Urb. Symb. Ant. 6. 217.

*Shrub*, 0.5-1.5 m. high, thickly clothed with stellate down and having scattered prickles up to 7 mm. long on the stems, leaf stalks and ribs; *lvs.* heart-shaped or roundish in outline, the lobes somewhat angular, not deeply cut, 10-36 cm. long by 7-25 cm. broad, the hairs scattered above and dense beneath. *Fls.* in lateral, subsessile, 6-8 fld. cymes; *pedicels* 8-9 mm. long; *cal.* 9 mm. long, deeply 5-lobed, the lobes ovate-oblong, pointed; *cor.* white, the lobes lanceolate; *berry* globose, yellow, 12-20 mm. diam. thickly covered with soft hairs.

Trinidad : San Fernando (Herb. Trin. 2669, 1. 9. 1864); Laventille (Herb. Trin. 4381, Nov. 1890); Maraval (Herb. Trin. 4496, 15. 4. 1891); Herb. Trin. 5046; Botanic Gardens (Herb. Trin. 5888); Belmont (Herb. Trin. 7883, Feb. 1916); Palmiste (Herb. Trin. 8372, 16. 7. 1916); Grande Rivière (Herb. Trin. 13575, 15. 6. 47).

Tobago : Menna Road, Mason Hall (Herb. Trin. 11121, 6. 6. 25); Store Bay (Herb. Trin. 11690, 8. 4. 26); Fort Hill (Herb. Trin. 11832, 13. 9. 27); N. Coast Rd. (Herb. Trin. 14523, 6. 12. 49).

Roadsides and waste ground, Trinidad and Tobago.

St. Vincent, Venezuela.

#### 5. *S. hyporrhodium* A. Braun & Bouché

O. E. Schulz in Urb. Symb. Ant. 6. 218 : Walp. Ann. 5. 563.

*Small tree*, 1.5-1.8 m. high, stellate hairy, *stems* angled, spines subincurved 1.5-5 mm. long, 1.2-4.5 mm. wide; *petioles* 4-11 cm. long, spiny; *lvs.* large, broadly ovate, acute, the base heart-shaped, shortly lobed, more densely hairy beneath than above. *Fls.* many in lateral scorpioid racemes, *pedicels* 9-10 mm. long, densely hairy; *cal.* 9 mm. long, the lobes ovate, obtuse; *cor.* white to lilac, lobes triangular-lanceolate, acute; *berry* globose 20 mm. diam., at first hairy, the hairs 2.5 mm. long, at length almost glabrous.

Trinidad : Mal d'estomac (Herb. Trin. 4496, 23. 8. 1891); Arima-Blanchisseuse Road, 10th mile (Broadway 6223, *ann.* 1926, in Herb. Kew); de Shack in Herb. Kew.

Venezuela.

6. *S. stramonifolium* Jacq.

Coco chat; dog-teeth.

Gr. Fl. 441 : O. E. Schulz in Urb. Symb. Ant. 6. 219.

*Shrub*, 0.5-1.5 m. high, stellate downy, the young branches, petioles and leaf ribs purplish, strongly armed on the branches, petioles and leaf ribs, the spines 18 mm. long or less, straight, or often recurved on the branches; *lvs.* broadly ovate in outline, with deep angular lobes, unequal sided at the base, 30 cm. long or less, spiny on both sides, the hairs above scattered, densely and finely woolly beneath. *Inf.* scorpioid-contracted, lateral, many-flowered, unarmed; *pedicels* 6-8 mm. long; *cal.* cup-shaped, 2.5 mm. long, shortly 5-lobed; *cor.* 2 cm. broad, lobes 5, lanceolate-oblong, densely hairy outside; *berry* globose, red, about 1 cm. diam. with short stellate hairs which are easily rubbed off.

Trinidad : Herb. Trin. 2661; Herb. Trin. 5047; Blue Basin (Herb. Trin. 5195, Dec. 1893); Herb. Trin. 5398; Botanic Gardens (Herb. Trin. 5918, 3. 6. 1889); Belmont (P. McLean 1906); Tamana (Broadway, 13. 1. 1915); Cedros (Herb. Trin. 7289, 2. 10. 1915); Belmont (Herb. Trin. 7847, Jan. 1915); Arima-Blanchisseuse Road 11-12th mile (Herb. Trin. 13582, 17. 8. 47).

Roadsides and waste ground, Trinidad.

Tropical South America.

7. *S. lanceifolium* Jacq.

Gr. Fl. 440 : O. E. Schulz in Urb. Symb. Ant. 6. 244.

Scandent *shrub*, up to 10 m., loosely stellate-pubescent and densely armed with recurved prickles 1-2 mm. long; *lvs.* ovate to lanceolate or elliptic, thin, entire or the base sinuate, 5-15 cm. long, the apex usually acute or acuminate, the base narrowed or rounded, *petioles* 1-6 cm. long, often densely prickly, the midrib commonly prickly beneath. *Inf.* lateral, few-flowered; *peduncles* as long as the petioles or shorter; *pedicels* 10-16 mm. long; *cal.* about 3 mm. long, stellate-hairy; *cor.* white or violet, about 2 cm. broad, its lobes oblong-lanceolate; *anths.* linear, about 6 mm. long; *berry* globose, red or orange, shining, 6-9 mm. diam.

Trinidad: Sieber 132 *ex* Schulz, not seen.

Guiana and West Indies.

The Sieber record is perhaps doubtful so there is no good record for Trinidad.



var. **brachyacanthum** (H.B.K.) O.E. Schulz

*S. brachyacanthum* H.B.K.

*S. obscurum* Sieb., *nom. nud.*

O. E. Schulz in Urb, *Symb. Ant.* 6, 247 : DC. *Prod.* 14, 224 : Sandwith in Kew Bull. 1938 p. 369.

*Lvs.* densely stellate-hairy beneath; above sometimes with minute recurved prickles on the main nerve, the lateral nerves impressed. *Peduncles* and *pedicels* somewhat woolly. *Pedicels* and *calyces* with minute, straight, conical prickles, 0.5-0.75 mm. long. *Infl.* often 8-flowered.

