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FLORA OF JAMAICA

VOL. VII.

DICOTYLEDONS

FAMILIES RUBIACEÆ TO COMPOSITÆ



# FLORA OF JAMAICA

CONTAINING DESCRIPTIONS OF  
THE FLOWERING PLANTS KNOWN  
FROM THE ISLAND

BY

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(NATURAL HISTORY)

VOL. VII.

BY THE LATE

SPENCER LE MARCHANT MOORE, B.Sc., F.L.S.

AND

A. B. RENDLE

DICOTYLEDONS

FAMILIES RUBIACEÆ TO COMPOSITÆ

WITH 100 TEXT ILLUSTRATIONS

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## P R E F A C E

THE present volume which continues the systematic account of the flowering plants of Jamaica has been prepared by Dr. Rendle.

Owing to the death of Mr. Fawcett, Dr. Rendle has carried on the work single-handed, and it was not until his retirement from the Keepership that he was able to devote much time to it. My only part has been to read the proofs.

J. RAMSBOTTOM.

DEPARTMENT OF BOTANY,  
BRITISH MUSEUM (NATURE HISTORY),  
*June, 1936.*

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## INTRODUCTION

THE present volume includes the families of Dicotyledons characterised by united petals and an inferior ovary. The delay in production is due to the death of my old friend and fellow-worker, William Fawcett, which coincided with the publication of the last volume. I was unable while still in office at the British Museum to continue the work but was fortunate in having the services of the late Spencer Moore, who has prepared the account of the Compositæ—a family to which he had devoted much attention—and the greater part of the Rubiaceæ, his work on that family being interrupted by his death in 1931. For the rest of the volume I am responsible.

The volume including the sympetalous families with a superior ovary (Vol. VI.) is in hand, and will complete the account of the Dicotyledons. There will remain one other volume (Vol. II.) to complete the Monocotyledons, excepting the Orchids which were the subject of the first volume.

Dr. W. R. Maxon, of the United States National Museum, has in preparation a volume on the Ferns which, it is hoped, will be ready for publication next year.

I am again indebted for the loan of specimens to the Government of Jamaica, and to various institutions and individuals, especially to the Directors of the Royal Botanic Gardens, Kew and Edinburgh, the Bristol Museum (for the continued loan of Dr. Broughton's herbarium), and the Naturhistoriska Riks-Museum at Stockholm (for the loan of some of Swartz's original specimens).

The work has been done in the Department of Botany.

British Museum, with the permission of the Keeper, Mr. J. Ramsbottom, who has given me every facility.

The drawings for the illustrations are mainly the work, under the supervision of Mr. Moore and myself, of Miss Beatrice O. Corfe, whose services we were able to secure after the death in 1929 of Mr. Percy Highley, who had made the drawings for previous volumes. The earlier illustrations for the *Compositæ* (Figs. 48-56, 58-63, 66-68, and 70-74) are from Mr. Highley's drawings.

A. B. RENDLE.

*March*, 1936.

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### NAMES OF COLLECTORS

(In addition to those cited in previous Volumes)

RENDLE, A. B. (1933). SANGSTER, MRS. (née I. Maxwell) 1927.

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### ADDENDUM.

To follow *Lobelia acuminata* Sw., page 142.

2\*. *L. alexia* E. Wimmer in *Fedde Rep. Sp. Nov.* xxxviii. 86 (1935); a shrub 2–4 ft. high; leaves membranous, glabrous, lanceolate or subobovate-lanceolate, 2–2.5 dm. by 3–5.2 cm. acuminate, tapering below to the petiole, margin sharply toothed, teeth obliquely triangular turned forwards, 2–3 mm. apart; raceme 6–10 cm. long; bracts linear-lanceolate, shorter than the 3–4 cm. l. pedicel and often adnate to its base; bracteoles above the middle of the pedicel, about 1 cm. long; calyx-lobes glabrous, somewhat linear, acute, minutely toothed, 1.5–1.7 cm. l.; corolla reddish, glabrous, curved, 3 cm. l., lobes all deflexed, the two lateral somewhat linear, acute, 1 cm. l.; staminal tube pubescent; anther-tube glabrous or pubescent.—*Tupa conglobata* Griseb. *Fl. Brit. W. Ind.* 387 (non A.DC.) as regards Wulschlägel's specimen only. *Forma grandiflora Lobeliae acuminatae Sw., Urb. Symb. Ant. i.* 453.

In shady woods, *Wulschlägel* 909 (Herb. Vienna).

I have not seen Wulschlägel's specimen. The species seems very close to *L. acuminata* Swartz differing apparently only in the more pronounced toothing of the leaves.

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### CORRIGENDA.

For *Psychotropium*, pp. 86, 89, 106, 111, near bottom of page, read *Psychotrophum*.

For *Stenostoma*, p. 60, below middle of page, read *Stenostomum*.

CONSPECTUS OF THE FAMILIES CONTAINED  
IN THIS VOLUME

DICOTYLEDONS (*continued*)

Stems with open bundles. Leaves net-veined. Floral parts in fours or fives. Embryo with two cotyledons.

*SYMPETALÆ. EPIGYNÆ.*

Families with petals united and ovary inferior.

Fam. 121. **Rubiaceæ.** Flowers bisexual (hermaphrodite), regular, usually in decussate panicles or cymes, sometimes aggregated into heads. Sepals, petals and stamens 4 or 5, carpels 2. Calyx-segments crowning the ovary, generally small, often persistent in the fruit. Corolla generally funnel-shaped, salver-shaped or rotate. Stamens inserted on the corolla-tube. Ovary crowned by a more or less developed fleshy disc, usually 2-celled with one to numerous anatropous ovules in each chamber. Fruit a capsule, berry or drupe. Shrubs or trees or sometimes herbs with opposite or whorled stipulate entire leaves.

Fam. 122. **Caprifoliaceæ.** Flowers bisexual, regular or zygomorphic,\* parts usually in fives with often reduction in the number of the carpels. Calyx small, 5-toothed or -lobed. Corolla rotate, or tubular and two-lipped. Stamens inserted on the corolla-tube. Ovary 1-5-celled, with one to many pendulous ovules in the inner angle of each chamber. Fruit a berry or one- to several-stoned drupe. Woody plants with decussate usually exstipulate leaves and cymose showy flowers.

\* Divisible by a longitudinal section into similar halves in one plane only.

Fam. 123. **Campanulaceæ.** Flowers bisexual, regular or zygomorphic, parts in fives. Calyx-segments generally well-developed and persistent in the fruit. Petals variously united or free nearly to the base. Stamens inserted on the top of the ovary; filaments free or united below, anthers free or united. Ovary inferior or half-inferior, 2-5-celled; ovules numerous on axile placentas. Style often with a crown of pollen-collecting hairs. Fruit a capsule, with numerous small seeds. Annual or perennial herbs or shrubs, generally with a milky juice and simple alternate exstipulate leaves.

Fam. 124. **Goodeniaceæ.** Flowers bisexual, zygomorphic, in few-flowered cymes, parts in fives with reduction to 2 in the pistil. Calyx-limb a mere border on the top of the ovary. Corolla split on one side. Stamens free, inserted on the top of the ovary. Ovary generally 2-celled, with one erect anatropous ovule in each cell; style slender, stigma forming a collecting cup for the pollen. Fruit a drupe. Herbs or small shrubs without latex.

Fam. 125. **Compositæ.** Flowers (florets) small, bisexual, unisexual, or neuter, sessile in heads (capitula) which are surrounded by small bracts (involucre). Parts generally in fives with reduction to 2 in the pistil. Calyx-limb absent or represented by a 'pappus' in the form of a ring, hairs, bristles or scales that persist in the fruit. Corolla regular, two-lipped or ligulate. Stamens inserted on the corolla-tube, filaments free, anthers united laterally and dehiscing introrsely. Ovary one-celled with one anatropous ascending ovule. Style with 2-lobed stigma bearing collecting hairs on the outer face. Fruit a one-seeded inferior achene often crowned by the pappus. Herbs or shrubs with generally alternate, sometimes opposite, exstipulate leaves.

*Note.*—The descriptions of the Families are drawn up with a view to the determination of Jamaican specimens, and therefore are not necessarily generally applicable.

## KEY TO FAMILIES.

[The figures before the name refer to the number of the family, those  
after the name to the page.]

- Flowers small, crowded into heads surrounded by an involucre of small bracts..... 125. *Compositæ* .....150
- Flowers not thus arranged.
- Leaves opposite or whorled.
- Stipules present ..... 121. *Rubiaceæ*..... 1
- Stipules absent or minute ..... 122. *Caprifoliaceæ* .....132
- Leaves alternate.
- Calyx-limbs well developed, persistent in fruit; fruit a capsule with numerous small seeds..... 123. *Campanulaceæ*.....136
- Calyx-limb obsolete; fruit a 2-seeded drupe..... 124. *Goodeniaceæ*.....148





# DICOTYLEDONS

## FAMILY CXXI. RUBIACEÆ.

(Genera 1-35 by Spencer Moore.)

TREES or shrubs, or sometimes herbs, rarely climbing. Leaves opposite or whorled, simple, entire; stipules often united forming a sheath, leaf-like in the tribe *Galieæ*. Flowers hermaphrodite, regular, usually in panicles or cymes, sometimes aggregated into heads. Calyx-tube united with the inferior ovary, segments 5-4, generally open in æstivation, crowning the ovary and often persistent in the fruit. Corolla generally funnel-shaped, salver-shaped or rotate; segments 5-4, with valvate, imbricate or contorted æstivation. Stamens 5-4, inserted on the corolla-tube or at the throat; filaments free; anthers introrse. Ovary crowned by a more or less developed disk, inferior, rarely half-inferior, one- to several-, usually two-, celled; ovules anatropous, one to indefinite in each cell; style filiform, often bifid or divided above. Fruit a capsule, berry or drupe. Seeds with a straight or curved embryo, generally in the base or axis of a fleshy, cartilaginous or horny endosperm.

Species about 4600, mainly in the warmer parts of the earth but extending into the temperate zones.

### CONSPECTUS OF TRIBES AND GENERA.

Ovules many in each cell of the ovary (few in *Lucya*).

Fruit a capsule.

Seeds winged or appendaged..... I. *Cinchoneæ*.

Seeds not winged

Shrubs or trees.

Corolla-lobes valvate in bud ..... II. *Condamineæ*.

Corolla-lobes imbricate in bud ..... III. *Rondeletieæ*.

Small herbs ..... IV. *Hedyotideæ*.

- Fruit indehiscent, berry-like, sometimes leathery.
- Corolla-lobes valvate in bud ..... V. *Mussaenda*æ.
- Corolla-lobes imbricate or contorted in bud.... VI. *Gardenia*æ.
- Ovules solitary in each cell of the ovary.
- Ovule pendulous from the top of the cell.
- Stamens inserted at or near the throat of the corolla ..... VII. *Guettarda*æ.
- Stamens inserted at the base of the corolla-tube ..... VIII. *Chiococca*æ.
- Ovule attached to the septum or to the base of the cell.
- Corolla-lobes contorted or imbricate ..... IX. *Ixore*æ.
- Corolla-lobes valvate.
- Stipules leaf-like ..... XIV. *Galie*æ.
- Stipules not leaf-like.
- Ovule erect from the base of the cell ... XII. *Psychotria*æ.
- Ovule attached to the septum.
- Fruit fleshy ..... X. *Morinde*æ.
- Fruit dry ..... XIII. *Spermacoce*æ.
- Ovules geminate in a one-celled ovary ..... XI. *Coussare*æ.
- Tribe I. *Cinchone*æ. Trees or shrubs, sometimes climbing. Ovules ascending. Seeds numerous, winged or with a tuft of hairs.
- Corolla-lobes valvate in bud.
- A shrub or tree ..... 1. *Macrocnemum*.
- Climbing shrubs ..... 2. *Manettia*.
- Corolla-lobes contorted in bud. Seeds with a hairy tuft. Epiphytic..... 3. *Hillia*.
- Corolla-lobes imbricate in bud. A small tree.... 4. *Exostema*.
- Tribe II. *Condamine*æ. Trees or shrubs, often with showy flowers. Corolla-lobes valvate in bud. Ovules numerous, placed horizontally.
- Corolla widely open, about 5 cm. long ..... 5. *Chimarrhis*.
- Corolla funnel-shaped, 2.5-20 cm. long ..... 6. *Portlandia*.
- Tribe III. *Rondeletia*æ. Trees or shrubs. Corolla-lobes imbricate or contorted in bud. Ovules numerous. Seeds very small.
- Capsule loculicidal. Leaves rarely less than 5 cm. long ..... 7. *Rondeletia*.
- Capsule septicidal. Leaves small, crowded, less than 1 cm. long..... 8. *Rachicallis*.
- Tribe IV. *Hedyotide*æ. Herbs with small axillary flowers. Corolla-lobes valvate in bud. Ovules many or few.
- Ovary inferior. Ovules many ..... 9. *Oldenlandia*.
- Ovary half-superior. Ovules few. A small prostrate plant with a tuberous root..... 10. *Lucya*.
- Tribe V. *Mussaenda*æ. Trees or shrubs, sometimes climbing, rarely herbs. Corolla-lobes valvate.
- Inflorescence terminal.
- Inflorescence racemose ..... 11. *Gonzalgunia*.
- Inflorescence capitate ..... 12. *Schradera*.

- Inflorescence axillary.  
 A climbing shrub ..... 13. *Sabicea*.  
 A creeping herb..... 14. *Coccocypselum*.
- Tribe VI. *Gardeniææ*. Shrubs or trees. Corolla-lobes imbricate or contorted.  
 Corolla-lobes contorted. Seeds immersed in pulp.  
 Inflorescence terminal ..... 18. *Casasia*.  
 Inflorescence lateral ..... 19. *Randia*.  
 Corolla-lobes imbricate.  
 Ovary 5-celled ..... 15. *Hamelia*.  
 Ovary 2-celled.  
 Stamens at base of corolla-tube. A spiny shrub ..... 17. *Catesbæa*.  
 Stamens at throat of corolla. Herb with suffrutescent base ..... 16. *Hoffmannia*.
- Tribe VII. *Guettardææ*. Trees or shrubs. Corolla-lobes imbricate. Stamens at throat of corolla. Ovule pendulous from top of the cell. Endosperm absent or scanty.  
 Calyx-limb cup-shaped. Inflorescence axillary.  
 Calyx-limb deciduous ..... 20. *Guettarda*.  
 Calyx-limb persistent ..... 21. *Antirrhæa*.  
 Calyx-limb not cup-shaped. Inflorescence a terminal panicle ..... 22. *Machaonia*.
- Tribe VIII. *Chiococceææ*. Shrubs rarely trees. Corolla-lobes valvate, imbricate or contorted. Stamens inserted at the base of the corolla-tube. Ovule pendulous. Fruit a drupe or capsule.  
 Ovary 5-10-celled ..... 23. *Erithalis*.  
 Ovary 2-celled.  
 Corolla-lobes valvate.  
 A climbing shrub ..... 24. *Chiococca*.  
 A tall resinous shrub ..... 25. *Phialanthus*.  
 Corolla-lobes imbricate. A glabrous shrub.... 26. *Scolosanthus*.
- Tribe IX. *Ixoreææ*. Shrubs. Corolla-lobes contorted or imbricate. Ovule ascending from the inner angle or lower half of the septum.  
 A small shrub with leaves in whorls of three ... 27. *Strumpfia*.  
 [A large shrub with opposite leaves ..... *Coffea*.]
- Tribe X. *Morindeææ*. Shrubs or trees. Corolla-lobes valvate. Ovule ascending from or near the base of the septum. Fruit a fleshy compound berry ..... 28. *Morinda*.
- Tribe XI. *Coussareææ*. Shrubs or small trees. Corolla-lobes valvate. Ovary one-celled. Ovules geminate from base of ovary..... 29. *Faramea*.
- Tribe XII. *Psychotriææ*. Shrubs or trees, rarely herbs. Corolla-lobes valvate. Stamens inserted at the throat of the corolla. Fruit a drupe.  
 Flowers not in heads.  
 Corolla-tube straight ..... 30. *Psychotria*.  
 Corolla-tube more or less curved and swollen at the base ..... 31. *Palicourea*.

Flowers in heads, with an involucre.

- A small creeping herb ..... 32. *Geophila*.  
 A shrub; flower-heads invested by large,  
 coloured bracts ..... 33. *Cephaelis*.

Tribe XIII. *Spermacocæ*. Herbs or small shrubs.  
 Corolla-lobes valvate. Ovules attached to  
 the axile placenta. Fruit dry.

Ovary 2-celled.

- Fruit indehiscent ..... 34. *Ernodea*.  
 Fruit separating into two closed cocci ..... 35. *Diodia*.  
 Fruit separating into two cocci which open at  
 the base ..... 36. *Hemidiodia*.  
 Capsule dehiscent, one valve remaining closed ..... 37. *Spermacoce*.  
 Capsule dehiscent septicidally ..... 38. *Borreria*.  
 Capsule dehiscent transversely ..... 39. *Mitracarpus*.  
 Ovary 3-celled ..... 40. *Richardia*.

Tribe XIV. *Galieæ*. Herbs with leaf-like stipules.

- Flowers axillary. Stamens inserted at the  
 mouth of the corolla. Ovule inserted at the  
 base of the septum ..... 41. *Relbunium*.

### 1. MACROCNEMUM P. Browne.

Trees or shrubs. Flowers in terminal or axillary panicles. Calyx-tube oblong, crowned by a cup-shaped 5-toothed limb. Corolla with funnel-shaped tube and 5-lobed limb, the lobes valvate in bud. Stamens 5, inserted on the corolla-tube, anthers included, dorsifixed. Ovary 2-celled; style filiform with 2 ellipsoidal arms; ovules many, peltately attached to a fleshy axile placenta. Capsule cylindrical, thinly leathery, 2-celled, with loculicidal valves. Seeds many, minute, compressed, winged; endosperm fleshy.

Species 14, natives of the West Indies and tropical America.

*M. jamaicense* L. *Amœn. v.* 413 (1760); *Sw. Obs. Bot.* 68, tab. iii. f. 1; *Lun. Hort. Jam.* ii. 277; *DC. Prodr.* iv. 403; *Macf. Jam.* ii. 214; *Griseb. Fl. Br. W. Ind.* 323; *Wils. in Rep. Geolog. Jam.* 280; *Standl. in N. Amer. Fl.* xxxii. 112. *M. arborescens foliis ovatis &c.* Browne *Hist. Jam.* 165. (Fig. 1.)

White-Thorn.

Manchioneal, *Browne*; *Masson*! *Liguanea*, *Broughton*! *Dancer*! *Bancroft*! Hopewell Gully, *St. Ann*; *St. Mary*; *McNab*! Moist woods near White River, *St. Mary*, *Purdie*! Dove Hall, *St. Thomas-in-Vale*, *Prior*! *March* 1927! *Wilson* 842! Valley of Sulphur River, *Bath*; S.E. foothills of John Crow Mts.; *Harris & Britton*! *Fl. Jam.* 10,583, 10,681; *Soho*, *St. Ann*, *Harris*! *Fl. Jam.* 12,025.

A tall glabrous shrub or tree up to 40 ft. in damp mountain woods. Leaves ovate to obovate-oblong, obtuse, rounded or obtuse at base, papery, mostly 10-18 by 6-8 cm.; petioles stoutish, 1.5-2 cm. l.

*Stipules* ovate-oblong, very obtuse, as seen 2 cm. l. (4 cm. Macfadyen), deciduous. *Panicles* many-flowered on peduncles up to 15 cm. l., in flower 6–10 cm. across; bracts firm, awl-shaped, 2–3 mm. l; pedicels 5 mm. l. *Calyx-tube* 8 mm., limb 2 mm. l. *Corolla* white, fragrant;

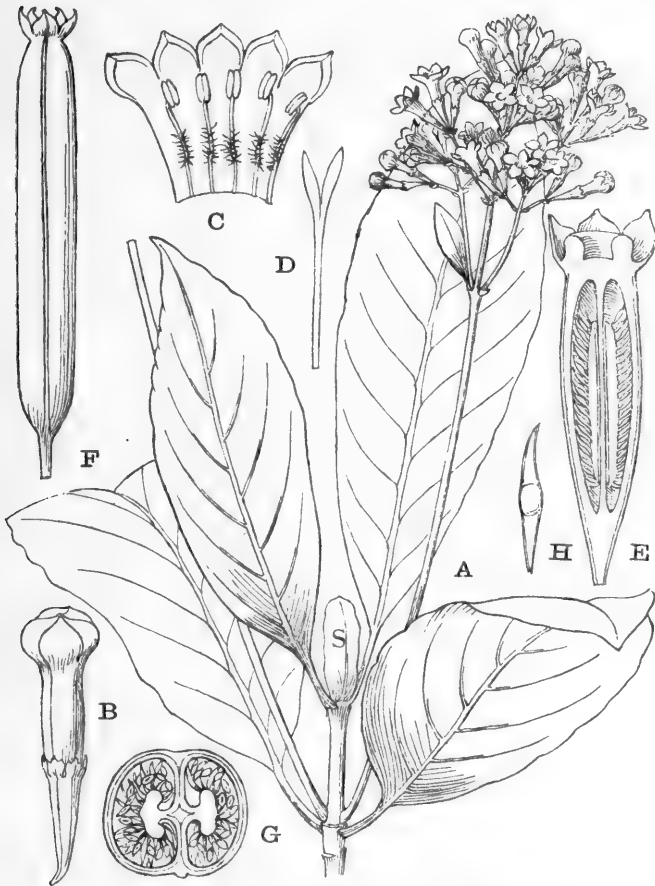


Fig. 1.—*Macrocnemum jamaicense* L.

- |   |   |
|---|---|
| A, Portion of branch with leaves and inflorescence $\times \frac{1}{2}$ ; S, stipule. | E, Ovary with calyx cut lengthwise $\times 4$ . |
| B, Unopened flower $\times 2$ .   | F, Fruit $\times 3$ .                           |
| C, Corolla cut open $\times 2$ .  | G, Fruit cut across $\times 6$ .                |
| D, Style $\times 2$ .   | H, Seed $\times 10$ .                           |

tube 6 mm. l.; lobes broad, reduplicate-valvate, 4 mm. l. *Filaments* inserted near base of corolla-tube, densely hairy in the middle. *Style-arms* short, obtuse. *Capsule* crowned by the persistent calyx-limb, 2–2.5 cm. l. *Seeds* oblong, apiculate at either end, 2 mm. l.

## 2. MANETTIA Mutis.

Slender-stemmed climbing herbs or undershrubs. Stipules short. Flowers axillary, solitary or in cymes and panicles. Calyx-tube small, top- or bell-shaped; limb usually 4-lobed, sometimes with 4 interposed teeth. Corolla small or rather large, often salver-shaped; tube funnel-shaped or cylindrical; lobes usually 4, shorter than the tube, valvate. Stamens usually 4, inserted in the mouth or throat of the corolla, included or exerted; filaments short, anthers versatile. Ovary 2-celled; style filiform; stigma entire or bifid; ovules numerous. Capsule top-shaped or obovoid, 2-celled, septicidally 2-valved, many-seeded. Seeds small, winged.

Species 80, natives of American tropics and subtropics; few in the West Indies.

Leaves leathery. Calyx 4-lobed with 4 interposed

teeth ..... 1. *M. Lygistum*.

Leaves membranous. Calyx 8-lobed ..... 2. *M. uniflora*.

1. *M. Lygistum* (L.) Sw. *Prodr.* 37 (1788) & *Fl. Ind. Occ.* 323; *DC. Prodr. iv.* 362; *Macf. Jam. ii.* 207; *Griseb. Fl. Br. W. Ind.* 329; *Wils. in Rep. Geolog. Jam.* 280; *Sprague in Bull. Herb. Boiss. sér. 2, v.* 832; *Shreve Mont. Rain-For.* 34; *Wernham in Journ. Bot. lvi. Suppl.* 28; *Standl. in N. Amer. Fl. xxxii.* 99; *Urb. Symb. Ant. viii.* 663. *M. tenuifolia Macf. tom. cit.* 208 (1850)? *Petesia Lygistum L. Syst. ed.* 10, 894 (1759). *Lygistum axillare Lam. Ill. i.* 286, t. 67, f. 2 (1791); *Ham. Prodr.* 20; *Hutchc. in Rep. Miss. Bot. Gard. iv.* 92. *L. flexile fruticosum &c. Browne Hist. Jam.* 142, t. 3, f. 2. A specimen from Browne in *Herb. Linn.* (Fig. 2.)

St. Mary, Browne! Wright! Masson! Shakespear! Broughton! Dancer! Blue Mt. Peak Purdie! Portland Gap, Prior! March 814! Catherine's Peak, Eggers 3637! Blue Mt. Peak, Hutchcock; J. P. 880, 2118, Hart! Maxon & Killip 1121! Morse's Gap, McNab! and Harris! 12,412; Newhaven Gap, Nichols 65! near Cinchona, Shreve.—Hispaniola.

Nearly glabrous climbing shrub with four-angled branches at first pubescent. Leaves shortly petioled, ovate, acute or shortly acuminate, broadly rounded at base, with 4-5 pairs of side nerves, impressed above, very prominent beneath, leathery, shining, 2-3 by 1-2.5 cm.; petioles puberulous, 2-5 mm. l. Stipules broadly triangular, puberulous, 1.5 cm. l. Cymes axillary, few-flowered; flowers shortly stalked. Calyx-tube oblong-top-shaped; puberulous, 1.5 mm. l.; lobes 2-4 mm. l., lanceolate, subacute, spreading, with 4 minute teeth interposed. Corolla blue; tube cylindrical broadening above, puberulous, 8-10 mm. l., with a median row of hairs inside; lobes oblong-ovate, less than half the length of tube, puberulous. Stamens inserted in mouth or throat of corolla, included. Style included or exerted; stigma bifid. Capsule obovoid, 5 mm. l. Seeds flattened, narrowly ovoid-oblong, evenly winged all round, 2.5 mm. across.

Two forms of the flower are known, long-styled with corolla-tube 8-8.5 mm. and lobes 2-3 mm. l., stamens inserted in the throat of the corolla with very short filaments and exserted style, and short-styled

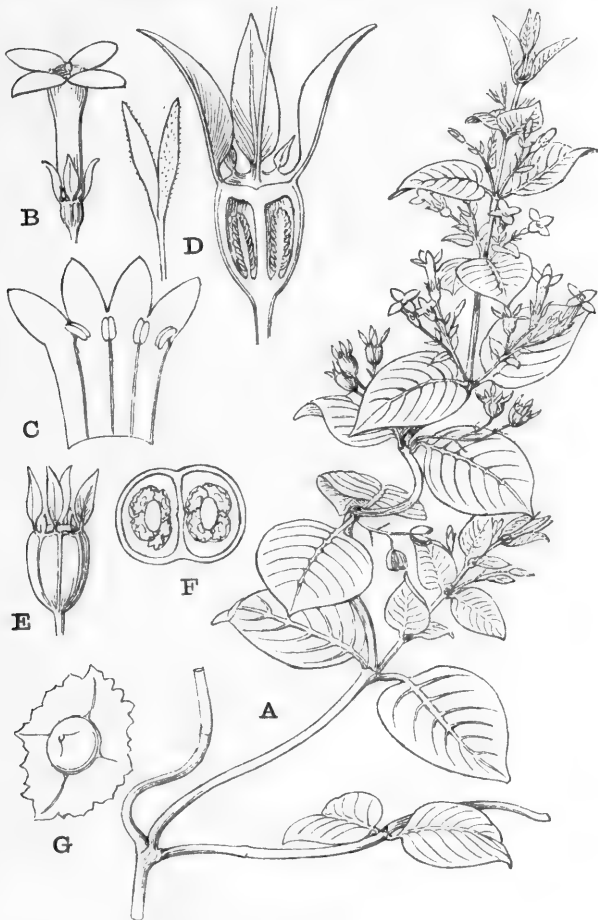


Fig. 2.—*Manettia Lygistum* (L.) Sw.

- |  |  |
|--|--|
| A, Branch with leaves, flowers, and fruit $\times \frac{1}{2}$ . | D, Ovary with calyx cut lengthwise and style and stigma $\times 8$ . |
| B, Flower $\times 2$ .   | E, Fruit $\times 2$ .  |
| C, Corolla cut open $\times 2$ .                                 | F, Fruit cut across $\times 4$ .                                     |
|  | G, Seed, $\times 8$ .  |

with corolla-tube of 10 mm. and lobes of 3-3.5 mm., stamens inserted at the corolla-mouth with longer filaments and included style (Sprague *l.c.*)

2. *M. uniflora* H. B. & K. *Nov. Gen. & Sp. iii.* 387 (1818);

*DC. tom. cit.* 363; *Urb. Symb. Ant.* vii. 545. *M. cuspidata* Bert. in *Spreng. Syst.* i. 415 (1825); *DC. loc. cit.* *M. coccinea* Griseb. *Pl. Wright.* 505, *Cat. Cub.* 130 & *Fl. Br. W. Ind.* 329 (non Willd. nec *Nacibea coccinea* Aubl.).

Bertero 2262 (ex Urban); Brockenhurst, near Manchester Purdie!—Cuba, St. Vincent, Trinidad, Mexico, Central America, Venezuela.

A nearly glabrous climbing *shrub*. Leaves ovate, acuminate, obtuse or rounded at base, side-nerves not prominent, membranous, mostly 4–6 by 2–3.5 cm.; petioles slender, 5–10 mm. l. Flowers solitary in the axils; pedicels slender, up to 2 cm. l. Calyx-tube ovoid, glabrous, 3–3.5 mm. l.; lobes linear-lanceolate, recurved at tip, 5 mm. l. Corolla red, about 15 mm. l.; tube narrowly funnel-shaped, hairy within; lobes oblong-ovate, one-third the length of tube. Stamens inserted in corolla-throat. Capsule obovoid, 7 mm. l. Seeds 2.5 mm. across, the wing incised.

### 3. *HILLIA* Jacq.

Glabrous epiphytic shrubs, with somewhat fleshy leaves, membranous stipules soon falling, and large terminal bracteate flowers, solitary or very few together. Calyx-tube cylindrical, lobes 2–4, soon falling, sometimes absent. Corolla large, salver-shaped; tube elongated, slightly swollen at the naked throat; lobes 4–6, contorted in æstivation. Stamens as many as corolla-lobes and inserted below its throat; anthers subsessile, basifixed, included. Ovary 2-celled; style filiform, included, with 2 short broad arms; ovules numerous, peltately attached upon a long fleshy axile placenta. Capsule cylindrical, 2-celled, septicidally 2-valved. Seeds very numerous, testa spongy, tailed below and produced into a long hairy tuft at the other end.

Species 6 or 7, natives of the West Indies and tropical America.

Leaves cuspidate-acuminate. Corolla 6-lobed..... 1. *H. parasitica*.

Leaves very obtuse. Corolla 4-lobed ..... 2. *H. tetrandra*.

1. *H. parasitica* Jacq. *Sel. Stirp. Amer.* 96, t. 66 (1763); leaves ovate, obtuse at base; corolla-lobes linear-lanceolate, obtuse; style as long as corolla-tube.—*K. Schum. in Mart. Fl. Bras. vi. pt.* 6. 203, t. 110; *Kew Bull.* 1893, 256; *Standl. in N. Amer. Fl.* xxxvii. 116; *Will. & Cheesm. Fl. Trin. & Tob. ii.* 6; *Urb. Symb. Ant.* iv. 583 & viii. 663; *Britt. & Wils. P.-Rico & Virg. Is. vi.* 227. *H. longiflora* Sw. *Prodr.* 58 (1788) & *Obs. Bot.* 135 t. v. f. 1; *Sims in Bot. Mag.* t. 721; *Lun. Hort. Jam. i.* 372; *DC. Prodr.* iv 351; *Macf. Jam. ii.* 203; *Griseb. Pl. Carib.* 78, *Pl. Wright.* 505, *Fl. Br. W. Ind.* 325 & *Cat. Cub.* 127; *Saww. Fl. Cub.* 62; *Duss Fl. Ant. Franc.* 334; *Hart Herb. List Trin.* 29; *Bold. Fl.*



*Ned. W.-Ind. i.* 187. Specimen from Herb. Jacquin in Herb. Mus. Brit. (Fig. 3.)

*Broughton ! Wright ! Bancroft !* Road to Juniper Gap from Old England, *Macfadyen ; J. P. 691, Hart ! Lancaster, Campbell !* above

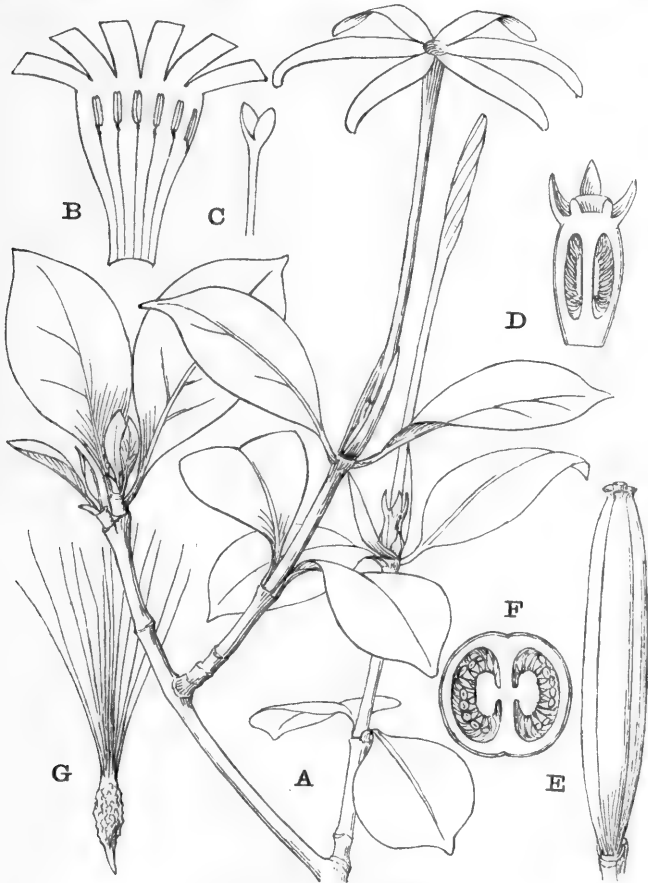


Fig. 3.—*Hillia parasitica* Jacq.

- |  |   |
|--|---|
| A, Portion of plant with leaves and flowers $\times \frac{1}{3}$ . | D, Ovary with calyx cut lengthwise $\times 2$ . |
| B, Upper part of corolla cut open $\times 1\frac{1}{2}$ .          | E, Capsule $\times \frac{1}{2}$ .               |
| C, Upper part of style with stigmas $\times 4$ .                   | F, Capsule cut across $\times 1\frac{1}{2}$ .   |
|  | G, Seed $\times 4$ .                            |

Silver Hill Gap *Harris !* Fl. Jam. 5773.—Antilles, Venezuela, Ecuador, Brazil.

A straggling epiphytic shrub growing amongst and over bushes. Branches often rooting, stout, somewhat fleshy. Leaves shortly

petioled, mostly 5–10 by 3–5 cm. *Stipules* ovate to linear-lanceolate, white, 1.5–nearly 3 cm. l., the uppermost pair investing the base of the flower like bracts. *Bracteoles* broadly ovate, cuspidate, 4 mm. l. *Calyx-tube* furrowed, about 8 mm. l.; lobes lanceolate, 4 mm. l. or less, smallest only 1–2 mm. *Corolla* white, sweet-scented; tube slender, 8–10 cm. l.; lobes 6, spreading, 3 cm. l. *Capsule* obtuse, pale, 6–8 cm. l. *Seeds* brown, about 15 mm. l., hairy tuft alone 10 mm. l.

2. **H. tetrandra** Sw. *Prodr.* 58 (1788); leaves obovate or obovate-oblong, cuneate at base; corolla-lobes ovate; style half as long as corolla-tube.—Sw. *Fl. Ind. Occ. i.* 630 &  *Ic. Ind. Occ. t. xi.*; *Lun. tom. cit.* 373; *DC. loc. cit.*; *Griseb. Pl. Wright.* 505, *Fl. Br. W. Ind.* 325 & *Cat. Cub.* 127; *Sauv. loc. cit.*; *Hook. f. in Bot. Mag. t.* 7355; *Standl. loc. cit.*; *Urb. tom. cit.* 664. Specimen from Swartz in Herb. Mus. Brit.

*Broughton!* Coldspring, *Swartz!* *Macfadyen!* Moneague, *Prior!* Guava Ridge, J. P. 908 *Hart!* near Whitfield Hall Works; Tyre near Troy; *Harris!* Fl. Jam. 5465, 9448.—Cuba, Hispaniola, Central America.

Epiphytic on trees. *Branches* angular and somewhat fleshy. *Leaves* very thin in texture, subsessile, mostly 4–6 by 2–3 cm. *Stipules* obovate, 1–2.5 cm. l. *Bracteoles* 4, oblong, obtuse, larger pair 5 mm., smaller 2–3 mm. l. *Flowers* solitary. *Calyx-tube* furrowed, fleshy, 4 mm. l.; lobes 2 or 4, linear, obtuse, about 1 cm. l. *Corolla* white, sweet-scented; tube 4–6 cm. l.; lobes 4, spreading, 1–2 cm. l. *Capsule* obtuse, 3.5 cm. l. *Seeds* as of last species.

#### 4. EXOSTEMA L. C. Rich.

Shrubs or trees. Leaves membranous. Stipules small. Flowers large, sweet-scented, in terminal corymbs or corymbose panicles but sometimes solitary and axillary. Calyx-tube ovoid or top-shaped; limb 5-lobed, lobes awl-shaped or triangular. Corolla salver-shaped with a long slender tube and 5-lobed limb, the generally elongated linear reflexed lobes imbricate in bud. Stamens 5, inserted near bottom of corolla-tube; filaments elongated, filiform; anthers linear, exserted. Ovary 2-celled; style filiform, clavate or with a small exserted capitate stigma; ovules many. Capsule ovoid to subcylindrical, leathery or woody, 2-celled, loculicidally 2-valved. Seeds many with a membranous testa and broad wing.

Nearly 40 species, natives of the West Indies and tropical America.

- Leaves up to 15 cm. l. Corolla-tube 5 cm. l. .... 1. *E. brachycarpum*.  
 Leaves mostly 6–8 cm. l. Corolla-tube 2 cm. l. 2. *E. triflorum*.  
 Leaves mostly 3–4.5 cm. l. Corolla-tube up to  
 3 cm. l. .... 3. *E. caribæum*.

1. **E. brachycarpum** (Sw.) Roem. & Schult. *Syst. Veg.* i. 19 (1819); leaves elliptic, obtuse; inflorescence many-flowered; capsule broadly ovoid.—*DC. Prodr.* iv. 359; *Macf. Jam.* ii. 205; *Griseb. Fl. Br. W. Ind.* 324; *Standl. in N. Amer. Fl.* xxxii. 122. *Cinchona brachycarpa* Sw. *Prodr.* 42 (1788) & *Fl. Ind. Occ.* i. 378; *Vahl Symb.* ii. 38; *Lamb. Cinch.* 28, t. 8; *Lun. Hort. Jam.* i. 391.

**Maroon Lance.**

North Western Woods, *Swartz*; *Lindsay*! *Wright*! near Troy, *Harris*! *Fl. Jam.* 8787.

A glabrous tree up to 30 ft. *Leaves* obtuse at base, ample, glossy, with 8 pairs of rather prominent side-nerve, 7–15 by 4–8 cm. *Stipules* broadly ovate, 7 mm. l. *Flowers* several in a terminal corymbose panicle. *Pedicels* 5–10 mm. l. *Calyx-tube* ovoid, 4–5 mm. l.; lobes very short, broadly awl-shaped. *Corolla* pale red, 8 cm. l. before opening, of which 3 cm. belong to the lobes. *Stamens* exserted to 2.5 cm. *Style* clavate, exserted nearly 3 cm. *Capsule* furrowed, 2 by 1.5 cm. *Seeds* many, compressed, subulate (*Swartz*).

2. **E. triflorum** (W. Wr.) *G. Don Gen. Syst.* iii. 481 (1834) (excl. ref. *Lamb.*); leaves lanceolate, obtuse; inflorescence few-flowered; capsule obovoid-oblong.—*Griseb. loc. cit.* & *Cat. Cub.* 125; *Sauv. Fl. Cub.* 61; *Standl. tom. cit.* 121. *E. coriaceum* *Macf. tom. cit.* 206 (1850)? *Cinchona triflora* *W. Wright in Lond. Med. Journ.* viii. 240 (1787); *Lun. tom. cit.* 393.

**Manchioneal**, *Swartz*! *Ibid.*, *Dancer*! Woods in Sixteen-Mile Walk, *Broughton*! *March* 134.—Cuba.

A glabrous, small tree about 20 ft. *Leaves* narrowed at base, glossy with 4 pairs of inconspicuous nerves, 6–10 by 2.5–4 cm.; stipules broadly triangular, 3 mm. l. *Flowers* in threes in a short terminal few-flowered corymb. *Pedicels* 5 mm. l. *Calyx-tube* top-shaped, 4 mm. l.; lobes broadly awl-shaped, 1.5 mm. l. *Corolla* 4.5 cm. l.; lobes 2.5 cm. l. *Stamens* and *style* as of last. *Capsule* 2 cm. l., scarcely 1 cm. broad.

*E. coriaceum* *Macf.* (non *Roem. & Schult.*) is probably this species. It is said to have been found by *Prior* on Union Hill, St. Ann. No specimen has been seen.

3. **E. caribæum** (*Jacq.*) *Roem. & Schult. Syst.* v. 18 (1819); leaves lanceolate, acute; flowers solitary in the leaf-axils; capsule subcylindrical.—*DC. loc. cit.*; *Don tom. cit.* 480; *Macf. tom. cit.* 204; *Griseb. Pl. Carib.* 78, *Fl. Br. W. Ind.* 324 & *Cat. Cub.* 125; *Sauv. Fl. Cub.* 61; *Egg. Fl. St. Croix & Virg.* 60; *Hemsl. Biol. Cent. Amer. Bot.* ii. 13; *Stahl Fl. P.-Rico* v. 48; *Hitchc. in Rep. Miss. Bot. Gard.* iv. 92; *Combs Pl. Cub.* 427; *Kew Bull.* 1893, 256; *Duss Fl. Ant. Franc.* 333; *Hart Herb. List Trin.* 28; *Bold. Fl. Ned. W.-Ind.* i. 1888; *Britt. Fl. Amer. Virg.* 93; *Britt. & Millsp. Baham.*

*Fl.* 409 ; *Urb. Symb. Ant.* iv. 584 & viii. 664 ; *Standl. in N. Amer. Fl.* xxxvi. 120 & *Contrib. U.S. Nat. Herb.* xxiii. 1366 ; *Will. & Cheesm. Fl. Trin. & Tob.* ii. 8 ; *Britt. & Wils. P.-Rico & Virg. Is.* vi. 228. *Cinchona caribæum* Jacq. *Enum. Pl. Carib.* 16 (1760), *Sel. Stirp. Amer.* 61 & *Obs. Bot.* pt. 2. 27,

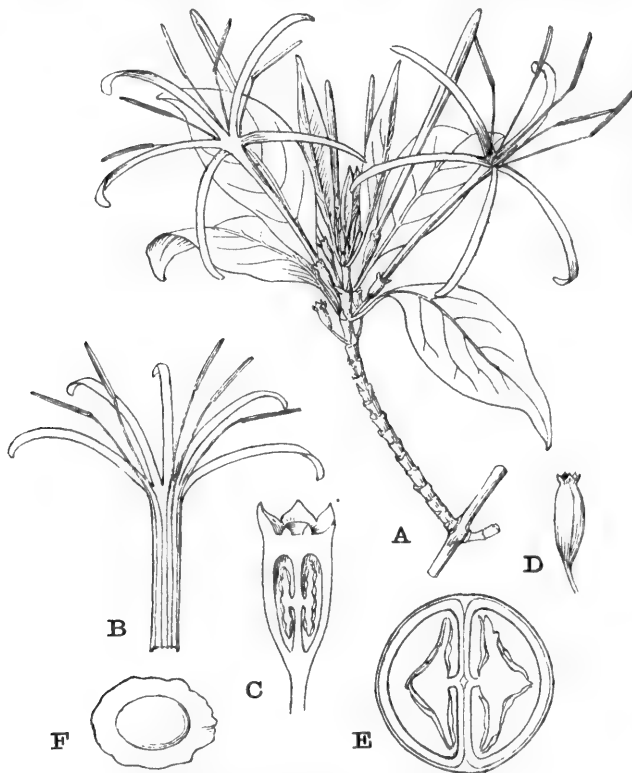


Fig. 4.—*Exostema caribæum* (Sw.) Roem. & Sch.

- A, Branch with leaves and flowers  $\times \frac{1}{2}$ . D, Capsule  $\times \frac{1}{2}$ .  
 B, Upper part of corolla cut open  $\times \frac{1}{2}$ . E, Capsule cut across  $\times 4$ .  
 C, Ovary with calyx cut lengthwise  $\times 4$ . F, Seed  $\times 4$ .

*t.* 47 ; *L. Sp. Pl. ed.* 2. 245 ; *Sw. Obs. Bot.* 72 ; *Lamb. tom. cit.* 24, *t.* 4 ; *Lun. tom. cit.* 391. *C. jamaicensis* W. Wright in *Phil. Trans. R. Soc. Lond.* lxxvii. 506, *t.* x. (1777). (Fig. 4.)

Caribbee Bark Tree, Jamaica Jesuit's Bark.

On stony ground near sea-shore, St. James and Hanover, and at Martha Brae, Trelawny, Wright ! ; Long Mt. abundant on Salt Pond Hill, Broughton ! Macfadyen ! Dunrobin Castle, St. Thomas, Purdie !

March 669! Lucea, Hitchcock; Westphalia Road, J. P. 1467 Hart! Norbrook; Long Mountain Road; Campbell! Fl. Jam. 5765, 6120; Grove near Gordon Town; Luana Point; Great Goat Island; Harris! Fl. Jam. 6835, 8073, 9314, 9945; Robertsfield, Blue Mts., Miss Perkins 1213!—S. Florida, Bahamas, West Indies, Mexico, Central America.

A shrub or small tree up to 20 ft. common in dry, stony, calcareous soil along the coast. Branches torulose from persistent leaf-bases. Leaves narrowed at base, nervation as of last, 3–5 by 1–2.5 cm. Stipules awl-shaped, 2–4 mm. l. Pedicels mostly 4–8 mm. l. Calyx-tube top-shaped, 4 mm. l.; lobes triangular, 1.5 mm. l. Corolla white or pale pink; tube 2.5–3 cm. l.; lobes about as long. Capsule dark and shining, 15 by 6 mm. Seeds closely packed, suborbicular, 2.5 mm. across.

Wood said to be useful for cabinet work and turnery. The bark of these species was formerly used as a febrifuge.

**E. Sanctæ-Luciæ** Britten in Journ. Bot. liii. 138 (1915) (*E. floribundum* Roem. & Schult. *Cinchona Sanctæ-Luciæ* Kentish. *C. floribunda* Sw.) found in many of the Antilles from Cuba to Trinidad is said by Swartz (*Fl. Ind. Occ. i.* 375) to occur in Jamaica. It has large leaves like those of *E. brachycarpum* but smaller flowers and narrow capsules. No support for Swartz's statement has been discovered.

## 5. CHIMARRHIS Jacq.

Glabrous or pubescent trees. Leaves crowded towards the end of the branches. Stipules soon falling. Flowers small, white, sweet-scented, in axillary stalked bracteate corymbose cymes. Calyx-tube short, bell-shaped; limb very short, truncate or denticulate. Corolla with short broad tube and villous throat; lobes 5, recurved, valvate in bud. Stamens 5, inserted on the throat of the corolla; filaments exserted, villous below; anthers dorsifixed. Ovary 2-celled; style short, obtusely bifid; ovules many on an axile peltate placenta. Capsule small, oblong, septically 2-valved, the valves ultimately 2-partite. Seeds minute, more or less compressed, with a reticulate, margined testa and fleshy endosperm.

Species 5 or 6, natives of the West Indies and tropical America.

**C. cymosa** Jacq. *Sel. Stirp. Amer.* 61 (1763); *DC. Prodr. iv.* 403; *Duss Fl. Ant. Franc.* 332.

Subsp. **jamaicensis** Urb. *Symb. Ant. i.* 411 (1900). *C. cymosa* Griseb. *Fl. Br. W. Ind.* 323 (in part) non Jacq.; *Kew Bull.* 1893, 256; *K. Schum. in. Engl. & Prantl Nat. Pflanzenfam. iv. pt. 4,* 17, f. 6; *Standl. in Fl. N. Amer. xxxii.* 5; *Will. & Cheesm. Fl. Trin. & Tob. ii.* 9. (Fig. 5.)

Masson! Road from Moneague to Brown's Town; Worthy Park, Prior! March 1822! Wilson 631! below Hardware Gap, J. P. 696,

*Hart* ! Mount James ; above Silver Hill ; St. George's ; near Troy ; Bachelors Hall, near Bath ; *Harris* ! Fl. Jam. 5810, 5828, 6793, 8783, 9449, 10,576 ; Ythanside, Portland, *Moore* ! Fl. Jam. 10,645.

A glabrous timber tree up to 35 ft. Branches angular, somewhat

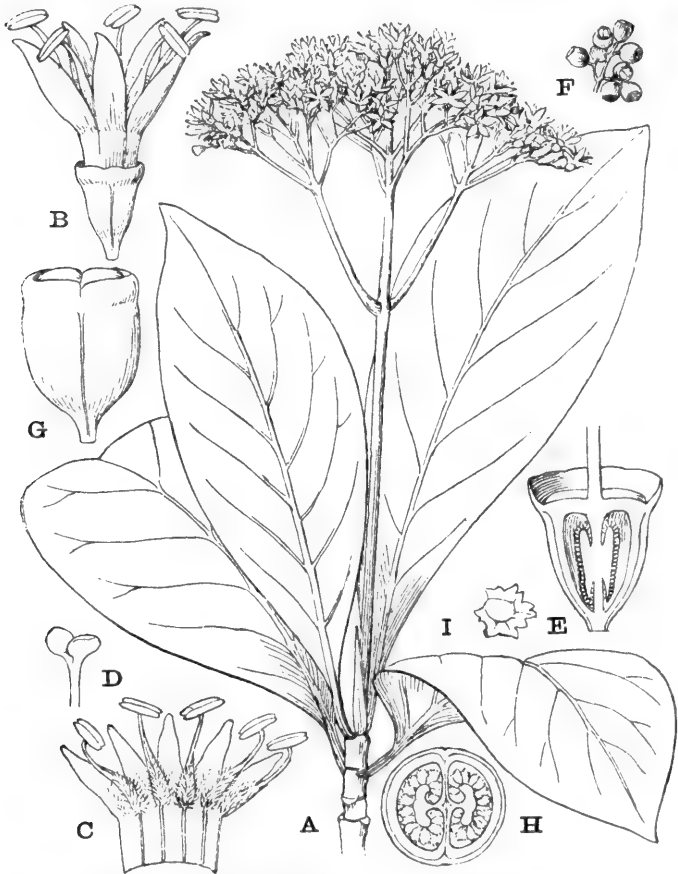


Fig. 5.—*Chimarrhis cymosa* Jacq. subsp. *jamaicensis* Urban.

- A, Branch with leaves and inflorescence  $\times \frac{1}{2}$ .  
 B, Flower  $\times 4$ .  
 C, Corolla cut open  $\times 4$ .  
 D, End of style with stigmas  $\times 4$ .

- E, Ovary with calyx cut lengthwise  $\times 8$ .  
 F, Cluster of fruits  $\times \frac{1}{2}$ .  
 G, Capsule  $\times 4$ .  
 H, Capsule cut across  $\times 4$ .  
 I, Seed  $\times 16$ .

nodular. Leaves elliptical or obovate, obtuse, narrowed at base, papery, few-nerved, often with prominent domatia in the nerve-angles, 8–15 by 4–10 cm. ; petioles stout, 7–20 mm. l. Stipules lanceolate, acuminate, 2 cm. l. Cymes compact, many-flowered, about as long as the leaves,

8–15 cm. across, peduncle stout, up to 12 cm. l., often with a pair of stipule-like bracts at the top; pedicels longer or shorter than the calyx. *Calyx-tube* 2 mm. l.; limb truncate, barely .5 mm. l. *Corolla* 5–6 mm. l., the tube about 2 mm. *Filaments* about as long as corolla-lobes; anthers oblong, 2 mm. l. *Capsule* 5 mm. l. *Seeds* with a narrow, cut margin, about .5 mm. across.

Besides this Jamaica subspecies Urban (*l.c.*) distinguishes the type as subsp. *genuina*, with acute leaves up to 30 cm. l., somewhat smaller flowers with longer filaments and small ovate anthers, and smaller capsules. This is confined to the Lesser Antilles. A third subspecies, *microcarpa* from Cuba, has small leaves (5–8 cm. l.) hairy on the nerves below, smaller corollas than subsp. *jamaicensis*, smaller oblong anthers and capsules only half as long.

## 6. PORTLANDIA P. Browne.

Glabrous shrubs or small trees growing on limestone. Leaves leathery. Stipules interpetiolar, slightly united at base if at all. Flowers solitary or very few together on axillary peduncles. Calyx-tube obovoid or top-shaped; lobes 5–7. Corolla large or largish, funnel-shaped; lobes generally 5, broad, reduplicate-valvate in bud. Stamens as many as corolla-lobes, inserted on the base of the corolla, filaments connate below, anthers slightly dorsifixed. Ovary 2-celled; style emarginate, bifid or 2-armed; ovules many, inserted round an elongated fleshy placenta. Capsule ovoid, obovoid or broadly oblong, leathery, loculicidally 2-valved. Seeds many, compressed, appendaged at base and with fleshy endosperm.

Species about 20, natives of Jamaica, Cuba, Hispaniola, and Mexico.

Corolla 16–20 cm. l. (10–11 cm. in var. *parviflora*).

Calyx-lobes leaf-like ..... 1. *P. grandiflora*.

Corolla under 10 cm. l.

Calyx-lobes at least 10 mm. l.

Leaves very broad, cordate at base ..... 2. *P. Harrisii*.

Leaves rounded at base, not cordate.

Corolla white inside, streaked with rose outside .....

3. *P. latifolia*.

Corolla crimson .....

4. *P. coccinea*.

Leaves rounded at base. Corolla white.....

5. *P. albiflora*.

Calyx-lobes 1–6 mm. l..... 6. *P. microsepala*.

1. ***P. grandiflora*** *L. Syst. ed.* 10, 928 (1760); leaves acute; calyx-lobes very conspicuous; corolla white.—*Jacq. Enum. Pl. Carib.* 16 & *Sel. Stirp. Amer.* 62, t. 44; *Sm. Ic. Pict. vi.*; *Sw. Obs. Bot.* 69; *Curt. Bot. Mag. t.* 286; *Lun. Hort. Jam. ii.* 91; *DC. Prodr. iv.* 465; *Benth. Pl. Hartweg.* 264; *Griseb. Fl. Br. W. Ind.* 324; *Hitchc. in Rep. Miss. Bot. Gard. iv.* 92; *Standl. in N. Amer. Fl. xxxii.* 11. *P. gypsophila Macf. Jam. ii.* 216 ?; *Griseb. loc. cit.* (in part); *S. Moore in*

*Journ. Bot. lxxiii.* 108. *P. foliis majoribus* &c. *Browne Hist. Jam.* 164, t. 11.

*Wright* ! *Shakespear* ! St. Mary, *Purdie* ! Near Spanish Town, *Hartweg* ; *Cuming* 35 ! ? ; *Porus, Hitchcock* ; near Stewart Town, *Fawcett* ! Belle Vue, Stonyhill ; Oxford, near Troy ; *Harris* ! Fl. Jam. 5878, 8662, 9407 ; near Troy, *Miss Perkins* 1389 !

*Shrub* 10 ft. high. *Branches* subterete as in other species (when young compressed) with somewhat swollen nodes. *Leaves* ovate, shortly cuspidate with acute tip, rounded at base, shining especially on upper face, 10–16 by 5–10 cm. ; petioles flattened, 5–7 mm. l. *Stipules* very shortly united at base, broadly deltoid, acute to rotundate, 5–10 mm. l. *Flowers* solitary on stout 1–1.5 cm. l. peduncles. *Calyx-tube* top-shaped, about 1 cm. l. ; lobes elliptic to lanceolate, acute, up to 2.5 by 1.3 cm., but usually smaller. *Corolla-tube* up to 20 cm. l., funnel-shaped, the lower half 5–15 mm. broad, the upper gradually enlarged to 5.5 cm. at the mouth ; lobes broadly triangular, obtuse, about 3 cm. l. *Capsule* obovoid, 2–2.5 cm. l.

Var. *parviflora* *S. Moore* in *Journ. Bot. lxxiii.* 108 (1930). *Corollas* only 10–11 cm. l.

*Broughton* ! *Wright* ! *Macfadyen* ! *McNab* 77 ! *March* 2014 !

“ The inner bark [of the typical form] is very thin and of a dark brown colour. Its taste is bitter and astringent and its virtues are the same as those of the Jesuit’s bark. Infused in spirits or wine with a little orange peel, it makes an excellent stomachic tincture ” (*Wright*).

2. *P. Harrisii* *Britton* in *Bull. Torr. Bot. Club.* xxxix. 8 (1912) ; leaves rotundate ; calyx-lobes oblong-lanceolate ; corolla white tinged with rose outside.—*Britton op. cit. xli.* 22 ; *Standl. tom. cit.* 9.

Peckham Woods, Upper Clarendon, *Harris* ! Fl. Jam. 10,975, 11,046, 11,209, 12,789.

*Shrub* or slender *tree* up to 20 ft. *Branches* with somewhat swollen nodes. *Leaves* subsessile, rigidly leathery, shining on both faces, up to 12.5 by 13.5 cm. *Stipules* broadly deltoid, obtuse, longitudinally ribbed, about 10 mm. l. *Flowers* 2–5 together in the upper axils ; peduncles about 10 mm. l. *Calyx-tube* top-shaped, 6 mm. l. ; lobes acute, 15 by 3.5 mm., crimson. *Corolla* funnel-shaped ; tube 8–9 cm. l., 4 cm. wide at the mouth ; lobes broadly triangular, obtuse, 1.5 cm. l. *Capsule* obovoid or subspheroidal, 1.7–2.5 cm. l.

3. *P. latifolia* *Britton & Harris* ex *S. Moore* in *Journ. Bot. lxxiii.* 108 (1930) ; leaves acute ; calyx-lobes lanceolate ; corolla white, internally streaked with rose.

*Robins* ! *Wright* ! *Broughton* ! Coast, St. Ann, *McNab* ! *Hall’s* Delight, St. Andrew ; Long Mt. near Kingston ; road to Wareka, Long Mt. ; near Hope Bay ; *Harris* ! Fl. Jam. 5598, 6060, 7870, 8922, 12,530, 12,669.

*Shrub* up to 15 ft. *Branches* nodulose. *Leaves* ovate to elliptical, shining especially on the upper side, mostly 10–12 by 5–7 cm. ; petioles



stout, 4 mm. l. *Stipules* deltoid, acuminate, longitudinally ribbed, 7–10 mm. l. *Flowers* solitary in the upper axils; peduncles 10–17 mm. l. *Calyx-tube* top-shaped, 6 mm. l.; lobes 18–25 by 3–5 mm. *Corolla* fragrant; tube funnel-shaped, 4.5–5 cm. l.; lobes triangular, very obtuse, 1.5 cm. l. *Capsule* obovoid top-shaped, obscurely angled, 1.5–2.5 by 1–1.2 cm.

4. *P. coccinea* Sw. *Prodr.* 42 (1788); leaves obtuse; calyx-lobes lanceolate or linear-lanceolate, acute; corolla

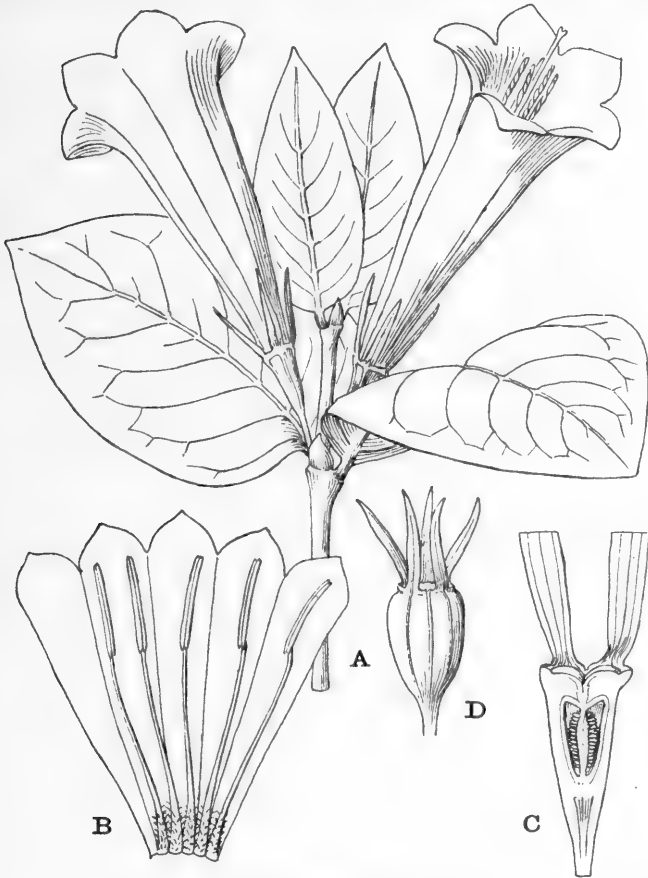


Fig. 6.—*Portlandia coccinea* Sw.

A, Branch with leaves and flowers  $\times \frac{1}{2}$  C, Ovary with calyx cut lengthwise  $\times 2$   
 B, Corolla cut open  $\times \frac{1}{2}$  D, Capsule  $\times \frac{1}{2}$

crimson with longitudinal whitish furrows internally.—Sw. *Fl. Ind. Occ. i.* 384; *Lun. tom. cit.* 92; *DC. loc. cit.*; *Griseb.*

*loc. cit.*; *Standl. tom. cit.* 12. Specimen from Swartz in Herb. Mus. Brit. (Fig. 6.)

Mountain cliffs, W. Jamaica Swartz ! Wright ! Bancroft ! Ipswich, St. Elizabeth, Harris ! Fl. Jam. 12,505, 12,515.

*Shrub* up to 10 ft. Branches somewhat compressed with swollen nodes. *Leaves* ovate or ovate-oblong, rounded at base, 8–12 by 4–7.5 cm.; petioles broad, 5 mm. l. *Stipules* deltoid, acute, 6–7 mm. l. *Flowers* 1–2 in the upper axils; peduncles about 1 cm. l. *Calyx-tube* oblong-top-shaped, about as long as the peduncle; lobes 1.5–1.8 cm. l. *Corolla* with narrow part of tube 15 by 6 mm., mouth 3.5 cm. across; lobes 12 mm. l. *Capsule* obovoid, 5-ribbed, 1.7 by 1.5 cm.

5. *P. albiflora* Britton & Harris ex Standl. in *N. Amer. Fl.* xxxii. 12 (1918); leaves acute; calyx-lobes linear-lanceolate, acute; corolla white inside with rosy tinge outside.

St. John's, Purdie ! March 1087 ! Cane River Valley, Harris ! Fl. Jam. 9637, 9639, 12,532, 12,670. Road to Wareka, Maxon 10,527 !

*Shrub* or small *tree* up to 15 ft. Branches nodulose. *Leaves* obovate-oblong or narrowly elliptic, cuneate at base, prominently nerved, 7–10 by 2.5–4.5 cm.; petioles 3–4 mm. l. *Stipules* deltoid, acute, 6 mm. l. *Flowers* solitary or 2–4 in the axils; peduncles 1–1.5 cm. l. *Calyx-tube* top-shaped, 6 mm. l.; lobes 10–15 by 1.5–2.5 mm. l. *Corolla* narrowly funnel-shaped; lower part of tube 1–1.5 cm. l., 3 mm. broad; upper part 3.5–5.5 cm. l., mouth 2–3 cm. across. *Capsule* subglobose, 1.3 by 1.3 cm.

6. *P. microsepala* Urb. in *Fedde Rep.* xiii. 478 (1915); leaves acute; calyx-lobes very small, triangular or triangular-awl-shaped.—Type in Herb. Kew.

St. Ann, Prior ! Union Hill, Moneague, Sturridge !

Branches terete, compressed when young. *Leaves* ovate, somewhat rounded at base, shining, 10–13 by 5.5–7.5 cm. *Stipules* deltoid, acute. *Flowers* solitary (always ?), on 10–15 mm. l. peduncles. *Calyx-tube* oblong-top-shaped, about 7 mm. l.; lobes 1–6 mm. l. *Corolla* 6 cm. l., the narrow basal portion nearly as long as the upper which is 4 cm. across at the mouth. *Capsule* obovate, 2 by 1.5 cm.

## 7. RONDELETIA L.

Shrubs or trees. Leaves opposite (occasionally ternate) leathery or parchment-like, rarely membranous. Stipules interpetiolar, broad, sheathing or free below. Flowers mostly white, red or yellow, small or smallish, usually in axillary or terminal cymes, corymbs or panicles, rarely solitary. Calyx-tube usually subglobose; lobes usually 5. Corolla usually salver-shaped, with a naked or ringed mouth; lobes usually 5, imbricate in bud. Stamens mostly 5, inserted in the throat or on the tube of the corolla, included; filaments short, anthers dorsifixed. Ovary 2-celled; style filiform, emarginate, bifid or 2-armed; ovules many on an axile placenta. Capsule

usually globose or subglobose, leathery or papery, loculicidally 2-valved. Seeds numerous, minute, wingless or narrowly winged or with an appendage at either end; endosperm fleshy.

Species over 100, natives of the West Indies and the American continent from Mexico to Colombia.

Flowers in cymose corymbs or panicles, the bracts small.

Corolla glabrous outside or nearly so.

Leaves sessile often cordate at base.

Leaves large (2-3 dm. l.). Corolla-tube about 1 cm. l. .... 1. *R. amplexicaulis*.

Leaves smaller (1-1.5 dm.). Corolla-tube not .5 cm. l. .... 2. *R. Harrisii*.

Leaves petiolate, never cordate at base. Leaves up to 5 cm. l., glabrous..... 3. *R. daphnoides*.

Leaves larger, shortly hairy on nerves below.

Corolla-tube 8 mm. l., twice as long as lobes ..... 4. *R. pallida*.

Corolla-tube 12 mm. l., thrice as long as lobes ..... 5. *R. elegans*.

Corolla tomentose outside.

Calyx glabrous ..... 6. *R. racemosa*.

Calyx tomentose.

Calyx-lobes minute, as broad as or broader than long. Corolla-lobes almost as long as tube ... 7. *R. laurifolia*.

Corolla-lobes markedly shorter than tube.

Leaves glabrous ..... 9. *R. polita*.

Leaves finely-tomentose beneath .... 8. *R. tomentosa*.

Leaves pubescent beneath becoming glabrous ..... 10. *R. trifolia*.

Calyx-lobes longer than broad.

Leaves often ternate..... 11. *R. impressa*.

Leaves always opposite ..... 12. *R. hirsuta*.

Flowers in dense cymose heads, rarely solitary, the bracts generally large.

Indumentum finely silky.

Calyx-lobes longer than tube.

Leaves obovate-oblong or elliptical ..... 13. *R. cincta*.

Leaves ovate with cordate base ..... 14. *R. clarendonensis*.

Calyx-lobes not longer than tube ..... 15. *R. glauca*.

Indumentum not silky.

Flowers solitary..... 16. *R. ligulata*.

Heads several-flowered.

Peduncles much longer than heads.

Indumentum strongly hirsute..... 17. *R. hirta*.

Indumentum at most hirsutulous ..... 19. *R. umbellulata*.

Heads on short peduncles ..... 18. *R. saxicola*.

Flowers 1-3 together, bracts generally smaller.

Leaves elliptical, pubescent below ..... 20. *R. incana*.

Leaves obovate-oblong, densely tomentose below ..... 21. *R. silvestris*.

1. **R. amplexicaulis** Urb. *Symb. Ant.* v. 68 (1908); leaves opposite, large, sessile, amplexicaul; calyx-lobes as long as tube; corolla-tube about 1 cm. l.—*Standl. in N. Amer. Fl. xxxv.* 68. Type in Herb. Jam.

On banks of shaded streams, Tyre, near Troy, *Harris*! Fl. Jam. 8567, 8650, 9371.

A handsome *shrub* 12–15 ft. high. Branchlets stout, soon subterete, glabrous. *Leaves* ample, obovate or obovate-oblong, acuminate, truncate or subcordate at base, parchment-like, glabrous, mostly 20–30 by 9–14 cm.; side-nerves 10–12 pairs. *Stipules* firm, triangular, acute, nearly 1 cm. l., silky within. *Flowers* in axillary corymbose panicles usually shorter than the leaves; peduncle and branches compressed, the former 2.5–10 cm. l.; bracts linear-lanceolate, about 1 cm. l., the ultimate narrowly linear, 3 mm. l.; pedicels 1–3 mm. l. *Calyx-tube* bell-shaped, glabrous or nearly so, 2 mm. l.; lobes as long, linear-awl-shaped. *Corolla-tube* subcylindrical, glabrous outside, ringed at mouth, 10–12 mm. l.; lobes suborbicular, minutely silky on the face. *Stamens* inserted near middle of tube, included. *Style* short, bifid. *Capsule* depressed-globose, 4 mm. across. *Seeds* winged, about 2 mm. l.

2. **R. Harrisii** Urb. *Symb. Ant.* vi. 43 (1909); leaves opposite, medium-sized, sessile, amplexicaul; calyx-lobes shorter than tube; corolla-tube 3 mm. l.—*Standl. loc. cit.* Type in Herb. Jam. A specimen with corolla in Herb. Kew. from Miss Perkins.

Wooded Hill N.E. of Dolphin Head; *Harris*! Fl. Jam. 10,310. Near Troy, *Miss Perkins* 1365!

*Shrub* or *small tree* up to 12 ft. Branchlets slender, compressed, afterwards subterete, grey. *Leaves* obovate-oblong, acute, rounded or slightly cordate at base, papery, glabrous, mostly 10–16 by 4–6.5 cm.; side-nerves 5–7 pairs. *Stipules* triangular, acute, silky inside, 3 mm. l. *Flowers* in short corymbose panicles; peduncles 1.5–3 cm. l.; pedicels 1–4 mm. l.; bracts small. *Calyx-tube* subglobose, glabrous, 1 mm. l.; lobes triangular, 3 mm. l. *Corolla* tawny yellow (*Harris*); tube widened above, very finely hairy at base; lobes suborbicular, 1 mm. l. *Anthems* and *style* included. *Capsule* and *seeds* as of last, but seeds smaller.

The type specimen lent from the Jamaica Herbarium is without a corolla, and Urban, who did not see one, or at least one in its perfect state, omits the basal indumentum from his description and gives apparently (“verisimiliter”) scarcely 7 mm. for the length. In every other respect the type and the Troy material agree well.

3. **R. daphnoides** Griseb. *Fl. Br. W. Ind.* 327 (1861); leaves opposite, petiolate, small; calyx-lobes shorter than tube; corolla-tube nearly 4 times as long as lobes.—*Standl. tom. cit.* 69. Type in Herb. Kew.

Valley going to Luidas Vale, near Moneague, *Prior* 469!

Slender glabrous *shrub*. Branches longitudinally striate, grey. *Leaves* obovate or obovate-oblong, obtusely acute sometimes emarginate, cuneate at base, thinly papery, mostly 3.5–5.5 by 1.5–2.5 cm.; side-nerves 4–5 pairs, inconspicuous; petioles stoutish, about 5 mm. l. *Stipules* deltoid, acute, 2 mm. l. *Inflorescence* axillary,

short, open, few-flowered; peduncles up to 1 cm. l.; pedicels slender, 2-5 mm. l.; bracts awl-shaped, up to 5 mm. l., youngest 1 mm. l. *Calyx-tube* subglobose, barely 1.5 mm. l.; lobes triangular, acute, .3 mm. l. *Corolla* apparently reddish; tube subcylindrical, 7 mm. l.; lobes suborbicular, 2 mm. l. *Stamens* inserted in the corolla-throat, included. *Style* bifid. *Capsule* globose, 4 mm. across (Griseb.). *Seeds* with an appendage at each end (Griseb.).

4. **R. pallida** Britton in *Bull. Torr. Bot. Club.* xxxvii. 358 (1910); leaves opposite, petiolate; calyx-lobes as long as tube; corolla-tube twice as long as lobes.—*Standl. loc. cit.* Type in Herb. N. York Bot. Gard.

S.E. foothills of John Crow Mts., Britton 3992; *Ibid.* Britton & Harris! Fl. Jam. 10,680, 10,724.

A tree 12-30 ft. high. *Branchlets* more or less compressed, at first shortly hairy. *Leaves* elliptic-oblong, acute, obtuse at base, parchment-like, when young very shortly and coarsely hairy especially on nerves, mostly 6-12 by 1.8-4 cm.; side-nerves 4-6 pairs; petioles hairy when young, 1-2 cm. l. *Stipules* broadly triangular, acuminate, 3-4 mm. l., silky within. *Flowers* in short, axillary sparsely-flowered cymose panicles; peduncles 10-15 mm. l.; pedicels 2-5 mm. l.; bracts linear-awl-shaped, 2-3 mm. l. *Calyx-tube* bell-shaped, glabrous, 1-5 mm. l.; lobes linear-lanceolate, 1 mm. l. *Corolla* white or tawny yellow; tube subcylindrical, about 8 mm. l., ringed at mouth; lobes suborbicular, 4 mm. l. *Stamens* inserted on middle of corolla-tube, included. *Style* 2-armed, included. *Capsule* depressed globose, 4 by 5 mm. *Seeds* winged.

5. **R. elegans** Britton in *Bull. Torr. Bot. Club.* xxxvii. 358 (1910); leaves petiolate; calyx-lobes shorter than the tube; corolla-tube thrice as long as lobes.—*Standl. loc. cit.* Type in Herb. N. York Bot. Gard.

E. slopes of S. end of John Crow Mts., Britton 4143; *Ibid.* Britton & Harris! Fl. Jam. 10,744, 10,748.

Tree 25-30 ft. high. *Leaves* as of last, but somewhat larger and usually with slightly longer petioles. *Stipules* and *inflorescence* much as of last. *Calyx-tube* bell-shaped, finely hairy, 2 mm. l.; lobes triangular, 1 mm. l. or a little more. *Corolla* crimson, with tawny yellow puberulous 12-14 mm. l. tube, ringed at mouth; lobes obovate, 4 mm. l. *Stamens* inserted near middle of tube. *Style* 2-armed, included. *Capsule* depressed-globose, strongly ribbed, 4 by 5.5 mm.

6. **R. racemosa** Sw. *Fl. Ind. Occ. i.* 360 (1797); leaves petiolate; calyx-lobes less than half as long as tube; corolla small, with lobes not half as long as tube.—*Lun. Hort. Jam. ii.* 122; *DC. Prodr. iv.* 407; *Griseb. op. cit.* 326; *Standl. tom. cit.* 170. *Petasia fruticosa, foliis ovatis &c.* *Browne Hist. Jam.* 143, t. 2, f. 3. Specimens from Swartz in Herb. Stockholm and in Herb. Mus. Brit.

Mammee River, Browne; Swartz! Macfadyen! J. P. 1101 Hart! Jenman!; Old England; Silver Hill; Wallingford; near Portland

Gap; woodland above Abbey Green; *Harris*! Fl. Jam. 5262, 5351, 5463, 5551, 5925, 5962, 6131.

Slender tree 20–30 ft. high. *Branchlets* subterete, glabrous. *Leaves* broadly to rather narrowly elliptic, acute, obtuse at base, papery, glabrous, mostly 7–12 by 3·5–4·5 cm.; side-nerves 6–7 pairs; petioles 1·5–3 cm. l. *Stipules* broad, cuspidate-acuminate, silky within, 3 mm. l. *Flowers* stalked, axillary, in short open glabrous cymose panicles 7 cm. l.; peduncles about as long as petioles; bracts small, awl-shaped. *Calyx-tube* top-shaped, 2 mm. l.; lobes very short, rotundate. *Corolla-tube* funnel-shaped, ringed at mouth, 3·5 mm. l.; lobes rotundate, barely 1·5 mm. l. *Stamens* very rarely 4 (*Swartz*), inserted on middle of tube, included. *Capsule* ovoid, 4 by 3·5 mm. *Seeds* winged.

7. *R. laurifolia* Sw. *Fl. Ind. Occ. i.* 363 (1797); leaves petiolate; calyx-lobes shorter than tube; corolla-tube short and broad, little longer than the lobes.—*Lun. tom. cit.* 122; *DC. loc. cit.*; *Griseb. op. cit.* 326; *Standl. tom. cit.* 70. *Petesia fruticosa foliis ovatis oppositis Browne Hist. Jam.* 143, t. 2, f. 2. Specimens from *Swartz* in Herb. Stockholm and in Herb. Mus. Brit.

Hills above Bull Bay and between Sixteen-Mile Walk and St. Mary's, *Browne*; *Knight*! *Swartz*! St. Mary, *McNab*! Mile Gully Mts., Manchester, *Purdie*! *March* 1624! Fray Woods; Roaring River near St. Ann's Bay; Liberty Hall, St. Ann; *Harris*! Fl. Jam. 10,335, 10,357, 10,359, 10,365.

*Shrub* or tree up to 40 ft. *Branchlets* with short internodes, compressed, minutely pubescent, soon becoming terete and glabrous. *Leaves* as of last, but petioles under 2 cm l. *Panicles* axillary, many-flowered, minutely pubescent, 5–15 cm. l. *Calyx-tube* depressed-globose, 1 mm. l.; lobes half as long, triangular. *Corolla* small, white or pale yellow, fragrant; tube obovoid, ringed at mouth, 1·5–2·5 by 2–3 mm.; lobes suborbicular, 1·3 mm. l. *Stamens* inserted in throat tube, subincluded. *Style* shortly exserted, bifid. *Capsule* depressed-globose, 2 mm. l. *Seeds* winged.

8. *R. tomentosa* Sw. *Prodr.* 41 (1788); leaves occasionally ternate, petiolate, finely tomentose beneath; calyx-lobes shorter than tube; corolla-lobes barely half as long as tube.—*Sw. Fl. Ind. Occ. i.* 365; *Lun. tom. cit.* 123; *DC. tom. cit.* 407; *Griseb. op. cit.* 326; *Standl. tom. cit.* 70. *Petesia fruticosa foliis subvillosis &c. Browne Hist. Jam.* 144. Specimens from *Swartz* in Herb. Stockholm and in Herb. Mus. Brit. Specimen from *Browne* in Herb. Linn.

Hills above Bull Bay and between Sixteen-Mile Walk and St. Mary's, *Browne*; Hills, Sixteen-Mile Walk, *Swartz*! Hills above the lagoons (Ferry), *Purdie*! *March* 649!

Erect shrub 3 ft. high (7–8 ft. *Browne*). *Branches* subterete, pale, pubescent soon becoming glabrous. *Leaves* opposite (rarely ternate) oblong-obovate or elliptical, obtuse or obtusely acute, narrowed at base, papery, rugulose and at first finely hairy above, finely grey tomentose beneath, 8–9 by 3·5–4 cm.; side-nerves 4–5 pairs; petioles

5–10 mm. l., tomentose. *Stipules* deltoid, acuminate, hairy on back, silky within, 3–4 mm. l. *Panicle* axillary, about 4 cm. l., tomentose; peduncles 1–2 cm. l.; pedicels 0–2 mm. l.; bracts minute, awl-shaped. *Calyx-tube* subglobose, 1 mm. l.; lobes barely half as long. *Corolla* white or dark yellow; tube somewhat dilated above, 4–5 mm. l., ringed at mouth; lobes suborbicular, barely 2 mm. l. *Stamens* inserted near middle of tube, included. *Style* included, 2-armed, 3 mm. l. *Capsule* depressed-globose, hairy, 3 mm. l. *Seeds* with an appendage at either end.

**Var. parviflora** *S. Moore in Journ. Bot. lxxviii.* 111 (1930).

N.E. slopes of Long Mt., *Norman* 166 ! in Herb. Mus. Brit.

Differs from type chiefly in its smaller and shorter-styled flowers. *Corolla* cream-coloured; tube 2.5–3 mm. l.; lobes 1.5 mm. l. *Style* 2 mm. l. *Capsule* not seen.

**9. R. polita** *Griseb. Fl. Br. W. Ind.* 326 (1861); leaves opposite, petioled; calyx-lobes minute, less than half as long as tube; corolla-tube three times as long as lobes.—*Standl. tom. cit.* 71. Type in Herb. Kew.

Near St. Ann's Bay, *Purdie* ! Union Hill, *Prior* ! Slopes of Dolphin Head; Fray Woods, Hanover; *Harris* ! Fl. Jam. 10,273, 10,291, 10,337A. Giddy Hall, St. Elizabeth, *Mrs. Sangster* 555 !

Small tree, 15–20 ft. *Branches* subterete, compressed at first, glabrous. *Leaves* obovate or oblong-elliptical, obtuse at apex and base, parchment-like, glabrous, midrib impressed above, prominent below, side-nerves 4–6 pairs, mostly 6–12 by 2.5–5 cm.; petioles about 1 cm. l. *Panicles* shorter than the leaves, finely hairy; peduncles about as long as petioles; pedicels 0–3 mm. l.; bracts minute, awl-shaped. *Calyx-tube* top-shaped, 1.5 mm. l.; lobes deltoid, .5 mm. l. *Corolla-tube* cylindrical or subcylindrical, with prominently ringed mouth, 5 mm. l.; lobes suborbicular, 2 mm. l. *Stamens* inserted in middle of tube, included. *Style* subexserted, 2-armed, rather more than 5 mm. l. *Capsule* globose, bisulcate, finely hairy, 3–4 mm. l. *Seeds* winged, acute at either end.

**10. R. trifolia** *Jacq. Sel. Stirp. Amer.* 60, t. 43 (1763); leaves sometimes ternate, petiolate; calyx-lobes broad, minute, shorter than the tube; corolla-lobes one-third as long as tube.—*Jacq. Ic. Pict.* 33, t. 62 (*trifoliata*); *L. Sp. Pl. ed.* 2, 1671; *Lun. tom. cit.* ii. 121; *DC. tom. cit.* 408; *Griseb. tom. cit.* 326; *Standl. tom. cit.* 72. *R. thyrsoidea* *Sw. Prodr.* 41 (1788) & *Fl. Ind. Occ. i.* 358; *Lun. tom. cit.* 121; *DC. tom. cit.* 407; *Griseb. tom. cit.* 326; *Standl. tom. cit.* 72. *R. microcalyx* *Krug & Urb. Symb. Ant. i.* 412 (1899); *Standl. loc. cit.* Specimen from Herb. Jacquin in Herb. Mus. Brit. and from Swartz in Herb. Stockholm and in Herb. Mus. Brit.; type of *R. microcalyx* in Herb. Jam. (Fig. 7.)

Ferry, *Jacquin* ! Dry Hills in W. Jamaica *Swartz* ! *Macfadyen* ! March 1965 ! Foot of Long Mt. *Campbell* ! Fl. Jam. 6147; near Wareka; Mona; Hall's Delight; Road to Wareka, Long Mt.; Hill behind Ferry Quarry; Cane River Valley; Road from Constant Spring

to Bardowie; *Harris*! Fl. Jam. 6682, 7892, 8428, 8933, 9020, 10,039, 10,060, 10,105, 11,901.

*Shrub* or slender *tree* up to 20 ft. *Branchlets* four-angled, puberulous or pubescent, soon becoming subterete and glabrous. *Leaves* obovate-oblong or elliptical, obtusely acute, obtuse at base, papery, smooth or somewhat rough above, finely pubescent beneath and becoming glabrous, mostly 5-10 by 2-4 cm.; side-nerves 4-5 pairs; petioles

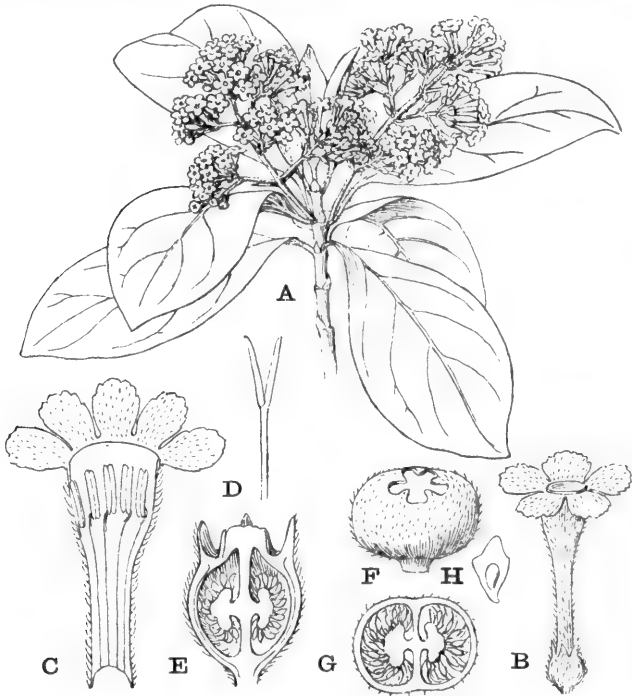


Fig. 7.—*Rondeletia trifolia* Jacq.

- |   |   |
|---|---|
| A, Branch with leaves and flowers<br>× 3.   | E, Ovary with calyx cut lengthwise<br>× 12. |
| B, Flower × 4.                              | F, Capsule × 4.                             |
| C, Corolla cut open × 6.                    | G, Capsule cut across × 8.                  |
| D, Upper part of style with stigmas<br>× 6. | H, Seed × 6.                                |

channelled, puberulous or pubescent, 1-2 cm. l. *Stipules* deltoid, acute, shortly and appressedly hairy on back; silky within. *Panicles* shorter than the leaves, pubescent; peduncles about as long as petioles; bracts linear-awl-shaped, mostly 2-4 mm. l.; flowers few together at ends of branches, sessile or subsessile. *Calyx-tube* subglobose, 1 mm. l.; lobes .2—nearly .5 mm. l. *Corolla* reddish or tawny yellow, scentless (*Jacq.*), very fragrant at night (*Swartz*); tube about 5 mm. l., dilated under the limb and ringed at mouth; lobes suborbicular, about 1.5 mm. l. *Stamens* inserted in middle of tube. *Style* bifid. *Capsule* subglobose, 3-4 mm. across. *Seeds* winged.



With the types of Jacquin and of Swartz before one, it seems impossible to distinguish between *R. trifolia* and *R. thyrsoidea*, although up to the present time, they have been considered distinct. There are small differences in the various specimens cited above relating mainly to the upper face of the leaves, and minute variations in the size of the tiny calyx-lobes together with a colour-range by no means extensive. The smallest calyx-lobes are those of *R. microcalyx*, regarded by Standley as conspecific with *R. thyrsoidea*; but the difference in size between these and those of typical *R. trifolia*, for instance, are appreciable with difficulty. In this connection it should be noted that the calyx-lobes tend to increase in size as the corolla passes.

11. **R. impressa** *Krug & Urb. Symb. Ant. i. 412 (1899)*; leaves opposite or ternate, petiolate; calyx-lobes shorter than tube; corolla-tube about 3 times as long as lobes.—*Standl. tom. cit. 74*. Co-types in Herb. Jam. and Herb. Kew.

Cherry Garden, *Campbell*! Fl. Jam. 6234; Plato; road to Jack's Hill; *Harris*! Fl. Jam. 5532, 11,870.

*Shrub* up to 12 ft. *Branches* terete, pale, pubescent. *Leaves* ovate or ovate-oblong, acute or shortly acuminate, obtuse at base, papery, hairy on the nerves above, sparsely pubescent below, side-nerves 4-6 pairs, mostly 5-10 by 2-4 cm. *Stipules* deltoid, acute, hairy on back, silky within. *Inflorescence* few-flowered, shorter than the leaves, pubescent; peduncles 1-3 cm. l.; pedicels 0-2 mm. l.; bracts awl-shaped, mostly 2-4 mm. l. *Calyx-tube* subglobose, about 1.5 mm. l.; lobes barely 1 mm. l. *Corolla* tawny yellow; tube cylindrical, about 6 mm. l.; lobes suborbicular, 2 mm. l. *Capsule* globose, 4 mm. across. *Seeds* winged.

12. **R. hirsuta** *Sw. Prodr. 41 (1788)*; leaves petioled; calyx villous, lobes longer than tube; corolla-tube more than twice as long as lobes.—*Sw. Fl. Ind. Occ. i. 371*; *Lun. tom. cit. 124*; *DC. tom. cit. 408*; *Griseb. tom. cit. 327*; *Standl. tom. cit. 75 (excl. synn. DC.)*. Specimens from Swartz in Herb. Mus. Brit. and Herb. Stockholm.

*Wright*! Mountains near Bath, *Swartz*! *Macfadyen*! *March 1483*! St. George's, Fl. Jam. 6792! between Mansfield and Devil's River; valley of Sulphur River, Bath, *Harris & Britton*! Fl. Jam. 10,573, 10,582.

*Erect shrub* up to 12 ft. high. *Branches* compressed or four-angled, hirsute, afterwards becoming terete and glabrous. *Leaves* ovate or oblong-ovate, acute or shortly acuminate, usually rounded at base, parchment-like, pilose-hispidulous chiefly on nerves, side-nerves 5-6 pairs, mostly 7-11 by 3-5 cm. *Stipules* triangular, acuminate, appressed-hairy on back, coarsely silky within, 7-13 mm. l. *Inflorescence* about as long as the leaves, stalked, coarsely hirsute, few-branched, each branch bearing a few stalked flowers; peduncles slender, 4-8 cm. l.; bracts narrow-linear, 5 mm. l. more or less; pedicels about 5 mm. l. *Calyx-tube* globose, hairy, 2 mm. l.; lobes linear, 5-7 mm. l. *Corolla* tawny yellow, sparsely hirsute; tube narrowly funnel-shaped, 6 mm. l., ringed at mouth; lobes obovate, 2 mm. l. *Stamens* inserted in middle of tube. *Style* 2-armed, 4.5 mm. l. *Capsule* depressed-globose, with two furrows, ultimately glabrous, 7 mm. across. *Seeds* winged.

13. **R. cincta** Griseb. *Fl. Br. W. Ind.* 329 (1861); leaves petiolate; inflorescence capitate; calyx-lobes twice as long as tube; corolla-tube thrice as long as lobes.—*Standl. tom. cit.* 75. Type in Herb. Kew.

Summit of Dolphin Head, *Purdie* ! *Ibid.*, *Harris* ! *Fl. Jam.* 10,272.

A small tree 20 ft. high. *Branches* compressed, pubescent, becoming subterete, glabrous and cinereous. *Leaves* obovate-oblong or elliptical, obtuse or obtusely acute, narrowed at base, leathery, rather sparingly hirsute with appressed hairs, afterwards glabrous or nearly so, sometimes nearly glabrous from the first, side-nerves 3-5 pairs, 5-9 by 2-3 cm.; petioles about 1 cm. l. *Stipules* sheathing, rigid, 10-14 mm. l., oblong or ovate, acuminate, finely hairy on back, silky within. *Flowers* white, densely silky outside, in axillary few-flowered cymose heads; peduncles stout, silky, 5-10 mm. l.; bracts several, closely investing the head, silky, outer ovate, 8-10 mm. l., inner smaller. *Calyx-tube* subglobose, 3 mm. l.; lobes ovate-lanceolate, acute, 6-7 mm. l. *Corolla-tube* broad, cylindrical, ringed at mouth, 9 mm. l.; lobes suborbicular, 3 mm. l. *Stamens* and *style* included. *Capsule* not seen.

14. **R. clarendonensis** Britton ex S. Moore in *Journ. Bot. lxxviii.* 111 (1930); leaves subsessile; inflorescence capitate; calyx-lobes thrice as long as tube; corolla-tube nearly thrice as long as lobes.—Type in Herb. Jam.

Peckham Woods, Upper Clarendon, 2500 ft. alt. *Harris* ! *Fl. Jam.* 12,774.

*Shrub* often with trailing stems 10 ft. long. *Branches* brown-tomentose, some glabrous and cinereous. *Leaves* subsessile (petioles only 2 mm. l.), ovate or ovate-oblong, cordate at base, apex very obtuse or rotundate, leathery, glabrous shining and rugulose on upper side, hairy on under side nerves, mostly 3-4 by 2-3.5 cm. *Inflorescence* axillary, peduncled, flowers up to 6 in a cluster; peduncles erect or nodding, silky-tomentose, up to 2 cm. l.; pedicels about 2 mm. l.; bracts linear, acute, minutely silky, 5-7 mm. l. *Calyx-tube* hemispherical, silky, 1.5 mm. l.; lobes linear, acute silky below, minutely silky in upper part, 6 mm. l. *Corolla* white; tube narrowly funnel-shaped, silky-tomentose, ringed at mouth, 7 mm. l.; lobes 5, suborbicular, 2.5 mm. l. *Stamens* and *style* included. *Capsule* depressed-globose, crowned by the persistent calyx-lobes, minutely grey-haired, 5 mm. across. *Seeds* pale brown, appendaged at one end, 1 mm. l.

15. **R. glauca** Griseb. *Fl. Br. W. Ind.* 329 (1861); leaves petiolate, inflorescence capitate; calyx-lobes as long as tube; corolla-tube more than twice the length of lobes.—*Standl. tom. cit.* 76. Type in Herb. Kew.

Pedro district, St. Ann, *Purdie* ! Holly Mount, near Ewarton, *Harris* ! *Fl. Jam.* 8881, 8972.

Straggling *shrub* 8-12 ft. high, with hairiness, branches, leaves and stipules much as of *R. cincta*. *Flower-heads* axillary, few-flowered; peduncles 3-8 (rarely 10) mm. l.; outer bracts obtuse or acute, 5-7 mm. l. *Calyx-tube* broadly obovoid, 4 mm. l.; lobes ovate, obtuse, 4 mm. l. *Corolla* tawny yellow; tube broad, ringed at mouth, 8 mm. l.; lobes suborbicular, 3 mm. l. *Stamens* and *style* included. *Capsule* depressed-globose, silky, 4-4.5 mm. l. *Seeds* winged.

16. **R. ligulata** Urb. *Symb. Ant. v.* 503 (1908); leaves petiolate; flowers solitary; calyx-lobes longer than tube; corolla-tube nearly thrice as long as lobes.—*Standl. tom. cit.*  
76. Co-types in Herb. Jam. and Herb. Mus. Brit.

Tyre, near Troy; Dolphin Head; *Harris*! Fl. Jam. 8804, 9088, 9248, 9469, 10,668.

*Shrub* up to 18 ft. high. *Branches* hirsute with spreading hairs becoming glabrous and ashy grey. *Leaves* oblong-ob lanceolate or elliptical, acute (sometimes obtuse), narrowed at base, parchment-like, sparsely appressed-hirsute above, more so below especially on the nerves, side-nerves 3-4 pairs, slender, 4-10 by 2-3.5 cm.; petioles hirsute, 5-10 mm. l. *Stipules* sheathing, ovate-lanceolate, acuminate, densely hirsute on back, silky within, at first closely investing the leaf-bud but soon falling off; 12-18 mm. l. *Peduncles* 2-8 mm. l., densely hirsute; bracts ovate, acuminate, densely hirsute, outer pair enclosing the flower-bud, about 12 mm. l., inner bracts awl-shaped and within them the short pedicel. *Calyx-tube* broadly top-shaped, densely hirsute, 2 mm. l.; lobes oblong-lanceolate, densely hirsute, about 6 mm. l. *Corolla-tube* crimson, funnel-shaped, ringed at mouth, hirsute, 12 mm. l.; lobes pale yellow, orbicular, 4.5 mm. l. *Stamens* and *style* included. *Capsule* depressed-globose, 5 mm. l. *Seeds* winged.

17. **R. hirta** Sw. *Prodr.* 41 (1788); leaves petiolate; inflorescence capitate; calyx hirsute, lobes longer than the tube; corolla-tube 3 times as long as lobes.—*Sw. Fl. Ind. Occ. i.* 373; *Ait. Hort. Kew. i.* 227; *Gaertn. Fruct. iii.* 33, *t. clxxxiv*; *Lun. tom. cit.* 125; *Lodd. Bot. Cab. t.* 350; *DC. tom. cit.* 407; *Griseb. tom. cit.* 328; *Standl. tom. cit.* 76 (excl. syn.). *R. hirta* var. *Aitonii* *DC. tom. cit.* 408. *R. hirsuta* var. *Aitonii* *Griseb. tom. cit.* 328. Specimen from Swartz in Herb. Stockholm, and a specimen of var. *Aitonii* from Herb. Kew. in Herb. Mus. Brit.

*Masson*! *Shakespear*! *Swartz*! *Broughton*! *Macfadyen*! *Rocks* near Woburn Lawn, Port Royal Mts. *Purdie*! *Liguanea Hills, Prior*! *March* 1483! *Wilson*! *Gordon Town, J. P.* 909, 1082, 1215 *Hart*! *Dover Castle, Eggers* 3515! *Plato Road*; *Belvidere, St. Thomas*; *Constant Spring to Bardowie*; *Liguanea Ridge, St. Andrew*; *Harris*! *Fl. Jam.* 5529, 10,591, 12,106, 12,203.

Tall *shrub* or slender *tree* up to 15 ft. high. *Branches* hirsute, becoming glabrous. *Leaves* ovate or ovate-oblong, acute or acuminate, rounded or obtuse at base, papery, appressed hairy and somewhat roughly hairy above, hispidulous especially on the nerves beneath, side nerves 6 or 7 pairs, mostly 5-16 by 2-6.5 cm. *Stipules* triangular, acute, appressed hirsute on back, silky within, 4-6 mm. l. *Inflorescence* axillary, stalked, 3-branched, each branch supporting a few sessile or short-stalked flowers; peduncle hirsute or pilose, 1.5-7 cm. l.; outer bracts foliaceous or all awl-shaped or linear-lanceolate and 5-10 mm. l. *Calyx-tube* ovoid, hirsute, 1.5 mm. l.; lobes awl-shaped, 3-4 mm. l. *Corolla* tawny yellow; tube funnel-shaped, hirsute, with prominently ringed mouth, 6-7 mm. l.; lobes suborbicular, 2 mm. l. *Stamens* inserted near middle of tube, included. *Style* short, 2-armed. *Capsule* subglobose, ribbed, puberulous, 6 mm. across. *Seeds* winged.

Swartz says the capsule of this species perfects only 2 seeds, and

Gaertner's figure cited above, shows clearly enough as does examination of a capsule from Swartz's specimen, that the supposed seeds are really a compact mass of tiny flat seeds characteristic of the genus implanted on a large placenta. Swartz makes the same mistake in some other species. See *Journ. Bot. lxxvii.* 110.

18. **R. saxicola** Britton in *Bull. Torr. Bot. Club. xxxix.* 8 (1912); leaves petiolate; inflorescence short-stalked; calyx-lobes rather longer than tube; corolla unknown.—*Standl. op. cit.* 77. Co-types in Herb. N. York Bot. Gard., Herb. Jam. and Herb. Kew.

Somerset Woods near Mandeville, *Harris & Britton!* Fl. Jam. 10,609.

*Shrub* 12 ft. high. *Branches* slender, at first four-angled and hirsute, becoming terete and glabrous. *Leaves* oblanceolate-oblong, obtuse or obtusely acute, narrowed at base, papery, appressed hirsutulous especially on the nerves, side nerves 5-6 pairs, 3.5-9 by 1.5-3 cm.; petioles 5-10 mm. l. *Stipules* sheathing, ovate-lanceolate, acuminate, appressed hirsute on back, 6-10 mm. l. *Inflorescence* a close few-flowered cymose head on a nodding hirsute peduncle 4-8 mm. l.; bracts ovate- to linear-lanceolate, 3-4 mm. l. *Calyx-tube* (of fruit) depressed globose, hairy, 2.5 mm. l., crowned by the oblong acute 3 mm. l. lobes.

19. **R. umbellulata** Sw. *Prodr.* 41 (1788); leaves petiolate; inflorescence long-stalked; calyx-lobes twice as long as tube; corolla-tube 4 times as long as lobes.—*Sw. Fl. Ind. Occ. i.* 367; *Lun. Hort. Jam. ii.* 123; *DC. tom. cit.* 407; *Standl. tom. cit.* 77. *R. buxifolia* Griseb. *tom. cit.* 328 (so far as concerns Jamaica) (non *Vahl*). Specimens from Swartz in Herb. Stockholm and Herb. Mus. Brit.

*Swartz!* Stephen Edge, bank of Great River, Westmoreland *Harris!* Fl. Jam. 9189.

*Shrub* 10 ft. high. *Branches* compressed, shortly hirsute, afterwards subterete and glabrous. *Leaves* elliptic-lanceolate, acuminate, narrowed at base, papery, nearly glabrous above, hirsutulous on nerves below, side-nerves 4-6 pairs, 6-9.5 by 2-3 cm. *Stipules* sheathing, loose, ovate, caudate-acuminate, coarsely appressed, hairy on both faces, up to 13 mm. l. *Flowers* sessile or subsessile, in axillary, trichotomous, few-flowered cymes; peduncles shortly hirsute, mostly 2.5-5 cm. l.; outer bracts foliaceous, lanceolate or linear-lanceolate, up to 3 cm. l.; inner bracts linear, 1 cm. l. or less. *Calyx-tube* broadly top-shaped, densely hairy, 1.5 mm. l.; lobes oblong, appressed hairy, 3 mm. l. *Corolla* tawny yellow; tube slender, dilated at throat, ringed at mouth, hairy outside, 8-11 mm. l.; lobes obovate, 2-2.5 mm. l. *Stamens* and *style* included. *Capsule* globose, 5 mm. across. *Seeds* winged.

20. **R. incana** Sw. *Prodr.* 41 (1788); leaves petiolate; peduncles short; calyx-lobes ovate, longer than tube; corolla-tube longer than lobes.—*Sw. Fl. Ind. Occ. i.* 369;

*Lun. tom. cit.* 124; *DC. tom. cit.* 407; *Standl. tom. cit.* 78. *Arachnimorpha incana* *Ham. Prodr.* 28 (1825)? Specimens from Swartz in Herb. Stockholm and Herb. Mus. Brit.

On limestone rocks in the highlands, *Swartz* !

An erect branching *shrub* 2-3 ft. high. *Branches* at first compressed and silky-tomentose, afterwards subterete, glabrous and cinereous. *Leaves* opposite, elliptical, obtuse at either end, shining above and glabrous almost from the first, pubescent especially on the midrib below, side-nerves 4-5 pairs, 5-7 by 2.5-3 cm.; petioles finely hairy, 5-15 mm. l. *Stipules* ovate-lanceolate, acuminate, finely silky back and front, about 7 mm. l. *Inflorescence* axillary, peduncled, shorter than the leaves; flowers shortly pedicellate, in clusters of three; peduncle compressed, silky tomentose, 1-2 cm. l.; pedicels up to 7 mm. l. but usually shorter, together with bracts, calyx and corolla tomentose. *Bracts* ovate-lanceolate, acuminate, about 6 mm. l. *Calyx-tube* ovoid, 3 mm. l.; lobes ovate, obtuse, 5 mm. l. *Corolla-tube* narrowly funnel-shaped, ringed at mouth, 10 mm. l.; lobes ovate, 4 mm. l. *Capsule* globose, tomentose, 7 mm. across.

21. **R. silvestris** *S. Moore in Journ. Bot. lxxiii.* 111 (1930); leaves petiolate; peduncles short; calyx-lobes lanceolate, longer than tube; corolla-tube thrice as long as lobes.—*R. incana* *Griseb. tom. cit.* 328 (non *Sw.*). Type in Herb. Kew.

On limestone rocks near Light Hole, St. Ann, *Purdie* ! Peckham Woods, Clarendon, at 2500 ft., *Harris* ! Fl. Jam. 11,030, 11,031.

Straggling *shrub* up to 9 ft. high. *Branches* compressed, tomentose, soon glabrous and cinereous. *Leaves* obovate-oblong, obtuse or rotundate, obtuse at base, stiffly leathery, silky-pubescent above at first afterwards glabrous and shining, densely pale-brown-tomentose below, side nerves 5-6 pairs, 2.5-5 by 1.5-2.5 cm. *Stipules* ovate, acute, rigid, appressed hairy on back, silky within, 6-8 mm. l. *Inflorescence* much as of last and with similar indumentum, but flowers sometimes solitary; bracts ovate or ovate-lanceolate, acute, 5-6 mm. l. *Calyx-tube* ovoid, about 3 mm. l.; lobes lanceolate, obtuse or obtusely acute, about 7 mm. l. *Corolla-tube* broadened above, 8 mm. l.; lobes ovate, 2.5 mm. l. *Capsule* subglobose, 5 mm. across.

**R. americana** L. is a St. Vincent plant said by Grisebach to occur also in Jamaica. There being considerable floristic difference between Jamaica and St. Vincent and no specimens of the species from the former being known, this is apparently a mistake. The plant is a shrub with elliptic acuminate leaves, 5.5-10 by 2.5-3 cm., axillary, rather open, cymose corymbs on slender peduncles as long as or longer than the leaves, linear calyx-lobes as long as the tomentose tube and white corollas with slender hairy tube 8 mm. long and about 3 times the length of the obovate lobes. Although scarcely likely to prove a native of Jamaica, it should be looked for.

## 8. RACHICALLIS DC.

Coarse copiously branched shrub or undershrub. Leaves crowded, small, opposite, sessile, fleshy. Stipules adnate to the leaf-bases to form a broad thinly leathery sheath. Flowers

solitary, axillary, opposite, sessile, subtended by 2 bracts. Calyx-tube half-superior, very small; lobes 4 sometimes with interjected teeth. Corolla salver-shaped, glabrous within; lobes 4, broad, imbricate in bud. Stamens inserted in the corolla-throat; anthers dorsifixed, included. Ovary half-superior, 2-celled; style filiform, bifid; ovules many in each cell, on a peltate placenta. Capsule subglobose, septicidally 2-valved, many-seeded. Seeds angular, pitted.

One species only, native of the West Indies.

**R. americana** (Jacq.) Kuntze *Rev. Gen. Pl.* ii. 281 (1891); *Hitchc. in Rep. Miss. Bot. Gard.* iv. 92; *Jenn. Is. Pin.* 264;

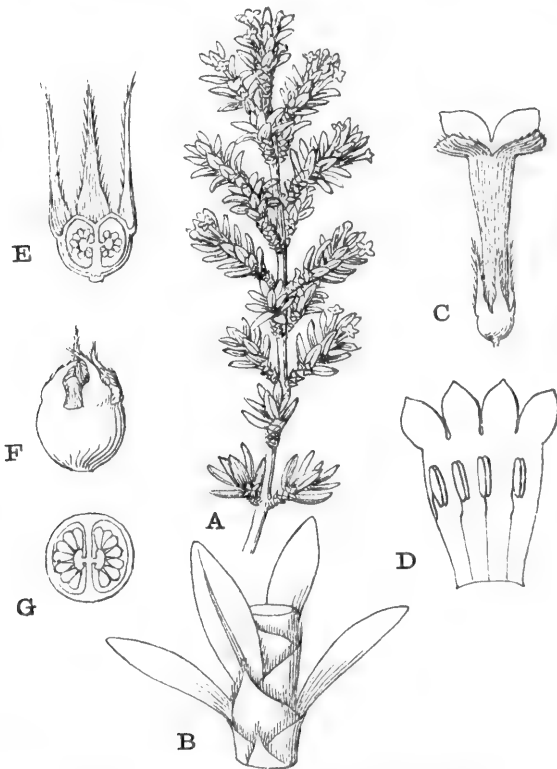


Fig. 8.—*Rachicallis americana* (Jacq.) Kuntze.

A, Branch with leaves and flowers  
×  $\frac{1}{2}$ .  
B, Part of branch showing leaves and  
stipules × 4.  
C, Flower × 4.

D, Corolla cut open × 4.  
E, Ovary with calyx cut lengthwise  
× 8.  
F, Fruit × 4.  
G, Fruit cut across × 4.

*Standl. in N. Amer. Fl. xxxii. 41*; *Britt. & Millsp. Baham. Fl. 409*; *Urb. Symb. Ant. viii. 661*. *R. rupestris DC. Prodr. iv. 434 (1830)*; *Griseb. Fl. Br. W. Ind. 330 & Cat. Cub. 130*; *Saw. Fl. Cub. 64*; *Combs Fl. Cub. 428*. *Hedyotis americana Jacq. Enum. Pl. Carib. 12 (1760)*. *H. rupestris Sw. Prodr. 29 (1788)*; *Lun. Hort. Jam. i. 277*. *Buchnera rupestris Sw. Fl. Ind. Occ. ii. 1063 (1806)*. *Oldenlandia rupestris Lam. Encyc. iv. 535*. *Thymelæa maritima ericæ foliis &c. Sloane Cat. 168 & Hist. ii. 94, t. 202, f. 1*. A specimen from Herb. Jacquin in Herb. Mus. Brit. (Fig. 8.)

Don Christopher's Cave, *Sloane Herb. vii. 2!* Coast, St. Ann, *Purdie!* Runaway Bay, *Lord Walsingham!* Near Runaway Bay and along the coast to Dry Harbour, *Harris!* Fl. Jam. 10, 176.—Bahamas, Cuba, Is. Pinos, Cayman, Navassa, Hispaniola, also Cozumel Island, Yucatan: reported from Bermuda but apparently by mistake.

Erect shrub 1-4 ft. high, on coastal rocks. Branches stout, grey and silky, becoming white and glabrous. Leaves imbricate, ovate to oblong, obtuse, thickly fleshy (rigidly leathery when dry), up to 8 by 2 mm. Stipules acute, obtuse or truncate, 2 mm. or more l., brown, glabrous or nearly so on back, appressed silky within. Bracts linear-lanceolate, acute, 3 mm. l. Calyx-tube depressed-subglobose, nearly glabrous, 1 mm. l.; lobes linear-lanceolate or awl-shaped, silky-ciliate, 2-3 mm. l. Corolla yellow; tube funnel-shaped, silky, 5-6 mm. l.; lobes broadly ovate, obtuse, silky on back. Style included, glabrous. Capsule somewhat compressed, crowned by the prominent calyx-lobes, depressed-globose, hairy in upper (free) part, 3 mm. l. Seeds about .5 mm. l.

## 9. OLDENLANDIA L.

Slender, erect or diffuse, glabrous herbs. Leaves opposite, usually small. Stipules entire or cut. Flowers mostly small, usually in axillary cymes or panicles, rarely solitary. Calyx-tube top-shaped or globose; limb of usually 4 small teeth or lobes. Corolla small, rotate, funnel- or salver-shaped; lobes 4 (5), valvate in bud. Stamens 4 (5), inserted on the corolla-throat; anthers dorsifixed, exerted or included. Ovary 2-celled; style ending in 2 short arms; ovules many with axile placentation. Capsule small, loculicidally dehiscent at the top of or all down the cell. Seeds several, small.

Species over 200 in the Old and New Worlds.

- Inflorescence of lax, few-flowered, dichotomous  
cymes ..... 1. *O. corymbosa*.
- Flowers solitary or densely fasciculate.  
Pedicels very short ..... 2. *O. uniflora*.  
Pedicels longer than the calyx.  
Leaves linear or linear-lanceolate ..... 3. *O. herbacea*.  
[Leaves ovate ..... *O. crystallina*.]

1. *O. corymbosa* L. *Sp. Pl.* 119 (1753); leaves usually longer than the internodes, and many times longer than broad; peduncles up to 1 cm. l. and over; corolla longer than calyx.—*Lun. Hort. Jam.* ii. 18; *DC. Prodr.* iv. 426; *Descourt. Fl. Ant.* i. 225, t. 50; *Griseb. Fl. Br. W. Ind.* 330 & *Cat. Cub.* 130; *Oliv. Fl. Trop. Afr.* iii. 62; *Egg. Fl. St. Croix & Virg.* 60; *Hook. f. Fl. Br. Ind.* iii. 64; *Kew Bull.* 1893, 256; *K. Schum. in Mart. Fl. Bras.* vi. pt. 6. 271; *Duss Fl. Ant. Franc.* 335; *Hart Herb. List Trin.* 29; *Jenn.*

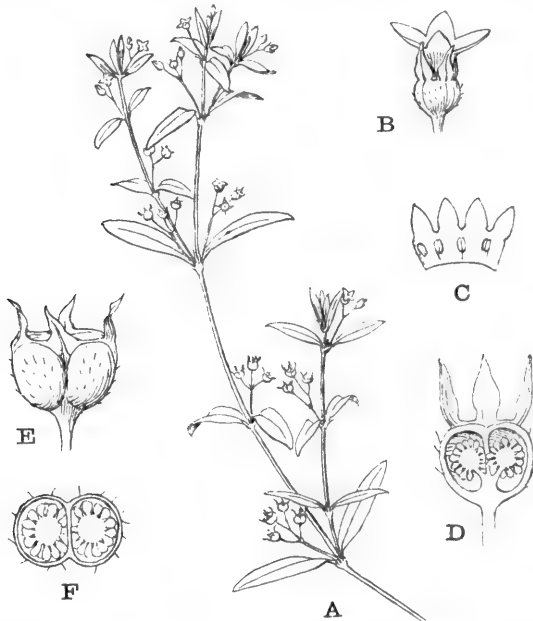


Fig. 9.—*Oldenlandia corymbosa* L.

A, Portion of plant  $\times \frac{1}{2}$ .  
B, Flower  $\times 6$ .  
C, Corolla cut open  $\times 6$ .

D, Ovary with calyx cut lengthwise  
 $\times 12$ .  
E, Fruit  $\times 6$ .  
F, Fruit cut across  $\times 6$ .

*Is. Pin.* 264; *Urb. in Fedde Rep. Beih.* v. 87; *Britton Fl. Amer. Virg.* 93; *Standl. in N. Amer. Fl.* xxxii. 19; *Will. & Cheesm. Fl. Trin. & Tob.* 12; *Britt. & Wils. P.-Rico & Virg. Is.* vi. 224. *O. ramosa* Roxb. *Fl. Ind.* i. 424 (1832); *Wight Ic.* t. 822. *Hedyotis corymbosa* Lam. *Tab. Encyc.* i. 272 & *Ill.* t. 61. *Gerontogea corymbosa* Cham. & *Schlecht. in Linnæa* iv. 154 (1829). *Oldenlandia minor caule teretimo* &c. *Browne Hist. Jam.* 146. *Oldenlandia pedunculis quadrifloris* &c. *Plum. Pl. Amer.* 205, t. cccxii, f. 1. (Fig. 9.)



In barren savannas, *Browne*. A weed in cane-fields, *Prior* ! Castleton, *Thompson* ! Fl. Jam. 799 ; Castleton District ; Hope Grounds ; Cornwall, St. Elizabeth ; *Harris* ! Fl. Jam. 7461, 9973b, 11,702, 11,887, 12,554.—Cuba, Is. Pinos, Lesser Antilles, Central and tropical S. America and Old World Tropics.

Annual branching weed, more or less decumbent. Branches slender, four-angled, glabrous. Leaves sessile or subsessile, linear or linear-lanceolate, acute, usually narrowed at base, rough at the side on the upper face, mostly 1–5 cm. by 2–7 mm. Stipules minute, ending in one or more bristle-like teeth. Flowers axillary, solitary or in open very few-flowered cymes ; peduncles filiform, 0–1.5 cm. l. ; pedicels very slender, usually longer than the flower. Calyx-tube top-shaped, barely 1 mm. l., about as long as the triangular acute lobes. Corolla white, rotate, slightly exceeding the calyx. Capsule depressed-globose, 2–3 mm. across. Seeds minute, brown.

Recommended by Descourtils as an expectorant and vermifuge.

2. *O. uniflora* L. *Sp. Pl.* 119 (1753) ; leaves generally shorter than the internodes ; about twice as long as broad ; flowers nearly sessile ; corolla shorter than calyx.—*Britton & Br. Ill. Fl. N. U. States* iii. 215, f. 3402 ; *Urb. Symb. Ant.* iv. 581 ; *Jenn. loc. cit.* ; *Britt. & Wils. tom. cit.* 225. *O. glomerata Michx. Fl. Amer. Bor. i.* 83 (1803) ; *Griseb. Cat. Cub.* 130 ; *Sauv. Fl. Cub.* 64 ; *Gray Fl. N. Amer. i. pt. 2.* 27. *Hedyotis glomerata Ell. Sketch i.* 188 (1816) ; *DC. tom. cit.* 421 ; *Stahl Fl. P.-Rico v.* 52.

