

	Page
259. <i>Aphelandra fosbergii</i> Leonard.....	711
260. <i>Aphelandra phalacra</i> Leonard.....	713
261. <i>Aphelandra diachyla</i> Leonard.....	715
262. <i>Aphelandra pinarotricha</i> Leonard.....	717
263. <i>Aphelandra grantii</i> Leonard.....	719
264. <i>Aphelandra coccinantha</i> Leonard.....	722
265. <i>Aphelandra trichota</i> Leonard.....	724
266. <i>Aphelandra atecmarta</i> Leonard.....	727
267. <i>Pseuderanthemum ctenospermum</i> Leonard.....	732
268. <i>Pseuderanthemum chilianthium</i> Leonard.....	735
269. <i>Pseuderanthemum diachylum</i> Leonard.....	738
270. <i>Pseuderanthemum cladodes</i> Leonard.....	740
271. <i>Pseuderanthemum galbanum</i> Leonard.....	742
272. <i>Pseuderanthemum micranthum</i> Leonard.....	744
273. <i>Pseuderanthemum thelothrix</i> Leonard.....	747
274. <i>Pseuderanthemum chocoense</i> Leonard.....	749

THE ACANTHACEAE OF COLOMBIA, III

By EMERY C. LEONARD

INTRODUCTION

The remaining three tribes of the series Imbricatae, which are treated in this part of "The Acanthaceae of Colombia", are as follows:

11. Odontonemeae
12. Isoglosseae
13. Justicieae

SYSTEMATIC TREATMENT

Subfamily 4. ACANTHOIDEAE (continued from Part 2) ¹

Series B. IMBRICATAE

The following artificial key will separate the genera of the Series Imbricatae, which are treated in Parts II and III of this monograph.

Anthers with 2 fertile cells.

Stamens 4..... 21. *Asystasia*

Stamens 2.

Staminodes present.

Corolla limb equally or subequally 5-lobed..... 23. *Pseuderanthemum*

Corolla limb 2-lipped.

Bracts small and inconspicuous..... 26. *Odontonema*

Bracts large and conspicuous..... 22. *Pachystachys*

Staminodes absent.

Stems 6-angled; calyx subtended by two partially united bracts; placenta separating from the mature capsule valves..... 25. *Dicliptera*

Stems subterete or subquadrangular; bracts distinct; placenta remaining attached to the capsule valves.

Costa and veins of the leaf blades conspicuously colored.. 29. *Fittonia*

Costa and veins of the leaf blades not conspicuously colored.

Flowers borne in short spikes, these forming a congested head terminating the tips of the branches..... 39. *Chaetochlamys*

Flowers variously disposed, if forming spikes these not contracted into a dense terminal head.

Corolla tube very slender, not exceeding 1 mm. in diameter.

28. *Siphonoglossa*

Corolla tube not noticeably slender, usually more than 1 mm. in diameter.

¹E. C. Leonard, Contr. U. S. Nat. Herb. 31, pt. 2: 119-322. 1958.

- Anther lobes superposed, often obliquely affixed and at least the lower one apiculate or calcarate. 36. *Justicia*
 Anther lobes slightly, if at all, superposed, parallel, muticous.
 Bracts large and brilliantly colored. 32. *Megaskepasma*
 Bracts, if large, not brilliantly colored.
 Spikes 4-angled, the bracts quadrifarious, conspicuous, ciliate, cuspidate. 24. *Tetramerium*
 Spikes, if present, not as above. 38. *Jacobinia*
- Anthers with 1 fertile cell.**
 Lower cell of anther vestigial.
 Vestigial cell similar to the upper fertile cell but much smaller and sterile or in some species reduced to a short hairlike organ. ... 40. *Chaetothylax*
 Vestigial cell represented by a thin triangular wing. ... 37. *Pelecostemon*
 Lower cell of anther lacking.
- Stamens 2.**
 Upper lip of the corolla relatively long and narrow.
 Inflorescence spicate; lower lip of the corolla triangular, the tip acute and minutely trilobate. 30. *Kalbreyeriella*
 Inflorescence paniculate; lower lip of the corolla oblong-cuneate, with a rounded trilobate tip. 33. *Habracanthus*
 Upper lip of the corolla relatively short and often lobelike.
 Upper lip of the corolla abruptly bent, the corolla appearing obliquely truncate; flowers borne in a narrow spikelike raceme. 27. *Razisea*
 Upper lip of the corolla more or less erect, not abruptly bent; flowers borne in panicles.
 Tip of the upper lip of the corolla 2-lobed. 31. *Syringidium*
 Tip of the upper lip of the corolla entire.
 Panicles loose; corollas relatively long, the expanded portion oblong. 34. *Hansteinia*
 Panicles dense and narrow; corolla short, the expanded portion subcylindric. 35. *Stenostephanus*
- Stamens 4.**
 Corolla lobes subequal, spreading.
 Bracts pink or white; plants shrubby. 15. *Neriacanthus*
 Bracts usually green; plants herbaceous. 16. *Stenandrium*
 Corollas 2-lipped.
 Calyx 3-parted. 19. *Cyphacanthus*
 Calyx 5-parted.
 Pollen grains spherical, the surfaces divided into tetragons. 18. *Encephalosphaera*
 Pollen grains elongated, cleft.
 Pollen grains with 3 longitudinal clefts, often with a pore in each cleft. 17. *Aphelandra*
 Pollen grains with the clefts much broader and flatter (i. e., stave-shaped), each containing a pore. 20. *Rhombochlamys*

Tribe 11. ODONTONEMEAE

Odontonemeae Lindau, Bot. Jahrb. Engler 18: 47. 1893; Engl. & Prantl Pflanzenf. IV, 3b. 287. 1895.

