

Department of Agriculture
TRINIDAD AND TOBAGO.

VOL. I.]

[PART 1.

FLORA
OF
Trinidad and Tobago.

RANALES

BY

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Price One Shilling.



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PREFACE.

The preparation of the Flora of a country is almost invariably the work of many persons during many years. That of Trinidad and Tobago, of which this, the first portion, is now issued, is no exception. Several botanists and collectors did yeoman work in the early part of the last century, notably the first three Superintendents of the Botanic Gardens, Lockhart 1816-46, Purdie 1846-57 and Crueger 1857-64 and enthusiastic local amateurs such as Fendler, Bradford, &c., and other botanists, e.g. : Sieber, De Schach and Lane. Much of the results of their work found its place in Grisebach's "FLORA OF THE BRITISH WEST INDIAN ISLANDS" published in 1864. Many additions to our knowledge have been made since those days, but Grisebach's Flora, necessarily incomplete and long out of print, is still the only publication in which information on the native plants of the Colony is readily accessible.

After Crueger's time the Herbarium of the Royal Botanic Gardens got into bad condition, as can so easily happen in the tropics without constant attention and to Hart is due the credit of rescuing the valuable collections from destruction. He, together with Broadway, made many further additions to the Herbarium and also generally put it into systematic order. Since that time the Herbarium has been maintained in good condition largely due to the unremitting care of Miss P. McLean, Herbarium Assistant for 35 years. It has grown considerably in size due to the efforts of many collectors principally Williams and the writer.

During the last half century or more constant assistance has been received from the Royal Botanic Gardens, Kew, to which great institution our specimens were sent for determination.

At the time of the re-organisation of the Department of Agriculture in 1920, much, however, remained to be done, as in the Herbarium were the accumulations of many years, and the realization of the long cherished hope of being able to produce a Flora still seemed very remote.

At this stage Dr. N. L. Britton, Director-in-Chief of the New York Botanical Garden, decided to come to Trinidad to study our Flora as a part of that of Northern South America, a work on which was contemplated. He and other botanists, including Mrs. Britton, spent two winters here, 1920 and 1921, and not only collected with his extraordinary zeal, but undertook the laborious task of working right through our Herbarium and checking determinations, partly whilst here and with the help of various specialists after return to Bronx. As the outcome he presented a MS. copy of "A PROVISIONAL LIST OF THE PLANTS OF TRINIDAD," which has been of great value.

A start was then made to write up the Flora and with the kind assistance of Dr. Hill, Director of the Royal Botanic Gardens more definite arrangements than heretofore have now been made and the help of a member of the Kew Herbarium Staff obtained to check the manuscript and decide doubtful points. Dr. Hill himself has also given advice and criticism of much value.

It is proposed to publish the work in parts as completed and those now ready are Part I of Vol. I containing the RANALES and Part I of Vol. II containing the RUBIALES.

There is unfortunately no officer of the Department who can devote all or even any considerable portion of his time to the work, desirable as it is to have a Flora, for general information, at times for questions of economic interest, and for the use of the Forestry Department, the staff and students of the Imperial College of Tropical Agriculture and the science pupils in the secondary schools of the Colony.

As an example of the use for economic purposes of the accumulated knowledge of the flora of the Colony it may be stated that in 1926-27 one hundred and nine sets of material were received and dried for the Forestry Department alone. Generic determinations were given them in one hundred and three cases and specific determinations also in eighty-eight. Duplicates of these named specimens were subsequently presented by the Forestry Department to the School of Forestry of Oxford University.

That so much has been possible is due to the zeal and hard work of Mr. R. O. Williams the present Superintendent of the Gardens and Assistant Botanist, who with the Rubiales and the Malvales (in MS.) has had the valuable co-operation of Professor Cheesman of the Imperial College. The former spent two months in 1926, on this work at Kew, where he received from Mr. T. L. Sprague assistance for which we are greatly indebted.

It is to be hoped that now a start has been made of raising the edifice, the foundational work of which has entailed such long and laborious preparation, the completion of the building will not be subject to any undue delays, that it will prove of great utility and that others will be encouraged to add to its completeness.

W. G. FREEMAN,
*Director of Agriculture and
Government Botanist.*

17th June, 1928.

DICOTYLEDONS.

GROUP 1. POLYPETALAE.

COHORT 1. RANALES.

BY

R. O. WILLIAMS.

Woody plants, not aquatic.

Lvs. opposite, compound.....**1. Ranunculaceae.**

Lvs. alternate, simple.

Lvs. pinnately veined.

Sep. 5, imbricate.....**2. Dilleniaceae.**

Sep. 3, valvate.....**3. Annonaceae.**

Lvs. palmately veined.....**4. Menispermaceae.**

Aquatic herbs.

Carps. distinct, not borne on a fleshy receptacle ;

lvs. cauline of two kinds, the submerged ones

finely dissected.....**5. Cabombaceae.**

Carps. united, immersed in a fleshy receptacle ;

lvs. of one kind, mostly floating, arising

from a stout submerged rootstock.....**6. Nymphaeaceae.**

FAMILY 1. RANUNCULACEAE.

Mostly *herbs*, the local species a perennial *climber*. *Lvs.* alternate or opposite, simple or compound, their stalks dilated at the base. *Sep.* often petal-like, usually caducous. *Pet.* often O. *Stam.* numerous. *Carp.* numerous, 1-celled.

1. CLEMATIS L.

Lvs. opposite, usually ternate or pinnate. *Fls.* in panicles, dioecious or polygamo-dioecious. *Sep.* 4 or 5, valvate. *Stam.* spreading. *Achenes* numerous, 1-seeded, terminated by long feathery styles.

1. *C. caracasana* DC.

C. brasiliensis DC. : *C. caripensis* H.B.K. : *C. dioica* var. *brasiliensis* Eichl.

Gr. Fl. 1 : Mart. Fl. Bras. 13.1.148.

A slender *vine*, the young stems somewhat pubescent ; *lfts.* usually 5, ovate, acuminate, 3.5-6 cm. long, 2.5-4 cm. broad, entire or nearly so, almost glabrous beneath, the hairs above sparse and weak, 3-5 nerved ; *achenes* about 4 mm. long and 1 mm. broad, longitudinally ridged, pubescent ; *style* (on the fruit) up to 6 cm. long, clothed with long, soft, weak hairs.

The Trinidad and Tobago material differs from typical *C. dioica* from Jamaica by the number of leaflets and the somewhat narrow achenes with more spreading pubescence.

Crueger 1848, Laventille, Trinidad in Herb. Kew. Broadway 3028 between Parlatuvier and St. Rose, Tobago, in Herb. Brit. Mus. The only records.

Dominica, Martinique, Venezuela, Colombia and Brazil.

FAMILY 2. DILLENACEAE.

Low *trees* or *climbing shrubs*, the stems woody. *Lvs.* alternate, often rough, entire or toothed, with parallel lateral veins. *Fls.* white or yellow, in terminal or lateral panicles, or lateral clusters. *Sep.* 5, imbricate, persistent. *Pet.* usually 5, imbricate, deciduous. *Stam.* numerous, the apex of the *filaments* more or less dilated. *Fruit* of 1-5 carpels, globose or triangular-acuminate, free from each other or more or less united, dehiscent or indehiscent. *Seeds* 1 or 2, arillate.

Amongst the introduced plants belonging to this order the best known is *Dillenia indica* L. an ornamental tree.

Sep. the 2 inner large, enclosing the fruit....**1. Davilla.**

Sep. not enclosing the fruit.

Carp. 1**2. Doliocarpus.**

Carp. 2, united, globose.

Stems round; lvs. rough; anths. introrse...**3. Curatella.**

Stems conspicuously angled; lvs. smooth;
anths. extrorse.....**4. Pinzona.**

Carp. 3-5, free, triangular-cuspidate.....**5. Tetracera.**

1. DAVILLA *Vand.*

Climbing shrubs. Lvs. rough. Fls. yellow, numerous, in terminal or axillary panicles. Sep. 5, unequal, the two inner much larger than the outer and enclosing the fruit. Pet. 5. Carp. 1-seeded (by abortion of a second ovule, Gr.) Seed completely enclosed in a membranous aril.

1. *D. aspera* (*Aubl.*) *R. Benoist.*

D. lucida Eichl., not Presl., excluding synonyms.
Mart. Fl. Bras. 13.1.104.

Stems glabrous or nearly so; *lvs.* mostly elliptical, sometimes oblong, 5-16 cm. long, 3.5-6.5 cm. broad, entire or somewhat undulate, the apex rounded or acute, slightly rough on both sides, glabrous and pitted above, the mid-rib pubescent, mid-rib and veins beneath appressed pilose or pubescent, the veins very prominent; *panicle* up to 12 cm. broad, many fld., the branches minutely hairy; *sep.* silky, the hairs appressed, the two inner concave, forming a globose, leathery covering to the fruit, the margin of the larger overlapping that of the smaller, about 5 mm. long on the fruit; *pet.* bright yellow, oblong, broader at the apex, 4 mm long; *fil.* and *style* contorted; *stig.* capitate; *carp.* membranous; *seed* 2.5 mm. long.

This species has previously been confused with *D. rugosa* Poir. which has stems and the veins of the leaves beneath long spreading pilose, the lvs. smaller and more or less serrate, and fewer and larger flowers.

Eggers 1440 in Herb. Kew and Herb. Trin. 10206 differ from typical *D. aspera* by the longer, coarser and less appressed deep yellow hairs.

Thickets and forest borders in wet and moist districts, Trinidad.
Guianas, Brazil.

2. DOLIOCARPUS Rol.

Shrubs or *climbers*, glabrous or hairy. *Lvs.* smooth. *Fls.* white or yellow, produced in many-fl'd. clusters on the sides of the branches. *Sep.* 4-5. *Ovules* 2. *Fruit* a glabrous, dehiscent berry; *carp.* 1, globose, 1-2 seeded. *Aril* membranous, surrounding the seed.

Lvs. quite glabrous beneath, margin entire...1. *D. scandens*.

Lvs. more or less hairy beneath, at least on the veins.

Lvs. appressed pubescent on the whole lower surface, veins 10-16 on each side 2. *D. dentatus*.

Lvs. appressed pubescent only on the veins, veins 7-8 on both sides.....3. *D. brevipedicellatus*.

1. D. scandens (Aubl.) Gilg.

Calinea scandens Aubl. : *D. Calinea* Gmel.

Aubl. Pl. Guiana t. 221 : Gr. Fl. 3, excl. synonyms : Mart. Fl. Bras. 13.1.80.

Climbing shrub ; *lvs.* leathery, oblong-lanceolate or elliptical, 8-12 cm. long, 2-4.5 cm. wide, tapering at both ends, sometimes obtuse, glabrous, entire, veins 8-10 on either side, the reticulation prominent above ; *pedi.* about 2 mm. long ; *sep.* minutely hairy outside, glabrous within ; *anths.* suborbicular.

Los Cuevas, Caroni and Aripo Savannah, Trinidad.
Venezuela, Guiana and Brazil.

2. D. dentatus (Aubl) Standl.

Tigarea dentata Aubl. : *D. pubens* Mart. : *D. semidentatus* Garcke.

Aubl. Pl. Guiana, 920, t. 351 : Gr. Fl. 3 : Mart. Fl. Bras. 13.1.79. (in part) as *D. Rolandri* Gmel.

Climber, stems glabrous or hairy above ; *lvs.* leathery, elliptical or elliptical-oblong, usually narrowing at the base and pointed at the apex, 10-18 cm. long, 4-8 cm. wide, entire except above the middle where it is serrate and mucronate, the mid-rib slightly channelled above, the lateral veins 10-16 on each side, glabrous or with long appressed cottony hairs above, pubescent beneath, more so on the mid-rib and veins ; *pedi.* slender, 1-2 cm. long on the fruit ; *sep.* membranous, pubescent outside, glabrous within, 4-5 mm. long on the fruit ; *ovary* glabrous ; *berry* rosy when ripe, 5-7 mm. diam. when fresh, glabrous, one seeded by abortion ; *seeds* immersed in pulp, the *aril* white and slightly toothed, almost enveloping the flattish, shiny brown seed.

The name *D. Rolandri Gmel.* was incorrectly applied by Eichler and others to a mixture of *D. major Gmel.* and *D. dentatus (Aubl.) Standl.* It is really synonymous with *D. strictus Poir.* a species which has remained unidentified down to the present day.

General in dry places, Trinidad and Tobago.
Cuba, Columbia, Guiana and Brazil.

3. *D. brevipedicellatus Garcke.*

Gr. Fl. 3 in part under *D. Calinea Gmel.*: Mart. Fl. Bras. 13.1.81.

Climbing shrub; *lvs.* elliptical or ovate-elliptical, 5-10 cm. long, 3-5 cm. wide, more or less serrate, glabrous above, appressed pilose on the veins beneath, often tufted in the axils; *fls.* densely clustered; *pedi.* 2 mm. long or less, puberulous.

The leaves of Trinidad, Porto Rico and British Guiana specimens are more entire than those from Para.

St. Ann's, Trinidad.
Porto Rico, Guiana and N. Brazil.

3. CURATELLA L.

Small *tree*, rough. *Lvs.* rough, stiff and leathery, more or less covered with minute stellate hairs. *Fls.* white, numerous, borne in lateral panicles on the leafless parts of the older branches. *Sep.* 4-5, the two outer enclosing the remainder. *Pet.* 4-5. *Stam.* persistent on the fruit; *fil.* slightly dilated at the apex. *Styles* sublateral on the inner side. *Carp.* 2, hispid, cohering at the base on the inner side, each 2-seeded.

1. *C. americana L.* Chaparro. Rough Leaf.

Mart. Fl. Bras. 13.1.68, t. 15.

A small *tree* of about 4 m. with twisted spreading branches, the bark very scaly, the young stems roughly pubescent; *lvs.* elliptical, 10-15 cm. long, 5-12 cm. wide, very rough, more so above, the veins paler in colour than the leaves and prominent beneath, the margin toothed or wavy, the apex usually notched, the base decurrent along the short petiole; *panicle* pubescent, about 3-5 cm. long; *fls.* fragrant, bracteate, 1-1.5 cm. long; *sep.* 5 mm. long, rounded; *pet.* about 6 mm. long, usually obovate; *carp.* globose, 4-5 mm. diam. in fruit, dehiscent longitudinally; *seeds* oblong, shiny, brown, about 3 mm. long, the *aril* small and membranous.

The leaves are so rough that they are reported as being used for polishing metal.

Dry hillsides and natural savannahs, Trinidad.
Cuba, Hispaniola, Cent. and S. America.

4. PINZONA Mart. and Zucc.

Climbing shrubs, stems angular. *Lvs.* glabrous. *Fls.* in axillary panicles. *Sep.* 4. *Pet.* 3-4. *Fil.* filiform, glabrous. *Anths.* orbicular, extrorse. *Styles* terminal. *Carp.* 2, united in the lower half, 1-seeded, sometimes 2-seeded. *Berry* glabrous.

1. *P. calineoides* Eichl.

Doliocarpus calineoides Eichl.

Mart. Fl. Bras. 13.1.71. t. 16. f. 2 : Urb. Symb. Ant. 4. 408 :
Sc. Surv. Porto Rico. 5.577.

Lvs. elliptical or somewhat obovate, the apex obtuse or acute, the base rounded or somewhat tapering into the petiole, 14-16 cm. long, 7-7.5 cm. wide, entire or wavy toothed, petioles 1-2.5 cm. long; *panicles* 3-6 cm. long, minutely pubescent; *fls.* small; *pedi.* about 3-5 mm. long; *sep.* about 2 mm. long, ciliate; *ovaries* glabrous.

Herb. Trin. 1466, Eggers, Arima and 2643, Cruieger, Guanapo, Trinidad, Porto Rico and Guadeloupe.

5. TETRACERA L.

Woody climber. *Lvs.* rough on both sides. *Fls.* numerous in terminal spreading panicles or axillary at the tops of the branches. *Sep.* 5. *Fil.* the apex dilated. *Fruit* of 3-5 follicles, ellipsoid, 3-angled with a sharp cusp, leathery, shiny, brown, bivalved with longitudinal dehiscence, 1-seeded. *Seeds* enclosed in a fringed aril.

1. *T. trinitensis* Sprague and Williams. sp. nov. Chaparillo.

Stems somewhat angular, the younger branches densely and minutely stellate pubescent; *lvs.* elliptical to obovate, 6-16 cm. long, 3-8 cm. broad, shortly cuspidate or apiculate at the apex, rounded or obtuse at the base, somewhat decurrent into the petiole, entire or sometimes minutely toothed towards the apex, puberulous above, soon glabrescent, minutely and densely dotted, the mid rib depressed and puberulous, densely stellate pubescent beneath, the main and lateral veins bearing scattered, long, simple, appressed hairs and deciduous stellate ones, veins 8-10 on each side not joining at the apex, petiole 2.5 cm. long, appressed pilose, somewhat corky; fruiting *panicle* 10-26 cm. long, thickly and minutely stellate pubescent; *pedi.* 2.4 mm. long; *sep.* persistent on the fruit, elliptical, 8-10 mm. long, 6-9 mm. broad, with several parallel raised veins outside, stellate pubescent on both sides, ciliate; *follicles* 11-12 mm. long, the beak about 2 mm. long; *seeds* black, about 5 mm. long, oblong-ellipsoid, the *aril* somewhat fleshy, cup-shaped, deeply cut, almost enclosing the seed.

This species has previously been confused with *T. ovalifolia* DC.

Herb. Trin. 751, 2123, 8463 and Dannouse, Aug. 25, 1899.
St. Ann's and S. and Cent. Forests, Trinidad.

FAMILY 3. ANNONACEAE.

Trees or *shrubs* often aromatic. *Lvs.* alternate, simple, entire, without stipules. *Fls.* hermaphrodite or rarely unisexual, terminal, opposite the leaves or axillary, solitary or clustered. *Sep.* 3, distinct or united, valvate. *Pet.* 6, in two series, usually thick and fleshy, valvate or slightly imbricate, the inner series sometimes small or absent. *Stam.* numerous, closely packed on a thick receptacle. *Fruit* fleshy or somewhat woody, composed of few to numerous, dehiscent or indehiscent carpels, the latter either free or united into a single, large, dry or fleshy fruit. *Seeds* solitary or 2-6, with or without *arils*.

The order is chiefly noted in Trinidad and Tobago for its edible fruits. Those of *Annona muricata* L. the soursop and *A. squamosa* L. the sugar apple are commonly cultivated. The former is principally used for making ice creams and sub-acid drinks, whilst the latter, which thrives best on the dry Bocas Islands, is esteemed as a dessert fruit.

Flowers perfect.

Carpels united in the fruit.

Pet. distinct.....1. **Annona.**

Pet. united at the base.....2. **Rollinia.**

Carpels free in the fruit.

Carpels indehiscent.....3. **Duguetia.**

Carpels dehiscent.

Sep. united, minutely 3-toothed....4. **Xylopia.**

Sep. united at the base.....5. **Anaxagorea.**

Sep. free6. **Cymbopetalum.**

Flowers unisexual, trees dioecious.....7. **Alcmene.**



1. **ANNONA L.**

Trees or shrubs. *Fls.* solitary or few together, peduncled, terminal or opposite to the leaves. *Sep.* small, valvate. *Pet.* the outer series fleshy, valvate, the inner series either somewhat similar or small or wanting. *Receptacle* hemispherical. *Fruit* large, fleshy, formed of the numerous, united carpels. *Seeds* solitary, erect.

Pet. the inner series large.

Fruit with long, curved, fleshy spines....1. *A. muricata.*

Fruit with minute, straight, fleshy spines...2. *A. montana.*

Fruit with rigid, pyramidal protuberances...3. *A. involucrata.*

Fruit smooth.....4. *A. glabra.*

Pet. the inner series absent or reduced to minute scales.

Fruit smooth.....5. *A. reticulata.*

Fruit tuberculate.

Fls. usually few clustered.....6. *A. squamosa.*

Fls. solitary.....7. *A. trinitensis.*

1. ***A. muricata* L.** Soursop.

Macf. Fl. Jam. 7: Fawc. and Rendl. Fl. Jam. 3. 195.

Small *tree*, 5-8 m. high; *lvs.* obovate-oblong, shortly acuminate, 10-15 cm. long, 3.5-4.5 cm. broad, glabrous; *pet.* greenish-yellow, fleshy, the outer sub-cordate, acute, 3-3.5 cm. long, 2.3 cm. broad, the three inner slightly smaller; *fruit* ovoid, oblong-ovoid or cordate-oblong, 15-20 cm. long or more, 8-10 cm. broad, green, with long, fleshy curved spines, pulp white; *seeds* black or brown, 1.5 cm. long, 1 cm. broad.

Occasionally spontaneous after cultivation.

W. Indies, cultivated in Continental Trop. America and West Africa.

2. ***A. montana* Macf.** Mountain or Wild Soursop.

Macf. Fl. Jam. 7: Safford. Cont. U.S.A. Nat. Herb. 18.1.