Trinidad : Chacachacare (Herb. Trin. 2663, 22. 4. 1866); Chacachacare (Crueger 258, 20. 10. 1861, in Herb. Kew); Monos (Herb. Trin. 7461, 27. 11. 1915); Gasparee (Herb. Trin. 10441, 2-7. 4. 21 = Britton 2780); Gasparee (Britton and Seaver, 31. 3. 21); Patos (Herb. Trin. 13029, 19. 11. 33); Teteron Bay (Herb. Trin. 13465, 22. 3. 38); Chacachacare (Herb. Trin. 14581, 1. 4. 1951); without locality, Sieber 19 and Lockhart *sine num.*, in Herb. Kew.

Tobago : Salem Charleston trace (Herb. Trin. 4792, 18. 9. 27); Scarborough (Herb. Trin. 14512, 5. 12. 49) Mt. Dillon (Herb. Trin. 14538, 7. 12. 49); Pigeon Hill (Sandwith 1803 in Herb. Kew, cited as *s. lancefolium* by Sandwith *loc. cit.*)

Hillsides and thickets in dry north-western districts of Trinidad and Tobago.

Venezuela, Mexico, Honduras.

The variety is very doubtfully distinct from the typical plant, and the characters assigned to it do not necessarily occur in correlation.

#### 8. *Solanum aripoense* sp. nov.

Frutex scandens, caulis, infra lignosus crebrisque spinis recurvatis instructus, supra inermis vel raris dissitis brevibus recurvatis spinis; folia late ovata, apice acuminata, basi cuneiformia vel obtusa, lamina in petiolum leviter decurrens, margine integro, supra scabrata raris brevibus stellatis pilis, infra molliter stellato-pilosa, longa 7-14 cm., lata 3.5-9 cm.; petioli longi 1-4 cm. Cymae floribus paucis, ex internodiis enatae; calyx lobis quinque linearibus fere usque ad basin divisus, in flore longus 8 mm., in bacca usque ad 10 mm. Corolla longa 1 cm., profunde divisa quinque lobis linearibus; stamina quinque; bacca matura non visa, immatura viridis, globosa, diam. 7 mm.

Climbing *shrub*, woody and densely recurved below, unarmed or with few, short, scattered recurved prickles above; *lvs.* broadly ovate, acute at the apex, wedge-shaped or obtuse at the base, the lamina slightly decurrent on the petiole, margin entire, rough above

with short, scattered, stellate hairs, softly stellate-hairy beneath, 7-14 cm. long by 3.5-9 cm. broad, *petioles* 1-4 cm. long. *Cymes* few-flowered, arising on the internodes; *cal.* 8 mm. long split nearly to the base into 5 linear lobes, increasing to 1 cm. in length on the fruit; *cor.* 1 cm. long, deeply divided into 5 linear lobes; *stam.* 5; ripe fruit not seen, immature berry green, globose, 7 mm. diam.

Heights of Aripo, Trinidad, Herb. Trin. 14151 (*the type*), R. E. D. Baker 24. 12. 1947; isotype in Herb. Kew.

Endemic, a scrambling and fairly high-climbing shrub known only from a small area of light open forest with dense undergrowth on limestone near the caves on Mt. Aripo, altitude ca. 2200 ft.

Apparently related to *S. lanceifolium* Jacq. but differing from it in the exceptionally long linear calyx-lobes and in being somewhat less prickly above on the leaves and young shoots.

#### 9. *S. jamaicense* Mill.

Gr. Fl. 441; O. E. Schulz in Urb. Symb. Ant. 6. 230; Britt. & Wils. Sci. Surv. Porto Rico 6. 170.

*Shrub*, 1-3 m. high, densely stellate hairy, the hairs rusty coloured, armed with recurved prickles 2.5-5 mm. long, on the stems, petioles and midribs of the lvs.; *lvs.* the superior ones often in pairs, *petiole* 0-7 mm. long, the blade angularly-lobed, wedge-shaped at the base, the apex usually acute, 7-26 cm. long by 5-20 cm. wide, thickly stellate-hairy on both sides. *Fls.* about 15 together in densely hairy lateral umbels; *peduncles* 0-12 mm. long; *pedicels* 4-7 mm. long; *cal.* 4 mm. long, minutely spiny, bell-shaped, the lobes lanceolate or linear, deeply parted; *cor.* white (or pale blue Sw.) about 1 cm. broad, lobes lanceolate, hairy outside; *berry* globose, red, 4-6 mm. diam. glabrous.

Trinidad: Herb. Trin. 2668, May, 1865; Naparima (Herb. Trin. 3029, 15. 10. 1873); Cocorite (Herb. Trin. 3877, 14. 8. 89); El Tucuche (Herb. Trin. 5252, 27. 2. 1893); Ortoire Ferry (Herb. Trin. 5754, 19. 9. 1893); Cedros (Herb. Trin. 7223, 20. 9. 15); Irois Forest (Herb. Trin. 8526, 13. 11. 16); Erin (Herb. Trin. 9114, 13. 5. 20); Las Lomas (Herb. Trin. 11704, Dec. 1925); Melajo Reserve (Herb. Trin. 13579, 24. 4. 47); St. Joseph (Herb. Trin. 13590, 2. 9. 47); Quinam (Herb. Trin. 14001, 30. 9. 47).

Tobago: N. Coast Rd. (Herb. Trin. 14526, 6. 12. 49).

Roadsides and waste places, Trinidad and Tobago.

West Indies, Costa Rica, tropical South America.

#### 10. *S. scabrum* Vahl

Gr. Fl. 440; O. E. Schulz in Urb. Symb. Ant. 6. 240; Sandwith in Kew Bull. 1938. p. 369.