Lindau defines this tribe as having "Spangepollen" (9 longitudinal ribs arranged in 3 groups, the middle one of each group broader than the flanking ones and containing a pore) and 2 or occasionally 4 stamens.

Subtribe 11a. Diclipterinae

Diclipterinae Lindau; Engl. & Prantl, Pflanzenf. IV, 3b: 287, 331. 1895.

Herbs or shrubs; flowers (in *Dicliptera*) subtended by 2 pairs or more of partly united bracts forming an involucre, the bractlets often indistinguishable; calyx of 4 or 5 segments, these usually hyaline or colored; corolla 2-lipped, the anthers 2- or 1-celled (2-celled in *Tetramerium* and *Dicliptera*); capsules 2- or 4-seeded, the placenta separating from the capsule walls at maturity. Of this subtribe 2 genera are represented in Colombia:

24. *Tetramerium*

25. *Dicliptera*

24. TETRAMERIUM Nees

Tetramerium Nees in Benth. Bot. Voy. Sulph. 147. 1844. The epithet is from the Greek *τετραμερής*, 4-parted, and refers to the closely imbricated quadrifarious bracts of the spikes. *Tetramerium* is a *nomen conservandum*, with the type designated as *T. polystachyum* Nees.

Fruticose or suffruticose; stems usually much branched, the pubescence often disposed in 2 opposite lateral lines; leaves sessile or petioled, the blades linear to ovate, entire, glabrous or pubescent; flowers borne in terminal or axillary 4-angled spikes, the bracts conspicuous, usually closely imbricate, opposite, ciliate, cuspidate at tip; calyx 4- or 5-parted, the segments ciliate; corollas infundibuliform to tubular, the tube straight or slightly curved, the upper lip entire or emarginate, the lower lip 3-lobed, the lobes nearly equal; stamens 2, included, the anther sacs slightly converging toward the apex, one a little longer than the other; capsules obovate, apiculate, contracted below into a solid base, usually hispid and 4-seeded (sometimes 2-seeded); seeds flattened, tuberculate or muriculate.

About 25 species have been established in this genus. Its range extends from the southern United States to Colombia and Ecuador.

1. *Tetramerium nervosum* Nees

FIGURE 119

Tetramerium nervosum Nees, in Benth. Bot. Voy. Sulph. 148, pl. 48. 1844.

Type collected at Puna, near Guayaquil, Ecuador, by Sinclair. The specific epithet alludes to the strongly nerved bracts.

Blechum angustius Nees in DC. Prodr. 11: 467. 1847. Type collected at Cartagena, Department of Bolívar, Colombia, January-February 1826, by Billberg (No. 1) (Isotype S). Cf. Leonard, Contr. U. S. Nat. Herb. 31: 63. 1951.

Branched suffrutescent herbs up to 1 meter high, the branches spreading, slender; stems subterete, pubescent to glabrate, the hairs white, spreading, up to 1 mm. long but usually shorter, sometimes disposed in two rows, the younger portions of the stems bearing numerous subpunctiform cystoliths, the bark, with age, separating into thin strips or shreds; leaf blades ovate, up to 6 cm. long and 3 cm. wide, acute to acuminate (the tip itself obtuse or acute, sometimes subapiculate), subcordate or rounded at base, the upper surface