Tree 5 m.; *lvs.* oblong, shortly acute, glabrous, the axils of the lateral veins usually pitted and fringed beneath, shiny above, 10-20 cm. long, 5-8.5 cm. broad; *sep.* acute, fringed, about 8 mm. wide; *pet.* pale greenish-yellow, the outer series pubescent, rounded-ovate, acute, thick, leathery, 3-3.5 cm. long, 2-2.5 cm. wide, the inner series pale salmon, somewhat smaller, thinner,

concave and rounded; *fruit* dry, ovate or subglobose, not edible, about 5-15 cm. diam., with small fleshy spines 10-15 mm. apart; *seeds* pale brown, about 18 mm. long and 10 mm. broad.

Diego Martin and Belmont, both populated districts, Trinidad. There is no authentic information that the species is native.

West Indies and Guiana.

3. **A. involucrata** *Baill.*

A. Prestoei Hemsl.; Safford Cont. U.S.A. Nat. Herb. 32. t. 1516.

Tree up to 18 m.; *lvs.* elliptical to obovate-oblong, 28-30 cm. long, 15-17.5 cm. broad, usually shortly and abruptly pointed, rusty-hairy above at first, at length glabrous, persistently rusty-hairy beneath; *cal.* and outer *pet.* densely and shortly rusty-hairy; *cal.* lobes broadly ovate, 2.5-3 cm. long; *pet.* the 3 outer very thick, ovate-lanceolate, 3.5-6.2 cm. long, 3-3.5 cm. broad, the 3 inner thinner than the outer, suborbicular or broadly rounded; *fruit* spheroidal, 10-12.5 cm. diam., covered with rigid, pyramidal protuberances, more or less 4-cornered, the apex not hooked; *seeds* brown; *pulp* yellow or orange-coloured, fragrant.

Forest, Siparia Quarry, Trinidad.

4. **A. glabra** *L.* Alligator Apple. Pond Apple. Corkwood.

A. palustris *L.*

Safford, Cont. U.S.A. Nat. Herb. 18.14: Macf. Fl. Jam. 8.

Tree, 5-8 m.; *lvs.* oblong-elliptical, acute, glabrous, 7-15 cm. long, 4-6 cm. wide; *pet.* the 3 outer ones roundish-ovate, subacuminate, concave, thick, leathery, the 3 inner half the size of the outer, acute, externally whitish, internally of a dark blood colour; *fruit* yellow, ovoid, smooth, about 7 cm. long, longer than broad, not edible; *seeds* brown, about 15 mm. long, 10 mm. broad.

The wood is buoyant and said to be used in Jamaica as a substitute for cork.

Maracas Bay, Trinidad.

Many of the W. Indian Islands, S. America and W. Africa.

5. **A. reticulata** *L.* Cashimar. Coeur de Boeuf. Bullock's Heart, Custard Apple.

Bot. Mag. tt. 2911 and 2912: Macf. Fl. Jam. 11.

Small *tree*, 2-6 m.; *lvs.* oblong or oblong-lanceolate, 10-15 cm. long, 2-5 cm. broad; *pet.* of the outer series, oblong, keeled on the inner side, 2-3 cm. long, purple at the base, the inner series

reduced to minute scales or wanting; *fruit* large, rounded, variable in shape and size, 10 cm. or more in diam., brownish-red, pulp granular, yellowish, edible, very sweet; seeds dark brown, shiny, 12-15 mm. long, 7 mm. broad. The fruit is said to be a remedy for dysentery.

Cultivated. Doubtfully native to Trinidad or Tobago.
West Indies generally.

6. **A. squamosa** L. Sweet Sop. Sugar Apple. Pomme canelle.

Bot. Mag. 3095; Macf. Fl. Jam. 9.

Small *tree*, 5-6 m.; *lvs.* oblong or lanceolate-oblong, more or less pubescent, 7-15 cm. long, 2.5-6 cm. wide; *fls.* usually few clustered; *pet.* the three outer thick, narrowly oblong, about 2 cm. long and 4 mm. broad, the 3 inner reduced to minute scales; *fruit* globose or ovoid, tuberculate, the tubercles large and rounded, glaucous, 8-9 cm. broad, pulp whitish tinged with yellow, edible, very sweet, popular for dessert purposes.

Cultivated and naturalized in dry places near the sea, doubtfully native, Trinidad and Tobago.
West Indies.

7. **A. trinitensis** Safford. Silky Annona.

Safford, Cont. U.S.A. Nat. Herb. 16. 268.

Tree, 5-6 m., the young branches clothed with rusty hairs; *lvs.* ovate, oblong, elliptical or obovate, obtuse or shortly and rather obtusely acuminate at the apex, wedge shaped or rounded at the base, 9.5-15 cm. long, 5.5-6.5 cm. broad, hairy, more so beneath, petioles 4-10 mm. long, hairy; *cal.* lobes broadly ovate, shortly acute, silky; *pet.* 3, yellowish, ovate, obtuse, 18-20 mm. long, 15 mm. broad, silky on the outside; *fruit* 2.5-3.5 cm. long and about 2 cm. diam., warty; *seeds* 4.5-5 mm. long, 2.5 mm. broad. Closely allied to *A. sericea* Dunal.

Type coll. by Fendler in Trinidad, 1877-80. Herb. Trin. 11273 and 11321, R. O. W. and W. G. F. Sangre Grande, Trinidad.

DOUBTFUL SPECIES.

Herb. Trin. 8704 & 10170 Dade's Rd., Rio Claro, El Corosal, Tabaquite and 11470 Plum Road, Williams. Unmatched but material insufficient for description.

2. ROLLINIA St. Hil.

Small trees. *Lvs.* membranous or leathery. *Fls.* solitary or in pairs, terminal or opposite to the leaves. *Pet.* the 3 outer fleshy, united at the base, almost covering the central organs, the lobes spreading, the three inner reduced to minute scales or wanting. *Receptacle* convex. *Fruit* globose or ovoid, the *carpels* numerous, united and 1-seeded.

Sep. pouched, 2 mm. broad.....1. *R. multiflora*.

Sep. not pouched, 4 mm. broad.....2. *R. mucosa*.

1. ***R. multiflora*** *Splitz.* Wild Cashimar. Wild Sugar Apple.

Gr. Fl. 6.

Small tree, 5-10 m ; *lvs.* oblong, the apex acute or obtuse, rounded or wedge-shaped at the base, somewhat leathery, 8-16 cm. long, 3-6 cm. broad, brownish and minutely hairy beneath, shining and glabrous or with minute scattered hairs above ; *fls.* densely cottony and rusty brown in colour ; *pedi.* about 2 mm. long ; *sep.* pouched and with a terminal point, 2 mm. broad at the base ; *pet.* oblong, rounded, 8-12 mm. long ; *fruit* small, 1-2 cm. broad, globose, smooth, covered with minute, rusty brown hairs.

General throughout Trinidad.

Trop. S. America.

2. ***R. mucosa*** (*Jacq.*) *Baill.* Wild Sugar Apple.

R. Sieberi DC.

Cont. U.S.A. Nat. Herb. 1858 : Gr. Fl. 6.

Tree 10-15 m. ; the young branches hairy ; *lvs.* membranous, oblong, ovate-oblong, elliptical or obovate-oblong, the apex usually acute, the base rounded or acute, 10-19 cm. long, 4-7 cm. broad, the veins prominent, hairy beneath, especially on the veins which are also hairy above ; *fls.* hairy, the stalks 2-3 cm. long ; *sep.* broadly triangular, 4 mm. broad, broader than long, with a terminal point ; *pet.* greyish ; the 3 outer oblong-ovate with a rounded apex, 10-20 mm. long, densely cottony ; *fruit* large, (not seen).

San Fernando Hill ; Diego Martin, Trinidad.

West Indies ; Mexico.

DOUBTFUL SPECIES.

Herb. Trin. 6397, without date or locality, differs from the two foregoing species. The *fls.* are larger, the petals being

about 2.5 cm. long; from the imperfect calyx lobes on the specimen they would seem to be somewhat like those of *R. mucosa* (Jacq.) Baill. The leaves also resemble in shape that species but differ in the reddish under-surface.

3. DUGUETIA St. Hil.

Trees, the young branches scaly. *Lvs.* with stellate scurf beneath. *Fls.* clustered, opposite the leaves. *Pet.* imbricate in the bud, unequal, somewhat leathery. *Fruit* composed of numerous, unequal, very closely packed carpels, somewhat woody when ripe, indehiscent. *Seeds* without arils.

1. *D. lucida* Urb.

Urb. Symb. Ant. 1.308.

Tree 6-10 m.; *lvs.* lanceolate to elliptical-oblong, the apex obtuse or acuminate, 8-15 cm. long, 3.5-5 cm. broad, dotted, leathery, shiny above; *fls.* 1 to about 8; *sep.* greenish, ovate, acute, about 1 cm. long, woolly; *pet.* outer series oblong-lanceolate, bluntish, reflexed, yellowish green, about 14 mm. long, the inner series slightly shorter, yellowish green except at the base inside where they are red, concave, glabrous, warty and somewhat fleshy; *fruit* spherical, about 5 cm. diam.; *receptacle* woody, angled, and swollen at the base; *carp.* at length woody, angled and sharply pointed, unequal in size, up to 2 cm. long, many are without seed; *seeds* solitary, brown, obovoid, 14 mm. long.

Urban apparently had not access to a mature fruit when he described the above as the Herbm. No's. referred to by him have only immature fruits.

Chaguanas; Maracas; Caparo; St. Joseph Hill, Trinidad.

4. XYLOPIA L.

Trees. *Lvs.* leathery. *Fls.* axillary, solitary or clustered, shortly stalked. *Cal.* cup-shaped, formed of 3 united sepals. *Pet.* valvate, the outer series linear, thick, the inner included, 3-angled above. *Styles* joined together, long exerted. Fruiting *carpels* numerous, distinct, at length dehiscent, oblong. *Seeds* 2-6, with a small scale-like aril.

1. **X. cubensis** A. Rich.

X. grandiflora Griseb. Fl. 6, partly, not Aug. St. Hil.

A. Rich. Fl. Cuba 2.12. t. 6.

Tree about 14 m.; *lvs.* oblong-lanceolate, glabrous, shining above, glabrous or with minute appressed hairs beneath, 10-14 cm. long, 2.5-4 cm. broad, petioles short, grooved above; *fls.* few in the clusters; *cal.* 4 mm. long, minutely 3-toothed, the base of the tube almost surrounded by a bract; outer *petals* about 13 mm. long; *carp.* when ripe 1-2 cm. long, 4-7 mm. broad, incurved, irregularly cylindrical, arranged on a rounded and somewhat flattened *receptacle* 5-8 mm. broad, the stalks 3-5 mm. long; *seeds* black, shining, about 5 mm. long, sub-cylindrical.

Trinidad material is somewhat more glabrous than that from Cuba and the Isle of Pines and the bract is inserted immediately below the calyx.

Arima Woods and Maracas, Trinidad.
Cuba and Isle of Pines.

5. **ANAXAGOREA** St. Hil.

Trees. *Fls.* axillary, shortly pedicellate, solitary or clustered, small. *Sep.* united at the base. *Pet.* valvate. *Fruit carp.* few to about twelve, tapering at the base into a club-shaped stalk, dehiscent within. *Seeds* erect, flat on one side and rounded on the other, without arils.

1. **A. acuminata** St. Hil.

Gr. Fl. 7.

A small or medium-sized *tree*, the young branches and petioles scurfy; *lvs.* elliptical-oblong, the apex obtuse or acuminate, 10-22 cm. long, 4-8 cm. broad, glabrous and somewhat leathery; *sep.* broadly triangular, united to about the middle; *carp.* when ripe scurfy, about 2.5 cm. long, including the stalk, and 1 cm. broad, with a small point at the apex; *seeds* 4, shiny, rich brown, 10-14 mm. long.

The North Coast and Maraval Valley, Trinidad.
Guiana.

6. CYMBOPETALUM *Benth.*

Small *tree* or *shrub*. *Lvs.* membranous. *Fls.* large, solitary, terminal or lateral on long stalks. *Sep.* ovate. *Pet.* valvate, the inner series larger and much more fleshy than the outer, with the margins rolled inwards and with an inflexed point. *Receptacle* hemispherical or subglobose. *Fruit* oblong, somewhat compressed. *Carp.* numerous, dehiscent. *Seeds* ovoid, with a raised margin, the *aril* very thin, bi-lobed.

1. C. brasiliense (*Vell.*) *Benth.*

Uvaria brasiliense Vell.

Journ. Linn. Soc. 5. 69.

Lvs. oblong or obovate-oblong, abruptly pointed, 13-30 cm. long, 5-10 cm. broad, glabrous or nearly so; *pedu.* about 9 cm. long; *sep.* 5 mm. long; *pet.* densely cottony, the three outer ovate, 2.5 cm. long, the three inner 3.2 cm. long; *fruit* crimson and yellow, the *carpels* 3-4 cm. long and about 1.5 cm. broad, the stalks 1.5 cm. long; *seeds* light brown, about 1.2 cm. long; the scarlet *aril* about two-thirds the length of the brownish-black seed, entire.

Fendler 204, Herb. Brit. Mus. and Herb. Trin. 6797.
Northern Hills and Southern districts, Trinidad.
Brazil and Peru.

7. ALCMENE *Urb.*

Small *tree*. *Lvs.* 2-ranked, shortly petioled. *Fls.* unisexual (only the male known), solitary, terminal on dwarf branches, which arise below the insertion of the petioles of the foliage leaves, and are themselves densely crowded with very small leaves. *Sep.* 3, leathery, entirely enclosing the petals in the bud. *Pet.* 6, thick and rigid, outer series ovate, strictly valvate, inner series oblong, slightly narrowed below the middle, with their tips over-lapping. *Receptacle* semi-globose, hollowed at the top. *Carp.* in the male flower 6-8, linear with a slightly broader base. *Ovules* wanting. *Styles* linear.

1. A. tobagensis *Urb.*

Fedde, Rep. 17 (1921) 167.

Young *branches* angled, pubescent with yellow, many-rayed stellate hairs, internodes 0.8-2 cm. long; *lvs.* oval, or rarely obovate, with a produced point, 6-15 cm. long, 3-5.5 cm. wide; very shortly pubescent on the middle vein otherwise glabrous and

shining above, with stellate hairs beneath set thickly on the middle vein and scattered on the laterals, papery or somewhat leathery, petioles 2-4 mm.; *pedi.* 3-4 mm. long; *buds* (so far as seen by Urban) 11 mm. long, 8 mm. diam., covered densely with very short stellate hairs; *sep.* narrowly ovate, ridged on the back, grooved within; exterior *petals* with adpressed stellate hairs without, shortly pubescent at the top within; *styles* as long as the carpels, erect, shortly hairy. *Not seen.*

(Broadway 4191, near Easterfield, Tobago, the only record.

FAMILY 4. MENISPERMACEAE.

Trees or climbing shrubs. *Lvs.* alternate, entire, palmately veined, without stipules. *Fls.* small, in axillary panicles, unisexual, the male and female being borne on different plants. *Sep.* and *Pet.* minute. *Stam.* united into a column. *Carp.* solitary. *Fruit* a succulent, 1-seeded drupe.

1. CISSAMPELOS L.

Climbing shrubs. *Fls.* yellowish-green, minute, the *male* in spreading, cymose panicles, bracteate. *Sep.* 4. *Pet.* united, entire, about half the length of the sepals, the apex of the staminal column peltate with four sessile anthers on the margin. *Female fls.* clustered in the axils of roundish, leafy bracts on more or less elongated panicles. *Sep.* 1. obovate. *Pet.* 1, broader and shorter than the sepal, and opposite to it. *Style* 3-lobed. *Drupe* subglobose, hairy.

1. *C. Pareira* L. Velvet leaf.

Gr. Fl. 10: Fawc. & Rendl. Fl. Jam. 3. 193.

Branches slender; *lvs.* roundish to heart-shaped, often peltate, 3-12 cm. broad, variously hairy, from sparsely so to densely felty beneath; the *male infl.* 2-10 cm. long, the *female* usually longer and less spreading than the male, both hairy; *drupe* scarlet, 4-5 mm. broad; *seed* horse-shoe shaped, corrugated.

The *roots* are reported by Grisebach to be employed against various diseases and especially as an antidote to the bite of serpents.

General; Trinidad and Tobago.
Tropics generally.

FAMILY 5. CABOMBACEAE.

Perennial aquatic *herbs*, with slimy stems. *Lvs.* floating or immersed. *Fls.* solitary, axillary. *Sep.* 3, rarely 4. *Stam.* 3-18. *Carp.* 2-18, distinct. *Ovules* 2 or 3. *Fruits* indehiscent, leathery, separate. *Seeds* 1-3.

1. CABOMBA *Aubl.*

Aquatic *herb*, rooting in mud, the stems slender. *Lvs.* of two forms, the submerged ones finely divided, the floating ones peltate. *Fls.* small, on long stalks, solitary in the leaf axils. *Sep.* 3, petaloid. *Pet.* 3. *Stam.* 6. *Carp.* 1-3 (usually 3), distinct, superior. *Ovules* 2-3, pendulous.

1. *C. Piauihyensis* *Gardn.*

Hook. *Icones Pl.* t. 641.

Stems long, often rooting at the joints; *lvs.* the submerged ones usually in whorls of three, circular in outline, 4-5 cm. diam., primarily cut into 5-7 divisions which are again divided into green, thread-like segments, petiole about 1.5 cm. long, floating leaves simple, linear, about 1.5 cm. long; *fls.* mauve with a yellow centre, on stalks rising 1-2 cm. above the water, opening at noon, closing at dusk, about 1 cm. diam.; *sep.* oblong, rounded at the apex, about 8 mm. long; *pet.* oblong, clawed, eared on either side, the ears yellow; *carp.* spindle-shaped, about 5 mm. long, when ripe each containing 2-3 minute, rounded, brown *seeds*, marked with crimson and black dots.

Shady stream, Carani Old Road, Trinidad.
Cuba, Porto Rico, Brazil.

FAMILY 6. NYMPHÆACEÆ.

Aquatic herbs with submersed rhizomes, rooting in mud. *Lvs.* floating, entire or toothed. *Fls.* solitary, large and showy, on long stalks, usually opening above water. *Sep.* usually 4. *Pet.* and *Stam.* numerous, the *filaments* often petaloid, inserted on the receptacle. *Carp.* numerous, free or united. *Ovules* numerous, pendulous. *Fruit* submerged when mature.

Of the cultivated plants of this order the water lilies (*Castalia*) are best known; there are several introduced species with rosy, red, white or blue flowers, opening by night or day.

Nelumbium speciosum Willd., the sacred Lotus, an aquatic with peltate leaves and large, pink flowers, both borne high above the water, occurs in some plant collections.

Victoria regia Lindl. with its immense floating leaves with up-turned edges and spiny under surfaces, is occasionally grown in the St. Clair Experiment Station.

1. CASTALIA Salisb.

Rhizomes thick, perennial. *Lvs.* floating, the petioles very long, the blade cleft nearly to the centre. *Fls.* floating or borne above the water, large and showy. *Sep.* 4, inserted at the base of the receptacle. *Pet.* numerous, in many series, passing gradually into stamens, both inserted on the receptacle. *Stam.* numerous, the *filaments* petaloid, the outer broad with small anthers, the inner narrow with longer anthers. *Carp.* immersed in the fleshy receptacle, and united with it into a many-celled, half inferior ovary. *Ovules* numerous. *Berry* spongy, ripening under water, breaking irregularly. *Seeds* immersed in pulp with a sack-like *aril*, open at the apex.

Fls. diurnal, connective appendaged1. *C. ampla*.

Fls. nocturnal, connective not appendaged.

Petioles glabrous at the top2. *C. Rudgeana*.

Petioles encircled at the top with a ring
of hairs3. *C. amazonum*.

I. *C. ampla* Salisb.

Nymphaea ampla DC.

Fawc. & Rendl. Fl. Jam. 3. 183: Gr. Fl. 11: Conard
Water-lilies, t. 5.

Lvs. 15-40 cm. broad, roundish, peltate, wavy-toothed or nearly entire, under surface red-purple; *fls.* white, 7-18 cm. broad, diurnal, raised above the water; *sep.* oblong-lanceolate, outer surface green, marked with blackish lines; *pet.* 7-21, oblong-lanceolate, the outer tinged yellowish green; *stam.* yellow; *anths.* having the connective of those of the outer series produced into an appendage; *carp.* 14-23, free from one another at the sides; *style* short, conical, narrowed to the apex, stiff and fleshy.

(Fendler 207 ex Conard) Trinidad.
Cent. America and West Indies.

2. **C. Rudgeana** (Meyer) *Britt. & Wilson*.

Nymphaea Rudgeana G. F. W. Meyer.

Fawc. & Rendl. Fl. Jam. 3. 184: Gr. Fl. 11: Conard
l.c. t. 20.

Lvs. rounded, about 30 cm. broad, deeply and irregularly toothed, green above, reddish on the margins beneath, prominently veined beneath, the petioles brownish, glabrous; *fls.* pure white, greenish-yellow with age, strongly odorous, opening at dusk and closing at daylight; *sep.* oblong-ovate, 6 cm. long, 2.5 cm. wide, green without, white within; *pet.* in series of fours, the outer expanding, elliptical to ovate, similar in size to the sepals, the inner erect, smaller and tapering; *anths.* without an appendage; *stig.* funnel-shaped; *styles* yellow, with enlarged club-shaped tips; *fruit* 5-6 cm. diam., round, bearing the persistent sepals, petals and stamens; the *petals* change to a rosy-red colour and expand nocturnally when the fruit is mature; *carp.* about 23.