Climbing *shrub*, somewhat thickly armed with recurved prickles, 2-3 mm. long, on the stems, petioles and midribs of the leaves, thinly clothed with stellate hairs; *petioles* 16-25 mm. long, leaf-blades oblong or elliptical, acute or acuminate at the apex, acute at the base, subentire or angularly lobed, 18 cm. long or less, sparsely hairy and rough on both sides. *Infl.* lateral in scorpioid racemes 10-15 fld.; *peduncles* 5-20 mm. long, rough; *pedicels* 6-10 mm. long; *cal.* bell-shaped, hairy and prickly, 4 mm. long, shortly 5-lobed, the lobes having a short point; *cor.* bluish, about 2.5 cm. diam., lobes oblong-lanceolate, having a short point, woolly outside; *style* hairy; *berry* globose, 10-13 mm. diam., glabrous or with few hairs.

Trinidad : San Fernando (Herb. Trin. 2667, 1. 9. 1864); St. Joseph (Herb. Trin. 4446, Nov. 1890); Botanic Gardens (Herb. Trin. 4694, Nov. 1890); Herb. Trin. 5397; Arima (Dannouse, *sine num.*, 1905); Moruga (Herb. Trin. 7583, 10. 2. 16); Moruga (Britton and Broadway, *sine num.* March 1919); Palmiste (Herb. Trin. 8370, 16. 7. 16); Belmont (P. McLean, *sine num.*, 4. 1. 17); St. Joseph (Herb. Trin. 13587, 2. 9. 47); Mayaro (Herb. Trin. 13731, 30. 12. 34).

Tobago: Speyside (Sandwith 1641 in Herb. Kew); N. Coast Rd. (Herb. Trin. 14527, 6. 12. 49).

Second growth, roadsides, &c., Trinidad and Tobago.

St. Vincent and Venezuela.

#### 11. *S. torvum* Sw.

O. E. Schulz in Urb. Symb. Ant. 6. 233 : Britt. and Millsp. Bah. Fl. 384 : Britt. & Wils. Sci. Surv. Porto Rico. 6. 170.

*Shrub*, densely stellate-woolly, prickly, 1-2 m. high; branches sparingly armed with nearly straight prickles 1-9 mm. long; *petioles* woolly and bearing a few prickles; leaf-blades, broadly ovate, deeply and angularly lobed or with a deeply wavy margin, 5-20 cm. long, acute or obtuse at the apex, truncate or somewhat heart-shaped at the base, rough above, minutely hairy on both sides, more densely so beneath, sometimes with a few prickles on the midrib. *Fls.* in lateral, shortly-stalked, many-fld. cymes; *pedicels* slender, 5-8 mm. long, glandular; *cal.* glandular, about 4 mm. long, lobes 5, deeply cut, ovate, acute; *cor.* white, 10-15 mm. broad, 5-lobed; *berry* yellow, globose, 10-14 mm. diam.

Trinidad : Herb. Trin. 2664; Laventille (Herb. Trin. 4556, 2. 12. 1890); L'Ebranche (Herb. Trin. 6720); Herb. Trin. 6883; San Fernando (Herb. Trin. 11763, 14. 4. 26); Melajo Reserve (Herb. Trin. 13574, 24. 4. 47); St. Augustine (Herb. Trin. 14268, 30. 3. 49).

Tobago : Scarborough (Herb. Trin. 11678, 8. 4. 26); Store Bay (Herb. Trin. 11689, 8. 4. 26); Fort Hill (Herb. Trin. 11836, 13. 9. 27); Hope (Herb. Trin. 14534, 6. 12. 49).

Roadsides and waste places, Trinidad and Tobago.

Tropics generally.

12. *S. subinerme* Jacq.

*S. Juripeba* Rich.

*S. heterophyllum* Lam.

Gr. Fl. 440 : O, E. Schulz in Urb. Symb. Ant. 6. 229.

Sprawling *shrub* about 3 m. high with prickly stems, densely stellate-woolly towards the apex, prickles recurved 2.5-6 mm. long; *lvs.* single or in pairs (sometimes threes); *petiole* 1-2 cm. long, woolly, sometimes spiny; leaf blades ovate or elliptical, entire wavy or angularly lobed, 6-17 cm. long usually unarmed or with a few straight spines, with scattered minute hairs above, more numerous beneath and dense on the young leaves. *Inf.* in many-fld. scorpioid racemes, *peduncles* woolly; *cal.* unarmed, 2.5-3 mm. long, truncate with 5 minute teeth; *cor.* 3-4 cm. diam., mauve, lobes oblong lanceolate, woolly on the outside; *berry* yellow, globose about 10 mm. in diam., glabrous.

Trinidad : Herb. Trin. 1126; Herb. Trin. 1901; Herb. Trin. 1905; Cedros (Herb. Trin. 1906, Nov. 1864); St. Clair (Herb. Trin. 3587, 12. 3. 89); Botanic Gardens (Herb. Trin. 3615, 1888); Chaguanas (Herb. Trin. 3711, 17. 4. 1889); Herb. Trin. 4574; Laventille (Herb. Trin. 4691, Nov. 1890); Aripo Savanna (Herb. Trin. 5099, 9. 1. 1893); Herb. Trin. 5404; Aripo Savanna (Herb. Trin. 5681, 1893); Herb. Trin. 5916, 9. 2. 1861; Maraval (Herb. Trin. 5924, 1891); Maraval (5986, 1891); Arima (Dannouse, 1905); St. Ann's (Tredholm, 1. 9. 1906); Herb. Trin. 6435; Cedros (Herb. Trin. 8055, 10. 6. 15); Sangre Grande (Herb. Trin. 9431, 16. 2. 15); Morne Bleu (Herb. Trin. 11565, 30. 4. 26); Piarcro Savanna (Herb. Trin. 13577, 3. 8. 47); St. Augustine (Herb. Trin. 13578, 31. 7. 47); Melajo Reserve (Herb. Trin. 13576, 24. 4. 47).

Hedges and waste ground, Trinidad.

Continental tropical America,

13. *S. ierense* Britt.

Bull. Torrey Bot. Club. 48. 338.