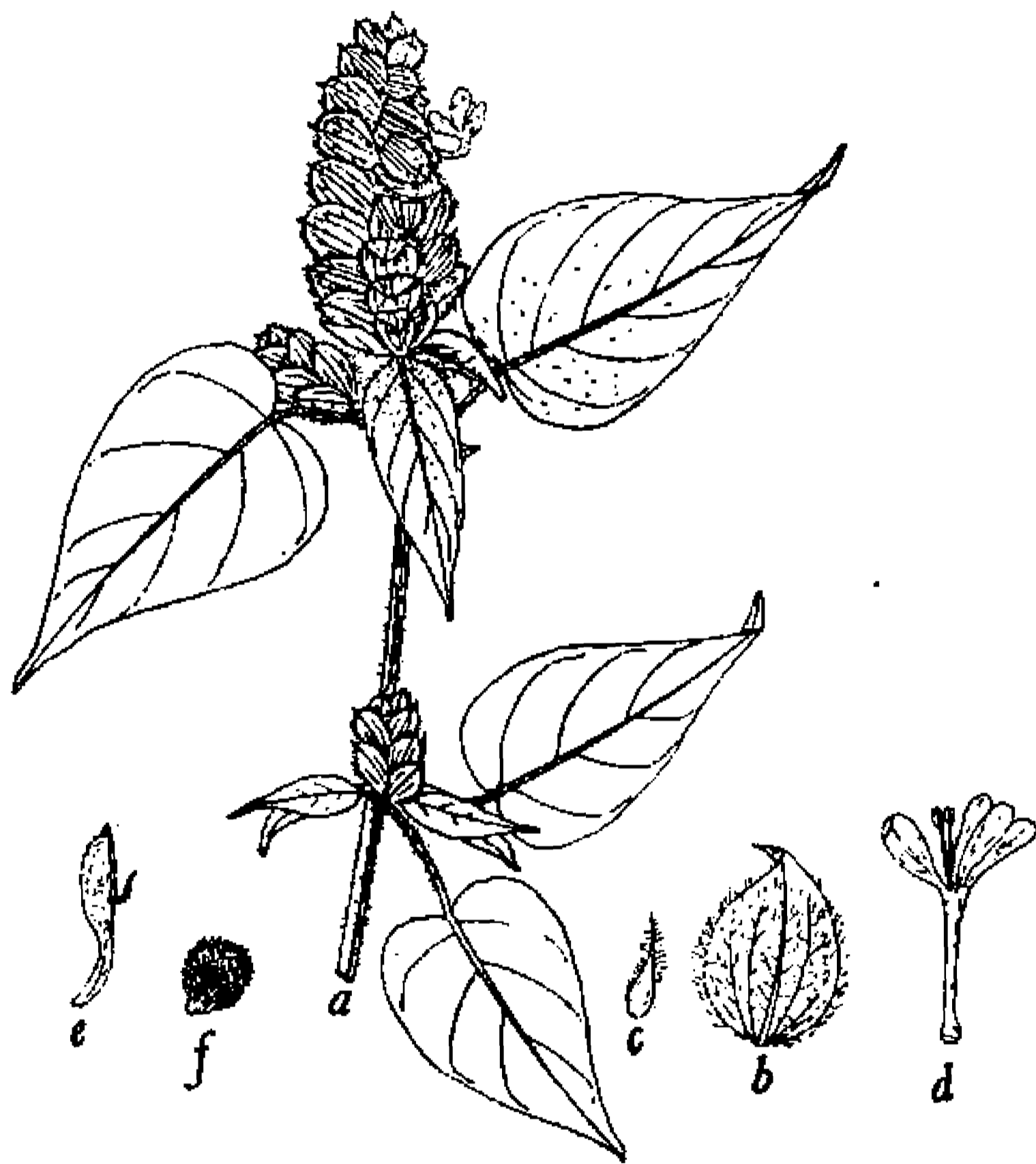


FIGURE 119.—*Tetramerium nervosum* Nees (a-c, Haught 4760; d-f, Pennell 4026): a, Tip of plant; b, bract; c, bractlet; d, corolla; e, valve of capsule; f, seed. (a, Half natural size; b-d, natural size; e, f, about twice natural size.)

sparingly hirsute with ascending straight or curved hairs about 0.5 mm. long, the costa and veins (4 or 5 pairs) rather prominent and more or less puberulous with minute appressed hairs, the lower surface sparingly hirsute to glabrate; petioles slender, up to 2.5 cm. long, pilose (the hairs spreading, up to 1 mm. long) or the channel puberulous; spikes terminal, up to 20 cm. long or more, 2 cm. broad, the rachis densely hirsute to glabrate; bracts rotund-ovate to ovate, up to 12 mm. long and 9 mm. wide, short-acuminate and cuspidate (the tip

more or less recurved, the cusp 0.5 to 1 mm. long), rounded or abruptly contracted below the middle to a subpetiolate base, sparingly hispidulous, the smaller hairs intermixed with white spreading or ascending ones up to 2 mm. long, the margins strongly hispid-ciliate, the hairs jointed, white, up to 2.5 mm. long, the costa and 2 pairs of lateral veins prominent; bractlets narrowly lanceolate, about 2 mm. long and 0.5 mm. wide at base, acuminate, hispid-ciliate; calyx lobes 4, linear-lanceolate, 2 to 3 mm. long, 0.5 mm. wide at base; corolla white or purplish white, 10 mm. long, essentially glabrous, the lips about 5.5 mm. long, the upper one oblong-obovate and emarginate, the lower lip 3-lobed, the lobes oblong-obovate, 5 to 5.5 mm. long and 1.8 mm. wide, rounded at tip; capsules clavate, 5 mm. long, 1.8 mm. broad, 1.5 mm. thick, minutely hirsute, the narrowed base about 2 mm. long; seeds 4, whitish to dark brown, flattened, 1.5 mm. long and 1.2 mm. broad, strongly papillose.

Plants of this species are variable in aspect. During the earlier stages they are leafy, the bark firm, and the spikes moderately long, varying from 2 to 5 cm. in length. With age the leaves usually drop, the spikes often elongate, and the bark parts from the stem in thin shreds.

Partial to thickets or open hillsides either in dry or damp situations. Limited apparently to low altitudes. Central America to northern South America.

BOLÍVAR: La Popa, *Billberg* 1 (S). San Lázaro, *Billberg* s. n. (S). Sincé, *Pennell* 4026 (GH, US).

MAGDALENA: Barro Blanco, *Haught* 4760 (US). Bonda, *H. H. Smith* 1408 (GH, Ph, NY, S, US). Gaira, *H. H. Smith* (NY). La Paz, *Haught* 3931 (US). Playa Brava, *H. H. Smith* 1973 (GH, Ph, NY, US).

SANTANDER: Bucaramanga, *Araque & Barkley* 18S.316 (US), 18S.321 (US).

25. DICLIPTERA Juss.

Dicliptera Juss. Ann. Mus. Paris 9: 267. 1807. Δικλις, double-folding, i. e., having two valves and πτερόν, wing, alluding to the two recurved apparently winged valves of the dehisced capsules. *Dicliptera* is a *nomen conservandum*, the type of which is designated as *D. chinensis* (L.) Juss. (*Justicia chinensis* L.).

Stems more or less hexagonal in cross section; leaf blades entire or undulate, mostly ovate, petioled; flowers 1 to several, borne in often contracted cymes, these forming spikes or panicles subtended by a involucre of 2-4 pairs of conspicuous bracts; calyx 5-parted, hyaline; corollas narrow, slightly ampliate, the limb 2-lipped; stamens 2, the anther sacs often unequal, the longer one sometimes calcarate at base; staminodes none; capsules ovate or suborbicular, the placentae separating elastically from their walls and rupturing, on dehiscence, the cell wall of the capsule valve; seeds 2 or 4.

Nearly 300 species of this genus have been described from the tropical and temperate regions of the world. The species are easily recognized by the hexagonal stems and the flattened bracted reduced cymes.