Lacovia, St. Elizabeth, *Britton* 1495 ! *Ibid. Harris* ! Fl. Jam. 9973a.—S.E. United States, Cuba, Is. Pinos, Porto Rico.

A weak annual with slender, rather rough branches ascending from a decumbent root-stock. Leaves subsessile or shortly petioled, ovate or ovate-oblong, obtuse or obtusely acute, rather rough along the edge and midrib, mostly 5–15 by 2–10 mm. Stipules from a broad base variously cut, 1.5–3 mm. l. Inflorescence of axillary, sessile fascicles, sometimes reduced and even to a solitary flower ; pedicels shorter than the calyx. Calyx-tube ovoid, rough, 1 mm. l., about as long as the ovate or lanceolate lobes. Corolla rotate with very short tube, white. Capsule globose, rough, 2 mm. across. Seeds minute, dark.

3. *O. herbacea* (L.) *DC. Prodr.* iv. 425 (1830) ; leaves about as long as the internodes, much longer than broad ; flowers on conspicuous peduncles ; corolla shorter than calyx.—*Griseb. Fl. Br. W. Ind.* 330 ; *Sauv. loc. cit.* ; *Stahl tom. cit.* 53 ; *Duss loc. cit.* ; *Bold. Fl. Ned. W.-Ind. i.* 187 ; *Hart loc. cit.* ; *Jenn. tom. cit.* 263 ; *Urb. Symb. Ant.* iv. 581 & viii. 660 ; *Standl. tom. cit.* 22 ; *Will. & Cheesm. tom. cit.* 13 ; *Britt. & Wils. tom. cit.* 224. *Hedyotis herbacea* L. *Sp. Pl.* 102 (1753).

Cornwall, St. Elizabeth, *Harris* ! Fl. Jam. 9877.—Cuba, Is. Pinos, Hispaniola, Porto Rico, Lesser Antilles, Tropical America, Old World Tropics.

A branching erect or decumbent, glabrous herb. Branches slender, four-angled, afterwards subterete. Leaves sessile, linear-lanceolate if not linear, acute, mostly 2-4 cm. by 1-6 mm. Stipules with very few small bristly teeth, 1-2 mm. l. Flowers axillary, solitary; peduncles filiform, 5-10 mm. l. Calyx-tube subglobose, 1.5 mm. l.; lobes lanceolate, acute, as long as tube. Corolla white; tube broad, 1 mm. l., as long as the triangular lobes. Capsule depressed-globose, 3 mm. across. Seeds minute, brown.

[*O. crystallina* Roxb. *Fl. Ind. i.* 422 (1832); leaves generally longer than the internodes, and about 2-3 times as long as broad; corolla shorter than calyx.—*DC. tom. cit.* 426; *Hook. f. Fl. Br. Ind. iii.* 65.

Hope Gardens, a weed on the lawns, *Harris!* *Fl. Jam.* 11,844, 11,853; introduced from India.

A lowly annual branching from the base, 3-10 cm. high, in habit and foliage much like *O. uniflora*. Flowers axillary, usually solitary, on filiform peduncles about 3 mm. l., in fruit lengthening to 5 mm. or even more. Calyx and corolla as of last, but corolla-tube swollen in lower half. Capsule ovoid, 2 mm. across. Seeds minute, dark brown.]

## 10. LUCYA DC.

A lowly perennial herb with a small tuberous root. Leaves opposite, membranous. Stipules minute. Flowers small, axillary, solitary. Calyx-tube hemispherical; limb of 4 or 5 lobes with as many alternating small teeth. Corolla rotate, 4- or 5-lobed, lobes valvate in bud. Stamens 4 or 5, inserted on the corolla-tube, included. Ovary superior in its upper part, 2-celled; style short, 2-armed; ovules few in each cell on a median axile placenta. Capsule hemispherical, didymous, 2-celled, with 2 loculicidal valves reflexed after opening. Seeds few, peltately attached.

One species only, native of the West Indies.

*L. tetrandra* (L.) *K. Schum. in Engl. & Prantl Nat. Pflanzenfam. iv. pt. 4.* 27 (1891); *Urb. Symb. Ant. iv.* 581 & *viii.* 660. *L. tuberosa* DC. *Prodr. iv.* 434; *Griseb. Pl. Wright.* 506, *Fl. Br. W. Ind.* 331 & *Cat. Cub.* 130; *Sauv. Fl. Cub.* 65. *Peplis tetrandra* L. *Amœn. v.* 413 (1759); *Jacq. Sel. Stirp. Amer. t.* 180, *f.* 29; *Lun. Hort. Jam. ii.* 275. *Hedyotis tuberosa* Sw. *Obs. Bot.* 136, *t.* 1, *f.* 2 (1791). *Dunalia tuberosa* Spreng. *Pugill. ii.* 25 (1815). *D. tetrandra* Kuntze *Rev. Gen. Pl. ii.* 281 (1891). *Clavenna tetrandra* Standl. in *N. Amer. Fl. xxxii.* 24. *Ammania hirta foliis parvis* &c. *Browne Hist. Jam.* 145.

Mountains between St. Thomas in the Vale and St. Mary's, *Browne;* *Wright!* *Swartz!* In crevices of limestone cliffs, Cane River Valley,

Harris! Fl. Jam. 9626, 10,066, 12,316.—Cuba, Hispaniola, Porto Rico.

A prostrate plant with weak slender caespitose branches up to 15 cm. l. but often much shorter. *Leaves* petiolate, ovate or ovate-oblong, obtuse, narrowed at base, rather rough, mostly 1–2 cm. by

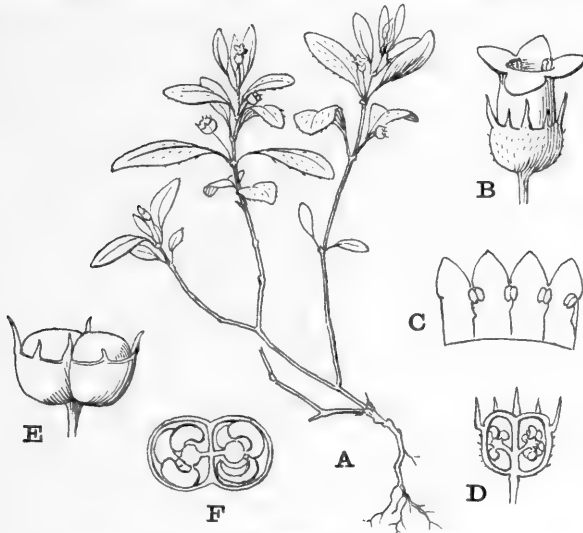


Fig. 10.—*Lucya tetrandra* (L.) K. Schum.

A, Portion of plant  $\times \frac{1}{2}$ .  
B, Flower  $\times 8$ .  
C, Corolla cut open  $\times 8$ .

D, Ovary with calyx cut lengthwise  $\times 8$ .  
E, Capsule  $\times 4$ .  
F, Capsule cut across  $\times 4$ .

5–8 mm.; petioles 3–5 mm. l. *Stipules* broadly triangular, minutely toothed, less than 1 mm. l. *Flowers* on slender pedicels about as long as the petioles. *Calyx-tube* 1 mm. l.; lobes awl-shaped, shorter than the tube. *Corolla* white; tube broad, about 1 mm. l.; lobes generally 4, triangular, shorter than tube. *Capsule* rather rough, 2 by 4 mm. *Seeds* ovoid, black, 1.5 mm. l.

### [MUSSÆNDA.

Generally shrubs. *Leaves* opposite or ternate. *Flowers* in terminal corymbs. *Calyx-tube* oblong-top-shaped; lobes 5, of which one is sometimes produced into a broad petaloid lamina. *Corolla* salver-shaped; tube long and slender, hairy in mouth and throat; lobes patent, valvate in bud. *Stamens* 5, subsessile, inserted in the corolla-throat. *Ovary* 2-celled; style elongated, 2-armed; ovules many in each cell. *Fruit* fleshy, indehiscent. *Seeds* numerous.

Species about 50 in tropics of Old World and Polynesia.

*M. pubescens* Ait. *Hort. Kew.* ed. 2. i. 372 (1810); *Sims*

*Bot. Mag. t. 2099* ; *DC. Prodr. iv. 371* ; *Forbes & Hemsl. Ind. Fl. Sin. i. 379* ; *Standl. in N. Amer. Fl. xxxii. 133.*

A native of China, said by Standley *l.c.* to be an escape from cultivation in Jamaica. No specimen seen from the island.

An erect shrub. Branches pubescent becoming glabrous. Leaves ovate or ovate-oblong, acute or acuminate, narrowed into the short petiole, appressed strigose-hairy especially on the underside nerves, mostly 4-12 by 1.5-5.5 cm. Stipules caudate from a broad base, 3-5 mm. or more l. Inflorescence a terminal bracteate strigose or glabrous corymb shorter than the leaves; flowers few, subsessile. Calyx strigose; tube ovoid, 3 mm. l.; lobes linear-awl-shaped, about 5 mm. l., one often expanded into an ovate white blade up to 6 by 4 cm. Corolla yellow; tube slender, strigose, throat and mouth densely hairy, 3-4 cm. l.; lobes ovate, about one-sixth as long as the tube. Berry subglobose, nearly glabrous, up to 8 mm. across.]

## 11. GONZALAGUNIA Ruiz & Pav.

(*Gonzalea* Pers.)

Herbs, shrubs or small trees. Leaves opposite. Flowers in slender elongated terminal spikes or thyrsi. Calyx-tube bell-shaped; limb 4- or 5-lobed. Corolla small, salver-shaped; tube longer than limb, with hairy throat; lobes 4 or 5, outer valvate, inner imbricate in bud. Stamens 4 or 5, inserted on the corolla-tube; filaments short; anthers dorsifixed, included. Ovary 2-4-celled; style included or exserted, filiform, entire or 2-4-lobed; ovules many. Fruit a berry of 2 or 4 cells, or bony or crustaceous pyrenes. Seeds minute.

Over 20 species, natives of the West Indies and tropical America.

**G. brachyantha** (*A. Rich.*) *Urb. Symb. Ant. vii. 400* (1912) & *viii. 667.* *Gonzalea brachyantha* *A. Rich. in Sagra Cub. xi. 16* (1850). *G. Petesia Griseb. Fl. Br. W. Ind. 321* (1860), *Pl. Wright. 504* & *Cat. Cub. 124*; *Sauv. Fl. Cub. 61.* *Petesia spicata Sw. Fl. Ind. Occ. iii. 1945* (1806) (non *Gonzalea spicata DC. Prodr. iv. 437*); *DC. tom. cit. 395.* *Duggena Petesia Standl. in Contrib. U.S. Nat. Herb. 18, 126* (1916). *D. brachyantha Standl. in N. Amer. Fl. xxxii. 136* (1921). Specimen from Swartz in Herb. Mus. Brit.

Lab-lab.

*Wright!* *Manchioneal Swartz!* *Mandeville*; *St. Thomas* in the *Vale*; *Purdie!* *Distin!* *St. Ann's Bay*; *Guy's Hill*, *Moneague*; *Mt. Diablo*; *Prior!* *Wilson 231!* *Near Whitfield Hall works*; *Mansfield*; *near Troy*; *Holly Mt., Mt. Diablo*; *Schwallenburg, St. Ann*; *Woodstock near Beaufort, Westmoreland*; *slopes of Dolphin Head*; *Bath to Cuna Cuna Pass*; *Mulgrave, St. Elizabeth*; *Harris!* *Fl. Jam. 5179, 6006, 8757, 8973, 9914, 10,280, 10,551, 10,657, 12,381*; *Cockpit Country, Norman 34!*—*Cuba, Hispaniola.*

A bush or tree 12-30 ft. high. Branches four-angled, appressed

strigose but soon glabrous. *Leaves* elliptical-lanceolate, acuminate, narrowed at base into the 5–15 mm. l. petiole, papery, appressed-hairy on the underside midrib, mostly 6–10 by 2–4 cm. *Stipules* caudate from a broad base, strigose on back, silky within, 4–8 mm. l. *Inflorescence* a number of subsessile few-flowered cymes forming a slender



Fig. 11.—*Gonzalagunia brachyantha* (A. Rich.) Urb.

A, Branch with leaves and flower-spike  $\times \frac{1}{2}$ .  
 B, Flower  $\times 8$ .  
 C, Corolla cut open  $\times 8$ .  
 D, Style  $\times 8$ .

E, Ovary with calyx cut lengthwise  $\times 10$ .  
 F, Berry  $\times 6$ .  
 G, Berry cut across  $\times 6$ .

terminal strigose thyrsus, up to 15 cm. l. on a short peduncle; bracts linear-awl-shaped, 1.5–3 mm. l.; pedicels .5–1 mm. l. *Calyx-tube* 1.5 mm. l.; lobes 4, triangular, one-third as long as tube. *Corolla* white or pale yellowish; tube 2 mm. l.; lobes 4, half as long as tube. *Style* 4-lobed. *Berry* globose, 3 mm. across.

12. *SCHRADERA* Vahl.

Epiphytic shrubs. Leaves opposite, petiolate, usually leathery. Stipules large, intrapetiolar, sheathing, deciduous. Flowers in a terminal peduncled head surrounded by a broad involucre. Calyx-tube broadly top-shaped; limb cup-shaped, truncate. Corolla salver-shaped; tube broad, villous within; lobes 5-10, narrow, spreading or reflexed, valvate in bud. Stamens 5-10, inserted in the corolla-throat; anthers subsessile, dorsifixed, included or exerted. Ovary 2-4-celled. Seeds many, minute.

About 10 species, natives of the West Indies and tropical South America.

*S. involucrata* (Sw.) K. Schum. in Mart. Fl. Bras. vi.

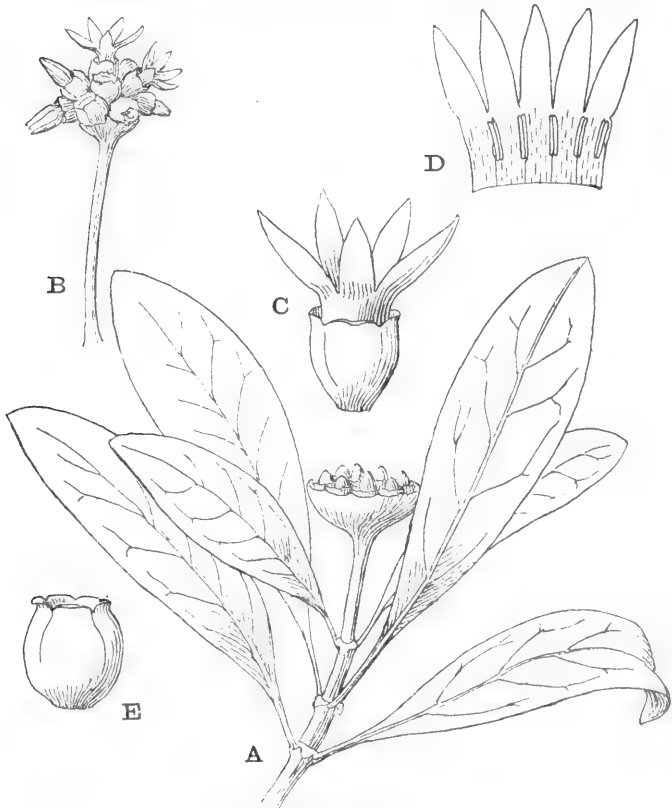


Fig. 12.—*Schradera involucrata* (Sw.) K. Schum.

A, Branch with inflorescence (flowers in bud)  $\times \frac{1}{3}$ .  
B, Inflorescence  $\times \frac{1}{3}$ .

C, Flower  $\times 2$ .  
D, Corolla cut open  $\times 2$ .  
E, Berry  $\times 2$ .

pt. 6. 295 (1889); *Urb. Symb. Ant. vi.* 45. *S. cephalotes* Willd. *Sp. Pl. ii.* 238 (1799); *DC. Prodr. iv.* 443; *Griseb. Fl. Br. W. Ind.* 319. *Fuchsia involucrata* Sw. *Prodr.* 62 (1788) & *Fl. Ind. Occ. ii.* 674; *Lun. Hort. Jam. i.* 310. *Urceolaria involucrata* Standl. in *Fl. N. Amer. xxxvii.* 132 (1921).

*Wright!* Morse's Gap, *McNab!* *Prior!* March 2000! *Wilson!* *Eggers* 3623; *Manchester, J. P.* 719 *Hart!* Near Moneague, *Blake!* Resource, near Holly Mount, *Harris!* *Fl. Jam.* 8894.

A glabrous shrub growing epiphytically on trees (in *Harris* 8894 over an old stone wall). Branches stout, subterete, pale brown. Leaves ovate or oblong-obovate, obtuse or acute, tapering at base, nerves 6-7 pairs, widely arched and anastomosing to form an open network near the margin, leathery, pale shining, 7-10 by 3.5-4 cm.; petioles 8-15 mm. l. Stipules "spathulate-oblong, blunt, as long as the petioles" (*Grisebach*). Head solitary, several-flowered, about 2 cm. in diameter; peduncle stout, four-angled, 2-4 cm. l. Involucre entire, 1 cm. l., 2 cm. in diameter. Calyx-tube barely 3 mm., limb 4 mm. l. Corolla white; tube about 5 mm. l.; lobes 7-8, as long as the tube. Disk prominent. Style 4-armed. Berry 4-celled, "oblong" (*Swartz*), "subglobose, about 12 mm. in diameter" (*Standley*).

### 13. SABICEA Aubl.

Mostly climbing shrubs with opposite leaves and usually broad stipules. Flowers almost always rather small, in axillary, sessile or stalked, bracteate heads, or corymbose or umbellate cymes. Calyx-tube somewhat ellipsoid; lobes 3-6, usually linear or oblong. Corolla usually funnel-shaped; lobes 4-5, shorter than the tube, valvate in bud. Stamens 4-5; inserted in tube or throat of the corolla; anthers dorsifixed, usually included. Ovary 4-5- (rarely 2-) celled; styles usually included with 4-5 (rarely 2) linear arms; ovules many, on axile placentas. Berry fleshy or leathery, 4-5- (rarely 2-) celled. Seeds numerous, minute.

Over 100 species, natives of tropical America (to Paraguay), tropical Africa and Madagascar: very few in the West Indies.

*S. hirta* Sw. *Prodr.* 46 (1788); *DC. Prodr. iv.* 439 (in part); *Griseb. Fl. Br. W. Ind.* 322; *Wernh. Monog. Sab.* 40, t. xii, f. 33; *Standl. in N. Amer. Fl. xxxvii.* 150. *S. aspera* K. *Schum. in Mart. Fl. Bras. vi. pt. 6.* 306 (1888) (in part) (non *Aubl.*) *Schwenkfeldia hirta* Sw. *Fl. Ind. Occ. i.* 450 (1797); *Willd. Sp. Pl. i.* 982; *Lun. Hort. Jam. ii.* 150.

*Masson!* *Wright!* Mountain woods in W. of Island, *Swartz!* *Bertero* 2703; *Macfadyen!* Manchester Mountains, *Purdie!* Askenish to Dolphin Head; *Cuna Cuna Pass, Portland!* *Harris!* *Fl. Jam.* 9246, 10,278, 10,561.

Scandent shrub 6 ft. high with weak trailing hirsute branches. Leaves elliptical or ovate-oblong, acuminate with obtuse apex, narrowed

at base into the hirsute 7-20 mm. l. petiole, papery, palely shining above, hirsute especially on nerves, 7-12 by 2.5-5 cm. *Stipules* sub-orbicular, sparsely hairy, up to 10 by 12 mm. *Cymes* umbellate, 3-flowered; peduncles about 5 mm. l. *Bracts* surrounding the

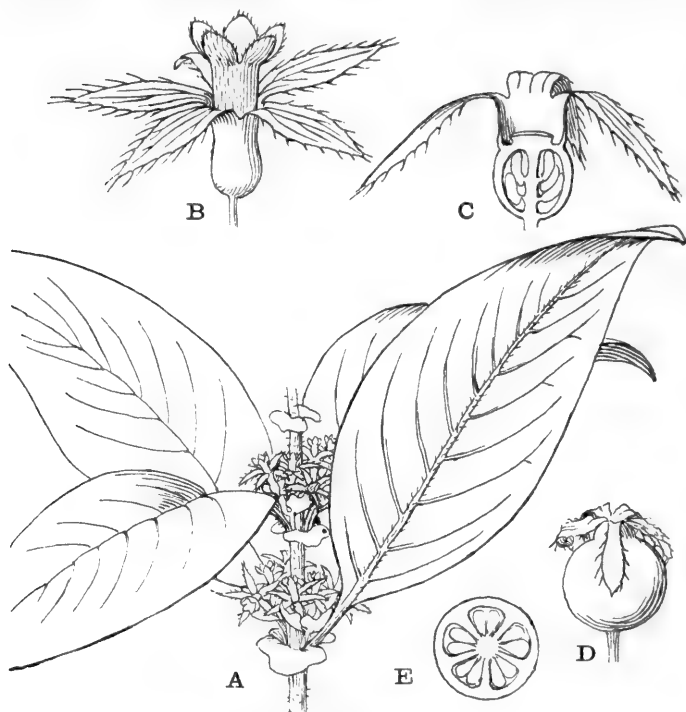


Fig. 13.—*Sabicea hirta* Sw.

- A, Portion of branch, with leaves and flowers  $\times \frac{1}{4}$ .  
 B, Flower  $\times 3$ .  
 C, Ovary with calyx cut lengthwise  $\times 4$ .  
 D, Berry  $\times 2$ .  
 E, Berry cut across  $\times 2$ .

peduncle orbicular to obovate, 5 mm. or more l. *Pedicels* 4-8 mm. l. *Calyx-tube* 4 mm. l.; lobes lanceolate, acute, ciliate, 5-6 mm. l. *Corolla* white, sparsely hirsute; tube about 5 mm. l.; lobes 5, narrowly ovate-oblong, 2 mm. l. *Anthers* included. *Style-arms* 5, about 3 mm. l. *Berry* white, round, sparsely hairy, about 7 mm. across.

#### 14. COCCOCYPSELUM Schreber.

Weak creeping herbs. Leaves opposite. Stipules small. Flowers small, in axillary solitary heads. Berries small, blue. Calyx-tube ovoid or top-shaped; lobes 4. Corolla funnel-shaped with smooth throat; lobes 4, oblong, valvate in bud. Stamens 4, inserted in the corolla-tube; anthers dorsifixed, included or shortly exserted. Disk 2-lobed.



Ovary 2-celled; style 2-armed; ovules many in the cell on a small axile placenta. Berry 2-celled, many-seeded. Seeds small, orbicular.

About 25 species in tropical America; rare in the West Indies.

Flowering heads usually sessile or subsessile.

Berry 6–8 mm. in diameter..... 1. *C. herbaceum*.

Flowering heads stalked. Berry about 4 mm.

in diameter..... 2. *C. Pseudotontanea*.

1. *C. herbaceum* Aubl. *Pl. Guian. i.* 68 (1775) (*Cocco-*

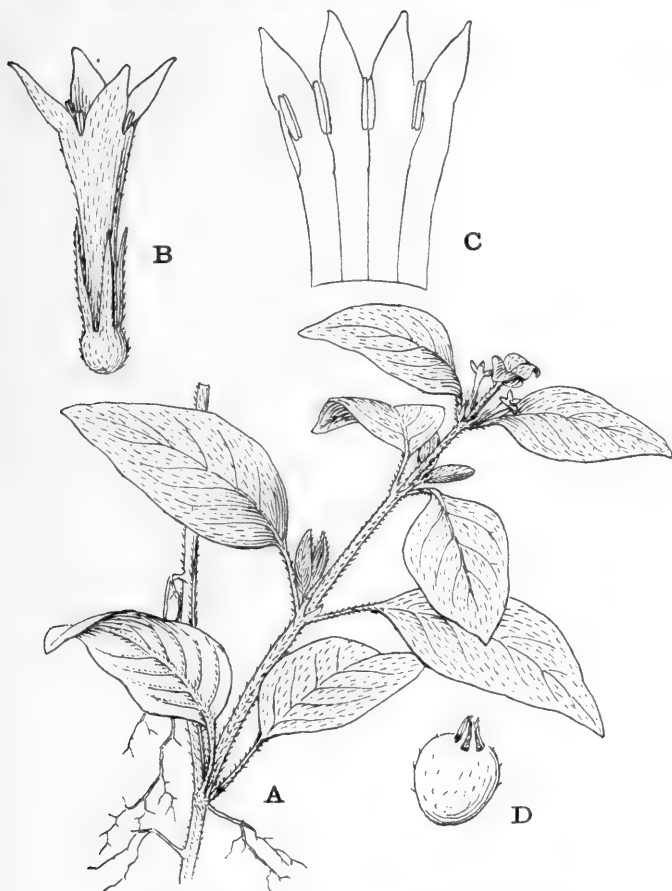


Fig. 14.—*Coccocypselum herbaceum* Aubl.

A, Portion of plant  $\times \frac{1}{2}$ .

B, Flower  $\times 4$ .

C, Corolla cut open  $\times 4$ .

D, Berry  $\times 1\frac{1}{2}$ .

*cipsilum*); *Lam. Encyc. ii.* 56 & *Ill. t.* 64. *C. repens Sw. Prodr.* 31 (1788) & *Fl. Ind. Occ. i.* 245; *Lun. Hort. Jam. i.* 205; *DC. Prodr. iv.* 396; *Griseb. Pl. Carib.* 79, *Pl. Wright.* 504 & *Fl. Br. W. Ind.* 322; *Sauv. Fl. Cub.* 61; *Stahl Fl. P.-Rico v.* 45; *Urb. Symb. Ant. iv.* 585 & *viii.* 668. *C. Brownei Desv. ex Ham. Prodr.* 17 (1825). *Tontanea herbacea Standl. in Fl. N. Amer. xxxii.* 147; *Britt. & Wils. P.-Rico & Virg. Is. vi.* 230. *Coccocipsilum herbaceum repens &c. Browne Hist. Jam.* 144, *t.* 6, *f.* 1. Specimens from Browne and Swartz in Herb. Mus. Brit.

Frequent in Liguanea and on Mt. Diablo *Browne!* *Swartz!* *Macfadyen!* St. Thomas in the Vale, *McNab!* Moneague, *Prior!* *March* 880! Pleasant Hill Road, *J. P.* 1027 *Hart!* *J. P.* 1227 *Hart!* Providence; Prospect Hill; Brandon Hill Road; *Thompson!* *Fl. Jam.* 7908, 7941, 8090; Cinchona; Vinegar Hill; Hollis's Savanna, Upper Clarendon; *Harris!* *Fl. Jam.* 5476, 12, 275. Bower Hill near Lucea, *Norman* 127! Near Millbank between Blue and Jim Crow Mts., *Id.* 227! Blue Mts., Greenhills to Woodcutter's Gap, *Rendle* 16! Hardware Gap, *Rendle* 12! Flamstead, St. Andrews, *Miss Maxwell!*—Cuba, Hispaniola, Porto Rico.

Pubescent herb with subterete frequently rooting branches. *Leaves* petiolate, ovate or ovate-oblong, obtuse, rounded at the base or narrowed into the 5–10 mm. l. petiole, membranous, mostly 2–4 by 1–2 cm. *Stipules* linear, 3–5 mm. l. *Heads* usually 2–3-flowered, but sometimes flowers solitary. *Bracts* linear, 3–4 mm. l. *Calyx* puberulous; tube ovoid, 1 mm. l.; lobes linear-awl-shaped, 3 mm. l. *Corolla* pale blue; tube puberulous, 6 mm. l.; lobes half as long as tube. *Berry* globose, blue, sparingly hairy, 6–8 mm. in diameter. *Seeds* dark, about 1 mm. across.

2. *C. pseudotontanea Griseb. Fl. Br. W. Ind.* 322 (1860). *C. tenue Urb. in Fedde Rep. xviii.* 479 (1915). *Tontanea tenuis Standl. in Fl. N. Amer. xxxii.* 146 (1921).—Type in Herb. Kew.; of *C. tenue* in Herb. Jam.

Moist bank near Coldspring Gap, *Purdie* 283! Catherine's Peak, *J. P.* 1482 *Hart!*

*Herb* with much the appearance &c. of *C. herbaceum*, but the creeping stems root very seldom. *Leaves* ovate, acute, rounded at base, 1.5–3 cm. by 8–18 mm.; petioles about 5 mm. l. *Stipules* linear, 1–2 mm. l. *Heads* 2–3-flowered, on slender peduncles up to 4 cm. l. *Bracts, calyx and corolla* as of last. *Berry* globose, hairy, about 4 mm. in diameter.

## 15. HAMELIA Jacq.

Shrubs or trees, with opposite or verticillate membranous leaves. *Stipules* interpetiolar. Flowers yellow or red, sessile or shortly stalked, usually secund in terminal 2–3-chotomously branched scorpionoid minutely bracteate cymes. *Calyx*-tube top-shaped, ovoid or hemispherical; lobes 5, short, persistent. *Corolla* tubular or narrowly bell-shaped, five-

angled at least in bud, with a glabrous throat; limb of 5 short and broad lobes, erect or spreading, imbricate in bud. Stamens 5, inserted near the base of the corolla; anthers basifixed, usually included. Disk prominent, forming an umbo to the fruit. Ovary 5-celled; style filiform, ending in a narrow, entire stigma; ovules very numerous on axile placentas. Berry ovoid or oblong, 5-lobed, 5-celled. Seeds minute, flattened, round or polygonal, tuberculate.

Nearly 40 species, natives of America from Florida to Paraguay: few in the West Indies.

- Flower pedicels longer than calyx ..... 1. *H. chrysantha*.  
 Pedicels absent or short; flowers usually secund.  
 Corolla more than 2 cm. l.  
 Leaves glabrous or puberulous.  
 Corolla up to 3.5 cm. l. Seeds 1 mm. across ..... 2. *H. cuprea*.  
 Corolla 4 cm. l. Seeds .5 mm. across ..... 3. *H. ventricosa*.  
 Leaves rough. Corolla 3-4 cm. l ..... 4. *H. scabrida*.  
 Corolla 2 cm. l. or less.  
 Leaves opposite ..... 5. *H. axillaris*.  
 Leaves usually whorled.  
 Leaves ovate or suborbicular, rough ..... 6. *H. papillosa*.  
 Leaves obovate-lanceolate, pubescent ..... 7. *H. patens*.

1. *H. chrysantha* Sw. *Prodr.* 46 (1788); a shrub; leaves usually opposite; corolla-lobes erect.—Sw. *Fl. Ind. Occ. i.* 444 (excl. syn. *Jacq.*); *DC. Prodr. iv.* 442; *Griseb. Fl. Br. W. Ind.* 320; *Wernh. in Journ. Bot. xlix.* 208; *Standl. in N. Amer. Fl. xxxii.* 188. *Duhamelia chrysantha Pers. Syn. i.* 203 (excl. syn. *Jacq.*). Specimen from Swartz in Herb. Mus. Brit.

*Wright! Swartz! St. George's, McNab! Macfadyen! Moneague, Prior! March 1772! Tyre, near Troy, Harris! Fl. Jam.* 9365. *Robertsfield, Blue Mts., Miss Perkins 1211! Near Troy, Id.* 1359!

A shrub 5-6 ft. high. Branches four-angled, glabrous. Leaves ovate to lanceolate, acute or acuminate, narrowed into the 7-15 mm. l. petiole, glabrous, mostly 4-10 by 2-3.5 cm. Cymes usually shorter than the leaves, few-flowered, glabrous. Pedicels mostly 4-7 mm. l. Calyx-tube hemispherical, 2.5 mm. l.; lobes abruptly pointed, 1 mm. l. Corolla dark yellow, narrowly funnel-shaped, but little expanded above, 2 cm. l.; lobes ovate, acute, 3 mm. l. Berry oblong (Swartz).

2. *H. cuprea* Griseb. *Fl. Br. W. Ind.* 320 (1860); small tree; leaves opposite or ternate; corolla-lobes spreading; berry ovoid.—*Wernh. tom. cit.* 209; *Standl. tom. cit.* 187. *H. chrysantha Lun. Hort. Jam. i.* 364 (1814) non Sw. *Campanula minor frutescens &c. Browne Hist. Jam.* 166, t. 14, f. 1. Co-types in Herb. Kew. and Herb. Edinb.

*Wright! Liguanea, Broughton! St. Ann, McNab! Macfadyen! March 1772! Westphalia, J. P.* 693, *Hart! Berwick Hill; Roberts-*

field; Great Goat Island; Cane River Valley; Stony Hill, St. Andrew; Harris! Fl. Jam. 5271, 5376, 7705, 9343, 9635, 12,073; Hodges Land, St. Elizabeth, *Miss Maxwell*!

A bushy tree, 15 ft. high. Branches somewhat four-angled, glabrous. Leaves ovate-lanceolate or oblong-ovate, acute or acuminate with acute tip, narrowed or rounded at base, glabrous, 4-8.5 by 1.5-3.5 cm.; petioles 5-10 mm. l. Cymes few-flowered, shorter than the leaves, glabrous. Younger flowers sessile or on pedicels about 2 mm. l. Calyx-tube top-shaped, 3 mm. l.; lobes acute, 1 mm. l. Corolla orange-coloured; tube 2.3-3.5 cm. l., expanded to 7-9 mm. in width above the basal constriction; lobes, 4 mm. l. Berry 5-7 mm. l. Seeds suborbicular, 1 mm. across.

3. *H. ventricosa* Sw. *Prodr.* 46 (1788); shrub or small

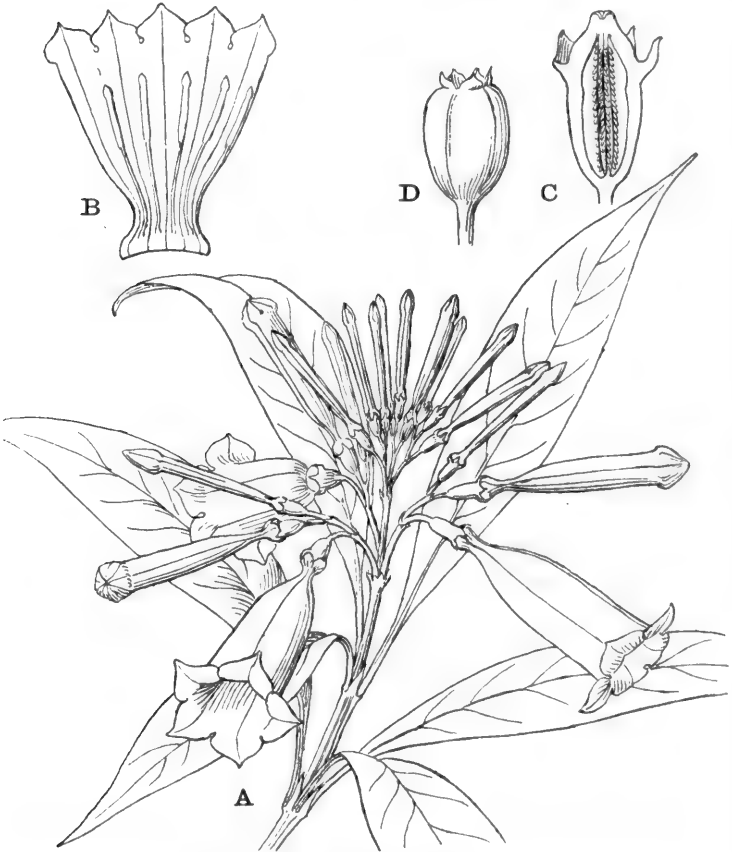


Fig. 15.—*Hamelia ventricosa* Sw.

A, End of branch in flower  $\times \frac{1}{2}$ .

B, Corolla cut open  $\times \frac{1}{2}$ .

C, Ovary with calyx cut lengthwise  $\times 3$ .

D, Berry nat. size.

tree; leaves usually ternate; corolla-lobes spreading; berry oblong.—*Sw. Fl. Ind. Occ. ii.* 446; *Lun. loc. cit.*; *Sims Bot. Mag. t.* 1894; *Lindl. Bot. Reg. t.* 1195; *DC. tom. cit.* 442; *Griseb. loc. cit.*; *Wernh. tom. cit.* 209; *Standl. loc. cit.* *Hamelia grandiflora L'Hérit. Sert. Angl. 4, t. 7* (1788); *Ait. Hort. Kew. ed. 1. i.* 229; *Salisb. Parad. Lond. t.* 55. *Duhamelia ventricosa Pers. loc. cit.* *Nerio affinis arbor &c. Sloane Cat.* 155 & *Hist. ii.* 63, *t.* 183, *f.* 2. *Campanula arborescens foliis ovato-acuminatis &c. Browne Hist. Jam.* 166. Specimen from Swartz in *Herb. Mus. Brit.*

Spanish Elm or Prince Wood (Sloane).

Red Hills, *Sloane Herb. vi.* 60! *Shakespear! Wright! Swartz! Moneague, Prior!*; near Port Antonio, *Distin!*; *March 1076! Cuming 18! 50!* Near Machfield, Westmoreland, *Fawcett! Fl. Jam.* 8750; Tyre, near Troy; Woodstock, *Harris! Fl. Jam.* 9355, 9867.

Large shrub or small tree 15–18 ft. high. Branches four-angled, glabrous. Leaves elliptical, acuminate with obtuse tip, narrowed into the 7–20 mm. l. petiole, puberulous especially on the nerves beneath, 6–15 by 2–4.5 cm. Cymes about as long as leaves, puberulous; pedicels mostly shorter than the calyx. Calyx-tube top-shaped, 4 mm. l.; lobes triangular, acute, 1 mm. l. Corolla yellow, 4 cm. l., constricted above the base, 1 cm. or more wide in the upper part; lobes rotundate, 5 mm. l. Berry 9–12 mm. l. Seeds polygonal, about .5 mm. l.

4. *H. scabrida Britton in Torreya xii.* 31 (1912); small tree; leaves opposite, upper sometimes ternate; berry oblong.—*Standl. tom. cit.* 185. Type in *Herb. N. York. Bot. Gard.*

Fairfield, Manchester, *Britton 3147.*

A small tree, 13 ft. high. Leaves of small twigs ternate, broadly ovate, shortly acuminate, rounded or narrowed at base, rough above, pubescent below; up to 10 cm. l.; petioles up to 2 cm. l. Flowers sessile or shortly pedicelled. Calyx-tube bell-shaped, 3–4 mm. l.; lobes with triangular acute tip, 1–1.5 mm. l. Corolla yellow, narrowly funnel-shaped, 3–4 cm. l.; lobes obtuse, 3 mm. l. Berry oblong, 10–14 mm. l. Seeds 1 mm. l.

5. *H. axillaris Sw. Prodr.* 46 (1788); shrub; leaves all opposite; corolla-lobes spreading; berry ovoid-oblong.—*Sw. Fl. Ind. Occ. i.* 443; *Lun. tom. cit.* 365; *DC. tom. cit.* 442 (and var. *appendiculata*); *Wernh. tom. cit.* 210; *Urb. Symb. Ant. iv.* 588 & in *Fedde Rep. Beih. v.* 88; *Britton in Torreya xii.* 30; *Britton Fl. Amer. Virg.* 93; *Will. & Cheesm. Fl. Trin. & Tob.* 18; *Standl. tom. cit.* 185. *H. chrysantha Jacq. Collect. iii.* 204 (1789) (non *Sw.*) &  *Ic. Pl. Rar. t.* 335. *H. appendiculata Gaertn. Fruct. iii.* 64, *t.* 191, *f.* 4 (1805). *H. lutea Rohr ex Smith in Rees Cyclop. xvii.* no. 4 (1819); *DC. loc. cit.*; *Griseb. Pl. Carib.* 79, *Fl. Br. W. Ind.* 320, *Pl. Wright.* 504 & *Cat. Cub.* 124; *Sauv. Fl. Cub.* 61; *Egg.*

*Fl. St. Croix & Virg.* 60 ; *Stahl Fl. P.-Rico* v. 40 ; *K. Schum. in Mart. Fl. Bras.* vi. pt. 6, 322 ; *Hitchc. in Rep. Miss. Bot. Gard.* iv. 92 ; *Sang. Fl. Cub.* 44 ; *Hart Herb. List. Trin.* 29 ; *Wernh. loc. cit.* ; *Urb. Symb. Ant.* viii. 670. *Lonicera racemis revolutis, foliis lanceolatis &c. Plum. Pl. Amer. (Burm.)* 212, t. ccxviii, f. 1. A specimen from Swartz in Herb. Mus. Brit.

*Wright ! Swartz ! Woods near Bath, Purdie ! March 627 ! Port Antonio, Hitchcock ; J. P. 1097 Hart ! Claverty Cottage, J. P. 1443 Hart ! Anotto Bay Road ; Tom's River ; Thompson ! Fl. Jam.* 6473, 7982 ; *Lancaster, Harris & Britton ! Fl. Jam.* 10,537 ; *Near Castleton ; Golden Valley, near Castleton ; Glasgow near Troy ; Harris ! Fl. Jam.* 12,086, 12,390, 12,630.—Cuba, Hispaniola, Porto Rico, St. Thomas, St. Croix, Trinidad, Central America, Venezuela, Columbia, and Peru.

*Shrub* 2–5 ft. high. *Branches* four-angled, glabrous. *Leaves* ovate or ovate-lanceolate, acuminate with acute tip, narrowed into the slender 8–25 mm. l. petiole, glabrous, mostly 5–10 by 3–5 cm. *Cymes* at the forking of the branches, shortly-stalked, very open, the branches patent, glabrous. *Flowers* sessile or subsessile. *Calyx-tube* oblong-ovoid, 2 mm. l. ; lobes subulate almost half as long as the tube. *Corolla* yellow, 8–10 mm. l. ; tube narrowly funnel-shaped from a short and narrow base ; lobes rounded, 1.5 mm. l. *Berry* 6 mm. l. *Seeds* polygonal, minutely tuberculate, 1 mm. across.

Because Swartz describes the corollas of his *H. axillaris* as tubular, as also are those of his specimen in Herb. Mus. Brit., whereas those of *H. lutea* are enlarged above, Wernham regarded the two as distinct species. But the corollas of Swartz's specimen are all unexpanded, and those of *H. lutea* at the same stage are also tubular ; hence there seems no reason for keeping the two distinct.

6. *H. papillosa Urb. Symb. Ant. v.* 508 (1908) ; shrub ; leaves opposite or ternate ; corolla-lobes ascending ; berry ovoid.—*Wernh. tom. cit.* 212 ; *Britton in Torreya* xii. 32 ; *Standl. tom. cit.* 186. Co-types in Herb. Jam., Mus. Brit. & Kew.

Near Troy ; Peckham Woods, Upper Clarendon ; Mulgrave, St. Elizabeth ; *Harris ! Fl. Jam.* 8747, 8959, 10,968, 12,376.

A *shrub* 10–12 ft. high. *Branches* four-angled, at first brown and minutely papillose, afterwards glabrous and cinereous. *Leaves* ovate or suborbicular, cuspidate-acuminate with subacute tip, usually rounded at base, rough above and mainly on the nerves below, mostly 5.5–9 by 3.5–6 cm., the third of a whorl often markedly smaller ; petiole rough, 5–15 mm. l. *Cymes* shorter than the leaves, several-flowered, the branches ascending and together with the calyx and lower part of the corolla rather rough ; flowers sessile or shortly stalked. *Calyx-tube* obovoid, 4 mm. l., four times as long as the triangular lobes. *Corolla* yellow ; tube funnel-shaped, slightly constricted above the broad base and then expanded, 18 mm. l. ; lobes apparently ascending, rotundate, 3 mm. l. *Anthers* with shortly exerted tips. *Berry* broadly ovoid, 7 by 6 mm. *Seeds* oval or oblong, rather coarsely tubercular, about 1 mm. l.

*Britton (loc. cit.)* describes the fruits as being over 1 cm. in diameter : apparently ripe ones seen were as stated above.

7. **H. patens** Jacq. *Enum. Pl. Carib.* 16 (1760); shrub; leaves usually ternate; corolla-lobes ascending; berry oblong, ovoid.—*Jacq. Sel. Stirp. Amer.* 72, t. 50; *L. Sp. Pl. ed.* 2. 246; *Sw. Obs. Bot.* 77; *Ruiz & Pav. Prodr. Fl. Per.* ii. 68, t. 221, f. a; *Smith Exot. Bot.* t. 24; *Sims Bot. Mag.* t. 2533; *DC. tom. cit.* 441; *Descourt. Fl. Ant.* ii. 155, t. 107; *Griseb. Pl. Carib.* 79, *Fl. Br. W. Ind.* 320, *Pl. Wright.* 504 & *Cat. Cub.* 124; *Sauv. Fl. Cub.* 79; *Egg. loc. cit.*; *Stahl tom. cit.* 41; *Hitchc. loc. cit.*; *Kew Bull.* 1893, 257; *Duss Fl. Ant. Franç.* 331; *Combs Pl. Cub.* 428; *K. Schum. tom. cit.* 321, t. 136; *Small Fl. S. E. U. S.* 1111; *Hart Herb. List Trin.* 29; *Wernh. tom. cit.* 214; *Urb. Symb. Ant.* iv. 588 & viii. 669, & in *Fedde Rep. Beih.* v. 88; *Britton Fl. Amer. Virg.* 92; *Jenn. Is. Pin.* 267; *Standl. tom. cit.* 190. *H. erecta* Jacq. *Enum. Pl. Carib.* 16 (1760); *Jenn. loc. cit.*; *Britton Fl. Berm.* 370; *Britt. & Millsp. Baham. Fl.* 412; *Standley in Contrib. U. S. Nat. Herb.* xxiii. 1380; *Will. & Cheesm. tom. cit.* 18. *H. coccinea* Sw. *Prodr.* 46 (1788). *Duhamelia patens* Pers. *loc. cit.* (1805). *Lonicera racemis revolutis, foliis ovatis &c.* *Plum. Pl. Amer. (Burm.)* 212, t. ccviii, f. 2. Specimen from Swartz of *H. coccinea* (from Hispaniola) in Herb. Mus. Brit.

*Liguanea, Broughton! Macfadyen! March 636! Aron's Pen, Campbell! Fl. Jam.* 5898; roadside above Constant Spring; the Quarry, near Spanish Town, *Harris! Fl. Jam.* 12,403.—Bermuda, Bahamas, Antilles, Florida and Mexico to Paraguay.

*Shrub* up to 9 ft. high. *Branches* four-angled, pubescent becoming glabrous. *Leaves* ternate or quaternate rarely quinate, obovate-lanceolate, acuminate with obtuse tip, narrowed into the 1.5–5 cm. 1. petiole, softly pubescent especially on the underside, 5–14 by 2.5–6.5 cm. *Cymes* generally shorter than the leaves, several-flowered, eventually by divergence of the pubescent branches very open; flowers secund, sessile or shortly pedicelled. *Calyx-tube* top-shaped, pubescent, 3 mm. l.; lobes triangular, pointed, 1 mm. l. *Corolla* orange changing to crimson; tube subcylindrical, but slightly enlarged above, 1.5 cm. l.; lobes ovate, acute, 2 mm. l. *Berry* yellow, then red and finally black, narrowly ovoid, about 7 by 5 mm. *Seeds* polygonal, rather coarsely tubercled, .5 mm. across.

A syrup prepared from the fruit is recommended by Descourtils as a remedy for dysentery: the fruit itself is edible and yields on fermentation a pleasant drink. The stem and leaves are used in tanning.

## 16. HOFFMANNIA Sw.

Herbs or shrubs. Leaves opposite or 2–4-nate. Stipules small, deciduous. Flowers white, yellow or red, rather small, in axillary few-flowered, subsessile or stalked, sometimes unilateral, ebracteolate cymes. Calyx-tube oblong to top-shaped, the small cupular limb with 4 short lobes. Corolla

rotate; tube glabrous within; lobes 4, imbricate in bud. Stamens 4, inserted in the throat or mouth of the corolla; anthers subsessile, dorsifixed, shortly exserted. Ovary 2-4-celled; style filiform, with 2- or 4-armed exserted stigma; ovules many. Berry small, ovoid, 2- rarely 4-celled. Seeds many, minute.

About 50 species, chiefly tropical American; rare in the West Indies.

**H. pedunculata** Sw. *Prodr.* 30 (1788) & *Fl. Ind. Occ. i.* 242; *Lun. Hort. Jam.* 374; *DC. Prodr. iv.* 400; *Macf.*

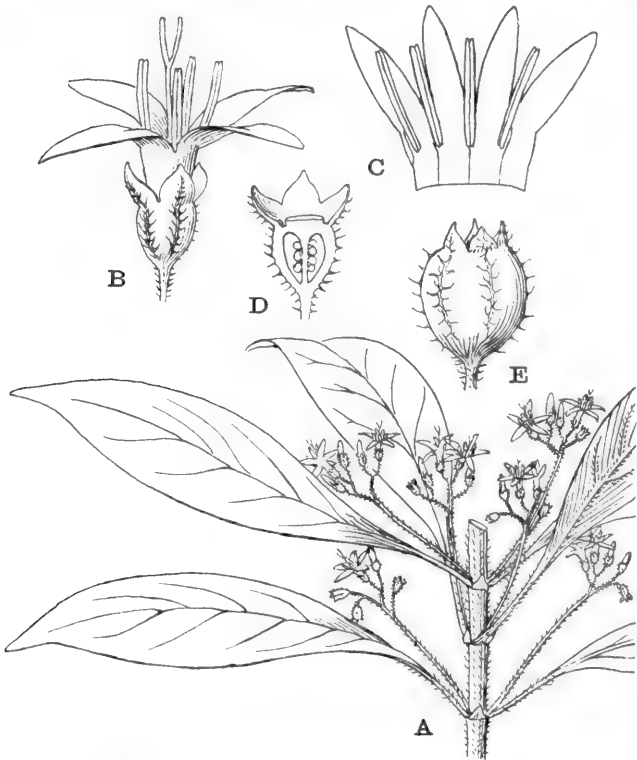


Fig. 16.—*Hoffmannia pedunculata* Sw.

A, Portion of branch with leaves and flowers  $\times \frac{1}{2}$ .

B, Flower  $\times 4$ .

C, Corolla cut open  $\times 4$ .

D, Ovary with calyx cut lengthwise  $\times 4$ .

E, Berry  $\times 4$ .

*Jam. ii.* 212; *Griseb. Fl. Br. W. Ind.* 321; *Standl. in N. Amer. Fl. xxxii.* 195. *H. jamaicensis* Spreng. *Syst. i.* 416 (1825). Specimen from Swartz in Herb. Mus. Brit.



*Swartz ! Macfadyen ! Near Cinchona, Harris !*

A branched herb with suffruticose base. Branches four-angled, somewhat rough. Leaves opposite, obovate-lanceolate, obtuse, prolonged at base into a 1.5-3 cm. l. petiole, papery, rather rough above, rusty-pubescent especially on the nerves beneath, mostly 7-15 by 3-4 cm. Cymes on peduncles about as long as or exceeding the petioles, rough like the 3-4 mm. l. pedicels and the ovoid 2.5 mm. l. calyx-tube ; calyx-limb 1.5 mm. l. Corolla yellow with red streaks ; tube 2 mm. l., lobes lanceolate, twice as long as tube. Anthers shortly exserted. Ovary 2-celled ; style exserted, 2-armed. Berry ovoid, scarlet, 6 mm. l. Seeds roundish, dark (Swartz).

### 17. CATESBÆA L.

Spiny glabrous shrubs. Leaves small, opposite, the pairs often clustered. Stipules deciduous. Flowers small or large, solitary in the axils, shortly stalked, erect or pendulous, white. Calyx-tube oblong or ovoid ; limb with 4 awl-shaped lobes. Corolla funnel- or bell-shaped ; tube glabrous inside ; lobes 4, broad, imbricate in bud. Stamens 4, rising from the base of the corolla-tube ; anthers subdorsifixed, included or shortly exserted. Ovary 2-celled ; style filiform ; stigma bifid, probably eventually 2-armed ; ovules few or many in the cell. Berry ovoid or globose, crowned by the persistent calyx-limb, 2-celled, few or many-seeded. Seeds compressed, angular or round.

Nearly 20 species, natives of the West Indies (including Bahamas), chiefly Cuba and Hispaniola.

[Flowers pendulous ; corolla 8-14 cm. l. .... *C. spinosa*.]

Flowers not pendulous ; corolla 8 mm. l. .... *C. parviflora*.

[*C. spinosa* L. *Sp. Pl.* 109 (1753) ; *Sw. Obs. Bot.* 46 ; *Curt. Bot. Mag. t.* 131 ; *Mill. Gard. Dict. ed.* 8 (Catesbæa) ; *DC. Prodr. iv.* 401 ; *Macf. Jam. ii.* 213 ; *Griseb. Fl. Br. W. Ind.* 317 & *Cat. Cub.* 122 ; *Sauv. Fl. Cub.* 60 ; *Combs Fl. Cub.* 428 ; *Urb. Symb. Ant. i.* 431 ; *Britt. & Millsp. Baham. Fl.* 411 ; *Standl. in N. Amer. Fl. xxxii.* 210. *C. longiflora* *Sw. Prodr.* 30 (1788). *C. latifolia* *Lindl. Bot. Reg. t.* 858 (1824) ; *DC. tom. cit.* 400 ; *A. Rich. in Sagra Cub. xi.* 11. *C. macrantha* *A. Rich. tom. cit.* 12, *t.* 47. Frutex spinosus Buxi foliis *Catesb. Carol. ii. t.* 100. A specimen from Herb. Gronov. and one from Herb. Miller in Herb. Mus. Brit.

#### Lily Thorn.

Kingston, *Prior !* Hope Gardens, *Harris !* A native of Bahamas and Cuba ; in Jamaica an escape from cultivation.

Shrub up to 10 ft. high. Branches glabrous or nearly so ; spines sharp, ascending, up to nearly 2 cm. l. Leaves sessile or subsessile, ovate or obovate, obtuse or rotundate, shining or opaque, leathery, .7-2.5 by .5-1.5 cm. Pedicels about 4 mm. l. Calyx-tube narrowly

ovoid, as long as the pedicel and a little longer than the limb. *Corolla* up to 14 cm. l.; tube enlarged in the upper half; lobes ovate, obtuse, eventually reflexed, 2.5 cm. l. *Berry* subglobose, up to 4.5 by 5.5 cm., but often smaller. *Seeds* sigmoid, brown, 3 mm. l.]

**C. parviflora** Sw. *Prodr.* 30 (1788) & *Fl. Ind. Occ. i.* 236; *Lun. Hort. Jam. i.* 451; *DC. tom. cit.* 401; *Macf. loc. cit.* (excl. syn. Vahl); *Griseb. Fl. Br. W. Ind.* 317 (in part); *Hitchc. in Rep. Miss. Bot. Gard. iv.* 92 (in part); *Urb. Symb. Ant. i.* 428 & *iv.* 539. *Britt. & Millsp. loc. cit.* (excl. synn.);

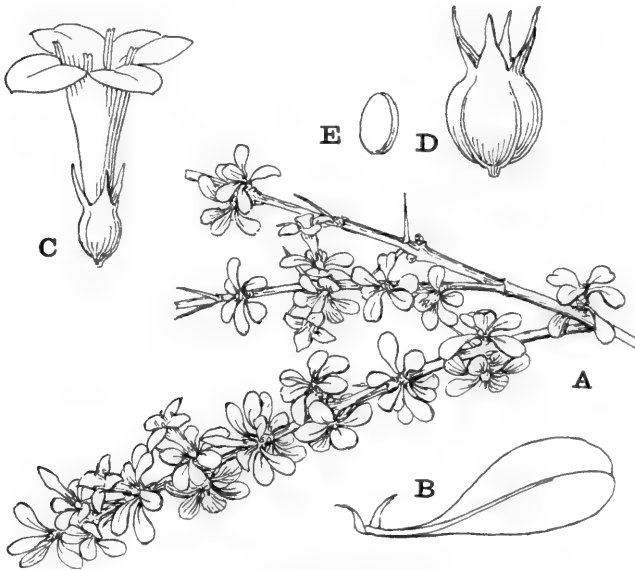


Fig. 17.—*Catesbæa parviflora* Sw.

- |                                    |               |
|------------------------------------|---------------|
| A, Portion of plant in flower × ½. | D, Berry × 4. |
| B, Leaf with stipules × 4.         | E, Seed × 4.  |
| C, Flower × 2.                     |               |

*Britt. & Wils. P.-Rico & Virg. Is. vi.* 234; *Standl. tom. cit.* 24. *Rhamnus foliis buxeis* &c. *Sloane Cat.* 216 & *Hist. ii.* 100, t. 207, fig. 1.

*Sloane* Herb. vii. 33bis (left-hand specimen)!; *Swartz*; Port Antonio; *Lucea*; *Hitchcock*; coast-line between Portland Point and Rocky Point, *Harris*! *Fl. Jam.* 10,193.—Porto Rico.

Coast shrub with slender drooping rather rough branches; spines rather weak, patent, 5–10 mm. l. *Leaves* mostly in clustered pairs, orbicular or obovate, rotundate or obtuse at base, shining and rugose above at least when dry, rigidly leathery, glabrous, 5–8 by 3–5 mm.; petioles 1–2 mm. l. *Flowers* sessile or nearly so; calyx-tube narrowly

obovoid, as long as the limb with its awl-shaped lobes. *Corolla* white; tube funnel-shaped, 8–10 mm. l.; lobes ovate, acute, 4 mm. l. *Ovary* with few ovules. *Berry* white, the persistent calyx-limb purple, broadly ovoid, 2-celled, cells 1–4-seeded, 4 by 3·5 mm. *Seeds* oval, brown, 2 mm. l.

The Florida and Bahama specimens referred here by authors, with differently shaped calyx and smaller corolla and berry, are separated by Krug & Urban from the typical form above described as var. *septentrionalis*. Other specimens from Porto Rico and Antigua having many-ovuled ovary-cells and black berries are *C. melanocarpa* of the same authors. (See Urban *Symb. Ant. i.* 429.)

### 18. CASASIA A. Rich.

Shrubs or small trees. Leaves opposite, in some species with a large number of crowded side-nerves, leathery. Flowers of medium size, pedicellate, in rather short terminal bracteolate cymes. Calyx-tube top-shaped; limb cup-shaped, 5-toothed. Corolla salver-shaped; tube sub-cylindrical, glabrous inside; lobes 5, spreading, contorted in bud. Stamens 5, inserted in the throat or middle of the corolla; anthers sessile, included. Ovary 1-celled, style ending in 2 prominent style-arms; ovules many on two parietal placentas. Berry large, woody, many-seeded. Seeds round, compressed, immersed in pulp.

Species 7 or 8, natives of the Bahamas, Florida and Cuba, and the two following endemic in Jamaica.

Leaves usually rounded at base. Berries globose .... 1. *C. longipes*.  
Leaves cuneate at base. Berries ovoid ..... 2. *C. piricarpa*.

1. *C. longipes* Urb. *Symb. Ant. v.* 506 (1908); *Standl. in N. Amer. Fl. xxvii.* 154. Co-types in Herb. Jam. and Herb. Kew.

Wild Pomegranate.

Near Troy, at 2500 ft.; Peckham Woods, Upper Clarendon; *Harris!* Fl. Jam. 8816, 9417, 11,119.

A tree 25–30 ft. high. Branches stout, nodulose, transversely ridged. Leaves at end of the branches, broadly ovate to obovate-oblong, rotundate at tip or suddenly and shortly pointed, generally rounded at base but sometimes narrowed, papery afterwards leathery, shining, with 7–10 rather distant nerves on each side, up to 23 by 13 cm.; petioles stout, up to 4·5 cm. l. *Stipules* triangular, acute, about 12 mm. l. *Cyme* shorter than the leaves, several-flowered; branches ascending; pedicels 7–10 mm. l. *Calyx-tube* top-shaped, 6 mm. l.; limb (cup) 3 mm. l. about double the length of the teeth. *Corolla* white; tube enlarged above, pubescent within below the anther-insertion, 18 mm. l.; lobes lorate-lanceolate, about as long as the tube. *Anthers* inserted on the corolla-throat. *Style* with 2 prominent slightly exerted arms. *Berry* on a pedicel about as long as the petioles, globose, 4·5 cm. across, the pericarp thick and woody. *Seeds* oval to orbicular, plano-convex, 8–12 mm. broad.

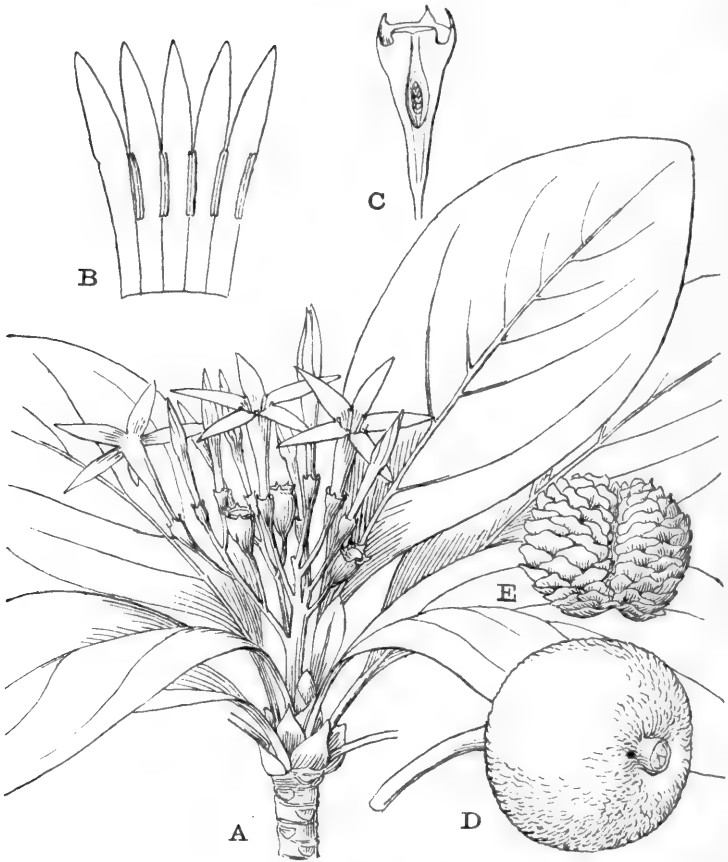


Fig. 18.—*Casasia longipes* Urb.

A, End of flowering branch  $\times \frac{1}{2}$ .

B, Corolla cut open nat. size.

C, Ovary with calyx cut lengthwise  $\times 2$ .

D, Fruit  $\times \frac{1}{2}$ .

E, Mass of seeds taken from fruit  $\times \frac{1}{2}$ .

2. *C. piricarpa* Urb. *Symb. Ant.* v. 507 (1908); *Standl. loc. cit.* Co-types in Herb. Jam. and Herb. Mus. Brit.

Malvern Hill, near Potsdam, *Harris* ! Fl. Jam. 9978 ; Teak Pen, Clarendon, *Strachan* !

A tree 25 ft. high, in foliage resembling the last except for the somewhat shorter petioles and the blade always cuneate at base. Berry obovate-pyriform, up to 9 by 5.5 cm. Flowers not seen. When more is known about this plant, it will perhaps be regarded as a variety of the above.

## 19. RANDIA L.

Trees or shrubs, erect or climbing, sometimes with axillary or extra-axillary spines. Leaves opposite. Stipules interpetiolar, often sheathing. Flowers small to large, axillary or lateral, solitary or in corymbs or clusters. Calyx-tube ovoid, obovoid or top-shaped; limb tubular or cup- or bell-shaped, truncate, toothed or lobed, often with foliaceous lobes. Corolla bell-, funnel- or salver-shaped; tube short or long, glabrous or hairy at the throat inside; lobes 5 (rarely 4) but in few species more, contorted in bud. Stamens usually 5, inserted on the throat or mouth of the corolla; anthers dorsifixed, included or exserted. Ovary usually 2-celled; style clavate, entire or bifid; ovules many (occasionally few). Berry 2-celled, usually many-seeded. Seeds immersed in pulp, compressed.

Over 300 species chiefly in the Old World tropics: fewer in America.

- Branches, leaves and flowers glabrous ..... 1. *R. aculeata*.  
 Young branches and leaves hairy; corollas  
 puberulous ..... 2. *R. jamaicensis*.

1. *R. aculeata* L. *Sp. Pl.* 1192; *Roem. & Sch. Syst.* v. 246; *Griseb. Pl. Wright.* 510, *Fl. Br. W. Ind.* 318 & *Cat. Cub.* 122; *Sauv. Fl. Cub.* 60; *Egg. Fl. St. Croix & Virg.* 60; *Stahl Fl. P.-Rico* v. 38; *Hitchc. in Rep. Miss. Bot. Gard.* iv. 92; *Kew Bull.* 1893, 257; *Duss Fl. Ant. Franç.* 330; *Small Fl. S.E. U. States* 1111; *Hart Herb. List Trin.* 30; *Bold. Fl. Ned. Ind. Occ.* ii. 102; *Urb. Symb. Ant.* iv. 586 & viii. 668; *Britton Fl. Berm.* 361 & *Fl. Amer. Virg.* 93; *Will. & Cheesm. Fl. Trin. & Tob.* 23; *Standl. in N. Amer. Fl.* xxxii. 174. *R. latifolia* Lam. *Encycl.* iii. 24 (1789) & *Ill. t.* 156, f. 1; *DC. Prodr.* iv. 385; *Macf. Jam.* ii. 209; *Hemsl. Biol. Centr. Amer. Bot.* ii. 40. *Gardenia Randia* Sw. *Prodr.* 52 (1788), *Obs. Bot.* 61 & *Fl. Ind. Occ.* i. 526; *Ait. Hort. Kew. ed.* 2. i. 370 (1810); *Sims Bot. Mag. t.* 1841; *Mayc. Fl. Barb.* 117. *G. aculeata* Ait. *op. cit. ed.* 1. i. 295 (1789); *Lun. Hort. Jam.* i. 426. *Mussænda rotundifolia*, *Sessé & Moc. Fl. Mex. ed.* 2. 59 (1894). *Lycium forte* foliis subrotundis &c. *Sloane Cat.* 171 & *Hist.* i. 40, t. 11, f. 4. *Randia* foliis subrotundis &c. *Browne Hist. Jam.* 143, t. 8, f. 1. Specimens from Swartz and drawing of Houstoun's in *Herb. Mus. Brit.*

Indigo Berry, Ink Berry, Box Briar, Prickle Bush.

*Swartz*! Common on dry hills in south side of Island, *Macfadyen*! *Cuming* 88! Banks of Hope River, *Fawcett*! Mavis Bank; *Robertsfield*; *Shaldon Road*; *Hope*; *Great Goat Island*; *Malvern Hill*;

Grove, near Hope; *Harris* ! Fl. Jam. 5432, 6569, 9325, 9970, 11,776.—Bermuda, Bahamas, Florida, Antilles, Mexico to Columbia.

A shrub up to 9 ft. high. Branches four-angled, bearing here and there a pair of extra-axillary, patent or ascending, sharp spines, 1 cm. more or less l. Leaves obovate, or obovate-oblong, rotundate or very obtuse, narrowed into a 2–8 mm. l. petiole, shining, rigidly leathery, glabrous, mostly 1–4 cm. by 7–25 mm. Stipules acuminate from a

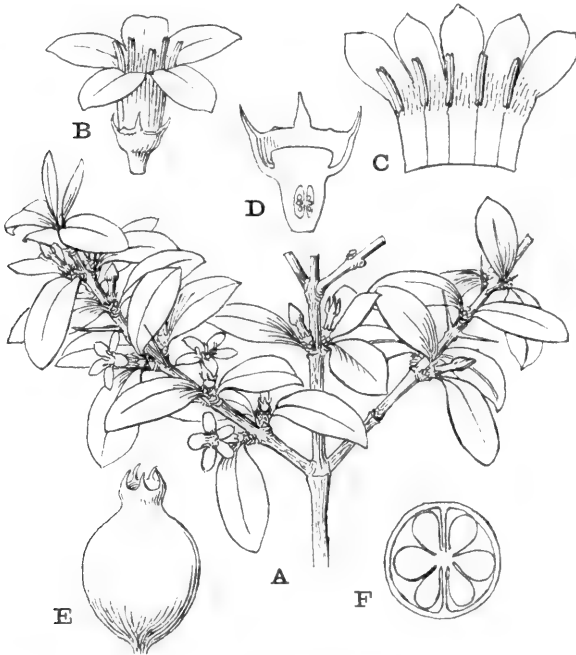


Fig. 19.—*Randia aculeata* L.

A, Portion of plant  $\times \frac{3}{4}$ .  
B, Flower  $\times 2$ .  
C, Corolla cut open  $\times 2$ .

D, Ovary with calyx cut lengthwise  $\times 4$ .  
E, Berry  $\times 2$ .  
F, Berry cut across  $\times 2$ .

broad base, 2–3 mm. l. Flowers lateral, sessile or subsessile. Calyx-tube narrowly obovoid, 2 mm. l.; limb as long, bell-shaped, shortly toothed. Corolla sometimes 6-merous, salver-shaped, white, fragrant; tube broad, hairy in the throat, 4–7 mm. l.; lobes ovate, acute, reflexed, 3.5 mm. l. Stamens 5, inserted in the throat; anthers subsessile, subexserted. Style exserted; stigma fusiform with bifid tip. Berry globose or ovoid, 6–12-seeded, 7–12 mm. across. Seeds suborbicular, immersed in blue pulp.

Var. *mitis* Griseb. loc. cit.; Egg. loc. cit. *R. mitis* L. *Sp. Pl.* 1192; *Mill. Gard. Dict. ed. 8*; *Houst. Reliq.* 4, t. 4; *Descourt. Fl. Ant. ii.* 101, t. 92; *Macf. tom. cit.* 210; *Jenn. Is. Pin.* 266; *Britt. & Millsp. Baham. Fl.* 410; *Standl.*

in *Contrib. U.S. Nat. Herb.* xxiii. 1376. *R. latifolia* Lam. var. *mitis* DC. *loc. cit.* *Mussænda mitis* Sessé & Moc. *tom. cit.* 60. *Lycium majus americanum* &c. *Pluk. Alm.* 234, t. 97, f. 6. *Cacao affinis frutex spinosus* &c. *Sloane Cat.* 135 & *Hist.* ii. 18, t. 161, f. 1. Specimen from Miller in Herb. Mus. Brit.

Near Guanaboa, *Sloane* Herb. v. 61 & 62 ! *Wright* ! *Broughton* ! St. Thomas in the East, *Macfadyen* ; St. Mary, *McNab* ! J. P. 965 & 1391 *Hart* ! Claverty Cottage, J. P. 1442 *Hart* ! The Cottage, *Kemble* ! Warike Road, Long Mt., *Campbell* ! Fl. Jam. 5694 ; between Bryans Hill and Strawberry Hill, *Fawcett* ! Grandvale, Westmoreland ; Shingle Heap, St. George's ; Near Troy ; Malvern ; Woodstock, Westmoreland ; Hill N. of Montego Bay ; Rio Minho Valley, 1200 ft. ; Peckham Woods, Clarendon ; *Harris* ! Fl. Jam. 7096, 7663, 8785, 9810, 9833, 10,322, 10,886, 11,063. John Crow Mts., *Harris & Britton* ! Fl. Jam. 10,711 ; Tyre, *Britton* 542 !

*Shrub* or small tree 20 ft. high, usually without spines. *Leaves* oblanceolate to obovate and ovate, obtuse or subacute, mostly 3-8 by 1.5-4 cm. *Berry* ovoid or globose, 10-12 mm. across.

The berries yield a blue dye and a syrup made from them is recommended by Descourtils in certain kinds of dysentery.

2. *R. jamaicensis* (*Spreng.*) *Krug & Urb.* in *Symb. Ant.* i. 426 (1899) ; *Standl. tom. cit.* 173. *R. jamaicensis* var. *Campbellii* *Krug & Urb. tom. cit.* 427. *Gardenia jamaicensis* *Spreng. Syst.* i. 761 (1825).

Jamaica, without locality, *Bertero* ; foot of Long Mt. *Campbell* ! Fl. Jam. 6153 ; Long Mt., North side, *Harris* ! Fl. Jam. 8945 ; road to Wareka, *Maxon* 10,529 !

*Shrub.* Branches usually densely hairy when young ; spines few, 6-10 mm. l. *Leaves* small, subsessile, ovate or suborbicular, tip rotundate or very obtuse, rotundate, subtruncate or slightly cordate at base, 7-13 mm. l. and broad, rather rough with very short hairs above, ciliate on margin, puberulous on nerves below. *Flowers* lateral, solitary, 4- or 5-merous. *Calyx-limb* 2.5 mm. l., twice or thrice as long as the triangular teeth. *Corolla-tube* 5-6 mm. l., sparsely and minutely hairy outside, densely villous in throat and at mouth ; lobes ovate, acute, 3.5-4 mm. l. *Anthers* subsessile, inserted in corolla-throat. *Style* ending in a subclavate deeply bifid stigma ; ovary with few ovules.

This description is adopted from that of *Krug & Urban loc. cit.*, itself drawn up from *Sprengel's* type. Except for its young branches being glabrous, there seems no valid difference between the type and var. *Campbellii*, but the material to hand is very scanty.

## 20. GUETTARDA L.

Shrubs or small trees. Leaves opposite, rarely ternate. Stipules interpetiolar. Flowers hermaphrodite or polygamodiceous, small or rather large, usually secund and sessile or subsessile in axillary forked cymes. Calyx-tube ovoid or globose ; limb tubular or cup-shaped, truncate or irregularly toothed, deciduous. Corolla salver-shaped, tube cylindrical,

elongated, straight or curved; lobes 4-9, imbricate in bud. Stamens 4-9, inserted on the throat of the corolla; anthers sessile or subsessile, dorsifixed, included. Ovary 4-9-celled; style filiform, stigma capitate or ovoid, entire or shortly lobed. Ovules solitary in the cells, pendulous from the top. Fruit a usually globose drupe; exocarp slightly fleshy, endocarp woody or bony, 4-9-celled. Seeds 4-9, without endosperm; embryo with elongated radicle.

Species about 80, chiefly natives of the New World: many in the West Indies.

Leaves glabrous or at most puberulous above.

Corolla-tube to nearly 4 cm. l. ....	1. <i>G. longiflora</i> .
Corolla-tube up to 1.8 cm. l. ....	2. <i>G. argentea</i> .
Corolla-tube 6 mm. l. ....	3. <i>G. elliptica</i> .
Leaves rough above .....	4. <i>G. scabra</i> .

1. *G. longiflora* Griseb. *Fl. Br. W. Ind.* 332 (1861); leaves up to 20 cm. l., more or less silky beneath, the quaternary nerves running parallel and close together; bracts ovate.—*Griseb. Cat. Cub.* 131; *Sauv. Fl. Cub.* 65; *Combs Pl. Cub.* 429; *Standl. in N. Amer. Fl.* xxxii. 248. Type in Herb. Kew.

*Browne! Wright! St. Thomas, McNab! Haddon, near Moneague, Prior 459! March 676!*

*Tree* 30 ft. high. *Branches* subterete, soon glabrous. *Leaves* large, ovate, cordate rotundate or broadly subtruncate at base, shortly cuspidate with acute tip, parchment-like, glabrous above, finely silky or nearly glabrous beneath, 12-20 by 9-13 cm.; petioles silky, 3-7 mm. l. *Stipules* ovate-lanceolate, acute, silky on back, 5 mm. l. *Peduncles* usually shorter than the leaves; bracts ovate, very fugacious. *Flowers* sessile and secund, close together on the branches of the inflorescence like themselves silky-tomentose. *Calyx-tube* depressed globose, furrowed, 1.25 mm. l.; limb tubular, truncate or shortly lacerate, 3 mm. l. *Corolla-tube* straight or curved, 2.5-nearly 4 cm. l.; lobes 5-6, obovate, 5-6 mm. l. *Anthers* subincluded. *Stigma* ovoid, entire. *Drupe* not seen.

Grisebach cites only March as the Jamaica collector; but March's specimen (at Kew) is without flowers, for the description of which Grisebach must have relied on Cuban material. Prior's specimens at Kew, overlooked by Grisebach, are very good except for the fruit which is still unknown.

2. *G. argentea* Lam. *Encycl.* iii. 54 (1789) (excl. ref. Cayenne); leaves silky beneath with inconspicuous quaternary nerves; bracts ovate; berry wrinkled.—*Lam. Ill. t.* 154, f. 1; *DC. Prodr.* iv. 455 (in part); *Griseb. Fl. Br. W. Ind.* 332 (excl. distrib. ext.); *Urb. Symb. Ant.* vi. 46; *Standl. tom. cit.* 245. *G. speciosa* L. *Syst. ed.* 10, ii. 1270 (1759) (ref. *Browne*) (non *L. Sp. Pl.* 991). *G. ambigua* DC. *loc. cit.* (1830) (excl. ref. *Halesia*). *Halesia arborescens foliis subrotundis &c.* *Browne Hist. Jam.* 205, t. 20, f. 1.



Sixteen-mile Walk, *Browne* ; *Macfadyen* ! Portland Gap, *Prior* ! Moneague, *Id.* 458 ! Martin's Hill, Manchester, *Purdie* ! March 654 ! *Wilson* 190 ! Westphalia Road and near Newcastle, J. P. 1094 *Hart* ! Norbrook, *Campbell* ! Silver Hill ; Tweedside Road, St. Andrew ; Sheldon Road ; Mona Woodland, Slope of Long Mt. ; Peckham Woods

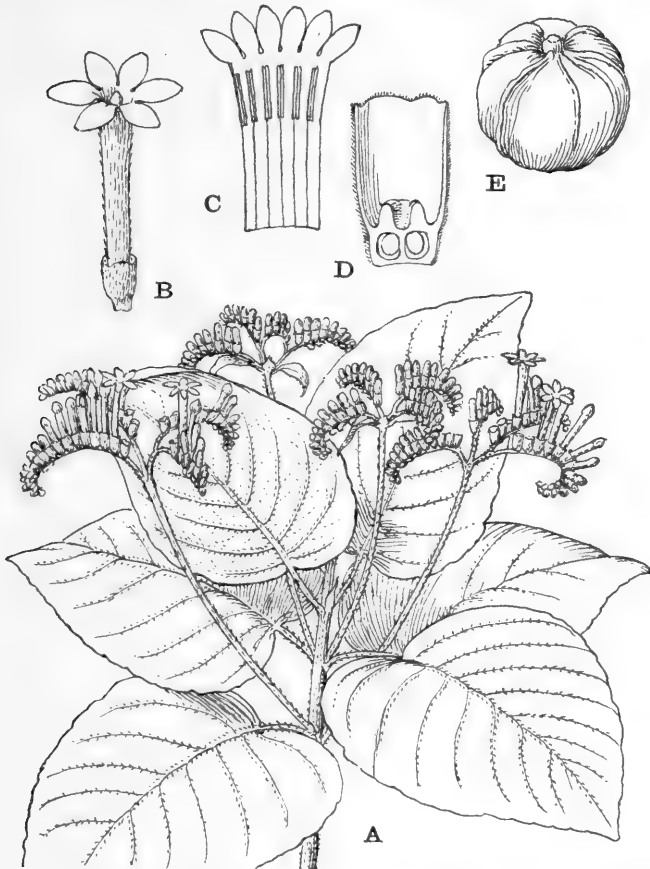


Fig. 20.—*Guettarda argentea* Lam.

A, End of flowering branch  $\times \frac{1}{3}$ .

B, Flower  $\times 2$ .

C, Corolla cut open  $\times 2$ .

D, Ovary with calyx, cut lengthwise  $\times 6$ .

E, Drupe  $\times 2$ .

and Croft's Mt., Upper Clarendon ; *Harris* ! Fl. Jam. 5694, 5918, 8851, 10,969, 10,993, 11,197, 11,229 ; Strawberry Hill, *Marble* 263 ! Halberstadt, Port Royal Mts. *Norman* 192 !

#### Silver Wood.

Tall shrub or tree with spreading head up to 30 ft. high. Branches nodulose, glabrous, at first finely pubescent. Leaves ovate, rotundate

or cuspidate-acuminate, with obtuse tip, obtuse, rotundate or shallowly cordate at base, parchment-like, with 5-6 pairs of nerves, glabrous and shining above, minutely grey (sometimes light brown), silky below, 5-12 by 3.5-9 cm.; petioles silky, 1-3.5 cm. l. *Stipules* awl-shaped from a broad base, about 5 mm. l. *Peduncles* usually shorter than the leaves, silky. *Flowers* silky, few, close together, secund at the top of the silky branches of the inflorescence; bracts ovate, fugacious. *Calyx-tube* ovoid, 1.25 mm. l., half as long as the tubular, truncate or slightly lacerate limb. *Corolla* white; tube sometimes curved, 12-18 mm. l.; lobes 6, ovate-oblong, obtuse, 2.5-3 mm. l. *Stigma* exerted, ovoid, entire. *Drupe* globose, conspicuously ridged, 1 cm. across; endocarp bony, 4-6-seeded.

*G. potamophila* Urb. *Symb. Ant. vi.* 47 from Black River, Lacovia to Elham Wharf, *Harris*! Fl. Jam. 9851 is probably conspecific, but its flowers are unknown.

3. *G. elliptica* Sw. *Prodr.* 59 (1788); leaves rather small, puberulous, the quaternary nerves not conspicuous; bracts linear; drupe slightly wrinkled.—*Sw. Fl. Ind. Occ. i.* 634; *DC. tom. cit.* 457; *Griesb. Pl. Wright.* 506, *Fl. Br. W. Ind.* 332 & *Cat. Cub.* 131; *Sauv. Fl. Cub.* 65; *Combs Fl. Cub.* 429; *Small Fl. S.E. U. States*, 1112; *Urb. Symb. Ant. iv.* 590 & *viii.* 672; *Britton Fl. Amer. Virg.* 93; *Britt. & Millsp. Baham. Fl.* 414; *Standl. in Contrib. U.S. Nat. Herb. xxiii.* 1384 & *in N. Amer. Fl. xxxii.* 256; *Britt. & Wils. P.-Rico & Virg. Is. vi.* 236.

Velvet Seed.

In dry woods, *Swartz*; *Wright*! *Lindsay*! *Macfadyen*! *March* 664! *Wullschlägel*; King's House Back Pasture, *Campbell*! Fl. Jam. 5928; Near Hope, *Hope*! Fl. Jam. 6571; Westphalia Road, J. P. 1469 *Hart*! Hagley Gap; Berwick Hill; Hope; Mona; Road to Wareka; Luana Point; Long Mt., South Side; Lititz Savannah; Great Goat Island; *Harris*! Fl. Jam. 5407, 6518, 6780, 7709, 8842, 9019, 9901, 10,012, 11,723.—Bahamas, Cuba, Hispaniola, Porto Rico, Virgin Isles, Florida, Mexico.

*Shrub* or small *tree* up to 15 ft. *Branchlets* rather slender, subterete, grey, soon glabrous. *Leaves* opposite (uppermost sometimes ternate), ovate, oblong-obovate or elliptical, rotundate, obtuse or subacute, parchment-like, with 3-4 pairs of nerves, the quaternary not conspicuous, puberulous chiefly on nerves of both faces, 1.5-5.5 by 1-3 cm.; petioles hairy, 1-5 mm. l. *Stipules* lanceolate, acute, 2-4 mm. l. *Flowers* silky, few in a contracted finely silky cyme; peduncles 2-30 mm. l.; bracts linear, 2 mm. l.; pedicels 1 mm. l. more or less. *Calyx-tube* depressed-globose, 1 mm. l.; limb tubular, generally 2-toothed, 2.5 mm. l. *Corolla* white; tube 6 mm. l.; lobes 4, ovate, one-third as long as tube. *Drupe* globose or subglobose, crimson, at length nearly black, silky, 5-7 mm. across, 4-(3-6) seeded.

4. *G. scabra* (L.) *Lam. Encycl. Tabl. ii.* 218 (1793), *t.* 154, *f.* 3; leaves rough with raised points on upper face, the quaternary nerves inconspicuous; bracts oblong; drupe wrinkled.—*Vent. Choix t. 1*; *Mayc. Fl. Barb.* 354; *DC. tom. cit.* 456; *Griseb. Fl. Br. W. Ind.* 332 & *Cat. Cub.* 131;

*Saw. loc. cit.*; *Egg. Fl. St. Croix & Virg.* 60; *Hemsl. Biol. Centr. Amer. Bot. ii.* 42; *Stahl Fl. P.-Rico v.* 56; *Kew Bull.* 1893, 257; *Duss Fl. Ant. Franç.* 337; *Hart Herb. List. Trin.* 29; *Bold. Fl. Ned. W.-Ind. i.* 189; *Britton Fl. Amer. Virg.* 93; *Britt. & Millsp. tom. cit.* 412; *Urb. Symb. Ant. viii.* 671; *Will. & Cheesm. Fl. Trin. & Tob.* 25; *Britt. & Wils. tom. cit.* 234; *Standl. N. Amer. Fl. xxxii.* 239. *G. rugosa Sw. Prodr.* 59 (1788) & *Fl. Ind. Occ. i.* 632; *Vahl Symb. iii.* 50; *DC. loc. cit.*; *Griseb. Pl. Carib.* 80; *Sessé & Moc. Fl. Mex. ed. 2.* 217. *Matthiola scabra L. Sp. Pl.* 1192 (1753). De Ponthieu's specimen from Antigua, type of *G. rugosa*, is in Herb. Mus. Brit.

*Macfayden*; *Manchester, Purdie*; *Wilson* (all according to Grisebach, but specimens not found at Kew).—Bahamas, Antilles, Florida, Mexico, Central America.

A small tree. Branches terete, at first pubescent. Leaves ovate, ovate-oblong or oblong-obovate, obtuse, rotundate or cuspidate with mucronate tip, rounded or sometimes shallowly cordate at base, leathery, scabrid with raised points above, laxly tomentose beneath, side-nerves 6-7 pairs, mostly 3-10 by 2.5-6 cm.; petioles pubescent, 5-10 mm. l. *Stipules* lanceolate, acuminate, about 5 mm. l. *Cymes* and flowers finely silky; cymes contracted, the flowers few or several on peduncles up to 8 cm. l. but often much shorter. *Bracts* 3-4 mm. l. *Calyx-tube* subglobose, 1.5 mm. l.; limb twice as long, truncate or shortly and irregularly cut. *Corolla* white; tube slightly enlarged above, 1-2 cm. l.; lobes 5-6, suborbicular, 3-4 mm. l. *Style* included. *Drupe* globose, wrinkled, finely tomentose, 5 mm. across, 4-(3-6) seeded.

Grisebach is the only authority for the occurrence of this plant in Jamaica. There are, however, no Jamaica specimens at Kew, as should be the case, nor in the British Museum, nor in the Jamaica Herbarium, though judging from its wide distribution in the West Indies, it is almost certainly indigenous in the island. The species is easily recognised by the very rough upper face of its stiff leaves.

*G. crispiflora Vahl Eclog. Amer.* 36, t. 6 (1796) is included by Grisebach as from Jamaica. The species was founded on material collected in Montserrat by Ryan near the end of the 18th century, and is also known from Dominica, St. Vincent, Martinique and Guadeloupe. Grisebach gives as the Jamaican collector Dancer, who introduced many plants into the island while Superintendent of the Bath Garden, and this may have been one of them, though it is not in the list of such introductions published by him.

A slender bush, 10 ft. high; leaves petiolate, ovate, up to 30 by 20 cm. but usually (sometimes much) smaller, with 11-12 pairs of nerves, the quaternary inconspicuous, thinly papery and sparsely pilose; *stipules* large, ovate, hairy on back; *cymes* short, once-forked, several-flowered, silky, the peduncles slender, about 2 cm. l.; *flowers* rather distant, sessile, secund; *bracts* minute; *calyx-limb* shortly and regularly toothed; *corolla-tube* 1 cm. l., the limb of 5 lacinate lobes; *drupe* sharply 4-angled and 4-seeded.

No authentic Jamaican specimen is known. The type (Montserrat, *Ryan*) is in Herb. Mus. Brit.

## 21. ANTIRRHŒA Comm.

Trees or shrubs. Leaves opposite. Stipules interpetiolar, deciduous. Flowers hermaphrodite or polygamous, small, the inflorescence as of *Guettarda*, sometimes (species not Jamaican) of small open cymes or the flowers solitary. Calyx-tube ovoid or oblong; limb truncate or irregularly 4-5-toothed or -lobed, persistent on the fruit. Corolla-tube cylindrical or funnel-shaped, with naked or hairy throat; lobes 4-5, short, imbricate in bud. Stamens 4-5, inserted on the throat of the corolla; filaments usually short; anthers dorsifixed, included or shortly exerted. Ovary 2-10-celled; style filiform; stigma capitate or 2-3-fid, included; ovules solitary in the cells, pendulous from the top. Drupe oblong; exocarp fleshy, endocarp bony or woody, 2-10-celled. Seeds elongated, without endosperm.

About 30 species, natives of the West Indies (including Bahamas), Mauritius, South China, Indian Archipelago and tropical Australia.

Leaves glabrous or at most puberulous.

Corolla tomentose .....	1. <i>A. jamaicensis</i> .
Corolla glabrous.	
Leaves parchment-like, shining. Corolla-tube about 5 mm. l.....	2. <i>A. lucida</i> .
Leaves leathery, opaque. Corolla-tube 8-9 m.l.....	3. <i>A. coriacea</i> .
Leaves velvety tomentose beneath .....	4. <i>A. tomentosa</i> .

1. ***A. jamaicensis*** (*Griseb.*) *Urb. Symb. Ant. i.* 435 (1899); leaves puberulous beneath, with axillary tufts of hairs (*domatia*); cymes singly forked.—*Standl. in N. Amer. Fl. xxxii.* 270. *A. bifurcata* *Benth. & Hook. f. Gen. Pl. ii.* 100 (1873). *Stenostoma bifurcatum* *Griseb. Fl. Br. W. Ind.* 333 (1861) (non *DC.*)

Gold Spoon, Wild Mahogany (Purdie).

Woods at Spitzbergen, Manchester, *Purdie!* *March* 711! Above Silver Hill; Road to Woodcutter's Gap; John Crow Mts., 1700 ft.. Peckham Woods, Clarendon; Soho, St. Ann, 1400 ft.; *Harris!* *Fl. Jam.* 5805, 6189, 10,766, 11,114, 11,989.

A spreading tree up to 40 ft. high. Branches somewhat four-angled, grey, glabrous. Leaves ovate, ovate-oblong or oblong-obovate, rotundate or cuspidate-acuminate with obtuse tip, rounded or obtuse at base, parchment-like, puberulous on nerves beneath with a small grey *domatium* in each of the main axils, nerves 6-8 pairs, rather prominent beneath, 6.5-14 by 3-9 cm.; petioles 1-2.5 cm. l. *Stipules* triangular, acute, 7 mm. l. *Cymes* few- and close-flowered; peduncles up to 6 cm. l., often much shorter. *Flowers* sessile, silky. *Calyx-tube* broadly oblong, 2 mm. l.; limb as long, very shortly toothed. *Corolla* greenish yellow tinged with pink; tube 6 mm. l., thrice the length of the ovate lobes. *Anthers* included. *Drupe* oblong, minutely hairy, 7-12 mm. l., 2-seeded.

Timber valuable for flooring and indoor work generally.

2. *A. lucida* (Sw.) Benth. & Hook. f. loc. cit. (1873); leaves glabrous without domatia; cymes singly forked.—*Urb. op. cit. iv.* 591 & *viii.* 673; *Standl. tom. cit.* 271. *Laugeria lucida* Sw. *Prodr.* 48 (1788) & *Fl. Ind. Occ. i.* 475; *Vahl*

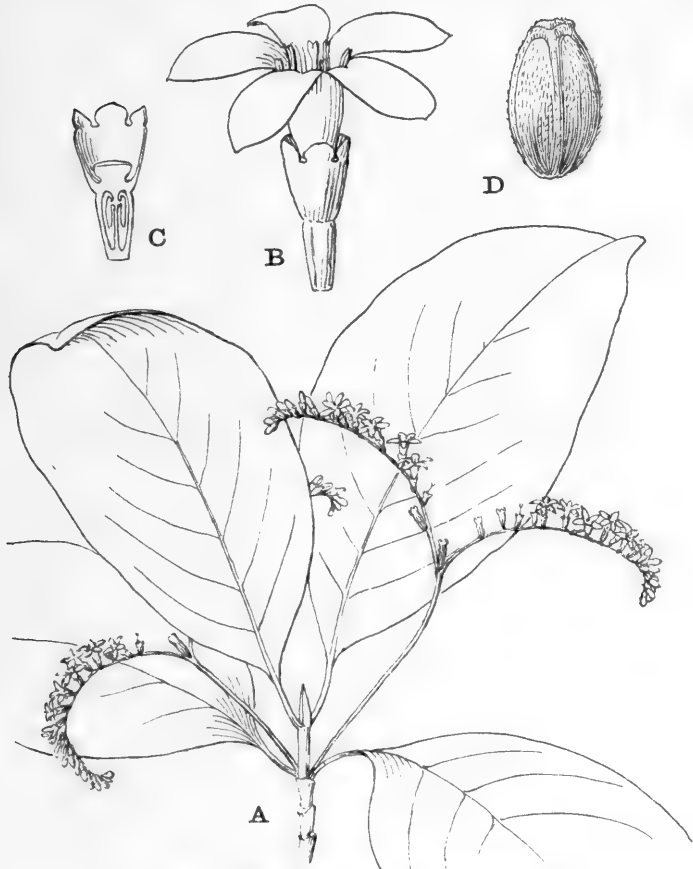


Fig. 21.—*Antirrhæa lucida* (Sw.) Benth. & Hook. f.

A, End of branch in flower  $\times \frac{1}{2}$ .  
B, Flower  $\times 6$ .

C, Ovary with calyx cut lengthwise  $\times 6$ .  
D, Drupe  $\times 2$ .

*Symb. iii.* 40, t. 57; *Lun. Hort. Jam. i.* 459. *Malanea nitida* Desr. in *Lam. Encycl. iii.* 688 (1789). *Stenostomum lucidum* Gaertn. *Fruct. iii.* 69, t. 192, f. 3 (1805); *DC. tom. cit.* 460; *Griseb. Pl. Wright.* 507, *Fl. Br. W. Ind.* 334 & *Cat. Cub.* 132; *Sauv. Fl. Cub.* 67; *Egg. Fl. St. Croix & Virg.* 60; *Stahl Fl.*

*P.-Rico v. 59*, *Britton Fl. Amer. Virg.* 92; *Britt. & Millsp. Baham. Fl.* 414; *Will. & Cheesm. Fl. Trin. & Tob.* 26; *Britt. & Wils. P.-Rico & Virg. Is. vi.* 237. *Stenostomum nitidum DC. tom. cit.* 461 (1830); *Griseb. Fl. Br. W. Ind.* 333; *Malanea lucida A. Rich. in Mém. Nat. Hist. Soc. Paris v.* 208 (1834); *Sagra Cub. xi.* 225. Specimen of *Laugeria lucida* from Swartz (St. Croix, von Rohr) in Herb. Mus. Brit.

*Wright! Macfadyen! Grant's Pen*, near Albion Estate; *Albion Mt., St. Thomas, Harris! Fl. Jam.* 10,817, 11,679.

*Tree* up to 40 ft., all parts glabrous. *Leaves* ovate-oblong or elliptical, rotundate or obtuse, obtuse at base, papery, highly lustrous especially above, nerves 8–12 pairs, very faint, 6–12 by 3·5–6 cm.; petioles up to 15 mm. l. *Stipules* triangular, acuminate, 6–8 mm. l. *Cymes* shorter than the leaves; peduncles up to 4·5 cm. l., usually shorter. *Flowers* sessile, rather distant. *Calyx-tube* oblong, 1·5 mm. l.; limb slightly longer with 5 broad teeth. *Corolla-tube* funnel-shaped, 3·5 mm. l.; lobes oblong, 2·5 mm. l. *Anthers* subincluded. *Drupe* oblong, about 1 cm. l., 2-seeded.

**3. *A. coriacea* (Vahl) Urb. Symb. Ant. i.** 436 (1899); leaves glabrous, without domatia; cymes doubly forked.—*Urb. op. cit. iv.* 591; *Standl. tom. cit.* 272. *Laugeria coriacea Vahl Eclog. Amer.* 26 (1796). *Guettarda coriacea Pers. Syn. i.* 201 (1805); *DC. tom. cit.* 458; *Griseb. Pl. Carib.* 80. *Stenostomum coriaceum Griseb. Fl. Br. W. Ind.* 334; *Britt. & Wils. loc. cit.*

#### Peg Wood.

*Crown Lands near Troy*, 2500 ft.; *Peckham Woodland, Clarendon; Harris! Fl. Jam.* 8730, 11,070; *John Crow Mts., 1500 ft., Harris & Britton! Fl. Jam.* 10,772.—*Porto Rico* [Montserrat, Guadeloupe, Martinique, Dominica, St. Vincent fide Urban].

*Glabrous tree* up to 30 ft. high. *Leaves* ovate, oblong-obovate or elliptical, obtuse or rotundate at either end, leathery, side-nerves 5–6 pairs, prominent on the underside, 5–10 by 3–5 cm.; petioles up to 15 mm. l. *Stipules* triangular, obtuse, 5–7 mm. l. *Cymes* shorter than the leaves, twice forked; peduncles mostly 10–25 mm. l.; flowers rather close together, sessile, secund. *Calyx-tube* broadly oblong, barely 1 mm. l.; limb twice as long, shortly toothed. *Corolla* greenish white, very fragrant, 8–9 mm. l. (Urban). *Drupe* narrowly obovoid-oblong, 7–8 mm. l., 2-seeded. In the main Urban has been followed here, but without full conviction owing to the absence of typical material.

**4. *A. tomentosa* (Sw.) Benth. & Hook. f. ex Fawc. Fl. Pl. Jam.** 19 (1893); leaves without domatia; cymes doubly forked.—*Urb. op. cit. vii.* 412; *Standl. tom. cit.* 270. *Laugeria tomentosa Sw. Prodr.* 48 (1788) & *Fl. Ind. Occ. i.* 477; *Lun. loc. cit.* *Guettarda tomentosa Pers. loc. cit.* (1805). *Stenostomum tomentosum DC. tom. cit.* 460 (1830); *Griseb. Fl. Br. W. Ind.* 333. Specimen from Swartz in Herb. Mus. Brit. and Herb. Stockholm.

Among shrubs in western parts of the Island, *Swartz* !

Tall *shrub* or *tree* up to 20 ft. *Branches* terete, soon glabrous. *Leaves* oblong-ovate, obtuse at tip and base, parchment-like, glabrous, nerves 6-7 pairs, prominent beneath, 6-14 by 3.5-7 cm.; petioles pubescent, 1 cm. l. or less. *Stipules* triangular, acute, about 4 mm. l. *Flowers* sessile, at first close together on the short branches of the cyme which elongate and leave wide intervals between the flowers. *Calyx-tube* broadly oblong, limb 5-toothed, the whole (in very early state) 1 mm. l. *Corolla* white, about 5 mm. l.; limb 5-fid. *Drupe* oblong, 2-seeded (floral details from *Swartz*).

## 22. MACHAONIA Humb. & Bonpl.

Shrubs or trees, sometimes spiny. Leaves usually opposite. Stipules interpetiolar. Flowers small, in terminal, bracteate, cymose panicles. Calyx-tube ovoid, obovoid or top-shaped; limb cup-shaped, 4-5-partite, the segments persistent on the fruit. Corolla-tube short, funnel-shaped, with hairy throat; lobes 4-5, imbricate in bud. Stamens 4-5, inserted in the corolla-throat or mouth; filaments short or long; anthers dorsifixed, included or exerted. Disk fleshy. Ovary usually 2-celled; style filiform, 2-armed; ovules solitary, pendulous from the top of the cell. Fruit of 2 trigonous indehiscent 1-seeded cocci, separating from below upwards from the persistent axis. Seeds elongated, cylindrical.

About 25 species, natives of the West Indies and tropical America.

Leaves at least 4 cm. l. Calyx-limb 5-lobed ..... 1. *M. rotundata*.

Leaves not over 3 cm. l. Calyx-limb usually 4-

lobed ..... 2. *M. cymosa*.

1. *M. rotundata* *Griseb. Fl. Br. W. Ind.* 348 (1861); branches usually unarmed, 3-4 mm. across; corolla-lobes 5; fruit papillose.—*Hitchc. in Rep. Miss. Bot. Gard. iv.* 93; *Urb. Symb. Ant. v.* 513 (fig. G); *Standl. in N. Amer. Fl. xxxii.* 221.

*Wright* ! *Macfadyen* ! Near Holland Bay, *Purdie* ! also *Wilson* 384 ! Port Antonio, *Hitchcock* ; Port Antonio ; Port Morant ; *Harris* ! *Fl. Jam.* 5996, 10,640.

A *shrub* in coastal thickets, up to 10 ft. high, unarmed or nearly so. *Branches* four-angled, finely pubescent, soon glabrous. *Leaves* ovate, obtuse or cuspidate-acuminate with subacute tip, rounded at base, papery, rather rough above, glabrous beneath, 4-7 by 3-4.5 cm. *Stipules* acute from a broad base, 2 mm. l. *Panicles* many- and densely-flowered, about as long as the leaves, up to 10 cm. across, the trichotomous branches pubescent. *Calyx-tube* narrowly obovoid, nearly glabrous, 2.5 mm. l.; lobes unequal, ovate, obtuse, nearly half as long as the tube. *Corolla* white; tube 2 mm. l.; lobes oblong-ovate, rotundate, about as long as the tube. *Stamens* included or exerted.

*Style* exerted. *Fruit* obovoid, obscurely ribbed, 5 mm. l., the persistent calyx-lobes erect.

The flowers would seem to be dimorphic, having long and short stamens and perhaps included as well as exerted styles.

2. *M. cymosa* (Sw.) Griseb. *Fl. Br. W. Ind.* 348 (1861) (excl. ref. *Sloane*) (non *Griseb. Cat. Cub.* 139); branches slender, 2 mm. across, lower ones spiny; corolla-lobes 4;

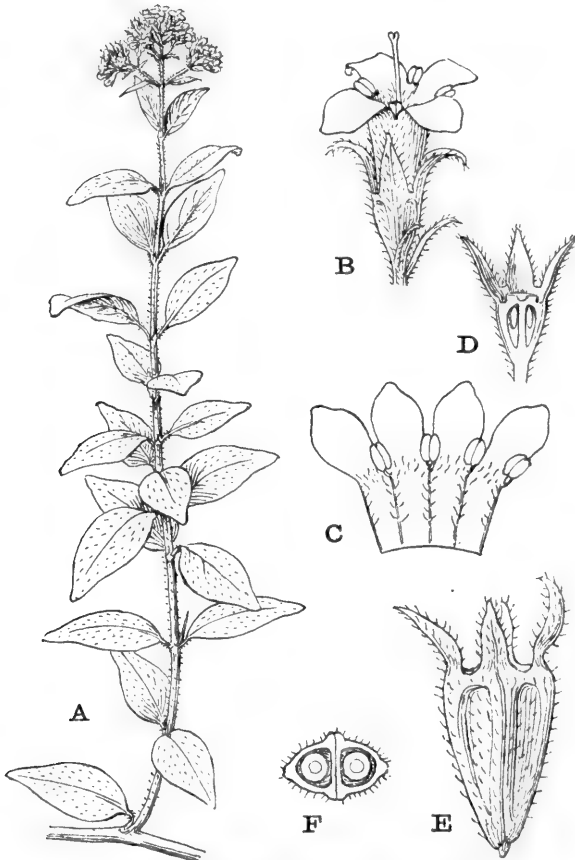


Fig. 22.—*Machaonia cymosa* (Sw.) Griseb.

A, Small branch in flower  $\times \frac{3}{8}$ .

B, Flower  $\times 6$ .

C, Corolla cut open  $\times 6$ .

D, Ovary with calyx cut lengthwise  $\times 6$ .

E, Fruit  $\times 4$ .

F, Fruit cut across  $\times 4$ .

fruit roughly hairy.—*Urb. loc. cit.* (fig. B); *Standl. tom. cit.* 216. *Lippia cymosa* Sw. *Prodr.* 93 (1788) & *Fl. Ind. Occ. ii.* 1066; *Lun. Hort. Jam. i.* 454; *DC. Prodr. xi.* 594. Specimen from Swartz in Herb. Mus. Brit.



*Swartz ! Wright ! Masson ! Liguana, Broughton ! Liguana Hills Prior 480 ! Macfadyen ! Near Hope Grove, St. Andrew ; Hope River Valley ; Harris ! Fl. Jam. 6556, 6834, 12,713.*

A slender *shrub* up to 15 ft. high. *Leaves* small, ovate or ovate-oblong, obtuse or obtusely acute, rounded or narrowed at base, papery, glabrous, 1.5–2.5 by .8–1.3 cm. ; petioles 1–3 mm. l. *Stipules* acute, 2 mm. l. *Panicle* short, rather few-flowered, pubescent. *Calyx-tube* obovoid, hispidulous, 1.5 mm. l. ; lobes triangular, acute, as long as the tube. *Corolla* white, fragrant ; tube 2 mm. l. ; lobes broadly obovate, a little shorter than the tube. *Anthers* scarcely exerted. *Style* exerted. *Fruit* obconical, somewhat compressed, strongly 4-ribbed, 4.5–5 mm. l., the calyx-lobes patent or reflexed.

Var. *glabrescens* *S. Moore in Journ. Bot. lxxviii. 112 (1930). Habit and foliage* of the type. *Branches* of the *inflorescence* at most puberulous. *Calyx-tube* and top-shaped fruit sparsely papillose or glabrous. *Spireæ* congener *cymosa* &c., *Sloane Hist. ii. 30, t. 174, f. 3 & 4.*

Cut Throat Gully, near Black River Bridge and St. Jago de la Vega, *Sloane Herb. v. 112 ! Inverness, Lower Clarendon ; Harris ! Fl. Jam. 11,964, 12,151.*

### 23. ERITHALIS L.

Glabrous shrubs, more rarely trees. Leaves opposite, leathery or parchment-like. Stipules broad, sheathing, persistent, usually apiculate. Flowers rather small, in axillary or supra-axillary, sometimes terminal, trichotomous paniculate cymes. Calyx-tube subglobose ; limb ring- or cup-shaped, truncate or 5–10-toothed, persistent on the fruit. Corolla salver-shaped or rotate, lobes 5–10, narrow and recurved, imbricate in bud. Stamens 5–10, inserted at the base of the corolla ; filaments filiform, united at base ; anthers basifixed. Ovary 5–10-celled (rarely more) ; style fleshy, ending in a narrowly clavate entire or minutely lobed stigma ; ovules solitary in and pendulous from the top of the cells. Fruit a globose drupe of (usually) 5–10 bony, cartilaginous or crustaceous pyrenes. Seeds oblong, compressed.

Species 10, natives of the West Indies, one extending to the Bahamas, South Florida and Central America.

Branches soon terete or subterete. Stipules apiculate. Corolla-lobes usually 5.

Calyx-limb ring-shaped ; corolla-lobes nearly

4 mm. l. ..... 1. *E. fruticosa.*

Calyx-limb cup-shaped ; corolla-lobes 8 mm. l. 2. *E. odorifera.*

Calyx-limb cup-shaped ; corolla-lobes 4 mm. l. 3. *E. Harrisii.*

Branches four-angled. Stipules truncate.

Corolla-lobes 6–7 (rarely 5) ..... 4. *E. quadrangularis.*

1. *E. fruticosa* *L. Syst. ed. 10. 930 (1760) ; branches subterete ; leaves obovate or obovate-oblong, apex rounded or obtuse, rounded or narrowed at base, leathery or*

parchment-like, shining; cymes in the upper axils as long as or a little longer than the leaves; calyx very small, the limb minutely toothed; corolla-lobes 5–8, oblong; anthers a little shorter than the filaments; drupe very small.—*Lam. Encyl. ii.* 388 & *Ill. t.* 159; *Sw. Obs. Bot.* 80 (excl. var.);

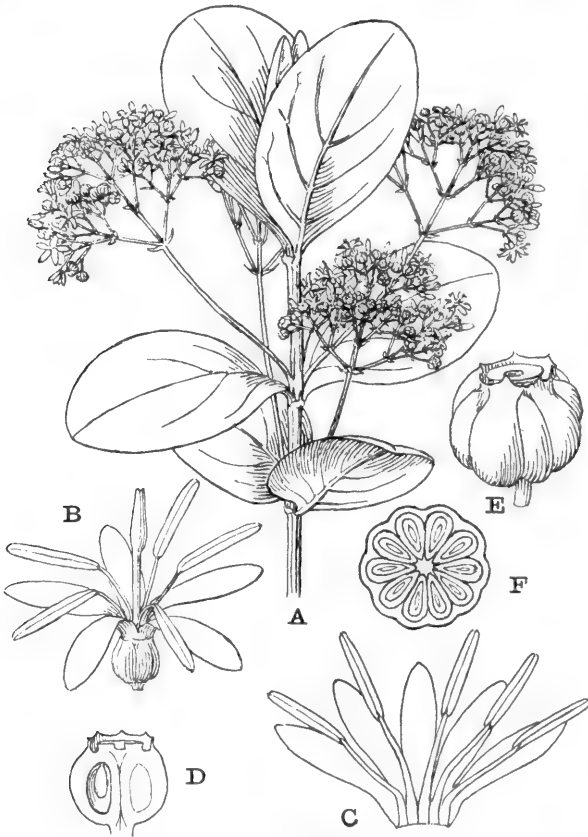


Fig. 23.—*Erithalis fruticosa* L.

A, End of branch in flower  $\times \frac{1}{2}$ .  
 B, Flower  $\times 6$ .  
 C, Corolla cut open  $\times 6$ .

D, Ovary with calyx cut lengthwise  $\times 12$ .  
 E, Drupe  $\times 6$ .  
 F, Drupe cut across  $\times 6$ .

*Lun. Hort. Jam. i.* 282; *Descourt. Fl. Ant. iv.* 40, t. 242; *DC. Prodr. iv.* 465 (excl. syn.); *Griseb. Pl. Carib.* 80, *Fl. Br. W. Ind.* 336 (excl.  $\beta$ ) & *Cat. Cub.* 134; *Sauv. Fl. Cub.* 68; *Egg. Fl. St. Croix & Virg.* 61; *Stahl Fl. P.-Rico v.* 61 (excl. syn.); *Hitchc. in Rep. Miss. Bot. Gard. iv.* 94; *Kew Bull.*

1893, 257; *Duss Fl. Ant. Franç.* 338; *Small Fl. S.E. U. States* 1112; *Urb. in Ber. Deutsch. Bot. Gesell.* xv. 269; *Bold. Fl. Ned. W.-Ind.* i. 190 & ii. 103; *Urb. Symb. Ant.* iv. 593 & viii. 673 (excl. syn.); *Britton Fl. Amer. Virg.* 94 (excl. syn.); *Britt. & Millsp. Baham. Fl.* 415 (excl. syn.); *Will. & Cheesm. Fl. Trin. & Tob.* ii. 28; *Britt. & Wils. P.-Rico & Virg. Is.* vi. 239; *Standl. in N. Amer. Fl.* xxxii. 280. *Erithalis fruticulosa foliis obovatis &c.* *Browne Hist. Jam.* 165, t. 17, f. 3. (Fig. 23.)

Holland Bay, *Purdie*! Brown's Town and Moneague, St. Ann, *Prior*! Manchioneal, *Wilson*! Montego Bay, *Fawcett*! Road to Wareka; Pedro Bluff; Luana Pt.; Cane River Valley; Long Mt., south side; *Harris*! *Fl. Jam.* 9022, 9638, 9718, 9821, 10,004, 12,114; Port Antonio; Lucea; *Hitchcock*! Montego Bay, *Maxon & Killip* 1610! Moneague, *Ridley*! Port Antonio, *Norman* 237!—South Florida, West Indies, Central America.

*Shrub* 5–10 ft. high or *small tree*, on coastal rocks and limestone cliffs. *Leaves* mostly 3–5 by 2.5–3.5 cm.; petioles stout, flattened, up to 5 mm. l. *Stipules* 1.5–3 mm. l. *Peduncles* up to 3 cm. l.; bracts ovate, minute; pedicels 1–3 mm. l. *Calyx-tube* barely 1 mm. l., 4 times as long as limb. *Corolla* white, fragrant; tube 1 mm., lobes 4 mm. l. *Stamens* 5; anthers nearly 2 mm. l., filaments a little longer. *Drupe* purple, furrowed, 2–2.5 mm. across; pyrenes 8–12.

Descourtils found an infusion of the bark to be useful in kidney trouble.

2. ***E. odorifera* Jacq. Sel. Stirp. Amer.** 72, t. 173, f. 23 (1763); branches subterete; leaves as of *E. fruticulosa* but often much larger; inflorescence as of last; calyx-tube larger with well-marked cup-shaped broadly toothed limb and corolla-lobes more than twice the size; anthers longer than the filaments; drupe fairly large. *E. fruticulosa Urb. in Fedde Rep. Beih.* 96 (1920) non *L.* *E. fruticulosa L. var. odorifera Griseb. Fl. Br. W. Ind.* 336; *Duss loc. cit.* and other authors. Cassine? *foliis obovatis &c.* *Plum. Pl. Amer. (Burm.)* 247, t. ccxlix, f. 2.

Carlton, St. Mary, *McNab*! Manchioneal, *Harris*! *Fl. Jam.* 6061.—Bahamas, Florida, Hispaniola, Porto Rico, Virgin Is., St. Kitts, Antigua, Dominica, Martinique.

*Small tree* or *shrub* on sea-coast rocks. *Leaves* up to 11 by 6 cm. *Calyx-tube* 2 by 2.5 mm.; limb as long as tube, the teeth deltoid, about .5 mm. l. *Corolla* white, very fragrant; lobes 8 times the length of the very short tube. *Stamens* 5; filaments 4 mm., anthers 6 mm. l. *Drupe* purple, furrowed, 3–4 mm. across.

Although united by writers, this and *E. fruticulosa* seem very distinct. Occasional intermediates are presumedly hybrids between the two.

3. ***E. Harrisii Urb. Symb. Ant. v.*** 514 (1908); branches subterete; leaves ovate, obovate or obovate-oblong, rounded or narrowed at base, leathery; cymes few- or many-flowered,

about as long as leaves; calyx small, limb minutely toothed; corolla-lobes 5, oblong; anthers about as long as filaments; drupe very small.—*Standl. tom. cit.* 281.

Near Troy, 2000 ft. alt.; Holly Mount, Mt. Diablo; Pedro Bluff; Croft's Mt., Upper Clarendon; Albion Pen, St. Ann; *Harris*! Fl. Jam. 8743, 8974, 9718, 11,227, 12,015.

Bushy shrub up to 12 ft. high or tree of 25 ft. Leaves 2.5–7.5 by 2–5 cm., midrib prominent on the underside. Stipules 2–3 mm. l. Bracts minute, awl-shaped, lower sometimes leaf-like; peduncles up to 5 cm. l., pedicels mostly 1–3 mm. l. Calyx-tube 1 mm. l., lobes half as long. Corolla rotate, white, fragrant; lobes 5, hairy near the base inside otherwise glabrous. Filaments hairy at base, 2 mm. l.; anthers 2 mm. l. Drupe black or pink, prominently furrowed, 6–8-celled, 2.5 mm. across.

Var. *angusta* S. Moore apud Rendle in *Journ. Bot.* lxxiii. 279 (1935); leaves small, narrowly oblanceolate or obovate-oblong, gradually narrowed at base, rotundate at tip, very lustrous, 2–6 by .6–1.8 cm. Type in Herb. Jam.

A low shrub on honeycombed rocks along the sea-beach at Luana Point, *Harris*! Fl. Jam. 9821.

4. *E. quadrangularis* Krug & Urb. in *Notizbl. Bot. Gard. Berlin i.* 320 (1897); branches prominently 4-sided; leaves ovate or broadly elliptical, rotundate or very obtuse, rounded at base, parchment-like or thinly leathery; inflorescences about as long as leaves, their branches compressed; pedicels longer than the calyx; calyx-tube as long as the cup-shaped prominently toothed limb; corolla-lobes 5–7, oblong; anthers shorter than the filaments; ovary about 20- (16–22-) celled.—*Krug & Urb. in Ber. Deutsch. Bot. Gesell.* 270, t. ix, f. 29; *Urb. Symb. Ant. i.* 441; *Standl. tom. cit.* 279.

New Green, Mandeville, 2200 ft.; Peckham Woods, Clarendon; Albion Pen, St. Ann; *Harris*! Fl. Jam. 6318, 11,048, 12,013.

