

PROPERTY OF THE BOTANY DEPARTMENT

DO NOT REMOVE FROM THE HERBARIUM

Vol. II.]

[Part V.

FLORA

OF

TRINIDAD AND TOBAGO

PERSONALES
SCROPHULARIACEAE
LENTIBULARIACEAE
GESNERIACEAE
BIGNONIACEAE
PEDALIACEAE
ACANTHACEAE

Price: — — \$1.20



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COHORT 9. PERSONALES

Herbs or sub-shrubs

Insectivorous, plants of water or damp ground, lvs. in rosettes or on stolons.....2.

Not insectivorous, rarely aquatic, lvs. usually cauline

Ovary 1-celled, ovules on parietal placentas2. **Lentibulariaceae**

Ovary 2-celled, ovules on axile placentas

Lvs. viscid-pubescent, with mucilage glands on the lower surface, ovary cells divided by a false septum3. **Gesneriaceae**

Lvs. not viscid, without mucilage glands, ovary cells not divided by a false septum5. **Pedaliaceae**

Branchlets and lvs. with cystoliths (except in *Aphelandra*), ovules with hook-like funicles, usually few (many in *Ruellia*)6. **Acanthaceae**

Branchlets and lvs. without cystoliths, ovules not with hook-like funicles

Twining, ovules up to 2 in each cell6. **Acanthaceae**

(*Mendoncia*,
Thunbergia)

Never twining, ovules many in each cell

Fls. in dense bracteate spikes or spike-like racemes6. **Acanthaceae**

(*Elytraria*,
Staurogyne)

Infis. lax and leafy or flowers solitary or few together1. **Scrophulariaceae**

Trees, shrubs or woody climbers

Ovules on parietal placentas, fruit gourd-like, indehiscent4. **Bignoniaceae**

(*Crescentia*)

Ovules on axile placentas, fruit not gourd-like, dehiscent

Lvs. mostly compound, ovules numerous, seeds winged1. **Bignoniaceae**

Lvs. simple, ovules very few, seeds unwinged6. **Acanthaceae**

FAMILY 1. SCROPHULARIACEAE

By R. E. D. BAKER*

Herbs or *sub-shrubs* (the Trinidad species), rarely small *trees*. *Leaves* alternate, opposite or verticillate. *Stipules* none. *Flowers* hermaphrodite, zygomorphic. *Calyx* imbricate or valvate. *Corolla* gamopetalous; limb 4-5 lobed, often more or less 2-lipped, lobes imbricate. *Stamens* often 4, didynamous, or 2, inserted on the corolla-tube and alternate with the lobes, the fifth (adaxial) stamen represented by a staminode, or absent, rarely perfect; *filaments* free from each other; *anthers* 2-celled, opening lengthwise or the cells confluent at the apex and opening by one continuous slit, sometimes connivent in pairs. *Ovary* superior, sessile, entire, usually perfectly 2-celled; *style* terminal; *ovules* axile, numerous or rarely few. *Fruit* a capsule, rarely a berry; *seeds* numerous.

A family including ornamental garden plants such as *Antirrhinum* and *Angelonia salicariaefolia* H. & B., the latter escaping from cultivation occasionally in the wetter parts of Trinidad. Native plants include only a few insignificant herbs of savannas and waste places, and weeds of cultivation.

Posterior corolla-lobes external in bud; leaves usually glandular-punctate; fls. mostly small (*Gratioleae*)

Lvs. alternate; cor. lobes equally distinct; stam. 5 1. **Capraria**

Lvs. opposite or ternate; post. cor. lobes united at least half their length; stam. usually 4, didynamous (5 in *Bacopa*, 2 in *Achetaria* and *Micranthemum*)

Cor. lobes longer than the tube; anths. exserted 2. **Scoparia**

Cor. lobes shorter than or as long as tube; anths. not exserted

Anther-cells usually parallel, not divaricate; sepals distinct

Sepals equal

Pedicels long (13-18 mm.); anther-cells proximate 3. **Conochea**

*I am indebted to Dr. F. W. Pennell for his invaluable help with this family.

- Pedicels short (less than 2 mm.);
 anther-cells stipitate 4. **Stemodia**
- Sepals unequal, the posterior-most
 largest
- Fertile stam. 4 or 5, bracteoles
 linear, smaller than sepals or
 wanting
- Cor. bluish-violet or white;
 bracteoles present, at or near
 summit of pedicels 5. **Bacopa**
- Cor. yellow; bracteoles at the
 base of the pedicels 6. **Mecardonia** *Pagesia*
- Fertile stam. 2; bracteoles rounded,
 larger than all but the posterior-
 most sepal 7. **Achetaria**
- Anther-cells divaricate; sepals distinct or
 united
- Septum of capsule complete and
 persistent; stam. 4; cor. 5-9 mm.,
 violet-blue or white
- Capsule longer than the plane calyx;
 pedicels without bracts 8. **Lindernia**
- Capsule as long as the ridge-angled
 calyx; pedicels with bracts 9. **Torenia**
- Septum of capsule developed only
 near the base and not persistent;
 stam. 2; cor. minute (1-2 mm.)
 whitish 10. **Micranthemum**
- Anterior corolla-lobes external in bud; leaves
 not punctate; flowers 9-12 mm. long
 (*Buchneraeae*)
- Corolla yellow; anther-cells equal 11. **Melasma**
- Corolla violet, blue or purple; anther-cells
 unequal
- Corolla campanulate; cells of anther
 unequal; bracteoles at middle of
 pedicels 12. **Anisantherina**
- Corolla salver-shaped; cell of anther 1;
 bracteoles beneath calyx 13. **Buchnera**

1. CAPRARIA L.

Perennial herbs; *lvs.* alternate, longer than broad, toothed;
fls. on axillary pedicels; *cal.* of 5 narrow, almost equal lobes; *cor.*
 white, campanulate, with 5 flat lobes; *stam.* usually 5, *anther-*
cells 2, divergent, confluent; *stigmas* dilated or 2-lobed; *caps.*
 short, 2-grooved, septicidally dehiscent; *seeds* reticulate.

1. *C. biflora* L.

Griseb. Fl. 427: Urb. Symb. Ant. 4. 560; 8. 635: Britt. & Millsp. Bah. Fl. 391: Britt. Fl. Berm. 348: Britt. & Wils. Sci. Surv. Porto Rico 6. 180.

Herb. 30-60 cm. high, glabrous or pubescent (see note below); *lvs.* oblanceolate to obovate, 2-10 cm. long, 0.7-2.5 cm. wide, acute at apex, tapering to the sessile base, sharply toothed above the middle; *fls.* in clusters of 1-5 in the axils of gradually diminishing leaves along the flowering branches; *pedicels* 4-6 mm. long; *cal.* lobes linear, 4-6 mm. long; *cor.* white, delicate, about 1 cm. long, hairy in the throat, the oblong-lanceolate lobes about as long as the tube; *caps.* ovoid, about as long as the slightly spreading calyx; *seeds* 0.5 mm. long, finely pitted.

The typical form of this species is glabrous or nearly so and has been collected only on Patos Is. (Herb. Trin. 10724) and in Tobago. The more common forma *hirta* Loes. is prevalent near the seashore, but equally common inland.

Trinidad: Chacachacare (*s.n.*, 1895); Belmont (Herb. Trin. 3849, 16.7.1889); *sine loc.* (Herb. Trin. 5770, 1893); Cocorite (*s.n.*, 12.9.1906); Pointe-a-Pierre (Herb. Trin. 7834, 26.3.1915); Black River (Herb. Trin. 8095, 10.4.1913); Tabaquite (*s.n.*, 13.9.1918); Tabaquite (Herb. Trin. 9651, 30.10.1918); Chacachacare (Herb. Trin. 10446, 25.1.1921); Patos (Herb. Trin. 10724, 18.4.1924); St. Augustine (Herb. Trin. 14629, 19.7.1950).

Tobago: Point opposite Melville Is. to Charlotteville, (Herb. Trin. 11415, 25.10.25); Lowlands (Herb. Trin. 13532, 28.3.1940); Buccoo Point (Herb. Trin. 13487, 2.4.1940); Friendship (Herb. Trin. 13482, 2.4.1940).

Roadsides, waste and cultivated ground, Trinidad and Tobago, especially near the sea. Common.

Florida, Texas, Mexico, West Indies, and continental tropical America.

2. *SCOPARIA* L.

Herbs or low *shrubs*, mostly branched, with opposite or verticillate punctate leaves and small bractless pedicelled flowers solitary or in pairs in the axils. *Cal.* 4-5 parted, the segments nearly distinct, imbricate. *Cor.* nearly rotate, 4-cleft, densely bearded in the throat, its lobes nearly equal, obtuse. *Stam.* 4, nearly equal; *fls.* filiform, *anther-cells* distinct, parallel or divergent. *Style* clavate above; *stigma* truncate or notched; *ovules* many. *Caps.* septicidally dehiscent, its valves entire, membranous; *seeds* many, angular.

1. *S. dulcis* L.

Griseb. Fl. 427: Urb. Symb. Ant. 4. 561; 8. 636: Britt. & Millsp. Bah. Fl. 391: Britt. & Wils. Sci. Surv. Porto Rico 6. 481.

Herb. annual, glabrous, often much branched, up to 1 m. high, the branches slender; *lvs.* ovate to oblong-lanceolate, opposite or verticillate in 3's or 4's, serrate or the upper ones entire, short-petioled, acute at the apex, narrowed or cuneate at the base, the lower 2-3 cm. long, the upper smaller; *pedicels* filiform, as long as the upper leaves or shorter, often borne in most of the axils; *cal.* lobes oblong or oblong-obovate, acute, sometimes ciliolate, about 1.5 mm. long; *cor.* white, 3-4 mm. wide; *caps.* ovoid-globose, a little longer than the sepals.

Trinidad: Botanic Garden (Herb. Trin. 1929, 31.8.1888); San Fernando Hill (Herb. Trin. 2421, 26.9.1864); St. Clair (Herb. Trin. 3582, 12.3.1889); Fort George (*s.n.*, W. E. Broadway); Cedros (Herb. Trin. 7231, 20.9.1915); Monos (Herb. Trin. 7446, 27.11.1915); Tucuche (Herb. Trin. 10072, 10.1.1922).

Tobago: Mason Hall, E. E. Cheesman 289, 1.4.1940, Herb. Acad. Nat. Sci. Philadelphia.

Roadsides, waste and cultivated ground, Trinidad and Tobago. Common.

Southern United States, Greater and Lesser Antilles, continental tropical America and Old World Tropics (Native to tropical America).

3. CONOBEA Aubl.

Herbs. glabrous, proximally branched; *lvs.* opposite, punctate and serrate; *fls.* axillary, on long pedicels that are nearly bractless; *cal.* 5-partite, the segments distinct, imbricate; *cor.* violet or blue, zygomorphic, the upper lip notched or entire, erect, the lower lip 3-lobed, spreading; *stam.* 4, didynamous, included, *anther-cells* distinct, sessile; *stigmas* distinct, flattened; *caps.* globose, 4-valved (both septicidal and loculicidal); *seeds* many.

1. *C. aquatica* Aubl.

Griseb. Fl. 430.

Lax, prostrate or ascending *herb.* 3-5 dm. long or longer; *stem* 4-angled; *lvs.* reniform, opposite, sessile, 5-8 veined, crenate-serrate, 5-8 mm. long, 9-13 mm. wide, nearly all subtending flowers; *pedicels* becoming 12-30 mm. long; *cal.* lobes 3 mm. long lanceolate-attenuate; *cor.* violet-blue, 8-9 mm. long; *caps.* 2-2.5 mm. long, depressed globose.

Trinidad: *Sine loc.* (Herb. Trin. 728, 7.3.1853); Woody rd. to Caroni Estate (Herb. Trin. 2209, 5.4.1866); Guanapo (*s.n.*, 2.2.1904); Piarco savanna (Herb. Trin. 8014, 28.12.1912 and Herb. Trin. 10442, 21.3.1921); O'Meara savanna (Herb. Trin. 10443, 22.3.1921); Long Stretch (Herb. Trin. 14253, 15.1.1949).

Moist places in savannas, not common.

Trinidad, Venezuela and Guiana.

4. STEMODIA L.

Herbs or low *shrubs*, mostly glandular-pubescent and odorous; *lvs.* opposite or verticillate, sessile or petioled; *fls.* solitary in the axils or in terminal often leafy-bracted spikes or racemes; *pedicels* 2-bracteolate; or ebracteolate; *cal.* 5-partite, *sepals* imbricate, nearly distinct and equal; *cor.* tube nearly cylindric and limb 2-lipped, the upper lip notched or entire, erect, the lower 3-lobed; *stam.* 4, didynamous, included, *fls.* filiform, *anther-cells* distinct, stipitate; *caps.* attenuate, septicidal, the valves 2-cleft; *seeds* striate, tuberculate, small.

Plant erect, 30-90 cm. tall, *lvs.* clasping, *peds.*

bibracteolate1. *S. durantifolia*

Plant diffuse, less than 10 cm. tall, *lvs.*

petioled, *peds.* not bracteolate2. *S. verticillata*

1. *S. durantifolia* (L.) Sw.

Capraria durantifolia L.

Griseb. Fl. 429: Urb. Symb. Ant. 4. 558; 8. 633: Britt. & Wils. Sci. Surv. Porto Rico 6. 184.

Herb, pubescent and glandular, erect, often much branched, 30-90 cm. high, the branches slender; *lvs.* oblong, oblong-lanceolate, oblanceolate, or the upper ones linear, acute, acuminate or obtuse, serrate, sessile and amplexicaul, those of the stem 3-9 cm. long, with narrowed bases, the upper much smaller; *fls.* nearly sessile, solitary in the axils, or forming narrow, long, leafy-bracted racemes, bractlets linear, shorter than the calyx; *cal.* about 5 mm. long, lanceolate, acuminate; *cor.* violet-blue, 5-7 mm. long, glandular-pubescent, longer than the calyx; *caps.* 3.5 mm. long.

Trinidad: Cap-de-Ville roadside (Herb. Trin. 7640, 31.3.1916); San Fernando Hill (Herb. Trin. 10898, 1.1.1925).

Roadsides and waste ground, not common.

Greater and Lesser Antilles, Curaçao and continental tropical America.

2. *S. verticillata* (Mill.) Hassl.

Poarium verticillatum Mill.

Erinus verticillatus Mill.

Capraria humilis Ait.

Stemodia parviflora Ait.

Lendneria verticillata Britton.

Griseb. Fl. 429: Urb. Symb. Ant. 8. 632: Britt. & Wils. Sci. Surv. Porto Rico 6. 184.

Annual *herb*, diffusely branched, pubescent, 5-15 cm. high; *lvs.* opposite, or verticillate in 3's or 4's, 10-16 mm. long, obtuse

crenate-serrate above the cuneate base, the petioles slender, about as long as the blades or shorter; *fls.* short-pedicelled in the axils; *cal.* linear-lanceolate, acuminate, 4-5 mm. long; *cor.* blue or purple, about as long as the sepals; *caps.* sub-globose, tipped, 2.5-3 mm. diam.

Trinidad: *Sine loc.* (Herb. Trin. 731); Garden (Herb. Trin. 2214, 19.9.1866).

Rare and not recently collected. (A common weed elsewhere in tropical America).

Greater and Lesser Antilles and continental tropical America.

5. BACOPA Aubl.

Herbs, usually annual and not blackening on drying; *lvs.* opposite or verticillate, sessile or petioled, usually punctate; *fls.* axillary; *pedicels* long or short, 2-bracted at the summit or ebracteolate; *cal.* 5-parted, the sepals distinct and unequal (outer largest, innermost pair much the narrowest); *cor.* purple or white, either zygomorphic (2-lipped) or campanulate and nearly regular; *stam.* 4, rarely 5 or 2, *anther-cells* distinct, approximate; *caps.* septicidal.

Leaf-blades much longer than wide, pinnately veined; stems erect or diffusely ascending; bracteoles present

Cor. 2-lipped; *stam.* 4; *caps.* longer than wide (*Mella*)1. *B. sessiliflora*

Cor. campanulate; *stam.* 5; *caps.* globose (*Eubacopa*)2. *B. aquatica*

Leaf-blades rounded, not pinnately veined; stems lax, creeping or ascending

Bracteoles present; leaf-blades 1-veined; plant repent (*Bramia*)3. *B. monnieri*

Bracteoles none; leaf-blades palmately veined or palmatifid (*Naiadothrix*)4. *B. reflexa*

1. *B. sessiliflora* (Benth.) Edwall

Herpestis sessiliflora Benth.
Griseb. Fl. 430.

Herbs, erect, glabrous, the stems simple or little branched, 10-20 cm. high; *lvs.* 0.5-2.5 cm. long, linear-lanceolate, dentate with low teeth, long-cuneate to sessile bases; *pedicels* solitary, very short; *bracteoles* subulate, about two-fifths as long as the longest sepal; *sepals* very unequal, outermost 3 mm. long, cordate, acute, becoming reticulate-ridged, the median ovate-acute, a little shorter, and the innermost linear, hyaline, 2 mm. long; *cor.* little exceeding the sepals; *caps.* ovoid, 2 mm. long.

Trinidad : Mon Plaisir Estate, La Brea (Herb. Trin. 2212, 25.2.1866); St. Augustine rice lands (Herb. Trin. 14290, 30.3.1949).
Locally common in the rice lands in dry weather.
Trinidad, Guiana and Eastern Venezuela.

2. *B. aquatica* Aubl.

Aubl. Pl. Guiane 1. 128 (1775): DC. Prod. 10. 401.

Annual *herb*, erect or decumbent, glabrous, the stems simple or branched, 10-40 cm. high; *lvs.* 3-7 cm. long, crenulate-dentate, long-cuneate to sessile bases; *pedicels* solitary, slender, 9-15 mm. long, with 2 subulate bracteoles 1-2 mm. long below the calyx; *sepals* very unequal, outermost 9 mm. long, nearly circular, the middle ones somewhat smaller, the innermost linear, paler; *cor.* campanulate, little longer than the calyx; *caps.* nearly globose, 3 mm. diam.

Trinidad : Marabella pasture (Herb. Trin. 2204, June 1865); St. Augustine rice lands (Herb. Trin. 14292, 30.3.1949).

Wet places and rice fields.

Trinidad, Venezuela, Guiana and E. Brazil.

3. *B. monnieri* (L.) Pennell

Bramia monnieri (L.) Pennell

Lysimachia monnieri L.

Gratiola monnieri L.

Herpestis monnieri H.B.K.

Griseb. Fl. 430 : Urb. Symb. Ant. 4. 559; 8. 634 : Britt. & Millsp. Bah. Fl. 389 : Britt. & Wils. Sci. Surv. Porto Rico 6. 182.

Herb. perennial, glabrous and fleshy, stem creeping, rooting at the nodes, 15-50 cms. long; *lvs.* spatulate or cuneate-obcordate, sessile, rounded at the apex, entire or sparingly denticulate, 6-20 mm. long; *pedicels* mainly in alternate axils, 2-bracteolate at the summit, in fruit longer than the leaves; *fls.* pale blue to white, about 1 cm. broad; upper calyx-segment ovate, acute; *cor.* campanulate; *stam.* nearly equal; *caps.* ovoid, acute, shorter than the calyx.

Trinidad: *Sine loc.* (Herb. Trin. 729, Aug. 1861); St. Joseph rd. (Herb. Trin. 4975, Sept. 1892).

Rare, and not recently collected.

South Eastern United States, Bermuda, Greater and Lesser Antilles, continental tropical America and Old World tropics.

4. *B. reflexa* (Benth.) Edwall

Herpestis reflexa Benth.

DC. Prod. 10. 399.

Aquatic *herb*, growing partially or entirely submerged; *lvs.* about 2.5 cm. long, palmately divided, the lobes pinnately cut,

giving the appearance of a whorl of about 10 pinnatisect leaves at each node, the segments threadlike; *fls.* borne above the water on pedicels 1.5 cm. long; *sepals* distinct, narrow-oblong, about 3 mm. long, pinkish, persistent; *cor.* strongly 2-lipped, 7-10 mm. across, the three anterior lobes obovate, 4-5 mm. long, very pale lilac, bright yellow at the throat, the two posterior lobes ovate, 2-3 mm. long, very pale lilac with darker lines at base; fruiting peduncle reflexed; *caps.* not seen.

Trinidad : Small stream, Caroni rd. (Herb. Trin. 11002, 23.4.1925); Piarcó savanna, pool on trace (Herb. Trin. 13244, 4.12.1937).

In slow-moving streams or ponds; Piarcó, rare.

Lowlands of northern South America, Colombia to Brazil.

6. MECARDONIA Ruiz & Pavon

Herbs usually perennial and blackening on drying; *lvs.* opposite, sessile or petioled, usually punctate, pinnately veined; *fls.* axillary; *pedicels* short or long, 2-bracteolate at the base; *cal.* 5-partite, *sepals* distinct and unequal (outermost largest, innermost pair much the narrowest); *cor.* yellow, zygomorphic, the tube quadrangular, pubescent above the orifice; *stam.* 4, didynamous, *anther-cells* distinct, slightly stipitate, *caps.* septicidal.

1. *M. dianthera* (Sw.) Pennell

Lindernia dianthera Sw.

Herpestis chamaedryoides H.B.K.

Pagesia dianthera (Sw.) Pennell

Griseb. Fl. 430: Urb. Symb. Ant. 4. 558; 8. 633: Britt. & Millsp. Bah. Fl. 390: Britt. & Wils. Sci. Surv. Porto Rico 6. 181: Pennell in Monogr. Acad. Nat. Sci. Philadelphia 1. 69 (1935).

Perennial glabrous *herb*, much branched, diffuse or ascending, branches up to 40 cm. long; *lvs.* oval, serrate, sessile or shortly petioled, 1-2 cm. long, 0.5-1.0 cm. broad; *fls.* axillary, the *pedicels* 1.5-2.5 cm. long, slender; *cal.* of 5 sepals, the outermost largest, ovate, 5-10 mm. long, the inner smaller and narrower; *cor.* yellow, as long as the calyx; *caps.* 4-7 mm. long, cylindric; *seeds* minute.

Trinidad : Arima lower savanna (Herb. Trin. 727, 9.4.1848); Maraval (Herb. Trin. 754, 28.2.1847); Cipero extension tramway (Herb. Trin. 2211, 3.8.1865); Princes Town (Herb. Trin. 4456, Dec. 1890); River Estate (Herb. Trin. 8112, 9.4.1913); St. Augustine paddy fields (Herb. Trin. 9004, 23.3.1920); Toco (Herb. Trin. 9221, 18.3.1920); St. Augustine (Herb. Trin. 13972, 4.12.1947 and Herb. Trin. 14010, 31.10.1935).

A common weed in cultivated ground and lawns. Trinidad and Tobago. Rapidly blackening on death.

West Indies and continental tropical America.

7. ACHETARIA *Cham. & Schlecht.*

Herbs, usually perennial and canescent, *stems* sharply quadrangular; *lvs.* opposite, petioled, punctate; *fls.* axillary or spicate; *pedicels* short, with spatulate bracteoles at base of calyx; *sepals* very irregular, the posterior largest, oblong-elliptic, the other 4 alike, linear-lanceolate or linear; *cor.* violet-blue, zygomorphic, externally pubescent; functional *stam.* 2 (the lower pair, with rudiments of the upper pair), *anther-cells* distinct and slightly stalked; *caps.* septicial.

1. A. guianensis Pennell

Achetaria trinitatensis Pennell

Beyrichia scutellarioides Benth. (*p.p.*)

Herb 30-60 cm. high; *stems* erect, or decumbent at base, freely branched, quadrangular, finely pubescent with upcurved white hairs; *lvs.* elliptical or rhombic, not much exceeding 2 cm. long, 1 cm. wide, and often much smaller, acute at apex, rounded or narrowed at base, shallowly crenate above the middle, shortly pubescent on both surfaces and glandular-punctate, *petioles* 1-5 mm. long; *fls.* solitary in the axils of most of the leaves; *pedicels* very short, bearing two obovate-rounded bracts 3 mm. long; *cal.* pubescent, the posterior sepal 4-5 mm. long, 3 mm. wide, resembling the bracts but rather larger, other sepals slightly shorter and much narrower; *cor.* 7 mm. long, very pale lilac with darker lines, whitish in the throat; *caps.* 2.7-3 mm. long.

Trinidad: Toco rd. (Herb. Trin. 10445, 14.3.1922); Cumuto rd. (Herb. Trin. 12142, 16.5.1929); Reservoir (*s.n.*, 8.9.1906); Piarco savanna (*s.n.*, 3.12.1922); Piarco (Herb. Trin. 9382, 28.1.1920); Toco (Herb. Trin. 9419, 18.3.1917); Tucuche (Herb. Trin. 10071, 10.1.1922 and Herb. Trin. 9085, 4.4.1920); Morne Bleu, Arima (Herb. Trin. 9568, 27.1.1921); O'Meara savanna, Arima (Herb. Trin. 9334, 8.4.1920 and Herb. Trin. 13250, 4.12.1937); Irois beach (Herb. Trin. 13636, 6.9.1940); Hort. Trin. (Herb. Trin. 2174, 17.10.1888); Cocorite (Herb. Trin. 725, 4.10.1846); Guanapo (*s.n.*, Aug. 1907); Cedros (Herb. Trin. 13635, 6.9.1940).

Roadsides and grassy places; common and widely distributed. Trinidad and Guiana.

8. LINDERNIA *All.*

Herbs, perennial or annual, glabrous or pubescent; *lvs.* opposite, petioled or sessile; *fls.* axillary on short or long bractless *pedicels*; *cal.* of 5 uniform, distinct or partially united sepals; *cor.* zygomorphic; *stam.* 4 (in our species) or 2 (with lower pair rudimentary), *anther-cells* distinct and approximate; *caps.* septicial (the septum persisting as a median plate); *seeds* reticulate to finely lined, unwinged.

Corolla 5-7 mm. long, violet-blue; capsule 3-4 mm. long, obtuse and mucronate; pedicels 8-25 mm. long; leaf-blades ovate, dentate1. *L. crustacea*

Corolla 12 mm. long, white with upper lip purplish; capsule 10 mm. long, acuminate; pedicels 1-2 mm. long; leaf-blades elliptic-oval, serrulate2. *L. diffusa*

1. *L. crustacea* (L.) F.v. Muell.

Capraria crustacea L.

Vandellia crustacea (L.) Benth.

Torenia crustacea (L.) C. & S.

F.v. Muell. Census, 97.

Herb., glabrous, 5-20 cm. high, diffusely branched; *lvs.* ovate, 0.5-1.2 cm. long, acute, the base rounded or truncate to petioles 1-7 mm. long; *pedicels* 8-25 mm. long; *cal.* tube campanulate, 4 mm. long, the caudate-tipped lobes 1 mm. long, the tube later split by the enlarging capsule; *cor.* violet-blue, 5-7 mm. long, the upper lip arched, the lower lip spreading and marked by an arch of deeper colour proximally; *caps.* 3-3.5 mm. long, globose.

Trinidad: Botanic Garden (Herb. Trin. 1433, 16.8.1888); Chaguanas (Herb. Trin. 5127, Jan. 1893); Reservoir Hill (*s.n.*, 3.10.1906); St. Augustine paddy fields (Herb. Trin. 9014, 23.3.1920); Government House (Herb. Trin. 9707, no date); Piarcó savanna (Herb. Trin. 10444) 21.3.1921; St. Augustine (Herb. Trin. 14009, 31.10.1935 and Herb. Trin. 13970, 4.12.1947).

Tobago: Northside Road, King's Bay to Charlotteville (Herb. Trin. 11392, 24.10.1925).

A common weed of grassy places and cultivated ground, Trinidad and Tobago.

Widespread weed over tropical lands of both hemispheres.

2. *L. diffusa* (L.) Wettstein

Vandellia diffusa L.

Griseb. Fl. 430: Britt. & Wils. Sci. Surv. Porto Rico 6. 185.

Herb., diffusely spreading, pubescent, branched, the 4-angled branches slender, 6-15 cm. long; *lvs.* ovate to sub-orbicular, very short-petioled, low-dentate, 8-20 mm. long, the apex rounded, obtuse or acutish, the base obtuse or rounded; *pedicels* very short; *cal.* tube narrowly obpyramidal, 3-4 mm. long its lanceolate, acuminate teeth about 2 mm. long; *cor.* white, about 5 mm. long, the upper lip purple; *caps.* narrowly oblong, attenuate, 10-12 mm. long.

Trinidad : St. Ann's (Herb. Trin. 724, 2.5.1847); Port-of-Spain savanna (Herb. Trin. 2217, 13.12.1865); Botanic Garden (Herb. Trin. 3809, 5.6.1889); Cedros : Prospect, near the lagoon (Herb. Trin. 8502, 2.11.1916); Morne Bleu roadside (Herb. Trin. 12309, 2.12.1929).

Widely distributed in similar localities but less common than *L. crustacea*. Unrecorded from Tobago, but presumably present there.

Greater and Lesser Antilles, continental tropical America.

9. TORENIA L.

Herbs, with opposite, petiolate leaves; *fls.* in abbreviated clusters axillary to the leaves of the main stem; *cal.* of 5 united and wing-ridged sepals, the free lobes short and subulate, forming an upper and a lower lip; *cor.* zygomorphic, blue-violet or white with violet lines; *stam.* 4, didynamous, the anthers of the lower pair often smaller; *caps.* septicidal (septum persisting as a median plate); *seeds* small, unwinged.

1. *T. thouarsii* (Cham. & Schlecht.) Kuntze

Nortenia thouarsii Cham. & Schlecht.

Creeping herb rooting at nodes; *stems* 4-angled, glabrous; *lvs.* ovate-lanceolate, 2-3 cm. long, 1-1.5 cm. wide, rounded or slightly narrowed at base, acute or bluntish at apex, toothed, glabrous except for a few weak hairs on the midrib beneath, *petioles* 3-8 mm. long; *fls.* axillary in few-fl'd. clusters; *pedicels* about 1 cm. long; *cal.* 7 mm. long, 5-keeled, pubescent on the ridges, 2-lipped; *cor.* tube 6 mm. long, posterior lip short, bilobed, anterior lip 3-lobed, the central lobe the largest, white in throat, lobes violet; *stam.* inserted near top of tube, *anth.* of the 2 longer exserted, of the 2 shorter included; *caps.* oblong, 1 cm. long, 3 mm. diam., included in the persistent calyx; *seeds* minute.

Trinidad : Morne Bleu-Arima, about 9th mile (Herb. Trin. 9455, 27.1.1921); Arima-Blanchisseuse rd., 11th-14th mile (Herb. Trin. 10105, 24.3.1922); Morne Bleu roadside (Herb. Trin. 12306, 2.12.1929); St. Augustine rice fields (Herb. Trin. 13163, 28.4.1937); Western rd. nr. pumping stn. (Herb. Trin. 13288, 17.3.1938).

Roadsides and grassy places, Trinidad; not common.

Panama to Venezuela and Peru. Naturalized from Africa.

Note : Torenia asiatica L.

Pansy

Herb. Trin. 13971, 4.12.1947.

Escaping from gardens and more or less naturalised from South-eastern Asia.

Flowers larger; blue or violet and yellow.

10. MICRANTHEMUM Michx.

Creeping, glabrous, matted herb; *lvs.* opposite, sessile and palmately veined; *fls.* axillary; *cal.* 4-lobed; *cor.* zygomorphic, white; *stam.* 2 (the anterior pair); *caps.* globose, the septum proximal, the cells distally confluent and externally rupturing irregularly; *seeds* minute, numerous.

1. *M. umbrosum* (Walt.) Blake

Anonymos umbrosa Walt.

Globifera umbrosa J.F. Gmel.

Micranthemum orbiculatum Michx.

Urb. Symb. Ant. 4. 559; 8. 635 : Britt. & Wils. Sci. Surv. Porto Rico 6. 186.

Creeping glabrous matted herb spreading over moist shaded soil; *lvs.* oval or circular, opposite, sessile and palmately veined, 4-6 mm. long and wide, cuneately narrowed or truncate at the base; *fls.* axillary on very short pedicels; *cal.* about 1 mm. long; *cor.* zygomorphic, white; *stam.* 2; *caps.* globose, about equalling the calyx; *seeds* minute, numerous.

Trinidad : Caroni savanna (Herb. Trin. 736, 14.2.1847); Botanic Gardens (Herb. Trin. 3656, 22.3.1889).

Minute weed of wet shaded places, Trinidad; not common.

North Carolina to Argentina.

11. MELASMA Berg.

Herbs, pubescent or hirsute, semi-parasitic on roots; *lvs.* opposite, mostly dentate, often darkening on drying; *fls.* axillary or forming terminal bracted spikes or racemes; *cal.* campanulate, 5-cleft; *cor.* tube sub-campanulate, short, its limb oblique and spreading, the anterior lobes exterior in the bud; *stam.* 4, didynamous, *anther-cells* parallel; *styles* mostly elongated; *caps.* sub-globose; *seeds* numerous, linear.

1. *M. melampyroides* (L.C. Rich.) Pennell

Cane Killer

Pedicularis melampyroides L.C. Rich.

Alectra melampyroides (L.C. Rich.) O. Ktze.

Alectra brasiliensis Benth.

Scrophularia fluminensis Vell.

Griseb. Fl. 428 : Urb. Symb. Ant. 4. 561 : Britt. & Wils. Sci. Surv. Porto Rico 6. 188.

Erect annual herb scabrous-hirsute, simple or branched, 30-80 cm. high; *lvs.* triangular-lanceolate, subsessile, dentate, 2-5 cm. long, or the upper much smaller, the apex acuminate, the base truncate or subcordate; *fls.* solitary and sessile in the axils and forming a leafy-bracted terminal spike; *cal.* about 8 mm. broad; *cor.* yellow, nearly or quite included.

Trinidad: Paradise estate (Herb. Trin. 3097, Jan. 1865); Endeavour, Chaguanas (s.n., 13.11.89); Chaguanas (Herb. Trin. 4177, July 1890); Botanic Gardens, St. Ann's (Herb. Trin. 10049, 27.2.1922); Arima-Blanchisseuse rd. 11th-14th mile (Herb. Trin. 10104, 24.3.1922); Cumuto Railway Station (Herb. Trin. 11714, 10.1.1927); Morne Bleu (Herb. Trin. 12456, 10.1.1931); Summit of Mt. Tucuche (Herb. Trin. 13224, 30.10.1937).

In grassy places, up to 3,000 ft., Trinidad, not uncommon. Guatemala and Guadeloupe south to Paraguay.

12. ANISANTHERINA Pennell

Annual *herb*, erect, pubescent, blackening on drying; *lvs.* opposite, sessile, linear; *pedicels* long, bibracteolate about the middle; *sepals* united into a campanulate cup, from rim of which project the short calyx-lobes; *cor.* tubular-campanulate, glabrous on both surfaces, violet-purple, its orifice widely open; *stam.* 4, didynamous, all anthers with unequal cells (the smaller three-fifths to two-thirds the size of the larger); *stigmas* linear, wholly united; *caps.* globose-ovoid, loculicidal; *seeds* cylindric, minutely lined.

1. *A. hispidula* (Mart.) Pennell

Gerardia hispidula Mart.

Griseb. Fl. 428.

Stem simple or branched, 20-40 cm. high; *lvs.* 3-5 cm. long, entire or with few salient knob-like lobes, scabro-pubescent above, glabrous beneath; *pedicels* 25-45 mm. long, bracteoles filiform, 1-2 mm. long; *cal.* 6 mm. long, the ovate-apiculate lobes 1-1.5 mm. long; *cor.* 10-13 mm. long; *anthers* with longer cells 1 mm. long; *caps.* 6 mm. long; *seeds* 0.6 mm. long.