KEY TO THE SPECIES

- A. Bracts subtending the cymules narrow, cuneate.
 Flowers secund, borne in lax spikes, these forming large branched terminal panicles.
 Outer pair of bracts subtending the flowers subulate..... 1. *D. assurgens*
 Outer pair of bracts subtending the flowers oblong to oblong-spathulate, abruptly acute at tip..... 2. *D. vahliana*
 Flowers borne in peduncled or subsessile flattened compound cymes.
 Cymes loose, 3-parted, the peduncles slender, up to 4.5 cm. long.
 3. *D. trianae*
 Cymes compact, usually composed of 5 or more cymules, sessile or subsessile, crowded in dense axillary clusters.
- B. Bracts subtending the cymules conspicuously ciliate, the hairs 0.75 to 1 mm. long.
- C. Outer bracts subtending the cymules acute, not cuspidate; corollas 2 to 3 cm. long, often red.
 Capitula axillary; corollas 3 cm. long..... 4. *D. sciaphila*
 Capitula axillary and terminal, the uppermost aggregated; corollas 2 cm. long.
 Outer bracts of the cymules densely ciliate, 12 mm. long.
 5. *D. uribei*
 Outer bracts of the cymules sparingly ciliate, 15 mm. long.
 6. *D. bogotensis*
- C. Outer bracts subtending the cymules cuspidate; corollas usually light purplish, 1 to 2.5 cm. long.
 Leaf blades, at least the uppermost, obtuse or rounded, conspicuously mucronate..... 7. *D. pilosa*
 Leaf blades acute, subobtuse or acuminate, not conspicuously mucronate.
- D. Stems hirtellous or pilosulous, the hairs 0.5 mm. long, the angles acute or narrowly winged, light greenish.
 Outer bracts subtending the cymules lanceolate, the cusp 1.5 mm. long, acute..... 8. *D. caucensis*
 Outer bracts subtending the cymules oblanceolate, subobtuse, the cusp 0.75 mm. long..... 9. *D. conformis*
- D. Stems sparingly pubescent or glabrate, the hairs 0.25 mm. long or less, the angles rounded.
 Outer bracts subtending the cymules thin, whitish except the tip, the posterior one about 9 mm. long
 10. *D. ochrochlamys*
 Outer bracts subtending the cymules firm, green, except the whitish base, the posterior bract 13 mm. long.
 11. *D. cuatrecasasi*
- B. Bracts subtending the cymules not conspicuously ciliate, or if so, the hairs mostly less than 0.5 mm. long.
- E. Stems pilosulous or hirtellous, the hairs spreading or retrorsely curved.

Outer cymule bracts cuspidate.

Tip of the cymule bracts abruptly cuspidate.... 12. *D. killipii*

Tip of cymule bracts gradually narrowed to cusp.. 13. *D. driophila*

Outer cymule bracts acute or apiculate, not cuspidate.

Posterior cymule bract oblanceolate, 2.25 mm. at its widest part; basal portion of the cymules yellowish green.... 14. *D. garciae*

Posterior cymule bract lanceolate, 3.5 mm. at its widest part; basal portion of the cymules green or greenish white.

Costa of smaller cymule bract bearing at least a few spreading hairs up to 1.25 mm. long..... 6. *D. bogotensis*

Costa of cymule bracts not long-pilose.

Lower surface of leaf blades glabrous or sparingly puberulous.

Corollas dull carmine, yellow in throat.. 15. *D. ewanii*

Lower surface of leaf blades rather densely puberulous or subtomentose.

Outer bract subtending the cymule subobtusate and apiculate..... 16. *D. haughtii*

Outer bract subtending the cymule acute.... 17. *D. koiei*

E. Stems glabrous or sparingly puberulous, the hairs minute, curved or appressed.

Outer bract subtending cymule cuspidate.... 11. *D. cuatrecasasi*

Outer bract subtending cymule acute, not cuspidate.

Nerves of the outer cymule bract prominent, hirtellous, intercostal area subglabrous..... 18. *D. danielii*

Nerves of the outer cymule bract obscure, the pubescence evenly distributed.

Capitula mostly terminal, forming a rounded headlike thyrse. 19. *D. scandens*

Capitula mostly axillary, only the uppermost aggregated to form a narrow spikelike thyrse.

Leaf blades large, up to 16 cm. long and 6 cm. wide, thin.

20. *D. sarcochroma*

Leaf blades smaller, up to 8 cm. long and 3 cm. wide, firm.

Inner surface of the outer bracts subtending the cymule moderately to densely puberulous..... 21. *D. hazeni*

Inner surface of the outer bract subtending the cymule glabrous or sparingly hirtellous..... 22. *D. inamoena*

A. Bracts subtending the cymules broad, ovate.

Posterior cymule bract up to 23 mm. long and 25 mm. wide.

Basal portion of peduncle below joint up to 15 mm. long, the cymes usually 3-parted..... 23. *D. megalochlamys*

Basal portion of peduncle below joint up to 5 mm. long, the cymes 2-parted..... 24. *D. batilliformis*

Posterior cymule bracts up to 16 mm. long and 17 mm. wide.

Cymule bracts thin, rounded or obtuse and apiculate.

25. *D. sanctae-martae*

Cymule bracts firm, acute to obtuse.

Cymule bracts narrowed at base.

Stems and peduncles puberulous..... 26. *D. rhombochlamys*

Stems and peduncles glabrous..... 27. *D. nanodes*

Cymule bracts truncate or shallowly cordate at base.

Cymes solitary, mostly 2-parted..... 28. *D. columbiana*

Cymes several, crowded in the axils; usually 3-parted.