*Shrub* about 2 m. high, the branches glabrous and occasionally bearing a few prickles, the young twigs stellate-pubescent; *petioles* slender, 4-10 mm. long; *lvs.* thin, ovate or elliptical-ovate, 5 cm. long or less, sparingly stellate-pubescent above, densely so beneath, the apex acute or obtuse; *fls.* solitary or in twos (rarely threes) in



the axils on slender pubescent stalks 10-25 mm. long; *cal.* stellate-pubescent, 5-7 cleft, the lobes linear-lanceolate, acuminate 3 mm. long; *cor.* white, 5-6 cleft, the lobes linear-lanceolate, acuminate, 3 mm. long; *cor.* white, 5-6 cleft, the lobes linear-lanceolate, acuminate, 10 mm. long; *stams.* 5 or 6; *anths.* 8 mm. long; *fil.* 1-2 mm. long; immature *berry* globose, about 7 mm. diam.

Trinidad : Monos (*sine num.* Williams, Oct. 1917); Chacachacare (Herb. Trin. 10029, 3. 4. 21); Chacachacare (Herb. Trin. 11061, 27. 5. 25; Chacachacare (Herb. Trin. 11730, 20. 6. 27); Patos (Herb. Trin. 11845, 9. 9. 27).

Dry Hillsides, Bocas Islands, Trinidad.

Endemic.

14. *S. Karstenii* Dunal

*S. polygamum* Vahl of Gr. Fl. 442 *pro parte, non* Vahl  
*S. Grisebachianum* Ktze.

O. E. Schulz in Urb. Symb. Ant. 6. 174.

Small *shrub* with slender branches, densely clothed with minute stellate hairs; *lvs.* usually in pairs of two forms, the larger oblong, the apex obtuse or rounded, 6-12 cm. long, by 18-33 mm. broad, the smaller elliptical to obovate, often resembling stipules 12-30 mm. long. *Fls.* clustered laterally, 3-6 on slender stalks 3-6 mm. long; *peduncles* absent or barely produced; *cal.* top-shaped, 2-3 mm. long, densely stellate-hairy, lobes 5, oblong-ovate, the apex rounded; *cor.* white, lobes ovate-lanceolate, 5 mm. long, hairy without, glabrous within; *berry* globose, 10 mm. diam.

Trinidad : Monos (Herb. Trin. 1907, Jan. 1865); Monos (Herb. Trin. 7443, 27. 11. 16); waste places, Port-of-Spain (Purdie, 77, in Herb. Kew).

Venezuela.

15. *S. asperum* L. C. Rich.

*S. Radula* Vahl

Gr. Fl. 438 *p.p.*: O. E. Schulz in Urb. Symb. Ant. 6. 180.

*Shrub* or small *tree* 1-2 m. high, stems and *lvs.* very rough, densely stellate-hairy; *lvs.* lanceolate or oblong-lanceolate, acuminate at both ends, entire, 6-14 cm. long, by 1-3 cm. broad. *Infl.* many fld. terminal, densely hairy, *peduncles* 2-9 cm. long; *pedicels* 3-4 mm. long; *cal.* 4 mm. long; *cor.* white or pale yellow, 5-7 mm. long; *berry* globose 5-7 mm. diam., with scattered hairs.

Trinidad : Herb. Trin. 2230 (Crueger, 11. 10. 1846); Chacachacare (Herb. Trin. 1904, 4. 10. 1864); Botanic Garden (Herb. Trin. 3883, Aug. 1889); Blue Basin (Herb. Trin. 5917, Dec. 1893); St. Ann's (Herb. Trin. 9199, March 1920); Arima (Herb. Trin.

13296, 19. 3. 38); Arima (Herb. Trin. 13583, 17. 8. 47); Mt. St. Benedict (Herb. Trin. 13586, 30. 8. 47).

Second growth, Trinidad.

Tropical South America.

16. *S. bicolor* Willd.

*S. callicarpifolium* Kth. & Bouché *p.p.*

Gr. Fl. 438 : O. E. Schulz in Urb. Symb. Ant. 6. 181.

*Shrub* or small *tree*, 1-2 m. high, the stems glabrous below, minutely and densely stellate-hairy above; *petioles* 1-2.5 cm. long; leaf blades elliptical, the apex shortly acuminate and tapering into the petiole, entire, 5-16 cm. long by 2-7 cm. broad, minutely stellate-hairy and rough above, densely woolly and greyish beneath. *Infl.* terminal, many fld., woolly; *cal.* 4-5 mm. long, deeply lobed, densely woolly; *cor.* white, 10-14 mm. diam., deeply lobed, the lobes oblong-elliptical, woolly outside; *anths.* 2 mm. long, twice as long as the filaments; *style* glabrous; *berry* globose 6-8 mm. diam.

Trinidad : Chaguanas (Herb. Trin. 1903, 17. 9. 1864); Chaguanas (Herb. Trin. 3710, 17. 4. 1889); Diego Martin (Herb. Trin. 3918, 30. 7. 1889); Dibé Valley (Herb. Trin. 4766, 26. 8. 1892); Santa Cruz (P. McLean, *sine num.*, 1895); Maraval (Herb. Trin. 5919, August 1842); Carapichaima (Dannouse, *sine num.*, 4. 3. 1903); Arima (Dannouse, *sine num.*, 2. 2. 1905); Cedros (Herb. Trin. 7382, 16. 11. 1915); Patos (Williams, *sine num.*, 25. 6. 17); St. Augustine (Herb. Trin. 13572, 5. 7. 47); St. Augustine (Herb. Trin. 13573, 31. 7. 47); Caroni (Herb. Trin. 13589, 5. 9. 47); St. Augustine (Herb. Trin. 14302, 28. 4. 49).

Tobago : Fort Hill (Herb. Trin. 11833, 13. 9. 27); Government Farm (Herb. Trin. 14552, 8. 12. 49).

Roadsides, hedges and waste ground, Trinidad and Tobago.

Central and South America, St. Vincent.

17. *S. erianthum* D. Don

*S. verbascifolium* Jacq. *et auct. omn., non L.*

Gr. Fl. 438 : O. E. Schulz in Urb. Symb. Ant. 6. 182 : Urban in Fedde Rep. Sp. Nov. 16. 40 : Urb. Symb. Ant. 8. 619 : Britt. & Wils. Sci. Surv. Porto Rico 6. 168.