Trinidad: Piarco savanna (W. G. Freeman, s.n., 3.12.1922 and Herb. Trin. 4985, Dec. 1891).

Piarco savanna only, rare and not recently collected.

British Honduras and Cuba to Brazil.

13. BUCHNERA L.

Perennial or biennial *herbs*, strict hispid or scabrous, blackening on drying; *lvs.* sessile, the lower opposite, the upper sometimes alternate; *fls.* violet-blue, purple or white, in terminal bracted spikes; *pedicels* each with two bracteoles; *cal.* tubular, 5-10 nerved, 5-toothed; *cor.* salver-shaped, its tube cylindric and somewhat curved, its limb nearly equally 5-cleft, spreading; *stam.* 4, didynamous, the *anther-cell* solitary (by loss of the associated cell); *style* slender, distally thickened or clavate, *stigma* small; *caps.* loculicidally dehiscent; *seeds* numerous, reticulate.

Lvs. linear or linear-lanceolate, plant only

slightly scabrous 1. *B. virgata*

Lvs. broadly ellipsoid or ellipsoid-lanceolate,

whole plant hispid 2. *B. elongata*

1. **B. virgata** H.B.K.

Buchnera longifolia H.B.K. *sens.* Griseb. Fl. 428
(as to the Trinidad plant) not H.B.K.

Stem 60-80 cm. tall, scabro-pubescent; *lvs.* linear or lanceolate-linear, attenuate, scabro-roughened, 3-veined beneath, 2-12 cm. long; bracts ovate-acute, 3-4 mm. long; *bracteoles* linear-acute 2.5-3 mm. long; *cal.* 5-6 mm. long, tube cylindric, ridge-lined below the ovate-cuspidate lobes (1.5 mm. long); *cor.* tube 6-7 mm. long, externally pubescent, the lobes widely spreading, 5-7 mm. wide; *caps.* 5 mm. long.

Trinidad: St. Joseph savanna (Herb. Trin. 2207, July 1848); *ibid.* (Herb. Trin. 11338, 31.8.1925); *ibid.* (Herb. Trin. 9317, 24.3.1920); *ibid.* (Herb. Trin. 9536, 24.3.1920); *ibid.* (Herb. Trin. 11337, 31.8.1925); *ibid.* (Herb. Trin. 13480, 18.11.1939).

Only recorded from the so-called 'natural savanna' on the hillside above St. Joseph, Trinidad, where it has been collected at intervals since 1848.

2. **B. elongata** Sw.

Griseb. Fl. 428 : Urb. Symb. Ant. 4. 562; 8. 637 : Britt. & Wils. Sci. Surv. Porto Rico 6. 189 : Britt. & Millsp. Bah. Fl. 393.

Herb. 40-80 cm. tall, hispid with appressed, stiff, white hairs; *lvs.* sessile, ellipsoid below and ellipsoid-lanceolate above, up to 6 cm. long and 1.5 cm. broad, sparsely toothed or entire, hispid above and below, the whole plant blackening with age and on drying; bracts ovate-acute 2-3 mm. long; *bracteoles* similar but slightly smaller; *cal.* 4-5 mm. long, cylindric, minutely toothed, accrescent and swollen in fruit, hispid; *cor.* blue-mauve, tube 8-10 mm. long, limb 5-lobed, spreading, slightly zygomorphic, 5-6 mm. diam.; *stam.* inserted in the corolla tube, *fil.* very short; *style* simple, club-shaped; *caps.* broadly ovoid, 5-6 mm. long; *seeds* minute.

Trinidad : Erin savanna (Herb. Trin. 14582, 26.4.1950); near Valencia (Herb. Trin. 14877, 19.3.1953); Piarco aerodrome (Herb. Trin. 14901, 22.3.1953).

A common plant of North, South and Central America and other West Indian islands, recently collected from savannas and savanna roadsides of Trinidad.

FAMILY 2. LENTIBULARIACEAE

BY P. TAYLOR

Herbs, all insectivorous, of damp or wet places, often without roots. *Leaves* entire or finely dissected, rosulate or on stolons. *Infl.* a scape bearing a raceme or a single flower. *Flowers* hermaphrodite, irregular. *Calyx* 2, 4 or 5-lobed, persistent. *Corolla* personate, lower lip usually spurred. *Stamens* 2, inserted at the base of the corolla; anther thecae 2 dehiscing by a common slit. *Ovary* superior, 1-locular, *ovules* anatropous, 2 or many on a fleshy free-central placenta. *Fruit* a capsule, few to many seeded, dehiscing irregularly, by 2-4 valves, or circumscissile, rarely 1-seeded and indehiscent. *Seeds* very small, variously shaped.

A family remarkable for the various devices for the capture and digestion of small organisms.

- Calyx 5-lobed1. *Genlisea*
 Calyx 2-lipped2. *Utricularia*

1. GENLISEA St. Hilaire

Terrestrial or sub-aquatic anchored rootless *herbs*. *Fls.* bracteate, racemose on a scape. *Rhizome* short, slender, erect. *Lvs.* of two kinds, rosulate; *foliage leaves* numerous, erect, usually long petiolate, spatulate; *trap leaves* fewer, descending, stalked, flask shaped, the bulbous part surmounted by a tubular neck, branched at its apex into two helically twisted arms. *Scape* erect, often covered with multicellular gland-tipped hairs, sterile bracts numerous throughout its length. *Bracts* and *bracteoles* basifixed. *Cal.* 5-lobed, lobes sub-equal, persistent. *Cor.* 2-lipped, upper lip entire or emarginate, lower lip spurred, with a gibbous palate and a 3-lobed margin. *Stam.* 2, *filis.* straight, anther thecae subdistinct. *Ovary* globose, 1-locular, *style* short, persistent; *stigma* 2-lipped, upper lip much smaller than lower. *Ovules* numerous on fleshy free central placenta. *Caps.* globose, circumscissile. *Seeds* very small, ovoid, reticulate.

The trap works on the lobster-pot principle, an organism having once entered through apertures in the twisted arms can only move inwards towards the digestion chamber, exit being prevented by numerous inward-pointing hairs.

1. *Genlisea oxycentron* sp. nov. affinis *G. pusillae* Warm. sed ovario hispido distincta.

Herba terrestris, erecta, gracilis, 7-14 cm. alta. *Rhizoma* breve, tenue, erectum vel suberectum, 5-10 mm. longum, radicibus nullis.

Folia omnia radicalia, dimorpha, dense rosulata: *folia chlorophyllosa* numerosa, plus minusve erecta, viridia, spathulata, petiolo 10-15 mm. longo circiter 0.3 mm. lato, lamina 2-3 mm. longa 1-1.5 mm. lata; *folia laqueos ferentia* pauciora, descendunt, subterranea, albida, ampullacea, 3-20 mm. longe et tenuiter stipitata, ampulla ovoideo-globosa circiter 1 mm. lata, cervice tubulosa usque ad 10 mm. longa 0.5 mm. lata apice dibrachiata, brachiis divaricatis helicoideis usque ad 12 mm. longis. *Pedunculus* rectus, rigidus, simplex. *Bracteae* et bracteolae subaequales, lanceolatae, circiter 1 mm. longae, bracteae inferiores steriles, numerosae, per totam longitudinem pedunculi inter se 10-15 mm. distantes dispositae. *Flores* 1-3, usque ad 12 mm. inter se distantes, pedicellati, pedicellis 1-3 mm. longis ascendunt. *Calyx* lobis 5 subaequalibus anguste lanceolato-ovatis acutis vel obtusis trinerviis, cum pedicellis pedunculisque omnino pilis multicellularibus circiter 0.4 mm. longis luteo-glanduloso-capitatis vestitus. *Corolla* lutea, 7 mm. longa, labio superiore ovato-integro vel emarginato erecto vel prorsum curvato, labio inferiore calcar parallelo profunde trilobato circiter 3.5 mm. longo 4 mm. lato, lobis lateralibus orbicularibus basi angustioribus, lobo medio oblongo quam lateralibus minore, palato gibboso leviter emarginato (antice viso) minute papilloso; calcar tenue, conicum, acutum, plus minusve rectum, circiter 5 mm. longum. *Stamina* 2, circiter 1 mm. longa, filamentis plus minusve rectis circiter 0.3 mm. latis, antheris ovoideis circiter 0.4 mm. longis. *Ovarium* globosum, circiter 0.8 mm. diametro, breviter et dense hispidum, pilis 0.1 mm. longis raro glanduliferis stigma versus longioribus. *Stigma* bilabiatum, persistens, labio inferiore ovato deflexo circiter 0.5 mm. longo 0.6 mm. lato, labio superiore triangulari 0.15 mm. longo et lato. *Capsula* globosa, circiter 2 mm. diametro, hispida. *Semina* plus minusve ovoidea, minute reticulata, circiter 0.25 mm. longa, 0.2 mm. lata.

Terrestrial herb; scapes erect, simple, 7-14 cm. high, more or less covered with multicellular gland-tipped hairs; rhizome short, 5-10 mm. long; foliage lvs. erect, long-petioled, spathulate, up to 15 mm. total length; traps stalked, stalk up to 20 mm. long, bulb globose, about 1 mm. diam., neck up to 10 mm. long, 0.5 mm. diam., arms up to 12 mm. long; infl. up to 4 cm. long, 1-3 fld.; pedicels erect, 1-3 mm. long; bracts and bracteoles equal, lanceolate, about 1 mm. long, sterile bracts numerous; cal. lobes about 1.5 mm. long, lanceolate-ovate; cor. about 7 mm. long, yellow, upper lip ovate, entire or emarginate, lower lip deeply 3-lobed, lobes sub-equal, spur descending, slender, acute, about twice as long as lower lip; stam. about 1 mm. long; ovary globose, shortly and densely hispid; stigma almost sessile, upper lip minute, triangular, lower lip ovate; caps. globose, about 2 mm. diam., hispid; seeds ovoid, reticulate, about 0.25 mm. long.

Trinidad : Long Stretch savannas (Baker, Simmonds *et al.* 3, 10.2.1951 and 8, 26.9.1951, in Herb. Kew); Aripo savanna (Baker, Simmonds *et al.* 6, 17.11.1951, *type*, in Herb. Kew).

Damp ground on savannas, endemic to Trinidad.

2. UTRICULARIA L.

Epiphytic, terrestrial, sub-aquatic or aquatic, anchored or floating, rootless *herbs*. *Fls.* bracteate, racemose on a scape from the base of which arise leaves, rhizoids and stolons. *Lvs.* entire or finely dissected. *Rhizoids* capillary, often branched. *Stolons* slender, often branched and bearing scattered or opposite leaves. *Traps* globose or ovoid, very small, usually stalked, mouth variously positioned in relation to the stalk, variously ciliate or provided with appendages. *Scape* often with sterile bracts throughout its length. *Bracts* basifix or medifix, bracteoles often present. *Cal.* 2-lipped, lips sub-equal, persistent. *Cor.* 2-lipped, upper lip entire or emarginate, lower lip spurred or rarely saccate, with a gibbous palate and entire or lobed margin. *Stam.* 2, *fls.* straight, curved or rarely bent sharply in the middle, anther thecae sub-distinct or confluent. *Ovary* globose or ovoid, 1-locular. *Ovules* 2 or numerous on fleshy free central placenta. *Style* usually very short, rarely long and bent, persistent, *stigma* 2-lipped, upper lip much smaller than lower or sometimes obsolete. *Caps.* usually globose, dehiscing by 2 valves or irregularly. *Seeds* very small, variously shaped, often reticulate.

The morphology of the vegetative parts is very confusing, there often being no clear distinction between rhizoid, stolon and leaf. The trap mechanism is extremely complex. An organism touching sensitive hairs on the door of a 'set' trap causes it to open suddenly; the trap expands and water (containing organism) is sucked in and the door closed.

Terrestrial or sub-aquatic anchored herbs with rhizoids and stolons, usually entire leaves, bracts basifix with bracteoles present or medifix with bracteoles absent, sterile bracts on the scape below the flowers, traps on the rhizoids, leaves or stolons

Montane herb, with tuberous swellings at the base of the scape, traps on the rhizoids only, fls. large 1. *U. alpina*

Lowland terrestrial or sub-aquatic anchored herbs, traps on the rhizoids, leaves or stolons, fls. small

Bracteoles present, bracts basifix

Corolla mauve, pink or white, sometimes with a yellow spot on palate, pedicel usually exceeding bract

- Upper corolla lip constricted at about the middle, palate transversely rugose 2. *U. sp.*
- Upper corolla lip not constricted, palate smooth
- Bracts laciniate, leaves long linear, spur slightly exceeding lower lip, curved 3. *U. hispida*
- Bracts entire, leaves spatulate, spur twice as long as lower lip, straight 4. *U. amethystina*
- Corolla yellow, pedicel usually exceeded by bract
- Spur acute, not concealed by lower lip, calyx lips plicate
- Corolla about 12 mm. long 5. *U. juncea*
- Corolla about 4 mm. long 6. *U. juncea forma virgatula*
- Spur saccate, concealed by lower lip, calyx lips not plicate 7. *U. peckii*
- Bracteoles absent, bracts medifixed
- Corolla yellow, leaves entire, inflorescence not sticky
- Lower lip as long as spur, fruiting calyx not exceeding fruit 8. *U. subulata*
- Lower lip about half as long as spur, fruiting calyx exceeding fruit 9. *U. pusilla*
- Corolla mauve, leaves divided into long capillary segments, inflorescence sticky 10. *U. viscosa*
- Floating aquatic herbs without rhizoids, leaves divided into filiform segments, sterile bracts on the scape below the flowers usually absent, bracteoles absent, bracts basifixed, sometimes with a short appendage below the point of attachment, traps on the leaves only
- Corolla yellow
- Pedicels recurved in fruit, leaves up to 8 cm. long, repeatedly divided 11. *U. foliosa*
- Pedicels erect in fruit, leaves up to 1 cm. long, once or twice divided 12. *U. obtusa*
- Corolla pink or reddish
- Traps lateral on leaf segments, pedicels reflexed in fruit 13. *U. hydrocarpa*

Traps terminal on leaf segments, pedicels erect in fruit

Corolla about 7 mm. long, mouth of trap ciliate 14. *U. malmeana*

Corolla about 12 mm. long, mouth of trap naked 15. *U. pulcherrima*

1. *U. alpina* Jacq.

U. montana Jacq.

U. grandiflora Pers.

Orchillium alpinum (Jacq.) Barnh.

Griseb. Fl. 390 : Barnh. in Mem. New York Bot. Gard. 6, 53.

Perennial herb, *scapes* sub-erect, simple, 10-30 cm. high, glabrous; *tubers* ovoid, up to 20 mm. long; *lvs.* spreading, lanceolate-ovate, long-petioled, coriaceous, 3-20 cm. long including petiole, 1-3 cm. broad; *stolons* fleshy, *rhizoids* slender, branched; *traps* numerous on rhizoids, globose, minutely glandular, about 1 mm. long, stalked, stalk adjacent to mouth, which is provided with two short curved horns; *raceme* up to 15 cm. long, 1-6 fld., *pedicels* cernuous, flattened, 15-30 mm. long; *bracts* and *bracteoles* basifixed, similar, lanceolate, about 7 mm. long; sterile bracts on scape smaller, few; *cal.* lips equal, ovate, cordate at the base, pale green; *cor.* 30-45 mm. long, white with a yellow patch on the gibbous palate, upper lip more or less reniform, entire, lower lip orbicular, entire, up to 50 mm. broad, spur slender, subulate, incurved, slightly shorter than the lower lip; *stam.* about 4 mm. long, *fil.* curved, fleshy; *ovary* ovoid, *stigma* sessile, upper lip short, 3-crenate, lower lip entire; *caps.* globose, about 8 mm. diam.; *seeds* fusiform, about 1 mm. long.

Trinidad : Mt. Tucuche (Herb. Trin. 2629, 28.8.1847 and numerous others; Britton, Hazen and Mendelson 1299, April 1920 and Friend 49, 29.8.1939 in Herb. New York; R.E.D. Baker s.n., 25.1.1953 in Herb. Kew); Heights of Aripo (Herb. Trin. 9848, Jan. 1922); Arima-Blanchisseuse Road (Herb. Trin. 13174, 22.5.1937); *sine loc.* (Parker s.n. in Herb. Kew).

Mossy tree-trunks and banks above 2,500 ft. alt.

West Indies and continental tropical America.

2. *U. sp. cfr. denticulata* Benj.

Terrestrial herb; *scapes* erect, simple, 19-27 cm. high, glabrous; *lvs.*, *rhizoids*, *stolons* and *traps* not seen; *infl.* 6-12 cm. long, 5-9 fld.; *bracts* basifixed, lanceolate, 1.5 mm. long, *bracteoles* linear, sterile bracts few; *pedicels* erect 1-2 mm. long; *cal.* lips sub-equal, ovate, about 4 mm. long; *cor.* probably mauve, about 12 mm. long, upper lip ligulate, obtuse, emarginate, slightly constricted at about the middle; lower lip more or less orbicular, palate with two rows of transverse ridges, spur descending, slender,

cylindrical, with bifid or entire acute apex, about as long as lower lip; *stam.* 2 mm. long, *fil.* straight; *ovary* globose, *style* short, *stigma* upper lip minute, ? truncate, lower reniform; *caps.* globose, about 3 mm. long; *seeds* ovoid about 0.4 mm. long, minutely reticulate.

Trinidad : Without locality (Fendler 549, 1877-80 in part in Herb. Mus. Brit.). *U. denticulata* is apparently confined to the central American mainland and differs from the present species in its smaller flowers with relatively much shorter lower lip.

3. *U. hispida* Lam.

U. angustifolia Benj.

U. gluckii Luetzelb.

Calpidisca hispida (Lam.) Barnh.

Griseb. Fl. 391 : Luetzelb. in Flora 1910, 186 : Barnh. in Bull. Torr. Bot. Club 58, 469.

Terrestrial herb; *scapes* erect, slender, glabrous 30-70 cm. high; *rhizoids* and *stolons* numerous, capillary; *lvs.* few from base of scape, linear, rather rigid, up to 20 cm. long, 1.5-3 mm. broad; *traps* on stolons ovoid, about 1 mm. long, stalked, mouth adjacent to stalk, provided with two curved horns which bear numerous stalked glands; *infl.* up to 15 cm. long 1-8 fld.; *bracts* basifixed, ovate, 1-2 mm. long, laciniate, *bracteoles* narrow lanceolate, laciniate, sterile bracts few; *pedicels* erect or spreading, 2-15 mm. long; *cal.* lips unequal, ovate, many nerved, margin minutely crenulate, upper about 4 mm. long, lower about 2.5 mm. long; *cor.* 8-11 mm. long, white or purple with a yellow patch on the palate, upper lip ovate, obtuse, entire, lower lip orbicular, entire, palate strongly 2-gibbous, spur slender, subulate, acute, curving outwards, slightly longer than lower lip; *stam.* 2 mm. long, *fil.* curved; *ovary* ovoid, *stigma* sub-sessile, upper lip minute, triangular, lower lip orbicular; *caps.* globose, 2.5 mm. diam., slightly exceeded by calyx; *seeds* about 0.8 mm. long, 0.25 mm. broad in the middle, slightly curved, tapering almost to a point at one end, more or less truncate at the other.

Trinidad: Aripo savanna (Purdie s.n., July 1848 and Patter s.n., 12.5.1895 in Herb. Kew; Herb. Trin. 2727, 7.4.1866 and 5324, 26.3.1893; Britton, Broadway and Hazen 317 and 318 in Herb. New York, and numerous others; Othmer in Luetzelb. loc. cit.); Arima (Crueger s.n., 9.4.1848 in Herb. Kew; O. Kuntze 1006, 20.4.1874 in Herb. New York); O'Meara savanna (N. L. and E. G. Britton 2493, 22.3.1921, in Herb. New York); Long Stretch savannas (Baker, Simmonds *et al.* 1 and 2, 10.2.1951 and 11 and 12, 26.9.1951, all in Herb. Kew); without locality (Fendler 549, 1877-80 in Herb. Kew).

Damp ground and shallow water on savannas.

West Indies and continental tropical America.

4. *U. amethystina* Salzm. ex St. Hil. et Girard*U. modesta* A. DC.*Calpidisca amethystina* (Salzm. ex St. Hil. et Girard) Barnh.

Griseb. Fl. 391 : Luetzelb. in Flora 1910, 174 : Barnh. in Bull. Torr. Bot. Club 58, 468.

Terrestrial herb; *scapes* erect, simple, glabrous, 12-40 cm. high; *rhizoids* numerous, capillary, sparsely branched; *stolons* slender, sparsely branched; *lvs.* few from the base of the scape, spatulate, long petiolate, up to 30 mm. total length, 2-8 mm. wide; *traps* globose, few on the stolons, about 1 mm. long, stalked, mouth adjacent to stalk, provided with two short acute processes which are densely ciliate on the inner side, the cilia curved and gland-tipped; *infl.* up to 10 cm. long, 1-5 fld.; *bracts* basifixed, lanceolate, acute, *bracteoles* linear, sterile bracts few; *pedicels* spreading, 4-15 mm. long; *cal.* lips sub-equal, ovate, upper entire, obtuse, lower emarginate; *cor.* white, pink, or mauve, about 8 mm. long, upper lip oblong, obtuse, entire, lower lip 3-lobed with gibbous palate, spur slender cylindrical, more or less acute, over twice as long as lower lip; *stam.* about 1.5 mm. long, *fil.* almost straight; *ovary* globose; *stigma* sub-sessile, upper lip as wide as lower but shorter; *caps.* globose, about 2 mm. long, about equal to calyx; *seeds* more or less ovoid, sub-acute at both ends, smooth.

Trinidad: Piarco (Dannouse s.n., 1905, in Herb. Trin.); Aripo savanna (Herb. Trin. 8034, 13.2.1915; Britton, Broadway and Hazen 320, 5.3.1920, in Herb. New York; Baker, Simmonds *et al.* 2, 8.10.1951 and 5, 17.11.1951 in Herb. Kew; Othmer in Luetzelb., *loc. cit.*); Long Stretch savannas (Baker, Simmonds *et al.* 7 and 8, 10.2.1951, 4 and 9, 26.9.1951, in Herb. Kew); without locality (Fendler 551, 1877-80 in Herb. Kew).

Damp ground and shallow water on savannas.

West Indies and continental tropical America.

5. *U. juncea* Vahl*Stomoisia juncea* (Vahl) Barnh.

Urb. Symb. Ant. 4. 572; Britt. & Wils. Sci. Surv. Porto Rico 6. 191 : Barnh. in Small Fl. Miami, 171.

Terrestrial herb; *scapes* erect, simple, glabrous, 20-40 cm. high; *rhizoids* numerous, capillary, branched; *stolons* slender, branched; *lvs.* numerous, linear, acute, up to 20 mm. long, about 0.3 mm. wide; *traps* numerous on rhizoids and *lvs.*, globose, about 0.5 mm. long, shortly stalked, minutely glandular, mouth at about 90° to the stalk, naked, beaked; *infl.* up to 4 cm. long, 1-6 fld.; *bracts* basifixed, ovate, acute, *bracteoles* narrow lanceolate, sterile bracts few; *pedicels* erect 1-2 mm. long; *cal.* lips plicate,

upper ovate, acute, entire, lower ovate, apex bifid, smaller than upper; *cor.* yellow, about 12 mm. long, upper lip orbicular, truncate, erect, lower lip entire, strongly gibbous, erect, spur subulate, acute, descending; *stam.* about 2 mm. long, *fil.* slightly curved; *ovary* ovoid, *stigma* sessile, upper lip as broad as lower but shorter; *caps.* ovoid, about 3 mm. long, exceeded by upper calyx lip; *seeds* more or less ovoid, truncate at the larger end, about 0.2 mm. long, smooth.

Trinidad: Piarco (Dannouse *s.n.*, 1905, in Herb. Trin); Aripo savanna (N. L. and E. G. Britton 2929, 14.4.1921, in Herb. New York); Arima (Eggers 1394, Oct. 1883, in Herb. Kew; Dannouse *s.n.*, 2.4.1900, in Herb. Trin.); Long Stretch savannas (Baker, Simmonds *et al.* 6, 10.2.1951; 1, 4 and 7, Aug. 1951; 1, 3 and 7, 26.9.1951, all in Herb. Kew).

Damp ground and shallow water on savannas.

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

6. *U. juncea* forma *virgatula* (Barnh.) Fern.

U. virgatula Barnh.

Barnh. in Bull. Torr. Bot. Club 34, 580: Fern. in Rhodora 48, 60.

A cleistogamous form of the preceding, differing only in its smaller corolla and usually shorter stature. Apparently occurring in pure populations or as occasional plants among normal *U. juncea*.

Trinidad: *sine loc.* (Fendler 548, 1877-80, in Herb. Kew); Long Stretch savannas (Baker, Simmonds *et al.* 6, Aug. 1951 and 5. 26.9.51, in Herb. Kew).

Throughout the range of *U. juncea*.

7. *U. peckii* Blake

U. rubricaulis Tutin

Blake in Cont. Gray Herb. n.s. 52, 90; Tutin in Journ. Bot. 72, 312; Steyermark in Bull. Torr. Bot. Club 75, 660.

Terrestrial herb; *scapes* erect, simple, flexuous, glabrous, 6-18 cm. high; *rhizoids* and *stolons* numerous, capillary, branched; *lvs.* numerous on stolons, linear, acute up to 20 mm. long, 0.3 mm. wide; *traps* globose about 0.25 mm. long, very numerous on *rhizoids* and *lvs.*, stalked, mouth naked, beaked, close to stalk; *infl.* up to 7 cm. long, 1-12 fld.; *pedicels* about 1 mm. long, erect; *bracts* basifixed, ovate, more or less acute, *bracteoles* lanceolate, acute, sterile bracts few; *cal.* lips sub-equal, ovate, more or less acute; *cor.* yellow, about 5 mm. long, upper lip orbicular, entire, erect, lower lip orbicular, entire, horizontal, palate not gibbous, spur saccate, about 1 mm. long, concealed by lower lip; *stam.* about 3 mm. long, *fil.* slender, bent sharply in the middle; *ovary*

ovoid; *style* about 1.5 mm. long bent sharply near the base, *stigma* minute, upper lip obsolete; *caps.* ovoid, acute, about 2.5 mm. long; *seeds* more or less globose, about 0.2 mm. long, reticulate.

Trinidad: Aripo savanna (Herb. Trin. 5113, Jan. 1893, 8032, 13.2.1915, and numerous others; Britton, Hazen and Broadway 319, 5.3.1920 and N. L. and E. G. Britton, 14.4.1921, in Herb. New York); Long Stretch savannas (Baker, Simmonds *et al.* 5, 10.2.1951, in Herb. Kew).

Damp ground and shallow water on savannas.

West Indies and continental tropical America.

8. *U. subulata* L.

U. nervosa Weber *ex.* Benj.

Setiscapella subulata (L.) Barnh.

Griseb. Fl. 391: Urb. Symb. Ant. 4. 572: Stahl Fl. Puerto Rico 325: Britt. & Wils. Sci. Surv. Porto Rico 6. 191: Barnh. in Small Fl. Miami 170.

Terrestrial *herb*; *scapes* erect, capillary, flexuous, glabrous, 5-25 cm. high; *rhizoids* and *stolons* numerous, capillary, branched; *lvs.* numerous on the stolons, linear, up to 20 mm. long, 0.2 mm. wide; *traps* numerous on the rhizoids, stolons and lvs., ovoid, about 0.4 mm. long, stalked, mouth almost opposite the stalk, provided with two short, antler-like appendages; *infl.* up to 10 cm. long, 1-8 fld.; *bracts* peltate, more or less orbicular, *bracteoles* absent, sterile bracts numerous; *pedicels* erect or spreading, 2-8 mm. long; *cal.* lips sub-equal, orbicular, obtuse, entire; *cor.* yellow, upper lip erect, ovate, emarginate, lower lip descending, deeply 3-lobed, palate gibbous, spur subulate, acute, descending, about as long as lower lip; *stam.* about 0.8 mm. long, *fil.* curved; *ovary* globose, *stigma* sub-sessile, upper lip obsolete, lower more or less orbicular; *caps.* globose, about 1.5 mm. long, exceeding calyx; *seeds* ovoid, about 0.25 mm. long, with about 15 longitudinal striations.

Trinidad: Aripo savanna (Herb. Trin. 9769, 23.1.1911; Broadway 6481, 26.11.1926, Patter *s.n.*, 1895, Baker, Simmonds *et al.* 3, 17.11.1951, all in Herb. Kew; Britton, Broadway and Hazen 2018, 5.3.1920, in Herb. New York); Piarco (Broadway 2112 and 2120, 13.12.1907, in Herb. Kew; Dannouse *s.n.*, 1905, in Herb. New York); O'Meara savanna (N. L. and E. G. Britton 2494, 22.3.1921, in Herb. New York); Long Stretch savannas (Baker, Simmonds *et al.* 4, 10.2.1951, 2 and 5, Aug. 1951, 2 and 13, 26.9.1951, all in Herb. Kew); *sine loc.* (Fendler 550, 1877-80, in Herb. Kew).

Damp ground and shallow water on savannas.

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

9. *U. pusilla* Vahl*U. leptantha* Benj.*Setiscapella pusilla* (Vahl) Barnh.

Griseb. Fl. 391: Urb. Symb. Ant. 4. 572 and 8. 649: Barnh. in Britt. & Wils. Sci. Surv. Porto Rico 6. 191.

Terrestrial herb; *scapes* erect, capillary, straight, 6-12 cm. high; *rhizoids* and *stolons* few, capillary, branched; *lvs.* few, ligulate, scattered on the stolons, up to 6 mm. long, 0.3 mm. wide; *traps* few on the lvs. and stolons, ovoid, about 0.5 mm. long, stalked, mouth at about 90° to the stalk, provided with two short densely ciliate appendages; *infl.* up to 7 cm. long, 1-14 fld.; *bracts* peltate, more or less orbicular, *bracteoles* absent, sterile bracts numerous; *pedicels* spreading, 1.5-2.5 mm. long; *cal.* lips ovate, lower slightly longer than upper; *cor.* yellow, about 6 mm. long, upper lip ovate, entire, erect, lower lip descending, 3-lobed, palate gibbous, spur subulate, descending, about twice as long as lower lip; *stam.* about 0.8 mm. long, *fls.* curved; *ovary* globose, *stigma* sub-sessile, upper lip obsolete, lower orbicular; *caps.* globose, about 1.5 mm. long, exceeded by lower lip of calyx; *seeds* ovoid, about 0.35 mm. long, with about 11 longitudinal striations.

Trinidad: Arena (Broadway 5209, Dec. 1923, in Herb. Kew and in Herb. New York); Matura (Broadway 2779, 25.9.1908, in Herb. Kew); Long Stretch savannas (Baker, Simmonds *et. al.* 3, Aug. 1951 and 6, 26.9.1951, in Herb. Kew); *sine loc.* (Herb. Trin. 2728).

Damp ground and shallow water on savannas.

West Indies and continental tropical America.

10. *U. viscosa* Spruce ex Oliv.*U. sp.* Luetzelb.

Luetzelb. in Flora 1910, 185, fig. 19 and 20.

Sub-aquatic herb; *scapes* erect, 5-25 cm. high, simple or occasionally branched, viscid above, hispid below; *rhizoids* and *stolons* few, slender, hispid; *lvs.* numerous, up to 20 cm. long, pinnately divided into long capillary segments up to 5 cm. long; *traps* ovoid, hispid, long stalked, few on stolon branches, mouth naked, about 90° to the stalk; *infl.* up to 10 cm. long, 1-10 fld.; *bracts* medifixed ovate, acute, *bracteoles* none, sterile bracts few; *pedicels* spreading, 15-18 mm. long, viscid; *cal.* lips sub-equal, orbicular, conspicuously veined; *cor.* white or pale violet with a yellow spot on the palate, 6-9 mm. long, conspicuously veined, upper lip ovate, lower lip orbicular, 3-crenate, spur cylindrical, obtuse, descending, about twice as long as lower lip; *stam.* about 1 mm. long, *fls.* straight; *ovary* globose, *style* very short, *stigma* upper lip obsolete, lower orbicular; *caps.* globose, about 2 mm.

long, more or less concealed by the calyx; *seeds* orbicular, about 0.25 mm. diam., conspicuously reticulate.

Trinidad: Aripo savanna (Baker, Simmonds *et al.* 4, 17.11.1951, in Herb. Kew; Othmer in Luetzelb., *loc. cit.*); Long Stretch savannas (Baker, Simmonds *et al.* 9, 10.2.1951, in Herb. Kew).

Standing water on savannas.

Trinidad, British Guiana and Brazil.

11. *U. foliosa* L.

U. oligosperma St. Hil.

Griseb. Fl. 392: Urb. Symb. Ant. 8. 649.

Floating aquatic *herb*; *stolons* long, branched, about 2 mm. thick; *lvs.* alternate on stolon branches, up to 8 cm. long, tri-pinnate, segments capillary, acute, setulose; *traps* numerous, on some of the leaves, ovoid, about 1.5 mm. long, shortly stalked, mouth at about 90° to stalk, provided with 2 forked setae; *scapes* arising at intervals on the stolons, erect, glabrous, up to 20 cm. long, 2 mm. thick; *infl.* 2-15 cm. long, 4-20 fld.; *bracts* ovate, 3-4 mm. long; *pedicels* 5-15 mm. long, erect or spreading at anthesis, strongly recurved in fruit; *cal.* lips equal, ovate, entire; *cor.* yellow, 6-8 mm. long, upper lip erect, orbicular, entire, lower lip descending, more or less orbicular, entire or emarginate, palate gibbous, spur conical, obtuse, shorter than lower lip; *stam.* about 2 mm. long, *fil.* slightly curved, *ovary* ovoid, *style* short, *stigma* small, lower lip very short, truncate, upper orbicular; *caps.* globose, 4-6 mm. diam.; *seeds* lenticular, flat, with a narrow membranous wing, 2-2.5 mm. diam.

Trinidad: *sine loc.* (Purdie, cited by Griseb. *loc. cit.*). The specimen is not in Herb. Kew.

Standing water.

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

12. *U. obtusa* Sw.

Griseb. Fl. 391: Urb. Symb. Ant. 4. 572 and 8. 649: Britt. & Wils. Sci. Surv. Porto Rico 6. 190.

Aquatic *herb*; *stolons* slender, numerous from the base of the scape; *lvs.* up to 1 cm. long, once or twice forked, segments capillary, glabrous; *traps* few on the leaf segments, ovoid, 1-2 mm. long, shortly stalked, mouth at about 90° to stalk, provided with numerous long branched bristles; *scapes* flexuous, erect, glabrous, 5-10 cm. high; *infl.* up to 4 cm. long, 1-4 fld.; *bracts* ovate, *pedicels* erect, 8-12 mm. long; *cal.* lips equal, ovate, entire; *cor.* yellow, 6-10 mm. long, upper lip erect, broadly ovate, lower lip

descending, orbicular, entire, palate gibbous, spur conical, obtuse or acute, slightly longer than lower lip; *stam.* about 1.5 mm. long, *fil.* straight; *ovary* globose, *stigma* sub-sessile, upper lip obsolete, lower orbicular; *caps.* globose, about 2 mm. long; *seeds* lenticular, narrowly winged, about 1 mm. diam.