29. *D. compacta*

1. *Dicliptera assurgens* (L.) Juss.

Justicia assurgens L. Syst. Nat. ed. 10, 850. 1759. Type locality: Jamaica.

The specific epithet is from the Latin "assurgere," to rise up, in allusion to the ascending stems.

Dicliptera assurgens Juss. in Ann. Mus. Hist. Nat. Paris 9: 269. 1807. Based on *Justicia assurgens* L.

Herbs up to 1 meter high; stems erect or ascending, up to 5 mm. thick toward base, hexagonal toward tip, sulcate, the angles narrowly winged, prominent, the internodes glabrous, the stipular lines bearing a few small hairs; leaf blades ovate, up to 5 cm. long and 2.5 cm. wide or the lowermost larger, all acute or short-acuminate at tip, narrowed at base and briefly decurrent on the petiole, both surfaces glabrous or the costa and lateral veins (4 or 5 pairs) bearing a few scattered hairs, the cystoliths rather prominent; petioles slender, up to 2 cm. long or more, the channel sparingly pubescent with small curved hairs; flowers usually solitary, more or less secund in lax spikes, these forming large terminal much branched panicles, the rachis glabrous or bearing a few minute scattered whitish disk-tipped hairs, the basal internodes 1 to 2 cm. long, the others successively shorter toward tip of branches, the branches of the panicles subtended by leaves similar to the main stem leaves but smaller, the flowers subtended by a pair of subulate bracts 1.5 mm. long and 0.5 mm. wide at base, glabrous or minutely ciliolate near base with papular hairs; involucre bracts 6, the two outermost lanceolate, 5 mm. long, 1 mm. wide at base, acuminate, puberulous, the papular hairs intermixed with a few typical ones about 0.25 mm. long, the margins of the bracts subhyaline, the 4 innermost segments lanceolate, 2.5 mm. long and 0.5 mm. wide, densely papillose, the papillae intermixed with occasional larger mushroom-like glandular hairs; calyx subhyaline, 2.5 mm. long, the segments triangular, 1 mm. long, acute, ciliate, the hairs about 115 μ long, the midrib of the bracts prominent, green; corollas red or orange-scarlet, finely pubescent, 3.5 cm. long, slightly curved, the tube 2 cm. long, 1.5 mm. broad at base, thence gradually enlarged to 6 mm. at mouth, the lips about equal, 1.5 cm. long and about 6 mm. wide at base, thence gradually narrowed to 1.5 mm. near tip, the upper lip erect, rounded and entire at tip, the lower lip recurved, 3-lobed at tip, the lobes low, about 0.75 mm. long, the middle one 0.5 mm. wide, the lateral ones somewhat narrower, all rounded; stamens reaching almost to the tip of the upper lip of the corolla, the filaments adhering to the dorsal portion of the tube to a distance of about 15 mm., minutely pilose, the hairs becoming less

numerous towards the tip, the anthers oblong, 2.5 mm. long and 1.5 mm. wide; capsules oval, 6 mm. long, 2.5 mm. wide, 1 mm. thick, the sides flattened, the basal portion solid and 1.5 mm. long, obtuse at tip, hirtellous, 2-seeded; seeds reddish brown, flattened, oval, about 2 mm. long and 1.5 mm. wide, the surface roughened, bearing numerous flat-tipped papilliform hairs; retinacula about 1 mm. long, subacute at tip.

Pastures, meadows, waste places in general. Partial to more or less damp sandy soil. West Indies and northern South America.

ATLÁNTICO: Barrio del Prado, Barranquilla, *Fosberg* 21438 (US). Puerto Colombia, *Barkley & Gutiérrez* 1857 (US). Hacienda Cachubana, *Usiacurí, Dugand & García-Barriga* 2371 (US).

MAGDALENA: Río Frío, Santa Marta, *Walker* 1282 (US).

2. *Dicliptera vahliana* Nees

Dicliptera vahliana Nees in DC. Prodr. 11: 489. 1847. A number of cotypes are cited, the first mentioned being that of Bertero collected at Santa Marta, Colombia. The species was named in honor of Martin Vahl, a Swedish botanist of the 18th century and a student of Linnaeus. Vahl traveled extensively in the West Indies and northern South America.

Herbs up to 1 meter high; stems erect or ascending, hexagonal (the angles narrowly winged), drying green, thinly puberulous, the papular hairs interspersed with scattered amber or whitish disk-tipped ones; leaf blades oblong-lanceolate, up to 5 cm. long and 2 cm. wide or the lowermost larger, obtuse or short-acuminate at tip, apiculate, narrowed at base and decurrent on the petiole, both surfaces glabrous except the costa and lateral veins (4 or 5 pairs), these sparingly hirtellous with appressed hairs; petioles 1 to 1.5 cm. long, the channels hirtellous, the hairs 0.25 mm. long or less; flowers usually solitary, more or less secund in lax spikes, these forming large much branched panicles, the internodes glabrous or the uppermost thinly puberulous, the papular hairs interspersed with minute glandular ones, the branches of the panicle subtended by leaves similar to those of the main stem but smaller, the flowers subtended by a pair of triangular subulate bracts 1.5 mm. long and 0.75 mm. wide at base, glabrous; involucre bracts 6, the outermost pair oblong to oblong-spathulate, 3 to 4 mm. long, 1 mm. wide at base, abruptly acute at tip, puberulous, the papular hairs intermixed with scattered larger disk-tipped ones, the innermost bracts lanceolate, 2.5 to 3 mm. long, 0.5 mm. wide, acuminate, densely papular-puberulous; calyx subhyaline, 2.5 mm. long, campanulate, the segments triangular, 1 mm. long, 0.75 mm. wide, papular-puberulous or glabrous toward base; corollas red, finely pubescent (the hairs 0.25 mm. long), 28 mm. long, the tube 15 mm. long, 1.5 mm. broad at base, narrowed to 1 mm. at 1.5 mm. above base, thence enlarged to 5 mm. at mouth, the lips about equal, 12 mm.