Ponds near Piarco and Caroni, Trinidad.
Jamaica to Brazil.

3. **C. amazonum** (Mart. and Zucc.) *Britt. & Wilson*.

Nymphaea amazonum Mart. & Zucc.

N. Rudgeana var. *amazonum*. Gr. Fl. 12.

Fawc. & Rendl. Fl. Jam. 3. 184: Urb. Symb. Ant. 4. 235:
Conard l.c. t. 19.

Lvs. rounded, the margin red, entire, the under surface brownish-red, 18 cm. diam. or less, a little longer than broad, the petiole having a thick ring of long hairs at the top; *fls.* nocturnal, creamy white, floating, strongly odorous; *sep.* 4, green, marked on the exterior with dark broken lines, rosy at the base, ovate-oblong to ovate-pointed, about 6 cm. long and 2.5 cm. broad; *pet.* in series of fours, the outer ones marked on the exterior with broken red lines, ovate-oblong, pointed; *anths.* without an appendage; *styles* red, with enlarged club-shaped tips; *fruit* rounded, about 4 cm. diam. bearing the persistent sepals and petals, the apex flattish, funnel-shaped; *carps.* 34 in the fruit examined.

Caroni, Trinidad. Studley Park, Tobago. Broadway 4560 in Kew Herbarium.

West Indies to Brazil.

Department of Agriculture

TRINIDAD AND TOBAGO.

100

VOL. II.]

[PART 1.

FLORA
OF
Trinidad and Tobago.

RUBIALES

BY

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and

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Price Two Shillings.



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DICOTYLEDONS.

GROUP 2. GAMOPETALAE.

COHORT 1. RUBIALES.

BY

R. O. WILLIAMS AND E. E. CHEESMAN.

FAMILY 1. RUBIACEAE.

Trees, shrubs or herbs, sometimes climbing or epiphytic. *Lvs.* simple and entire, rarely toothed, opposite, sometimes whorled. *Stip.* variable, often sheathing the stem, the lobes or teeth usually between the petioles. *Fls.* perfect, rarely unisexual, usually regular and symmetrical, often in panicles, sometimes in heads or clustered in the axils. *Cal.* tube united to the ovary, limb cup-shaped or tubular, entire, toothed or lobed, occasionally unequal. *Cor.* gamopetalous, limb usually symmetrical. *Stam.* usually as many as the corolla lobes, inserted in the throat or tube, alternate with the lobes. *Ovary* inferior, 1-10 celled; *style* simple or 2-10 fid; *ovules* solitary to numerous. *Fruit* a capsule, berry, drupe or schizocarp. *Seeds* variable, often winged, embryo usually surrounded by fleshy or horny endosperm.

Several spp. are cultivated either for the alkaloids which are present in many members of the family or for their showy flowers. In the former class may be included *Coffea*, the most important genus economically, *C. arabica* L. and several other spp. yielding coffee, and such drug plants as *Cinchona*, the source of quinine and *Uragoga*, the ipecacuanha. In the second class are *Ixora coccinea* L., frequently found naturalized on old house

spots, other *Ixora* spp., *Gardenia jasminiodes* Ellis, *Morinda citrifolia* L., *Mussaenda frondosa* L., *Pentas carnea* Benth., *Portlandia grandiflora* L., *Rondeletia* spp.

Ovules numerous.

Fruit a capsule.

Fls. in globose heads..... 1. **Uncaria.**

Fls. not arranged in heads.

Seeds winged.

Herbs climbing..... 2. **Manettia.**

Epiphytes 3. **Hillia.**

Shrubs or trees.

Cor. lobes ovate, much shorter
than the tube..... 4. **Coutarea.**

Cor. lobes linear, about as long
as the tube..... 5. **Exostemma.**

Seeds not winged.

Large tree; cal. truncate..... 6. **Chimarrhis.**

Small tree; one calyx lobe large,
scarlet..... 7. **Warszewiczia.**

Shrub..... 8. **Rondeletia.**

Herbs.

Stip. entire..... 9. **Sipanea.**

Stip. terminated by several
bristles..... 10. **Oldenlandia.**

Fruit fleshy.

Cor valvate.

Infl. terminal.

Fls. not in heads.

Fls. pinkish, in stout, erect
panicles 11. **Isertia.**

Fls. white, in long slender spikes.. 12. **Duggena.**

Fls. in heads; shrubs sub-epiphytic 13. **Schradera.**

Infl. axillary.

Scrambling shrubs..... 14. **Sabicea.**

Creeping herbs..... 15. **Tontanea.**

Cor. imbricate or contorted; shrubs or
trees.

Seeds minute.

Fls. pink. 11. **Isertia.**

Fls. not pink.

Berry 5-celled..... 16. **Hamelia.**

Berry 2-celled..... 17. **Bertiera.**

- Seeds not minute.
 Fls. unisexual.
 Fls. sessile.....18. **Alibertia.**
 Fls. shortly peduncled.
 Shrubs, not spiny.....19. **Amaioua.**
 Shrubs, spiny.....20. **Basanacantha.**
 Fls. perfect.
 Infl. terminal; cor. tube very
 long.....21. **Posoqueria.**
 Infl. axillary.
 Shrubs; lvs. small (2-7 cm.
 long)22. **Randia.**
 Tree; lvs. large (exceeding
 10 cm.)23. **Genipa.**
 Ovules solitary in the cells.
 Fruit a berry or drupe.
 Fruit with 2 or more seeds.
 Stam. inserted in the throat of the
 corolla.
 Seeds pendulous.
 Cal. deciduous.....24. **Guettarda.**
 Cal. persistent.
 Cor. imbricate.
 Stip. lanceolate; ov. 2-celled. 25. **Stenostomum.**
 Stip. connate, truncate;
 ov. 4-5 celled.....26. **Laugeria.**
 Cor. valvate.....27. **Malanea.**
 Seeds basal.
 Shrubs or trees, rarely perennial
 herbs.
 Fls. in heads, surrounded by
 an involucre.....36. **Cephaelis.**
 Infl. various without
 involucre.
 Cor. funnel-shaped or bell-
 shaped.
 Stip. variable, not woody..32. **Psychotria.**
 Stip. woody, cut above.....34. **Rudgea.**
 Cor. swollen at the base or
 its lobes unequal.....33. **Palicourea.**
 Creeping herbs.....35. **Geophila.**

- Stam. inserted in the base of the corolla.
 Ov. 5-10 celled.....28. **Erithalis.**
 Ov. 2-3 celled.....29. **Chiococca.**
 Fruit 1-seeded.
 Fruit longer than broad.....30. **Coussarea.**
 Fruit broader than long.....31. **Faramea.**
 Fruit dry, usually a capsule or schizocarp.
 Ov. 2-celled.
 Seeds winged.....42. **Endlichera.**
 Seeds not winged.
 Fruit a schizocarp (ripe carpels separating)
 Carpels remaining closed.....37. **Diodia.**
 Carpels opening at the base.....38. **Hemidiodia.**
 Fruit a capsule.
 Dehiscence longitudinal.
 Carpels, one remaining closed..39. **Spermacoce.**
 Carpels, both opening.....40. **Borreria.**
 Dehiscence transverse.....43. **Mitracarpum.**
 Fruit indehiscent, plant malodorous. 41. **Tobagoa.**
 Ov. 3-celled.....44. **Perama.**

1. UNCARIA Schreb.

Shrubs climbing by stout, hooked spines formed by sterile peduncles. *Lvs.* shortly petioled. *Stip.* entire. *Fls.* numerous, sessile or stalked, in globose heads; *heads* axillary, sometimes terminal, stalked, solitary or in panicles, hairy. *Cal.* tube fusiform; limb 5-lobed or 5-toothed. *Cor.* tubular-funnel-shaped, the throat glabrous, lobes 5, valvate. *Stam.* 5, inserted in the throat. *Style* exerted; *stig.* capitate. *Caps.* 2-celled, septically bi-valved, the valves bifid. *Seeds* numerous, winged at each end.

- Cor. silky on tube and lobes.....1. *U. tomentosa.*
 Cor. tube glabrous, the lobes silky.....2. *U. guianensis.*

1. *U. tomentosa* DC. Liane d'eau.

Ourouparia tomentosa (Willd.) K. Schum.
 N. Amer. Fl. 32.131: DC. Prod. 4.349.

Vine 10 m., *stems* tetragonal, more or less pubescent, especially at the nodes; *lvs.* ovate to elliptical-oblong, 8-12 cm. long, 5-7 cm. wide, obtuse or shortly acuminate at the apex, rounded at the base, glabrous above, hairy on the veins beneath;

stip. persistent, broadly triangular, 6-10 mm. long, pubescent, usually relaxed; *fl. heads* 1.5 cm. broad, in panicles of 3-5; *fls.* yellowish-green; *pedu.* and branches brownish pubescent; *cal.* 1-2 mm. long, silky, the teeth minute; *cor.* 5-6 mm. long, tube and lobes densely pubescent outside, lobes oval or oblong, rounded, about 1.5 mm. long; *fruit head* 1.5-2 cm. diam.; *fruit* shortly stalked, nearly 1 cm. long; *seeds* minute, wings linear.

Arima and Tabaquite Forests.
Cent. and S. America.

2. *U. guianensis* Gmel.

Ourouparia guianensis Aubl. Pl. Guiana 1.177 t. 168.

Stems tetragonal, younger branches roundish, glabrous except at the nodes; *lvs.* ovate, elliptical or oblong-elliptical, 8-12 cm. long, 5-7 cm. wide, apex acuminate, base rounded, glabrous above and beneath; *stip.* deciduous, 8-10 mm. long, oblong-lanceolate; *fl. heads* 2 cm. broad, solitary or 2 or 3 together; *pedu.* and branches brownish pubescent; *cal.* 5-6 mm. long, silky, lobes 0.5 mm. long, obtuse or acuminate; *cor.* 5-6 mm. long, tube glabrous below, the lobes densely silky; *fruit heads* 4-5 cm. diam. the stalks up to 1 cm. long, woody; *seeds* brown, flattened, minute, the wings membranous, the whole nearly as long as the fruit.

S. and Cent. Trinidad.
Guiana, Surinam, Para, Brazil and Bolivia.

2. MANETTIA Mutis.

Climbing herbs, pubescent. *Lvs.* petioled. *Stip.* short, broad, acute. *Fls.* small, axillary, solitary or in few-fl. cymes. *Cal.* lobes usually 4 (8 in the Trinidad sp.). *Cor.* tubular or funnel-shaped, lobes usually 4, short, erect or recurved, valvate. *Stam.* 4 (rarely 5), inserted in the throat of the corolla. *Stig.* club-shaped or bi-fid. *Caps.* obovoid, 2-celled, 2-grooved, septicidally bi-valved from the apex. *Seeds* numerous, compressed, surrounded by a broad, irregularly toothed wing.

1. *M. coccinea* Willd.

Lygistum reclinatum Kuntze: *Manettia coccinea* of Griseb.
Wern. Journ. Bot. (1919) Suppl. 1.39: N. Amer. Fl. 32.97:
Gr. Fl. 329.

Stems slender, angled, glabrous or minutely hairy especially on the angles; *stip.* 1-2 mm. long, united to the petiole, minutely toothed; *lvs.* thin, usually ovate, acuminate, 3-7 cm. long, 1-3 cm. wide, acute or obtuse at the base, glabrous or with minute scattered hairs; *pedu.* 1-4 cm. long; *pedi.* slender, 1.5-5 cm. long;

cal. glabrous or shortly hairy, tube 3-5 mm. long, contracted near the top, lobes 8, subequal, linear-lanceolate, 4-14 mm. long, recurved, fringed; *cor.* red, salver-shaped, tube cylindrical, 1.5-2.8 cm. long, densely hairy at the base, glabrous or hairy at the throat, lobes ovate or triangular, 4-5 mm. long, glabrous within or slightly hairy; *stam.* included; *anths.* 2.5-3 mm. long; *caps.* 6-10 mm. long, 6-8 mm. broad, thin; *seeds* 2-3 mm. broad, brown, the wing paler in colour than the seeds.

Maraval, Trinidad.

West Indies. Cent. and S. America.

3. *HILLIA* Jacq.

Shrubs, often epiphytic, glabrous, the branches sub-tetragonal. *Lvs.* petioled, fleshy. *Stip.* membranous, falling early. *Fls.* white, large, terminal, solitary, sub-sessile, fragrant, bracteate and bracteolate. *Cal.* tube obovoid or cylindrical, lobes leafy 2-6 or none. *Cor.* salver-shaped, the tube elongated, the throat broadened and glabrous, lobes 3-7, spreading, contorted. *Stam.* 4-7, inserted below the throat of the corolla, included. *Style* included. *Caps.* long, 2-celled, septicidally bivalved. *Seeds* numerous, with a basal appendage and a tuft of hairs at the apex.

Lvs. small. Cal. lobes deciduous on the capsule1. *H. parasitica.*

Lvs. large. Cal. lobes persistent on the capsule2. *H. trinitensis.*

1. *H. parasitica* Jacq.

H. longiflora Sw.

Jacq. Sel. Stirp. Amer. 96. t. 66: N. Amer. Fl. 32. 116:

Urb. Symb. Ant. 4583: Gr. Fl. 325.

Shrub, 3-6 m., epiphytic on trees, often pendent; *lvs.* usually obovate, rounded at the top with a produced apex, 5-10 cm. long, 2-5 cm. wide, the veins spreading, petioles about 1 cm.; *stip.* oblong or oval, 1-2.5 cm. long, obtuse or rounded at the apex; *bracts* oval-oblong with a rounded apex, 2-3 cm. long, membranous; *cal.* lobes 6, obtuse, about 4 mm. long, deciduous on the fruit; *cor.* 6-10 cm. long, lobes 6, lanceolate, bluntish, 2-5 cm.; *caps.* 6-12 cm.; *seed* 2-3 mm., the brown or yellowish hairs 8-12 mm. long.

On trees in forests in wet or moist districts. Maraval and Tucuche, Trinidad. Herb. Trin. 11788, Salem-Charleston Trace, Williams, Tobago. West Indies generally; Mexico, Venezuela to Ecuador and Brazil.

2. **H. trinitensis** sp. nov.

Epiphytic on trees; *lvs.* elliptical or oblong-elliptical, apex acute or acuminate, more or less wedge-shaped at the base, 6-16 cm. long, 4-9 cm. wide, thinly leathery, the veins ascending; *cal.* lobes 6, linear-lanceolate, persistent on the fruit, then 2-2.5 cm. long; *caps.* about 12 cm. long.

Herb. Trin. 7807, Tamana and 5416 Maraval, Trinidad.

4. **COUTAREA** Aubl.

Trees or *shrubs*, branches lenticellate. *Lvs.* shortly petioled, membranous. *Stip.* short, acute. *Fls.* large, terminal or axillary, solitary or in 3-fld. cymes, shortly pedicelled. *Bracts* deciduous. *Cal.* tube obovoid, lobes 5-6, subequal, awl-shaped or linear, deciduous. *Cor.* oblique, funnel-shaped to bell-shaped, the tube often curved and swollen at the base on one side, glabrous at the throat, lobes 5-6, short, spreading, contorted. *Stam.* 5-6, inserted at the base of the corolla, exserted. *Stig.* exserted. *Caps.* ovoid or obovoid, compressed, leathery or woody, 2-celled, loculicidally bi-valved, the valves cleft. *Seeds* numerous, compressed, surrounded by a large, entire, oblong wing.

1. **C. hexandra** (Jacq.) Schum.

C. speciosa Aubl.

Mart. Fl. Bras. 6.196: N. Amer. Fl. 32. 128: Jacq. Sel.

Stirp. Amer. pl. 182 f. 20: Aubl. Pl. Guiana 314.

Tree 5-15 m., stems glabrous or slightly hairy, lenticels whitish; *lvs.* ovate or elliptical-oblong, 4-12 cm. long, 2-6 cm. wide, rounded to acute at the base, more or less pointed, glabrous or sparsely hairy above and beneath, sometimes bearded in the axils of the veins and hispid on the mid-rib beneath; *stip.* triangular, 2-4 mm. long, fringed, deciduous; *bracteoles* lanceolate or awl-shaped; *cal.* tube glabrous or more or less hairy, 4-6 mm. long, lobes 6, 5-6 mm. long; *cor.* white streaked with mauve or lilac, fragrant, tube 3-4 cm. long, constricted for about 1 cm., expanding at the throat to 1-2 cm. broad, lobes 6, ovate, acute or obtuse, much shorter than the tube; *caps.* 2.3-3.5 cm. long, 1.5-2 cm. wide; *seeds* irregularly rounded, smaller than their brown, membranous wing, the whole 11 mm. by 6 mm.

Bocas Islands and extreme western end of Northern Range, Trinidad.
Cent. and S. America.

5. EXOSTEMMA Rich.

Shrubs or trees. Lvs. petioled or sub-sessile. *Stip.* entire or bifid. *Fls.* white or red, axillary and solitary, or in terminal corymbs, pedicelled. *Cal.* tube cylindrical or obovoid, lobes 5 (-4), linear or awl-shaped. *Cor.* salver-shaped, the tube filiform-cylindrical, the throat glabrous or hairy, lobes 5 (-4), linear, imbricate, 2 exterior. *Stam.* 5, inserted at the base of the corolla tube, exserted. *Style* exserted. *Stig.* capitate, entire or bi-lobed. *Caps.* usually oblong-cylindrical, 2-celled, septicidally bi-valved, the valves entire or bifid. *Seeds* numerous, compressed, winged.

DOUBTFUL SPECIES.

Flowers axillary, solitary. 1. *E. caribaeum*.
Flowers in terminal corymbs. 2. *E. Sanctae-Luciae*.

1. ***E. caribaeum*** (Jacq.) R. & S. Jamaica Bark. West Indian Bark. Seaside Beech.

Cinchona caribaea Jacq.

N. Amer. Fl. 32.120: Jacq. Sel. Stirp. Amer. (1763) 61: Urb.

Symb. Ant. 4.584: Gr. Fl. 324.

Shrub or tree up to 8 m.; *lvs.* ovate, oblong, or elliptical-oblong, 4-8 cm. long, 1.2-4 cm. wide, usually acute, membranous, glabrous above and either glabrous or hairy beneath, the petioles 2-10 mm. long, glabrous or hairy; *stip.* 2.5-5 mm. long, deciduous, broad at the base, the lobes awl-shaped; *fls.* axillary, solitary, fragrant; *pedi.* 4-10 mm. long; *cal.* tube 4 mm. long, lobes 5. minute; *cor.* white, tube 3-5 cm. long and about as long as the lobes; *caps.* oval, 1-1.5 cm. long, smooth, shiny; [*seeds* 5-6 mm. long, the wings included.

Sieb. ex Gr. Not otherwise known from Trinidad.

South Florida to Guiana. General in the West Indies.

2. ***E. Sanctae-Luciae*** (Kentish) J. Britten. Jamaica Bark. *E. floribundum* (Sw.) R. & S. *Cinchona Sanctae-Luciae* Kentish.

Journ. Bot. 1915. 138: Urb. Symb. Ant. 8.664: N. Amer. Fl. 32.122: Gr. Fl. 323.

Tall *tree*; *lvs.* elliptical or elliptical-oblong, 10-22 cm. long, 4.5-11.5 cm. wide, abruptly acuminate at the apex, glabrous, or hairy beneath in the axils of the lateral veins, petioles 5-12 mm. long; *stip.* sheathing, 9 mm. or less, thin, the lobes obtuse or acute; *fls.* in terminal corymbose panicles 7-15 cm. broad, many-flowered; *pedi.* 3-12 mm.; *cal.* tube 6-7 mm. long, lobes 5, triangular awl-shaped, 1-2 mm.; *cor.* pale red, tube 2-3 cm., lobes 5, obtuse, about as long as the tube; *caps.* cylindrical, 1.2-2 cm. long, smooth.

DC. Prod. 4.360. Not otherwise known from Trinidad.

Lesser Antilles.

3. Herb. Trin. 683 without data cited by Hart as *E. caribaeum* is not that species. The material is inadequate for description.

6. CHIMARRHIS Jacq.

Trees glabrous or pubescent. *Lvs.* shortly petioled. *Stip.* oblong, acuminate, falling early. *Fls.* white, fragrant, small, in many-fld. axillary, long-stalked cymes. *Cal.* tube short, bell-shaped, limb truncate, persistent. *Cor.* shortly funnel-shaped, tube very short, bearded in the throat, lobes 5, linear-oblong, recurved, valvate. *Stam.* 5, inserted between the corolla lobes; *fil.* hairy at the base. *Style* short, thickened and furrowed above, shortly bifid, the lobes obtuse. *Caps.* small, oblong, 2-grooved, septically bi-valved from the apex, the exocarp and endocarp finally separating. *Seeds* numerous, minute.

Lvs. beneath tufted and pitted in the axils. 1. *C. cymosa*.

Lvs. beneath not tufted and pitted in the axils.....2. *C. microcarpa*.

1. **C. cymosa** Jacq. Waterwood. Bois riviere.