Tree up to 30 ft. high. Leaves opaque or very slightly shining, with broad midrib; 8–11(12) by 4.5–7.5(9.5) cm.; petioles stout, 5–10 mm. l. Stipules not apiculate, 3–5 mm. l. Bracts minute except a few lower foliaceous ones up to 3 cm. l.; pedicels mostly 5–15 mm. l. Calyx-tube 2 mm. l. Corolla white, turning yellow; tube 2.5 mm. l.; lobes 14 mm. l. Filaments 6 mm., anthers 4 mm. l. Drupe not seen.

## 24. CHIOCOCCA L.

Glabrous shrubs, often climbing. Leaves opposite, leathery and shining; stipules broad, with a hard point. Flowers in axillary opposite simple or compound racemes. Calyx-tube ovoid or subglobose; limb 5-toothed or -lobed, persistent on the fruit. Corolla-tube funnel-shaped with glabrous throat; limb of 5 patent or reflexed lobes valvate in bud. Stamens 5, inserted at the base of the corolla; filaments very shortly connate; anthers basifixed, usually included. Disk prominent. Ovary 2- (occasionally 3-) celled; style filiform, stigma entire or shortly 2-lobed; ovules solitary,

pendulous from the top of the cell. Drupe ovoid or orbicular, of 2 white leathery pyrenes. Seeds compressed, with membranous testa and fleshy endosperm.

Species about 12, natives of Bermuda, the West Indies, Florida and Mexico to Brazil and Paraguay.

- Leaves acute or acuminate. Racemes as long as leaves ..... 1. *C. alba*.  
 Leaves smaller and obtuse. Racemes short, few-flowered ..... 2. *C. parvifolia*.

1. *C. alba* (L.) Hitchc. in Rep. Miss. Bot. Gard. iv. 94 (1893); a tall climbing glabrous shrub; leaves ovate and ovate-oblong to lanceolate, usually narrowed at base; racemes

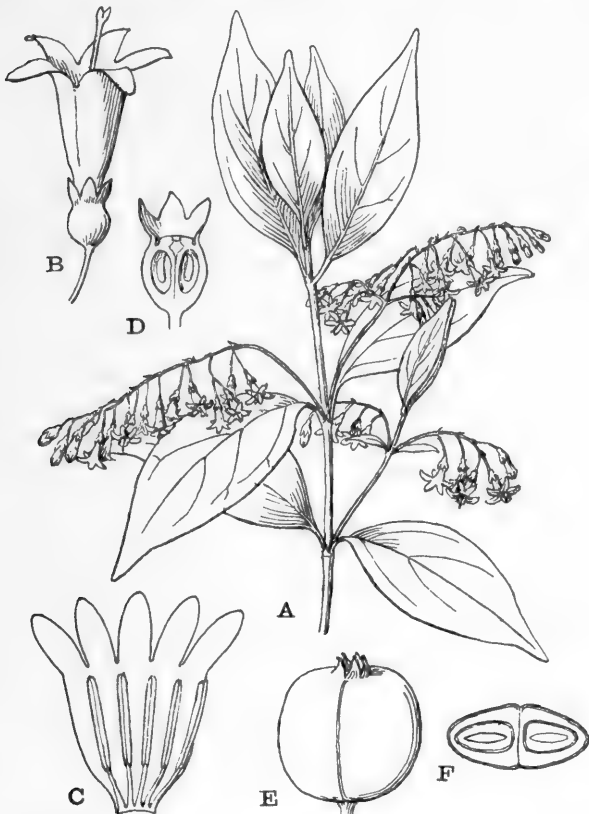


Fig. 24.—*Chiococca alba* (L.) Hitchc.

- A, End of branch in flower  $\times \frac{1}{2}$ .  
 B, Flower  $\times 4$ .  
 C, Corolla cut open  $\times 4$ .  
 D, Ovary with calyx cut lengthwise  $\times 6$ .  
 E, Drupe  $\times 4$ .  
 F, Drupe cut across  $\times 4$ .

rather lax, about as long as the leaves, usually branched, many-flowered; calyx-tube subglobose, equal to or a little longer than the limb; corolla-lobes  $\frac{1}{3}$  to  $\frac{2}{3}$  the length of the tube; stamens included, anthers twice or thrice as long as the filaments; drupe orbicular, compressed, white.—*Urb. Symb. Ant. iv.* 593 & *viii.* 674; *Jenn. Is. Pin.* 268; *Britton Fl. Amer. Virg.* 94; *Britt. & Millsp. Baham. Fl.* 416 (in part); *Will. & Cheesm. Fl. Trin. & Tob. ii.* 29; *Standl. in Contrib. U.S. Nat. Herb. xxiii.* 1386 & in *N. Amer. Fl. xxxii.* 287; *Britt. & Wils. P.-Rico & Virg. Is. vi.* 240. *C. racemosa* L. *Syst. ed.* 10, 917 (1760); *Jacq. Enum.* 16 & *Sel. Stirp. Amer.* 36, t. 69; *Sw. Obs. Bot.* 76; *Lun. Hort. Jam. ii.* 175; *Descourt. Fl. Ant. iv.* 276, t. 292; *Hook. Exot. Fl. ii.* 93; *Mayc. Fl. Barb.* 94; *DC. Prodr. iv.* 482; *Griseb. Pl. Carib.* 81, *Fl. Br. W. Ind.* 336, *Pl. Wright.* 508 & *Cat. Cub.* 134; *Sauv. Fl. Cub.* 68; *Egg. Fl. St. Croix & Virg.* 61; *Stahl Fl. P.-Rico v.* 62; *Duss Fl. Ant. Franç.* 339; *Small Fl. S.E. U. States* 1112; *Bold. Fl. Ned. W.-Ind. i.* 190. *Lonicera alba* L. *Sp. Pl.* 175 (1753). *Jasminum forte folio myrtino* &c. *Sloane Cat.* 160 & *Hist. ii.* 97, t. 188, f. 3. *Lonicera racemis lateralibus* &c. *L. Hort. Cliff.* 496. *Periclymenum racemosum* &c. *Dill. Elth.* 306, t. 228; *Mill. Gard. Dict. ed.* 8, No. 2. *Chiococca sarmentosa foliis myrtineis* &c. *Browne Hist. Jam.* 164. *Ligustrum foliis ovatis acuminatis* &c. *Plum. Pl. (Amer. Burm.)* 211, t. ccxvii, f. 2. (Fig. 24.)

#### Snowberry, David's Root.

Near St. Jago de la Vega, *Sloane Herb.* vii. 46! between Spanish Town and St. Faith's; between Manchioneal and St. Thomas's; *Browne!* *Wright!* *Masson!*; coast of St. Mary, *McNab!* *Bancroft!* *Distin!*; Ocho Rios, *St. Ann, Prior* 454!; *March* 1702! *Cuming* 58! *Devon, Metcalfe!* *Mavis Bank, J. P.* 673 *Hart!*, *Norbrook!*; *Long Mt. Road!* *Campbell!* *Fl. Jam.* 5762, 6133; near Mandeville, *Cradwick!* *Fl. Jam.* 8203; *Windward Road, Fawcett!* *Fl. Jam.* 8439; *Devon Pen, Thompson!* *Fl. Jam.* 7962; *Belle Vue, Stony Hill!*; near Alligator Pond; near Hope; Great Goat Island; *Long Mt., south side!*; *Peckham Woodland, Clarendon!*; *Constant Spring to Bardowie!* *Harris!* *Fl. Jam.* 5866, 5911, 7231, 8598, 9304, 9611, 11,083, 12,102; *Montego Bay, Ridley!* also *Norman* 111! *Balaclava, Orcutt* 1468! *Y.S., St. Elizabeth, Mrs. Sangster!* *Mavis Bank, St. Andrew, Mrs. Sangster.*—Bahamas, Antilles, Florida, Mexico and Central America.

*Branchlets* slender, four-angled or terete. *Leaves* papery, nervation obscure except for slender midrib, mostly 3-9 by 1.5-3 cm. *Stipules*, including the hard point, 2-2.5 mm. l. *Bracts* awl-shaped, 1 mm. l., lowest larger. *Pedicels* slender, up to 5 mm. l. *Calyx-tube* 1.25-2 mm. l. *Corolla* greenish white or yellow; tube 4.5-6 mm. l.; lobes ovate-lanceolate, 3-4 mm. l. *Anthers* 3 mm. l. *Drupe* 4-5 mm. across. *Seeds* brown, 4 mm. l.

There are several forms or races of this widely diffused species, dependent mainly on size and shape of leaf and length of corolla-lobes relatively to that of the tube.

A decoction of the flowers is said to have anodyne and narcotic properties: the root contains a bitter recommended by Browne in rheumatism and venereal disease.

2. *C. parvifolia* Wullschl. ex Griseb. *Fl. Br. W. Ind.* 337 (1861); climbing shrub; leaves small, ovate or ovate-oblong, obtuse, sometimes rounded at tip, narrowed at base; racemes unbranched, shorter than the leaves, the flowers few and rather close together; calyx-tube didymous, a little longer than the limb; corolla small, the limb half or two-thirds the length of the tube; tip of anthers exerted; drupe as of last.—*Chapm. Fl. S.U. States* 177; *Sauv. Fl. Cub.* 68; *Hitchc. loc. cit.*; *Kew Bull.* 1893, 257; *Will. & Cheesm. loc. cit.*; *Standl. tom. cit.* 288. *C. racemosa* L. var. *Sw. Obs. Bot.* 76. *C. alba* Hitchc. var. *parvifolia* Urb. *Symb. Ant. viii.* 675. *Chiococca scandens sarmentis tenuissimis et fere indivisis* Browne *loc. cit.*, type of *C. racemosa* var. *Sw. loc. cit.*; specimens from Browne in Herb. Linn.

*March*, 1765! Constant Spring, *Campbell!* *Fl. Jam.* 5736; Annotto Bay, *Thompson!* *Fl. Jam.* 6498; Watson's Hill, Manchester; Malvern; *Harris!* *Fl. Jam.* 6320, 9648.—Bahamas, Florida, Cuba, St. Vincent, Tobago, Trinidad.

*Leaves* papery, nervation obscure except for midrib, 1.5-3 by 1-2 cm. *Stipules* 1.5 mm. l. *Pedicels* 1.5-2 mm. l. *Calyx-tube* 1 mm. l. *Corolla* white or purplish; tube 3 mm. l.; lobes oblong, 1.5-2 mm. l. *Anthers* 2 mm. l., about the length of the hairy filaments.

## 25. PHIALANTHUS Griseb.

Branching resinous shrubs. Leaves opposite, leathery. Stipules sheathing. Flowers small, sessile or shortly stalked, in axillary fascicles. Calyx-tube top-shaped or obovoid; limb 4-5-lobed, lobes persistent. Corolla-tube funnel-shaped, short, throat glabrous or hairy; lobes 4-5, short, obtuse, valvate in bud. Stamens 4-5, inserted at the base of the corolla; filaments free; anthers dorsifixed, exerted. Disk ring-shaped. Ovary 2-celled; style filiform; ovule solitary, pendulous from the top of the cell. Drupe ovoid, 2-celled. Seeds cylindrical.

Species 10, mostly Cuban, 1 extends to Bahamas.

Leaves narrowed in the lower third into the short petiole; margin flat or very slightly revolute.

Flowers greenish ..... 1. *P. jamaicensis*.

Leaves narrowed in the lower sixth; margin plainly revolute. Flowers yellowish ..... 2. *P. revolutus*.

1. *P. jamaicensis* Urb. *Symb. Ant. v.* 515 (1908); leaves oblanceolate-spathulate, obtuse, shining, midrib broad, prominent on underside, nervation obscure; fascicles umbellate, sessile or nearly so, 5-8-flowered; calyx-tube as long as pedicel, narrowly top-shaped, both minutely scurfy, lobes spathulate, slightly longer than tube: corolla-tube top-shaped;

lobes triangular-ovate about as long as tube (Urban); anthers slightly exserted; drupe unknown.—*Standl. in N. Amer. Fl. xxvii. 282.*

Road to Wareka 800 ft. alt.; Long Mt. south side, 900 ft. alt.; *Harris!* Fl. Jam. 9023, 9587.

A tall, slender, resinous *shrub* 20 ft. high. *Branches* terete, sparsely striate, the youngest nodulose from the persistent stipules. *Leaves* 1.5–3 cm. by 4–10 mm. *Stipules* hard, pointed, 1 mm. l. *Pedicels* 1 mm. l. *Calyx-lobes* 1.5 mm. l. *Corolla* 1.5 mm. l. (Urban). *Style* 3 mm. l.

2. *P. revolutus* *Urb. in Fedde Rep. xvii. 407 (1921)*; very

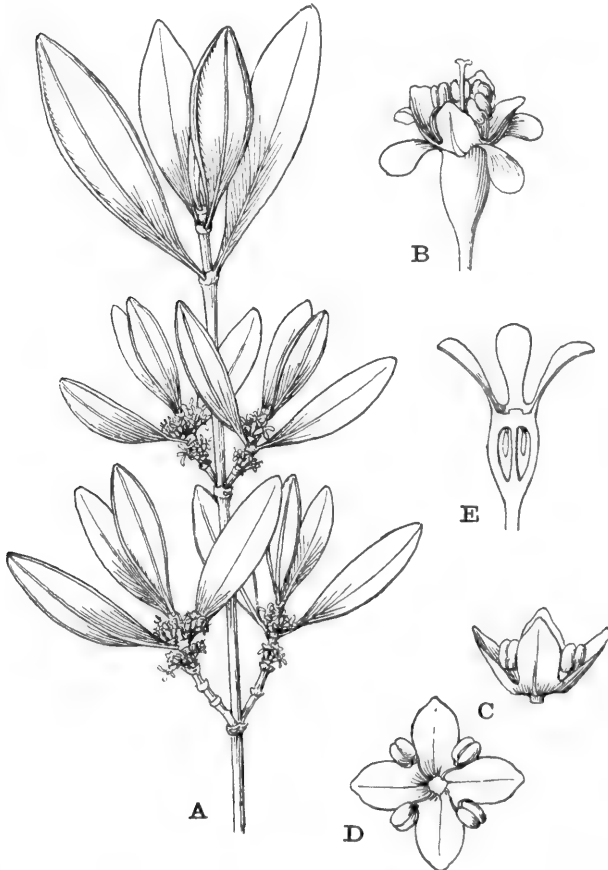


Fig. 25.—*Phialanthus revolutus* Urb.

A, Branch with flowers  $\times \frac{1}{2}$ .  
B, Flower  $\times 8$ .  
C, Corolla  $\times 8$ .

D, Corolla spread open  $\times 8$ .  
E, Ovary with calyx cut lengthwise  $\times 8$ .



like the last, but the strongly revolute leaves, broadest in the centre (not near the top as in the other), may reach 4 or even 4.5 cm. in length; stipules joined above the petiole, persistent after leaf-fall; fascicles up to 12-flowered; pedicels shorter than calyx-tube, which is obovoid and 1.5 mm. l.; calyx-lobes spathulate, a little shorter than tube. Corolla 1.5 mm. long, tube very short, lobes broadly obovate, ascending, stamens short, inserted at edge of tube. Drupe unknown.—*Standl. loc. cit.* (Fig. 25.)

Healthshire Hills, near Salt Island; *Harris & Britton* ! Fl. Jam. 10,525.

## 26. SCOLOSANTHUS Vahl.

Armed or unarmed shrubs. Leaves opposite, sessile, leathery. Stipules minute, short, truncate, fringed in Jamaican species. Flowers small, axillary or terminal, solitary or fasciculate. Calyx-tube ovoid or oblong; limb of 4 oblong or awl-shaped persistent lobes. Corolla-tube funnel-shaped, the throat glabrous; lobes 4, short, patent, imbricate in bud. Stamens 4, inserted at the base of the corolla-tube; filaments connate below; anthers basifixed, partly exserted in Jamaican species. Disk inconspicuous. Ovary 2-celled; style ending in a club-shaped bifid or emarginate stigma; ovules solitary, pendulous from the top of the cell. Drupe compressed, ovoid or subglobose, of 1 or 2 pyrenes. Seeds oblong, compressed; endosperm fleshy.

Species 11, natives of the West Indies, mostly Cuban; 1 in Bahamas.

**S. multiflorus** (*Sw.*) *Krug & Urb. Symb. Ant. i.* 443 (1899); leaves shortly stalked, oval or ovate-oblong, acute or obtuse (sometimes rotundate at tip), suddenly narrowed at base; stipules short, truncate, fringed when young; fascicles usually several-flowered, terminal or axillary, from a swollen base, flowers pedicelled; calyx-lobes oblong narrowing above, shorter than the tube; corolla-tube narrowly funnel-shaped.—*Standl. in N. Amer. Fl. xxxii.* 294. *S. versicolor* *Griseb. Fl. Br. W. Ind.* 335 (non *Vahl*). *Ixora?* *multiflora Sw. Prodr.* 30 (1788); *DC. Prodr. iv.* 489. *Chiococca capitata Wernh. in Journ. Bot. li.* 323 (1913). (Fig. 26.)

*Wright* ! White River near St. Ann's Bay, *Prior* ! March 1716 ! Forest Hill, St. Elizabeth; Salem, Llandoverly, St. Ann; *Harris* ! Fl. Jam. 9762, 10,374.

A glabrous shrub 6–15 ft. high, with very few trifurcate spines (Urban). Branches terete, compressed when young. Leaves sometimes subverticillate, shining, nervation (except midrib) obscure, 2–4.5 by

1-2.5 cm.; petioles 3-6 mm. l. *Stipules* 1 mm. l. *Pedicels* 1.5 mm. l. *Calyx-tube* narrowly ovoid, 4-angled, compressed, 1.5 mm. l.; lobes 1 mm. l. *Corolla* tawny yellow; tube 7 mm., lobes 2 mm. l. *Filaments* 4 mm. l., connate below, anthers pointed, nearly 3 mm. l. *Style* 9 mm. l.; stigma bifid. *Drupe* ellipsoidal, white, 5 by 3.5 mm.

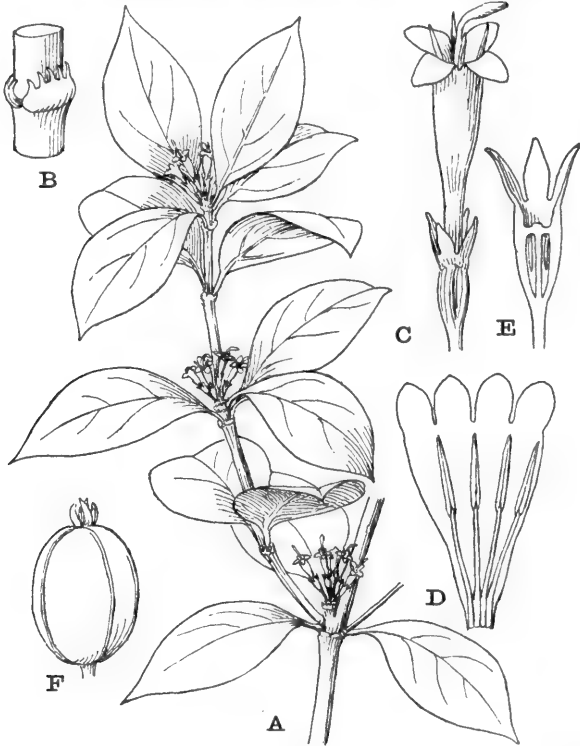


Fig. 26.—*Scolosanthus multiflorus* (Sw.) Krug & Urb.

A, Portion of plant in flower  $\times 3$ .

B, Stipules  $\times 4$ .

C, Flower  $\times 4$ .

D, Corolla cut open  $\times 4$ .

E, Ovary with calyx cut lengthwise  $\times 6$ .

F, Drupe  $\times 4$ .

### [COFFEA L.]

Shrubs with opposite (rarely ternate) leaves. Stipules broad, persistent for a time. Flowers in axillary clusters, sessile or shortly stalked, white, usually sweet-scented; bracteoles sometimes cup-shaped. Calyx-tube oblong or top-shaped; limb short, truncate or toothed. Corolla salver-shaped; tube with glabrous or hairy throat; lobes 4-10, oblong, patent, contorted in bud. Stamens 4-10, inserted in the mouth or throat of the corolla; anthers dorsifixed.

Disk prominent. Ovary 2-celled; style filiform with 2 linear or awl-shaped arms; ovules solitary in the cell, at or near the middle of the septum, amphitropous. Fruit an oblong or globose berry with 2 leathery or papery pyrenes convex on back and deeply furrowed on the axial face. Seeds with a ventral umbilicus; testa membranous; endosperm horny.

Over 40 species, natives of the Old World tropics.

**C. arabica** *L. Sp. Pl.* (1753); *Browne Hist. Jam.* 161; *Gaertn. Fruct. i.* 118, *t.* 25; *Sims Bot. Mag. t.* 1303; *Lun. Hort. Jam. i.* 218; *Descourt. Fl. Ant. viii.* 190, *t.* 564; *DC. Prodr. iv.* 499; *Griseb. Fl. Br. W. Ind.* 338; *K. Schum. in Mart. Fl. Bras. vi. pt.* 5, 75, *t.* 11; *Urb. Symb. Ant. iv.* 595 & *viii.* 676.

*Browne*! Moneague and St. Thomas in Vale, *Prior*! Hope Gardens, *Harris*! *Fl. Jam.* 11, 961. Giddy Hall, St. Elizabeth, *Mrs. Sangster*! —A native of Arabia and Abyssinia, cultivated in most tropical countries; in Jamaica, where it is also naturalised, in hilly country between 3000 and 4000 ft.

A large shrub or small tree up to 15 ft. *Leaves* shortly petioled, ovate-oblong, acuminate with obtuse tip, base obtuse, parchment-like, glabrous and shining, mostly 7–10 by 3–5 cm. *Stipules* acuminate, 4–5 mm. l. *Clusters* several-flowered; pedicels stout, about 5 mm. l., subtended by lanceolate bracteoles of about the same length. *Calyx-tube* oblong, 2 mm. l.; limb toothed. *Corolla* sweet-scented; tube 8 mm. l., lobes 5, a little longer than the tube. *Stamens* 5, on the corolla-mouth, exserted. *Style* with long linear arms, exserted. *Berry* ovoid, red, about 1 cm. across, usually 2-seeded.

**C. liberica** *Hiern*, a native of West Africa, has larger 6–7-merous flowers, a berry 1.5 cm. across and larger seeds. It is the source of the Liberian coffee now largely cultivated. There are specimens in the Kew Herbarium sent by *Harris* from Castleton Gardens.]

## 27. STRUMPFIA Jacq.

A small copiously branched shrub of maritime shores, with rigidly leathery leaves in whorls of three. Stipules sheathing, their bases persistent. Flowers very small, in short axillary racemes. *Calyx-tube* ellipsoid; limb of 5 erect persistent lobes. *Corolla* deeply 5-partite; tube very short, naked at the throat; lobes 5, oblong-lanceolate, slightly imbricate. *Stamens* 5, inserted on the corolla-tube; anthers subsessile, joined by their connectives to form a column. Ovary 2-celled; style glabrous, surrounded by a ring of hairs at the base; stigma simple; ovules solitary, inserted on the septum close to its base, erect, anatropous. *Drupe* globose, with a 1–2-celled putamen. Seeds oblong; endosperm fleshy.

Only one species, native of the Bahamas, Greater and many of the Lesser Antilles, Keys of Florida and Yucatan.

**S. maritima** Jacq. *Enum. Pl. Carib.* 28 (1760) (excl. ref. Sloane) & *Sel. Stirp. Amer.* 218; *L. Sp. Pl. ed. 2*, 1316 (1763) (excl. ref. Sloane); *Sw. Obs. Bot.* 316; *DC. Prodr. iv.* 469; *Descourt. Fl. Ant.* iii. 260, t. 208; *Griseb. Pl. Carib.* 81, *Fl. Br. W. Ind.* 336 & *Cat. Cub.* 134; *Sauv. Fl. Cub.* 68; *Hitchc. in Rep. Miss. Bot. Gard. iv.* 94; *Duss Fl. Ant. Franç.* 338; *Small Fl. S.E. U. States*, ed. 2, 1113; *Urb. Symb.*

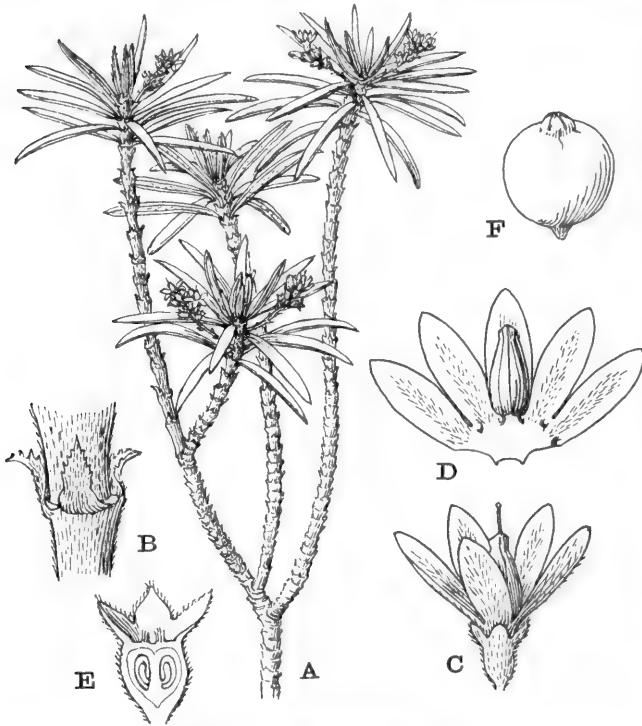


Fig. 27.—*Strumpfia maritima* Jacq.

A, Portion of plant  $\times \frac{1}{2}$ .  
 B, Stipules  $\times 4$ .  
 C, Flower  $\times 4$ .

D, Corolla cut open, showing connate anthers  $\times 4$ .  
 E, Ovary with calyx cut lengthwise  $\times 8$ .  
 F, Drupe  $\times 4$ .

*Ant. iv.* 596 & *viii.* 676; *Bold. Fl. Ned. W.-Ind. i.* 191 & *ii.* 103; *Jenn. Is. Pin.* 268; *Britt. & Millsp. Baham. Fl.* 418; *Standl. in Contrib. U.S. Nat. Herb. xxiii.* 1387; *Britt. & Wils. P.-Rico & Virg. Is. vi.* 243. *Thymelæa frutescens rosmarini folio &c. Plum. Spec.* 17. *Tournefortia foliis lanceolato-linearibus &c. Burm. Amer. t.* 251, f. 1. *Daphne americana Mill. Dict. ed. 8, No. 9* (type in Herb. Mus. Brit.). (Fig. 27.)

Pedro Bluff, *Harris* ! Fl. Jam. 9726.

A shrub or small tree with long trailing branches. Branches stiff, nodulose from the persistent bases of the stipules, the youngest closely scurfy-tomentose, internodes very short. Leaves sessile, linear, acute, with strongly revolute margins, grey-pubescent on the lower side, 1-2 cm. by 1-2 mm. Stipules rigid, subtriangular from a broad base, fringed above and spreading, about 1.5 mm. l. above the connate base. Racemes shorter than the leaves, few-flowered; peduncles 3 mm. l., scurfy; pedicels 1 mm. l.; bracts subtriangular, fringed, 1 mm. l. Calyx scurfy; tube and limb each 1 mm. l., the triangular lobes .5 mm. l. Corolla white; tube barely 1.5 mm. l.; lobes obtuse, pubescent, 3 mm. l. Staminal column 2 mm. l. Drupe white, crowned by the persistent calyx, about 3.5 mm. across.

The leaves pounded or used in an infusion or a decoction are spoken of by Descourtils as useful in certain kinds of fever.

## 28. MORINDA L.

Shrubs or trees usually glabrous. Leaves opposite, rarely ternate. Stipules sheathing at base. Flowering heads stalked or sessile, axillary or terminal, sometimes umbellate. Flowers usually white. Calyx-tube obovoid or hemispherical; limb short, truncate or minutely toothed, persistent on the fruit. Corolla salver-shaped; lobes 3-7 (usually 5) valvate in bud. Stamens as many as corolla-lobes, inserted on the throat or tube of the corolla; anthers dorsifixed, included or exerted. Ovary 2- or 4-celled; style included or exerted, with 2 linear arms; ovule solitary in the cell, ascending from or near the base of the septum. Fruit a fleshy compound berry (caused by the union of the calyx-tubes) of many cartilaginous or bony 1-seeded pyrenes. Seeds obovoid or kidney-shaped, with fleshy endosperm.

Species about 70, chiefly Indian and Malayan; few in Africa and America.

Leaves not exceeding 10 cm. l. Heads sessile 1. *M. Royoc*.  
[Leaves 15-30 cm. l. Heads manifestly stalked... 2. *M. citrifolia*.]

1. **M. Royoc** L. *Sp. Pl.* 176 (1753); *Jacq. Hort. Vindob.* 6, t. 16; *Sw. Obs. Bot.* 78; *Lun. Hort. Jam. i.* 417; *DC. Prodr. iv.* 448; *Descourt. Fl. Ant. ii.* 251, t. 129; *Griseb. Fl. Br. W. Ind. 347 & Cat. Cub.* 138; *Sauv. Fl. Cub.* 71; *Hitchc. in Rep. Miss. Bot. Gard.* 94; *Bold. Fl. Ned. W.-Ind. ii.* 104; *Jenn. Is. Pin.* 271; *Britt. & Millsp. Baham. Fl.* 419; *Urb. Symb. Ant. viii.* 685 & *ix.* 540. *Royoc humifusum*, fructu cupressino *Plum. Nov. Pl. Amer. Gen.* 11. *Morinda procumbens* L. *Hort. Cliff.* 73. *Morinda subfruticosa foliis oblongis* &c. *Browne Hist. Jam.* 159. (Fig. 28.)

*Houstoun* ! *Shakespear* ! *Wright* ! *Broughton* ! *Masson* ! banks of Hope River, *Armstrong* ! *Yallah River, Prior* ! *March 1663* ! *Oersted* !

*Wilson* ! Kingston ; Port Morant ; Lucea ; *Hitchcock* ; Gordontown, *Ball* ! J. P. 1003 *Hart* ! ; *Molynes, Campbell* ! Fl. Jam. 5775 ; Windward Road, *Fawcett* ! Rockfort ; Alligator Pond ; Hope ; Mona ; *Harris* ! Fl. Jam. 5817, 6377, 6606, 7890 ; Montego Bay, *Norman* 103 ! Mountain Side, St. Elizabeth, *Mrs. Sangster* 554 !—Bahamas, Cuba, Hispaniola, Is. de Pinos, Curaçoa and neighbouring islands.

A straggling usually glabrous shrub 3 or 4 ft. high, sometimes climbing to 20 ft. among shrubs and trees. Branches rather slender, terete, pale, striate. Leaves linear-lanceolate, lanceolate or lanceolate-oblong,

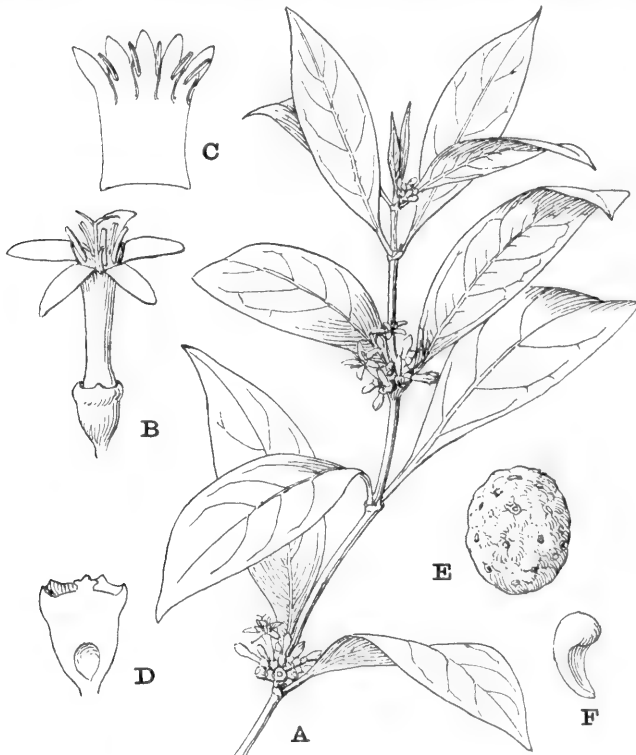


Fig. 28.—*Morinda Royoc* L.

A, Branch with flowers  $\times \frac{1}{2}$ .

B, Flower  $\times 3$ .

C, Corolla cut open  $\times 2$ .

D, Ovary with calyx cut lengthwise  $\times 6$ .

E, Fruit  $\times \frac{1}{2}$ .

F, Pyrene  $\times 2$ .

acute, narrowed into the 5–8 mm. l. petiole, firmly membranous, 5–9 by 1–2.5 cm. Stipules from a broad base suddenly caudate, 2 mm. l. Flowering heads 1 cm. across or less on peduncles usually of about 2 mm., globose, several-flowered. Calyx-tube obovoid, 3 mm. l.; limb barely a third as long. Corolla white or pinkish; tube 5 mm. l.; lobes 5, oblong, obtuse, 3 mm. l. Stamens inserted in the corolla-throat; anthers shortly exserted. Style exserted, 5.5 mm. l. Fruit globose to ovoid up to 2 cm. across; pyrenes crustaceous, slightly scurfy, about 5 mm. l.

[2. *M. citrifolia* L. *Sp. Pl.* 176 (1753); *DC. tom. cit.* 446; *Griseb. Fl. Br. W. Ind.* 347; *Duss Fl. Ant. Franç.* 346; *Benth. Fl. Austral. iii.* 423; *Bedd. Fl. Sylv. t. ccxx*; *Hiern in Oliv. Fl. Trop. Afr. iii.* 191; *Hook. f. Fl. Brit. Ind. iii.* 155; *Britton Fl. Amer. Virg.* 94; *Urb. Symb. Ant. viii.* 685.

*March ex Griseb*; *J. P.* 622 *Hart* !; sea-coast near Priestman's River, *Harris* !—Native of India, Malaya, tropical Australia. Naturalised in the West Indies.

A tree, often very large. *Branches* stout, four-angled or subterete. *Leaves* ovate or ovate-oblong, acute or obtuse, often subcuspidate with acute tip, wedge-shaped or rounded at base, papery, palely shining, up to 30 by 20 cm. but often smaller; petioles generally 1–2 cm. l. *Stipules* foliaceous, rotundate, 5–10 mm. l. *Heads* few- or several- (up to 24) flowered, solitary or 2–3 together on peduncles often leaf-opposed and usually 10–15 mm. l. *Calyx-tube* hemispherical; limb truncate. *Corolla* leathery, white or green; tube 1 cm. (more or less) l.; lobes usually 5, shorter than the tube. *Fruit* small or large (up to 4 cm. across); pyrenes crustaceous, wedge-shaped with a broad head nearly up to 1 cm. across, 2-celled; seeds 3.5 mm. l.

For the various uses to which this plant is put see *Watt Dict. Econ. Prod. Ind. v.* 261–274.]

## 29. FARAMEA Aubl.

Shrubs or small trees, usually glabrous. Leaves opposite. Stipules interpetiolar, sometimes sheathing. Inflorescence of axillary or terminal panicles or few-flowered open corymbs; flowers white, bracteate or ebracteate. Calyx-tube globose or ovoid; limb cup-shaped or tubular, truncate, 4-toothed or 4-lobed, persistent on the fruit. Corolla-tube cylindrical or funnel-shaped, with naked throat; lobes 4, patent or recurved, valvate in bud. Stamens 4, inserted in the throat or tube of the corolla; anthers dorsifixed, exerted or included. Ovary 1-celled; style filiform, usually with 2 linear arms; ovules 2, collateral, erect from the base of the ovary. Fruit leathery, 1-seeded. Seed usually spheroidal with thin testa and horny albumen.

A tropical American genus of nearly 120 species.

*F. occidentalis* (Jacq.) *A. Rich. in Mém. Soc. Hist. Nat. Paris v.* 176 (1834) & *Sagra Cub. xi.* 25 (non *Muell.-Arg.*); *Urb. Symb. Ant. iv.* 604 & *viii.* 685 & in *Fedde Rep. Beih. v.* 72; *Jenn. Is. Pin.* 270; *Britton Fl. Amer. Virg.* 94; *Standl. in Contrib. U.S. Nat. Herb. xxiii.* 1393; *Will. & Cheesm. Fl. Trin. & Tob. ii.* 30; *Britt. & Wils. P.-Rico & Virg. Is. vi.* 252. *F. odoratissima* *DC. Prodr. iv.* 496 (1830); *Griseb. Pl. Carib.* 81, *Pl. Wright.* 508, *Fl. Br. W. Ind.* 338 & *Cat. Cub.* 134; *Saw. Fl. Cub.* 68; *Egg. Fl. St. Croix & Virg.* 61; *Stahl Fl. P.-Rico v.* 66; *Kew Bull.* 1893, 257; *Duss Fl. Ant. Franç.* 341;

*Hart Herb. List. Trin.* 28; *Bold. Fl. Ned. W.-Ind.* i. 193.  
*F. americana Kuntze Rev. Gen. Pl.* ii. 282 (1891) (excl. cit.  
*Linn.*). *Coffea occidentalis Jacq. Enum. Pl. Carib.* 16 (1760) &  
*Sel. Stirp. Amer.* 67, t. xlvii; *Lun. Hort. Jam.* i. 228; *Mayc. Fl.*  
*Barb.* 93. *Ixora occidentalis L. Syst. ed.* 10, ii. 893 (1760).

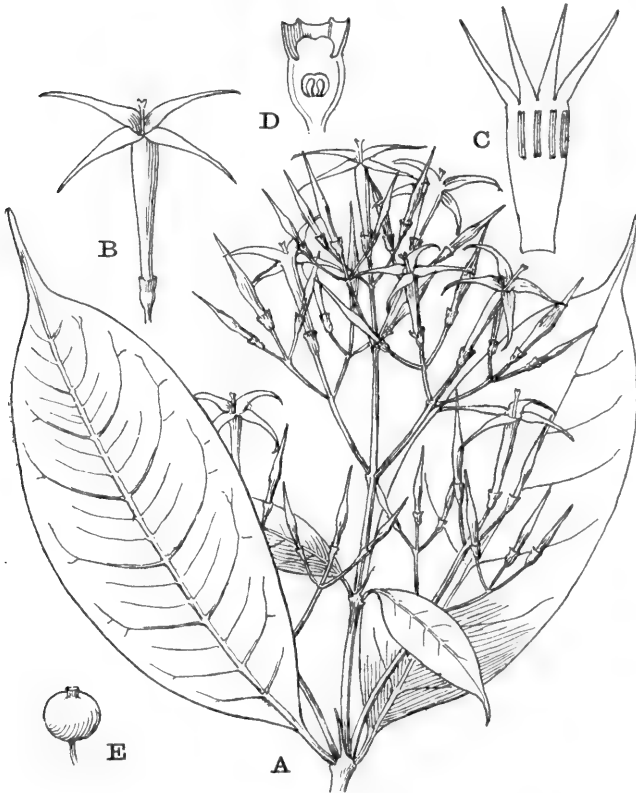


Fig. 29.—*Faramea occidentalis* (Jacq.) A. Rich.

A, End of branch in flower  $\times \frac{1}{2}$ .

B, Flower nat. size.

C, Corolla cut open nat. size.

D, Ovary with calyx cut lengthwise  
 $\times 4$ .

E, Fruit nat. size.

*Tetramerium odoratissimum Gaertn. Fruct.* iii. 90, t. 196, f. 1  
(1805). *Pavetta coffeoides Ham. Prodr.* 18. *Jasminum forte*  
*arborescens &c. Sloane Cat.* 169 & *Hist.* ii. 97. *Pavetta?*  
*foliis oblongo-ovatis &c. Browne Hist. Jam.* 142, t. 6, f. 2.  
*Ixora foliis lanceolato-ovatis &c. Plum. Pl. Amer. (Burm.)*  
150, t. clvi. f. 2. (Fig. 29.)



Wild Jessamine (Browne); Wild Coffee.

*Sloane* Herb. vii. 11! *Wright*! *Broughton*! *Distin*! *Macfadyen*! *St. Mary, McNab*! *Moneague*; Hills of *St. Ann*; *Prior* 452!; *March* 1664! *Wilson*! *Claverty Cottage*, J. P. 981 & *Barbican* J. P. 1335 *Hart*! *Constant Spring, Campbell*! Fl. Jam. 5686; *Ramble to Claremont, Fawcett & Harris*! Fl. Jam. 7010; *Berwick Hill*; *Spanish River*; *Grandvale, Westmoreland*; *Wallingford*; *Battersea Wood near Christiana*; near *Troy*; *Tyre woodlands*; near *Guy's Hill, St. Ann*; *Harris*! Fl. Jam. 5225, 5361, 5451, 5490, 7067, 7665, 8270, 9359, 10,515, 12,043; near *Troy, Miss Perkins* 1351! *Orcutt*! *Giddy Hall, St. Elizabeth, Miss Maxwell*!—West Indies, tropical S. America.

A glabrous shrub or small tree, 6–20 ft. high. Leaves elliptical, acuminate, wedge-shaped at base, papery, shining, those of a pair sometimes unequal in size, 8–16 by 2.5–7 cm.; petioles 4–8 mm. l. Stipules broad and sheathing, 2–3 mm. l., with a slender awn about 5 mm. l. Corymbs usually shorter than the leaves, axillary or terminal, peduncled, ebracteate; pedicels about as long as the flower. Calyx-tube ovoid, barely 2 mm. l.; limb shallow, truncate. Corolla very fragrant; tube narrowly funnel-shaped, 1—nearly 2 cm. l.; lobes lanceolate, long-acuminate, 1 cm. l. more or less. Stamens inserted in the throat, included. Stigma bifid. Fruit black, globose, 7 mm. across.

### 30. PSYCHOTRIA L.

Usually shrubs or small trees, erect or climbing. Leaves opposite, occasionally 3–4-nate. Stipules free or more or less united. Flowers usually in terminal corymbs, cymes or panicles, bracteate or ebracteate. Calyx-tube more or less ovoid; limb usually 5-toothed. Corolla-tube cylindrical or funnel-shaped, straight, glabrous or hairy inside; lobes usually 5 (4–6), valvate in bud. Stamens 5 (4–6), inserted usually on the throat or mouth of the corolla; anthers dorsifixed, included or exerted. Ovary 2-celled; style with 2 linear or awl-shaped arms; ovules solitary in each cell, erect from the base. Fruit a berry, or drupe of 2 pyrenes, or cocci often dehiscing longitudinally on the ventral side. Seeds convex and smooth or ribbed dorsally, flat or concave ventrally; endosperm fleshy or horny, uniform or furrowed between the ribs and sometimes also on the commissural (ventral) side. The flowers are often dimorphic, having included or exerted stamens and styles correspondingly exerted or included.

Nearly 1200 species in the tropics of both Old and New Worlds.

§ *Notopleura*. Pyrenes dorsally compressed, 3-ribbed, the lateral ribs opposite the commissure. Endosperm without furrows.

Leaves acuminate. Panicles stalked..... 1. *P. uliginosa*.

Leaves rounded at apex. Panicles sessile or nearly so..... 2. *P. discolor*.

§ *Mapourea*. Pyrenes plano-convex, uniformly 4-5-ribbed on the back. Endosperm furrowed between the ribs, uniform or with 2 small furrows on the commissural side.

A. Stipules free or united only at the base.

a. Stipules 10 mm. long or over.

Leaves to 11 cm. broad; side-nerves 16-18 pairs ..... 3. *P. grandis*.

Leaves to 8 cm. broad; side-nerves 9-10 pairs ..... 4. *P. dura*.

Leaves to 5 cm. broad; side-nerves 8-10 pairs ..... 5. *P. Jenmanii*.

Leaves to 4 cm. broad; side-nerves 10-12 pairs ..... 6. *P. marginata*.

b. Stipules generally over 5 and less than 10 mm. long.

Leaves rigidly leathery; side-nerves 8-10 pairs ..... 7. *P. clarendonensis*.

Leaves parchment-like or thinly leathery.

Leaves broad at base.

Side nerves 6-8 pairs.  
Corolla over 6 mm. l. .... 8. *P. glabrata*.

Side-nerves 12-15 pairs.  
Corolla only 1.5 mm. l. .... 9. *P. pusilliflora*.

Leaves narrowed at base.

Stipules bilobed. Corolla under 4 mm. l. .... 10. *P. tenuifolia*.

Stipules entire. Corolla 4.5-5 mm. l. .... 11. *P. Danceri*.

c. Stipules 5 mm. long or less.

Leaves oblong-ovate or obovate-oblong.

Leaves to 5.5 cm. broad; side-nerves 7-8 pairs ..... 12. *P. Brownei*.

Leaves to 6.5 cm. broad; side-nerves 8-10 pairs ..... 13. *P. Swartzii*.

Leaves subrhombic-ovate; side-nerves 6 pairs ..... 14. *P. platoensis*.

Leaves broadly-elliptical; side-nerves 8-9 pairs ..... 15. *P. dolphiniana*.

Leaves oblong- or ovate-lanceolate; side-nerves 5-7 pairs ..... 16. *P. Balbisiana*.

Leaves ovate; side-nerves 8-9 pairs ..... 17. *P. Harrisiana*.

Leaves oblanceolate; side-nerves 5-7 pairs ..... 18. *P. Sloanei*.

B. Stipules sheathing, free only at the top if at all.

a. Panicles stalked.

Plant glabrous or nearly so.

Leaves elliptical, acute; stipules lanceolate, 5 mm. l. .... 19. *P. congesta*.

Leaves elliptical, acuminate; stipules ovate, 4-7 mm. l. .... 20. *P. Lunanii*.

Leaves ovate; side-nerves 5-6 pairs.

Stipules ovate, 4 mm. l. .... 21. *P. plicata*.

Stipules ovate, 2.5-3 mm. l. .... 22. *P. Purdiei*.

- Leaves obovate, side-nerves  
10-12 pairs.  
Stipules to 15 mm. long .... 23. *P. siphonophora*.
- Plant glabrous except for the rusty-  
hairy stipules.  
Stipules up to 2 cm. long ..... 24. *P. dasyophthalma*.
- Plant hairy.  
Leaves ovate. Stipules 12 mm.  
1. .... 25. *P. hirsuta*.
- b. Panicles sessile.  
Plant hairy at least in young state.  
Leaves obovate; nerves 10-  
12 pairs; stipules ovate,  
10-12 mm. long ..... 26. *P. cæloneura*.
- Leaves lanceolate to ovate;  
nerves 7-9 pairs; stipules  
obovate, to 14 mm. long 27. *P. nervosa*.
- Plant glabrous.  
Leaves narrow-lanceolate;  
nerves 10-14 pairs ..... 28. *P. Fadyenii*.
- c. Inflorescence a sessile cymule ..... 29. *P. manna*.
- § Mapouriopsis. Pyrenes smooth or nearly so,  
slightly involute at the commissure. Endo-  
sperm extending beyond the commissural  
contour.  
Leaves up to 20 by 10 cm. Panicle with  
flowers in small terminal heads ..... 30. *P. fœtida*.
- Leaves up to 10 by 5 cm. Flowers 2-3  
together crowning the panicle  
branches ..... 31. *P. fœtens*.
- § Eupsychotria. Pyrenes ribbed, with a large  
broad furrow along the commissure. Endo-  
sperm as in § Mapouriopsis.  
Bracts up to 1 cm. or more in length.  
Branches glabrous. Leaves up to 14 by  
6 cm. .... 32. *P. brachiata*.
- Branches pubescent or puberulous.  
Leaves up to 24 by 10 cm.; side-nerves  
11-15 pairs ..... 33. *P. Berteriana*.
- Leaves up to 11 by 5 cm.; side-nerves  
6-8 pairs ..... 34. *P. involucrata*.
- Bracts small, exceptionally up to 8 mm. l.  
Branches finely pubescent ..... 35. *P. pubescens*.
- Branches glabrous.  
Peduncle 10-14 cm. l. .... 36. *P. pedunculata*.
- Peduncle 10 cm. l. or shorter.  
Corolla purple, 6 mm. l. .... 37. *P. corymbosa*.
- Corolla pale yellow then white, up to  
16 mm. l. .... 38. *P. dolichantha*.
- Corolla white, 4 mm. l. .... 39. *P. patens*.
- § Strepmpelia. Pyrenes slightly ribbed or smooth,  
separating along the slightly incurved commis-  
sure. Endosperm with shallow dorsal but no  
commissural furrows.  
Side-nerves of leaf very obscure. Stipules  
minute ..... 40. *P. Myrstiphyllum*.
- Side-nerves of leaf's underside prominent.  
Stipules not minute ..... 41. *P. Wullschlaegelii*.

§ *Notopleura*, species 1, 2.

1. **P. uliginosa** Sw. *Prodr.* 43 (1788) & *Fl. Ind. Occ. i.* 421; herbaceous undershrub of damp woods, 2–4 ft. high; branches stout, hollow; leaves large, obovate-oblong, cuspidate-acuminate with obtuse tip, narrowed into the petiole; stipules lanceolate acuminate; flowers subsessile in clusters terminating the branches of axillary stalked trichotomous panicles shorter than the leaves; calyx-limb 5-toothed; corolla-tube cylindrical, hairy in the centre within; berry ovoid, compressed.—*Lun. Hort. Jam. ii.* 103; *DC. Prodr. iv.* 505; *Griseb. Pl. Wright.* 508, *Fl. Br. W. Ind.* 340 (excl. var.  $\beta$ ) & *Cat. Cub.* 134; *Sauv. Fl. Cub.* 69; *Kew Bull.* 1893, 258; *Duss Fl. Ant. Franç.* 342; *Hart Herb. List Trin.* 30; *Bold. Fl. Ned. W.-Ind. i.* 192; *Urb. Symb. Ant. iv.* 597, *vii.* 437 & *viii.* 677; *Will. & Cheesm. Fl. Trin. & Tob. ii.* 32; *Britt. & Wils. P.-Rico & Virg. Is. vi.* 245. *P. lævis* DC. *tom. cit.* 505; *Griseb. Pl. Wright.* 508; *Stahl Fl. P.-Rico v.* 68; *Urb. Symb. Ant. iv.* 597. *Uragoga uliginosa* Kuntze *Rev. Gen. Pl. ii.* 963 (1891).

*Masson!* *Macfadyen!* *March 1527!* Moneague, *Prior!* J.P. 892 & 1148 (*Hart!*); between Silver Hill and Woodcutter's Gap; Mansfield; below John Crow Peak; Holly Mount near Ewarton; *Harris!* *Fl. Jam.* 5277, 6047, 8431, 8900.—West Indies, Central America and perhaps Guiana.

*Leaves* parchment-like, pale below, lateral nerves 8–12 pairs, 14–24 by 6.5–10 cm.; petioles 2.5–5 cm. l. *Stipules* 7 mm. l., the persistent base 2 mm. *Panicles* usually 6–15 cm. l. including the 3.5–10 cm. peduncle. *Bracts* lanceolate, 5–10 mm. l.; bracteoles similar but smaller. *Calyx-tube* 1.5 mm. l.; limb as long, its teeth triangular, acute or obtuse. *Corolla* pale red; tube 5 mm. l., hairy inside at the staminal insertion; lobes 1 mm. l. *Berry* scarlet, 8 by 6 mm.; pyrenes with very prominent dorsal rib.

2. **P. discolor** Rolfe in *Kew Bull.* 1893, 258; habit of last; leaves large, obovate, broadly rounded above, narrowed at base into a long broad petiole; flowers subsessile, in short sessile or subsessile racemose puberulous panicles many times shorter than the leaves; calyx-limb 5-toothed; corolla-tube broadly cylindrical, hairy at the staminal insertion; berry ovoid, compressed.—*Urb. Symb. Ant. vii.* 437. *P. uliginosa* Sw. var.  $\beta$ . *discolor* Griseb. *Fl. Br. W. Ind.* 340 (1861). Type in Herb. Kew.

Moneague, *Prior!* between Mansfield and Devil's River, *Harris!* *Fl. Jam.* 10,576.

*Leaves* parchment-like; midrib puberulous on the underside, lateral nerves 8–10 pairs, mostly 20–24 by 9–11 cm.; petioles 5–7 cm. l. *Stipular sheath* 2.5 mm. l. *Panicles* about 3 cm. l. *Bracts* broadly ovate, 2.5 mm. l.; bracteoles smaller, ovate. *Calyx-tube* 1.5 mm. l.,

limb as long, its teeth triangular. *Corolla* white; tube broad, longer than the lobes. *Berry* white, 4 by 3 mm., dorsal rib of pyrenes not prominent.

§ *Mapourea*, species 3–29.

3. **P. grandis** Sw. *Prodr.* 43 (1788) & *Fl. Ind. Occ. i.* 417; a tall shrub or small tree with stout hollow branches; leaves large, subsessile, obovate, cuspidate with acute or obtuse tip, gradually narrowed towards the base; stipules large, free except at the very base, deltoid, caudate-acuminate; flowers in a terminal open panicle on a stalk nearly as long as the leaves; calyx-limb as long as the tube; corolla-tube funnel-shaped, hairy in the middle inside; berry spheroidal.—*DC. tom. cit.* 517; *Griseb. Pl. Carib.* 81, *Fl. Br. W. Ind.* 340 & *Cat. Cub.* 135; *Sauv. loc. cit.*; *Stahl loc. cit.*; *Urb. Symb. Ant. iv.* 594, *vii.* 476 & *viii.* 680; *Britt. & Wils. tom. cit.* 247. *P. polyantha* *DC. tom. cit.* 516 (1830). *Uragoga grandis* *Kuntze tom. cit.* 960 (1891).

*Masson*! Bath, *Prior* 440!; *Wilson* 653! Bath to Cuna Cuna Pass, *Harris*! *Fl. Jam.* 10,549.—Cuba, Hispaniola, Porto Rico, Costa Rica.

*Leaves* parchment-like; side-nerves 16–18 pairs, up to 30 by 11 cm.; petioles stout, 5 mm. l. *Stipules* 13 mm. l. *Panicle* including the stout 15–17 cm. l. peduncle 25–30 cm. l., in fruit 11 cm. diam.; flowers subsessile, clustered at the ends of the panicle branches. *Bracts* and *bracteoles* minute. *Calyx-tube* and limb each 1 mm. l. *Corolla-tube* 3 mm. l.; lobes reflexed, about half as long as tube. *Stamens* exerted. *Berry* scarlet, obscurely ribbed, 5–6 mm. diam.; endosperm with shallow dorsal furrows.

4. **P. dura** *Griseb. Fl. Br. W. Ind.* 340 (1861) (non *Sm. in Herb. Banks ex Griseb. loc. cit. nec Griseb. Cat. Cub.* 135); a shrub 10 ft. high with stout hollow branches; leaves petiolate, ovate or obovate, cuspidulate or shortly acuminate with very obtuse tip, obtuse at base, glabrous; stipules large, free, suborbicular, leathery, soon deciduous; panicle stalked, 3–5-chotomous, about as long as the leaves; calyx-limb as long as the tube, teeth 5, broad; corolla-tube somewhat narrowed below, hairy at the throat inside; lobes 5, shorter than the tube; berry ovoid.—*S. Moore in Journ. Bot. lxxix.* 131 (1931). *P. troyana* *Urb. Symb. Ant. v.* 515 (1908). Type in *Herb. Kew.*

*Moneague, Prior* 446!; *March* 1768! *Wilson*! Tyre near Troy, 1300 ft. alt., *Harris*! *Fl. Jam.* 8561, 8655, 9393.

*Leaves* parchment-like or thinly leathery, drying grey or reddish, lateral nerves 9–10 pairs, 10–16 by 6–8 cm.; petioles 4–10 mm. l. *Stipules* 11–12 mm. l. *Panicle* up to 15 by 10 cm., the branches very minutely puberulous; peduncles 2–10 cm. l. *Bracts* small, triangular; *bracteoles* minute. *Pedicels* 0–1 mm. l. *Calyx* minutely puberulous, 1 mm. l.; limb as long, its teeth triangular. *Corolla* white; tube 4 mm. l.; lobes half as long, ovate-oblong. *Berry* not prominently

ribbed, 6-7 by 3-4 mm. ; endosperm with 4 dorsal and 2 small ventral furrows.

Closely allied to this is *Harris* ! Fl. Jam. 10,656 also from Troy, with leaves gradually narrowed at base, and very open panicles, 17 by 15 cm. including the 10 cm. long peduncle. It is a tree 25 ft. high of which fruiting specimens only are to hand, and has been provisionally described as *P. dura* var. *cuneata* S. Moore in *Journ. Bot. tom. cit.* 132.

5. **P. Jenmanii** *Urb. Symb. Ant. vii.* 440 (1913) ; apparently a shrub, glabrous in all parts ; branches four-angled, afterwards subterete ; leaves rather large, obovate-oblong, obtuse, gradually narrowed at base into a stout petiole ; stipules longer than the petioles, free, ovate, obtuse, leathery ; panicle stalked, very open, trichotomous, sometimes with a basal short accessory branch, the few branches making a wide angle with the axis ; lowest bracts acuminate, the rest smaller and obtuse ; flowers unknown ; berry oblong-obovoid. Type in Herb. Kew.

Woods near Brokenhurst, Manchester, *Purdie* !

*Leaves* parchment-like, drying dark brown above, greenish grey below, lateral nerves 8-10 pairs, prominent on the upper face, 10-15 by 4-5 cm. ; petioles up to 8 mm. l. *Stipules* drying black, 10 mm. l., the youngest only half as long. *Panicle* (in fruit) up to 15 by 15 cm. ; peduncle stout, 7-8.5 cm. l. *Berry* rather shallowly 10-ribbed, 6 mm. l. ; endosperm with 5 narrow dorsal furrows.

6. **P. marginata** *Sw. Prodr.* 43 (1788) & *Fl. Ind. Occ. i.* 400 ; a glabrous shrub up to 6 ft. high ; branches slender, subterete ; leaves lanceolate, acute or shortly acuminate with obtuse or acute tip, narrowed into the petiole, bordered by a very narrow, minutely ciliate, white line ; stipules free, lanceolate, obtuse, leathery, soon falling, panicle about as long as or longer than the leaves, stalked, trichotomous, very open, bracts minute, scarious ; flowers in clusters of 5-8 ; pedicels slender, longer than the calyx ; calyx-tube a little longer than the shortly 5-toothed limb ; corolla-tube cylindrical, hairy within at the throat ; stamens inserted in the throat ; berry small, spheroidal.—*Lun. tom. cit.* 516 ; *Griseb. Fl. Br. W. Ind.* 340 ; *Urb. Symb. Ant. vii.* 462 ; *Will. & Cheesm. tom. cit.* 36. *Uragoga marginata* *Kuntze tom. cit.* 960 (1891). *Myrstiphyllum marginatum* *Hitchc. in Rep. Miss. Bot. Gard. iv.* 95. *Psychotropium fruticulosum foliis plumbeis &c.* *Browne Hist. Jam.* 161 ? Specimen from Swartz in Herb. Mus. Brit.

*Wright* ! *Swartz* ! *Wiles* ! *Macfadyen* ! Hopewell Woods, St. Mary, *McNab* ! *March* 1350 ! Port Morant, *Hitchcock* ; Castleton District, 500 ft. alt., *Harris* ! Fl. Jam. 11,608 ; Waterworks Glen, Port Antonio, *Norman* 236 !—Cuba, Trinidad, Central America, Colombia.

*Leaves* parchment-like, drying grey ; side-nerves 10-12 pairs,

8-16 by 2.5-4 cm.; petioles about 1 cm. l. *Stipules* 10-13 mm. l. *Panicles* 5-10 by 5-12 cm.; peduncles 4-7 cm. l.; branches patent, slender, up to 7 cm. l.; pedicels 1.5-3 cm. l. *Calyx* microscopically floccose, in all 1 mm. l. *Corolla* white; tube 2.5 mm. l.; lobes oblong, 1.5 mm. l. *Style* exerted or very short. *Berry* black, barely 4 mm. diam., strongly ribbed; endosperm with 4 shallow dorsal and 2 ventral furrows.

7. ***P. clarendonensis*** Urb. *Symb. Ant. vii.* 443 (1913); a glabrous tree 25 ft. high; branches spreading, subterete, enlarged slightly at the nodes, striate at least when dry; leaves ovate or ovate-oblong, very obtuse or minutely cuspidulate, narrowed into a short petiole, margin slightly revolute; stipules free, ovate, rounded above, leathery, soon falling; flowers clustered at the ends of a terminal stalked trichotomous panicle about as long as the leaves; calyx-limb less than half as long as the tube, shortly toothed or undulate; corolla-tube broad, lobes oblong, half as long as the tube; stamens inserted in the villous throat, exerted; fruit not seen.

Peckham Woods, Upper Clarendon, *Harris*! Fl. Jam. 10,988.

*Leaves* rigidly leathery, palely shining, side-nerves rather obscure, 8-10 pairs, 3.5-5.5 by 2.5-3.5 cm.; petioles 3-5 mm. l. *Stipules* 6 mm. l. *Panicle* including the 2.5-3 cm. l. peduncle 5-6 cm. l. and 3-4 cm. diam. *Flowers* sessile or subsessile. *Bracts* and *bracteoles* broad and very short. *Calyx-tube* 1.5 mm. l., limb .5 mm. *Corolla-tube* 4 mm. l., reflexed lobes 2 mm. l.

8. ***P. glabrata*** Sw. *Prodr.* 43 (1788) & *Fl. Ind. Occ.* 390; a glabrous shrub up to 9 ft. high, occasionally a small tree of 18-20 ft.; branches compressed, somewhat tumid at the nodes; leaves stalked, ovate, obtuse or shortly cuspidate with obtuse tip, broadly rounded at base, stipules united below, ovate, obtuse or rounded above; panicle stalked, trichotomous, about as long as the leaves; flowers shortly stalked; calyx-limb as long as tube, the teeth very small; corolla-tube cylindrical, longer than the oblong lobes; stamens inserted in the hairy throat; berry ovoid.—*Spreng. Syst. i.* 744 (excl. distrib. Hispan.); *Griseb. Fl. Br. W. Ind.* 341 (excl. syn. and distrib.), non *Cat. Cub.* 135; *Urb. Symb. Ant. vii.* 465. Specimen from Swartz in Herb. Mus. Brit.

*Wright*! *Swartz*! Mt. Diablo; Ocho River; *Prior*! Negril, Westmoreland, *Purdie*! *March* 1929! Walderston; Oxford near Troy; Stanmore Hill, St. Elizabeth; Bloomfield near Mandeville; *Harris*! Fl. Jam. 8271, 8657, 9963, 10,614. Prospect, St. Elizabeth, 1000 ft., *Miss Maxwell*!

*Leaves* parchment-like, slightly shining, drying dark; lateral nerves 6-8 pairs, rather obscure, mostly 5-8 by 3-5 cm.; petioles 5-15 mm. l. *Stipules* 3-8 mm. l. *Panicle* 5-10 by 4-10 cm.; peduncle

1-4 cm. l. ; bracts and bracteoles minute ; pedicels 1-2 mm. l. *Calyx* in all 2 mm. l. *Corolla* white ; tube 4.5-6 mm. l. ; lobes 2 mm. l. *Berry* strongly ribbed, 6 mm. l. ; endosperm with 3 dorsal furrows.

9. ***P. pusilliflora*** *S. Moore in Journ. Bot. lxxix.* 133 (1931) ; a glabrous shrub 6-10 ft. high ; branches compressed, afterwards terete ; leaves stalked, ovate, shortly acuminate with obtuse tip, broad at base ; stipules free except at the base, ovate, acute, finely rufous hairy on the back, ciliolate on the margin ; panicle rather lax, about as long as leaves, stalked, 4-5-chotomous below, 3-2-chotomous above ; flowers sessile or subsessile ; calyx-tube obconic, as long as the bell-shaped 5-toothed limb ; corolla very small, with cylindrical tube with hairy throat and ovate-oblong obtuse lobes half its length ; stamens and style included ; berry ellipsoid, 8-ribbed. Type in Herb. Jam.

Mansfield Bath ; Askenish to Dolphin Head ; *Harris* ! Fl. Jam. 6046.

*Leaves* parchment-like, drying pale greenish grey, side-nerve sub-horizontal, 12-15 pairs, 5-8 by 3-5 cm. *Stipules* 8 mm. l. (at top of shoot barely half as long). *Panicle* 10 by 7 cm. including the 3-5 cm. stalks ; cymules generally composed of a central sessile flower and a congested cluster of 3-5 flowers crowning each of the two branches. *Calyx* 1.5 mm. l. *Corolla* white, 1.5 mm. l. *Berry* 4-5 by 3-3.5 mm. ; endosperm with 4 dorsal furrows.

10. ***P. tenuifolia*** *Sw. Prodr.* 43 (1788) & *Fl. Ind. Occ. i.* 402 ; a glabrous shrub 3-8 ft. high ; branches compressed, afterwards terete ; leaves broadly elliptical, obtuse or shortly acuminate with obtuse tip, obtuse at base or gradually narrowed into the petiole ; stipules free, mostly shorter than the petioles, broadly ovate, bilobed, with long, subulate-acuminate lobes ; panicle shorter than the leaves, shortly stalked or nearly sessile, trichotomous ; flowers clustered, sessile or shortly stalked ; calyx-tube obovoid, as long as the 5-lobed limb ; corolla-tube short and broad, scarcely as long as the oblong reflexed lobes, the mouth hairy ; stamens inserted in the mouth of the corolla, shortly exerted ; berry oblong (Sw.).—*DC. tom. cit.* 514 ; *Mayc. Fl. Barb.* 92 ; *Griseb. Fl. Br. W. Ind.* 341 (in part) & *Cat. Cub.* 135 (in part) ; *Egg. Fl. S. Croix & Virg.* 61 ; *Duss tom. cit.* 343 ; *Combs Pl. Cub.* 430 ; *Urb. op. cit. iv.* 600 & *viii.* 680 ; *Britton Fl. Amer. Virg.* 94.

*Sloane* Herb. vi. 56\* ! *Morant Bay, Broughton ! Macfadyen ! McNab ! Mayday Mts., Purdie ! Waters ! Wullschlägel.*—Greater Antilles, St. Thomas to Barbados and Grenada ; also Guatemala (Urb.).

*Leaves* parchment-like, drying dark green, lateral nerves 6-9 pairs, sometimes with *domatia* in the axils, 7-15 by 3.5-6 cm. ; petioles 7-20 mm. l. *Stipules* 7-9 mm. l. *Panicle* up to 6 by 10 cm. ; peduncle



0.8 mm. l.; bracts small. *Calyx* in all 1.5 mm. l. *Corolla* white (yellow, Broughton); tube 1.5 mm. l., lobes barely 2 mm. *Berry* 6-8 mm. l. (Gr.).

Easily recognised by the stipules and the conspicuous hairy tuft at the mouth of the corolla.

11. **P. Danceri** *Urb. Symb. Ant. vii.* 449 (1913); apparently a shrub, glabrous; branchlets somewhat compressed, furrowed; leaves oblong-obovate, shortly acuminate, narrowed into the short petiole; stipules free, ovate-oblong, obtuse or rotundate, minutely hairy on the margin, soon falling; panicle as long as or a little longer than the leaves, lax, stalked, 3-5-chotomous; flowers heterostylous in small cymes crowning the ultimate branchlets of the panicle, the central flower sessile, the rest shortly stalked; bracts ovate, very small; calyx-tube narrowly obovoid, as long as the broad minutely toothed limb; corolla-tube cylindrical, hairy at the throat within, as long as the oblong-ovate acute reflexed lobes; stamens inserted in the corolla-throat, included or shortly exerted; style included or (of long-styled form) exerted; berry unknown. Type in Herb. Kew.

Jamaica, without locality, *Dancer*!

Leaves rather thinly leathery, drying dark greenish brown above, paler below; lateral nerves 8-10 pairs, 7-11 by 2-5 cm.; petioles 3-5 mm. l. *Stipules* reddish brown, 8 mm. l. *Panicle* up to 15 by 10 cm.; peduncle 4.5-5 cm. l.; stalks of flowers up to 2 mm. l. *Calyx* in all 1 mm., corolla in all 4.5-5 mm.

In the absence of fruit the affinity of this is doubtful; Urban thinks it may be near *P. Balbisiana* DC.

12. **P. Brownei** *Spreng. Syst. i.* 742 (1825); tall shrub 10-15 ft. high; branches compressed, striate; leaves petioled, oblong-ovate or broadly obovate-oblong, obtuse or shortly cuspidate with obtuse tip, narrowed at base; stipules free, broadly ovate, obtuse; panicle stalked, open, about as long as the leaves, rather few-flowered; flowers subsessile or shortly stalked, usually in terminal clusters of three; calyx-tube narrowly ovoid, as long as the limb; teeth minute; corolla-tube cylindrical, longer than the lobes; stamens inserted in the throat of the corolla; berry ovoid.—*DC. tom. cit.* 517. *P. asiatica* *Poir. in Lam. Encyl. v.* 696 & *Lam. III. t.* 161, *f. i.* (non *L.*). *P. glabrata* *Urb. Symb. Ant. vii.* 475 (non *Sw.*). *Psychotropium fruticosum, foliis amplioribus* &c. *Browne Hist. Jam.* 160, *t.* 17, *f.* 2.

*Wright*! banks of Wag Water, St. Mary, *McNab*! Westmoreland, *Purdie*!; *Waters*; Stanmore Hill, St. Elizabeth; Kentucky Hill, Bluefields Mts.; edge of Great Morass, Negril; slopes of Dolphin Head; Peckham Woods, Upper Clarendon; Troy; *Harris*! Fl. Jam. 9947, 10,208, 10,245, 10,289, 10,952, 12,594.

*Leaves* parchment-like, drying grey, lateral nerves 7-8 obscure pairs, mostly 5-10 by 2.5-5.5 cm.; petioles 5-12 mm. l. *Stipules* 2.5-5 mm. l. *Panicles* in flower about 6 by 5 cm.; peduncles 1-2.5 cm. l.; bracts and bracteoles very small. *Calyx* in all 1.5 mm. l. *Corolla* white; tube 5 mm., lobes 2 mm. l. *Berry* 6-7 mm. l.; endosperm with 3 dorsal furrows.

13. **P. Swartzii** *Urb. Symb. Ant. vii. 444* (1913); a shrub 10 ft. high; branches at first compressed, soon subterete; leaves obovate or obovate-oblong, cuspidate-acuminate with obtuse tip, abruptly narrowed into the broad petiole; stipules free except at base, triangular, obtusely acuminate (Urb.), the youngest small, obovate-oblong, obtuse; panicle about as long as the leaves, stalked, lax; flowers unknown; berry ovoid, strongly ribbed.

Charliemont near Ewarton, *Harris* ! Fl. Jam. 6709.

*Leaves* parchment-like, drying dark, grey below, somewhat lustrous, lateral nerves 8-10 pairs, 9-14 by 4-6.5 cm.; petioles 10-17 mm. l. *Stipules* (uppermost) 5 mm. l., dark, leathery. *Panicle* about 10 by 6 cm. *Berry* 7 mm. l.; endosperm with 5 dorsal and 2 small commissural furrows.

14. **P. platoensis** *Urb. Symb. Ant. vii. 447* (1913); shrub 12 ft. high (Urb.); leaves subrhombic-ovate, acuminate, drawn out at base into a short petiole; stipules united at base; ovate, obtuse or rotundate; panicle stalked, corymbose, trichotomous, few-branched; flowers unknown; berry obovoid, obtusely 10-ribbed (Urb.).

Plato, *Harris* ! Fl. Jam. 5534.

*Leaves* parchment-like, drying grey, lateral nerves 6 pairs, midrib impressed above, 7-9.5 by 3-4.5 cm.; petioles 5-8 mm. l. *Stipules* 3 mm. l. *Panicle* about 7 by 4 cm.; peduncle 2.5 cm. l. *Berry* 5-5.5 mm. l.; endosperm with 4 dorsal and 2 small ventral furrows (Urb.).

The specimen in Herb. Jam. and that at the British Museum are even more imperfect than that seen by Urban which, as the type, should be at Berlin.

15. **P. dolphiniana** *Urb. Symb. Ant. vii. 440* (1913); a glabrous shrub 10 ft. high; branches soon terete, somewhat nodular; leaves broadly elliptical, obtusely acuminate, gradually narrowed into the petiole; stipules (very young) triangular, obtuse; panicle about as long as the leaves, stalked, corymbose, trichotomous with few patent branches; flowers unknown; berry ovoid, 8-ribbed, ribs not very prominent. Type in Herb. Jam.

Wooded hill N.E. of Dolphin Head, *Harris* ! Fl. Jam. 10,304.

*Leaves* papery, drying brown, midrib impressed above, prominent below, lateral nerves 8-9 pairs inserted on the midrib nearly at a right-angle, 6.5-10 by 3-4 cm.; petioles about 1 cm. l. *Stipules* barely 2 mm. l. *Panicle* about 7 by 7 cm.; peduncle 2-3 cm. l. *Berry* scarlet, 6-7 mm. l.; endosperm with 4 dorsal furrows.

16. **P. Balbisiana** DC. *Prodr. v.* 517 (1830); a glabrous shrub up to 10 ft. high; branches soon terete, striate; leaves oblong- or ovate-lanceolate, shortly acuminate with obtuse tip, narrowed at base; stipules free except at base, ovate, obtuse; panicle stalked, trichotomous, often shorter than the leaves; flowers clustered at the ends of the branches; bracts minute; calyx-tube obovoid, not longer than the minutely toothed limb; corolla-tube slightly narrowed below, longer than the lobes, hairy at the throat; stamens inserted in the throat, shortly exerted; berry small, ovoid.—*P. laurifolia* Sw. *Fl. Ind. Occ. i.* 392 (1797) (in part), (non *Prodr.* 43). *P. lucida* Spreng. in *Herb. Balb. ex DC. loc. cit.* *P. androsæmifolia* Griseb. *Fl. Br. W. Ind.* 341 (1861); *Urb. tom. cit.* 476. Type in Herb. DC.; of *androsæmifolia* in Herb. Kew.

*Shakespear!* *Bertero!* *Broughton!* *March 1435!* Holland Bay, *Purdie!* *Macfadyen!* Near Sheldon, Blue Mts.; Green Valley; Dolphin Head; Hall's Delight, Blue Mts.; Long Mountain, 700 ft. alt.; Cane River Valley; Peckham Woods, Upper Clarendon; *Harris!* *Fl. Jam.* 5237, 5246, 5386, 5576, 8857, 9262, 10,059, 11,206.

*Leaves* parchment-like, drying dark grey, faintly shining; lateral nerves 5–6 (rarely 7) pairs, mostly 4.5–9 by 2.5–4 cm.; petioles 6–10 mm. l. *Stipules* 2–5 mm. l. *Panicles* up to 7 by 5 cm. (often wider in fruit); peduncles 2–4 cm. l. *Calyx-tube* and *limb* each 1.75 mm. l. *Corolla* white; tube 5 mm. l.; lobes triangular-oblong, 2 mm. l. *Berry* strongly ribbed, 4.5–5.5 mm. l.; endosperm with 4 dorsal and 2 ventral furrows.

Var. **pluricostata** S. Moore in *Journ. Bot. lxi.* 133 (1931). Characters of type but leaves with 8–10 pairs of lateral nerves.

*Macfadyen!*; hill behind Ferry Quarry; Bowerswood Road near Angel Pen; Peckham Woods, Upper Clarendon; *Harris!* *Fl. Jam.* 10,038, 10,527, 11,201.

Var. **latifolia** S. Moore *loc. cit.* Leaves drying dark brown, broader than in type, attaining a width of 5 cm. Type in Herb. Kew.

*Macfadyen!* *Wilson!*

17. **P. Harrisiana** Urb. *Symb. Ant. vii.* 446 (1913); a tall glabrous shrub or bushy tree 20 ft. high; leaves ovate, shortly acuminate with obtuse tip, obtuse at base; stipules free except at the base, ovate, obtusely acute; panicle stalked, usually about as long as the leaves, trichotomous, rather open, flowers about 3 to the cluster, the central flower subsessile, the lateral stalked; bracts small; calyx-tube narrowly obovoid, as long as the triangularly toothed limb; corolla-tube cylindrical, narrowed at the base, hairy in the throat, lobes triangular, acute, about one-third as long as the tube; stamens inserted in throat; berry ovoid-oblong.

*Swartz*; *Wullschlägel*; *Wilson*! near Portland Gap; Morse's Gap; New Forest near Charlottenburg; Silver Hill; Hardware Gap, 4000 ft. alt.; *Harris*! Fl. Jam. 5341, 5413, 5421, 5435, 5486, 6796, 8174, 10,111.

*Leaves* parchment-like, drying dark, opaque, lateral nerves 8-9 pairs, 4-11 by 3-4.5 cm.; petioles 3-10 mm. l. *Stipules* 3-5 mm. l. *Panicles* up to 10 by 6 cm.; peduncle usually 4-6 cm. l.; pedicels of lateral flowers 1 mm. l. *Calyx-tube* and *limb* each nearly 1 mm. l. *Corolla-tube* 4 mm., lobes 1.5 mm. l. *Berry* scarlet, slightly narrowed at base, moderately ribbed, 6.5-7.5 mm. l.; endosperm with 4 dorsal furrows.

18. **P. Sloanei** *Urb. Symb. Ant. vii. 445 (1913)*; a small tree 25 ft. high; branchlets somewhat compressed, striate; leaves oblanceolate, acute or shortly acuminate, gradually narrowed into the petiole; stipules (young) free but closely apposed, ovate, obtuse, minutely pilose, soon falling; panicle stalked, longer than the leaves, trichotomous, open, flowers shortly stalked, in small clusters at the end of the minutely pulverulent branches; calyx-tube turbinate as long as the relatively somewhat prominently toothed limb; corolla-tube cylindrical, pulverulent-puberulous, hairy within at the throat, longer than the oblong, obtuse lobes; stamens inserted in the throat; berry unknown. Specimen in Herb. Mus. Brit.

Near Newcastle; J. P. 1436 (*Hart*!); near John Crow Peak, 5500 ft. alt., *Harris*! Fl. Jam. 6522.

*Leaves* papery, drying dark but paler on underside; lateral nerves 5-7 pairs, 5-9 by 2-3.5 cm.; petioles 5-10 mm. l. *Stipules* 2-3 mm. l. *Panicle* 10-12 cm. l. and broad; peduncle 3.5 cm. l.; lower bracts small, broad, upper minute; pedicels about 1 mm. l. *Calyx-tube* and *limb* each 1 mm. l. *Corolla* white, in all 7.5 mm. l.

19. **P. congesta** *Spreng. ex DC. Prodr. v. 515 (1830)*; a glabrous shrub or slender straggling tree 15-20 ft. high; leaves shortly petioled, elliptical-lanceolate, acute, obtuse at base; stipules sheathing, lanceolate, narrowed above, obtuse; panicle stalked, longer than the leaves, usually trichotomous, very lax; flowers sessile in clusters of 2-4 at the ends of the branches; calyx-tube obovoid; about as long as the 5-toothed limb; corolla-tube twice as long as the lobes, hairy at the throat inside; berry ellipsoidal.—*Urb. tom. cit. 439*. *P. celastroides* *Griseb. Fl. Br. W. Ind. 341 (excl. ref. Cuba)*. Type in Herb. DC.

*Bertero*! *Wullschlägel*; between House Hill and Cuna Cuna Gap, St. Thomas, *Maxon* 8895!

*Leaves* papery, drying brownish grey; lateral nerves 5-6 pairs, about 2.5-10 by 1-4 cm.; petioles 3-5 mm. l. *Stipules* 5 mm. l. *Panicle* 7 by 5 cm.; peduncle barely 2 cm. l. *Calyx* 1 mm. l., the teeth deltoid. *Corolla* white, 3-4 mm. l. *Berry* 4 by 3-4 mm.

20. **P. Lunanii** Urb. *Symb. Ant. vii.* 468 (1913); a shrub 10 ft. high; branches slender, terete, grey; leaves elliptical, acuminate with mucronate tip, narrowed into the petiole; stipules sheathing, ovate and obtuse or lanceolate with incurved tip; panicle usually longer than the leaves, stalked, very lax, 3- rarely 5-chotomous, apparently few-flowered; berry ovoid-oblong, 8-ribbed.

Holly Mount, 2600 ft. alt., *Harris* ! Fl. Jam. 8889.

*Leaves* papery, drying grey-green, lateral nerves 6-7 pairs, 4-7 by 1.5-2.5 cm.; petioles 6-10 mm. l. *Stipules* 4-7 mm. l. *Panicles* 5-10 by 5-10 cm.; peduncles 2-5 cm. l. *Flowers* unknown. *Berry* 6-7 mm. l.; endosperm with 4 dorsal furrows.

21. **P. plicata** Urb. *Symb. Ant. vii.* 438 (1913); a tree 40 ft. high; branches rather stout, striate, grey, the ultimate internodes only 3-7 mm. l.; leaves ovate, obtuse or obtusely acute, sometimes very shortly acuminate, narrowed at base into the short petiole; stipules sheathing, ovate or roundish, soon splitting, leathery; panicles stalked, about as long as the leaves, lax; berry elliptic-oblong, 10-ribbed. Type in Herb. Jamaica.

Near Troy, 2200 ft. alt., *Harris* ! Fl. Jam. 9479.

*Leaves* thinly leathery, drying grey or brownish and always plicate when dry, lateral nerves 5-6 pairs, rather obscure, 4-7 by 2.5-3 cm.; petioles 3-7 mm. l. *Stipules* 4 mm. l. *Panicles* 6-7 by 4-8 cm.; peduncles slender, 1.5-3 cm. l.; pedicels up to 1.5 mm. l. *Berry* 7-8 mm. l.; endosperm with 4-5 dorsal and 2 small ventral furrows.

In drying the leaves become folded longitudinally, hence the trivial name.

22. **P. Purdiei** Urb. *Symb. Ant. vii.* 439 (1913); apparently a shrub; branches dark, striate, the ultimate internodes about 2 cm. l.; leaves ovate, obtuse, narrowed at base; stipules sheathing, broadly ovate, roundish, hairy within, soon falling; panicles longer than the leaves, stalked, trichotomous; flowers clustered at the ends of the branches, sessile or shortly stalked; calyx-tube oblong-top-shaped; bell-shaped limb as long, its teeth small and triangular; corolla-tube hairy at the throat inside; lobes shorter than the tube; stamens inserted in the throat, anthers shortly exerted. Type in Herb. Kew.

Portland Woods, *Purdie* ! *Wilson* 120 !

*Leaves* papery, drying brown, lateral nerves 5-6 pairs, 3.5-6 by 1.5-4 cm.; petioles 5-10 mm. l. *Stipules* 2.5-3 mm. l. *Peduncles* 2.5-3 cm. l.; pedicels .5 mm. l. *Calyx* 1.5 mm. l. *Corolla* 4 mm. l. *Style* very short. *Berry* unknown.

23. **P. siphonophora** Urb. *Symb. Ant. v.* 516 (1908); a tall glabrous shrub 12 ft. high; branches at first

compressed, afterwards subterete and somewhat swollen at the nodes; leaves obovate or obovate-oblong, cuspidate-acuminate with obtuse or obtusely acute tip, gradually narrowed into the stout petiole; stipules prominent, united into a longish bifid sheath but soon separating throughout and falling off, leathery; panicle about as long as or shorter than the leaves, stalked, trichotomous, rather lax; flowers generally in clusters of 3, the lateral ones shortly stalked; bracts lanceolate, united at base, fugacious; calyx-tube obovoid, as long as the shortly and rather broadly toothed or almost truncate limb; corolla-tube oblong-funnel-shaped, hairy on the throat, longer than the oblong lobes; stamens inserted in the throat, anthers exerted; berry ovoid, rather obscurely ribbed.

Near Troy, 2000 ft. alt., *Harris* ! Fl. Jam. 8760, 9412.

*Leaves* parchment-like, drying greenish grey or brownish, midrib broad, lateral nerves 10-12 pairs, rather obscure, 9-14 by 3.5-5.5 mm.; petioles 7-10 mm. l. *Stipules* drying dark, up to 15 mm. l. *Panicle* 6-10 by 5-10 cm.; peduncle 1-4 cm. l., pedicels of lateral florets of the cluster 1 mm. l.; lower bracts about 5 mm. l., upper similar but much smaller. *Calyx-tube* and *limb* each nearly 2 mm. l. *Corolla-tube* 6-5 mm. l.; lobes 2 mm. l. *Berry* 5 mm. l.; endosperm with 5 dorsal furrows.

24. ***P. dasyophthalma*** *Griseb. Fl. Br. W. Ind.* 341 (1861); except for the stipules a glabrous shrub; young branches four-angled, becoming terete; leaves lanceolate- or obovate-oblong, shortly acuminate with obtuse or mucronate tip, cuneate at base; stipules large, sheathing, lanceolate, acuminate, free on one side half-way down, shortly rusty hairy; panicle somewhat longer than the leaves, stalked, corymbose, 3-5-chotomous with few branches; bracts minute; flowers sessile, few together in small clusters; calyx-tube ovoid, as long as the triangularly toothed limb; corolla glabrous outside; tube broad, constricted at the very base, longer than the triangular obtuse lobes, hairy on the throat within; stamens included; berry ellipsoidal (*Griseb.*). —*Urb. op. cit. vii.* 446.

Fairfield, Manchester, *Wullschlägel*; Mount Pleasant, Stony Hill, *Harris* ! Fl. Jam. 11,130.

*Leaves* papery, drying dark brown, lateral nerves 6-7 pairs, ascending, 5-7 (-10 *Griseb.*) by 2-3.5 cm. *Stipules* up to 2 cm. l. *Panicles* up to 10 by 8 cm., the peduncle 3-5.5 cm. l. *Calyx* 1.5 mm. l. *Corolla* 4 mm. l. including the 1 mm. l. lobes. Anthers nearly 1 mm.; style 3 mm. l. *Berry* 6 by 3 mm. (*Griseb.*).

25. ***P. hirsuta*** *Sw. Prodr.* 42 (1788) & *Fl. Ind. Occ. i.* 394; shrub 6-8 ft. high; young branches slender, densely dark brown or rufous hirsute soon becoming glabrous; leaves

ovate or ovate-lanceolate, acuminate, obtuse at base, somewhat rough with coarse appressed hairs above, sparingly hirsute on underside nerves; stipules united below, lanceolate, obtuse, rufous hairy on back; panicles longer or shorter than leaves, stalked, very open, trichotomous, hirsute, flowers 2-3 to the cluster, central flower subsessile; calyx-tube ovoid, as long as the relatively broad acutely toothed limb; corolla-tube cylindrical, hairy at the throat, longer than the lobes; berry ovoid oblong, moderately ribbed.—*Lun. Hort. Jam. ii.* 103; *DC. loc. cit.* 516; *Griseb. Fl. Br. W. Ind.* 341 (excl. ref. *Poepp.*). Specimen from Swartz in Herb. Mus. Brit.

*Dancer* ! *Swartz* ! *Wiles* ! *Macfadyen* ! *March* 630 ! St. Thomas in the Vale, *Prior* ! *Wilson* 183 !; Claverty Cottage, J. P. 973, 1062 (*Hart* !); Hibernia; valley of Sulphur River, Bath; *Harris* ! *Fl. Jam.* 5253, 10,584.

*Leaves* papery, opaque, lateral nerves 7 pairs, prominent on the underside, 5-12 by 2.5-6 cm.; petioles densely hairy, 5-15 mm. l. *Stipules* 7-12 mm. l. *Panicles* 4-8 cm. diam.; peduncles 4-10 cm. l.; pedicels of lateral flowers about 1 mm. l. *Calyx-tube* 1 mm. l.; limb .75 mm. l. *Corolla-tube* 5 mm. l.; lobes lanceolate, 1.5 mm. l. *Berry* puberulous, red (*Swartz*), 6 mm. l.; endosperm with 4 dorsal furrows.

26. ***P. cœloneura*** *Urb. Symb. Ant. v.* 519 (1908); *P. dolichocarpa* *Urb. op. cit. iii.* 382 (1903) non *K. Schum. in Engl. Bot. Jahrb. xxv.* 686 (1898); small shrub 3 ft. high; young branches striate beneath a copious rufous hirsute indumentum afterwards falling off; leaves obovate or obovate-oblong, acuminate, narrowed at base, somewhat rough on the nerves of upper side, rufous hirsute below; stipules ovate, obtusely acute, soon splitting and falling, rufous hirsute on back, panicle sessile, shorter than the leaves, trichotomous, open, hirsute, few-flowered, flowers stalked, 2-3 together crowning the branches; berry oblong, slightly narrowed below. A specimen in flower in Herb. Kew.

*St. Ann, Prior* 437 ! Holly Mount, near Ewarton, *Harris* ! *Fl. Jam.* 6455.

*Leaves* papery, drying black above, lateral nerves 10-12 pairs, impressed on upper side, prominent beneath, 6-10 by 2.5-4.5 cm. *Stipules* 10-12 mm. l. *Panicles* 4 by 7 cm.; pedicels 1-3 mm. l. *Berry* rather sparsely rufous hirsute, becoming glabrous, 10-ribbed, 8-10 mm. l.; endosperm with 5 shallow dorsal furrows.

27. ***P. nervosa*** *Sw. Prodr.* 43 (1788) & *Fl. Ind. Occ. i.* 403; shrub 6-8 ft. high; branches subterete, glabrous or at first rufous pubescent or puberulous; leaves lanceolate to ovate or oblong-obovate, acuminate with obtuse or obtusely acute tip, acuminate at base, margin undulate, glabrous or pubescent or puberulous chiefly on the nerves; stipules large,

united, sheathing, scarious, obovate or suborbicular, rounded acute or acuminate, sometimes bifid, marcescent, soon falling; panicle short, trichotomous, glabrous to rufous pubescent; flowers stalked, in clusters of 2-4 at the end of the few branches; calyx-tube narrowly ovoid, longer than the undulate limb; corolla-tube somewhat inflated above, subcylindrical below, densely hairy inside above the narrow



Fig. 30.—*Psychotria nervosa* Sw.

A, End of branch in flower  $\times \frac{1}{2}$ .

B, Flower  $\times 4$ .

C, Corolla cut open  $\times 4$ .

D, Ovary with calyx cut lengthwise  $\times 8$ .

E, Fruit  $\times 2$ .

F, Fruit cut across  $\times 8$ .

portion of the tube, exceeding the reflexed oblong lobes; stamens inserted on the ring of hairs, filaments very short; anthers scarcely exerted; berry narrowly ovoid.—*Lun. Hort. Jam. ii.* 104; *DC. tom. cit.* 514; *Mayc. Fl. Barb.* 92; *Benth. Pl. Hartweg.* 264; *S. Moore in Journ. Bot. lxi.* 132. *P. undata* Jacq. *Hort. Schoenb. iii.* 5, t. 260 (1798); *DC. tom. cit.* 513; *Griseb. Fl. Br. W. Ind.* 342; *Sauv. Fl. Cub.* 70; *Stahl Fl. P.-Rico v.* 70; *Kew Bull.* 1893, 258; *Sang.*



*Fl. Cub.* 46; *Small Fl. S.E. U. States* 1113; *Urb. Symb. Ant.* iv. 598, vii. 454 & viii. 678; *Jenn. Is. Pin.* 269; *Britton Fl. Amer. Virg.* 94; *Britt. & Millsp. Fl. Baham.* 419; *Will. & Cheesm. Fl. Trin. & Tob.* ii. 37. *P. rufescens* H. B. & K. *Nov. Gen. & Sp.* iii. 364 (1818); *DC. tom. cit.* 512; *Griseb. Fl. Br. W. Ind.* 342 & *Cat. Cub.* 135; *Sauv. loc. cit.*; *Stahl tom. cit.* 71; *Combs Pl. Cub.* 430; *Bold. Fl. Ned. W. Ind.* i. 192; *Urb. op. cit.* iv. 598. *P. hirta* H. B. & K. *loc. cit.* (1818) *ex Urb. op. cit.* iv. 598 & vii. 476. *P. lanceolata* Nutt. *in Amer. Journ. Sc. ser. 1, v.* 290 (1822); *Griseb. Fl. Br. W. Ind.* 342. *P. oligotricha*, *DC. tom. cit.* 514 (1830) *ex Urb. op. cit.* iv. 598. *P. stipulacea* Sw. *ex DC. loc. cit.* (1830). *P. portoricensis* *DC. tom. cit.* 515 (1830) *ex Urb. op. cit.* iv. 598. *P. glabrata* *Egg. Fl. St. Croix & Virg.* 61 (*ex Britton*) (non Sw.). *Myrstiphyllum undatum* *Hitchc. in Rep. Miss. Bot. Gard.* iv. 95 (1893). Specimen from Swartz in *Herb. Mus. Brit.* (Fig. 30.)

*Browne! Swartz! Masson! Wright! Shakespear! Broughton! Wiles! Prior!* near Stony Hill, *Hartweg* 1541! *March* 1735! *Wilson!* *J. P.* 1090, 1160, 1300, 1392 (*Hart!*); *Robertson!* *Bethlehem, St. Elizabeth!* *Papine Estate!* *Mona,* 700 ft. alt.; *Malvern,* 2200 ft.; *Corby, Sta. Cruz Mts.!* *Harris!* *Fl. Jam.* 7702, 8292, 8370, 8836, 9656, 9683; near *Moneague, Britton* 2656! *Blue Mts.* between *Vinegar Hill* and *Thomson Gap, Miss Perkins* 1249! *Prospect, St. Elizabeth,* 1000 ft., *Mrs. Sangster!*—*Florida, Bahamas, West Indies, Central America, Venezuela, Colombia.*

*Leaves* papery, drying dark brown or dark grey (occasionally reddish), underside paler, lateral nerves 7–9 pairs, flat above, projecting below, with domatia in the axils, mostly 5–11 by 2–4.5 cm. *Stipules* becoming reddish brown before falling, 6–14 mm. l. *Panicles* generally 3–5 cm. l. *Pedicels* at most 1 mm. l. *Calyx-tube* 1 mm., limb .5 mm. l. *Corolla* white; tube about 4 mm., lobes 2 mm. *Disk* prominent. *Berry* scarlet, rather prominently 10-ribbed, 6–7 mm. l.; endosperm with 5 dorsal and 2 commissural furrows.

28. *P. Fadyenii* *Urb. Symb. Ant.* vii. 470 (1913); a nearly glabrous shrub 8 ft. high; branches slender, terete, slightly nodular; leaves shortly petioled, narrowly lanceolate, acuminate at each end, tip mucronulate; stipules sheathing, oblong-ovate, narrowed above, splitting down one side, rufous, soon falling; panicles shorter than the leaves, sessile, trichotomously few-branched, branches ending in small, open, cymose clusters of 2–5 stalked flowers; calyx-tube top-shaped, as long as the broad undulate-denticulate, discoloured limb; corolla-tube slightly narrowed below, hairy within in the middle, as long again as the oblong lobes; stamens inserted about the middle of the corolla-tube, anthers shortly exerted. Type in *Herb. Jamaica.*

Near *Troy,* 1500 ft. alt., *Harris!* *Fl. Jam.* 8541.

*Leaves* papery, drying dark grey; midrib prominent, lateral nerves 10–14 pairs, very slender, 5–8 by 1–2 cm.; petioles about 4 mm. l.

*Stipules* 6 mm., ultimately up to 10 mm. l. *Panicles* about 3 by 3 cm. *Pedicels* about 2 mm. l. *Calyx* 2 mm. l. *Corolla* white 7 mm. l. *Berry* unknown.

29. **P. manna** *Urb. Symb. Ant. v. 518* (1908); a freely branching shrub 6–10 ft. high; young branches rather rough, afterwards terete and smooth; leaves small, subsessile, ovate, elliptical or narrowly obovate-oblong, obtuse or obtusely acute, sometimes shortly acuminate or broadly roundish, obtuse at base; stipules very small, sheathing, entire or shortly toothed, soon splitting and falling off; flowers sessile, usually three together in a terminal sessile cymule subtended by small triangular acute bracts; calyx-tube ovoid, rather longer than the prominently often unequally 5-toothed limb; corolla-tube cylindrical nearly twice as long as the lobes, hairy at the throat within; stamens inserted in the throat, filaments short or longer; style short and included or long and exserted, the flowers being dimorphic; berry narrowly ovoid, 8-ribbed.

Near Troy; Tyre, near Troy; Peckham Woods, Upper Clarendon; *Harris*! *Fl. Jam.* 8784, 9397, 9483, 10,666, 10,954.

*Leaves* papery or parchment-like, drying grey, lateral nerves obscure, mostly 8–30 by 5–10 mm.; petioles 1–3 mm. l. *Stipules* about 1.5 mm. l.; bracts about 1 mm. *Calyx* 2.5 mm. l. *Corolla* white, 5–6 mm. l. *Berry* crowned by the prominent persistent calyx-limb, 4.5 mm. l.; endosperm with 4 dorsal and 2 small ventral furrows.

§ *Mapouriopsis*, species 30, 31.

30. **P. foetida** *Griseb. Fl. Br. W. Ind.* 342 (1861) (excl. ref. *Sw.*); a glabrous shrub; leaves petioled, ovate or broadly ovate-oblong, obtuse or cuspidate-acuminate with obtuse tip, broadly roundish at base, occasionally slightly cordate; stipules ovate, acuminate, broadly sheathing; panicle as long as or longer than the leaves, stalked, very lax, 3–6-chotomous by reason of short accessory branches; primary bracts ovate, acuminate; flowers sessile, several together forming small spheroidal bracteate terminal heads; calyx-tube obovoid, limb as long with 5 triangular teeth; corolla-tube funnel-shaped, longer than the lobes; berry ellipsoidal.—*Urb. op. cit. vii.* 459. Type in *Herb. Kew.*

*Shakespear*! Rio Cobre, St. Catherine, *Purdie*! Moneague, *Prior* 447! *Wilson* 365!

*Leaves* papery or thinly leathery, drying grey, lateral nerves 8–10 pairs, forming almost a right angle with the midrib, 7.5–20 by 3.5–10 cm.; petioles stout, 1–4.5 cm. l. *Stipules* 10 mm. l. with a conspicuous persistent sheath-base. *Panicle* up to 30 by 20 cm., but usually shorter and much narrower; peduncle 8–10 mm. l.; primary bracts 3–4 mm. l. *Flowering heads* 3 by 4–5 mm., the ovate bracts about 1 mm. l. *Calyx* 1 mm. l. *Corolla* 3 mm. l. *Berry* 5 mm. l.

31. **P. fœtens** Sw. *Prodr.* 43 (1788) & *Fl. Ind. Occ. i.* 396 ; small tree, 20 ft. high ; branchlets rather slender, soon terete ; leaves ovate or ovate-oblong, obtuse or acute, shortly narrowed into the petiole ; stipules triangular, abruptly acuminate ; panicle about as long as the leaves, stalked, 3-5-chotomous (often with 2 basal accessory branches) ; bracts small, flowers sessile, 2-3 together at the ends of the branches, calyx-tube cylindrical, twice as long as the broad, undulate-dentate limb ; corolla-tube somewhat dilated at base, hairy within on the throat, lobes a little shorter than the tube ; stamens inserted in the throat ; berry "small, oblong" (Sw.).—*Lun. Hort. Jam. ii.* 104 ; *DC. Prodr. v.* 516 ; *Urb. op. cit. vii.* 459. *P. Thompsoniana Urb. op. cit. vi.* 48 (1909). Specimen from Swartz in Herb. Mus. Brit.

Broughton ! mountain woods in the south, Swartz ! Castleton Hill, Thompson ! *Fl. Jam.* 8028.

Leaves thinly papery, drying grey, lateral nerves 8-9 pairs, 8-10 by 3.5-5 cm. ; petioles 5-10 mm. l. Stipules 4 mm. l. Panicles up to 14 by 9 cm. Calyx-tube 1 mm., limb .5 mm. l. Corolla white, 3.5 mm. l. Berry scarlet (Sw.).

#### § *Eupsychotria*, species 32-39.

32. **P. brachiata** Sw. *Prodr.* 45 (1788) & *Fl. Ind. Occ. i.* 415 ; a nearly glabrous shrub 6-10 ft. high ; branches soon subterete, sulcate with slight nodular swellings ; leaves obovate-elliptical, more or less abruptly acuminate with obtuse tip, obtuse at base or more usually gradually narrowed into the petiole ; stipules ovate, free except at base, bifid, persistent for a time ; panicle usually about as long as the leaves, stalked, thyrsoid, the few opposite puberulous branches forming a right angle with the axis or nearly so ; primary bracts ovate, obtuse, conspicuous, similar but smaller bracts subtending the few sessile flowers forming the small cyme that crowns each branch ; calyx-tube obovoid-oblong, as long as the bell-shaped truncate ciliolate limb ; corolla funnel-shaped ; tube longer than the ovate lobes, glabrous within or nearly so ; stamens inserted near the base of the corolla, anthers included ; berry ovoid, prominently ribbed.—*Lun. op. cit.* 105 ; *DC. tom. cit.* 515 ; *Griseb. Pl. Wright.* 509, *Fl. Br. W. Ind.* 343 & *Cat. Cub.* 157 ; *Sauv. Fl. Cub.* 70 ; *Stahl Fl. P.-Rico v.* 72 ; *Hart Herb. List Trin.* 30 ; *Urb. op. cit. iv.* 600 & *viii.* 681 ; *Will. & Cheesm. op. cit.* 35. *Myrstiphyllum brachiatum Hitchc. op. cit.* 94. Specimen from Swartz in Herb. Mus. Brit.

Wright ! Swartz ! Wiles ! Dancer ! Purdie ! Prior ! March 624 ! Wilson 22 ! J.P. 1472 (Hart !); Castleton Hill ; Brandon Hill ; Thompson ! *Fl. Jam.* 8026, 8040 ; Swift River District, Portland, Moore !

Fl. Jam. 10,645 ; Silver Hill ; Lancaster Wood ; Mansfield woodland ; road to Holly Mount ; *Harris* ! Fl. Jam. 5354, 5602, 5967, 8977.—Greater Antilles, Trinidad, Central America.

*Leaves* papery, drying brown or greenish, lateral nerves 7–8 pairs, 6–14 by 3–6 cm. ; petioles 5–20 mm. l. *Stipules* pale, 4–6 mm. l. *Panicles* 6–14 cm. l. ; peduncle 3–5.5 cm. l. *Bracts* up to 1 cm. l., the younger progressively smaller. *Calyx-tube* and *limb* each about 1 mm. l. *Corolla* white, yellowish or purplish ; tube 4.5 mm., lobes 1.5 mm. l. *Berry* blue, 4 mm. l.

**33. *P. Berteriana* DC. Prodr. v. 515 (1830)** ; a large shrub or small tree up to 20 ft. high ; branches stout, puberulous ; leaves large, broadly oblong-ovate or obovate-oblong, shortly acuminate, narrowed at base, puberulous chiefly on the nerves ; stipules shorter than the petioles, united at base, bifid with deltoid acute segments ; panicles about as long as the leaves, 3–6-chotomous, the branches few, puberulous, ultimate 2-chotomous, peduncle elongate, bracts linear-lanceolate or linear ; flowers sessile, heterostyled, in small open cymules ; calyx-tube subglobose, as long as the prominently but unequally toothed limb ; corolla-tube cylindrical, a little longer than the oblong obtuse lobes, hairy at the throat ; stamens inserted in the throat, filaments short or longer ; berry spheroidal, prominently 8-ribbed.—*Stahl Fl. P.-Rico v. 69 ; Urb. op. cit. iv. 600, vii. 476 & viii. 681 ; Will. & Cheesm. op. cit. 32 ; Britt. & Wils. P.-Rico & Virg. Is. vi. 248. P. platyphylla DC. tom. cit. 517 (1830) ; Kew Bull. 1893, 258 ; Urb. op. cit. i. 449 (var. angustior Urb.). P. hebecladoides Griseb. Pl. Wright. 509 (1862). P. pyramidalis Griseb. Pl. Wright. 509 (1862) & Cat. Cub. 137 ; Sauv. Fl. Cub. 70. Nonatelia pubescens Spreng. Syst. i. 751 (1825).*

*March 632* ! John Crow Mts., slope below Big Level ; woodlands, eastern slope of John Crow Mts. south end, *Harris & Britton* ! Fl. Jam. 10,696, 10,749.—Greater Antilles, Dominica, Martinique, St. Lucia, St. Vincent, Trinidad, Central America, Colombia.

*Leaves* membranous, drying green, midrib broad, furrowed above, prominent on underside, lateral nerves 11–15 pairs, 10–24 by 5.5–10 cm. ; petioles channelled, 1–3 cm. l. *Stipules* 6 mm. l. *Panicles* up to 18 by 8 cm. including the 9–10 cm. l. peduncle. *Bracts* mostly 3–12 mm. l. *Calyx* 2 mm. l. *Corolla* white, 3.5 mm. l. *Berry* 3 mm. diam.

**34. *P. involucrata* Sw. Prodr. 45 (1788) & Fl. Ind. Occ. i. 413** (excl. ref. Guian.) ; a shrub up to 6 ft. high ; branches slender, finely pubescent becoming glabrous ; leaves lanceolate or ovate-lanceolate, acuminate with acute tip, narrowed into the short petiole, glabrous ; stipules persistent, from a very short sheathing base, bipartite, the segments awl-shaped ; inflorescence much shorter than the leaves, of few-flowered flat heads subtended by conspicuous lanceolate or linear-

lanceolate bracts; peduncle short, pubescent; calyx-tube cylindrical, longer than the undulate limb; corolla-tube funnel-shaped, hairy at throat, lobes oblong, about one-third as long as tube; stamens inserted in the throat; berry subglobose, 10-ribbed.—*Urb. op. cit. iv.* 600 & *vii.* 473; *Jenn. Is. Pin.* 268; *Will. & Cheesm. op. cit.* 34; *Britt. & Wils. tom. cit.* 247. *P. capitellata* DC. *tom. cit.* 514 (1830). *P. oligantha* A. Gray in *Griseb. Pl. Wright.* 510 (1862). *P. tribracteata* Wright ex *Griseb. Cat. Cub.* 137 (1866); *Sauv. Fl. Cub.* 70; *Hart Herb. List Trin.* 30. *P. Hoffmansseggiana* Muell.-Arg. in *Mart. Fl. Bras. vi.* 336 (1881).

*Shakespear*!—Cuba, Is. Pinos, Trinidad, Central and northern South America.

*Leaves* papery, drying green, nerves 6–8 pairs, 5–11 by 1.5–5 cm.; petioles 5–10 mm. l. *Stipules* 2 mm. l. *Inflorescence* up to 2 by 1.5 cm., but often smaller; peduncle 5–15 mm. l.; bracts 5–20 mm. l. *Calyx-tube* .75 mm., limb 5 mm. l. *Corolla* white, 5 mm. l. *Berry* dark blue (Sw.), 4 by 3.5 cm.

In his description Swartz cites Shakespear as having collected *P. involucrata* in Jamaica, and Urban states that there is such a specimen in the Stockholm Herbarium. The corresponding Museum sheet, however, is marked "America Meridionalis," and as the Stockholm specimen was doubtless given by Banks to Swartz during the latter's sojourn in this country, either the Museum specimen has been wrongly localised or Swartz was mistaken in supposing his to be from Jamaica. It is suggestive that no later collector has found the plant in that island.

35. *P. pubescens* Sw. *Prodr.* 44 (1788) & *Fl. Ind. Occ. i.* 425; shrub up to 10 ft. high; branches slender, terete, finely pubescent becoming glabrous; leaves ovate or obovate-lanceolate, acuminate with mucronulate tip, narrowed into the petiole, pubescent chiefly on the nerves, somewhat rough on the upper face; stipules bipartite, base narrow, segments awl-shaped; panicles shorter than the leaves, stalked, trichotomously few-branched, branches rather short, ascending or patent; flowers usually in small cymules, sessile; bracts small, filiform; calyx-tube depressed-globose, twice as long as the 5-toothed limb; corolla broadly cylindrical, hairy in the throat; lobes of limb ovate-oblong, half as long as the tube; stamens inserted in the throat, anthers included; berry depressed-globose, didymous, 8-ribbed, slightly rough between the ribs.—*Lan. tom. cit.* 101; *DC. tom. cit.* 515; *Griseb. Fl. Br. W. Ind.* 343 & *Cat. Cub.* 137; *Sauv. op. cit.* 70; *Hemsl. Biol. Centr. Amer. Bot. ii.* 80; *Combs op. cit.* 430; *Urb. op. cit. iv.* 600, *vii.* 476 & *viii.* 681; *Jenn. op. cit.* 268; *Britton Fl. Amer. Virg.* 94; *Britt. & Millsp. Baham. Fl.* 418; *Standley in Contrib. U.S. Nat. Herb. xxiii.* 1389; *Britt. & Wils. tom. cit.* 248. *P. horizontalis* Sw. var. *cuspidata* DC. *tom. cit.* 515.

*Myrstiphyllum pubescens* Hitchc. *op. cit.* 95. *Psychotrophum hirsutum foliis ovatis* Browne *Hist. Jam.* 161 *vide* Swartz.

Wild Coffee (Wright).

*Wright* ! Port Royal Mts., *Purdie* ! St. Ann, *McNab* ! Mammee Bay, *Prior* 445 ! *March* 1843 ! *Wilson* 654 ! Port Antonio, *Hitchcock* ; Papine Estate ; Stony Hill, Mt. Pleasant ; Cowie Park, near Troy ; *Harris* ! Fl. *Jam.* 8379, 11,135, 12,628. Bowerswood Road near Angel Pen ; valley of Sulphur River, Bath ; *Harris & Britton* ! Fl. *Jam.* 10,528, 10,586 ; Montego Bay, *Ridley* !—Bahamas, Greater Antilles, St. Kitts, Central America.

*Leaves* membranous, drying green, lateral nerves 8–11 pairs, 7–16 by 3–7 cm. ; petioles 5–20 mm. l. *Stipules* 3 mm. l. *Panicles* up to 6 by 5 cm., the peduncle 1.5–4 cm. l. *Bracts* 3 mm. l. *Calyx* 1.25 mm. l. *Corolla* yellow or yellowish white, 6 mm. l. *Berry* black with blue juice (Sw.), 2.5–3.5 mm.

36. *P. pedunculata* Sw. *Prodr.* 44 (1788) & *Fl. Ind. Occ. i.* 427 ; a glabrous shrub 9–12 ft. high or small tree up to 20 ft. ; branches stoutish, terete or somewhat four-angled, somewhat nodular, the cortex cinereous ; leaves obovate or elliptical, shortly acuminate with obtuse or mucronulate tip, narrowed at base into the petiole ; stipules small, united at base, each with 2 distant short teeth ; panicles short, few-branched, cymules few-flowered, corymbose, crowning a stout peduncle usually as long as or longer than the leaves, 3–5-chotomous, ultimate branches dichotomous ; bracts linear or lanceolate, the ultimate short and ovate ; flowers sessile ; calyx-tube depressed-globose, a little longer than the 5-toothed limb ; corolla-tube funnel-shaped, thrice as long as the ovate-oblong lobes, pubescent or nearly glabrous, hairy within except at the throat ; stamens inserted in the throat ; berry subglobose, didymous, 8-ribbed, rugose.—*Lun. tom. cit.* 101 ; *DC. tom. cit.* 517 ; *Griseb. Fl. Br. W. Ind.* 343. *Psychotrophum fruticosum foliis ovatis &c.* Browne *Hist. Jam.* 160 (ex *descript.*). Specimen from Swartz in Herb. Mus. Brit.

*Wright* ! in mountain woods, *Swartz* ! *Distin* ! Moneague, *Prior* 426 ! *March* 635 ! 1942 ! *Wilson* ! Lancaster ; near Troy ; road to Holly Mount ; road from Askenish to Dolphin Head ; Black River to Newmarket ; Kentucky Hill, Bluefields Mts. ; Ipswich, St. Elizabeth ; *Harris* ! Fl. *Jam.* 5245, 8745, 8979, 9258, 9396, 9919, 10,207, 12,357 ; Martin's Hill, near Mandeville, *Harris & Britton* ! Fl. *Jam.* 10,618.

*Leaves* membranous, drying greenish brown, lateral nerves 8–10 pairs, 7–14 by 3–6 cm. ; petioles 5–15 mm. l. *Stipules* 2 mm. l. *Panicles* 1.5–3 cm. l., exclusive of the usually 10–14 cm. l. peduncle ; bracts 2–7 mm. l., the uppermost about 1 mm. ; pedicels up to 2 mm. l. *Calyx* 1.5 mm. l., the teeth deltoid. *Corolla* yellow in bud, white when fully expanded, 8–10 mm. l. *Anthers* elongated, half-exserted. *Berry* dark purple (Swartz), 4–5 mm. diam.

37. *P. corymbosa* Sw. *Prodr.* 44 (1788) & *Fl. Ind. Occ. i.* 423 ; a glabrous shrub up to 9 ft. high ; branches rather

slender, somewhat compressed, afterwards subterete, with rather short internodes; leaves lanceolate or elliptic-lanceolate, acuminate, apex obtuse or acute, narrowed at base into a slender petiole; stipules small, deltoid, bilobed, united below to form a sheath; panicle corymbose, about as long as the leaves, stalked, rather laxly trichotomous; primary bracts rather prominent, linear, flowers sessile on the branches of small cymules; calyx-tube oblatly spheroidal, as long as the 5-lobed limb; corolla-tube cylindrical, glabrous within, longer than the oblong lobes; stamens inserted in the throat of the corolla, anthers subincluded; berry "roundish, contracted at the commissure" (Griseb.).—*Lun. op. cit.* 103; *DC. tom. cit.* 315; *Griseb. Fl. Br. W. Ind.* 343; *Shreve Mont. Rain. For.* 29. *Myrstiphyllum corymbosum Hitchc. op. cit.* 95. *Uragoga corymbosa Kuntze Rev. Gen. Pl. ii.* 960.

On high mountains, *Swartz!*; *Wright! Masson! Shakespear! Wiles! Bancroft!* Portland Gap, *Purdie! McNab* 65! Bath, *Prior* 432! *March* 631! Blue Mt. Peak, *Hitchcock*; *J. P.* 598, 1090 (*Hart!*); near *Cinchona, Fawcett!* Fl. Jam. 6448; near *Whitfield Hall Works*; *Woodcutters' Gap road*; near *Cinchona, Harris!* Fl. Jam. 5181, 5572, 9144; *Cinchona, Clute,* 210!; *Blue Mts. road,* *Clyde to Mt. Pleasant*; near *Troy; Miss Perkins,* 1237, 1381; *Mossman's Peak, Mazon,* 9692.

*Leaves* thinly papery, drying brown or green, green below, midrib impressed above, prominent below, lateral nerves 6–9 pairs, mostly 6–12 by 2–4 cm.; petioles 5–15 mm. l. *Stipules* 2 mm. l. *Panicles* up to 10 by 5 cm., peduncles 3–6 cm. l., primary bracts about 5 mm. l. *Calyx* in all 2 mm. l. *Corolla* purple; tube 4.5 mm. l., lobes 1.5 mm. *Berry* purple, 5 mm. diam. (Gr.).

38. **P. doliehantha** *Urb. Symb. Ant. v.* 517 (1908); a glabrous shrub up to 10 ft. or small tree 20–25 ft. high; young branches four-angled, older subterete and nodular, with grey or pale brown cortex; leaves obovate-oblong, cuspidate-acuminate, rarely broadly rotundate, narrowed at base into the petiole; stipules persistent, small, sheathing, each bidentate or almost entire; panicles rather few-flowered, corymbose, generally trichotomous, shorter than the peduncle; bracts linear or oblong, occasionally foliaceous; flowers sessile; calyx-tube depressed-globose, rather longer than the triangularly 5-toothed limb; corolla-tube cylindrical, hairy in the middle within, thrice as long as the oblong lobes; stamens inserted in the glabrous throat, anthers partly exserted; berry subglobose, broadly ribbed, somewhat wrinkled.

Holly Mount, Mt. Diablo; Troy; Peckham Woods, Upper Clarendon; Mulgrave; *Harris!* Fl. Jam. 8969, 9399, 10,962, 11,177, 12,370, 12,808.

*Leaves* papery, lustrous above, drying green, midrib broad, lateral nerves 5-7 pairs, 5-10 by 2-5.5 cm.; petioles 5-20 mm. l. *Stipules* 2 mm. *Panicles* mostly 5-10 by 4-6 cm.; peduncle alone 2.5-5 cm. l. *Bracts* mostly 3-8 mm. l., the uppermost 1-2.5 mm. *Calyx* 1.75 mm. l. *Corolla* pale yellow in bud, afterwards white, 12-16 mm. l. *Berry* 4 mm. diam.