*Shrub* or small *tree*, 1.8-6.5 m. high, stems rough, woolly, more so towards the top; *petioles* 1-7.5 cm. long; *lvs.* ovate-elliptic, pointed, entire, the base rounded, 11-30 cm. long by 6-22 cm. wide, minutely hairy and rough above, densely woolly and rough beneath, the younger yellowish. *Infl.* terminal, many-fld., woolly; *cal.* 4-5 mm. long, 5-lobed, half as long as the corolla, lobes ovate-oblong; *cor.* white 10-15 mm. diam. deeply lobed, the lobes ovate-oblong, woolly outside; *berry* yellow, globose, 1-2 cm. diam.



Trinidad : Chacachacare (Herb. Trin. 1902, April 1866); St. Joseph (Herb. Trin. 4444, Nov. 1890); Laventille (Herb. Trin. 4610, Nov. 1890); Maracas Bay (Herb. Trin. 6755); Pt. Gourde (P. McLean, 9. 9. 12); Monos (Herb. Trin. 7460, 27. 11. 15); Gasparee (Herb. Trin. 9462, 11. 3. 20); Patos (Herb. Trin. 13036, 19. 11. 33); Morne Coco Road (Herb. Trin. 13588, 27. 8. 47); North Coast Road (Herb. Trin. 14144, 15. 11. 47).

Waste ground and second growth, N. W. peninsula and Bocas Islands, Trinidad.

Widely distributed in tropical regions.

var. **adulterinum** (Hamilton *ex* G. Don) *comb. nov.*

*S. verbascifolium* L. var. *adulterinum* Hamilton *ex* G. Don.  
*S. Hazenii* Britt.

G. Don, Gen. Syst. 4. 415; O. E. Schulz in Urb. Symb. Ant. 6. 185 : Britton in Bull. Torr. Bot. Club 48. 338.

Leaves thinly stellate-pilose or glabrescent above.

Seiber 21 in Herb. Kew; Britton and Hazen 156 (Saddle Road, not seen, the *type* of *S. Hazenii*).

Cuba, Jamaica and Grenada (*ex* Schulz); "East India" (the *type* locality, *ex* Schulz).

18. ***S. seaforthianum*** Andr.

Gr. Fl. 437 : Britt. & Wils. Sci. Surv. Porto Rico 6. 167 : O. E. Schulz in Urb. Symb. Ant. 6. 167 : Sandwith in Kew Bull. 1938. 369.

*Climber*, nearly or quite glabrous; *petioles* 2-3 cm. long, *lvs.* mostly pinnately divided, thin, 16 cm. long or less, the segments ovate, oblong or lanceolate. *Fls.* lilac-coloured in terminal or lateral many fld. drooping, glabrous, branched panicles; *cal.* 1 mm. long, broadly obconical, barely toothed; *cor.* deeply 5-lobed, 1-1.5 cm. diam., the lobes ovate with fringed margins; *style* incurved; *berry* red, globose, 6-12 mm. diam.

Trinidad : Herb. Trin. 1121, 1125; Port-of-Spain (Herb. Trin. 3834, 24. 6. 1889); Herb. Trin. 5920; Erin (Herb. Trin. 7328, 10. 11. 15); Chacachacare (Herb. Trin. 8071, 4. 12. 12); Palo Seco (Herb. Trin. 10886, 31. 12. 24); San Fernando Hill (Herb. Trin. 10899, 1. 1. 25); San Fernando Hill (Herb. Trin. 11761, 14. 4. 26); S.W. Reserve (Herb. Trin. 14479, 4. 11. 49); Chacachacare (Herb. Trin. 14681, 1. 4. 51).

Tobago : Friendsfield Road (Sandwith 1674 in Herb. Kew).  
Hedges and thickets, Trinidad and Tobago.

Central and South America and West Indies.

19. *S. sempervirens* Dunal

*S. laetum* Miq. Stirp. Surinam Sel. 135, *non* Kunze; DC. Prodr. 13. 88.

*Climber*, stems slender, the younger ones minutely hairy; *petioles* 1-2.5 cm. long; *lvs.* somewhat leathery, ovate, elliptical or oblong, about 10 cm. long, glabrous, unequal sided, entire or only slightly wavy. *Fls.* purple, fragrant, 2-3 cm. broad, in drooping, terminal, many-fld. branched, pubescent panicles, leafy at the base, the leaves small; *cal.* cup-shaped, 2 mm. long, broadly 5-toothed; *cor.* lobes oblong-lanceolate, pubescent without; *anths.* 5, 4 almost sessile and 1 with a filament 3 mm. long; *style* densely hairy; *berry* bluish.

Trinidad: Siparia (Herb. Trin. 9728); Fyzabad (Herb. Trin. 13090, 9. 2. 35).

Forests, south-west Trinidad.

Guiana, Brazil.

Perhaps only a form of *S. pensile* Sendtn. with glabrescent leaves and stems.

20. *S. nigrum* L. *var. americanum*

Agouma; Calalu

(Mill.) O. E. Schulz

*S. americanum* Mill.

*S. nodiflorum* Jacq. *sensu* Dun. *pro parte, non* Jacq.

Gr. Fl. 437: Britt. & Wils. Sci. Surv. Porto Rico 6. 166: O. E. Schulz in Urb. Symb. Ant. 6. 160: Sandwith in Kew Bull. 1938. p. 369.

Annual *herb.* 30-80 cm. high, glabrous or pubescent with simple hairs; *petioles* 0.5-2 cm. long; *lvs.* ovate, entire, sometimes wavy, thin, unequal sided, 14 cm. long or less, glabrous or pubescent; *fls.* white, 8-10 mm. broad, borne 3-10 on lateral, slender stalked umbels; *peduncles* 7-17 mm. long; *pedicels* 5-10 mm. long; *cal.* lobes 5, much shorter than the corolla; *cor.* lobes 5, deeply divided; *berry* glabrous globose black, 8-10 mm. diam. on nodding stalks. A variable plant.