Trinidad: Pitch Lake (Dannouse s.n., Nov. 1905 and Freeman s.n., 24.9.1912, in Herb. Trin.; Armitage s.n., 7.2.1930, in Herb. Kew); Caroni River (N. L. and E. G. Britton 2885, 11.4.1921, in Herb. New York); Chaguanas (Herb. Trin. 5129, Jan. 1893); Aripo (Dannouse s.n., 1903, in Herb. Trin.); Piarcó (Herb. Trin. 5186, 19.1.1893); *sine loc.* (Crueger s.n., 1.6.1851, in Herb. Kew).

Shallow standing water and mud.

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

13. *U. hydrocarpa* Vahl

U. coccinea Benj.

U. vaga Griseb.

Griseb. Fl. 392: Griseb. Cat. Pl. Cuba 161.

Floating aquatic herb; *stolons* long, slender, rarely branched, up to 30 cm. long; *lvs.* alternate on the stolons, up to 3 cm. long, bipinnate, segments capillary, acute, sparsely setulose; *traps* ovoid, 1-3 mm long, very shortly stalked, numerous on the leaves, mouth at about 90° to the stalk, provided with two branched setae; *scapes* slender, glabrous, erect, 3-6 cm. high, arising at intervals on the stolons, 2-4 fld.; the lowermost fl. usually near the base of the scape; *bracts* basifixed, ovate, about 2 mm long; *pedicels* erect at anthesis, strongly reflexed in fruit, 2-15 mm. long; *cal.* lips sub-equal, ovate, acute; *cor.* flesh-coloured or purplish with a yellow spot on the palate, about 8 mm. long, upper lip orbicular, entire, lower lip orbicular, entire, spur conical, shorter than lower lip; *caps.* globose, circumscissile, *style* persistent and elongating; *seeds* depressed globose, slightly angular, about 0.6 mm. diam., reticulate.

Trinidad: *sine loc.* (Purdie s.n., in Herb. Kew); Madras Settlement rd. (Baker & Simmonds, Herb. Trin. 15083, 17.2.1954, in Herb. Kew).

Standing water.

West Indies and continental tropical America.

14. *U. malmeana* Sylven

U. elephas Luetzelb.

Sylven in Arkiv. Bot. Stockh. 8, 6, 40: Luetzelb. in Flora 1910, 190.

Aquatic herb; *scapes* slender erect 12-33 mm. high, one flowered, densely covered with short hooked hairs below; *stolons* 2-5 from the base of the scape, slender, hispid; *lvs.* in whorls of 4 on the stolons, up to 10 mm. long, capillary, with whorled capillary segments up to 2 mm. long, each terminated by a trap; *traps* ovoid, 1-2 mm. long, mouth opposite the point of attachment, finely ciliate and with a single ciliate appendage; *bracts* ovate, more or less trifid, with a short appendage below the point of attachment; *cal.* lips sub-equal, entire, upper ovate, lower oblong; *cor.* pink, with double white spot on palate, 7-8 mm. long, upper lip ovate, emarginate, lower narrow ovate, entire with a strongly 2-gibbous palate, spur descending, slender, cylindrical, acute, slightly exceeding lower lip, *stam.* straight, *fil.* about 1.2 mm. long; *ovary* ovoid, *style* very short, *stigma* upper lip minute triangular, lower broad, ciliate; *caps.* globose, about 1.5 mm. long; *seeds* globose, about 0.25 mm. diam., rugose.

Trinidad: Aripo savanna (Baker, Simmonds *et al.* 1, 8.10.1951, in Herb. Kew and Othmer in Luetzelb. *loc. cit.*).

Shallow standing water.

Trinidad, British Guiana and Brazil.

15. ***U. pulcherrima* Sylven**

U. myriocysta Griseb. Fl. non St. Hil.

Griseb. Fl. 391: Sylven in Arkiv. Bot. Stockh. 8.6.42.

Aquatic herb; *scapes* slender, erect, hispid and slightly thickened at the base 3.5-14 cm. high, 1-2 fld.; *stolons* slender, 1 or 2 from the base of the scape; *lvs.* capillary 30-40 mm. long, whorled on the stolons, twice divided into whorls of capillary segments, segments all terminated by traps; *traps* ovoid; 1.5-2 mm. long, mouth naked, at about 90° to the point of attachment; *pedicels* erect, 3-12 mm. long; *bracts* ovate, entire, sometimes with a small appendage below the point of attachment; *cal.* lips sub-equal, entire, upper ovate, lower oblong; *cor.* pink, with yellow spot on palate, 12-15 mm. long, upper lip broad ovate, entire, lower more or less ovate, with strongly 2-gibbous palate, spur more or less horizontal, curved, slender, acute, about as long as lower lip; *stam.* about 1.5 mm. long, *fil.* straight; *ovary* globose, *stigma* sessile, upper lip obsolete, lower orbicular, ciliate; *caps.* globose, about 3 mm. long; *seeds* globose, about 0.5 mm. diam., rugose.

Trinidad: Aripo savanna (Purdie *s.n.*, July 1848 and Crueger *s.n.*, 8.7.1848, in Herb. Kew; N. L. and E. G. Britton 2935, 14.4.1921 in Herb. New York; Baker & Simmonds *s.n.*, 25.3.1953, in Herb. Kew).

Shallow standing water.

West Indies and continental tropical America.

FAMILY 3. GESNERIACEAE

BY C. V. MORTON*

Herbs or shrubs, the *stems* often fleshy, terrestrial or epiphytic, sometimes climbing by adventitious roots. *Leaves* opposite (in ours), those of a pair equal or strongly unequal, mostly short-petiolate, the blades (dry) thin-membranaceous to coriaceous (mostly rather fleshy when living), mostly toothed, usually pinnate-veined, usually conspicuously hairy with septate hairs. *Infls.* (in ours) axillary, the flowers umbellate, fasciculate, or solitary, pedicellate; *calyx* lobes free or united, herbaceous, often coloured, sometimes toothed; *corolla* erect or horizontal in the calyx, spurred at base or not, tubular or rarely campanulate, contracted in throat or not, often hairy externally, the limb sub-regular to strongly bilabiate (never absolutely actinomorphic), variously coloured. *Stamens* 4 (in ours), affixed to the base of the corolla tube, the *filaments* free from each other or joined, often contorted; *anthers* connivent in pairs or even connate, 2-celled, the cells discrete or confluent; *ovary* superior or inferior, often hairy, 1-celled, with two parietal, lobed placentae; *style* simple; *stigma* bilobed or sub-capitate; *disk* surrounding the ovary annular and unlobed, or composed of 5 discrete glands, or reduced to a single posterior gland. *Fruit* capsular or mostly baccate; *seeds* very numerous and minute, mostly linear or fusiform, obliquely striate, mostly reddish.

Ovary superior (Columneoideae)

Annual, subcaulescent herbs; cor. campanulate, pale violet-blue1. *Marssonia* (leaf)

Perennial, caulescent herbs or shrubs; cor. tubular, white, yellow or red

Flowers umbellate on a common peduncle; Terrestrial herbs

Cal. lobes partially united into a tube; cor. erect in calyx, not spurred, yellow or orange2. *Tussacia*

Cal. lobes free; cor. horizontal in cal., spurred at base, white3. *Nautilocalyx*

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- Flowers solitary or paired in the axils, a common peduncle absent or obsolete; cal. lobes free or nearly so
- Terrestrial shrubs; anth. cells confluent; disk annular4. **Besleria** ✓
- Epiphytic herbs or shrubs; anth. cells discrete; disk composed of discrete glands or reduced to a single gland
- Lvs. entire, glabrous; cor. white; anth. cells divaricate5. **Codonanthe** ✓
- Lvs. toothed or if entire, then pubescent; cor. not pure white (yellowish, yellow or scarlet)
- Cor. tube broad (2 cm. wide in throat), the limb yellowish, with brown, reticulate veins, the lobes conspicuously toothed; cal. lobes 2.5 cm. long or more6. **Drymonia** ✓
- Cor. tube narrow, not more than 9 mm. broad in the throat, the limb not reticulate-veined, the lobes not toothed; cal. lobes 2 cm. long or less7. **Columnnea** ✓
- Ovary inferior (Gesnerioideae)
- Disk annular; corolla pale violet-blue; stems and leaves glabrate8. **Gloxinia** ✓
- Disk composed of five distinct glands; cor. orange or red; stems and leaves densely hairy9. **Kohleria** ✓

1. MARSSONIA *Karsten*

Annual *herbs*, subcaulescent; *lvs.* crowded, rosulate, obovate to oblong-lanceolate, narrowed toward base, rounded or acutish at apex, scarcely petiolate, membranaceous; *infl.* axillary, racemose, few-flowered; *cal.* lobes nearly free, nerved; *cor.* campanulate, relatively small, sub-regular, glabrous, pale violet-blue; *fil.* short; *anthers* reniform, included; *fruit* a capsule.

1. *M. subacaulis* (Griseb.) Urb.

Episcia subacaulis Griseb.

Napeanthus subacaulis Kuntze.

Griseb. Fl. 462: Urb. Symb. Ant. 7. 377: Sandw. in Kew Bull. 1938, 371.

Stems up to 4 cm. long; *lvs.* up to 14 cm. long and 4 cm. wide, dentate toward apex, nearly glabrous above, sparingly pilosulous on the veins beneath, the lateral veins 6-8 pairs; *infl.* up to 10 cm. long; *pedicels* slender, 2.5-3.5 cm. long, each subtended by a bract; *cal.* lobes 5-7.5 mm. long, ovate-lanceolate, acuminate, entire, glabrate; *cor.* about 1 cm. long; *fil.* 2 mm. long.

Trinidad: Las Cuevas (Crueger, in Herb. Kew, type, not seen); Blanchisseuse rd. (Broadway 6738); Maracas falls (Herb. Trin. 2506, 14.5.1868); Mt. Tucuche (Britton, Hazen & Mendelson, 1277); Ortinola estate (Britton & Hazen 252); Piedra Blanca (Herb. Trin. 14223, 18.4.1948); Morne Bleu (Herb. Trin. 9574, 13.3.1921; Herb. Trin. 10450, Britton, Freeman & Bailey, 2247, 13.3.1921; Herb. Trin. 11969, 23.3. 1928); Santa Cruz (Broadway 2291, *fide* Urban); Tucuche (Othmer 217, *fide* Urban).

Tobago: Charlotteville (Broadway 3132, *fide* Urban); Main Ridge above Parlatuvier (Sandwith 1915, in Herb. Kew).

Formerly confused with *Marssonia primulina* Karsten, a Venezuelan species.

Wet mossy rocks in deep shade in springs and near waterfalls in the central Northern Range; also Tobago.

2. TUSSACIA *Rchb.*

Perennial herbs with creeping rootstocks, the *stems* unbranched; *lvs.* of a pair equal, membranaceous when dry, conspicuously crenate, not pellucid-punctate; *infl.* axillary, umbellate, the common peduncle elongate, several-flowered; *cal.* scarlet, campanulate, 5-angled, the lobes connate for most their length; *cor.* yellow or orange, with brown lines within, tubular, erect in calyx, not spurred, the limb spreading, sub-regular; *anthers* with parallel cells, these not confluent at apex; *disk* reduced to a large posterior gland, and sometimes with one or two small anterior glands.

1. *T. pulchella* (Donn.) *Rchb.*

Besleria pulchella Donn.

Sandw. in Kew Bull. 1938, 371.

Lvs. petiolate (up to 3 cm.), the blades ovate, up to 20 cm. long and 10 cm. wide, acuminate at apex, decurrent at base, sparsely pilosulous above, minutely puberulous beneath, the lateral veins 6 or 7 pairs; common *peduncle* 2-3 cm. long; *pedicels* slender, 1.5-2 cm. long, slender pilosulous; *cal.* about 1 cm. long, puberulous; *cor.* about 2 cm. long, densely white-sericeous externally.

Trinidad: Maraval valley (Herb. Trin. 2505, 13.12.1865); Hort. Trin. (Kuntze, Herb. Trin. 4737); Diego Martin (Herb. Trin. 7737, 13.5.1915); Heights of Oropuche (*s.n.*, Freeman, 23.4.1916); Cumaca rd. (Herb. Trin. 14169, 1.2.1948).

Tobago: Between Parlatuvier and Bloody Bay (Sandwith 1895 in Herb. Kew).

Moist shady places, especially under cacao.
Panama and British Guiana.

3. NAUTILICALYX *Linden*

Herbs; stems unbranched or branched from the base; *lvs.* opposite, petiolate, those of a pair sub-equal, the blades pinnate-veined, toothed; *infl.* axillary, sessile or pedunculate; *cal.* irregular, the lobes free, narrow or broad, the posterior reflexed; *cor.* horizontal in calyx, hypocrateriform, spurred at base, ventricose upwardly, contracted in throat, white or pale yellow; *anthers* included, free or connate in pairs; *ovary* superior, villous; *disk* low-annular with an enlarged posterior gland.

1. *N. mimuloides* (*Benth.*) *comb. nov.*

Episcia mimuloides Benth. in Hook. London Journ. Bot. 5; 362. 1846. Type from British Guiana.

Urban in Fedde Repert. 17, 166, 1921: Sandwith in Kew Bull. 1938, 371: Sprague in Kew Bull. 1912, 85-90.

Stems minutely pilosulous; *petioles* 2-3 cm. long; leaf blades elliptic, membranaceous, the larger 12-16 cm. long and 4-7 cm. wide, long-attenuate at base, minutely strigillose on both surfaces; common *peduncle* 3- or 4-flowered, 6-11 mm. long, bibracteate at apex, the bracts narrowly lanceolate, green; *pedicels* slender, 15-18 mm. long; *cal.* lobes green, thin, ovate, 10-15 mm. long, 4-7 mm. wide, long-acuminate, entire, minutely strigillose; *cor.* white, thin, 4-5 cm. long, the tube 9-12 mm. broad at middle, sparsely pilosulous externally, the limb spreading, probably about 2 cm. wide.

Tobago: Between Parlatuvier and Bloody Bay (Broadway 4282, *fide* Urban); Main Ridge above Parlatuvier (Sandwith 1902, in Herb. Kew).

The above description is based on Guiana materials. According to Sandwith (*loc. cit.*), the Tobago plants may deserve at least varietal status. For a discussion of the generic status of *Nautilocalyx* see Sprague (*loc. cit.*). The character of placentation stressed by Sprague may not hold, but the group does seem to represent a recognizable unit.

4. *BESLERIA* (*Plumier*) *L.*

Terrestrial *shrubs*, the stem sparingly branched; *lvs.* of a pair equal, obviously petiolate, mostly membranaceous; *fls.* not bracteate, axillary, solitary or fasciculate; *cal.* 5-parted nearly to base, mostly coloured, the lobes imbricate; *cor.* erect or oblique in

calyx, not spurred at base, the tube contracted in the throat or not, the limb regular or somewhat bilabiate, the lobes entire; *fls.* usually glabrous, the *anthers* often connate when young, quadrate, the cells parallel and confluent; placentae ovuliferous on the inner surface only; *disk* annular, entire, sometimes thickened posteriorly; *fruit* a fleshy berry.*

- Leaves relatively small, less than 8 cm. long,
the veins 5-7 pairs; cor. white. Tobago1. *B. seitzii*
Leaves larger, 7-27 cm. long, the veins 8-12
pairs; cor. yellow (or orange?). Trinidad
Leaf blades strongly punctate; cor. bilabiate,
3.5 cm. long or more2. *B. longipes*
Leaf blades not punctate; cor. sub-regular,
not more than 2 cm. long
Calyx lobes mucronulate3. *B. sieberiana*
Calyx lobes not mucronulate4. *B. strigillosa*

1. *B. seitzii* Krug & Urban

Stems whitish, glabrate; *lvs.* petiolate (up to 12 mm.), the blades narrowly elliptic, 3-8 cm. long, 1.5-2.5 cm. wide, membranaceous, attenuate at base, coarsely dentate, glabrous above, sparingly strigose on the veins beneath, the primary veins 5-7 pairs; *pedicels* 13-16 mm. long; *cal.* 10-13 mm. long, the lobes lanceolate, filiform at tip, membranaceous, entire, sparsely pilosulous externally, glabrous within; *cor.* 17 mm. long, glabrous, the limb bilabiate, 18 mm. wide or more; *fls.* glabrous; *style* glabrous; *ovary* glabrous; *fruit* globular, 9 mm. in diam., densely tuberculate.

Tobago: King's Bay (Seitz 13, type, not seen); Easterfield (Herb. Trin. 13551, 21.1.1913); Main Ridge (Broadway); Caledonia (Broadway); Great Dog River (Eggers 5786); North-side rd. (Herb. Trin. 11399, 24.10.1925; Herb. Trin. 14529, 6.12.1949); Pigeon Hill (Sandwith 1805 in Herb. Kew).

Note by R. O. Williams: "Slender shrub; flowers white, 2 cm. broad, 5-lobed; fruit succulent when ripe, the outer valves recurved after dehiscence, orange-coloured, exposing the crimson pulp about the size of a pea, in which are embedded numerous minute seeds."

Moist shady places; Tobago.

2. *B. longipes* Urban ✓

Stems appressed-pubescent; *lvs.* petiolate (5-11 cm.), the blades elliptic-oblong, 15-27 cm. long, 7.5-12 cm. wide, strongly

*C. V. Morton, A Revision of Besleria, Contr. U.S. Nat. Herb 26. 395-474. 1939.

dentate, obtuse and oblique at base, thin-membranaceous, conspicuously pellucid-punctate, glabrate except for the puberulous veins beneath, the primary veins 10-12 pairs; *pedicels* 1 cm. long; *cal.* 15-18 mm. long, the lobes oblong-lanceolate, acuminate, membranaceous, entire, sparingly pilosulous externally, glabrous within; *cor.* greenish-yellow, 35-40 mm. long, glabrous, the limb bilabiate, 2-2.7 cm. wide; *ovary* slightly pilosulous at apex.

Trinidad: St. Ann's (Broadway 3185, type); Mt. Tucuche (Britton, Hazen and Mendelson 1279, Herb. Trin. 10074, 10.1.1922); Dibé Valley (Britton, Hazen and Mendelson 1750, Herb. Trin. 9456, 15.4.1920); Maracas (Herb. Trin. 12499, 11.1.1931; Broadway 6737, 7389: Herb. Trin. 14644, 29.10.1950); *sine loc.* (Fendler 507, Herb. Trin. 1113; Herb. Trin. 2504, *p.p.*).

Moist shady places; Northern Range, Trinidad.
Venezuela.

3. *B. sieberiana* Urban

Urb. Symb. Ant. 2. 349.

Stems strigose at apex; *lvs.* petiolate (4-7 mm.), the blades ovate or narrowly ovate, 8-14 cm. long, 4-7.5 cm. wide, rounded or obtuse at base, membranaceous or subchartaceous, serrate, pilosulous beneath on the veins, the primary veins 10-12 pairs; *pedicels* 10-15 mm. long; *cal.* 5 mm. long, the lobes connate nearly to middle, ovate, obtuse, mucronulate; *cor.* 17-18 mm. long, cylindric, a little curved, glabrous; *ovary* glabrous.

Trinidad: Sieber 193, *p.p.* (Not seen; description compiled; it is somewhat doubtful if this species is sufficiently different from the following).

4. *B. strigillosa* Urban

Urb. Symb. Ant. 2. 349.

Stems strigose at apex; *lvs.* petiolate (15-20 mm.), the blades ovate, those of a pair somewhat unequal, the larger 8-11 cm. long, 4-6 cm. wide, obtuse at base, membranaceous, serrate, short-pilose on both sides, the veins strigose beneath, the primary veins 8-12 pairs; *pedicels* about 15 mm. long; *cal.* lobes free, orbicular, rounded, not mucronulate, sparsely pilosulous externally, ciliolate; *cor.* glabrous; *ovary* glabrous.

Trinidad: Sieber 193, *p.p.* (Not seen, description compiled).

5. CODONANTHE (Martius) Hanstein

Perennial, scandent, radican herb, the stems unbranched or little branched; leaves of a pair equal, rather small and fleshy, drying leathery, entire, glabrous; fls. axillary, solitary or paired, pedicellate; cal. small, the lobes nearly free (in ours), entire,

glabrous; *cor.* horizontal in calyx, spurred at posterior base, white or whitish-violet, unspotted except sometimes within tube, the limb oblique, sub-regular; *anther cells* divaricate, separated by the thickened connective; *disk* reduced to a single posterior gland.

Cal. lobes 2.5-4.5 mm. long, lvs. thick, with
obscure veins1. *C. crassifolia*

Cal. lobes 8-12 mm. long
Lvs. triplinerved. Trinidad2. *C. triplinervia*
Lvs. pinnate-nerved. Tobago3. *C. eggersii*

1. *C. crassifolia* (Focke) Morton. ✓

Hypocyrta crassifolia Focke.

Codonanthe confusa Sandw.

Codonanthe calcarata auctt., non Hanstein.

Morton, Field Mus. Publ. Bot. 18, 1159. 1938; Sandw. in Kew Bull. 1931, 492.

Stems glabrous, shining; *lvs.* short-petiolate (4-5 mm.), the blades ovate or oval, up to 5 cm. long and 2 cm. wide, obtusish or acute, the lateral veins obscure; *pedicels* 5-10 mm. long; *cal.* lobes lanceolate, acuminate; *cor.* glabrous, about 2 cm. long, the tube very slender at base, gradually enlarged upwardly to the throat (about 6 mm. wide), the limb about 1 cm. wide, the lobes entire.

Trinidad: Oropuche rd. (Broadway 6175); Toco rd., Valencia (Britton, Hazen & Mendelson 1784); Maracas Valley (Britton & Hazen 1633); Valencia (Britton 2835, Herb. Trin. 9248, 16.4.1920); Carapichaima (Herb. Trin. 5706, ann. 1892); Santa Cruz (Herb. Trin. 7008, 18.5.1908); Arena Forest (Cheesman & Baker 376, 26.8.1940); Melajo Reserve (Herb. Trin. 13779, 24.4.1947); Cumaca rd. (Herb. Trin. 14232, 27.12.1948); Long Stretch (Herb. Trin. 14366, 6.6.1949).

Epiphytic; central northern Trinidad.

Guatemala to the Guianas, Venezuela and Colombia.

2. *C. triplinervia* Britton.

Britton Bull. Torrey Club 48, 339, 1921.

Stems strigillose when young, soon glabrate; *lvs.* petiolate (6-11 mm.), the blades cuneate at base, acuminate at apex, prominently triplinerved a few mm. above base, the nerves conspicuous beneath; *pedicels* 8-13 mm. long in fruit; *cal.* lobes lanceolate, somewhat unequal, 10-12 mm. long in flower, up to 16 mm. long in fruit, entire, acuminate, glabrate; *cor.* 2.5-4 cm. long, the tube gradually and strongly ampliate from the base, becoming 1.5 cm. wide in throat, glabrous.

Epiphytic; generally distributed.

Trinidad: Ortoire River, Guayaguayare rd. (Britton, Freeman & Nowell, Herb. Trin. 2543, type); Mt. Aripo (Herb. Trin. 14447, 22.10.1949).

The species is variable, and three varieties, which may prove to be distinct species with further material and field study, may be distinguished as follows:

- Lvs. broadly ovate (average ratio of length to width 1.8:1), greenvar. **latifolia**
 Lvs. elliptic ovate (average ratio of length to width 2.9:1)
 Lvs. green, rather abruptly acuminate; hairs of young stems, lvs., and calyces colourlessvar. **triplinervia**
 Lvs. purple beneath, rather gradually acuminate; hairs of young stems, lvs. and calyces purplevar. **purpurea**

Var. **latifolia** Morton, var. nov.

Lvs. broadly ovate, 4.5-6.5 cm. long (average length 5.8 cm.), 2.7-3.5 cm. wide (average width 3.2 cm.), average ratio of length to width 1.8:1, shortly and sharply acuminate, green on both sides, the hairs when present, colourless; cor. white, the interior of the tube yellow, streaked and spotted with purple, as also the basal spur externally.

Folia late ovate, ca. duplo longiora quam latiora, viridia, breviter acuminata; corolla intus maculata.

Trinidad: Summit of Mt. Tucuche, 3,000 ft., Simmonds, Herb. Trin. 14061, 2.1.1948.

Var. **triplinervia**.

Lvs. elliptic-ovate, 5-8 cm. long (average length 6.6 cm.), 1.9-3 cm. wide (average width 2.3 cm.), average ratio of length to width 2.9:1, abruptly acuminate, green on both sides, or sometimes possibly somewhat reddish beneath, the hairs, when present colourless.

Var. **purpurea** Morton, var. nov.

Lvs. elliptic-ovate, 7-9.5 cm. long (average length 8 cm.), 2.5-3 cm. wide (average width 2.8 cm.), average ratio of length to width 2.9:1, gradually long-acuminate, purple beneath, the hairs of young stems, lvs. and calyces purple; sepals deep purple.

Folia elliptico-ovata, ca. triplo longiora quam latiora, gradatim acuminata, subtus purpurea, pilis purpureis.

Trinidad: 11th mile of Arima-Blanchisseuse rd., 1,800 ft., Simmonds, Herb. Trin. 13796, 17.8.1947.

3. *C. eggersii* Urban

Urb. Symb. Ant. 2. 366; Sandw. in Kew Bull. 1938, 371.

Young stems short-pilose, soon glabrous; *lvs.* petiolate (4.6 mm.), the blades ovate-oblong to oblong-lanceolate, 5-8 cm. long, 1.8-4.5 cm. wide, the lateral veins 4 pairs; *pedicels* 8-12 mm. long; *cal.* 9-12 mm. long, the lobes coloured, lanceolate or oblong-lanceolate, 3- or 5-nerved; *cor.* 3.3-3.5 cm. long, enlarged to 9 mm. wide in throat, the lobes rather large, sub-orbicular.

Tobago: Morne d'Or, 500 metres alt., along Great Dog River, Eggers 5848 (type); Rd. between Roxborough and Parlaturvier, creeping at base of trunk, Sandwith 1761 in Herb. Kew.

Not seen, description compiled.

DOUBTFUL SPECIES

Episcia hookeri Hanstein

Centrosolenia glabra Hooker

This species has never been placed. It is probably not an *Episcia* (*sens. lat.*) at all. From the description and illustration of Hooker it appears to be a *Codonanthe*, in all likelihood the same as *C. crassifolia*. It was collected in Trinidad by Purdie, and apparently no type specimen has been preserved.

6. *DRYMONIA* Martius

Epiphytic, scandent shrubs; *lvs.* of a pair equal; *fls.* axillary, solitary; *cal.* lobes large and subfoliaceous, herbaceous in texture, free, broad, toothed; *cor.* large, oblique or horizontal in calyx, spurred at base, the tube broad, not ventricose, ampliate upwardly, not contracted in throat, the limb broad, spreading, slightly irregular, the lobes conspicuously toothed; *fls.* short-connate at base, the *anthers* narrowly oblong, usually free, sagittate, only partially dehiscent; *disk* reduced to a solitary posterior gland.

1. *D. serrulata* (Jacq.) DC. ✓

Besleria serrulata Jacq.

Stems sparsely strigose, radicant below; *lvs.* petiolate (1-2.5 cm.), the blades broadly elliptic, 8-15 cm. long, 3.5-7 cm. wide, sharply acuminate, cuneate at base, conspicuously sinuate-dentate, sparsely strigillose on both sides, the lateral veins about 8 pairs; *fls.* solitary, the *pedicels* about 2 cm. long, stout; *cal.* 2.5-3 cm. long, the lobes nearly free, narrowly ovate, obviously veined, acute, sinuate-denticulate, strigillose on both sides; *cor.* yellowish with conspicuous, reticulate brown veins, 4-4.5 cm. long, about 2 cm. wide in throat, densely pilosulous externally, the lobes sharply toothed.

Trinidad: Siparia (Britton & Broadway 2811, Herb. Trin. 10452, 8.4.1921; Herb. Trin. 2513, 31.5.1865); Diego Martin (Herb. Trin. 6857, 2.8.1907); Maracas Bay (Herb. Trin. 6750, *ann.* 1900; Herb. Trin. 14142, 15.11.1947); Arima-Blanchisseuse rd. (Herb. Trin. 13292, 19.3.1938); El Paraiso, Tabaquite (Herb. Trin. 8721, 14.9.1918); *sine loc.* (Finlay, Herb. Trin. 2512, 4.8.1844); San Rafael (Herb. Trin. 14650, 7.10.1950).

Tobago: Roxborough-Parlatuvier rd. (Herb. Trin. 11110, 5.6.1925); Eggers 5718 (*fide* Urban); Mason Hall, Sandwith 1866 in Herb. Kew).

It is not entirely certain that these plants are correctly identified by *D. serrulata*, which was described from a cultivated plant said to have come from the West Indies. They certainly do not agree altogether with those figured by Lindley (Edwards Bot. Reg. 24: plate 4. 1838).

Moist open places; general, Trinidad and Tobago.
Venezuela.

7. COLUMNEA L. ✓

Erect or scandent, epiphytic *shrubs* or *sub-shrubs*, the *stems* unbranched or not much branched; *lvs.* opposite, those of a pair equal or strongly unequal; *fls.* axillary and mostly solitary, short-pedicellate, mostly ebracteate; *cal.* 5-parted, the lobes free, entire or toothed, acute or acuminate; *cor.* yellow or scarlet, erect in calyx, not spurred at base, the tube hairy, the limb sub-regular or strongly bilabiate; *fls.* connate, adnate to base of corolla tube, the *anthers* connate, oblong, the cells parallel, not confluent, oblong; *disk-gland* posterior, solitary; *fruit* baccate.*

Cor. yellow, the limb small (about 5 mm. wide) with 5 sub-equal lobes; *lvs.* strongly unequal, the smaller of the pair stipule-like, the larger 15-26 cm. long, obviously toothed (Subgenus *Collandra*)1. *C. sanguinea*

Cor. yellow or scarlet, the limb large, strongly bilabiate, the upper lip broad and erect, the lower narrow and reflexed; *lvs.* of a pair equal or nearly so, small 1.8-4.1 cm. long, entire (*Eucolumnea*)

Cor. yellow, the throat 5-6 mm. wide; calyx lobes narrow, 1.8-2.2 mm. wide; *lvs.* rather narrow (average ratio of length to width 3.4:1)2. *C. tocoensis*

*C. V. Morton, The West Indian Species of *Columnea*. Contr. U.S. Nat. Herb. 29: 1-15. 1944.

Cor. scarlet, the throat 6-9 mm. wide; calyx lobes broader, 2.5-4 mm. wide; lvs. broader (average ratio of length to width 2.6:1)3. *C. scandens*

1. *C. sanguinea* (Persoon) Hanstein

Besleria sanguinea Persoon

The plant occurring in Trinidad is var. *trinitensis* Morton, Contr. U.S. Nat. Herb. 29, 4 1944. Typical *C. sanguinea* occurs in Hispaniola.

Stems thick, mostly unbranched, densely long-hirsute; larger *lvs.* of a pair subsessile, the blades oblong-lanceolate, 15-26 cm. long, 5-10.3 cm. wide, sharply acuminate, sharply serrate, hirsute on both sides, red-spotted beneath above the middle, the primary veins 6-8 pairs; *pedicels* short, up to 5 mm. long; *cal.* about 2 cm. long, the lobes lanceolate, long-hirsute on both sides, subulate-toothed, the teeth long and narrow, about 4 on each side; *cor.* 2.6-3 cm. long, the throat contracted a little and 7 mm. wide, the limb about 7 mm. wide, the lobes about 4 mm. long; *fil.* sparsely pilosulous; *anthers* 2 mm. long and wide; *style* glabrous; *ovary* sparsely villous; posterior *disk-gland* 2 mm. long, 4-dentate.

Trinidad: Mt. Tucuche (Britton, Hazen & Mendelson 1333: Herb. Trin. 9093, 4.4.1920: Herb. Trin. 14801, 25.1.1953); Guayaguayare rd., Ortoire River (Britton, Freeman & Nowell 2528, Herb. Trin. 10451, 25.3.1921, type of var. *trinitensis*); Blanchisseuse rd. (Broadway 5977); Mora Forest (Broadway 5386); Long Stretch (Herb. Trin. 14230, 27.12.1948: Broadway 6851); Mt. Aripo (Herb. Trin. 9855, 10-26.1.1922); Chaguanas (Herb. Trin. 2507, 7.5.1868; *sine loc.* (Fendler 511 in Herb. Kew).

Tobago: Probably represented by Eggers 5856 from Morne d'Or, not seen, cited by Urban, and in Herb. Kew.

Epiphytic, in moist districts; general, Trinidad & Tobago.

2. *C. tocoensis* Britton.

Britt. Bull. Torr. Bot. Club 53, 470. 1926.

Scandent, the *stems* slightly branched, densely sericeous-strigose; *lvs.* petiolate (3-5 mm.), the blades narrowly oblong, 1.8-4.1 cm. long (averaging about 3), 0.7-1.3 cm. wide (averaging 0.9) rounded at apex, not red-spotted, entire, appressed-pilosulous on both sides, the primary veins 3 pairs; *pedicels* 5-6 mm. long; *cal.* 7-10 mm. long, the lobes linear-lanceolate, narrowed toward base, 1.8-2.2 mm. wide, entire, white-sericeous on both sides; *cor.* 4-4.8 cm. long; *fil.* glabrous; *anthers* 1.5 mm. long, *ovary* sparsely sericeous at apex; *style* glandular-pilosulous; *disk-gland* entire.

Trinidad: Toco rd., Valencia (Britton, Hazen & Mendelson 1785, type: Britton, Herb. Trin. 9247, 16.4.1920); Caroni River (Britton & Britton 2886); Oropuche (Broadway 6176); Arena (Broadway); Cumuto (Broadway 5741), Aripo (Herb. Trin. 2508, 15.3.1865); Valencia rd. (Herb. Trin. 13360, 16.10.1938); Guaico-Tamana rd. (Herb. Trin. 15004, 7.5.1953).

A light-demanding epiphyte in moist districts; central north Trinidad.

3. *C. scandens* L.

The Trinidad plant is var. *aripoensis* (Britton) Morton, Contr. U.S. Nat. Herb. 29, 14, 1944. (*Columnea aripoensis* Britton, Bull. Torrey Club 53, 470, 1926? *C. rotundifolia* Salisb. Parad. Lond. 1: pl. 29, 1806? *C. speciosa* Presl. Abh. Bohm. Ges. Wiss. V. 3: 575, 1845). *C. scandens* var. *scandens* occurs in Martinique and Montserrat and var. *vincentina* Morton in St. Vincent and Grenada.

Scandent, the stems sparingly branched, densely sericeous at apex; *lvs.* petiolate (2-3 mm.), the blades oblong, 2-3.7 cm. long (averaging 2.6), 0.8-1.5 cm. wide (averaging 1), rounded or obtuse at apex, entire, not red-spotted beneath, densely strigose on both sides, the primary veins 3 pairs; *pedicels* 8-15 mm. long; *cal.* 8.5-11 mm. long, the lobes broadly lanceolate, entire or some of them with a single tooth near base; *cor.* 4.6-5.8 cm. long; *fls.* glabrous; *anthers* 1.5-2 mm. long; *ovary* slightly hairy at apex; *style* white, glandular-pilous; *disk-gland* entire.

Trinidad: Aripo (Britton & Freeman 2340, type of *C. aripoensis*: Herb. Trin. 9856, 10-26.1.1922; Herb. Trin. 14017, 24.12.1947); Northern Range (Graf 2); Siparia (Herb. Trin. 2514, 31.5.1865); *sine loc.* (Crueger, Herb. Trin. 2509); Mt. Tucuche, 1,500 ft. (Herb. Trin. 14802, 25.1.1953).