39. **P. patens** *Sw. Prodr.* 45 & *Fl. Ind. Occ. i.* 419; a glabrous shrub about 5 ft. high; branches compressed at first, with long internodes, afterwards marked with the prominent persistent bases of fallen leaves; leaves broadly elliptical, acuminate, narrowed into a short petiole; stipules united at base, each bipartite with narrowly linear, acuminate segments; panicles stalked, fastigiate, flexuous, as long as or shorter than the leaves, the short second branches opposite or alternate; primary bracts absent; calyx-tube subspheroidal, rather longer than the 5-toothed limb; corolla-tube funnel-shaped, glabrous within; lobes short; berry oblatelately spheroidal, didymous, transversely rugose.—*Lun. tom. cit.* 104; *DC. tom. cit.* 515 (excl. ref. S.-Domingo); *Griseb. Fl. Br. W. Ind.* 343, *Pl. Wright.* 510 & *Cat. Cub.* 137; *Sauv. op. cit.* 70; *Hart Herb. List Trin.* 30; *Urb. op. cit. vii.* 472; *Will. & Cheesm. Fl. Trin. & Tob. ii.* 34; *Britt. & Wils. P.-Rico & Virg. Is. vi.* 248. *P. flexuosa* Willd. *Sp. Pl. i.* 966 (1797); *DC. tom. cit.* 510. *Palicourea patens* Urb. in *Fedde Rep. xviii.* 198 (1922). *Nonatelia paniculata* Aubl. *Pl. Guian. i.* 181, *t.* 70, *f.* 2. *Uragoga flexuosa* Kunze *Rev. Gen. Pl. ii.* 960 & *U. patens* *ii.* 962 (1891). Specimen from Swartz in Herb. Mus. Brit.

Blue Mts., Swartz! Wiles! Wilson!—Cuba, Hispaniola, Porto Rico, Trinidad, Central America to Bolivia and Guiana.

*Leaves* thinly papery, drying green or brown, green below; lateral nerves 5 pairs, mostly 7-13 by 3-5 cm.; petioles 3-7 mm. l. *Stipules* up to 5 mm. l., the lobes to 4 mm. *Panicle* up to 11 by 4 cm.; peduncle 3-7 cm. l.; secondary bracts awl-shaped, about 3 mm. l. *Calyx* about 1 mm. l. *Corolla* white, 4 mm. l. *Berry* white, purple or black, 2-4 mm. diam., commissural furrow extending half-way across the pyrene; dorsal furrows of endosperm broad and shallow.

#### § *Strempelia*, species 40, 41.

40. **P. Myrstiphyllum** *Sw. Prodr.* 44 (1788) & *Fl. Ind. Occ. i.* 405; a freely branching nearly glabrous shrub up to 6 ft. high; branches at first nodular from the persistent bases of fallen stipules and rather rough, afterwards subterete and striate; leaves small, subsessile, oblanceolate or lanceolate-oblong, obtuse at either end; panicles about as long as the leaves, stalked, trichotomously few-flowered; bracts minute; flowers sessile or shortly stalked; calyx-tube



obovoid, as long as the 5-toothed limb; corolla-tube cylindrical, longer than the lobes, hairy at the throat; stamens inserted on the throat; berry ellipsoidal, 8-ribbed.—*Lun. loc. cit.* 101; *Griseb. Fl. Br. W. Ind.* 344 (excl. ref. Haiti); *Urb. op. cit. vi.* 51. *Myrti folio angusto* &c. *Sloane Cat.* 171 & *Hist. ii.* 102, t. 209, fig. 2. *Myrstiphyllum minus, fruticosum*, &c. *Browne Hist. Jam.* 152. Type in Herb. Mus. Brit.

*Sloane* Herb. vii. 24! *Wright! Anderson!* Manchester; St. Ann; *Purdie*; *Macfadyen* 3! *March* 1079! between Grandvale and Westmoreland; near Malvern; Chelsea Hill, Santa Cruz Mts.; Spur Tree Hill 2000 ft.; Font Hill, St. Elizabeth; *Harris!* Fl. Jam. 7066, 9663, 9693, 9866, 9900, 12,684; woods behind Montego Bay, *Norman* 98!

*Leaves* leathery, drying grey, darker above, midrib prominent on underside, lateral nerves invisible or very obscure, mostly 1.5–3 cm. l. by 5–13 mm. *Stipules* 1.5 mm. l. *Calyx* 1.5 mm. l. *Corolla* white, 5 mm. l. *Berry* scarlet, 5–6 mm. l.; endosperm with 4 very shallow dorsal furrows.

41. **P. Wullschlaegeli** *Urb. Symb. Ant. vi.* 50 (1909); very like and closely allied to the last from which it differs chiefly in the smooth young branches, the lateral nerves prominent on the underside of the leaves and the larger (2.5–3.5 mm. l.) stipules. *P. Myrstiphyllum Griseb. Fl. Br. W. Ind.* 344 (*Myrtiphyllum*) (in part) (non *Sw.*).

*Wullschlägel*; Moneague, *Prior!*

Urban *loc. cit.* cites *Prior* (Alexander) 444 from Moneague for this—the corresponding specimen at Kew is without a number.

**P. laxa** *Sw. Fl. Ind. Occ. i.* 407; *Urb. op. cit. vii.* 439; of which no known specimen exists, is perforce excluded. Urban (*loc. cit.*) suggests that its affinity may be with *P. plicata*.

### 31. PALICOUREA Aubl.

Shrubs. Leaves opposite, exceptionally ternate or quaternate. Stipules usually united below, often bicuspidate or bipartite. Flowers with or without bracteoles, sessile or shortly stalked, usually in terminal stalked racemose, corymbose or thyrsoid panicles: they are sometimes dimorphic. Calyx-tube ovoid or top-shaped; limb truncate, 5-toothed or 5-lobed. Corolla small or rather large, with elongated, straight or curved tube often swollen at base, hairy inside; lobes 5, valvate in bud. Stamens 5 inserted on the throat of the corolla; anthers dorsifixed, included or exerted. Ovary 2-celled; style 2-armed; ovules solitary in the cell, erect from its base. Berry usually globular, of 2 leathery or crustaceous pyrenes, convex and usually furrowed

on the back and flat or nearly so on the ventral side. Seed with membranous testa and fleshy albumen. Embryo minute.

Nearly 200 species in tropical America.

Flowers stalked.

Stipules not over 3 mm. l.

- |                           |                        |
|---------------------------|------------------------|
| Corolla 8 mm. l. ....     | 1. <i>P. crocea</i> .  |
| Corolla 12 mm. l. ....    | 2. <i>P. riparia</i> . |
| Corolla 2.5-3 cm. l. .... | 3. <i>P. pulchra</i> . |

Stipules 6-8 mm. l.

- |                             |                            |
|-----------------------------|----------------------------|
| Corolla under 1 cm. l. .... | 4. <i>P. barbinervia</i> . |
| Corolla 1.2-1.5 cm. l. .... | 5. <i>P. alpina</i> .      |

Flowers sessile or subsessile in threes at the end

- |                               |                            |
|-------------------------------|----------------------------|
| of the panicle-branches ..... | 6. <i>P. domingensis</i> . |
|-------------------------------|----------------------------|

1. ***P. crocea*** (*Sw.*) *Roem. & Schult. Syst. v. 193* (1819); a glabrous shrub 4-10 ft. high; branches four-angled, somewhat nodular after the leaves have fallen; leaves broadly ovate-lanceolate, acuminate with acute tip, narrowed at base into the short petiole, slightly hairy on the nerves especially beneath; stipules bipartite, the segments linear, acuminate, entire, base very short; panicles, including the reddish peduncle, mostly shorter than the leaves, usually trichotomous below, dichotomous or irregular above; bracts filiform, the upper very small; flowers stalked, pedicels longer than the calyx, orange; calyx-tube slightly longer than the bell-shaped, triangularly lobed limb; corolla-tube cylindrical, slightly curved, gibbous at base and hairy near it inside, 4-5 times as long as the triangular lobes; stamens inserted half-way down the corolla-tube, included; style shortly exerted; berry ovoid, 8-ribbed.—*Griseb. Pl. Wright. 510, Fl. Br. W. Ind. 345* (excl. var.  $\gamma$ ) & *Cat. Cub. 138*; *Stahl Fl. P.-Rico. v. 78*; *Hitchc. in Rep. Miss. Bot. Gard. iv. 95*; *Duss Fl. Ant. Franç. 345*; *Hart Herb. List Trin. 29*; *Urb. Symb. Ant. iv. 602 & viii. 683*; *Shreve Mont. Rain. For. 31*; *Jenn. Is. Pin. 270*; *Will. & Cheesm. Fl. Trin. & Tob. ii. 38*; *Britt. & Wils. P.-Rico & Virg. Is. vi. 250*. *P. coccinea DC. Prodr. v. 529* (1830). *Psychotria crocea Sw. Prodr. 44* (1788) & *Fl. Ind. Occ. i. 429*; *Lun. Hort. Jam. ii. 102*. *Psychotropium fruticosum foliis ovatis, &c. Browne Hist. Jam. 160, t. 13, f. 1*.

*Masson! Dancer! Macfadyen! March! Moneague, Prior! Wilson! J. P. 1040, 1468 Hart! Castleton Hill; Brandon Hill road; Thompson! Fl. Jam. 8025, 8079; Oxford, near Troy, Harris! Fl. Jam. 9435; Port Morant, Hitchcock! near Troy, 2000 ft., Miss Perkins, 1928!—West Indies, Trinidad, Colombia, Bolivia.*

*Leaves* papery, lateral nerves 8-12 broadly arching pairs, 6-12 by 2.5-5.5 cm.; petioles 4-15 mm. l. *Stipules* 2-3 mm. l. *Panicles* mostly 5-10 by 3-5 cm.; peduncle 2-6 cm. l.; lower bracts up to

5 mm. l., upper about 1 mm. ; pedicels filiform, about 5 mm. l. *Calyx-tube* 1 mm. l., limb. 75 mm. *Corolla* red or orange, 8 mm. l., lobes 1.5 mm. l. *Berry* 4.5 by 4 mm., pyrenes slightly concave on the ventral side ; endosperm with 4 shallow dorsal and 2 very small ventral furrows.

2. **P. riparia** *Benth. in Hook. Journ. Bot. iii.* 224 (1841) ; very like the last and regarded by Grisebach as a variety of it.—*P. crocea* *DC. tom. cit.* 526 (1830) ; (non *Roem. & Sch.*) ; *Griseb. Fl. Br. W. Ind.* 345 (var. *riparia*) ; *Stahl tom. cit.* 77 ; *Duss loc. cit.* ; *Urb. op. cit. iv.* 602 & *Fedde Rep. Beih. v.* 88 ; *Will. & Cheesm. loc. cit.* ; *Britt. & Wils. loc. cit.* *Chiococca scandens*, sarmentis tenuissimis, &c. *Browne Hist. Jam.* 164. *Lonicera racemis terminalibus*, &c. *Plum. Pl. Amer. (Burm.)* 211, t. ccxvii, f. 1.

*Wiles* ! near Whitfield Hall Works ; Claverty Cottage ; *Harris* ! *Fl. Jam.* 5180, 5203, 6312 ; rocky forest slopes near Flamstead, *Maxon*, 8678 !—Cuba, Lesser Antilles, Trinidad, Guiana.

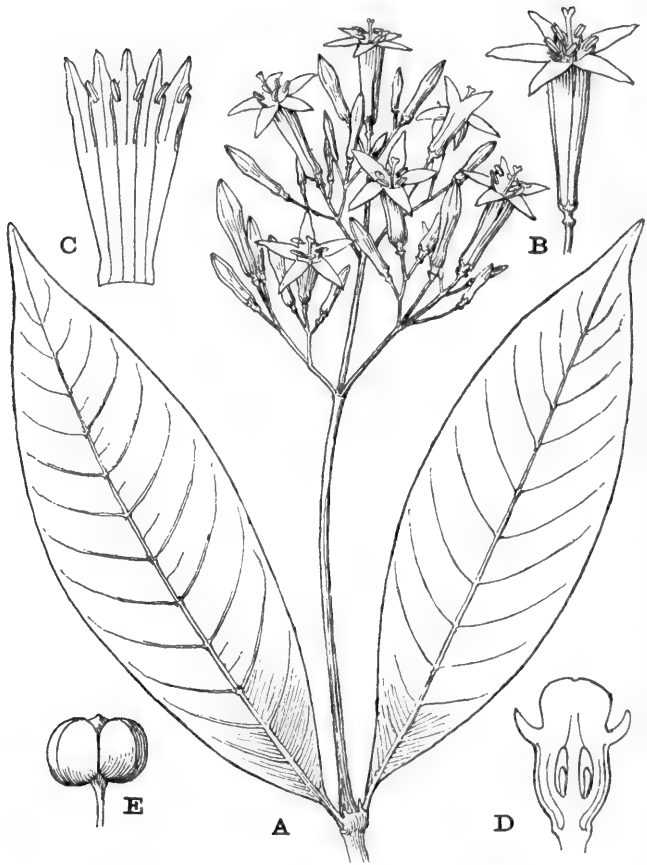
*Shrub* 6 ft. high. *Flowers* in a stalked corymb. *Corolla* 12 mm. l. *Berry* black, 5–6 by 4.5 mm.

3. **P. pulchra** *Griseb. Fl. Br. W. Ind.* 345 (1861) ; a glabrous shrub up to 10 ft. or small tree 15 ft. high ; branches four-angled ; leaves shortly petioled, elliptic-lanceolate or elliptic-oblong, shortly and obtusely acuminate, obtuse at base ; stipules from the short sheath bipartite, the segments linear-lanceolate, acute ; panicles about as long as the leaves, corymbose, open, stalked, usually trichotomous ; bracts small, awl-shaped ; pedicels longer than the calyx ; calyx-tube broadly cylindrical, longer than the 5-lobed limb ; corolla-tube straight, elongated, widening slightly along the middle, much longer than the lobes, slightly enlarged at base, glabrous within ; stamens inserted in the throat of the corolla, exserted, filaments much longer than anthers ; style exserted, berry didymous, compressed, ovoid-reniform, very faintly ribbed. (Fig. 31.)

#### Wild Lime.

*St. Ann, McNab* ! *Macfadyen* ! *Moneague, Prior* ! *Wilson* ! *March* ! *Marshall's Penn, Mandeville* ; *Oxford and Crown Lands near Troy* ; *Dolphin Head* ; *Peckham Woods, Upper Clarendon* ; *Ipswich, St. Elizabeth* ; *Harris* ! *Fl. Jam.* 6260, 8659, 8728, 9240, 9426, 10,956, 12,368.

*Leaves* papery, lateral nerves 8–12 pairs, 8–16 by 3–7 cm. ; petioles 5 mm. more or less l. *Stipules* 2 mm. l. *Panicles* 8–13 by 7–10 cm. *Bracts* 1–3 mm. l. *Pedicels* 3–10 mm. l. *Calyx-tube* 1.5 mm. l. ; limb barely 1 mm., divided beyond the middle into triangular lobes. *Corolla* pale yellow to rose-violet or mauve, in all 2.5–3.0 cm. l. *Disk* prominent. *Berry* 4 by 6 mm. ; pyrenes narrowly involute at the short commissure.

Fig. 31.—*Palicourea pulchra* Griseb.A, Flowering branch  $\times \frac{1}{2}$ .

B, Flower nat. size.

C, Corolla cut open nat. size.

D, Ovary with calyx cut lengthwise  $\times 10$ .

E, Fruit nat. size.

4. *P. barbinervia* DC. *Prodr.* iv. 530 (1830); a shrub or small tree; branches four-angled, finely striate; leaves petioled, ovate- or obovate-elliptical, shortly acuminate, cuneate at base, glabrous except for a line of hairs on each side of the midrib below; stipules ovate, bifid, persistent; panicles pyramidal, stalked, about as long as the leaves, 3-4-chotomous below, irregularly branched above, pedicels slender, exceeding the calyx; calyx-tube somewhat top-shaped, larger than the patent 5-lobed limb; corolla densely pulverulent, tube curved and swollen at base and under the

limb, glabrous within except for a ring of coarse hairs close to the base, six times as long as the triangular lobes; stamens inserted half-way down the corolla-tube, included; style (of flowers examined) exerted; berry ovoid, 8-ribbed.—*Stahl tom. cit.* 79; *Urb. op. cit. iv.* 603 & *viii.* 683; *Britt. & Wils. tom. cit.* 251. *Psychotria macrophylla* and *P. lutea Spreng. fide DC. loc. cit.*

Near Moore Town, Portland, *Mitchell!* Fl. Jam. 10,071.—Greater Antilles, Trinidad.

*Leaves* membranous or papery, lateral nerves 10–12 pairs, sub-horizontal, not dichotomising, mostly 12–23 by 5.5–10 cm.; petioles stout, 5–15 mm. l. *Stipules* up to 8 mm. l. *Panicles* 15–20 by 6–9 cm. including the stout 7–12 cm. l. peduncle; branches yellow or red, rather coarse and shortly hairy; bracts awl-shaped, 2 mm. more or less l.; pedicels mostly 4–10 mm. l. *Calyx-tube* 1.5 mm., limb 1 mm. l. *Corolla* white, 9.5 mm. l.; tube 8 mm., lobes 1.5 mm. l. *Berry* 4–5 by 3–4 mm.; commissure of pyrene but slightly involute; endosperm with 4 shallow dorsal furrows.

5. *P. alpina* (*Sw.*) *DC. Prodr. v.* 528 (1830); a glabrous shrub 10–15 ft. high with four-angled branches; leaves broadly to somewhat narrowly elliptical, shortly acuminate, obtuse or rounded at base; stipules bilobed, the sheath little more than half as long as the linear-lanceolate acute lobes; panicles stalked or sessile, pyramidal, shorter than the leaves, its branches coloured; bracts awl-shaped; pedicels longer than the calyx; calyx-tube ovoid, a little shorter than the bell-shaped 5-lobed limb; corolla-tube slightly curved, somewhat swollen at base, nearly three times as long as the oblong lobes, glabrous within except for a ring of hairs close to the base; stamens inserted near the middle of the corolla-tube; filaments shorter than the included anthers; style (of specimens seen) included; berry ovoid, compressed, faintly ribbed.—*Griseb. Fl. Br. W. Ind.* 345 & *Cat. Cub.* 138; *Hitchc. op. cit.* 95; *Urb. op. cit. iv.* 602 & *viii.* 683; *Britt. & Wils. tom. cit.* 250. *Psychotria alpina Sw. Prodr.* 44 (1788) & *Fl. Ind. Occ. i.* 431; *Lun. tom. cit.* 103.

*Wright!* *Masson!* *McNab!* J. P. 894, 1100 (*Hart!*); near Morse's Gap; near Cinchona; *Harris!* Fl. Jam. 5299, 9116; Cuna Cuna Pass, Portland, *Harris & Britton!* Fl. Jam. 10,563; Blue Mt. Peak, *Maxon,* 10,019!—Greater Antilles; Dominica (*fide Grisebach*).

*Leaves* papery, lateral nerves 9–13 pairs, prominent on the underside, not forking, 7–15 by 3–6 cm.; petioles 5–10 mm. l. *Stipules* 6–8 mm. l., the sheath alone 3 mm. *Panicles* 5–10 cm. l. (exclusive of the peduncle which may reach 5.5 cm. l.) and 3–7 cm. wide. *Bracts* up to 5 mm. l., but the upper ones much smaller. *Pedicels* mostly 3–6 mm. l. *Calyx-tube* 1.5 mm., limb 2 mm. l. *Corolla* red, yellow, purple, blue or white (*Swartz*), 1.2–1.5 cm. l.; lobes 5 mm. l. *Berry* 4 by 3.5 mm.

6. **P. domingensis** (Jacq.) DC. *Prodr. v.* 529 (1830); an erect branching glabrous shrub about 6 ft. high; branches four-angled, finely striate; leaves elliptic-lanceolate, obtusely acuminate, narrowed at base into the slender petiole; stipules very small, bipartite with linear-lanceolate segments; panicles corymbose, generally shorter than the leaves, stalked, mostly trichotomous with sessile or shortly stalked flowers in threes at the end of its branches; calyx-tube shortly and broadly cylindrical, half as long as the bell-shaped 5-toothed limb; corolla-tube club-shaped, slightly curved, hairless inside, about twice the length of the patent ovate- or oblong-lanceolate lobes; stamens inserted near the middle of the corolla-tube, their tips exerted; berry oblatly sub-spheroidal, 8-ribbed, reticulate between the ribs.—*Urb. op. cit. iv.* 601 & *viii.* 682 & *in. Fedde Rep. Beih. v.* 72; *Britton Fl. Amer. Virg.* 94. *P. tabernæfolia* DC. *tom. cit.* 525 (1830). *P. Pavetta* DC. *loc. cit.*; *Griseb. Pl. Wright.* 510, *Fl. Br. W. Ind.* 346 & *Cat. Cub.* 138; *Sawv. Fl. Cub.* 71; *Egg. Fl. St. Croix & Virg.* 61; *Hitchc. op. cit.* 95; *Combs Pl. Cub.* 431; *Duss op. cit.* 345; *Bold. Fl. Ned. Ind. Occ. i.* 192; *Britt. & Wils. tom. cit.* 249. *Psychotria domingensis* Jacq. *Enum. Pl. Carib.* 16 (1760) & *Sel. Stirp. Amer.* 66. *P. Pavettæ* Sw. *Prodr.* 45 (1788); *Lun. tom. cit.* 102; *Maycock Fl. Barb.* 70. *P. tabernæfolia* Poir. *in Lam. Encycl. v.* 704 (1804). *Pavetta pentandra* Sw. *Fl. Ind. Occ. i.* 233 (1797). *Cestrum nervosum* Mill. *Gard. Dict. ed. 8, No. 3.* *Ceraso affinis*—fructu cæruleo, &c. *Sloane Cat.* 169 & *Hist. ii.* 95, *t.* 202, *f.* 2. *Lonicera foliis lanceolato-ovatis*, &c. *Plum. Pl. Amer. (Burm.)* 149, *t. clvi, f. 1.*

#### Wild Coffee.

Red Hills, *Sloane* Herb. vii. 8! *Purdie*; *Moneague, Prior*! *Wilson*! *Wullschlägel*; *Port Antonio, Hitchcock*; near *Cinchona, Harris*! *Fl. Jam.* 9144.—West Indies.

*Leaves* membranous or thinly leathery, lateral nerves 8–10 pairs, not forking towards the margin, 5–12 by 2.5–5 cm.; petioles 5–10 mm. l. *Stipules* 2 mm. l. *Panicles* 3–7 by 4–5 cm.; pedicels stout, up to 3 mm. l. *Calyx-tube* 1 mm. l.; limb 2 mm. l., its teeth .5 mm. *Corolla* white, fragrant; tube 12 mm. l., lobes 5–6 mm. *Berry* black, 4 by 5 mm.; endosperm with 4 dorsal and 2 minute ventral furrows.

**Rudgea caribæa** Benth. *in Linnæa*, 1850, 460, a species of the Lesser Antilles, is cited for Jamaica, a specimen being quoted from Dancer. But there is no specimen of this species from Dancer at Kew or the British Museum, and the plant has not been recorded since from Jamaica.

### 32. GEOPHILA D. Don.

Small creeping and rooting herbs. Leaves opposite, petiolate, orbicular or cordate. Stipules broad. Flowers small, stalked or subsessile in an umbellate bracteate few-

flowered cluster crowning radical or terminal peduncles, the bracts forming a loose involucre. Calyx-tube obovoid; limb 5-7-lobed or -partite with elongated persistent segments. Corolla narrowly funnel-shaped, hairy at the throat; lobes 4-7, valvate in bud. Stamens as many as corolla-lobes; anthers dorsifixed below the middle. Disk fleshy. Ovary 2-celled. Style 2-armed, included or exerted; ovule solitary in each cell, erect from the base. Drupe with 2 plano-convex ribbed or smooth, long or crustaceous, 1-seeded pyrenes. Seeds with leathery testa and horny endosperm.

Species about 25 in the tropics of either hemisphere.

**G. herbacea** (Jacq.) K. Schum. in *Engl. & Prantl Nat. Pflanzenfam. iv.* 4. 119 (1891); stems slender, rooting at many of the nodes; leaves cordate or orbicular with cordate base entire or slightly crenulate; stipules semiorbicular in outline, bifid, persistent; peduncles about as long as the petioles, glabrous or nearly so; bracts oblong- or linear-lanceolate, acuminate; calyx-tube shorter than the prominent limb, divided half-way down into equal or unequal linear-lanceolate segments; corolla-tube longer than the ovate-lanceolate lobes; stamens included; drupe elliptical, crowned by the persistent calyx; pyrenes ovoid-oblong, keeled on the back.—*Urb. Symb. Ant. iv.* 603 & *viii.* 684; *Britton Fl. Amer. Virg.* 94; *Will. & Cheesman Fl. Trin. & Tob. ii.* 40. *G. reniformis* D. Don *Prodr. Fl. Nep.* 136 (1825); *DC. Prodr. iv.* 537; *Griseb. Fl. Br. W. Ind.* 347, *Pl. Wright.* 510 & *Cat. Cub.* 139; *Sauv. Fl. Cub.* 71; *Egg. Fl. St.-Croix & Virg.* 62; *Stahl Fl. P.-Rico v.* 81; *Duss Fl. Ant. Franç.* 346; *Hart Herb. List Trin.* 28; *Britt. & Wils. P.-Rico & Virg. Is. vi.* 251. *Psychotria herbacea* Jacq. *Enum. Pl. Carib.* 16 (1760) & *Sel. Stirp. Amer.* 36, *t.* 67; *Sw. Obs. Bot.* 74; *Tussac Fl. Ant. i.* 83, *t.* 8; *Lun. Hort. Jam. ii.* 100. *Cephaelis reniformis* H. B. & K. *Nov. Gen. & Sp. iii.* 377 (1818). *Mapourea herbacea* Muell.-Arg. in *Mart. Fl. Bras. vi. pt. 5,* 427 (1881). *Geocardia herbacea* Standl. in *Contrib. U.S. Nat. Herb. xvii.* 444 (1914). *Violæ folio malabarica*, &c. *Rheede Mal.* 10, 41, *t.* 21. *Violæ folio baccifera* &c. *Sloane Cat.* 115 & *Hist. i.* 243. *Psychotropium herbaceum repens*, &c. *Browne Hist. Jam.* 161. (Fig. 33.)

Woods towards Sixteen-Mile Walk, *Sloane Herb. iv.* 111! *Shakespeare!* *Wright!* *Wiles!* near Manchineal, *Purdie!* *Distin!* *Moneague,* *Prior!* *Castleton Gardens,* *Harris!* *Fl. Jam.* 12, 291; *Bath,* *Norman,* 215!—West Indies and tropics of Old and New Worlds.

*Leaves* membranous, 3-5-nerved from just above the base, 1.5-4 by 1.5-4.5 cm.; petioles with lines of usually short coarse hairs, .5-5 cm. 1. *Stipules* membranous, 1.5 mm. 1. *Peduncles* 5-30 mm. 1. *Flowers* sometimes solitary, usually 2-3 (occasionally very few more) to the

umbel. Bracts about 3 mm., pedicels 1 mm. l. Calyx-tube 1 mm., limb 4 mm. l. Corolla white, in full 1 cm. l., lobes 2 mm. Drupe scarlet, 5 mm. l. Pyrenes brown, 3.5-4 mm. l.

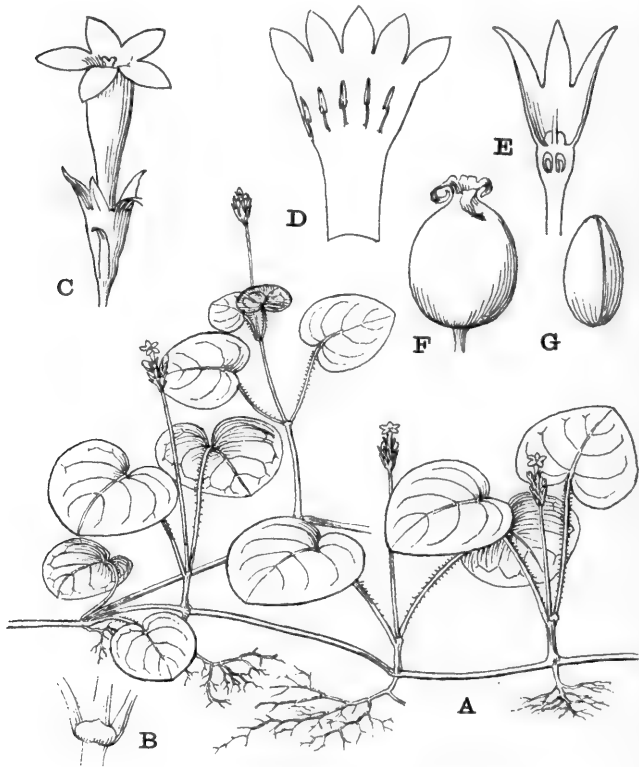


Fig. 32.—*Geophila herbacea* (Jacq.) K. Schum.

A, Plant  $\times \frac{2}{3}$ .  
 B, Stipule  $\times 3$ .  
 C, Flower  $\times 3$ .  
 D, Corolla cut open  $\times 3$ .

E, Ovary with calyx-tube cut lengthwise  $\times 6$ .  
 F, Fruit  $\times 4$ .  
 G, Pyrene  $\times 4$ .

### 33. CEPHAELIS Sw.

Characters mainly of *Psychotria*. Flowers sessile in axillary or terminal heads surrounded by two or more, often large and brightly coloured bracts forming an involucre and accompanied by bracteoles like the receptacular scales of Composites.

Species over 100, tropical, chiefly American; few in Africa and Asia.



*C. elata* Sw. *Prodr.* 45 (1788) & *Fl. Ind. Occ. i.* 437; a straggling glabrous shrub up to 12 ft. high; branches stout, four-angled; leaves elliptical or obovate-oblong, obtusely cuspidate-acuminate, produced at base into the short petiole;

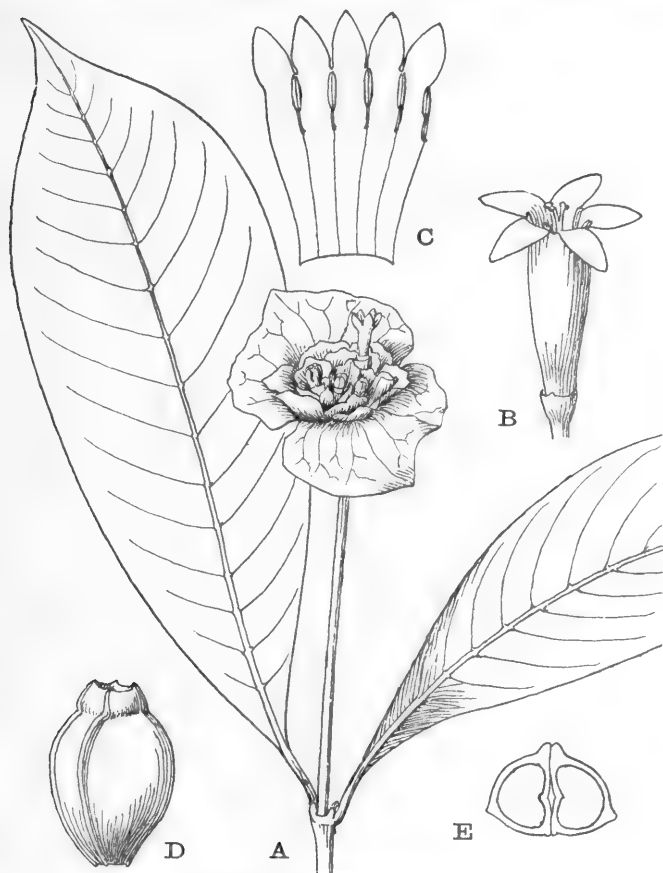


Fig. 33.—*Cephaelis elata* Sw.

A, End of flowering branch  $\times \frac{1}{2}$ .

B, Flower  $\times 2$ .

C, Corolla cut open  $\times 2$ .

D, Berry  $\times 4$ .

E, Same cut across  $\times 4$

stipules persistent, short, 2-lobed, lobes ovate, obtuse; flowering heads usually terminal, stalked, peduncles shorter than the leaves; involucrel bracts 2, large, reniform, shortly united at the base, scarlet or purplish; bracteoles many, spatulate; calyx-tube short, cylindrical, as long as the

undulate limb; corolla-tube narrowly funnel-shaped; lobes 5, shorter than the tube; stamens inserted above the middle of the corolla; anthers shortly exerted; berry ovoid, pyrenes not prominently ribbed.—*Willd. Sp. Pl. i.* 978; *DC. Prodr. iv.* 533; *Robins. in Proc. Amer. Acad. xlv.* 408. *C. punicea Vahl Eclog. Amer. fasc. 1,* 19 (1796) (Cephaelis); *Willd. tom. cit.* 977; *Griseb. Fl. Br. W. Ind.* 346. *Tapogomia elata & T. punicea Poir. in Lam. Encyc. vii.* 585 (1806). *Uragoga punicea K. Schum. in Engl. & Prantl Nat. Pflanzenfam. iv.* pt. 4. 120 (1891). (Fig. 33.)

*Wright! von Rohr! March! Colthurst Run, J. P.* 639, *Hart! Tweedside, Campbell! Fl. Jam.* 7203; *Vinegar Hill; wooded slope above Mabess River, 4000 ft. alt.; Greenhill woodland; Harris! Fl. Jam.* 5191, 9129, 10,131; *Hardware Gap, 4000 ft., Nichols 96! John Crow Mts., Norman 253! Blue Mts., Green Hills, Rendle, 66!*

*Leaves* papery, lustrous; lateral nerves 14–18 pairs, not forking, 10–23 by 3.5–7 cm.; petioles 1–1.5 cm. l. *Stipules* 5 mm. l. *Peduncles* stout, up to 10 cm. l. but often less. *Heads* (with involucre) up to 7 cm. across. *Involucral bracts* membranous, about 2–2.5 by 3–3.5 cm.; bracteoles reduced in size from without inwards, the innermost immediately investing the flowers about 5 mm. l. *Calyx-tube* and limb each 1 mm. l. *Corolla* white, about 15 mm. l. in all. *Berry* nearly dry, 6 by 3.5 mm.; pyrenes with a small furrow at the commissure; endosperm uniform.

This is said to occur also in Central America and in Guiana, but the specimens seen from those countries are hardly conspecific with those from Jamaica.

### 34. ERNODEA Sw.

Erect or trailing glabrous coastal undershrubs, with persistent sheathing stipules, and solitary axillary sessile flowers. Calyx-tube ovoid; limb generally 4-partite with narrow persistent segments. Corolla salver-shaped, tube cylindrical, glabrous within, limb of generally 4 narrow lobes valvate in bud. Stamens as many as lobes of the corolla & inserted in its throat, exerted; anthers dorsifixed. Disk fleshy. Ovary 2-celled; style exerted; stigma subentire. Ovules solitary in the cell, fixed to the septum. Fruit a nearly dry berry with 2 plano-convex 1-seeded pyrenes; endosperm nearly uniform.

Species 6 (5 perhaps forms only), natives of Florida, West Indies & Central America.

**E. littoralis Sw. Prodr.** 29 (1788) & *Fl. Ind. Occ. i.* 224, t. 4, f. 3; branches four-angled, somewhat swollen at the nodes; leaves in decussate pairs upon short lateral branches, sessile, lanceolate or linear-lanceolate, pungent; stipules from a broad sheathing base with several filiform lobes; calyx-tube somewhat compressed, half the length of the limb with its

linear-lanceolate segments; corolla-tube slightly enlarged above, longer than the linear-oblong, reflexed lobes; berry ovoid, nearly smooth, crowned by the persistent calyx.—*Lun. Hort. Jam. ii.* 200; *DC. Prodr. iv.* 575; *A. Rich. in Mém. Soc. Hist. Nat. Paris v.* 156, t. 15, f. 2; *Griseb. Fl. Br.*

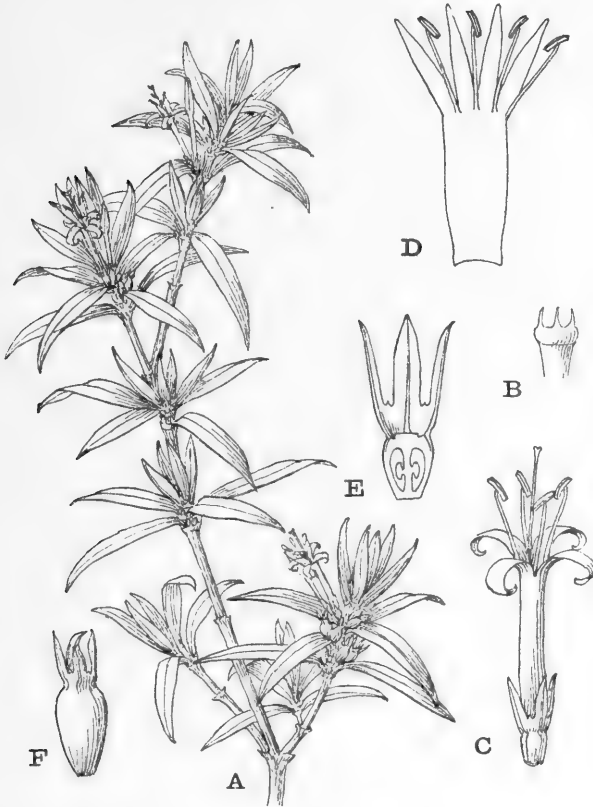


Fig. 34.—*Ernodea littoralis* Sw.

- A, Branch in flower and fruit  $\times \frac{1}{2}$ .      E, Ovary with calyx cut lengthwise  
 B, Stipule  $\times 2$ .       $\times 4$ .  
 C, Flower  $\times 2$ .      F, Fruit  $\times 2$ .  
 D, Corolla cut open  $\times 2$ .

*W. Ind.* 347; *Egg. St. Croix & Virg.* 62; *Stahl Fl. P.-Rico v.* 83; *Hitchc. in Rep. Miss. Bot. Gard. iv.* 95; *Duss Fl. Ant. Franç.* 347; *Small Fl. S.E. U. States* 1115; *Britton in Bull. Torr. Bot. Club* 35. 204; *Bold. Fl. Ned. Ind. Occ. i.* 198 & ii. 104; *Urb. Symb. Ant. iv.* 605 & viii. 686; *Britton Fl. Amer. Virg.* 94; *Britt. & Millsp. Baham. Fl.* 420; *Britt. & Wils.*

*P.-Rico & Virg. Is. vi. 253. Thymelæa humilior foliis acutis, &c. Sloane Cat. 168 & Hist. ii. 93, t. 189, figs. 1, 2. Knoxia littoralis repens &c. Browne Hist. Jam. 140. (Fig. 34.)*

Palisades, Port Royal, *Sloane Herb. vii. 1!* shore of Portland, *Browne; Robinson! J.P. 1089, Hart!* Pedro Bluff; Cane River Valley; Great Goat Island; sea coast, Negril; *Harris!* Fl. Jam. 9719, 10,054, 10,171, 10,219; Pedro Bluff; coastal rocks near Black River; Great Goat Island; *Britton!* 1247, 1365, 1884.—Coasts of Florida, Bahamas, West Indies, Honduras and Yucatan.

*Leaves* rigid and somewhat fleshy, 3-5-nerved, 2-4 cm. by 3-5 mm. *Stipules* 2-3 mm. l. *Calyx-tube* 2 mm. l., limb 4 mm. including the 3 mm. l. segments. *Corolla* white to pink; tube 10 mm., lobes 7 mm. l. *Berry* yellow, slightly fleshy, about 5 by 3 mm.; pyrenes with 2 furrows on the commissural side, otherwise endosperm uniform.

### 35. DIODIA L.

Annual or perennial sometimes shrubby herbs. Leaves opposite or spuriously whorled. Stipules united with the petioles to form a bristly sheath. Flowers axillary, sessile or subsessile, small or minute. Calyx-tube ovoid or obovoid; limb usually 2-4- (sometimes 5-6-) lobed or toothed, sometimes with interposed small teeth. Corolla-tube funnel-shaped, glabrous or hairy at the throat; lobes usually 4, valvate in bud. Stamens as many as corolla-lobes, inserted in the throat of the corolla; anthers dorsifixed, exserted. Ovary 2- (sometimes 3-4-) celled; style 2-armed or capitate, exserted. Ovules solitary in the cells, fixed to the septum. Fruit of 2 (very seldom 3-4) plano-convex indehiscent cocci; albumen horny, minutely furrowed on the commissural side.

Over 30 species, the majority tropical American; a few in tropical Africa and Asia.

Calyx-lobes 4. Stipules with several bristles.

Leaves linear. Flowers usually solitary ..... 1. *D. prostrata.*

Leaves oblong-lanceolate or elliptical. Flowers

up to 5 in the leaf-axils ..... 2. *D. sarmentosa.*

Calyx-lobes 2. Stipules with only 2-3 bristles ..... 3. *D. simplex.*

1. *D. prostrata Sw. Prodr. 30 (1788) & Fl. Ind. Occ. i. 228;* a copiously branching annual with weak slender trailing rather rough branches; leaves opposite, sessile, linear, acute, rough, with revolute margins; stipular sheath about as long as the bristles; flowers usually solitary, sessile; calyx hispid; tube obovoid, longer than the 4 oblong-lanceolate obtuse lobes; corolla-tube thrice as long as the 4 lobes; stigma capitate; fruit globose, hispid, the cocci 3-ribbed on the back.—*Lun. Hort. Jam. i. 265; Spreng. Syst. i. 406 (excl. ref. Hispaniola); DC. Prodr. iv. 562;*

*Griseb. Fl. Br. W. Ind.* 348; *Hemsl. Biol. Centr. Am. Bot.* vi. 55. Spermacece annuum foliis linearibus &c. *Loefl. It. Hisp.* 201 (*fide Swartz*). Specimen from Swartz in Herb. Mus. Brit.

*Shakespear ! Swartz ! St. Andrew, McNab ! King's House Grounds, Harris ! Fl. Jam.* 12, 145.—Central America.

Branches a span long or over. Leaves rather rigid, mostly 5–20 by 1–2 mm. Stipules 3 mm. l., the bristles alone 2 mm. Calyx-tube 1.5 mm. l., limb 1 mm. Corolla white or mauve, 4 mm. l. Fruit 2.5 mm. diam.

2. *D. sarmentosa Sw. Prodr.* 30 (1738) & *Fl. Ind. Occ. i.* 231; a scandent undershrub climbing in thickets to a height of 6 ft.; branches four-angled, ultimately glabrous, when

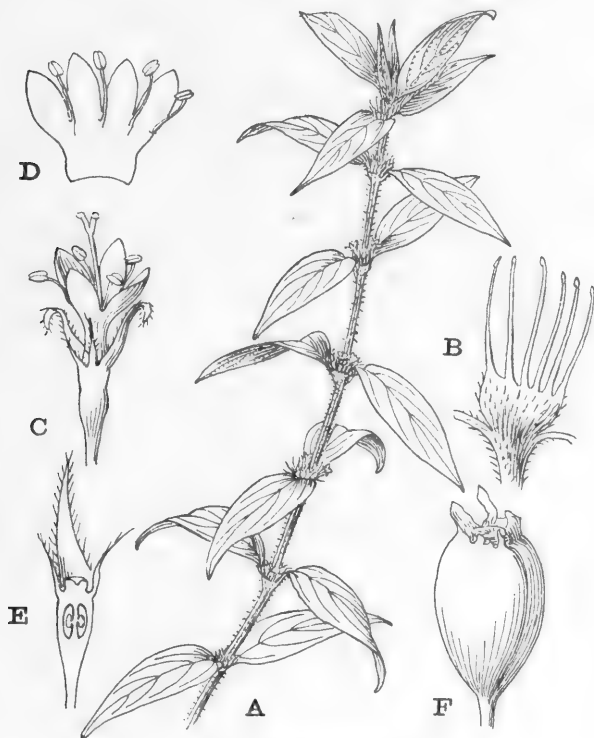


Fig. 35.—*Diodia sarmentosa Sw.*

A, Portion of plant in flower  $\times \frac{1}{2}$ .

B, Stipule  $\times 3$ .

C, Flower  $\times 8$ .

D, Corolla cut open  $\times 8$ .

E, Ovary with calyx cut lengthwise  $\times 10$ .

F, Fruit  $\times 4$ .

young rather rough or rough; leaves shortly petioled, oblong-lanceolate or elliptical, acute, rough or rather rough especially on the nerves; stipular bristles longer than the rough sheath; flowers 5 or fewer in the axils; calyx-tube narrowly ovoid; lobes linear-lanceolate, acute, longer than the tube; corolla about as long as the calyx-limb, divided half-way down into 4 lobes; style shortly bilobed at apex, stigmas capitate; fruit oblong-ovoid, smooth.—*Lun. loc. cit.*; *DC. tom. cit.* 563; *Griseb. op. cit.* 349; *Hiern in Oliv. Fl. Trop. Afr. iii.* 232; *Egg. Fl. St. Croix & Virg.* 62; *Stahl Fl. P.-Rico v.* 86; *Hemsl. tom. cit.* 56; *K. Schum. in Mart. Fl. Bras. vi. pt.* 6, 27; *Duss Fl. Ant. Franç.* 347; *Urb. Symb. Ant. iv.* 606 & *viii.* 687; *Britton Fl. Amer. Virg.* 95; *Ridl. Fl. Mal. Penins. ii.* 174; *Will. & Cheesm. Fl. Trin. & Tob. ii.* 43; *Britt. & Wils. P.-Rico & Virg. Is. vi.* 254. *Aparine paucioribus foliis semine lævi Sloane Cat.* 50 & *Hist. i.* 145, *t.* 94, *f.* 2. (Fig. 35.)

Plentifully amongst the woods going from Town to Guanaboa, &c. *Sloane Herb.* ii. 123, 124! *von Rohr* 31! *Masson*! *March*! *Moneague*, *Prior*! *Claverty Cottage*, *J. P.* 1444, 1471, *Hart*! near *Guy's Hill*, *St. Ann*, *Harris*! *Fl. Jam.* 12,040.—West Indies, Trinidad, Mexico, Central America, Guiana; also in tropical Africa and Malay Peninsula and Islands.

*Leaves* stiff, lateral nerves 4-5 pairs, but little curved, mostly 2.5-3.5 cm. by 5-10 mm. *Stipular sheath* 2 mm., bristles 4-5 mm. l. *Bracts* linear-lanceolate, acute, about as long as the calyx-lobes. *Pedicels* 1 mm. l. *Calyx-tube* 2 mm. l.; lobes unequal, 1.5-3 mm. l. *Corolla* white, about 2 mm. l. *Stamens* and *style* shortly exerted. *Fruit* dark brown; cocci 5 mm. l.

**3. *D. simplex*** *Sw. Prodr.* 29 (1788) & *Fl. Ind. Occ. i.* 266; a weak, ascending or decumbent herb rooting at the base and sometimes at the nodes; stem rather slender, sparingly branched, four-angled, glabrous; leaves opposite, sessile or subsessile, oblong-lanceolate or obovate-oblong, ciliolate; stipules broadly sheathing, with usually 2-3 bristles longer than or as long as the sheath; flowers solitary, sessile; calyx-tube oblong, crowned by 2 oblong awl-shaped lobes; corolla funnel-shaped; limb 4-lobed with acute lobes; stamens and bifid style as long as the corolla; fruit ovoid, keeled on the back and slightly wrinkled, the calyx-lobes persistent upon it.—*Lun. loc. cit.*; *DC. tom. cit.* 563; *Urb. op. cit. ix.* 542. *Borreria simplex Griseb. op. cit.* 350. *Spermaceoe simplex Fawc. Fl. Pl. Jam.* 19. Specimens from *Swartz* in *Herb. Mus. Brit.* and *Herb. Stockholm.*

Among grassy herbage on mountain tops, *Swartz*! *Lacovia*, *Britton*! *Fl. Jam.* 1497; pond near *Four Paths*, *Clarendon*, *Harris & Britton*! *Fl. Jam.* 10,633.—*Is. Pinos (fide Urban)*, *Cuba.*

Leaves papery, somewhat rough, mostly 1-3.5 cm. by 5-10 mm. Stipular sheath scarious, about 2 mm. l.; bristles rather coarse, 2-3 mm. l. Corolla white. Fruit 4 mm. l., 4 times as long as the persistent calyx-lobes. Fruits 4 mm. l. Seeds black, 2.5 mm. l.

Flowers not seen; the description taken from Swartz.

### 36. HEMIDIODIA K. Schum.

Differs from *Diodia* in its fruit, the membranous cocci of which separate and open in the lower portion.

One species in tropical America and the West Indies.

**H. ocimifolia** (Willd.) K. Sch. in Mart. *Fl. Bras. vi. pt. 6, 29, t. lxxii.* (1888); *Urb. Symb. Ant. iv. 606 & viii. 688*; *Britt. & Wils. P.-Rico & Virg. Is. vi. 254*; *Will. & Cheesm. Fl. Trin. & Tob.*

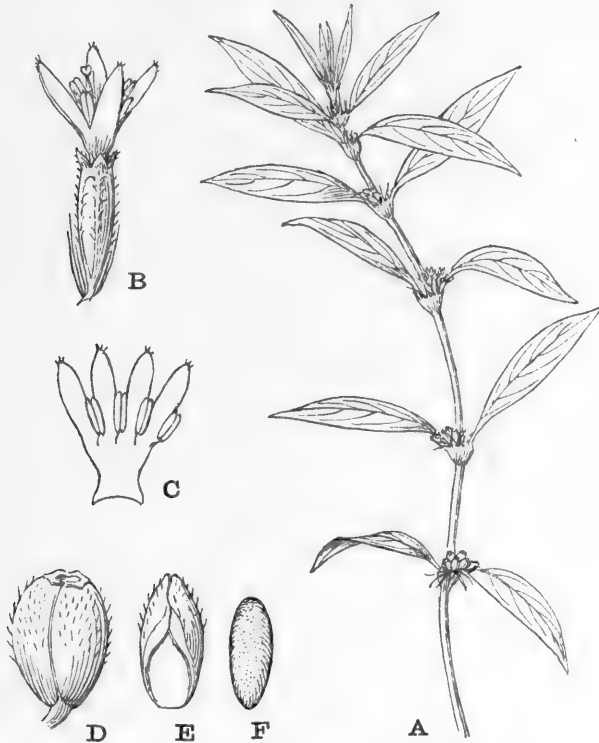


Fig. 36.—*Hemidiodia ocimifolia* (Willd.) K. Sch.

A, Portion of plant bearing flower and fruit  $\times \frac{1}{2}$ .  
B, Flower  $\times 6$ .  
C, Corolla opened  $\times 6$ .

D, Fruit  $\times 6$ .  
E, Cocculus showing ventral opening  $\times 6$ .  
F, Seed  $\times 6$ .

ii. 43. *Spermacoce ocymifolia Willd. ex Roem. & Schult. Syst. Veg. iii. 530 (1818); DC. Prodr. iv. 556. (Fig. 36.)*

*Masson! Cuming! Moneague, Prior! Claverty Cottage, J.P. 1445, Hart!*—West Indies, Trinidad, Mexico, tropical South America.

A perennial branched herb becoming suffruticose below, up to 7 dm. tall; branches spreading, somewhat four-angled when young with puberulous angles, becoming terete, up to 2 mm. thick, dark purplish when dry. *Leaves* lanceolate, acuminate, up to 4.5 by 1 cm., narrowed at base into a short petiole, one-nerved, puberulous or glabrate, margin and nerves rather rough; stipular sheath cup-like, 3–4 mm. long, puberulous, bearing numerous bristles about equal to or exceeding its length. *Flowers* numerous in a dense sessile cluster towards one side of the leaf-axils. *Calyx-tube* cylindrical, puberulous, lobes 4, short, ovate, united at base into a short open cup, .75 mm. l. *Corolla-tube* slender, cylindric, 1.5 mm. l., lobes 4, narrow, barely 2 mm. l.; apex blunt, shortly hairy. *Stamens* exerted, shorter than the corolla-lobes. *Style* filiform; stigma capitate. *Fruit* shortly stalked, oblong, 2-furrowed, puberulous above, 3.5 mm. long; cocci papery, separating and opening in the lower portion. *Seeds* narrowly oval, furrowed on back, deep brown-purple, minutely pitted, 2.5–3 mm. l.

### 37. SPERMACOCE L.

Annual or perennial herbs with four-angled stem. Stipules united with the petioles to form a bristly sheath. Flowers several to many, sessile in the leaf-axils. Calyx-tube top-shaped; limb 4-lobed. Corolla funnel-shaped; lobes 4, valvate in bud. Stamens as many as corolla-lobes, inserted on the corolla-tube; anthers not exerted. Ovary 2-celled; style simple with shortly bifid stigma. Ovules solitary, fixed to the septum. Fruit leathery or crustaceous, bearing the persistent calyx-teeth; one valve closed, the other open; seed oblong, shallowly grooved on the ventral side; endosperm horny.

Three or four species in tropical and subtropical America and the West Indies.

Leaves rough on upper face. Inflorescence several-flowered. Capsule crustaceous, hirtellous ..... 1. *S. confusa*.

Leaves glabrous. Inflorescence many-flowered. Capsule leathery, glabrous ..... 2. *S. tenuior*.

1. *S. confusa Rendle in Journ. Bot. lxxiv. 12 (1936);* an annual herb 30–60 cm. high, stem generally erect from a vertical tap-root, angles generally rather rough, branches suberect to spreading, unequal, alternate or opposite; leaves lanceolate to linear-lanceolate, acuminate, narrowing at the base but scarcely stalked, one-nerved, rough above, rather rough on the nerves beneath; stipular sheath short, truncate, bearing several long thread-like bristles, puberulous; flowers 7–13, unilateral; calyx-tube exceeding the 4-lobed



limb; corolla-lobes ovate, less than half as long as the stout tube; stamens inserted on the base of the tube; capsule subglobose, crowned by the persistent sepal-limbs; seed oblong, scarcely pitted.—*S. tenuior* Gaertn. *Fruct. i.* 122, t. 25, fig. 9 (1788) non *L. Sp. Pl.* 102; *Lam. Tab.*

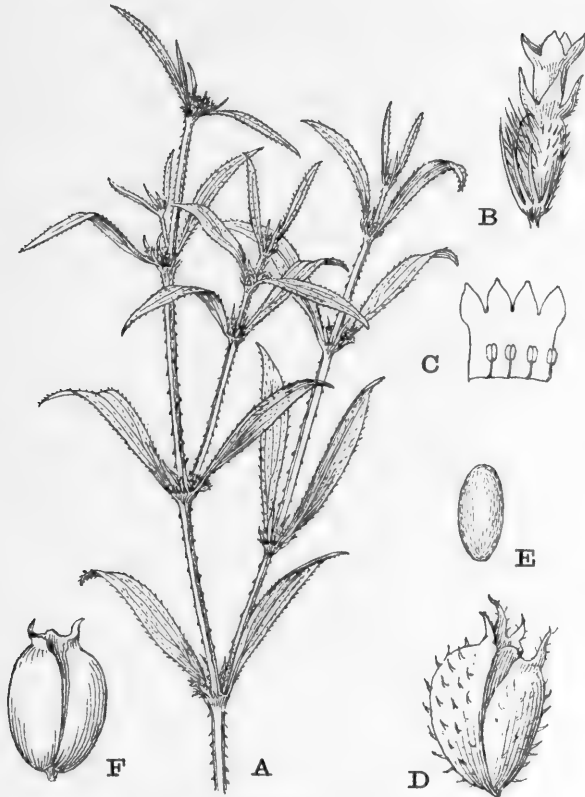


Fig. 37.—*Spermacoce confusa* Rendle.

A, Portion of plant in flower and fruit  
×  $\frac{1}{2}$ .

B, Flower with bract × 8.

C, Corolla cut open × 8.

D, Fruit, the persistent membrane is  
seen on the left-hand valve × 8.

E, Seed × 8.

F, Fruit of *S. tenuior* L. × 8.

*Encyc. et Method. i.* 273, t. 62, fig. 1 (1791); *DC. Prodr. iv.* 552; *Griseb. Fl. Br. W. Ind.* 349 & *Cat. Pl. Cub.* 141; *Egg. St. Croix & Virg.* 62; *Hemsl. Biol. Centr. Amer. Bot. ii.* 60; *K. Schum. in Mart. Fl. Bras. vi.* pt. 6, 34; *Hitchc. in Miss. Bot. Gard. Rep. iv.* 95; *Urb. Symb. Ant. iv.* 608 & viii. 690; *Britton Fl. Amer. Virg.* 95; *Britt. & Wils. P.-Rico & Virg. Is.*

vi. 256; *Will. & Cheesm. Fl. Trin. & Tob. ii.* 44; *Rendle in Journ. Bot. lxxii.* 333. (Fig. 37.)

*McFadyen!* Hope, *Prior!* Balaclava, *Orcutt* 2273! Montego Bay, *Norman*, 84! nr. Kingston, 500 ft., *Clute*, 11! Walkers Pen, Long Mt. Road, 300 ft., *Campbell!* nr. Mandeville, 2200 ft.; Cinchona, 5000 ft.; Inverness, Lower Clarendon, 300 ft.; *Harris!* Fl. Jam. 6150, 6191, 8582, 12,749.—South-eastern United States, Bahamas, West Indies, Trinidad, tropical continental America.

*Leaves* 2.5–4 cm. rarely to 5 cm., by 2–5 mm. rarely to 1 cm.; stipular sheath about 1 mm. l., bristles unequal, 1–2 mm. l. *Calyx-tube* narrowly top-shaped, 1.5 mm. l. *Corolla* white, barely 2 mm. l. *Capsule* 2.5 mm. l.; persistent sepal-limbs 1 mm. *Seed* dark chestnut-brown, scarcely 1.6 mm. l.

2. **S. tenuior** *L. Sp. Pl.* 102 (excl. ref. to *Pluk. Alm.*); a perennial glabrous herb with a stout torulose tap-root; branches few, alternate, generally ascending, terete below, four-angled above with four prominent lines, 3–5 dm. long; leaves herbaceous, lanceolate or oval-lanceolate, narrowing towards the acute apex and at base and passing into a short petiole, one-nerved; stipular sheath glabrous or slightly puberulous, bearing several unequal filiform bristles; flowers many, crowded in unilateral clusters, very shortly stalked; calyx-lobes ovate-triangular, acute, shorter than the tube; corolla-lobes narrowly ovate, exceeding the short tube, hairy at and above the throat; stamens subsessile near the base of the tube; capsule thinly leathery, obovoid to subellipsoid with flattish top bearing the often flattened short sepal-limbs which may become almost obliterated; seed minutely pitted.—*Rendle tom. cit.* 329, t. 607, 608, fig. 3. *S. glabra* *Auct. non Michx. Fl. Bor. Am. i.* 82; *K. Schum. tom. cit.* 35; *Urb. op. cit. iv.* 609 & *viii.* 688. *S. riparia* *Cham. & Schl. in Linnæa iii.* 355 (1828); *DC. tom. cit.* 553; *Britton & Wils. tom. cit.* 256. *S. verticillis tenuioribus* *Dillen. Hort. Elth.* 370, t. 277, f. 359.

*Wright!* *McNab!* *Wilson* 275! Constant Spring Pond, 600 ft., *Campbell!* Fl. Jam. 6135.—South-eastern United States, Hispaniola, Porto Rico, Brasil, Uruguay, Paraguay.

*Leaves* generally 3–5 cm. by 6–12 mm.; stipular sheath 2–2.5 mm. l., bristles unequal, 1.5–3 mm. l. *Corolla*, tube .5 mm. long, segments 1.5 mm., filaments of *stamens* scarcely .5 mm. *Style* with thickened stigma scarcely .5 mm. long. *Capsule* 2.5–3 mm. long, persistent sepal-limb 1 mm. or less. *Seed* about 2 mm. long, deep purple or chestnut-brown.

### 38. BORRERIA G. F. W. Meyer.

Annual or perennial herbs sometimes woody at the base, or suffrutescent. Branches four-angled. Leaves sometimes apparently whorled. Stipules united with the petioles to

form a bristly sheath. Flowers small, numerous, sessile and axillary or in terminal heads. Calyx-tube top-shaped to cylindrical, limb 2- or 4-lobed. Corolla funnel-shaped, lobes 4, valvate in bud. Stamens 4, attached at or below the mouth of the corolla; anthers often exserted. Ovary 2-celled; style simple with shortly bilobed stigma. Ovules solitary, fixed to the septum. Capsule leathery or membranous, crowned by the persistent sepal-limbs, septicidal, valves cohering at the base. Seeds oblong, convex on the back with a ventral furrow; endosperm horny.

Species about 80 in the tropics of both worlds but mainly American.

Seeds transversely furrowed. Calyx-teeth 4 ..... 1. *B. lævis*.

Seeds minutely pitted. Calyx-teeth 2.

A small annual herb with generally oval to narrowly oval leaves. Anthers subsessile at the mouth of the corolla..... 2. *B. ocymoides*.

Suffrutescent with woody branched stem. Inflorescence dense, terminal, globose, with sometimes accessory ones in the upper leaf-axils. Stamens exserted..... 3. *B. verticillata*.

A stiff annual herb with a well-marked generally unbranched main stem. Leaves long, stiff, linear-lanceolate. Flowers in dense terminal and axillary many-flowered heads ..... 4. *B. spinosa*.

1. *B. lævis* (Lam.) Griseb. *Fl. Brit. W. Ind.* 349 (1861); a herb or suffrutescent below, sometimes scrambling in bushes, branches spreading or ascending, becoming subterete at base, glabrous or glabrescent above; leaves lanceolate to ovate-lanceolate or ovate, sometimes oblong-lanceolate, acuminate, base cuneate generally passing into a short petiole, glabrous, or glabrescent or slightly hairy above, shortly hairy beneath; stipular sheath glabrescent bearing linear bristles about equal to it in length; inflorescence of terminal and axillary many-flowered sessile clusters; calyx-tube broadening upwards, shortly hairy above, bearing 4 short triangular teeth with intervening fringe; corolla white, divided to about the middle into 4 triangular-lanceolate shortly hairy lobes; stamens exserted, about equal to the corolla-lobes; style slightly exceeding the corolla; capsule ellipsoidal, shortly hairy above; valves papery; seeds chestnut-coloured; transversely furrowed.—*Griseb. Cat. Pl. Cub.* 141; *K. Sch. in Mart. Fl. Bras. vi. pt. 6, 43*; *Urb. Symb. Ant. iv. 607 & viii. 688*; *Britton Fl. Berm.* 365; *Britt. & Wils. P.-Rico & Virg. Is. vi. 255*; *Will. & Cheesm. Fl. Trin. & Tob. ii. 44*; *Rendle in Journ. Bot. lxxii. 332, t. 608, fig. 4*. Spermaceoe *lævis* Lam. *Tabl. Encyc. et Meth. Bot. i. 273* (excl. ref. to *Sloane*)

(1791); *Poir. in Lam. Encyc. vii. 313*; *DC. Prodr. iv. 556*; *Hemsl. Biol. Centr. Amer. Bot. ii. 59*; *Hitchc. in Miss. Bot. Gard. Rep. iv. 95*. *S. suffrutescens Jacq. Hort. Schoenbr. t. 322* (1798). *S. tenuior Sw. Obs. 43* (non *Linn.*). *Spermacoce scandens foliis oblongis &c. Browne Hist. Jam. 141* (excl.

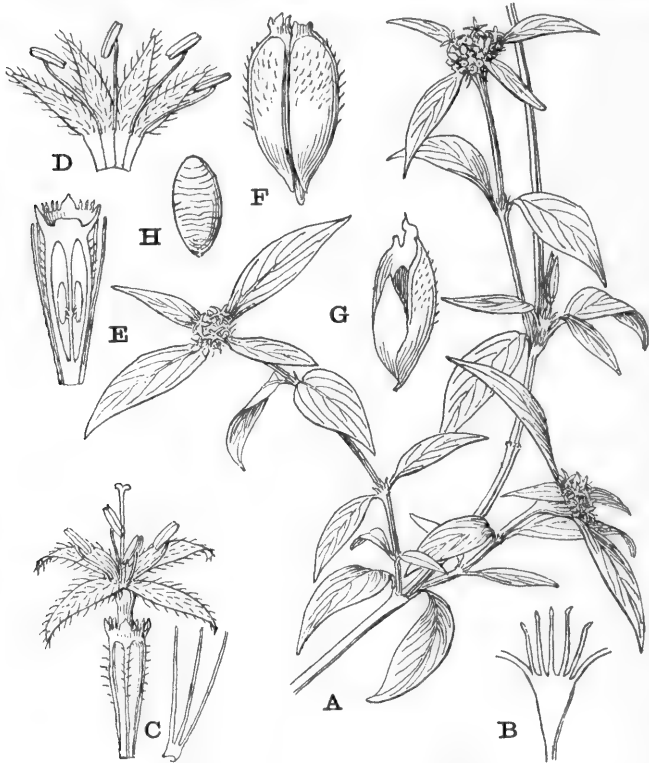


Fig. 38.—*Borreria laevis* (Lam.) Griseb.

- |  |   |
|--|---|
| A, Portion of plant in flower $\times \frac{1}{2}$ . | E, Ovary with calyx cut lengthwise $\times 8$ . |
| B, Stipule $\times 2$ .                              | F, Fruit $\times 8$ .                           |
| C, Flower and bract $\times 6$ .                     | G, One valve of fruit with seed $\times 8$ .    |
| D, Corolla cut open $\times 6$ .                     | H, Seed $\times 8$ .                            |

syn. *Linn.*). *Anonymos Americ. foliis Parietariae scabris &c. Pluk. Alm. 33, t. cxxxvi. f. 4.* (Fig. 38.)

*Sloane Herb. xcv. 53 ! xcix. 77 ! Wilson 281 ! Newcastle, J. P. 1471 ! Anotto Bay ; Temple Hall ; Thompson ! Ferry ; Rio Cobre ; Constant Spring ; Campbell ! Sunning Hill, St. Thomas ; near Ewarton ; King's House ; Cinchona ; Harris ! St. George's, Bot. Dept. ! Fl. Jam. 5404, 6157, 6162, 6190, 6495, 6712, 6771, 6795, 7919, 8007, 8582 ; Balaclava ; Sweetwater ; May Pen ; Orcutt 296 ! 702 ! 1496 ! 2153 ! near Troy,*

2000 ft.; Blue Mts., Thompson Gap; *Miss Perkins* 1252! 1401! Chapelton, *Ridley*! Cockpit, north of Appleton, *Norman* 24! Giddy Hall, St. Elizabeth, *Miss Maxwell*! Blue Mts., near Green Hills, *Rendle*, 8! 96!—Florida, Bermuda, West Indies, Central and tropical South America.

Varies much in size from under a foot to 4 ft. in height when scrambling, also in length of branches and width of leaves. *Leaves* 2-5.5 cm. by 0.6-2.5 cm.; stipular sheath 4-5 mm. l. *Calyx-tube* 3-4 mm. l. *Capsule* 2.5-3 mm. l. *Seed* 1.5-2 mm. l.

2. **B. ocymoides** (*Burm. f.*) *DC. Prodr. iv.* 544 (1830); branches slender, spreading from just above the base, glabrous or sparsely shortly hairy on the angles; leaves oval to narrowly oval or oval-lanceolate to lanceolate or linear-lanceolate, acute to subacute, narrowing below into a short petiole or sessile, glabrous, margin minutely rough; stipular sheath short, prolonged into filiform bristles about equal to it in length; flowers in small dense terminal heads and axillary whorls, minute, shortly stalked; calyx-tube top-shaped, lobes triangular-subulate from the shallow tube; corolla barely exceeding the sepal-limbs, divided below the middle into ovate-triangular blunt lobes; anthers in a ring at the base of the lobes; style short; fruit membranous, urn-shaped; seeds narrowly oblong, chestnut-brown, finely pitted.—*K. Sch. tom. cit.* 48; *Urb. op. cit. iv.* 607 & *viii.* 689; *Britt. & Wils. tom. cit.* 255; *Will. & Cheesm. loc. cit.* *B. parviflora* *G. F. W. Meyer Prim. Fl. Essequib.* 83 (1818); *DC. loc. cit.*; *Griseb. Fl. Br. W. Ind.* 349 & *Cat. Pl. Cub.* 141; *Egg. St. Croix & Virg.* 62; *Stahl Fl. P.-Rico v.* 91; *Hemsl. loc. cit.* *B. domingensis* *Griseb. Cat. Pl. Cub.* 141. *Spermaceoce ocymoides* *Burm. f. Fl. Ind.* 34, t. 13, f. 1 (1768).

*Wiles*! *March*! Prospect Hill, 2000 ft., *Thompson* 7939! Castle-ton Gardens, 500 ft., *Harris*! Cuna Cuna Pass, Portland, a roadside weed, *Harris & Britton*! *Fl. Jam.* 10,891, 11,922, 10,564.—West Indies, tropical America to the Argentine, tropical Asia.

A weed from a few up to 10 ins. high. *Leaves* 1-2.5 cm. by 2-10 mm.; stipular sheath about 1 mm. Heads of flowers 3-4 mm. in diameter. *Flowers* a little over 1 mm. long, calyx-tube .5 mm., sepal-lobes .5 mm. *Fruit* 1 mm. long.

3. **B. verticillata** (*L.*) *G. F. W. Meyer Prim. Fl. Essequib.* 83 (1818); a common perennial weed up to 3 or 4 ft. high from a woody tap-root; branches glabrous, up to 2.5 mm. thick; leaves linear-lanceolate to almost linear, apparently whorled from the development of short shoots in the axils, apex and base acute to acuminate, shortly stalked, glabrous, mid-nerve prominent beneath and somewhat rough; stipular bristles longer than the sheath; flowers subsessile or shortly stalked; calyx-tube subcylindrical, lobes triangular-awl-

shaped from a shallow fringed cup; corolla funnel-shaped, split to the middle into ovate-triangular spreading lobes; stamens exserted, attached at the mouth of the corolla; style equal to the corolla; fruit subglobose; seed oblong, chestnut-brown, minutely pitted.—*DC. tom. cit.* 541; *Stahl tom. cit.* 88; *Egg. loc. cit.*; *K. Sch. tom. cit.* 49; *Urb. op. cit. iv.* 608 & *viii.* 689; *Britt. & Wils. tom. cit.* 255; *Will. & Cheesm. loc. cit.* *Spermacece verticillata L. Sp. Pl.* 102; *Griseb. Fl. Br. W. Ind.* 350; *Hemsl. tom. cit.* 60; *Hitchc. loc. cit.* *Spermacece fruticulosa atque ramosa Browne, Hist. Jam.* 141; *Sp. verticillis globosis Dill. Hort. Elth.* 369, *t.* 277, *f.* 350; *Linn. Hort. Cliff.* 33. *Pulegium fruticosum erectum verticillis densissimis Sloane Cat.* 64 & *Hist. i.* 170.

*Sloane* Herb. iii. 48! viii. 127! *Masson!* *Wright!* *von Rohr!* *March!* *Macfadyen!* *Prior!* *Gosse!* *McNab!* *Cinchona*, 5000 ft., *Clute* 192! *Giddy Hall*, St. Elizabeth, *Miss Maxwell!* sea-shore, *Montego Bay*, *Norman* 93! *Balaclava!* *Arntully!* *Orcutt* 996! 2652! roadside near *Mandeville*, *Rendle* 147! an ubiquitous weed, *J. P.* 941! 1413! *Shortwood*, 500 ft., *Campbell!* *Anotto Bay*, *Thompson!* near *Bluefields*; weed in cultivated ground, *Lilitz Savanna*, 300–900 ft.; *Harris!* *Fl. Jam.* 6121, 7915, 7926, 9909, 11,744.—*West Indies*, continental tropical America.

*Leaves* generally 2–3.5 cm. (1.5–4.5) by 2–5 mm. *Flower-heads* about 1 cm. in diam.; flowers white or yellowish white. *Calyx-tube* 1.25 mm. l., lobes 1 mm. l. *Corolla* barely 4 mm. l. *Fruit* 1.5–2 mm. l.

4. ***B. spinosa* (L.) Cham. & Schlecht. in Linnæa iii.** 340; stem solitary, up to 3 ft. high, erect from a tap-root or with short branches from the upper leaf-axils; glabrous, sometimes rough on the angles; leaves tapering acuminate, narrowing to a subsessile base, glabrous, margin rough, revolute when dry, nerve prominent beneath; stipular sheath passing above into hyaline filaments equal to itself in length; flower-heads involucrate (4–8-leaved); flowers white, shortly stalked; calyx-tube narrowly top-shaped, densely white pubescent above, lobes 2, linear, opposite, from a shallow white puberulous tube; corolla slightly exceeding the calyx, divided above the middle into triangular-ovate spreading lobes, glabrous; stamens equal to the corolla-lobes; style equal to the corolla; capsule oblong, somewhat compressed, stiffly membranous, white villous above the middle; seed narrowly oblong, brown-red, finely pitted.—*DC. tom. cit.* 542; *Griseb. Fl. Br. W. Ind.* 350 & *Cat. Pl. Cub.* 141; *K. Sch. tom. cit.* 403. *B. densiflora DC. Prodr. iv.* 542 (1830) (e descript.). *Spermacece spinosa Jacq. Enum. Syst. Pl. Carib. &c.* 12 (1760) (nomen); *L. Sp. Pl. ed. 2*, 148 (1762); *Hemsl. loc. cit.* *Spermacece erecta simplex &c. Browne Hist. Jam.* 140.

*Macfadyen* ! Grant's Pen, 460 ft., *Campbell* ! coarse weed, 3 ft. high, King's House Grounds, 600 ft., *Harris* ! Fl. Jam. 6241, 6945.—Cuba, Porto Rico, Tobago, Colombia.

*Leaves* varying much in length and breadth, up to 10 cm. by 6 mm.; stipular sheath up to 5 mm. l. *Calyx-tube* 2 mm. l., lobes 1-2.5 mm. l. *Fruit* 3-4 mm. l., on a short stalk about 1 mm.

### 39. MITRACARPUS Zuccarini.

Annual or perennial herbs sometimes woody at the base. Stem 4-angled with opposite spreading branches, puberulous to villous. Leaves oblong to lanceolate; stipules united with the petioles to form a bristly sheath. Flowers small, sessile, axillary and in terminal heads. Calyx-tube subglobose, limb with two long and two short teeth. Corolla tubular, lobes 4, valvate in bud. Stamens at the mouth of the corolla-tube. Ovary 2-celled; style with bifid stigma. Ovules solitary, fixed to the septum. Capsule membranous subglobose, dehiscent transversely, the upper part crowned by the persistent sepals. Seeds ellipsoid, ventrally 4-lobed by a cross-shaped furrow.

About 15 species, mainly tropical American, also in tropical and South Africa and the Pacific Islands.

**M. villosus** (*Sw.*) *DC. Prodr. iv.* 572 (1830); an annual herb sometimes becoming woody at the base; stem simple or branched, generally from the base, branches opposite, puberulous to villous especially beneath the nodes; leaves oblong to lanceolate, blunt to acute, mucronate, narrowed at base to a short petiole or subsessile, upper face and incurved margin rather rough; stipular sheath shallow, bristles about equal to it in length; flowers shortly stalked; calyx-tube hairy, lobes awl-shaped, acute, pilose, connate at base, the longer rigid, keeled, the shorter hyaline; corolla-lobes ovate, blunt, about half the length of the tube; style about equal to the corolla. Capsule membranous, the upper dehiscent portion hairy; seeds pale brown, minutely pitted.—*Griseb. Fl. Br. W. Ind.* 350 & *Cat. Pl. Cub.* 143; *Hemsl. Biol. Centr. Amer. ii.* 61; *Hitchc. in Miss. Bot. Gard. Rep. iv.* 96. *M. hirtum* *K. Sch. in Mart. Fl. Bras. vi. pt. 6,* 84 (1888) (excl. syn.), non *DC. Prodr. iv.* 572; *Britt. & Wils. P.-Rico & Virgin Is. vi.* 258; *Will. & Cheesm. Fl. Trin. & Tob. ii.* 48. *Spermacoce hirta* *L. Sp. Pl. ed. 2,* 148 (1762); *Jacq. Ic. Rar. t.* 308. *S. villosa* *Sw. Prodr.* 29 (1788) (excl. syn. *Sloane*) & *Fl. Ind. Occ.* 1943. *Spermacoce erecta subhirsuta* &c. *Browne Hist. Jam.* 141. Specimens from Browne in Linnean Herb. and from Swartz in Herb. Mus. Brit. and Stockholm. (Fig. 39.)

*Houstoun* ! *Masson* ! *Purdie* ! Kingston, *Prior* ! Flamstead, St. Andrew, 4000 ft., *Miss Maxwell* ! near Walker's Pen by Long Mt. Road, 300 ft., *Campbell* ! Mona estate, 500 ft., a weed in pastures, *Harris* ! Fl. Jam. 6173, 11,862.—West Indies, tropical America.

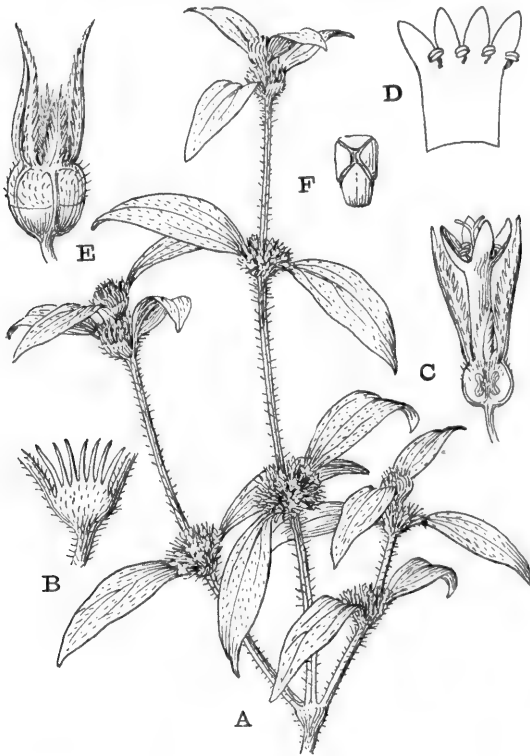


Fig. 39.—*Mitracarpus villosus* (Sw.) DC.

A, Portion of plant in flower  $\times \frac{1}{2}$ .

B, Stipule  $\times 2$ .

C, Flower, the ovary shown in section  $\times 10$ .

D, Corolla cut open  $\times 10$ .

E, Fruit, the transverse dehiscence is indicated  $\times 10$ .

F, Seed  $\times 10$ .

Plant generally from 1-3.5 dm. high; stem 1-3.5 mm. thick at base. Leaves generally 2-3.5 by 0.5-1 cm., rarely 1.5 cm. Flower heads up to 1 cm. diam. Calyx-tube barely .5 mm. l.; the longer lobes 2 mm. Fruit less than 1 mm. l. Seed 0.75 mm. l.

#### 40. RICHARDIA L.

Diffuse pubescent or rough annual herbs growing in waste ground; root torulose. Leaves (in Jamaican species) lanceolate-oblong to elliptical; stipules united with the



petioles to form a bristly sheath. Flowers small in a dense terminal involucre head. Calyx-tube subglobose; limb 6-lobed. Corolla narrowly funnel-shaped, six-lobed, lobes valvate. Stamens attached at the mouth of the corolla. Ovary 3-celled; ovules solitary, attached to the septum; style simple with trifid stigma. Fruit crustaceous, trigonous, crowned by the persistent sepals; separating into indehiscent cocci. Seed plano-convex; albumen horny.

Species 9 in the warmer parts of America from the southern United States to the Argentine.

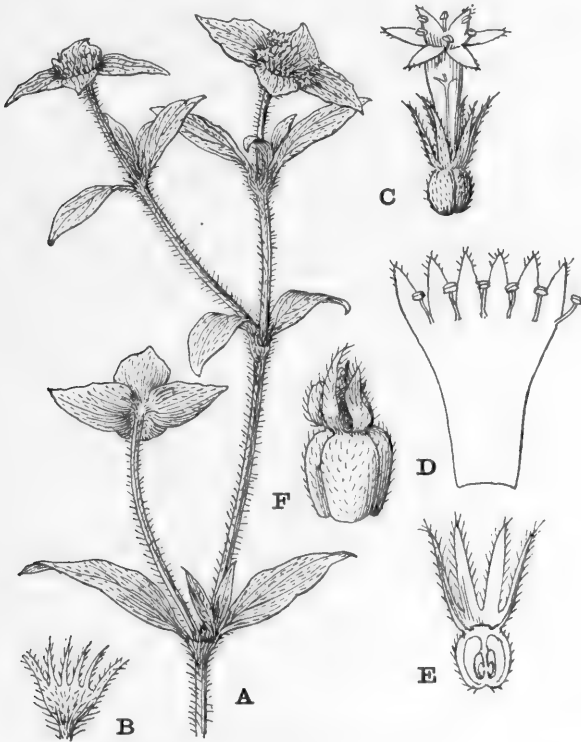


Fig. 40.—*Richardia brasiliensis* Gomez.

A, Portion of plant in flower  $\times \frac{1}{3}$ .

B, Stipule  $\times 2$ .

C, Flower  $\times 4$ .

D, Corolla cut open  $\times 6$ .

E, Ovary with calyx cut lengthwise  $\times 6$ .

F, Fruit  $\times 6$ .

**R. brasiliensis** Gomez *Mem. Ipecac.* 31, t. 2 (1801); tap-root woody, torulose; stem branching at the base, branches numerous, prostrate to ascending, subterete, more or less  
VII.—9

densely covered with roughish white hairs; leaves acute to subacute, tapering at the base to a short petiole, with appressed roughish hairs; stipular bristles about as long as the sheath; involucre 4-leaved; calyx-lobes narrowly triangular, acute, connate at base, hairy with ciliate margins; corolla-lobes spreading, narrowly ovate, acute, shortly hairy at tip; fruit obovoid, muricate, dull red; seed broadly ovoid or subrotund, brown, smooth.—*K. Sch. in Mart. Fl. Bras. vi. pt. 6, 94; Small Flora S.E. United States, ed. 2, 1114. R. pilosa Ruiz & Pav. Fl. Per. & Chili iii. 50, t. 279b (1802) (specimen in Herb. Mus. Brit.). Richardsonia scabra St. Hil. Pl. Usuell. Bras. fasc. viii. t. viii. (1824) non Richardia scabra L. Sp. Pl. 330 (specimen from Houstoun in Herb. Mus. Brit.); DC. Prodr. iv. 567; Griseb. Fl. Br. W. Ind. 351 & Cat. Pl. Cub. 143; Hemsl. Biol. Centr. Amer. ii. 62; Urb. Symb. Ant. ix. 542. (Fig. 40.)*

*Macfadyen! Bancroft! St. Andrew, Purdie! March! Wilson! St. Andrew's Hills near Kingston, Prior 428! Cinchona, Taylor 4240! also Clute 213! and Fawcett! Arntully, Orcutt! Cinchona; King's House Grounds, 400 ft.; Harris! Fl. Jam. 5330, 5960, 8583, 12, 138.—Cuba, tropical S. America, S.E. United States, Sandwich Is.*

*Plant 1–3 dm. high; stem 2 mm. thick at base. Leaves 2–4 by .7–2 cm. Flower-heads up to 1.5 cm. diam. Calyx-tube barely 1.5 mm. long, limbs 3 mm. Corolla-tube 4 mm. l. Fruit 2.5 mm. l. Seeds barely 2 mm.*

#### 41. RELBUNIAM Endl.

Perennial much branched herbs with four-angled slender stems. Leaves apparently four in a whorl (really opposite with a pair of leaf-like stipules). Flowers small, solitary or few in the leaf-axil, enveloped by a leaf-like involucre. Calyx-tube globose, limb obsolete. Corolla rotate, 4-lobed. Stamens attached at the mouth of the corolla. Ovary 2-celled; style deeply divided; stigmas capitate. Ovules solitary, fixed to the base of the septum. Fruit fleshy. Seeds adhering to the pericarp; endosperm horny; embryo curved.

**R. hypocarpium** (L.) Hemsl Biol. Centr. Am. ii. 63 (1881–2); stem and branches beset with short roughish hairs and straggling over surrounding vegetation to the height of 2 to 3 ft.; leaves sessile or subsessile, oval or oval-oblong, entire, apex shortly cuspidate, convex, margin revolute in drying, one-nerved, hispid or hirsute above, hirsute on the nerve beneath; flower-pedicels slender, axillary, equal to or a little shorter than the leaf, 1–4 at one node; leaves of

involucre 4, equal or subequal, oval, acute, hirsute, exceeding or as long as the corolla; corolla yellow or cream-coloured, lobes spreading, with shortly hairy margins; fruit scarlet, globose indented above, hairy.—*K. Sch. in Mart. Fl. Bras. vi. pt. 6, 112, t. 92*; *Hitchc. in Miss. Bot. Gard. Rep. iv. 96*; *Greenm. Proc. Am. Acad. Arts & Sci. xxxiii. 468*. *Valantia*

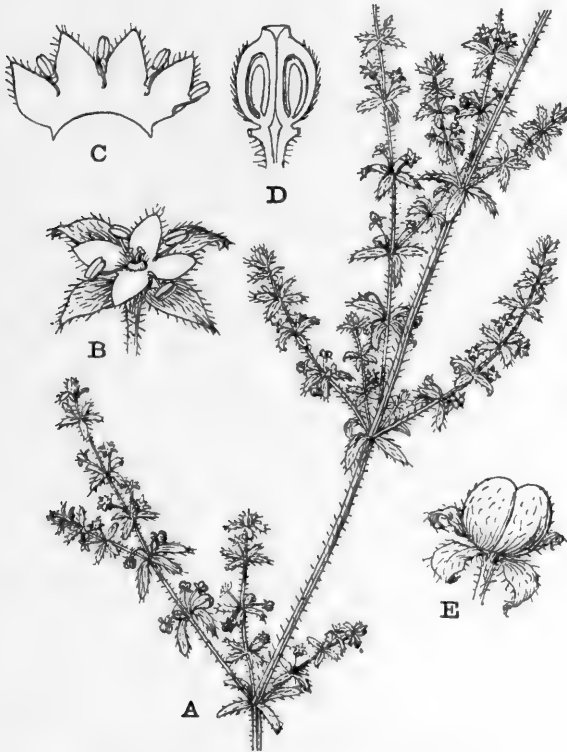


Fig. 41.—*Relbunium hypocarpium* (L.) Hemsl.

A, Portion of plant  $\times \frac{3}{4}$ .  
 B, Flower  $\times 6$ .  
 C, Corolla cut open  $\times 6$ .

D, Ovary with calyx cut lengthwise  
 $\times 12$ .  
 E, Fruit  $\times 4$ .

*hypocarpia* L. *Syst. Nat.* ed. 10, 1307 (1759); *Sw. Obs.* 386.  
*V. hypocarpa* L. *Pugill. Jam. Pl.* 412 (1760) & *Sp. Pl.* ed. 2, 1491 (1763) (specimen in Herb. Linn.). *Rubia hypocarpia* DC. *Prodr.* iv. 591. *Galium hypocarpium* Griseb. *Fl. Br. W. Ind.* 351 (1861). *Rubia subhirsuta scandens vel reclinata* Browne *Hist. Jam.* 141. (Fig. 41.)

Broughton ! Wright ! Masson ! Shakespear ! Dancer ! Metcalfe ! McNab 75 ! McNeil's Coffee estate, Eggers 3566 ! Guava Ridge, St. Andrew, 3600 ft., Miss Maxwell ! Abbey Green, open brushy slope, Mazon 10,053 ! Cinchona, 5000 ft., Clute 213 ! and Harris 8588 ! Newcastle, 2800 ft. Norman 233 ! near Woodcutter's Gap, Blue Mts. 4800 ft., Rendle 11 ! ; Catherine's Peak, 6300 ft., Rendle 39 ! 47 !—Warmer parts of America from Mexico southward.

Main branches about 1.5 mm. thick. The stiffish leaves vary much in size, on the main branches .5–1 cm. by 3–5 mm., smaller on the branchlets. Leaves of involucre barely 2 mm. long. Corolla about 2.5 mm. across. Fruit 3 mm. broad.

## FAMILY CXXII. CAPRIFOLIACEÆ.

Shrubs or small trees, rarely climbing (*Lonicera*). Leaves opposite, simple, pinnate in *Sambucus*, usually without stipules. Flowers hermaphrodite, regular or irregular (*Lonicera*), in showy cymose inflorescences. Calyx-tube united with the inferior ovary, limb generally small, 5-toothed or -lobed. Corolla rotate (tubular and two-lipped in *Lonicera*), segments 5. Stamens 5, inserted on the corolla-tube, filaments free, anthers generally introrse. Ovary inferior, 1- to 5-celled ; ovules pendulous, one to many in each cell ; style simple, lobed, or absent. Fruit a berry or drupe. Seeds with a fleshy endosperm and generally small straight embryo.

Species about 340, mainly temperate to subtropical in the northern hemisphere.

Corolla regular, rotate.

Leaves simple ..... *Viburnum*.  
 [Leaves pinnate..... *Sambucus*.]  
 [Corolla tubular, two-lipped..... *Lonicera*.]

## VIBURNUM L.

Shrubs or small trees, much branched. Leaves simple ; stipules absent or small. Flowers in terminal or axillary corymbs, white, fragrant. Calyx 5-toothed. Corolla rotate, 5-lobed. Ovary originally 3-celled, becoming one-celled by abortion with a single seed in the drupe. Style very short, 3-partite.

Species about 100, mainly in the temperate and subtropical regions of the northern hemisphere, and the Andes.

Branches and inflorescence stellate-pubescent.

Fruit-ellipsoid to subglobose, 5 mm. long..... 1. *V. villosum*.  
 Fruit oval, 9–10 mm. long ..... 2. *V. arboreum*.  
 Branches and inflorescence glabrate, fruit 6 mm. l. 3. *V. alpinum*.

1. *V. villosum* Sw. *Prodr.* 54 & *Fl. Ind. Occ.* 564 ; a shrub or small tree ; branchlets and inflorescence pubescent with stellate hairs ; leaves ovate or elliptic, acuminate, base rounded, shortly stalked, midrib and veins prominent beneath, surface typically densely stellate-pubescent beneath.



Fig. 42.—*Viburnum villosum* Sw.

- |   |  |
|---|--|
| A, Branchlet with inflorescence; <i>h</i> , stellate hair; $\times \frac{1}{2}$ . | D, Ovary with calyx cut lengthwise $\times 10$ .       |
| B, Flower $\times 6$ .  | E, Drupe $\times 3$ .                                  |
| C, Corolla cut open $\times 6$ .  | F, Drupe, upper half of pericarp removed, $\times 3$ . |

very sparsely stellate-pubescent or glabrate above, stipules absent ; flowers in large spreading generally 6-7-rayed cymes ; calyx-lobes small, ovate-obtuse to subacute, ciliate ; drupe black, ovoid, broadly ellipsoid or subglobose, crowned by the short persistent calyx-lobes and the base of the style.—*Lunan Hort. Jam.* ii. 261 ; *DC. Prodr.* iv. 327 ; *Macf. Fl.*

*Jam. ii.* 201; *Griseb. Fl. Br. W. Ind.* 315; *Britton in Bull. Torr. Bot. Cl. xxxvii.* 351.

**Black Wattle.**

*Shakespear!* *Wright!* *McNab!* *Dancer!* *March* 1340! 1787! Woodside, St. Mary; St. Andrew; *Purdie!* Union Hill, Moneague; Tiddenham, St. Ann; *Prior!* *Linden* 1669! *Marsh* 648! Port Royal Mts., *Bancroft!* and *Hartweg* 1545! Robertsfield, J. P. 704! Keith Hall; Brandon Hill, 1000 ft.; *Thompson!* Cinchona, 5000 ft.; road from Askenish to Dolphin Head, 1400 ft.; grove near Hope, 800 ft.; Mt. Pleasant, Stony Hill, 1100 ft.; *Harris!* Fl. Jam. 7978, 8046, 9196, 9255, 11,139, 11,777; Cinchona, *Miss Perkins* 1126! and *Britton* 340! Bellevue, 4500 ft., *Eggers* 3768! Flamstead, St. Andrew, 4000 ft., *Miss Maxwell!* Halberstadt, 2500 ft., Norman, 184!

*Leaves* generally 7-10 by 4-6 cm.; petiole .5-1 cm. l. *Cymes* 10-15 cm. broad. *Calyx-lobes* about .5 mm. l. Open *corolla* 4-5 mm. across. *Drupe* about 5 mm. l.

*Grisebach* distinguished varieties *glabrescens* with leaves glabrate and *subdentatum* with leaves rather thick, rugose, subdentate and undulate, veins impressed above and prominent beneath. N. L. Britton (*l.c.*) says: "The species apparently consists of numerous races, differing in the amount of stellate pubescence, in the shape of the fruit, and in the length of the stamens. Very densely tomentose bushes grow in proximity to slightly pubescent ones about Cinchona." The genus requires careful study in the field.

2. *V. arboreum* *Britton in Bull. Torr. Bot. Cl. xxxvii.* 351 (1910); a tree up to 45 ft. high with straight trunk and spreading branches; leaves oval-elliptic, glabrous or sparsely stellate-pubescent above, loosely stellate-pubescent beneath, apex shortly acuminate, unequally narrowed or obtuse at the base, veins 5-6 on each side of the midrib, prominent beneath when dry; petioles and inflorescence stellate-pubescent; flowers as in the other species; fruit oval narrowing at both ends, crowned by the broadly ovate ciliate calyx-lobes and the base of the style.

Wooded rocky hill, Tyre, Cockpit country, *Britton* 553! and *Harris* Fl. Jam. 9475! Soho, St. Ann, 1400 ft., *Harris* Fl. Jam. 11,990!

*Leaves* dull green, 8-12 by 5-6.5 cm.; petioles 1-1.5 cm. l. *Inflorescence* 8-12 cm. broad. *Drupe* 9-10 mm. l., 3 mm. in diameter when dry.

3. *V. alpinum* *Macf. Fl. Jam. ii.* 201 (1850)\*; a large shrub or small tree to 20 ft. high; branches and inflorescence glabrate-papillose, very sparsely stellate-hairy; leaves ovate to elliptical, acuminate, base rounded to obtuse, glabrous, midrib and veins (4-5 each side) somewhat prominent beneath, slightly impressed above when dry, petiole slender, stipules absent; flowers as in *V. villosum* but inflorescence (5-7-rayed) less dense; drupe ellipsoidal, black when ripe.—*Britton tom. cit.* 352; *Griseb. loc. cit.* as *V. glabratum* *Kunth.*

\* See note vol. V. p. xiv.

## Black Wattle.

*Wilson ! Waters ! Cinchona, Hart J. P. 897 ! top of Blue Mt. Peak, J. P. 1202 ! Blue Mts., Prior ! Cinchona, Fawcett ! Peckham Woodland, Clarendon, 2300 ft. and 2500 ft., Harris ! Fl. Jam. 8158, 9197, 11,072, 11,196 ; Cinchona, Clute 215 ! Stony Valley River gully, Orcutt 5897 !*

*Leaves up to 12 by 8 cm. Drupe 6 by 4 mm. A plant generally of higher altitudes than villosum.*

A specimen in fruit, road to Holly Mt. 2400 ft. *Harris ! Fl. Jam. 8978*, "a bush or small tree 20 ft. high" is apparently a more robust plant and has larger drupes, 7.5-8 by 5 mm. It is perhaps a variety of the above.

## [SAMBUCUS L.

Generally shrubs or trees, branches with a thick pith. Leaves pinnate, often with small stipules. Flowers small, white, in much branched corymbs. Calyx small, 3- to 5-toothed. Corolla rotate 5-lobed. Ovary 3- to 5-celled ; ovules 1, pendulous in each cell ; style short, 3- to 5-partite. Drupe 3- to 5-celled.

Widely distributed ; about 20 species mainly temperate and on mountains in the tropics.

*S. Simpsonii Rehder in Sargent Trees and Shrubs ii. 187 (1911) ; a tree up to 20 ft. high, glabrous except for a sparse pubescence on the petioles, the backs of the leaflets, and the inflorescence ; leaves imparipinnate, generally with two pairs of subsessile leaflets below the terminal one and two lower pairs of stalked tripinnate leaflets ; leaflets lanceolate, rather long acuminate, serrate, 5-10 cm. ; inflorescence 5-rayed, rays much branched forming a large wide-spreading corymb of white flowers ; sepal-lobes short, orbicular, scarcely 1 mm. l. ; corolla open, 6.5 mm. across, lobes broadly ovate, scarcely 3 mm. l. ; stamens about equal to the corolla ; ovary 5-celled, ripe fruit (not seen) "black."—*Britt. & Wils. P.-Rico & Virg. Is. vi. pt. 1, 259. S. canadensis Bello in Anal. Hist. Nat. Soc. Españ. x. 278 (1881) (non L.) ; Stahl Fl. P.-Rico vi. 23. S. canadensis var. laciniata von Schwerin in Urb. Symb. Ant. viii. 692 (1921) (non A. Gray). S. intermedia Carr. var. insularis von Schwerin in Mitt. Deutsch. Dendrol. Ges. 1909, 188 & in Urb. Symb. Ant. iv. 609.**

Castleton district, 500 ft., in flower, *Harris ! Fl. Jam. 11,932.* "Very generally naturalised throughout the island."—Native of south-eastern United States ; apparently widely naturalised in the West Indies.]

## [LONICERA L.

Shrubs, sometimes climbing. Leaves entire, exstipulate. Flowers in cymes or heads, often connate in pairs by the ovaries. Calyx-lobes small. Corolla with a long tube and

2-lipped 5-lobed limb. Ovary 2- to 3-celled; ovules many, pendulous in the inner angle of each cell; style long, slender. Berry fleshy, few-seeded.

Species more than 100; temperate and warm regions of the northern hemisphere.

**L. confusa** DC. *Prodr. iv.* 333 (1830); a twining pubescent shrub, climbing over shrubs and low trees; leaves ovate to ovate-oblong, acute, base rounded, 4-7 by 2.2-3 cm., dark green above and glabrescent except on the midrib and veins, short pubescent beneath; petiole pubescent, less than 1 cm. long; flowers fragrant, pubescent, generally in short-stalked pairs in the axils of the bracts in partial inflorescences in the upper leaf-axils of the branchlets, the whole forming a many-flowered paniculate terminal inflorescence; bracts, ovary and acute narrow sepal-lobes with short brown hairs; corolla white changing to pale orange or yellow, about 4 cm. long, tube slender, barely 2 mm. in diameter, glandular-pubescent outside, longer than the lobes, stamens and style extruded.—*Rehder Man. Cult. Trees and Shrubs* 837. *L. japonica* Andr. *Bot. Rep. t.* 583 (non *Thunb.*).

Cultivated at Hope Gardens, 1906; Hardware Gap and vicinity, 3000-4000 ft. and abundantly naturalised, *Harris*! *Fl. Jam.* 10,897.—Native of China; planted for its fragrant flowers.]

### FAMILY CXXIII. CAMPANULACEÆ.

Annual or perennial herbs or shrubs, generally with milky juice. Leaves alternate, simple, without stipules. Flowers hermaphrodite, regular or irregular, often showy, solitary or in racemes. Calyx-tube adnate to the ovary, often free in the upper part; lobes well-developed. Petals 5, variously united or free nearly to the base. Stamens 5, generally springing from the top of the ovary; filaments free or united below; anthers free or united, introrse. Ovary inferior or partly inferior, 2- to 5-celled; ovules numerous, anatropous on axile placentas; style simple, open with a crown of pollen-collecting hairs. Fruit a capsule opening by valves or loculicidally. Seeds small, numerous, with a straight embryo and fleshy endosperm.

Species about 1500, mainly temperate and subtropical.

Flowers regular.

Corolla-tube very short..... 1. *Specularia*.

Corolla-tube long and slender..... 2. *Isotoma*.

Flowers irregular ..... 3. *Lobelia*.



## 1. SPECULARIA Heist.

Small annual herbs with small leaves and small axillary blue flowers, the earlier smaller with a rudimentary corolla and cleistogamous. Flowers regular. Calyx-lobes 5, or fewer in the closed flowers. Corolla rotate or broadly campanulate, 5-lobed. Stamens free, filaments short, slender; anthers free. Ovary 3-celled; stigmas 3. Capsule narrowly top-shaped, 3-celled, opening by 3 narrow lateral valves.

Species 10, natives of the Mediterranean region, extending to Central Europe and North America, with one species extending to the West Indies and South America.

**S. perfoliata** (L.) A. DC. *Mon. Campan.* 351 (1830) & in *DC. Prodr. vii. pt. 2*, 290; a weak weedy herb, from 6 ins. to 2 ft. high; stem simple or branched from near the base,

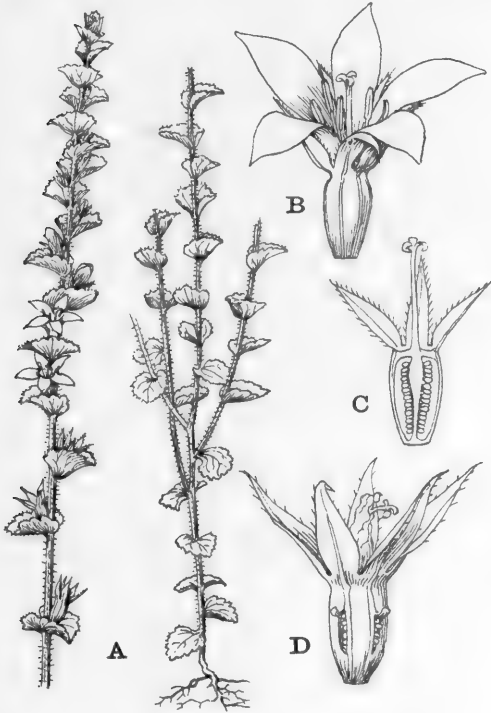


Fig. 43.—*Specularia perfoliata* (L.) A. DC.

A, Plant with flower and fruit  $\times \frac{1}{3}$ .

B, Flower  $\times 3$ .

C, Ovary with calyx cut lengthwise  
 $\times 3$ .

D, Fruit  $\times 3$ .

stem and branches slender bearing downward pointing short stiff hairs on the angles; leaves sessile, orbicular or broadly ovate, 1 cm. or less in length, except the lower clasping the stem with a broad cordate base, apex blunt, margin crenate-dentate, margin and veins on lower face hirtellous; calyx-tube about 4 mm. l., equal in length to the narrow lanceolate acuminate lobes; corolla broadly campanulate in the open flowers, tube short, lobes spreading, about 7 mm. l.; capsule crowned by the persistent calyx-lobes, about 5 mm. l.—*Hemsl. Biol. Centr. Amer. ii.* 271; *K. Sch. in Mart. Fl. Bras. vi. pt. 4,* 186; *Britt. & Br. Ill. Flor. N.U.S. &c. iii.* 298; *Ritzerow in Flora xcvi.* 205; *Urb. Symb. Ant. viii.* 699. *Campanula perfoliata L. Sp. Pl.* 169. (Fig. 43.)

*Masson! McNab! Cinchona,* 5000 ft., a weed along roadsides, *Harris! Fl. Jam.* 12,087.—Canada and the United States south to Mexico and S. America. In mountains in Hispaniola and Jamaica.

## 2. ISOTOMA Lindl.

Perennial herbs. Leaves in West Indian species coarsely sinuate-dentate. Flowers solitary, axillary, regular. Corolla with a long slender tube and spreading limb. Stamens inserted on the corolla-tube below the mouth, filaments united above; anthers united round the style, the two lower tipped with stiff hairs, the 3 upper larger, naked or bearded. Ovary inferior, 2-celled; style long, thread-like; stigma of 2 broad lobes. Capsule opening loculicidally at the top within the persistent calyx-lobes.

Species 8; 6 in Australasia, one in the Society Is., one in the West Indies.

**I. longiflora** (L.) *Presl Prodr. Lob.* 42 (1836); a flaccid pubescent leafy herb, 1–2 ft. high, with acrid milky juice; stem generally simple, leaves narrowly to broadly oblanceolate, coarsely sinuate-dentate, acute or obtuse, tapering to the sessile base, generally 10–13 by 2–4 cm.; flowers pure white, pedicel short; calyx-lobes slender, tapering, about 1 cm. l.; corolla-tube 8–11 cm. l., lobes oblong-lanceolate about 2 cm. l.; all anthers bearded; capsule ellipsoid, nodding, about 1.5 cm. l.—*A. DC. in DC. Prodr. vii. pt. 2,* 413; *Griseb. Fl. Br. W. Ind.* 388 & *Cat. Cub.* 160; *Egg. St. Croix & Virg. Is.* 67; *Stahl Fl. P.-Rico vi.* 27; *Hitchc. in Miss. Bot. Gard. Rep. iv.* 103; *Urb. Symb. Ant. iv.* 617 & *viii.* 703; *Britt. & Wils. P.-Rico & Virg. Is. vi.* 273. *Lobelia longiflora L.*

*Sp. Pl.* 930; *Jacq. Hist. Stirp. Amer.* 219, *Ed. pict.* 106, t. 200; *Sw. Obs.* 317; *Tuss. Fl. Ant. iv.* t. 45; *Descourt. Fl. Ant. iii.* t. 156. *Lobelia foliis lanceolatis dentatis Royen Lugdb.* 241 (1742); *Plum. Plant. Amer. (Ed. Burm.)*, t. 253. *Rapunculus aquaticus foliis Cichorei, flore albo, tubulo longissimo Sloane Cat.* 58 & *Hist.* 158, t. 101, fig. 2. *Lobelia foliis*

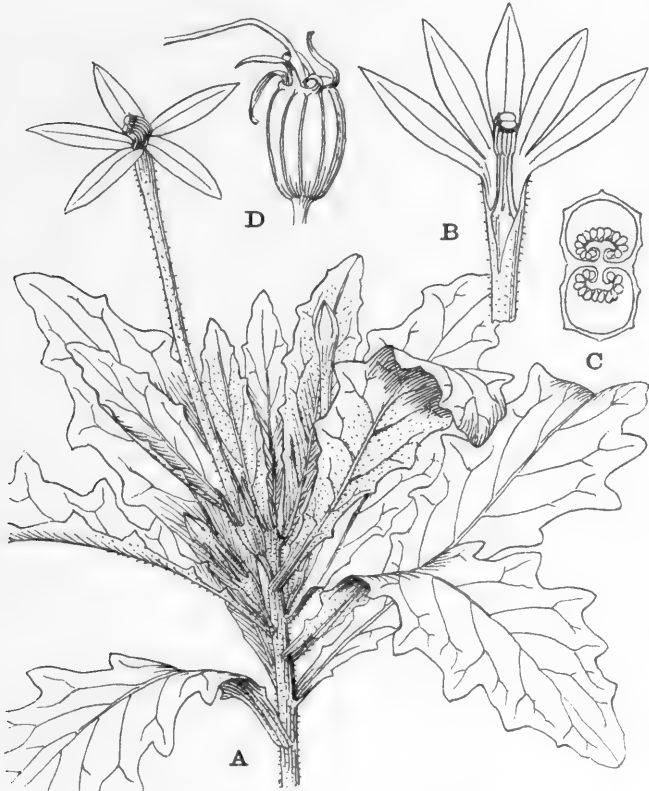


Fig. 44.—*Isotoma longiflora* (L.) Presl.

A, Upper part of plant in flower  $\times \frac{1}{2}$ . C, Ovary cut across  $\times 2$ .  
 B, Top of flower cut open nat. size. D, Capsule nat. size.

*lanceolatis dentatis &c. Browne Hist. Jam.* 322. Specimen from Browne in *Herb. Linn.* (Fig. 44.)

*Sloane Herb.* iii. 23! *Browne!* *Houstoun!* *Distin!* Port Royal Mts., *Purdie!* *Hartweg* 1548! St. Ann's Bay, *Prior!* St. Mary, *McNab!* Burlington, 200 ft.; Providence, 700 ft.; Golden Valley, 800 ft.; *Thompson!* Hope, 700 ft., *Harris!* *Fl. Jam.* 6476, 6749, 6782,

7914; Montego Bay, *Norman* 86 ! Bath, *Orcutt* 1970 !—In damp places at lower elevations.—West Indies.

Tussac (1824) emphasizes the poisonous character of the plant to man and cattle, and says that it has been largely destroyed by Government order in S. Domingo.

### 3. LOBELIA [Plumier] L.

Annual or perennial herbs, more rarely shrubs. Flowers axillary or in terminal racemes, irregular, resupinate (*i.e.* the stalk becomes twisted through 180° in the open flower). Corolla two-lipped, the tube split down the (apparently) upper side, often curved. Stamens free from the corolla; anthers united round the style, the two lower only with a stiff tuft of hairs in Jamaican species. Ovary often only partly inferior, two-celled; the style bears a crown of hairs below the stigma by which the pollen is pushed out of the anther-tube. Capsule crowned by the persistent calyx-lobes, opening above the calyx, between the septa.

Species about 200 in tropics and temperate regions.

- Section *Hemipogon*. Annual herb with small leaves and small blue flowers ..... 1. *L. Cliffortiana*.
- Section *Tylomium*. Perennial herbs or shrubs with generally lanceolate acute leaves and many-flowered racemes of curved flowers.
- Raceme more or less elongated.
- Bracts not leaf-like.
- Flowers glabrous.
- Calyx-lobes entire or with a few small teeth.
- Calyx-lobes 1.5–2 cm. long ..... 2. *L. acuminata*.
- Calyx-lobes less than 1 cm. long ..... 3. *L. innominata*.
- Calyx-lobes conspicuously serrate.
- Leaves narrowly elliptical-oblong, crenulate-serrate ..... 4. *L. Fawcettii*.
- Leaves elliptical, denticulate ..... 5. *L. grandifolia*.
- Flowers pubescent.
- Leaves lanceolate to oval-lanceolate.
- Raceme radial ..... 6. *L. salicina*.
- Raceme markedly unilateral ..... 8. *L. assurgens*.
- Leaves linear-lanceolate, caudate ..... 7. *L. caudata*.
- Bracts leaf-like ..... 9. *L. Martagon*.
- Raceme few-flowered, congested within a terminal leaf-rosette ..... 10. *L. Harrisii*.

1. ***L. Cliffortiana*** *L. Sp. Pl.* 931; an annual glabrous herb; stem generally erect, slender, simple or branching from the base, branches ascending; leaves ovate, coarsely and unequally serrate, apex obtuse to subacute, base subcordate or narrowing abruptly into the long slender petiole; racemes

terminal, several- to many-flowered, bracts linear; calyx-lobes linear-acuminate, a little shorter than the corolla-tube; corolla blue, the apparently lower lip 3-lobed, spreading, upper lip 2-lobed, suberect; capsule rather more than half its length



Fig. 45.—*Lobelia Cliffortiana* L.

- A, Upper portion of plant in flower and fruit  $\times \frac{1}{2}$ .  
 B, Flower cut lengthwise  $\times 6$ .  
 C, Staminal tube cut open showing the included style and stigma  $\times 10$ .  
 D, Capsule open above  $\times 4$ .

above the calyx-tube.—A. DC. in DC. Prodr. vii. pt. 2, 372; Griseb. Fl. Br. W. Ind. 385 & Cat. Cub. 159; Hitchc. in Rep. Miss. Bot. Gard. iv. 103; Hemsl. Biol. Centr. Am. ii. 266; Stahl Fl. P.-Rico vi. 28; Urb. Symb. Ant. iv. 617 & viii.

701; *Britt. & Wils. P.-Rico & Virg. Is. vi.* 272. *Lobelia caule erecto, foliis cordatis &c. Linn. Hort. Cliff.* 426, *t.* 26 & *Virid. Cliffort.* 90. Specimen in Herb. Cliffort. in Herb. Mus. Brit. (Fig. 45.)

*Masson!* *Houstoun!* *Macfadyen!* *Purdie!* *Moneague, Prior!* *St. Mary, McNab!* *Wilson!* Roaring River Falls, a weed in pastures; Leicesterfield, Upper Clarendon, 1800 ft., a roadside weed; Castleton district, a weed; Golden Grove to Holland Bay, weed in damp places along roadsides; *Harris!* Fl. Jam. 10,361, 10,845, 10,888, 11,950; Balaclava, *Orcutt* 597!—Florida, Central America, Cuba, Hispaniola, Porto Rico, Dominica, Martinique, Trinidad, tropical S. America.

A weed in pastures and damp places, generally between 12 and 20 ins. high. *Leaves* thinly papery when dry, blade 2–4 cm. l. becoming smaller below the raceme; *petioles* 2–2.5 cm. l. sometimes shorter; *raceme* and *thread-like flower-pedicels* (up to 1 cm. l.), lengthening after flowering to 2 cm. l. *Calyx-tube* about 2 mm. l. *Corolla*, tube about 3 mm. l. and a little over 1 mm. in diam., lobes about 1 mm. l. *Capsule* about 6 mm. l.

2. ***L. acuminata*** *Sw. Prodr.* 117 (1788) & *Fl. Ind. Occ.* 1950 (excl. synonymy); shrubby, 2–6 ft. high, glabrous; stem branched; leaves broadly lanceolate to lanceolate, acuminate, apex acute, tapering below to, and decurrent on, the short petiole, margin serrulate; raceme shorter than the leaves, dense, radial or unilateral; bracts linear-tapering, shorter than the pedicel and adnate to its base; calyx-lobes linear-tapering, minutely toothed, 1.5–2 cm. long; corolla nearly twice as long as calyx-lobes, white or yellowish white, sometimes tinged with rose; staminal tube hairy; anthers glabrous except for the stiff beard.—*Willd. Sp. Pl.* 1, 943 (excl. synonymy); *Rendle in Journ. Bot. lxxiii.* 273. *Rapuntium acuminatum Presl Mon. Lobel.* 24 (1836). Specimen in Herb. Stockholm named by Swartz. (Fig. 46.)

*Masson!* *Swartz!* Grandvale, Westmoreland, 500 ft.; damp shady woods, Tyre, near Troy, 2400 ft.; steep rocky slope in forest, Lapland, 2000 ft.; rocky slope, Kempshot, 1100–1600 ft.; Ipswich, St. Elizabeth, 500–750 ft.; *Harris!* Fl. Jam. 7072, 8832, 9162, 10,334, 12,503.

*Stem* terete, smooth, .5 cm. or more thick in the upper part. *Leaves* membranous, up to 3 dm. by 6 cm; the degree of serrulation varies from minutely serrulate to the more marked form shown in the figure, an extreme case; *petiole* somewhat decurrent giving the stem an angled appearance below the nodes. *Raceme* up to 10 cm. l.; *pedicel* about 3 cm. l.; *bracteoles* about the middle of the pedicel, 7 mm. l. *Corolla* 3–3.5 cm. l. *Anthers* 8.5 mm. l. *Capsule* top-shaped, about 1.5 cm. l. by 1 cm. br. *Seeds* globose, minutely reticulate, brown, .75 mm. diam.



Fig. 46.—*Lobelia acuminata* Sw.

A, Inflorescence  $\times \frac{2}{3}$ ; leaf in background  $\times \frac{1}{2}$ .

B, Flower cut lengthwise  $\times 1\frac{1}{2}$ .  
C, Fruit  $\times 1\frac{1}{2}$ .

3. *L. innominata* Rendle in *Journ. Bot.* lxxiii. 274 (1935); herbaceous, 5 ft. high, glabrous; leaves broadly oblanceolate, acuminate, acute, tapering below and narrowly decurrent

along the short petiole, finely serrulate almost to the base; raceme shorter than the leaves, unilateral in flower; bracts linear-lanceolate, attached at the base to and shorter than the pedicel; calyx-lobes narrowly triangular or tapering from a triangular base, minutely denticulate, 5-9 cm. l.; corolla 2-2.5 cm. l., "greenish yellow"; staminal tube hairy; anther-connectives sparsely hairy or glabrous.—*Tupa acuminata* Griseb. *op. cit.* 386 (non *A. DC.*).

*Dancer!* woods of Portland, *Purdie!* wood below Carron Hall, St. Mary, *McNab!* John Crow Mts., *Harris & Britton!* Fl. Jam. 10,703.

*Stem* 5-7 mm. thick below the inflorescence. *Leaves* 2.5-3.8 dm. by 4-6 cm., petiole about 1 cm. l. *Raceme* 15-20 cm. l. including the peduncle (4 cm.); bracts minutely serrulate, 1 cm. l. or less, bracteoles below the calyx-tube, scarcely 3 mm. l.; pedicels 2-2.5 cm. l. *Calyx-tube* top-shaped, 1 cm. l. *Andræcium* equal to the corolla. *Capsule* broadly top-shaped, 1 cm. l., the upper 2 mm. forming a low dome free within the free part of the calyx-tube (4-5 mm. l.). *Seeds* globose, plainly minutely reticulate, brown, .7 mm. diam.