N. Amer. Fl. 32.5.

Tree 10-25 m.; *lvs.* obovate or elliptical, 15-30 cm. long, the apex obtuse or acute, the base more or less narrowing into the petiole, glabrous, bearded beneath in the axils of the veins; *pedu.* 7-15 cm. long, compressed; *cymes* much branched, the branches thickly covered with short, rusty hairs; *fls.* often sessile or with pedicels not exceeding 2 mm. long; *cor.* white, 4-6 mm. long, glabrous outside, densely hairy in the throat, lobes oblong, obtuse, longer than the tube; *caps.* 2-5 mm. long.

The only record is Herb. Trin. 10011, Broadway, Heights of Aripo, 1922, Trinidad, determined by Britton.

Cuba, Jamaica and the Lesser Antilles.

2. **C. microcarpa** Standley.

Bull. Torr. Bot. Club, 53. 471.

Branches stout, obtusely angulate, ochraceous, glabrous; *stip.* lance-oblong, alternate, 3 cm. long, thin, brown, glabrous, caducous, petioles slender, 2.5 cm. long, glabrous; *lf-blades* elliptical, 11-19 cm. long, 5-8 cm. wide, acute, the base acute and decurrent upon the petiole, membranous, glabrous; *infl.* axillary, cymose-paniculate, half as long as the leaves, 4-5 cm. long and broad, many flowered; *pedu.* slender, 3.5-5.5 cm. long, thinly puberulent; *pedi.* 1-2 mm. long; *caps.* subglobose, 2 mm. long, obtuse at the base, broadly rounded at the apex, dark red-brown, glabrous, crowned by the low persistent calyx.

Not seen. Dannouse 6946, Maraval, Trinidad. Type in Herb. N. York Bot. Gardens.

7. WARSZEWICZIA Kl.

Small *trees* or *shrubs*. *Stip.* large, deciduous. *Fls.* small, numerous, in corymbose heads on an elongated, terminal, arching panicle. *Cal.* 5-lobed, one or more lobes in each corymb transformed into a large, coloured, petioled leaf. *Cor.* small, funnel-shaped, 5-lobed, imbricate. *Stam.* 5, exerted, arising from the throat of the corolla. *Caps.* subglobose, 2-celled, septical.

1. **W. coccinea** (*Vahl.*) Kl. Trinidad Pride. Wild Poinsettia. Chaconier.

Vahl. Symb. 2. 38, t. 29 : N. Amer. Fl. 32. 40.

A *shrub* or small *tree*, 4-6 m., evergreen ; *lvs.* obovate-oblong, 45-60 cm. long, 15-20 cm. wide, acuminate, glabrous above, pubescent beneath, especially on the veins, shortly petioled, petioles enlarged at the base ; *stip.* lanceolate, 3.5 cm. long, 1 cm. wide ; *panicle* 45-60 cm. long ; *cal.* tube hairy, 2 mm. long, lobes rounded, transformed lobes scarlet, oval-oblong, apex rounded, 6-8 cm. long, 3-4 cm. wide, about twice the length of their stalks ; *cor.* orange yellow, 1 cm. long, lobes acuminate, about as long as the tube ; *caps.* 4-5 mm. long ; *seeds* minute, numerous.

A gorgeous plant, forming one of the most attractive features of the flora of Trinidad. Common on moist, semi-shaded flat lands and the lower wooded hillsides, Trinidad.

Costa Rica to equatorial Brazil and Peru.

8. RONDELETIA L.

Shrubs or *trees*. *Lvs.* petioled, leathery or membranous. *Stip.* broad, obtuse or acute. *Fls.* small, in axillary, rarely terminal corymbs or panicles, pedicellate. *Cal.* tube subglobose, rarely obovoid or oblong ; lobes 4-5, linear or lanceolate, sometimes unequal, persistent. *Cor.* funnel-shaped or salver-shaped, tube often slender, elongated, throat glabrous or hairy ; lobes 4-5, spreading, obovate, obtuse, broadly imbricate. *Stam.* 4-5, inserted in the throat of the corolla. *Caps.* small, globose, rarely oblong, 2-furrowed, 2-celled, the valves bifid. *Seeds* numerous.

Leaves hispid on the veins beneath1. *R. hispidulus*.
Leaves glabrous beneath.

Pedu. as long as or shorter than the
petiole.2. *R. Rohri*.

Pedu. three times as long as the petiole.....3. *R. laevigata*.

1. **R. hispidulus** (Gr.) Schum.

Arachnothrix hispidulus Gr. Fl. 325.

Shrub; *lvs.* elliptical, pointed, 7-10 cm. long, 2-6 cm. wide, nearly glabrous above except for long scattered hairs, hispid on the veins beneath; *stip.* awl-shaped to lanceolate, as long as the petioles, about 8 mm.; *pedu.* 3-5 cm. long, the scorpioid branches opposite; *bracts* linear, about 1 cm.; *cal.* lobes unequal, lanceolate; *cor.* tube glabrous within, hairy without, 1.2 cm. long, thrice exceeded by the calyx, lobes 2 mm.; *style* included, *stig.* lobes lanceolate; *caps.* about 5 mm. diam., 2-3 celled.

Herb. Trin. 678, Crueger, Nov. 1845, Maracas Waterfall, Trinidad, a duplicate of which is in the Kew Herbarium; the only records.

2. **R. Rohri** sp. nov.

Lvs. elliptical, narrowed into the petiole, the apex acute, 7-11 cm. long, 3-5.5 cm. broad, glabrous or puberulous above, glabrous beneath, petioles 1-2 cm. long, lateral veins 6 or 7 on each side; *stip.* triangular, glabrous outside, hairy within, 4 mm. long, 3.5 mm. broad, acute; *panicle* axillary, 2-3.5 cm. long; *cal.* lobes 5, 1 mm. long, linear, pubescent; *cor.* pubescent outside, tube 2.5 mm. long, lobes 1.5 mm. long.

Herb. Brit. Mus., Von Rohr. Trinidad. The only record.

DOUBTFUL SPECIES.

3. **R. laevigata** Ait.

DC. Prod. 4. 408.

Lvs. oblong or elliptical, tapering at both ends, glabrous, paler beneath, petioled; *stip.* triangular, glabrous without, bearded within; *pedu.* axillary, trichotomous, three times as long as the petiole and half as long as the leaf; *cal.* tube pubescent, lobes 5, linear, one-third the length of the corolla tube; *caps.* pubescent.

No Trinidad specimen seen, doubtfully native of Trinidad.

9. **SIPANEA** Aubl.

Annual or perennial *herbs*, more or less hairy, erect or prostrate. *Lvs.* petioled. *Stip.* persistent. *Fls.* white or pink, in dense, terminal cymes. *Cal.* top-shaped or ovoid, lobes 5, awl-shaped, persistent. *Cor.* salver-shaped, tube long, throat dilated, lobes 5, equal, spreading, contorted in the bud. *Stam.* 5, inserted in the throat of the corolla, included. *Style* included, bifid. *Caps.* 2-celled, loculicidal. *Seeds* numerous, minute, angled.

1. *S. pratensis* Aubl.

Aubl. Pl. Guiana 147: N. Amer. Fl. 32.93: Journ. Bot. 1917. 173.

An erect or straggling *perennial*, 30-50 cm. high; *stems* thickly or sparsely silky; *lvs.* lanceolate or ovate-lanceolate, 3-7 cm. long, 7-17 mm. wide, obtuse or acute at the base, thickly or sparsely clothed with long hairs on both sides, especially on the veins, petioles 2-4 mm. long; *stip.* awl-shaped or narrowly triangular, 3-7 mm. long, hairy; *fls.* pinkish, sessile or nearly so; *bracteoles* linear; *cal.* tube 2 mm. long, densely or sparsely hispid, lobes 6-8 mm., sparsely hispid; *cor.* tube slender, 9-13 mm., slightly hairy above, densely yellow-bearded in the throat, lobes oblong or ovate, 6-8 mm.; *caps.* ovoid or tubular, 7-8 mm. long, ribbed, hairy; *seeds* brown, pitted.

A pretty weed, found in moist places such as roadside drains. Near the Piarco Savannah and at Las Lomas Road, also at Cedros and Arima, Trinidad.

Guiana, Brazil, Dominica.

10. *OLDENLANDIA* L.

Slender *herbs*, stems erect or diffuse, dichotomously branched, glabrous. *Lvs.* usually small, narrow. *Stip.* bearing several bristles. *Fls.* white or pink, small, in dichotomous axillary and terminal panicles, or solitary. *Cal.* tube top-shaped, obovoid or subglobose, lobes 4 (-5), usually erect and remote on the fruit. *Cor.* funnel-shaped, throat usually glabrous, lobes 4 (-5), obtuse, valvate. *Stam.* 4 (-5), inserted in the throat or base of the corolla. *Style* slender. *Caps.* 2-celled, usually membranous, loculicidally dehiscent at the top. *Seeds* numerous, smooth or minutely granulate.

Fls. in peduncled cymes of 2-5 (rarely solitary).....1. *O. corymbosa*.

Fls. solitary (sometimes 2 or 3 together, but in that case with distinct pedicels).

Lvs. linear-lanceolate2. *O. herbacea*.

Lvs. suborbicular.....3. *O. callitrichoides*.

1. *O. corymbosa* L.

Mart. Fl. Bras. 6. pars. 6. 271: N. Amer. Fl. 32. 19: Gr. Fl. 330.

Annual, 10-40 cm.; *stem* tetragonal, channelled on two sides; *lvs.* sessile, linear-lanceolate, acute at the apex, 1-3 cm. long, 1-4 mm. wide, slightly rough above and on the margins,

glabrous and whitish beneath; *stip.* sheathing, the bristles equalling the sheath, 1-2 mm. long; *fls.* in axillary cymes of 2-5, rarely solitary; *pedu.* filiform, 0.5-1.5 cm. long; *pedi.* usually shorter, sometimes longer, bracts minute; *cal.* lobes triangular, 1 mm. long, distant on the fruit; *cor.* white or pale lilac, hairy in the throat, the tube very short, the lobes oblong, 1.5 mm.; *stam.* inserted at the base of the corolla, not exceeding the tube; *style* included; *stig.* 2-lobed; *caps.* subglobose, thin-walled, 1.5-2 mm. broad and almost as long, loculicidal at the top; *seeds* brown, angular, granulate.

A common weed, Trinidad and Tobago.

West Indies generally; Tropical America; Tropical Africa, Ceylon and the East Indies.

2. *O. herbacea* (L.) DC.

Hedyotis herbacea L.

L. Sp. Pl. 102 (1753): DC. Prod. 4.425. : N. Amer. Fl. 32. 22. : Gr. Fl. 330: Urb. Symb. Ant. 4.581.

Annual, 10-40 cm; *stems* cylindrical; *lvs.* sessile, linear-lanceolate, acute, 1-5 cm. long, 1-6 mm. wide, rough on the margins, pale and glabrous beneath; *stip.* sheathing, the bristles equal to, or slightly longer than the sheaths, 1-3 mm.; *fls.* single in the axils, or 2 to 3 together with separate pedicels; *pedi.* 0.5-1 cm.; *cal.* lobes lanceolate, 1.5 mm. long; *cor.* white, glabrous in the throat, tube 0.5 mm., lobes 1.5 mm.; *stam.* inserted in the throat, barely exerted; *style* exceeding the tube; *stig.* 2-cleft; *caps.* globose, 3 mm. broad; *seeds* brown, angular, granulate.

Common in moist habitats, such as rice fields, Trinidad.

Cosmopolitan Tropical.

3. *O. callitrichoides* Griseb.

Stems very slender, creeping, 2-10 cm. long, rooting at the joints; *lvs.* suborbicular, obtuse or acute at the apex, 1-4 mm. long, glabrous except for a few long hairs above, petioles 1-4 mm. long; *stip.* minute or wanting; *fls.* solitary in the axils; *pedu.* slender, 2-3 times as long as the leaves; *cal.* about 1 mm. long, the lobes ovate to lanceolate, sparsely hairy; *cor.* white, funnel-shaped, the 4 or 5 lobes shorter than the tube; *caps.* top-shaped, about 2 mm. long.

Herb. Trin. 11770, Broadway, In damp ground, Woodbrook, Trinidad. Porto Rico, Bahamas, Cuba, Hispaniola, Guadeloupe.

11. ISERTIA Schreb.

Trees or *shrubs*, pubescent. *Lvs.* petioled, leathery. *Stip.* lanceolate, acuminate, erect. *Fls.* sessile or shortly pedicellate, in a terminal, many-flowered panicle. *Cal.* 4-6 toothed or truncate, persistent. *Cor.* tubular-funnel-shaped, fleshy, lobes 6, valvate or contorted, sometimes unequal. *Stam.* 4-6, inserted in the tube of the corolla. *Stig.* lobes 2-6, distinct or united. *Berry* globose or ovoid, 4-6 celled. *Seeds* minute, few or many.

1. *I. parviflora* Vahl. Bois Caco. Wild Ixora.

Ecl. Amer. 11.28. t. 15 (1793).

A small *tree* 6-8 m.; *lvs.* oblong or elliptical-oblong, apex acuminate, more or less obtuse at the base, glabrous above, minutely hispid or nearly glabrous beneath, 15-30 cm. long, 5-11 cm. wide; *stip.* 2 cm., deciduous; *panicle* minutely hispid, 6-12 cm. long, and almost as broad; *pedu.* 4.5-11 cm. long; *bracteoles* triangular-acuminate or lanceolate, hairy; *fls.* shortly pedicellate, the central ones sessile or sub-sessile; *cal.* cup-shaped, 3 mm. long, lobes triangular or rounded, hispid, more especially on the margins; *cor.* pink, glabrous, pilose within, 10-13 mm. long in the bud, lobes shorter and paler in colour than the tube with a red spot on each; *stig.* exceeding the tube; *berry* black, 3-5 mm. broad, smooth.

Common in woodlands throughout Trinidad.
Guiana.

12. DUGGENA Vahl.

Shrubs or *trees* glabrous or hairy. *Fls.* clustered in long terminal spikes. *Cal.* 4 or rarely 5-fid. *Cor.* funnel-shaped or salver-shaped, hairy, lobes 4, rarely 5. *Stam.* 4 rarely 5, inserted in the tube of the corolla, included. *Stig.* bifid. *Berry* 2-4 celled. *Seeds* numerous.

Leaves hairy beneath, not silky.....1. *D. hirsuta*.

Leaves thickly silky beneath.....2. *D. incanescens*.

1. *D. hirsuta* (Jacq.) Britton.

Gonzalea spicata DC : Lygistum spicatum Lam. Tabl. Encycl. 1.286 (1791) : *D. Richardii* Vahl. in West Bidr. St. Croix 269 (1793) : N. Amer. Fl. 32.135 : Urb. Symb. Ant. 4.584 : Gr. Fl. 321 : Gonzalea grisea Wern. Journ. Bot. 1913. 219.

A variable *shrub* 2-3 m., stems slender, cylindrical, pubescent; *lvs.* shortly petioled, uppermost almost sessile, ovate or oblong, acuminate, very variable in size, sometimes as much as 22 cm. long and 8 cm. wide, shiny and with short scattered hairs above,

hairy beneath especially on the veins; *stip.* awl-shaped, 8-10 mm. long; *fl. spikes* elongated, inferior flowers arising from the axils of the reduced uppermost leaves, sessile or nearly so; *bracteoles* awl-shaped; *cal.* lobes linear, green, hairy, variable in size up to 4 mm. long; *cor.* white, salver-shaped, tube cylindrical, slightly dilated at the top, 1 cm. long, lobes oblong, rounded; *berry* 2-celled.

Banks and ravines in moist districts. Trinidad and Tobago.
West Indies generally, Venezuela, Guiana and Brazil.

2. **D. incanescens** (DC.) comb. nov.

Gonzalea incanescens DC.

Shrub, stems pubescent; *lvs.* sessile or nearly so, elliptical, acuminate, 7-10 cm. long, 3-4 cm. wide, pubescent above, thickly woolly beneath, the hairs white; *stip.* awl-shaped, winged at the base, about 1 cm. long; *fls.* sessile or nearly so crowded on the spike; *cal.* lobes oblong, variable in size, 3-4 mm. long; *cor.* tube 10-12 mm. long, thickly covered with long, whitish hairs.

Herb. Trin. 10415, Freeman and 11089, Williams, Tobago. Determined from description only.

13. **SCHRADERA** Vahl.

Shrubs, subepiphytic, glabrous, stems angled. *Lvs.* petioled, leathery. *Stip.* large, united at the base, deciduous. *Fls.* in terminal, stalked, globose heads, surrounded by involucre. *Cal.* tube top-shaped or hemispherical, limb short, truncate, persistent. *Cor.* thick, leathery, salver-shaped, throat hairy, lobes 5-10, narrow, spreading, valvate. *Stam.* 5-10, inserted in the throat of the corolla. *Style* 2-4 branched. *Berry* fusiform, 2-4 celled. *Seeds* numerous, minute, suborbicular, compressed, granulate.

Leaves nearly four times as long as broad. 1. *S. angustifolia*.
Leaves about twice as long as broad. 2. *S. clusiaefolia*.

1. **S. angustifolia** (Britt. & Standl.) comb. nov.

Urceolaria angustifolia Britt. & Standl.

Journ. Wash. Acad. Sciences 13. 106-107.

Branches stout, brownish, the internodes 1-3 cm. long; *lvs.* oblong-oblongate or narrowly oblong, 4.5-8 cm. long, 1.2-2.5 cm. wide, obtuse at the apex, wedge-shaped at the base, lustrous above, the veins prominent, the petioles 6-10 mm. long; *stip.* falling early; *pedu.* 2.5 cm. long, the involucre entire, 3 mm. high; *cal.* in the bud 1 cm. long.

"While this may be only a form of *U. clusiaefolia*, the shape of the leaves is strikingly different, and it is probable that the present plant is specifically distinct."—(Britt. & Standl. loc. cit.)

Herb. Trin. 9363, Leslie, Mt. Tucuche (1907), Trinidad, the type specimen.

2. *S. clusiaefolia* (Britt & Standl.) comb. nov.*Urceolaria clusiaefolia* Britt. & Standl.

Journ. Wash. Acad. Sciences 13. 106.107 (S. cephalotes of Hart's Herb. Trin. List).

Branches stout, brown, somewhat lustrous, the internodes 2-8 cm. long; *lvs.* oblong-obovate to obovate-elliptical, 8-11 cm. long, 3.5-5.5 cm. wide, the apex acute, often somewhat abruptly so, the base acute or acuminate and decurrent upon the petiole, lustrous above, the veins prominent, the petioles stout, 1-1.5 cm. long; *stip.* quickly deciduous; *pedu.* over 1.5 cm. long, stout, the involucre entire, about 3 mm. long; *cal.* in fruit about 1 cm. long, the immature fruit 5-6 mm. diam.

"Although only imperfect specimens are available for study, these differ so conspicuously in leaf characters from the other West Indian representatives of the genus that it seems safe to assume that they represent a distinct species" (Britt. & Standl. loc. cit.)

Herb. Trin. 673, Mt. Tucuche (1847), Trinidad, the type specimen.

14. *SABICEA* Aubl.

Scrambling *shrubs.* *Fls.* usually small, in axillary heads or cymes. *Cal.* lobes usually linear-oblong. *Cor.* tube narrow slightly enlarged above, lobes valvate, relatively short, not attaining half the length of the tube. *Stam.* 4-5, included. *Style* erect, its branches 3-5, rarely 2, erect, linear, obtuse. *Berry* variable, 3-5 (-2) celled. *Seeds* minute, ovoid or angled.

Lvs. hairy above, hairs on veins of lower surface spreading 1. *S. hirsuta.*

Lvs. scantily pubescent above, hairs on veins of lower surface appressed..... 2. *S. trinitensis.*

1. *S. hirsuta* H.B. & K.

Mon. of *Sabicea* Wern. Brit. Mus. Nat. Hist. 55. 1914:

N. Amer. Fl. 32. 149: Urb. Symb. Ant. 4. 586: Gr. Fl. 322.

Lvs. elliptical-oblong, acuminate, more or less hairy on both sides, especially on the lower along the veins, not, however, woolly, 6-13 cm. long, 2.5-7 cm. wide; *stip.* broadly ovate or roundish, reflexed; *fls.* white, small, sessile; *cal.* lobes linear-lanceolate, rather short, occasionally increasing on the fruit to 4 mm.; *cor.* tube glabrous at the base, sparsely hairy above, scarcely 6 mm. long, lobes narrowly triangular, minute; *berry* violet, up to 1 cm. diam.

A variable plant; forms with more or less persistent felt beneath have been referred to *S. velutina* Benth. and more glabrescent forms to *S. hirsuta appressa* Wern. and *S. glabrescens* Benth.

Trinidad.

Central America, Guiana and Brazil.

2. *S. trinitensis* Standl.

N. L. Britton, Cont. New York Bot. Gdn. 236. (1922).

Stems about 2 m. long, pubescent with dense, short, ascending reddish hairs; *stip.* 5-6 mm. long, rounded-ovate, obtuse or almost acute, glabrous except for very fine, short hairs, petioles 8-14 mm. long, densely hairy with ascending hairs; *lvs.* elliptical or oblong-elliptical, 9-10.5 cm. long, 4.5-6 cm. wide, acute or almost so, abruptly contracted at the base, minutely hispid above along the midrib, elsewhere roughish, glabrous beneath except for adpressed hairs along the veins; *fls.* few, sessile in the leaf-axils, subtended by two green bracts similar to the stipules; *cal.* tube about 3 mm. long, glabrous or with a few adpressed white hairs, lobes linear, 2-3 mm. long; *cor.* with adpressed hairs, the tube 6-7 mm. long, the lobes lanceolate, acuminate, 3 mm. long.