Tobago: Mt. St. George-Castara rd. (Sandwith 1837 in Herb. Kew); Caledonia Woods (Broadway 4005).

A light-demanding epiphyte in moist districts, general.

8. *KOHLERIA* Regel

Terrestrial herbs; *rhizomes* bearing scaly, fleshy propagules; *stems* erect, unbranched, densely hairy; *lvs.* opposite, those of a pair sub-equal, petiolate, pinnate-veined, toothed; *fls.* axillary, solitary or few, sometimes borne on a common peduncle; *cal.* lobes free from each other, triangular to subulate; *cor.* erect in calyx, tubular, not saccate at base, red or yellow, hairy, mostly ventricose at middle, contracted in throat, the limb sub-regular; *stam.* included, the *anthers* coherent; *ovary* interior; *disk* composed of 5 glands; *fruit* capsular.

1. *K. hirsuta* (H.B.K.) Regel

Stems densely yellowish-tomentose; *petioles* 2-5 cm. long, thick, tomentose; *leaf blades* ovate to elliptic, the larger 10-15 cm. long, 4-8 cm. wide, broadly cuneate at base, sharply acuminate at apex, sharply serrate, green, densely tomentose on both sides; *pedicels* mostly paired, elongate (longer than the flowers), 4-6.5 cm. long; *cal.* lobes subulate, about 8 mm. long, 2.5 mm. wide at base; *cor.* red, about 3 cm. long, 6-7.5 mm. wide at middle, densely red-villous, the limb a little broader than the tube, not spotted.

Trinidad: Mt. Tucuche (Britton, Hazen & Mendelson 1304); North Coast rd. to Maracas Bay (Herb. Trin. 14139, 27.1.1952); Blue Basin (Herb. Trin. 7735, 13.5.1915).

Colombia.

Moist places, on rocks.

A related species has been found by a trail on the Cumaca Road, Heights of Oropuche, Simmonds 275 (Herb. Trin. 14134, 1.2.1948). It has passed as *K. hondensis* (H.B.K.) Regel, a native of Colombia, but its identity is still uncertain. It is distinguished from *K. hirsuta* by having the (mostly 3) pedicels borne on a well-developed common peduncle and by being themselves shorter than (rather than longer than) the corollas, by having the leaves purple beneath, by the more villous (rather than tomentose) pubescence, and by the narrower limb of the corolla. It is uncertain if it is native in Trinidad or escaped from cultivation. Other species of *Kohleria* may be expected in cultivation. Some of these have been recently treated by Moore.*

9. *GLOXINIA* L'Her.

Terrestrial, fleshy *herbs*; *rhizomes* creeping, bearing scaly, fleshy propagules; *stems* erect, unbranched; *lvs.* opposite, those of a pair slightly unequal, or occasionally borne in three's, long-petiolate, pinnate-veined; *fls.* solitary in the axils of reduced, sometimes almost bractlike leaves, pedunculate; *cal.* lobes free from each other, green, subfoliaceous, more or less reflexed, somewhat toothed; *cor.* broadly campanulate, erect in calyx, not contracted in throat, slightly saccate at posterior base, the limb spreading, broadly 5-lobed, the lobes sub-equal, the middle lobe of the lower lip somewhat more concave, the tube hairy externally; *stam.* included, the *anthers* coherent; *ovary* inferior; *disk* annular; *fruit* capsular.

1. *G. pallidiflora* Hook.

Stems mostly reddish, not lined or spotted, glabrous; *petioles* of larger leaves 1.5-4 cm. long, glabrous; *leaf blades* ovate, oblique

*Comments on Some *Kohlerias* Cultivated in the United States. Bailey 1: 89-101. 1953.

and sub-cordate at base, acute at apex, coarsely crenate, pale and silvery beneath, essentially glabrous; *peduncles* in flower 8-13 mm. long; *cal.* lobes in flower 8-10 mm. long, 4-5 mm. wide, narrowed at base, herbaceous; *cor.* 2-3 cm. long, pale blue or lilac.

Trinidad: Maracas Road, 1,000 ft. (Herb. Trin. 14664, 31.12.1950); Maracas Bay (Herb. Trin. 14140, 13.11.1947); Morne Coco Road (Herb. Trin. 14242, 1.1.1949); Sans Souci (Herb. Trin. 13797, 14.9.1947).

Venezuela and Colombia.

The related species *G. perennis* (L.) Fritsch may be in cultivation in Trinidad. It is a larger, coarser plant, with stems spotted and lined with dark red, leaves mostly red beneath, broader, more strongly toothed calyx lobes, and larger, darker rose-violet corollas, these more strongly woolly externally.

DOUBTFUL RECORDS

***Skiophila melittifolia* (L.) Hanstein**

Besleria melittifolia L.

Episcia melittifolia Martius

Reported from Trinidad by Grisebach, on the basis of a specimen without locality collected by Crueger.

Sandwith reports that the Crueger sheet in Herb. Kew, which was identified by Grisebach, in his own hand, as *Episcia melittifolia* L., is labelled "Martinique May '56" by Crueger. Therefore, this species can be definitely rejected from our flora.

***Rhytidophyllum tomentosum* (L.) Martius**

Gesneria tomentosa L.

There is a specimen in the Trinidad Herbarium collected in the Maraval Valley. It may have been cultivated. The species is otherwise known only from Cuba and Jamaica. It is a large, conspicuous shrub, so it does not seem likely that the species is really native in Trinidad. *Rhytidophyllum* may be distinguished at once from all other Trinidad genera of Gesneriaceae by its alternate, rather than opposite, leaves. The large, cymose inflorescences have peduncles 30 cm. long or more.

CULTIVATED SPECIES

The Gesneriaceae are very ornamental plants and a good many species are in cultivation. The following are probably present in Trinidad, and there may be many others: *Saintpaulia ionantha* Wendl., acaulescent perennials with large fleshy, hairy leaves, and white, pink or violet flowers, the corollas campanulate, the perfect stamens only two; *Episcia cupreata* (Hook.) Hanstein and *E. fulgida*

(Lind.) Hook. pot-herbs with green, coppery, or metallic-coloured leaves, these bullate above, and brilliant scarlet or orange flowers.*

The above two species belong to the Columneoideae (with superior ovaries); the following cultivated plants with inferior ovaries belong to the Gesnerioideae: *Achimenes longiflora* DC., herbs with scaly underground rhizomes, toothed, rather small leaves red-tinted beneath, and blue flowers with elongate tube and spreading limb; and *Sinningia speciosa* (Lodd.) Benth. & Hook. (called "Gloxinia" by florists), herbs from tuberous rhizomes, with large fleshy, hairy leaves, and very large, tubular, violet or purple corollas.

*Moore, H. E. The Scarlet Episcias, Bailey 1: 46-48, 1953.

FAMILY 4. BIGNONIACEAE

BY N. Y. SANDWITH

Trees, shrubs or climbers. Branchlets often with fields of small immersed plate-shaped glands at the nodes between the petioles. *Axillary buds* with outer scales pseudostipular and often foliaceous. *Leaves* usually opposite, rarely alternate, simple, 1-foliolate or variously digitately or pinnately compound, in the climbers commonly 3-foliolate with the terminal lft. often replaced by a tendril which is simple or divided (2-3-fid or twice 3-fid) at the apex; lfts. usually entire, commonly densely lepidote and therefore punctate after the fall of the small scales. *Stipules* none. *Inf.* a terminal or axillary thyrses or raceme, sometimes reduced to single fls. or a fascicle of pedicels. *Flowers* hermaphrodite, zygomorphic. *Calyx* gamosepalous, usually more or less campanulate or tubular, variously lobed or split, or truncate and entire or denticulate. *Corolla* gamopetalous with a conspicuous tube which is often narrowly cylindric towards the base, usually campanulate or funnel-shaped, sometimes salver-shaped or tubular, variable in length, glabrous, glandular-lepidote or variously pubescent; limb more or less bilabiate, the 5 lobes usually imbricate. Fertile *stamens* 4, didynamous, the anterior pair the longer, usually inserted below the middle of the tube, normally papillose-pilose at the insertion; *anthers* dithecal, the thecae divergent, divaricate or parallel, the *connective* frequently produced at the apex; *staminode* usually very short. Hypogynous *disk* variously shaped, sometimes absent. *Ovary* superior, bilocular, rarely unilocular (in local genera, only in *Crescentia*); *ovules* numerous, attached within each locus to 2 placentas which are axile, or parietal in unilocular ovaries; *style* simple with two flattened *stigmas*. *Fruit* capsular, bivalved, the valves either parallel to the septum (dehiscence septifragal) or at right angles to it (dehiscence loculicidal and sometimes also septifragal); or baccate and indehiscent. *Seeds* exalbuminous, more or less compressed, commonly transversely oblong with broad, membranous and often hyaline, or firm and corky, wings; or thick and wingless, and embedded in pulp.

In addition to the beautiful native trees and climbers, some of which are in cultivation, ornamental introduced species of this family are commonly grown in gardens. One or two of these are so conspicuous or familiar (sometimes even semi-naturalized) as to warrant their admission to the following account. Others include *Jacaranda obtusifolia* H. & B. var. *rhombifolia* (G. F. W. Mey.) Sandw., *Kigelia pinnata* (Jacq.) DC. (Sausage tree), *Oroxylum*

indicum (L.) Vent., *Pandorea jasminoides* (Lindl.) K. Schum., *Parmentiera cereifera* Seem. (Candle tree), *Podranea ricasoliana* (Tanf.) Sprague, *Pyrostegia venusta* (Ker-Gawl.) Miers, *Saritaea magnifica* (Sprague ex van Steenis) Dugand, *Spathodea campanulata* Beauv. (Tulip tree), *Tanaecium crucigerum* Seem. and *Tecomaria capensis* (Thunb.) Spach.

Key A. For material with branchlets, leaves and flowers

- Trees or shrubs, never climbing; lvs. never bifoliate with a tendril
 - Lvs. simple or 3-foliate, spirally arranged in alternate fascicles; fls. broadly campanulate 1. **Crescentia**
 - Lvs. various, opposite; fls. funnel-shaped to salver-shaped
 - Lvs. simple or digitately 3-5-foliate 2. **Tabebuia**
 - Lvs. pinnate 3. **Tecoma**
- Tendril-climbers
 - Lvs. 2-3-ternate or ternately bipinnate
 - Branchlets terete, with gland-fields at the nodes; tendrils simple; cor. pinkish purple 4. **Arrabidaea**
 - Branchlets sharply 4-angled, without gland-fields; tendrils trifid; cor. very pale yellow 10. **Pleonotoma**
 - Lvs. 2-3-foliate
 - Cor. pink or pinkish purple, at least on the limb
 - Branchlets with distinct gland-fields at the nodes
 - Lfts. and fls. with smell of garlic, tendrils trifid 7. **Pseudocalymma**
 - Lfts. and fls. not smelling of garlic; tendrils simple
 - Infl. a showy thyrses; cal. minutely denticulate; indumentum of simple hairs 4. **Arrabidaea**
 - Infl. short, axillary; cal. usually conspicuously dentate; indumentum of branched hairs 13. **Xylophragma**
 - Branchlets without gland-fields at the nodes
 - Tendrils simple
 - Branchlets tetragonous; disk absent... 9. **Cydista**

- Branchlets not tetragonous
 Infl. a showy thyrses; cal. loosely cup-shaped; disk conspicuous 8. **Petastoma**
 Infl. of lax dichasia; cal. spathaceous, terminated by a horn; disk absent12. **Phryganocydia**
- Tendrils trifid (or bifid in *Paragonia*)
 Cor. thickly velvety-tomentose outside, drying chocolate-brown 5. **Paragonia**
 Cor. not tomentose outside
 Cal. double; cor. thick, more or less cylindric20. **Amphilophium**
 Cal. simple; cor. thin, funnel-shaped
 Branchlets and petioles with spreading gland-tipped hairs; cal. more than 1 cm. long, not ribbed11. **Martinella**
 Branchlets and petioles without gland-tipped hairs; cal. less than 1 cm. long, prominently ribbed14. **Onohualcoa**
- Cor. yellow or white
 Cor. rich bright yellow
 Tendrils simple; cal. very large 3-4 cm. long, inflated, yellow21. **Callichlamys**
 Tendrils trifid with claw-like arms; cal. less than 3 cm. long
 Cal. loosely campanulate and irregularly lobed22. **Doxantha**
 Cal. spathaceously split, terminated by an apiculus
 Lfts. rather narrowly elliptic, long acuminate; cal. tubular-campanulate; disk simple.....23. **Macfadyena**
 Lfts. ovate or broadly elliptic, not or shortly acuminate; cal. broadly, loosely campanulate; disk double24. **Melloa**
- Cor. pale yellow or white
 Branchlets with gland-fields at the nodes
 Anthers glabrous15. **Ceratophytum**
 Anthers densely villous
 Pseudostipules superposed in a conspicuous series; cor. lobes with rows of glands outside; disk present16. **Pachyptera**

- Pseudostipules obscure; cor. lobes without rows of glands outside; disk absent 6. **Lundia**
- Branchlets without gland-fields at the nodes
- Cal. double; cor. more or less cylindric 20. **Amphilophium**
- Cal. simple; cor. funnel-shaped
- Cor. densely tomentose outside, thick
- Branchlets terete, without fibrous detachable ribs 18. **Distictella**
- Branchlets angled, with fibrous detachable ribs 19. **Pithecoctenium**
- Cor. glabrous or lepidote outside
- Branchlets tetragonous; disk absent; ovary subcylindric... 9. **Cydista**
- Branchlets not tetragonous; disk conspicuous; ovary ellipsoid 17. **Anemopaegma**

Key B. For material with branchlets, leaves and fruits

- Trees or shrubs, never climbing; lvs. never bifoliolate with a tendril
- Lvs. simple or 3-foliolate, spirally arranged in alternate fascicles; fruit large, gourd-like, indehiscent 1. **Crescentia**
- Lvs. various, opposite; fr. a narrow capsule
- Lvs. simple or digitately 3-5-foliolate 2. **Tabebuia**
- Lvs. pinnate 3. **Tecoma**
- Tendril-climbers
- Lvs. 2-3-ternate or ternately bipinnate
- Branchlets terete, with gland-fields at the nodes; tendrils simple 4. **Arrabidaea**
- Branchlets sharply 4-angled, without gland-fields at the nodes; tendrils trifid 10. **Pleonotoma**
- Lvs. 2-3-foliolate
- Fruit a long, linear capsule, up to 2.5 cm. broad, often much narrower
- Caps. flatly compressed, smooth
- Tendrils trifid
- Lfts. smelling of garlic 7. **Pseudocalymma**
- Lfts. not smelling of garlic
- Branchlets and petioles with gland-tipped hairs; tendrils long, with wavy, curved and hooked arms 11. **Martinella**

- Branchlets and petioles without gland-tipped hairs; tendrils short, with thickened claw-like arms
- Pseudostipules ovate or sub-orbicular; seeds with membranous pale wings22. **Doxantha**
- Pseudostipules subulate-lanceolate; seeds with firm dark-coloured wings23. **Macfadyena**
- Tendrils simple
- Branchlets with distinct gland-fields at the nodes
- Caps. glabrous 4. **Arrabidaea**
- Caps. densely tomentose 6. **Lundia**
- Branchlets without gland-fields at the nodes
- Branchlets tetragonous; seeds with firm coloured wings 9. **Cydistia**
- Branchlets terete; seeds with membranous wings
- Petiолules hirsute on upper side; seeds less than 1 cm. long, the wings dirty white, much paler than the body 8. **Petastoma**
- Petiолules glabrous; seeds more than 1 cm. long, the wings nearly the same colour as the body12. **Phryganocydia**
- Caps. densely minutely tuberculate, biconvex in section 5. **Paragonia**
- Fruit an ellipsoid or thick and oblong capsule, exceeding 2.5 cm. in breadth (sometimes narrower in *Pachyptera*)
- Tendrils short, trifid with hooked claw-like arms24. **Melloa**
- Tendrils long, simple or trifid but not with claw-like arms
- Branchlets with conspicuous gland-fields at the nodes
- Tendrils simple13. **Xylophragma**
- Tendrils trifid
- Pseudostipules inconspicuous; caps. horn-shaped, gibbous at base; seeds with broad membranous wings15. **Ceratophytum**

Pseudostipules superposed in a conspicuous series; caps. not horn-shaped; wings of seeds corky with narrow hyaline margin16. **Pachyptera**

Branchlets without gland-fields at the nodes

Caps. densely echinate, or with prickly-like tubercles

Branchlets angled with detachable ribs; caps. ellipsoid, echinate-prickly19. **Pithecoctenium**

Branchlets subterete, without detachable ribs; caps. oblong, with tubercles14. **Onohualcoa**

Caps. smooth or rugose-warty

Branchlets hexagonal with conspicuous ribs; seeds with pubescent body20. **Amphilophium**

Branchlets not hexagonal; seeds glabrous

Caps. more than 15 cm. long; seeds large, more than 5 cm. broad21. **Callichlamys**

Caps. up to 15 cm. long; seeds up to 5 cm. broad

Caps. glabrous17. **Anemopaegma**

Caps. densely tomentellous ...18. **Distictella**

1. CRESCENTIA L.

Small or medium-sized trees. *Lvs.* simple (or 3-foliolate in a Central American sp.), spirally arranged, mostly in fascicles on short shoots in the axils of fallen lvs. *Infl.* of 1-3 peduncles arising from nodes on old wood. *Cal.* large, coriaceous, deeply split. *Cor.* broadly campanulate, the tube very broad, dilated and transversely plicate below the middle, glandular-lepidote outside, without a ring of hairs within at the insertion of the stamens; lobes broadly deltoid-triangular, conspicuously acuminate. *Stams.* inserted below the middle of the tube; *anthers* glabrous. *Disk* large, hemispherical, depressed above. *Ovary* 1-locular, ovoid-ellipsoid, glabrous; *ovules* pluriseriate on two parietal bilobed placentas. *Fruit* large, gourd-like, globose or ovoid, with a corky pericarp, pulpy within; *seeds* small, flattened, not winged, embedded in the pulp.

1. *C. cujete* L. Calabash.

Griseb. Fl. 445; Britt. & Wils. Sci. Surv. Porto Rico 6. 198: Sandwith in Pulle, Fl. Suriname 4. pt. 2. 83; Seibert in Carnegie Inst. Wash. Publ. 522. 383 (1940); Marshall, Silv. Trin. Tob. 176-177.

Small tree; young branchlets angled, nodes very prominent, gland-fields absent; lvs. simple, cuneate-oblongate or spatulate, shortly narrowly oblong-ellipsoid loculicidal capsule, attenuate at size, up to about 21 cm. long and 5.8 cm. broad, papery, glabrous or more or less densely crisped-pilous on main nerves beneath; cal. 1.5-2.5 cm. long, very deeply split, glabrate or lepidote outside; cor. yellowish white, usually with greenish tinge and purple veins, 4-7 cm. long, tube glandular-lepidote within near base; fruit variable in size, up to 25 cm. in diam.; seeds 7-8 mm. long and 4 mm. broad.

Trinidad: Southern Watershed reserve, main ridge, "wild", Herb. Trin. 12402. Rare except in cultivation.

Tropical America. Widely cultivated throughout the tropics.

The related *Enallagma latifolia* (Mill.) Small (*E. cucurbitina* (L.) Baill., *Crescentia cucurbitina* L.) is recorded from Trinidad, on the strength of Sieber 277, by Griseb. Fl. 447 and by Urban in Fedde Repert. 14. 306 (1916). At the present time it is known only from cultivated specimens from the Botanic Garden. It has solitary, simple, alternate leaves which are elliptic or obovate, broader than those of *C. cujete* and not conspicuously long-attenuate to the base. The calyx and corolla are much like those of *C. cujete*. The fruit is up to 10 cm. long and 6 cm. in diam. The genus *Enallagma* is perhaps not worth separating from *Crescentia*.

2. *TABEBUIA* Gomes ex DC.

Trees. Branchlets with or without gland-fields at the nodes. Lvs. simple or 1-foliolate, or digitately 3-5-foliolate. *Pseudostipules* not evident. Infl. terminal or axillary, varying from short many-flowered dichasia to racemes, dense heads or a single flower. Cal. campanulate to elongate-tubular, lobed and often more or less bilabiate. Cor. campanulate-funnel-shaped, funnel-shaped or nearly salver-shaped with a narrow cylindric tube, glabrous outside, often pilose within in the anterior upper half of the tube. Anthers glabrous. Disk platter-shaped or cup-shaped. Ovary more or less oblong or oblong-ovoid, usually lepidote; ovules biseriate or pluriseriate in each loculus. Fruit a subterete elongate-linear or shortly cuspidate or acuminate, long-attenuate to base, variable in both ends, often beaked at apex; valves at right angles to septum, smooth; seeds transversely oblong with membranous whitish-hyaline wings, or rarely almost suborbicular and wholly coriaceous.

Calyx lepidote; corolla pink or white

Lvs. 1-5-foliolate; corolla usually pink,
funnel-shaped

Lfts. acuminate; infl. showy, many-fl.;
mature caps. at least 25 cm. long1. *T. rosea*

Lfts. obtuse; infl. few-fl.; mature caps.
usually less than 20 cm. long2. *T. pallida*

Lvs. simple; corolla white, nearly salver-
shaped3. *T. stenocalyx*

Calyx stellate-pubescent or tomentose; corolla
yellow

Fl. buds and calyx densely woolly with long
soft golden hairs covering a much shorter
tomentum4. *T. chrysantha*

Fl. buds and calyx tomentose or pubescent

Young parts and calyx rusty-tomentose;
lfts. stellate-pubescent; pedicels
usually less than 1 cm.5. *T. rufescens*

Young parts and calyx scurfy-pubescent;
lfts. not stellate-pubescent; pedicels
often exceeding 1 cm.6. *T. serratifolia*

1. *T. rosea* (Bertol.) DC. Pink Poui, Apamata.

Tecoma rosea Bertol.

Tabebuia pentaphylla (L.) Hemsl. *sensu auct. plur.,
partim, non Bignonia pentaphylla* L. Sp. Pl. ed. 2
870.

Tecoma leucoxydon (L.) Mart. *ex* DC. var. *pentaphylla*
Bur. & K. Schum., *partim*.

Bertoloni, *Florula Guatimalensis* 25 (1840): DC. Prodr. 9.
215 (1845): Bur. *et* K. Schum. in Mart. Fl. Bras. 8. pt. 2. 342:
Standley, *Trees & Shrubs of Mexico* 1320 (1926) and in 'Tropical
Woods' 36. 17 (1933): Seibert *loc. cit.* 388: Sandwith in Kew
Bull. 1953, 454 (1954).

Medium-sized to large deciduous tree; branchlets terete, stout,
irregularly many-ribbed, lepidote; petioles long, often equalling
the terminal petiolule and lft.; lvs. 5-foliolate; lfts. elliptic, elliptic-
oblong or elliptic-ovate, usually conspicuously acuminate, rounded
or cuneate at base, very variable in size, 6-25 cm. long, 2.5-12.5 cm.
broad, more or less coriaceous, glabrous but densely lepidote on
both surfaces, the lower surface often canescent with inconspicuous
veinlets on account of the scaly coating; infl. thyrses rather large,
loose and many-flowered, usually broader than long, lepidote, with
inconspicuous bracts; cal. tubular-campanulate, bilabiate split
into unequal lobes, 1.5-2 cm. long, densely lepidote; cor. pinkish

purple, throat and tube yellow within, funnel-shaped, 6-8 cm. long, glabrous outside and without gland-fields near base of lobes, limb up to 7 cm. in diam., ciliate and sparsely pubescent within; *disk* large, pulvinate; *ovules* biseriate in each loculus; *caps.* elongate-linear, beaked-acuminate, attenuate into persistent calyx, when mature 25-35 cm. long, up to 1.2 cm. broad, densely lepidote, valves with several obscure or finely prominulous longitudinal ribs; *seeds* about 1 cm. long, 3.5-4 cm. broad, wings broadly membranous and whitish-hyaline.

Trinidad: commonly cultivated.

Tobago: cultivated at the Botanic Station.

Mexico to Venezuela and Ecuador.

2. *T. pallida* (Lindl.) Miers.

White Cedar

Bignonia pallida Lindl.

Tabebuia heterophylla (DC.) Britton subsp. *pallida* (Lindl.) Stehlé

Tecoma pentaphylla (L.) DC. *sensu* DC., Griseb. & Urban Lindley, Bot. Reg. t. 965: DC. Prodr. 9. 217: Griseb. Fl. 447: Urb. Symb. Ant. 4. 565: Britt. & Wils. *loc. cit.* 196: Stehlé in Bull. Soc. Bot. France 93. 32 (1946): J. S. Beard, Nat. Veget. of Windward & Leeward Is. (Oxf. Forestry Mem. 21) 89 (1949).

Shrub to medium-sized deciduous *tree*, with general characters of preceding sp. but *lvs.* often 1-3-foliate; *lfts.* elliptic, oblong or obovate-elliptic, obtuse and often rounded, rarely very shortly obtusely cuspidate at apex, often very rounded or subtruncate at base, of thinner texture and with nerves less prominent below than in *T. rosea*, and with scattered scales instead of a scaly coating beneath; *infl.* thyrses much less showy, relatively few-flowered; *cal.* usually shorter, commonly less than 1.5 cm. long, much less densely lepidote with larger, scattered scales; *cor.* usually pale lilac-rose with yellowish tube and yellow throat, sometimes white; *caps.* when mature up to 22 cm. long, usually much shorter and 10-15 cm. long, much less densely lepidote with larger, scattered scales; *seeds* smaller, 7-9 mm. long and 2-3 cm. broad.

Tobago: Orange Hill, fl. 23.5.1951, Herb. Trin. 14713. Reported also from Sheerbird's Point, Bon Accord Lagoon, as a tall straggling shrub on coral soil with mangroves. Recorded by Urban, *loc. cit.*

Puerto Rico, Virgin Islands, and throughout the Lesser Antilles. Naturalized in Bermuda.

"White Cedar" is reported in cultivation, as *Tecoma leucoxydon*, by Williams, see "Useful and Ornamental Plants in Trinidad and Tobago", ed. 3. 232 (1941).

3. **T. stenocalyx** Sprague & Stapf

Wild Calabash

Schlegelia violacea (Aubl.) Griseb. *quoad descr.* Griseb.,
excl. syn.

Griseb. Fl. 445: Sprague & Stapf in Kew Bull. 1910, 196:
Urb. in Fedde Repert. 14. 304 (1916): Sprague & Sandwith in
Kew Bull. 1932, 20: Marshall, Silv. Trin. Tob. 183.

Medium-sized evergreen *tree*: young *branchlets* compressed, densely lepidote, older ones terete, grey, ribbed, glabrate, lenticellate; *petioles* 1-2.5 cm. long; *lvs.* simple, blade not articulated to petiole, elliptic to obovate, very obtuse and rounded or abruptly acute at apex, gradually or abruptly cuneate-attenuate to base, 8-22 cm. long, 3-12 cm. broad, coriaceous with revolute margin, glossy above, densely minutely lepidote, prominently nerved and above, densely minutely lepidote, prominently nerved and intricately reticulate-veined; *infl.* thyrses terminal, short, lepidote, with compressed rachis and branches, and with narrow leafy bracts; *cal.* narrowly elongate-tubular, 2-3 cm. long, 5-7 mm. broad, shortly bilabiate and irregularly shortly and broadly toothed, densely lepidote and often with some immersed glands in the upper half; *cor.* white, nearly salver-shaped, tube narrowly cylindric except for the narrowly funnel-shaped upper third, 5-7 cm. long, glabrous outside but with groups of small plate-shaped glands near base of lobes, the frilled limb up to 6 cm. in diam., pubescent and glandular-lepidote within; *disk* cup-shaped, crenulate; *ovules* biseriate; *caps.* shortly linear-oblong, shortly attenuate and more or less beaked-acuminate, up to 18 cm. long, when mature 1.5-2 cm. broad, densely lepidote; *seeds* up to 1.3 cm. long, about 3.5-4 cm. broad, the wings broadly membranous and whitish-hyaline.

Trinidad: northern and central districts, locally common in forests with a high rainfall. Also cultivated. A conspicuous absentee from the rain forests of Tobago.

British Guiana.

4. **T. chrysantha** (Jacq.) Nicholson

Poui Vert

Tecoma chrysantha Jacq.

Jacquin, Hort. Schoenbr. 2. 45. t. 211: Bur. & K. Schum.
loc. cit. 339: Standley in 'Tropical Woods' 36. 18 (1933): Seibert
loc. cit. 391.

Small deciduous *tree*; *branchlets* angled with sharp ribs, cortex easily fissured, covered like the petioles and petiolules with a deciduous tomentum of cream-coloured, mostly branched hairs; *lvs.* 5-foliate; *lfts.* obovate to elliptic or elliptic-oblong, acuminate, obtuse or rounded or somewhat cordate at base, 4-15 cm. long, 2-9 cm. broad, usually entire, more or less coriaceous, glabrous but conspicuously lepidote above, densely stellate-pubescent or

tomentose beneath; *fl. buds* forming golden "velvety puffs" (Dugand, *vide* Standley) of long soft hairs at the end of branchlets; *infl.* of many fls. congested in head-like clusters terminating leafless branchlets; *pedicels* less than 1 cm.; *bracts* and *bracteoles* minute, falling early; *cal.* campanulate with broad lobes, 0.8-1.5 cm. long, conspicuously ribbed, like the pedicels clothed with long soft and very shortly branched (appearing simple) hairs which cover a much shorter tomentum; *cor.* bright yellow, funnel-shaped, 4-7 cm. long, tube glabrous outside, the limb about 5 cm. in diam., sparsely pubescent with branched stellate-like hairs and glandular-lepidote outside, with rather long, soft and very dense hairs round base of lobes and descending down inner anterior side of tube; *disk* shallowly annular-cupshaped; *ovules* pluriseriate; *caps.* elongate-linear, attenuate into a beak, up to 30 cm. long, about 1.3 cm. broad, valves furry-woolly with a golden-brown deciduous indumentum like that of calyx; *seeds* about 5-7 mm. long and 2-2.5 cm. broad, the wings membranous, whitish-hyaline and shining.

Trinidad: Chacachacare, Crueger 257, Herb. Kew; *ibid.*, 20.10.1861, Herb. Trin. 1497.

Patos (Broadway 7637, Herb. Mus. Brit.), Venezuela, Colombia, Central America and Mexico.

The Crueger specimen was identified as "*Tecoma spectabilis* Planch. var." by Grisebach, but was not cited in his Flora. It was incorrectly cited under *T. rufescens* Johnst. by Sprague and Sandwith in Kew Bull. 1932, 23. I have seen no authentic specimen of *T. chrysantha*, but am accepting the interpretation of Schumann, Standley and Seibert, which seems to me to be correct.

5. *T. rufescens* J. R. Johnston Black Pouli, Cogwood.

T. glomerata Urb.

Tecoma spectabilis Planch. *sensu* Griseb. Fl. non Planch. Griseb. Fl. 447: J. R. Johnston in Proc. Amer. Acad. 40. 696 (1905): Urb. in Fedde Repert. 14. 305 (1916): Britt. & Wils. loc. cit. 197: Sprague & Sandwith in Kew Bull. 1932, 22: Marshall, Silv. Trin. Tob. 177.

Small or medium-sized deciduous tree; old branchlets glabrate, young ones, petioles and petiolules rusty-tomentose with stellate hairs; *lvs.* 5-foliate; *lfts.* obovate to elliptic, acuminate, cuneate to rounded and subcordate at base, up to about 15 cm. long and 7.5 cm. broad, entire (but margins coarsely serrate on lvs. of seedlings and young trees), papery, lepidote and more or less pubescent with stellate hairs (often glabrescent except on nerves) on both surfaces, especially the lower, sometimes also with simple hairs on upper surface; *infl.* very short, forming heads or fascicles

of fls. at apex or in fork of leafless branchlets, coarsely, more or less rusty, tomentose with branched and simple hairs; *pedicels* less than 1 cm.; *cal.* shortly tubular-campanulate with broad lobes, 0.8-1.3 cm. long, conspicuously ribbed, rather coarsely rusty-tomentose with branched and subsimple hairs, the subsimple hairs not much longer than the rest; *cor.* bright yellow, funnel-shaped, 5-7 cm. long, tube glabrous outside, the limb about 5 cm. in diam., ciliate, with very scattered branched hairs outside, somewhat glandular-lepidote within, with short, stiff, rather dense hairs round base of lobes and descending down inner anterior side of tube; *disk* shallowly annular-cupshaped; *ovules* pluriseriate; *caps.* elongate-linear, up to 33 cm. long (up to 45 cm., *vide* Marshall), 1-4 cm. broad, valves densely rusty stellate-pubescent, finely striate; *seeds* about 5-7 mm. long and 2-2.5 cm. broad, the wings membranous, whitish-hyaline and shining.

Trinidad: mainly in seasonal forests in southern districts, *vide* Marshall and J. S. Beard. Cultivated in and around Port-of-Spain.

Tobago: frequent in woods in drier areas.

Grenada, St. Vincent (native in either?). Margarita, Venezuela and Colombia. Amazonian Brazil? Widely cultivated in the West Indies, and in British Guiana.

Closely allied to *T. chrysantha* (Jacq.) Nichols., of which it is perhaps not more than a variety differing conspicuously in characters of indumentum.

6. *T. serratifolia* (Vahl) Nicholson

Yellow Poui.

Bignonia serratifolia Vahl

Tecoma serratifolia (Vahl) G. Don.

Tabebuia araliacea (Cham.) Morong & Britton

Griseb. Fl. 447: Urb. in Fedde Repert. 14. 305 (1916):
Sprague & Sandwith in Kew Bull, 1932, 26: Sandwith in Pulle Fl.
Suriname 4. pt. 2. 73: Marshall, Silv. Trin. Tob. 180.

Tall deciduous *tree*; *branchlets* terete, finely ribbed, when young minutely scurfy, glabrous with age like the petioles and petiolules; *lvs.* usually 5-foliolate, sometimes 3-foliolate; *lfts.* very variable in size and shape, usually elliptic-lanceolate to elliptic-ovate, acuminate, rounded or obtuse at base, the terminal one sometimes more than 20 cm. long and nearly 10 cm. broad, margins more or less wavy and crenate-serrate but sometimes entire, papery, bearded-hairy in axils of main nerves beneath, otherwise glabrous except for minute scales beneath, ultimate veinlets finely and very intricately reticulate beneath but not raised; *infl.* usually on leafless branchlets, forming a few-flowered thyse sometimes resembling a fascicle of pedicels, brownish scurfy-tomentellous with minute stellate hairs; *pedicels*

often much exceeding 1 cm.; *cal.* campanulate, broadly irregularly lobed, 0.8-1.8 cm. long, finely scurfy-pubescent with stellate hairs; *cor.* bright yellow, funnel-shaped, 6-8 cm. long, glabrous outside, the frilled limb 4-9 cm. in diam., ciliate, glabrous or nearly so within, with long, thin, rather sparse hairs round base of lobes and descending down inner anterior side of tube; *disk* shallowly cupshaped; *ovules* pluriseriate; *caps.* elongate-linear, up to at least 45 cm. long and 2 cm. broad, valves glabrous or very obscurely scurfy; *seeds* about 1 cm. long and 4 cm. broad, the wings membranous, whitish-hyaline and shining.

Trinidad: widely distributed in the northern forests. Also in the Central Range, at Mayaro, &c.

Tobago: well-known in the island, and noted by J. S. Beard as rare or occasional in lowland and lower montane rain forest. The only collection seen is from the coast at Parlatuvier, N. Y. Sandwith 1897, Herb. Kew., *vide* Kew Bull. 1938, 372.