Trinidad: Herb. Trin. 1123, 2232; San Fernando Hill (Herb. Trin. 2666, 15. 8. 1864); Royal Botanic Gardens (Herb. Trin. 3825, 17. 6. 1889); Royal Botanic Gardens (Herb. Trin. 4429, 1890); Carapichaima (Herb. Trin. 5717, 1892); Herb. Trin. 5883; Cedros (Herb. Trin. 7186, 15. 9. 15); Erin. (Herb. Trin. 7334, 11. 11. 15); Momos (Herb. Trin. 7449, 27. 11. 15); Moruga (Herb. Trin. 7588, 8. 2. 16); Gasparillo (Herb. Trin. 8380, 30. 12. 14); Los Bajos (Herb. Trin. 10892, 31. 12. 24); Maracas Bay (Herb. Trin. 14404, 31. 7. 49).

Tobago: Opposite Melville Island (Herb. Trin. 11405, 11418, 25. 10. 25); Bacolet (Sandwith 1703 in Herb. Kew); Scarborough (Herb. Trin. 14514, 5. 12. 49).



Cultivated and waste ground, also coastal rocks, Trinidad and Tobago.

South and Central America and West Indies (the variety).

21. ***S. dolichostylum*** O. E. Schulz

O. E. Schulz in Urb. Symb. Ant. 6. 158 : Sandwith in Kew Bull. 1938. 369.

*Shrub*, 0.6 m. high, glabrous, branches very leafy; *lvs.* entire, in pairs of two distinct forms, the larger elliptical or obovate, the apex acute or acuminate, the base unequal; *petiole* grooved, 7-20 mm. long, the blades 6-18 cm. long, the smaller of the pair sessile or nearly so, obovate or rounded, 12-34 mm. long. Racemes dense, about 20-flid., opposite the *lvs.*; *peduncles* 4-6 mm. long; *pedicels* 10 mm. long or less, threadlike, thickening on the fruit; *cal.* funnel-shaped, the lobes acuminate, unequal, 1 longer than the other 4; *cor.* white, 4 mm. long, the lobes lanceolate, acuminate; *berry* globose with a small point at the apex (1 cm. diam. in doubtfully mature specimens).

Trinidad : Herb. Trin. 6779; Arima (Danmrose, 1900, 6 7. 1903); Maracas Falls (Broadway 5362, Britton, Hazen and Coker 1636, both in Herb. Kew); Maracas Falls (Herb. Trin. 14357, 6. 6. 49); Tunapuna dry river (Herb. Trin. 14438, October, 1949).

Tobago : Caledonia (Sandwith 1731 in Herb. Kew); Great Dog River (Eggers 5795 in Herb. Kew., *type*).

Damp, rocky ravines, Trinidad and Tobago.

Endemic.

22. ***S. arboreum*** H.B.K.

O. E. Schulz in Urb. Symb. Ant. 6. 167.

*Shrub* or small *tree*, glabrous; *lvs.* the upper ones usually in unequal pairs, the larger with *petioles* 1-3 cm. long, the blades elliptical or obovate, unequal-sided, shortly acuminate at the apex, 12-24 cm. long; the smaller one of the pair rounded or obovate, with a barely produced point at the apex, 2.5-6.5 cm. long, 1.5-5 cm. broad, sessile or barely stalked. *Fls.* in few-flid. umbels opposite the leaves; *berry* globose, 12 mm. in diam., glabrous on stalks 2.5-3 cm. long.

Trinidad : Heights of Aripo (Herb. Trin. 9847, Jan. 1922); Morne Bleu (Herb. Trin. 11884, 15. 11. 27); Aripo Cave (Herb. Trin. 14149, 24. 12. 47); El Tucuche (Britton, Hazen and Mendelson 1339 in Herb. Kew).

Wet mountain forests, Trinidad.

Margarita, Venezuela and Colombia.

23. *S. micranthum* Willd. ex R. & S.

*S. triste* Jacq. *sensu* Gr., *non* Jacq.

Gr. Fl. 437: O. E. Schulz in Urb. Symb. Ant. 6. 166.

*Shrub*, glabrous; *lvs.* thin usually in pairs, one of the pair much smaller, glabrous or sometimes with a few long hairs on the midrib beneath; the larger ovate, broadly ovate or elliptical, acuminate, 6-16 cm. long, *petiole* 8-20 mm. long; the smaller ovate or rounded, 2.5-6 cm. long with a *petiole* 2.5 mm. long. *Fls.* in lateral many-fl. slender stalked cymes, slightly longer than the *petioles*; *cal.* 1.5 mm. long, lobes 5, rounded; *cor.* 5-10 mm. broad, lobes 5, lanceolate-linear; *berry* globose, 7-9 mm. diam.

Trinidad: Herb. Trin. 1120, 2670; Belmont (Herb. Trin. 3920, July 1889); Herb. Trin. 4562, 4695; St. Joseph Road (Herb. Trin. 4792); Herb. Trin. 5917; El Tucuche (Herb. Trin. 6822, 1898); Arima (Dannouse, 3. 11. 1903); Sans Souci (Herb. Trin. 11889, 5. 12. 27); without locality, Sieber 22 in Herb. Kew, (cited by Gr. *loc. cit.*).

Venezuela and Colombia.

24. *Solanum cataractae* Britton mss., *sp. nov.*

Arbor 7 m., rami glabri; folia solitaria vel gemina, lamina ovata, lateribus inaequalibus, in petiolum contracta, glabra paucis pilis infra in axillis collatis exceptis, marginibus undulatis, apice acuta vel obtusa, long. 13-29 cm., lat. 6-12 cm.; petioli long. 1-2 cm. Flores in racemis scorpioidibus et pubescentibus terminalibus vel lateralibus dispositi; pedunculi subrobusti, long. 1-1.5 cm.; pedicelli florum circa 5 mm. longi, baccarum maturarum 10-15 mm.; calyx long. 2-3 mm., pubescens, 5-lobatus vel dentatus; corolla alba, profunde lobata; bacca globosa raris brevissimis pilis instructa.