2439 Britton, in Herb. Trin. O'Meara Savannah, Trinidad.

15. **TONTANEA** Aubl.

Herbs, annual or perennial, creeping or trailing, more or less hairy. *Lvs.* petioled. *Stip.* small. *Fls.* purple or blue, in solitary, axillary, compact, stalked heads. *Cal.* ovoid or top-shaped, lobes 4, oblong, awl-shaped or lanceolate, persistent. *Cor.* funnel-shaped, the throat glabrous, lobes 4, oblong, valvate. *Stam.* 4, inserted in the tube of the corolla, included or shortly exerted. *Style* slender with 2 short branches. *Berry* 2-celled, blue, *Seeds* orbicular, sub-angular.

1. *T. guianense* Aubl.

Coccocypselum nummulariaefolium C. & S.

Aubl. Pl. Guiana. 108: N. Amer. Fl. 32.147.

Stems more or less succulent, usually clothed with long spreading, yellowish or purplish hairs, sometimes almost glabrous; *lvs.* ovate or ovate rounded, sometimes heart-shaped, 2-7 cm. long, 1.5-5 cm. wide, rounded to acute at the apex, obtuse or rounded at the base; *stip.* awl-shaped, 5 mm. long, attached to a very short sheath; *fl. heads* usually 2-9 fld.; *pedu.* 1-4.5 cm. long; *bracts* linear, 3-7 mm. long; *cal.* lobes 2-3 mm. long, hairy; *berry* obovate-oblong, bright royal blue, hairy, 1.5-2 cm. long, crowned by the persistent, green calyx lobes which form a cross at the apex; *seeds* brown, numerous, 1.5 mm. long, warty.

A variable plant, forms of which have been referred to *Coccocypselum tenue* Urb. and *C. hirsutum* Bartl. by some authors.

Shady moist situations, such as the faces of banks caused by road cuttings through forests or on rotten trees in woods, Trinidad.

Cent. and S. America. West Indies.

16. **HAMELIA** Jacq.

Shrubs. *Lvs.* opposite or whorled (3-4), petioled. *Infl.* cymose, terminal. *Cal.* persistent, 5-lobed, erect. *Cor.* tubular or bell-shaped, 5-lobed, contracted near the base. *Stam.* 5, inserted above the base of the tube. *Stig.* 5-lobed, the lobes more or less fused. *Berry* 5-celled. *Seeds* numerous.

Leaves whorled.....1. *H. erecta.*

Leaves opposite.2. *H. axillaris.*

1. **H. erecta** Jacq.

H. patens Jacq.

Wern. Journ. Bot. (1911). 214: Urb. Symb. Ant. 4.588:
Gr. Fl. 320.

Shrub 1-2 m.; *stems* cylindrical, tetragonal or triangular above, more or less channelled, sparsely pubescent; *lvs.* whorled (3-4), ovate or elliptical, acute, 10-20 cm. long, 7-10 cm. wide, glabrous above, pubescent beneath, especially on the veins, petioles 2-5 cm. long, green; *stip.* persistent, as many as the leaves, acuminate and recurved, 4 mm. long; *cymes* simple or branching at the base; *pedu.* 2-5 cm. long; *fls.* numerous; *cal.* tube ovate, longer than the short pedicels, slightly toothed, teeth triangular, 0.5 mm. long; *cor.* orange scarlet, tubular, 15-18 mm. long, minutely hairy; lobes rounded, 2 mm. wide; *stam.* joined at the base, free from above the constricted throat; *anths.* barely exceeding the lobes; *berry* oval, 1 cm. long, reddish, blackish purple when ripe; *seeds* minute, brown. A showy shrub when in flower.

Common on waste land throughout Trinidad and Tobago.
Florida to Paraguay and West Indies.

2. **H. axillaris** Sw.

H. lutea Rohr.

Wern. Journ. Bot. (1911) 210: Urb. Symb. Ant. 4.588:
Gr. Fl. 320.

Shrub 0.5-1 m.; *stems* cylindrical, somewhat compressed above, minutely pubescent on the younger branches; *lvs.* opposite, elliptical, the apex acuminate, the base narrowing into the petiole, glabrous above, pubescent on the veins beneath, more so at the junction of the mid-rib and nerves, 10-16 cm. long, 4.5-8 cm. wide, petioles 2-4 cm. long, reddish; *stip.* deciduous, awl-shaped, 3 mm. long; *cymes* terminal, pubescent; *pedu.* 5-15 mm. long; *cal.* tube green, bell-shaped, longer than the short pedicels, lobes linear, bluntish, spreading, 1 mm. long, persistent on the fruit;

cor. yellow, almost glabrous, tubular, 10 mm. long, lobes more or less spreading; *berry* black, oblong to oval, about 5 mm. long.

Readily recognizable from *H. erecta* by its darker coloured opposite leaves, yellow fls., smaller and shorter peduncled cymes and linear cal. lobes.

Monkey Hill, Tamana, Cent. Range and Maracas Falls, Trinidad.

Cuba, Jamaica, Hispaniola, St. Thomas, St. Croix, Saba, Cent. Amer. to Peru and Brazil.

17. BERTIERA *Aubl.*

Shrubs or small *trees*, pubescent. *Lvs.* shortly petioled, oblong or lanceolate, acuminate. *Stip.* united at the base. *Panicle* terminal, many fld. *Fls.* white, small, sessile, arranged serially on the upper side of the semi-pendent inflorescence. *Bracts* small. *Cal.* tube subglobose, lobes 5, persistent. *Cor.* funnel-shaped, lobes 5, ovate, acute. *Stam.* 5. *Stig.* fusiform, entire or bifid. *Berry* 2-celled, globose. *Seeds* small, numerous.

1. *B. guianensis* *Aubl.*

Shrub or small *tree*, 3-4 m.; *lvs.* 10-18 cm. long, 3-6 cm. wide; *stip.* 7-12 mm. long, the awl-shaped lobes longer than the sheath; *fls.* greenish-white; *bracteoles* awl-shaped, 1-4 mm. long; *cal.* 1 mm. long, hairy, lobes triangular to ovate, persistent on the fruit; *cor.* tube 3 mm. long, glabrous, lobes hairy, especially within, acute; *berry* blue, 4-5 mm. diam., ridged when dry.

In woods, Erin, Maracas and Golden Grove, Trinidad.
Trop. S. America.

18. ALIBERTIA *Rich.*

Shrubs or *trees*. *Lvs.* often leathery, entire, petioled. *Stip.* united at the base. *Fls.* sessile, terminal, unisexual, the male clustered, the female often solitary. *Cal.* tube in the male fls. hemispherical, in the female globose, the limb short or tubular, entire or minutely toothed. *Cor.* leathery, salver-shaped, the tube cylindrical, lobes 4-8, contorted. *Stam.* 4-8, inserted in the corolla tube. *Stig.* 2-8 branched. *Berry* globose, 2-8 celled, the cells many seeded, placentas pulpy. *Seeds* compressed, obtusely angled.

Leaves lanceolate, stip. acute or apiculate...1. *A. trinitatis*.

Leaves elliptical, stip. subulate-acuminate...2. *A. tobagensis*.

1. *A. trinitatis* *Sprague and Williams*. sp. nov.

Cordia triflora Gr. Fl. 319 not *A. Rich.*

Shrub, stems slender; *lvs.* oblong-lanceolate, the apex acuminate, acute or bluntish, the base wedge-shaped or tapering, leathery, 6-20 cm. long, 2-4 cm. wide, glabrous except for small

tufts in the axils of the mid-rib and lateral nerves beneath, the upper surface shiny and drying dark brown, the mid-rib, lateral and tertiary nerves conspicuous, the lower surface much paler and the nerves less conspicuous, nerves 10-15 on each side, petiole 5-10 mm. long; *stip.* persistent, deltoid, 2-5 mm. long, acute or apiculate, adpressed; *male fls.*: *cal.* bell-shaped, about 3 mm. long, barely toothed, membranous, pubescent; *cor.* in bud about 1.5 cm. long, broadened at the throat, minutely pubescent on both sides except at the base of the tube within, where it is somewhat glabrous, tube about 1.5 cm. long, the lobes lanceolate-acuminate, 11-12 mm. long; *berry* globose (blackish-green, ex Broadw.) 1.5-2.5 cm. diam., the *cal. limb* forming a persistent entire cup at the apex about 3 mm. long and broad; *seeds* obliquely triangular-obovate 5 mm. long by 4 mm. broad.

This species differs essentially from *Cordia triflora* Rich., a Guiana plant, with which it has sometimes been confused, by its longer and acuminate corolla lobes and the broadened throat. It also differs from *A. edulis* Rich. by the leaves which are more narrowed at the base, the globose, not depressed, fruit, and the much smaller and entire calyx on the fruit.

Purdie, 124, O'Meara Savannah in Herb. Kew; Dannouse, Arima, in Herb. Trin: Crueger 275: Britt. and Hazen 731.

Natural Savannahs, Trinidad.

2. *A. tobagensis* Sprague and Williams. sp. nov.

Shrub, branches slender; *lvs.* elliptical, oblong-elliptical or obovate-elliptical, rather abruptly acuminate at the apex and wedge-shaped at the base, 7-13 cm. long, 4-7 cm. wide, thinly leathery, glabrous except for small tufts in the axils of the mid-rib and lateral nerves beneath, the upper surface drying dark brown, the lateral and tertiary nerves conspicuous, the lower surface paler and the nerves less conspicuous, nerves 7-9 on each side; petioles 5-11 mm. long; *stip.* persistent, 7-9 mm. long, deltoid, sharply acuminate, adpressed; *male fls.* white; *cal.* bell-shaped, 3-4 mm. long, minutely dentate, membranous, puberulous outside; *cor.* broadened at the throat, densely and minutely pubescent on both sides except at the base of the tube within, the lobes lanceolate, acuminate; 1.1 cm. long, the tube 1.2 cm. long; *female fls.* not seen; *fruit* globose, 2 cm. diam. the *calyx* forming a persistent cup 3.5 mm. long.

This plant differs essentially from *A. edulis* Rich., with which it has sometimes been confused, by its elliptical leaves and subulate acuminate stipules.

4627, Herb. Trin. and 4256 Broadway, in Herb. Kew.
The Widow, Tobago.

19. AMAIOUA *Aubl.*

Trees or *shrubs*. *Lvs.* shortly petioled, leathery. *Stip.* triangular or ovate, deciduous. *Fls.* white, fragrant, in terminal clusters or corymbs, unisexual. *Cal.* tube ovoid-oblong, limb cup-shaped, deciduous, 6-toothed, the teeth short, awl-shaped. *Cor.* salver-shaped, the tube silky, inflated, the throat woolly, lobes 6, spreading, contorted. *Stam.* 6, inserted in the corolla tube, included. *Ovary* 2-celled, or by the placentas scarcely cohering in the middle, almost 1-celled. *Style* short, thickened above, the 2 branches coherent. *Berry* oblong, 1-celled. *Seeds* numerous, in four series, embedded in pulp, horizontal, suborbicular.

1. A. corymbosa *H.B.K.*

A. fagifolia Desf.

N. Amer. Fl. 32. 157.

A small *tree* 2-5 m., stems sub-angular; *lvs.* elliptical or elliptical-oblong, 5-20 cm. long, 3-10 cm. wide, shortly acuminate at the apex, glabrous above, silky on the prominent veins beneath, petioles stout, 3-15 mm. long, densely silky; *stip.* 1.5-2.5 cm. long, rust-coloured silky without, glabrous within; *staminate corymbs* lax, often long stalked; *cal.* cup-shaped, 3-4 mm. long, silky, teeth 1 mm. long; *cor.* about 18 mm. long, the tube silky, the lobes lanceolate, about as long as the tube; *pistillate fls.* in long or short stalked heads or corymbs, usually branching at the base, few flowered; *cal.* tube 3-4 mm. long; *cor.* about 1 cm. long; *berry* oval or obovoid, 1.2-1.5 cm. long, sparsely silky; *seeds* irregularly angular, 3 mm. long, reddish brown, lustrous, finely lined.

General in woods throughout Trinidad.

Cuba. Cent. and S. America.

20. BASANACANTHA *Hook.*

Shrubs, stems spiny, spines opposite or in fours. *Lvs.* clustered at the tops of the branches, petioled, ovate, obovate, elliptical or lanceolate, membranous. *Stip.* chaffy, persistent. *Fls.* white, fragrant, terminal, unisexual, solitary or clustered, pedicels short or slender. *Cal.* tube in male fls. short, obconical or wanting, in the female fls. ovoid or oblong, lobes 5, deciduous. *Cor.* salver-shaped, the tube slender, the throat glabrous, lobes 5, ovate-lanceolate, contorted. *Stam.* 5, inserted in the throat of the corolla, exerted, in the female fls. imperfect or none. *Stig.* bifid. *Berry* oblong, or subglobose, leathery, 2-celled, many seeded. *Seeds* horizontal, immersed in pulp, compressed.

1. *B. phyllosepala* Sprague & Williams. sp. nov.

Shrub, stems slender, the branchlets short and armed with 2-4 spines near the apex; *lvs.* elliptical, 6-14 cm. long, 2.5-5 cm. wide, rather abruptly acute or acuminate, wedge-shaped or tapering at the base, puberulous above and beneath, especially on the veins, membranous, lateral veins 8-10 on each side; *stip.* deltoid, 5 mm. long and broad, minutely apiculate, glabrous outside and with long weak hairs at the base within; *female fls.*; *cal.* tube cylindrical, constricted at both ends, 1 cm. long, densely pilose, lobes oblanceolate or oblong, acute, 1.6 cm. long, densely pilose on both sides; *cor.* tube cylindrical, broadened at the throat, 2 cm. long, sparsely pilose, glabrous within, the lobes ovate, acuminate, about 1.2 cm. long, pilose outside, glabrous within; *style* glabrous; *fruit* ellipsoid, 3 cm. long, 1.8 cm. broad, minutely pubescent.

This species has been confused with *B. spinosa* (L) K. Schum. from which it differs by the much larger and differently shaped calyx lobes and by the indumentum on the tube of the corolla. J. H. Hart 1/89, Carrera Island, Gulf of Paria, differs by its longer (not deltoid) stipules glabrous fruit and glabrescent veins of the leaves beneath; leaves not attenuate at the base.

Herb. Trin. 3131, Devenish, Monos, Trinidad. 11078, Williams, Charlotteville, Tobago.

21. *POSOQUERIA* Aubl.

Small *trees* or *shrubs*. *Lvs.* petioled, leathery. *Stip.* large, deciduous. *Fls.* white, fragrant, in terminal many-fl. corymbs. *Cal.* tube obovoid, lobes 5, persistent. *Cor.* salver-shaped, tube slender, very long, the throat scarcely dilated, glabrous or hairy, the limb pouched in the bud, lobes 5, obtuse, contorted. *Stam.* 5, inserted in the throat of the corolla, exerted, bifid at the base. *Stig.* bifid, included. *Berry* large, globose or ovoid, fleshy, 1-2 celled. *Seeds* numerous, large, obtusely angled.

1. *P. trinitatis* DC.

DC. Prod. 4, 375.

Small *tree*, 4-6 m.; *lvs.* glabrous, ovate, elliptical or oblong-elliptical, shortly acuminate at the apex, usually rounded at the base, 5-26 cm. long, 6-12 cm. wide, lustrous, dark green above, paler beneath, petioles 8-15 mm. long; *stip.* lanceolate or oblong, obtuse or acute, 8-23 mm. long; *corymbs* stalked, branches sparsely pubescent; *pedu.* 2-3 cm. long; *bracteoles* awl-shaped, minute; *pedi.* up to 12 mm. long; *cal.* tube 3-4 mm. long, lobes rounded, shorter

than the tube; *cor.* tube 12.5-16.5 cm. long, the throat hairy, lobes oblong, 1-2.5 cm. long; *berry* yellow, 4-5 cm. diam.; *seeds* irregularly angled, 1-1.8 cm. long. An uncommon plant.

It differs from *P. latifolia* (Rudge) R. & S. by its thinner leaves, the veins of which are prominent beneath and by the larger stipules and the longer calyx lobes.

Irois and Matura, Trinidad.

St. Vincent; Br. Guiana.

22. RANDIA L.

Trees or shrubs, spiny or unarmed, the spines axillary. *Lvs.* usually leathery. *Stip.* short, barely united at the base. *Fls.* white, single or clustered, axillary, rarely terminal. *Cal.* tube ovoid or obovoid, limb tubular, or with 5 (4-6) lobes, persistent. *Cor.* salver-shaped, lobes 5, rarely more, contorted. *Stam.* 5; *fil.* very short or none. *Stig.* bifid. *Berry* globose or ovoid, 2-celled. *Seeds* numerous.

Cor. tube less than 1 cm. long1. *R. aculeata*.

Cor. tube 5-8 cm. long.....2. *R. formosa*.

1. *R. aculeata* L. Indigo Berry. Ink Berry. Prickle Bush.

Urb. Symb. Ant. 4. 586: Gr. Fl. 318.

Shrub, spines opposite, sometimes wanting; *lvs.* obovate or elliptical, 2-4 cm. long, 1-2 cm. wide, tapering into a short petiole, or sessile, leathery, glabrous; *fls.* single or in threes, sessile; *cal.* limb shortly bell-shaped, with distant, lanceolate, recurved teeth; *cor.* tube subcylindrical, 4-8 mm. long, hairy within, as long as or twice as long as the lobes; *berry* 8-12 mm. diam. The spiny character is variable.

Balandra, Moruga, Marabella, Trinidad. Tobago.

West Indies, Mexico and Florida.

2. *R. formosa* (Jacq.) Schum.

R. Moussaendae DC.

Shrub, unarmed; *lvs.* lanceolate-elliptical or lanceolate, 2-7 cm. long, pubescent beneath, somewhat membranous, shortly petioled; *fls.* sessile, single, terminal, on more or less reduced branches; *cal.* pubescent, lobes 5, distant, awl-shaped, erect; *cor.* tube pubescent, 5-8 cm. long, lobes ovate-acuminate, about 15 mm. long, hairy at the throat; *berry* ovoid, about 2.5 cm. long, glabrous or slightly hairy, mottled with green and with five longitudinal green stripes.

Herb. Trin. 3192, Chaguanas and Tamana, Crueger in Herb. Kew, Trinidad.

Herb. Trin. 11699 Williams and Eggers 5919 in Herb. Kew, Tobago. St. Vincent, Mexico to Guayaquil and Guiana.

23. GENIPA L.

Trees, glabrous or pubescent. *Lvs.* petioled or subsessile. *Stip.* deciduous. *Infl.* few-fld., axillary cymes. *Fls.* stalked. *Cal.* 5 or 6-lobed, persistent. *Cor.* 5 or 6-lobed, salver-shaped, the tube cylindrical. *Stam.* 5-6, inserted at the throat of the corolla; *anths.* sessile, exserted. *Berry* oval, 1 or 2-celled, large, the pericarp thick. *Seeds* numerous.

1. G. americana L. Genip.

G. Caruto H.B.K.

N. Amer. Fl. 32.156: Urb. Symb. Ant. 4.587: Gr. Fl. 317.

Tree, deciduous, 12-15 m. high; *lvs.* obovate or obovate-oblong, shortly acuminate, glabrous and shiny above, pubescent or glabrous beneath, shortly petioled, variable in size, about 20 cm. long, and 12 cm. wide in the obovate, mature form; *stip.* triangular, sharply acuminate; *cymes* shortly stalked; *bracts* 3-4 mm. long, acuminate, membranous; *cal.* bell-shaped, 1-5 cm. long, toothed, lobes rounded; *cor.* creamish, contorted in the bud, salver-shaped, 5-lobed, 5-8 mm. long, the tube barely exceeding the calyx lobes, silky on both sides, the throat hairy; *stig.* club-shaped; *berry* greyish, 5-6 cm. long, somewhat rough; *seeds* irregular, 6-12 mm. long.

There is considerable variation in the leaf characters; in young plants the leaves are larger and obovate-oblong as compared with the obovate form in large trees. They may be glabrous beneath or either sparsely or densely pubescent.

General throughout Trinidad and Tobago.

Lesser Antilles, Trop. S. America.

24. GUETTARDA L.

Shrubs or *trees*. *Lvs.* opposite, rarely in whorls of 3, subsessile or petioled. *Stip.* various, deciduous. *Infl.* axillary, usually a forked cyme with the flowers sessile on the inner side of the branches, branches sometimes much contracted so that the peduncle appears simple and few fld. at the top. *Fls.* perfect or unisexual. *Cal.* tube ovoid or globose, limb tubular, cupshaped, truncate, or slightly toothed at the top, deciduous, rarely persistent. *Cor.* salver-shaped, throat glabrous, lobes 4-9, oblong, obtuse. *Stam.* 4-9, inserted in the tube, included. *Drupe* ovoid or often globose, epicarp thin, endocarp woody, round, obtusely angled or furrowed, 4-9 celled, cells narrow. *Seeds* pendulous.

Fruit smooth.

Leaves rough above.....1. *G. scabra*.

Leaves glabrous above.....2. *G. parviflora*.

Fruit sharply 4-angled, 6 mm. long.....3. *G. crispiflora*.