St. Vincent (probably only in cultivation), Continental Tropical America, from Colombia to Guiana, Brazil and Bolivia.

Closely allied to *T. guayacan* (Seem.) Hemsl., of Mexico to Panama, which differs in the dense indumentum of stiff hairs at the sinuses of the corolla lobes.

3. *TECOMA* Juss.

Shrubs or small *trees*. *Branchlets* without gland-fields at the nodes. *Lvs.* imparipinnate, rarely simple or ternate; *lfts.* serrate. *Pseudostipules* obscure, not foliaceous. *Infl.* a terminal raceme or panicle. *Cal.* campanulate or tubular-campanulate, with deltoid-triangular, often apiculate lobes. *Cor.* thin, campanulate-funnel-shaped or narrowly tubular-funnel-shaped, glabrous outside; lobes of limb whitish-ciliate in bud. *Stams.* included or exerted; *anthers* glabrous or pilose. *Disk* shallowly cupshaped. *Ovary* oblong, lepidote; *ovules* biseriate in each loculus. *Fruit* a compressed, linear, loculicidal capsule; valves at right angles to septum, smooth; *seeds* transversely oblong, with broad membranous whitish wings.

1. *T. stans* (L.) H.B.K.

Christmas Hope.

Bignonia stans L.

Stenolobium stans (L.) Seem.

Griseb. Fl. 447: Urb. in Fedde Repert. 14. 306 (1916): Britt. & Wils. *loc. cit.* 197: Sandwith in Pulle Fl. Suriname 4. pt. 2. 79: Seibert *loc. cit.* 394.

Shrub or small *tree*; young *branchlets* subterete, finely striate, lenticellate, glabrous or minutely lepidote; *lvs.* imparipinnate with 1-3 pairs of *lfts.*; *lfts.* lanceolate or elliptic-lanceolate, long-attenuate and acuminate, cuneate at base, 3-10 cm. long, 1-4 cm. broad, sharply serrate, papery, glabrous, or pilose along the

midrib beneath especially in axils of main nerves, punctate beneath; *cal.* 5-7 mm. long, glabrous except for the ciliate lobes, usually with some impressed glands in the upper half; *cor.* yellow, campanulate-funnel-shaped, 3.5-5 cm. long, the limb up to 3.5 cm. in diam.; *stams.* included; *anths.* pilose; *caps.* long-attenuate to an acute apex, 10-22 cm. long, up to about 7 mm. broad, drying brownish, glabrous, yellowish-lenticellate; *seeds* up to about 7 mm. long and 3 cm. broad, often much smaller.

Trinidad: N.W. peninsula and Bocas Islands, in dry places.

Tobago: the Rectory, Scarborough, Herb. Trin. 8418.

Widely distributed throughout Tropical America. Commonly cultivated.

A form with the leaflets deeply incised or even pinnatifid with toothed lobes is known in cultivation. This is the var. *apiifolia* Hort. ex DC. Prodr. 9. 224 (1845), and is the *Tecoma incisa* Sweet, Hort. Brit. ed. 1. 284 (1827), a *nomen nudum* given to a plant which came from Trinidad. Two old Trinidad specimens of var. *apiifolia*, collected by de Shack and Lockhart, are in the Kew Herbarium.

4. ARRABIDAEA DC.

Tendrils-climbers. *Branchlets* more or less terete, with conspicuous gland-fields at the nodes. *Lvs.* 2-3-foliate, rarely 2-3-ternate; tendrils simple. *Pseudostipules* not foliaceous, minute. *Infl.* usually a large, many-flowered terminal or axillary thyrse. *Cal.* campanulate, truncate and minutely denticulate. *Cor.* comparatively small, campanulate-funnel-shaped or funnel-shaped, densely pubescent outside. *Anthers* glabrous. *Disk* pulvinate or cup-shaped. *Ovary* oblong, minutely lepidote; *ovules* usually biseriate, sometimes 4-seriate, in each loculus. *Fruit* a linear compressed capsule; valves parallel to the septum, essentially smooth, with distinctly raised median nerve; *seeds* transversely oblong, with membranous more or less hyaline wings.

Lvs. simply ternate; *ovules* 2-seriate in each
loculus

Lfts. densely pubescent or tomentose
beneath1. *A. sieberi*

Lfts. glabrous or nearly so

Lfts. drying reddish-brown; *caps.* not
acuminate2. *A. chica*

Lfts. not drying reddish-brown; *caps.* long-
acuminate3. *A. oxycarpa*

Lvs. 2-3-ternate; *ovules* 4-seriate in each
loculus4. *A. inaequalis*

1. *A. sieberi* DC.

Bignonia mollis Vahl sec. Griseb., *partim*, non Vahl

Arrabidaea blanchetii DC.

A. lundellii Standl.

Griseb. Fl. 448, 449: Bur. & K. Schum. *loc. cit.* 55, 56: Urb. in Fedde Repert. 14. 302 (1916): Seibert *loc. cit.* 405.

Strong, woody climber, with all vegetative parts softly and densely, finely pubescent or tomentose; *branchlets* sometimes angled, drying pale brown, glabrate with age; *lfts.* broadly ovate or ovate, shortly acuminate or blunt and rounded at apex, widely and shallowly cordate (sometimes rounded and abruptly cuneate) at base, 5.5-16 cm. long, 4-10.5 cm. broad, coriaceous, velvety when young, lepidote and finely pubescent above with minute hairs from tuberculate bases, slightly rough with age, densely tomentose or pubescent beneath with curly hairs and thus often paler and more or less greyish-hoary, venation impressed above strongly reticulate beneath; *infl.* thyrses showy, pyramidal, densely pubescent; *cal.* small, 3-5 mm. long, finely greyish-tomentellous; *cor.* pinkish purple, 2-3 cm. long, the limb up to 2.5 cm. in diam. and pubescent within; *caps.* up to 27 cm. long, 1-1.2 cm. broad, glabrous, the valves with thickened margins, copiously minutely warty and somewhat rough to touch; *seeds* 8-9 mm. long, 3-4 cm. broad, body brown, wings almost wholly whitish-hyaline.

Trinidad: widespread in northern, central and southern districts.

Mexico and Central America to Venezuela, British Guiana and eastern Brazil.

The Crueger specimen identified by Grisebach (and again quoted by Urban) as *Bignonia mollis* Vahl is in the Kew Herbarium. It is a fruiting example of *A. sieberi*. The words of Grisebach's description, "flowers precocious, purple", were adapted from Crueger's notes on the label.

I entirely agree with Dr. Seibert, *loc. cit.*, in my inability to distinguish the Central American species *A. lundellii* from the Brazilian species *A. blanchetii*, but I go further and consider that both are conspecific with *A. sieberi*, which has hitherto been known from the intermediate area of Trinidad, British Guiana and Venezuela.

2. *A. chica* (H. & B.) Verlot

Bignonia chica H. & B.

Humboldt & Bonpland Pl. Aequin. 1. 107 pl. 31: Bur. & K. Schum. *loc. cit.* 31: Urb. in Fedde Repert. 14. 301 (1916): Britt. & Wils. *loc. cit.* 192: Seibert *loc. cit.* 404.

Climber; branchlets striate, like the slender petioles and petiolules finely puberulous, later glabrate; *lfts.* ovate to elliptic-ovate, acutely acuminate, rounded or cuneate at base, 6-13 cm. long, 3-7.5 cm. broad, or larger, papery or coriaceous, usually drying reddish or reddish-brown, more or less shining, minutely puberulous mostly along main nerves or quite glabrous, usually not bearded in axils of main nerves beneath, very intricately reticulate-veined on both surfaces; *infl.* thyrses showy, pyramidal, finely puberulous or glabrate; *cal.* 3-4.5 mm. long, finely tomentellous, often drying reddish; *cor.* rose-purple, 2-3 cm. long, often drying reddish, the limb up to about 2 cm. in diam. and pubescent within; *caps.* up to 30 or more cm. long, 1-1.3 cm. broad, shortly attenuate and merely acute at apex, glabrous, the valves thick with strongly thickened margins, surface shining, distinctly warty or rugose and dotted with immersed plate-shaped glands; *seeds* about 1 cm. long and 3-4 cm. broad, body dark brown, wings whitish-hyaline (in Puerto Rico material the body of the seed is light reddish-brown and asperous).

Trinidad: without locality, 1889, Herb. Trin. 3926; Maracas Bay, fl. Nov., Herb. Trin. 13992; rare.

Puerto Rico. Continental Tropical America, from British Honduras to British Guiana, Brazil, Argentina and Ecuador.

Urban, *loc. cit.*, referred Herb. Trin. 3926 to var. *thyrsioidea* (DC.) Bur. I prefer not to assign the Trinidad specimens to any of the named varieties, which have doubtful taxonomic validity. *A. chica* seems to be a very variable and perplexing species. *A. calodictyos* Sprague and *A. larensis* Pittier, of Venezuela, are likely to prove conspecific, while *A. floribunda* (H.B.K.) Loes., of Southern Mexico, seems to be little more than a small-flowered form of the same plastic species.

3. *A. oxycarpa* Urb.

Urb. in Fedde Repert. 14. 301 (1916).

Climber, almost entirely glabrous; *branchlets* ribbed, with an easily split and detachable pale cortex; *petioles* and *petiolules* canaliculate above with sharp edges; *lfts.* ovate or elliptic-ovate, terminal lft. sometimes obovate, acuminate, rounded or cuneate at base, 7-14 cm. long, 3.5-8 cm. broad, stiffly papery or sub-coriaceous, glabrous except for tufts of hairs in axils of main nerves beneath, very intricately reticulate-veined on both surfaces especially the lower; *infl.* thyrses short, with many clustered fls., minutely puberulous; *cal.* 4 mm. long, teeth 1 mm. long or shorter; *cor.* "somewhat rosy" (*Broadway*), fragrant, 1.5-3 cm. long; *caps.* up to 28 cm. long, 10-11 mm. broad, conspicuously long attenuate-acuminate at apex, glabrous, the valves not very thick

with scarcely thickened margins, surface very minutely warty-rugulose under a lens; *seeds* 8-9 mm. long, up to about 3 cm. broad, body dark brown, wings with fairly broad whitish-hyaline margin.

Trinidad: Moruga, on small trees on sea-shore, fl. and fr. June, Broadway 3188 (type collection, not seen); *ibid.*, fr. 19.3.1921, Britton and Broadway 2149 in Herb. Trin. 10032, dupl. in Herb. Kew; Marabella, beyond Tarouba Bridge, San Fernando, fr. Oct., Herb. Trin. 1484.

Endemic? Rare, southern districts only.

This species appears to be closely related to *A. tuberculata* DC., of Guiana and the Amazon region. The inflorescence has not been seen, and the description of the flowers has been compiled from Urban's description and from Broadway's field-notes preserved at Kew. It is hoped that further material in all stages of development will be collected. Broadway's notes show that the type material was collected on June 5th, 1908. The type specimen in the Berlin Herbarium was presumably destroyed in March, 1943.

4. *A. inaequalis* (DC. ex Splitg.) K. Schum.

Bignonia inaequalis DC. ex Splitg.

Tetrastichella inaequalis (DC. ex Splitg.) Pichon

Urb. in Fedde Repert. 14. 302 (1916): Sandwith in Pulte Fl. Suriname 4. pt. 2. 13: Seibert *loc. cit.* 404: Pichon in Bull. Soc. Bot. France 92. 223 (1945).

Woody climber; *branchlets* finely striate, like the petioles and infl. rachis drying blackish, usually spotted with pale whitish lenticels, minutely lepidote otherwise glabrous; *lfts.* ovate-oblong to obovate-oblong, conspicuously acuminate, cuneate to rounded at base, 4-11 cm. long, 2-7 cm. broad, papery, usually drying dark brown or blackish, often shining, glabrous or puberulous on main nerves, conspicuously loosely reticulate-veined; *infl.* thyrses showy, pyramidal, lateral branches and pedicels brownish-tomentellous; *cal.* 4-6 mm. long, finely pubescent or tomentellous; *cor.* pinkish-purple, 2.5-3.5 cm. long, the limb 2-3 cm. in diam. and pubescent within; *caps.* up to about 30 cm. long, 10-11 mm. broad, glabrous, the valves with thickened margins, intricately minutely rugulose and rough to touch, with scattered immersed plate-shaped glands; *seeds* 8-10 mm. long, 3.5-4.5 cm. broad, rather pale brown and shining, wings becoming whitish-hyaline at their apical margin.

Trinidad: widely distributed in northern and central districts.

S. Mexico, British Honduras, Colombia, Venezuela, Guiana and Amazonian Brazil.

DOUBTFUL SPECIES

A species referred to this genus with doubt, as allied to *A. pearcei* (Rusby) K. Schum. ex Urb., was reported from Trinidad by Urban, Fedde Repert. 14. 302 (1916), on the strength of a sterile specimen collected by Othmer, no. 374B, at Maracas Bay, and a fruiting specimen collected on the shore at Erin by Broadway, no. 2826. Neither of these collections has been seen, and the specimens examined by Urban were presumably destroyed at Berlin in March, 1943.

5. PARAGONIA Bur.

Tendrils-climbers. *Branchlets* subterete, without gland-fields at the nodes. *Lvs.* 2-foliolate, often terminated by an unequally bifid or trifid tendril. *Pseudostipules* small, subulate-lanceolate. *Infl.* a terminal many-flowered thyrses. *Cal.* campanulate, truncate or irregularly lobed. *Cor.* rather thick, funnel-shaped, velvety-tomentose outside. *Anthers* glabrous. *Disk* large, cup-shaped. *Ovary* subcylindric with thick walls, lepidote; *ovules* biseriate in each loculus. *Fruit* an elongate-linear acuminate capsule, biconvex in section; valves parallel to the septum, finely and densely tuberculate; *seeds* narrowly transversely oblong, with broad, membranous, hyaline, dirty white or brown wings.

1. *P. pyramidata* (L.C. Rich.) Bur.

Bignonia pyramidata L.C. Rich.

B. laurifolia Vahl

Griseb. Fl. 448: Urb. in Fedde Repert. 14. 303 (1916): Sand-with in Pulle Fl. Suriname 4. pt. 2. 15: Seibert *loc. cit.* 427.

Woody high climber; young *branchlets* finely striate, minutely lepidote, often drying purplish black with creamy lenticels; *pseudostipules* often ribbed; *petioles* with plate-shaped glands on upper side near apex; *lfts.* oblong-elliptic to ovate or obovate, shortly acuminate or cuspidate, obtuse or rounded at base, up to 18 cm. long and 8.5 cm. broad, thinly coriaceous, glabrous but minutely lepidote, closely reticulate on both surfaces, often drying a greyish-olive colour; *infl.* thyrses sometimes more than 20 cm. long, with rather dense cymes and short pedicels; *cal.* 5-8 mm. long, densely and minutely bluntly tuberculate and more or less lepidote; *cor.* pink or purple, drying chocolate-brown, 3-7 cm. long, the limb about 3 cm. in diam. and pubescent within; *caps.* up to 46 cm. long and 1.3 cm. broad; *seeds* about 1 cm. long and 3.5 cm. broad.

Trinidad: northern, central and southern districts, not uncommon.

Tobago: The Widow, 14.7.1913, Broadway 4576; Easterfield Road, Herb. Trin. 13560; recorded by Urban, *loc. cit.*

Guadeloupe (*vide* Grisebach and Urban). Very widely distributed in Continental Tropical America.

6. LUNDIA DC.

Tendrils-climbers. *Branchlets* subterete, with gland-fields at the nodes. *Lvs.* 2-3-foliolate, the terminal lft. often replaced by a simple or, in some species (not occurring in Trinidad), trifid tendril. *Pseudostipules* obscure, not foliaceous. *Infl.* an axillary or terminal thyrse. *Cal.* at first ellipsoid and acuminate, the acumen ending in short teeth, then splitting with the upper third removed like a cap, finally campanulate and truncate or more rarely somewhat bilobed, rather thin. *Cor.* campanulate-funnel-shaped, densely pubescent or tomentose outside. *Stams.* with glabrous or pilose filaments; *anthers* densely villous. *Disk* absent. *Ovary* oblong, densely pubescent or villous, with a villous ring of hairs at base; *ovules* 2-6-seriate in each loculus; *style* and *stigmas* usually more or less densely pubescent or villous. *Fruit* a linear compressed capsule; valves parallel to the septum, smooth, with a distinctly raised median nerve; *seeds* narrowly transversely oblong, with thin body and broad, membranous, hyaline wings.

1. *L. corymbifera* (Vahl) Sandwith

Bignonia corymbifera Vahl

B. umbrosa H.B.K.

Lundia umbrosa (H.B.K.) Bur.

Arrabidaea corymbifera (Vahl) Bur. ex K. Schum. *quoad nomen tantum*.

Bur. in *Adansonia* 8. 282. t. 6: Bur. & K. Schum. *loc. cit.* 36, 239: Urb. in *Fedde Repert.* 14. 303 (1916): Sandwith in *Rec. Trav. Bot. Néerl.* 34. 229, and in *Lilloa* 3. 461: Dugand in *Caldasia* 4. 235 (1946).

Woody climber; *branchlets* finely ribbed-striate, when young finely pubescent like the petioles and petiolules, lenticellate; *tendrils* simple; *lfts.* ovate, suborbicular or ovate-oblong, conspicuously cuspidate-acuminate, rounded and often deeply cordate at base, 7-12 cm. long, 3.5-7 cm. broad, papery, finely pubescent along main nerves above, bearded-hairy in axils of main nerves beneath; *infl.* finely pubescent, fls. congested at apex of branches, the buds ovoid-ellipsoid or pear-shaped and conspicuously acuminate; *cal.* finally top-shaped and truncate, 4-5 mm. long, thin, pubescent; *cor.* white, often yellow in throat and tube, 2.5-3.5 cm. long, thin, the limb 2-3 cm. in diam. and pubescent within; *fls.* glabrous; *style* strongly pubescent only near base, glabrous in upper half; *ovules* 4-seriate in each loculus; *caps.* 30 cm. or more long, 1.3-2 cm. broad, densely tomentose, brown when dried, the valves with thickened margins and sharply

prominent median nerve; *seeds* about 1 cm. long and 4 cm. broad, body brown, wings of a dirty cream colour.

Trinidad: northern, central and southern districts, common on forest trees and in secondary growth.

Costa Rica to N. Colombia, Venezuela, Amazonian Ecuador and Peru, and Central Brazil. Apparently not yet found in Guiana or in Amazonian Brazil.

The type specimen of this species was collected in Trinidad by von Rohr.

7. PSEUDOCALYMMMA A. Sampaio & Kuhlmann

Tendrils-climbers, emitting a strong smell of garlic. *Branchlets* subterete or quadrangular, with conspicuous gland-fields at the nodes. *Lvs.* 2-foliate; tendril trifid. *Petiole* sometimes with gland-fields at apex. *Pseudostipules* subulate, not foliaceous. *Infl.* a terminal or axillary thyrses, short, or elongate with compressed rhachis and branches. *Cal.* campanulate, truncate, minutely denticulate, with or without small fields or lines of plate-shaped glands. *Cor.* showy, thin, funnel-shaped, tube glabrous outside or minutely lepidote, limb densely pubescent outside when in bud (cf. *Petastoma*). *Anthers* glabrous. *Disk* annular or pulvinate. *Ovary* oblong, lepidote; *ovules* biseriate in each loculus. *Fruit* an elongate-linear compressed capsule; valves parallel to the septum, smooth, rather thin, with sharply raised median nerve; *seeds* transversely oblong, with membranous more or less hyaline wings.

1. *P. alliaceum* (Lam.) Sandwith

Bignonia alliacea Lam. and *B. alliacea* Sw.

Adenocalymma alliaceum (Lam.) Miers, *excl. descr. fruct.*
A. obovatum Urb. in Fedde Repert. 14. 307 (1916), *ex descr.*

Pseudocalymma sagotii (Bur. & K. Schum.) Sandw.

P. macrocarpum (Donn. Sm.) Sandw.

Swartz, Prodr. Veg. Ind. Occ. 91 (1788) and Fl. Ind. Occ. 2. 1039 (1800); Griseb. Fl. 450; Bur. & K. Schum. *loc. cit.* 110-111; Seibert *loc. cit.* 401-402; Sandwith in Pulle Fl. Suriname 4. pt. 2. 21, and in Kew Bull. 1953, 466 (1954).

Woody climber, vegetative parts glabrous, crushed lvs. and fls. with a strong smell of garlic; young *branchlets* finely ribbed, the older ones quadrangular; *petioles* stout, becoming woody; *lfts.* elliptic, acute and shortly acuminate-cuspidate or nearly rounded at apex, acute or obtuse and sometimes abruptly attenuate at base, about 10-20 cm. long and 4-10 cm. broad, papery, glabrous but punctate-lepidote, prominently veined and loosely reticulate beneath, often strongly 3-nerved from near base, often with gland-fields in axils of lower main nerves beneath; *infl.* thyrses short and

few-flowered or long and many-flowered, minutely pubescent; *cal.* short, less than 8 mm. long (in var. *microcalyx* Sandw.; longer and wider in var. *macrocalyx* Sandw.), minutely pubescent and lepidote; *cor.* pink to purple, about 7 cm. long, the limb up to about 5 cm. in diam. and glandular-lepidote within; *caps.* about 25 cm. long and 1.5-2 cm. broad, glabrous; *seeds* 1-1.5 cm. long, 3-5.5 cm. broad, pale creamy-brown.

Tobago: without locality, ann. 1761-1777, John Gregg in Herb. Mus. Brit. (the top of a young sterile shoot).

St. Vincent, and cultivated in other West Indian islands. Mexico, Central America and throughout Northern South America.

Gregg's specimen agrees well with the foliage of Anderson's gathering on St. Vincent which was cited by Swartz under his *Bignonia alliacea*. Anderson's material at Kew includes a single detached flower which has a short calyx and is referable to *P. alliaceum* var. *microcalyx* Sandw. in Kew Bull. 1953, 467 (1954).

This species is often cultivated in Trinidad. The specimens agree best with the Central American form hitherto known as *P. macrocarpum* (Donn. Sm.) Sandw. This I now refer to *P. alliaceum* var. *microcalyx*.

8. PETASTOMA Miers

Tendrils-climbers. *Branchlets* subterete or compressed, with interpetiolar ridges but no gland-fields at the nodes. *Lvs.* bifoliate, often terminated by a simple tendril, sometimes simple. *Pseudostipules* when foliaceous more or less sickle-shaped. *Infl.* a showy, pyramidal, terminal or axillary thyse. *Cal.* loosely cupshaped or campanulate, sometimes very shallow and platter-like, truncate and wavy at margin, thin or membranous, without gland-fields. *Cor.* campanulate-funnel-shaped, tube narrowly cylindric for some distance above base, lobes in bud conspicuously whitish tomentellous and velvety outside, in strong contrast when dried with the nearly glabrous tube which becomes purplish black. *Anthers* glabrous. *Disk* conspicuous, pulvinate. *Ovary* oblong, glabrous or lepidote; *ovules* biseriate in each loculus. *Fruit* a compressed elongate-linear capsule; valves parallel to the septum, smooth, with a thin, slightly raised median nerve; *seeds* narrowly transversely oblong, with membranous, whitish, somewhat hyaline wings.

1. *P. broadwayi* Sprague & Riley

Sprague & Riley in Kew Bull. 1921, 311.

Strong woody climber; *branchlets* ribbed, lenticellate, lepidote, glabrous with age; *pseudostipules* very narrowly foliaceous and sickle-shaped; *petioles* strongly dilated at apex, like the petiolules

hirsute on the upper side; *lfts.* ovate or elliptic-ovate, acuminate, obtuse to rounded or slightly cordate at base, 7-16 cm. long, 3.5-9 cm. broad, papery, drying green, glabrous above, hirsute in axils and sometimes along main nerves beneath, venation intricately reticulate; *infl.* thyrses very showy and many-flowered, lepidote, bracts linear; *cal.* white, drying brown, inflated-campanulate, 5-8 (usually about 7) mm. long, sinuate-lobed, glabrate or sparsely lepidote and puberulous with curved hairs; *cor.* pink or mauve, fragrant, 3-5 cm. long, the limb 3-4 cm. in diam. and pubescent within; *ovary* glabrous; *caps.* 18-38 cm. long, somewhat over 1 cm. broad, glabrous, the valves with slightly thickened margins and somewhat ribbed and rugulose-warty as well as with an evident median nerve; *seeds* 8-9 mm. long, about 3 cm. broad, body brown, with brown veins radiating into the dirty whitish wings.

Trinidad: widely distributed in northern and southern districts. There are numerous specimens from St. Clair and neighbourhood, Teteron Bay, Mt. St. Benedict, Arima, San Fernando and Irois beach.

Apparently endemic, but may prove to be only a local race of the widely distributed *P. patelliferum* (Schl.) Miers, since the larger calyx seems to be the only constant distinguishing character of our plant. The plant of Amazonian Bolivia described by Kräenzlin as *Arrabidaea penstemonoides* is a species of *Petastoma* extremely like *P. broadwayi*, but further collections are needed before identity can be seriously suggested.

9. CYDISTA Miers

Tendrils-climbers. *Branchlets* more or less tetragonous, without gland-fields at the nodes. *Lvs.* bifoliate, often terminated by a simple tendril. *Pseudostipules* inconspicuous to foliaceous. *Infl.* an axillary or terminal raceme or thyse. *Cal.* campanulate, truncate, scarcely denticulate, sometimes lobed. *Cor.* thin, funnel-shaped, lepidote outside. *Anthers* glabrous. *Disk* absent. *Ovary* subcylindric, densely lepidote; *ovules* biserial in each loculus. *Fruit* an elongate-linear compressed capsule; valves parallel to the septum, smooth, with thickened raised margins and inconspicuous median nerve; *seeds* transversely semi-ellipsoid, compressed, brown, with broad firm wings of the same texture and colour as the body.

1. *C. aequinoctialis* (L.) Miers

Bignonia aequinoctialis L.

Griseb. Fl. 448: Urb. in Fedde Repert. 14. 303 (1916): Britt. & Wils. loc. cit. 194: Sandwith in Pulle Fl. Suriname 4. pt. 2. 28: Seibert loc. cit. 414.

Straggling climber over bushes and low trees, lepidote in all parts, otherwise glabrous; young branchlets drying blackish, with 4 distinct paler ribs, finely striate between the ribs; *lfts.* drying reddish-brown to blackish-purple, ovate to oblong, elliptic or lanceolate, acuminate at apex, obtuse, rounded or shallowly cordate at base, up to 16 cm. long and 7.5 cm. broad, stiffly papery, shiny, reticulation intricate and rather prominent; *infl.* up to nearly 15 cm. long; *pedicels* up to 1.5 cm. long; *cal.* 5-8 mm. long, glabrous but lepidote, and with gland-fields in upper half; *cor.* pale lilac or rose with darker veins, sometimes white or white with mauve streaks, or the tube creamy yellow and the limb pinkish-mauve, 4.5-8 cm. long, the limb about 4-6 cm. in diam. and pubescent within; *caps.* up to 40 cm. long, 2-2.5 cm. broad, drying blackish, rather densely lepidote; *seeds* 2 cm. long, 3.5-4.5 cm. broad.

Trinidad: common in southern districts (mainly near the coast, often in swamps), also in similar habitats as far up the west coast as Caroni Swamp and Port-of-Spain, and on the east coast found as far north as Balandra.

Tobago: Farm Road, Scarborough, Herb. Trin. 11154; Mount St. George, in swamp, Broadway 4558 in Herb. Mus. Brit. Apparently frequent on the S.W. side of the island.

Widely distributed in the West Indies and throughout Continental Tropical America.

10. PLEONOTOMA Miers

Tendril-climbers. Branchlets conspicuously quadrangular, the sharp angles with detachable ribs, without gland-fields at the nodes. *Lvs.* biternate or ternate-bipinnate, the third basal pinna often replaced by a trifid tendril. *Pseudostipules* inconspicuous or foliaceous. *Infl.* an axillary or terminal raceme. *Cal.* campanulate, truncate and minutely denticulate. *Cor.* narrowly campanulate-funnel-shaped (as in the Trinidad species) or salver-shaped, tube either wholly glabrous outside or brownish-glandular, pubescent and lepidote in the upper half. *Anthers* glabrous. *Disk* thick, large, pulvinate or pulvinate-cupshaped. *Ovary* oblong, lepidote or pubescent; *ovules* biseriate in each loculus. *Fruit* an oblong-linear or elongate-linear compressed capsule; valves parallel to the septum, smooth or nearly so, median nerve usually inconspicuous; *seeds* transversely oblong, with broad membranous wings.

1. *P. variabilis* (Jacq.) Miers

Bignonia variabilis Jacq.

Urb. in Fedde Repert. 14. 304 (1916); Sandwith in Pulle Fl. Suriname 4. pt. 2. 32-33, and in Lilloa 3. 464.

Woody climber; branchlets punctate-lepidote, pubescent at nodes, finely striate, pale with darker detachable ribs; *pseudostipules* not foliaceous, linear-spathulate or oblong-spathulate, usually acuminate, less than 1 cm. long, with immersed glands in upper half; *lfts.* ovate or elliptic, terminal one sometimes obovate, acuminate, rounded and usually somewhat cordate at base, 5-12 cm. long, 2.5-7 cm. broad, papery, shining, conspicuously reticulate, lepidote-punctate, otherwise glabrous but often bearded in axils of main nerves beneath; *infl.* racemes short, glabrous except at nodes; *pedicels* flexuous, 0.8-1.5 cm. long; *cal.* 5.5-8 mm. long, glabrous except on puberulous margin; *cor.* very pale yellow, fragrant, tube narrowly campanulate-funnel-shaped 4.5-5.5 cm. long, glabrous outside, limb 3-4 cm. in diam., conspicuously pubescent; *caps.* oblong-linear, up to 38 cm. long and 2.8 cm. broad, surface somewhat rough and uneven, densely lepidote; *seeds* about 1-1.3 cm. long and 3-4 cm. broad, pale brown, wings like the body or only a little paler.

Trinidad: Northern Range, Bocas Islands, San Fernando, Pitch Lake and Cap-de-Ville. It has been collected in Government House Grounds, in the Royal Botanic Gardens and on Lady Chancellor Road. Not common. Sometimes found in full exposure, climbing over low shrubs and grasses.

Continental Tropical America, Costa Rica to Venezuela. The Guiana specimens are referred to the related species *P. clematis* (H.B.K.) Miers, *vide* Sandwith *loc. cit.*, which apparently differs in the smaller calyx and corolla, and in the much narrower (but not longer) capsule. A recent Trinidad collection made by R. E. D. Baker at Cap-de-Ville shows that the broad capsule of *P. variabilis* can be as long as that of *P. clematis*.

11. MARTINELLA Baill.

Tendrils-climbers. Branchlets subterete, with short spreading gland-tipped hairs, without gland-fields at the nodes but with a very conspicuous, broad interpetiolar ridge. *Lvs.* bifoliate, terminated by a trifid (sometimes simple in S. American species) tendril with wavy, curved and hooked arms. *Pseudostipules* not evident. *Infl.* an axillary flexuous raceme. *Flower-buds* pear-shaped, apiculate. *Cal.* fairly large, tubular-campanulate, deeply and irregularly 2-3-lobed after splitting of the bud. *Cor.* thin, funnel-shaped or campanulate-funnel-shaped, tube glabrous outside. *Anthers* glabrous. *Disk* broad, pulvinate or platter-shaped. *Ovary* cylindric, glabrous or sparsely lepidote, constricted above disk; *ovules* 4-seriate in each loculus. *Fruit* an elongate-linear, compressed capsule attenuate at each end; valves parallel to the septum, thin, smooth, with slightly thickened margins and indistinct median nerve; *seeds* transversely oblong, thin, with broad membranous wings

1. *M. obovata* (H.B.K.) Bur. & K. Schum.

Spathodea obovata H.B.K.

Bignonia martini DC.

Griseb. Fl. 448: Urb. in Fedde Repert. 14. 303 (1916): Bur. & K. Schum. *loc. cit.* 161, t. 84: Sandwith in Pulle Fl. Suriname 4. pt. 2. 39, and in Kew Bull. 1938, 372: Seibert *loc. cit.* 421.

Woody climber, the young parts with minute gland-tipped hairs, otherwise glabrate; *branchlets* finely ribbed-striate, rarely lenticellate, usually drying brown; *lfts.* ovate to ovate-lanceolate, conspicuously attenuate-acuminate, rounded or distinctly cordate at base, up to 15 cm. long and 10.5 cm. broad, firmly papery, glabrous, reticulation intricate on lower surface which often dries a pale greyish-green and is marked with scattered plate-shaped glands near midrib; *infl.* racemes short or up to 28 cm. long, slender and flexuous; *pedicels* deflexed or flexuous, 0.5-1.5 cm. long; *bracts* filiform-subulate; *cal.* 1.2-1.7 cm. long, the broad lobes 3-9 mm. long, minutely puberulous or glabrate with a few impressed glands; *cor.* with white or cream-coloured tube and pale pink or chocolate-mauve limb, 4-7 cm. long, limb about 3 cm. in diam. and minutely lepidote; *caps.* drying brown, up to 80 cm. long and 1.7 cm. broad, glabrous but minutely lepidote; *seeds* 1-1.4 cm. long, 4-5 cm. broad, yellowish white or yellowish brown, wings of same colour as body.

Trinidad: northern, central and southern districts, locally common.

Tobago: Great Dog River Valley, fl. 12.10.1937, Sandwith 1746 in Herb. Kew.

St. Vincent (native?). Continental Tropical America, from British Honduras to Amazonian Brazil and Bolivia.

12. *PHRYGANOCYDIA* Mart. ex Baill.

Tendrils-climbers. *Branchlets* terete, without gland-fields at the nodes. *Lvs.* usually bifoliate, the terminal leaflet often replaced by a simple tendril. *Pseudostipules* inconspicuous, not foliaceous. *Infl.* usually a terminal fascicle of lax 2-4 times forked dichasia. *Cal.* oblong-clavate in bud, splitting spathaceously to the middle, thin, but terminated by a more or less reflexed and thickened horn inflexed at apex. *Cor.* thin, funnel-shaped with a large floppy limb, tube lepidote outside, otherwise usually glabrous but sometimes more or less distinctly pilose. *Anthers* glabrous. *Disk* absent. *Ovary* oblong, lepidote; *ovules* biseriate in each loculus. *Fruit* a linear-oblong compressed capsule; valves parallel to the septum, smooth, with obscure or distinctly raised but thin median nerve; *seeds* transversely oblong, thin, with broad membranous wings (but in one species of the Panama Canal Zone and N.W. Colombia the fruit is short and ovoid, with thick and corky, almost wingless seeds).

1. *P. corymbosa* (Vent.) Bur. ex K. Schum.*Spathodea corymbosa* Vent.*Macfadyena corymbosa* (Vent.) Griseb.

Griseb. Fl. 449: Bur. & K. Schum. loc. cit. 249, t. 100: Urb. in Fedde Repert. 14. 304 (1916): Britt. & Wils. loc. cit. 200: Sandwith in Pulle Fl. Suriname 4. pt. 2. 5, in adnot.