4. *L. Fawcettii* Urb. *Symb. Ant. i.* 452 (1900); a shrub 3-5 ft. high, glabrous; leaves narrowly elliptic-oblong, shortly and abruptly acuminate at apex, tapering below and decurrent along the petiole; margin with minutely apiculate crenulations, denticulate below, very sparsely shortly hairy on the back of the well-marked midrib and on the upcurving lateral veins; raceme dense, unilateral, much shorter than the leaves; bracts linear-acuminate, denticulate, adnate to the pedicel below and about equal to it; calyx-lobes linear-acuminate, irregularly serrulate, 1.5-2 cm. l.; corolla shortly lobed, pale yellow, about twice as long as the calyx-lobes; staminal tube pubescent, anther-connectives sparsely puberulous.—*Rendle tom. cit.* 276. *Tupa conglobata* Griseb. *op. cit.* 387 (non *A. DC.*).

*March!* Moneague, *Prior!* moist woods, Manchester, *Purdie!* near Christiana, Manchester, *Fawcett!* Tweedside, Clarendon, 2600 ft.; road to Dolphin Head, 1200 ft.; *Harris!* Fl. Jam. 6346, 8141, 9269.

*Leaves* membranous, 3-4 dm. by 5.5-9 cm. *Raceme* to 1 dm.; pedicels 1.5-2 cm. l.; bracteoles beneath the calyx-tube, 8-13 mm. l. *Calyx-tube* top-shaped, about 8 mm. l. *Corolla* 3-3.5 cm. l. *Andræcium* 2.5 cm. l.; anthers 7.5-8.5 mm., beard long. *Capsule* subhemispherical, scarcely produced beyond the calyx-tube, about 8 mm. diam. *Seeds* ellipsoid, dull yellow, very finely minutely reticulate, .7 mm. l.

5. *L. grandifolia* Britton in Bull. Torr. Bot. Cl. xxxvii. 359 (1910); "herbaceous" 3-4 ft. high; stem stout, somewhat pubescent; leaves "flaccid," elliptical, abruptly acuminate, base cuneate, blade not decurrent on petiole, minutely denticulate, pubescent beneath on the broad flat midrib and numerous upcurved lateral veins; raceme dense, unilateral,



shorter than the leaves; bracts linear-lanceolate, acuminate, glandular-serrate, nearly as long as the pedicels; flowers glabrous; calyx-lobes linear-lanceolate, glandular-serrate, 1.2–1.5 cm. l.; corolla about 2.5 cm. l.; staminal tube pubescent; anther-connectives loosely puberulous.—*Rendle tom. cit.* 277.

Woodlands, eastern slopes of south end of John Crow Mts. at about 1300 ft., *Britton* 4194, 4197; *Harris & Britton!* Fl. Jam. 10,725.

*Leaves* 3–5 dm. by 8–12 cm., “glabrous and dull green above, rather bright green beneath”; petiole 3–4 cm. l. *Raceme* 5–15 cm. l., peduncle stout, pubescent, 5–15 cm. l.; pedicels about 2 cm. l. *Calyx-tube* 8–10 mm. l. *Corolla* “yellowish white, greenish yellow or brownish.” *Andræcium* 1.5–2 cm. l.; anthers 7–9 mm., beard long.

6. *L. salicina* *Lam. Encycl. Meth. iii.* 583 (1789–91); stem glabrous, branched, to 4 ft. high; leaves glabrous, narrow lanceolate to lanceolate, tapering to the acute apex and the very short petiole, serrulate; raceme radial, long, many-flowered, puberulous, overtopping the leaves; bracts linear-tapering, as long as or longer than the pedicels and adnate to their base; flowers velvety; calyx-lobes short, awl-shaped, .5 cm. l.; corolla “greenish streaked with brown,” 2.5–3 cm. l.—*Urb. Symb. Ant. viii.* 702; *Rendle tom. cit.* 273. *L. ensifolia* *Hitchc. in Miss. Bot. Gard. Rep. iv.* 103 (1893). *L. acuminata* *Willd. Sp. Pl. i.* 943 (1797) (quoad syn. *Lam., Browne and Sloane*); *Tuss. Fl. Ant. iii.* 116, t. 36; *Spreng. Syst. i.* 711. *Tupa acuminata* *A. DC. in DC. Prodr. vii.* 396 (1839) (quoad syn. *Lam.*). *T. ensifolia* *A. DC. loc. cit.*; *Griseb. op. cit.* 386 & *Cat. Cub.* 159. *Lobelia* 2. *Foliis oblongis, angustis &c.* *Browne Hist. Jam.* 322. *Rapunculus folio oblongo serrato &c.* *Sloane Cat.* 58 & *Hist. i.* 158, t. 95.

Woods about Sixteen-Mile Walk and about Guanaboa, *Sloane Herb.* iii. 24! *Purdie!* Mt. Diabolo, *Prior!* between Claremont and Moneague, *Fawcett!* Roaring River Falls; Soho, St. Ann, 1400 ft.; *Harris!* Fl. Jam. 8408, 10,362, 11,996.—Hispaniola, Cuba.

*Leaves* to 25 by 3 cm.; petiole 5–7 mm. *Raceme* 15–25 cm. l., becoming longer in fruit; pedicels 1.5 cm. l. *Calyx-tube* broadly top-shaped, about 7 mm. l. *Corolla* curving above the middle or in the upper third, united for two-thirds the length, lobes slender, linear. *Stamens* equal in length to the corolla. *Capsule* subglobular with a free subpyramidal cap, less than 1.5 cm. l. *Seeds* ellipsoid, light brown, minutely reticulate, .8 mm. l.

7. *L. caudata* *Urb. Symb. Ant. i.* 454, *obs. ii.* (1899); a shrub 4 ft. high, stem glabrous, slender, conspicuously notched with the persistent decurrent leaf-bases; leaves linear-lanceolate, caudate-acuminate, tapering into the slender petiole, somewhat distantly serrate with sharp-pointed slender

teeth, midrib projecting beneath, with a line of short patent hairs on each side; raceme radial or unilateral, varying much in length, carried above the leaves on a rather stout pubescent peduncle; bracts flexuose, linear-tapering, distantly toothed with slender spreading teeth, pubescent, exceeding and not adnate to the pedicels, uppermost sterile; flowers puberulous; calyx-lobes linear-tapering, 3-4 mm. l.; corolla yellow or greenish white, about 1.5 cm. l., lobed to the middle.—*Rendle tom. cit.* 277. *Tupa caudata* Griseb. *Fl. Br. W. Ind.* 386 (1861).

Morse's Gap, Blue Mts., *Purdie*! *McNab*! Portland Road to Vinegar Hill, Blue Mts., *Miss Perkins* 1267! on rocky slope, near Cinchona, 4800 ft., *Harris*! *Fl. Jam.* 11,778.

*Leaves* stiff, to 16 by .8 cm.; petiole about 1 cm. l. *Raceme* from 10 cm. lengthening to 7 dm. in fruit. *Bracts* to 3 cm. l.; pedicels slender, pubescent, 1.5 cm. l. *Calyx-tube* hemispherical, puberulous, .5 cm. l. *Capsule* top-shaped, ribbed, puberulous, 8 mm. l. below the free part of the calyx-tube, above glabrous, 4 mm. l. *Seeds* ellipsoid, shiny pale brown, .7 mm. l.

8. *L. assurgens* *L. Amœn. Acad. v.* 408 (1760); a shrub 3-5 ft. high; stem thick, angular, glabrous; leaves lanceolate to oval-lanceolate, tapering to the acuminate apex and the base, sessile or decurrent on a very short petiole; margin serrulate becoming dentate towards the base with slender patent pointed teeth, glabrous except for slight pubescence along the prominent midrib and bases of the upcurving veins; inflorescence tomentose, exceeding the leaves, sometimes branched, nodding above and markedly unilateral, flowers numerous, congested, bracts long, much exceeding the pedicels and adnate to their base, linear-tapering, the lowermost subfoliaceous; calyx-lobes narrow, tapering, 1.5-1.7 cm. l.; corolla 2.5 cm. l.; staminal tube pubescent, a short tuft of hairs at the base of the anthers, beard short, connective of three outer anthers pilose.—*Sw. Obs. Bot.* 317; *Hitchc. loc. cit.*; *Rendle, Classif. Fl. Pl. ii.* 583, fig. 269 & *Journ. Bot. lxxiii.* 276; var. *jamaicensis* *Urb. op. cit. i.* 453 (1899) & *ix.* 431. *L. jamaicensis* *Urb. in Arkiv Bot. K. Svensk. Vetensk. xxviii.* no. 5, 104 (1930). *Tupa assurgens* *A. DC. in DC. Prodr. vii. pt. 2,* 394 (1839); *Griseb. op. cit.* 387 & *Cat. Cub.* 160. *Lobelia* 3. Major *brachiata assurgens* &c. *Browne Hist. Jam.* 322. Specimen from Browne in Herb. Linn. named by Linnæus.

*Masson*! *G. Don*! base of Blue Mt. Peak, *Purdie*! Port Royal Mts., *McNab*! Catherine's Peak, 4000 ft., *Eggers* 3601! Hardware Gap, 4000 ft., *Nichols*! near Morse's Gap, Blue Mts. 4943 ft., *Miss Perkins* 1226! near Portland Gap, 5000 ft.; Green Hill Wood, 3500 ft.; Cinchona, 5000 ft.; *Harris*! *Fl. Jam.* 6306, 7785, 12,453.—Cuba.

*Leaves* 2-3 dm. by 4-8 cm. *Raceme* up to 20 cm. l. carried above

the leaves on a longer or shorter peduncle; pedicels about 2.5 cm. l., bracteoles narrow-linear, beneath the flower, about 1.5 cm. l. *Calyx-tube* top-shaped, barely 1 cm. l. *Corolla-lobes* about 1 cm. l. *Capsule* broadly top-shaped, about 1.5 cm. l. *Seeds* subglobose, dull brown, very obscurely reticulate, .6 mm. l.

9. **L. Martagon** (Griseb.) Hitchc. in Miss. Bot. Gard. Rep. iv. 103 (1893); a shrub up to 4 ft. high, stem stout, glabrous; lowest leaves rosulate, cauline crowded, lanceolate, acuminate, sessile, minutely serrulate with cartilaginous teeth; raceme radial on a long pubescent peduncle far overtopping the leaves; bracts crowded, foliaceous, lanceolate or oval-lanceolate, sessile, the uppermost sterile; pedicels pubescent, rarely exceeding the bracts; calyx-lobes tapering from a triangular base, hispid, serrulate, 1-1.2 cm. l.; corolla brownish purple, pubescent, 3.5 cm. l.; staminal tube and connectives ciliate-pubescent.—Rendle in Journ. Bot. lxxiii. 277. Tupa Martagon Griseb. loc. cit. (1861).

Blue Mt. Peak, Macfadyen! and Purdie! Mt. Diablo, near Moneague, Prior! summit of Blue Mt. Peak, 7400 ft., Nichols! road to John Grant Peak, J. P. 1285! New Haven, Cinchona, 5600 ft., Harris! Fl. Jam. 12,672.

*Leaves* of rosette 1.5-2 dm. by 2-2.5 cm., cauline 2 dm. by 2.5 cm. *Raceme* with peduncle up to 5 dm. l.; pedicels 4 cm. l., increasing to 7 cm. in fruit; bracteoles beneath the flower linear-tapering, serrulate, pubescent, 8-12 mm. l. *Calyx-tube* top-shaped, 8 mm. l. *Andræcium* 3 cm. l., anthers 8-9 mm. *Capsule* bell-shaped below, 8 mm. l., upper membranous free portion pyramidal, 5 mm. l. *Seeds* ellipsoidal, dull brown, very obscurely and minutely reticulate, .8 mm. l.

10. **L. Harrisii** Urb. Symb. v. 520 (1908); a shrub, stems several from a stout rootstock, to 2 dm. high, notched with the decurrent corky scars of the fallen leaves; leaves crowded in a spreading rosette at the apex of the stem, glabrous, broadly oblanceolate, acute, tapering to and narrowly decurrent on the short petiole, margin with large patent teeth between which are smaller teeth alternating with short filiform projections, teeth produced into gland-tipped bristles; flowers yellow or orange-yellow, in a small terminal cluster, bracts foliaceous; calyx-lobes tapering from a broad base with awl-shaped ciliolate marginal teeth, 8-10 mm. l.; corolla 2 cm. l.; staminal tube shortly hairy, beard of inner anthers short, the three outer obsoletely bearded with a few short hairs.—Rendle loc. cit.

Crevices of rocks in woodland, near Troy, 2300 ft.; in crevices of honeycombed limestone, Tyre woods, 2000 ft.; Harris! Fl. Jam. 8695, 9395, 10,665.

*Leaves* 7-15 by 1.5-3 cm., midrib broad, scarcely prominent beneath; petiole .5-1.5 cm. *Pedicels* slender, 1-1.5 cm. l.; bracteoles linear-

awl-shaped. *Calyx-tube* shortly top-shaped, about 5 mm. l. *Corolla* curving somewhat above the middle, lobed in the upper third. *Andræcium* 1·8 cm. l.; anthers 3–3·5 mm. l. *Capsule* broadly campanulate and 5 mm. l. below, free part short and flat, about 1 mm. l., apiculate with the base of the style. *Seeds* globose-ellipsoid, pale brown, minutely reticulate.

#### FAMILY CXXIV. GOODENIACEÆ.

Herbs or small shrubs without latex. Leaves generally alternate, simple, entire, exstipulate. Flowers hermaphrodite, irregular, axillary, solitary or in few-flowered cymes. Calyx-limb a mere border on top of the ovary. Corolla 5-lobed, split on one side. Stamens 5, free, epigynous. Ovary inferior, 1- to 2-celled; ovules anatropous and erect, 1 in each cell; style slender, stigmas forming a collecting cup into which the pollen passes before the flower opens. Fruit a drupe. Seed with a straight embryo surrounded by a fleshy endosperm.

Species about 300, mainly Australian.

#### SCÆVOLA L.

Fleshy stout herbs or shrubs. Leaves generally alternate, entire. Flowers in few-flowered dichotomous cymes. Corolla-lobes winged, tube villous within. Ovary generally 2-celled; stigma surrounded by a hairy indusium.

Species about 60, mostly Australian.

**S. Plumierii** (L.) Vahl *Symb. Bot. ii.* 36 (1791); a perennial nearly glabrous shrub up to 6 ft. high, much branched and often straggling; branches terete, tough, covered with a greenish or purplish cortex and marked with the cicatrices of the fallen leaves; leaves thick, fleshy, shining, crowded at the ends of the branchlets, alternate, obovate, entire, apex rounded, narrowing below into a short narrowly winged petiole, a tuft of silky hairs in the axil, including the petiole generally 5–8 by 2·5–3·5 cm.; flowers sessile, 2·5 cm. l., in axillary generally 3-flowered cymes rather shorter than the leaves; calyx-tube glabrous, subglobose, 4 mm. l., limb shallowly lobed, 1 mm. l.; corolla white, glabrous outside, tube filled with short woolly hairs inside, lobes somewhat spreading, barely 1 cm. l., with a pair of crisped membranous wings on the upper face; stamens included in the corolla-tube, filaments slender, unequal, less than 1 cm. l., anthers apiculate; style stout, exceeding the corolla-tube, cup-like stigma shortly hairy; drupe juicy, subglobose, smooth, blue-black, up to 2 cm. long; endocarp woody, corrugated, 2-seeded.—*Descourt.*

*Pl. Méd. Ant. vii. 92* ; *DC. Prodr. vii. 506* ; *Griseb. Fl. Br. W. Ind. 388* ; *K. Sch. in Mart. Fl. Bras. iii. pt. 3, 766, t. 127* ; *Hitchc. in Miss. Bot. Gard. Rep. iv. 103* ; *Guppy Pl. Seeds &c. W. Indies, 277* ; *Urb. Symb. Ant. iv. 618 & viii. 703* ; *Krause*

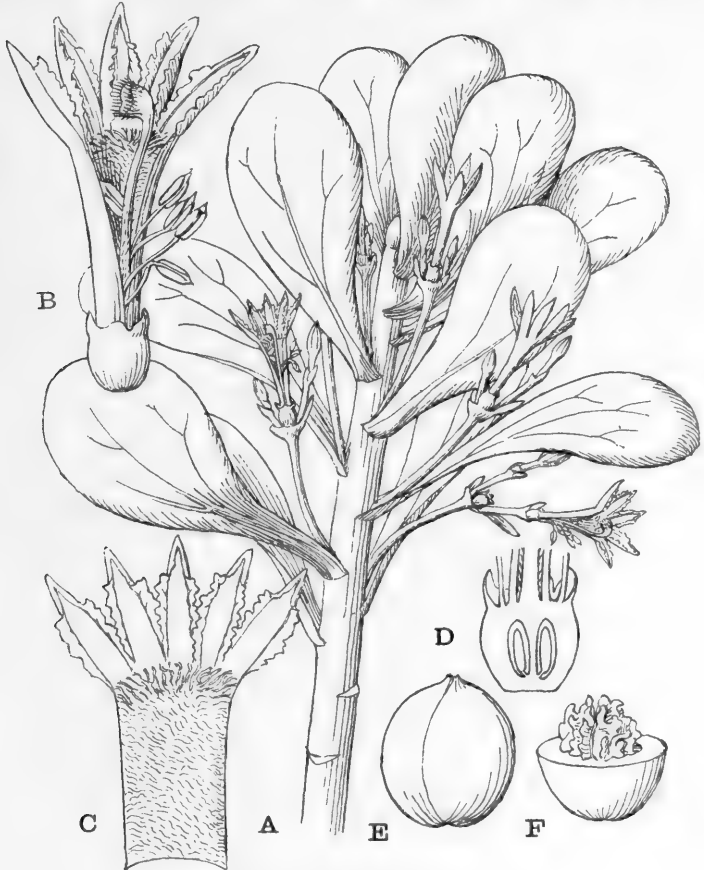


Fig. 47.—*Scævola Plumierii* (L.) Vahl.

- A, End of branch with flowers  $\times \frac{3}{4}$ .
- B, Flower  $\times 2$ .
- C, Corolla cut open  $\times 2$ .
- D, Ovary with calyx cut lengthwise  $\times 3$ .
- E, Drupe nat. size.
- F, Drupe, upper half cut away exposing the stone, nat. size.

*in Pflanzenreich iv. pt. 277, 120* ; *Britt. & Millsp. Fl. Baham. 429*. *S. Lobelia Murr. Syst. ed. 13, 178 (1774)* ; *Jacq. Sel. Stirp. Amer., Ed. pict. 213, t. 199* ; *Hiern in Oliv. Fl. Trop. Afr. iii. 462* ; *Clarke in Hook. f. Fl. Br. Ind. iii. 421*. *S. Thunbergii Eckl. & Zeyh. Enum. Pl. Afr. Austr. 387* ; *Sonder in Harv. &*

*Sond. Fl. Cap. iii.* 605. *Lobelia Plumierii* L. *Sp. Pl.* 929 (1753) not of *Herb. Linn.*; *Jacq. Hist. Stirp. Amer.* 219, t. 179, fig. 88. *Lobelia frutescens*, portulacæ folio *Plum. Nov. Gen.* 21, t. 31 (1703). (Fig. 47.)

*Wright* ! *Purdie* ! *March* 1484 ! Montego Bay, *Fawcett* ! sea-shore, Healthshire Hills, *Harris* ! Fl. Jam. 9533.—Tropical sea-shores.

## FAMILY CXXV. COMPOSITÆ.

(By Spencer Moore.)

Herbs, shrubs and sometimes trees. Leaves alternate or opposite, occasionally whorled, without stipules, entire, toothed, lobed or variously cut. Flowers (*florets*) usually small, hermaphrodite, unisexual or neuter, closely compacted into heads (*capitula*) which are solitary or arranged in cymes, corymbs or panicles, each head surrounded by one row or more of scales or bracts (*involucre*). Florets crowded on a flat convex or conical receptacle which is naked, pitted (alveolate) or furnished with chaffy scales (paleaceous); in the latter case a scale usually subtends each of the florets. Calyx superior; limb entirely absent or presumed represented by a ring, short teeth, awns, scales or bristles crowning the ovary. Corolla superior, sympetalous, with a long or short tube and a usually 4- or 5-lobed limb, valvate in æstivation and regular (actinomorphic) or irregular (zygomorphic) and then either 2-lipped or strap-shaped (ligulate). Stamens inserted on the corolla, one opposite each of its lobes; filaments free or united; anthers usually united into a tube surrounding the style, the cells rounded or tailed at base and dehiscent introrsely. Ovary inferior, 1-celled; style usually 2-armed, the arms long or short, terete or flattened, obtuse, acute, truncate or cone-tipped; ovule solitary, erect from the base, anatropous. Fruit (*achene*) 1-celled, 1-seeded, indehiscent, usually dry, crowned by the persistent calyx (*pappus*).

Heads are *homogamous* when all the florets are sexually similar; they are *heterogamous* when the florets are sexually diverse.

*Discoid* heads have all the florets tubular and hermaphrodite.

*Disciform* heads, with the central florets (disk) hermaphrodite, have the outer florets female, but the corollas somewhat different from those of the disk though not ligulate.

*Radiate* heads have the outer florets (ray) ligulate and female or neuter, the central tubular and hermaphrodite.

*Radiatiform* heads have the outer (female or neuter) florets different from those of the disk (hermaphrodite) but not ligulate.

*Ligulate* heads have all the florets homogamous and ligulate.

The largest of all the families, comprising over 800 genera and 12,000 species. Distribution world-wide.

Series A. Central corollas (disk) or all regular, 4-5-fid.

Tribe I. *Vernoniææ*. Heads discoid, homogamous. Anthers sagittate at base. Receptacle naked or pitted. Style-arms more or less terete, hairy on the back. Leaves very rarely opposite. Corollas white or purple. Pappus usually of bristles or scales.

- |  |                               |
|--|-------------------------------|
| Heads in axillary glomerules. Pappus cup-like .....                | 1. <i>Struchium</i> .         |
| Heads free, stalked or sessile. Pappus of bristles .....           | 2. <i>Vernonia</i> .          |
| Heads in capituliform glomerules.                                  |                               |
| Pappus of 5 or more bristles all similar ....                      | 3. <i>Elephantopus</i> .      |
| Pappus with 2 bristles longer than the rest and folded above ..... | 4. <i>Pseudelephantopus</i> . |

Tribe II. *Eupatoriææ*. Heads discoid, homogamous. Anthers obtuse at base. Receptacle usually naked or pitted. Style-arms usually long, subterete, papillose. Leaves usually opposite. Corollas mostly purple. Pappus mostly of bristles.

- |   |                         |
|---|-------------------------|
| Achenes 5-ribbed.   |                         |
| Anthers truncate at top. Pappus of few clavate outgrowths ..... | 5. <i>Adenostemma</i> . |
| Anthers ending in a triangular appendage.                       |                         |
| Pappus of scales .....  | 6. <i>Ageratum</i> .    |
| Pappus of bristles.   |                         |
| Involucral scales numerous. Heads many-flowered .....           | 7. <i>Eupatorium</i> .  |
| Involucral scales 4. Heads 4-flowered .....                     | 8. <i>Mikania</i> .     |
| Achenes 10-ribbed. Pappus of bristles .....                     | 9. <i>Brickellia</i> .  |

Tribe III. *Asteroidææ*. Heads radiate or discoid, usually heterogamous. Receptacle usually naked. Anthers obtuse at base. Style-arms flattened, crowned by a papillose appendage. Pappus usually of bristles. Leaves alternate. Disk-corollas usually yellow, the ray of the same colour as of the disk or different.

- |                      |                      |
|----------------------|----------------------|
| Heads bisexual.      |                      |
| Pappus cup-like..... | 10. <i>Egletes</i> . |

Pappus of bristles.

- Heads radiate ; ligules broad ..... 11. *Aster*.  
 Heads radiate ; ligules very narrow .... 12. *Erigeron*  
 Heads unisexual ..... 13. *Baccharis*.

Tribe IV. *Inuloideæ*. Heads radiate or discoid, usually heterogamous. Receptacle naked, sometimes scaly. Anthers tailed at base. Style-arms linear, obtuse, without appendage. Leaves usually alternate. Pappus bristly.

- Involucral scales herbaceous.  
 Heads in corymbs..... 14. *Pluchea*.  
 Heads in glomerules ..... 15. *Pterocaulon*.  
 Involucral scales scarious..... 16. *Gnaphalium*.

Tribe V. *Helianthoideæ*. Heads usually radiate and heterogamous, (tubifloral and homogamous in *Isocarpha*, *Eleutheranthera*, *Verbesina* and *Calea* ; tubifloral and heterogamous in *Clibadium*). Receptacle scaly. Anthers entire at base or sagittulate. Style-arms truncate or appendaged. Pappus usually awned, sometimes absent, rarely bristly. Leaves opposite or alternate. Disk-corollas usually yellow and those of ray of the same colour.

Pappus not scaly.

Scales of receptacle concave or folded.  
 Achenes mostly not or but slightly compressed.

Heads small to middle-sized.

Heads unisexual.

- Female heads 1-flowered ..... 20. *Ambrosia*.  
 Female heads 2-flowered ..... 21. *Xanthium*.

Heads bisexual.

- [Heads 1- (rarely 2-) flowered.... *Lagascea*.]  
 Heads many-flowered.

Achenes smooth or nearly so.

Pappus absent.

- Achenes invested by the spinous paleæ..... 18. *Acanthospermum*.

Achenes free.

Heads in corymbose panicles. Achenes drupaceous.....

17. *Clibadium*.

Heads scattered. Achenes dry.

Heads axillary sessile .....

22. *Enhydra*.

Heads peduncled ....

24. *Isocarpha*.

Pappus cup-shaped .....

25. *Borrchia*.

Pappus awned. Persistent ligules attached to ripe achenes.

Achenes invested by an involucral scale and

- 2 paleæ ..... 19. *Parthenium*.



- [Achenes free..... *Zinnia.*]  
 Pappus of 2 or more deciduous awnlike bristles .... 28. *Melanthera.*  
 Achenes rugose or tubercled.  
 Anthers connate.  
 Pappus of 2 short awns or absent..... 23. *Eclipta.*  
 Pappus of united squamellæ with or without 2 awns. Ray florets fertile ..... 26. *Wedelia.*  
 Anthers free.  
 Pappus of *Wedelia*. Ray-florets neuter or absent ..... 27. *Eleutheranthera.*  
 Heads few-flowered ..... 33. *Chænocephalus.*  
 [Heads large, 4–14 cm. across..... *Tithonia.*]  
 Achenes much compressed, usually with an awned pappus.  
 Achenes wingless or nearly so.  
 Herbs. Outermost florets neuter. 29. *Simsia.*  
 Herbs. Outermost florets fertile.. 31. *Spilanthes.*  
 Shrubs..... 32. *Salmea.*  
 Achenes winged.  
 Heads radiate ..... 30. *Verbesina.*  
 Heads (of Jamaica sp.) discoid .... 34. *Notoptera.*  
 Scales of receptacle flat.  
 Pappus awned.  
 Heads sessile. Pappus-awns smooth 35. *Synedrella.*  
 Heads stalked. Pappus-awns generally barbed.  
 Achenes not beaked ..... 36. *Bidens.*  
 Achenes beaked..... 37. *Cosmos.*  
 Pappus absent ..... 38. *Chrysanthellum.*  
 Pappus of numerous scales.  
 Annual herb. Involucral scales few. Receptacular scales flat ..... 39. *Galinsoga.*  
 Shrubs. Involucral scales in several rows.  
 Receptacular scales concave ..... 40. *Calea.*
- Tribe VI. *Helenioideæ*. Heads usually radiate and heterogamous. Receptacle naked. Anthers obtuse at base or sagittulate. Style-arms truncate or appendaged. Pappus usually paleaceous or aristate. Leaves opposite or alternate. Disk-corollas usually yellow, sometimes white or purple; of the ray homochromous. Involucral scales in one row, generally glandular.  
 Heads discoid ..... 41. *Porophyllum.*  
 Heads radiate.  
 [Involucral scales united high up ..... *Tagetes.*]  
 Involucral scales free ..... 42. *Pectis.*

Tribe VII. *Senecionideæ*. Heads usually radiate and heterogamous or discoid and homogamous. Receptacle usually naked. Anthers sagittulate or auricled at base.

Style-arms usually truncate, with or without an appendage. Pappus bristly. Leaves usually alternate. Disk-corollas mostly yellow with homochromous ray.

Involucral scales in several rows. Style-arms of *Vernoniææ*.

Heads radiate. Receptacle shortly fringed.

Leaves opposite..... 43. *Liabum*.

Heads discoid. Receptacle scaly. Leaves alternate.....

44. *Neurolæna*.

Involucral scales in one row. Style-arms truncate, with or without an appendage.

Heads discoid, heterogamous; outer florets female. Style-arms truncate....

45. *Erechthites*.

[Heads discoid, homogamous. Style-arms shortly appendaged.....

*Emilia*.]

Heads radiate and heterogamous or discoid and homogamous. Style-arms truncate and penicillate .....

46. *Senecio*.

Heads usually radiate and heterogamous. Style-arms with a lanceolate or awl-shaped appendage .....

47. *Gynoxys*.

#### Series B. Central corollas or all 2-lipped.

Tribe VIII. *Mutisiææ*. Heads homogamous or heterogamous, the outer florets often simulating ligules (heads then radiatiform). Receptacle usually naked or shortly fringed. Anthers long-tailed at base. Style-arms connate far up and obtuse or longer and truncate. Pappus bristly.

Scapigerous herbs. Style-arms connate nearly to the top .....

48. *Chaptalia*.

Herbs or shrubs with scattered leaves.

Style-arms truncate .....

49. *Trixis*.

#### Series C. All corollas ligulate.

Tribe IX. *Cichorieææ*. Heads homogamous. Receptacle naked, fimbriiferous or paleaceous. Anthers sagittate at base. Style-arms long and thin. Pappus bristly or paleaceous, rarely absent.

Involucral scales in one row with a few outside.

[Achenes without pappus .....

*Lapsana*.]

[Pappus bristly.....

*Crepis*.]

Involucral scales in 3 or more rows.

[Pappus-bridles plumose.....

*Hypochæris*.]

Pappus-bridles simple.

Achenes beaked.....

50. *Lactuca*.

[Achenes without a beak .....

*Sonchus*.]

**1. STRUCHIUM P. Browne.**

Annual herb, with alternate stalked penninerved leaves. Heads axillary, discoid, composed of tubular florets, solitary or in glomerules. Leaves of involucre in about 4 rows, enlarging from without inwards. Receptacle flat, naked. Corolla regular; tube slender, limb 3-4-fid. Anthers sagittate at base. Style-arms linear, papillose. Achenes 2-4-angled. Pappus a prominent cartilaginous cup with a very shortly toothed rim.

A single tropical American species: naturalised in Africa and East Indies.

***S. sparganophorum* (L.) Kuntze** *Rev. Gen. Pl. i.* 366 (1891); *Hitchc. in Rep. Miss. Bot. Gard. iv.* 96; *Gleason in Bull. N. York Bot. Gard. iv.* 155; *Britt. Fl. Amer. Virg.* 97.

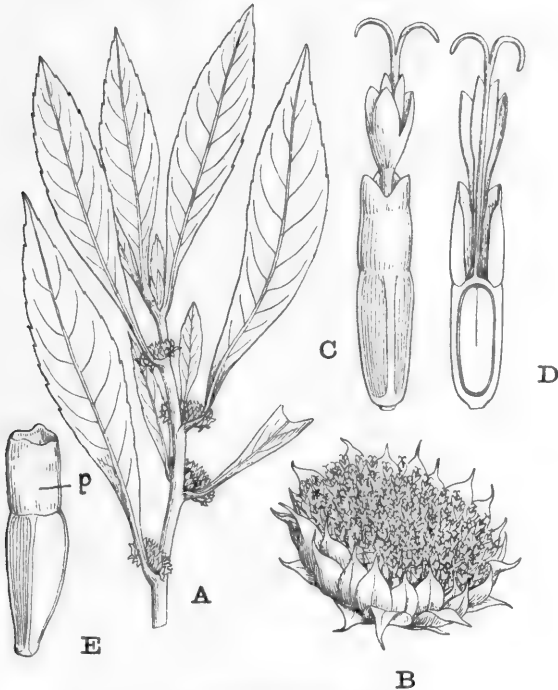


Fig. 48.—*Struchium sparganophorum* (L.) Kuntze.

A, Portion of branch in flower  $\times \frac{1}{2}$ .  
 B, Head  $\times 4$ .  
 C, Floret  $\times 12$ .

D, Floret cut lengthwise  $\times 12$ .  
 E, Achene  $\times 12$ ; p, pappus.

*S. americanum* Poir. *Encyc.* vii. 475 (1806). *Ethulia sparganophora* L. *Sp. Pl. ed.* 2, 1171 (1763). *E. Struchium* Sw. *Prodr.* iii. (1788) & *Fl. Ind. Occ.* iii. 1297. *Sparganophorus Vaillantii* Crantz *Instit.* i. 261 (1766); *Gaertn. Fruct.* ii. 395, t. 165; *DC. Prodr.* v. 12; *Sagra Cub.* xi. 32; *Griseb. Fl. Br. W. Ind.* 352 & *Cat. Cub.* 143; *Sauv. Fl. Cub.* 74; *Wils. in Rep. Geolog. Jam.* 281; *Egg. Fl. St. Croix & Virg.* 62; *Stahl Fl. P.-Rico* v. 100; *Duss Fl. Ant. Franç.* 350; *Combs Pl. Cub.* 432; *Urb. Symb. Ant.* iv. 618 & viii. 703; *Hart Herb. List Trin.* 33; *Jenn. Is. Pin.* 278. *Struchium herbaceum subassurgens* &c. *Browne Hist. Jam.* 312. (Fig. 48.)

*Lane* in *Herb. Petiver (Sloane Herb. clxii. 26 !)*; *The Ferry, Browne*; *Wright ! Distin ! March 1326 ! Moneague, Prior ! Liguanea, Purdie !*; *Lucea, Hitchcock*; *Green Island, St. Catherine*; *Belle Vue, near Spanish Town*; *Two Mile Wood, Pen, St. Catherine*; *Harris ! Fl. Jam.* 10,254, 11,905, 12,072. *Giddy Hall, St. Elizabeth, Miss Maxwell !* —West Indies, Trinidad, tropical America.

Young parts puberulous soon becoming glabrous or nearly so. *Branches* four-angled, striate. *Leaves* lanceolate, acute, narrowed below into the 5–15 mm. long petiole, mostly 6–8 by 2–3.5 cm., occasionally up to 12 by 5 cm. or reduced to about 3 by 1 cm., toothed at the margin or nearly entire, membranaceous, nearly glabrous. *Heads* globose, about 5–8 mm. across. *Involucral* leaves ovate or ovate-lanceolate, spinulose-acuminate, 3–4 mm. l., few outermost narrower and shorter. *Corolla* white, 2 mm. l., of which half belongs to the slender tube. *Style* minutely papillose above. *Achenes* callus-based, with prominent angles, minutely glandular on the faces, 1.5 mm. l. *Pappus* prominent, white, 1 mm. l.

## 2. VERNONIA Schreb.

Shrubs or herbs. *Leaves* alternate, penninerved. *Heads* discoid, solitary or in cymes, corymbs or panicles, usually with many tubular purple, rose or white florets. *Involucres* of scales in several rows. *Receptacle* naked or minutely pitted. *Corolla* regular with distinct tube and 5-fid limb. *Anthers* sagittate at base. *Style-arms* linear or awl-shaped, usually terete, papillose or shortly hairy. *Achenes* cylindrical or top-shaped, usually with a hardened (callous) base, angled or ribbed; ribs sometimes very obscure. *Pappus* usually biseriate, inner series of bristles, outer of usually shorter bristles or scales.

A large genus of over 1000 species in the tropics and subtropics of both worlds; rarer in warm temperate regions; not native in Australia.

[Section 1. *Stengelia*. Involucral scales crowned with a usually broad membranous appendage .....

*V. anthelmintica.*]

Section 2. *Lepidaploa*. Involucral scales without a membranous appendage. Heads in scorpioid cymes. Achenes 10-ribbed. Cymes more or less elongated. Heads secund, 11-18-flowered.

Leaves acute or acuminate.

Pappus white..... 1. *V. divaricata*.

Pappus brown.

Leaves up to 7 cm. long. Heads 7 by 6 mm., 14-15-flowered .. 2. *V. acuminata*.

Leaves up to 5 cm. long. Heads 5 by 4 mm., 11-flowered ..... 3. *V. expansa*.

Leaves orbicular or nearly so ..... 4. *V. rigida*.

Cymes congested. Heads erect or nearly so.

Leaves rotundate. Heads 9-10-flowered ..... 5. *V. Harrisii*.

Leaves acute or acuminate. Heads 5-8-flowered ..... 6. *V. pluvialis*.

[Section 3. *Tephrodes*. Involucral scales without an appendage.

Heads in corymbs. Achenes obscurely, if at all, ribbed ..... 7. *V. cinerea*.]

[*V. anthelmintica* Willd. *Sp. Pl.* 1634 (1804); erect herb; stem branched above, glandular-pubescent; leaves elliptical, serrate; heads erect, few, rather scattered, crowning the main stem and branches; pappus pale reddish.—*D.C. Prodr.* v. 61; *Hook. f. Fl. Br. Ind.* iii. 236.

Flea Bane.

Green Valley; *Harris Fl. Jam.* 5472!—An Indian introduction into Jamaica.

A coarse herb about 3 ft. high. *Stem* pale, strongly ribbed. *Leaves* acute, rather coarsely toothed, narrowed into the 1 cm. (or shorter) petiole, somewhat scabrid above, paler and pubescent on the nerves below, 4-10 by 2-4.5 cm. *Inflorescence* up to 12 by 10 cm., but usually less, the glandular-pubescent peduncles longer or shorter than the heads. *Heads* rather large, about 40-flowered. Involucres depressed-subhemispherical, 11 by 15 mm.; scales 4-seriate, oblong or oblong-ovate with narrower green tips, outer up to 7 mm., inner to 9 mm. l. *Receptacle* convex. *Corollas* pale rose, 11 mm. l.; tube slender, 8 mm. l.; lobes narrow oblong. *Achenes* subcylindrical, prominently callus-based, 10-ribbed with short appressed hairs on and between the ribs, 4-5 mm. l. *Pappus*, bristles rather coarse and rough, 7 mm. l., outer narrow linear scales less than 1 mm. in length.

Used in India as a vermifuge and tonic. "The plant roasted in a room, or powdered and thrown about the floor, is believed to expel fleas—hence the popular English name" (Watt).]

1. *V. divaricata* Sw. *Fl. Ind. Occ.* iii. 1319 (1806); branches tomentose; leaves usually ovate-lanceolate, acute or acuminate, rounded at base; flowering branches straight or curved, bearing secund heads each in the axil of a leafy bract; pappus white.—*DC. tom. cit.* 48; *Ekm. in Ark. f. Bot.* xiii. no. 15,

59; *Shreve Mont. Rain-For.* 22. *V. arborescens Sw. tom. cit.* 1320 (1806); *DC. loc. cit.*; *Wils. in Rep. Geolog. Jam.* 281; *Hitchc. in Rep. Miss. Bot. Gard. iv.* 96; *Gleas. in Bull. N. York Bot. Gard. iv.* 180; *Ekm. loc. cit.*; *Shreve loc. cit.* *V. arborescens Sw. var. Swartziana Griseb. Fl. Br. W. Ind.* 353 (1861) (in part); *Ekm. loc. cit.* *V. permollis Gleas. tom. cit.* 181 (1906); *Urb. Symb. Ant. vi.* 112; *Ekm. loc. cit.* *V. intonsa Gleas. tom. cit.* 182 (1906); *Urb. loc. cit.*; *Ekm. loc. cit.*; *Shreve loc. cit.* *V. albicoma Gleas. tom. cit.* 185

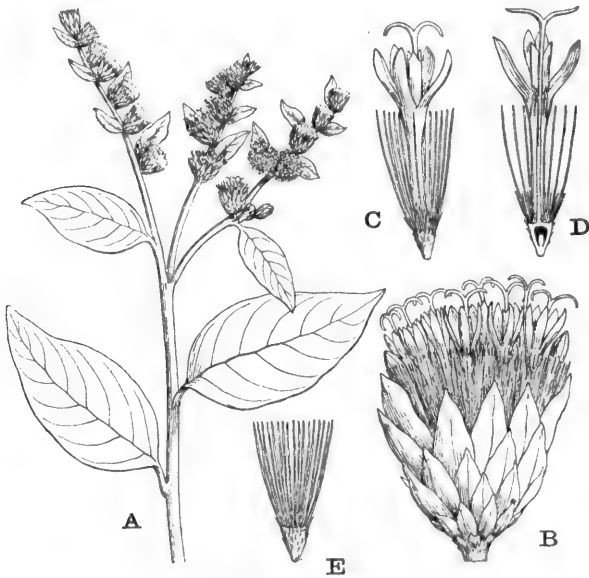


Fig. 49.—*Vernonia divaricata Sw.*

A, Branch with inflorescence  $\times \frac{1}{2}$ .  
B, Flowering head  $\times 5$ .  
C, Floret  $\times 6$ .

D, Floret cut lengthwise  $\times 6$ .  
E, Achene and pappus  $\times 5$ .

(1906); *Urb. loc. cit.*; *Ekm. loc. cit.* *V. amaranthina Gleas. in Bull. Torr. Bot. Club. xl.* 307 (1913); *Ekm. loc. cit.* *Conyza arborescens L. Amæn.* 406 (1760) non *L. Syst. ed.* 10, 1213 (1759); *Sw. Obs. Bot.* 304; *Lun. Hort. Jam. i.* 299; *Ekm. loc. cit.* *Conyza fruticosa flore pallide purpureo &c. Sloane Cat.* 124 & *Hist.* 257. *Eupatorium erectum hirsutum &c. Browne Hist. Jam.* 313. Specimen from Browne in *Herb. Linn.* (Fig. 49.)

In cleared woodlands at the Crescent Plantation, *Sloane Herb. v.* 17! *Barham* in *Herb. Petiver (Sloane Herb. clxii. 16!)* *Houston!*

*Browne* ! *Robins* ! *Shakespear* ! *Swartz* ; *Wright* ! hedges and roadsides, *Broughton* ! *McNab* ! 47, 48 ; *Macfadyen* ! *St. Mary, Purdie* ! *March* ! 832, 1472 ; *Bancroft* ! *Wilson* 238 ! *Kingston, Prior* ! *Gordon Town* ; *Hope River* ; *Eggers* 3481 ! 3490 ; *Lehmann* 989 ! *Distin* ! *Swainson* ! *Wullschlägel* 875 ; *Tussac* ; *Hansen* ; *Cinchona Forest, Shreve* ; *Hamilton Town, Watt* ! *Arcadia, Mrs. Sewell* ! *Mona* ; foot of *Long Mt.* ; *Arnold Road* ; *Campbell* ! *Fl. Jam.* 5870, 6091, 6152 ; *Providence Road* ; *Prospect Hill, Thompson* ! *Fl. Jam.* 6746, 7909, 8038 ; *Salt Hill Road* ; *Hope* ; *Liguanea Ridge* ; *Harris* ! *Fl. Jam.* 5622, 6993, 12,207 ; near *Newcastle, Britton & Hollick* 1788 ; *Maxon* 895 ; " *Greenland*," *Britton* 2897 ; *Green Island, Britton & Hollick* 2133 ; *Chapelton, Ridley* ! *Mandeville, Norman* 59 ! *Giddy Hall* ; *Flamstead* ; *Miss Maxwell* ! *Blue Mts., Green Hills, Rendle* 74 !

*Shrub* 3-4 ft. high. *Branches* terete, ribbed beneath the brown tomentum. *Leaves* on short petioles of 3-7 mm. l., stiff, somewhat scabrid and often blistered above, pubescent to densely hirsute below, mostly 2.5-6.5 by 1.5-3.5 cm. *Inflorescence* a terminal more or less open scorpioid cyme, nearly straight and several times longer than the leaves or shorter and sharply curved. *Heads* 13-17-flowered, 5-6 mm. across ; bracts diminishing upwards, youngest very small or absent. *Involucre* subhemispherical, 5 by 6 mm. ; scales (in 5 rows) oblong or lanceolate, acute, tomentose to slightly hairy, outer rows small, inner longer and sometimes purple-tipped, 4 mm. l. *Receptacle* minutely pitted. *Corolla* light red and violet to pale mauve and white ; tube slender 4 mm. l. ; lobes linear-oblong, 2.5 mm. l. *Anthers* and *style-arms* exerted. *Achenes* top-shaped, inconspicuously callus-based, appressed silky, about 1 mm. l. *Pappus* scales (of outer row) narrow, 1 mm. l. ; bristles rather coarse, deciduous, smooth, white, about 3 mm. l.

"The bruised leaves are good against pains and inflammations of the eyes. The leaves and pappose seeds, because of their being aromattick, are good in baths to cleanse and scour" (*Piso ex Sloane*). [*Piso* probably refers to a Brazilian species. A.B.R.]

2. *V. acuminata* *Less. in Linnæa* vi. 663 (1831) ; branches pubescent or puberulous ; leaves elliptical, acute or acuminate, narrowed at base ; flowering branches usually sharply curved, not much longer than the leaves ; pappus brown.—*DC. tom. cit.* 47 ; *Griseb. loc. cit.* ; *Wils. loc. cit.* ; *Ekm. tom. cit.* 62. *V. divaricata* *DC. tom. cit.* 48 (1836) (non *Sw.*) ; *Gleason, tom. cit.* 185 & *Bull. Torr. Bot. Club. xl.* 310 ; *Ekm. loc. cit.* *Cacalia acuminata* *Kunze Rev. Gen. Pl. ii.* 969 (1891).

*Shakespear* ! *Wright* ! *Swartz* ; *Distin* ! *Moneague, Prior* ! *Macfadyen* 28 ! *Wullschlägel* ; *J. P.* 665, *Hart* ! *Catherine's Peak, Eggers* 3592 ! *Mandeville, Panton* ! *Glasgow, near Troy, Harris* ! near *Kendal, Harris* ! *Fl. Jam.* 8205 ; between *Claremont and Moneague, Fawcett* ! *Fl. Jam.* 8205 ; *Hansen*.

*Shrub* 4-6 ft. high. *Branches* terete, striated, at length glabrous. *Leaves* subsessile, finely hairy below, firmly membranaceous, 3-7 by 1.5-2.5 cm. *Cymes*, the 14-15-flowered heads (especially the upper ones) rather close together. *Bracts* like the leaves but much smaller. *Heads* obovoid, 7 by 6 mm. *Involucral scales* 5-rowed, outer rows small, ovate-oblong, innermost oblong, 5 mm. l. *Receptacle* minutely pitted and silky fringed. *Corolla* white or pale lavender ; tube slender, 4 mm. l. ; lobes narrow 3 mm. l. *Anthers* and *style-arms*

exserted. *Achenes* somewhat top-shaped with very small callous base, appressed brown-silky, 1-1.5 mm. l. *Pappus*-scales very narrow, barely 1 mm. l.; bristles rather coarse, rough, deciduous, 4.5 mm. l.

3. **V. expansa** Gleas. in *Bull. N. York Bot. Gard. iv.* 186 (1906); branches terete, markedly striate, brown pubescent becoming glabrous; leaves shortly stalked, ovate or ovate-oblong, acute or shortly acuminate, obtuse at base; flowering branches as long as or shorter than the leaves, bearing small sessile secund heads each subtended by a bract or bractless; pappus brown.—*Urb. tom. cit.* 112; *Gleas. in Bull. Torr. Bot. Club xl.* 311; *Ekm. tom. cit.* 64.

Near Troy 2000 ft. alt., *Harris Fl. Jam.* 8796! woods, Bluefields Mt. 2300 ft., *Britton & Hollick* 1956.

A straggling shrub 8-10 ft. high. *Branchlets* rather slender, leafy throughout. *Leaves* narrowed into the base, firmly membranaceous, except for the nerves glabrous above, puberulous below, 2.5-5 by 1.3-2.5 cm.; petioles hairy, 2-3 mm. l. *Cymes* greatly curved, crowded, generally 2-3 cm. l. *Heads* 5 by 4 mm., 11-flowered. *Involucre* campanulate; scales 4-seriate, ovate-oblong, obtuse, brown, dark-tipped, glabrous or nearly glabrous, longer innermost 3 mm. l. *Corolla* white, 6 mm. l. of which half belongs to the narrow lobes. *Anthers* and *style-arms* exserted. *Achenes* somewhat top-shaped, densely bristly, 1 mm. l. *Pappus*-scales pale, .75 mm. l.; bristles rather rough, 3 mm. l.

4. **V. rigida** Sw. *Fl. Ind. Occ. iii.* 1322 (1806); branches, finely brown-tomentose; leaves suborbicular, broadly rounded above, truncate at base; flowering branches at length elongated, flexuose, bearing scattered secund heads solitary or two together in the axil of leaf-like bracts; pappus brown.—*Lun. op. cit.* 300; *DC. tom. cit.* 49; *Sch. Bip. in Journ. Bot. i.* 233; *Griseb. Fl. Br. W. Ind.* 354 (excl. syn.); *Wils. loc. cit.*; *Ekm. tom. cit.* 67; *S. Moore in Journ. Bot. lxvi.* 162. *V. fruticosa* Gleas. in *Bull. N. York Bot. Gard. iv.* 182 (1906) (non Sw.). *Conyza rigida* Sw. *Prodr.* 113 (1788). Specimens from Swartz in Stockholm and in Herb. Mus. Brit.

Rare on limestone hills in the north, Swartz!

*Shrub.* *Branches* rigid, flexuose. *Leaves* on short stout tomentose stalks, nearly orbicular or very broadly ovate (sometimes slightly emarginate), stiff, drying dark above, grey-green below, at first densely grey-tomentose but rapidly becoming pubescent or puberulous on either face, 2-2.8 by 1.8-2.7 cm. (3-4.5 by 2.5-3 cm. Ekman). *Involucre* top-shaped, 10 by 7 mm. (up to 15 mm. Ekman), of 7 rows of brown leathery scales, those of outer rows short and broadly deltoid, innermost narrowly ovate-oblong, obtuse, 7 mm. l. *Receptacle* shallowly pitted. *Heads* 12-flowered (Swartz). *Corolla* not seen. *Achenes* subcylindrical, callus-based, shortly bristly, 2.5 mm. l. *Pappus*, outer of a few narrowly oblong white scales often minutely toothed and cut at tip, 1.5 mm. l., inner of rather coarse, rather rough bristles slightly swollen at the tip and 6 mm. l.



5. **V. Harrisii** *S. Moore in Journ. Bot. lxxi.* 164 (1928); branches leafy to the top, clothed in a dark brown tomentum; leaves ovate or obovate-oblong, rounded at apex and base; flowering branches elongated, straight; heads in short cymes; pappus dark brown.

Peckham Woods, Upper Clarendon, 2500 ft.; *Harris!* Fl. Jam. 12,776. Specimens in Herb. Mus. Brit., Kew. and Jam.

*Shrub.* Branches elongated (up to 9 ft. l.), weak, straight, brown-tomentose. Leaves petioled, stiff, hairy on the nerves, on the upper face shining and prominently nerved, on both faces covered with sunken glands, up to 5.5 by nearly 4 cm., but mostly smaller, the uppermost passing into bracts of the inflorescence; petioles tomentose, 7 mm. l. Cymes scorpioid, short, few-headed. Heads 9–10-flowered, crowded, erect or nearly so. Involucres 7 by 5 mm., subcylindrical, 4–5-seriate; scales oblong-lanceolate, acute, brown with dark top, usually slightly hairy, the innermost 5 to nearly 6 mm. l. Receptacle shortly pitted. Corollas rosy violet. Achenes cylindrical, callus-based, with small bristles, barely 2 mm. l. Pappus-scales narrowly oblong, 1 mm. l.; bristles quickly falling, 4 mm. l.

6. **V. pluvialis** *Gleas. in Bull. Torr. Bot. Club xl.* 312 (1913); branches subterete, striate, puberulous; leaves lanceolate, acute or acuminate, narrowed at base; flowering branches short bearing crowded cymes of small erect heads; pappus brown.—*Ekm. tom. cit.* 64. *V. proclivis* *Gleas. loc. cit.* (1913); *Ekm. tom. cit.* 65. *Baccharis myrsinites* *Griseb. Fl. Br. W. Ind.* 366 (1861) (in part) (non *Pers.*); *Wils. loc. cit.* Type in Herb. New York.

*McNab!* Blue Mt. Peak, J. P. 2120, *Morris!* *Shreve;* *Nichols* 120; Morse's Gap, *Nichols* 20! *Britton* 102; Sir John Peak, *Britton* 203, 3856; St. Thomas, *Britton* 4055; Cinchona, *Marble* 188; Morse's Gap 4900 ft.; New Haven Gap 5600 ft.; *Harris!* Fl. Jam. 11,634, 11,636.

A trailing shrub. Leaves shortly stalked, usually acute, obtuse or acute at base, entire or obscurely denticulate, membranaceous, glabrous or nearly so, mostly 4–5 by 1–2 cm. Cymes 1.5–6 cm. l.; the slender peduncle 1–5 cm. l., minutely pubescent. Heads 5–8-flowered, solitary or few together, sessile or subsessile, the leaflike subtending bracts few and small. Involucres 6–6.5 by 3–4 mm., somewhat top-shaped, of 5–6 rows of brown oblong glabrous scales, the outer very small, innermost 4.5–5 mm. l. Receptacle minutely pitted. Corolla purple to pale lavender; tube narrow, 3.5–4 mm. l.; lobes narrow oblong, 3 mm. l. Anthers subincluded. Style-arms exerted. Achenes somewhat top-shaped, 5-ribbed, bristly, 1.5 mm. l. Outer pappus of narrow brown scales barely 1 mm. l.; bristles rather rough, 4 mm. l.

**Var. *reducta*** var nov. Heads smaller than those of type, 5 by 2.5 mm., 5–6-flowered. Scales of involucre narrower, the innermost 4 mm. l. Corolla 5 mm. l., of which half belongs to the tube. Achenes (immature) 1 mm. l. Pappus-

scales .5 mm. l.; bristles 3 mm. l.—*V. reducta* Gleas. *tom. cit.* 313 (1913). *V. pluvialis* Gleas. *ex Ekm. loc. cit.* in part.

Sir John Peak, *Shreve, Britton* 203; New Haven Gap, *Cinchona, Britton* 151! *Harris*! *Fl. Jam.* 11,636.

[*V. cinerea* (L.) *Less. in Linnæa iv.* 291 (1829); herb with pubescent branches, leaves ovate to lanceolate, pubescent beneath; heads small, erect, in terminal lax corymbs exceeding the leaves; pappus white.—*DC. tom. cit.* 24; *Griseb. Fl. Br. W. Ind.* 353; *Wils. loc. cit.*; *Hitchc. tom. cit.* 96; *Duss op. cit.* 351; *Gleas. in Bull. N. York Bot. Gard. iv.* 174; *Ekm. tom. cit.* 95; *Britton Fl. Amer. Virg.* 97; *Britton & Millsp. Baham. Fl.* 436; *Urb. op. cit. viii.* 706. *Conyza cinerea* L. *Sp. Pl.* 862 (1753).

*Houstoun*! *Wilson* 232; *Macfadyen*! *Irwin Hills, Wullschlägel*; near *Kingston, Prior*! *Clute* 20! *Gordontown, Ball*! *Eggers* 3421! *Banana River, Eggers* 3468; *Hope, Harris*! *Fl. Jam.* 6865, 11,793; *Castleton, Lehmann*! near *Kingston, Hansen*; *Giddy Hall, Miss Maxwell*! *Bath; Arntully; Albion Trail; Orcutt*! 1946, 2008, 3912.—*Bahamas, Cuba, Hispaniola, St. Thomas, St. Croix, Guadeloupe, Grenada, Tobago.* An East Indian weed, naturalised generally in the tropics.

An erect or decumbent herb up to 3 ft. high. Leaves shortly stalked, ovate, obovate or lanceolate, acute or obtuse, narrowed at base, margin undulate-dentate or entire, puberulous above, grey-pubescent below, mostly 1.5–5 by 1–3 cm. Inflorescence up to 12 by 17 cm., but often smaller. Heads on peduncles often longer than themselves, 14–20-flowered. Involucres campanulate, of 5 rows of linear-lanceolate acuminate finely pubescent scales, innermost 4 mm. l., outer smaller. Receptacle minutely pitted. Corolla mauve to rose-colour, 5 mm. l. of which 3.5 mm. belong to the narrow tube. Achenes subcylindrical, callus-based, obscurely ribbed, with short bristles, 1.5 mm. l. Pappus, outer of stiff bristles .3 mm. l.; inner bristles quickly falling, rather rough, 4 mm. l.

In India used as a febrifuge; also in conjunctivitis and other diseases.]

### 3. ELEPHANTOPUS L.

Herbs. Leaves alternate, penninerved. Heads discoid, small, few-flowered, collected into globose or ovoid glomerules usually subtended by broad bracts. Involucre oblong, of a few imbricate narrow dry scales. Receptacle naked or minutely pitted. Corolla tubular, regular or nearly so; limb 5-lobed. Anthers shortly sagittate at base. Style-arms linear. Achenes 10-ribbed, obscurely callus-based. Pappus of 5 or more rigid bristles or scales in 1 or 2 series.

Over 20 species, chiefly tropical American.

- Glomerules in lax corymbs. Pappus of 5  
bristles ..... 1. *E. mollis*.  
Glomerules in spikes. Pappus of numerous  
bristles ..... 2. *E. angustifolius*.

1. *E. mollis* H. B. & K. *Nov. Gen. & Sp. iv.* 26 (1820);  
leaves scattered, obovate or obovate-oblong, toothed;  
glomerules of heads laxly corymbose, subtended by ovate  
bracts.—*DC. Prodr. v.* 86; *Sagra Cub. xi.* 34; *Griseb. Fl.*

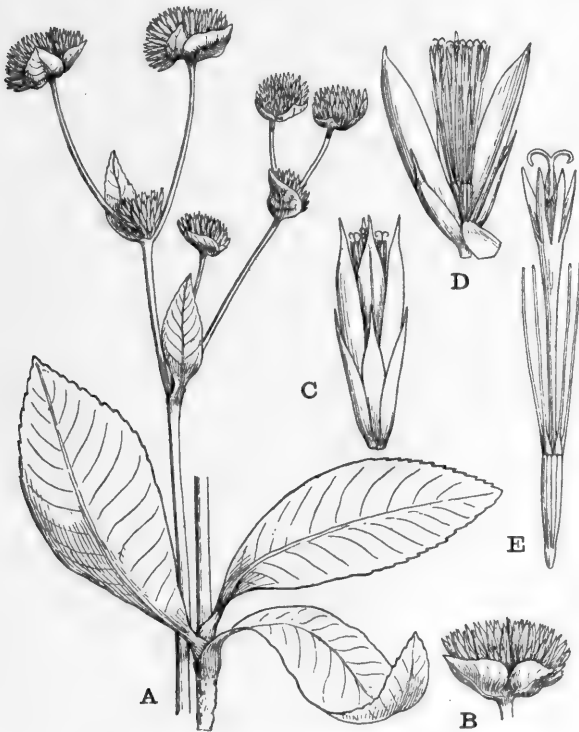


Fig. 50.—*Elephantopus mollis* H. B. & K.

- A, Part of plant in flower  $\times \frac{1}{2}$ .  
B, An inflorescence  $\times \frac{1}{2}$ .  
C, A single head  $\times 4$ .  
D, Head opened  $\times 4$ .  
E, Floret with young achene and  
pappus  $\times 8$ .

*Br. W. Ind.* 355 & *Cat. Cub.* 145; *Wils. in Rep. Geolog. Jam.* 281; *Egg. Fl. St. Croix & Virg.* 63; *Stahl Fl. P.-Rico v.* 105; *Kew Bull.* 1893, 259; *Hart Herb. List Trin.* 32; *Urb. Symb. Ant. iv.* 621 & *viii.* 707; *Jenn. Is. Pin.* 275; *Britt. Fl. Amer. Virg.* 97; *C. F. Baker in Trans. Acad. Sc. St. Louis*

xii. 51, tab. ix. fig. F.; *Gleas. in Bull. N. York Bot. Gard. iv.* 240; *Elm. Leaf. Phil. Bot. i.* 97. *E. tomentosus* L. *Sp. Pl.* 1314 (in part); *Lun. Hort. Jam. i.* 281 (non L.); *Hitchc. in Rep. Miss. Bot. Gard. iv.* 96; *Duss Fl. Ant. Franç. 352*; *Hart loc. cit.* *Scabiosa affinis anomala* &c. *Sloane Cat.* 127 & *Hist. i.* 263, tab. 156, figs. 1 & 2. *Elephantopus erectus foliis integris* &c. *Browne Hist. Jam. i.* 311. (Fig. 50.)

#### Elephant's Foot.

Woods near Guanaboa and elsewhere, *Sloane Herb. v.* 46! *Lane in Herb. Petiver (Sloane Herb. clxii. 26!*); frequent in many places, N. side of Island, *Browne!* Rio Cobre, *Prior!*; *March*; Blue Mts.; Bog Walk; Port Morant; Porus; *Hitchcock*; *Cinchona, J. P. 1243 Hart!* *Claremont, Fawcett & Harris Fl. Jam. 7008!* Blue Mts. Green Hills, *Rendle!* *Flamstead, Miss Maxwell!*—West Indian Islands, tropical and sub-tropical America. Introduced into Philippines from Mexico.

A weed, 2–3 ft. high. *Stem* stoutish, tomentose or hispid. *Leaves* cauline, oblong or oblong-obovate, narrowed into the short petiole, serrate or serrulate, rough above, softly tomentose below, 6–9 by 3–5 cm. *Glomerules* many-headed, up to 2 by 1.5 cm. but more often smaller, the subtending bracts usually shorter than the glomerule, sessile, mucronate, serrulate or nearly entire, strongly nerved on both sides with hispidulous nerves. *Heads* 4-flowered. *Involucre* narrowly cylindrical, of few lanceolate or oblong-lanceolate acuminate pale shining scales, inner 7 mm. l., outer shorter. *Corolla* white, 6.5 mm. l. of which 4.5 mm. belong to the slender tube. *Style-arms* exserted. *Achenes* narrowed below, 10-ribbed, minutely hairy between the ribs, 2–3 mm. l. *Pappus* of 5 straight rather rough bristles dilated at the base, 4 mm. l.

“This plant is a good vulnerary. . . . The leaves are frequently used instead of *Carduus Benedictus* [as a tonic and diaphoretic] among the inhabitants of the French Islands” (Browne).

2. *E. angustifolius* Sw. *Prodr.* 115 (1788); stem usually naked; leaves elongated, linear-lanceolate; glomerules sessile in long simple or branched spikes subtended by ovate to lanceolate bracts.—*Sw. Fl. Ind. Occ.* 1383; *Lun. tom. cit.* 282; *Less. in Linnæa iv.* 327; *Griseb. Fl. Br. W. Ind.* 355; *Wils. loc. cit.*; *Duss loc. cit.*; *Kew Bull. loc. cit.*; *Hart loc. cit.*; *Urb. op. cit. viii.* 707. *Distreptus angustifolius* Cass. in *Dict. Sc. Nat. xviii.* 368 (1819). *Elephantosis angustifolia* DC. *tom. cit.* 87 (1836); *C. F. Baker tom. cit.* 54, tab. 15, fig. D. *Orthopappus angustifolius* Gleas. *tom. cit.* 238 (1906). *Conyza inodora, helenii folio* &c. *Sloane Cat.* 123 & *Hist. i.* 256, tab. 148, fig. 4.

Mount Diablo, *Sloane Herb. v.* 10! *Masson!* *Broughton!* near Barbican, St. Andrew, *McNab* 43! *Macfadyen!* *Wullschlägel!* among grasses, road to Constitution Hill; Norbrook, St. Andrew, *Harris!* *Fl. Jam.* 9025, 10,834; *Flamstead, Miss Maxwell!*—Cuba, Hispaniola, Porto Rico, Gaudeloupe, Martinique, St. Vincent, Tobago, Trinidad, tropical America.

*Herb*, 2–4 ft. high. *Stem* erect, naked or with a few scattered leaves, pubescent or tomentose. *Leaves* chiefly basal (rosulate), obtuse, sheathing at base, crenate to nearly entire, firmly membranaceous, rather rough on both faces and hairy on the nerves, up to 35 by 3·5 cm., usually about 25 by 1·5–2 cm. *Glomerules* several-headed, about 8 by 6 mm., hairy, 5–10 mm. l. *Heads* 3–5-flowered. *Involucre* cylindrical, of few thin pale shining scales, the outer short and broader than the oblong-lanceolate acute 8 mm. l. inner. *Corolla* white; tube narrow, 6 mm. l.; lobes 2 mm. l. *Style-arms* exerted. *Achenes* narrowed below, 10-ribbed, with short bristles, 2 mm. l. *Pappus* of numerous rough bristles slightly dilated at base, 7 mm. l.

#### 4. PSEUDELEPHANTOPUS Rohr.

*Herb*. Leaves alternate, penninerved. Heads discoid, small, few-flowered, sessile, solitary or few together in axillary glomerules. Involucre &c. as of *Elephantopus*. Achenes 10-ribbed, callus-based. Pappus of few bristles, 2 longer than the rest and folded at the top.

A genus of 1 species often united with the preceding.

**P. spicatus** (*B. Juss.*) *Rohr in Skrivt. Nat. Selsk. Kjoeb. ii. pt. 2, 214 (1792)*; *C. F. Baker in Trans. Acad. Sc. St. Louis xii. 54, tab. 9, fig. G*; *Gleas. in Bull. N. York Bot. Gard. iv. 242*; *Britt. Fl. Amer. Virg. 97*. *Elephantopus spicatus B. Juss. in Aubl. Pl. Guian. ii. 808 (1775)*; *Sw. Prodr. 115 & Fl. Ind. Occ. iii. 1380*; *Lun. Hort. Jam. i. 281*; *Mayc. Fl. Barb. 337*; *Sauv. Fl. Cub. 75*; *Kew Bull. 1893, 259*; *Hitchc. in Rep. Miss. Bot. Gard. iv. 96*; *Combs Pl. Cub. 432*; *Duss Fl. Ant. Franç. 352*; *Elmer Leaf. Philip. Bot. i. 96*. *Distreptus spicatus Cass. in Dict. Sc. Nat. xiii. 367 (1819)*; *DC. Prodr. v. 87*; *Sagra Cub. xi. 35*; *Griseb. Pl. Carib. 84, Cat. Cub. 145 & Fl. Br. W. Ind. 355*; *Wils. in Rep. Geolog. Jam. 280*; *Egg. Fl. St. Croix & Virg. 63*; *Stahl Fl. P.-Rico v. 106*; *Urb. Symb. Ant. iv. 621 & viii. 707*; *Hart Herb. List Trin. 31*; *Jenn. Is. Pin. 275*. *Matamoria spicata La Llave & Lex. Nov. Veg. Descr. Fasc. i. 8 (1824)*. *Conyza major inodora &c. Sloane Cat. 123 & Hist. i. 256, tab. 150, figs. 3, 4*. *Elephantopus erectus hirsutus &c. Browne Hist. Jam. i. 311. (Fig. 51.)*

#### Dog's Tongue.

Rio Cobre, near St. Jago de la Vega; Guanaboa; Moneague Savanna; *Sloane Herb. v. 9! Houstoun! Wright! Shakespear! Masson!* common in most parts of Jamaica, *Browne*; Moneague, *Prior!* Constant Spring; Bog Walk; Porus; Port Morant; *Hitchcock*; near Gordontown, *Ball!* Hope, *Harris Fl. Jam. 6936!* Constant Spring, *Ridley!* Giddy Hall, St. Elizabeth, *Miss Maxwell!* dry ground by railway, Williamsfield, Manchester, *Rendle 158!* Balaclava, *Orcutt 914!*—West Indies generally, tropical America. Introduced into Philippines and Japan.

A freely branching erect herb, 1-3 ft. high. Leaves, lower obovate to obovate-oblong and oblanceolate, rounded or obtuse at tip, narrowed below into the short, sheathing petiole, margin crenulate or undulate, firmly membranaceous, somewhat scabrid and often with hispid hairs on underside nerves, mostly 4-10 by 1.5-5 cm.; upper leaves much reduced, linear or linear-lanceolate. Glomerules 1-4-headed, sessile in the axils of the upper leaves. Heads 4-flowered, 10 by 3 mm. Involucre cylindrical, of few ovate-oblong acute scales, the inner

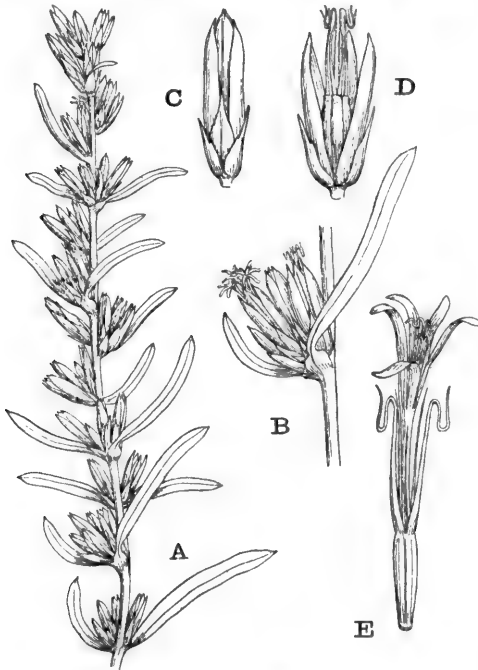


Fig. 51.—*Pseudelephantopus spicatus* (B. Juss.) Rohr.

- A, Upper part of shoot in flower  $\times \frac{1}{2}$ .      D, Head opened  $\times 2$ .  
 B, Inflorescence  $\times \frac{1}{2}$ .                              E, Floret with pappus  $\times 4$ .  
 C, Head  $\times 2$ .

8 mm. l. Corolla white or pale mauve; tube narrow 4.5 mm. l.; lobes barely 4 mm. l. Style-arms exserted. Achenes narrowed below, 10-ribbed, bristly, 5 mm. l. Pappus of 2 bristles, twice bent at the top, somewhat dilated at base, 6 mm. l. and of 4 or 5 weaker and shorter (3-5 mm. l.) bristles straight or nearly so and dilated and often lobed or pectinate at base.

"The stalks and leaves being hard are made use of for brooms to sweep houses" (Sloane).

[*Rozandra argentea* Rottb., a plant of tropical America, the Lesser Antilles and Porto Rico, was introduced from St. Vincent into the Bath Garden by Broughton in 1794. There is a Jamaica specimen in the Banksian Herbarium sent by Dancer; but whether this came from the

Garden or was an escape from it or a native plant is uncertain, though, as we have no other Jamaica record, the latter supposition is improbable. Grisebach gives it as Jamaican on the authority of Sloane, and Fawcett, following Grisebach, includes it in his list : but Sloane says he got his specimen (in Herb. Sloane) at Madeira or one of the Caribbean Islands, the latter no doubt. Under these circumstances the genus is not included here ; but future collectors should bear it in mind, as it may have been overlooked. It is a shrubby plant 3-6 ft. high with long branches bearing lanceolate or ovate leaves *silvery on the underside* and about 5 by 2.5 cm., with glomerules of small 1-flowered heads in the axils. The affinity is with *Elephantopus*.]

## 5. ADENOSTEMMA Forst.

Herbs, usually glandular-hairy. Leaves opposite. Heads discoid, in corymbs or panicles. Involucre campanulate or subhemispherical, of 1-2 rows of nearly equal, almost always free, scales. Receptacle naked. Corolla regular, 5-fid. Anthers obtuse at base, truncate and unappendaged at top. Style-arms elongated, usually terete, obtuse. Achenes 5-ribbed. Pappus of 3-5 stout usually clavate spreading out-growths.

About 10 species, chiefly in tropics of both Worlds.

Decumbent. Leaves small, shallowly toothed.

Petioles slender. Heads 6 mm. across ..... 1. *A. Verbesina*.

Erect. Leaves large, coarsely toothed or lobulate.

Petioles winged. Heads 8 mm. across ..... 2. *A. brasiliensis*.

1. *A. Verbesina* (L.) Sch. Bip. in *Journ. Bot.* i. 235 (1863) ; stem slender, rooting at the nodes ; leaves ovate, shallowly toothed ; heads very few to the corymb, sometimes solitary ; involucre finely glandular.—*Kuntze Rev. Gen. Pl.* ii. 304 ; *Urb. Symb. Ant.* iv. 622 & viii. 708. *A. Swartzii* Cass. in *Dict. Sc. Nat.* xxv. 362 (1822) ; *DC. Prodr.* v. 110 ; *Griseb. Fl. Br. W. Ind.* 356 & *Cat. Cub.* 145 ; *Wils. in Rep. Geolog. Jam.* 281 ; *Sauv. Fl. Cub.* 76 ; *Kew Bull.* 1893, 259. *Cotula Verbesina* L. *Amæn.* v. 407 (1760). *Lavenia decumbens* Sw. *Prodr.* 112 (1788) & *Fl. Ind. Occ.* iii. 1331 ; *Lun. Hort. Jam.* i. 440. *Chrysanthemum sylvaticum repens* &c. *Sloane Cat.* 126 & *Hist.* i. 262, tab. 155, fig. 2. *Tanacetum herbaceum erectum* &c. *Browne Hist. Jam.* i. 316. (Fig. 52.)

Inland woods, *Sloane Herb.* v. 39 ! *Broughton ! Macfadyen ! Wilson ; Morse's Gap, Nichols* 159 ! damp places near Vinegar Hill ; Tyre near Troy ; forest near Hardware Gap ; *Harris ! Fl. Jam.* 5310, 5745, 5964, 8809, 10,122.—Cuba, Porto Rico, St. Kitts, St. Vincent, Brazil, Ecuador.

A weak lowly decumbent sparsely glandular-hairy *annual* rooting at the lower nodes. *Leaves* obtuse, broad below but suddenly narrowed into the slender petiole, toothed or subentire, 1-3.5 by .7-3 cm. *Corymbs* mostly 1-4-headed ; heads about 20-flowered, 6 mm. across,

on slender glandular-hairy peduncles usually longer than the leaves. *Involucre* campanulate, 4 by 5 mm. ; scales broadly oblong or oblong-spathulate, obtuse, sometimes slightly toothed, dark green. *Corolla* white, 2 mm. l. ; tube shorter than the campanulate limb. *Style-arms* exserted. *Achenes* somewhat curved, narrowed at base, minutely glandular, 2-2.5 mm. l. *Pappus*-outgrowths usually 3, often unequal, clavellate, microscopically papillose, 1 mm. l. more or less.

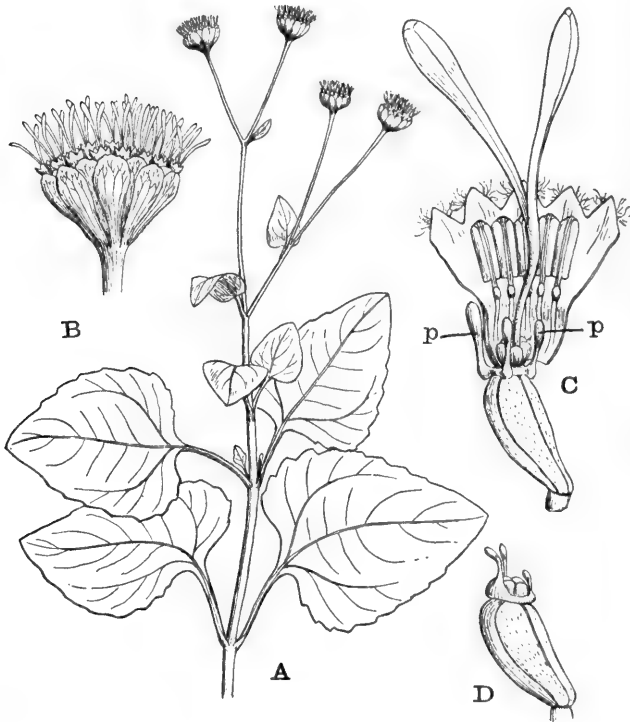


Fig. 52.—*Adenostemma Verbesina* (L.) Sch. Bip.

A, Portion of plant in flower  $\times \frac{1}{2}$ .  
B, Head  $\times 3$ .

C, Floret, the corolla opened  $\times 12$  ; p, pappus.  
D, Achene  $\times 12$ .

2. ***A. brasilianum*** (Pers.) Cass. *Nat. xxv.* 363 (1822) ; stem erect ; leaves ovate, coarsely toothed, sometimes lobulate ; corymbs usually several-headed ; involucre coarsely glandular. —*DC. tom. cit.* 112 ; *Hook. Ic. Pl.* 238. *Verbesina brasiliiana* Pers. *Syn.* 472 (1805).

In shade on rocky slopes near Troy, *Harris Fl. Jam.* 12,622 ! — Tropical South America, Paraguay.

An erect, branched *herb* up to 3 ft. high. *Stem* stout, fistular, like



the branches coarsely glandular. *Leaves* obtuse, from the broad base narrowed into the winged petiole, glandular chiefly on the nerves, up to 15 by 12 cm., but often less than 10 by 5 cm. *Corymbs* few- or several-headed; heads nearly 50-flowered, 8 mm. across, on slender, glandular peduncles sometimes only as long as or but little longer than themselves. *Involucre* campanulate, 5 by 7 mm.; scales united at base, oblong or oblong-ovate, obtuse, coarsely glandular-hairy on back. *Corolla* white, 2.5 mm. long; tube nearly as long as limb. *Style-arms* exerted. *Achenes* narrowed below, coarsely glandular, 2-2.5 mm. l. *Pappus*-outgrowths generally 2, clavate, minutely papillose, about 1 mm. l.

This is usually considered to be a variety of the widely distributed *A. viscosum* Forst.

## 6. AGERATUM L.

Herbs or shrubs. Leaves opposite, the upper sometimes alternate. Heads discoid, many-flowered, in corymbs or lax panicles. Involucre campanulate, of 2-3 rows of narrow equal or nearly equal scales. Receptacle naked or scaly. Corolla regular, 5-fid. Anthers obtuse at base, with a terminal appendage. Style-arms elongated, exerted, terete, obtuse. Achenes 5-angled and ribbed. Pappus of 5 or more scales, awned or muticous, free or united at base.

Nearly 30 species, chiefly American from Florida to tropical South America; one species widely distributed in both Worlds.

Pappus of 5 awned scales.

Involucral leaves oblong, shortly pointed,  
glabrous ..... 1. *A. conyzoides*.

Involucral leaves linear-lanceolate, long-  
pointed, hairy ..... 2. *A. Houstonianum*.

Pappus of 5 awnless scales ..... 3. *A. latifolium*.

1. *A. conyzoides* L. *Sp. Pl.* 839 (1753); leaves ovate, crenate or crenulate; heads in terminal corymbs; involucral scales oblong; pappus of 5 equal awned scales, about as long as the corolla.—*Lun. Hort. Jam. i.* 62; *Mayc. Fl. Barb.* 322; *DC. Prodr. v.* 108; *Griseb. Fl. Br. W. Ind.* 356 & *Cat. Cub.* 145; *Wils. in Rep. Geolog.* 281; *Sauv. Fl. Cub.* 76; *Stahl Fl. P.-Rico v.* 110; *Egg. Fl. St. Croix & Virg.* 63; *Kew Bull.* 1893, 259; *Hitchc. in Rep. Miss. Bot. Gard. iv.* 97; *Combs Pl. Cub.* 432; *Sang. Fl. Cub.* 47; *Urb. Symb. Ant. iv.* 622 & *viii.* 709; *Hart Herb. List Trin.* 81; *Robins. in Proc. Amer. Acad. xlix.* 460; *Britt. in Fl. Amer. Virg.* 97 & *Fl. Berm.* 407. *A. hirtum* Lam. *Encyl. i.* 54 (1783). *Cacalia mentrasto Vell. Fl. Flum.* 339 & *viii. t.* 69 (1825). *Cacalia conyzoides Kuntze Rev. Gen. Pl. ii.* 325 (1891). *Conyza urticæ folio Sloane Cat.* 124 & *Hist. i.* 258, *tab.* 152, *fig.* 2. *Eupatorium*

humile africanum &c. *Sloane Hist. ii.* 381. Specimen from Browne in Herb. Linn. and one in Hort. Clifflort. in Herb. Mus. Brit.

*Sloane* ! Herb. v. 19, 20, 20\*1, 20\*2 and 24 ; *Browne* ! *March* 1354 ! Moneague Hills, *Prior* ! Golden Spring, *Thompson* ! Fl. Jam. 7985, 8087 ; near Cinchona ; Bull Head Mt. ; Castleton Grounds ; *Harris* ! Fl. Jam. 11,973, 12,270, 12,514 ; Sweetwater, *Orcutt* 2190 !—Widely distributed through the warmer regions of both Worlds.

A usually erect branched *annual*, 1–3 ft. high. *Stem* leafy throughout, like the branches pubescent. *Leaves* on slender hairy 5–15 mm. l. petioles, obtuse, rounded or obtuse at base, membranaceous, hairy chiefly on the nerves, 2–6 by 1.5–4 cm. *Corymbs* usually stalked, of several rather crowded heads ; heads on hairy peduncles 3–8 mm. l., about 50-flowered, 6 mm. across. Scales of *involucre* shortly acuminate, usually minutely denticulate near the top, membrane-edged, 2–3-nerved, glabrous or nearly so, 5 by 1 mm. *Corolla* lavender, blue or white, 2.5–3 mm. l. *Achenes* somewhat narrowed below, 5-angled and ribbed, callus-based, black, glabrous or slightly hairy, 2 mm. l. *Pappus* white, 2.5 mm. l.

Var. *inæquipaleacea* *Hieron. in Engl. Bot. Jahrb. xix.* 44 (1894). Pappus with 1–3 awned scales and the rest short and awnless, otherwise as the type.—*Robins. tom. cit.* 462.

Jamaica, unlocalised, Herb. Jam. *Hart* ! (or *Morris*).—Bahamas, Is. Pinos, Hispaniola, Colombia, Peru, Bolivia.

2. **A. Houstonianum** *Mill. Gard. Dict. ed.* 8 (1768) ; leaves ovate, serrate or serrulate ; corymbs terminal ; involucre scales linear-lanceolate, gradually acuminate ; pappus of 5 equal awned scales.—*Robins. tom. cit.* 459 & *Contrib. Gray Herb. lxxviii.* 5 ; *Britt. Fl. Berm.* 406. *A. mexicanum* *Sims Bot. Mag. tab.* 2524 (1825) ; *Sweet Brit. Fl. Gard. i. tab.* 89. *A. conyzoides* L. var. *mexicanum* *DC. loc. cit.* (1836). *Carelia Houstoniana* *Kuntze loc. cit.* (1891). Type (from Vera Cruz) in Herb. Mus. Brit.

Banana River, *Eggers* 3445 ! Cinchona, *Clute* 190 ! August Town River, *Campbell* Fl. Jam. 6268 ! near Cinchona, *Harris* Fl. Jam. 11,971 ! Morse's Gap, *Nichols* 33 ; by the waterside, Hermitage River, *Norman* 132 ! Guava Ridge, *Miss Maxwell* !—Green Hills to Woodcutter's Gap, *Rendle* 13 ! 78 !—Bermuda, Martinique, Central America, Brazil, St. Helena : introduced into Annam and South China.

*Annual herb*, erect or decumbent, pubescent or nearly glabrous. *Leaves* often truncate-cordate at base, otherwise (also the inflorescence) as of last. *Heads* about 70-flowered, 6–8 mm. across. *Involucre* 5 mm. l. ; scales hairy on the back, 2-nerved. *Corolla* lilac, blue, white or yellow, 3–3.5 mm. l. *Achene* and *pappus* as of *A. conyzoides*.

3. *A. latifolium* Cav.  *Ic. iv. 33, tab. 357* (1797); leaves ovate or ovate-oblong, bluntly dentate; corymbs terminal; involucrel scales oblong-lanceolate, acute; pappus of 5 short, oblong, incised scales.—*Britt. & Millsp. Fl. Baham. 436*; *Robins. tom. cit. 465*; *Urb. op. cit. viii. 709*. *A. brachystephanum* Regel *Gartenfl. iii. 245, tab. 108, fig. C.* (1854). *A.*

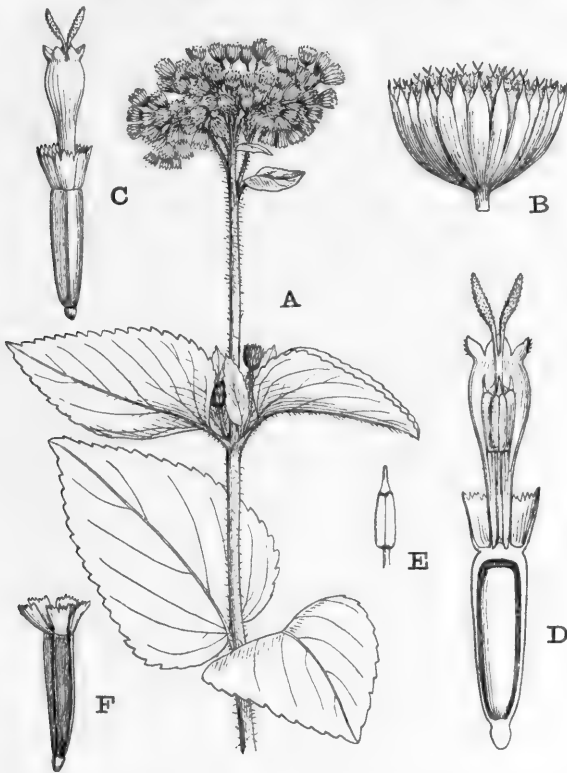


Fig. 53.—*Ageratum latifolium* Cav.

A, Upper part of plant  $\times \frac{1}{2}$ .

B, Head  $\times 4$ .

C, Floret  $\times 8$ .

D, Floret cut lengthwise  $\times 12$ .

E, Anther  $\times 12$ .

F, Achene and pappus  $\times 8$ .

*muticum* Griseb. *Fl. Br. W. Ind. 356* (1861) & *Cat. Cub. 145*; *Sauv. op. cit. 76*; *Wils. loc. cit.*; *Hitchc. loc. cit.* *Carelia brachystephana* Kuntze *loc. cit.* *Carelia mutica* Kuntze *loc. cit.* (Fig. 53.)

March 919! Mt. Diablo, Prior! *Wullschlagel*; Blue Mt. Peak, *Hitchcock*; Peckham, Upper Clarendon, *Harris* *Fl. Jam. 12,825*!—Bahamas, Cuba, Hispaniola, Central and western South America.

Annual sparsely hairy herb, 2-3 ft. high. *Leaves* shortly petioled, truncate rounded or obtuse at base, 2-4.5 by 1-2.5 cm. *Corymbs* few-headed, lax or somewhat crowded. *Heads* about 30-flowered (about 40-flowered, Robinson), 5 mm. across. *Involucre* 4 mm. l.; leaves glabrous, 2-nerved. *Corolla* blue, violet or white, barely 2 mm. l. *Achenes* as long as corolla, narrowly cylindrical, slightly hairy on the 5 ribs. Scales of *pappus* free, white, very obtuse, .5 mm. l.

## 7. EUPATORIUM L.

Herbs or shrubs. Leaves opposite, penninerved, 3-nerved (from the base) or triplinerved (from above the base), upper ones sometimes alternate. Heads discoid, usually rather small, in corymbs or panicles or solitary. Involucre of scarious scales in few or several rows. Receptacle flat, convex or shortly cylindrical, usually naked, sometimes hairy or scaly. Corolla regular, tubular below, limb 5-lobed or 5-toothed. Anthers obtuse at base and with an apical appendage. Style-arms exerted, elongated, obtuse, often expanded at the tip. Achenes strongly 5-ribbed, crowned by a pappus of numerous fine bristles in a single series.

A large genus of about 1000 species, mostly American from United States to Chile and Argentina. Fewer in Asia; very rare in Africa; absent from Australia.

Receptacle glabrous, flat or but slightly raised, or linear.

§ **Cylindrocephala.** Heads cylindrical; involucreal scales in several series, closely appressed, firmly scarious, shed at maturity. Receptacle flat or nearly so.

Leaves ovate or ovate-lanceolate. Heads about 1 cm. long .....

1. *E. odoratum.*

Leaves linear-lanceolate. Heads slightly exceeding .5 cm. in length .....

2. *E. ivæfolium.*

§ **Subimbricatæ.** Heads cylindrical or more or less campanulate; involucreal scales in few rows, very unequal, not closely appressed, persistent till fall of achenes. Receptacle linear, narrow, flat or slightly convex.

Heads cylindrical. Receptacle narrow.

Bristles of pappus fine. Involucreal scales obtuse.

Leaves with translucent glands and lines.

Branches glabrous. Leaves lanceolate, serrulate .....

3. *E. Dalea.*

Branches hairy. Leaves ovate or ovate-lanceolate, serrate .....

4. *E. parviflorum.*

- Leaves without translucent glands and lines.
- Leaves penninerved, narrowed at base..... 5. *E. critoniforme*.
- Leaves triplinerved, broad at base..... 6. *E. tetranthum*.
- Bristles of pappus coarse. Involucral scales rotundate..... 7. *E. platychaetum*.
- Heads campanulate. Receptacle flat or slightly convex.
- Leaves amplexicaul.
- Branchlets puberulous ..... 8. *E. Dolphini*.
- Branchlets hirsute..... 9. *E. cordifolium*.
- Leaves stalked ..... 10. *E. montanum*.
- § **Eximbricatæ.** Heads campanulate; involucral scales subequal, in 1 or 2 rows, but slightly imbricated; receptacle flat or nearly so.
- Shrubby. Branches rough, with short hairs or puberulous.
- Leaves with a few coarse serratures..... 11. *E. nervosum*.
- Leaves entire or undulate ..... 12. *E. gracilipes*.
- Shrubby. Branches rusty-hairy.
- Hairs glandular ..... 13. *E. glandulosum*.
- Hairs simple.
- Leaves 3-nerved (from the base).
- Indumentum rather coarse. Involucral scales linear-oblong..... 14. *E. corylifolium*.
- Indumentum velvety. Involucral scales oblong ..... 15. *E. villosum*.
- Leaves triplinerved (from above the base).
- Branches rusty-velvety. Leaves ovate ..... 16. *E. triste*.
- Branches sparingly rusty. Leaves lanceolate ..... 17. *E. riparium*.
- Leaves penninerved.
- Leaves parchment-like, rounded at base..... 18. *E. Hartii*.
- Leaves parchment-like, narrowed at base..... 19. *E. schizanthum*.
- Leaves leathery, very broad-based..... 20. *E. hammatocladum*.
- Herbaceous annual ..... 21. *E. microstemon*.
- § **Praxelis.** Receptacle strongly convex, hemispherical, columnar or conical.
- Leaves 3-nerved, rounded at base. Involucre 10 by 4-5 mm.
- Mainly glabrous. Leaves somewhat leathery ..... 22. *E. rigidum*.
- Hairy. Leaves firmly membranous .... 23. *E. heteroclinium*.
- Leaves triplinerved, suddenly contracted at base. Involucre 8 by 5.5 mm..... 24. *E. Maxwelliæ*.
- Receptacle hairy, convex.
- § **Hebeclinium.**
- Leaves broadly cordate, long-petioled..... 25. *E. macrophyllum*.

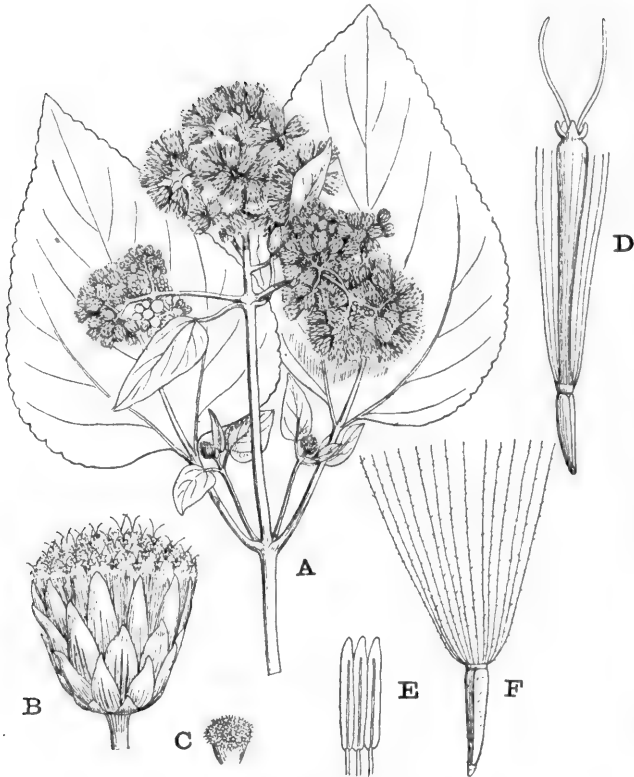


Fig. 54.—*Eupatorium macrophyllum* L.

A, Portion of plant in flower  $\times \frac{1}{3}$ .  
 B, Head of flowers  $\times 4$ .  
 C, Hairy receptacle  $\times 5$ .

D, Floret  $\times 12$ .  
 E, Anthers  $\times 12$ .  
 F, Achene  $\times 12$ .

1. *E. odoratum* L. *Syst. ed.* 10, 1205 (1760); leaves broad from coarsely toothed to nearly entire, 3-nerved; corymbs densely headed; heads 1 to nearly 1.5 cm. long.—*Sw. Obs. Bot.* 300; *Lun. Hort. Jam. i.* 371; *Mayc. Fl. Barb.* 321; *DC. Prodr. v.* 143; *Griseb. Fl. Br. W. Ind.* 358 & *Cat. Cub.* 146; *Sauv. Fl. Cub.* 76; *Wils. in Rep. Geolog. Jam.* 280; *Egg. Fl. St. Croix & Virg.* 63; *Stahl Fl. P.-Rico* 111; *Hitchc. in Rep. Miss. Bot. Gard. iv.* 97; *Kew Bull.* 1893, 259; *Duss Fl. Ant. Franç.* 354; *Sang. Fl. Cub.* 48; *Hart Herb. List Trin.* 32; *Urb. Symb. Ant. iv.* 623 & *viii.* 710; *Robins. in Proc. Amer. Acad. lv.* 280, 346, *lx.* 46 & *Contrib. U.S. Nat. Herb. xxiii.* 1444 (cum syn.); *Britton Fl. Amer. Virg.* 97 & *Fl. Berm.* 388; *Britton & Millsp. Fl. Baham.* 438. E.

conyzoides *Mill. Gard. Dict. ed. 8, No. 14 (1768)*; *Vahl Symb. iii. 96*; *DC. loc. cit.*; *Griseb. ll. cc.*; *Sauv. loc. cit.*; *Wils. loc. cit.*; *Stahl op. cit. 110*; *Hitchc. loc. cit.*; *Sang. loc. cit.* *E. floribundum H. B. & K. Nov. Gen. & Sp. iv. 118, t. 344 (1820)*; *DC. loc. cit.* *E. conyzoides Mill. var. floribunda Hieron. in Engl. Bot. Jahrb. xxxvi. 463 (1905)* & *var. tam-billense Hieron. tom. cit. 464.* *Eupatoria conyzoides folio molli &c. Pluk. Alm. 141, t. 177, f. 3.* *Conyza fruticosa, folio hastato &c. Sloane Cat. 124 & Hist. i. 257.* *Eupatorium odoratum hirsutum &c. Browne Hist. Jam. 313.* Specimen from Browne in Herb. Linn.

Archangel, Christmas Rose, Jack-in-the-Bush, Bitter Bush.

*Sloane Herb. v. 12!* *Browne! Houstoun! Broughton! Aguatta Vale, Metcalfe! Manchester, Purdie! Distin! Macfadyen! Gosse; Moneague, Purdie! Mandeville, Panton! Constant Spring; Port Morant; Hitchcock; near Cinchona, Fawcett Fl. Jam. 8219!* Salt Hill Road; Hope; Hope Road; Hope Grounds; John's Hall, Upper Clarendon; *Harris! Fl. Jam. 5618, 6999, 8216, 8224, 12,833.* Pleasant Hill, Blue Mts., *Miss Perkins 1260!* Balaclava, *Orcutt 678!*—West Indies and continental America from Florida to Paraguay.

A straggling, openly branching bush, 4–8 ft. high. Branches pubescent or nearly glabrous, multistriate. Leaves on slender stalks usually 1–2 cm. l., rhombic-ovate to ovate-lanceolate, acute or acuminate, truncate or cuneate at base, pubescent or puberulous chiefly on the nerves, copiously glandular on the lower face, mostly about 5–7 by 2–3 cm., upper often smaller. Corymbs terminal, many-headed, 5–10 cm. across. Peduncles usually shorter than the 14–25-flowered heads. Involucre 9 by 2.5 mm., of oblong, obtuse or subacute, pale 3-nerved scales in 4–5 rows, the lowest short, the uppermost about 7 mm. l. and sometimes linear. Corolla pale blue, pale lavender or white, 5 mm. l. Achenes narrowed below, hairy on ribs or glabrous, 4–5 mm. l. Pappus as long as achene; bristles dirty white, rather rough.

“It is counted as an admirable vulnerary being only beaten and applied, having cured one who was lanc'd through the body at the taking of the Island” (Sloane). It has also been used as an emmenagogue.

2. *E. ivæfolium L. Syst. ed. 10, 1205 (1760)*; leaves narrow, toothed, 3-nerved; corymbs loosely headed; heads about 7 mm. l.—*Sw. Obs. Bot. 301*; *DC. tom. cit. 146*; *Griseb. Fl. Br. W. Ind. 359 & Cat. Cub. 146*; *Sauv. loc. cit.*; *Wils. loc. cit.*; *Duss op. cit. 355*; *Robins. in Proc. Amer. Acad. lv. 275, lx. 44 & lxi. 37*; *Urb. op. cit. viii. 711.* Specimen from Browne in Herb. Linn.

*Lane in Herb. Petiver (Sloane Herb. clxii. 18!)*; *Browne! Wright! Swartz! Macfadyen!*—Cuba and Lesser Antilles, S. United States to Brazil and Paraguay.

A small branching shrub. Branches slightly rough or glabrous, striate. Leaves linear-lanceolate, acute, narrowed at base into the short

petiole, distantly toothed, nerves slightly rough, mostly 3-5 by .5-1.5 cm. *Corymbs* terminal, trichotomous, 5-10 cm. across. *Heads* about 20-flowered, stalked. *Involucre* 6-7 by 3.5-4 mm.; scales 4-5-seriate, oblong, obtuse, puberulous and sometimes denticulate at top, 3-striate, outer short, innermost 5 mm. l. *Corolla* purplish, 3 mm. l. *Achenes* narrowed at base, glabrous or nearly so, 3 mm. l. *Pappus* pale brown, 4 mm. l.

3. **E. Dalea** *L. Syst. ed.* 10, 1204 (1760); shrub up to 15 ft.; leaves lanceolate; heads 3-5-flowered; bristles of pappus fine.—*Sw. Obs. Bot.* 298 & *Fl. Ind. Occ. iii.* 1300; *Lun. tom. cit.* 369; *Hitchc. loc. cit.*; *Shreve Mont. Rain-For.* 22. *Critonia Dalea DC. tom. cit.* 140 (1836); *Griseb. Fl. Br. W. Ind.* 362; *Wils. loc. cit.* *Dalea fruticosa, foliis oppositis &c. Browne Hist. Jam.* 239 t. 34, f. 1. Specimen from Browne in Herb. Linn.

Lower hills of Liguanea, *Browne!* *Wright!* *Macfadyen!* Manchester, *Purdie!* Blue Mt. Peak, *Hitchcock!* Hope River, *Eggers* 3488! Long Mountain Road, *Campbell* Fl. Jam. 6118! Near Gordon Town; Hope River; Long Mountain; *Harris!* Fl. Jam. 6667, 8235, 8867, 9059, 10,007. Giddy Hall, St. Elizabeth, *Miss Maxwell!*—Cuba?

#### Cigar Bush.

A slender, glabrous shrub of grateful odour, 10-15 ft. high. *Branches* terete, brown, striate. *Leaves* acute or acuminate, narrowed into the 8-10 mm. l. petiole, serrulate, penninerved, filled with translucent dots and short lines, 7-12 by 1.5-4 cm. *Heads* few together, sessile, in open panicles up to 20 cm. across, composed of slenderly stalked corymbs. *Involucre* 5 by 1.5 mm.; scales 4-rowed, rather loose, brown, 3-striate, middle scales about half as long as the 4 mm. l. innermost. *Corolla* white, 3 mm. l.; tube nearly twice as long as limb. *Achene* pointed below, hairy between the 5 prominent ribs, 3 mm. l. *Pappus*-bristles rather rough, dirty white, 3.5 mm. l.

4. **E. parviflorum** *Sw. Prodr.* 111 (1788); shrub or small tree; leaves ovate to ovate-lanceolate, serrate; heads 2-3-flowered; bristles of pappus fine.—*Sw. Obs. Bot.* 299 & *Fl. Ind. Occ. iii.* 1299; *Lun. tom. cit.* 370; *Hitchc. loc. cit.*; *Shreve loc. cit.* *Critonia parviflora DC. tom. cit.* 140 (1836); *Griseb. Fl. Br. W. Ind.* 362; *Wils. loc. cit.*

*Masson!* Moneague and Rio Cobre; *Prior!* *Macfadyen!* St. Mary, *McNab!* *Distin!* *Wilson* 235! mountains of Manchester, *Purdie!* Port Antonio, *Hitchcock!* Portland Gap; Silver Hill; River Head near Ewarton; Clydesdale; near Morse's Gap; Tyre, near Troy; near Cinchona; Walderston, Manchester; *Harris!* Fl. Jam. 5461, 5627, 6700, 7005, 8198, 9069, 9142, 9511, 12,858; Trafalgar, Blue Mts., *Miss Perkins* 1184!

*Shrub* of 10 ft. or small tree up to 25 ft., odourless. *Branches* pubescent or puberulous, brown, striate. *Leaves* narrowed at the obtuse tip, obtuse or rotundate at base, penninerved, on 1-2 cm. l. stalks, nearly glabrous, with translucent glands and lines, mostly 10-16 by 4-9 cm. *Inflorescence* as of the last, the panicles open, up to



20 cm. across, but often much less. *Involucre* 5 by nearly 2 mm.; scales as of the last, innermost 4 mm. l. *Corolla* white, 3 mm. l. *Achenes* narrowed below, 2 mm. l., slightly hairy upon and between the ribs. *Pappus*-bristles dirty white, rather rough, 3 mm. l.

5. ***E. critoniforme*** Urb. *Symb. Ant. i.* 458 (1900); bushy shrub, 12–15 ft. high; leaves lanceolate, acuminate; heads 4–5-flowered; bristles of pappus fine.—*Shreve loc. cit.* Co-types in Herb. Jam. & Herb. Mus. Brit.

J. P. 1043, 1360 (*Hart*!); below Vinegar Hill, St. George's; near Vinegar Hill Gap; *Harris*! Fl. Jam. 6335, 6734.

Nearly glabrous. *Leaves* narrowed into the 1–2 cm. l. petiole, entire or undulate, penninerved, eglandular, 6–12 by 3–4.5 cm. *Panicle* up to 10 cm. across, the branches crowned by laxly headed corymbs. *Heads* sessile. *Involucre* 5.5 by 3.5 mm.; scales as of the last two. *Corolla* 3 mm. l. *Achenes* somewhat top-shaped, very prominently ribbed, glabrous and shining, 3 mm. l. *Pappus* as of last.

6. ***E. tetranthum*** Griseb. *Fl. Br. W. Ind.* 360 (1861); trailing shrub; leaves lanceolate or oblong-lanceolate, triplinerved; heads 4-flowered; bristles of pappus fine.—*Wils. loc. cit.*; *Urb. op. cit. i.* 459. Specimens in Herb. Kew. authenticated by Grisebach.

Sedburgh Woods, Manchester; *Purdie*! *Macfadyen*! *Wullschlägel*. A loose trailing shrub, up to 16 ft. *Branches* striate, glabrous or nearly so. *Leaves* stalked, obtuse, broad at base, without glands or transparent lines, mostly 2.5–7 by 1–3.5 cm. *Inflorescence* an open panicle of slenderly stalked few-headed corymbs. *Heads* 3.5 by 2.5 cm. *Involucre* 2.5 by 2 mm. *Corolla* 2 mm. l. *Achenes* somewhat top-shaped, slightly rough on the ribs, about 1 mm. l. *Pappus*-bristles rather rigid, rather rough, pale brown, barely 2 mm. l.

7. ***E. platychætum*** Urb. in *Notizbl. Bot. Gart. Berlin viii.* 23 (1921); tall bush; leaves as of *E. Dalea*; heads 3–4-flowered; bristles of pappus coarse.

Holly Mount, Mt. Diablo, *Harris*! Fl. Jam. 8985.

*Bush* 20 ft. high. *Leaves* lanceolate, nearly entire or serrulate. *Panicles* about 10 cm. across, of few branches, the branchlets crowned by few-headed corymbs. *Heads* sessile. *Involucre* 5 by 2.5 mm.; scales 4-seriate, rotundate, prominently 3-striate, innermost 3.5 mm. l. *Corolla* 3 mm. l. *Achenes* narrowed at base, shining, glabrous, 2 mm. l. *Pappus*-hairs rather rough, dirty white, 3 mm. l.

The rotundate involucreal scales and the pappus afford an easy means of distinguishing this species.

8. ***E. Dolphini*** Urb. *Symb. Ant. v.* 522 (1908); shrub; branches puberulous; leaves sessile, shining, nearly glabrous; heads about 50-flowered.

Dolphin Head, *Harris*! Fl. Jam. 9250.

*Shrub* up to 6 ft. high. *Branches* striate. *Leaves* ovate, shortly acuminate, cordate and amplexicaul at base, 5-nerved, coarsely serrate,

hairy on nerves below, papery, 4-7 by 2.5-4 cm. *Panicle* about as long as leaves, 3-furrowed, pubescent; branchlets crowned by a few-headed corymb. *Involucre* slightly hairy, 4 by 6 mm.; scales 4-seriate, usually 3-striate, oblong, outermost acute, the rest obtuse or rotundate, innermost 3.5 mm. l. *Corolla* lavender-blue, 2 mm. l. *Achenes* narrowed below, slightly hairy, barely 3 mm. l. *Pappus*-bristles rather rough, pale brown, 2.5 mm. l.

9. ***E. cordifolium*** *Sw. Prodr.* 111 (1788); branchlets hirsute; leaves coarsely hirsute below; heads about 45-flowered, in a short congested corymb; involucre hairy.—*Sw. Fl. Ind. Occ. iii.* 1309; *Lun. tom. cit.* 371; *DC. tom. cit.* 162; *Griseb. Fl. Br. W. Ind.* 359; *Wils. loc. cit.*; *Urb. op. cit. i.* 463. Specimen from Swartz in Herb. Mus. Brit.

On limestone rocks in montane situations, *Swartz*!

*Shrub*, 3 ft. high. *Branchlets* with dark brown hairs. *Leaves* sessile or almost so and slightly amplexicaul, cordate, acute, triplinerved, rough above, mostly 4.5-7 by 3.5-5. *Inflorescence* subsessile, about 2 cm. across, of a few closely-placed heads. *Heads* subsessile, about 7 mm. across. *Involucre* narrowly campanulate, 5 by 6 mm.; scales 4-seriate, linear-oblong; outer acute, about half as long as the obtuse 5 mm. l. inner, 3-striate, hairy on the back. *Achenes* glandular, about 2 mm. l. *Pappus*-bristles rather rough, pale brown, 2.5 mm. l.

10. ***E. montanum*** *Sw. Prodr.* 111 (1788); branches coarsely hairy; leaves hairy below; panicles about as long as leaves, the corymbs open; heads about 15-flowered; involucre puberulous.—*Sw. Fl. Ind. Occ. iii.* 1311; *Lun. tom. cit.* 371; *DC. tom. cit.* 157; *Griseb. Fl. Br. W. Ind.* 359; *Wils. loc. cit.* *Eupatorium fruticosum*, *assurgens* &c. *Browne op. cit.* 313. Specimen from Swartz in Herb. Mus. Brit.

In highlands, *Swartz*! *Browne*; interior of St. Ann, *Purdie*! Cascade Rock, Fl. Jam. 8157!

*Shrub* 3-4 ft. high. *Leaves* shortly stalked, cordate, acute or shortly acuminate, dentate-serrate or serrulate, triplinerved with a pair of basal accessory nerves, shining and rough above, hairy below especially on the nerves, mostly 7-12 by 3-7 cm. *Panicles* spreading, up to 17 by 17 cm., but may be much smaller; branches brown-pubescent; corymbs several-headed. *Heads* about 25-flowered, 4 mm. across. *Involucre* campanulate, 2.5 by 3 mm.; scales in 3 rows, oblong, obtuse, 3-striate, the 3 mm. l. innermost about twice as long as the outer. *Corolla* whitish, 2 mm. l. *Achenes* narrowed below, slightly rough on the ribs, 2 mm. l. *Pappus*-bristles as long as achenes, rather rough, dirty white.

11. ***E. nervosum*** *Sw. Prodr.* 111 (1788); shrubby; branches slender, somewhat rough with short hairs; leaves lanceolate to ovate, coarsely serrate, triplinerved; heads 16-20-flowered.—*Sw. Fl. Ind. Occ. iii.* 1307; *DC. tom. cit.* 169 (in part); *Griseb. Fl. Br. W. Ind.* 361 (in part); *Wils. loc. cit.*; *Hitchc. loc. cit.* Imperfect material in Herb. Kew.

In the mountains, *March 1872!* Lucea, *Hitchcock.*

*Shrub* 4-5 ft. high. *Leaves* usually ovate or ovate-lanceolate, acuminate, obtuse or rounded at base, with a few coarse serratures on either margin, rough on both sides, 4-7 by 2-3 cm.; petioles 3-4 mm. 1. *Inflorescence* an open panicle of many corymbs, the filiform branches hairy. *Involucre* 1-2-seriate, the scales linear, acute. *Corolla* whitish. *Achenes* a trifle shorter than the whitish pappus.

The only specimens seen are on a sheet at Kew authenticated by Grisebach; but as these are without flowers Swartz's description has necessarily been made use of. The Haiti plant de Candolle and Grisebach refer to this species is surmised by Urban (*Fedde Rep. xvii.* 49), and no doubt correctly, to be conspecific with his *E. gibbosum*.

12. *E. gracilipes* Urb. *Symb. Ant. v.* 522 (1908); climbing shrub; branches puberulous; leaves ovate-lanceolate, not toothed, triplinerved; heads 12-16-flowered.—*E. celtidifolium* Griseb. *Fl. Br. W. Ind.* 361 (in part) (non Lam.); *Wils. loc. cit.*

*Macfadyen!* Guava Ridge Road below 11th mile, *Harris!* *Fl. Jam.* 7773.

10-12 ft. high. *Branches* striate, finely hairy between the striæ. *Leaves* more or less long-acuminate, obtuse at apex, rather suddenly contracted into the 10-15 mm. l. petiole, entire or nearly so, glabrous, 8.5-12 by 3.5-5 cm. *Panicle* lax, about as long as the leaves, 10-12 cm. across; corymbs on slender branchlets, several-headed. *Heads* 3.5 mm. across. *Involucre* 2 by 2.5 mm.; scales oblong, obtuse, 2-3-striate, puberulous and ciliolate, innermost rather more than 2 mm. l. *Corolla* white tinged with blue, fragrant, 2 mm. l. *Achenes* somewhat top-shaped, about as long as corolla, obscurely glandular. *Pappus*-bristles rather rough, pale brown, barely 2 mm. l.

13. *E. glandulosum* H. B. & K. *Nov. Gen. & Sp. iv.* 122, t. 346 (1820); shrubby; branches densely glandular; leaves ovate-rhombic, coarsely serrate or crenate, 3-nerved; heads 50-flowered more or less.—*Griseb. Fl. Br. W. Ind.* 360; *Robins. in Proc. Amer. Acad. lv.* 85. *E. adenophorum* Spreng. *Syst. iii.* 420 (1826); *DC. tom. cit.* 164; *Wils. loc. cit.*; *Hemsl. Biol. Centr. Amer. Bot. ii.* 91. *E. americanum* Hort. *fide Bailey Cyclop.* 560; *Bot. Reg. t.* 1723.

*March 1499!* *Wilson 844!* Blue Mts. near Mt. Hybla, St. Andrew, *Miss Perkins 1022!* Morse's Gap, *Nichols 28!* Hardware Gap, *Davis!*—Mexico; naturalised in Pacific Islands and Madeira.

A thick bush 3-4 ft. high. *Branches* terete, closely pubescent with short rusty glandular hairs. *Leaves* on stalks of 5-20 mm., acute or obtuse, truncate or cuneate at base, puberulous on the nerves beneath, 3-8 by 1.5-5 cm. *Panicles* as long as or longer than the leaves, glandular hairy; corymbs long-stalked, minutely bracteate, each composed of several stalked heads. *Heads* 6 mm. across. *Involucre* 4 by 6 mm.; scales lanceolate or linear-lanceolate, sometimes incised at top, 2-3-striate, about 3 mm. l. but a few shorter. *Corolla* white, 3.5 mm. l. *Achenes* narrowed at base, black, with a covering of very short hairs between the ribs, 2 mm. l. *Pappus* 3 mm. l., bristles pale brown, rather rough.

14. **E. corylifolium** Griseb. *Fl. Br. W. Ind.* 361 (1861); branches rusty-hirsute becoming glabrous; leaves ovate, serrate, 3-nerved; heads about 25-flowered.—*Wils. loc. cit.*; *Shreve loc. cit.* Type in Herb. Kew.

*Masson!* *Macfadyen!* Coldspring, St. Andrew, March 1500!  
*Wilson* 855!

Branches rather slender, striate. Leaves on rusty-hirsute stalks of 8–15 mm. l., acute, rounded or obtuse at base, serrate or crenate-serrate, entire near base, shortly hairy on nerves below, 2.5–4.5 by 1.5–2.5 cm. Panicles about 6 cm. across; branches rusty-hirsute. Corymbs stalked, few-headed. Heads 6 mm. across. Involucre 5 by 4 mm.; scales linear-oblong, obtuse, obscurely striate, hairy on back. Corolla barely 3 mm. l. Achenes narrowly fusiform, slightly hairy, 2 mm. l. Pappus as long as corolla; bristles rather rough, whitish.

15. **E. villosum** Sw. *Prodr. iii.* (1788); shrub with rusty-velvety branches; leaves ovate or ovate-oblong, 3-nerved; heads 8–18-flowered.—*Vahl Symb. iii.* 95; *Sw. Fl. Ind. Occ. iii.* 1305; *Lun. tom. cit.* 371; *DC. tom. cit.* 172; *Griseb. Fl. Br. W. Ind.* 361 & *Cat. Cub.* 147; *Sauv. Fl. Cub.* 77; *Wils. loc. cit.*; *Hitchc. loc. cit.*; *Chapm. Fl. S. U. States, ed. 3,* 216; *Combs Pl. Cub.* 432; *Urb. op. cit. i.* 462 & *iv.* 624; *Jenn. Is. Pin.* 280; *Britton & Millsp. Baham. Fl.* 438. *E. triste* *Stahl Fl. P.-Rico v.* 113 (non DC.). *Conyza fruticosa* cisti odore &c. *Sloane Cat.* 123 & *Hist. i.* 257, t. 151, fig. 2.

#### Bitter Bush.

Red Hills near Guanaboa; Mt. Diablo; *Sloane Herb. v.* 11 & 12!; *Shakespear!* *Masson!* *Wright!* *Broughton!* *Distin!* *Guy's Hill, St. Mary, Purdie!* *March* 1740! *Moneague, Prior!* *Parnell!* *Morris!* *Mandeville, Panton!* *Lucea;* *Porus;* *Hitchcock;* *South Camp Road, Campbell Fl. Jam.* 6086! near *Cinchona, Fawcett Fl. Jam.* 8220! *Tyre, near Troy;* *Hollis's Savannah;* *Harris!* *Fl. Jam.* 9089, 12,242; coastal region E. of Montego Bay, *Maxon & Killip* 1614! *Balaclava, Orcutt!* 896, 1456.—*Florida, Bahamas, Cuba, I. de Pinos, Cayman, Porto Rico (S. Domingo?).*

Shrub up to 6 ft., occasionally reaching 15 ft. Leaves distantly toothed to undulate, obtuse, rounded at base, usually finely velvety especially on the underside, 2–6 by 1–3 cm.; petioles rusty, 5–10 mm. l. Panicle up to 8 cm. across, often less; corymbs several-headed; pedicels filiform, 3–5 mm. l. Heads 6 mm. across. Involucre ovoid, scales oblong, obtuse, obscurely striate, hairy on back, 2–2.5 mm. l. Corolla funnel-shaped, pale lavender or whitish changing to tawny, barely 3 mm. l. Achenes sparsely glandular-hairy, 1.5 mm. l. Pappus 2 mm. l.; bristles rather rough, dirty white.