*Tree* 7 m., branches glabrous; *lvs.* single or in pairs, elliptical, unequal sided, tapering into the petiole, glabrous except for a few hairs clustered in the axils beneath, the margins wavy, the apex acute or obtuse, 13-29 cm. long, by 6-12 cm. wide, *petioles* 1-2 cm. long. *Fls.* in lateral or terminal, scorpioid, pubescent racemes; *peduncles* stoutish 1-1.5 cm. long; *pedicels* about 5 mm. long, 10-15 mm. on the fruit; *cal.* 2-3 mm. long, pubescent, 5-lobed or toothed; *cor.* white, deeply lobed; *berry* globose, with minute, scattered hairs.

Trinidad: Maracas Waterfall (Britton, Hazen and Mendelson, 1641) 10. 4. 1920. In Herb. Trin. (9492, the *type*) and U.S. Nat. Herb.

Endemic, known only from the one locality, and not found there on recent search.



25. *S. capillipes* Britt.

Bull. Torrey Bot. Club 48. 338.

*Shrub* about 2 m., the slender young branches hairy, the older branches glabrous; *lvs.* oblong-elliptical to elliptical, lanceolate, membranous, glabrous, 10-15 cm. long, 3-6 cm. wide, acuminate, *petiole* 1 cm. long. *Fls.* in lateral few-fl'd. glabrous racemes; *peduncles* very slender, 2.5 cm. long or less; *pedicels* threadlike, spreading, 1-3 cm. long; *cal.* 5 mm. long, glabrous or with few, scattered simple hairs, 5-lobed or toothed; *cor.* white, deeply lobed, 5-6 mm. broad; *stam.* all alike; *anths.* 1.5 mm. long, nearly sessile; *berry* globose, 6-7 mm. diam.

Trinidad: Moruga (Herb. Trin. 7909, 14. 2. 16); Ortoire River (Herb. Trin. 10030, 25. 3. 21), *type*, duplicates in Herb. Kew and in Herb. New York Bot. Gard.

Endemic, so far as known.

## Doubtful species

*S. pentadactylum* G. Don

G. Don. Gen. Syst. Gard. & Bot. 4: O. E. Schulz in Urb. Symb. Ant. 6. 248: Dunal in DC. Prodr. 13. 1. p. 69.

*Shrub* up to 1 m. unarmed, glabrous; *lvs.* large runcinately sinuate with acute segments, glabrous, shining above; *corymbs* short, terminal, or in the forks of the stems. *Fls.* blue; *fruit* large, "size of an apple", yellow, ovate, furnished with five regular protuberances at the base.

St. Ann's and Port-of-Spain (*ex* Don). otherwise unknown, possibly cultivated.

Trinidad (*ex* Don, otherwise unknown).

## 10. CYPHOMANDRA Sendtn.

*Shrubs* or small *trees*, unarmed. *Lvs.* entire, 3-lobed or pinnately divided. *Fls.* usually in lateral, simple racemes or racemes of cymes (often scorpioid), rarely in corymbose panicles. *Calyx* short, 5-fid. *Corolla* with a short tube and deeply 5-lobed limb. *Stamens* inserted in the throat of the corolla; *filaments* short, often joined at the base, *connective* thickened. *Ovary* 2-locular, with numerous ovules. *Berry* ovoid, oblong or globose, fleshy, often large.

*C. betacea* (Cav.) Sendtn., the tree tomato, is occasionally cultivated.

1. *C. tobagensis* Sandwith

Sandwith in Kew Bull. 1938. p. 370.

Small *tree*, branches shortly and densely glandular-pilose when young, later becoming glabrous; *lvs.* entire, simple, solitary or in

slightly unequal pairs, the larger ovate-oblong or ovate, 9.5-21 cm. long, 5-11 cm. wide, acuminate at apex, rounded and unequal sided at base, the smaller ovate or almost orbicular, distinctly but not deeply cordate at base, shining above, minutely glandular along the nerves on both sides, otherwise glabrous, *petioles* 1.8-4 cm. long. *Cal.* cup-shaped, 2-5 mm. long, 4.5 mm. wide, glandular, its lobes broadly ovate-triangular, 0.5-1 mm. long; *cor.* dirty whitish-green, tube very short, lobes narrowly lanceolate, about 1 cm. long, 2.5 mm. wide; *anth.* amethyst, straight, about 6.5 mm. long, *connective* dorsally thickened and about as broad as the anther loculi; *fruit* ovoid, acuminate, 2.6 cm. long, 1.3 cm. in diameter.

Tobago: Near Parlatuvier, in forests of Englishman's Bay (Broadway 3879, April 15th, 1912, the *type*, in Herb. Kew); Roxborough-Parlatuvier Road in forest reserve of Main Ridge (Sandwith 1773, Oct. 14th, 1937, in Herb. Kew); Bloody Bay, Roxborough Rd. (Herb. Trin. 12955, Swabey 9. 9. 33).

Endemic to Tobago.

## 11. NICOTIANA L.

Narcotic *herbs* or *shrubs*, clothed with sticky hairs. *Lvs.* sessile, entire or slightly wavy. *Fls.* white, mauve or greenish yellow in terminal panicles or racemes; *cal.* tubular, bell-shaped or ovoid, 5-lobed; *cor.* long, tubular, lobes 5, spreading, plaited in bud; *stam.* 5, included, inserted into the lower part of the corolla tube; *stig.* capitate, 2-lobed; *caps.* 2-valved, *seeds* minute.

### 1. *N. plumbaginifolia* Viv.

DC. Prodr. 13 569.

Annual *herb* about 70 cm. high, stems branched, slightly rough and minutely hairy; *lvs.* sessile, entire, the lower obovate-spathulate, more or less obtuse and nearly glabrous up to 27 cm. long, the upper oblong-lanceolate, semi-amplexicaul, acute, slightly hairy, the margins wavy. Racemes terminal, sometimes slightly branched; *cal.* tubular, slightly hairy, five-lobed 1 cm. long; *cor.* 3-7 cm. long, salver-shaped, with a slender, hairy tube somewhat swollen above, three times as long as the calyx, five-lobed, the petals spreading; filaments filiform, very short, inserted in the corolla tube; *capsule* ovate, glabrous, 9 mm. long, 6 mm. broad.

Trinidad: Herb. Trin. 1124; St. Augustine (Herb. Trin. 13466, March 1938); St. Augustine (Herb. Trin. 14301, 11. 4. 49).