Straggling woody climber; branchlets like the lfts. and infl. conspicuously minutely lepidote, grey or bluish-grey when young, otherwise glabrous; pseudostipules usually obscure, fleshy, roundish or oblong; lfts. ovate to ovate-oblong or lanceolate, shortly, broadly and very obtusely acuminate or cuspidate, or sometimes rounded and emarginate at apex, rounded and usually cordate at base, up to about 12 cm. long and 8 cm. broad, coriaceous, glabrous, inconspicuously reticulate; infl. with compressed, often much flattened, distally dilated branches and round cartilaginous scars in the forks; pedicels and bracts often shining and sticky; cal. 2.5-4 cm. long, lepidote; cor. rosy-purple, tube and throat sometimes creamy-white, fragrant, tube about 5 cm. long, limb 5-6 cm. in diam. and scattered-pilose within; caps. 25-40 cm. long and 1.5-2 cm. broad, densely lepidote; seeds up to 1.5 cm. long and 5.5 cm. broad, pale brown, wings not well distinguished from body and with a very narrow whitish-hyaline apical margin.

Trinidad: common in all districts, growing both on bushes and high trees, flowering at intervals throughout the year. Very ornamental and often cultivated. Extensively used for the manufacture of baskets.

Panama, Colombia, Venezuela, Margarita, British Guiana and Brazil, extending as far south as Matto Grosso and (fide Schumann) the Gran Chaco territory of Argentina.

13. *XYLOPHRAGMA* Sprague

Tendrill-climbers. Branchlets subterete, with large fields of many small glands at the nodes. Lvs. 2-3-foliate; tendrill simple. Pseudostipules not foliaceous, short, triangular-ovate, acute. Infl. a short densely-flowered thyrses, axillary either on old leafless branchlets or at the base of short shoots terminated by very young lvs. Cal. tubular-campanulate or campanulate, truncate and with more or less conspicuous subulate teeth. Cor. thin, campanulate-funnel-shaped, densely scurfy-pubescent with branched hairs outside. Anthers glabrous, with divaricate thecae. Disk annular-cupshaped, with wavy-sinuate margin. Ovary ovoid, densely lepidote; ovules 8-seriate in each loculus; style tetraquetrous, furrowed. Fruit a thick, woody, compressed, oblong capsule; valves parallel to the septum, smooth or somewhat rough and obscurely warty, without a raised median nerve; seeds transversely oblong, body stiff and more or less rough with minute ridges and warts, wings membranous and whitish-hyaline.

1. **X. seemannianum** (Kze.) Sandwith

Saldanhaea seemanniana Kze.

Bignonia dentata DC. *sec.* Seem. *non* DC.

Tecoma floccosa Klotzsch *ex* Bur. & K. Schum.

Tabebuia floccosa (Klotzsch *ex* Bur. & K. Schum.)
Sprague & Sandwith

Seem. Bot. Herald 179: Kuntze Rev. Gen. Pl. 2. 480: Bur. & K. Schum. *loc. cit.* 318: Sprague & Sandwith in Kew Bull. 1932, 27: Seibert *loc. cit.* 398: Dugand in Caldasia 3. 261 (1945): Sandwith in Kew Bull. 1953, 469 (1954).

Shrubby deciduous climber, all young parts covered with a close scurfy pubescence of whitish, much branched, crystal-like hairs; old branchlets glabrate, lenticellate; *lfts.* ovate to elliptic or obovate, conspicuously caudate-acuminate, obtuse or rounded and sometimes cordate at base, very variable in size and texture, old *lfts.* stiffly papery or leathery and up to 18 cm. long and 13.5 cm. broad, glabrate except on nerves and prominently veined, very different from the small scurfy-pubescent youngest *lfts.*; *cal.* 4.5-7 mm. long, ribbed, the ribs ending in more or less subulate teeth 0.3-2 mm. long, densely pubescent; *cor.* pink or pinkish-purple, tube cream-coloured within, 3-5 cm. long, limb 3-4.5 cm. in diam. and pubescent within; *caps.* 8-12 cm. long, 4-5 cm. broad, the valves smooth but finely warty-rugose when dried; *seeds* about 2 cm. long and 4 cm. broad, body brown, rough with minute jagged ridges and teeth, wings sharply differentiated, dirty white.

Trinidad: without locality, fl. April 1874, Kuntze 744, authentic specimen in Herb. Kew; Fendler 515 in Herb. Kew; Diego Martin, road to Blue Basin, Herb. Trin. 7738: Royal Botanic Gardens (Emperor Valley), Herb. Trin. 11314: Hololo Mountain Road, St. Ann's, fl. May, Broadway 7562 in Herb. Mus. Brit.: Mt. St. Benedict, on roadside shrubs, Herb. Trin. 15000: Caroni, south bank road, Herb. Trin. 13400: Moruga, Broadway *sine no.* in Herb. Trin.

Climbing on roadside shrubs and trees: not common.

Mexico to Venezuela and British Guiana.

The calyx of the Trinidad material seems to be uniformly tubular-campanulate with rather conspicuous (1-2 mm.) teeth. The fruit and seeds have not yet been collected in Trinidad.

14. **ONOHUALCOA** Lundell

Tendrils-climbers. Branchlets subterete, conspicuously lenticellate, with sinuous interpetiolar ridges but without gland-fields at the nodes. *Lvs.* 2-3-foliate; tendril trifold. *Pseudostipules* not foliaceous, usually very obscure. *Infl.* a narrow terminal or axillary

thyrses. *Cal.* tubular-campanulate, somewhat split on one side, rugose-warty with age, with five prominent main ribs which are more or less spirally twisted and end in subulate teeth. *Cor.* thin, showy, campanulate-funnel-shaped or almost tubular-funnel-shaped, tube pubescent outside, sometimes glabrate, lepidote. *Anthers* glabrous. *Disk* large, pulvinate. *Ovary* oblong, glandular-lepidote or glabrate; *ovules* biseriate in each loculus. *Fruit* a thick, woody, subcylindric or somewhat compressed, oblong capsule; valves parallel to the septum, covered with conspicuous rigid, conical, prickly-like tubercles; *seeds* large, transversely oblong, with thick body and broad membranous wings becoming hyaline in their upper half.

1. *O. helicocalyx* (Kze.) Sandwith

Adenocalymma helicocalyx Kze

A. moritzii Urb.

Bayonia helicocalyx (Kze.) Dugand

Kuntze Rev. Gen. Pl. 2. 478: Urb. in Fedde Repert. 14. 302 and 308-9 (1916): Dugand in *Caldasia* 4. 63 (1946): Sandwith in *Kew Bull.* 1946, 88 (1947).

Woody climber; *branchlets* glabrous or minutely puberulous; *lfts.* large, shortly acuminate or cuspidate, rounded or cordate at base, 10-20 cm. long, 6-15 cm. broad, firmly papery, glabrous or (in Venezuelan specimens) pubescent beneath, axils of lateral nerves beneath often with fields of immersed glands; *infl.* warty with age, axillary usually much shorter than lvs., terminal often long and showy; *cal.* 5-8 mm. long, teeth 1-4 mm. long, pubescent and lepidote; *cor.* deep pink or pinkish-purple, 5-7 cm. long, limb very showy, up to more than 5 cm. in diam. and rather densely scurfy-pubescent; *caps.* up to 25 cm. long and 3-4 cm. broad, the broad-based tubercles usually 3-5 mm. long, the valves also densely lenticellate; *seeds* about 1.8-2 cm. long and 7-8 cm. broad, body brown, wings very pale creamy-brown.

Trinidad: Caroni River, 22.4.1874, Kuntze, isotype in Herb. Kew; sea-shore, Plaisance Estate, Pointe-à-Pierre, fl. May, Herb. Trin. 1486; Tamana Hill, 750 ft., 19.4.1954, flowering when leafless, Herb. Trin. 15123. Now very rare.

Colombia, Venezuela and British Guiana. Specimens from Brazil, Ecuador and Peru may also be conspecific.

Possibly conspecific with *Bignonia verrucifera* Schl. = *Adenocalymma verruciferum* (Schl.) Miers, but I have not seen the type of that species, which was based on a single collection from Venezuela formerly either in the Berlin Herbarium or, more likely, at the University of Halle.

15. CERATOPHYTUM *Pittier*

Tendrils-climbers. Branchlets terete, with distinct gland-fields at the nodes. *Lvs.* trifoliate, or bifoliate with a trifid tendril. *Pseudostipules* not foliaceous. *Infl.* a terminal subcorymbose thyrse. *Cal.* campanulate, truncate, coriaceous, with inconspicuous gland-fields in the upper part. *Cor.* thick, funnel-shaped, tomentose outside. *Anthers* glabrous. *Disk* pulvinate. *Ovary* ovoid-oblong, densely lepidote; *ovules* about 8-seriate in each loculus. *Fruit* a thick, oblong-linear, horn-shaped capsule, gibbously thickened at the base and tapering to the apex; valves parallel to the septum, smooth, with a median rib or furrow; *seeds* transversely oblong, with broad membranous wings.

1. *C. tobagense* (Urb.) Sprague & Sandwith

Anemopaegma tobagense Urb.

Ceratophytum brachycarpum Pittier

Urb. in Fedde Repert. 14. 311 (1916): Sprague & Sandwith in Kew Bull. 1933, 322 and 1934, 223: Sandwith in Pulle Fl. Suriname 4. pt. 2. 41: Seibert *loc. cit.* 397: Dugand in Caldasia 3. 257-259 (1945).

Woody climber, all vegetative parts lepidote; *branchlets* striate, usually drying pale brown; *lfts.* ovate-elliptic or subobovate, acutely or obtusely cuspidate, rounded or subcordate at base, 7-15 cm. long, 4-8 cm. broad, thinly coriaceous, glabrous except for scales, reticulation raised on both surfaces, prominent and intricate with thick veinlets on the lower, domatia usually evident in axils of main nerves beneath; *infl.* thyrses 5-8 cm. long; *pedicels* 1-2 cm. long; *cal.* 1-1.3 cm. long, lepidote; *cor.* white with yellow throat, fragrant, 6-7 cm. long, limb 4.5-5 cm. in diam., scurfy-pubescent and glandular-lepidote within; *caps.* up to 28 cm. long and 3.5 cm. broad, pale cinnamon-coloured, dotted with sunken plate-shaped glands; *seeds* up to 1.5 cm. long and 4 cm. broad, wings brown like the body but with a whitish-hyaline margin.

Trinidad: near Rio Grande, fl. 10.4.1921, Britton 2834 in Herb. Kew; Plum Road, near Southern Cunapo Road Junction, fl. April, Herb. Trin. 13561: Tamana Hill, 750 ft. fr. 19.4.1954, Herb. Trin. 15175.

Tobago: Scarborough, in Scoby's land, Broadway 3493, type (not seen) and *ibid.*, fl. and fr. 8.11.1932, Broadway 9060 in Herb. Kew: Store Bay, fl. and fr. 6.6.1925, Herb. Trin. 11165.

Continental Tropical America, from S. Mexico to Venezuela and Guiana.

It is likely that the earliest name for this species is *Ceratophytum tetragonolobum* (Jacq.) Sprague & Sandwith, see Kew Bull. 1934, 222-223.

16. **PACHYPTERA** DC.

Tendrill-climber. Branchlets quadrangular or subterete, strongly ribbed and furrowed, outer cortex thin and quickly peeling off, gland-fields very conspicuous at the nodes as also at apex of petioles and at nodes of infl. *Lvs.* trifoliate, or bifoliate with a trifid tendril. *Pseudostipules* not foliaceous, subulate-lanceolate, sharply acute, superposed in a distinctive series. *Infl.* an axillary or terminal raceme. *Cal.* narrowly campanulate, truncate, sometimes shallowly lobed. *Cor.* thin, narrowly funnel-shaped, rather densely puberulous outside; lobes with rows of plate-shaped glands outside near base. *Anthers* densely white-villous; staminode villous at apex. *Disk* pulvinate. *Ovary* elliptic-oblong, 4-angled, rusty-papillose; *ovules* biseriate in each loculus. *Fruit* a thick, oblong or oblong-linear, compressed or subcylindric capsule; valves parallel to the septum, smooth, dotted with immersed plate-shaped glands, with or without distinct median nerve; *seeds* transversely oblong, with corky wings with a narrow hyaline apical margin.

1. **P. kerere** (Aubl. emend. Splitg.) Sandwith

Bignonia kerere Aubl. emend. Splitg.

Pachyptera foveolata DC.

Adenocalymma foveolatum (DC.) Baill.

Sprague & Sandwith in Kew Bull. 1932, 83: Sandwith in Rec. Trav. Bot. Néerl. 34. 219, and in Pulle Fl. Suriname 4. pt. 2. 59: Seibert loc. cit. 396.

Climber; young branchlets and petioles puberulous, usually drying pale brown; *lfts.* ovate to lanceolate, usually conspicuously acuminate, rounded and always slightly cordate at base, 10-20 cm. long, up to 9.5 cm. broad, thin and papery, main nerves minutely puberulous, otherwise glabrous, intricately but inconspicuously reticulate on both surfaces; *infl.* racemes short, up to 5 cm. long, many-flowered and conspicuously scarred, densely puberulous; *pedicels* 0.5-1 cm. long; *cal.* 7-11 mm. long, minutely densely puberulous and with rows of plate-shaped glands; *cor.* milk-white, 5.5-8 cm. long, limb 3-4 cm. in diam. and minutely lepidote within; *caps.* 8-25 cm. long, 1.7-4 cm. broad, minutely pubescent; *seeds* about 2-2.5 cm. long and 3.6-6 cm. broad, pale brown, wings of same colour as body.

Trinidad: Mafeking Branch Road, Mayaro, Herb. Trin. 12084. Rare.

Continental Tropical America, from British Honduras to Amazonian Brazil.

17. **ANEMOPAEGMA** Mart. ex DC.

Tendrill-climbers. Branchlets subterete or angled, ribbed, without gland-fields at the nodes. *Lvs.* 2-3-foliate; tendril simple or trifid. *Pseudostipules* foliaceous, or not evident. *Infl.* a short,

axillary or terminal raceme or thyse. *Cal.* campanulate, truncate, with gland-fields below margin on outer surface. *Cor.* campanulate-funnel-shaped, glabrous, glandular-lepidote, or more or less pubescent outside (the latter not in local species). *Anthers* glabrous. *Disk* pulvinate. *Ovary* ellipsoid or ovoid-ellipsoid, often ribbed or angled, conspicuously contracted into the disk, lepidote or tomentose; *ovules* 2-6-seriate in each loculus, few in each series. *Fruit* a short, thick, ellipsoid or elliptic, stipitate capsule; valves parallel to the septum, compressed or convex, smooth, with thin median nerve slightly raised or impressed in a furrow; *seeds* broadly transversely oblong, glabrous, thin with membranous wings, or corky and opaque.

Lfts. usually much less than 10 cm. long, lateral nerves up to 6 on each side of midrib; cor. tube glandular-lepidote outside; seeds with membranous wings 1. *A. carrerense*

Lfts. usually more than 10 cm. long, lateral nerves more than 6 on each side of midrib; cor. tube glabrous outside; seeds with corky opaque wings 2. *A. chrysoleucum*

1. *A. carrerense* Armitage

Distictis robinsoni J. R. Johnston

Armitage in Journ. Bot. 1898, 188: J. R. Johnston in Contr. U.S. Nat. Herb. 12. 110 (1908): Urb. in Fedde Repert. 14. 302 (1916): Sandwith in Kew Bull. 1938, 372, and 1953, 475 (1954).

More or less woody climber; branchlets pubescent or glabrate, the uppermost very slender; petioles and petiolules pubescent with curved hairs on upper side; pseudostipules when foliaceous elliptic-ovate, rarely exceeding 1 cm., usually much shorter; tendril trifid; lfts. small, ovate or elliptic-ovate, shortly acuminate or cuspidate, rounded at base, 4-12 cm. long, 2.5-8 cm. broad, papery, glabrous, usually shining, more or less punctate on both surfaces, usually 3-5-nerved at or near base, main nerves 4-6 on each side of midrib; infl. racemes very slender, few-flowered, puberulous, short, up to 6 cm. long; cal. 4-7 mm. long, glabrous but lepidote outside; cor. thin, pale yellow with whitish limb, not fragrant, 4-6 cm. long, glandular-lepidote outside, limb about 3 cm. in diam. and obscurely punctate-lepidote within, its lobes ciliate; ovary lepidote; ovules 4-seriate; caps. compressed, glabrous, up to 11 cm. long, 3.5-5 cm. broad; seeds 2-3 cm. long, 3-5 cm. broad, with broad cream-coloured membranous wings surrounding the small body.

Trinidad: common in northern coastal and savanna districts, and on the Bocas Islands; also on San Fernando Hill, Herb. Trin. 1479 and 1488.

Tobago: Pigeon Hill, fl. and fr. 16.10.1937, Sandwith 1800 in Herb. Kew.

Venezuela and British Guiana.

Possibly conspecific with the earlier described *A. karstenii* Bur. & K. Schum., the type of which was collected at Puerto Cabello, Venezuela, and was probably destroyed in the Berlin Herbarium in March, 1943. I have seen no specimen of *A. karstenii*.

2. *A. chrysoleucum* (H.B.K.) Sandwith

Bignonia chrysoleuca H.B.K.

Anemopaegma paraense Bur. & K. Schum.

A. grandiflorum Sprague

A. surinamense Sprague

A. belizeanum Blake

Urb. in Fedde Repert. 14. 302 (1916): Sandwith in Pulle Fl. Suriname 4. pt. 2. 35, and in Lilloa 3. 459 (1938), and in Kew Bull. 1953, 470 (1954): Seibert *loc. cit.* 426.

Robust woody climber; young branchlets pubescent at nodes; petioles and petiolules pubescent with curved hairs on upper side; pseudostipules foliaceous, orbicular or ovate, often more than 1 cm. long and broad; tendril simple, sometimes bifid (and trifid?); lfts. very variable in size and shape, ovate or obovate-oblong, or the uppermost lanceolate, shortly acuminate or cuspidate, rounded or cuneate at base, up to 19 cm. long and nearly 12 cm. broad, stiffly papery or coriaceous, largest old lfts. sometimes somewhat bullate, puberulous on main nerves above, otherwise glabrous, punctate on both surfaces, not obviously 3-5-nerved near base, main nerves 7 or more on each side of midrib; infl. very short, about equalling petiole, with few clustered fls., pubescent; cal. up to 1.2 cm. long, ciliolate on margin, lepidote, otherwise glabrous; cor. rather thick in bud, pale yellow, limb whitish in bud, strongly fragrant, 4-8 cm. long, glabrous outside, limb up to 4.5 cm. in diam. and densely conspicuously glandular-lepidote within, its lobes ciliate; ovary lepidote; ovules 6-seriate; caps. with convex valves, glabrous, 8 (or more?) cm. long, about 4 cm. broad; seeds (only young ones seen) with corky opaque wings, pale brown, about 1.75 cm. long and 2.5 cm. broad.

Trinidad: St. Clair Experiment Station, cultivated, "brought in from the woods" according to J. H. Hart, June 1902, Herb. Trin. 6812, type of *A. grandiflorum* Sprague in Herb. Kew; Erin road, without fl. or fr., 7.6.1954, Herb. Trin. 15180.

Central America to Guiana, Amazonian Brazil and Peru.

18. *DISTICTELLA* Kze.

Tendril-climbers. Branchlets terete, without fibrous detachable ribs, without gland-fields at the nodes. Lvs. 2-3-foliolate; tendril trifid. Pseudostipules not foliaceous. Infl. a terminal or axillary

thyrses or racemes. *Cal.* campanulate, truncate, coriaceous, usually with gland-fields outside in upper half. *Cor.* thick, campanulate-funnel-shaped or funnel-shaped, often curved, densely tomentose outside except near base. *Anthers* glabrous. *Disk* conspicuous, pulvinate or annular-cupshaped. *Ovary* ovoid-oblong or ellipsoid, tomentellous; *ovules* 4-seriate in each loculus. *Fruit* a short, thick, oblong or narrowly ellipsoid capsule attenuate at each end, flattened or biconvex in section, not appendiculate; valves parallel to the septum, smooth, often with distinctly raised median nerve; *seeds* transversely oblong, glabrous, with broad, thin, sometimes membranous and hyaline wings.

1. *D. racemosa* (Bur. & K. Schum.) Urb.

Distictis racemosa Bur. & K. Schum.

Distictella broadwayana Urb.

Bur. & K. Schum. *loc. cit.* 179: Urb. in Fedde Repert. 14. 310 (1916): Sprague & Sandwith in Kew Bull. 1932, 90: Sandwith in Pulle Fl. Suriname 4. pt. 2. 42.

Climber; branchlets finely striate, at first densely puberulous, finally glabrate and lenticellate, often drying dark brown or purplish-black; *lfts.* ovate-oblong or elliptic-oblong, shortly cuspidate or acuminate, obtuse or rounded at base, 10-21 cm. long, 4.5-11 cm. broad, coriaceous, glabrous but punctate-lepidote, more or less shagreened on both surfaces especially the lower, main nerves impressed above prominent beneath, reticulation of lesser venation usually impressed on both surfaces; *infl.* narrow, 10-30 cm. long, finely minutely puberulous; *cal.* campanulate or tubular-campanulate, 0.9-1.4 cm. long, finely tomentellous, often drying purplish; *cor.* white, fragrant, velvety, campanulate-funnel-shaped, 5-6 cm. long, limb up to 5 cm. in diam. and pubescent within; *ovary* ellipsoid; *style* pubescent; *caps.* 10-15 cm. long, 4-5 cm. broad, brownish-tomentellous, dotted with numerous dark plate-shaped immersed glands, valves with raised or impressed median nerve; *seeds* about 2 cm. long and 3-4 cm. broad, wings brown or dirty cream, stiffening with age.

Tobago: near Menna, fl. March, Broadway 4753, type collection of *D. broadwayana* Urb., in Herb. Mus. Brit.

Northern South America, from Colombia to Guiana, Amazonian Brazil and Peru.

The earliest correct name for this variable species may prove to be *Distictella magnoliifolia* (H.B.K.) Sandwith in Lilloa 3. 460 (1938), and in Kew Bull. 1953, 477 (1954), the type specimen of which perhaps represents not more than a distinctive local phase of *D. racemosa*.

19. PITHECOCTENIUM Mart. ex DC.

Tendrils-climbers. *Branchlets* angular with fibrous detachable ribs, without gland-fields at the nodes. *Lvs.* 2-3-foliolate; tendril trifid or twice trifid. *Pseudostipules* often evident, but not foliaceous. *Infl.* a terminal raceme or thyrs. *Cal.* campanulate, truncate, more or less denticulate, coriaceous. *Cor.* thick, campanulate-funnel-shaped, densely tomentose or stellate-scurfy outside except near base. *Anthers* glabrous. *Disk* conspicuous, pulvinate. *Ovary* ellipsoid, constricted above disk, densely softly adpressed-spinulose; *ovules* pluriserial in each loculus. *Fruit* a thick, woody, flattened-ellipsoid capsule, with an oblong echinate appendage at apex of replum; valves parallel to the septum, densely echinate-prickly; septum with broad seed-bearing borders bent at right angles to flattened sterile portion; *seeds* transversely oblong, with thin body and very broad, membranous, hyaline wings.

1. **P. echinatum** (Jacq.) K. Schum. Monkey's hairbrush.
Bignonia echinata Jacq.
Pithecoctenium aubletii Splitg.

Griseb. Fl. 449: Bur. & K. Schum. loc. cit. 168, t. 86: Sandwith in Pulle Fl. Suriname 4. pt. 2. 45: Seibert loc. cit. 411.

Woody climber; *branchlets* and *petioles* lepidote with shining white scales, sometimes pubescent with simple hairs (glabrous or nearly so in Trinidad material); *pseudostipules* spatulate or oblong; *lfts.* ovate to suborbicular, acutely long-acuminate or cuspidate, rounded and usually conspicuously cordate at base, 8-15 cm. long, 4.5-10 cm. broad, thinly papery, more or less copiously sprinkled with shining white scales, otherwise glabrous in Trinidad specimens, but elsewhere often pubescent with simple hairs, drying greenish, with 4-6 main lateral nerves rising at or near base; *infl.* usually narrow and racemose, up to 15 cm. long, pubescent or tomentose; *bracts* rather conspicuous, often recurved; *cal.* 7-10 mm. long, tomentellous outside and with gland-fields in upper half; *cor.* white or yellowish white, 4-6 cm. long, tube often with a right-angle bend, limb 2.5-4 cm. in diam. and pubescent within; *caps.* 10-22 cm. long, 4.5-6.5 cm. broad, prickles deltoid-subulate from a broad base, acute, up to 4 mm. long; *seeds* up to 3 cm. long and 8 cm. broad, body yellowish white, wings whitish and hyaline with pale yellow veins.

Trinidad: Claxton's Bay, Herb. Trin. 8450; St. Clair Experiment Station, Herb. Trin. 11222; Sangre Grande, fr. 4.8.1949, Herb. Trin. 14403; Caroni South Bank Road, fl. 24.6.1950 and 10.7.1950, Herb. Trin. 14597 and 14608; head of Cumaca Road, fl. July, Herb. Trin. 14615. Not common.

Cuba, Jamaica. Continental Tropical America, from Mexico to Paraguay, Argentina and Bolivia.

20. AMPHILOPHIUM *Kunth*

Tendrils-climbers. *Branchlets* hexagonal, with conspicuous ribs which sometimes become detached, without gland-fields at the nodes. *Lvs.* bifoliate, pubescence simple or stellate; tendril trifid. *Pseudostipules* sometimes foliaceous, usually not evident. *Infl.* a narrow terminal thyrse. *Cal.* with a thick campanulate or subglobose tube, limb double, outer with a widely spreading often reflexed wavy or frilled and lobed margin, inner irregularly 2-3-lobed. *Cor.* rather small, thick, cylindric or cylindric-clavate, limb distinctly bilabiate, upper lip large and entire, lower with 3 short erect lobes, glabrous or pubescent outside. *Anthers* glabrous. *Disk* pulvinate. *Ovary* ovoid-ellipsoid, tomentose; *ovules* pluriseriate in each loculus. *Fruit* a short, thick, woody, narrowly flattened-ellipsoid capsule, biconvex in section, blunt and rounded at apex; valves parallel to the septum, smooth or reticulate-rugose or warty, with raised median nerve; *seeds* transversely oblong, with pubescent body and broad, membranous, more or less hyaline wings.

1. A. paniculatum (L.) H.B.K.

Bignonia paniculata L.

Griseb. Fl. 450: Bur. & K. Schum. *loc. cit.* 211: Britt. & Wils. *loc. cit.* 193: Sandwith in Kew Bull. 1938, 372: Seibert *loc. cit.* 409.

Woody climber, young parts densely lepidote; *branchlets*, *petioles* and *petiohules* with main ribs usually covered with a furry yellowish-tawny indumentum of curved hairs; *pseudostipules* when foliaceous broad and up to 1 cm. long; *lfts.* ovate to suborbicular, shortly acuminate or cuspidate, rounded and truncate or slightly cordate at base, 5-10 cm. long, up to 8 cm. broad, firmly papery, densely clothed with minute shining scales, usually pubescent with curved simple hairs beneath along nerves, nerves and veinlets impressed above; *infl.* up to 20 cm. long, lepidote and tawny-pilose; *cal.* about 1 cm. long, densely lepidote, wavy outer limb up to 1.5 cm. broad; *cor.* pale red or purplish, sometimes yellow or yellowish violet and limb sometimes white, fragrant, about 3 cm. long, sticky, tube glabrous but viscous-glandular-lepidote outside, limb about 1.5 cm. in diam. and papillose-lepidote; *caps.* 8-9 cm. long, 3-4.5 cm. broad, smooth or somewhat wrinkled-warty, minutely lepidote; *seeds* up to 1.5 cm. long and 4.5 cm. broad, body brown and pubescent, wings gradually paler.

Trinidad: sea-shore, Moruga, fr. 2.12.1932, Broadway 9086 in Herb. Kew; Santa Cruz, fr. 14.2.1948, R. E. D. Baker in Herb. Kew; Heights of Aripo, 1,500 ft. fl. 22.10.1949, Herb. Trin. 14433. Probably well distributed. Fallen corollas were seen by N. Y. Sandwith in October, 1937, in forests on the ascent of Tucuche.

Tobago: Mt. St. George-Castara Road, in forest reserve of Main Ridge, fl. 18.10.1937, Sandwith 1834 in Herb. Kew.

Puerto Rico and Lesser Antilles. Continental Tropical America, from Mexico to British Guiana, Brazil and Peru.

21. *CALLICHLAMYS* Miq.

Tendrils-climbers. *Branchlets* more or less terete, without gland-fields at the nodes. *Lvs.* trifoliolate, or rarely bifoliolate with a simple tendril. *Pseudostipules* not evident. *Infl.* an axillary raceme. *Cal.* very large, thin, inflated-campanulate, irregularly deeply lobed. *Cor.* thin, showy, funnel-shaped, glabrous but minutely lepidote outside. *Anthers* glabrous. *Disk* broadly depressed-pulvinate. *Ovary* ellipsoid, constricted above the disk, glabrous; *ovules* pluriseriate in each loculus. *Fruit* a woody, compressed, ellipsoid capsule; valves parallel to the septum, glabrous and appearing smooth, but densely minutely granular-rugulose, without a raised median nerve; *seeds* large, transversely oblong, glabrous, with broad membranous wings of the same brown colour as the body.

1. *C. latifolia* (L.C. Rich.) K. Schum.

Bignonia latifolia L.C. Rich.

B. rufinervis (DC.) Griseb.

Tabebuia ? *rufinervis* DC.

Griseb. Fl. 448: Bur. & K. Schum. loc. cit. 226, t. 95: Sandwith in Pulle Fl. Suriname 4. pt. 2. 63: Seibert loc. cit. 420.

Woody climber; *branchlets* glabrous or nearly so, often drying purplish-black, more or less ribbed-striate and lenticellate; *lfts.* ovate to ovate-oblong, up to 19 cm. long and 11 cm. broad, conspicuously cuspidate-acuminate, rounded to cuneate at base, papery, glabrous but minutely lepidote, distinctly loosely reticulate on both surfaces; *infl.* racemes up to 12 cm. long, scurfy-puberulous or glabrate; *pedicels* about 1 cm. long; *cal.* yellow, 3-4 cm. long, glabrous but with scattered plate-shaped glands; *cor.* large, bright golden-yellow, lined within with brown or crimson, 6-10 cm. long, limb up to 8 cm. in diam. and minutely lepidote within; *caps.* up to 25 cm. long and 8 cm. broad; *seeds* brown, up to 3 cm. long and 9 cm. broad.

Trinidad: Siparia to Cedros, on San Fernando Hill, and cultivated at Port-of-Spain and St. Augustine.

St. Vincent (probably only in cultivation). Widely distributed in Continental Tropical America, from British Honduras to Brazil and Bolivia.

22. *DOXANTHA* Miers

Tendrils-climbers. *Branchlets* slender, subterete, when young with gland-fields at the nodes but these are often not evident on old branchlets. *Lvs.* bifoliolate, terminated by a short trifid tendril

with hooked, claw-like arms. *Pseudostipules* not foliaceous, small, ovate or suborbicular, pointed, thick, often concave, strongly striate-veined. *Infl.* axillary, a shortly peduncled few-flowered cyme, or flowers solitary or 2-3 in a cluster. *Cal.* thin, loosely campanulate, irregularly lobed, the margin expanded and often more or less frilled. *Cor.* thin, funnel-shaped, glabrous outside. *Anthers* glabrous. *Disk* simple, large, annular-pulvinate. *Ovary* oblong-linear, 4-angled, lepidote or glabrate; *ovules* 4-seriate in each locus, very numerous in each series. *Fruit* an elongate-linear compressed capsule; valves parallel to the septum, smooth, with thin, slightly raised median nerve; *seeds* transversely oblong, with membranous wings which are hyaline in their upper half.

1. *D. unguis-cati* (L.) Miers emend. Rehder

Bignonia unguis-cati L.

Batocytia unguis (L.) Mart. ex Britt. & Wils.

Griseb. Fl. 448: Bur. & K. Schum. loc. cit. 282, t. 105: Urb. in Fedde Repert. 14. 304 (1916): Britt. & Wils. loc. cit. 194: Seibert loc. cit. 214.

Woody climber; older branchlets pale brown, ribbed, glabrous, lenticellate; *lfts.* elliptic or elliptic-lanceolate, or more or less obovate, shortly acutely acuminate or cuspidate, attenuate to base but rounded and more or less oblique at base itself, 5-10 cm. long, up to 4.5 cm. broad, papery or thinly coriaceous, usually glabrous; *pedicels* slender, 1-2 cm. long; *cal.* 0.5-2 cm. long and broad, glabrous; *cor.* bright yellow or orange-yellow, 4-6 cm. long, limb up to 6 cm. in diam. and glabrous within, often drying blackish with darker veins; *caps.* up to 70 cm. long and 1.6 cm. broad, copiously lenticellate and very minutely lepidote, otherwise glabrous; *seeds* up to about 1.2 cm. long and 4 cm. broad, wings lighter in colour than the body, of a pale dirty brownish cream colour with a still paler hyaline apex.

Trinidad: Royal Botanic Gardens and Belmont, Herb. Trin. 3592 and 8423; Elizabeth St., Port-of-Spain, fl. 8.5.1950, Herb. Trin. 14587; North Coast Road, near Saddle, fl. June 1950, Herb. Trin. 14599; Maracas Bay, Othmer 246, *fide* Urb. loc. cit.; Caroni South Bank Road, fl. 11.5.1950, Herb. Trin. 14588 and 14589; St. Augustine, in gardens, fl. 5.5.1950, Herb. Trin. 14576, and fl. 5.3.1951, Herb. Trin. 14698; Arima, Herb. Trin. 8321 and 8440; without locality, fr., A. W. Hill in Herb. Kew; without locality, fl. and fr. Fendler 523 in Herb. Kew and Herb. Mus. Brit. "A high climber, covering the tops of tall trees with masses of yellow flowers especially in March and April. Probably fairly common."—R. E. D. Baker.

Tobago: in cacao area, road to Signal Hill, fr. 8.12.1949, Herb. Trin. 14551; recorded by Urban, loc. cit.

Very widely distributed throughout the West Indies and Continental Tropical America.

23. MACFADYENA A. DC.

Tendrils-climbers. *Branchlets* slender, subterete, with gland-fields at the nodes. *Lvs.* bifoliate, terminated by a short trifid tendril with hooked, claw-like arms. *Pseudostipules* not foliaceous, small, subulate-lanceolate. *Infl.* an axillary contracted, few-flowered thyse or cyme, or flowers solitary. *Cal.* tubular-campanulate, spathaceously split to about the middle or more or less bilabiate, midrib of posterior sepal produced into an incurved hook-like apiculus. *Cor.* thin, funnel-shaped, glabrous outside. *Anthers* glabrous. *Disk* simple, flattened-pulvinate or hollowed above. *Ovary* oblong-linear, minutely lepidote; *ovules* biserial in each loculus, relatively few in each series (in the local species; 4-seriate and more numerous in some other species). *Fruit* an oblong-linear compressed capsule; valves parallel to the septum, smooth, with thin, slightly raised median nerve; *seeds* with truncate base and curved upper margin, the wings firm, dark-coloured and opaque like the body.

1. *M. uncata* (Andr.) Sprague & Sandwith

Bignonia uncata Andr.

B. uncinata G. F. W. Mey.

Macfadyena uncinata (G. F. W. Mey.) A. DC.

Griseb. Fl. 449: Urb. in Fedde Repert. 14. 304 (1916):
Sprague & Sandwith in Rec. Trav. Bot. Néerl. 34. 215 (1937):
Sandwith in Pulle Fl. Suriname 4. pt. 2. 45: Seibert *loc. cit.* 399.