“ . . . bitter-bush is regarded as very efficaceous in cholera, and also in typhus and typhoid fevers, and in smallpox; it is also reputed to be a good cholagogue ” (*Bentl. & Trim. Med. Pl. iii.* 147).

16. **E. triste** DC. *Prodr. v.* 166 (1836); tall shrub; branches rusty-velvet; leaves ovate or ovate-oblong, triplinerved; heads 10–20-flowered.—*Griseb. Fl. Br. W. Ind.* 361; *Wils. loc. cit.*; *Hitchc. loc. cit.* *E. ceanothifolium* *Spreng. Syst. iii.* 418 (1826) (in part). *E. lucidum* *Shreve loc. cit.?* (non *Ort.*)

## Bitter Bush.

Lane in Herb. *Petiver* (Sloane Herb. clxii. 14!) *Wright*!; *Bertero*! *Macfadyen*! *March*! *McNab*! *Bancroft*! Port Royal, Manchester, *Wulschlägel* (*vide* Grisebach); Blue Mt. Peak, *Hitchcock*; J. P. 643 (*Hart*!); Alston, Mandeville, *Panton*! Yallahs Valley; Clydesdale; near Cinchona; near Morse's Gap; *Harris*! Fl. Jam. 5621, 7001, 9135, 11,697.

Shrub up to 10 ft. high, with a woody stem over 2 in. in diameter. *Leaves* rarely oblong, serrate or crenate to undulate, obtuse, rounded at base, from velvety especially below to nearly glabrous, 3-6.5 by 1.5-4 cm.; petioles rusty, 5-15 mm. l. *Panicles* 6-10 cm. across; its branches rusty-hairy; corymbs rather open, of few heads on peduncles of 5-7 mm. *Heads* 7 mm. across. *Involucre* obovoid; scales narrow-oblong, obtuse, pubescent on back, 5-6 mm. l. *Corolla* funnel-shaped, whitish, fragrant, barely 4 mm. l. *Achenes* black, shortly hairy, 3.5 mm. l. *Pappus* 4 mm. l.; bristles dirty white.

For medicinal properties see the preceding species.

17. **E. riparium** *Regel Gartenfl. xv. 324, t. 525* (1866); a lowly undershrub; branches soon glabrous or nearly so; leaves lanceolate, triplinerved; heads 25-28-flowered.—*Regel op. cit. xvii. 12*; *Robins. in Contrib. U.S. Nat. Herb. xviii. 1464*. *E. Harrisii Urb. op. cit. i. 460* (1900).

Cinchona, *Harris*! Fl. Jam. 5624, 7812; Cinchona, *Clute* 207! no locality, *Miss E. K. Francis*! plentiful on track, Green Hills to Woodcutter's Gap, Blue Mts., *Rendle* 17! Catherine's Peak, *Rendle* 50!

1-2 ft. high. *Branches* slender, at first minutely rusty, afterwards glabrous. *Leaves* acuminate, narrowed at base, serrate above the middle, slightly rough on the nerves; mostly 3-7 by 1-2 cm.; petioles 5-15 mm. l. *Corymbs* terminal or from the upper axils, rather open, few-headed. *Heads* slenderly stalked, 5 mm. across. *Involucre* 4 mm. l.; scales oblong, obtuse or acute, membrane-edged, 2-striate. *Corolla* white, 3 mm. l. *Achenes* narrowed below, slightly hairy, 1.5 mm. l. *Pappus* 3 mm. l.; bristles shortly barbellate,\* dirty white.

The home of this plant, well-known in cultivation, is uncertain. *Regel* thinks it to be the "mountains of America," and *Robinson* includes it among the Eupatoriums of Mexico. If this be correct, it is most probably an escape at Cinchona. [A very aggressive weed on the track from Green Hills to Woodcutter's Gap, Blue Mts., in February 1933. Also in Bermuda. A. B. Rendle.]

18. **E. Hartii** *Urb. Symb. Ant. iii. 395* (1903); shrub; branches coarsely and shortly tomentellous; leaves ovate-oblong, rounded at base, penninerved; heads 14-16-flowered. Co-types in Herb. Jam. & Herb. Mus. Brit.

Blue Mt. Peak, *Harris*! Fl. Jam. sine no.! *Hart* 657 (*vide* Urban).

*Branches* at first rusty-tomentellous, afterwards glabrous. *Leaves* generally small, ovate-oblong rarely ovate, serrate or serrulate, at base entire and revolute on to the rusty petiole, parchment-like, shortly and coarsely hairy chiefly on nerves of underside, 2-4.5 by 1-2.5 cm. *Inflorescence* short, 2.5-4.5 cm. across, of a few rather close corymbs crowning the branches. *Heads* shortly stalked, 8 mm. across. *Involucre* of oblong, obtuse, thick, obscurely 3-6-striate, membrane-

\* Beset with shorter and stiffer hairs.

edged scales 5.5 mm. l. *Corolla* funnel-shaped, 4.5 mm. l. *Achenes* narrowly cylindrical, shortly hairy on the ribs, 3 mm. l. *Pappus* 3.5 mm. l.; bristles shortly barbellate, dirty white.

19. ***E. schizanthum*** Griseb. *Fl. Br. W. Ind.* 361 (excl. ref. *Sloane*); shrub; branches rusty-tomentose; leaves oblong-lanceolate, narrowed at base, penninerved; heads 5–8-flowered.—*Wils. loc. cit.* Type in Herb. Edinb.

Unlocalised, *McNab* !

*Leaves* obtuse, cuneately narrowed into the 5–7 mm. l. rusty petiole, usually crenulate or undulate, parchment-like, rough above, hairy on the nerves below, mostly 3–7 by 1.5–2.5 cm. *Panicle* terminal, shorter than the larger leaves, 6 cm. across, rusty-hairy. *Heads* stalked, about 5 mm. across. *Involucre* usually of 6 oblong obtuse obscurely striate membrane-edged hairy scales, barely 5 mm. l., 2 of them smaller. *Corolla* 2 mm. l. *Achenes* narrowed below, glandular, 3–3.5 mm. l. *Pappus* 3 mm. l.; bristles rather rough, dirty white.

20. ***E. hammatocladum*** Robins. & Britton in *Proc. Amer. Acad. Sc.* 246 (1918); shrub; branches rusty-tomentellous; leaves broadly obovate, penninerved; heads 5–7-flowered.

Peckham woods, Upper Clarendon, *Harris* ! *Fl. Jam.* 12,795.

A shrub 9 ft. high. *Branches* ultimately glabrate. *Leaves* opposite or 3–4-nate (very rarely subopposite) on rusty 5–15 mm. l. petioles, sometimes suborbicular, dentate-undulate in the upper part, entire below, glabrous and shining above, hairy on the nerves below, mostly 5–6.5 by 4–5 cm. *Panicle* terminal, about as long as leaves, 7 cm. across. *Corymbs* of a few rather closely set sessile or shortly stalked heads. *Involucral scales* oblong, obtuse, usually ciliolate and membrane-edged, 2–3-striate, 3 mm. l. *Corolla* whitish, glandular, 4 mm. l. *Achenes* subcylindrical, glandular on and between the ribs, 2 mm. l. *Pappus* 4 mm. l.; bristles rather coarse, barbellate, pale brown.

21. ***E. microstemon*** Cass. in *Dict. Sc. Nat.* xxv. 432 (1822); annual herb; leaves small, ovate, crenate, 3-nerved; heads 15–27-flowered.—*Urb. op. cit.* iv. 625 & viii. 714; *Robins. in Proc. Amer. Acad.* xxxii. 48, liv. 266 & 295, lv. 69, lxi. 58 & lxxviii. 255. *E. paniculatum* Schrad. in *Comm. Gott.* vi. 130 (1828) non *Mill. Gard. Dict. ed.* 8. 15; *Schlecht. in Linnæa Litt.-Ber.* 1833, 26; *DC. tom. cit.* 167; *Griseb. Fl. Br. W. Ind.* 362; *Hitchc. loc. cit.*; *Wils. loc. cit.*; *Duss op. cit.* 356; *Hart Herb. List Trin.* 32. *E. Berterianum Colla in Mem. Acad. Tor.* xxxviii. 130, t. 8 (1829). *E. guadaloupense DC. tom. cit.* 170 (1836).

*Houstoun* ! *Wright* ! *Bogwalk* ; *Porus* ; *Port Antonio* ; *Hitchcock* ; *Devon Pen* ; *Ward's Rock* ; *Thompson* ! *Fl. Jam.* 7964, 8019; *Castleton district* ; *Glasgow, near Troy* ; *Harris* ! *Fl. Jam.* 12,148, 12,639; *Balaclava, Orcutt* ! 709, 1454, 2303.—*Hispaniola, Porto Rico, Lesser Antilles, tropical America.*

*Herb* frequently branching, 1-3 ft. high. *Branches* slender, puberulous becoming glabrous. *Leaves* (upper usually alternate) ovate or ovate-deltoid, obtuse, narrowed into the slender petiole, membranaceous, mostly 2.5-5 by 1.5-4 cm. *Panicles* terminal or lateral, lax, several-headed. *Heads* stalked, 4 mm. across. *Involucre* of oblong obtuse 3-6-striate glabrous pale green scales, 4 mm. l., a few outer smaller and acute. *Corolla* white, 2 mm. l. *Achenes* narrowed below, minutely hairy, 1.5 mm. l. *Pappus* 2 mm. l.; bristles rather rough, white.

22. **E. rigidum** *Sw. Prodr.* 111 (1788); glabrous undershrub; leaves ovate, coarsely and remotely serrate, rough; heads 25-30-flowered.—*Sw. Fl. Ind. Occ. iii.* 1313; *Lun. tom. cit.* 321; *Griseb. Fl. Br. W. Ind.* 357; *Wils. loc. cit.* *Ooclinium rigidum* *DC. tom. cit.* 134 (1836). Specimen from Swartz in *Herb. Mus. Brit.*

Limestone hills in the north, *Swartz*!

*Undershrub*, 1½ ft. high. *Branches* leafy throughout. *Leaves* shortly petioled, ovate (uppermost ovate-lanceolate), obtuse or acute, rounded at base, margin with a few coarse serratures (of smaller leaves nearly entire), 3-nerved, nerves prominent beneath, somewhat leathery, rough, immersed glands very numerous on the lower face, mostly 2-4 by 1-2.5 cm. *Heads* solitary or very few at the ends of the branches, stalked, 25-30-flowered (*Swartz*). *Receptacle* narrowly obovoid, glabrous, 2 mm. high. *Involucre* 10 by 5 mm., narrowly ovoid-oblong; scales 3-seriate, pale and shining with 4-6 dark striae in the upper half, innermost about 7 mm. l. *Corolla* 4.5 mm. l., pale violet (*Swartz*). *Achenes* very narrow, somewhat rough on the ribs, 5 mm. l. *Pappus* as long as the corolla; bristles shortly barbellate, dirty white.

23. **E. heteroclinium** *Griseb. Fl. Br. W. Ind.* 358 (1861); undershrub; branches hairy; leaves ovate-lanceolate, serrate, rough; heads about 50-flowered.—*Wils. loc. cit.* Specimens authenticated by Griesbach in *Herb. Kew. & Herb. Edinb.*

*Macfadyen*! *March* 918! *McNab* 53! Liguanea Hills and Blue Mts., *Prior*! *J. P.* 1014 (*Hart*).

Apparently up to about 3 ft. high. *Stem* and *branches* terete, shortly and rather roughly hairy. *Leaves* small, on hairy petioles 4-8 mm. l., obtuse, broad at base, 3-nerved, serrate or serrulate except near base, firmly membranous, rough especially on the upper face, mostly 1.5-3 by 1-1.5 cm. *Receptacle* narrowly oblong-obovoid, 1.5 mm. high. *Heads* 5 mm. across, very few at the ends of the branches, peduncles 3-10 mm. l. *Involucre* subcylindrical, 10 by 4 mm.; scales 7-seriate, closely imbricate, ovate-oblong, obtuse, uppermost linear, 8 mm. l., hairy at top, all but the 3-striate uppermost 5-6-striate. *Corolla* purple, 4 mm. l. *Achenes* narrowed at base, somewhat rough on the ribs, 4-5 mm. l. *Pappus* 4 mm. l.; bristles rather rough, pale straw-coloured.

24. **E. Maxwelliæ** *S. Moore in Journ. Bot. lxxvi.* 165 (1928); apparently an undershrub; branches hispidulous; leaves

ovate-lanceolate, serrate, triplinerved, scabrous ; heads about 50-flowered. Type in Herb. Mus. Brit.

Flamstead, *Miss Maxwell* !

*Branches* soon becoming rough by falling off of the hairs. *Leaves* much like those of the last, but triplinerved, broad at base and suddenly narrowed into the 5–15 mm. l. petiole, up to 2.5 cm. broad. *Heads* 3 together at the ends of the branches, on hairy peduncles 5–10 mm. l. *Receptacle* narrowly oblong-obovoid, 1–1.5 mm. high. *Involucre* narrowly oblong-obovoid, 8 by 5.5 mm.; scales 7-seriate, closely imbricate, mostly ovate-oblong or obovate, rotundate, pale green with 5–7 very dark striæ, uppermost linear-oblong, obtuse, 3-striate, hairy at tip and 7 mm. l. *Corolla* &c. as of last.

25. **E. macrophyllum** *L. Sp. Pl. ed. 2, 1175 (1763)*; shrub ; branches finely velvety, strongly striate ; leaves large, on long stalks, cordate, 3-nerved ; heads 35–50-flowered.—*Sw. Fl. Ind. Occ. iii. 1303* ; *Sauv. op. cit. 76* ; *Maza Periant. Cub. 72* ; *Kew Bull. 1893, 259* ; *Urb. op. cit. iv. 622, viii. 709 & Fedde Rep. Beih. v. 66* ; *Britton Fl. Amer. Virg. 97* ; *Robins. in Proc. Amer. Acad. lv. 329*. *Eupatorium molle Sw. Prodr. 111 (1788)*. *Hebeclinium macrophyllum DC. tom. cit. 136 (1836)* ; *Griseb. Fl. Br. W. Ind. 356* ; *Wils. loc. cit.* ; *Egg. loc. cit.* ; *Stahl op. cit. 109* ; *Duss op. cit. 353* ; *Hart loc. cit.* *Ageratum guianense Aubl. Pl. Guian. iii. 800 (1775)* ; *Sw. Fl. Ind. Occ. iii. 1303*. *Coleosanthus tiliaefolius Cass. in Dict. Sc. Nat. xxiv. 519*. *Eupatorium foliis cordatis acuminatis &c. Plum. Pl. Amer. (Burm.) 121, t. cxxix. (Fig. 54.)*

*Wright* ! *Liguanea, Broughton* ! *St. Ann, Prior* ! *March 1034* ! *Distin* ! *Colthurst Run, J. P. 1449 (Hart)* ! ; *Claverty Cottage, J. P. 977 & 2124 (Hart)* ! ; *St. George's, Watt* ! *Arcadia, Mrs. Sewell* ! *Brandon Hill, Thompson Fl. Jam. 8047* ! *Ithanside, Portland, A. Moore Fl. Jam. 10,647* ! *Soho, St. Ann, Harris* ! *Fl. Jam. 12,028*.—*Cuba, Hispaniola, Porto Rico, Lesser Antilles, American continent from Mexico to Paraguay.*

*Shrub* 3–6 ft. high. *Branches* terete, velvety with minute tawny hairs. *Leaves* opposite, upper alternate, suddenly cuneately narrowed into the 1–5.5 cm. l. velvety petiole, simply or doubly crenate or crenulate, membranous, hairy on the nerves above, minutely velvety especially on the nerves beneath, mostly 4–10 by 2.5–12 cm. *Panicles* generally as long as or longer than the leaves, 5–7 cm. across, the heads crowded at the ends of rather short tawny branches. *Heads* subsessile, 5 mm. across, 35–50-flowered (50–75 Robinson). *Receptacle* hemispheroidal, finely hairy. *Involucre* narrowly campanulate ; scales 6-seriate, rather closely imbricate, outermost ovate and very short, the rest lanceolate or linear-lanceolate, acute or obtuse (innermost barely 5 mm. l.), 2–5-striate, puberulous on back, pale straw-coloured. *Corolla* whitish or lavender, filiform, 2 mm. l. *Achenes* with a narrow foot, sparsely and minutely hairy, 1.25 mm. l. *Pappus* up to 3 mm. l. ; bristles rather rough, pale.



*Doubtful Species.*

**E. reticulatum** Desv. ex Ham. *Prodr. Pl. Ind. Occ.* 52 (1825). "Jamaica." The short description is inadequate for determination.

**8. MIKANIA** Willd.

Shrubs or herbs, mostly climbing. Leaves opposite, generally stalked. Heads discoid, usually 4-flowered, in spikes, racemes or corymbose panicles. Involucre oblong, of 4 nearly equal generally striate scales. Receptacle naked. Corolla regular with a tube and campanulate 5-fid limb. Anthers obtuse at base; tip with an appendix. Style-arms long, exerted. Achenes 5-ribbed. Pappus of numerous bristles united at the base.

Species over 200, almost all American.

- |   |                            |
|---|----------------------------|
| Heads in dense racemosely arranged spikes.....              | 1. <i>M. hastata</i> .     |
| Heads in racemes forming a panicle .....                    | 2. <i>M. Swartziana</i> .  |
| Heads in glomerules crowning the branches of a panicle..... | 3. <i>M. brachycarpa</i> . |
| Heads in compound usually dense corymbs.                    |                            |
| Flowering heads 13 mm. long.....                            | 4. <i>M. jamaicensis</i> . |
| Flowering heads 8-9 mm. long.                               |                            |
| Leaves broad at base.....                                   | 5. <i>M. troyana</i> .     |
| Leaves cordate at base.....                                 | 6. <i>M. cordifolia</i> .  |
| Flowering heads 4-5 mm. long .....                          | 7. <i>M. micrantha</i> .   |

1. **M. hastata** Willd. *Sp. Pl. iii.* 1742 (1804); leaves deltoid-hastate on long petioles; inflorescences as long as or longer than the leaves; spikes 3—several to each inflorescence; flowering heads 4 mm. l.—*Spreng. Syst. iii.* 421; *DC. Prodr. v.* 190; *Griesb. Pl. Wright.* 512, *Fl. Br. W. Ind.* 362 & *Cat. Cub.* 147; *Saww. Fl. Cub.* 77; *Wils. in Rep. Geolog. Jam.* 281; *Maza Periant. Cub.* 270; *Sang. Fl. Cub.* 48; *Urb. Symb. Ant. v.* 215; *Hart Herb. List Trin.* 32; *Robins. in Contrib. Gray Herb. lxiv.* 53. *Eupatorium hastatum L. Syst. ed. 10,* 1204 (1759); *Sw. Obs. Bot.* 299; *Lun. Hort. Jam. i.* 370. *Eupatorium Houstonis Mill. Gard. Dict. ed. 8, n.* 16 (non *L.*) (1786). *E. Houstoni Lun. loc. cit.* (1814). *Willoughbya hastata Kuntze Rev. Gen. Pl. ii.* 372 (1891). *Kleinia scandens &c. Browne Hist. Jam.* 316, *t.* 34, *f.* 3.

*Sloane Herb.* ii. 103! *Houstoun!* *Wright!* St. Thomas in the East and Manchioneal, *Browne!* Manchester, *Purdie!* *Prior!*—Cuba, Trinidad, Venezuela.

A shrub. Branches strongly striate soon becoming glabrous. Leaves acute, broadly truncate or very openly cordate at base, denti-

culate or undulate, 3-nerved, glabrous or nearly so, mostly 3-7 by 2-5 cm.; petioles slender, 1-3 cm. l. *Panicles* axillary, up to about 8 cm. l.; bracts at the base of the branchlets 2-5 mm. l.; main spike 2-6 cm. l., the lateral shorter. *Bracteoles* narrowly obovate, oblong, obtuse 2 mm. l. *Involucral scales* oblong, obtuse, 3 mm. l. *Corolla* white, fragrant, 2 mm. l. *Achenes* narrowed below, rather rough, 1-5 mm. l. *Pappus* 2 mm. l.; bristles rather rough.

This and several other species of *Mikania* are known under the name Guaco; they are reputed to be of value in the treatment of dysentery and for the bites of snakes, &c.

2. *M. Swartziana* Griseb. *Fl. Br. W. Ind.* 363 (1861), excl. ref. Cuba; leaves ovate or ovate-oblong, shortly stalked; inflorescences longer than the leaves; racemes patent; flowering heads 3 mm. l.—*Sch. Bip. in Seem. Journ. Bot. i.* 235; *Wils. loc. cit.*; *Urb. tom. cit.* 216 (in part). *Eupatorium Houstonis Sw. Obs. Bot.* 300 (1791) (non *L.*) *Willoughbya Swartziana Kuntze tom. cit.* 373.

Wright! Manchester, Purdie!

Glabrous shrub. *Branches* terete, smooth, striate. *Leaves* on stalks of 5-12 mm., acute, obtuse or rounded at base, entire or undulate, triplinerved, firmly membranous, mostly 5-8 by 2.5-4.5 cm. *Racemes* mostly 2-5 cm. l. *Bracts*, lower leaflike but greatly reduced, the rest awl-shaped less than 5 mm. l. *Bracteoles* small, much shorter than the slender 2-4 mm. l. pedicels. *Heads* 4 by nearly 3 mm. *Involucral scales* oblong, obtuse, ciliolate, 3-striate, 3 mm. l. *Corolla* 2.25 mm. l.; tube rather broad as long as the campanulate limb; lobes of limb .5 mm. l. *Achenes* slightly narrowed at base, rather rough with short hairs, nearly 1.5 mm. l. *Pappus* 2 mm. l.; bristles rather rough, pale reddish.

The Cuban plant referred here by Grisebach and Urban, with its leathery leaves, narrower involucral scales, corolla with a narrower tube and smaller glabrous achenes has been described as *M. Lindenii* S. Moore in *Journ. Bot.* lxvi. 166. Wright's specimen would seem to have been that examined by Swartz.

3. *M. brachycarpa* Urb. *Symb. Ant. v.* 220 (1907); leaves petioled, ovate; inflorescences longer than the leaves, lateral and terminal; glomerules stalked, densely headed; flowering heads 7 mm. l.—*Robins. in Contrib. Gray Herb. lxiv.* 21. Co-types in Herb. Jam. and Herb. Mus. Brit.

Macfadyen! road to Vinegar Hill, Harris Fl. Jam. 9126!

A tall, nearly glabrous climber growing over trees. *Branches* strongly striate, soon becoming glabrous. *Leaves* lengthily caudate-acuminate, obtuse at tip, shallowly cordate or broadly rotundate and produced on to the petiole at base, entire or denticulate below the middle, triplinerved with a pair of accessory nerves nearer the base, papery, glabrous except for the nerves, 5-9.5 by 2.5-6.5 cm.; petioles finely hairy, 1-2 cm. l. *Panicles* thyrsoid, up to 13 by 6 cm., branches finely hairy; bracts usually narrow, about 8 mm. l. *Glomerules* closely many-headed. *Bracteole* beneath the head, oblong, obtuse, finely hairy, 2 mm. l. *Heads* sessile or subsessile. *Involucral scales* oblong, rotundate, leathery at base, 2-3-striate, nearly glabrous, 4 mm.

1. *Corolla* funnel-shaped, greenish white, barely 5 mm. l. *Achenes* sparsely and minutely glandular, 1.5 mm. l. *Pappus-bristles* 4.5–5 mm. l., rather rough, pale tawny.

var. **Purdieana** Urb. *loc. cit.*; leaves markedly cordate at base and not produced on to the petiole, 5–7-nerved. Involucral scales 2 mm. l.—*M. latifolia* Griseb. *Fl. Br. W. Ind.* 363 (in part) (non *Sm.*).

Westmoreland, *Purdie* (in Herb. Kew. ex Urban).

Not found in Herb. Kew. Urban thinks it may prove to be a distinct species; and if the involucral scales are only 2 mm. long, there seems no escape from this view.

4. **M. jamaicensis** Robins. in *Contrib. Gray Herb.* lxiv. 12 (1922); leaves ovate-cordate, obtuse, 3-nerved, tomentose below; corymbs several-headed, as long as or longer than the leaves; flowering heads 13 mm. l. Type in Herb. Kew.

Claverty Cottage, 2000 ft., J. P. 984, *Morris*!

A climber with rather stout tomentose branches becoming glabrous and striate. *Leaves* (upper only seen) petioled, entire, leathery, slightly rough above, about 3.5 by 3 cm., petioles tomentose, 10–15 mm. l. *Inflorescence* stalked, tomentose, up to 7 by 6 cm.; corymbs stalked, rather open, several-headed; bracts leaflike but reduced; bracteoles linear or linear-lanceolate, about as long as the involucres. *Involucral scales* broadly oblong, obtuse or rotundate, tomentose on back or down middle alone, 8 mm. l. *Corolla* 7 mm. l.; tube hardened, 2.5 mm. l.; lobes of limb 1.5 mm. l. *Achenes* slightly narrowed below, sprinkled with minute glandular hairs, 6 mm. l. *Pappus* as long as achene; bristles rough, pale brown.

Maxon's 9839, 10,237 and 10,569 in the U.S. National Herbarium, from Blue Mt. Peak and Main Ridge Gap (5000–5300 ft.), so far as can be told without flowers or fruit, are to be referred here. The leaves are much larger than those of the type, unfortunately only a scrap, the largest measuring 10 by 9 cm. on petioles 4.5 cm. l., the uppermost 3.5–5.5 by 3–4.5 cm. on 10–15 mm. l. petioles. In other respects the specimens in question agree closely with the type. The loftier habitat of these specimens should be noted.

5. **M. troyana** Urb. *Symb. Ant. v.* 226 (1907); leaves long-stalked, deltoid-ovate, 3-nerved; corymbs in panicles usually longer than the leaves; flowering heads 8 mm. l. (Fig. 55.)

*Wright*! near Troy, 2000 ft., *Harris* Fl. Jam. 8822!

A high climber growing over bushes. *Branches* subterete, strongly striate, like the inflorescence minutely rusty-tomentose. *Leaves* on tomentose stalks about 2 cm. l., deltoid-ovate, obtuse, 3-nerved from the very broad sometimes slightly cordate base, entire or slightly denticulate near the bottom, closely and very finely hairy, especially beneath, 5–8 by 3–7 cm. *Inflorescences* lateral and terminal, about 10 by 16 cm., stalked, the stalks about as long as or longer than the leaves. Lower bracts small, ovate; upper lanceolate. *Corymbs* stalked, rather openly several-headed. *Heads* stalked; bracteoles beneath the heads linear-lanceolate, 4.5 mm. l. *Involucral scales*

oblong, obtuse, obscurely striate, hairy on back, 6 mm. l. *Corolla* white, 7 mm. l., lobes linear-lanceolate about as long as the tube. *Achenes* (ripe not seen) narrowed below, glabrous, 3.5 mm. l. *Pappus-bristles* rather coarse, rather rough, reddish, 5-6 mm. l.

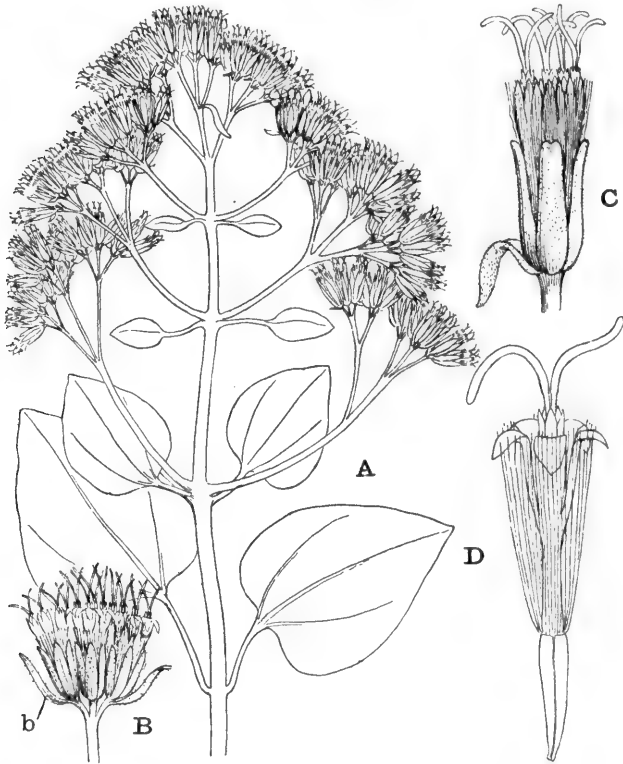


Fig. 55.—*Mikania troyana* Urb.

A, Portion of plant in flower  $\times \frac{3}{4}$ . C, Head  $\times 4$ .  
 B, Group of three heads  $\times 2$ ; b, D, Floret  $\times 6$ .  
 bracteoles.

6. *M. cordifolia* Willd. *Sp. Pl.* iii. 1746 (1804); leaves petioled, ovate, cordate at base, 3-nerved; inflorescences usually longer than the leaves, of several-headed corymbs; flowering heads 9 mm. l.—*DC. tom. cit.* 189; *Duss Fl. Ant. Franç.* 358; *Urb. op. cit.* iv. 626, v. 227 & viii. 716; *Britton Fl. Amer. Virg.* 98; *Robins. in Contrib. Gray Herb.* lxiv. 41 & c. *M. suaveolens* H.B.K. *Nov. Gen. & Sp.* iv. 135 (1820). *M. gonoclada* *DC. tom. cit.* 199 (1836); *Griseb. Fl. Br. W. Ind.* 364 & *Cat. Cub.* 147; *Wils. loc. cit.*; *Egg. Fl. St.*

*Croix & Virg.* 63; *Stahl Fl. P.-Rico.* v. 115; *Combs Pl. Cub.* 432; *Sang. op. cit.* 49. *Willoughbya cordifolia* *Kuntze loc. cit.* *Cacalia cordifolia* *L. f. Suppl.* 351 (1781).

Manchester, *Purdie*! *Macfadyen*! *Prior* 379! *Wilson* 237!  
*Gosse*! *Yallahs Valley, Harris* *Fl. Jam.* 7794!

A scandent *shrub*. *Branches* four-angled or subterete, pubescent or puberulous. *Leaves* on petioles 2-8 cm. l., more or less cordate at base rarely truncate, obtuse or acute rarely acuminate, entire or toothed (rarely lobulate) near the base, membranous, rough or finely hairy especially underneath, mostly 3-8 by 2-6 cm. *Corymbs* stalked, rather openly several-headed, about 6-10 cm. across; bracts leaflike but greatly reduced. *Heads* stalked. *Bracteoles* beneath the heads, linear-lanceolate, about 4 mm. l. *Involucral scales* oblong, acute or acuminate, often 1-striate, minutely hairy on back, about 7 mm. l. *Corolla* white, 6 mm. l., tube as long as the narrowly funnel-shaped limb. *Achenes* 3-4 mm. l., glabrous. *Pappus* as long as corolla; bristles rather rough, pale or reddish.

7. *M. micrantha* *H.B. & K. Nov. Gen. & Sp. iv.* 134 (1820); leaves stalked, cordate or ovate-hastate, 3-nerved; panicles usually open and longer than the leaves; flowering heads 4-5 mm. l.—*DC. tom. cit.* 196; *Robins. in Contrib. Gray Herb. lxiv.* passim. *M. orinocensis* *H.B. & K. loc. cit.* (1820); *DC. loc. cit.*; *Griseb. Fl. Br. W. Ind.* 364 (excl. syn.) & *Cat. Cub.* 147; *Sauv. op. cit.* 78; *Wils. loc. cit.*; *Hitchc. in Rep. Miss. Bot. Gard. iv.* 97; *Kew Bull.* 1893, 259; *Combs op. cit.* 433; *Hart loc. cit.* *M. scandens* *Auct. (non Willd.), Bak. in Mart. Fl. Bras. vi. pt. 2,* 248; *Hemsl. Biol. Centr. Amer. Bot. ii.* 104; *Urb. op. cit. iv.* 627 & v. 229; *Bold. Fl. Ned. W. Ind.* 106. *Willoughbya scandens* & *normalis* *Kuntze op. cit.* 372 (1891) & var. *orinocensis* *Kuntze loc. cit.* *Conyza folio hastato* & c. *Sloane Cat.* 124 & *Hist. i.* 258, t. 153, f. 1 & 2.

Sixteen-Mile Walk, *Sloane* *Herb.* v. 21! *Masson*! *Ferry River, Broughton*! hills near *Kingston*; *Hope Estate*; *Prior*! *Purdie*! *Dover, Metcalfe*! *Banana River, Eggers* 3431! *Kingston*; *Constant Springs*; *Blue Mts.*; *Port Morant*; *Porus*; *Lucea*; *Hitchcock*; *Arcadia, Mrs. Sewell*! *Spanish River*; *Hope*; *Hope Grounds*; near *Kendal*; marsh near *Black River*; *Peckham, Upper Clarendon*; *Harris*! *Fl. Jam.* 5490, 7004, 8160, 8178, 8226, 9934, 12,829. *Giddy Hall, St. Elizabeth, Miss Maxwell*! *Arntully, Albion trail, Orcutt* 3901!—*Antilles, American continent (tropics).*

A *shrub* climbing over bushes and small trees. *Branches* slender, striate, glabrous or puberulous. *Leaves* cordate with a deep or a broad sinus, sometimes ovate and subhastate, acute or acuminate, coarsely or slightly toothed especially towards the base rarely entire, glabrous or nearly so, mostly 4-10 by 2.5-6 cm. (rarely up to 12 by 8 cm.); petioles 2-9 cm. l. *Panicles* axillary and terminal, on long peduncles, usually 6-10 cm. across; bracts few, leaflike but greatly reduced. *Corymbs* few-headed. *Heads* stalked. *Bracteoles* beneath the heads, lanceolate or linear, about 2 mm. l. *Involucral scales* oblong-obovate or broadly oblong, usually broad at apex with a small point, 3-striate, glabrous or ciliolate, 3-4 mm. l. *Corolla* white (noted in one case as "greenish yellow"), 2.5-3 mm. l.; tube about as long as the broadly campanulate

limb. *Achenes* linear-oblong, slightly narrowed at base, with minute sessile pellucid glands between the ribs, 1.2–1.8 mm. l. *Pappus*-hairs few, rather rough, pale brown or reddish, 2.5 mm. l.

Var. *congesta* (Bak.) Robins. in *Contrib. Gray Herb.* lxiv. 43 & 111 (1922); heads sessile or subsessile, more or less collected into glomerules about 1–3 cm. across.—*M. congesta* DC. *tom. cit.* 197 (1836); *Griseb. Cat. Cub.* 147; *Stahl op. cit.* 117; *Duss op. cit.* 359. *M. scandens* var. *congesta* Bak. *op. cit.* 249, t. 69.

*Masson* ! unlocalised.—Cuba, Porto Rico, Martinique, Colombia, Bolivia, Brazil. *M. scandens* Willd., to which the Jamaica plant and others of both New and Old Worlds are referred by authors, is a North American species with larger heads, longer and narrower, pointed involucre scales, larger lavender-purple corollas and longer achenes. See Robinson *tom. cit.* 24.

## 9. BRICKELLIA Ell.

Herbs or undershrubs. Leaves opposite or alternate, stalked or sessile. Heads discoid, arranged in panicles. Involucre campanulate or oblong, of striated scales in several series, outer smaller. Receptacle flat or convex, naked, glabrous or hairy. Corolla regular, narrowly tubular, 5-fid. Anthers obtuse at base with an appendage at top. Style-arms long, exserted. Achenes 10-ribbed. Pappus of smooth, rough, barbellate or shortly plumose bristles.

A genus of nearly 100 species, chiefly North and Central American.

*B. diffusa* (Vahl) A. Gray *Plant. Wright. Pt. i.* 86 (1852); annual herb; leaves opposite or alternate, acuminate, toothed; heads on long very slender stalks forming a broad open panicle; heads narrow, 6–12-flowered.—*Griseb. Fl. Br. W. Ind.* 356; *Wils. in Rep. Geolog. Jam.* 281; *Hart Herb. List Trin.* 31; *Robins. in Contrib. Gray Herb.* xxiv. 211, xxxix. 200 & *Monogr.* 25; *Urb. Symb. Ant.* viii. 717. *Eupatorium diffusum* Vahl *Symb.* iii. 94 (1794); *Sw. Fl. Ind. Occ.* iii. 1301; *DC. Prodr.* v. 174; *Sauv. Fl. Cub.* 76. *E. capillare* Desv. ex Ham. *Prodr.* 51 (1825). *E. leptopodium* Gardn. in Hook. *Lond. Journ. Bot.* v. 478 (1846). *Bulbostylis diffusa* DC. *Prodr.* vii. 268 (1838). *Coleosantes diffusus* Kuntze *Rev. Gen. Pl.* ii. 328 (1891). (Fig. 56.)

*Wright* ! Westmoreland, *Purdie* ! Liguanea Hills, *Prior* ! St. Andrew, March 1319 ! *Macfadyen* ! Banana River, *Eggers* 3436 ! roadsides, Gordon Town, *Harris* Fl. Jam. 6987 !—Cuba, Hispaniola, Trinidad, Galapagos Is., Central and tropical South America.

2–8 ft. high. *Branches* striated, glabrous or nearly so. *Leaves* often alternate, very broadly ovate or deltoid, cordate or truncate at

base often suddenly narrowed into the petiole, crenate-serrate, 3-nerved, glabrous except for fine hairs on the nerves, mostly 2.5-8 by 2-6.5 cm.; petioles slender, .5-5 cm. l. *Panicles* longer than the leaves, axillary or terminal; branches alternate, patent, very slender,

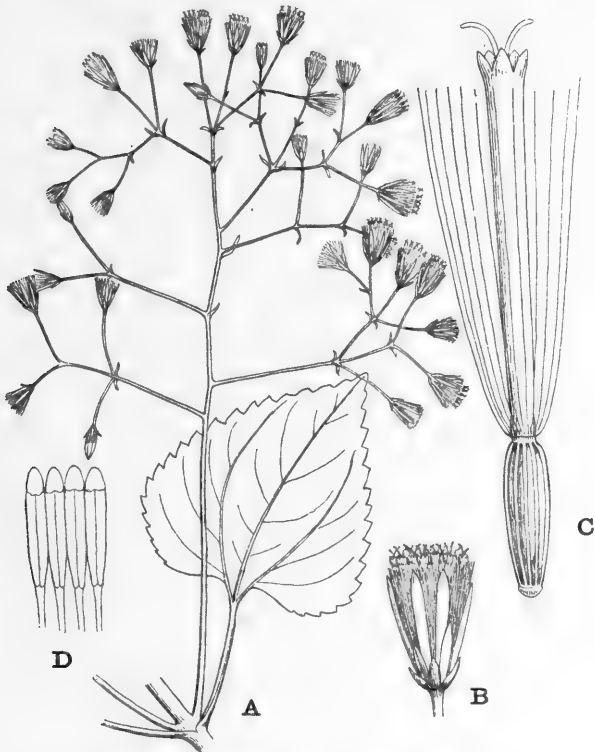


Fig. 56.—*Brickellia diffusa* (Vahl) A. Gray.

A, Upper part of plant  $\times \frac{1}{4}$ .

B, Head  $\times 2$ .

C, Floret  $\times 12$ .

D, Anthers  $\times 32$ .

bearing a few heads at the end; bracts, lower leaflike but reduced, upper very small. Stalks of heads .5-2 cm. *Involute* oblong, 7.5 mm. l.; scales 5-seriate, the outer short, the inner linear-lanceolate, acute, 2-3-striate, pale green. *Corolla* greenish white (pale blue, Eggers), 4 mm. l. *Achenes* slightly narrowed at base, finely hairy, inconspicuously 10-ribbed beneath the hairs, barely 2 mm. l. *Pappus*: 4 mm. l.; bristles few, smooth, white.

### 10. EGLETES Cass.

Small herbs. Leaves alternate, toothed or lobed. Heads usually solitary and arising opposite the leaves, radiate; florets of the ray female, of the disk hermaphrodite.

Involucre campanulate; scales 2-3-seriate; outer series herbaceous, the inner membranous. Receptacle convex, naked. Ray-corollas ligulate, in one series, exerted from or shorter than the involucre; disk-corollas numerous, regular, tubular, with a 3-5-toothed limb. Anthers obtuse at base. Style-arms of the hermaphrodite florets short, flattened, with a very short appendage. Achenes oblong, compressed, ribless. Pappus a shallow entire cup crowning the achene.

A typical American genus of 6 species.

**E. prostrata** (Sw.) Kuntze *Rev. Gen. Pl. ii.* 334 (1891); a more or less prostrate herb, the young parts with an arachnoid clothing afterwards thrown off; leaves sessile, obovate, serrate; heads on stalks as long as or longer than the leaves, in flower about 1 cm. across.—*Bold. Fl. Ned. W. Ind. ii.*

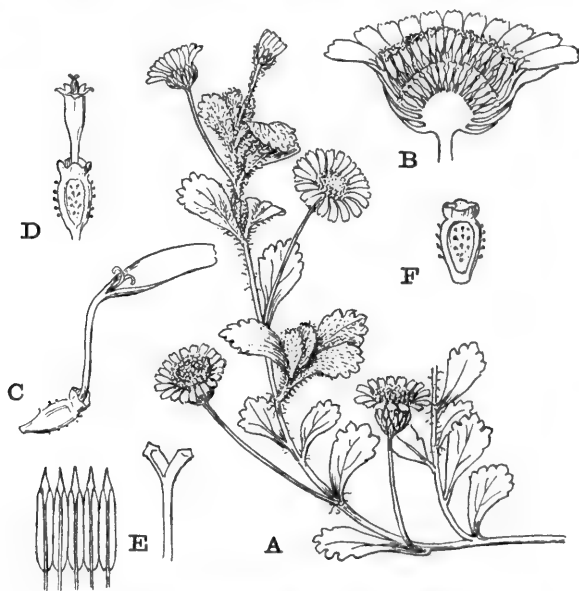


Fig. 57.—*Egletes prostrata* (Sw.) Kuntze.  
 A, Portion of plant  $\times \frac{1}{2}$ .  
 B, Head in section  $\times 3$ .  
 C, Ray-floret  $\times 6$ .  
 D, Disk-floret  $\times 6$ .  
 E, Anthers and style  $\times 10$ .  
 F, Achene  $\times 6$ .

106; *Britton Fl. Amer. Virg.* 98; *Urb. Symb. Ant. viii.* 717. *E. domingensis* Cass. in *Dict. Sc. Nat. xiv.* 265 (1819); *DC. Prodr. vi.* 42; *Griseb. Fl. Br. W. Ind.* 380; *Kew Bull.* 1893, 259; *Duss Fl. Ant. Franç.* 373. *Matricaria prostrata* Sw. *Prodr.* 114 (1788) & *Fl. Ind. Occ. iii.* 1366. Specimen from Swartz (Curaçao, v. *Rohr*) in Herb. Mus. Brit. (Fig. 57.)



St. Ann's Bay, Prior! March 825!—Hispaniola, Lesser Antilles, Curaçao, Aruba.

Lateral branches ascending from the prostrate main stem. Leaves rotundate at top, gradually narrowed into the base, coarsely or rather finely serrate, 1.5–2.5 by .7–1.2 cm. Peduncles mostly 1–3 cm. l. Involucre 4 by 6 mm.; scales finely arachnoid and almost glabrous; outermost series herbaceous, lanceolate, acute, 3 mm. l.; the 2 inner series a little longer. Ligules several, exserted, oblong, white, 4 mm. l. Corolla of hermaphrodite flowers 2 mm. l.; limb as long as the hairy tube. Style-arms exserted. Achenes broader above, covered with fine sessile glandular hairs, 1.25 mm. l.; cupular pappus hard, glabrous, barely half as long as the achene.

## 11. ASTER L.

Perennial herbs, rarely annual. Leaves alternate, entire, toothed or divided. Heads radiate; ray-florets 1–2-seriate, usually female and fertile; disk-florets hermaphrodite, usually fertile. Involucre campanulate; scales imbricate in 3–4 rows. Receptacle flat or convex. Ray-corollas ligulate; those of disk numerous, regular, tubular with a 5-fid limb. Anthers obtuse at base. Style-arms of the disk-florets flattened, crowned with a short or longish papillose appendage. Achenes usually compressed, 1–4-ribbed or ribless. Pappus-bristles in 2–3 rows.

Over 700 species with head-quarters in N. America.

**A. exilis** *Ell. Sketch ii. 344* (1824); erect herb, frequently branching; glabrous or nearly so; leaves, lower lanceolate or linear-lanceolate, upper linear; flowering heads 6 mm. across.—*DC. Prodr. v. 247*; *Gray Fl. N. Amer. i. pt. 2, 203*; *Chapm. Fl. S. U. States, ed. 3, 225*; *Combs Fl. Cub. 433*; *Britt. & Br. Ill. Fl. U. States 382*; *Britt. & Millsp. Fl. Baham. 441*. *A. subulatus Michx. Fl. Bor.-Amer. ii. 111* (1803) (in part). *A. inconspicuus Less. in Linnæa v. 143* (1830). *Tripolium subulatum Nees Gen. & Sp. Ast. 156* (1833) (in part); *DC. tom. cit. 254* (in part). *Erigeron strictus Griseb. Fl. Br. W. Ind. 365* (1864) (non *DC.*). Type of *E. strictus* Griseb. in Herb. Edinb. (Fig. 58.)

*McNab 75!* Spanish Town Road; Plato Road; swamp near Ferry; below Newcastle; roadside ditches, Cokely near Castleton; *Harris!* Fl. Jam. 6559, 6649a, 8196, 10,144, 12,154; Flamstead, *Miss Maxwell!*—Bahamas, Cuba, Mexico, S.E. United States.

Herb up to 5 ft. Leaves sessile, lower occasionally serrulate, up to 15 by 1.5 cm.; upper gradually smaller and 2–5 mm. broad. Heads stalked, in open panicles with reduced leaf-like bracts. Involucral scales in 3 rows, linear-lanceolate, acuminate, glabrous or sometimes ciliate, 5 mm. l., outer shorter. Ray-florets numerous; ligules

exserted, oblong, bluish, purple or white, 2.5-3 mm. l.; disk-florets several, their corollas 3.5 mm. l. *Achenes* slightly hairy, 1-1.5 mm. l. *Pappus* 3 mm. l.; bristles rather rough, white.

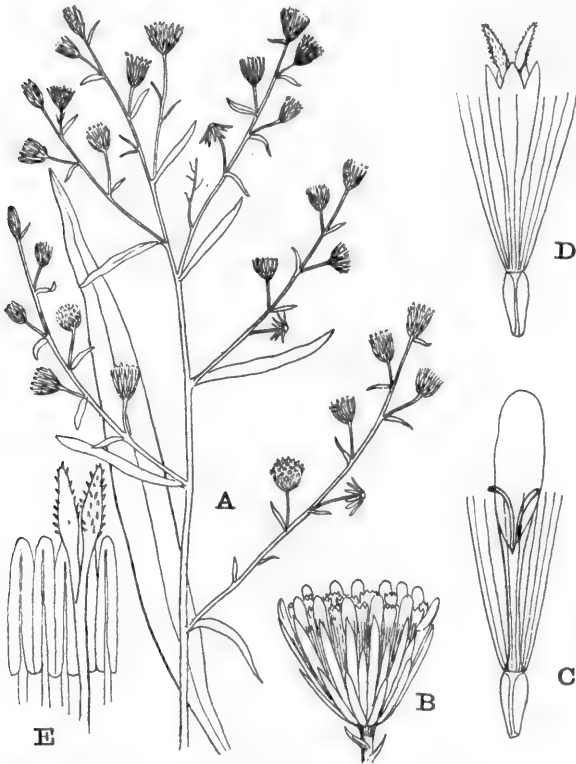


Fig. 58.—*Aster exilis* Ell.

A, Portion of plant  $\times \frac{1}{2}$ .  
 B, Head  $\times 4$ .  
 C, Ray-floret  $\times 12$ .

D, Disk-floret  $\times 8$ .  
 E, Anthers and style  $\times 32$ .

## 12. ERIGERON L.

Annual or perennial herbs. Leaves radical or cauline and alternate, entire or divided. Heads radiate; florets of the ray female, 2- or more-seriate, fertile; of the disk hermaphrodite, usually fertile. Involucre campanulate; scales in 1-3 rows. Receptacle generally flat and naked. Ray-corollas ligulate, with narrow ligule sometimes wanting; those of disk generally numerous, regular, tubular with a

usually 5-fid limb. Anthers obtuse at base; style-arms, achenes and pappus as of *Aster*.

Over 400 species chiefly in temperate and montane countries of both Worlds.

Ray-florets not or but little exceeding the involucre.

Heads on long peduncles, few or solitary.

Cauline leaves linear, small ..... 1. *E. cuneifolius*.

Cauline leaves like radical but smaller .... 2. *E. jamaicensis*.

Heads paniced.

Heads in flower 6-7 mm. long ..... 3. *E. bonariensis*.

Heads in flower 3-4 mm. long ..... 4. *E. canadensis*.

Ray-florets greatly exceeding the involucre .... 5. *E. Karvinskyanus*.

1. ***E. cuneifolius* DC.** *Prodr. v.* 288 (1836); radical leaves rosulate, oblong-spathulate, entire, rarely toothed, cauline small, linear; peduncles usually longer than the leaves.—*Stahl Fl. P.-Rico v.* 119; *Egg. Fl. St. Croix & Virg.* 63; *Urb. Symb. Ant. iv.* 627 & *viii.* 718; *Jenn. Is. Pin.* 281; *Britt. Fl. Amer. Virg.* 98. *E. jamaicensis Sw. Obs. Bot.* 305, *t. viii. f. 2* (1791) (non L.); *Griseb. Fl. Br. W. Ind.* 364 & *Cat. Cub.* 148; *Wils. in Rep. Geolog. Jam.* 281; *Combs Fl. Cub.* 433. *Aster jamaicensis Less. in Linnæa v.* 144 (1830).

*Wright! Masson! Macfadyen! Hanover, Purdie! St. Mary, McNab! J. P.* 2096, *Hart! Castleton Gardens, Thompson Fl. Jam.* 8004! Ashkenish to Dolphin Head; Castleton Gardens; Hope Gardens; Hope Grounds; *Harris! Fl. Jam.* 10,275, 11,925, 11,970, 12,088; Giddy Hall, *Mrs. Sangster! Balaclava, Orcutt* 1451!—Cuba, Is. Pinos, Porto Rico, Virgin Islands.

A puberulous annual. Stem slender, simple or branched above, 4-12 in. high. Leaves sessile, radical, obtuse or rotundate, gradually narrowed below, slightly toothed rarely pinnatifid, mostly 2-4 cm. by 7-10 mm.; cauline leaves distant, lower sometimes linear-spathulate, 5-10 mm. l. Heads at the ends of the branches, on filiform peduncles sometimes several cm. l., 5 by 6 mm. when in flower. Involucral scales 2-seriate, linear, acute, outer nearly 3 mm., inner barely 4 mm. l. Ray-florets in 2 series; ligules white, 1.5 mm. l. Achenes hairy, 1 mm. l. Pappus pale reddish or dirty white; bristles few, rough, barely 3 mm. l.

2. ***E. jamaicensis* L.** *Syst. Veg. ed.* 10, *ii.* 1210 (1759); pubescent herb; radical leaves rosulate, oblong-spathulate, pinnatifid; cauline lobulate; stalks of heads shorter than the leaves.—*Lun. Hort. Jam. i.* 614; *DC. tom. cit.* 288; *Sauv. Fl. Cub.* 79; *Wils. loc. cit.*; *Hitchc. in Rep. Miss. Bot. Gard. iv.* 98; *Sang. Fl. Cub.* 49; *Urb. op. cit. viii.* 719. *E. rivularis Sw. Prodr.* 113 (1788) & *Fl. Ind. Occ. iii.* 1346; *Lun. tom. cit.* 615; *Griseb. Fl. Br. W. Ind.* 365 & *Cat. Cub.* 149. *Senecio minor bellidis majoris folio Sloane Cat.* 125 & *Hist. i.* 260, *t.* 152, *f.* 3. *Senecio tomentosus &c. Browne Hist.*

*Jam.* 320. A specimen from Browne in Herb. Linn.; and from Swartz in Herb. Mus. Brit. (Fig. 59.)

Banks of the Cobre at St. Jago de la Vega, *Sloane*! Herb. v. 24! *Browne*! *Broughton*! Cedar Valley, *Purdie*! Cascade of Falls River, *Prior*! Port Antonio; Porus, Bog Walk; *Hitchcock*; Green River

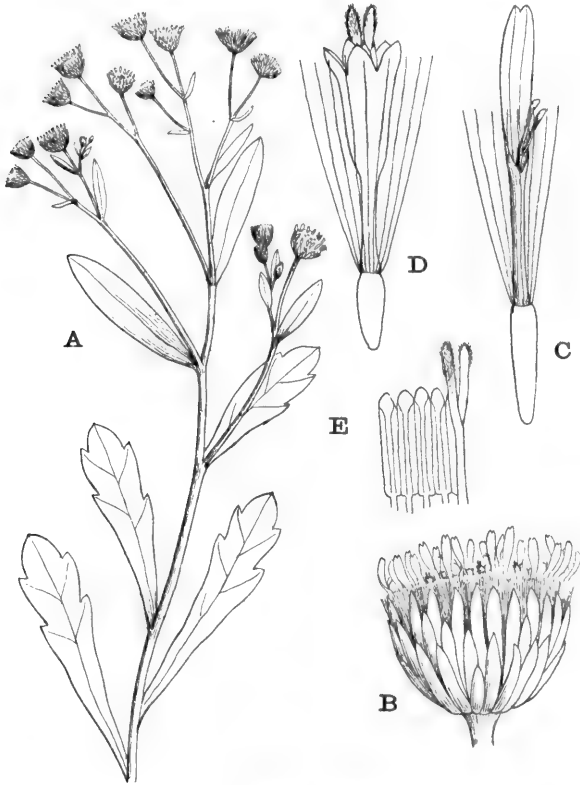


Fig. 59.—*Erigeron jamaicensis* L.

A, Portion of plant in flower  $\times \frac{1}{2}$ .

B, Head  $\times 4$ .

C, Ray-floret  $\times 10$ .

D, Disk-floret  $\times 10$ .

E, Anthers and stigma  $\times 10$ .

Fording; Troy; Castleton District; *Harris*! Fl. Jam. 6263, 7399, 8672.—Cuba, Hispaniola.

Stems 1 or 2 ascending from the rootstock, branched above, up to 1 ft. high. Radical leaves sessile, gradually narrowed below, with 2–4 mucronate lobes on either side, pubescent, up to 10 by 2 cm., usually smaller; cauline like them but smaller. Inflorescence a terminal few-headed corymb. Heads 6 by 7 mm., on slender pubescent stalks up to 2 cm. l. Involucral scales linear, acuminate, hairy on back,

outer 2 mm., inner 4 mm. 1. *Ray-florets* 1-seriate, shortly exserted, narrowly oblong, white, 5 mm. 1. *Achenes* hairy, 1.5 mm. 1. *Pappus* 3 mm. 1.; bristles few, rough, pale brown or dirty white.

3. *E. bonariensis* L. *Sp. Pl. ii.* 863 (1753); erect herb; leaves lanceolate, entire, sometimes pinnatifid; panicle racemose; heads in flower nearly 1 cm. across.—*DC. tom. cit.* 289; *Griseb. Fl. Br. W. Ind.* 365; *Wils. loc. cit.*; *Kew Bull.* 1893, 259; *Duss Fl. Ant. Franç.* 360; *Hart Herb. List Trin.* 32; *Urb. op. cit. iv.* 628 & *viii.* 719.

*Houstoun!* Manchester, *Purdie!* *Distin!* Moneague, *Prior!* J. P. 938 *Hart!*—Florida, Antilles, Central and South America.

*Stem* up to 4 ft. high, leafy throughout, often branched, coarsely pilose. *Leaves* sessile, acute, lower broader and sometimes toothed or pinnatifid, upper entire, roughly pubescent or nearly smooth, up to 8 cm. 1. but usually smaller, upper gradually reduced to 2.5 cm. or less. *Panicle* terminal, thyrsoïd; bracts leaf-like. *Heads* stalked, up to 7 mm. 1. *Involucral scales* 2-seriate, linear-lanceolate, acuminate, hairy on back, 4.5–5 mm. 1., outer shorter. *Ray-florets* very numerous; corollas shortly exserted, filiform, 4 mm. 1., ligule very inconspicuous; disk-florets fewer, 4 mm. 1. with 5-toothed limb. *Achenes* minutely hairy, 1 mm. 1. *Pappus* 4 mm. 1., of few rough white bristles.

4. *E. canadensis* L. *Sp. Pl. ii.* 863 (1753); leaves linear-lanceolate or linear, usually entire; panicle racemose; flowering heads barely 5 mm. across.—*Nutt. Gen. N. Amer. Pl. ii.* 148; *DC. tom. cit.* 289; *Griseb. Pl. Carib.* 85, *Pl. Wright.* 513, *Fl. Br. W. Ind.* 365 & *Cat. Cub.* 149; *Sauv. op. cit.* 79; *Egg. op. cit.* 64; *Stahl op. cit.* 121; *Gray Fl. N. Amer.* 221; *Wils. loc. cit.*; *Hitchc. loc. cit.*; *Kew Bull. loc. cit.*; *Duss loc. cit.*; *Sang. loc. cit.*; *Hart loc. cit.*; *Urb. op. cit. iv.* 628 & *viii.* 719. *E. pusillus* *Nutt. loc. cit.* *Leptilon canadense* *Britt. & Br. Ill. Fl. N. U. States iii.* 391 (1898); *Small Fl. S.E. U. States, ed. 2,* 1231; *Britt. Fl. Berm.* 394. *Leptilon pusillum* *Britton in Torreya xiv.* 198 (1914), *Fl. Amer. Virg.* 98 & *Fl. Berm.* 395; *Britt. & Millsp. Fl. Baham.* 443. Specimens from Hort. Cliffort. in Herb. Mus. Brit.

#### Canada Fleabane.

*Wright!* *Wilson* 243! *Macfadyen!* Orange Bay; Castleton Road; *Scott's Hall;* *Thompson!* *Fl. Jam.* 6496, 6745, 8103. *Arcadia, Mrs. Sewell!* Castleton; *Mt. Hybla;* Grove near Hope; *Harris!* *Fl. Jam.* 57, 11,772; *Fredholm* 3317. *Giddy Hall, Miss Maxwell!* *Balaclava;* *Montego Bay;* *Orcutt!* 854, 2220.—Native of temperate N. America; widely naturalised.

*Stem* erect, leafy, hairy or glabrous, up to 3 ft. high. *Leaves* sessile, linear-lanceolate, upper linear, acute, smooth or slightly rough, up to 10 cm. 1., upper mostly 2–3 cm. 1. *Panicle* terminal, thyrsoïd, much longer than the leaves, with leaf-like bracts. *Heads* stalked. *Involucral scales* in 3 rows, linear-lanceolate, acute, 3.5 mm. 1., outer

shorter. *Corolla* of ray-florets as of last, 2.5 mm. l., of disk-florets 2.5 mm. l. with 4-toothed limb. *Achenes* 1 mm., pappus 2 mm. l.

*E. canadensis* "has been found a useful remedy in the treatment of diarrhœa, dysentery and dropsical complaints" (*Bentl. & Trim. Med. Pl.* 149).

5. **E. Karvinskyanus** *DC. Prodr. v.* 285 (1836); leaves oblanceolate and 3-lobed or linear-lanceolate and entire, heads on long stalks, solitary, terminal or axillary, in flower 2 cm. across.—*Hemsl. Biol. Centr. Amer. Bot. ii.* 124; *Blake in Contrib. Gray Herb. lii.* 30; *Standley in Contrib. U.S. Nat. Herb. xxiii.* 1499. *E. mucronatus* *DC. loc. cit.* (1836); *Urb. op. cit. viii.* 720.

Roadside banks, Walderston; Silver Hill Gap; *Harris!* *Fl. Jam.* 8281, 11,881; Flamstead, *Miss Maxwell!* Catherine's Peak, *Rendle* 42! —A native of Mexico, Central America and Venezuela: "naturalised in all hill districts" *Harris*; also in Guadeloupe and San Domingo.

*Herbaceous perennial*, glabrous or nearly so. *Stems* erect or ascending, simple or sparingly branched, leafy throughout. *Leaves* sessile, oblanceolate, generally 3-lobed, mucronate, upper smaller, linear-lanceolate, entire or toothed, lower mostly 2.5–3.5 by 1–1.5 cm., upper 1–2 cm. by 2–3 mm. *Peduncles* slender, up to 7 cm. l. *Involucral scales* 3-seriate, linear-lanceolate, acuminate, slightly hairy on back, 3 mm. l., outer shorter. *Ray-florets* numerous, in 2 series, exserted; ligules linear-oblong, white, 4.5 mm. l.; disk-florets numerous; corollas 2.5 mm. l. *Achenes* slightly hairy, 1 mm. l., half the length of the few dirty white pappus-bristles.

### 13. BACCHARIS L.

Shrubs or undershrubs. Leaves alternate, occasionally reduced to scales, entire, toothed or lobed. Heads discoid, diœcious, of numerous hermaphrodite or female florets, the latter only fertile. Involucre oblong to hemispheric; scales in several series. Receptacle flat or convex, generally naked or minutely pitted. Hermaphrodite corollas regular, tubular with 5-lobed limb; female slender with 5-toothed or entire limb. Anthers obtuse at base. Style-arms of the hermaphrodite florets awl-shaped, papillose on back, or styles truncate or club-shaped. Achenes somewhat compressed, 5–10-ribbed, of the hermaphrodite florets aborted. Pappus-bristles of the female numerous, in one or more series; of the hermaphrodite few and straight or wavy.

A New World genus of nearly 400 species, mostly tropical.

Broad-leaved shrub. Leaves obovate or obovate-

oblong, entire..... 1. *B. dioica*.

Bush-like shrub with small or minute leaves ..... 2. *B. scoparia*.

1. **B. dioica** Vahl *Symb. iii.* 98, *t.* 74 (1794); shrub up to 10 ft.; leaves crowded along the branches, triplinerved; heads usually few together in glomerules at the end of the branches.—*Griseb. Pl. Carib.* 85 & *Fl. Br. W. Ind.* 366 (in part); *Wils. Rep. Geolog. Jam.* 281; *Urb. Symb. Ant. iii.* 406 & *viii.* 722; *Heering in Urb. Symb. Ant. v.* 247; *Britt. Fl. Amer. Virg.* 98; *Britt. & Millsp. Fl. Baham.* 445. **B. Vahlia** DC. *Prodr. v.* 411 (1836); *Egg. Fl. St. Croix & Virg.* 64. *Gundlachia domingensis* Bold. *Fl. Ned. W. Ind.* 199 (in part) (non *A. Gray*).

*Purdie*! *St. Andrew, McNab*! *Holly Mount, Mt. Diablo Harris*! *Fl. Jam.* 9009.—*Bahamas, Cuba, Hispaniola, St. Croix, Montserrat.*

Somewhat viscid especially the young parts. *Branches* angular. *Leaves* occasionally subopposite, petiole-like below, decurrent, broadly rotundate and sometimes retuse above, entire, glandular and slightly fleshy, 1.5–3 by 1–1.5 cm. *Inflorescence* about as long as leaves, up to about 1.5 cm. across. *Heads* sessile; male 4 by 5 mm., about 20-flowered; involucre obovoid, the scales 4–5-seriate, membrane-edged, outer ovate-oblong, 2 mm. l., inner oblong, 3 mm. l.; *corolla*-lobes shorter than the slender tube; *style* shortly exerted, club-shaped; *pappus* 3 mm. l., bristles barbellate at tip, white: *female heads* 7 by 4 mm., about 50-flowered; involucre ovoid-oblong, scales 6-seriate, outer ovate-oblong, 2 mm. l., innermost linear, 4 mm. l.; *corolla* 5-toothed; *style-arms* exerted; *achene* oblong, 10-ribbed, glabrous, nearly 2 mm. l.; *pappus* 3 ultimately 6 mm. l.; bristles rather rough, reddish.

2. **B. scoparia** (L.) Sw. *Fl. Ind. Occ. iii.* 1339 (1806); broom-like viscid shrub, up to 10 ft., usually less; leaves small or minute; heads solitary at the end of the branches.—*Pers. Syn. ii.* 425; *DC. tom. cit.* 424; *Griseb. Fl. Ind. Occ.* 366; *Wils. loc. cit.*; *Hitchc. in Rep. Miss. Bot. Gard. iv.* 98; *Heering in Engl. Bot. Jahrb. xxvii.* 467 & *in Urb. op. cit. v.* 248; *Shreve Mont. Rain-For.* 22. *Chrysocoma scoparia* L. *Amœn. v.* 404 (1759). *Calea scoparia* L. *Syst. ed.* 12, *iii.* 234 (1768); *Sw. Obs. Bot.* 302; *Lun. Hort. Jam. i.* 520. *Chrysocoma* ? arborea, ramosissima &c. *Browne Hist. Jam.* 316, *t.* 34, *f.* 4. Specimen from Browne in *Herb. Linn.* (Fig. 60.)

#### Mountain Broom Tree, Bitter Broom.

*Houstoun*! *Wright*! *Browne*! *Liguanea, Swartz*! *Bertero* 2074; *Port Royal, McNab*! *Bancroft*! *Port Royal Mts. Purdie*! *St. Thomas East, Wilson*! *St. Andrew Hills, Prior*! *Wullschlâgel* 414! *J. P.* 644 (*Hart*!); *Newcastle, Eggers* 3569! *Blue Mt. Peak, Hitchcock*; *Cinchona Fawcett*! *Fl. Jam.* 9041; *Cinchona*; *Clydesdale*; below *Flamstead*; *Resource*; *Holly Mount*; *Harris*! *Fl. Jam.* 6628, 7000, 9028, 9042, 9113, 12,200; *Guava Ridge, Miss Maxwell*!

*Stem* erect and stoutish below, copiously branched above, ultimate branches barely 1 mm. thick. *Leaves* scattered, linear-oblong, 1-nerved,

sometimes very small, usually less than 1 cm. l. and about 2 mm. broad, but reaching 1.5 cm. by 5 mm. and then with a single tooth on each side. *Male heads* 5 by 3 mm., about 20-flowered; involucre sub-hemispherical, scales 5-seriate, outer ovate, 1-1.5 mm. l., inner oblong, 2 mm. l.; corolla 2.5 mm. l., lobes shorter than tube; style clavate; pappus 2.5 mm. l., bristles dirty white; *female heads* 4 by 2 mm., 10-flowered; involucre ovoid-oblong, scales 5-6-seriate, outer ovate,

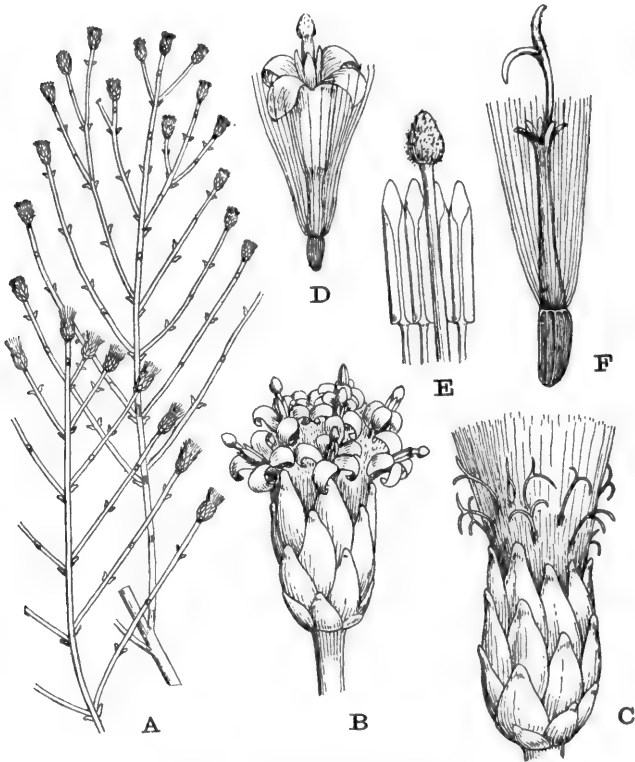


Fig. 60.—*Baccharis scoparia* (L.) Sw.

A, Flowering branches of female (front) and male plants  $\times \frac{1}{2}$ .  
 B, Male head  $\times 6$ .  
 C, Female head  $\times 10$ .

D, Male floret  $\times 12$ .  
 E, Same; anthers and style  $\times 25$ .  
 F, Female floret  $\times 14$ .

1.5 mm. l. innermost oblong-lanceolate, 3 mm. l.; corolla 5-toothed; style-arms exserted; achenes oblong, 10-ribbed, glabrous, 1.5 mm. l., pappus at length 5 mm. l., bristles pale brown.

*Harris*! Fl. Jam. 8421 & 12,202 from Castleton Gardens, is a bush 12 ft. high with obtuse leaves sometimes toothed or lobulate and paniculate heads, otherwise much like *B. dioica*. It is *B. halimifolia* L. forma *subintegrifolia* Heering in Urb. op. cit. v. 243.



14. PLUCHEA Cass.

Herbs or shrubs. Leaves alternate, entire or toothed, rarely pinnatifid. Heads usually in terminal corymbose cymes, discoid, heterogamous, outer florets in several rows, female and fertile, central florets generally few, hermaphrodite, sterile. Involucre ovoid or campanulate, scales few- or several-seriate. Receptacle flat, naked. Corolla of female florets filiform, shortly 3-fid or toothed; of hermaphrodite florets tubular, 5-lobed. Anthers tailed at base. Styles of hermaphrodite florets entire or bifid, papillose, of female ending in 2 linear arms. Achenes 4-5-angled. Pappus-bristles several or many, 1-seriate.

About 40 species in the warmer regions of both hemispheres.

Shrub. Leaves entire or nearly so. Involucres tomentose ..... 1. *P. odorata*.

Herbaceous undershrub. Leaves serrate. Involucres pubescent ..... 2. *P. purpurascens*.

1. *P. odorata* (Desv.) Cass. in *Dict. Sc. Nat.* xlii. 3 (1826); branches brown-tomentose; flowering heads broadly ovoid.—*Descourt. Fl. Ant.* iii. 299, t. 217; *DC. Prodr.* v. 452; *Griseb. Pl. Carib.* 86, *Pl. Wright.* 513, *Fl. Br. W. Ind.* 366 & *Cat. Cub.* 150; *Sauv. Fl. Cub.* 79; *Wils. in Rep. Geolog. Jam.* 281; *Egg. Fl. St. Croix & Virg.* 64; *Stahl Fl. P.-Rico* v. 122; *Hitchc. in Rep. Miss. Bot. Gard.* iv. 98; *Kew Bull.* 1893, 259; *Combs Pl. Cub.* 433; *Duss Fl. Ant. Franç.* 361; *Sang. Fl. Cub.* 49; *Hart Herb. List Trin.* 83; *Bold. Fl. Ned. W.-Ind.* 200; *Urb. Symb. Ant.* iv. 629 & viii. 722; *Small Fl. S.E. U. St. ed.* 2, 1235; *Jenn. Is. Pin.* 276; *Britton Fl. Amer. Virg.* 98 & *Fl. Berm.* 389; *Britton & Millsp. Baham. Fl.* 445; *Standl. in Contrib. U.S. Nat. Herb.* xxiii. 1510. *Conyza odorata* L. *Syst.* ed. 10, 1213 (1760) (in part); *Sw. Obs. Bot.* 304 & *Fl. Ind. Occ.* iii. 1343. *Baccharis odorata* Desv. in *Ham. Prodr.* 52 (1825); *Mayc. Fl. Barb.* 324. (Fig. 61.)

Sweet scented Fleabane, Riverside Tobacco (March).

*Prior!* *Purdie!* *March!* St. Andrew, *McNab!* *Wullschlägel!* Blue Mts. *Hitchcock!*; J. P. 1244 (*Hart!*); Sheldon; delta of Hope River; *Harris!* Fl. Jam. 5619, 10,050; near Montego Bay, *Ridley!* Guava Ridge, *Miss Maxwell!*—Florida, Bermuda, Bahamas, Antilles, Mexico to Venezuela.

Coarse shrub 4-6 ft. high. Branches stoutish, striate beneath the tomentum. Leaves petioled, ovate-oblong to lanceolate, mucronulate,

rounded or narrowed at base, entire or with a very few minute teeth, roughish and puberulous above, tomentose beneath, mostly 5–13 by 2.5–4.5 cm. *Corymbs* many-headed, usually at least 10 cm. across; heads crowded, stalked, 6 by 5 mm.; flowers dirty white or lavender. *Involucre* 5-seriate; outer scales ovate, obtuse, about 2 mm. l., innermost oblong-lanceolate, acute, 5 mm. l. *Hermaphrodite florets* about 10, corollas narrowly funnel-shaped, 4 mm. l.; style exserted, bifid. *Corollas* of female florets 3.5 mm. l.; style-arms shortly exserted. *Achenes* .5 mm. l. *Pappus*-bristles smooth, dirty white, 3 mm. l.

According to Descourtils used by negroes as a stomachic and alexipharmic.

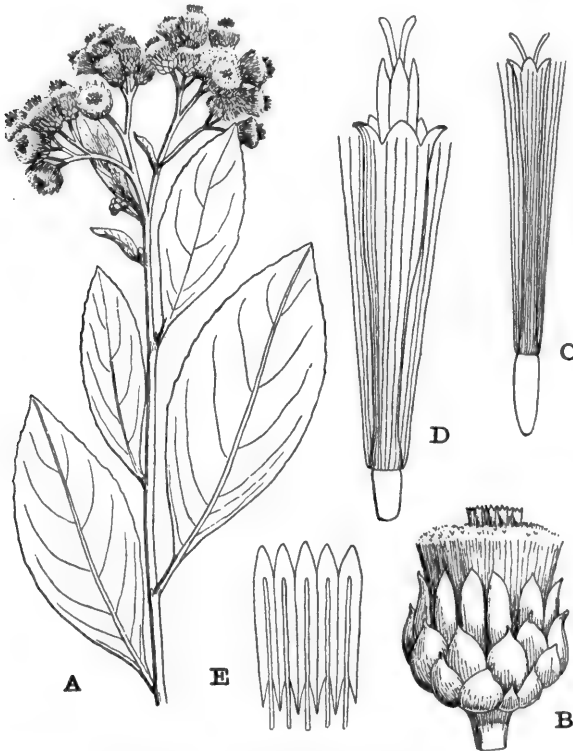


Fig. 61.—*Pluchea odorata* (Desv.) Cass.

A, End of branch in flower  $\times \frac{1}{2}$ .

B, Head  $\times 4$ .

C, Female floret  $\times 12$ .

D, Hermaphrodite floret  $\times 12$ .

E, Anthers  $\times 12$ .

2. *P. purpurascens* (Sw.) DC. *Prodr.* v. 452 (1836); branches pubescent; flowering heads hemispherical.—*Griseb. Pl. Carib.* 85, *Fl. Br. W. Ind.* 367 & *Cat. Cub.* 150; *Chapm. Fl. S. U.S. ed.* 3, 238; *Sauv. loc. cit.*; *Wils. loc. cit.*; *Egg. loc. cit.*; *Stahl*

*op. cit.* 123; *Duss op. cit.* 362; *Sang. loc. cit.*; *Bold. loc. cit.*; *Urb. ll. cc. & Fedde Rep. Beih. v.* 58; *Small loc. cit.*; *Jenn. loc. cit.*; *Britton ll. cc.*; *Britt. & Millsp. op. cit.* 446. *Conyza odorata L. loc. cit.* (in part). *C. purpurascens Sw. Prodr.* 112 (1788) & *Fl. Ind. Occ. iii.* 1342; *Lun. Hort. Jam. i.* 300. *Placus purpurascens Maza Periant. Cub.* 273 (1890). *Conyza major odorata &c. Sloane Cat.* 124 & *Hist. i.* 258, *t.* 152, *f.* 1. *Conyza odorata minor &c. Browne Hist. Jam.* 318. *Conyza foliis lanceolatis &c. Plum. Pl. Amer. (Burm.)* 85, *t.* *xcviii.* Specimen in Herb. Brit. Mus. from Hort. Cliffort. & in Herb. Linn. from Browne.

#### Wild Tobacco.

*Liguanea, Sloane!* frequent in all low marshy lands, *Browne!* *Shakespear!* in ditches and wet places, *Broughton!* *Prior!* *Purdie!* *Distin!* *Macfadyen!* *St. Andrew, McNab!* *March!* ferry, Spanish Town Road; Passage Fort; *Campbell!* *Fl. Jam.* 5849, 6272; sea-coast near Falmouth, *Harris!* *Fl. Jam.* 7223.—Distrib. as of last.

*Undershrub* 2-3 ft. high. *Branches* usually rather slender, striate. *Leaves* as of last, but generally smaller, toothed (sometimes minutely) and pubescent beneath. *Corymbs* smaller and fewer-headed than of last; heads on slender stalks, 5 by 5 mm.; flowers purple. *Involucre* 4-seriate; outer scales ovate, 2 mm. l., inner oblong-lanceolate, acute, 4 mm. l. *Hermaphrodite florets* about 7; corolla 3.5-4 mm. l., tube narrowly campanulate above; style exserted, shortly bifid. *Female florets* as of last but achenes 1 mm. l.

"It is kept by some people among their cloaths, and is said to preserve them from moths and other vermin" (Browne).

### 15. PTEROCAULON ELL.

(including *Monenteles*).

Herbs sometimes suffrutescent below, usually more or less tomentose. Leaves alternate, decurrent. Heads in terminal globose or spicately arranged glomerules, discoid, heterogamous. Involucre ovoid or campanulate; scales in few series. Receptacle flat or nearly so, naked or hairy or sometimes scaly. Florets and fruit as of *Pluchea*.

About 25 species, the true *Pterocaulon* restricted to the New World.

Glomerules arranged in interrupted cylindrical spikes ..... 1. *P. virgatum*.

Glomerules in more or less spheroidal globose masses..... 2. *P. alopecuroideum*.

1. *P. virgatum (L.) DC. Prodr. v.* 454 (1836); leaves linear-lanceolate, entire or nearly so; heads few together, occasionally solitary, sessile.—*Griseb. Fl. Br. W. Ind.* 367 (in part); *Urb. in Fedde Rep. Beih.* 58; *Britt. Fl. Amer. Virg.* 98. *Gnaphalium virgatum L. Syst. ed.* 10, 1211 (1759). *Conyza virgata L. Sp. Pl. ed.* 2, 1206 (1763); *Sw. Fl. Ind.*

*Occ. iii.* 1345 (in note); *Lun. Hort. Jam. i.* 299. *Chlænobolus virgatus* Cass. in *Dict. Sc. Nat. xlix.* 340 (1827); *Small Fl. S.E. U. States* 1236. *Helichrysum caule alato* &c. *Sloane Cat.* 125 & *Hist. i.* 260, t. 152, f. 5. *Conyza angustifolia subincana* &c. *Browne Hist. Jam.* 318. *Conyza foliis ensiformibus* &c. *Plum. Pl. Amer. (Burm.)* 86, t. *xcviii.* f. 2. Specimen from Browne in Herb. Linn.

Golden cudweed, golden tufts, and golden locks.

Dry savannas near Mr. Batchelor's and over the Rio Cobre by the Angels, *Sloane*! *Lane* in Herb. *Petiver (Sloane Herb. clxii.* 17!) Mt. Diablo, *Browne*! *March*! a weed in pasture near Spanish Town, *Harris*! Fl. Jam. 12,048.—Porto Rico, St. Thomas, St. Jan, St. Croix, Texas and Mexico to Paraguay.

*Plant* about 2 ft. high, branching from the base. *Branches* rather slender, winged, pale greyish- or brownish-tomentose. *Leaves* obtuse, mostly 3-7 cm. l. and 3-6 mm. broad, the lower ones sometimes reaching 15 mm. across, papery, green above (drying black) tomentose below. *Glomerules* usually 3- or 4-headed; heads 7 by 5 mm. *Involucre* campanulate, 3-seriate, tomentose; outer scales oblong, 2 mm. l., inner linear, acuminate, 5 mm. l. *Corollas* of outer (female) florets filiform 5.5 mm. l.; of hermaphrodite (very few), narrowly funnel-shaped, 4.5 mm. l. *Achenes* hairy, 1 mm. l. *Pappus*-bristles smooth, brownish white, 6 mm. l.

"The whole plant is drying and restringent, which makes it good against all sorts of fluxes and catarrhs. It is good in quinsies and all ulcers" (Barham).

2. ***P. alopecuroideum* (Lam.) DC. Prodr. v.** 454 (1836); leaves oblong or oblong-ovate, serrulate; glomerules many-headed, the lower ones often crowning short branches.—*Griseb. Pl. Carib.* 86 & *Pl. Wright* 513; *Stahl Fl. P.-Rico v.* 124; *Urb. in Fedde Rep. Beih.* 58. *Conyza alopecuroides* Lam. *Encyc. ii.* 93 (1786) (in part); *Conyza alopecuroidea* Sw. *tom. cit.* 1344 (1806). *Chlænobolus alopecuroides* Cass. *tom. cit.* 339 (1827). *Conyza alopecuroidea helenii* folio &c. *Plum. Cat.* 9 & *Pl. Amer. (Burm.) t.* 98, f. 1. One of Browne's specimens in Herb. Linn. belongs here. (Fig. 62.)

*Browne*! Rockspring, St. Mary, *McNab*! *Macfadyen*! Prospect Hill, *Thompson*! Fl. Jam. 7942; Hope; Mt. Airy; *Harris*! Fl. Jam. 6568, 7455.—Antilles, South America.

A weed 2 ft. high. *Branches* stout, rather broadly winged, tomentose. *Leaves* apiculate, up to 9.5 by 3.5 cm., sometimes only 3 by 1.5 cm. or even less, papery, tomentose below. *Glomerules* spheroidal, in full flower about 2 cm. across; heads 10 by 5 mm. *Involucre* and floral details as of *P. virgatum*.

These two species have often been confused, or regarded as forming a single species. Citations are therefore restricted to such as are accompanied by a description, which leaves no doubt as to the plant the writer had in mind.

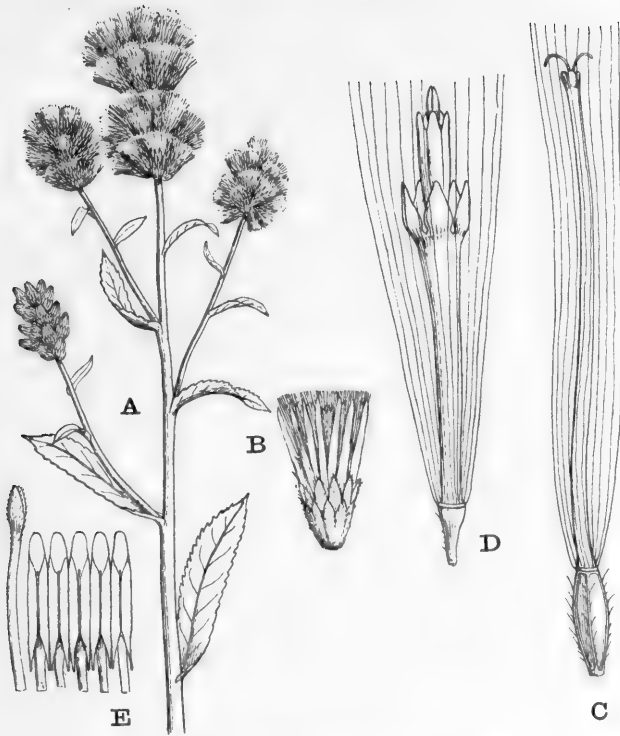


Fig. 62.—*Pterocaulon alopecuroideum* (Lam.) DC.

A, End of flowering branch  $\times \frac{1}{2}$ .  
 B, Head  $\times 2$ .  
 C, Female floret  $\times 10$ .

D, Hermaphrodite floret  $\times 10$ .  
 E, Anthers and style  $\times 12$ .

## 16. GNAPHALIUM L.

Herbs. Leaves alternate, entire. Heads usually in terminal or axillary cymes or glomerules, discoid, heterogamous, florets all fertile, outer in several rows female, central fewer and hermaphrodite. Involucre ovoid or campanulate; scales scarious in several series. Receptacle flat or raised, naked or minutely pitted. Corolla of female florets filiform, of hermaphrodite tubular with 5-fid limb. Anthers tailed at base. Styles of hermaphrodite florets ending in 2 subterete truncate arms. Achenes terete or slightly compressed. Pappus-bristles 1-seriate, free or slightly united at base.

Species nearly 200: distribution world-wide.

- Heads in simple or branched spikes ..... 1. *G. americanum*.  
 Heads in corymbs.  
 Leaves tomentose on both sides. Heads  
   ovoid ..... 2. *G. albescens*.  
 Leaves rough above, tomentose below. Heads  
   campanulate ..... 3. *G. domingense*.

1. ***G. americanum*** Mill. *Gard. Dict.* ed. 8, No. 17 (1768) (excl. syn. *Sloane*); erect herb; leaves tomentose below; spikes as long as or longer than the leaves.—*Sw. Prodr.* 112 (excl. syn. *Sloane*) & *Fl. Ind. Occ.* iii. 1336; *Lun. Hort. Jam.* i. 255; *DC. Prodr.* vi. 234; *Griseb. Fl. Br. W. Ind.* 380 & *Cat. Cub.* 157; *Sauv. Fl. Cub.* 82; *Wils. in. Rep. Geolog. Jam.* 281; *Stahl Fl. P.-Rico* v. 147; *Maza Periant. Cub.* 273. *Gnaphalium spicatum* Lam. *Encyc.* ii. 757 (1786); *Urb. Symb. Ant.* viii. 724. *Gnaphalium erectum spicatum* &c. *Browne Hist. Jam.* 318. Type, Houston's specimen in Herb. Mus. Brit.

Cassidony, Cudweed, Goldylocks, Cottonweed.

*Houston!* Liguanea Mts., *Browne*; *McNab* 54! *Purdie!* J. P. 2083 (*Hart!*); *Cinchona, Nicholls!* *Flamstead, Miss Maxwell!*—Cuba, Hispaniola, Porto Rico, Central America.

A small herb,  $\frac{1}{2}$  ft. or so high. *Stem* simple, tomentose. *Leaves* sessile, oblanceolate, obtuse, minutely silky above, tomentose beneath, lower up to 7 by 1 cm., upper gradually smaller. *Spikes* woolly, very shortly branched below with interpolated leaves, simple above, up to 6 in. l. often shorter. *Heads* sessile, 5 by 3 mm. *Involucre* narrowly ovoid; scales 3-seriate, pale brown, outer ovate, acute, about 2.5 mm. l., inner oblong or linear, acute, 4.5 mm. l. *Female* florets numerous, hermaphrodite, about 5 with 3 mm. l. corolla. *Achenes* .5 mm. l. *Pappus* 3 mm. l.; bristles rather rough, white.

In spite of the fact that Miller has omitted the collector's name, Houston's specimen (from Jamaica!) is taken as the type of this, as it agrees perfectly with Miller's description and is the only Jamaica *Gnaphalium* which does so. The Houston sheet has been inscribed "*Gnaphalium americanum* Mill. Dict." in an unrecognised hand, and immediately beneath it Swartz has endorsed the naming. By some curious mischance Miller quoted for his plant Sloane's *Gnaphalium ad stœchadem citrinam accedens*, and says further that it "grows naturally in France, Italy and Spain." But Sloane's specimen (Herb. v. 27) came from Madeira and in fact is *G. luteo-album* L. In these circumstances Urban, disregarding the "americanum" and seeing that the alleged synonym is not a New World plant, rejects Miller's name and adopts in its place Lamarek's.

2. ***G. albescens*** Sw. *Prodr.* 112 (1788); leaves narrowed towards base, drying grey above; florets numerous in the head, very few hermaphrodite.—*Sw. Fl. Ind. Occ.* iii. 1334; *Lun. loc. cit.*; *DC. tom. cit.* 228; *Griseb. Fl. Br. W. Ind.* 380; *Wils. loc. cit.*; *Hitchc. in Rep. Miss. Bot. Gard.* iv. 98. *Gnaphalium domingense* Urb. *loc. cit.* (in part). *Gnaphalium*

caule fruticoso &c. *Plum. Pl. Amer. (Burm.)* 114, t. cxxiv. Masson's sheet in Herb. Mus. Brit. authenticated by Swartz. (Fig. 63.)

*Lane* in Herb. *Petiver (Sloane Herb. clxii. 17 !)*; *Masson !* among rocks, *Liguanea, Broughton ! Bancroft ! Liguanea Hills, Prior ! Blue Mt. Peak, Hitchcock ; Cinchona Plantation, J. P. 661, Hart ! near Cinchona, Harris ! Fl. Jam. 6991.* (Fig. 63.)

*Plant 1-2 ft. high. Stem covered with a thick tomentum. Leaves*

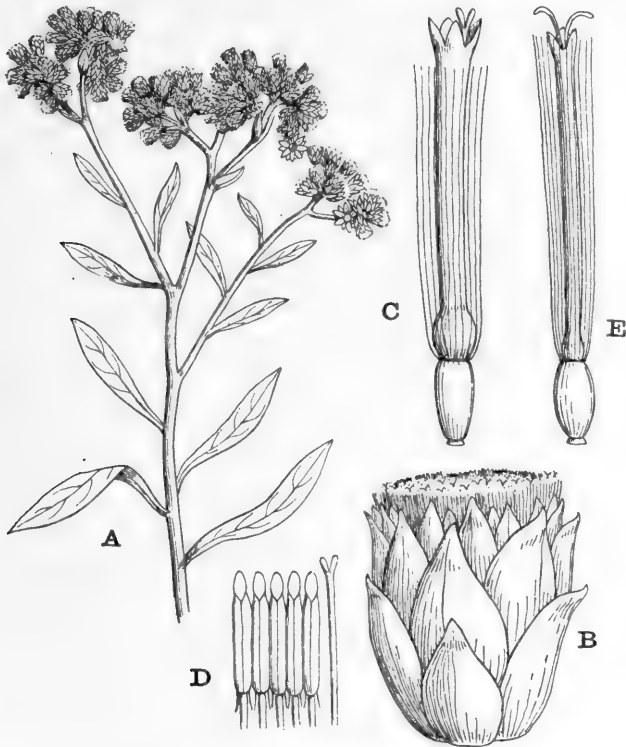


Fig. 63.—*Gnaphalium albescens* Sw.

A, End of branch in flower  $\times \frac{1}{2}$ .

B, Head  $\times 9$ .

C, Hermaphrodite floret  $\times 14$ .

D, Stamens and style  $\times 14$ .

E, Female floret  $\times 14$ .

sessile, linear-oblongate, acute tip mucronate, tomentose on both sides but especially below, mostly 2-5 cm. l. and 4-8 mm. broad. *Corymbs* up to 10 cm. across, often less. *Heads* sessile, 4 by 3 mm. *Involucral scales* 5-6-seriate, outer ovate, inner ovate-oblong or oblong, about 3 mm. l. *Female florets* about 40, corolla 3 mm. l.; *hermaphrodite* 3-4, corolla barely 3 mm. l. *Achenes* .5 mm. l. *Pappus* 3 mm. l.; bristles rather rough, white.

3. *G. domingense* Lam. *Encyc. ii.* 743 (1786); leaves oblanceolate or linear-lanceolate, not or but slightly narrowed at amplexicaul base; florets about 60 per head, of which several are hermaphrodite.—*DC. tom. cit.* 227; *Griseb. Fl. Br. W. Ind.* 380; *Wils. loc. cit.*; *Urb. loc. cit.* (excl. syn.).

Port Royal Mts., *McNab* 55! *Macfadyen*! *March* 812! *Flamstead*, *Miss Maxwell*!—Hispaniola.

About 2 ft. high. *Leaves* mucronate, minutely toothed, sometimes at first cobwebby above but soon rather rough and dark above when dry, 2–7 cm. l., 5–1 cm. broad. *Corymbs* up to 10 cm. across. *Heads* 6 by 5 mm. *Involucral scales* 5–6-seriate, outer series ovate, acute, inner oblong, obtuse. *Female florets* about 50; hermaphrodite 7–10 (5–13). *Corolla* and *achene* as of last.

### [LAGASCEA Cav.

Annual herbs or shrubs. Leaves opposite or alternate, entire or toothed. Heads 1- very rarely 2-flowered, globose or campanulate glomerules closely surrounded by floral leaves; florets all hermaphrodite and fertile. Involucre of 5 herbaceous scales connate into a 5-fid tube. Corolla exerted from the involucre, narrow below, cylindrical above, 5-lobed. Anthers slightly produced at base. Style-arms elongated, hairy. Achenes oblong, narrowed below, slightly compressed. Pappus a small toothed or fringed cup or ring, 2 or 3 of the teeth sometimes growing out into short awns.

Species 16, Mexican; one introduced into tropical and subtropical America and India.

*LAGASCEA mollis* Cav. in *An. Cienc. Nat. vi.* 332, t. 44 (1803); *DC. Prodr. v.* 91; *Griseb. Cat. Cub.* 145; *Kew Bull.* (1893) 259; *Combs Pl. Cub.* 433; *Sang. Fl. Cub.* 49; *Bold. Fl. Ned. W.-Ind. i.* 200 & *ii.* 107; *Urb. Symb. Ant. iv.* 631; *Bak. in Mart. Fl. Bras. vi. pt.* 3. 142. *Nocca mollis* (*Noccæa*) *Jacq. Fragm.* 58, t. 85, f. 11 (1809); *Cass. in Dict. Sc. Nat. xxv.* 103; *Robins. in Contrib. Gray Herb. xx.* 471; *Britt. Fl. Amer. Virg.* 98. (Fig. 64.)

Sandy Gully; South Camp Road; *Campbell*! *Fl. Jam.* 6024, 6082; roadside, *Mandeville*, *Britton & Harris*! *Fl. Jam.* 10,598. Hope Road, *Harris*! *Fl. Jam.* 11,798.—Cuba, Porto Rico, St. Thomas, Saba, St. Martin, Anguilla, St. Kitts, St. Vincent, Curaçao, Mexico to tropical South America.

A branching roadside weed up to 3 ft. high. *Branches* covered with a harsh grey pubescence, at length rough. *Leaves* petioled, 3-nerved, ovate, acute or acuminate, truncate-rotundate at base, pubescent above, silky tomentose below, mostly 2.5–9 by 1–6 cm. *Glomerules* 1–1.5 (rarely 2) cm. across, on stalks sometimes up to 10 cm. l. *Floral leaves* about 6, ovate-oblong or oblong, unequal, villous, 5–7 (rarely



up to 12) mm. 1. *Heads* numerous, closely packed. *Involucre* cylindrical, 6 by 2 mm., villous, the awl-shaped ciliate lobes 2 mm. 1. *Corolla* white, 5.5 mm. 1. *Achenes* closely invested by the involucre, narrowly ovoid, black, 3 mm. 1. *Pappus* minute.]

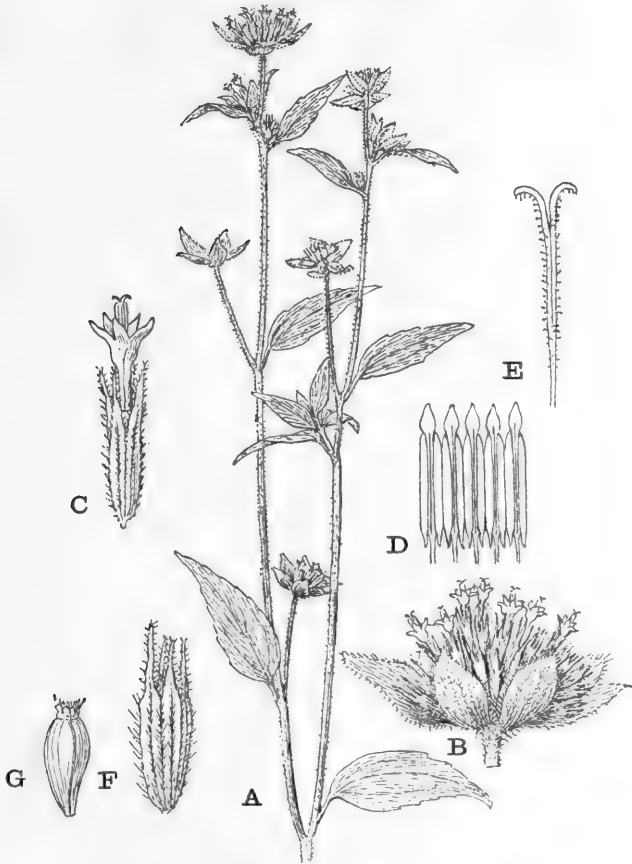


Fig. 64.—*Lagascea mollis* Cav.

- |  |                               |
|--|-------------------------------|
| A, Portion of plant $\times 3$ .             | E, Style $\times 8$ .         |
| B, Glomerule of flowering heads $\times 2$ . | F, Fruiting head $\times 4$ . |
| C, A single head $\times 3$ .                | G, Achene $\times 4$ .        |
| D, Anthers $\times 8$ .                      |                               |

## 17. CLIBADIUM L.

Herbs or shrubs. Leaves opposite, entire or toothed. Heads small, in terminal corymbose panicles, discoid, heterogamous, outer florets female and fertile; central florets hermaphrodite and sterile. Involucre ovoid or subglobose,  
VII.—14

of few broad closely imbricated scales. Receptacle naked in the centre or scaly throughout. Corolla of female florets funnel-shaped, 3-5-toothed; of hermaphrodite campanulate, 5-lobed. Anthers entire at base or nearly so. Style of hermaphrodite (sterile) florets scarcely divided, of female 2-armed. Achenes broad, without pappus, at length drupaceous, those of the hermaphrodite florets narrow and empty.

Species about 30 in tropics of the New World.

Leaves lanceolate or ovate-lanceolate..... 1. *C. surinamense*.  
 Leaves ovate ..... 2. *C. terebinthaceum*.

1. *C. surinamense* L. *Mant.* 294 (1771); leaves lanceolate or ovate-lanceolate, triplinerved.—*DC. Prodr.* v. 505; *Duss*



Fig. 65.—*Clibadium surinamense* L.

A, End of flowering branch  $\times \frac{1}{2}$ .      D, Inner sterile (hermaphrodite) floret  
 B, Head  $\times 4$ .       $\times 6$ .  
 C, Outer fertile (female) floret  $\times 6$ .      E, Achene  $\times 6$ .

*Fl. Ant. Franç.* 362; *Hart Herb. List Trin.* 31; *O. E. Schulz in Engl. Bot. Jahrb.* xlv. 617 & *in Urb. Symb. Ant.* vii. 78 (cum syn.) & viii. 726. *Clibadium asperum* DC. *tom. cit.* 506 (1836); *Griseb. Fl. Br. W. Ind.* 367; *Wils. in Rep. Geolog. Jam.* 281; *Kew Bull.* 1893, 259. *Trixis aspera* Sw. *Prodr.* 115 (1788). *Trixis scabra* Sw. *Fl. Ind. Occ.* iii. 1378 (1806). (Fig. 65.)

Liguanea, Broughton! *Distin!* *Cuming!* Scott's Hall, Thompson! *Fl. Jam.* 7935; Tyre, near Troy; Woodstock near Beaufort, Westmoreland; Askenish near Lucea; *Harris!* *Fl. Jam.* 8674, 9886, 10,299.—Hispaniola, Martinique, St. Vincent, Grenada, Tobago, Trinidad, Central America to Guiana.

*Shrub*, 3–12 ft. high. *Branches* striate, covered with a short rough pubescence. *Leaves* acuminate, narrowed at base, serrulate, thinly papery, rough above, pubescent especially on the nerves below, mostly 9–12 by 2.5–4 cm.; petioles rough-pubescent, 1–2 cm. l. *Inflorescence* many-headed, shorter than the leaves, with rough pubescence. *Heads* sessile or subsessile, globose, about 5 mm. across. *Involucral scales* 3 or 4, ovate, membranous, striate, rough on back, white (sometimes violet, *O. E. Schulz*), 4 mm. l. *Receptacular scales* much like those of the involucral. *Florets* white; female 3–6, corolla 2.5 mm. l., ovary ovoid, hairy at top, 1.5 mm. l.; hermaphrodite florets 6–13, corolla 3–3.5 mm. l., narrowly campanulate above the narrow basal part, lobes hairy outside, ovary hairy, 1.5–3 mm. l. *Achenes* obovoid, slightly hairy at top, 3 by 2.5 mm.

2. *C. terebinthaceum* (Sw.) DC. *Prodr.* v. 506 (1836); leaves ovate, subpenninerved (2 lateral nerves stronger than the rest).—*Griseb. op. cit.* 368; *Wils. loc. cit.*; *Hart loc. cit.*; *O. E. Schulz in Engl. Bot. Jahrb.* xlv. 623 & *Urb. Symb. Ant.* vii. 83. *Clibadium Alexandri* *Griseb. op. cit.* 368 (1861); *Hitchc. in Rep. Miss. Bot. Gard.* iv. 98. *Trixis terebinthacea* Sw. *Prodr.* 115 (1788) & *Fl. Ind. Occ.* iii. 1375; *Lun. Hort. Jam.* ii. 340. Specimen from Swartz in *Herb. Mus. Brit.* Type of *C. Alexandri* *Griseb.* in *Herb. Kew.*

*Shakespear!* west Jamaica, in rocky valleys, *Swartz!* *Bertero!* Guy's Hill, Moneague; *Prior!* Cuna Cuna Pass, *Wilson* 238! Catherine's Peak, and near Bellevue, *Eggers* 3585, 3794; Blue Mts. and Blue Mt. Peak, *Hitchcock!* near Cinchona; Tyre, near Troy; *Harris!* *Fl. Jam.* 7356, 9463.—Costa Rica, Colombia.

Coarse *shrub* about 8 ft. high. *Branches* roughly pubescent. *Leaves* ample, acute or acuminate, rounded or shortly cuneate at base, serrulate, thinly papery, rough above, rough-pubescent below, 10–20 by 4.5–9 cm.; petioles rough-pubescent, 1.5–4 cm. l. *Inflorescence* as of last. *Heads* broadly ovoid, 6 mm. l. *Involucral scales* 3, ovate, rough on back, 2–3 mm. l. *Outer receptacular scale* broad, inner (subtending the hermaphrodite florets) shorter and narrower. *Florets* white; female 7–12, hermaphrodite 5–10. Other characters as of last, except that the hermaphrodite ovaries are hairy at the top alone, and the achenes are somewhat smaller.

## 18. ACANTHOSPERMUM Schrank.

Annual herbs. Leaves opposite, toothed, lobed or pinnatifid. Heads at first very small, solitary and sessile or nearly so in axils or forks of the branches, radiate, heterogamous; florets of ray female and fertile, of disk hermaphrodite and sterile. Involucre of 4-6 1-seriate herbaceous scales and several inner ones each enveloping one of the ray achenes. Receptacle convex, scaly. Corolla of ray-florets with a short ligule, of disk-florets campanulate or funnel-shaped. Anthers slightly produced at base. Style of hermaphrodite florets club-shaped, hairy. Achenes of ray-florets oblong, smooth, without pappus, closely invested each by one of the enlarged barbed, prickly or spiny inner involucreal scales; of the disk small and empty.

Species 8, from Massachusetts to Uruguay; 2 established in the Old World.

**A. humile** (Sw.) DC. *Prodr.* v. 522 (1836); *Griseb. Fl. Br. W. Ind.* 369 & *Cat. Cub.* 153; *Sauv. Fl. Cub.* 80; *Wils. in Rep. Geolog. Jam.* 281; *Bold. Fl. Ned. W. Ind.* i. 201; *Combs Pl. Cub.* 433; *Jenn. Is. Pin.* 277; *Britt. & Millsp. Baham. Fl.* 447; *Urb. Symb. Ant.* viii. 726; *Blake in Contrib. U.S. Nat. Herb.* xx. 386. *Melampodium humile* Sw. *Prodr.* 114 (1788) & *Fl. Ind. Occ.* iii. 1370; *Maza Periant. Cub.* 276. *Centrospermum humile* Less. *Syn.* 217 (1832). Specimen from Swartz (Hispaniola) in Herb. Mus. Brit. (Fig. 66.)

*Wright!* Manchester, *Purdie!* March 1033! *Bancroft!* *Distin!* Spanish Town, *Prior!* Montego Bay, *McCatty!* Green Valley; on sand near the beach, Long Acre Point, W. of Black River; *Harris!* Fl. Jam. 5456, 5733, 9964; *Giddy Hall, Mrs. Sangster!*—Cuba, Is. Pinos, Hispaniola, St. Martin, St. Croix, Panama; introduced into Florida.

A frequently branching, erect or decumbent herb up to 2 ft. but often much less. Stem rough or roughly hairy. Leaves sessile, ovate, obtuse, dentate-serrate sometimes lobulate, abruptly petiole-like in the lower half or third, rather rough, especially on the nerves beneath, mostly 2-3 by 1.5-2 cm. Outer involucreal scales 5, obovate, acute, ciliate at edge, 3.5 mm. l. Florets of ray 5-7; ligule ovate, toothed at apex, yellowish, 1.25 mm. l. Florets of disk 5-8; scales oblong-spathulate, incised at top, barely 1.5 mm. l.; corolla as long as scale, spreading above the tubular base. Involucreal scales enclosing the ripe achenes 4 mm. l., cuneate, trigonous with hooklets along the borders and 2 terminal, strong, diverging spines, one hooked the other straight, and 3.5-4 mm. l.

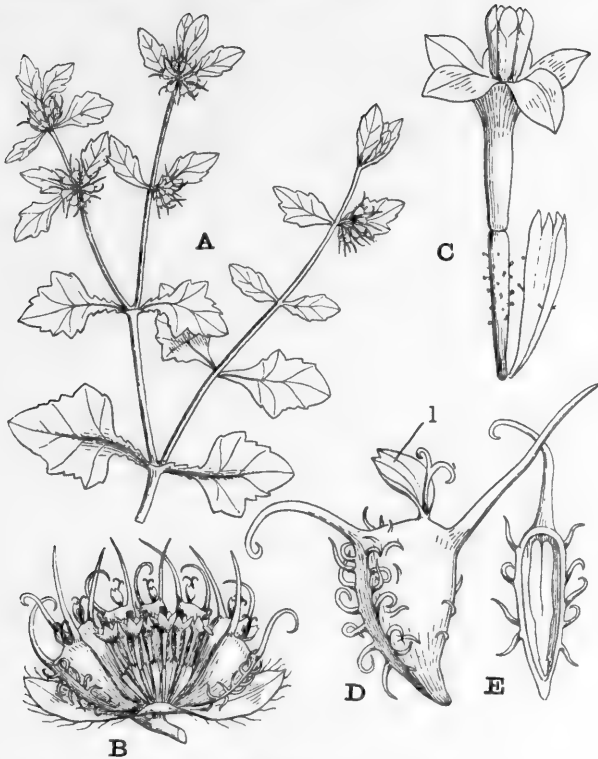


Fig. 66.—*Acanthospermum humile* (Sw.) DC.

- A, Portion of plant in flower  $\times 3$ .  
 B, Head opened  $\times 4$ .  
 C, Disk-floret  $\times 16$ .  
 D, Floret of ray  $\times 8$ ; *l*, ligule.  
 E, Achene opened  $\times 8$ .

### 19. PARTHENIUM L.

Herbs or shrubs. Leaves alternate, entire to pinnately cut. Heads small, in terminal panicles, radiate, heterogamous; florets of ray few, female and fertile, of disk hermaphrodite and sterile. Involucre campanulate, of few broad scales, the outer sometimes smaller than the inner. Receptacle more or less raised, with scales surrounding the disk-florets. Corolla of female florets with a short ligule; of the male regular, funnel-shaped, 5-toothed. Anthers entire at base. Styles of the disk-florets unbranched. Achenes of the ray compressed, keeled, crowned by the persistent ligules and surrounded by an involucral scale and 2 lateral concave receptacular scales. Pappus of 2-3 short or elongated, weak or stronger awns.

About 16 species, mainly Mexican.

**P. Hysterophorus** L. *Sp. Pl.* 988 (1753); *Sw. Obs. Bot.* 360; *Lun. Hort. Jam.* ii. 279; *Mayc. Fl. Barb.* 335; *DC. Prodr.* v. 532; *Griseb. Fl. Br. W. Ind.* 369 & *Cat. Cub.* 153; *Sawv. Fl. Cub.* 80; *Wils. in Rep. Geolog. Jam.* 281; *Egg. Fl. St. Croix & Virg.* 64; *Stahl Fl. P.-Rico* 157; *Lefroy Bot. Berm.* 86; *Kew Bull.* 1893, 259; *Combs Fl. Cub.* 433; *Duss*

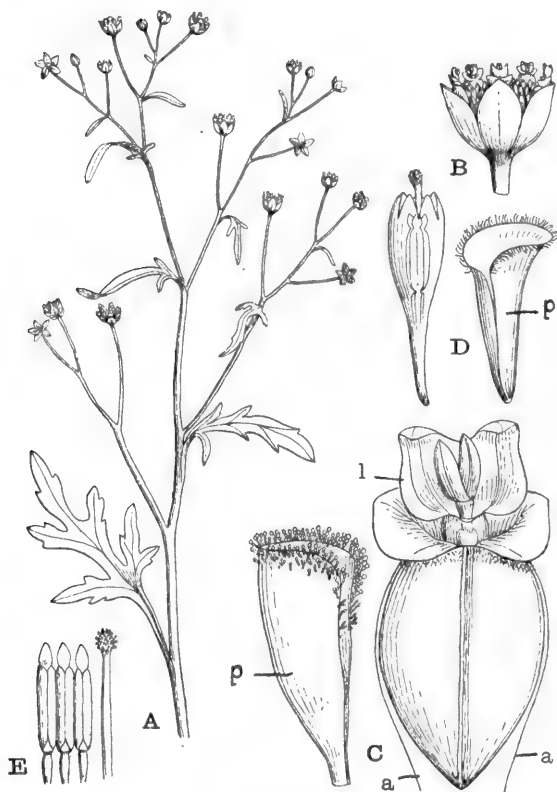


Fig. 67.—*Parthenium Hysterophorus* L.

A, Portion of plant  $\times \frac{1}{2}$ .

B, Head  $\times 6$ .

C, Floret of ray with receptacular scale, *p*, ligule, *l*, and awns, *a*  $\times 18$ .

D, Disk-floret with scale, *p*,  $\times 18$ .

E, Anthers and style of disk-floret  $\times 24$ .

*Fl. Ant. Franç.* 365; *Sang. Fl. Cub.* 50; *Hart Herb. List Trin.* 33; *Bold. Fl. Ned. W.-Ind.* i. 201 & ii. 107; *Urb. Symb. Ant.* iv. 632; *Small Fl. S.E. U. St. ed.* 2, 1247; *Jenn. Is. Pin.* 277; *Britt. Fl. Amer. Virg.* 98 & *Fl. Berm.* 398; *Britt. & Millsp. Baham. Fl.* 448; *Sims in Bot. Mag.* t. 2275. *Argyrochæta bipinnatifida* Cav.  *Ic. iv.* 54, t. 378 (1797).

Villanova bipinnatifida *Ort. Hort. Matr.* 48 (1797). *Artemisia humilior* &c. *Sloane Cat.* 127 & *Hist. i.* 263. *Parthenium subhirsutum*, *ramosum* &c. *Browne Hist. Jam.* 340. Specimen in Hort. Cliffort. in *Herb. Mus. Brit.* (Fig. 67.)

Wild Wormwood, Bastard Feverfew, Mugwort.

Spanish Town, *Sloane Herb.* v. 45! *Browne*; *Wright*! *Broughton*! *Wiles*! *Gosse*! *Kingston, Prior*! Gruat Valley, Manchester, *Purdie*! *Arcadia, Mrs. Sewell*; *Hope*; *Hope Road*; the Quarry, Spanish Town; *Harris*! *Fl. Jam.* 5701, 6565, 6762, 8181, 8212, 8371; *Giddy Hall, St. Elizabeth, Miss Maxwell*! *May Pen, Orcutt* 314! and *Balaclava 2282*! by railway, *Williamsfield, Manchester, Rendle*, 159!—Bermuda, Bahamas, West Indies, Florida and Texas to Chile and Argentina: introduced into the Old World.

An annual weed of roadsides and waste places, about 2 ft. high. *Stem* branched, strongly striate, puberulous, soon glabrous or rather rough. *Leaves* sessile, bipinnatifid with obtuse ultimate segments, puberulous or pubescent especially below, up to 12 by 7 cm. but usually much smaller. *Heads* on slender stalks 1 cm. l. or less, the loose panicle up to about 10 cm. across. *Involucral scales* 2-seriate, ovate, obtuse, outer entire, hairy on back, 2 by 1.5 mm., inner hairy and denticulate at top, elsewhere glabrous. *Scales of receptacle* oblong-clavate, coarsely mealy, nearly 2 mm. l. *Ligule* of ray-florets suborbicular, white, 1 mm. l. *Corolla* of disk-florets 1.2 mm. l. *Achenes* 2 by 1.2 mm., broadly obovoid, black, hairy at top, with 2 slender recurved awns their own length.

An infusion of the plant used in the form of a bath, is spoken of as a valuable vulnerary by the old writers.

## 20. AMBROSIA L.

Herbs, sometimes shrubby at base. Leaves opposite (occasionally ternate) or alternate, entire to pinnately cut. Heads monœcious, male or female, male several-flowered in spikes or racemes, female 1-flowered, solitary or in glomerules below the male. Involucre of males cup-shaped, 5–12-lobed, herbaceous; receptacle scaly; corolla regular, campanulate, 5-fid; anthers obtuse at base; style undivided, enlarged at top. Involucre of females closed and joined, usually with tubercles or small prickles near the top and contracted above into a short beak surrounding the style; corolla absent; style deeply divided into 2 long narrow arms. Achenes broad and thick, without pappus, closely surrounded by the persistent hardened involucre.

Species about 15, chiefly American.

*Stem* erect or ascending. Lower leaves bipinnatifid. Male heads of fully-grown racemes rather loosely arranged..... 1. *A. paniculata*.

*Stem* creeping. Lower leaves tripinnatifid. Male heads closely packed ..... 2. *A. hispida*.

1. **A. paniculata** Michx. *Fl. Bor. Amer. ii.* 183 (1803); leaves pubescent or rough, segments lanceolate, the terminal one acuminate or acute.—*DC. Prodr. v.* 527; *O. E. Schulz in Urb. Symb. Ant. vii.* 84 & *viii.* 727; *Britt. & Millsp. Baham. Fl.* 432. *A. elatior* Sw. *Obs. Bot.* 359 (1791); *Lun. Hort. Jam. ii.* 298. *A. artemisifolia elatior* Descourt. *Fl. Ant. i.* 239, *t.* 55. *A. artemisifolia* L. var. *jamaicensis* Griseb. *Fl. Br. W. Ind.* 370 (1861). *A. psilostachya* Griseb. *loc. cit.* (in part) (non *DC.*) (1861). *A. artemisiæfolia* Hemsl. *Biol. Centr. Amer. Bot.* 150 (in part) (non *DC.*); *Hitchc. in Rep. Miss. Bot. Gard. iv.* 99. *Ambrosia elatior foliis artemisiæ &c.* *Sloane Cat.* 38 & *Hist. Jam. i.* 125. *Ambrosia erecta ramosa &c.* *Browne Hist. Jam. i.* 340.

Wild Tansy.

Dry River and elsewhere, *Sloane Herb. ii.* 78! *Wright! Dancer! McNab!* Blue Mt. Peak, *Hitchcock!* Mt. Hybla, *Harris!* *Fl. Jam.* 7259 and *Miss Perkins* 1239!—Florida, Bahamas, Hispaniola.