Fruit broadly 5-angled, 12 mm. long.....4. *G. tobagensis*.

1. *G. scabra* (L.) Lam.

G. longiflora of Hart's List.

Mathiola scabra L. Sp. Pl. 1661 (1753).

Small tree, 5-9 m., young stems hairy, older ones glabrous; *lvs.* petioled, elliptical or obovate, with a produced point, 10-15 cm. long, 6-12 cm. wide, slightly wavy at the margins, rough and wrinkled above, hairy beneath with prominent veins; *stip.* awl-shaped, 1 cm. long, deciduous; *pedu.* hairy, nearly as long as the leaves, branches contracted; *bracts* lanceolate, 6 mm. long; *cor.* white, tube cylindrical, slightly curved, hairy, 3-4 times as long as the calyx, lobes 5-7; *fruit* globose, pubescent, 3-6 seeded.

Herb. Trin. 5851 Baptiste, Maraval (1891), Trinidad.

Trop. America (Florida to Brazil) and West Indies.

2. *G. parviflora* Vahl.

G. parvifolia Sw.

Urb. Symb. Ant. 4. 590: Gr. Fl. 333.

Shrub, not exceeding 4 m.; *lvs.* shortly petioled, elliptical or oblong elliptical, 3.5-6 cm. long, glabrous above and with appressed minute hairs on the veins beneath; *stip.* subulate; *pedu.* pubescent, nearly as long as the leaves; *cal.* limb tubular, truncate or slightly toothed, tardily deciduous from the fruit; *cor.* white, tube club-shaped, 6 mm. long, pubescent, lobes 5 (-6); *fruit* globose, velvety, 4 mm. diam., 4-5 seeded. The Crueger specimen cited by Griseb. Fl. B.W.I. p. 333 as *G. odorata* Lam. is this species.

Cedros and Monos, Trinidad; Tobago.

Reported from nearly all the West Indian Islands, and from Venezuela,

3. *G. crispiflora* Vahl.

Shrub or small tree, 3-7 m.; *lvs.* petioled, ovate or elliptical, acuminate, 10-20 cm. long, pubescent along the veins, especially beneath; petioles 2-3 cm., *stip.* large (1-3 cm.) ovate, acuminate, hairy, especially within; *fls.* numerous, in axillary cymes at the tips of the branches, the two branches of the peduncle about as long as the unbranched part, 1-1.5 cm.; *bracts* minute; *cal.* tube oblong, 2 mm., the limb very short, 4-5 toothed; *cor.* pale red, yellow at the base of the throat (ex Duss) tube club-shaped, 1 cm. long, covered with silky hairs, lobes 5, crinkled, glabrous within; *fruit* 6 mm. long, typically acutely 4-angled and 4-seeded, sometimes 3-angled, 3-seeded.

Herb. Trin. and Kew, 9818. Heights of Aripo, Trinidad.

Most of the West Indian Islands.

4. *G. tobagensis* Urb.

Urb. Symb. Ant. 7. 406.

Small *tree*; trunk and older branches armed with spines 2.5-5 cm. long, young branches hairy with very short adpressed hairs, older roundish, glabrous; *lvs.* ovate or often oval, acute at the base, acuminate, 12-17 cm. long, 7.5-9.5 cm. wide, hairy with short adpressed hairs below, very short hairs above, lateral veins fairly prominent beneath; *petioles* 2-3 cm. long; *stip.* triangular-acuminate, 5 mm. long, not joined at the base, densely hairy, deciduous; *fls.* drop early; *cor.* 4-5 lobed, green outside and densely hairy, glabrous and white within, tube 1.7 cm. long, limb 2 cm. diam.; *pedu.* (in fruit) 0.6-1.2 cm. long, cymose, the two branches 0.5-3 mm. long, closely 3 or 5-flowered; *cal.* limb deciduous from the fruit, leaving a scar 2.5-3.5 mm. diam.; *fruit* green, flattened spheroidal, very shortly hairy, broadly 5-furrowed in the upper two-thirds, 12-14 mm. long, 16-18 mm. diam. 5-celled, endocarp very hard.

The Widow, Broadway and Herb. Trin. 11116, Menna Road, Williams, Tobago.

25. *STENOSTOMUM* Gaertn.

Trees and shrubs, glabrous. *Lvs.* leathery. *Stip.* deciduous. *Fls.* small, sessile or shortly stalked, serial on one side of the branches of axillary, bifid, scorpioid cymes. *Cal.* tube ovoid or obovoid, limb truncate or lobed, persistent. *Cor.* funnel-shaped, the tube cylindrical, imbricate. *Stam.* 4-5, inserted in the throat of the corolla, half exerted; *Stig.* included, entire or two to three-fid. *Drupe* small, glabrous. *Seeds* single in the cells, cylindrical, elongated, pendulous.

DOUBTFUL SPECIES.

1. *S. lucida* (Sw.) Gaertn. f.

Laugeria lucida Sw.

DC. Prod. 4. 460: Gr. Fl. 334: Urb. Symb. Ant. 4. 591.

Small *tree*; *lvs.* elliptical or elliptical-oblong, blunt, 5-8 cm. long, shiny; *stip.* lanceolate to awl-shaped; *pedu.* once or twice bifid below or at the middle, branches slender; *fls.* distant; *cal.* top-shaped, glabrous, lobes 5, rounded; *cor.* white, tube glabrous, 6 mm. long, lobes 5, roundish; *drupe* black, ellipsoidal-oblong, contracted below the cal. limb, 6 mm. long below the crown, 2-celled.

Trinidad, ex DC. The only record. No local specimen seen; doubtfully native.

Cuba, Jamaica, Hispaniola, St. Thomas, St. Croix, St. Barthelemy, St. Lucia.

26. LAUGERIA Vahl.

Shrubs or small *trees*, glabrous, resinous. *Lvs.* shortly petioled, lanceolate, leathery. *Stip.* united in a fringed truncate sheath, tardily deciduous. *Fls.* serial in axillary, long-stalked, forked cymes. *Cal.* tube minute, oblong, limb truncate, recurved. *Cor.* glabrous, narrowly funnel-shaped, tube cylindrical, elongated, lobes 4-5, spreading, oblong, imbricate. *Stam.* 4-5, inserted in the middle of the cor. tube, included. *Drupe* oblong, glabrous, 4-5 celled.

DOUBTFUL SPECIES.

1. **L. resinosa** Vahl.

Stenostomum resinosum (Vahl.) Gr.

DC. Prod. 4. 458 : Gr. Fl. 334 : Urb. Symb. Ant. 4. 592.

Shrub or small *tree*, 3-5 m.; *lvs.* oblong-lanceolate, shortly acuminate, 7-15 cm. long, 2-3 cm. wide, viscid above; *stip.* forming a complete tube within the petioles, 4 mm. long; *pedu.* long, shortly bifid; *fls.* sessile on the upper sides of the branches; *cor.* tube 6 mm. long.

No local specimen seen, Trinidad ex DC. The only record.

Porto Rico, Montserrat, Guadeloupe, Dominica, Martinique, St. Vincent.

27. MALANEA Aubl.

Shrubs, climbing or scrambling. *Lvs.* petioled, leathery, ovate or oblong. *Stip.* deciduous. *Fls.* small, sessile, clustered in axillary or pseudo-terminal panicles. *Cal.* tube short, top-shaped, limb very short, 4-toothed, persistent. *Cor.* funnel-shaped, tube short, lobes 4, valvate, the throat and lobes hairy within. *Stam.* 4, inserted in the throat of the corolla, exerted. *Stig.* 2-lobed. *Drupe* small, narrow-oblong, furrowed, 1-2 celled. *Seeds* single in the cells, pendulous.

Lvs. densely rusty hairy beneath.....1. *M. sarmentosa*.

Lvs. with minute greyish hairs beneath...2. *M. macrophylla*.

1. **M. sarmentosa** Aubl.

Aubl. Pl. Guiana. 1.106 t. 41.

Climbing *shrub*, young stems rusty hairy; *lvs.* obovate, blunt, 10-18 cm. long, 5-10 cm. wide, rusty hairy beneath, veins impressed above, prominent beneath; *stip.* ovate-oblong to lanceolate, 7-9 mm. long; *panicles* rusty hairy; *cal.* minute; *cor.* blue, minutely downy, the lobes ovate, pointed, as long as the tube, hairy within with a whitish beard.

Arima and Chaguanas, Trinidad.
Guiana.

2. *M. macrophylla* Bartl.*M. megalantha* Wern.

Shrub, stems almost glabrous; *lvs.* elliptical, shortly pointed, 7-20 cm. long, 5-9 cm. wide, glabrous above, minutely hairy with adpressed hairs beneath, especially along the veins; *stip.* obovate to oblong, rounded at the top, 1 cm. long, 4-7 mm. wide; *panicles* silky; *fls.* yellow (Fendler); *cor.* pubescent, lobes ovate-oblong, blunt, about half as long as the tube, hairy within; *drupe* 1 cm. long.

Northern Range and South coast, Trinidad, Tobago.
West Indies and Guiana.

28. ERITHALIS L.

Shrubs or low trees, resinous, glabrous. *Lvs.* petioled, leathery. *Stip.* broad, united within the petioles and with a produced point, persistent. *Fls.* white, in axillary, trichotomous, corymbose panicles. *Cal.* tube ovoid or globose, limb truncate or 5-10 toothed, persistent. *Cor.* salver-shaped, tube short, throat naked, lobes 5-10, linear-oblong. *Stam.* 5-10, inserted at the base of the corolla tube; *fil.* free from the corolla base, hairy below. *Stig.* blunt, lobes 5 or more. *Drupe* globose, 5-10 celled, furrowed. *Seeds* solitary, oblong compressed.

1. *E. fruticosa* L.

Gr. Fl. 336: Urb. Symb. Ant. 4. 593.

Shrub or small tree, 1-5 m.; *lvs.* variable, often obovate, petioles 5-7 mm. long; *stip.* about 2 mm. long, with a minute point; *fl. heads* equal to or shorter than the peduncle, the latter 2-4 cm. long; *bracteoles* variable in size, usually awl-shaped, minute; *cal.* limb subtruncate; *cor.* about 5 mm. long, lobes 5, oblong-linear or lanceolate-oblong.

The only specimen seen from Trinidad in Herb. Kew bears no name or locality and is mounted on a sheet of *E. quadrangularis* from Jamaica. West Indies generally, Cent. America.

29. CHIOCOCCA L.

Shrubs, often climbing, glabrous. *Lvs.* petioled, leathery, shiny. *Stip.* broad, acute, persistent. *Fls.* in opposite, axillary, cymose panicles. *Cal.* tube ovate, lobes 4-5, persistent. *Cor.* funnel-shaped, throat glabrous, lobes 5, spreading or reflexed,

Stam. 5, inserted at the base of the corolla tube, usually included ; *fil.* bearded, cohering at the base. *Stig.* club shaped. *Drupe* white, small, roundish, compressed 2-(3) celled. *Seeds* compressed.

Lvs. large, 7-10 cm. long; the veins prominent ;
infl. many fld.....1. *C. alba*.

Lvs. small (2-4.5) cm. long, the veins obscure ;
infl. 1-3 fld.....2. *C. parviflora*.

1. ***C. alba*** (L.) Hitchc. David's Root. Snowberry.

C. racemosa Jacq.

Lonicera alba L. Sp. Pl. 175 (1753) : Urb. Symb. Ant. 4.593 :
Gr. Fl. 336.

Climbing *shrub*, 1 m. or more ; stem slender, cylindrical ; *lvs.* shortly petioled, elliptical to ovate-acuminate, with a bluntish point, 7-10 cm. long, 4-5 cm. wide ; *stip.* adpressed to the stem, membranous, sharply acuminate, 3 mm. long ; *fls.* scented, numerous, in axillary, cymose panicles which may be either shorter or longer than the leaves ; *bracts* with 2 small lateral teeth at the base ; *cor.* lobes yellowish, about half as long as the tube ; *drupe* 4-5 mm. diam., crowned by the persistent calyx teeth ; *seeds* 2, roughened.

A variable plant of which many varieties are recorded. The Trinidad material has larger leaves than the Jamaican.

The Peruvian *C. brachiata* is distinct.

General on dry hillsides, Trinidad, Tobago.

Common throughout the West Indies, Florida to Brazil.

2. ***C. parviflora*** Wullsch.

Shrub, branches slender, the branchlets minutely pubescent, becoming glabrous ; *lvs.* lanceolate, ovate or elliptical, the apex acuminate or acute, sometimes obtuse, the base wedge-shaped or attenuate, rarely rounded, 2-4.5 cm. long, 0.7-1.9 cm. broad, glabrous, petiole 2-5 mm. long ; *stip.* connate with an awl-shaped lobe on either side longer than their sheath, the sheath 1 mm. long or less ; *infl.* lateral, 1-3 fld ; *pedu.* 8-12 mm. long ; *bracts* minute, subulate ; *cal.* purplish, minutely pubescent, 4-5 toothed, the teeth about 1 mm. long ; *cor.* mauve, deeper outside, 3-5 mm. diam., 4 mm. long, 4-5 lobed, the lobes acute or obtuse ; *stig.* bilobed, exserted, white ; *fruit* 4 mm. long and broad, white.

Fort George, Trinidad. Easterfield, Mt. St. George-Castara Road, Tobago.

30. COUSSAREA *Aubl.*

Shrubs or *trees*. *Infl.* terminal, paniced, variable. *Fls.* shortly pedicellate. *Cal.* tube ovoid, limb persistent, cup-shaped, entire or very shortly 4-toothed. *Cor.* funnel-shaped, throat expanded, glabrous, lobes 4, oblong, valvate, as long as the tube. *Stam.* 4. *Ovary* 1-celled, sometimes 2-celled, with a thin septum. *Fruit* leathery, ovoid, 1-seeded. *Seed* ovoid, laterally compressed.

1. *C. paniculata* (*Vahl.*) *Standley.*

Faramea Martini DC.

Gr. Fl. p. 339.

Small *tree*, glabrous; *lvs.* elliptical or elliptical-oblong with a produced point, 10-20 cm. long, 3.5-12 cm. wide; petiole 1-1.5 cm. long; *fls.* fragrant; *pedi.* clustered; *cor.* tube 11 mm. long in the bud, lobes as long as the cylindrical tube; *fruit* 1.5 cm. long.

The synonym *F. Martini* DC. is given on Grisebach's authority, the original description being insufficient to identify the species and we having no authenticated specimens.

General in forests, Trinidad.
Guiana.

31. FARAMEA *Aubl.*

Shrubs or *trees*, glabrous. *Stip.* with a long bristle-like point. *Fls.* in terminal and axillary corymbs or umbels. *Cal.* limb entire, persistent on the fruit. *Cor.* salver-shaped, lobes 4, valvate, throat glabrous. *Stam.* 4, inserted in the corolla tube. *Berry* dry, 1-celled and 1-seeded, smooth. *Seed* basal, spheroidal.

1. *F. occidentalis* (*L.*) *A. Rich.* Wild Jasmine. Wild Coffee.

F. odoratissima (*Gaertn.*) DC.

Gr. Fl. 338 : Urb. Symb. Ant. 4. 604.

Shrub or small *tree* 3-15 m.; *lvs.* 10-15 cm. long, 4-7 cm. wide, elliptical or oblong with a produced point, petiole 5-10 mm. long; *stip.* at length deciduous, rounded, terminated by a bristle 1 cm. long, the pair crossed over each other at the terminal bud, the bristles falling earlier than the more or less united sheath; *fls.* white, few together; *pedi.* 4-8 mm. long, much shorter than the peduncle; *bracts* linear, 2-3 mm. long; *cal.* cup-shaped; *cor.* 15-20 mm. long in the bud, lobes linear-lanceolate, about as long as the tube; *fruit* roundish, 1 cm. broad, broader than long; *seeds* brown, 8 mm. wide, deeply hollowed below, and with a cross shaped furrow extending from the pit.

Common in forest, Trinidad and Tobago.
West Indies generally and Trop. S. America.

32. PSYCHOTRIA L.

Shrubs, trees or rarely perennial herbs, sometimes trailing. Stip. variable. *Infl.* variable. *Cal.* tube short, usually 5-lobed or toothed. *Cor.* various, usually 5-lobed, rarely 4 or 6, valvate. *Stam.* inserted in the corolla tube or united up to the throat. *Berry* 2-celled, often ribbed. *Seeds* solitary and erect in each cell.

- Trailing or climbing plants.....1. *P. pendula*.
 Shrubs, stems herbaceous.....2. *P. uliginosa*.
 Shrubs or small trees.
 Stems pubescent.
 Bracteoles conspicuous, white or lavender.....3. *P. inundata*.
 Bracteoles absent or not conspicuous.
 Fls. in short stalked axillary heads....4. *P. axillaris*.
 Fls. in terminal panicles.
 Stip. entire, deciduous.....5. *P. horizontalis*.
 Stip. 2-lobed, persistent.....6. *P. Berteriana*.
 Stems glabrous.
 Stip. persistent.
 Fls. in compact flattened heads.....7. *P. involuocrata*.
 Fls. in panicles.
 Stip. awl-shaped.....8. *P. patens*.
 Stip. triangular.
 Berry red.9. *P. pinnularis*.
 Berry blue.
 Panicle longer than broad... 10. *P. brachiata*.
 Panicle broader than long... 11. *P. cuspidata*.
 Stip. deciduous.
 Leaves with bacterial galls beneath.
 Stip. large, up to 13 mm. long.. 12. *P. tobagensis*.
 Stip. small, up to 7 mm. long.... 13. *P. marginata*.
 Leaves without bacterial galls.
 Cal. deeply 5-toothed.....5. *P. horizontalis*.
 Cal. entire or nearly so
 Lateral veins 7-8 on each side 14. *P. trinitensis*.
 Lateral veins 12-14 on each side 15. *P. nitida*.

1. ***P. pendula*** (*Jacq.*) *Urb.* Climbing Vine.

P. parasitica Sw. : *P. crassa* Gr. Fl. 344. non Benth.

Shrub, trailing or climbing, glabrous; *lvs.* leathery, elliptical or elliptical-oblong, acuminate, rounded at the base or narrowed into the petiole, 7-9 cm. long, 3-5 cm. wide; *stip.* united, tubular, papery; *infl.* trichotomous axillary or terminal cymes; *fls.* stalked, numerous; *bracteoles* minute, triangular; *berry* obovate.

A variable plant. Urban in Symb. Ant. 1.445 describes 6 subspecies. The specimens in the Trinidad Herbarium show considerable variation, the fls. being either terminal or axillary and the leaves more or less rounded at the base or narrowed into the petiole. Urb. loc. cit. describes Herb. Trin. 3127 as *P. pendula* var. *trinitensis*. In this specimen the fls. are axillary and the leaves elliptical or elliptical-oblong, narrowing into the petiole.

Northern Range, Trinidad.
W. Indies generally, Venezuela and Guiana.

2. *P. uliginosa* Sw.

Gr. Fl. 340: Urb. Symb. Ant. 4. 597.

Shrub 1 m., stems herbaceous, glabrous or slightly hairy; *lvs.* leathery, obovate or elliptical, acuminate, usually tapering at the base, pallid beneath, 25-30 cm. long, 10-12 cm. wide; *stip.* persistent, entire, fleshy, united at the base, lobes horizontal, 3 mm. long; *infl.* axillary trichotomous panicles, shorter than the long peduncles; *fls.* whitish, clustered on spreading branches; *bracts* ovate-acuminate, 4 mm. long; *cal.* cup-shaped, 5-toothed, minute; *cor.* salver-shaped, 5-lobed, lobes about half as long as the tube, the latter 4 mm. long, the throat hairy; *berry* crimson, smooth, ridged when dry, 6 mm. long; *seeds* flattened.

Gr. gives a var. *discolor* distinguished by oval leaves, rounded at the apex, acute at the base and with the underside of the mid-rib and sessile panicles puberulous.

Northern Range and Aripo Savannah, Trinidad. Pigeon Hill, Tobago.
West Indies generally, Cent. America and Guiana.

3. *P. inundata* Benth.

P. arcuata Benth.: *Uragoga arcuata* Kuntze.

Urb. Symb. Ant. 7. 475.

Shrub 5 m., stems cylindrical or slightly tetragonal, pubescent; *lvs.* lanceolate or oblong-lanceolate, acuminate, narrowing into the petiole, with minute scattered hairs above, glabrous beneath except on the veins, 15-20 cm. long, 4-8 cm. wide; *stip.* deciduous, bifid, united at the base, lobes linear-acuminate, 6-10 mm. long, about as long as the petiole; *fls.* white in terminal pyramidal panicles; *pedu.* as long as or longer than the inflorescence, branches pubescent; *bracteoles* white or lavender coloured, oblong-linear, 1 cm. long, pubescent; *cal.* tube 1 mm. long, broadly toothed; *cor.* white or yellow, tube 4 mm. long, lobes 4, oblong, bluntish, about half as long as the tube, hairy at the throat; *berry* globose, 10-furrowed.

Northern Range, Trinidad. Tobago.
Grenada, Brazil and Guiana.

4. *P. axillaris* Willd.

Ronabea latifolia Aubl.