long, the upper one erect, lanceolate, 6 mm. wide at base, gradually narrowed to 1.5 mm. near tip (the tip itself obtuse), the lower lip recurved, 4 mm. wide at base, gradually narrowed to 2 mm. near tip, the tip itself terminated by 3 low rounded lobes about 0.25 mm. long and 0.5 mm. wide; stamens partly enclosed by the upper lip of the corolla and reaching to its apex, the filaments minutely pilose toward base, the hairs retrorsely curved, about 0.25 mm. long, the anthers 2.5 mm. long and 1.5 mm. broad, bearing a few minute marginal hairs; capsules ovoid, 5 to 6 mm. long, 2.5 mm. broad, 1 mm. thick at base, narrowing to 0.5 mm. at tip, the solid stipitate basal portion 2 mm. long, the tip of the capsule emarginate and apiculate, the entire surface except the basal portion rather densely pubescent, the hairs retrorse, about 0.5 mm. long; seed light brown, oval, flattened, about 2 mm. long and broad, sparingly puberulous, the hairs papular and retrorsely barbed.

Vernacular names are "canilla de laura," and "canilla de golero" (*Dugand & Jaramillo* 2798).

Dicliptera vahliana is closely related to *D. assurgens*, but can be easily separated by its oblong spatulate outer pair of involucre bracts. In *D. assurgens* these are strictly subulate.

Fields, thickets and waste places in general. Southern United States to northern South America and in the West Indies. Occurs in low altitudes usually at or below 200 meters.

ATLÁNTICO: Barranquilla, *Bro. Paul* B-26 (US); *Lehmann* 7849 (K). Arroyo de Megua, *Dugand & Jaramillo* 2798 (US).

BOLÍVAR: Cartagena, *Schott* 5 (NY). Río Sinú, *Pennell* 4779 (NY). Sincé, *Pennell* 4037 (NY). Turbaco, *Pennell* 4750 (NY).

MAGDALENA: Playa Brava, vicinity of Santa Marta, *H. H. Smith* 1488 (Ph, NY, US).

3. *Dicliptera trianae* Leonard, sp. nov.

FIGURE 120

Herba, caulibus rectis vel ascendentibus, subhexagonis, glabris vel parce hirtellis, pilis minutis, arcte adpressis; lamina foliorum lanceolata vel ovato-lanceolata, acuminata (apice ipso obtuso), basi rotundata vel angustata, in petiolum breviter decurrens, integra vel undulata, chartaceo-membranacea, utrinque glabra vel parcissime hirtella, subtus sub lente minute papillosa, costa et venis aliquanto prominentibus; petioli graciles, glabri vel canale minute hirtelli; panicula terminalis, laxa, cymis praecipue in paribus, tripartitis, pedunculis usque ad 4.5 cm. longis, hexagonis, dense hirtellis, pilis rectis, patulis, pilis glandulosis intermixtis; bracteae cymas subtendentes anguste triangulares, acuminatae, carinatae, glabrae vel parce hirtellae, pedunculis cymularum inaequalibus, subhexagonis, dense hirtellis, pilis acutis et pilis glandulosis intermixtis; bractea major exterior cymulam subtendens triangulari-ovata, acuta, carinata, costa promi-

nente, utrinque aliquanto dense hirtella, pilis rectis, patulis; bractea minor exterior cymulam subtendens lanceolata, acuminata (apice saepe recurvato), costa prominente, utrinque hirtella, pilis acutis et glandulosis intermixtis, bracteis ambis viridibus, marginibus deorsum albidis; bracteae intimae anguste lanceolatae, acuminatae, marginibus albidis, puberulae, pilis acutis et obtusis intermixtis; calycis segmenta triangularia, acuta, albida, minute hirtella; corolla parva, hirtella, tubo angusto, labiis subaequalibus, labio inferiore trilobato, lobis parvis, suborbicularibus, subobtusis.

Herbs; stem erect or ascending, subhexagonal, glabrous or sparingly hirtellous, the hairs closely appressed, minute; leaf blades lanceolate or ovate-lanceolate, up to 4 cm. long and 1.5 cm. wide, acuminate