An annual weed up to 4 ft. Stem frequently branching, striate, rough-pubescent. Leaves diminishing in size from below upwards, lower opposite or ternate, on hairy 2–3 cm. l. petioles, bipinnatifid, up to 10 cm. l.; segments pinnatifid, up to 4 cm. l., becoming smaller upwards, acute, terminal segment 1–2 cm. l. Racemes numerous, paniced, up to 10 cm. l. or even more. Male heads recurved, on short slender stalks, 3 mm. across; florets about 12; scales filiform, 1.5 mm. l.; corollas yellow, 2 mm. l.; style slightly enlarged at top. Female heads 3–8 together in the axil of a small lanceolate entire leaf and subtended each by an ovate or oblong bract 1–2 mm. l. Involucre with its beak 2 mm. l.; tubercles up to 8, sometimes almost absent. Style-arms 2 mm. l. Achenes keeled, 2–2.5 mm. l.

A powerful vulnerary employed in baths and fomentations: other uses are mentioned by Barham and by Descourtils.

var. **peruviana** *O. E. Schulz in Urb. Symb. Ant. vii.* 87 (1911); leaf-segments obtuse or rotundate, uppermost segment 5 mm. l. or less. Male heads 4 mm. across; florets about 25. Female heads up to about 20 together, some often at the top of a short peduncle.—*A. peruviana* Willd. *Sp. Pl. iv.* 377 (1805); *Urb. op. cit. iv.* 632. *A. psilostachya* Griseb. *loc. cit.* (in part) (non *DC.*).—Cuba, Porto Rico, Peru.

*Wright!* Moneague, *Prior!* March 875! *Giddy Hall, Miss Maxwell!*

Wormwood according to Miss Maxwell.

2. **A. hispida** Pursh *Fl. Amer. Sept. ii.* 743 (1814); segments of the hispid leaves very short, the terminal segment rounded.—*DC. loc. cit.*; *Hitchc. loc. cit.*; *Small Fl. S.E. U. St. ed. 2,* 1150; *Bold. Fl. Ned. W.-Ind. i.* 201; *Urb. loc. cit.*; *O. E. Schulz in Urb. op. cit. vii.* 90 & *viii.* 728; *Jenn. Is. Pin.* 284; *Britt. & Millsp. loc. cit.* *A. crithmifolia* *DC. tom.*



*cit.* 525 (1836); *Griseb. loc. cit. & Cat. Cub.* 154; *Sauv. Fl. Cub.* 80; *Maza Periant. Cub.* 278; *Sang. Fl. Cub.* 50. (Fig. 68.)

Barton's, St. Catherine, Thompson! Montego Bay, common in graveyards near the sea, *G. H. Leader* in litt.—Florida, Bahamas, Cuba, Is. Pinos, Hispaniola, Porto Rico, Saba, St. Martin, St. Kitts, Barbados, Central America.

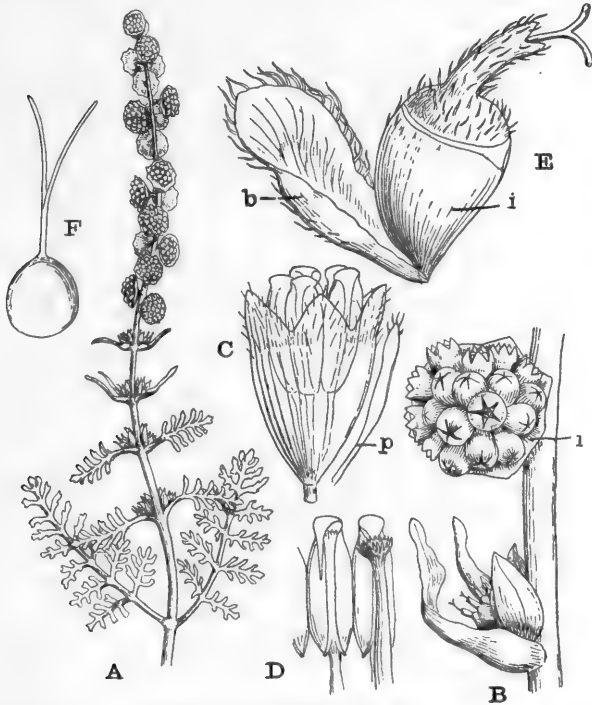


Fig. 68.—*Ambrosia hispida* Pursh.

A, Upper part of plant  $\times \frac{1}{2}$ .

B, A glomerule of female heads and a male head; *i*, involucre;  $\times 4$ .

C, Male floret detached with scale, *p*,  $\times 12$ .

D, Anthers and style from male floret  $\times 12$ .

E, A female head with bract, *b*; *i*, involucre;  $\times 12$ .

F, Ovary and style  $\times 8$ .

*Perennial.* Stem striate, together with the branches and leaves coarsely hispid. Leaves up to 5 cm. l., usually shorter, lower tri- upper bipinnatifid, segments making an open angle with the rachis, short terminal segment about 3 mm. l.; petioles hispid, up to 1 cm. l. Racemes solitary or few, up to 10 cm. l. Male heads closely packed, sessile, 4 mm. across, about 20-flowered; involucre strigose; scales filiform or linear, 1.5–2 mm. l.; corollas 2–2.5 mm. l.; style thickened at top. Female heads several together (up to 10); bracts broadly ovate, about 4 mm. l. Involucre with 1–5 short spines, strigose, with beak 2.5 mm. l. Achenes 2.5–3 mm. l., black and shining.

## 21. XANTHIUM L.

Coarse annuals. Leaves alternate, deeply toothed or lobed. Heads unisexual, monœcious, axillary or terminal, discoid. Male heads globose, many-flowered; female beneath the male, 2-flowered. Male involucre of few short scales; receptacle cylindrical, scaly; filaments united throughout, anthers obtuse at base; style undivided. Female involucre completely closed round the florets, 2-beaked at apex and spiny on the back. Corolla absent. Style-arms long and slender, each pair exerted from a beak. Achenes obovoid, without pappus, enclosed in the persistent hardened apparently 2-celled involucre.

About 25 species, chiefly American.

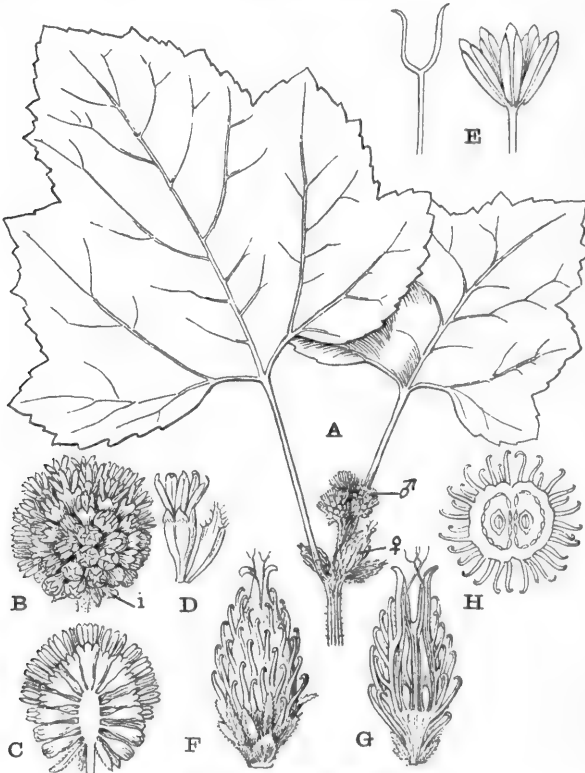


Fig. 69.—*Xanthium chinense* Mill.

A, Portion of plant  $\times \frac{1}{2}$ .

B, Male head with involucre, 1,  $\times 3$ .

C, Same in long. section  $\times 3$ .

D, Male floret with scale  $\times 5$ .

E, Stamens from male and style-arms from female floret  $\times 8$ .

F, Female head (2-flowered)  $\times 3$ .

G, Same in long. section  $\times 3$ .

H, Fruit cut across  $\times \frac{1}{4}$ .

**X. chinense** Mill. *Gard. Dict.* ed. 8, No. 4 (1768); *Millsp. & Sherff in Field Mus. Nat. Hist. Bot.* iv. 17 (cum syn.). *X. echinatum* Urb. *Symb. Ant.* iv. 632 & viii. 728 (non Murr.). Type in Herb. Mus. Brit. (Fig. 69.)

Hopewell, St. Mary, *McNab* ! *Distin* ! Green Valley; Watson's Hill, Manchester; Troy; *Harris* ! Fl. Jam. 5454, 6267, 8537.—Bermuda, Bahamas, West Indies, Ontario and Nebraska to Mexico.

*Herb* 1–3 (sometimes 6) ft. high. *Stem* striate, rough. *Leaves* broadly ovate to suborbicular, 3–5-lobed, cordate or cordate-truncate at base, coarsely toothed, 3-nerved, green on both sides, rough or rough-pubescent. Up to 12 by 18 cm. but often much smaller; petioles rough, 5–10 cm. l. *Male heads* 8 mm. across; involucre scales lanceolate, ciliate, 1.5 mm. l.; receptacular scales spatulate, acute, 4 mm. l.; corolla 3 mm. l. *Fruit* ovoid, dark green or reddish, the central body nearly glabrous, 10–15 by 7–9 mm.; beaks straight or curved, hooked at tip, pubescent below, 3–6 mm. l.; spines numerous, glabrous or sparsely hairy below, straight, hooked at tip, about as long as the beaks.

### [ZINNIA L.]

Herbs or undershrubs. Leaves opposite, entire. Heads conspicuous, solitary at the top of the branches, heterogamous, radiate; florets all fertile, those of the ray 1-seriate, female, of the disk hermaphrodite. Involucre cylindrical or campanulate, of broad, closely imbricated scales in 3 or more series. Receptacle raised, bearing complicate scales embracing the disk-florets. Ray-florets with a usually broad, entire, persistent ligule. Corolla of disk-florets cylindrical, 5-fid. Anthers obtuse at base. Style-arms linear, obtuse or acute. Achenes compressed or triquetrous, striate. Pappus of 1–3 short awns, of the female sometimes absent.

Species about 15, S. United States to Chile and Brazil, but mostly Mexican—the following and 1 or 2 others occur in warm countries including several West Indian Islands as escapes from cultivation.

**Z. multiflora** L. *Sp. Pl.* ed. 2, 1269 (1763); *DC. Prodr.* v. 535; *Griseb. Fl. Br. W. Ind.* 370; *Wils. in Rep. Geolog. Jam.* 281; *Egg. Fl. St. Croix & Virg.* 64; *Stahl Fl. P.-Rico* v. 127; *Duss Fl. Ant. Franç.* 365; *Robins. & Greenm. in Proc. Amer. Acad.* xxxii. 19 (cum syn.); *Urb. Symb. Ant.* iv. 633 & viii. 728. *Crassina multiflora* Kuntze *Rev. Gen. Pl.* ii. 331; *Britt. Fl. Amer. Virg.* 98; *Britt. & Millsp. Baham. Fl.* 448; *Bot. Mag. t.* 149. (Fig. 70.)

Yallahs River, *Prior* ! J. P. 623 *Morris* ! Lititz Savannah, common in old cultivated grounds and along roadsides, *Harris* ! Fl. Jam. 11,729.—Florida and Texas to Venezuela and Bolivia.

Erect annual, up to 2 ft. high. *Stem* sparsely hairy, somewhat rough. *Leaves* sessile, oblong-lanceolate, obtuse, broad at

base, 3-nerved, rough on both faces, mostly 3.5–5 cm. by 7–15 mm. Heads to 3.5 cm. across. Involucre 12 by 9 mm.; scales 3-seriate, broadly oblong, rotundate at tip, striate, lowest 5 mm., uppermost 10 mm. l. Ligules exserted, ovate, emarginate, 8–10 mm. l., red.

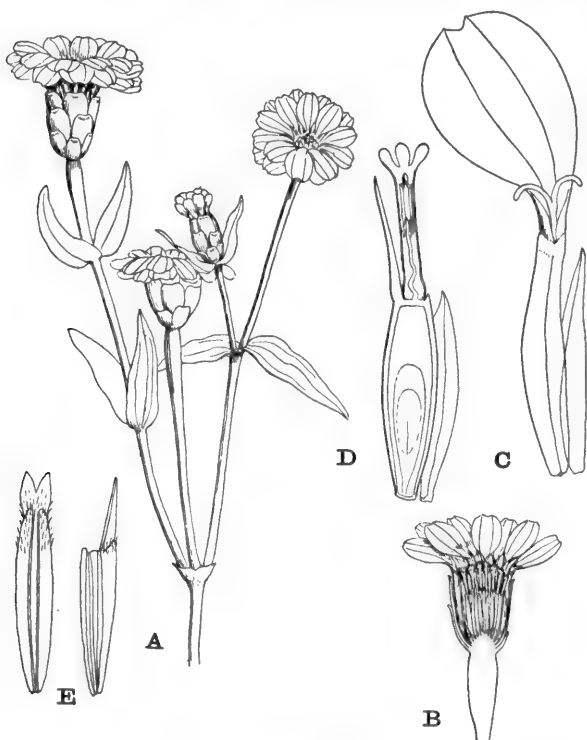


Fig. 70.—*Zinnia multiflora* L.

A, Portion of plant  $\times \frac{1}{2}$ .  
B, Head in section  $\times \frac{1}{4}$ .

D, Floret of disk  $\times 5$ .  
E, Achenes of ray and disk  $\times 3$ .

Receptacular scales barely 1 cm. l. Corolla of disk-florets 4 mm. l. Achenes linear-oblong, compressed, somewhat rough on the striae, those of the ray awnless and 9–10 mm. l., of the disk somewhat broader, 1-awned, 7–8 mm. l.]

## 22. ENHYDRA Lour.

Marsh herbs. Leaves opposite, sessile or subsessile. Heads axillary, sessile or shortly stalked, heterogamous, radiate; ray-florets female and fertile; disk-florets hermaphrodite, fertile or the innermost sterile. Involucre of 4

broad herbaceous scales in 2 series. Receptacle convex with scales investing the florets. Ray-florets with a very short and relatively broad 3-4-toothed ligule. Corolla of disk-florets tubular, 5-fid. Anthers obtuse at base. Style-arms of the disk-florets linear, obtuse, hairy. Achenes surrounded by the persistent scales, oblong, often compressed, without pappus.

Species about 8 in the tropics of both Worlds.

*E. sessilis* (Sw.) DC. *Prodr.* v. 637 (1836); *Griseb. Fl. Br. W. Ind.* 369; *Wils. in Rep. Geolog. Jam.* 281; *Bak. in Mart. Fl. Bras. vi.* pt. 3, 169, t. lv. f. 2; *Urb. Symb. Ant.* iv.

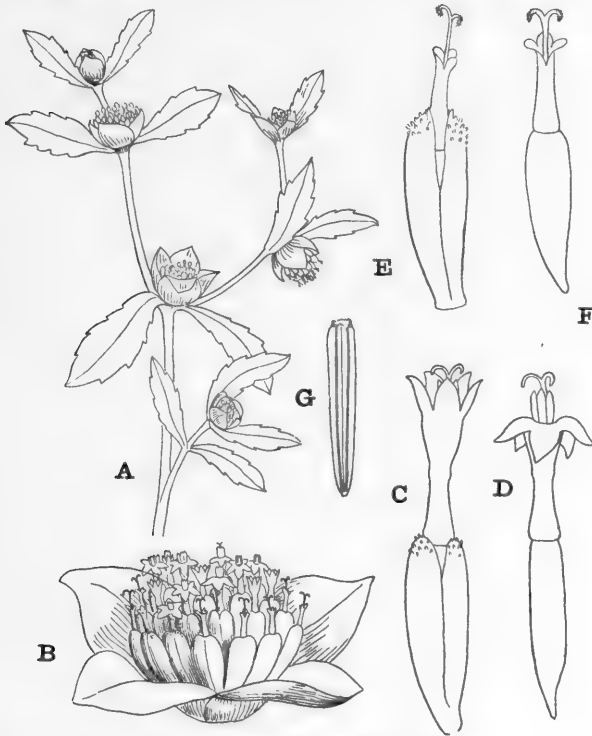


Fig. 71.—*Enhydra sessilis* (Sw.) DC.

A, Branch in flower  $\times \frac{1}{4}$ .

B, Head  $\times 4$ .

C, Disk-floret with scale  $\times 8$ .

D, Same, scale removed,  $\times 8$ .

E, Ray-floret with scale  $\times 8$ .

F, Same, scale removed,  $\times 8$ .

G, Achene  $\times 8$ .

633 & viii. 729; *Jenn. Is. Pin.* 277. *E. sessilis* var. *subcuneata* DC. *loc. cit.*; *Griseb. Cat. Cub.* 153. *Eclipta sessilis* Sw. *Prodr.* 114 (1788). *Meyera sessilis* Sw. *Fl. Ind. Occ.* iii. 1364 (1806). (Fig. 71.)

*Wright!* *Wullschlägel*; Montego Bay to Round Hill Bluff, *Harris!* Fl. Jam. 10,348.—Cuba, Is. Pinos, Hispaniola, Porto Rico.

*Stem* up to 2 ft., hollow, frequently rooting below, puberulous especially under the nodes. *Leaves* obovate-oblong, obtuse, broad and often slightly amplexicaul but sometimes narrowed at base, coarsely toothed, mostly 2.5–4 by 1 to nearly 2 cm., glabrous or puberulous. *Heads* generally solitary the opposite axil being empty, 7–10 mm. across. *Involucral scales* ovate, obtuse; outer pair 7 by 5 mm., inner pair smaller, at most puberulous. *Scales of receptacle* striate, hairy at top, 3.5–4 mm. l. *Ligule* of ray-florets obovate, 3-toothed, .5 mm. l. *Corolla* of disk-florets 2 mm. l. *Achenes* compressed, oblong, narrowed at base, glabrous, 3 mm. l.

### 23. ECLIPTA L.

Herbs. Leaves opposite. Heads axillary, stalked, usually solitary or two together, heterogamous, radiate; florets of ray female, fertile or sterile, of disk hermaphrodite and fertile. Involucre campanulate, of few herbaceous scales in 2 series. Receptacle flat or slightly raised, scaly; scales subtending the florets, inner very narrow or absent. Ray-florets with an exerted ligule; corolla of disk-florets tubular, 4–5-fid. Anthers obtuse at base. Style-arms of the disk-florets with a short, obtuse appendage. Achenes cylindrical or slightly compressed, rugose, flat at top or with 2 short awns.

A small genus of 4 or 5 species, mainly American and Australian: one a weed of wide distribution in both hemispheres.

*E. alba* (L.) Hassk. *Pl. Jav. Rar.* 528 (1848); *Griseb. Fl. Br. W. Ind.* 370 & *Cat. Cub.* 154; *Egg. Fl. St. Croix & Virg.* 64; *Stahl Fl. P.-Rico v.* 132; *Duss Fl. Ant. Franç.* 366; *Urb. Symb. Ant. iv.* 633 & *viii.* 729; *Hart Herb. List Trin.* 31; *Bold. Fl. Ned. W.-Ind. i.* 202 & *ii.* 108; *Jenn. Is. Pin.* 277. *E. erecta* L. *Mant.* 286 (1771); *Sw. Obs. Bot.* 311; *Kew Bull.* 1893, 260. *E. punctata* L. *loc. cit.* (1771); *Mayc. Fl. Barb.* 330. *Verbesina alba* L. *Sp. Pl.* 902 (1753); *Britt. Fl. Amer. Virg.* 98 & *Fl. Berm.* 399; *Britt. & Millsp. Baham. Fl.* 449. *Eupatoriophalacron album* Hitchc. in *Rep. Miss. Bot. Gard. iv.* 99. (Fig. 72.)

*Browne!* on roadsides everywhere, *Broughton!* *Wiles!* *Dancer!* *Distin!* *Macfadyen!* Port Morant, *Hitchcock!* J. P. 2112 *Hart!* Mona Estate, *Campbell!* Fl. Jam. 5868; *Troy, Harris!* Fl. Jam. 6674, 8560; *Castleton, Thompson!* Fl. Jam. 8009; *Robertson!* Blue Mts., *Miss Perkins* 1210! *Balaclava, Orcutt* 1491!—Widely distributed in warmer parts of both hemispheres.

*Stem* slender, rather rough. *Leaves* sessile, lanceolate or linear-lanceolate, mucronulate, narrowed at base, entire or remotely denticulate, rough on either side, mostly 2.5–7 by .5–2 cm. *Heads* sometimes

3 in an axil, stalks slender, scaberulous, 1.5–4.5 mm. l.; heads white, about 8 mm. across. *Involucral leaves* ovate, acute, 3.5–4 mm. l., rather rough on back. *Scales* of receptacle, outer narrowly linear, inner filiform, 2.5 mm. l. *Ligule* of ray-florets linear, bidentate, barely 2 mm. l. *Corolla* of disk-florets 1.5 mm. l. *Achenes* oblong, very rugose, awnless, 2 mm. l.

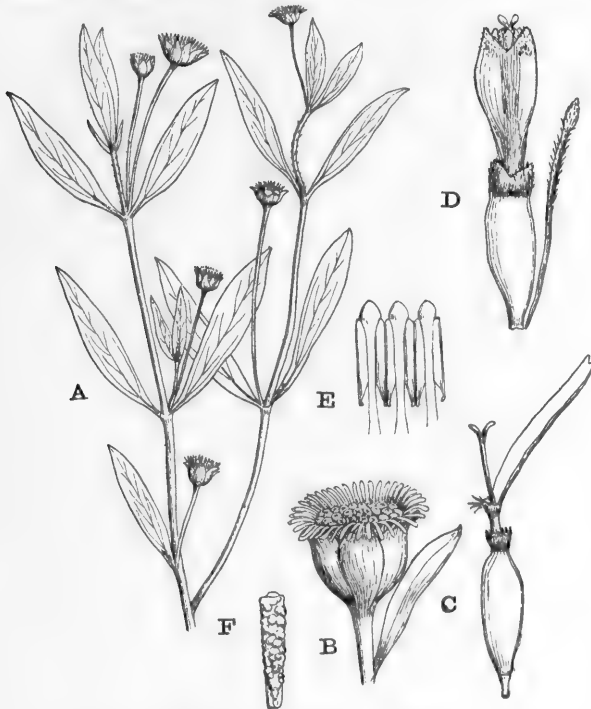


Fig. 72.—*Eclipta alba* (L.) Hassk.

A, Portion of plant in flower  $\times \frac{1}{2}$ .

B, Head  $\times 2\frac{1}{2}$ .

C, Floret of ray  $\times 12$ .

D, Disk floret  $\times 12$ .

E, Anthers  $\times 20$ .

F, Achene  $\times 8$ .

## 24. ISOCARPHA R.Br.

Herb. Leaves opposite or alternate, entire or toothed. Heads rather small, many-flowered, solitary or few together crowning a long peduncle, homogamous, discoid; florets all hermaphrodite. Involucre of few scales in 2–3 series. Receptacle conical with complicate scales surrounding the florets. Corollas regular; tube widened above, 5-lobed. Anthers obtuse at base. Style-arms terete, slender, hairy. Achenes 4–5-angled, truncate and without pappus.

Six species natives of tropical America.

**I. oppositifolia** (L.) R. Br. in *Trans. Linn. Soc.* xii. 110 (1818); DC. *Prodr.* v. 107; Griseb. *Fl. Br. W. Ind.* 376; Wils. in *Rep. Geolog. Jam.* 281; Hart *Herb. List Trin.* 32; Johnston in *Contrib. Gray Herb.* xxxvii. 267; Britt. & Millsp. *Baham. Fl.* 450; Blake in *Contrib. U.S. Nat. Herb.* xxii.

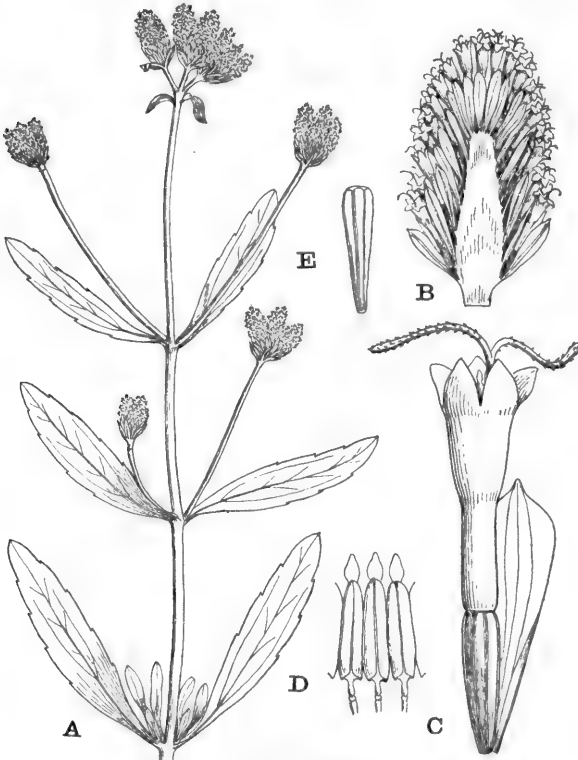


Fig. 73.—*Isocarpha oppositifolia* (L.) R. Br.

A, Portion of plant  $\times \frac{1}{2}$ .

B, Head cut lengthwise  $\times 4$ .

C, Floret  $\times 12$ .

D, Anthers  $\times 14$ .

E, Ripe achene  $\times 8$ .

614. *I. angustata* Griseb. *loc. cit.* *Santolina oppositifolia* L. *Syst. ed.* 10, 1207 (1759). *Calea oppositifolia* L. *Sp. Pl. ed.* 2, 1179 (1763); Sw. *Obs. Bot.* 302 & *Fl. Ind. Occ.* iii. 1328; Lun. *Hort. Jam.* 364. *Santolina? erecta* &c. Browne *Hist. Jam.* 315. Specimen from Browne in Herb. Linn. (Fig. 73.)

*Sloane Herb.* v. 15a! Lane in Herb. *Petiver* (*Sloane Herb.* clxii. 25!), *Houstoun*! *Liguanea*, *Browne*! *Broughton*! *Swartz*! *Macfadyen*! *Wilson*! sea-coast, *Trelawny*, *Purdie*! cascade of Falls



River, *Prior*! Hagley Gap; near Brook Lodge; near Falmouth; Great Goat Island; Cane River Valley, *Harris*! Fl. Jam. 5448, 6664, 7268, 9312, 10,061; between Kingston and Morant Bay, *Fawcett*! Fl. Jam. 8248; Arntully, Albion Trail, *Orcutt* 3906!—Bahamas, Cuba, Trinidad, Margarita, Curaçao, Texas to Venezuela and Colombia.

Erect, pubescent, 1–3 ft. high. *Leaves* usually opposite, sessile, lanceolate or linear-lanceolate, obtuse, narrowed at base, entire or nearly so, up to 10 by 2.5 cm. but usually much smaller. *Heads* top-shaped, 6–10 mm. l., solitary or 2–5 together, sessile or shortly stalked; common stalk 3–18 cm. l. *Involucral scales* 2-seriate, obovate-oblong, acute or obtuse, strongly 2-nerved, hairy and glandular on back, 3–4 mm. l. *Receptacular scales* oblong-spathulate, mucronulate, ciliate and glandular in upper part, 3.5 mm. l. *Corolla* white, 2.5 mm. l. *Achenes* oblong, narrowed at base, 5-angled, dark, 2 mm. l.

## 25. BORRICHIA Adans.

Shrubs. Leaves opposite, entire or nearly so. Heads stalked, solitary in the forks or at the end of the branches, heterogamous, radiate; florets of ray female, of disk hermaphrodite, all fertile. Involucre hemispherical, of hard scale-leaves in 2 or 3 series. Receptacle slightly raised, with rigid concave scales round the florets. Corolla of ray ligulate; ligule 2–3-toothed or subentire; of disk tubular, 5-toothed. Anthers entire at base or nearly so. Style-arms of disk-florets swollen and hairy above. Achenes oblong, 3- or 4-sided. Pappus a short toothed cup.

Species 5 or 6, Bermuda, West Indies, S. United States to Mexico and Peru.

**B. arborescens** (L.) DC. *Prodr.* v. 489 (1836); *Griseb. Cat. Cub.* 86 & *Fl. Br. W. Ind.* 371; *Saww. Fl. Cub.* 80; *Wils. in Rep. Geolog. Jam.* 281; *Egg. Fl. St. Croix & Virg.* 65; *Stahl Fl. P.-Rico* v. 134; *Duss Fl. Ant. Franç.* 366; *Millsp. Fl. Yucat.* 53; *Chapm. Fl. S. U. States* ed. 3, 245; *Combs Pl. Cub.* 434; *Urb. Symb. Ant.* iv. 634 & viii. 730 & *Fedde Rep. Beih.* v. 60; *Bold. Fl. Ned. W.-Ind.* i. 202; *Jenn. Is. Pin.* 277; *Britt. Fl. Berm.* 400 & *Fl. Amer. Virg.* 99; *Britt. & Millsp. Baham. Fl.* 450. *B. frutescens* DC. *loc. cit.* (so far as regards the Sloane citation); *Hemsl. Biol. Centr. Amer. Bot.* ii. 169 (in part). *B. argentea* DC. *loc. cit.* (1836). *Buphthalmum arborescens* L. *Syst. ed.* 10, ii. 1227 (1759). *B. frutescens* Sw. *Obs.* 315 (1791) (non L.); *Lun. Hort. Jam.* ii. 25. *Chrysanthemum fruticosum maritimum* &c. *Sloane Cat.* 125 & *Hist.* i. 260. *Buphthalmum subfruticosum maritimum* &c. *Browne Hist. Jam.* 320. *Buphthalmum fruticosum* &c. *Plum. Pl. Amer. (Burm.)* 96, t. cvi, f. 2. Specimens from Hort. Clifort. in Herb. Mus. Brit., and from Browne in Herb. Linn. (Fig. 74.)

Sapphire, Seaside Ox-eye, Seaside Tansy (Antigua).

Seaside rocks, St. Christopher's Cave near Sevilla, *Sloane* Herb. v. 31!; common in St. James Parish, *Browne*! near Port Morant, *Broughton*! Holland Bay, *Purdie*! *Macfadyen*! March 1698! *Wilson* 388! seacoast near Falmouth; coast road Montego Bay to Lucea; Old Redoubt, Bluefields Bay; *Harris*! Fl. Jam. 7171, 9237, 9975.—Florida, Bermuda, Bahamas, West Indies, Yucatan.

Branching *shrub* of coastal rocks, up to 5 ft., silvery tomentose or glabrous. *Branches* striate, marked with the persistent bases of

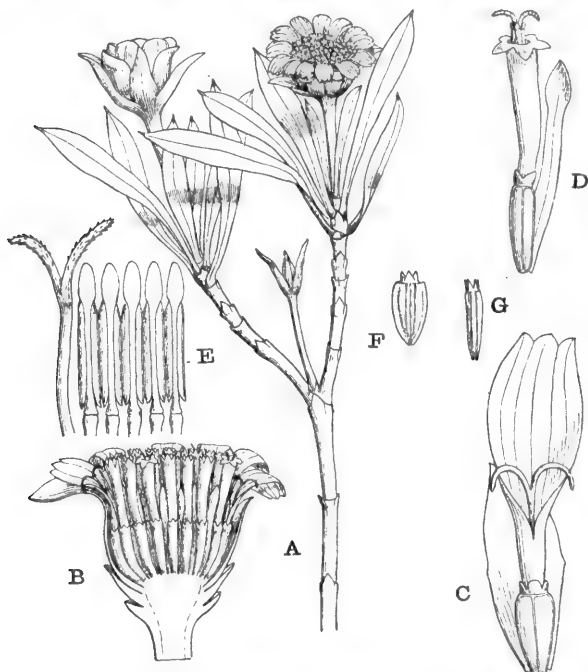


Fig. 74.—*Borrichia arborescens* (L.) DC.

A, Portion of plant  $\times \frac{1}{2}$ .  
 B, Head in section  $\times 2$ .  
 C, Ray-floret  $\times 4$ .  
 D, Disk-floret  $\times 4$ .

E, Anthers and style  $\times 8$ .  
 F, Achene of ray-floret  $\times 3$ .  
 G, Ditto of disk-floret  $\times 3$ .

recent leaves. *Leaves* sessile, entire, oblanceolate or oblanceolate-linear, mucronate, leathery, 2.5–4.5 cm. l., 5–8 (rarely 12) mm. broad. *Heads* in flower up to 2.5 cm. across, yellow; stalks stout, 1.5–4.5 cm. l. *Involucral scales* in 3 series; outer oblong-ovate, obtuse, rugose below, 1 cm. l.; innermost oblong, 9 mm. l. *Scales of receptacle* oblong-spathulate, rotundate, 7 mm. l. *Ligules* exserted, broadly oblong, 3-toothed, 7 mm. l. *Corolla* of disk-florets 6 mm. l. *Achenes* of ray-florets 3-sided, 3.5 mm. l.; of disk-florets a little longer, but 4-sided and narrower. *Pappus* 1 mm. l.

For remarks on the dispersal of this plant Guppy's *Plants, Seeds and Currents in W. Indies and Azores* should be consulted.

## 26. WEDELIA Jacq.

Herbs or undershrubs. Leaves opposite, usually toothed or lobed. Heads small, stalked, solitary, axillary or terminal, heterogamous, radiate; florets of ray female, of disk hermaphrodite, all usually fertile. Involucre campanulate; scales few, 2-seriate, outer series herbaceous, inner membranous at least below. Receptacle flat or convex, the scales investing the disk-florets. Ray-florets with ligulate corolla; ligule generally 2-3-toothed. Corolla of disk-florets tubular, 5-toothed or 5-lobed. Anthers entire at base or shortly sagittulate. Style-arms of disk-florets linear, hairy in their upper part. Achenes thick, angled, rarely narrowly winged. Pappus cup-shaped, toothed or divided into small scales, sometimes with 1 or 2 short caducous awns, sometimes a mere ring or obsolete.

Species about 70 in the warmer parts of both hemispheres.

Stem glabrous or nearly so. Leaves fleshy,  
from 3.5 cm. l. .... 1. *W. trilobata*.

Stem hairy. Leaves membranous, not more  
than 2.5 cm. l. .... 2. *W. gracilis*.

1. *W. trilobata* (L.) Hitchc. in *Rep. Miss. Bot. Gard. iv.* 99 (1893); leaves slightly narrowed at base if at all; achenes 5 mm. l.—*O. E. Schulz in Urb. Symb. Ant. iv.* 634, vii. 95 & viii. 730; *Urb. in Fedde Rep. Beih. v.* 60; *Jenn. Is. Pin.* 277; *Britt. Fl. Amer. Virg. 99*; *Britt. & Millsp. Baham. Fl.* 45. *W. carnosa Pers. Syn. ii.* 490 (1807); *Cass. in Dict. Sc. Nat. xlv.* 409; *DC. Prodr. v.* 538; *Sagra Cub. xi.* 52; *Griseb. Fl. Br. W. Ind. 371 & Cat. Cub. 154*; *Wils. in Rep. Geolog. Jam. 281*; *Sauv. Fl. Cub. 80*; *Egg. Fl. St. Croix & Virg.* 65; *Stahl Fl. P.-Rico v.* 135; *Chapm. Fl. S. U. States ed. 3, 246*; *Kew Bull. 1893, 260*; *Duss Fl. Ant. Franç. 366*; *Sang. Fl. Cub. 50*; *Hart Herb. List Trin. 33*. *Silphium trilobatum L. Syst. ed. 10, ii.* 1233 (1759); *Lun. Hort. Jam. ii.* 25. *Stemmodontia trilobata Small Fl. S.E. U. St. ed. 2, 1262* (1903). *Chrysanthemum palustre, repens &c. Sloane Cat. 126 & Hist. i.* 262, t. 155, f. 1. *Bupthalmum hirsutum foliis trilobis &c. Browne Hist. Jam. 321*. *Bupthalmum caule repente &c. Plum. Pl. Amer. (Burm.) 96, t. 107, f. 2*. Specimen from Browne in *Herb. Linn.* (Fig. 75.)

## Creeping Ox-eye.

Rio Cobre and elsewhere, *Sloane Herb. v.* 38! *Lane in Herb. Petiver (Sloane Herb. clxii. 22!)*; *Houstoun!* frequent in all low marshy grounds, *Browne!* *Wright!* *Liguanea, McNab 50!* *Moneague,*

*Prior* ! *March* 824 ! *Distin* ! *Cuming* 75 ! Port Antonio, *Harshberger* 87, 104, 110 ; Blue Mts. *Rothrock* ; Navy Island, *Millspaugh* ; Constant Spring ; Bog Walk ; Port Morant ; Port Antonio ; *Hitchcock* ; J. P. 620 *Morris* ! *Scott's Hall* ; Brandon Hill ; Brandon Hill Road ; *Thompson* ! Fl. Jam. 6806, 8080, 8081 ; Castleton, *Harris* ! Fl. Jam. 12,125 ; Giddy Hall, *Miss Maxwell* ! Balaclava, *Orcutt* 1495 ! and Bath, 1959 !—Florida, Bahamas, Antilles, Central America, Colombia.

A creeping plant of marshes and ditches, rising to about 1½ ft. high. Stem four-angled, glabrous or nearly so, but often hirsute at the nodes, prominently marked below by the scars of fallen leaves.

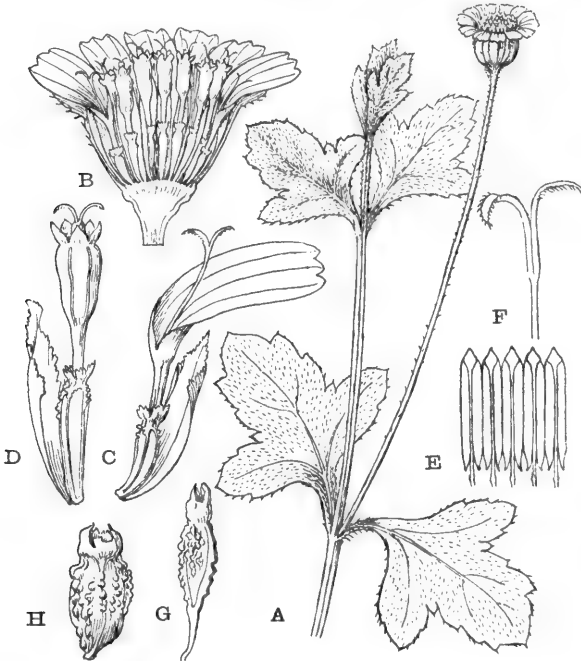


Fig. 75.—*Wedelia trilobata* (L.) Hitchc.

A, Upper part of plant  $\times \frac{1}{2}$ .  
 B, Head in section  $\times 2$ .  
 C, Ray-floret with scale  $\times 4$ .  
 D, Disk-floret with scale  $\times 4$ .

E, Stamens  $\times 8$ .  
 F, Style-arms  $\times 8$ .  
 G, Achene of ray  $\times 4$ .  
 H, Achene of disk  $\times 4$ .

*Leaves* 5.7–7 cm. l., 1.5–5 cm. broad, obovate or obovate-oblong, mucronate, obtuse at base, 3-lobed or (except for the crenulate margins) entire or nearly so, rough on both faces ; lateral lobes short and rounded, entire or like the terminal lobe crenulate. *Peduncles* slender, as long as or longer than the leaves, pubescent or puberulous. *Heads* yellow, in flower about 2 cm. across. Outer *involucral scales* obovate, obtuse, rough on the nerves, about 12 mm. l. ; inner narrower, acute, ciliate, 8 mm. l. *Receptacular scales* oblanceolate, ciliate, 7 mm. l. *Ligules* broadly oblong, 3-toothed, 9 mm. l. *Corolla* of

disk-florets 5 mm. l. *Achenes* obovoid, rugose, 5 mm. l., those of ray with a slender 2 mm. l. foot, of disk 3-sided, acute at base. *Pappus* of irregular short united scales.

2. **W. gracilis** Pers. *Syn. ii.* 490 (1807); leaves usually petiole-like at base; achenes 4 mm. l.—*DC. loc. cit.*; *Sagra tom. cit.* 53; *Griseb. ll. cc.*; *Wils. loc. cit.*; *Sauv. loc. cit.*; *Combs Pl. Cub.* 434; *Sang. loc. cit.*; *O. E. Schulz in Urb. op. cit. iv.* 634, *vii.* 99 & *viii.* 731.

Moneague, *Prior* 395! *Wullschlägel*; near Kingston, *Hansen*; Jackson Town, *Miss Barrett*! swampy places, Troy; Savannah, Upper Clarendon; *Harris*! *Fl. Jam.* 8667, 11,110.—Cuba, Hispaniola, Porto Rico.

Creeping,  $\frac{1}{2}$  ft. or so high, sometimes 1 ft. *Stem* slender, pilose or pubescent, sometimes hispid. *Leaves* obovate or suborbicular, mucronate, 3-lobed, lateral lobes mostly entire, terminal lobe toothed, rough, 1–2.5 cm. l., 7–23 mm. broad. *Peduncles* much longer than the leaves, pubescent. *Heads* yellow, in flower 1.5 cm. across. *Involucre* as of last, but scales narrower and shorter. *Florets* as of last but ligules only 7 mm. l. *Achenes* narrower than those of last, 4 mm. l.

## 27. ELEUTHERANTHERA Poit.

Annual herb. Leaves opposite, subentire. Heads shortly stalked, axillary or terminal, solitary or few together, homogamous, discoid, the few florets all hermaphrodite but sometimes heterogamous with florets shortly ligulate and neuter. Involucre campanulate, of few sub-biseriate herbaceous scales. Receptacle convex, scaly; scales surrounding the florets. Corolla tubular, 5-fid. Anthers free, sagittulate at base. Style-arms linear, hairy on the back. Achenes thick, smooth or rough, slightly 2–3-sided, surmounted by a small ciliate cup with sometimes 2–3 short awns.

**E. ruderalis** (Sw.) Sch. *Bip. in Bot. Zeit.* xxiv. 165 (1866); *Bettfr. Fl. Argent. i.* 31, *t.* 11; *Urb. Symb. Ant. iv.* 63 & *viii.* 732; *Hart Herb. List Trin.* 32; *Jenn. Is. Pin.* 277; *Britt. Fl. Amer. Virg.* 99. *E. ovata* Poit. *ex Steud. Nomencl. ed. 2, i.* 549 (1840); *Kew Bull.* 1893, 260. *Melampodium?* *ruderalis* Sw. *Fl. Ind. Occ. iii.* 1372 (1806); *DC. Prodr. v.* 521. *Ogiera triplinervis* Cass. *in Bull. Sc. Philom.* 32 (1818); *DC. tom. cit.* 546. *Wedelia discoidea* Less. *in Linnæa vi.* 728 (1831); *Egg. Fl. St. Croix & Virg.* 65. *Kigelia ruderalis* Sch. *Bip. in Linnæa xxi.* 245 (1848). *Tetranthus ruderalis* Griseb. *Pl. Carib.* 86 (1857). *Ogiera ruderalis* Griseb. *Pl. Wright.* 513 (1860), *Fl. Br. W. Ind.* 369 & *Cat. Cub.* 153; *Wils. in Rep. Geolog. Jam.* 281; *Sauv. Fl. Cub.* 80; *Stahl Fl.*

*P.-Rico v. 126*; *Duss Fl. Ant. Franç. 363*. *Conyza minor procumbens* &c. *Sloane Cat. 124* & *Hist. 259, t. 153, f. 3*.—Specimen from Swartz in Herb. Mus. Brit. (Fig. 76.)

Everywhere in open woods, *Sloane Herb. v. 22*! waste places, south of the Island, *Swartz*! *Moneague, Prior*!—Bahamas, West Indies, Central America, Brazil.

Branching herb from a few inches to 1½ ft. high, rough or pubescent,

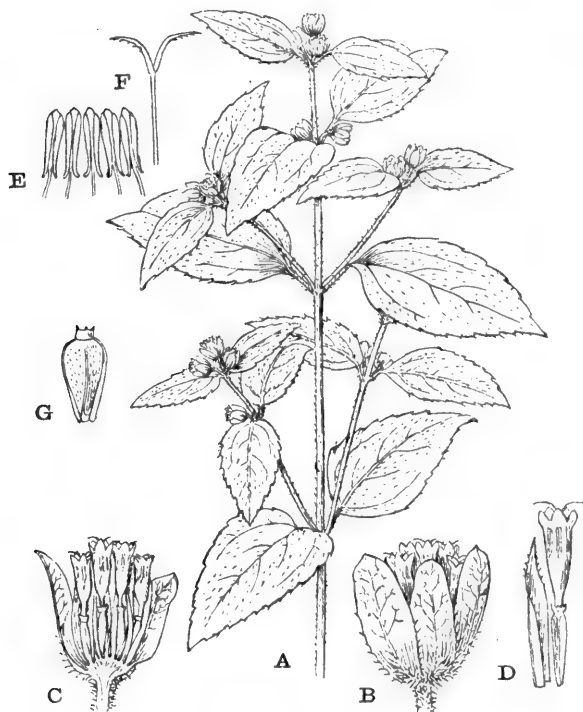


Fig. 76.—*Eleutheranthera ruderalis* (Sw.) Sch. Bip.

A, Portion of plant  $\times \frac{1}{2}$ .  
 B, Flowering head  $\times 4$ .  
 C, Same in section  $\times 4$ .  
 D, Floret with scale  $\times 6$ .

E, Stamens, nearly free  $\times 16$ .  
 F, Style-arms  $\times 16$ .  
 G, Ripe achene  $\times 4$ .

sometimes nearly glabrous. *Leaves* petioled, ovate or ovate-lanceolate, obtuse, rounded or obtuse at base, triplinerved, margin undulate or crenulate, 1.5–6 by 1–3.5 cm. *Peduncles* filiform, 3–15 mm. l. *Heads* in flower 5–6 mm. across. *Involucral scales* oblong-ovate, obtuse, hispid on back, 5 mm. l. *Receptacular scales* oblong incised at top, 4 mm. l. *Corolla* 2 mm. l. *Achenes* narrowly obovoid, minutely hairy or glabrous, 3 mm. l.

## [TITHONIA Desf.]

Usually annual herbs, sometimes shrubby. Leaves alternate, occasionally opposite, entire or lobed, triplinerved. Heads conspicuous, solitary, lateral, on a long peduncle, heterogamous, radiate; florets of ray neuter, of disk hermaphrodite. Involucre hemispherical, scales in 2-5 rows, ribbed and leathery below, herbaceous or papery above. Receptacle convex, with persistent scales embracing the disk-florets. Ray-florets with exerted and emarginate or 3-toothed ligule; corolla of disk-florets narrow below, cylindrical above, 5-fid. Anthers sagittulate at base. Style-arms slender with a linear-lanceolate hairy appendage. Achenes oblong, four-angled. Pappus of free or connate small scales with or without 1 or 2 awns, sometimes absent.

Species 10, natives of Mexico and Central America.

Leaves usually entire. Involucral scales in 2 rows, those of the inner row with acute herbaceous tip ..... 1. *T. rotundifolia*.

Leaves usually 3-5-lobed. Involucral scales in 4 rows, the innermost row with rounded or obtuse papery tip ..... 2. *T. diversifolia*.

1. *T. rotundifolia* (Mill.) Blake in *Contrib. Gray Herb.* lii. 41 (1917); annual, up to 6 ft. high; flowering heads 4-8 cm. across.—Blake in *Contrib. U.S. Nat. Herb.* xx. 426. *T. uniflora* Gmel. *Syst.* ii. 1259 (1796). *T. tagetiflora* Desf. in *Ann. Mus. Paris.* i. 46, t. 4 (1802); *DC. Prodr.* v. 584; *Bot. Reg.* vii. t. 591; *Kew Bull.* 1893, 260. *T. speciosa* Hook. ex Griseb. *Cat. Cub.* 155 (1866); *Sauv. Fl. Cub.* 81; *Duss Fl. Ant. Franç.* 367. *Tagetes rotundifolia* Mill. *Gard. Dict.* ed. 8, No. 4 (1768). *Helianthus speciosus* Hook. *Bot. Mag. sub t.* 3295 (1834). *Leighia?* *speciosa* DC. *tom. cit.* 583 (1836). *Urbanisol tagetifolius* Kuntze *Rev. Gen. Pl.* ii. 370 (1891).

Moneague, Prior! a weed along roadsides near Grand Vale, Westmoreland, Harris! *Fl. Jam.* 9763; *Orcutt* 4543!—Mexico to Panama: an escape from cultivation also in West Indies, Venezuela and Brazil.

*Stem* erect, terete, striate, hoarily pubescent at first then glabrate. *Leaves* alternate, deltoid-ovate, acuminate, broad-based but narrowed into the 2-14 cm. l. petiole, crenate or serrate, sometimes 3-lobed to the middle, rough especially on underside, 7-27 by 4-19.5 cm. (Blake). *Peduncles* stout, enlarged under head, pubescent, afterwards glabrate except at top, up to 30 cm. l. *Involucral scales* subequal, herbaceous in upper half, ovate-oblong, acute, minutely pubescent, about 1.5 cm. l. *Receptacular scales* lanceolate, acuminate, 1.5 cm. l. *Ligules* yellow or orange, ovate, 3-toothed, about 2.5 cm. l. *Corolla* of disk-florets 9 mm. l. *Achenes* somewhat compressed, appressedly pilose. 5.5 mm. l.; awns 2, deciduous, 3.5 mm. l.; scales free, 2.5 mm. l.

2. **T. diversifolia** (Hemsl.) A. Gray in *Proc. Amer. Acad. xix.* 5 (1883); perennial; 9 to 20 ft. or more high; flowering heads up to 14 cm. across.—*Trim. Fl. Ceyl. iii.* 39 (1895); *Blake in Contrib. U.S. Nat. Herb. xx.* 434. *Mirasolia diversifolia* Hemsl. *Biol. Centr. Amer. Bot. ii.* 168, *t.* 47 (1881). *Urbanisol tagetifolius* var. *diversifolius* Kuntze *loc. cit.*

South Mexico to Costa Rica; introduced but now widely spread in gardens and as an escape in waste places, Hope Grounds, Harris! *Fl. Jam.* 11,877; banks of Yallahs River, *Miss Maxwell!*—An escape from cultivation also in the Old World (Ceylon, Sikkim, Tenasserim, tropical Africa).

*Stem* four-angled, strongly striate, hairy at first, then glabrate. *Leaves* alternate, obovate or obovate-oblong, 3-5-lobed (sometimes entire), acuminate, decurrent into the biauriculate 2-10 cm. l. petiole, crenate or serrate, rough above, pubescent below, 7-20 by 4-18.5 cm. (Blake). *Peduncles* as of last. *Involucral scales* very unequal; outermost oblong-ovate, acute, leathery almost throughout, 5-8 mm. l.; the rest gradually longer up to 17 mm. including the papery tip. *Receptacular scales* obovate, suddenly pointed, 12 mm. l. *Ligules* golden yellow, broadly oblong, 3-toothed, up to 6 cm. l. (Blake). *Corolla* of disk-florets 7.5 mm. l. *Achenes* compressed, clothed with closely appressed hairs, 6 mm. l.; awns 2, about 3 mm. l.; crown of scales connate at base, 2 mm. l.]

## 28. MELANTHERA Rohr.

(*Melananthera* Michx.)

Herbs or undershrubs. Leaves opposite, stalked, toothed or lobed. Heads axillary or terminal, stalked, homogamous and discoid or heterogamous and radiate; ray-florets female or neuter, those of the disk hermaphrodite. Involucre hemispherical; scales 2-3-seriate, herbaceous, but inner often dry. Receptacle convex, scaly; scales concave. Corollas of ray-floret ligulate; of disk tubular, 5-fid. Anthers obtuse or minutely sagittulate at base. Style-arms with an acute, hairy appendix. Achenes thick, somewhat compressed or 3-edged. Pappus of 2 or more unequal stiff ciliated awnlike bristles, soon falling, sometimes absent from achenes of the ray.

Species nearly 50, tropical and subtropical American and African.

**M. aspera** (Jacq.) Rendle *comb. nov.* *M. deltoidea* Michx. *Fl. Bor. Amer. ii.* 107 (1803); *DC. Prodr. v.* 545 (in part); *Griseb. Fl. Br. W. Ind.* 372 (in part); *Wils. in Rep. Geolog. Jam.* 281; *O. E. Schulz in Urb. Symb. Ant. vii.* 122. *Bidens nivea* L. *Amæn. v.* 381 (1760), non *L. Sp. Pl.* 833 (1753); *Sw. Obs. Bot.* 296; *Lun. Hort. Jam. ii.* 184. *Calea aspera* Jacq. *Coll. ii.* 290 (1788) &  *Ic. Pl. Rar. iii.* 15, *t.* 583. *Amellus ramosus*, *foliis ovatis* &c. *Browne Hist. Jam.* 317. Type of *B. nivea* in *Herb. Linn.* from Browne. (Fig. 77.)



Bull-bay River and Port Royal district, *Browne* ! cultivated grasslands, in south of Island, *Swartz* ; *McNab* ! *Macfadyen* ! *Wilson* ! *Wulschlägel* ; near Ocho River, *Prior* ! *Parnell* ! *Watson Hill*, *Fawcett* ! Fl. Jam. 8399 ; *Lititz Savannah*, *Harris* ! Fl. Jam. 11,739 ; *Giddy Hall*, *Miss Maxwell* ! *Bath*, *Orcutt* 1948 !—*Yucatan* (*O. E. Schulz*), but according to others this has a much wider distribution (in the Antilles and continental America).

*Shrubby*, 2–3 ft. high. *Branches* rather slender, four-angled, rough.



Fig. 77.—*Melanthera aspera* (Jacq.) Rendle.

A, Portion of plant  $\times \frac{3}{8}$ .  
 B, Head in section  $\times 2$ .  
 C, Scale  $\times 4$ .  
 D, Floret with scale  $\times 4$ .

E, Anthers  $\times 8$ .  
 F, Style-arms  $\times 8$ .  
 G, Achene  $\times 4$ .

*Leaves* ovate-oblong, mucronate, hastate at base, unequally serrate, triplinerved, rough on both faces, up to 8 by 3.5 cm. ; upper often lanceolate and 3–6 by 1.2–2 cm. ; petioles mostly 1–2.5 cm. l. *Heads* discoid, about 1 cm. across. *Peduncles* up to 10 cm. l., but usually shorter. *Involucre* broadly campanulate ; scales in 2–3 series, ovate, acute, herbaceous, very rough on back, 4 mm. l. *Receptacular scales* obovate (inner narrower) shortly acuminate, 4.5–5 mm. l. *Corolla* 3.5 mm. l. *Achenes* 3 by 2 mm., crowned by a minute ciliated rim. dark brown. *Pappus* bristles 2–4, 1–3 mm. l.

29. *SIMSIA* Pers.

Annual or perennial herbs or shrubby. Leaves opposite, upper usually alternate, toothed or lobed, 3-nerved or triplinerved. Heads rather small or of medium size, paniculate (sometimes very few or solitary), heterogamous, radiate or discoid, florets of ray neuter, of disk hermaphrodite. Involucre campanulate, scales 3-4-seriate, herbaceous or

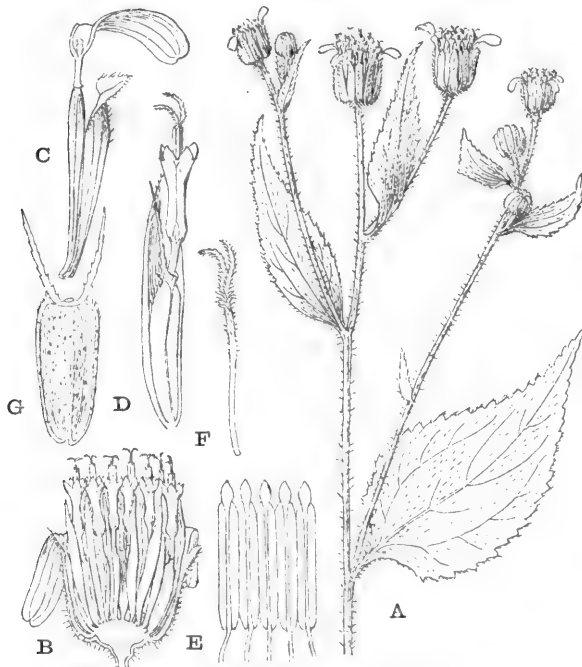


Fig. 78.—*Simsia jamaicensis* Blake.

- |   |                         |
|---|-------------------------|
| A, Upper part of plant $\times \frac{1}{2}$ . | E, Anthers $\times 8$ . |
| B, Head in section $\times 2$ .               | F, Style $\times 8$ .   |
| C, Ray-floret $\times 3$ .                    | G, Achene $\times 3$ .  |
| D, Disk-floret $\times 3$ .                   |                         |

leathery. Receptacle slightly raised; scales boat-shaped, dry and membranous, acuminate, persistent after fall of achenes. Ray-florets (when present) with a 2-toothed usually yellow ligule; disk-corollas tubular, 5-fid. Anthers minutely sagittulate at base. Style-arms with a hispidulous appendage. Achenes (of disk) much compressed, obovate or oblong, wingless, usually 2-awned.

Species 24, in Texas, Mexico and Central America: few in W. tropical America and 1 in Argentina.

**S. jamaicensis** Blake in *Proc. Amer. Acad.* xlix. 388 (1913). (Fig. 78.)

Near Kingston, *Clute* 2; King's House Grounds; Hope Road; Hope Grounds; Long Mountain Road; *Harris*! Fl. Jam. 6953, 6989, 8228, 10,001.

A branching weedy *perennial* up to 8 ft. high. *Branches* pale, terete, striate, rough with hispid hairs. *Leaves*, lower opposite, ovate, acute, truncate at base and suddenly narrowed into the petiole, dentate-serrate, 3-nerved, rough and microscopically glandular on both faces, up to 13 by 11 cm. but usually smaller, rough above and below; upper smaller, alternate, lanceolate or ovate-lanceolate. *Heads* in flower about 1.5 cm. across, rather few in an open erect cymose panicle; stalks rough, 5–40 mm. l. *Involucral scales* 2-seriate, oblong, subacute, thinly leathery below, rough on back, 15 mm. l. *Receptacular scales* closely investing the ovary, oblong-obovate, about 10 mm. l. *Ligules* 0–10, obovate, 4.5 mm. l., white. *Disk-corollas* enlarged above, about 6 mm. l. *Achenes* 6 by 2.5 mm., dark with black spots, appressedly hairy; awns subequal, about 4 mm. l.

The recent discovery of this plant in easily accessible habitats suggests that it may be a mutation of the closely allied *S. adenophora* Blake.

### 30. VERBESINA L.

Herbaceous or shrubby. Leaves opposite or alternate, stalked or sessile, usually toothed or lobed. Heads in corymbs or solitary or very few on long peduncles, radiate and heterogamous with fertile or sterile ray-florets or discoid and homogamous. Involucre hemispherical or campanulate; scales 2–6-seriate, herbaceous or dry. Receptacle convex or conical; scales complicate or concave. Ray-corollas ligulate, entire or 2–3-dentate, those of disk with a short tube and longer 5-fid limb. Anthers obtuse at base. Achenes broad, much compressed, with winged margins. Pappus of 2 deciduous or persistent usually straight awns.

Species over 100, New World, chiefly continental, from Virginia to Argentina.

Lowly herb. Heads very few on long stalks.

Longer awn of pappus hooked..... 1. *V. alata*.

Shrubby herb, up to 12 ft. Heads in dense

corymbs. Both awns of pappus straight.... 2. *V. pinnatifida*.

1. **V. alata** L. *Sp. Pl.* ii. 901 (1753); branches winged; leaves toothed; peduncles usually 5–10 cm. l.—*Mill. Gard. Dict. ed.* 8, No. 1; *Sw. Obs. Bot.* 313; *Lun. Hort. Jam.* ii. 256 (elata); *Bot. Mag. t.* 1716; *H. B. & K. Nov. Gen. & Sp. iv.* 202; *DC. Prodr. v.* 617; *Griseb. Pl. Carib.* 87, *Fl. Br. W. Ind.* 374 & *Cat. Cub.* 155; *Wils. in Rep. Geolog. Jam.* 281; *Saw. Fl. Cub.* 81; *Egg. Fl. St. Croix & Virg.* 65;

*Stahl Fl. P.-Rico v. 131*; *Duss Fl. Ant. Franç. 369*; *Combs Pl. Cub. 434*; *Robins. & Greenm. in Proc. Amer. Acad. xxxiv. 537*; *Urb. Symb. Ant. iv. 638, v. 260 (var. genuina) & viii. 734*. *Tepion alatum Britt. in Bull. N. York. Bot. Gard. viii.*

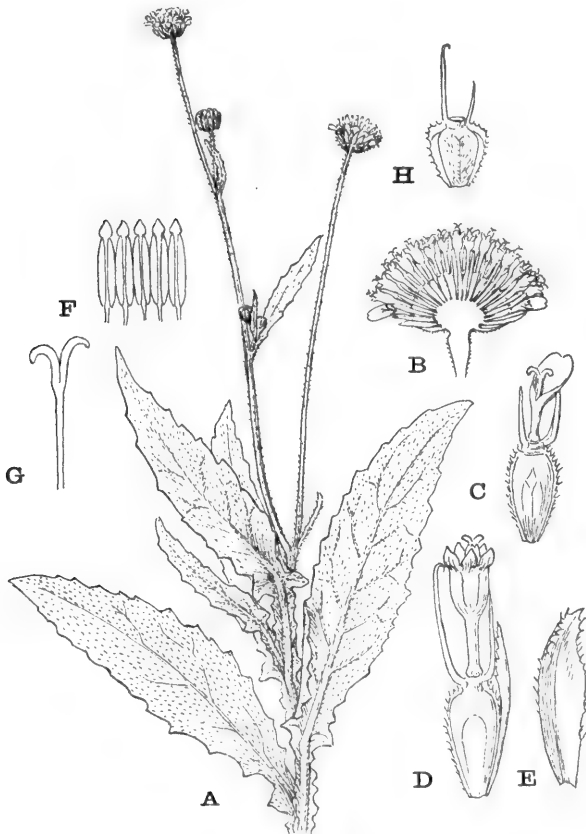


Fig. 79.—*Verbesina alata* L.

- |   |                                    |
|---|------------------------------------|
| A, Upper part of plant $\times \frac{1}{2}$ . | E, Receptacular scale $\times 7$ . |
| B, Head in section $\times 2$ .               | F, Stamens $\times 8$ .            |
| C, Ray-floret $\times 6$ .                    | G, Style $\times 8$ .              |
| D, Disk-floret $\times 6$ .                   | H, Achene $\times 2$ .             |

408 & *Fl. Amer. Virg.* 99. *Chrysanthemum cannabinum americanum* &c. *Sloane Cat.* 126 & *Hist. i.* 261. *Verbesina foliis oblongo-ovatis* &c. *Browne Hist. Jam.* 319. Hort. Clifflort. specimen in Herb. Mus. Brit. and specimen from Browne in Herb. Linn. (Fig. 79.)

Black River, St. Dorothy's parish, *Sloane*! Herb. v. 34, 35! *Browne*! *Masson*! about Bath, very rare, *Broughton*! Moneague, *Prior*! *McNab*! St. Thomas in the East, *Purdie*! *Wilson* 250! Holly Mount, near Ewarton; Roaring River Falls; Soho, St. Ann; *Harris*! Fl. Jam. 6457, 8890, 10,360, 12,021; Knowsley Park, Devon, *Wood*! Fl. Jam. 3180; Giddy Hall, *Miss Maxwell*! Balaclava, *Orcutt* 1461!—Cuba, Porto Rico, St. Thomas, St. Croix, Guadeloupe, Curaçao.

A rough weed in pastures, up to 1 ft. or so high. *Branches* striate, the wings 2–3 mm. wide. *Leaves* alternate, sessile, ovate or ovate-oblong (upper smaller and lanceolate), narrowed at the decurrent base, obtuse (tip mucronulate), dentate or dentate-serrate, penninerved, up to 20 by 11 cm., usually smaller, e.g. 8 by 4 cm., rough on both faces. *Heads* sometimes solitary, radiate, in flower about 1 cm. across, orange. *Involucre* 2–3-seriate; scales narrowly oblong, subacute, herbaceous above, rough on back, 2.5–4 mm. l. *Receptacular scales* narrow, folded, 3.5 mm. l. *Ligules* included, only 1.5 mm. l. *Disk-corollas* 3 mm. l. *Achenes* sparingly glandular-hairy, 4 mm. l., dark with paler ciliated wings sometimes 1 mm. wide. *Pappus-awns*, shorter about 1.5 mm., longer 2.5–3 mm. l.

Said to occur also on the American continent. The only specimen seen bearing this out is a small one collected by Shakespear, and localised as "America Meridionalis," but probably meaning one of the Caribbees which Shakespear also visited.

2. *V. pinnatifida* Sw. *Prodr.* 114 (1788) (excl. syn. *Plum.*); branches wingless; leaves pinnatifid; peduncles rarely more than 1 cm. l.—*Lun. tom. cit.* 257 (excl. descript. *Cav.*). *V. gigantea* Sw. *Fl. Ind. Occ. iii.* 1368 (in part); *DC. tom. cit.* 615 (in part); *Griseb. Fl. Br. W. Ind.* 374 (in part); *Hitchc. in Rep. Miss. Bot. Gard. iv.* 100; *Robins. & Greenm. tom. cit.* 561 (non *Jacq.*); *Urb. op. cit. v.* 264. *Santolina assurgens* major &c. *Browne Hist. Jam.* 315. A specimen (collector unnamed) in Herb. Mus. Brit. authenticated in Swartz's hand.

Common in most parts of the Island, *Browne*; in mountain thickets, *Swartz*; *Wulschlägel*; *Distin*! Moneague, *Prior*! *Wilson* 241! *J. P.* 1046 *Morris*! Bog Walk, *Hitchcock*; Guava Ridge, *Eggers* 3520! near Halberstadt; Hope Grounds; *Harris*! Fl. Jam. 6729, 8180.

Shrubby and coarse, 8–12 ft. high. *Branches* terete, strongly striate, glabrous or nearly so. *Leaves* alternate, lower 1–1½ ft. l., segments several, usually lobed or pinnatifid, obovate or oblong-lanceolate, mucronate, rough above, pubescent below, frequently 10–20 cm. l.; upper leaves gradually reduced in size and with fewer segments; petioles auricled at base. *Corymbs* many-headed, often 20 cm. across or more, branches rough or hispid. *Peduncles* usually 7–10 mm. l., with a small linear bract here and there. *Heads* radiate or discoid, 7 mm. across. *Involucre* 2-seriate; scales oblong, subacute, rough on back, 5 mm. l. *Receptacular scales* folded, narrowly obovate-oblong, hairy at top, 6 mm. l. *Ligules* when present very few, shortly exerted, 4 mm. l., white. *Disk-corollas* 4 mm. l. *Achenes* minutely hairy, 6 mm. l.; wings pale, ciliolate, 1 mm. or more wide.

## 31. SPILANTHES Jacq.

Herbs usually annual. Leaves opposite, entire or toothed. Heads mostly rather small and long-stalked, axillary or terminal, radiate and heterogamous with female ray-florets or discoid and homogamous. Involucre short, campanulate; scales 1-2-seriate, herbaceous or partly dry. Receptacle convex, subcolumnar or conical; scales folded. Ligules, when present, usually short, entire or 2-3-toothed. Disk-corollas tubular, with enlarged 4-5-fid limb. Anthers obtuse at base. Style-arms truncate. Achenes usually flattened, wingless. Pappus of 1-3 bristle-like awns or absent.

Species about 70 in warmer parts of both Hemispheres especially the Western.

- Leaves entire. Heads discoid. Achenes conspicuously awned ..... 1. *S. urens*.  
 Leaves denticulate. Heads radiate. Shortly awned ..... 2. *S. uliginosa*.

1. *S. urens* Jacq. *Enum. Pl. Carib.* 28 (1760); leaves linear- or oblong-lanceolate; peduncles longer than the leaves; heads about 10 mm. across.—*Jacq. Sel. Stirp. Amer.* 214, t. 126, f. 1; *L. Syst. ed.* 10, 533; *Spreng. Syst.* iii. 444; *DC. Prodr.* v. 625; *Griseb. Pl. Carib.* 88 & *Fl. Br. W. Ind.* 376; *Bak. in Mart. Fl. Bras. vi. pt. 3,* 233; *Hitchc. in Rep. Miss. Bot. Gard.* iv. 100; *Kew Bull.* 1893, 260; *Duss Fl. Ant. Franç.* 370; *A. H. Moore in Proc. Amer. Acad.* xlii. 528 & *Engl. Bot. Jahrb.* xlv. 426; *Bold. Fl. Ned. W.-Ind.* ii. 108; *Urb. Symb. Ant.* viii. 733. *Cotula Spilanthes* L. *Mant.* i. 116 (1767). *Bidens angustifolia* Lam. *Encycl.* i. 416 (1783). *Ceratocephalus urens* Kuntze *Rev. Gen. Pl.* ii. 326 (1891).

Montego Bay, *McCatty*! Port Morant; Port Antonio; Lucea; *Hitchcock*; Jackson Tower, *Moulton-Barrett*; Bowden, *Millsbaugh* 2028; mangrove swamps at Port Antonio; near Black River; Lucea; *Harris*! *Fl. Jam.* 6025, 9756, 10,263; Montego Bay, *Ridley*! Falmouth Road, Montego Bay, *Norman* 130! Black River, *Miss Maxwell*!—Hispaniola, Martinique, St. Vincent, Curaçao, tropical America.

A nearly glabrous trailing herb, the ascending leafy branches  $\frac{1}{2}$  ft. high or less. Leaves sessile, mostly linear-lanceolate, a few lower ones rarely obovate, obtuse, triplinerved, about 4-8 by 1-1.5 cm. Heads solitary (rarely two), subglobose, white; peduncles up to 10-12 cm. l., often shorter. Involucre 2-seriate; scales ovate-oblong, obtuse, 5 mm. l. Receptacle subcolumnar; scales oblong-ovoid, tip crested, 4 mm. l. Corollas hairy at base, 2 mm. l. Achenes obovate-oblong, dark with pale rim, sparingly hairy, 2.5-3 mm. l.; awns unequal, enlarged basally, 1-1.5 mm. l.

2. *S. uliginosa* Sw. *Prodr.* 110 (1788); leaves lanceolate; peduncles about as long as leaves; heads 5-6 mm. across.—

*Sw. Fl. Ind. Occ. iii. 1291; Lun. Hort. Jam. ii. 191; DC. tom. cit. 624; Griseb. Fl. Br. W. Ind. 376; Wils. loc. cit.; Kew Bull. 1893, 260; Hitchc. loc. cit. 21; Duss loc. cit.; Hart Herb. List Trin. 33; A. H. Moore tom. cit. 537; Bold.*

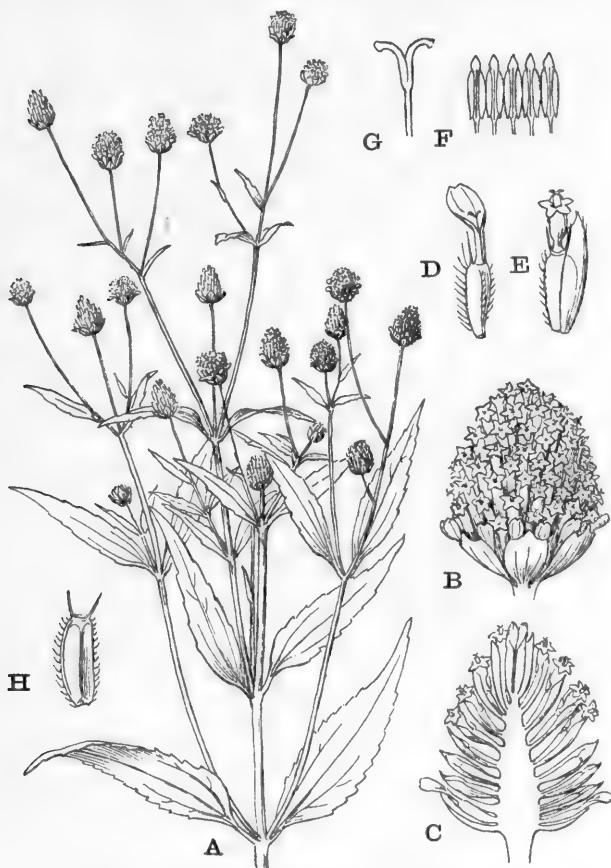


Fig. 80.—*Spilanthes uliginosa* Sw.

- |   |  |
|---|--|
| A, Upper part of plant $\times \frac{1}{2}$ . | E, Disk-floret with scale $\times 7$ . |
| B, Head in flower $\times 4$ .                | F, Anthers $\times 16$ .               |
| C, Head in section $\times 4$ .               | G, Style $\times 16$ .                 |
| D, Ray-floret $\times 7$ .                    | H, Achene $\times 8$ .                 |

*Fl. Ned. W.-Ind. i. 203. Spilanthes Acmeella Murr. var. uliginosa Bak. loc. cit. (1884). Acmeella uliginosa Cass. in Dict. Sc. Nat. xxiv. 351. Ceratocephalus Acmeella Kuntze var. uliginosa Kuntze loc. cit. (1891). Specimen from Swartz in Herb. Mus. Brit. (Fig. 80.)*

Marshy places in the south, *Swartz* ! Westmoreland Mts., *Purdie* ! *Macfadyen* ! *Wilson* 247 ! swampy pastures, Low Layton, *Metcalfe* ! *Lucea* ; Port Morant ; *Hitchcock* ; St. Ann's Bay, *Churchill* ; between Constant Spring and Annotto Bay, *Britton* 830 ; near Port Antonio, *Fredholm* 3059 ; Port Antonio, *Wright* 35 ; Castleton, *Thompson* ! Fl. Jam. 8005 ; Castleton District ; New Market ; Castleton grounds ; *Harris* ! Fl. Jam. 7457, 9959, 9960, 12,513.—St. Eustatius, St. Christopher, Guadeloupe, St. Vincent, Grenada, Tobago, Trinidad, Central America and Brazil.

A branching, glabrous or puberulous, roadside or marsh annual up to about 1 ft. high. *Leaves* shortly petiolate, mostly lanceolate, obtuse or subacute, crenulate or denticulate, triplinerved, usually 2-5 by .5-1.5 cm. ; petioles 4 mm. l., more or less. *Cymes* few-headed, very lax. *Heads* ovoid, yellow ; stalks filiform, 1-5 cm. l. *Involucral scales* subuniseriate, ovate, acute, 2 mm. l. *Ligules* entire or minutely toothed, 1 mm. l. *Achenes* 1.5 mm. l., narrowly obovate-oblong, 2-3-edged, dark, with pale ciliate edges and crowned by 2 minute bristle-like awns .5 mm. l.

### 32. SALMEA DC.

Erect or climbing shrubs. Leaves opposite, entire, toothed or lobed. Heads rather small, in terminal or axillary cymose panicles, discoid, homogamous. Involucre campanulate or top-shaped ; scales 2-5-seriate, membranous or dry. Receptacle conical or columnar ; scales folded. Corollas regular, tubular, enlarged above, 5-toothed. Anthers shortly sagittulate at base. Style-arms papillose at top. Achenes greatly compressed, dark and with or without a pale border, usually ciliate, crowned by 2 subequal awns.

Species 7, in West Indies and continental America from Mexico to Paraguay.

Glabrous or nearly so. Involucral scales  
indurated ..... 1. *S. scandens*.

Stem and leaves rufous-hairy. Involucral scales  
submembranous ..... 2. *S. sessilifolia*.

1. *S. scandens* (L.) DC. *Cat. Hort. Monsp.* 141 (1813) ; leaves stalked ; involucral scales 2-3-seriate, acute or obtuse, ciliolate.—*R. Brown* in *Trans. Linn. Soc.* xii. 112 ; *Sims Bot. Mag.* t. 2062 ; DC. *Prodr.* v. 493 ; *Sauv. Fl. Cub.* 81 ; *Hitchc.* in *Rep. Miss. Bot. Gard.* iv. 100 ; *Urb. Symb. Ant.* v. 256 & in *Fedde Rep. Beih.* v. 58 ; *Blake* in *Journ. Bot.* liii. 197. *S. eupatoria* DC. *Cat. Hort. Monsp.* 141 (1813). *S. grandiceps* Cass. in *Dict. Sc. Nat.* xlvi. 88 (1827) ; *Griseb. Pl. Wright.* 514, *Fl. Br. W. Ind.* 375 & *Cat. Cub.* 155 ; *Wils.* in *Rep. Geolog. Jam.* 281 ; *Stahl Fl. P.-Rico* v. 139. *S. parviceps* Cass. *loc. cit.* (1827) ; *Griseb. Fl. Br. W. Ind.* 375 ; *Hart Herb. List Trin.* 33. *Bidens scandens* L. *Sp. Pl.* 833 (1753) ; *Sw. Obs. Bot.* 297 ; *Lun. Hort. Jam.* ii. 184. *Verbesina*



scandens Klatt in *Leopold. xxv.* 106 (1889). *Bidens foliis oppositis &c. L. Hort. Cliff.* 399. *Bidens suffruticosus, vimineus &c. Browne Hist. Jam.* 317. *Eupatorium foliis cordato-ovatis &c. Plum. Pl. Amer. (Burm.)* 86, *t. cxix.* Type

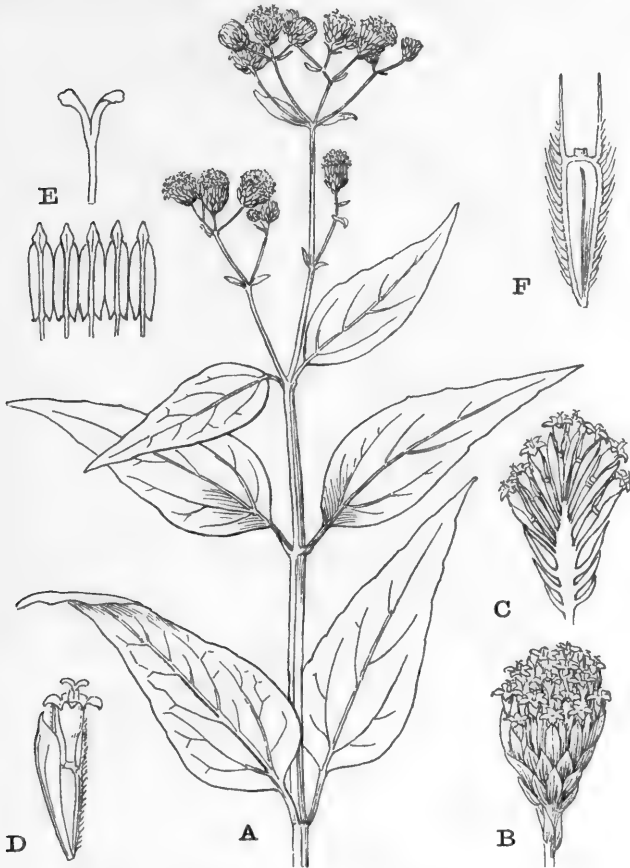


Fig. 81.—*Salmea scandens* (L.) DC.

A, Upper part of plant  $\times \frac{1}{2}$ .  
 B, Head  $\times 3$ .  
 C, Head cut lengthwise  $\times 3$ .

D, Floret with scale  $\times 5$ .  
 E, Stamens and style  $\times 14$ .  
 F, Ripe achene  $\times 7$ .

from Hort. Cliffort. in Herb. Mus. Brit., also specimen from Browne in Herb. Linn. named in Solander's hand. (Fig. 81.)

*Sloane Herb.* v. 16! *Lane* in Herb. *Petiver* (*Sloane Herb.* clxii. 25 !); frequent on hills above Bull Bay, *Browne*! *Swartz*; *Wright*! *Macfadyen*! *Purdie*! Mt. Diablo; Moneague; *Prior*!; *Wilson* 240!  
 VII.—16

Blue Mts.; Blue Mts. Peak; Porus; *Hitchcock*; *Eggers* 3477; *Cinchona*; *Arntully*; *Fl. Jam.* 645, 1209 (*Hart*!); *Charlemont*, near *Ewarton*; near *Vinegar Hill*; near *Kendal*; *Harris*! *Fl. Jam.* 6620, 6660, 8179. *Giddy Hall, Miss Maxwell*!—Cuba, Hispaniola, Porto Rico, Trinidad and Mexico to Bolivia and Paraguay.

A climber up to 30 ft.; sometimes procumbent and 6–12 ft. high. *Branches* strongly striate, glabrous or slightly hairy. *Leaves* ovate or ovate-lanceolate, acute or acuminate, rounded or narrowed at base, repand-denticulate or entire, papery or thinly leathery, triplinerved, mostly 4–10 by 1.5–3.5 cm.; petioles 5–15 mm. l. *Inflorescences* several- or many-headed, rather open, up to 10 cm. across; peduncles 5–15 mm. l., rarely more, glabrous or puberulous. *Heads* top-shaped, 5–7 mm. across, white. *Involucral scales* 2–3-seriate, oblanceolate-oblong, acute or obtuse, about 4 mm. l. *Receptacle* conical, up to 5 mm. high; scales acute, 5 mm. l. *Corollas* 2 mm. l. *Achenes* oblong, with narrow pale ciliate margin, 2–3 mm. l.

2. *S. sessifolia* *Griseb. Fl. Br. W.-Ind.* 375 (1861); leaves subsessile; involucral scales 5-seriate, obtuse, hairy on back.—*Wils. loc. cit.*; *Urb. tom. cit.* 258; *Blake tom. cit.* 198. Type in *Herb. Kew.*

Westmoreland Hills, *Purdie*!

*Branches* stoutish, striate, densely rufous-hirsute. *Leaves* subsessile, ovate, acuminate, broad-based, repand-denticulate, obscurely triplinerved, leathery, hairy especially below, somewhat shining above, 5–10 by 3–5 cm. *Corymbs* open, several-headed, about 6 cm. across. *Heads* hemispherical, 6 mm. across. *Involucral scales* 5-seriate, ovate, rotundate, strongly nerved, 4 mm. l. *Receptacular scales* spatulate, 2 mm. l. *Florets* very immature.

### 33. CHÆNOCEPHALUS *Griseb.*

Tall shrubs. Leaves alternate, toothed, rarely lobed. Heads rather small, stalked, few-flowered, in terminal open corymbose panicles, discoid and homogamous. Involucre of very few scales in one row. Receptacle small with concave or folded scales. Corolla tubular, with enlarged 5-fid limb. Anthers minutely sagittulate at base. Style-arms with an acute hairy appendage. Achenes compressed, winged, crowned by 2 awns.

Species 11, 6 continental (Ecuador, Peru, Argentina), the rest endemic in Jamaica.

- Branches winged. Leaves obovate-oblong, the older 3 dm. or more long..... 1. *C. petrobioides*.  
 Branches terete. Leaves linear-lanceolate to oblong-obovate, up to 1 dm. long.  
 Leaves smooth. Scales of receptacle rounded at tip. Achenes obscurely winged..... 2. *C. venosus*.  
 Leaves slightly rough above. Scales pointed at tip. Achenes prominently winged..... 3. *C. propinquus*.  
 Leaves rough on upper or both faces.  
 Leaves at most shallowly toothed ..... 4. *C. rupestris*.  
 Leaves coarsely toothed to lobed ..... 5. *C. lobatus*.

1. **C. petrobioides** Griseb. *Fl. Br. W. Ind.* 374 (1861); panicles up to 20 cm. across; wings of achenes very narrow.—*Wils. in Rep. Geolog. Jam.* 281; *Urb. Symb. Ant.* iii. 413 & v. 527. Type in Herb. Kew.

Martin's Hill, Manchester, Purdie! *Wullschlägel*; near Troy; Ipswich, St. Elizabeth; Peckham Woods, Upper Clarendon; Harris! *Fl. Jam.* 8806, 12,502, 12,778.

*Arborescent shrub* up to 20 ft. high, glabrous or nearly so, with naked stem 5 cm. thick. *Branches* clustered at top of stem, strongly striate, including the narrow wings about 5 mm. thick. *Leaves* sessile or subsessile, decurrent, obovate-oblong, gradually narrowed to base, acute (sometimes cuspidate), coarsely toothed to repand-denticulate in the upper part, leathery or papery, glabrous, lower up to 35 by 9 cm., upper 10 by 3 cm. more or less. *Panicles* very broad with linear bracts 4–12 mm. l. *Heads* 12–16-flowered, 8 mm. across, white. *Involucral scales* linear-oblong, obtuse, reflexed, 5 mm. l. *Receptacular scales* obovate, rounded at top, 7 mm. l. *Corolla* 6 mm. l. *Achenes* oblong-obovate, appressedly hairy, 3–4 mm. l.; wings ciliolate; awns unequal, 1–1.5 mm. l.

2. **C. venosus** Urb. *Symb. Ant.* v. 525 (1908); panicles about 10 cm. across; scales of involucre broad; of receptacle rounded at tip; achenes almost wingless.

John Crow Peak, Harris! *Fl. Jam.* 9109.

*Shrub* 6 ft. high. *Branches* striate, glabrous, 3–4 mm. across. *Leaves* shortly stalked, oblanceolate, acute (tip mucronate), narrowed at base, callus-toothed in the upper part, papery, glabrous, 5–10 by 1.5–2.5 cm. *Panicle-branches* shortly hispidulous; bracts narrow. *Heads* about 16-flowered, 8 mm. across. *Involucral scales* broadly oblong, obtuse, ciliolate, 6 mm. l., of the receptacle oblong-obovate, like the involucral slightly hairy on back, 5.5 mm. l. *Corolla* 5 mm. l. *Achenes* obovate with scarcely visible wing, 3 mm. l.; awns nearly equal, about 2.5 mm. l.

3. **C. propinquus** Britton in *Bull. Torr. Bot. Club.* xxxvii. 360 (1910); panicles about 5 cm. across; scales of involucre oblong, of receptacle pointed at top; achenes broadly winged. Type in Herb. N. York Bot. Gard.; specimen in Herb. Jam.

Yardley Chase, Santa Cruz Mts., Harris! *Fl. Jam.* 9672; Yardley Chase, Britton 1144.

*Shrub* 9 ft. high. *Leaves* as of last, but slightly rough on upper face. *Panicle* narrow, few-headed. *Heads* about 18-flowered. *Involucral scales* obtuse, 5 mm. l., of receptacle obovate, 4 mm. l. *Achenes* obovate, 4 mm. l., rough, with a broad ciliolate wing; awns 1.5–2 mm. l. Otherwise as in *C. venosus*.

4. **C. rupestris** Urb. *Symb. Ant.* iii. 412 (1903); heads very few-flowered. Scales of involucre shorter than those of the receptacle.—*Urb. op. cit.* v. 527.

Hope River, Eggers 3571! Mavis Bank, in crevices of rocks; Bridge Hill; Newcastle road, on rocky banks; Falls River below Stoneleigh; near Content Gap, north side; Harris! *Fl. Jam.* 7793, 7795, 7797, 7809, 7811, 9125.

A straggling *shrub* 8–12 ft. or more high. *Branches* striate, at first harshly pubescent, becoming glabrous. *Leaves* shortly stalked, oblanceo-

late to lanceolate-obovate, mucronate, gradually narrowed to base, callus-toothed to serrulate, papery, rough above, harshly pubescent below, mostly 6–12 by 1.5–4 cm. Panicles usually 10–20 cm. across, hispidulous; bracts small, lanceolate to linear. Heads 6–10-flowered, 6 mm. across, whitish, fragrant. Involucral scales ovate, obtuse, 1.5–3 mm. l. Receptacular scales folded, obovate-oblong, rounded at top, like the involucre densely and shortly hairy on back, 5 mm. l. Corollas 4 mm. l. Achenes obovate, hairy, 5 mm. l., with well-marked ciliate wings; awns nearly equal, 3–4 mm. l.

5. *C. lobatus* Urb. *Symb. Ant. v. 526* (1908); heads about 20-flowered; involucral scales longer than those of the receptacle. (Fig. 82.)

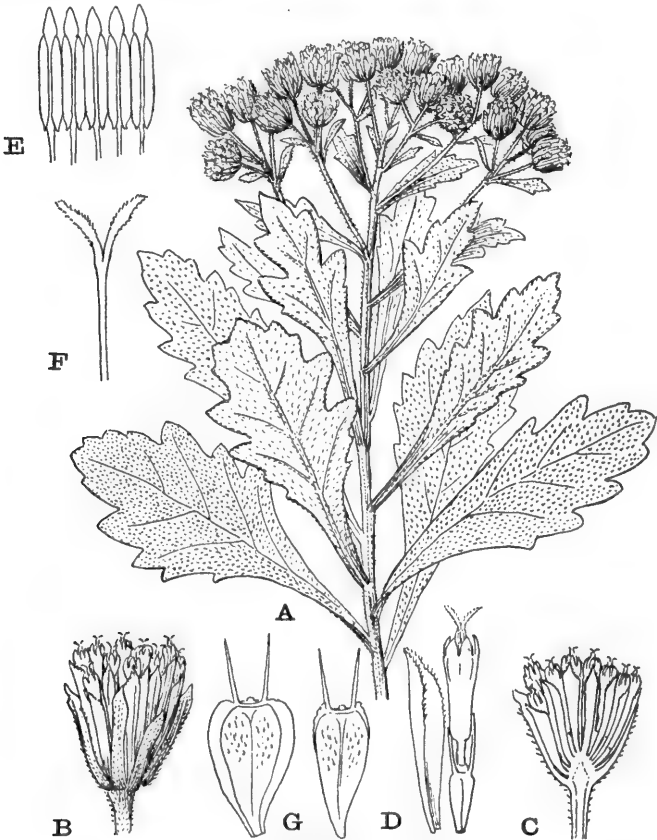


Fig. 82.—*Chaenocephalus lobatus* Urb.

A, Upper part of plant  $\times \frac{1}{2}$ .  
 B, Head  $\times 2$ .  
 C, Head in section  $\times 2$ .  
 D, Floret with scale  $\times 4$

E, Stamens  $\times 8$ .  
 F, Style-arms  $\times 8$ .  
 G, Achenes  $\times 4$ .

Cane River Valley ; Albion Mt., St. Thomas ; *Harris* ! Fl. Jam. 9510, 10,058, 11,652, 12,152.

*Shrub* 6–10 ft. high. *Branches* as of last. *Leaves* sessile, oblanceolate to narrowly obovate, mucronate, gradually narrowed at base, lobed and coarsely toothed, rough on both faces, 5–10 by 1–2.5 cm. *Panicles* usually less than 10 cm. across, otherwise as of last. *Heads* 7–8 mm. across, white. *Involucral scales* reflexed, shortly hairy, 7 mm. l. *Scales of receptacle* folded, pointed, 5–6 mm. l. *Corollas* 4 mm. l. *Achenes* as of last, but nearly glabrous and with shorter awns (some are very narrowly winged or even wingless).

**Var. brachyphyllus** *Urb. tom. cit.* 527 ; leaves shorter and less drawn out at base, coarsely toothed not lobed, 2.5–4 cm. l. ; involucral scales a little shorter and erect.

Road to Wareka, Long Mt., south side, *Harris* ! Fl. Jam. 10,005.

### 34. NOTOPTERA Urb.

Erect or climbing shrubs. Leaves opposite, entire or toothed. Heads small to medium, in terminal or axillary simple or paniced cymes, discoid and homogamous or radiate and heterogamous with outermost florets sterile. Involucre of oblong to ovate scales in 2–5 series. Receptacle convex with folded scales. Disk-corollas narrowed below, 5-fid. Anthers sagittulate at base. Style-arms without an appendage, hairy at tip. Achenes of ray 3-sided, narrowly 3-winged, 3-awned ; of disk compressed, on the outer side narrowly winged if at all and with a simple or winged short awn, on the inner broadly winged in the upper part and with a longer winged awn.

Besides the one here noticed, the genus consists of 7 species in Mexico and Central America.

**N. hirsuta** (*Sw.*) *Urb. Symb. Ant. ii.* 466 (1901) ; *Blake in Journ. Bot. liii.* 225. *Bidens hirsuta Sw. Prodr.* 110 (1788) & *Fl. Ind. Occ. iii.* 1295. *Salmea hirsuta DC. Cat. Hort. Monsp.* 141 (1813) ; *R. Br. in Trans. Linn. Soc. xii.* 112 ; *Griseb. Fl. Br. W. Ind.* 375 ; *Wils. in Rep. Geolog. Jam.* 281. *Eupatorium vestitum Spreng. Syst. iii.* 416 (1826). *Hopkirkia hirsuta Spreng. tom. cit.* 444 (1826). Specimen from Swartz in Herb. Mus. Brit. (Fig. 83.)

*Sloane Herb. v.* 15a ! *Lane* in Herb. *Petiver* (*Sloane Herb. clxii.* 15 ! *Shakespear* ! *Wright* ! *Swartz* ! *Hector's River, Manchester, Purdie* ! *Moneague, Prior* ! *Macfadyen* ! *Wilson* ! *Banana River, Eggers* 3458 ! *Hall's Delight* ; Cane River Valley ; Little Goat Island, Old Harbour Bay ; Albion Mt., St. Thomas ; *Harris* ! Fl. Jam. 8427, 10,062, 10,158, 11,682.

A climber over bushes and trees, reaching 30 ft. high. Stem near ground several inches in diameter with corky cortex. Branches slender,

pale, finely pubescent to tomentose. *Leaves* lanceolate or ovate-lanceolate, acuminate with mucronate tip, rounded or cordate at base, undulate or minutely serrulate, rough or roughish above, finely grey-tomentose beneath, 6.5–10 by 2.5–4.5 cm.; petioles densely softly hairy, 1 cm. l. *Cymes* about as long as the leaves, axillary or terminal,



Fig. 83.—*Notoptera hirsuta* (Sw.) Urb.

A, Portion of plant  $\times \frac{1}{2}$ .  
 B, Head in section  $\times 2$ .  
 C, Floret with scale  $\times 4$ .

D, Anthers  $\times 8$ .  
 E, Style-arms  $\times 8$ .  
 F, Ripe achene  $\times 4$ .

stalked, several-headed, the branches tomentose; pedicels 0–2.5 mm. l. *Heads* discoid, few-flowered, white, odorous. *Involucre* short, 3–4-seriate; scales oblong, obtuse, tomentose on back, outermost 1 mm., inner 2–2.5 mm. l. *Scales of receptacle* pointed, 5 mm. l. *Corollas* 4.5 mm. l. *Achenes* compressed, oblong, narrowed at base, sparsely

glandular, narrowly winged on both edges, with a short, simple awn and a longer broadly winged one.

Eggers 3458 is the type of Urban's (*loc. cit.*) var. *Eggersii* of this species, characterised chiefly by having the leaves rounded at the base, not cordate. But Swartz's type has also rounded leaves and Blake's view (*loc. cit.*) that the variety is not worth keeping up is adopted.

### 35. SYNEDRELLA Gaertn.

Annual herbs. Leaves usually opposite, serrate or sub-entire. Heads small, solitary or several together, axillary or terminal, usually sessile, heterogamous and radiate, ray-florets female, disk hermaphrodite. Involucre of few scales, outermost usually leaf-like. Receptacle with nearly flat scales among the florets. Ray-corollas ligulate, ligule short and broad, those of disk tubular and 4-fid. Anthers minutely sagittulate. Style-arms with hairy appendage. Achenes compressed, 2-3-awned, of the ray with crested, of the disk with entire wings.

Species 2, the second a native of Ecuador.

**S. nodiflora** (L.) Gaertn. *Fruct. ii.* 456, *t.* 171, *f.* 7 (1791); *Hook. Exot. Fl. t.* 60; *Less. Syn.* 233; *DC. Prodr. v.* 629; *Griseb. Pl. Carib.* 88, *Pl. Wright.* 514, *Fl. Br. W. Ind.* 337 & *Cat. Cub.* 156; *Wils. in Rep. Geolog. Jam.* 281; *Egg. Fl. St. Croix & Virg.* 66; *Stahl Fl. P.-Rico v.* 143; *Kew Bull.* 1893, 260; *Combs Pl. Cub.* 434; *Duss Fl. Ant. Franç.* 371; *Sang. Fl. Cub.* 51; *Hart Herb. List Trin.* 33; *Urb. Symb. Ant. iv.* 639 & *viii.* 735; *Britt. Fl. Amer. Virg.* 99; *Britt. & Millsp. Baham. Fl.* 452. *Verbesina nodiflora* L. *Cent. Pl. i.* 28 (1755); *Sw. Obs. Bot.* 312; *Lun. Hort. Jam. ii.* 256; *Mayc. Fl. Barb.* 331. *Ucacou nodiflorum* Hitchc. *in Rep. Miss. Bot. Gard. iv.* 100. *Chrysanthemum conyzoides nodiflorum* &c. *Sloane Cat.* 126 & *Hist. i.* 262, *t.* 154, *f.* 4. *Verbesina erecta hirsuta* &c. *Browne Hist. Jam.* 319. Specimen from Browne in *Herb. Linn.* (Fig. 84.)

*Sloane Herb. v.* 36! *Houstoun!* common everywhere in the lowlands, *Browne!* *Wright!* *Broughton!* *McNab!* *Bancroft!* *Moneague* and *Kingston,* *Prior!* *Kingston;* *Port Morant;* *Porus;* *Hitchcock;* vicinity of *Kingston,* *Clute 8!* *Hope;* *Norbrook,* *St. Andrew;* *Harris!* *Fl. Jam.* 6636, 6874, 6972, 10,832; *Giddy Hall,* *Miss Maxwell!* *Balaclava,* *Orcutt 1555!*—Florida, West Indies, tropical America: naturalised in the Old World.

A branching weed about 1 ft. high. Branches slender, pubescent or nearly glabrous. Leaves stalked, ovate, obtuse or cuspidate, narrowed at base, serrate to nearly entire, triplinerved, 3-9 by 1.5-5 cm.; stalks winged, up to 3 cm. l. but usually much shorter. Heads mostly 1-3 together, occasionally more, yellow. Involucre cylindrical; scales 2, ovate-oblong, obtuse, hairy on back, 7.5-8 mm. l. Scales of receptacle obtuse; outer obovate-oblong, inner oblong, 6 mm. l. Corolla of the 4-5 ray-florets 4 mm. l., barely half belonging to the ovate ligule; of

the usually 6–10 disk-florets 2 mm. l. *Achenes* dark; those of the ray obovoid-oblong, 4 mm. l. without the straight 1 mm. l. awns, including the pale crested wings 3 mm. across; of disk oblong, narrowed at base, barely 1 mm. broad, 3.5 mm. l., with diverging awns of equal length.

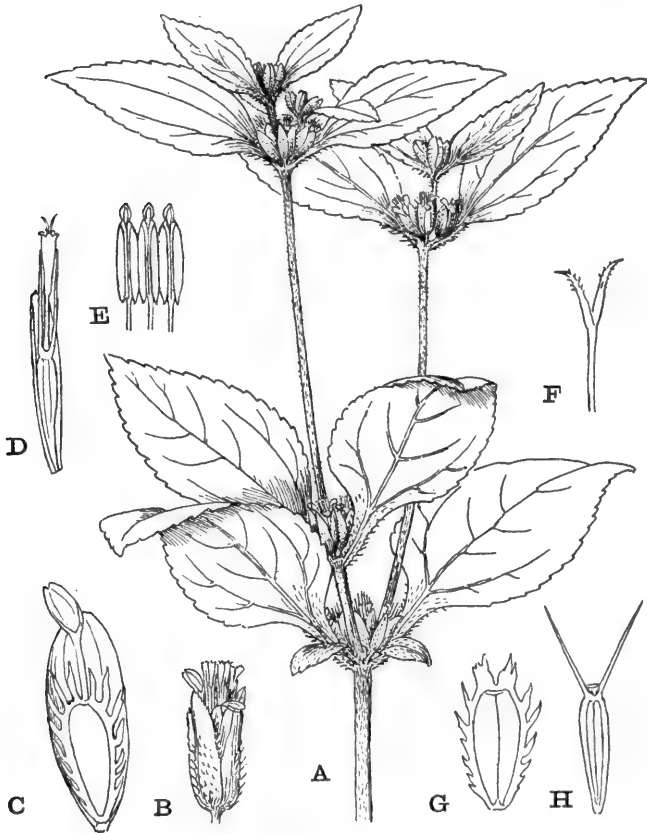


Fig. 84.—*Synedrella nodiflora* (L.) Gaertn.

A, Upper part of plant  $\times \frac{1}{2}$ .  
 B, Head in flower  $\times 2$ .  
 C, Ray-floret with scale  $\times 4$ .  
 D, Disk-floret with scale  $\times 4$ .

E, Stamens  $\times 14$ .  
 F, Style-arms  $\times 14$ .  
 G, Achene of ray  $\times 4$ .  
 H, Achene of disk  $\times 4$ .

### 36. BIDENS L.

Herbs or undershrubs. Leaves opposite (uppermost sometimes alternate), toothed or more or less divided. Heads mostly medium-sized or rather large, solitary or few at the



end of the branches, sometimes in panicles, radiate and heterogamous (rarely discoid and homogamous); ray-florets 1-seriate, usually neutral, those of the disk hermaphrodite and fertile. Involucre of few 1-2-seriate usually herbaceous scales. Receptacle flat or slightly raised, with flat scales subtending the florets. Ray-florets usually conspicuously ligulate; ligules entire or denticulate at top; disk-florets tubular, 5-fid. Anthers entire at base or minutely sagittulate. Style-arms of disk-florets hairy and appendaged at top. Achenes compressed or 4-angled, usually linear or linear-oblong, sometimes shortly narrowed at top (not beaked) and crowned with 2-4 (-6) awns usually provided with upward- or downward-pointing hooks.

Upwards of 100 species in temperate and tropical regions of both Worlds.

Annual herbs.

- Leaves bipinnate. Achenes narrowed above, 4-6-awned ..... 1. *B. cynapiifolia*.
- Leaves simply pinnate. Achenes not narrowed above, usually 2-awned ..... 2. *B. pilosa*.

Shrubby climbing species.

- Leaves pinnate.
  - Leaflets serrate ..... 3. *B. reptans*.
  - Leaflets pinnatisect ..... 4. *B. dissecta*.
- Leaves simple.
  - Leaves broad-based, crenate-serrate or serrulate ..... 5. *B. Shrevei*.
  - Leaves cuneate at base, coarsely serrate .... 6. *B. clarendonensis*.

1. ***B. cynapiifolia*** *H.B. & K. Nov. Gen. & Sp. iv.* 185 (1818); outer scales of receptacle oblong-lanceolate, achenes much longer than the involucre.—*Spreng. Syst. iii.* 454; *DC. Prodr. v.* 603; *Griseb. Pl. Carib.* 87; *O. E. Schulz in Urb. Symb. Ant. vii.* 128, 736, & in *Engl. Bot. Jahrb. l. Suppl.* 185; *Britt. Fl. Amer. Virg.* 99; *Britt. & Millsp. Baham. Fl.* 453; *B. bipinnata West Ste. Croix* 302 (1793) (non *L.*); *Lun. Hort. Jam. ii.* 183; *Mayc. Fl. Barb.* 321; *Griseb. Pl. Wright.* 514, *Fl. Br. W. Ind.* 373 (in part) & *Cat. Cub.* 155; *Sauv. Fl. Cub.* 81; *Egg. Fl. St. Croix & Virg.* 65; *Hitchc. in Rep. Miss. Bot. Gard. iv.* 100; *Kew Bull.* 1893, 260; *Combs Pl. Cub.* 435; *Duss Fl. Ant. Franç.* 369; *Hart Herb. List Trin.* 31; *Urb. op. cit. iv.* 640.

Spanish Nettle.

Very common especially in the mountains, *Lunan*; *Macfadyen*! Hope Estate, Kingston, *Prior*! *Wilson* 255! Constant Spring, *Hitchcock*; Hope Road, *Harris*! *Fl. Jam.* 8182 (in part); *Balaclava, Orcutt* 1557! —Bahamas, Antilles.

An erect, openly branching herb up to 6 ft. Branches rather slender, four-angled, striate, glabrous or nearly so. Leaves (uppermost sometimes alternate) stalked, bipinnate, with 2-3 pairs of lateral segments;

terminal segment ovate or ovate-lanceolate, acuminate, usually 2–5 cm. by 5–20 mm. ; lateral segments much shorter and relatively broader, all segments rather coarsely serrate, membranous and slightly rough. Heads few, about 25-flowered, on stalks up to 8 cm. l. but usually

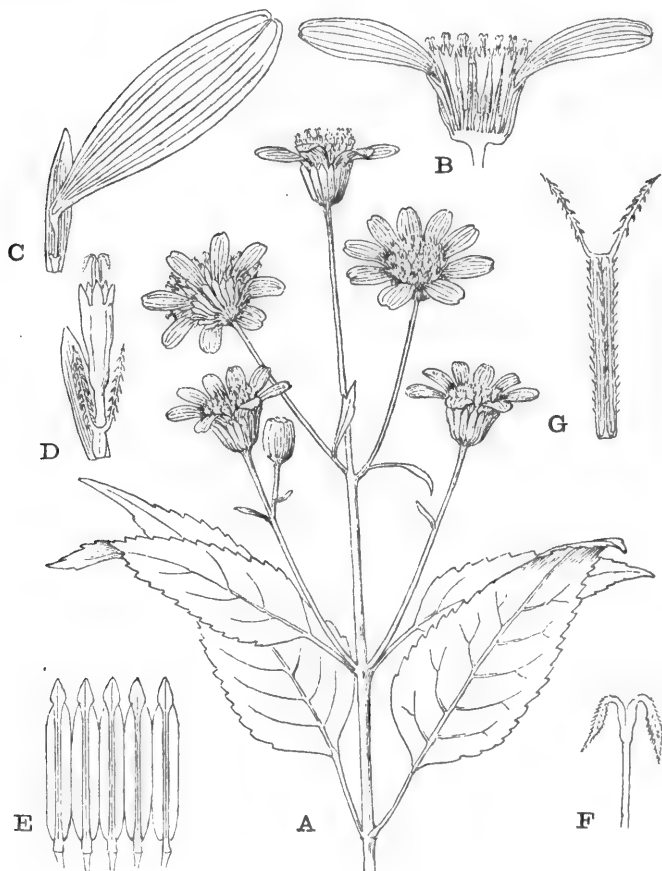


Fig. 85.—*Bidens Shrevei* Britton.

- |   |                             |
|---|-----------------------------|
| A, Upper part of plant $\times \frac{1}{2}$ . | E, Stamens $\times 6$ .     |
| B, Head in section $\times 1\frac{1}{2}$ .    | F, Style-arms $\times 6$ .  |
| C, Ray-floret with scale $\times 3$ .         | G, Ripe achene $\times 3$ . |
| D, Disk-floret with scale $\times 3$ .        |                             |

shorter ; in flower 5–7 mm. across. *Involucral scales* linear, acute, slightly hairy, 5–6 mm. l. *Outer scales of receptacle*, acute, many-nerved, 4 mm. l. ; inner narrower, 5 mm. l. *Ray-florets* 4 or 5, sterile ; ligules short, obovate, 5-nerved, white or pale yellow, 4 mm. l. *Corolla* of disk-florets 3–4 mm. l. *Achenes* linear, slightly narrowed at

top, striate, nearly glabrous, about 10–12 mm. l. (sometimes longer), inner nearly straight, outer curved, with pappus of usually 4 2·5–3 mm. l. awns with downward-pointing hooks; a very few marginal achenes are broader and hairy and about 7 mm. l. with awns 1–2 mm. l.

2. **B. pilosa** *L. Sp. Pl.* 832 (1753); outer scales of receptacle broad with hyaline margin; achenes but little longer than the involucre.—*Spreng. op. cit.* 453; *Mayc. loc. cit.*; *DC. tom. cit.* 597; *Griseb. Pl. Carib.* 87; *Kew Bull.* 1893, 260; *Hitchc. op. cit.* 101; *Britt. in Bull. Torr. Bot. Club xxxv.* 343; *Urb. op. cit. iv.* 639 & *viii.* 737; *O. E. Schulz in Urb. Symb. Ant. vii.* 133; *Britt. Fl. Berm.* 402 (in part); *Britt. & Millsp. loc. cit.* (in part). *B. leucantha* *Griseb. Fl. Br. W. Ind.* 373 (1861) (non *Willd.*). *B. leucantha* *Willd. forma discoidea* *Griseb. Pl. Wright.* 513 (1862); var. *pilosa* *Griseb. Cat. Cub.* 155 (1866).

*McNab ! Distin ! Cinchona, J. P. 1270 Hart ! Moneague, Britton.*—Antilles, warmer regions of both Worlds.

Annual herb,  $\frac{3}{4}$ –6 ft. Branches four-angled, striate, loosely hairy or almost glabrous. Leaves all opposite, stalked, sparsely hairy; lowest undivided, ovate, acute, serrate; middle ones with 1–3 pairs of pinnae, the leaflets ovate or ovate-lanceolate, acuminate, truncate at base, coarsely serrate; terminal leaflet up to 7·5 by 3 cm., the rest smaller; youngest leaves smaller and simple. Heads discoid, about 30-flowered, in flower 7–10 mm. across. Involucral scales linear-oblong, subacute, hairy at base, ciliate, 4–5 mm. l. Outer scales of receptacle broadly oblong, 4 mm. l.; inner linear, 5 mm. l. Corolla 4 mm. l. Achenes linear, straight or nearly so, slightly hairy, outer 5–6 mm., inner 7–8·5 mm. l. Awns generally 2, with downward-pointing hooks (of outer florets sometimes 3 or more), 1·5–3 mm. l.

Var. **dubia** *O. E. Schulz in Urb. op. cit. vii.* 135 (1911) & *in Fedde Rep. Beih. v.* 47; heads with 4–7 short ovate white or yellow, 5-nerved 3 mm. l. ligules; stamens sometimes reduced; style sometimes absent.—*Britt. Fl. Amer. Virg.* 99. *Kerneria dubia* *Cass. in Dict. Sc. Nat. xxiv.* 398 (1822). *B. chinensis* *Willd. Sp. Pl. iii.* 3 (1804) (non *B. pilosus* var. *chinensis* *L.*). *Bidens foliis ternatis &c. Plum. Pl. Amer. (Burm.)* 42, t. liii, f. 1.

Hope Road; Castleton district; *Harris ! Fl. Jam.* 8182 (in part), 12,115; Green Hills, Blue Mts., roadside weed, *Rendle* 95! May Pen, *Orcutt* 313! Sweetwater, 2159!—St. Thomas, St. Croix, St. Eustatius, Barbados, Grenada and in the Old World *passim*.

Var. **radiata** *Sch. Bip. in Webb & Berth. Hist. Canar. iii. pt. 2,* 242 (1836–40); heads conspicuously radiate, ray-florets 5–6, sterile, the ligules obovate, white, 8-nerved, 8–10 mm. l.; achenes usually 2-awned.—*Urb. op. cit. viii.*

737 & in *Fedde Rep. Beih. v. 47*. *B. pilosa* var. *alba* *O. E. Schulz in Urb. op. cit. vii. 136* (1911). *B. leucantha* *Willd. Sp. Pl. iii. 1719* (1804); *Mayc. op. cit. 320*; *DC. tom. cit. 598*; *Griseb. Pl. Carib. 87, Fl. Br. W. Ind. 373* (in part), *Pl. Wright. ii. 513 & Cat. Cub. 155*; *Sauv. op. cit. 435*; *Duss op. cit. 368*; *Sang. Fl. Cub. 51*; *Hart loc. cit.*; *Jenn. Is. Pin. 277*; *Britt. Fl. Berm. 402* (in part), *Britt. & Millsp. op. cit. 453* (in part). *B. alba* *DC. tom. cit. 605* (1836). *Coreopsis alba* *L. Sp. Pl. 908* (1753). *Bidens foliis quinatis &c. Plum. Pl. Amer. (Burm.) 43, t. 53, f. 2*.

*Macfadyen!* *March 803!* *Wilson 436!* *Mt. Diablo, Prior 400!* *Parnell!* *Cinchona, J. P. 1458 Hart!* *Bog Walk; Blue Mt. Peak; Porus; Hitchcock; Port Antonio, Churchill; Arcadia, Mrs. Sewell!* on the coast at Annotto Bay and Buff Bay, *Thompson!* *Fl. Jam. 6468, 7927; Montego Bay, Britton; Green Hills, Blue Mts., Rendle 8!*—Antilles and mixed with type in tropics generally.

3. *B. reptans* (*L.*) *G. Don in Sweet Hort. Brit. ed. 3, 360* (1839); leaflets coarsely serrate; achenes hairy.—*Hitchc. op. cit. 101; Urb. op. cit. iv. 640; O. E. Schulz in Urb. op. cit. vii. 139*. *B. Coreopsidis* *DC. tom. cit. 599* (1836); *Griseb. Fl. Br. W. Ind. 373* (in part), *Pl. Wright. ii. 514* (in part) & *Cat. Cub. 155* (in part); *Sauv. loc. cit.*; *Stahl Fl. P.-Rico v. 129; Duss op. cit. 368; Sang. loc. cit.*; *Shreve Mont. Rain-For. 22*. *B. Coreopsidis* *DC. var? reptans* *DC. loc. cit. & var. incisa* *DC. loc. cit.* *B. incisa* *G. Don loc. cit.* *B. rubrifolia* *A. Rich. in Sagra Cub. xi. 55* (1850) (non *H. B. & K.*); *Griseb. Cat. Cub. 155; Sauv. loc. cit.*; *Kew Bull. 1893, 260*. *Coreopsis reptans* *L. Syst. ed. 10, 1228* (1759). *C. incisa* *Ker Bot. Reg. i, t. 7* (1815). *Chrysanthemum trifoliatum scandens &c. Sloane Cat. 125 & Hist. i. 261, t. 154, f. 2 & 3*. *Coreopsis scandens, foliis serratis &c. Browne Hist. Jam. 321*. Type of *C. reptans* from Browne in Herb Linn.

Red Hills near Guanaboa; Mt. Diablo and elsewhere; *Sloane Herb. v. 33!* *Houstoun!* *Browne!* *Shakespear!* *Bertero;* *G. Don!* *Broughton!* *McNab!* *Distin!* *Manchester, Purdie!* *Kingston!* *Coffee region, Blue Mts.; Prior!* *March 1196!* *Wilson!* *Gosse!* *Metcalf!* *Quashi Hill, Eggers 3437!* *Blue Mt. Peak, Hitchcock;* near *Kingston, Hansen;* *Cinchona Plantations, Morris J. P. 937!* *Arntully Morris!* *J. P. 1213!* *Constant Spring, Campbell Fl. Jam. 6441!* *Liguanea Ridge, St. Andrews;* *Yallahs Valley;* *Hagley Gap, St. Thomas;* *Harris!* *Fl. Jam. 5617, 12,209, 12,303;* *Giddy Hall, Miss Maxwell!* *Balaclava, Orcutt 1452!*—Cuba, Porto Rico, Antigua, Martinique, St. Vincent, Barbados and Mexico to Venezuela and Colombia.

A branching climber among shrubs and trees, up to 20 ft. Branches twining, subterete, striate, glabrous or nearly so. Leaves petioled, mostly 3-5-foliolate; terminal leaflet ovate-lanceolate, acuminate, usually 2-4.5 cm. l., lateral leaflets shorter and relatively broader, all

broad-based, coarsely serrate, finely pubescent or puberulous on the underside; petioles slender, 1-4 cm. l. *Heads* radiate, about 30-flowered, when fully expanded over 2 cm. across. *Involucral scales* linear, subacute, slightly hairy, 5-6 mm. l. *Outer scales of receptacle* linear, subacute, 6-7 mm. l.; inner much narrower. *Ray-florets* 5-8, sterile, the ligule obovate-oblong, 10-12-nerved, yellow, about 9 mm. l. *Disk-corollas* 5 mm. l. *Achenes* linear, slightly narrowed below, four-angled and somewhat compressed, hispidulous with very short bulbous-based hairs, 8-10 mm. l.; awns 2, about 2 mm. l., very divergent, with a few usually downward-pointing small weak hooks.

Var. **tomentosa** *O. E. Schulz in Urb. op. cit. vii. 141* (1911); branches pubescent; leaves white-tomentose on lower face.—*B. incisa* *Sherff in Bot. Gazette lvi. 494* (1913) (non *G. Don*).

*Don*! *McNab*! *Cinchona*, *Harris*! *Fl. Jam. 11,649, 12,327*; *Nicholas 137*; *Britton 73*.

4. **B. dissecta** *Sherff in Bot. Gaz. lvi. 493* (1913); leaves with 3-4 pairs of pinnatisect leaflets, the ultimate segments mostly entire, otherwise as of last.—*B. reptans* *G. Don var. dissecta O. E. Schulz op. cit. 142* (1911).

*Moy Hall, Blue Mts., Harris Fl. Jam. 5420*; *Arntully, Morris J. P. 1212*!; *Cedar Valley, St. Thomas, Harris*! *Fl. Jam. 12,302*.

The type of this, *Harris 5420*, I have not seen.