Climber or trailing vine; *branchlets* finely striate, becoming glabrous, drying brown or cinnamon; *petioles* and *petiolules* minutely puberulous; *lfts.* elliptic, acutely long-acuminate, cuneately attenuate to base but rounded at base itself, 5-14 cm. long, 2-6 cm. broad, stiffly papery, glabrous or rarely pilosulous beneath, punctate-lepidote and with a few immersed glands beneath; *infl.* axis rarely 2 cm. long, flowers often solitary in leaf axils; *cal.* 1.5-2.5 cm. long, thin, glabrous, with scattered immersed glands; *cor.* bright yellow, 4-7 cm. long, limb up to 4 cm. in diam. and glabrous within; *caps.* up to 25 cm. long and 2 cm. broad, usually attenuate to each end, drying blackish, glabrous, valves rather thick; *seeds* up to about 1.5 cm. long and 4 cm. broad, shining although dark-coloured and opaque.

Trinidad: Laventille, fl. 9.4.1848, Crueger in Herb. Kew; Government House, by Flagstaff, Herb. Trin. 10135; Monos, Herb. Trin. 1487; Couva Road, Chaguanas, Herb. Trin. 1494; Erin, fl. March, Broadway 2734, *vide* Urb. *loc. cit.*; Mafeking Branch Road, Mayaro, Herb. Trin. 12083; without locality, coll.

J. H. Hart, Herb. Trin. 3672; without locality, Fendler 522 in Herb. Kew.

Tobago: Louis d'Or, in coastal swamp, fl. 5.5.1953, Herb. Trin. 14967.

Continental Tropical America, from Mexico to Brazil and Bolivia.

24. MELLOA Bur.

Tendrils-climbers. Branchlets terete, with interpetiolar ridges and sometimes with evident gland-fields at the nodes. *Lvs.* bifoliate, terminated by a short trifid tendril with hooked, claw-like arms. *Pseudostipules* not foliaceous, lanceolate-subulate to ovate, sharply acuminate. *Inf.* an axillary or terminal thyrse, often long and showy, sometimes reduced to a raceme or 1-3-flowered cyme. *Cal.* thin, broadly and loosely campanulate, obliquely truncate, spathaceously split, terminated by an apiculus which is often recurved. *Cor.* thin, tubular-funnel-shaped, glabrous outside. *Anthers* glabrous. *Disk* double, owing to development of an internode below insertion of corolla, upper part annular. *Ovary* compressed-ovoid, ribbed, glabrous; *ovules* pluriseriate in each loculus. *Fruit* a short, thick, woody, oblong capsule narrowed at both ends; valves parallel to the septum, smooth, eventually splitting down median nerve so that fruit is broken into 4 parts; *seeds* transversely oblong, thin and flat, with broad, membranous hyaline wings.

1. *M. populifolia* (DC.) Bur. ex K. Schum.

Bignonia populifolia DC.

Bur. & K. Schum. *loc. cit.* 295, t. 108; Seibert *loc. cit.* 422.

High woody climber; older branchlets ribbed, lenticellate, glabrous, drying brown or cinnamon; *lfts.* ovate or shortly and broadly elliptic, variable at apex from shortly cuspidate to acute or rounded and emarginate, obtuse or rounded and sometimes slightly cordate at base, 6-16 cm. long and 3-11 cm. broad, papery, usually glabrous but with scattered sunken glands on lower surface, veinlets finely and intricately reticulate beneath; *infl.* up to 20 cm. long, glabrous; *bracts* foliaceous, lanceolate, deciduous; *cal.* 1.5-2.3 cm. long, often at least 1.5 cm. broad, glabrous; *cor.* bright yellow, 5-8 cm. long, limb up to 6 cm. in diam. and glabrous within; *caps.* 8-14 cm. long, 3-5 cm. broad, covered with fine but conspicuous pale lenticels, glabrous; *seeds* up to nearly 2 cm. long and 5 cm. broad, body brown, wings much paler with brown veins, sometimes white.

Trinidad: Royal Botanic Gardens, collected on many occasions; "Arima," Dannouse in Herb. Trin. 8444, 8445. Doubtfully native.

Continental Tropical America, from Mexico to Argentina, but very rarely collected in Guiana or the Amazon basin.

FAMILY 5. PEDALIACEAE

BY E. E. CHEESMAN

Annual or perennial *herbs*, often coarse. *Leaves* opposite, or the upper alternate, without stipules. *Flowers* axillary or in terminal racemes, hermaphrodite, zygomorphic. *Calyx* 5-fid nearly to the base. *Corolla* tubular, usually oblique at base, the *limb* slightly 2-lipped, lobes 5, imbricate. *Stamens* alternate with the corolla lobes, inserted on the tube, 4 didynamous (2 long and 2 short) or sometimes only 2 perfect, with staminodes; *anthers* connivent in pairs, 2-celled. *Ovary* sessile on a fleshy disc, 1-celled with 2 intrusive parietal placentas, or 2-4-celled, the cells often again divided by false septa; *style* terminal; *ovules* numerous to solitary in each cell. *Fruit* (in local genera) a capsule.

1. MARTYNIA L.

Coarse *herbs*, viscid-pubescent. *Lvs.* opposite or alternate, on long petioles. *Fls.* rather large, in short terminal racemes. *Cal.* bell-shaped, inflated, deeply and unequally 5-fid, with 1 or 2 bracteoles at the base. *Cor.* tube oblique at the base, widened above, the limb 5-lobed, slightly 2-lipped, the lobes spreading. *Stam.* 2, or 4 didynamous, inserted near the base of the corolla; *staminodes* 3 or 1. *Ovary* 1-celled, with 2 parietal placentas intruded and expanded in the centre of the cavity; *ovules* numerous in one or two series. *Fruit* a 2-valved capsule, with somewhat fleshy exocarp and fibrous and woody endocarp; *seeds* wrinkled.

1. *M. annua* L.*M. diandra* Glox.

Griseb. Fl. 465: Britt. & Wils. Sci. Surv. Porto Rico 6. 202.

Stem much-branched, rather stout, 50-80 cm. high; *lvs.* opposite, ovate-orbicular, 8-15 cm. long, cordate at base, palmately veined, thin and flaccid in texture, long-petioled; *racemes* several-flowered; *pedicels* 1-2 cm. long, slender, thickening and recurved in fruit; *cal.* 1-1.5 cm. long, very deeply 5-cleft, its lobes acute; *stam.* 2; *cor.* pink or nearly white, 3-5 cm. long, its rounded lobes purple-blotched; *caps.* obliquely ovoid, compressed, 2-2.5 cm. long, viscid, with a hooked beak about 3 mm. long (description mainly adapted from Britton & Wilson *loc. cit.*, the local specimen being inadequate).

Herb. Trin. 2510, "woods leading to Mayaro, 14 March 1866". The specimen is marked "ex herb. Crueger" and also "ex herb.

Finlay". The species has apparently not been collected in the Colony since 1866.

West Indies and continental tropical America.

DOUBTFUL RECORD

Craniolaria annua L. is recorded from Trinidad by Grisebach (Fl. 466) "in savannahs", citing Lockhart. There is no specimen in the Trinidad Herbarium, and the specimen at Kew collected by Lockhart is from Venezuela. The species is thus not definitely known from Trinidad, but occurs in Porto Rico, Hispaniola, Margarita Is. and S. America.

The following brief description should identify it if it happens to be found: Viscid hairy herb, 50-80 cm. high, petioles 6-14 cm. long, leaf blades broad and rounded, 7-12 cm. wide, flowers white, with a long and slender corolla tube 10-15 cm. long and 3 mm. thick (cf. Britt. & Wils. Sci. Surv. Porto Rico 6. 203).

Sesamum orientale L. (Sesame), an important crop plant in Africa and the East, where it is cultivated for its oil-bearing seeds, is occasionally found on waste lands escaping from cultivation.

FAMILY 6. ACANTHACEAE

BY EMERY C. LEONARD

*Herbs, shrubs or small trees. Leaves simple, opposite, exstipulate. Flowers irregular to nearly regular, perfect. Calyx persistent, inferior, the segments 5 or occasionally fewer. Corolla gamopetalous, the limb 5-lobed or 2-lipped (rarely 1-lipped). Stamens 4, didynamous, or 2 only. Staminalodes often present, especially in 2-stamened species. Anther sacs 2 or 1, longitudinally dehiscent. Ovary 2-celled, the ovules 2-10 in each cavity. Style filiform. Stigmas 1 or 2. Fruit a capsule (drupaceous in *Mendoncia*), 2-celled, 2-valved. Seeds usually flat, borne on retinacula (papilliform in a few genera but usually hook-shaped), the testa smooth or roughened, often mucilaginous when moistened.*

Acanthaceae is a large family of about 200 genera found in various tropical and sub-tropical habitats. A few species are reported to have medicinal value; others occur as widely distributed weeds; and still others are cultivated in gardens or green houses for their beautiful and conspicuous flowers. Chief among the cultivated ones are species of *Aphelandra*, *Barleria*, *Beloperone*, *Eranthemum*, *Jacobinia*, *Lankesteria*, *Megaskepasma*, *Pseuderanthemum*, and *Thunbergia*. Endemic to Trinidad and Tobago are *Beloperone flaviflora*, *Dicliptera aripoense*, *Drejerella tobagensis*, *Isothea alba*, *Odontonema brevipes*, and *Staurogyne trinitensis*.

- | | |
|--|----------------------|
| Fruit drupaceous; vines | 1. Mendoncia |
| Fruit capsular; herbs, shrubs, small trees or sometimes vines (<i>Thunbergia</i>) | |
| Seeds borne on papilliform retinacula | |
| Peduncles with imbricate, coriaceous bracts | 2. Elytraria |
| Peduncles, if present, without imbricate, coriaceous bracts | |
| Capsules strongly beaked, 2 to 4-seeded; seeds relatively large; plants often scandent | 3. Thunbergia |
| Capsules not strongly beaked; seeds numerous, minute; decumbent herbs | 4. Staurogyne |
| Seeds borne on hook-like retinacula | |
| Perfect stamens 4 | |
| Anthers 1-celled | 5. Aphelandra |

- Anthers 2-celled or the posterior ones
1-celled
- Posterior stamens with 1-celled anthers 6. **Isotheca**
- Posterior stamens with 2-celled anthers
- Calyx segments very dissimilar, the
posterior and anterior ones
much larger than the lateral,
the anterior more or less united
- Corolla 5 mm. long, 2-lipped 7. **Teliostachya**
- Corolla 2 cm. long or more, with
5 nearly equal lobes 8. **Barleria**
- Calyx segments similar or nearly so
- Shrubs or small trees 9. **Bravaisia**
- Herbs (sometimes suffrutescent)
- Corolla 2-lipped; flowers soli-
tary or fascicled, axillary..10. **Hygrophila**
- Corolla regular or nearly so;
inflorescence various
- Flowers borne in dense
spikes; bracts large,
imbricate11. **Blechnum**
- Flowers axillary or borne in
loose terminal or axillary
cymes, panicles, or
spikes (rarely in terminal
heads); bracts small not
imbricate
- Seeds, thin-margined, entire 12. **Ruellia**
- Seeds, thick-margined, irre-
gularly crenate or
lobed13. **Asystasia**
- Perfect stamens 2
- Staminodes present
- Bracts imbricate, corolla red
- Bracts not imbricate or reticulate15. **Odontonema**
- Staminodes none
- Stems conspicuously 6-angled; calyx
subtended by 2 partially united
bracts; placenta separating from
the mature capsules16. **Dicliptera**
- Stems terete or subquadrangular;
bracts distinct; placenta remain-
ing attached to the capsule walls
at maturity
- Bracts imbricate; pollen marked by
longitudinal ribs17. **Drejerella**

Bracts not imbricate, or if imbricate,
the pollen marked by small
knobs

Corolla tube relatively short,
ampliate above18. **Justicia**

Corolla tube elongate, not or
scarcely ampliate above19. **Beloperone**

1. MENDONCIA Vell.

Twining herbaceous or suffrutescent *vines*. *Leaf blades* usually ovate, elliptic or oblong, entire, petioled. *Fls.* pediceled, 1-several in the axils of the leaves, each flower subtended by a pair of conspicuous bracts. *Cal.* a minute ring. *Cor.* usually red or white, 5-lobed. *Stam.* 4, paired. *Anth.* lobes diverging, bearded. *Fruit* drupaceous, often dry and compressed at the tip.

1. *M. hoffmannseggiana* Nees.

Mart. Fl. Bras. 9: 9: Urb. Symb. Ant. 2. 179.

Stems subterete, covered with appressed or somewhat spreading yellowish-brown hairs or the older portions glabrescent; *leaf blades* narrowly to broadly elliptic, up to 11 cm. long and 6.5 cm. wide, acuminate and mucronate, acute or subacute at base, rather thin, densely pubescent with appressed incurved yellowish-brown star-based hairs about 1 mm. long; *petioles* 0.5-3 cm. long, yellowish-brown pilose; *pedicels* up to 5 cm. long, solitary or superposed in pairs, densely yellowish-brown pilose, the hairs appressed or somewhat spreading; *bracts* narrowly oblong, 3.5 cm. long, up to 9 mm. wide, obtuse and apiculate, densely velvety pubescent; *cor.* red, tubiform, 3.5-5 cm. long, the lobes very short; *drupe* 15 mm. long, flattened toward tip, pubescent, black, succulent when ripe.

Trinidad: only in the extreme south-west, and there uncommon. Irois (Herb. Trin. 2911, 1.10.1861); Cap-de-Ville (Herb. Trin. 8532, 26.11.1916); Buenos Ayres (Herb. Trin. 11509, 11.2.1926); Irois forest (Herb. Trin. 9.9.1940).

Venezuela, Guiana, and northern Brazil.

2. ELYTRARIA Michx.

Caulscent or acaulescent *herbs*. *Lvs.* alternate or sometimes subopposite, basal or crowded at the ends of the branches. *Fls.* borne in dense peduncled spikes, both peduncle and spike with imbricate coriaceous bracts. *Cal.* segments scarious, narrow, entire or toothed at apex. *Cor.* white or blue, the tube slender, the limb 2-lipped, the upper lip 2-lobed, the lower lip 3-lobed. *Stam.* 2, barely exserted. *Anth.* 2-celled, the sacs equal, parallel, sometimes awn-tipped at base. *Staminodes* usually wanting. *Ovary* 2-celled. *Ovules* 6-10 in each cavity. *Caps.* narrow, contracted at base, acute at apex.

1. **E. imbricata** (Vahl) Pers.

Justicia imbricata Vahl

Verbena squamosa Jacq.

E. tridentata Vahl

Gr. Fl. 451: Urb. Symb. Ant. 2. 177.

Acaulescent or the leaves crowded at the tip of a glabrous or sparingly pilosulous stem up to 30 cm. long; leaf blades ovate to oblong or obovate, rarely linear-lanceolate, 1-18 cm. long, 0.5-6 cm. wide, blunt to acutish at apex, narrowed at base to a slender winged petiole, both surfaces appressed-pilose or glabrate, the margins undulate; scapes numerous, axillary, 1-24 cm. long, simple or branched (sometimes leafy at tip), the bracts ovate to subulate, tightly appressed; spikes 1 to several, up to 6 cm. long; bracts oblong to elliptic, 3-6 mm. long, 1-2 mm. wide, firm, awn-tipped, bearing near apex a pair of triangular or rhombic hyaline teeth; bractlets 3 mm. long; cal. segments thin, the upper ones bidentate; cor. blue, 5-8 mm. long; caps. oblong, glabrous.

Trinidad: Bocas Is. only: Gasparee, Britton & Coker 552; Monos (Herb. Trin. 2908, 28.1.1867 and Herb. Trin. 7425, 27.11.1915).

Tobago: Scarborough, Broadway 4380.

Texas to northern South America. Introduced in the Philippine Islands.

3. **THUNBERGIA** Retz.

Herbaceous vines or occasionally shrubs. Lvs. opposite. Fls. 2-bracted, usually large and conspicuous, solitary in the axils of the leaves or in terminal racemes. Cal. short, annular. Cor. tube oblique, the limb 5-lobed. Stam. 4, didynamous. Ovary with 2 ovules in each cavity. Caps. coriaceous, globose, abruptly beaked.

Petioles winged

Corolla limb yellow or orange1. *T. alata*

Corolla limb white1A. *T. alata* var. *albiflora*

Petioles not winged, corolla pure white2. *T. fragrans*

1. **T. alata** Bojer

Black-eyed Susan.

Urb. Symb. Ant. 2. 181; *ibid.* 4. 573; 8. 649: Britt. & Millsp. Bah. Fl. 405.

A trailing or climbing pubescent vine up to 1 metre long; leaf blades ovate to triangular-ovate, 2-8 cm. long, remotely few-toothed or entire, acute to rounded, cordate or hastate at base; fls. axillary, the peduncles slender, longer than the petioles; bracts ovate-lanceolate, about 1.5 cm. long, acute or acuminate; cal.

shorter than the bracts; *cor.* 2.5-4 cm. long, yellow or orange, usually with a dark purple eye; *caps.* depressed-globose, pubescent 0.5-1 cm. in diameter, the beak stout, about 1 cm. long.

Trinidad: Ortinola, Britton & Hazen 251: s.n., Kuntze Herbarium 738, 911; garden (Herb. Trin. 2918, 20.11.1866); Tunapuna (Herb. Trin. 7321, 27.10.1915); Tucuche trail (Herb. Trin. 14222, 18.4.1948).

Naturalized and fairly common on roadsides, old house sites, &c.

Tropical America generally. A native of Eastern Africa.

1a. **T. alata** var. **albiflora** Hook.

T. alata var. *alba* Paxt.

Cor. limb white with dark purple eye.

Trinidad: A single specimen from Kuntze Herbarium.

Washington, D.C. (greenhouse), Honduras, Puerto Rico.

2. **T. fragrans** Roxb.

T. volubilis Pers.

Gr. Fl. 458: Urb. Symb. Ant. 2. 180: *ibid.* 4. 573: Britt. & Millsp. Bah. Fl. 405.

A slender climbing *vine* up to 2 metres long; *stems* grooved, minutely strigose or glabrate; *petioles* slender, up to 4 cm. long; *leaf blades* ovate to ovate-lanceolate, 4-11 cm. long, 1.5-6 cm. wide, acuminate, acute or occasionally obtuse at apex, subtruncate, cordate, or hastate at base, entire or remotely few-toothed toward base, thin, minutely strigose or glabrate; *fls.* axillary; *peduncles* up to 7 cm. long; *bracts* ovate or ovate-lanceolate, 1.5-2 cm. long, 6-12 mm. wide, acute or acuminate, pubescent; *cor.* white, the lobes subtruncate at tip, about as long as the tube; *caps.* depressed-globose, about 8 mm. in diameter, puberulous tipped by a stout subulate beak 1-1.5 cm. long.

Trinidad: San Fernando (Herb. Trin. 2917, 10.11.1867); Mitau Village (Herb. Trin. 14286, 13.3.1949).

Roadsides, thickets, and waste places, not uncommon.

Tropical America generally. A native of India.

4. **STAUROGYNE** Wall.

Herbs or *shrubs*. *Stems* erect, ascending or repent, simple or branched, glabrous or pubescent, often glandular. *Lvs.* opposite, petiolate, the blades entire. *Fls.* borne in terminal or axillary bracted loose or compact spikes or racemes. *Cal.* segments 5, the posterior segment oblong, usually much longer and wider than the others. *Cor.* red, yellow, or purple, tubular, the limb 2-lipped, the upper lip 2-lobed, the lower lip 3-lobed, the lobes rounded. *Stam.* 4, usually included, a staminode often present between the

posterior stamens. *Anth.* 2-celled, the sacs ovate, obtuse, subequal, muticous. *Stigmas* 2-parted. *Caps.* oblong, obtuse, seed-bearing nearly to base. *Seeds* numerous, minute, subglobose. *Retinacula* none.

1. *S. trinitensis* Leonard.

Journ. Wash. Acad. Sci. 27: 401. 1937.

Decumbent *herbs*; *stems* about 30 cm. long, rooting at the lower nodes, pilose, the hairs up to 1 mm. long; *leaf blades* ovate, up to 3.5 cm. long, 1.7 cm. wide, obtuse, narrowed at base, thin, sparingly pilose, the hairs beneath confined to costa and lateral veins; *petioles* up to 1 cm. long, pilose; *fls.* borne in short terminal spike-like racemes up to 1.5 cm. long, *bracts* oblong, 7-12 mm. long, 1.5-3 mm. wide, acute to subobtuse at apex, sparingly pilose; *pedicels* 0.5-1 mm. long, bearing at middle a pair of lanceolate, acute bractlets 5-6 mm. long and 1 mm. wide; *cal.* segments 5-6 mm. long, pilose and ciliate, the posterior segment linear, barely over 0.5 mm. wide, 3-nerved, the others less than 0.5 mm. wide, 1-nerved; *cor.* 5-6 mm. long, glabrous, the lobes of the upper lip and middle lobe of the lower lip about 1 mm. wide, the lateral lobes of the lower lip slightly smaller; *style* 2.5 mm. long, glabrous; *caps.* (immature) glabrous, about 1 cm. long.

Trinidad: On road to Caroni Estate, Arima (Herb. Trin. 2900, 5.4.1866, type). A part of the type is also in Herb. N. Y. B. G.

Rare and not recently collected.

5. *APHELANDRA* R. Br.

Shrubs or large *herbs*. *Leaf blades* usually large, oblong to elliptic, usually entire. *Fls.* red, yellow, or white, borne in large terminal bracted spikes. *Cal.* 5-parted, the segments narrow, subequal or the posterior one larger. *Cor.* tube straight or incurved, sometimes ampliate upwardly, the limb usually bilabiate, the upper lip erect, entire or 2-lobed, the lower reflexed-spreading, 3-lobed. *Stam.* 4. *Anth.* 1-celled. *Ovules* 2 in each cell.

1. *A. incerta* Leonard, *sp. nov.*

Frutex caulibus longis, subquadrangularibus, tenuiter strigosis; lamina foliorum elliptica vel ovata vel late lanceolata, acuminata, basi angustata, in petiolum decurrens, undulata vel crenata, supra glabra vel parce hirsuta, subtus aliquantum dense hirsuta, pilis in costa et venis praecipue positis; spicae terminales, solitarii vel plures fasciculatae, quadrifariae, rhachi albo-tomentosa; bractae imbricatae, ovatae, acutae vel subacutae, pulvulentae, ciliolatae, medio glandulas sessiles nitidas, brunneas, solitarias vel coalescentes gerentes; bracteolae lanceolatae, acuminatae, obliquae, carinatae, tomentosae, ciliatae; calycis segmenta chartaceae, acuta vel subacuta, striato-nervata; corolla puberula, coccinea, labio superiore

erecto, bilobo, lobis curvatis, acuminatis, labio inferiore patulo, trilobo, lobo mediano lanceolata acuminato, lateralibus minutibus, rotundatis cum labio superiore connatis; capsulae clavatae, glabrae, minute punctatae; semina plana, subrufo-brunnea, glabra vel parce puberula.

Shrubs up to 4 metres high; *branches* long, subquadrangular, finely strigose, the hairs closely and upwardly appressed, up to 0.5 mm. long (the lower portions of the stems becoming glabrate); *lenticels* various, punctiform to elongate (up to 3.5 mm. long and 0.5 mm. wide); *leaf blades* elliptic to ovate or broadly lanceolate, 8 to 30 cm. long, 3 to 11 cm. wide, acuminate, narrowed at base and decurrent on the petioles, thin, the margins entire, undulate or crenate, the upper surface glabrous or sparingly hirsute, the lower surface more densely hirsute, the hairs spreading up to 0.75 mm. long, confined chiefly to the costa and veins (8 or 9 pairs), the venation prominent; *petioles* up to 9 cm. long; *spikes* terminal, solitary or several in a cluster, 2 to 10 cm. long, about 5 mm. broad, quadrifarious, the rachis white-tomentose or occasionally subglabrous; *bracts* ovate, 6 to 7 mm. long, about 6 mm. wide acute or subacute, puberulous, densely ciliolate, the dorsal glands 2 to several in each group, dark brown, more or less nitid, 1 to 1.25 mm. in diameter, separate to coalescing; *bractlets* lanceolate, acuminate, oblique, carinate, tomentose, ciliate; *cal.* segments 7 mm. long, chartaceous, striate-nerved, the nerves fused and indurate at base, the margins subhyaline, more or less ciliate, at least toward tip, the posterior segment oblong-ovate, 3.25 mm. wide, subacute, the anterior pair lanceolate, 2 mm. wide, acute, the lateral pair, 1.75 mm. wide, acute; *cor.* scarlet, sparingly puberulous with minute coarse hairs, the upper lip erect, about 2 cm. long, divided from about the middle into 2 curved acuminate lobes, the lower lip 3-lobed, the middle lobe lanceolate, about 22 mm. long, and 6 mm. wide, acuminate, the lateral lobes attached to the basal portion of the upper lip, their free portions triangular, about 1.5 mm. long, rounded; *caps.* clavate, about 17 mm. long, 6 mm. broad toward tip, narrowed to 3 mm. at base, glabrous, minutely dotted; *seed* flat, reddish brown, about 5 mm. long and 4 mm. broad, flattened, glabrous, or sparingly puberulous.

Type in the U.S. National Herbarium, No. 1,320,122, collected in Trinidad, November 27, 1888 by Broadway (Herb. Trin. 4500). Also represented by:

Trinidad: Tamana (Herb. Trin. 370, 26.9.1849); Maracas (Herb. Trin. 371, 6.11.1861); Santa Cruz (Herb. Trin. 6623 & 6630); Carrera's Is. (Herb. Trin. 2898, Feb. 1867); Chacachacare (Herb. Trin. 10474, 5.4.1921 and Britton, Britton & Brown 2761); Macqueripe (*s.n.*, 24.10.1921 and Britton, Britton & Hazen 209); Blue Basin (Britton, Britton & Hazen 1906); Quarry Hill, Marac rd.

(Herb. Trin. 12291, 6.11.1929); Morne Coco rd. (Herb. Trin. 13259, 2.2.1938); hillside above St. Joseph (Herb. Trin. 14159, 8.2.1948); Montserrat hills (Herb. Trin. 14776, 11.12.1952).

Common and generally distributed in shady places.

Tobago: Calder Hill, Eggers 5721; Charlotteville (Herb. Trin. 11425, 25.10.1925); damp rocky ravine, Lambeau Hill (Sandwith 1647, 7.10.1937 in Herb. Kew); roadside, Spring Garden, Broadway 3490; Mt. Dillon (Herb. Trin. 14537, 7.12.1949).

Venezuela: Anzoategui: Wooded ridge of Quebrada Bonita, tributary of the Río Querecual, north-east of Bergantín, Steyermark 60978; dense forest of Quebrada Negra, tributary of the Río Zumbador, north-east of Bergantín, Steyermark 61147; steep forested slopes between Cerro San José, along headwaters of Quebrada Tigra and Cerro Peonía (Cerro Los Pajaritos), Steyermark 61568. Aragua: Guamitas, Williams 9994. Federal District: Vicinity of Caracas, L. H. & E. Z. Bailey 484; Chacaito Gorge around Caracas, Pittier 9942; Middle Catuche wood above Caracas, Pittier 7066. Miranda: Dos Caminos and Los Chorros, Pittier 5928; Quebrada de Las Mostazas, Allart 260.

Sucre: Forest of Aricagua, vicinity of Cristobal Colon, Broadway 496; The Balcon, vicinity of Cristobal Colon, Broadway 104; Guacarapo, Lasser 197; along Quebrada Juajuá near Cumanacoa, Pittier 14676.

Aphelandra incerta is a member of the *A. pulcherrima-tetragona* complex. True *A. pulcherrima*, rare in Venezuela but fairly common in Colombia is easily recognized by the soft thick grayish tomentose pubescence of the under surfaces of the leaf blades. *A. tetragona* (Vahl) Nees is probably limited to the vicinity of Caracas, Venezuela. It differs from *A. incerta* by its larger, longer acute bracts (a full centimetre long), and by its strictly glabrous leaf blades.

6. ISOTHECA Turrill

Erect suffrutescent herbs. *Lvs.* entire. *Fls.* pediceled, fascicled, borne in a terminal thyrse. *Bracts* small. *Cal.* 5-parted, the segments narrow, acute, subequal. *Cor.* slender, slightly ampliate above, the limb 2-lipped, the upper lip 2-lobed, the lower lip 3-lobed. *Stam.* 4, didynamous, united into pairs at base of filaments, the 2 posterior anthers 1-celled, the others 2-celled, the cells parallel, muticous. *Caps.* clavate.

1. *I. alba* Turrill.

Kew Bull. Misc. Inf. 1922. 188.

Stem erect, glabrous; *leaf blades* elliptic, up to 25 cm. long and 10 cm. wide, acute or acuminate, narrowed at base, glabrous, with minute subpunctiform cystoliths above; *petioles* up to 5 cm.

long, glabrous; *infl.* about 20 cm. long, glabrous; *cal.* segments lance-subulate, 7 mm. long; *cor.* white, the tube 4 cm. long, about 8 mm. in diameter at throat, the segments of the upper lip lateral, 7 mm. long and 2.5 mm. wide, the lobes of the lower lip subequal, 1.5 mm. long; *stam.* slightly exerted, the filaments 4.5 cm. long; *ovary* glabrous; style 5.5 cm. long.

Trinidad: Heights of Aripo only (Herb. Trin. 9858, 13.1.1922, type; Herb. Trin. 10113, 11.4.1922; Herb. Trin. 14148, 24.12.1947). Endemic.

7. TELIOSTACHYA Nees

Herbs or low shrubs. *Lvs.* entire. *Fls.* borne in dense spikes. *Cal.* unequally 5-parted. *Cor.* tube slender, subcylindric, the limb 2-lipped, the upper lip 2-cleft or emarginate, the lower 3-lobed. *Stam.* 4, didynamous, the filaments short, the anther cells blunt, or apiculate at base. *Style* entire. *Caps.* oblong, 4-seeded. *Seeds* flat, nearly orbicular.

1. *T. alopecuroides* (Vahl) Nees

Ruellia alopecuroides Vahl

Lepidagathis alopecuroides R. Br.

Gr. Fl. 453: Urb. Symb. Ant. 2. 200: *ibid.* 4. 575: 8. 653: Rec. Trav. Bot. Neerl. 35. 149.

Herb; *stems* up to 50 cm. long, usually branched, erect decumbent or ascending, sometimes rooting at the lower nodes, short-pilose; *leaf blades* thin, ovate to elliptic, 3-8 cm. long, 2-3 cm. wide, acute or obtuse at apex, narrowed at base, repand or entire; *petioles* up to 2 cm. long; *spikes* usually terminal, 3-8 cm. long, 1-1.5 cm. in diameter, many-flowered; *bracts* lanceolate to oblong, about 6 mm. long, ciliate; *cal.* segments unequal, 4-6 mm. long, the anterior pair lanceolate, connate at base, the lateral pair linear, the posterior segment obovate; *cor.* white or violet, about as long as the calyx; *stam.* free at the base; *anth.* sacs parallel, slightly unequal; *caps.* sessile, glabrous, about 4 mm. long.

Trinidad: Maracas (Herb. Trin. 373, 28.3.1847); Marabella pasture (Herb. Trin. 2910, 20.2.1865); Hort. Trin. (Herb. Trin. 3410, 11.1.1889 and Herb. Trin. 3700, 6.2.1890); Toco (Herb. Trin. 9421, 18.3.1917); Cocorite (Britton & Hazen, 26.2.1920); Morne Bleu (Herb. Trin. 9565, 27.1.1921). Heights of Aripo (Herb. Trin. 9857, 10-26.1.1922); banks of Caroni (Herb. Trin. 10927, 27.1.1925); I.C.T.A. (Herb. Trin. 13415); Tucuche summit (Herb. Trin. 14800, 25.1.1953).

Tobago: Bloody Bay (Sandwith 1892, 23.10.1937, in Herb. Kew).

Wet shaded banks in woods, thickets and fields. A common weed.

Central America to northern South America, and West Indies.

8. BARLERIA L.

Shrubs or herbs, often with axillary spines. *Lvs.* entire. *Fls.* yellow, blue or violet. *Cal.* deeply 4-parted, 2 of the segments larger than the others. *Cor.* tube about as long as the limb, the lobes rounded, spreading. *Stam.* 4, didynamous, unequal. *Caps.* ovoid or oblong, 4-seeded. *Seeds* flattened, ovate or orbicular.

1. *B. lupulina* Lindl.

Urb. Symb. Ant. 2. 202.

Low *shrubs* up to 1 metre high; *stems* branched, glabrous, bearing at the leaf axilla a pair of slender sharp spines, these spreading or retrorse, up to 2 cm. long; *leaf blades* narrowly oblong, up to 15 cm. long and 2 cm. wide, narrowed to an aristulate tip, narrowed at base, glabrous, dark green, the midrib sometimes pinkish; *petioles* up to 1 cm. long; *fls.* borne in terminal spikes up to 7 cm. long and about 2 cm. broad; *bracts* closely imbricate, suborbicular to ovate, puberulous, aristulate; *calyx* about 1 cm. long; *cor.* bright yellow, up to 3 cm. long; *caps.* 10-15 mm. long, glabrous, the tip slender; *seed* flat, ovate, 8 mm. long and 6.5 mm. wide, densely pilose.

Trinidad: St. Joseph (Herb. Trin. 14592, 31.5.1950).

Tobago: Scarborough Road on sea beach (Herb. Trin. 11145, 6.6.1925).

Native of Madagascar, naturalized in a few localities.

9. BRAVAISIA DC.

Shrubs or trees. *Lvs.* petioled, entire. *Infl.* a terminal subcorymbose panicle, each flower subtended by a pair of bracts. *Cal.* segments 5, subcoriaceous. *Cor.* white, purplish, or yellow, the tube rather abruptly expanded above the ovary, the lobes 5, subequal, rounded, spreading. *Stam.* 4, the anther cells contiguous, spurred at base. *Ovules* 2-4 in each cell.

1. *B. integerrima* (Spreng.) Standl.

Jigger wood.

White Mangué

Amasonia integerrima Spreng.

B. floribunda DC.

Onychacanthus berlandierianus Nees

Gr. Fl. 453: Urb. Symb. Ant. 2. 181: Marshall, Trees, Trin. & Tob. 74.

A dense *tree* up to 10 metres high, the *branches* subquad-rangular, glabrous or the young tips finely pubescent; *petioles* 3-5 cm. long, connate at base; *leaf blades* oblong-elliptic, 8-28 cm. long, 2-10 cm. wide, acuminate or acute, narrowed at base, subcoriaceous, glabrous, or the costa and lateral veins pilosulous

below; *panicle* leafy, subcorymbose, about 12 cm. long and 10-20 cm. in diameter; *bractlets* subtending the flowers, ovate, 2-3 mm. long, subcarinate, puberulous and ciliolate; *cal.* segments ovate, 3-4 mm. long, 2-3 mm. wide, obtuse or rounded, puberulous and ciliolate; *fls.* white (occasionally yellow) with a purple spot at the throat, glabrous, the tube about 10 mm. long, 8 mm. broad at throat, the limb nearly regular, about 2 cm. broad, the lobes emarginate; *caps.* oblong, 10-12 mm. long, obtuse at apex, rounded at base, 4-seeded.