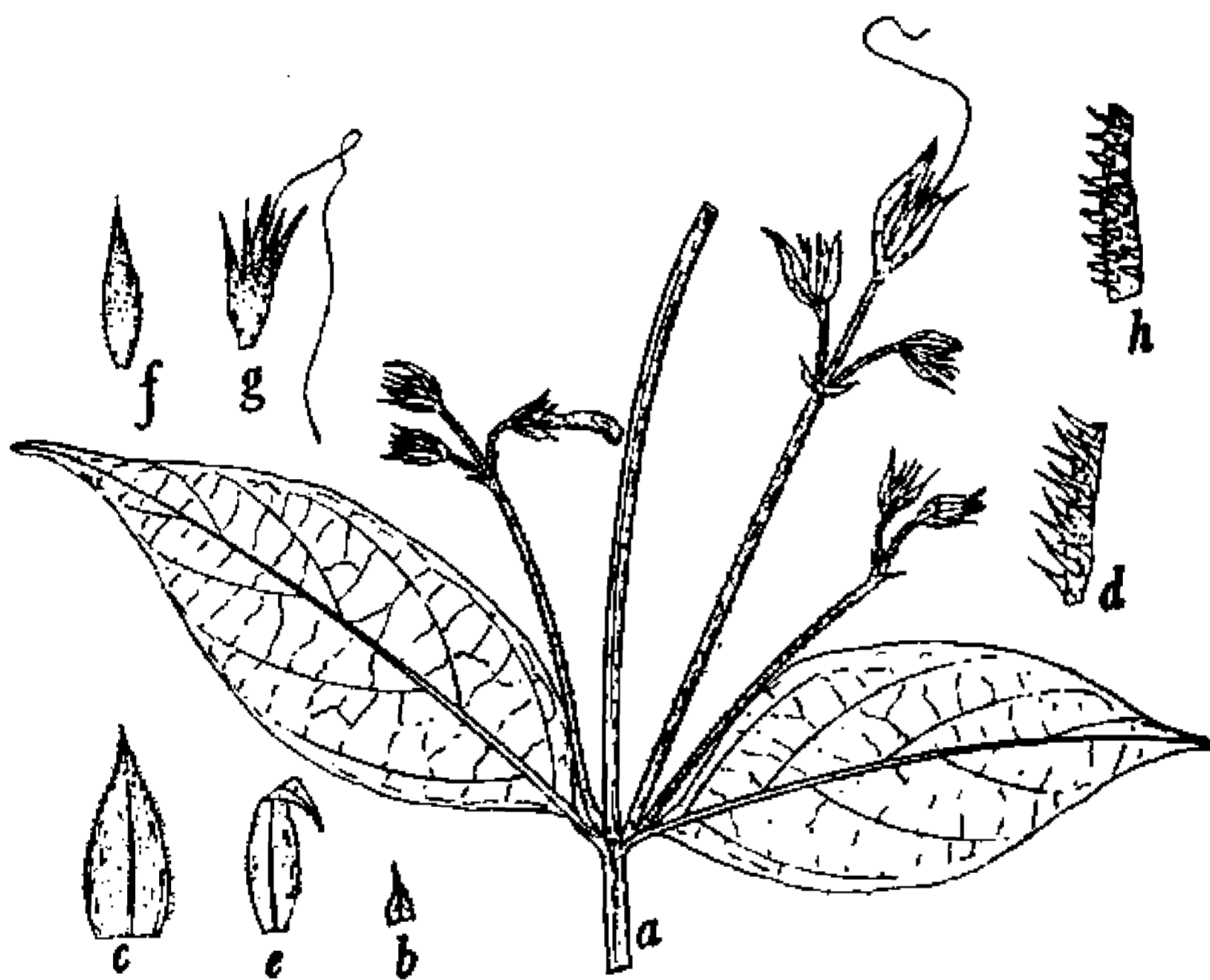


FIGURE 120.—*Dicliptera trianae* Leonard (Triana, El Cauca): *a*, Second node from base of inflorescence; *b*, one of a pair of bracts subtending the cyme; *c*, the larger of the outer bracts subtending the cymules; *d*, marginal hairs of same; *e*, the smaller of the outer bracts; *f*, one of the innermost bracts; *g*, calyx; *h*, marginal hairs of one of the segments. (*a*, Natural size, *b*, *c*, *e-g*, twice natural size; *d*, 12 times natural size; *h*, 8 times natural size.)

(the tip itself blunt), rounded or narrowed at base and briefly decurrent on the petiole, entire or undulate, firmly membranaceous, both surfaces glabrous or very sparingly hirtellous, the lower surface minutely papillate under lens, the costa and lateral veins (4 or 5 pairs) moderately conspicuous; petioles slender, up to 4 mm. long, glabrous or the channels minutely hirtellous; flowers borne on narrow open panicles up to 18 cm. long and 5 cm. broad or more, the cymes, usually in pairs, loosely 3-parted, their peduncles up to 4.5 cm. long, hexagonal, densely hirtellous, the hairs straight, spreading, up to 0.25 mm. long, some of them gland-tipped; bracts subtending the cymes narrowly triangular,

acuminate, carinate, about 2 mm. long and 0.5 mm. wide at base, glabrous or sparingly hirtellous; peduncles of the cymules unequal, the middle one up to 8 mm. long, the lateral ones about half as long, all subhexagonal, densely hirtellous with a mixture of glandular and eglandular straight spreading hairs up to 0.25 mm. long; outer bract subtending the cymule triangular-ovate, 7 mm. long, 3 mm. wide at base, acute (the costa prominent), carinate, both surfaces rather densely hirtellous, the hairs straight, erect, up to 0.25 mm. long; smaller outer bract subtending the cymule lanceolate, 6 mm. long, 2 mm. wide at about 2 mm. above base, acuminate (the tip often recurved), the costa prominent, both surfaces of the bract hirtellous with a mixture of glandless and erect straight glandular hairs about 0.25 mm. long, both the outer bracts green except their white basal margins; innermost bracts narrowly lanceolate, 5.5 mm. long, 1 mm. wide near base, green with whitish margins, acuminate, puberulous with a mixture of sharp and bluntish hairs up to 0.2 mm. long; calyx 5 mm. long, puberulous with stoutish hairs rarely more than 125μ long, the segments of the calyx narrowly triangular, 3 mm. long, 0.75 mm. wide at base, acuminate, whitish; ovary minutely hirtellous; corolla about 12 mm. long, hirtellous, the hairs spreading, about 0.2 mm. long, the tube narrow, about 2 mm. broad at mouth, the lips subequal, about 4 mm. long, the lobes of the lower lip suborbicular about 0.75 mm. long and broad, obtusish; capsules not seen.