Shrub 2 m., somewhat pubescent, more so at the nodes and on the petioles; *lvs.* glabrous or with minute, scattered hairs beneath, elliptical or oblong, acuminate, tapering at the base, 12-15 cm. long, 4-6 cm. wide, petioles 1 cm. long; *stip.* awl-shaped, persistent, entire, 2 mm. long, hairy; *infl.* short-stalked axillary heads, scarcely exceeding the petioles; *fls.* white, few, almost sessile; *cal.* minutely 5-toothed; *cor.* salver-shaped, 5-lobed, lobes oblong, bluntish, hairy within, one-third as long as the club-shaped tube; *stam.* inserted in the corolla tube; *stig.* bifid; *berry* black, ovoid, smooth, 2-celled.

Northern Range and Mora Forest, Trinidad.
Guiana and Venezuela.

5. *P. horizontalis* Sw.

Urb. Symb. Ant. 7. 452.

Shrub 4-5 m., stems smooth, cylindrical, young branches pubescent with red or blackish hairs, or glabrous; *lvs.* lanceolate or ovate, acuminate, glabrous above, pubescent beneath, petiole short, 2-10 mm. long, pubescent; *stip.* deciduous, lanceolate or ovate, obtuse, entire, 3-8 mm. long, shortly hairy; *fls.* small, in erect, terminal panicles, 5-radiate, the branches pubescent; *cal.* limb deeply 5-toothed, lobes lanceolate or awl-shaped, spreading; *cor.* hairy at the throat; *berry* oval or subglobose.

No Trinidad specimen seen.

Broadway 2682 Moruga, Trinidad. Specimen in Chicago Herbarium.
Cuba, No. 90 Rugel in Herb. Kew. Costa Rica, Venezuela.

6. *P. Berteriana* DC.

P. platyphylla DC.

Shrub or *tree* up to 10 m.; *lvs.* ovate or oblong, acuminate, glabrous above, slightly hairy on the veins beneath, 10-14 cm. long, 5-6 cm. wide, petioles 1.5-2 cm. long; *stip.* persistent, 2-lobed, lobes ovate or oblong, acuminate, 2 mm. long, as long as their sheath; *fls.* in terminal, elongated panicles, the branches opposite, minutely hairy; *bracts* lanceolate, 5-7 mm. long; *buds* whitish; *cal.* 5-lobed, persistent on the fruit, lobes triangular, 0.5 mm. long; *cor.* tube short; *berry* globose, ridged and grooved.

Herb. Trin. 9091, Britt. & Freeman, Tucuche, and 11538 W. G. F. and R. O. W. Summit of Morne Bleu, Trinidad.

W. Indies and Colombia.

7. *P. involucrata* Sw.*P. capitellata* DC.

Urb. Symb. Ant. 4. 600 & 7.473.

Shrub 1-2 m., stems glabrous; *lvs.* lanceolate or ovate-acuminate, with minute scattered hairs above, petiole 4-5 mm. long; *stip.* persistent, bifid, united to a basal sheath; *fls.* white, in compact, flattened, terminal, corymbose heads, shorter than the hairy peduncle; *bracts* linear-lanceolate, 7 mm. long; *cal.* minutely 5-toothed; *cor.* funnel-shaped, 5-lobed, tube short, hairy; *berry* rounded; *seeds* grooved.

Northern Range, Trinidad.

W. Indies and Trop. America.

8. *P. patens* Sw.*P. flexuosa* Willd. : *Palicourea patens* Urban.

Urb. Symb. Ant. 7. 472. : Gr. Fl. 343.

Shrub 1-2 m., stems cylindrical, somewhat constricted below the nodes; *lvs.* ovate, lanceolate or elliptical, acuminate, 8-13 cm. long, 3-5 cm. wide, petioles 5-10 mm. long; *stip.* persistent, bifid, lobes awl-shaped, 4-5 mm. long, much longer than their sheath; *fls.* small and numerous, sessile or very shortly stalked, in terminal elongated panicles, the latter 4-6 cm. long, about as long as the peduncle, with purplish branches 10-15 mm. long, terminated by dichotomous cymes; *bracteoles* linear-lanceolate, about as long as the calyx; *cal.* lobes 5, purplish, minute, acuminate; *cor.* white, funnel-shaped, 5-lobed, glabrous at the throat, lobes half as long as the tube; *style* exceeding the corolla; *berry* somewhat rounded, black and transversely wrinkled.

Northern Range, Trinidad.

Cuba, Jamaica, Porto Rico, Trop. America.

9. *P. pinnularis* Moc. & Sesse.*P. horizontalis* Gr. Fl. 344 non Sw.

Urb. Symb. Ant. 7. 471 & 476.

Shrub 1-5 m., glabrous; *lvs.* obovate-oblong to oblanceolate, acute or bluntish at the apex, gradually tapering into the short petiole, 5-10 cm. long, 3-5 cm. wide, often with tufts of hairs at the junction of the veins beneath; *stip.* persistent, the bidentate, triangular lobes, 2 mm. long; *fls.* clustered in terminal, usually 3-rayed, few-fl'd. cymes; *pedu.* longer than the cymes; *bracteoles* minute; *cal.* limb longer than the tube, persistent on the fruit, slightly 5-toothed; *cor.* white, funnel-shaped, lobes 5, one-third as long as the tube; *berry* red, globose, nodding; *seeds* smooth or slightly 5-ridged.

Maraval and banks of the Caroni, Trinidad, Tobago.

W. Indies generally and Guiana.

10. *P. brachiata* Sw.

Urb. Symb. Ant. 4. 600 : Gr. Fl. 343.

Shrub 2 m., glabrous, stems round or slightly tetragonal; *lvs.* elliptical or oblong, acuminate, narrowed at the base, pallid beneath, 10-14 cm. long, 5-7 cm. wide; *stip.* persistent, united at the base, bi-lobed, lobes triangular, about 5 mm. long, longer than their sheath; *fls.* clustered on the tops of the branches of terminal, elongated panicles; *bracteoles* ovate, united, concave, acute, pubescent; *cor.* white, minute, funnel-shaped, lobes 5, hairy, shorter than the tube; *berry* indigo blue (Gr.), ovoid, grooved, crowned with the subentire calyx limb; *seeds* grooved.

Sant d'Eau Marang. Shady woods of Arima (Lockhart) Trinidad.
Cuba, Jamaica, Hispaniola and Guatemala.

11. *P. cuspidata* Bred.

P. cornigera Benth.

Urb. Symb. Ant. 7. 474 : Gr. Fl. 344.

Shrub, 1-2 m., glabrous, stems smooth, cylindrical or tetragonal, somewhat compressed and constricted below the nodes; *lvs.* ovate or elliptical, acuminate, 10-15 cm. long, 4-6 cm. wide; *stip.* persistent, bifid, united at the base, lobes adpressed, awl-shaped or triangular, longer than their sheath; *fls.* in terminal, corymbose panicles, the branches often bearded; *bracteoles* minute or inconspicuous; *cal.* 5-toothed, persistent on the fruit; *cor.* sub-cylindrical, hairy at the throat, lobes as long as the tube; *berry* blue, smooth, bi-lobed; *seeds* 2, sometimes one by abortion.

General, in woods, Trinidad.
Trop. America.

12. *P. tobagensis* Urb.

Urb. Symb. Ant. 7. 441.

Shrub, glabrous; *lvs.* ovate, obovate or broadly oval, apex triangular, acuminate, more or less narrowed at the base, mid-rib prominent above and grooved, bacterial galls beneath, petiole 10-25 mm. long; *stip.* deciduous, ovate or oval, apex obtuse or roundish, 13 mm. long, 7-8 mm. wide, leathery; *fls.* in terminal panicles; *pedu.* 9-11 cm. long, fruiting panicle up to 10 cm. long and 15 cm. wide, 3-5 branched at the base; *pedi.* 3-6 mm. long; *bracts* the lower deciduous, the upper minute, broadly triangular, acute; *cal.* very shortly produced above the fruit, the teeth 0.3-0.4 mm. long; *cor.* white; *berry* shortly obovate, 5-6 mm. long, 4-4.5 mm. broad, obtusely 10-ribbed.

Herb. Trin. 11809, Mt. St. George—Castara Main Road, Williams, Tobago,

13. *P. marginata* Sw.

Urb. Symb. Ant. 7. 462: Gr. Fl. 340.

Shrub 1-1.5 m., glabrous; *lvs.* obovate, lanceolate or oblong, gradually tapering into the petiole, often with prominent bacterial galls beneath; *stip.* deciduous, entire, united at the base, lobes oblong, bluntish or acute, glabrous, membranous, 7-8 mm. long; *fls.* in terminal, lax, trichotomous panicles; *pedu.* shorter than the panicle, branches glabrous or pubescent; *pedi.* short; *bracteoles* minute; *cal.* minutely 5-toothed; *cor.* lobes 5, as long as the tube; *berry* sub-globose, seeds deeply grooved.

Maracas Falls in the northern range, Trinidad.

Cuba, Jamaica, Mexico, Costa Rica, Nicaragua and N. Granada.

14. *P. trinitensis* Urb.

Urb. Symb. Ant. 7. 441.

Small *tree* 4 m., stems glabrous; *lvs.* obovate or obovate-elliptical, acute, 12-16 cm. long, 5-9 cm. wide, petioles 5-15 mm. long; *stip.* deciduous, lanceolate or ovate, obtuse, 25 mm. long; 6 mm. wide; *fls.* in large, terminal, spreading panicles, shorter than the peduncle, branches white, the tops often clothed with short, minute hairs; *pedi.* 2-6 mm. long; *bracts.* triangular, minute, deciduous; *cal.* cup-shaped, 1-1.3 mm. long, margin entire or slightly toothed; *cor.* lobes 5, linear-lanceolate, about twice the length of the calyx tube, recurved; *berry* red, ovate, 6-8 mm. long, 4-5 mm. broad, 10-ribbed, smooth before dried; *seeds* deeply 4-grooved ventrally.

Northern and Central Trinidad.

15. *P. nitida* Willd.

Urb. Symb. Ant. 7. 442.

Stems glabrous; *lvs.* obovate, elliptical or lanceolate, apex acuminate, the base more or less narrowed or obtuse, 8-17 cm. long, 2.5-6.5 cm. wide, petioles 3-15, rarely 25 mm. long; *stip.* deciduous, obovate, or somewhat longer than obovate, roundish or subtruncate at the apex, entire, 7-15 mm. long; *fls.* usually sessile in terminal panicles; *pedu.* 1.5-5 cm. long; *panicles* 4-7 cm. long, slightly hairy; *cal.* limb 0.5 mm. long, entire or nearly so; *cor.* white, 5-6 mm. long, interior of the tube hairy above, lobes lanceolate, equal to, or shorter than the tube; *berry* variable in shape, elliptical to obovate, 6-7 mm. long, 3-4.5 mm. broad, obtusely 10-ribbed.

Urban included two distinct species under *P. nitida*, Imray's 193 and 371 Dominica are distinct from Guilding, St. Vincent and are apparently *P. floribunda* H.B.K. We have not seen either of the specimens cited below and place them under *P. nitida* Willd. on the authority of Britton and Urban respectively.

Chaguanas, Dannouse Apr. 1905, Trinidad. Mason Hall, Tobago.
Montserrat, Guadeloupe, Dominica, Martinique, St. Lucia, St. Vincent.

DOUBTFUL SPECIES.

P. undata Jacq. = *P. lanceolata* Nutt. Trinidad (Sieb. ex Gr. 342 ex Urb. 7. 476). Not otherwise known from Trinidad, and doubtfully native.

33. PALICOUREA Aubl.

Shrubs. *Lvs.* opposite or whorled. *Stip.* variable. *Fls.* in terminal or more rarely axillary panicles. *Cal.* tube hemispherical or top-shaped, limb 5-lobed or entire, persistent. *Cor.* tube elongated, straight or curved, often pouched at the base, lobes 5, valvate, often unequal. *Stam.* 5, inserted in the throat of the corolla. *Style* shortly 2-branched. *Berry* globose or rarely oblong, 2, rarely 3-5 celled, *Seeds* solitary, erect. With difficulty distinguishable from *Psychotria* except for the pouched corolla tube or the unequal lobes.

Leaves in whorls of three.....1. *P. ternata*.

Leaves opposite.

Berry 5-celled, depressed globose.....2. *P. racemosa*.

Berry 2-celled, not depressed.

Stip. lobes obtuse.....3. *P. barbinervis*.

Stip. lobes linear-acuminate.....4. *P. crocea*.

1. *P. ternata* Urb.

Shrub; stems hairy, more so at the tops of the branches; *lvs.* whorled, usually 3, ovate or elliptical, 11-17 cm. long, 4-4.5 cm. wide, the apex acuminate, the base obtuse or acute, slightly hairy above, shortly hairy beneath, especially on the veins, petioles 2-8 mm. long; *stip.* as many as the leaves, persistent, 10-13 mm. long, 2-lobed, lobes united to a short, basal sheath; *fls.* in terminal panicles; *pedu.* 7-8 mm. long, shortly hairy; *bracteoles* 1-2 mm. long; *pedi.* 3-5 mm. long; *cal.* limb 1-5 mm. long, 5-toothed, the teeth triangular; *stig.* bi-lobed, the lobes linear; *berry* 2-celled, 4 mm. long, 5 mm. wide.

Northern Range and Aripo Savannah, Trinidad.
Cuba, Central America.

2. *P. racemosa* (Aubl.) Willd.

Shrub; *lvs.* elliptical, rather acute at the apex and tapering at the base, 22 cm. long, 8-9 cm. broad, membranous, nearly glabrous, veins about 16 on either side, petiole 1 cm. long; *stip.* 4, deciduous, broadly subulate, 8-10 mm. long, 1 mm. broad, rigid; corymbs terminal; *fls.* sessile or shortly pedicelled, the *bracts* linear; *fruit* 5-celled, depressed globose, 5-ridged, 5 mm. diam. the *pedi.* somewhat winged at the base.

Herb. Trin. 7907, La Fortune Trace, Moruga, is the only record. The specimen is very poor but it agrees with the Para specimens of *P. racemosa* (Aubl.) Willd. except for the larger leaves with more veins and rather less prominently ridged fruit.

Guiana, Brazil, Para, Bolivia.

3. *P. barbinervis* DC.

DC. Prod. 4. 530: Urb. Symb. Ant. 4. 603.

Small *tree* 7-10 m., stems glabrous; *lvs.* opposite, elliptical or elliptical-oblong, 12-25 cm. long, 6-12 cm. wide, glabrous except on the veins, which have a row of short, stiffish hairs on either side, more pronounced on the mid-rib beneath; *stip.* persistent, 2-lobed, united to a short, basal sheath, adpressed, those in the pairs overlapping, obtuse, 5-8 mm. long, 3-5 mm. wide, sheath 1-2 mm. long; *panicle* terminal, much branched; *pedu.* angular, usually tetragonal, the whole infl. yellow, except for the whitish *fls.* changing to a purplish-red when in fruit, branches and pedicels hairy; *bracts* 6 mm. long, awl-shaped above the middle; *bracteoles* linear, 1-2 mm. long; *cal.* 5-toothed; *cor.* salver-shaped, pouched at the base and somewhat expanded above, tube 10-12 mm. long, covered with short yellowish hairs, lobes 5, sometimes 4 by abortion, spreading, 1.5-2 mm. long (the corollas are often abortive, drying instead of opening); *berry* ribbed.

Central and Northern Range, Trinidad.
Cuba, Jamaica, Hispaniola.

4. *P. crocea* (Sw.) R. & S.

P. riparia Benth.

Urb. Symb. Ant. 4. 602: Gr. Fl. 345.

Shrub 1-3 m., stems glabrous; *lvs.* opposite, shortly petioled, elliptical-oblong, acuminate, up to 12 cm. long and 6 cm. wide, glabrous above, the veins slightly hairy beneath, more so at their junctions; *stip.* linear, acuminate, 2 mm. long, 2-lobed, much longer than their very short sheath; *fls.* in axillary and terminal panicles; *pedu.* reddish, 4-6 cm. long; *bracteoles* 1 mm. long, triangular, acuminate; *pedi.* orange, about twice as long as the

ripe fruit, changing to purplish ; *cal.* lobes triangular, not exceeding the base of the corolla, sometimes longer and recurved ; *cor.* reddish or yellow, tubular, 1 cm. long, with a ring of white hairs within the tube just above the slightly pouched base, lobes obtuse, 1 mm. long ; *berry* roundish, laterally compressed, 2-celled.

Common throughout Trinidad from sea level to the top of the highest mountain, 3,000 feet, also recorded from Monos. It favours semi-shady or moist situations.

Lesser Antilles, Cent. and Trop. S. America.

DOUBTFUL SPECIES.

P. umbellata DC. given by Gr. Fl. 345, as a Trinidad plant, is, according to Urban probably *Psychotria cuspidata* Bred.

34. RUDGEA Salisb.

Shrubs or small *trees*, glabrous or pubescent. *Lvs.* sessile or petioled, leathery. *Stip.* deciduous, cut above. *Fls.* in terminal panicles. *Cal.* 5-lobed, persistent. *Cor.* funnel-shaped, pubescent, lobes 5, narrow, valvate. *Stam.* 5, inserted in the throat of the corolla. *Stig.* bifid. *Drupe* smooth or somewhat angled, 2-celled. *Seeds* solitary, erect.

1. *R. Freemani* Sprague & Williams. sp. nov.

A small *tree* about 9 m. ; *lvs.* leathery, oblong-elliptical to obovate, apex acute or obtuse, base usually obtuse sometimes narrowing into the petiole, 12-20 cm. long, 4-10 cm. wide, glabrous, petioles 5-12 mm. long ; *stip.* 2, deciduous, somewhat woody, united at the base, the margin having 6 unequal teeth ; *panicle* white, the branches turning green as the fruit ripens ; *fls.* sessile, in clusters of 3-5 on the branches of the inflorescence ; *bracts* ovate-lanceolate, 3-6 mm. long ; *cal.* lobes 5, triangular, hairy ; *cor.* lobes fleshy, linear-lanceolate, 5-6 mm. long, longer than the tube, reflexed, horned at the tips, the throat densely hairy ; *stam.* barely exceeding the tube ; *stig.* much exceeding the anthers ; *drupe* roundish or ridged when dry, glabrous, 1 cm. diam., scarlet or black when ripe. A pretty tree both in flower and fruit.

This species has been confused with *R. Hostmanniana* Benth. from which it differs by its obtuse or obtusely cuneate bases of the leaves, the anastomosing lateral veins which are usually branched above the middle and the more minute indumentum of the inflorescence.

Herb. Trin. 9358, Freeman, near Arima: 10677, Williams, Arima : 10793, R.O.W. and E. E. C. : 10777, R.O.W and E. E. C., Tabaquite : Herb. Kew, 5844, Eggers, Tobago.

Very common in woods throughout Trinidad, Tobago.
Grenada.

35. GEOPHILA Don.

Creeping *herbs*. *Lvs.* long petioled, heart or kidney shaped. *Stip.* undivided, usually ovate. *Fls.* in cymes surrounded by linear or leafy bracts. *Cal.* short, 5-7 toothed, persistent. *Cor.* funnel or salver shaped, hairy in the throat. *Stam.* 4-7, inserted into the corolla tube. *Stig.* bifid. *Berry* 2-celled. *Seeds* solitary, flat on the ventral side.

1. **G. herbacea** (Jacq.) K. Schum.

G. reniformis Don.

Gr. Fl. 347.

Annual, stems slender, creeping and rooting at the nodes; *lvs.* 2-3 cm. long and about as wide, rounded or bluntish at the top, pubescent above, glabrous beneath, the petioles variable, 1-7 cm. long, hairy on the upper side; *stip.* ovate, 1.5-2 mm. long; *cymes* axillary, stalked, few-flowered; *bracts* linear, acuminate, nearly as long as the pedicels; *cal.* teeth 5, lanceolate, 2 mm. long; *cor.* white; *berry* scarlet, ripening golden yellow.

General, Trinidad.

Cosmopolitan Tropical.

36. CEPHAELIS Sw.

Shrubs or *sub-shrubs*, rarely perennial *herbs*. *Stip.* entire or bi-lobed, free or united at the base. *Fls.* somewhat small, crowded in terminal or axillary stalked or sometimes sessile involucrate heads. *Cal.* bell-shaped or oblong, 4-7 toothed, persistent. *Cor.* trumpet or salver-shaped, the tube short or elongated, lobes 4-5, valvate in the bud, throat usually hairy. *Stam.* usually 5, sometimes 4, inserted in the throat of the corolla. *Fruit* a dry or fleshy drupe, 2 or rarely 3-4 celled. *Seeds* solitary, erect, oblong, more or less compressed, smooth or ribbed.

Perennial herb.....1. *C. tontaneoides*.

Shrubs.

Infl. sessile or subsessile.

Stip. lobes triangular.....2. *C. axillaris*.

Stip. lobes bristle like, deciduous.....3. *C. muscosa*.

Infl. stalked.

Stip. persistent.

Cor. yellow, exceeding the bracteoles...4. *C. tomentosa*.

Cor. mauve, shorter than the

bracteoles.....5. *C. pubescens*.

Stip. deciduous.....6. *C. peduncularis*.

1. *C. tontaneoides* (Britt. & Standl.) comb. nov.

Evea tontaneoides Britt. & Standl.