Trinidad: St. Joseph (Herb. Trin. 372, 1.3.1846); Pointe-a-Pierre (Herb. Trin. 2902, 28.2.1865); Hort. Trin. (Herb. Trin. 3561, 6.3.1889); Saut d'eau (Herb. Trin. 6710, Apr. 1899); Moruga (Herb. Trin. 7919, 18.2.1916); Black River (Herb. Trin. 8116, 10.4.1913); Talparo (Herb. Trin. 10960, 5.3.1925); Southern Watershed Reserve (Herb. Trin. 12474, 15.3.1931 and Herb. Trin. 13468, 6.4.1938); Siparia (Herb. Trin. 14192, 29.2.1948).

Wet forests, in all districts.

Southern Tamaulipas and Guerrero, Mexico to Trinidad, Venezuela to Peru.

10. *HYGROPHILA* R.Br.

Herbs. *Lvs.* entire, often with cystoliths. *Fls.* sessile, fascicled or solitary, axillary. *Cal.* 5-parted, the segments narrow, nearly similar. *Cor.* tube subcylindric, the limb strongly 2-lipped, the upper lip 2-lobed, the lower 3-lobed, the lobes sinistrorsely contorted. *Stam.* 4, didynamous. *Anth.* 2-celled, the lobes unappendaged.

1. *H. guianensis* Nees

H. conferta Nees

Urb. Symb. Ant. 2. 182.

A branched *herb* up to 50 cm. high, sparingly hirtellous or glabrate, the stem obtusely quadrangular; *leaf blades* lanceolate, 5-15 cm. long, 0.5-3 cm. wide, acuminate at both ends, entire; *fls.* fascicled; *cal.* segments lanceolate, about 5 mm. long, white-margined, pilose; *cor.* white or purplish, puberulous, the tube 5 mm. long, the lips about 2.5 mm. long; *caps.* narrowly oblong, 1.2-1.4 cm. long, glabrous, 16-18-seeded.

Trinidad: woods leading to Caroni Estate (Herb. Trin. 2899, 5.4.1866); along stream in Caura River Valley, Britton & Hazen 1202; Maracas (Herb. Trin. 375, 11.11.1845); *sine loc.* Kuntze 657.

Mexico to northern South America and the West Indies.

11. BLECHUM P. Br.

Perennial *herbs*. *Lvs.* petioled, repand-dentate, crenate, or entire. *Fls.* borne in dense terminal spikes, the bracts imbricate. *Cal.* 5-parted, the segments slightly unequal, linear subulate. *Cor.* whitish, the tube slender, the limb nearly equally 5-lobed. *Stam.* 4, didynamous, the anther sacs parallel. *Ovules* few in each cavity. *Caps.* broadly oblong with a short narrowed base.

1. *B. brownei* Juss. forma *puberulum* Leonard

Journ. Washington Acad. Sci. 32. 184.

Stems erect or ascending, 20-70 cm. high, the *branches* slender, more or less puberulous; *leaf blades* ovate, 2-7 cm. long, 1-5 cm. wide, acute or obtuse at apex, narrowed at base, glabrous or sparingly pilose, thin; *spikes* 4-sided, 3-6 cm. long; *bracts* ovate, pinnately veined, 1-2.5 cm. long, about 1 cm. wide, acutish at apex, rounded at base, grey-puberulous, ciliate; *cor.* 12-13 mm. long, pubescent; *caps.* broadly oblong, about 6 mm. long, puberulous.

Trinidad : garden (Herb. Trin. 2901, Jan. 1865); Hort. Trin. (Herb. Trin. 3411, 12.1.1889); St. Clair (Herb. Trin. 3585, 12.3.1889); Hololo pass (Herb. Trin. 8105, 26.4.1913).

Tobago : Goldsborough (Herb. Trin. 14954, 5.5.1953).

A common weed.

West Indies, tropical America, and the Old World.

12. RUELLIA L.

Perennial *herbs* or *shrubs*. *Lvs.* petioled, entire or crenate. *Fls.* usually large and conspicuous, solitary or clustered in the axils or borne in terminal cymose panicles or sometimes crowded at the tip of slender axillary peduncles. *Cal.* usually 5-parted, the segments usually narrow and subequal. *Cor.* red, yellow, white, or purple (mauve), funnellform or salverform, sometimes saccate, the limb of 5 obtuse, usually spreading lobes. *Stam.* didynamous, the *anther* sacs blunt at base. *Stig.* lobes unequal. *Caps.* oblong or clavate. *Seed* flat, mucilaginous when moistened.

Corollas scarlet; flowers borne in headlike clusters terminating long axillary peduncles

Leaf blades, at least the larger ones up to 18 cm. long and 6 cm. wide1.

R. fulgida

Leaf blades rarely exceeding 9 cm. in length and 3 cm. in width1A.

R. fulgida var.
angustissima

Corollas mauve; flowers sessile and axillary or if terminating long peduncles, these dichotomously branched

Flowers axillary and sessile2.

R. geminiflora
var. *angustifolia*

Flowers borne on erect or ascending
dichotomously branched peduncles3. *R. tuberosa*

1. *R. fulgida* Andr.

Arrhostoxylum fulgidum Nees
Stemonacanthus fulgidus Griseb.

Griseb. Fl. 452 : Urb. Symb. Ant. 2. 196.

Suffrutescent; *stems* erect, glabrous or sparsely pubescent at the nodes, the tips quadrangular, the lower portions terete; *leaf blades* ovate to oblong-ovate, 5-18 cm. long, 1.5-6 cm. wide, acuminate (the tip blunt), narrowed or rounded at base, thin, entire or shallowly crenate, glabrous or the costa and lateral veins beneath puberulous with minute curved hairs; *petioles* 1-6 cm. long; *fls.* usually several, crowded at the tips of slender, quadrangular, subglabrous, simple or sparingly branched peduncles up to 20 cm. long; *bracts* lanceolate, up to 2 cm. long; *cal.* segments linear, 5-8 mm. long, 1 mm. wide at base, sparingly puberulous; *cor.* scarlet, 2-3 cm. long, salverform, 5-7 mm. broad at mouth, the limb about 1.5 mm. broad, the lobes oval, rounded and emarginate; *caps.* clavate, about 17 mm. long and 3-4 mm. broad, glabrous; *seeds* 2.5 mm. long and 2 mm. broad, apparently glabrous when dry, mucilaginous-pubescent when moistened.

Trinidad : Montserrat hills (Herb. Trin. 2916, 15.2.1865); Caparo (Herb. Trin. 7816, 23.4.1915); Brigand Hill (Herb. Trin. 13629, 21.4.1940, and Herb. Trin. 14269, 13.3.1949).

Tobago : Bloody Bay (s.n., Williams, 22.2.1922); Charlotteville (Herb. Trin. 11079, 4.6.1925); Castara-Parlatuvier Rd. (Sandwith 1882, 22.10.1937, in Herb. Kew).

Hispaniola, St. Vincent, Colombia, Venezuela. Probably introduced into the West Indies.

1A. *R. fulgida* Andr. var. *angustissima* (Hochr.). Leonard, comb. nov.

Arrhostoxylum fulgidum Nees var. *angustissimum* Hochr.
Bull. New York Bot. Gard. 6. 287.

Leaf blades lanceolate, sometimes falcate, usually 5 to 9 cm. long and 2-3 cm. wide; *petioles* 0.5-3 cm. long. In other respects similar to the typical form.

Tobago : Mason Hall (Herb. Trin. 4399, 3.3.1913).
Colombia and Venezuela.

R. fulgida angustissima is a poorly defined variety. It seems to merge with the typical form if a number of specimens are examined. The specimen cited above seems to be intermediate between the typical form and the variety.

2. *R. geminiflora* var. *angustifolia* (Nees) Griseb.

Dipteracanthus geminiflorus var. *angustifolius* Nees
D. angustifolius (Nees) Brem.

Gr. Fl. 451: Urb. Symb. Ant. 2. 193: Pulle Fl. Suriname 4. 216.

Herb 4-40 cm. high; *stems* erect, obtusely quadrangular, sulcate, hirsute or glabrescent; *lvs.* sessile or short-petioled, the blades narrowly elliptic, lanceolate or oblanceolate, up to 6.5 cm. long and 1.2 cm. wide, acute to obtuse, narrowed at base, densely to sparsely hirsute; *fls.* axillary, opposite; *bractlets* small, linear, hirsute; *pedicels* 1.5 mm. long, hirsute; *cal.* segments narrowly triangular-subulate, up to 15 mm. long, 1 mm. wide at base, densely hirsute; *cor.* mauve, funnellform, 4.5-5 cm. long, pubescent without, glabrous within, 9 mm. in diameter at throat, the limb 2-3 cm. in diameter; *caps.* ovoid, 10 mm. long, 5 mm. broad, apiculate, stipitate, puberulous, 4-seeded.

Trinidad: O'Meara savanna (Herb. Trin. 2913, 5.4.1866 and Herb. Trin. 9340, 8.4.1920); Piarco savanna (Herb. Trin. 4654, Apr. 1892; Herb. Trin. 5165, Jan. 1893; Herb. Trin. 5293, Mar. 1893; Herb. Trin. 6020; Herb. Trin. 11534, Britton & Hazen, 18.3.1920; Herb. Trin. 13626, 4.4.1940).

O'Meara and Piarco savannas, Trinidad.

Guiana, Venezuela and Colombia.

3. *R. tuberosa* L.

Minnie Root.

Gr. Fl. 452: Urb. Symb. Ant. 2. 191: *ibid.* 4. 574; 8. 651: Britt. & Millsp. Bah. Fl. 401.

Roots clustered, thick-fibrous or fusiform; *stem* erect or ascending, pilose or glabrate; *petioles* 5 mm. long; *leaf blades* ovate to oblong, 2-11 cm. long, 1.5-6 cm. wide, obtuse, abruptly narrowed toward base, undulate, crisped, rather thick, sparingly pilose or glabrous; *fls.* 1-several, borne in erect or ascending cymes, the peduncles up to 4 cm. long, glabrous or pilosulous, obscurely quadrangular; *bracts* linear, 3-8 mm. long; *pedicels* 5-10 mm. long, puberulous or glabrate; *cal.* 15-28 mm. long, the segments narrowly linear or subulate, ciliate or glabrous, often spreading; *cor.* mauve, 3-6 cm. long, sparingly puberulous, the limb 2-4 cm. broad; *caps.* cylindric, 17-20 mm. long, 3 mm. broad, acute at apex, glabrous except the puberulous calluses at tip; *seeds* numerous (20 or more), mucilaginous-pilose when moistened.

Trinidad: Gasparee (Herb. Trin. 3813, 10.6.1889); Chacachacare (Herb. Trin. 4740, 12.2.1890); Five Islands (Herb. Trin. 5014, June 1891); Erin (Herb. Trin. 7362, 12.11.1915); Cedros (Herb. Trin. 8531, 3.11.1916); Chacachacare (Herb. Trin. 11.6.1919); Siparia (*s.n.*, 20.9.1912).

Tobago : Mason Hall (Herb. Trin. 11120, 6.6.1925); Sandy Point (Herb. Trin. 11821, 15.9.1927); Scarborough (Herb. Trin. 14507, 5.12.1949).

Dry sandy or gravelly soil at low elevations. Common on the Bocas Is. and seaside localities generally.

West Indies and northern South America.

A white flowered form was collected at Sandy Point, Tobago, by R. O. Williams (Herb. Trin. 11821).

13. *ASYSTASIA* Blume

Herbs or shrubs. Fls. borne in spikes or racemes, these lax or dense, simple or branched, unilateral, the pedicels short. *Bracts* and *bractlets* small, narrowly triangular or linear. *Cor.* variously coloured, the tube short to long, funnellform, ventricose or narrow, the 5 lobes subequal. *Stam.* 4, perfect (sometimes 2 perfect and 2 staminodes) didynamous. *Anth.* oblong, the cells parallel, approximate, minutely spurred or mucicous at base. *Ovules* 4. *Caps.* 4-seeded above the base. *Seeds* glabrous, compressed, orbicular or irregularly angular, rugose or tubercular, their margins thick, wrinkled, lobed or crenate.

1. *A. gangetica* (L.) T. Anders.

Justicia gangetica L.

A. coromandeliana Nees

Amoen. Acad. 4. 299: Thwaites Enum. Pl. Zeyl. 235.

Herbaceous to shrubby, often climbing or trailing; *stems* branching, subquadrangular, glabrous or sparingly pubescent; *leaf blades* ovate, up to 9 cm. long and 5 cm. wide, acute or abruptly acuminate, obtuse, rounded or subcordate at base and decurrent on the petiole, sparingly pubescent, the hairs confined chiefly to costa and lateral veins (4 or 5 pairs); *petioles* up to 3 cm. long, pubescent; spikes terminal, lax, 10 cm. long or more, the flowers more or less secund, the rachis sparingly and minutely pubescent; *bracts* and *bractlets* small, triangular, acuminate, ciliate; *cal.* about 1 cm. long, the segments linear-lanceolate, acuminate, about 8 mm. long and 0.75-1 mm. wide at base, sparingly hirsute, some of the hairs glandular, *pedicels* up to 4 mm. long, minutely hirsute with both glandular and eglandular hairs. *Cor.* white, yellow, mauve, or pale yellow sometimes flushed with red outside, 3-4 cm. long, the enlarged portion of the tube obconic, the lobes rounded, about 1.5 cm. in diameter. *Stam.* borne in pairs, included; *caps.* clavate, about 20 mm. long, minutely pilosulous, some of the hairs glandular. *Seeds* 2, grey, about 3.5 mm. broad, roughened, the margins crenate.

Trinidad : naturalized around Port-of-Spain and St. Augustine.

Native to tropical Africa, Asia including Malaya. Cultivated or found as an escape in tropical regions of America.

14. PACHYSTACHYS *Nees*

Herbs or small *shrubs*. *Lvs.* large, with cystoliths. *Fls.* borne in a terminal spike. *Bracts* large, herbaceous. *Bractlets* narrowly linear, equalling the calyx or shorter. *Cal.* segments equal or the upper one somewhat narrower than the others. *Cor.* large, showy, purple, red or yellow, the tube narrowly infundibuliform, slightly curved, the limb bilabiate, the upper lip narrow, shortly 2-lobed or emarginate, the lower lip 3-lobed. *Stam.* 2, sometimes accompanied by short staminodes. *Anth.* sagittate, the basal lobes acute. *Caps.* exstipitate, 4-seeded. *Seeds* lenticular.

1. P. coccinea (Aubl.) *Nees*

Justicia coccinea Aubl.

Gr. Fl. 454: Urb. Symb. Ant. 2. 213: *ibid.* 8. 655.

Small *shrub*; *branches* puberulous when young, soon glabrescent; *leaf blades* elliptic or obovate, up to 20 cm. long and 9 cm. wide, acuminate, acute or obtuse at base, glabrous except the costa and lateral veins, these puberulous but soon glabrescent; *petioles* 1-1.5 cm. long; *peduncles* up to 2 cm. long; *spikes* up to 14 cm. long, the lower bracts decussate, 2.5-3 cm. long, about 1.7 cm. wide, the upper ones ternate and quaternate, narrower, all acute or subacuminate, apiculate, the margins and costa short-pubescent; *cal.* tube campanulate, the segments triangular, equal, 2 mm. long and 1 mm. wide; *cor.* hirtellous, red, 5 cm. long, 7 mm. broad at throat, the upper lip 2 cm. long, emarginate, the lower lip oblong, obtuse, 1.7 cm. long, 4 mm. wide; *fil.* 4 cm. long, hirtellous; *staminodes* flat, ovate, glabrous; *ovary* glabrous.

Trinidad: *sine loc.* (Herb. Trin. 367, 5.5.1845); Chaguanas (Herb. Trin. 2912, Feb. 1866); Hort. Trin. (Herb. Trin. 3435, 17.1.1889 and Herb. Trin. 4361, *ann.* 1890); Santa Cruz (Herb. Trin. 6629).

Common along streams and in cacao plantations, where it may become a troublesome weed.

West Indies and northern South America.

15. ODONTONEMA *Nees*

Herbs or *shrubs*. *Lvs.* usually large and entire. *Fls.* borne in narrow terminal panicles. *Cal.* 5-parted, the segments small and narrow. *Cor.* white, purplish, red or yellow, the tube slender, the throat only slightly enlarged, the limb 2-lipped, nearly regular. *Stam.* 2, the anther sacs blunt at the base. *Staminodes* 2. *Caps.* oblong, stipitate. *Seeds* 4 or fewer.

Stems and leaves glabrous; corollas 16 mm.

long1. *O. nitidum*

Stems (tips) and leaves (costa and nerves beneath) short-pilous; corollas 7.5 mm.

long or less2. *O. brevipes*

1. **O. nitidum** (Jacq.) Kuntze.*Justicia nitidia* Jacq.*Thyrsacanthus nitidus* Nees

Urb. Symb. Ant. 2. 220 : Britt. & Wils. Sci. Surv. Puerto Rico and the Virgin Is. 6. 214.

A shrub 1-3 metres high, the branches slender, glabrous; *lvs.* oblong to elliptic, 10-20 cm. long, 2-7 cm. wide, acuminate, narrowed at base, thin, glabrous; *petioles* 1-3 cm. long, glabrous or sparingly pilose; *panicles* slender, simple or branched, longer than the leaves; *pedicels* 5-10 mm. long; *cal.* about 3 mm. long, the segments lanceolate; *cor.* white or purplish, about 16 mm. long, the lips about as long as the tube; *caps.* about 15 mm. long, glabrous; *seeds* verrucose.

Trinidad : Savanna de Aripo, Eggers 1453.

Tobago : Mt. St. George-Castara Road (Herb. Trin. 13534, 31.3.1940).

West Indies.

2. **O. brevipes** Urban

Urb. Symb. Ant. 7. 385.

Shrub up to 1 metre high; *stems* pilosulous with short spreading hairs, elliptic to oblong-elliptic, up to 17 cm. long and 7 cm. wide, acuminate, narrowed at base, glabrous except the costa and veins beneath, these pilosulous; *petioles* 3-8 cm. long; *panicles* terminal, simple or branched at base, up to 15 cm. long; *bracts* small, linear; *fls.* borne in 1-5 flowered sessile cymes; *cal.* about 2 mm. long, the segments linear-lanceolate; *cor.* light violet or white, 7-7.5 mm. long, sparingly pilosulous; *staminodes* minute, clavate; *style* 6.5 mm. long, exserted; *caps.* 13 mm. long, about 3 mm. broad, stipitate, glabrous, the seeds densely verrucose.

Tobago : Easterfield, Broadway 4378; Great D'or (Dog) River (Morne D'or *vide* Urban), Eggers 5838 (Isotype in U.S. National Herbarium); Lot 42, Broadway 4037; Summit of Pigeon Hill (Herb. Trin. 11377, 22.10.1925); The Widow, near Easterfield, Broadway 3516; Forest margin, N. coast rd. (Herb. Trin. 14533, 6.12.1949); above Parlatuvier (Sandwith 1898, 24.10.1937, in Herb. Kew).

Forest, shady places at fairly high altitudes (c. 1,000-1,500 ft.)
Endemic.

16. **DICLIPTERA** Juss.

Herbs. *Stems* usually hexagonal near tips. *Lvs.* entire, usually ovate, petiolate. *Infl.* spicate, cymose or paniculate, the flowers 1-several, subtended by an involucre of 2-4 usually conspicuous bracts, the cymes often contracted. *Cal.* 5-parted, hyaline. *Cor.* narrow, slightly ampliate, the limb 2-lipped. *Stam.* 2, the anther

sacs often unequal, the longer sometimes calcarate at the base. *Staminodes* none. *Cal.* ovate or suborbicular, the placentae separating elastically from their walls. *Seeds* 2 or 4.

Bracts broad, ovate, cuspidate1. *D. martinicensis*

Bracts narrow, oblong-elliptic, lanceolate or spatulate

Flowers borne in flat peduncled cymes2. *D. ariipoensis*

Flowers or flower clusters sessile3. *D. vahliana*

1. ***D. martinicensis* (Jacq.) Juss.**

Justicia martinicensis Jacq.

Diapedium martinicense Kuntze

Gr. Fl. 458 : Urb. Symb. Ant. 2. 225 (in part).

Herbs up to 1 metre high; *stems* puberulous or glabrescent, spreading; *leaf blades* ovate to ovate-oblong, up to 10 cm. long and 6 cm. wide, acuminate, obtuse to acute at base, thin, glabrous except costa and lateral nerves, these pubescent with minute curved hairs; *fls.* borne in cymes usually of 3 flowers each, the cymes axillary or forming terminal interrupted panicles; *peduncles* about 3 cm. long, puberulous; *pedicels* 3-5 mm. long or the middle one as much as 2 cm. long, hirtellous with retrorsely-curved hairs; *bracts* ovate, up to 18 mm. long and 12 mm. wide, acute, cuspidate, thin, puberulous; *bractlets* subulate; *cal.* segments lanceolate, 3.5 mm. long, 2 mm. wide, whitish, puberulous; *cor.* rosy, up to 3.5 cm. long, pubescent, the lips linear-oblong; *caps.* 7-8 mm. long, short-stipitate, pubescent.

A specimen without locality from the Crueger Herbarium is in the Herbarium of the Trinidad Botanic Gardens (No. 2907).

Martinique, Trinidad.

2. ***D. ariipoensis* (Britton) Leonard, comb. nov.**

Diapedium ariipoense Britton.

Bull. Torr. Bot. Club 53. 470.

Herb; *stems* branching, strigillose, 1-1.5 metres long; *leaf blades* elliptic-ovate, up to 18 cm. long and 8 cm. wide, acuminate, narrowed at base, membranous, glabrous or the costa and lateral veins sparingly pubescent with minute curved hairs; *petioles* up to 7 cm. long, glabrous or minutely and sparingly strigose; *fls.* borne in flat, peduncled cymes usually of 5 flowers each, the *peduncles* 5-10 cm. long, although occasionally as much as 13 cm. long, minutely and sparingly pubescent with curved hairs; *bracts* subtending the cymes 2-3 cm. long, leaflike; *bracts* subtending the flowers unequal, one oblong-elliptic, about 12 mm. long and 5 mm. wide, acute, the other narrowly oblong, 10 mm. long, 2 mm. wide, acuminate, both bracts puberulous and whitish toward base; *bractlets* lanceolate, about 5 mm. long, whitish, puberulous; *cal.*

segments about 3 mm. long, white, puberulous; *cor.* red, about 3 cm. long, villous, slightly curved, the lips about 6 mm. long.

Trinidad : Heights of Aripo only, Broadway 8031; Herb. Trin. 9860, 10-26.1.1922 (type also in New York Bot. Gard.); Herb. Trin. 12988, 25.3.1934.

In wet forest, endemic.

3. *D. vahliana* Nees

DC. Prodr. 11. 489.

Herb up to 1.5 metres long; *stems* ascending, simple or branched, glabrous or somewhat puberulent; *lvs.* often early deciduous, the blades ovate to oblong-lanceolate, 4-10 cm. long, up to 6 cm. wide, acute or obtuse at apex, narrowed at base; *petioles* slender; *fls.* borne in small sessile bracted clusters, on slender interrupted, simple or branched spikes 5-15 cm. long; *bracts* oblong-spatulate, 8-15 mm. long; *cal.* about 4 mm. long, the segments linear-lanceolate, equalling the tube or longer; *cor.* scarlet or red, 2-2.5 cm. long, the tube curved, the lips lanceolate; *caps.* 5-6 mm. long.

Trinidad : Chacachacare (Herb. Trin. 374, Jan. 1847); San Fernando (Herb. Trin. 2905, 20.1.1865); Couva bay (Herb. Trin. 10458, 27.3.1921); Southern Watershed Reserve (Herb. Trin. 10123, 28.4.1922); Gasparee (*s.n.*, Britton, Sears and Broadway, 31.3.1921); Chacachacare (Herb. Trin. 14881, 15.3.1953).

Florida, West Indies, tropical continental America.

D. vahliana is closely related to *D. assurgens* differing chiefly in its oblong spatulate outer pair of involucre bracts. In *D. assurgens* these are strictly subulate.

17. *DREJERELLA* Lindau

Shrubs or *herbs*. *Lvs.* petioled. *Fls.* borne in terminal bracted spikes, the bracts imbricate. *Cal.* 5-parted. *Cor.* 2-lipped, the upper lip 2-toothed, the lower 3-lobed. *Stam.* 2, the anther sacs calcarate. *Ovules* mostly 2 in each cavity. *Caps.* short-stipitate, usually 4-seeded.

1. *D. tobagensis* Urban

Urb. Symb. Ant. 7. 386.

Stems ascending up to 15 cm. high, rooting at lower nodes, retrorsely pubescent with short hairs; *leaf blades* oblong-ovate to oblong-lanceolate, 4.5-8 cm. long, 1.5-2.8 cm. wide, acuminate (the tip blunt), narrowed at base, sparsely long-pilose above, short-pilose beneath; *spikes* 1 to several in the axils of the upper leaves, 1.5-5 cm. long; *bracts* ovate or narrowly obovate, 6-8 mm. long, 2-3 mm. wide, short-acuminate, white-ciliate; *bractlets* linear-filiform; *cal.* segments linear-lanceolate, 3.5 mm. long, 0.5 mm.

wide, short-pilose; *cor.* white or violet, 11 mm. long; *caps.* 7.5 mm. long, 1-8 mm. broad, short-pilose; *seeds* brownish, densely granular-tuberculate.

Description adapted from the original: Eggers 5847, collected on Morne D'or, Tobago.

18. JUSTICIA L.

Herbs or *shrubs*. *Lvs.* petiolate, usually ovate, entire. *Fls.* spicate, paniculate or solitary. *Bracts* small or occasionally large imbricate. *Cal.* segments 4 or 5, narrow, subequal. *Cor.* usually purple, pink or white, sometimes with dark purple markings, the tube usually short, the throat ampliate, the upper lip 2-lobed, the lower one 3-lobed. *Stam.* 2. *Anth.* cells 2, more or less unequally attached, acute, rounded or calcarate. *Staminodes* none. *Ovules* 2 in each cavity. *Caps.* oblong to ovate.

Calyx 4-parted; flowers sessile1. *J. sessilis*

Calyx 5-parted; flowers borne in terminal spikes
or panicles

Flowers borne in dense spikes or panicles;
corollas 15-40 mm. long

Bracts large, oblong-cuneate2. *J. carthaginensis*

Bracts small, subulate3. *J. secunda*

Flowers borne in slender interrupted spikes
or panicles; corollas 4-15 mm. long

Branches of the inflorescence terete,
glandular-puberulous4. *J. pectoralis*

Branches of the inflorescence angular,
glabrous or minutely pilosulous, some-
times more or less glandular5. *J. comata*

1. *J. sessilis* Jacq.

Dianthera sessilis Gmelin

Rhytiglossa sessilis Nees

J. pauciflora Vahl

Gr. Fl. 455: Urb. Symb. Ant. 4. 579: 8. 658.

Suffrutescent, up to 80 cm. high; *stems* branched, pubescent in two lines; *leaf blades* elliptic to ovate or ovate-lanceolate, up to 2.5 cm. long and 1.5 cm. wide, acute or acuminate to obtuse at apex, narrowed or rounded at base, glabrous or sparingly pilose; *petioles* up to 3 mm. long; *fls.* 1-3 in the upper axils, sessile; *bractlets* about 2 mm. long, subulate, pilose; *cal.* 4-parted, the segments lanceolate, about 4 mm. long; *cor.* purple, puberulous, the tube slender, about 10 mm. long, the lips 6-7 mm. long; *caps.* 10-12 mm. long, stipitate, glabrous.

Trinidad: Bocas Islands only; Chacachacare (Herb. Trin. 2904, 20.4.1866 and Herb. Trin. 9527, 13.3.1920); Monos (Herb. Trin. 7431, 27.11.1915).

Hispaniola and Colombia.

2. *J. carthaginensis* Jacq.

Adhatoda carthaginensis Nees

Gr. Fl. 456: Urb. Symb. Ant. 8. 657: Britt. & Millsp. Bah. Fl. 403.

Herbaceous or suffrutescent, up to 1.5 metres high; *stems* erect, branched, pilosulous in 2 lines, or glabrous; *leaf blades* ovate or elliptic-ovate, 5-12 cm. long, up to 7 cm. wide, acuminate, narrowed or rounded at base and decurrent on the petiole, glabrous or pilosulous; *petioles* 0.5-2 cm. long; *fls.* borne in dense terminal spikes or panicles 3-7 cm. long; *bracts* oblong-cuneate, 15 mm. long or less, about 5 mm. wide, acute or obtuse, the *bractlets* similar but narrowed, all pilosulous, some of the hairs glandular; *cal.* segments 5, linear-lanceolate, 10-11 mm. long, white-margined, ciliolate toward tip; *cor.* purple, 2.5-3 cm. long, sparingly glandular-pubescent or glabrous, the tube about 1.5 cm. long, the upper lip straight, about as long as the tube, notched at the apex, the lower lip spreading, slightly longer than the upper, the lobes elliptic, about 1 cm. long, rounded; *caps.* 1.5-2 cm. long, finely puberulous.

Trinidad: San Fernando Hill (Herb. Trin. 2909, 1.12.1864).

Tobago: Plymouth (Herb. Trin. 11894, 7.12.1927).

West Indies and continental tropical America.

3. *J. secunda* Vahl

Dianthera secunda Griseb. (in part).

Gr. Fl. 455 (*excl.* var. b. and c.): Urb. Symb. Ant. 2. 238: Britt. Fl. Berm. 355.

Shrubby, up to 3 metres high, the branches nearly terete, puberulous or glabrescent; *leaf blades* ovate-oblong to ovate-lanceolate, up to 14 cm. long and 5 cm. wide, long, acuminate, obtuse or rounded at base, rather thin, glabrous except the costa and veins, these finely pubescent; *fls.* borne in narrow terminal panicles up to 25 cm. long, the pedicels very short; *bracts* small, subulate; *cal.* segments linear-lanceolate, about 7 mm. long and 1.5 mm. wide, puberulous; *cor.* red or reddish-purple, finely pubescent, the tube about 15 mm. long, the upper lip about 26 mm. long, minutely dentate at apex, the lower lip slightly longer, the lobes obtuse, 2 mm. long and 3 mm. wide; *caps.* 10 mm. long, 3 mm. wide, stipitate, puberulous; *seeds* flat, about 3 mm. in diameter.

Trinidad : Shrubby bank along Blanchisseuse Road, Verdant Vale, Broadway 7672; Couva Bay, Britton, Freeman & Nowell 2587; Ortinola Estate, Britton & Hazen 236; Near reservoir at St. Anns (Herb. Trin. 3907, Sept. 1889) San Rafael Cemetery (Herb. Trin. 12721, 21.9.1932); *sine loc.*, Kuntze 648; Morne Coco rd. (Herb. Trin. 14248, 1.1.1949).

Second growth, in rather moist shady localities.

Virgin Islands to British Guiana, Venezuela, and Colombia.

4. ***J. pectoralis* Jacq.**

Carpenter's Grass.

Dianthera pectoralis Gmelin

Stethoma pectoralis Raf.

Gr. Fl. 455: Urb. Symb. Ant. 2. 241: *ibid.* 4. 579; 8. 658.

Herbs up to 60 cm. high; *stems* erect, decumbent, or ascending, sparingly branched, often rooting at the lower nodes, short-pilose in 2 lines below, puberulous and more or less glandular above; *leaf blades* lanceolate to ovate-lanceolate, 2-10 cm. long, up to 4 cm. wide, acuminate, acute or obtuse at base, glabrous; *petioles* 2-12 mm. long; *infl.* a terminal, few to several-flowered panicle, the branches terete, slender, alternate, 2-12 cm. long, more or less glandular, the flowers subdistant; *bracts* and *bractlets* subulate, up to 3 mm. long; *cal.* segments 5, subulate, about 2 mm. long, the posterior segment slightly shorter than the others; *cor.* pink, puberulous, 8-15 mm. long, the upper lip straight, about 4 mm. long, minutely 2-lobed at tip, the lower lip slightly longer, 7 mm. wide, the lobes rounded, 1.5-2 mm. long, purple, white-striped toward throat.

Trinidad : Hort. Trin. (Herb. Trin. 2239, 7.1.1889); St. Clair (Herb. Trin. 3578, 12.3.1889); Tucuche (Herb. Trin. 10075, 10.1.1922).

A common weed in waste and cultivated places.

West Indies and continental tropical America.

5. ***J. comata* (L.) Lam.**

Dianthera comata L.

Stethoma comata Britton

Gr. Fl. 456: Urb. Symb. Ant. 2. 239: *ibid.* 4. 579; 8. 658.

Herb up to 20 cm. high; *stem* weak, ascending, or nearly erect, usually branched, often rooting at the lower nodes, glabrous or sparingly pilosulous, *lvs.* sessile or petioled, the blades lanceolate to oblong-ovate or oblong, 3-15 cm. long, acuminate or acute at apex, rounded or narrowed at base; *petioles* up to 2 cm. long; *fls.* borne in axillary and terminal peduncled panicles up to 22 cm. long, the branches nearly filiform, angular, 2-7 cm. long, often forming verticillasters, more or less glandular-pubescent; *bracts* and *bractlets* subulate, 3 mm. long or less; *cal.* segments 5, subulate.

1.5-2 mm. long; *cor.* white or purplish, with purple spots along the central ridge of the lower lip, about 6 mm. long, the tube relatively broad, 2 mm. long, the upper lip erect, 3 mm. long, emarginate, the lower lip 3-5 mm. long, 3-lobed, the lobes rounded, 1 mm. long; *caps.* 4-5 mm. long, stipitate, puberulous or glabrescent.

Trinidad: Caroni (Herb. Trin. 368, 15.9.1861); Talparo (Herb. Trin. 10457, 6.3.1921); banks of the Caroni (Herb. Trin. 10926 and 10942, 27.1.1925).

Tobago: Mason Hall (Sandwith 1859, 19.10.1937 in Herb. Kew); Betsy's Hope River, Broadway 3873, 1912, in Herb. Kew).

A common weed in damp thickets and woods, usually on banks of streams.

West Indies and continental tropical America.

19. BELOPERONE Nees

Herbs or shrubs. Lvs. usually elliptic or ovate, entire. *Fls.* fasciculate in the axils of the bracts, or cymose, or borne in terminal thyrsi or panicles. *Bracts* small or large. *Cal.* 5-parted, the segments narrow. *Cor.* purple, yellow or white, the tube slender, elongate, scarcely ampliate above, the limb deeply 2-lipped, the upper lip narrow, erect, entire or minutely 2-lobed, the lower lip 3-lobed. *Stam.* 2, the anther cells unequal, usually superposed, at least the lower one mucronate or calcarate at base. *Staminodes* none. *Caps.* clavate, 4-seeded.

1. *B. flaviflora* Turill

Kew Bull. Misc. Inf. 1922. 187.

An erect *herb* becoming woody at base; *branches* subterete, their tips densely yellow-hirsute, the lower portions less so; *leaf blades* oblong-elliptic or elliptic, up to 27.5 cm. long and 11 cm. wide, acute or acuminate at tip, narrowed at base, pilosulous with yellow hairs, the young leaves densely so; *fls.* borne in terminal and axillary panicles; *bracts* linear-lanceolate, 3 mm. long, glandular-puberulous; *cal.* segments linear-lanceolate, 5 mm. long, 1 mm. wide, acute, glandular-puberulous; *cor.* narrowly cylindric, 28 mm. long, yellow, glandular-puberulous, the lips 12 mm. long; *caps.* about 18 mm. long and 4 mm. broad, clavate, puberulous; *seeds* flat, about 2 mm. in diameter, light yellowish, muricate.

Trinidad: Heights of Aripo only (Broadway 7093; Herb. Trin. 9859, 13.1.1922, type; Herb. Trin. 12986, 25.3.1934).

Endemic.