Cultivated land, naturalized.

Widely distributed in tropical America.



## 12. BROWALLIA L.

Annual *herbs*. *Lvs.* entire, membranous. *Fls.* blue, solitary. *Cal.* tubular bell-shaped, 5-toothed. *Cor.* salver-shaped, plaited in the bud, the tube long, lobes 5, notched, imbricate, the superior exterior. *Stam.* 4, in pairs, the posterior shorter. *Caps.* shortly stalked, 2-celled, the valves 2-fid.

1. *B. americana* L.

*B. demissa* L.

*B. elata* L.

*B. americana forma elata* (L.) O. Ktze.

Gr. Fl. 431 : Britt. & Wils. Sci. Surv. Porto Rico 6. 178.

Plant 20-30 cm. high, hairy or glabrous; *lvs.* ovate, 10 cm. long or less, *petioles* 1-3 cm. long; *pedicels* about 2 mm. long; *cal.* about 7 mm. long, hairy; *cor.* tube slender about 14 mm. long, the limb purplish, yellow at the throat, 15 mm. diam.; *caps.* membranous about 1 cm. long, including the persistent calyx lobes, the stalk 1-1.5 cm. long.

Trinidad : Sieber *ex* Grisebach; Herb. Trin. 730 (Crueger, 1. 2. 1844); Herb. Trin. 2206; Heights of Aripo (Herb. Trin. 9846, Jan. 1922); Heights of Aripo (Herb. Trin. 14431, 11. 10. 49).

Tobago : Scarborough (Herb. Trin. 14550, 7. 12. 49).

Roadsides, &c., not uncommon.

Central and South America and West Indies.

## 13. BRUNFELSIA L.

*Shrubs* or small *trees*. *Lvs.* entire. *Fls.* solitary, terminal or lateral. *Cal.* tubular or bell-shaped, 5-lobed. *Cor.* salver-shaped, lobes 5, somewhat unequal, rounded, imbricate, plaited in the bud, the two posterior exterior. *Stam.* 4, one pair longer than the other, inserted in the tube and included. *Stig.* 2-lobed. *Caps.* rounded, leathery or fleshy, 2-celled, the valves undivided.

1. *B. uniflora* (Pohl.) D. Don var. *pubescens* (Benth.) comb. nov.

*B. Hopeana* (Hook.) Benth. var. ? *pubescens* Benth.

*B. Hopeana* (Hook.) Benth. of Griseb. Fl. *quoad pl. trin.*

*B. Lockharti* Hort. Belg. *ex* Heynh. Nom. 2. 79, *nomen tantum?*

Benth. in DC. Prodr. 10. 200 : Gr. Fl. 432.

*Shrub*; *lvs.* elliptical, shortly pointed 3.5-5 cm. long, *petioles* about 3 mm. long, the young branchlets, *petioles*, leaf margins and midribs all conspicuously pubescent; *cal.* tubular, slightly

larger at the top, 15-19 mm. long, the lobes about 2 mm. long; cor. blue, the tube slightly exceeding the calyx; the limb spreading, 2-3 cm. diam. (pericarp dry, capsular (Gr.)).

Trinidad : Lockhart 197 in Herb. Kew; Monos (Herb. Trin. 1916, 20. 7. 1867); Botanic Gardens (Broadway 5693 in Herb. Kew).

Monos, Margarita Islands and cultivated.

Bentham suggested that this plant which has a peculiar indumentum and may prove to have a special distribution may turn out to be a distinct species, but until a revision of *Brunfelsia* has been undertaken we feel compelled to retain it under the variable species *B. uniflora* with which *B. Hopeana* has been united by Don, Bentham, Schmidt (in Mart. Fl. Bras.) and Bailey (Stand. Cyclop. Hortic.) although only Don has recognized the legal precedence of the epithet *uniflora*.

### Doubtful Record

#### *B. americana* L.

*B. fallax* Duch.

Benth. in DC. Prodr. 10. 200 : Britt. & Wils. Sci. Surv. Porto Rico 6. 178 : Gr. Fl. 432. *sub B. fallax*.

This species differs essentially from the previous one in the yellow corolla, the tube of which is several times longer than the calyx, itself 8 mm. long.

Sieber 26 in Herb. Kew. (*ex Benth. loc. cit.*), not otherwise known from Trinidad.

West Indies.

### 14. DATURA

Erect *shrub*. Flowers solitary in the axils, large and drooping; Calyx tubular 5-cleft; corolla funnel-shaped, the spreading limb shortly 5-lobed; stamens 5, included; ovary 2-celled; style filiform, fruit capsular, dehiscent, unarmed, with numerous seeds.

#### 1. *D. suaveolens* H. & B. ex Willd.

*Brugmansia suaveolens* (H. & B.) Bercht. and Presl.

Gr. Fl. 433 : Britt. & Wils. Sci. Surv. Porto Rico. 6. 173 : Urban Symb. Ant. 4. 553 and 8. 626 : DC. Prodr. 13. 545.

Erect, much branched *shrub* up to 4 m. in height, twigs and leaves finely pubescent or nearly glabrous. Lvs. ovate or elliptic, up to 30 cm. long, acute, entire, narrowed at the base; petioles much shorter than the laminae. Peduncles axillary, up to 6 cm.



long. *Flrs.* few, large, conspicuous and drooping; *calyx* tubular, narrowed towards the base, up to 12 cm. long, with 5 acute lobes; *cor.* white, green-veined, 20-30 cm. long, narrowly tubular within the calyx, inflated above, campanulate-spreading at the apex with 5 subulate teeth, 5-10 mm. long; *stam.* 5, included, the anthers coherent; *ovary* bilocular with numerous ovules. *Fruit* capsular, fusiform, 6-12 cm. long, unarmed; *seeds* numerous, compressed, irregularly roughened.

Trinidad : Diego Martin (Herb. Trin. 14558, 2. 3. 50); Santa Cruz (Herb. Trin. 14596, 21. 5. 50).

In second growth, apparently naturalized. This and other species of *Datura* are sometimes seen in gardens.

West Indies, continental tropical America.