5. **B. Shrevei** *Britton in Bull. Torr. Bot. Club xxxvii. 359* (1910); serratures of leaf mucronate; achenes with 2 awns nearly half their length.—*Shreve op. cit. 22, 30*; *O. E. Schulz op. cit. 142*. Type in *Herb. N. York Bot. Gard. (Fig. 85.)*

*Shakespear*! *Lunatic Asylum grounds*; near *Cinchona*; *Fawcett*! *Fl. Jam. 6112, 8221, 8221a*; *Catherine's Peak, Harris*! *Fl. Jam. 6735*; *Cinchona, Shreve*.

A frequently branching, glabrous climber. *Branches* four-angled, coarsely striate. *Leaves* all simple, petioled, ovate-lanceolate, acuminate, rounded or truncate at base, crenate-serrate or serrulate, 5-10 by 1.5-3 cm.; petioles slender, mostly 1.5-2.5 cm. l. *Heads* few or several at the ends of the branches on slender stalks up to 6 cm. l., but usually shorter, radiate, about 25-flowered, in flower about 3 cm. across. *Involucral scales* linear-oblong, subacute, 3-nerved, sparsely hairy, about 8 mm. l. *Receptacular scales* oblong, obtuse, 9-10 mm. l. *Ray-florets* about 8, sterile, the ligules obovate or obovate-oblong, obtuse, 9-12-nerved, yellow, 15 mm. l. *Corollas of disk-florets* 7 mm. l. *Achenes* linear, compressed, curved above, covered with very short hispidulous hairs, about 10 mm. l. *Awns* 2, divaricate, with downward-pointing small hooks, 4-5 mm. l.

6. **B. clarendonensis** *Britton in Bull. Torr. Bot. Club. xxxix. 9* (1912); serratures of leaf gland-tipped; achenes with 1 or 2 very short awns. Type in *Herb. N. York. Bot. Gard.*

Peckham Woods, Upper Clarendon, *Harris* ! Fl. Jam. 10,987, 11,180.

A trailing, glabrous *shrub*, with stems over 12 ft. long. *Branches* four-angled, striate. *Leaves* ovate, acute, rather abruptly cuneate at base, margin with coarse gland-tipped teeth, firmly membranous, nervation rather prominent, mostly 5-7 by 3-4 cm.; petioles 1.5-2 cm. l. *Heads* few at the ends of the branches on peduncles 6-15 mm. l., radiate, about 25-flowered, about 3 cm. across in flower. *Involucral scales* linear-oblong, obtuse or subacute, 3-nerved, 8 mm. l. *Receptacular scales* oblong, obtuse (inner narrower), rough-edged, strongly nerved, 7.5 mm. l. *Ray-florets* about 5; ligules ovate-oblong, 10-nerved, about 13 mm. l. *Disk corollas* 5 mm. l. *Achenes* linear, four-angled, slightly compressed, rather rough, 8-10 mm. l. *Awns* 1 or 2 with few downward-curved small hooks, 1-1.5 mm. l.

### 37. COSMOS Cav.

Characters of *Bidens*, but achenes produced above into a beak.

Besides the following, nearly 20 tropical American species, chiefly Mexican.

*C. caudatus* H. B. & K. *Nov. Gen. & Sp. iv.* 240 (1820); *DC. Prodr. v.* 606; *Griseb. Pl. Carib.* 87, *Fl. Br. W. Ind.* 373 & *Cat. Cub.* 155; *Sauv. Fl. Cub.* 81; *Wils. in Rep. Geolog. Jam.* 281; *Egg. Fl. St. Croix & Virg.* 65; *Stahl Fl. P.-Rico v.* 130; *Hitchc. in Rep. Miss. Bot. Gard. iv.* 100; *Kew Bull.* 1893, 260; *Combs Pl. Cub.* 435; *Duss Fl. Ant. Franç.* 369; *Sang. Fl. Cub.* 51; *Hart Herb. List Trin.* 260; *Urb. Symb. Ant. iv.* 641 & *viii.* 737; *Britt. Fl. Amer. Virg.* 99. *Cosmea caudata Spreng. Syst. iii.* 615 (1826). (Fig. 86.)

*Bancroft* ! Liguanea Hills, *Prior* ! *Wilson* 154 ! Spring Garden, *Mrs. Espent* ! Constant Spring; Blue Mts.; Port Morant; *Hitchcock*; Cherry Garden, *Campbell* ! Fl. Jam. 5910; Resource, *Harris* ! Fl. Jam. 6139; Brandon Hill, *Thompson* ! Fl. Jam. 8076; between Flamstead and Good Hope, *Miss Maxwell* !—West Indies; naturalised in Florida and Central America; an escape from cultivation in tropical America and Asia.

A branching glabrous *herb* up to 3 ft. high. *Branches* pale, striate. *Leaves* bipinnatisect, up to 8 cm. l. but usually shorter, the segments linear-lanceolate, mucronate, terminal one about 2 cm. l.; petioles slender, 1 cm. or more l. *Heads* few, about 3 cm. across, on pedicels of 10-20 cm. l. but often shorter. *Involucral scales* of outer series linear-lanceolate, acuminate, ciliolate, 5 mm. l.; inner nearly twice as long, oblong or oblong-obovate, obtuse, finely striolate, membrane-edged. *Ray-florets* few, neuter; ligules exserted, obovate, 2-3-toothed, rose-coloured, 13 mm. l.; disk-florets more numerous; corollas yellow, 8 mm. l. *Receptacular scales* ovate-oblong, 12 mm. l. *Achenes* narrow, 4-angled, 1 cm. l., tapering into a rough beak of equal length; awns slender, diverging, 3 mm. l.

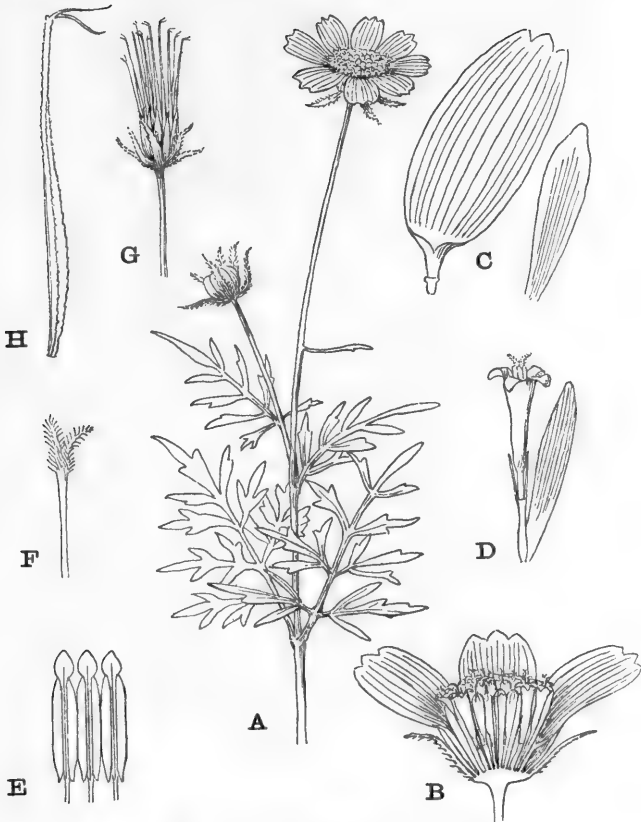


Fig. 86.—*Cosmos caudatus* H. B. & K.

A, Upper part of plant  $\times \frac{1}{2}$ .  
 B, Head in section  $\times \frac{1}{2}$ .  
 C, Ray-floret with scale  $\times 3$ .  
 D, Disk-floret with scale  $\times 3$ .

E, Stamens  $\times 6$ .  
 F, Style and arms  $\times 6$ .  
 G, Head with ripe achenes  $\times \frac{1}{2}$ .  
 H, Achene  $\times 2$ .

### 38. CHRYSANTHELLUM L. C. Rich.

Annual herbs. Leaves radical and cauline (the latter alternate), lobed or pinnatifid. Heads small, stalked, solitary or terminal or in the axils of the upper leaves, radiate, heterogamous, ray-florets female, those of the disk hermaphrodite, all fertile. Involucre campanulate, of few membranous scales. Receptacle flat with flat scales. Ray-corollas several, ligulate; disk-corollas with short tube and campanulate 5-fid limb. Anthers obtuse at base. Style-arms (of the disk-florets)

ending in an awl-shaped appendage. Achenes more or less compressed, flat or minutely 2-toothed at top, innermost slightly winged. Pappus absent.

Species 8 or 9, chiefly American.

**C. americanum** (L.) Vatke in *Bremen Abhandl.* ix. 122 (1885); *Hitchc. in Rep. Miss. Bot. Gard.* iv. 101; *Urb. Symb. Ant.* v. 266 & viii. 735. *C. procumbens* L. C. Rich. in *Pers. Syn.* ii. 471 (1807); *DC. Prodr.* v. 630; *Griseb. Pl. Wright.* 514, *Fl.*

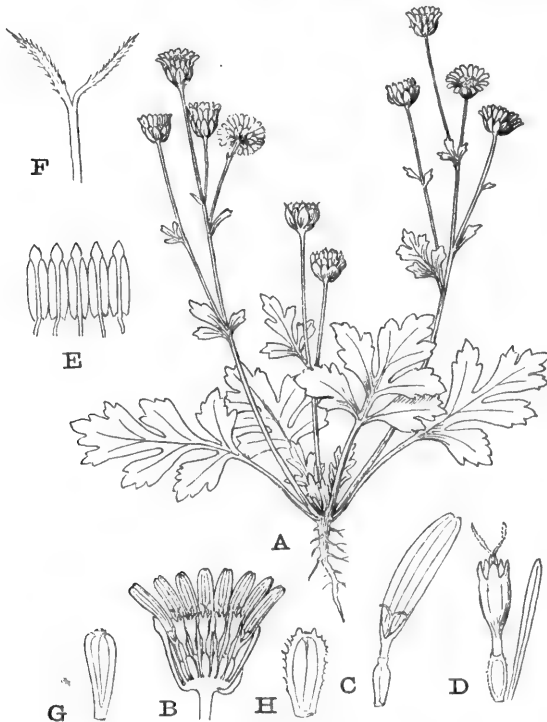


Fig. 87.—*Chrysanthellum americanum* (L.) Vatke.

A, Plant  $\times \frac{1}{2}$ .

B, Head in section  $\times 3$ .

C, Ray-floret  $\times 6$ .

D, Disk-floret with scale  $\times 6$ .

E, Stamens  $\times 14$ .

F, Style-arms  $\times 14$ .

G, Ripe outer, H, inner achene  $\times 4$ .

*Br. W. Ind.* 377 & *Cat. Cub.* 156; *Sauv. Fl. Cub.* 81; *Greenm. in Proc. Amer. Acad.* xxxix. 114. *Anthemis americana* L. *Sp. Pl.* 895 (1753). *Bidens apiifolia* L. *Syst.* ed. 10, 1203 (1760). *Verbesina mutica* L. *Sp. Pl.* ed. 2, 1273 (1763); *Sw. Obs. Bot.* 314; *Lun. Hort. Jam.* ii. 256; *Lam.*



*Ill. t.* 686, *f.* 2. *Chrysanthemum palustre minimum* &c. *Sloane Cat.* 126 & *Hist. i.* 263, *t.* 155, *f.* 3. *Anthemis minima arvensis* &c. *Browne Hist. Jam.* 320. Specimens from *Houstoun* ex *Herb. Gronovius* and from *Browne* in *Herb. Linn.* (*Fig.* 87.)

Common in moist places, *Sloane Herb.* v. 42! frequent in all the savannahs, *Browne!* *Houstoun!* *Masson!* *Shakespear!* *Swartz!* *Wiles!* *Liguanea Plains;* *St. Mary;* *McNab!* 46, 57; cultivated fields and roadsides, *Broughton!* *Luidas Vale,* *Prior!* *Distin!* *Bancroft!* *Macfadyen!* *Wilson* 469! *Port Morant;* *Lucea;* *Hitchcock;* *King's House;* *Long Acre Point,* *West of Black River;* *Constant Spring* to *Bardowie;* *Harris!* *Fl. Jam.* 8280, 9965, 12,107; *Giddy Hall,* *St. Elizabeth,* *Miss Maxwell!*—*Cuba,* *Hispaniola,* *Central America,* *Venezuela.*

Erect or prostrate glabrous herb up to 1½ ft. long, but usually much shorter (sometimes under 3 in.). *Leaves* small, petioled, pinnatifid with entire or toothed segments, up to 2 by 1·5 cm.; petiole of radical leaves up to 3 cm. l., of the cauline much shorter. *Peduncles* slender, eventually 3–6 cm. l. *Heads* 7–10 mm. across, yellow. *Involucral scales* broadly oblong, obtuse, scarious-edged, striate, 4 mm. l. *Receptacular scales* linear, 3 mm. l. *Ray-florets* about 12; ligules oblong, bifid, 3 mm. l. *Corolla* of disk 2·5 mm. l. *Achenes* narrowly obovoid, 3 mm. l., outer almost 3-angled, wingless; inner much compressed and very narrowly winged.

### 39. GALINSOGA Ruiz & Pav.

Annual herbs. *Leaves* opposite, entire or toothed. *Heads* small, stalked, solitary or few, terminal or in the upper axils, heterogamous, radiate, ray-florets female, of disk hermaphrodite, all fertile. *Involucre* campanulate, of few broad membranous scales. *Receptacle* raised, with flat scales subtending the florets. *Ray-corollas* few; ligules short, entire or toothed. *Disk-corollas* tubular, 5-fid. *Anthers* obtuse at base. *Style-arms* of the disk-florets shortly appendaged. *Achenes* angular (outer sometimes compressed); *pappus* of 8–16 linear or spatulate, awned or awnless scales, of the ray-florets sometimes fewer or absent.

Species about 5, tropical American. The following is now naturalised in tropical and temperate regions of both Worlds.

*G. parviflora* *Cav. Ic. iii.* 41, *t.* 281 (1794); *DC. Prodr.* v. 677; *Griseb. Fl. Br. W. Ind.* 379; *Robins. in Proc. Amer. Acad.* xxix. 325; *Small Fl. S.E. U. St. ed.* 2, 1285; *Britt. Fl. Berm.* 402; *Urb. Symb. Ant. viii.* 738. (*Fig.* 88.)

*McNab!* *March* 916! *Mountain Industry,* *Eggers* 3439! *J. P.* 990 (*Hart!*); *Cinchona;* *Hardware Gap;* *Harris!* *Fl. Jam.* 8586, 10,115; *Guava Ridge,* *Miss Maxwell!*—*Central and South America;* introduced into *United States* and *Bermuda* and into the *Old World:* a probable introduction into *Jamaica.* It is reported also from *Hispaniola.*

Branched herb, 1–2 ft. high. *Branches* with hispidulous hairs, becoming glabrous. *Leaves* shortly petioled, ovate, acute or shortly acuminate, broad at base, toothed or serrulate, triplinerved, sparingly hairy or glabrous, up to 5 by 3·5 cm., but often much smaller especially

the upper ones. *Peduncles* slender, 1–2.5 cm. l. *Heads* 5 mm. across. *Involucral scales* ovate, obtuse, 2.5 mm. l. *Receptacular scales* linear-lanceolate, acute, 3 mm. l. *Ray-florets* 4 or 5; *ligules* ovate, 3-fid,

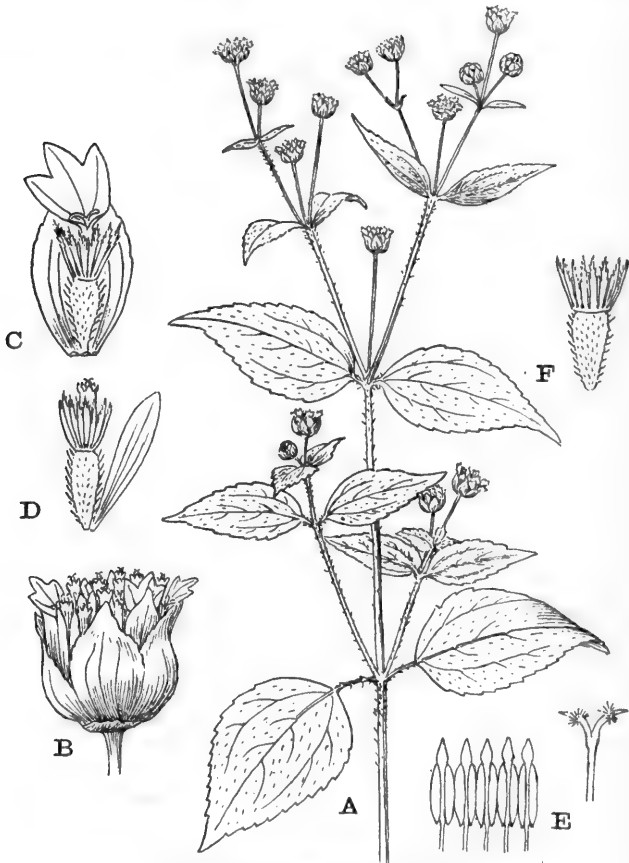


Fig. 88.—*Galinsoga parviflora* Cav.

A, Portion of plant  $\times \frac{1}{2}$ .

B, Head  $\times 4$ .

C, Ray-floret with scale  $\times 6$ .

D, Disk-floret with scale  $\times 6$ .

E, Anthers and style-arms  $\times 24$ .

F, Achene  $\times 6$ .

1.5 mm. l., white; disk-corollas 1 mm. l. *Achenes* narrowly top-shaped, minutely papillate, 1.5–2 mm. l. *Pappus* of 16 or fewer linear-lanceolate ciliated scales 1 mm. l., some of them ending in short awns.

#### 40. CALEA L.

Shrubs or undershrubs. Leaves opposite, entire, toothed or lobed. Heads stalked in terminal or axillary cymes or solitary, heterogamous, radiate (rarely discoid and homo-

gamous), florets of ray female, of disk hermaphrodite, all fertile. Involucre hemispherical, campanulate or cylindrical, the scales in several rows. Receptacle more or less raised; scales concave. Ray-florets few or numerous; ligules exerted, usually toothed. Disk-corollas tubular, 5-fid. Anthers sagittulate at base. Style-arms obtuse. Achenes angled, cylindrical, or obovoid, crowned by a pappus of few or several (up to 20) scales.

Species about 100, tropical and subtropical American.

**C. jamaicensis** L. *Sp. Pl. ed. 2*, 1179 (1763); *Sw. Obs. Bot.*

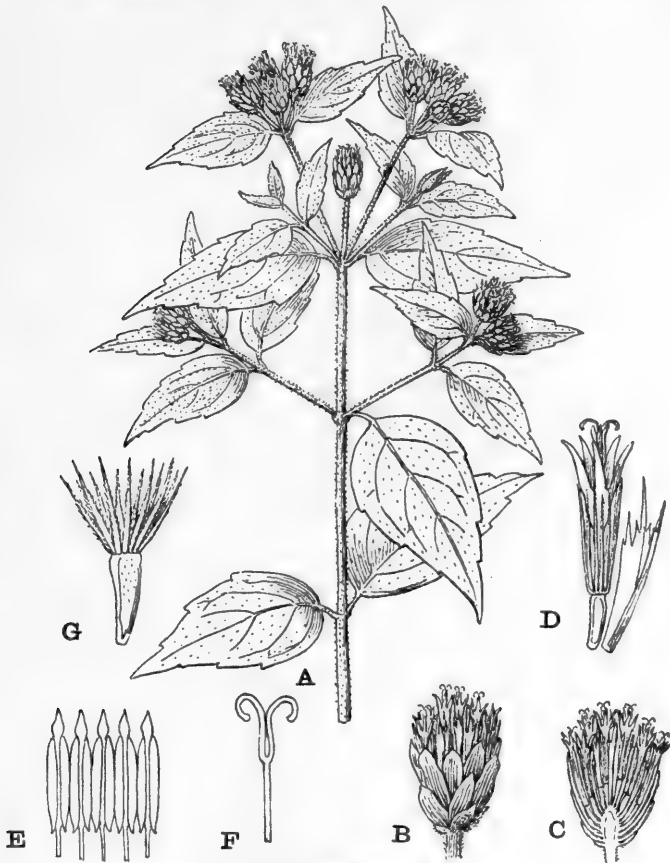


Fig. 89.—*Calea jamaicensis* L.

A, Portion of plant  $\times \frac{1}{2}$ .  
 B, Head  $\times 2$ .  
 C, Head in section  $\times 2$ .  
 D, Floret with scale  $\times 4$ .

E, Anthers  $\times 8$ .  
 F, Style  $\times 8$ .  
 G, Achene  $\times 4$ .

302; *Lun. Hort. Jam. ii.* 363; *R. Brown in Trans. Linn. Soc. xii.* 108; *DC. Prodr. v.* 672; *Griseb. Fl. Br. W. Ind.* 379. *C. cordifolia Sw. Fl. Ind. Occ. iii.* 1326. *Santolina jamaicensis L. Syst. ed.* 10, 1027 (1759). *Conyza fruticosa Cisti odore &c. Sloane Cat.* 124 & *Hist. i.* 257, *t.* 151, *f.* 3. *Santolina subhirsuta &c. Browne Hist. Jam.* 315. Type specimen from Browne in *Herb. Linn.* (Fig. 89.)

Mt. Diablo and near Guanaboa, *Sloane Herb. v.* 14 & 15!; *Browne! Swartz! Liguanea, Broughton! Macfadyen! R. Cobre; Hope Estate, Prior! Wilson! Charlemont near Ewarton; Mount Airy; Cane River Valley; Albion Mount, St. Thomas; Lititz Savannah; Harris! Fl. Jam.* 6702, 7459, 10,057, 10,064, 11,653, 11,763.

A freely branching *shrub* up to 9 ft., but usually smaller. *Branches* when young covered with a short rough tawny pubescence which falls off afterwards. *Leaves* shortly petioled, ovate or ovate-lanceolate, acute or acuminate, rounded or obtuse at base, entire or sparsely toothed, triplinerved, thinly leathery, rough on both faces, 2-4 by 1-2.5 cm. *Heads* discoid, 6 mm. across, about 15-flowered, usually 2-4 together on pedicels about 5 mm. l. at the end of the branches. *Involucre* campanulate; scales 4-seriate, ovate, obtuse, straw-coloured, striate, rough on the back, 5 mm. l. *Receptacular scales* ovate, acute, toothed, 6 mm. l. *Corolla* 5 mm. l., yellow. *Achenes* narrowed below, sparsely hairy, 2 mm. l. *Pappus-scales* about 16, linear-tapering, 3 mm. l.

Var. **parvifolia** *S. Moore in Journ. Bot. lxvii.* 130 (1929); leaves very small, obtuse or subacute, never acuminate, 10-15 by 5-8 mm.

Cane River Valley, below the Falls, *Harris!* *Fl. Jam.* 10,064.

#### 41. POROPHYLLUM Vaill.

Glabrous, glandular herbs. Leaves alternate (the lower sometimes opposite), entire or nearly so, often glaucous. Heads medium to rather small, stalked, solitary and terminal or in terminal open corymbs, discoid, homogamous, all the florets hermaphrodite and fertile. Involucre subcylindrical or narrowly campanulate, of few scales in one series. Receptacle naked. Corolla with a slender tube and narrowly campanulate 5-fid limb. Anthers obtuse at base. Style-arms linear, hairy at the top. Achenes linear, striate. Pappus of rough or barbellate bristles in 1-2 rows.

Species about 50, Argentina to California.

**P. ellipticum** (*L.*) *Cass. in Dict. Sc. Nat. xliii.* 56 (1826); *DC. Prodr. v.* 648; *Griseb. Pl. Carib.* 88; *Urb. Symb. Ant. i.* 467, *iv.* 642 (var. *genuinum Urb.*) & *viii.* 739; *Robins. in Proc. Amer. Acad. xlix.* 549. *P. ruderale Griseb. Fl. Br. W. Ind.* 379 (1861) (in part, non *Cass.*). *P. Porophyllum Kuntze Rev. Gen. Pl. iii.* 168 (1898); *Rydb. N. Amer. Fl. xxxiv.* 184;

*Britt. Baham. Fl.* 456 & *Fl. Amer. Virg.* 99. *Cacalia Porophyllum* L. *Sp. Pl.* 834 (1753); *Sw. Obs. Bot.* 298. *Kleinia ruderalis* Jacq. *Enum. Pl. Carib.* 28 (1760), *Sel. Stirp. Amer.* 215, t. 127 & *Ic. Pict.* t. 195; *Sw. Fl. Ind. Occ.* iii. 1293. (Fig. 90.)



Fig. 90.—*Porophyllum ellipticum* (L.) Cass.

A, Portion of plant  $\times \frac{1}{2}$ .  
 B, Head  $\times \frac{1}{2}$ .  
 C, Floret  $\times 2\frac{1}{2}$ .

D, Anthers and style-arms  $\times 10$ .  
 E, Achene  $\times 2\frac{1}{2}$ .

*Liguanea*, *Broughton* ! Kingston ; *Ewarton*, *Prior* ! King's House, J. P. 1110 *Morris* ! *Eggers* 3476 ; *Hector's River* ; *Glasgow*, near *Troy* ; *Harris* ! *Fl. Jam.* 6004, 12,631 ; *Guava Ridge*, *Miss Maxwell* !—*Bahamas*, *Antilles*, *tropical America*.

Erect herb up to  $3\frac{1}{2}$  ft. high. Stem terete, striate. Leaves petioled, ovate to oblong, obtuse or acute, crenate or undulate with a few large glands in the crenatures or on the limb, up to 5 by 2.5 cm., but often much smaller especially the upper ones ; petioles slender, .5–4 cm. l. Heads about 30-flowered, solitary or few in an open corymb, about

13 mm. across; peduncles swollen under the head, 2-4 cm. l. *Involucral scales* 5, narrowly linear-lanceolate, shortly acuminate, with linear glands reaching the top, 18 mm. l. *Corolla* 13 mm. l., green or purplish. *Style-arms* exserted. *Achenes* slightly narrowed at both ends, 8 mm. l. *Pappus-bristles* rather rough, white.

Cassini distinguished two closely allied species of *Porophyllum*, one (*P. ellipticum*) with obtuse, crenate, glandular leaves, the other (*P. ruderale*) having the leaves acuminate and eglandular. Urban, his view confirmed by Robinson, regards these as conspecific. He calls the former var. *genuinum*; this, besides the characters just given, has glandular lines upon the involucral scales running from bottom to top, whereas in the other (*P. ellipticum* var. *ruderale*) the glands are at the bottom only. All the Jamaica specimens seen belong to the former of these. Swartz (*Prodr.* 110) claims *P. ruderale* ("*Cacalia ruderalis*") for Jamaica, as well as (*Obs. Bot.* 298) *P. ellipticum* ("*Cacalia Porophyllum*"); but as no Swartz specimen is available, the point must remain uncertain. Without seeing specimens it is inadvisable to quote further references for the two varieties. Rydberg ignores these varieties; and this seems reasonable as there are intermediate forms between them.

### [TAGETES L.

Annual, glandular herbs. Leaves opposite or alternate, usually pinnatisect. Heads small to large, stalked, solitary or in open corymbs, heterogamous, radiate; ray-florets few (occasionally 1-3 or absent), female, of disk hermaphrodite, all fertile. Involucre subcylindrical or campanulate, of several 1-seriate scales connate nearly throughout. Receptacle flat, naked or slightly pitted. Ray-corollas with entire or retuse 5-fid exserted or included ligule. Corolla of disk-florets tubular, 5-fid. Anthers obtuse at base. Style-arms of the disk-florets long, obtuse. Achenes linear, callus-based. Pappus of few heteromorphous scales, long and aristate or short and truncate.

About 35 species of tropical and subtropical America, 2 or 3 of which are naturalised, or escapes from cultivation, in many parts of the Old World.

**T. patula** L. *Sp. Pl.* 887 (1753); *Sims Bot. Mag. t.* 150; *Mayc. Fl. Barb.* 327; *DC. Prodr. v.* 643; *Sang. Fl. Cub.* 52; *Urb. Symb. Ant. iv.* 642 & *viii.* 739; *Rydb. N. Amer. Fl. xxxiv.* 154; *Britt. Fl. Amer. Virg.* 100. Linnean specimens in Hort. Cliff. in Herb. Mus. Brit.

French Marigold.

Tyre near Troy, Harris! Fl. Jam. 9464, a garden escape.—Cuba, Porto Rico, Virgin Islands, Barbados, Mexico and Central America.

An openly branching, glabrous, naturalised weed, 1½ ft. high. Branches hollow, striate. Leaves sessile or subsessile, ovate in outline, mostly 4-5 by 3-4 cm., with usually 5-7 pairs of oblong-lanceolate, acute, sharply serrulate segments which, like the involucral scales, bear scattered immersed glands. Heads in flower 3-4 cm. across, solitary or very few at the ends of the branches, on stalks about 4-6 cm. l.

swollen under the head. *Involucres* glaucous, 15 by 8 mm. with 5 short deltoid obtuse teeth. *Ray-floret ligules* exserted, suborbicular, retuse, about 1 cm. l., yellow or orange. *Corolla of disk-florets* 12 mm. l. *Style-arms* exserted. *Achenes* compressed, striate, sparsely and minutely glandular, 7 mm. l. *Pappus* of 2 long 8–10 mm. scales; and 2 short and broad about half as long.]

42. PECTIS L.

Annual or perennial aromatic herbs. Leaves opposite, usually linear and with stiff marginal hairs below the middle. Heads small to medium, stalked, solitary or in corymbs, heterogamous, radiate, ray-florets female, those of disk hermaphrodite, all fertile. Involucre cylindrical or campanulate, of few free 1-seriate glandular scales. Receptacle naked. Ray-corollas with exserted entire or 3-toothed ligules; those of the disk tubular, with an enlarged regular or irregular, 5-lobed limb. Anthers obtuse at base. Style-arms short and obtuse. Achenes linear, striate; pappus of few or many bristles, hair-like or scaly below, occasionally of small scales.

Species nearly 100, from Nebraska to Argentina, chiefly Mexican and Central American; several in the West Indies.

Involucral scales 8.

Pappus of short scales some of which may be  
bristle-like above ..... 1. *P. Swartziana*.

Involucral scales 5.

- Pappus of bristles scaly below.
  - Heads sessile or shortly stalked.
    - Glands on underside of leaf scattered ..... 2. *P. ciliaris*.
    - Glands on underside of leaf in two rows .... 3. *P. linearifolia*.
  - Heads on long stalks ..... 4. *P. febrifuga*.
- Pappus bristly, bristles sometimes with an  
obscure basal dilatation ..... 5. *P. floribunda*.
- Pappus of 2–4 awl-shaped hard divergent bristles 6. *P. tinifolia*.

1. *P. Swartziana* Less. in *Linnæa* vi. 711 (1831) (excl. ref. Swartz); leaves with 1–3 pairs of basal bristles and a few scattered glands on the underside.—DC. *Prodr.* v. 99; Griseb. *Fl. Br. W. Ind.* 378 (excl. ref. Plum. & Swartz); Fernald in *Proc. Amer. Acad.* xxxiii. 69; Sang. *Fl. Cub.* 52; Urb. *Symb. Ant.* v. 269 & viii. 739; Rydb. *N. Amer. Fl.* xxxiv. 201; Jenn. *Is. Pin.* 288. *P. patula* Linn. f. ex DC. loc. cit. (1836). *P. pratensis* C. Wright in *Sauv. Fl. Cub.* 81.

*Macfadyen* !—Cuba, Hispaniola, Mexico to Bolivia.

Erect branching herb, 3–8 in. high. Branches divaricate, slender, slightly rough. Leaves linear-oblongate, mucronate, mostly 1–2.5 cm. l. Heads 3 mm. across, usually solitary, on peduncles mostly

1-2.5 cm. l., 17-20-flowered. *Involucral scales* 8 (rarely 7), linear-oblong, obtuse or subacute, 3.5-4 mm. l. *Ray-florets* 6-8; ligules oblong-ovate, toothed, 2 mm. l. *Disk-florets* 8-12; corollas 2 mm. l. *Achenes* sparsely and shortly hairy, 2.5 mm. l. *Pappus* of ray-florets a small lacinate cup about .3 mm. deep; of disk-florets 5 or 10 lacinate scales (sometimes united at base) about .5 mm. l., of which some may end in a bristle about 2 mm. l.

2. ***P. ciliaris*** *L. Syst. ed. 10, 1221 (1760); DC. tom. cit. 100 (excl. synn.);* leaves with 3 or 4 pairs of marginal bristles below the middle and scattered glands on the under-side.—*Griseb. op. cit. 378 & Cat. Cub. 156; Sauv. loc. cit.;*



Fig. 91.—*Pectis ciliaris* L.

A, Portion of plant  $\times \frac{1}{2}$ .  
 B, Head  $\times 3$ .  
 C, Ray-floret  $\times 4$ .  
 D, Disk-floret  $\times 4$ .

E, Anthers and style  $\times 10$ .  
 F, Achene of ray-floret  $\times 4$ .  
 G, Achene of disk-floret  $\times 4$ .



*Sang. loc. cit.*; *Combs Fl. Cub.* 435; *Urb. op. cit. iv.* 643, v. 277 & viii. 740; *Rydb. tom. cit.* 200. *P. anceps Less. in Linnæa vi.* 715 (1831). *Hieracium minimum &c. Sloane Cat.* 123 & *Hist. i.* 255, t. 150, f. 1. *H. erectum minimum &c. Browne Hist. Jam.* 311. Specimen from Browne in Herb. Linn. (Fig. 91.)

Town savannah, *Sloane Herb. v.* 7! common in the road between Spanish Town and Sixteen-Mile Walk, *Browne!* *Swartz!* *Broughton!* *Liguanea Plains, McNab* 45! *Purdie!* *Macfadyen!* Shortwood, *Campbell!* *Fl. Jam.* 5749; Constant Spring; above Hope Mines; Two-Mile Wood Pen, St. Catherine; *Harris!* *Fl. Jam.* 5796, 6827, 12,067.—Cuba, Hispaniola, Porto Rico.

An erect or spreading weed 4 in. to nearly 1 ft. high. *Branches* with lines of rough hairs. *Leaves* linear-oblong or linear, acute, rough, especially at the margin, mostly 1.5–2.5 cm. *Heads* in flower 4 mm. across, about 12–(9–17)-flowered, solitary or few, sessile or subsessile among the uppermost leaves, yellow. *Involucral scales* broadly oblong, rotundate, 6 mm. l. *Ray-florets* 5; ligules linear-lanceolate, minutely toothed, 2–2.5 mm. l. *Disk-florets* usually about 8–10 (4–12); corolla 3 mm. l. *Achenes* with short appressed hairs, 3 mm. l. *Pappus-bristles* of ray generally 2 or 3, of disk usually 5, rough, 3 mm. l., some often shorter.

3. *P. linearifolia Urb. Symb. Ant. v.* 276 (1907); leaves usually with 3 or 4 pairs of marginal bristles, and glands upon the underside in two rows, one under each margin.—*Rydb. tom. cit.* 201. *P. linifolia Griseb. Fl. Br. W. Ind.* 378 (non *L. nec Less.*). *P. ciliaris Fernald tom. cit.* 66; *Small Fl. S.E. U. St. ed.* 2, 1296 (non *L.*).

*Macfadyen!* Giddy Hall, St. Elizabeth, *Miss Maxwell!*—Florida.

Branching herb 4 in. to upwards of 1 ft. high. *Branches* slender, with rows of short, rough hairs. *Leaves* linear, obtuse or mucronulate, involute margins rather rough, mostly 1–2.5 cm. l. *Heads* in flower 3 mm. across, subsessile or on short stalks at most 4.5 mm. l., 11–12-flowered, solitary or very few together, yellow. *Involucral scales* oblong, acute or obtuse, strongly keeled, 5 mm. l. *Ray-florets* 5; ligules narrowly obovate-oblong, toothed, barely 2.5 mm. l. *Disk-florets* 6 or 7; corollas 2 mm. l. *Achenes* 3 mm. l., rather rough upon the edges. *Pappus-bristles* of ray-florets 2, of disk 5, basal part lanceolate, ciliate, about 1 mm. l. with a rather longer aristate terminal part.

4. *P. febrifuga van Hall in Fl. Jard. Pays-Bas. iv.* 33 (1861); leaves with 3–5 pairs of marginal bristles and few small glands on the underside.—*Urb. op. cit. v.* 279; *Bold. Fl. Ned. W.-Ind. i.* 205 & *ii.* 109; *Rydb. tom. cit.* 202; *Britt. Fl. Amer. Virg.* 99. *P. linifolia Less. tom. cit.* 709 (1831) (excl. syn.); *DC. tom. cit.* 99; *Egg. Fl. St. Croix & Virg.* 66 (non *L.*).

Hope Grounds, *Fawcett!* *Fl. Jam.* 8302; Hope Gardens; King's House Grounds; *Harris!* *Fl. Jam.* 8616, 12,139; Papine, *Ridley!*—Virgin Isles, Curaçao, Aruba, Colombia.

A low, copiously branching herb up to  $\frac{3}{4}$  ft. high. Branches slender, somewhat rough. Leaves linear, mucronulate, mostly .5–1.5 cm. l. Heads in flower 3 mm. across, 11–18-flowered, in few-headed open corymbs, yellow; peduncles filiform, generally 1.5–2 cm. l. Involucral scales oblong, acute, 5 mm. l. Ray-florets 5; ligules oblong, toothed, 2.5 mm. l. Disk-florets usually about 10; corollas 2.5 mm. l. Achenes minutely rough along the edges, barely 3 mm. l. Ray-pappus of 2, disk usually of 5 lanceolate, often incised scales about 1 mm. l., produced into rough bristles 3 times their length.

5. **P. floribunda** A. Rich. in *Sagra Cub.* xi. 36 (1850); leaves with usually 2 or 3 pairs of bristles on the rough margin near the base and scattered glands on the underside.—*P. elongata* Urb. op. cit. v. 283 & viii. 741; *Rydb. tom. cit.* 210; *Jenn. op. cit.* 28 (non H.B. & K.). *P. Plumieri* Griseb. *Fl. Br. W. Ind.* 378 (1861) (excl. ref. *Plum.*) & *Cat. Cub.* 156; *Hitchc. in Rep. Miss. Bot. Gard.* iv. 101; *Sang. loc. cit.* Type in Herb. Paris; of *Plumieri* in Herb. Edinb.

Verbena Grass.

St. Mary, *McNab*! Lucea, *Orgill*! *Bancroft*! *Hansen*; between Yallahs and Morant Bay; King's House pasture; *Fawcett*! *Fl. Jam.* 7453; Halberstadt, *Harris*! *Fl. Jam.* 6662; Flamstead, *Miss Maxwell*!—Cuba, Isle of Pines (Central America?).

Branching herb from 4 in. to 2 ft. or more high. Stem erect, woody at base; branches four-angled, rough at the nodes. Leaves linear, acuminate, mostly 1–4 (rarely 6) cm. l. Heads 3 mm. across, 11–12-flowered, purple. Involucral scales linear, acute, 5–6 mm. l. Ray-florets 5; ligules linear-lanceolate, minutely toothed, 2–2.5 mm. l. Disk-florets 6 (rarely 7); corolla 2.5 mm. l. Achenes glabrous or slightly hairy, 2.5 mm. l. Pappus-bristles of ray-florets 3–5 (rarely 6), of disk-florets 8, very slightly expanded if at all at the base, rough, 4–4.5 mm. l., but one or more sometimes shorter.

6. **P. linifolia** L. *Syst. ed.* 10, 1221 (1759); leaves with 2–4 basal bristles and glands scattered or in a single row on the underside.—*Lun. Hort. Jam.* i. 308; *Lam. Ill. t.* 684; *DC. tom. cit.* 99; *Fernald tom. cit.* 85; *Britt. in Bull. N. York Bot. Gard.* iii. 453; *Urb. op. cit.* iv. 643, v. 285 & viii. 741; *Rydb. tom. cit.* 215; *Bold. op. cit.* 110; *Britt. Fl. Amer. Virg.* 99. *P. punctata* Jacq. *Enum. Pl. Carib.* 28 (1760), *Sel. Stirp. Amer.* 216, t. 128 & *Ed. Pict. t.* 196; *Sw. Obs. Bot.* 308; *Griseb. Pl. Carib.* 84, *Pl. Wright.* 514, *Fl. Br. W. Ind.* 377 & *Cat. Cub.* 156; *Saww. op. cit.* 82; *Egg. loc. cit.*; *Hitchc. loc. cit.*; *Stahl Fl. P.-Rico* v. 146; *Kew Bull.* 1893, 260; *Duss Fl. Ant. Franç.* 371. *Pectidium punctatum* Less. in *Linnæa* vi. 707. *Hieracium fruticosum* &c. *Sloane Cat.* 123 & *Hist. i.* 255, t. 149, f. 3. *Tagetes*? minor, caule subdiviso &c. *Browne Hist. Jam.* 319. Specimen from Browne in Herb. Linn.

*Sloane* Herb. v. 6 ! *Lane* in Herb. *Petiver* (*Sloane* Herb. clxii. 13 !); *Browne* ! *Broughton* ! *McNab* ! *Parnell* ! *Macfadyen* ! *Hope* Estate, *Prior* ! *Liguanea*, *Purdie* ! *Bancroft* ! *Distin* ! *Lucea*, *Hitchcock* ; *J. P.* 893, 1189 (*Hart* !); *Sheldon* Road; near *Grove*; *Hope* Grounds; *Harris* ! *Fl. Jam.* 5450, 6828, 12,127; *Giddy* Hall, *St. Elizabeth*, *Miss Maxwell* ! *Arntully*, *Albion* trail, *Orcutt* 3909 !—*Bahamas*, *West Indies*, *Galapagos* Is., and *Arizona* to *Venezuela* and *Colombia*.

An erect, branching weed, 2–4 ft. high. Branches slender, striate, glabrous. Leaves linear or narrowly linear-lanceolate, acute, up to 6 cm. l. but usually much shorter. Flowers mostly solitary, on filiform usually 1–2.5 cm. l. stalks. Heads 3 mm. across, 6–9-flowered, yellow or purple. Involucral scales linear, obtuse, 5–6 mm. l. Ray-florets 4 or 5; ligules ovate, minutely toothed, 1 mm. l. Disk-florets 2–4; corollas 3 mm. l. Achenes minutely hairy or glabrous, about 5 mm. l. Pappus-bristles usually 3, sometimes 4 or 2, subulate-aristate, soon diverging, 1.5–2.5 mm. l.

**Pyrethrum Parthenium** (L.) Sm. (*Matricaria Parthenium* L.) is cited by *Grisebach* as introduced into *Jamaica* from *Europe*. The only specimen seen, collected by *McNab* at *Dalmeny*, is in *Herb. Edinb. Bot. Gard.* It is a perennial herb up to 2 ft., with pinnatisect leaves, having deeply cut segments, stalked radiate heads about 1 cm. across, the short and broad rays white, the disk yellow, and small ribbed achenes without a pappus.

#### 43. LIABUM Adans.

Herbs or shrubs. Leaves opposite, entire toothed or lobed, usually tomentose beneath. Heads rather large to rather small, solitary or in a corymb or panicle, heterogamous and radiate or rayless and homogamous, florets all fertile. Involucre campanulate or hemispherical, the scales in several rows. Receptacle minutely pitted or fringed. Ray-corollas ligulate; ligules exserted, several or many, usually narrow, entire or toothed; those of disk with a narrow tube and cylindrical 5-fid limb. Anthers sagittate at base. Style-arms linear, obtuse, hairy. Achenes oblong. Pappus 1–2-seriate, of rough or barbellate bristles sometimes somewhat scaly.

Species over 100, *Mexico* to *Argentina*, rare in *West Indies*; many *Andine*.

**L. umbellatum** (L.) Sch. Bip. in *Journ. Bot. i.* 236 (1863); *Urb. Symb. Ant. v.* 265 & viii. 742; *Shreve* *Mont. Rain-For.* 22 & 34. **L. Brownei** Cass. in *Dict. Sc. Nat. xxvi.* 203 (1823); *Less. in Linnæa vi.* 697; *DC. Prodr. v.* 97; *Griseb. Pl. Wright.* 515 & *Fl. Br. W. Ind.* 383; *Sauv. Fl. Cub.* 82. *Amellus umbellatus* L. *Syst. ed.* 10, 1225 (1760); *Sw. Obs. Bot.* 310; *Lun. Hort. Jam. ii.* 307. *Solidago?* villosa, incana &c. *Browne Hist. Jam.* 320, t. 33, f. 2. Type specimen from *Browne* in *Herb. Linn.* (Fig. 92.)

## Wound Worth (Lunan).

*Sloane* Herb. v. 7! *Browne*! *Masson*! *Shakespear*! *St. Mary*, *McNab*! *Macfadyen*! *Mt. Diablo*, *Prior*! *Bancroft*! *Wilson*! *St. George's Gap*, *Purdie*! *Cinchona*, J. P. 1066 (*Hart*!); *Leicesterfield*, *Upper Clarendon*, *Harris*! *Fl. Jam.* 10,844.—*Cuba*, *Hispaniola*.

Coarse herb up to 3 ft. *Stem* simple, naked above, coarsely striate,

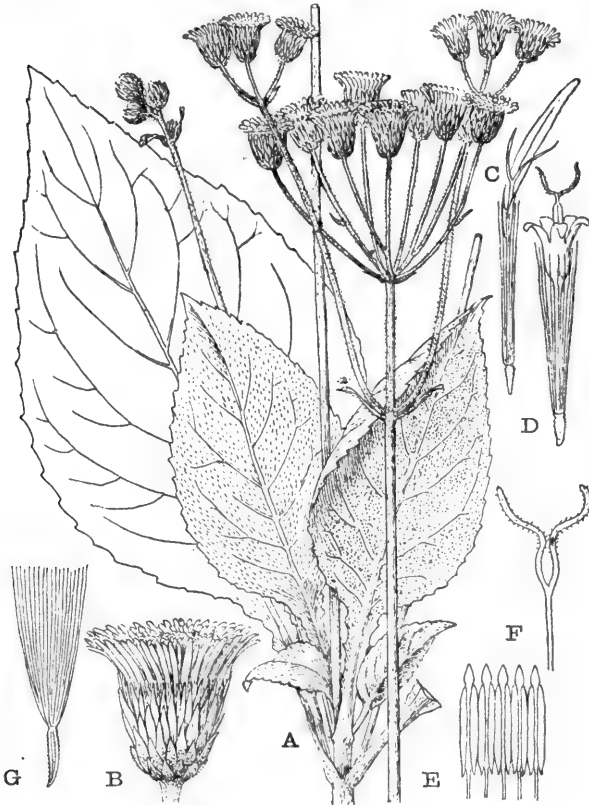


Fig. 92.—*Liabum umbellatum* (L.) Sch. Bip.

A, Upper part of plant  $\times \frac{1}{3}$ .

B, Head  $\times 2$ .

C, Ray-floret  $\times 4$  (the ligule is shown as too long).

D, Disk-floret  $\times 4$ .

E, Anthers  $\times 8$ .

F, Style-arms  $\times 8$ .

G, Achene  $\times 4$ .

tomentose. *Leaves* near base of stem, petioled, ovate, truncate-rotundate or cuneate at base, margin glandular-toothed, thinly cobwebby afterwards, glabrous above, tomentose below; petioles winged in upper part, amplexicaul, tomentose, up to 2 cm. l. *Heads* yellow, in flower 10–13 mm. across, in corymbose umbels greatly overtopping the leaves; peduncles longer or shorter than the heads. *Involucre* broadly campanulate; scales 4-seriate, ovate- to linear-lanceolate,

acute, of outer series about 1 mm. l., size increasing inwards, innermost scales 5.5 mm. l. *Receptacle* fringed. *Ray-florets* numerous in several rows; *ligules* linear, 2.5 mm. l., the filiform tube more than twice that length. *Disk-florets* few; *corollas* 6 mm. l. *Achenes* callus-based, minutely hairy, 2 mm. l. *Pappus-bristles* numerous, 2-seriate, light brown, rather rough, 6 mm. l.

#### 44. NEUROLÆNA R. Br.

Tall shrubby plants. Leaves alternate, entire toothed or 3-lobed. Heads rather small, in terminal corymbose panicles, homogamous, discoid, all florets hermaphrodite and fertile. Involucre campanulate; scales in 3-4 rows, membranous. Receptacle flattish, with membranous scales. Corollas with slender tube and 5-fid limb. Anthers sagittulate at base. Style-arms slender, bearing tufts of short hairs. Achenes oblong. Pappus of numerous bristles in 1-2 rows.

Besides the following, there are 3 or 4 species in Mexico and Central America.

**N. lobata** (Sw.) R. Br. in *Trans. Linn. Soc.* xii. 120 (1818); *DC. Prodr.* vi. 292; *Griseb. Pl. Carib.* 88, *Fl. Br. W. Ind.* 381 & *Cat. Cub.* 157; *Sauv. Fl. Cub.* 82; *Stahl Fl. P.-Rico* v. 148; *Kew Bull.* 1893, 260; *Duss Fl. Ant. Franç.* 373; *Sang. Fl. Cub.* 53; *Robins. in Proc. Bost. Soc. Nat. Hist.* xxxi. 248; *Hart Herb. List Trin.* 32; *Bold. Fl. Ned. W.-Ind.* i. 205; *Urb. Symb. Ant.* iv. 644 & viii. 743 & in *Fedde Rep. Beih.* v. 58; *Jenn. Is. Pin.* 288; *Britt. Fl. Amer. Virg.* 99; *Britt. & Millspaugh Baham. Fl.* 457. *Conyza lobata* L. *Sp. Pl.* 862 (1753). *Calea lobata* Sw. *Prodr.* 113 (1788) & *Fl. Ind. Occ.* iii. 1324; *Lun. Hort. Jam.* i. 363; *Sims Bot. Mag.* t. 1734. *Eupatorium valverdianum Klatt in Bull. Soc. Bot. Belg.* xxxi. 188 (1892). *E. chrysocephalum Klatt Bot. Beibl. Leopold.* 2 (1895). *Virga aurea major* &c. *Sloane Cat.* 125 & *Hist.* i. 260, t. 152, f. 4. *Santolina erecta subhirsuta* &c. *Browne Hist. Jam.* 315. *Conyza foliis hastatis* &c. *Plum. Pl. Amer. (Burm.)* 84, t. xxvi.—Houstoun's type (from Vera Cruz) in *Herb. Mus. Brit.*, also specimen from *Hort. Clifffort.* (Fig. 93.).

Halbert Weed, Bitter Wood, Bitter Bush, American Golden Rod, Cow Gall.

Road to Mountain River, *Sloane Herb.* v. 25! *Browne*; Blue Mts., *Swartz*! *Broughton*! *Moneague, Prior*! *Purdie*! *Macfadyen*! *J. P.* 1068, 1241 (*Hart*!)?; *Bull Head, Fawcett*! *Fl. Jam.* 8463; *Claremont, Fawcett & Harris*! *Fl. Jam.* 7007; *Doll Wood*; *Holly Mount, Mt. Diablo*; *Ramble, Claremont*; near *Troy*; *Harris*! *Fl. Jam.* 5625, 7007, 8463, 8503, 8754; near *Troy*; *Wallingford, Blue Mts.*; *Miss Perkins*! 1361, 1473; *Cook's Bottom, near Ipswich, Maxon & Killip* 1450! *Water Works Glen, Port Antonio, Norman* 234!—West Indies, Mexico to Colombia.

Coarse, shrubby weed up to 12 ft. high, but usually less. *Branches* terete, strongly striate, rough-pubescent becoming glabrous. *Leaves* ovate to oblong-lanceolate, obtuse or acuminate, tip mucronate, narrowed into the petiole; entire or toothed, lower often 3-lobed, rough above, pubescent on lower face, 5-24 by 2.5-8 cm., sometimes even larger; petioles pubescent, 1 cm. l. or less. *Panicles* many-headed, generally shorter than the (longer) leaves up to about 10 cm.



Fig. 93.—*Neurolena lobata* (Sw.) R. Br.

A, Portion of plant  $\times \frac{1}{2}$ .

B, Head  $\times 3$ .

C, Floret with nearly flat scale  $\times 4$ .

D, Anthers  $\times 8$ .

E, Style-arms  $\times 8$ .

F, Achene  $\times 4$ .

across often less. *Pedicels* slender, with few, small, scattered bracts, mostly longer than the heads. *Heads* yellow, in flower 6 mm. across. *Involucral scales* oblong, obtuse, in 4 rows, outer rows very small, the rest gradually larger, innermost 5.5 mm. l., 3-nerved. *Receptacular scales* linear-oblong, 5.5 mm. l. *Corollas* 5 mm. l. *Anthers* exserted. *Achenes* slightly narrowed below, callus-based, glabrous, barely 2 mm. l. *Pappus-bridles* smooth, 4.5 mm. l.

Bitter Wood is so called from its excessive bitterness. . . . Of late bedsteads and presses are made of it, to prevent bugs, cockroaches and worms breeding . . . ; neither do the workmen care for working it, it bittering their mouths and throats. . . . It is a most noble wound-herb, restringent and healing all sores and ulcers (Barham).

It is an excellent bitter and much used in America, where a spirituous infusion of the tops is generally kept in most plantations, which is often administered as an active warm stomachic (Browne).

#### 45. ERECHTHITES Raf.

Annual or perennial herbs. Leaves alternate, entire to pinnatifid. Heads in terminal corymbs, discoid, heterogamous, outer florets in 2 or more rows, female; inner hermaphrodite, all usually fertile. Involucre cylindrical, of numerous narrow scales in one row with sometimes a few small ones (calyculus) outside. Receptacle flat, naked. Corollas of outer florets filiform, of inner tubular and 5-fid. Anthers obtuse at base. Style-arms of the hermaphrodite florets truncate. Achenes oblong. Pappus of numerous long silky bristles.

Species about 18, in America (Canada southwards), Australia and New Zealand; one introduced into Asia.

**E. hieracifolia** (L.) Raf. ex DC. *Prodr.* vi. 294 (1837); *Griseb. Pl. Carib.* 88, *Pl. Wright.* 514, *Fl. Br. W. Ind.* 381 & *Cat. Cub.* 157; *Saw. Fl. Cub.* 82; *Egg. Fl. St. Croix & Virg.* 66; *Macoun Cat. Can. Pl. i.* 262; *Stahl Fl. P.-Rico* 150; *Duss Fl. Ant. Franç.* 374; *Hart Herb. List Trin.* 32; *Small Fl. S.E. U. St. ed. 2,* 1300; *Urb. Symb. Ant. iv.* 644 & *viii.* 743; *Jenn. Is. Pin.* 288; *Britt. Fl. Amer. Virg.* 100; *Britt. & Millsp. Baham. Fl.* 458. **E. præalta** Raf. *Fl. Ludov.* 65 (1817); *Less. in Linnæa vi.* 411. **E. cacalioides** Less. *in Linnæa v.* 395 (1832). **Senecio hieracifolius** L. *Sp. Pl.* 866 (1753); *Sang. Fl. Cub.* 53. **S. cacalioides** Fisch. ex Spreng. *Nov. Prov.* 37 (1819). **Sonchus agrestis** Sw. *Prodr.* 110 (1788) & *Fl. Ind. Occ. iii.* 1289; *Lun. Hort. Jam. ii.* 182; *Mayc. Fl. Barb.* 319. **Sonchus lævis** Cord. *hist. &c. Sloane Cat.* 122 & *Hist. i.* 255. Specimen from Hort. Cliff. in Herb. Mus. Brit., and from Browne in Herb. Linn. (Fig. 94.)

*Sloane Herb.* v. 1! *Browne!* *Shakespear!* *Broughton!* *St. Ann, Prior!* *March 1492!* *Distin!* *Claremont, Fawcett & Harris!* *Fl. Jam.* 7035; *Castleton Hill, Thompson!* *Fl. Jam.* 8024; *New Green near Mandeville;* *Castleton;* *Glasgow near Troy;* *Harris!* *Fl. Jam.* 6279, 10,890, 12,637; *Balaclava;* *Sweetwater;* *Orcutt!* 1459, 2154.—West Indies, Central America; introduced into the Old World.

A weed along roadsides and in waste places. Stem erect, simple or branched, up to 3 ft. high, hollow, striate, coarsely and sparsely hairy

or glabrous. *Leaves* sessile, oblong- or linear-lanceolate, obtuse to acuminate, often auricled at base, coarsely toothed or pinnatifid with triangular acute segments, glabrous or sparsely hairy, mostly 4–12 by 1–4 cm. *Corymbs* shorter than the leaves, congested at the ends of the branches, 3–6 cm. across. *Peduncles* coarsely hairy,

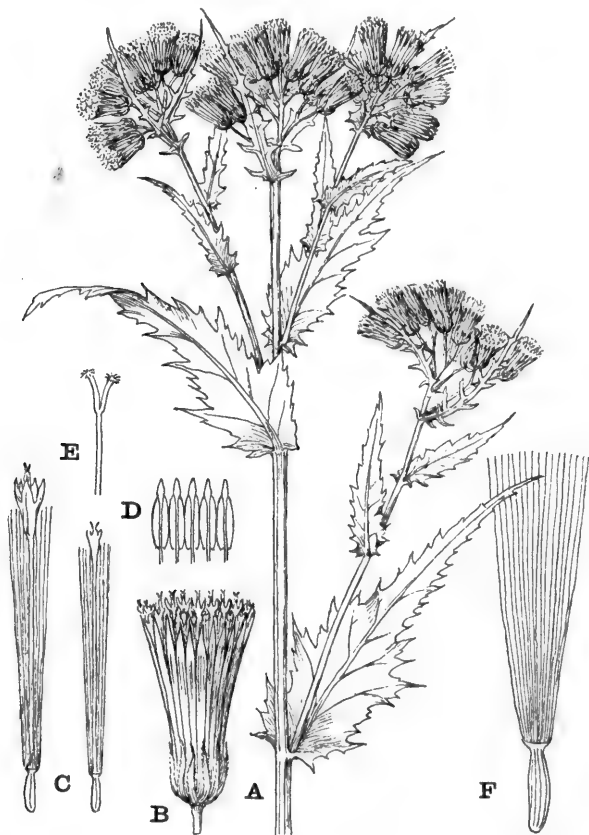


Fig. 94.—*Erechthites hiezacifolia* (L.) Raf.

- |  |                             |
|--|-----------------------------|
| A, Upper part of plant $\times \frac{1}{2}$ .              | D, Anthers $\times 10$ .    |
| B, Head $\times 2\frac{1}{2}$ .                            | E, Style-arms $\times 10$ . |
| C, Hermaphrodite (left) and female<br>florets $\times 4$ . | F, Achene $\times 4$ .      |

usually shorter than the heads. *Heads* in flower 7 mm. across, white. *Involute* glabrous or coarsely hairy; scales barely 1 cm. l., with a few small ciliate ones outside. *Outer florets* in several rows; corollas slightly enlarged at top, 1 cm. l.; inner florets somewhat longer with well-marked limb. *Achenes* ribbed, slightly hairy, 3 mm. l. *Pappus-  
bristles* smooth, white, 10 mm. l.



## [EMILIA Cass.

Annual or perennial herbs. Leaves alternate, entire toothed or pinnatifid. Heads on long peduncles, solitary or few in a lax corymb, homogamous, discoid, all florets hermaphrodite and fertile. Involucre cylindrical, the narrow scales in one row with no calyculus outside. Receptacle flat and naked. Corolla tubular with an elongated cylindrical 5-fid limb. Anthers obtuse at base. Style-arms with a short appendage. Achenes oblong, subterete or ribbed. Pappus of numerous silky bristles.

About 23 species, in tropical Asia and Africa, the two following naturalised in the New World.

Scales of involucre 10–13 mm. long ..... 1. *E. sonchifolia*.  
Scales of involucre 7 mm. long ..... 2. *E. sagittata*.

1. ***E. sonchifolia*** (L.) DC. *Prodr.* vi. 302 (1837); *Griseb. Pl. Carib.* 88, *Pl. Wright.* 514, *Fl. Br. W. Ind.* 381 & *Cat. Cub.* 157; *Sauv. Fl. Cub.* 82; *Egg. Fl. St. Croix & Virg.* 66; *Stahl Fl. P.-Rico v.* 151; *Kew Bull.* 1893, 260; *Hitchc. in Rep. Miss. Bot. Gard.* iv. 101; *Duss Fl. Ant. Franç.* 374; *Sang. Fl. Cub.* 53; *Hart Herb. List Trin.* 32; *Urb. Symb. Ant.* iv. 644 & viii. 743; *Small Fl. S. U. St. ed.* 2, 1374; *Jenn. Is. Pin.* 288; *Britt. Fl. Berm.* 397 & *Fl. Amer. Virg.* 100; *Britt. & Millsp. Baham. Fl.* 457. *Cacalia sonchifolia* L. *Sp. Pl.* 835 (1753). *Senecio sonchifolius* Moench *Meth. Suppl.* 231 (1802); *Bold. Fl. Ned. W.-Ind.* i. 206. (Fig. 95.)

## Cupid's Shaving Brush.

Moneague, *Prior!* near Kingston, *Lehmann* 974! *J. P.* 119 (*Hart!*); *Arcadia, Mrs. Sewell!* near Green Hills, *Blue Mts., Rendle* 103! *Ward's Rock, Thompson!* *Fl. Jam.* 8020; *Mt. Lebanon!* *Long Acre Point, W. of Black River!* *Harris!* *Fl. Jam.* 6648.

Annual weed, glabrous or nearly so, 1 ft. high or less. Leaves glaucous, lower lyrate, toothed, upper sagittate, amplexicaul, toothed or lobed, up to 10 by 4 cm., but usually smaller. Corymbs longer than the leaves, very few-headed; peduncles slender, 2.5–10 cm. l. Heads 4–7 mm. across, about 40-flowered, crimson. Involucral scales free except at the somewhat swollen base, 10–13 mm. l. Corollas 10 mm. l. Achenes strongly ribbed, rough, 3 mm. l. Pappus-bristles smooth, 6 mm. l.

2. ***E. sagittata*** (Vahl) DC. *Prodr.* vi. 302 (1837); *Egg. loc. cit.*; *Duss loc. cit.*; *Hart loc. cit.*; *Urb. op. cit.* iv. 645 & viii. 744; *Britt. Fl. Berm.* 397 & *Fl. Amer. Virg.* 100. *Cacalia sagittata* Vahl *Symb.* iii. 91 (1794). *Senecio sagittatus* Hieron. in *Engl. Bot. Jahrb.* xix. 64 (1896).

Agualla Vale, *Metcalf!* *Castleton, Lehmann!* vicinity of Kingston, VII.—18

*Clute* 9! *Cinchona*, *Taylor* 4228! *Balaclava*; *Sweetwater*; *Orcutt* 907, 2152.

Very similar to the last except that the involucreal scales are only about 7 mm. l., so that the corollas easily overtop them.]

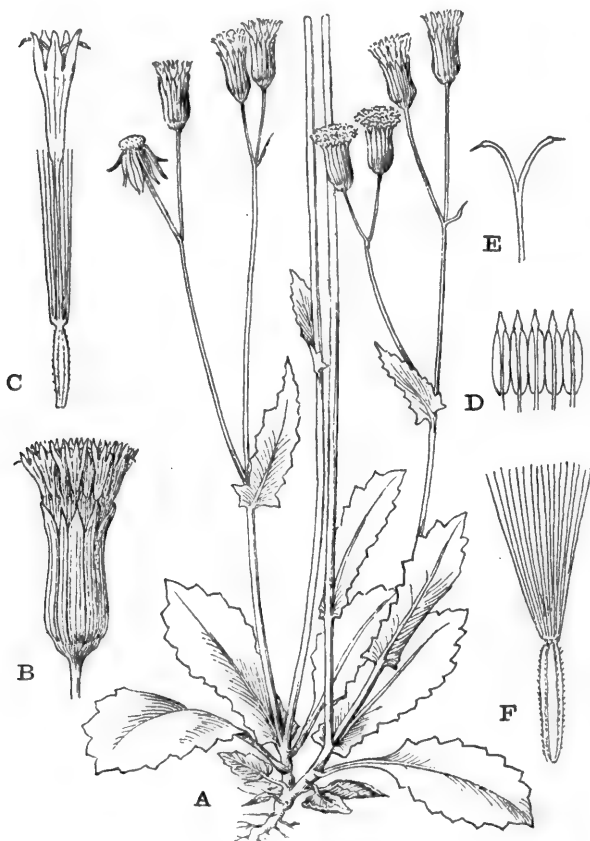


Fig. 95.—*Emilia sonchifolia* (L.) DC.

A, Plant  $\times \frac{1}{2}$ .  
B, Head  $\times 2$ .  
C, Floret  $\times 4$ .

D, Anthers  $\times 8$ .  
E, Style-arms  $\times 8$ .  
F, Achene  $\times 5$ .

#### 46. SENECIO L.

Herbs or shrubs, rarely trees. Leaves alternate, entire lobed or pinnatifid. Heads small to large, usually corymbose or solitary, heterogamous and radiate, the ray-florets female, the disk hermaphrodite, or discoid and homogamous, all

florets usually fertile. Involucre cylindrical to hemispheroidal; scales in one row free or more or less united at first, leathery, withered at tip, often with a few smaller at the base outside (calculus). Receptacle flat or slightly raised, naked, minutely pitted or fringed. Corolla of ray-florets ligulate, of disk tubular and 5-fid. Anthers obtuse or sagittulate at base. Style-arms of the disk-florets truncate (sometimes obtuse) and with a tuft of hairs. Achenes subterete or 10-ribbed. Pappus of numerous smooth or rough or shortly barbellate bristles.

Species about 3000, world-wide.

- Leaves pinnatifid ..... 1. *S. laciniatus*.
- Leaves entire or at most toothed.
  - Leaves tomentose beneath ..... 2. *S. discolor*.
  - Leaves glabrous on both faces.
    - Leaves at most minutely toothed.
      - Erect shrubs. Leaves obovate or obovate-lanceolate ..... 3. *S. Swartzii*.
      - Climbing shrub. Leaves ovate or oblong-lanceolate ..... 4. *S. Hollickii*.
    - Leaves coarsely toothed.
      - Leaves narrowed at base. Involucres 6.5-7 mm. l. .... 5. *S. Fadyenii*.
      - Leaves rounded at base. Involucres 9.5-10 mm. l. .... 6. *S. dolichanthus*.

1. **S. laciniatus** (Sw.) DC. *Prodr. vi.* 411 (1837); leaves decurrent, up to 22 cm. l. Heads yellow, 26-flowered.—*Griseb. Fl. Br. W. Ind.* 382; *Wils. in Rep. Geolog. Jam.* 282; *Shreve Mont. Rain-For.* 37. *Cineraria laciniata Sw. Fl. Ind. Occ. iii.* 1352 (1806). *Gynoxys laciniata Less. Syn.* 390 (1832).

*Swartz* ! Blue Mt. Peak, *Macfadyen* ! *Ibid.*, *Harris* !

A tall shrub ("under-tree" Shreve). Branches stout, striate with short rough hairs or glabrous. Leaves large, obovate in outline, pinnatifid with triangular acute coarsely toothed segments, the lowest segments greatly reduced, rough on both faces, 10-22 by 4-9 cm.; petioles swollen at base, 2-3 cm. l. *Corymbs* usually shorter than the leaves, densely headed, the open branches like the involucre rough. Heads numerous, radiate, 6 mm. across. *Peduncles* usually shorter than the heads, bracteate. *Involucral scales* with obtuse, hairy tips, 6 mm. l.; *calculus* of very few scales. *Receptacle* minutely fringed. *Ray-florets* 6; *ligules* ovate-oblong, 3-toothed, 4 mm. l. *Disk-florets* about 20; *corollas* 8 mm. l. *Style-arms* of hermaphrodite florets obtuse, with a tuft of hairs. *Achenes* glabrous, 1.5 mm. l. *Pappus-bristles* rather rough, white, 7.5 mm. l.

2. **S. discolor** (Sw.) DC. *Prodr. vi.* 412 (1837); leaves not decurrent, at most 12 by 4 cm. Heads white; florets 15-18.—*Griseb. loc. cit.*; *Hitchc. in Rep. Miss. Bot. Gard. iv.* 101;

*Wils. loc. cit.* *Cineraria discolor Sw. Prodr.* 114 (1788) & *Fl. Ind. Occ. iii.* 1358; *Lun. Hort. Jam. i.* 301; *Sims Bot. Mag. t.* 2647. Specimen from Houstoun in Herb. Mus. Brit.

*Houstoun! Shakespear! Lindsay! Liguanea, Broughton! Port Royal, McNab! Purdie! Mt. Diablo, Prior! Waters! Manchester, March 859! Gordon Town, Eggers 3492! Clute 16! Porus, Hitchcock; Norwood, Campbell! Fl. Jam. 6042; Salt Hill Road; grove near Gordon Town; Peckham Woodland, Clarendon; Cumberland, Upper Clarendon; Harris! Fl. Jam. 5626, 8425, 11,068, 12,854. Mandeville, Norman 72! Guava Ridge, Miss Maxwell! Green Hills, Blue Mts., Rendle 88!*

A straggling shrub up to 12 ft. high. Branches subterete, striate, with a cobwebby indumentum soon disappearing. Leaves petioled.

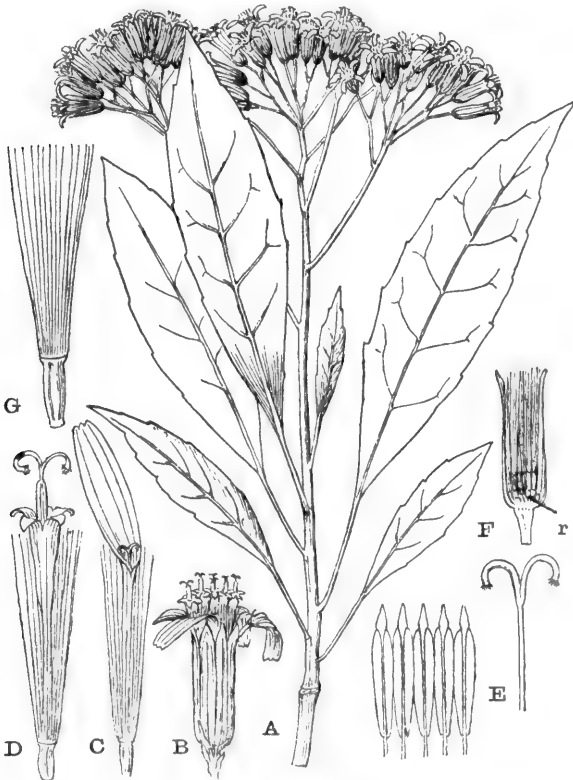


Fig. 96.—*Senecio Swartzii* DC.

A, Branch in flower  $\times \frac{1}{2}$ .  
 B, Head  $\times 2$ .  
 C, Ray-floret  $\times 4$ .  
 D, Disk-floret  $\times 4$ .

E, Anthers and style-arms  $\times 6$ .  
 F, Head in section showing achenes and receptacle (r)  $\times 2$ .  
 G, Achene  $\times 4$ .

lanceolate or oblong-lanceolate, obtuse or acute, tip mucronate, rounded and sometimes slightly cordate at base, repand-denticulate with revolute margin, leathery, glabrous above and together with the inflorescence and 10–15 mm. l. petioles white-tomentose below, 5–12 by 1.5–4 cm. *Corymbs* many-headed, rather open, usually shorter than the leaves. *Peduncles* bracteate, about as long as or shorter than the heads. *Heads* radiate, 4 mm. across, sweet-scented. *Involucre* calyculate; scales 8–9, acute, 4.5 mm. l. *Receptacle* naked. *Ray-florets* 3–6; ligules ovate, 2 mm. l. *Disk-florets* about 12; corollas 4 mm. l. *Achenes* slightly hairy, 2 mm. l. *Pappus* 3.5 mm. l.; bristles rather rough, white.

3. *S. Swartzii* DC. *Prodr.* vi. 411 (1837); leaves not decurrent, narrowed into the petiole, up to 16 by 5 cm. Heads yellow, florets 8–14.—*Griseb. loc. cit.*; *Wils. loc. cit.*; *Shreve op. cit.* 29. *Cineraria glabra* Sw. *Prodr.* 113 (1788); *Lun. op. cit.* i. 300. *Cineraria glabrata* Sw. *Fl. Ind. Occ.* iii. 1354 (1806). *Gynoxys glabrata* Less. *loc. cit.* (1832). (Fig. 96.)

*Masson*! Moneague, *Prior*! Manchester; Westmoreland; *Purdie*! *Macfadyen*! *March* 1707! Manchester, *Jenman*! 85, 100; John Crow Peak, J. P. 1248 (*Hart*!)?; Old England, St. Andrew; near Troy; Holly Mount; lower slopes of Dolphin Head; *Harris*! *Fl. Jam.* 8649, 8892, 10,294.

Glabrous shrub up to 10 ft. *Branches* subterete, striate. *Leaves* obovate or obovate-lanceolate, obtuse or acute, tip mucronate; entire or distantly minutely toothed, 8–16 by 2.5–5 cm.; petiole 1–2.5 cm. l. *Corymbs* many-headed, rather dense, shorter than the leaves. *Peduncles* as long as or shorter than the heads, sparsely bracteate. *Heads* radiate, barely 1 cm. across. *Involucral scales* 6–10, 7 mm. l. *Receptacle* shortly fringed. *Ray-florets* 3–6; ligules obovate-oblong, 5 mm. l. *Disk-florets* 5–8; corollas 8 mm. l. *Achenes* ribbed, glabrous or pilose at top, barely 3 mm. l. *Pappus-bristles* rather rough, white, 7 mm. l.

4. *S. Hollickii* Britton ex Greenm. in *Ann. Miss. Bot. Gard.* iii. 201 (1916); leaves not decurrent, rounded at base, up to 7 by 4 cm. Heads orange; florets 10–11. Type in Herb. N. York Bot. Garden.

Union Hill, near Moneague, *Britton & Hollick* 2729; Ramble, near Claremont, *Fawcett & Harris*! *Fl. Jam.* 7032; Soho, St. Ann; Peckham, Upper Clarendon; *Harris*! *Fl. Jam.* 11,983, 12,820; Mt. Diablo, *Ridley*! near Troy, *Miss Perkins* 1386!

A climbing shrub up to 20 ft. *Branches* subterete, coarsely striate, puberulous soon glabrous. *Leaves* ovate or oblong-lanceolate, acute, entire with revolute margin, parchment-like, mostly 4–7 by 2.5–4 cm.; petioles about 5 mm. rarely 10 mm. l. *Corymbs* about as long as the leaves, many-headed, rather dense. *Peduncles* shorter than the involucre, pubescent. *Heads* radiate, 6 mm. across. *Involucral scales* 8, acute, 7.5 mm. l. *Receptacle* shortly fringed. *Ray-florets* 4; ligules obovate-oblong, 4 mm. l. *Disk-florets* 6–7; corollas 7 mm. l. *Achenes* ribbed, hairy especially in the upper part, barely 3 mm. l. *Pappus-bristles* rather rough, white, 6 mm. l.

5. **S. Fadyenii** Griseb. *Fl. Br. W. Ind.* 382 (1861); leaves not decurrent, shallowly callus-toothed, up to 14 by 5 cm. Heads yellow, florets 5-8.—*Wils. loc. cit.*; *Shreve op. cit.* 36. Type in Herb. Kew.

*Macfadyen*! Blue Mts., *Shreve*; Blue Mts., near Vinegar Hill, *Miss Perkins* 1244! ? (specimen unsatisfactory).

A glabrous shrub. Leaves oblanceolate or oblanceolate-oblong, acute, narrowed gradually into the petiole, shallowly callus-toothed in the upper part, membranous, 10-14 by 4-5 cm.; petioles 2.5-3 cm. l. *Corymbs* as long as or shorter than the leaves, many-headed, rather dense. Heads radiate, 4 mm. across. *Involucral scales* 5, obtuse, 6.5-7 mm. l. *Receptacle* shortly fringed. *Ray-florets* 2-3; ligules lanceolate, about 3.5 mm. l. *Disk-florets* 3-5; corollas 6 mm. l. *Achenes* nearly glabrous, 1.5 mm. l. *Pappus-bristles* rather rough, white, 6 mm. l.

6. **S. dolichanthus** S. Moore in *Journ. Bot.* *lxvii.* 130 (1929); leaves not decurrent, coarsely callus-toothed, up to 14 by 6.5 cm.; heads yellow; florets 6.—*S. Fadyenii* Griseb. var. *dolichanthus* Krug & Urb. in *Urb. Symb. Ant. i.* 470.

Monkey Hill, J. P. 1359 (*Hart*!); near Woodcutter's Gap, Port Royal Mts.; near Vinegar Hill; *Harris*! *Fl. Jam.* 5113, 6352.

A glabrous shrub up to 10 ft. high. Branches stoutish, striate. Leaves obovate or obovate-oblong, mucronate, rounded or obtuse at base, coarsely toothed to below the middle, 10-14 by 4-6.5 cm.; petioles flattened, 2.5-4.5 cm. l. *Corymbs* somewhat open, many-headed, generally shorter than the leaves. *Peduncles* stout, shorter than the heads; bracts very few, small. Heads radiate 5-6 mm. across. *Involucral scales* 5-6, obtuse, 9.5-10 mm. l. *Receptacle* shortly fringed. *Ray-florets* 2; ligules obovate-oblong, 3-toothed, 4.5 mm. l. *Disk-florets* 4; corollas 10 mm. l. *Achenes* strongly ribbed, nearly glabrous, 2 mm. l. *Pappus-bristles* rough, white, 8 mm. l.

**S. vulgaris** L., the common Groundsel, occurs as a weed in cultivated ground. It is an annual up to 1 ft. high with pinnatifid, amplexicaul leaves and small heads of yellow florets without a ray. Besides Jamaica it has been reported from Bermuda, Cuba, Hispaniola and the United States. It is widely distributed in the Old World.

#### 47. GYNOXYS Cass.

Characters of *Senecio* but style-arms ending in a lanceolate or awl-shaped appendage. Shrubs or small trees, the leaves of most species opposite.

Species more than 30, mostly natives of tropical South America.

**G. incana** (Sw.) Less. *Syn.* 390 (1832); *Griseb. Fl. Br. W. Ind.* 381; *Wils. in Rep. Geolog. Jam.* 281; *Hitchc. in Rep. Miss. Bot. Gard.* *iv.* 101. *Cineraria incana* Sw. *Fl. Ind. Occ.* *iii.* 1356 (1806). *Senecio jamaicensis* DC. *Prodr.* *vi.* 412. (Fig. 97.)

Masson ! Wright ! Broughton ! St. Ann's Bay, Prior ! Portland, Purdie ! Blue Mt. Peak, Macfadyen ! St. Mary, McNab ! Port Antonio, Hitchcock ; St. George's, Harris ! Fl. Jam. 5539, 6406 ; Bath, Orcutt 2026 !

A shrub 12 ft. high with cobwebby clothing. Branches stout, striate. Leaves alternate, sessile or subsessile, obovate-oblong or lanceolate, acute or acuminate, mucronate, pinnatisect at base with triangular

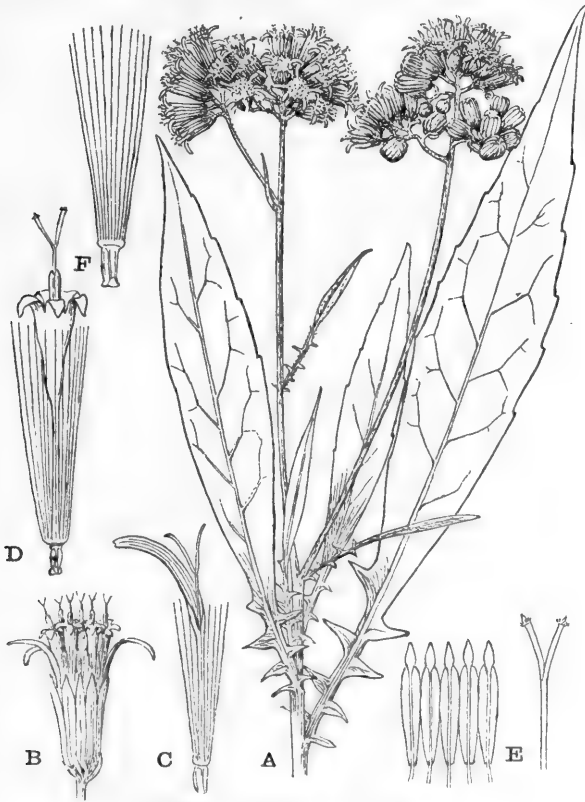


Fig. 97.—*Gynoxys incana* (Sw.) Less.

A, Portion of plant  $\times \frac{1}{2}$ .  
B, Head  $\times 2$ .  
C, Ray-floret  $\times 3$ .

D, Disk-floret  $\times 3$ .  
E, Anthers and style-arms  $\times 6$ .  
F, Achene  $\times 4$ .

segments, 10–25 by 5–7 cm., segments mostly 7–14 mm. l. Corymbs stalked, dichotomous, many-headed, generally shorter than the leaves ; peduncle up to 5 cm. l., usually much shorter. Heads about 1 cm. across, 12–20-flowered, yellow. Involucral scales 10–12, oblong, acute, membrane-edged, striate, 7 mm. l. Receptacle shortly fringed. Ligules 4–6, linear, 6 mm. l. Corollas of disk-florets leathery at base, 10 mm. l. Achenes callus-based, slightly hairy, 1.5 mm. l. Pappus-bristles united at base, smooth, white, 8 mm. l.

## 48. CHAPTALIA Vent.

Scapigerous herbs. Leaves radical, entire toothed or lyrate, tomentose beneath. Heads medium to small, many-flowered, solitary on a naked scape, heterogamous, radiate, outer florets female and fertile, inner hermaphrodite and fertile, or the central ones (or all) sterile. Involucre campanulate, usually of narrow scales in 3 or more rows. Receptacle flat or slightly raised, naked. Outer corollas ligulate with a toothed or 3-fid ligule; middle ones short and filiform, those of disk tubular with a 2-lipped limb, the outer lip usually shortly 3-fid and the inner more deeply 2-fid. Anthers drawn out at base into long glabrous or hairy tails. Styles of the hermaphrodite florets 2-fid with obtuse arms. Achenes fusiform or oblong; produced into a beak. Pappus of numerous rough or barbellate bristles.

About 50 species, N. Carolina and Texas to Argentina and Chile; few in West Indies.

Leaves lyrate.

Terminal segment of leaf 4–10 cm. l. .... 1. *C. nutans*.

Terminal segment of leaf 1–2 cm. l. .... 2. *C. pumila*.

Leaves very faintly toothed, otherwise entire ..... 3. *C. dentata*.

1. *C. nutans* (L.) Polak. in *Linnæa xli*. 582 (1877); heads rather large on a stoutish scape; achenes markedly shorter than the beak.—*Hemsl. Biol. Centr. Amer. Bot. ii*. 255; *Hitchc. in Rep. Miss. Bot. Gard. iv*. 102; *Kew Bull.* 1893, 260; *Bold. Fl. Ned. W.-Ind. i*. 206; *Urb. Symb. Ant. iii*. 419, *iv*. 645 & *viii*. 746; *Britt. Fl. Amer. Virg.* 100. *Leria nutans* DC. in *Ann. Mus. Paris xix*. 68 (1812) & *Prodr. vii*. 42; *Less. in Linnæa v*. 131; *Griseb. Pl. Carib.* 88, *Pl. Wright.* 515, *Fl. Br. W. Ind.* 383 & *Cat. Cub.* 158; *Sauv. Fl. Cub.* 83; *Egg. Fl. St. Croix & Virg.* 66; *Stahl Fl. P.-Rico v*. 152; *Hart Herb. List Trin.* 32. *Tussilago nutans* L. *Syst. ed.* 10, 1214 (1760); *Sw. Obs. Bot.* 305; *Lun. Hort. Jam. i*. 259; *Mayc. Fl. Barb.* 324. *Thysanthea nutans* Kuntze *Rev. Gen. Pl. ii*. 369 (1891); *Small Fl. S.E. U. St. ed.* 2, 1309. *Dens leonis folio subtus incano &c.* *Sloane Cat.* 123 & *Hist. i*. 255, *t.* 150, *f.* 2. *Leontodon foliis radicalibus &c.* *Browne Hist. Jam.* 310. Specimen from Browne in *Herb. Linn.* named in Linnæus's hand. (Fig. 98.)

Guanaboa, *Sloane Herb.* v. 8! *Browne!* *Liguanea, Broughton!* *Hopewell, St. Mary, McNab!* *Moneague, Prior!* *Port Antonio;* *Porus; Hitchcock;* *Cinchona pastures J. P.* 1412 (*Hart!*); *Farm Hill, Fawcett!* near *Troy, Harris!* *Fl. Jam.* 8752; *Giddy Hall, Miss Maxwell!*—West Indies, S. United States to Argentina.

*Leaves* 5–20 by 2.5–5 cm., repand-toothed, terminal segment ovate,



lower segments short and broad sometimes scarcely distinguishable ; petiole dilated at base, tomentose, 1-2 cm. l. *Scape* tomentose, 10-40 cm. l. *Heads* nodding, 2 cm. across, in fruit up to 3 cm. *Involucre* cobwebby ; scales 3-4 seriate, linear-lanceolate, acuminate, innermost 15 mm. l. *Ray-florets* numerous ; ligules exserted, linear, 2-3-toothed, 5 mm. l., rose-colour. *Disk-florets* numerous ; corollas 10 mm. l. ;

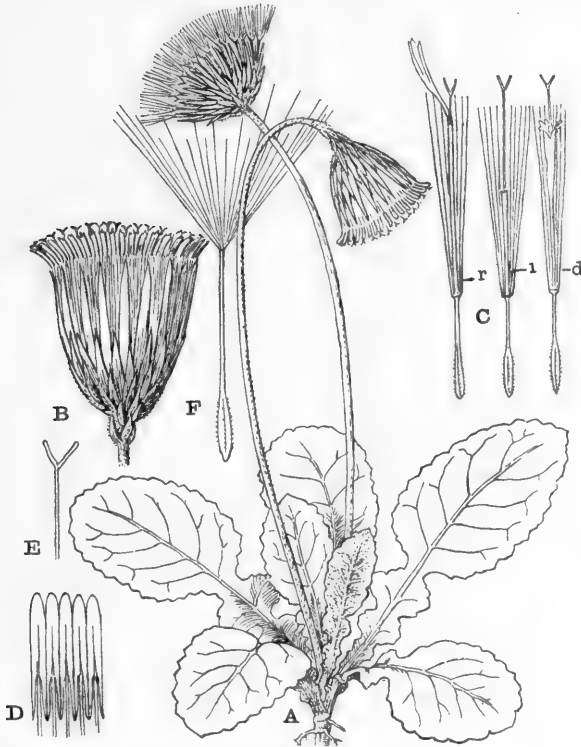


Fig. 98.—*Chaptalia nutans* (L.) Polak.

- |  |   |
|--|---|
| A, The plant $\times \frac{1}{4}$ .                                | D, Anthers $\times 6$ .                 |
| B, Flowering head nat. size.                                       | E, Style-arms $\times 6$ .              |
| C, Florets, of ray (r), intermediate (i),<br>disk (d) $\times 2$ . | F, Ripe achene with pappus $\times 3$ . |

limb 2-lipped. *Achenes* fusiform, puberulous, 3 mm. l. ; beak more than twice as long. *Pappus-bristles* rather rough, pale brown, 11 mm. l.

“ The decoction . . . is good against convulsions, takes away gripes, and is a remedy against all sorts of cold ” (Sloane).

“ It is reckoned an excellent diuretic, and is used as such by many people ” (Browne).

2. *C. pumila* (Sw.) Fawc. *Fl. Pl. Jam.* 22 (1893) ; heads small, on a filiform scape ; achenes almost as long as the beak. —*Urb. op. cit.* iii. 420. *Leria pumila* DC. *ll. cc.* ; *Less. Syn.*

121; *Griseb. Pl. Wright.* 515, *Fl. Br. W. Ind.* 383 & *Cat. Cub.* 158; *Sauv. loc. cit.* *Tussilago pumila Sw. Prodr.* 113 (1788) & *Fl. Ind. Occ.* 1350; *Lun. tom. cit.* 260. Specimen from Swartz in Herb. Mus. Brit.

Coldspring, Swartz! Wilson! Bryan's Hill, Harris (ex Urban); Iron Face, Chester Vale; St. Helen's Gap, Cinchona; Harris! Fl. Jam. 10,033, 10,935; Morse's Gap, Nichols 47! Flamstead, Miss Maxwell!—Cuba.

Leaves up to 3 cm. l.; terminal segment ovate or ovate-oblong, repand-denticulate, 2–3 cm. by 7–13 mm. l., lower segments few, very small, occasionally absent; petiole 5–10 mm. l. or a little more. Scape very slender, soon becoming glabrous, 5–18 cm. l. Heads erect (sometimes nodding) 7 mm. across, in fruit 1 cm. Involucre glabrous or cobwebby; scales 3-seriate, linear, acute, innermost 7 mm. l. Ray-florets about 20; ligules exserted, linear, entire or toothed, 3 mm. l., white. Disk-florets about 10; corollas 5 mm. l.; intermediate filiform florets numerous. Achenes narrowly fusiform, puberulous, 2.5 mm. l., the beak about 3.5 mm. Pappus-bristles rather rough, pale brown, 4 mm. l.

3. *C. dentata* (L.) Cass. in *Dict. Sc. Nat.* xxvi. 104 (1823); heads of medium size on a long scape; achenes half as long again as the beak.—*DC. Prodr.* vii. 41; *Urb. op. cit.* iii. 419, iv. 646 & viii. 747; *Jenn. Is. Pin.* 289; *Britt. & Millsp. Baham. Fl.* 460. *C. albicans Vent. ex Steud. Nomencl. ed. 2, i.* 344 (1840); *Combs Fl. Cub.* 436. *Leria dentata Spreng. Syst.* iii. 502 (1826); *Griseb. Fl. Br. W. Ind.* 383. *L. albicans DC. ll. cc.*; *Griseb. Fl. Br. W. Ind.* 383 & *Cat. Cub.* 156; *Suav. Fl. Cub.* 83. *Tussilago dentata L. Sp. Pl. ed. 2, ii.* 1213 (1763). *T. albicans Sw. Prodr.* 113 (1788) & *Fl. Ind. Occ.* iii. 1343; *Lun. tom. cit.* 260. *Thyrsanthema dentata Kuntze loc. cit.*

Masson! Bertero; Distin! Wilson! Wullschlägel; Mona Woodland, slope of Long Mt., Harris! Fl. Jam. 8856; St. Elizabeth, Miss Maxwell!—Bahamas, Cuba, Is. Pinos, Porto Rico, Florida.

Leaves oblanceolate or oblanceolate-oblong, obtuse, gradually narrowed below, margin narrowly revolute, entire except for scattered very minute teeth, 5–10 by 1–2 cm.; petioles dilated at base, about 1.5–5 cm. l. Scape 10–30 cm. l., cobwebby, soon glabrous. Heads usually erect, 10 mm. across, in fruit 1.5 cm. Involucre tomentose; scales 3-seriate, linear-lanceolate, acute, innermost 9 mm. l. Ray-florets numerous; ligule linear, minutely toothed, 4 mm. l., white. Disk-floret corollas 7 mm. l. Achenes narrowly fusiform, puberulous, 3–4 mm. l.; beak 4–6 mm. l. Pappus-bristles rather rough, pale red-brown, 9 mm. l.

#### 49. *TRIXIS* P. Browne.

Herbs or shrubs. Leaves alternate, usually entire or toothed. Heads mostly of middle size, several- or many-flowered, usually in corymbose panicles, homogamous, corollas

all similar or outer forming a ray, all florets fertile. Involucre campanulate or subcylindrical, the scales mostly in 2 rows, the outer row the smaller. Receptacle flat, naked or fringed. Corolla 2-lipped; outer lip 3-toothed, inner 2-fid or 2-partite. Anthers tailed at base. Style-arms truncate. Achenes oblong or linear, 5-ribbed, narrowed above or beaked. Pappus-bristles numerous, 2-3-seriate, rather rough.

Species about 50, Mexico to Argentina and Chile; few in West Indies.

**T. radialis** (L.) Urb. *Symb. Ant. viii.* 748 (1921).—*T. frutescens* Spreng. *Syst. iii.* 501 (1826); *Less. in Linnæa v.*

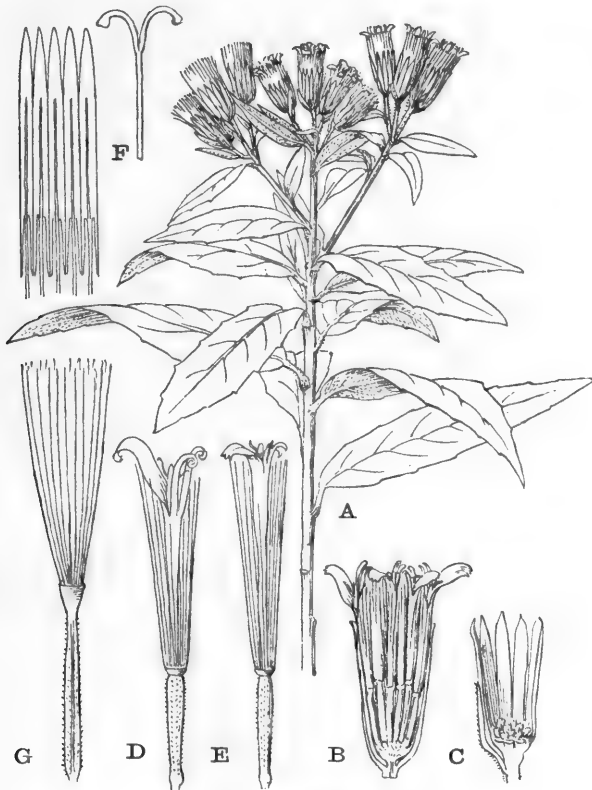


Fig. 99.—*Trixis radialis* (L.) Urb.

- |                                      |                           |
|--------------------------------------|---------------------------|
| A, Flowering branch × ½.             | D, Floret of ray × 4.     |
| B, Head in section × 2.              | E, Floret of disk × 4.    |
| C, Empty head showing receptacle × 2 | F, Anthers and style × 6. |
|                                      | G, Achene and pappus × 4. |

33; *DC. Prodr. vii.* 68; *Griseb. Pl. Wright.* 515, *Fl. Br. W. Ind.* 383 & *Cat. Cub.* 159; *Sauv. Fl. Cub.* 84; *Hitchc. in Rep. Miss. Bot. Gard. iv.* 102; *Combs Pl. Cub.* 436; *Hart Herb. List Trin.* 33; *Robins. & Greenm. in Proc. Amer. Acad. xl.* 13; *Bold. Fl. Ned. W.-Ind. ii.* 110. *Inula Trixis L. Amæn. v.* 406 (1759) & *Syst. ed.* 10, 1219. *Perdicium radiale L. Sp. Pl. ed. 2, ii.* 1248 (1763); *Sw. Obs. Bot.* 307; *Lun. Hort. Jam. ii.* 59. *Solidago fruticosa Mill. Gard. Dict. ed.* 8, 31. *Pulmonaria Jam. salicis folio &c. Sloane Hist. i.* 255. *Trixis frutescens foliis nitidis &c. Browne Hist. Jam.* 312, t. 33, f. 1. Specimen of *I. Trixis* from Browne in *Herb. Linn.* (Fig. 99.)

*Sloane Herb. v.* 3! *Lane* in *Herb. Petiver (Sloane Herb. clxii.* 11); common in the savannahs about Kingston, *Browne!* *Macfadyen!* *Blue Mts., Hitchcock;* *J. P.* 1324 (*Hart!*); *Up Park Camp, Campbell!* *Fl. Jam.* 6134; *Hope River;* near *Wareka;* *Long Mt., S. Side;* *Harris!* *Fl. Jam.* 6942, 8233, 8606, 10,009—*Cuba, Hispaniola, Trinidad, Margarita, Mexico to Venezuela.*

A trailing shrub 4-8 ft. high. Branches pubescent except in the pulvinate axils, but quickly becoming glabrous. Leaves shortly petioled, oblong-ovate or elliptic-lanceolate, acute with mucronate tip, obtuse or narrowly rotundate at base, entire or distantly minutely toothed, pubescent on underside, 4-10 by 2-3.5 cm., upper ones usually much smaller; petioles swollen at base, pubescent, 3-5 mm. l. Corymbs as long as or shorter than the leaves, leafy, few-branched, several-headed, together with the short peduncles pubescent. Heads radiati-form, about 12-flowered, in flower about 1 cm. across, yellow. Involucral-scales 8, leathery, in one row (with two or three accessory herbaceous ones outside), oblong, obtuse or subacute, puberulous on back, tomentose at tip and on margin, 8-10 mm. l. Receptacle covered with small fringed scales. Outer corollas, tube 5 mm. l.; outer lip ovate-oblong, 6 mm. l., inner 5 mm. l., bipartite with linear segments; inner corollas similar but with shorter lips. Achenes linear, not beaked, shortly rough, hairy, 4-6 mm. l. Pappus-bristles very pale brown, 9 mm. l.

### [LAPSANA L.

Annual herbs. Leaves alternate, toothed or pinnatifid. Heads small, in open panicles, homogamous, all florets fertile, the corollas ligulate, 5-toothed at the top. Involucre campanulate or subcylindrical; scales in one series with a few small ones outside. Receptacle flat, naked. Anthers sagittate at base. Achenes oblong, subterete, many-ribbed, glabrous, rounded at the top and without pappus.

Species under 10, natives of cooler parts of the Old World.

**L. communis** *L. Sp. Pl. ii.* 811 (1753); *DC. Prodr. vii.* 76; *Sm. & Sowerb. Engl. Bot. ed. 2, vi.* 57, t. 1104; *Griseb. Fl. Br. W. Ind.* 384; *Wils. in Rep. Geolog. Jam.* 282;

*Macoun Cat. Canad. Pl.* 273; *Hitchc. in Rep. Miss. Bot. Gard.* iv. 102; *Britt. & Br. Ill. Fl. N. U. St.* iii. 262; *Urb. Symb. Ant.* viii. 748.

Blue Mts. *Prior*! Blue Mt. Peak, *Hitchcock*; *Cinchona*, *Taylor* 4256! *Clute* 201! *Fawcett*! and *Harris*! *Fl. Jam.* 5623, 8587; *Catherine's Peak*, *Eggers* 3610! *J. P.* 1269 (*Hart*!).—Introduced also from the Old World into Canada and Northern United States: reported recently from Hispaniola.

A naturalised glabrous *weed*, 2–3 ft. high. *Leaves* ovate, lower often lyrate with ovate-rotundate, repand-toothed or lobulate, terminal segment of about 5 by 4 cm., the lower segments few, rounded, very small. *Panicle* very loose, few-headed, peduncles longer than the 8–12-flowered yellow heads. *Involucral scales* 8, oblong, obtuse, keeled on the back and barbellate at tip, 6·5 mm. l. *Ligules* exserted, oblong, 5·5 mm. l. *Achenes* curved, keeled on one side, 3·5 mm. l.]

### [CREPIS L.

Annual or perennial herbs. Leaves radical or cauline and alternate, coarsely toothed or pinnatifid, sometimes entire. Heads small or medium-sized, solitary or in an open panicle, homogamous, the corollas ligulate, 5-toothed, fertile. Involucre campanulate or subcylindrical, inner scales in one row, subequal, with some smaller outside. Receptacle flat or concave, naked or shortly fringed. Anthers sagittate at base. Achenes linear-oblong, terete or angled, many-ribbed, narrowed or beaked at the top. Pappus-bristles numerous, rather rough.

Species about 200, natives chiefly of the Old World, fewer in America.

**C. japonica** (L.) *Benth. Fl. Hongk.* 194 (1861); *Britt. Fl. Berm.* 380. *Prenanthes japonica* L. *Mant.* 107 (1767); *Thunb. Fl. Jap.* 303. *Chondrilla japonica* Lam. *Encycl.* ii. 79 (1786). *Youngia japonica* DC. *Prodr.* vii. 194 (1838).

Castleton; Castleton Grounds; Mandeville; near Walderstein; *Harris*! *Fl. Jam.* 10,932, 11,963, 12,884, 12,909; Mt. Diablo, *Ridley*! *Giddy Hall*, *Miss Maxwell*! *Balaclava*; *Sweetwater*, *St. James*; *Orcutt*! 596, 598, 1455, 2204.—A weed of east Asia; naturalised also in Hispaniola.

A nearly glabrous *annual*,  $\frac{1}{2}$ –1 $\frac{1}{2}$  ft. high, in gardens and along roadsides. *Leaves* shortly petioled, mostly radical, lyrate with ovate or ovate-oblong terminal segment, usually 3–6 by 2–5 cm., irregularly coarsely crenate or lobulate; lower segments much smaller, triangular, acute or obtuse, sometimes absent altogether. *Panicles* longer than the leaves, very loose, many-headed; the branches filiform with a few small bracts; peduncles longer or shorter than the heads. *Heads* about 20-flowered, 5 mm. across, yellow. *Involucral scales* 6–7, linear-lanceolate, acute, in fruit strongly keeled on the back, barely 5 mm. l.; outer broader and very small. *Corollas* with oblong 2·5 mm. l. *ligules*. *Achenes* oblong-ellipsoid, slightly narrowed at either

end, subterete, glabrous, 1.5 mm. l. *Pappus-bristles* rather rough, 3 mm. l.]

### [HYPOCHÆRIS L.

Annual or perennial herbs. Leaves radical, entire, toothed or pinnatifid. Heads medium to rather large, solitary or few, upon a branched scape, homogamous, all florets ligulate and fertile; ligules 5-toothed, yellow. Involucre campanulate or subcylindrical; scales in 3 or more rows. Receptacle flat with scales subtending the florets. Anthers sagittate at base. Achenes linear or oblong, terete or somewhat compressed, 10-ribbed, usually produced into a beak. *Pappus-bristles* plumose, sometimes with shorter simple ones also.

Species about 50, Old World and South America.

**H. glabra** L. *Sp. Pl.* 811 (1753); *Curt. Fl. Lond. t.* 145; *Bak. in Mart. Fl. Bras. vi. pt.* 3, 331; *Macoun Cat. Canad. Pl.* 284; *Britt. & Br. Ill. Fl. N.U. States iii.* 265.

#### Cat's Ear.

A weed among grass and in moist places, naturalised at Cinchona, Blue Mts., J. P. 1221 *Hart*! also *Harris*! Fl. Jam. 8581, 10,927 and *Clute* 223!—Europe and N. Africa; naturalised or a casual in Maine, Vancouver Island and farther south on the Pacific coast, also in S. America to Argentina and Uruguay.

*Annual*,  $\frac{1}{2}$ –1 ft. high, sometimes more. *Leaves* sessile, oblong, obtuse, lobed (sometimes pinnatifid), smooth, mostly 4–12 by 1–2 cm. *Scales* much longer than the leaves, few-headed. *Heads* many-flowered, in flower about 10 mm. across. *Involucre* subcylindrical; scales in several rows, linear-oblong, acute, the innermost about 10 mm. l., afterwards 15 mm. or even more. *Scales* slender, about 2 cm. l. *Achenes* oblong, terete, minutely rough, black, 4 mm. l.; beak of the outer florets about as long or shorter or absent, of the inner florets twice as long or even more. *Pappus* 8 mm. l., the dirty white bristles plumose, a few outside ones shorter and simple.]

[The Dandelion, *Taraxacum officinale* Vill., occurs "as a weed among grasses and in waste places." It is a low scapigerous herb with rosulate oblong-obovate runcinate leaves, with rather large heads, the corollas ligulate and yellow, and beaked achenes with a pappus of smooth bristles. There are two specimens in Fl. Jam.—J. P. 933 *Hart*! and *Harris*! 10,926—the latter and probably the other also from Cinchona.]

### 50. LACTUCA L.

Annual or perennial herbs sometimes of shrubby habit. Leaves radical and (the upper ones) alternate, entire, coarsely toothed or pinnatifid. Heads in panicles, homogamous, all florets fertile, the corollas ligulate, 5-toothed, white, yellow or blue. Involucre cylindrical; scales in few rows, the innermost elongated, the outer ones gradually smaller or few and

short. Receptacle flat, naked. Anthers sagittate at base. Achenes usually oval or oblong, more or less compressed, short- or long-beaked, ribbed. Pappus of numerous smooth bristles.

Species nearly 100, chiefly in the cooler regions of the northern hemisphere.

Achenes oval, flat ..... 1. *L. jamaicensis*.  
 Achenes linear-oblong, subterete ..... 2. *L. intybacea*.

1. *L. jamaicensis* Griseb. *Fl. Br. W. Ind.* 384 (1861); peduncles about as long as the heads; ligules white; achenes with smooth ribs.—*Wils. in Rep. Geolog. Jam.* 282; *Stahl*

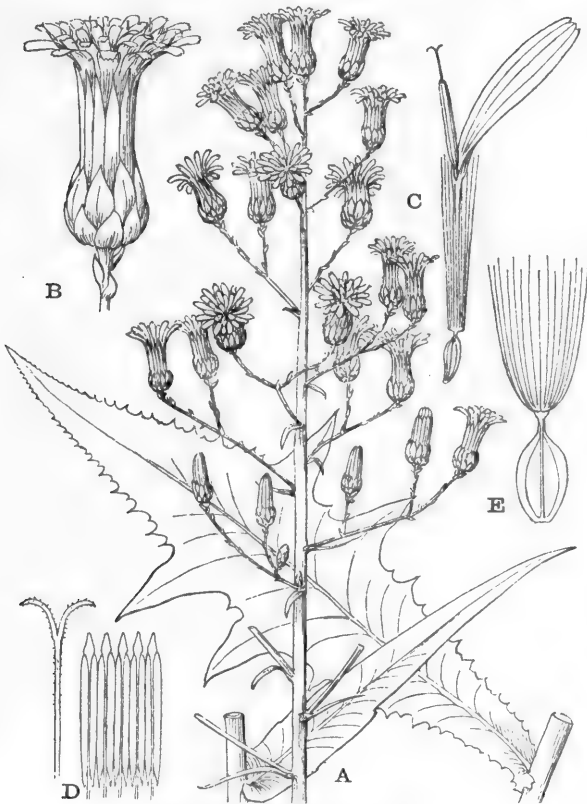


Fig. 100.—*Lactuca jamaicensis* Griseb.

A, Portion of plant  $\times \frac{1}{2}$ .  
 B, Head  $\times 2$ .  
 C, Floret  $\times 3$ .

D, Anthers and style-arms  $\times 6$ .  
 E, Ripe achene and pappus  $\times 4$ .

*Fl. P.-Rico v. 153*; *Hitchc. in Rep. Miss. Bot. iv. 102*. Type in Herb. Kew. (Fig. 100.)

March 2004! *McNab*; *Wullschlägel* (ex *Griseb.*); Blue Mt. Peak, *Hitchcock*; *Castleton, J. P. Hart*! Burlington; Devon Pen; *Thompson*! *Fl. Jam. 6491, 7972*; Hope Grounds, *Harris*! *Fl. Jam. 11,010*. Sweetwater, *Orcutt 2189*!—Porto Rico (ex *Stahl*).

Shrubby, 4 ft. high, glabrous. *Stem* erect, stout, striate. *Lower leaves* obovate in outline or oblanceolate, acute, shortly auricled at base, coarsely lobed or toothed, the lobes triangular and together with the teeth mucronate, about 12 by 3.5–4 cm.; upper leaves linear- or oblong-lanceolate, acuminate, amplexicaul, entire or minutely toothed, sometimes with one or few lateral lobes, about 6–10 by 1.5–2.5 cm. *Panicles* up to 6 dm. l.; branches patent or ascending, each bearing several rather distant heads on stalks usually as long as the involucre and provided with small bracts. *Heads* about 20-flowered, in flower about 1 cm. across; ligules oblong, 8 mm. l. *Involucre* broadly cylindrical, afterwards campanulate; scales 3–4-seriate, innermost oblong, obtuse, scarious-edged, about 1 cm. l., the rest ovate and much smaller. *Achenes* very flat, 3-ribbed on one face, black, 3 mm. l.; beak 1 mm. l., pilose at top. *Pappus-bristles* 5 mm. l.

2. *L. intybacea* *Jacq. Ic. Pl. Rar. i. 16, t. 162 (1781)*; peduncles shorter than the heads; ligules yellow; achenes with rough ribs.—*Less. in Linnæa vi. 724*; *Hemsl. Biol. Centr. Amer. Bot. ii. 262*; *Hitchc. loc. cit.*; *Johnst. in Proc. Bost. Nat. Hist. Soc. xxxiv. 267*; *Bold. Fl. Ned. W.-Ind. i. 207 & ii. 110*; *Urb. Symb. Ant. iv. 647 & viii. 760*; *Britt. Fl. Amer. Virg. 96*; *Britt. & Millsp. Baham. Fl. 430*. *Phœnixopus intybaceus Less. Syn. 137 (1832)*. *Brachyramphus intybaceus DC. Prodr. vii. 177 (1838)*; *Griseb. Pl. Carib. 88, Fl. Br. W. Ind. 384 & Cat. Cub. 159*; *Sauv. Fl. Cub. 84*; *Egg. Fl. St. Croix & Virg. 66*; *Duss Fl. Ant. Franç. 376*.

*Sloane* Herb. v. 1\*! between Kingston and Morant Bay, *Fawcett*! *Fl. Jam. 8250*; near Falmouth; *Lititz Savanna, 600 ft.*; *Harris*! *Fl. Jam. 7234, 12,900*.—Bahamas, Antilles, Central America and Venezuela.

Annual herb up to 3 or 4 ft. *Leaves* much as of last, but upper ones like the lower only much smaller and broadly amplexicaul. *Panicles* much longer than the leaves, of few ascending distantly flower-bearing branches. *Peduncles* subsessile or short. *Heads* about 20-flowered, in flower 6 mm. across; ligules oblong, 4 mm. l. *Involucres* as of last; innermost scales 8.5 mm. l. *Achenes* narrower than those of last, few-ribbed, very shortly beaked, finely warted, 3.5 mm. l. *Pappus-bristles* 6 mm. l.

### [SONCHUS L.

Annual or perennial herbs, or shrubby. Leaves radical or alternate, entire toothed or pinnatifid. Heads usually in corymbs or panicles, homogamous, all florets fertile; corollas



ligulate, 5-toothed, yellow. Involucre campanulate or ovoid; scales in several rows, the inner gradually longer. Receptacle flat, naked. Anthers sagittate at base. Achenes oval to linear, more or less compressed, without a beak, ribbed and sometimes wrinkled. Pappus of numerous smooth bristles.

Species nearly 50, natives of the Old World: two or three, including the following, widely naturalised in the New World.

**S. oleraceus** *L. Sp. Pl.* 794 (1753); *Mayc. Fl. Barb.* 319; *Sm. & Sowerb. Engl. Bot. ed. 2, vi.* 43, t. 843; *Griseb. Pl. Carib.* 88, *Fl. Br. W. Ind.* 384 & *Cat. Cub.* 159; *Saw. Fl. Cub.* 84; *Stahl Fl. P.-Rico v.* 154; *Hitchc. in Rep. Miss. Bot. Gard. iv.* 102; *Kew Bull.* 1893, 260; *Duss Fl. Ant. Franç.* 375; *Johnst. in Proc. Bost. Nat. Hist. Soc. xxxiv.* 268; *Bold. Fl. Ned. W.-Ind.* 207; *Urb. Symb. Ant. iv.* 647 & *viii.* 749; *Britt. Fl. Berm.* 381 & *Fl. Amer. Virg.* 96; *Britt. & Millsp. Baham. Fl.* 430. *Sonchus asper laciniatus* *Sloane Cat.* 123 & *Hist. i.* 255. *Sonchus foliis ciliatis* & *c. Browne Hist. Jam.* 311.

#### Sow-Thistle.

Near St. Jago de la Vega, *Sloane Herb. v.* 2! in every fallow field, *Browne*; *J. P.* 934 *Hart*! *Cinchona, J. P.* 1154, 1253 *Hart*! *Arcadia, Mrs. Sewell*!—Naturalised in Bermuda, Bahamas, West Indies, N. and S. America.

*Annual herb. Lower leaves* petioled (upper sessile), up to 15 cm. l., runcinate or lyrate-pinnatifid (sometimes entire), the segments sharply toothed; uppermost leaves oblong-lanceolate with auricled base. *Corymbs* few-headed, shorter or longer than the leaves, glandular-hispid, 3–5 cm. across. *Heads* many-flowered, in flower about 1 cm. across; ligules linear-oblong, 4 mm. l., pale yellow. *Involucre* narrowly ovoid, scales 4-seriate, linear-lanceolate, acute, innermost 9 mm. l., outermost short. *Achenes* oblong, finely wrinkled between the ribs, 2.5–3 mm. l. *Pappus* 5 mm. l.

*Sonchus asper* Hill is closely allied to the above and like it has become widely naturalised in the New World. It differs from *S. oleraceus* in the strongly spinous tooting of its leaves, and its achenes smooth between the ribs. A Jamaican specimen quoted by Grisebach, is in *Herb. Kew.* collected by March.]



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(*Synonyms in italics*)

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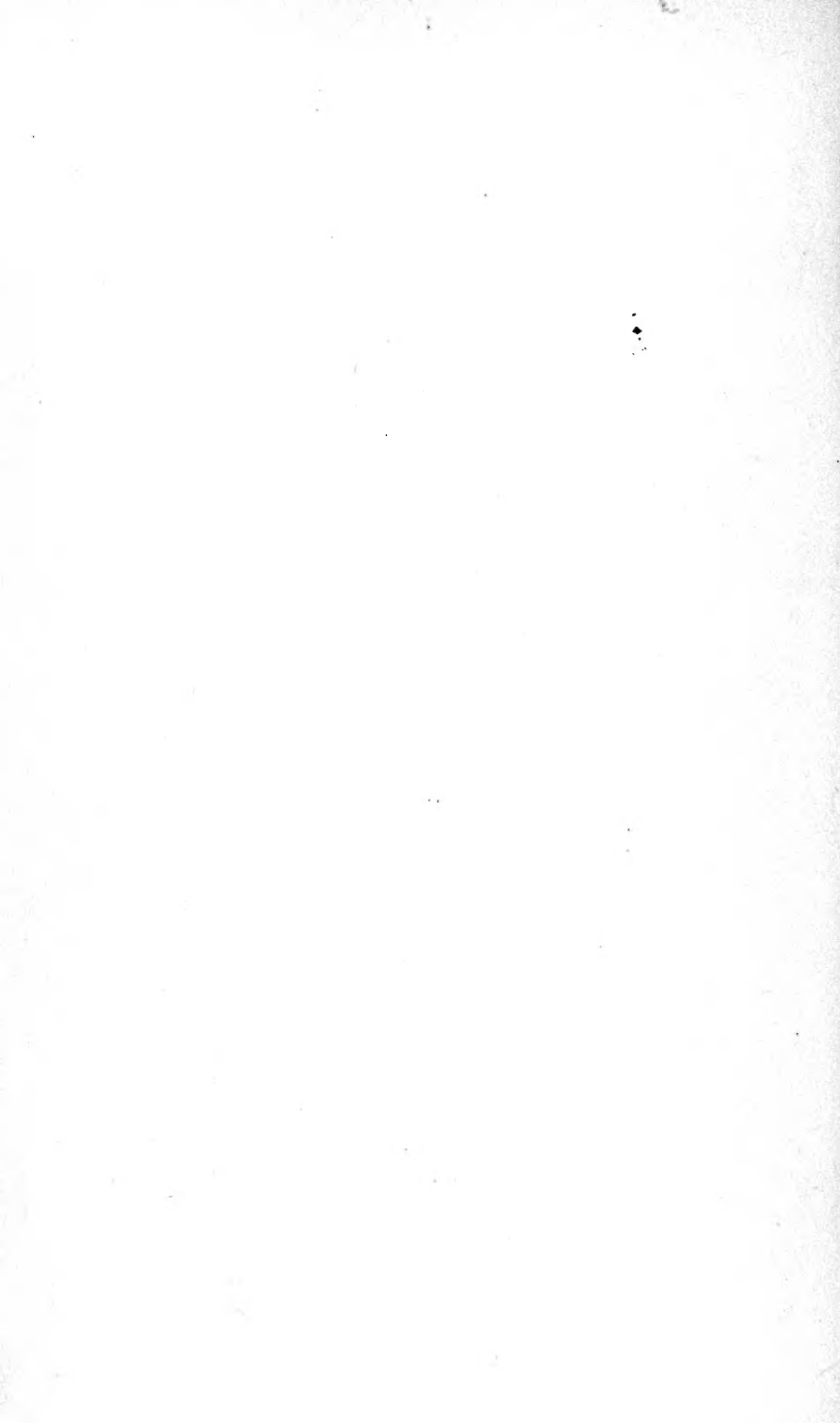
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