A prostrate, perennial herb, 20-30 cm. high, the whole plant thickly clothed with long hairs, stems slender; *lvs.* lanceolate or ovate, acuminate, 3.5-6 cm. long, 15-23 mm. wide; *stip.* persistent, bi-lobed, united to a basal sheath, lobes linear, acuminate, 3 mm. long; *infl.* terminal or axillary; *pedu.* 8-15 mm. long; *involucral bracts* about 8, lanceolate or ovate-acuminate or obovate; *bracteoles* small, linear, acuminate; *cal.* lobes linear; *cor.* white, exceeding the bracts.

In woods, Caparo, Cumuto, Cap-de-Ville and Mora Forest, Trinidad.

2. *C. axillaris* Sw.

Shrub 1-2 m., stems glabrous, internodes obtusely angled; *lvs.* lanceolate, oblong or elliptical, acuminate, narrowing into the petiole, glabrous, slightly hairy on the mid-rib beneath, 10-17 cm. long, petioles 2-4.5 cm. long; *stip.* persistent, 2-lobed, lobes triangular, shorter than their sheath; *infl.* sessile, axillary, subglobose, 1.5-2 cm. diam.; *involucral bracts* 4-6, ovate, obtuse, exceeded by the fls.; *bracteoles* obovate, incised and fringed with hairs at the top; *cal.* 5-toothed; *cor.* small, tubular.

Northern Range, Trinidad.

West Indies and Trop. S. America.

3. *C. muscosa* Sw.

Shrub 2-3 m., glabrous; *lvs.* lanceolate, oblong or elliptical-oblong, acuminate, 8-11 cm. long, 3-4 cm. wide, petioles 3 mm. long; *stip.* united, slightly bi-dentate, persistent, with deciduous bristles; *infl.* axillary, sessile or with a thickened peduncle about 5 mm. long, head 1-1.3 cm. diam.; *involucral bracts* about 4, toothed, purplish; *cal.* minute, 5-toothed; *cor.* white, tubular, minute; *drupe* rounded, succulent when ripe, about 1-1.5 cm. long; *seeds* grooved.

General in woods throughout Trinidad. Pigeon Hill, Tobago.
West Indies and Tropical S. America.

4. *C. tomentosa* Willd.

Shrub 1-2 m., stems hairy; *lvs.* elliptical or elliptical-oblong, with long, stiffish hairs above and short adpressed hairs beneath, petioles about 1 cm. long; *stip.* persistent, 2-lobed, united to a basal sheath, lobes lanceolate-awl-shaped, 8 mm. long, sheath 5 mm.; *fl. heads* long stalked, axillary or terminal, densely crowded; *involucral bracts* 2, scarlet, large and showy, heart-shaped or ovate, united and tetragonal at the base, hirsute;

bracteoles yellowish, irregular, spatulate or oblong, hairy; *fls.* much exceeding the *bracteoles*; *cal.* cup-shaped, lobes 5, awl-shaped, hairy, 2 mm. long; *cor.* yellow, hairy outside and with a ring of hairs inside slightly above the middle of the tube; *drupe* royal blue, 2 cm. long, succulent; *seeds* 2, oblong, black, 6 mm. long.

General in woods throughout Trinidad.
Mexico to Guiana and Peru.

5. *C. pubescens* Hoffm. & G. & A. DC.

Uragoga pubescens (Hoffm. & G. & A. DC.) Urb. in Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8. 30 (1921).

Shrub. 1-3 m., stems swollen at the nodes, pubescent; *lvs.* lanceolate or elliptical, acuminate, slightly hairy above, pubescent beneath especially on the veins, petioles about 4 mm. long; *stip.* persistent, lanceolate-awl-shaped, 2-lobed, united to a basal sheath, lobes 6-7 mm. long; *fls.* in densely crowded, stalked heads, 3-3.5 cm. diam.; the outer row of *involucral bracts* 4, purple or greenish, large, ovate and acuminate, pubescent, the secondary ones numerous; *fls.* not exceeding the green or purplish, hairy *bracteoles*; *cal.* cup-shaped, 1 mm. long, lobes 5, linear, 0.5 mm. long, glabrous or nearly so; *cor.* mauve, salver-shaped, 5-lobed, hairy on the lobes and at the throat, tube 4 mm. long, lobes ovate, 1.5 mm. long; *drupe* globose or ovate, 8 mm. long, succulent; *seeds* pendulous, 3 mm. long.

Quare River, Aripo Road, Arima Wood, Maraval and Maracas, Trinidad.

DOUBTFUL SPECIES.

6. *C. peduncularis* Salisb.

Shrub or small *tree*, 1-3 m., stems glabrous or nearly so; *lvs.* elliptical-oblong, or slightly obovate, shortly acuminate, narrowed at the base, leathery, glabrous or nearly so; *stip.* deciduous, exposing a ring of hairs at the nodes, broadly oval or ovate, bifid, 1.5 cm. long, hairy near the base outside; *infl.* a stalked, globose, terminal or subterminal head, 1.5-2 cm. diam.; *pedu.* 3-6 cm. long, glabrous or slightly hairy; *fls.* 5-10 mm. long, numerous and crowded, shortly pedicellate; *involucral bracts* united at the base, about 1 cm. long; *bracteoles* small; *cal.* shortly 5-toothed, much shorter than the corolla, persistent on the fruit; *cor.* white, tube slender, limb short; *fruit* oval, 5 mm. long, ribbed.

An African plant recorded by Oliver in Flora Trop. Africa, Vol. III, p. 223 from Upper and Lower Guinea. The only local record (except a cultivated specimen from the R. Botanic Gardens, Trinidad) is from Arima-Guanapo collected by Miss McLean in the forest in 1904.

37. DIODIA L.

Herbs, annual or perennial, decumbent, often rigid. *Stip.* united, sheathing, bearing several bristles. *Fls.* small, axillary. *Cal.* tube ovoid or obovoid, lobes persistent. *Cor.* funnel-shaped, lobes 4 (-6), short, ovate-triangular, valvate. *Stam.* 4 (-6), inserted in the throat of the corolla, exserted. *Fruit* ovoid, oblong, or subglobose, of 2 indehiscent carpels, which fall away when ripe. *Seeds* oblong, convex on the back, longitudinally furrowed at the top.

I. D. sarmentosa Sw.

Gr. Fl. 349 : Urb. Symb. Ant. 4. 606.

Climbing *herb* or *subshrub*, stem obtusely tetragonal, more or less hairy, rough on the angles; *lvs.* shortly petioled, oblong-lanceolate, pointed, 2.5-4 cm. long, rough; *stipular bristles* hairy, 4 mm. long; *fls.* few in the axils; *cal.* lobes 4, lanceolate, half or one-third as long as the carpels; *cor.* white, 3 mm. long, tube nearly as long as the calyx limb; *fruit* ovoid-oblong, 4 mm. long, glabrous, hard.

Herb. Trin. 7265 and Crueger, Cedros, in Herb. Kew.

Tropical America, W. Indies, Trop. Africa and Java.

38. HEMIDIODIA K. Schum.

Perennial *herbs*. *Stip.* sheathing, bearing several bristles. *Fls.* white, small, in axillary clusters. *Cal.* lobes 4, minute, persistent. *Cor.* funnel-shaped. *Stam.* 4, inserted in the throat of the corolla, exserted. *Fruit* of two carpels falling away and opening at the base. *Seeds* oblong, with a ventral furrow.

I. H. ocimifolia (Willd.) K. Schum.

Spermacoce ocimifolia Willd.

Urb. Symb. Ant. 4. 606.

Perennial *herb*, 30-60 cm., stem rigid, erect, subcylindrical, 4-keeled, pubescent, the keels hairy; *lvs.* lanceolate or oblong, shortly petioled, acuminate, 3-7 cm. long, pubescent, rough on the margins; *stip.* bristles about the length of the sheath, 3-4 mm.; *cal.* lobes triangular; *fruit* oblong, hairy, 3 mm. long, the carpels falling away when ripe and leaving the lower part of the septum attached to the plant, so that the seeds are exposed at the base of each carpel; *seeds* black, oblong, minutely pitted.

A species sometimes confused with *Spermacoce tenuior*, but easily distinguished by the fruit.

Roadsides and waste places, Trinidad and Tobago.

Central America, W. Indies and the Malayan Archipelago.

39. SPERMACOCE *Dill. ex L.*

Annual or perennial *herbs* or *sub-shrubs*. *Stip.* sheathing, bearing several bristles. *Fls.* small, in terminal and axillary globose clusters. *Cal.* 4-lobed, with or without small teeth between the lobes, persistent. *Cor.* funnel-shaped or salver-shaped, 4-lobed, valvate. *Stam.* 4, inserted at the base of the corolla tube. *Stig.* entire or bifid. *Caps.* 2-celled, leathery or brittle, one carpel opening ventrally, the other remaining closed. *Seeds* solitary in the cells, oblong with a ventral groove.

1. *S. tenuior* L.

Gr. Fl. 349 : Urb. Symb.-Ant. 4. 608.

Annual 15-90 cm., stem slender, erect and simple or branching and decumbent at the base, glabrous or pubescent, tetragonal; *lvs.* shortly petioled, lanceolate or linear, acuminate, rough; *stip.* bristles longer than the sheath; *cal.* lobes 4, triangular to awl-shaped, much shorter than the fruit; *cor.* white; *caps.* obovate, hairy, about 3 mm. long, with 3 calyx lobes on the closed, and one on the open carpel; *seeds* black, oblong, minutely roughened.

A variable species, but easily recognised by the fruit.

General, Trinidad.

C. America and W.I.

40. BORRERIA *Meyer.* (Borreria Miq. in Gr. Fl.)

Annual or perennial *herbs* or *sub-shrubs*, habit of *Spermacoce*. *Cal.* 2- or 4-lobed. *Stam.* 4, inserted in the throat of the corolla or lower down. *Caps.* 2-celled, both carpels dehiscing ventrally.

Caps. septicial above the middle.....1. *B. laevis*.

Caps. septicial to the base.

Lvs. narrow (at least 4 times as long as wide)

Stem subcylindrical.....2. *B. spinosa*.

Stem tetragonal (at least above)

Heads of flowers spherical.....3. *B. verticillata*.

Heads not spherical.....4. *B. eryngioides*.

Lvs. ovate (or less than 4 times as long as wide)

Cal. lobes as long as the fruit.....5. *B. ocymoides*.

Cal. lobes 1/3 to 1/2 as long as the fruit.

Plant erect, *lvs.* yellowish-green.....6. *B. latifolia*.

Plant diffuse, *lvs.* dark green.....7. *B. Bartlingiana*.

1. *B. laevis* (*Lam.*) *Griseb.*

Gr. Fl. 349 : Urb. Symb. Ant. 4. 607.

Annual, 20-50 cm., stem branched, more or less decumbent at the base, slightly angled; *lvs.* shortly petioled, elliptical-lanceolate to lanceolate, acuminate, variable in size, commonly about 5 cm. long, slightly pubescent; *stip.* bristles as long as the sheath,

3-5 mm.; *cal.* lobes 4, equal, ovate, much shorter than the fruit; *cor.* white, fading about midday, its lobes 2 mm., hairy; *caps.* obovate, 2-3 mm. long, dehiscent only to the middle, the septum persistent below; *seeds* oblong, with well-marked transverse furrows.

A common weed amongst grass, Trinidad and Tobago.
C. America and W. Indies.

2. **B. spinosa** Cham. and Schlecht.

B. densiflora DC.

Urb. Symb. Ant. 8. 690.

Annual, 30-70 cm., stem rigid, erect, cylindrical below to obtusely tetragonal above, rough on the angles; *lvs.* sessile, linear-lanceolate, about 8 cm. long, 1 cm. wide, rough on the margins and midrib; *stip. bristles* about as long as the sheath, 6 mm.; *heads* and whorls many-flowered, 1-2 cm. diam.; *cal.* lobes 2, lanceolate, one-third as long as the oblong fruit; *seeds* black, oblong, roughened.

Cedros and Icacos, Trinidad. Tobago (ex Urban).
Trop. America.

3. **B. verticillata** (L.) Meyer. White Broom.

Urb. Symb. Ant. 4. 608 : Gr. Fl. 350.

Perennial herb, 30-50 cm., stems wiry, erect, tetragonal (at least above), glabrous, sometimes with small warty spines on the angles; *lvs.* sessile, lanceolate or linear, shortly acuminate, 3-5 cm. long, glabrous, mid-rib often warty below; *stip. bristles* about as long as the sheath, 2-3 mm.; *heads* and whorls many-flowered, spherical, 1 cm. diam; *cal.* lobes 2 (-4), linear, blunt, barely as long as the fruit; *cor.* white; *caps.* ovate-oblong, 2 mm.; *seeds* roughish.

A common weed, somewhat variable, but easily recognisable by the conspicuous spherical heads of flowers.

Throughout Trinidad and Tobago.

Florida to Argentina; also in W. Africa, Cape Verde Is. Mozambique
(K. Sch. Nat. Pfl.)

4. **B. eryngioides** Cham. and Schlecht.

Perennial herb, 25-40 cm., stem wiry, erect, tetragonal, glabrous; *lvs.* sessile, oblong-linear, bluntish, 1-3.5 cm. long, rough above and with warty spines along the lower side of the mid-rib; *stip. bristles* longer than the sheath, 3-4 mm.; *cal.* lobes 4, occasionally 3 or 2, half as long as the oblong fruit; *cor.* white, minute, the tube very short, the lobes less than 1 mm., hairy within; *caps.* 1 mm. long; *seeds* minutely pitted.

Resembles *B. verticillata* in stems and leaves, but is distinguished at a glance by the less prominent flower heads and smaller flowers.

Herb. Trin. 4977. General, Trinidad.

A Brazilian species, not recorded from any of the other West Indian Islands.

5. ***B. ocymoides*** (*Burm.*) *DC.**B. parviflora* *Mey.*

Gr. Fl. 349 : Urb. Symb. Ant. 4. 607.

Annual, 10-30 cm., stem erect, tetragonal, usually branched; *lvs.* sessile or shortly petioled, oblong-lanceolate or elliptical, blunt or pointed, averaging 2 cm. in length, but very variable, slightly pubescent; *stip. bristles* longer than the sheath, 3-4 mm.; *cal. lobes* 4, lanceolate, about as long as the fruit; *caps.* obovate, 1 mm.; *seeds* minute, coarsely pitted.

General, Trinidad and Tobago,
Cosmopolitan Tropical.

6. ***B. latifolia*** (*Aubl.*) *Schum.**Spermacoce latifolia* *Aubl. Pl. Guiana* 1. 55. t. 19.

Annual, 50-90 cm., stem stout, erect, obtusely tetragonal, channelled on two sides, more or less pubescent; *lvs.* yellowish-green, sub-sessile or shortly petioled, oblong-lanceolate to ovate, acute or acuminate, 3-8 cm. long, 1.5-3.5 cm. wide, hairy on both sides, margins rough, veins prominent; *stip. bristles* much longer than the sheath, 5-12 mm., hairy, sheath 2-3 mm.; *whorls* many-flowered; *cal. lobes* 4, triangular to lanceolate, pubescent, one-third to one-half as long as the fruit; *cor.* salver-shaped, white, tube 4 mm. long, hairy within, lobes 4, 1.5 mm. long, glabrous; *stam.* 4, inserted in the throat; *anths.* exerted; *stig.* bifid; *caps.* subglobose, 3 mm. long, more or less hairy; *seeds* brown, minutely pitted, 2-2.5 mm. long, the ventral groove large.

Natural savannahs and roadsides, Trinidad.
Mexico to Brazil.

7. ***B. Bartlingiana*** *DC.**DC. Prod.* 4. 544 : *Gr. Fl.* 350.

Annual, stem often reddish, decumbent, rooting at the lower nodes, and freely branched at the base, tetragonal, more or less hairy on the angles; *lvs.* dark green; *whorls* few-to many-flowered; *cor.* white or bluish.

United by some authorities with *B. latifolia* from which it cannot be distinguished by dimensions or floral characters. It is, however, a very distinct plant in the field, both in habit and in habitat.

General in pastures and cultivated land, Trinidad.
Mexico to Brazil.

41. TOBAGOIA Urb.

Sub-shrub with the general habit of *Spermacoce* or *Borreria*. *Fls.* white or whitish, perfect, of two kinds, *viz.*: long-styled and short-styled. *Bracts* broad, unequally incised. *Cal.* 4-lobed, persistent. *Cor.* 4-lobed. *Stam.* 4. *Fruit* of 2 carpels, not separating when ripe.

1. *T. maleolens* Urb. Fedde Rep. 14 (1916) 343.

Sub-shrub 0.6-1 m. high, with a strong, unpleasant odour recalling that of carbon disulphide, stems marked with four lines decurrent from the base of the petioles, flat or concave on two sides, convex on the others, glabrous; *lvs.* oblong-lanceolate or lanceolate, acuminate, rough above, very shortly hairy beneath, petioles 3-8 mm. long, blades 7-10 cm. long, 2-3 cm. wide ex Urb., (in our material, Herb. Trin. 10413 and 11397, the leaves are 4-6 cm. long and 1-2 cm. wide); *stip. sheath* 0.5-1 mm. long, bristles 3, remote from each other, 2-4 mm. long, somewhat thickened at the tip; *fls.* 10-20 in each axil; *cal.* lobes 0.5-0.6 mm. long; *cor.* 3 mm. long, its lobes in long-styled flowers ovate-lanceolate, $1\frac{1}{2}$ times as long as the tube, in short-styled flowers triangular-ovate, $\frac{1}{2}$ as long as the tube; *fil.* in long-styled flowers 0.4 mm. long, inserted below the top of the corolla tube, in short-styled flowers 1 mm. long, inserted between the corolla lobes; *style* bifid at the top, 4 mm. long in long-styled flowers, 2 mm. in short-styled; *fruit* very shortly hairy, 1.5 mm. long, indehiscent (in material examined); *seeds* blackish, about 1 mm. long, pitted, with a ventral groove.

Several localities, Tobago.

Only known from Tobago.

42. ENDLICHERA Presl.

Climbing *herbs* or *sub-shrubs*. *Lvs.* petioled. *Stip.* sheathing bearing several bristles. *Fls.* white, small, in terminal paniced umbels. *Cal.* lobes 4, persistent. *Cor.* lobes 4. *Stam.* exerted. *Stig.* bifid. *Fruit* a capsule. *Seeds* winged.

1. *E. umbellata* (Spreng.) K. Schum.

Emeorrhiza brasiliensis Walp.

Vine, 5 m. or more, stem cylindrical below, tetragonal or at least angled above; *lvs.* shortly petioled, lanceolate, acuminate, 3-6 cm. long, glabrous; *stip.* joined to the petioles, the bristles about as long as the sheath, 3-4 mm.; *cal.* lobes acuminate, 1 mm. long; *cor.* spreading; *caps.* 2 mm. long, 2-valved, the valves bifid at the apex, and when open exceeding the persistent calyx lobes; *seeds* fused to a loose part of the septum, which forms a wing projecting at both ends like a tail.

General in the northern part of Trinidad.

Trop. S. America.

43. MITRACARPUM Zucc.

Herbs, usually hairy. *Stip.* sheathing, bearing several bristles. *Fls.* white, small, in terminal or axillary globose clusters. *Cal.* persistent, lobes 4, two of them longer than the others. *Cor.* funnel-shaped. *Stam.* inserted in the top of the tube. *Caps.* membranous or leathery, dehiscing by a transverse slit around the middle.

I. **M. hirtum** DC.

M. villosum Cham. and Schlecht.

Annual, 20-60 cm., stem erect, simple or branched, hairy with a short down, tetragonal; *lvs.* oblong or lanceolate, with a minute terminal bristle; *stip.* bristles shorter than the sheath, 2 mm.; *heads* and *whorls* many-flowered; *cal.* lobes 4, 2 awl-shaped or lanceolate, longer than the fruit, 2 shorter and membranous; *cor.* white, the lobes about 1 mm. long; *stig.* bifid; *caps.* 1.5 mm.; *seeds* oval, with a cross-shaped furrow which makes them appear 4-lobed. Habit of *Spermacoce* but easily distinguished by the fruit.

A weed of cultivation, and on waste land, Trinidad.

Trop. America and W. Indies. Also reported from the Society Islands.

44. PERAMA Aubl.

Small annual *herbs*, stem erect, rigid. *Lvs.* sessile. *Stip.* small or absent. *Fls.* in terminal stalked heads. *Cal.* 2-lobed. *Cor.* funnel-shaped, shortly 4-lobed. *Caps.* 3-celled.

I. **P. hirsuta** Aubl.

Annual, 5-35 cm., stem slender, simple or branched, cylindrical, hispid with scattered hairs, leafy below the middle; *lvs.* ovate-lanceolate, the uppermost linear-lanceolate, 0.5-1 cm. long, hispid, palmately veined, the leaf-bases joined into a very short stem-clasping sheath; *stip.* absent; *fl. heads* ovoid, 5 mm. diam.; *cal.* lobes rigid, linear, longer than the fruit, 2-3 mm. with prominent marginal bristles; *cor.* yellow, the tube as long as the calyx lobes, the lobes triangular, about 1 mm.; *stam.* inserted in the throat; *stig.* 3-fid; *caps.* dehiscing in 2 valves, septical on one side, loculicidal on the other; *seeds* 3, 3-sided.

In savannahs, such as those of Aripo and Piarco, Trinidad.

Venezuela, the Guianas, and Brazil.