Type in the Herbario Nacional Colombiano, collected in the Department of Cauca, 1,000 meters altitude, February 1853, by J. Triana (No. 4093.1-1). Isotype: K.

When compared with other Colombian species of the genus, *Dicliptera trianae* is strikingly distinct in the character of its inflorescence. The color of the corolla was not apparent in the dried material of the type.

4. *Dicliptera sciaphila* Leonard, sp. nov.

Figure 121

Suffrutex, caulibus obscure hexagonis, crasse sulcatis, glabris vel bifariam pubescentibus, pilis curvatis; lamina foliorum oblongo-ovata, acuminata, basi angustata, in petiolum breviter decurrens, membranacea, integra, parce pilosa, pilis saepe in costa et venis positis; petioli graciles, subtus glabri, canali pubescente, pilis minutis et curvatis; capitula axillaria, pedunculis aliquanto brevibus, bifariam pubescentibus, pilis curvatis; cymula 5-flora, subsessilis; bracteae aliquanto magnae, bractea exterior oblongo-elliptica, acuta, viridis, basi angusta, albida, subtus parce et minute hirtella, supra puberula, marginibus ciliata, pilis patulis, bractea interior similis sed minor; bracteae interiores subulatae, lanceolatae, acuminatae, ciliatae, pilis albis et patulis; calyx (siccus) fulvus, segmentis anguste lanceolatis,

acuminatis, puberulis; corolla rubra, minute et parce pubescens, labio superiore ovato, subacuto, labio inferiore trilobato; stamina vix exserta, filamentis glabris.

Suffrutescent; stems obscurely hexagonal, drying olive green, coarsely sulcate, glabrous or pubescent, the hairs disposed in 2 lines, curved, about 0.75 mm. long, the lowermost internodes about 10 cm.



FIGURE 121.—*Dicliptera sciaphila* Leonard (*Cuatrecasas* 214): *a*, Tip of branch; *b*, outer bract; *c*, inner bract; *d*, hair from margin of inner bract; *e*, innermost bracts; *f*, calyx segment; *g*, small portion of calyx segment enlarged to show pubescence. (*a-c*, *e-f*, Natural size; *d*, about 15 times natural size; *g*, about 25 times natural size.)

long, the others successively shorter toward tip of stems; leaf blades oblong-ovate, up to 12 cm. long and 7 cm. wide, acuminate (the tip ending in a sharp point or bluntish), narrowed at base and briefly decurrent on the petiole, thin, entire, drying green, sparingly pilose, the hairs straight or nearly so, up to 0.5 mm. long, confined chiefly

to costa and lateral veins (4 or 5 pairs), the cystoliths inconspicuous, 125 to 175 μ long; petioles up to 4 cm. long, the lower surface glabrous, the channel pubescent, the hairs small, recurved; flowers borne in axillary peduncled cymes, the peduncle up to 1 cm. long, pubescent in two lines, the hairs curved, about 0.25 mm. long, the cymules 5-flowered, subsessile; bracts rather large, the outer bract oblong-elliptic, 17 mm. long, 5 mm. wide near the middle, acute, narrowed at base, the inner bract smaller, lanceolate, 12 mm. long, 2 mm. wide, acuminate, both inner and outer bract green except at base, this whitish and somewhat indurated, the lower surface of the larger bract minutely hirtellous, the hairs about 0.25 mm. long, the upper surface of the larger bract and both surfaces of the smaller puberulous, the margins more or less densely ciliate, the hairs up to 1 mm. long, white, spreading, the middle and inner bracts about equal, lanceolate, 8 to 10 mm. long, 1.25 to 1.5 mm. wide, acuminate, puberulous toward tip and ciliate, the marginal hairs up to 0.5 mm. long, white, spreading; calyx 6 mm. long, drying dull brown, the segments narrowly lanceolate, 5 mm. long, 1.75 mm. wide, acuminate, puberulous, sparingly ciliate, the hairs about 0.5 mm. long, the hairs of the inner surface appressed; corollas red, finely and rather sparingly pubescent (the hairs up to 0.5 mm. long), 3 cm. long, the tube 2.5 mm. broad near base, narrowed at 6 mm. above base to 1 mm., thence enlarged to 7 mm. at throat, the lips about 1 cm. long, the upper ovate, about 5 mm. wide near base, acutish, the lower lip 3-lobed; stamens reaching nearly to the tip of the upper lip, the filaments glabrous, the anthers about 2 mm. long, the cells unequally attached; ovaries (eaten by insects) and capsules not seen.

Type in the U. S. National Herbarium, No. 1772775, collected in dense forest of La Hondonada, Salto de Tequendama, Department of Cundinamarca, Colombia, 2,250 to 2,300 meters altitude, October 2, 1938, by J. Cuatrecasas (No. 214).

The flowers of *Dicliptera sciaphila* are large for the genus. The strongly ciliate bracts and dull lead-colored puberulous calyx (dried material) furnish further diagnostic characters. The specific epithet "sciaphila" ($\sigma\kappa\iota\acute{\alpha}$, shade, and $\phi\acute{\iota}\lambda\omicron\varsigma$, loving) alludes to a preference to dense forests.

5. *Dicliptera uribel* Leonard, sp. nov.

FIGURE 122

Herba, caulibus subhexagonis, bifariam hirtellis, pilis parvis, retrorse curvatis; lamina foliorum anguste ovata, acute vel sub-acuminata, basi angustata, in petiolum decurrens, integra vel undulata, subcoriacea, utrinque parce hirtella, pilis minutis, praecipue in costa et venis aliquanto prominentibus positis, cystolithis minutis, subnigris; petioli breves, subtus glabri, canale dense adpresso-piloso;

capitula axillaria et terminalia, sursum aggregata, thyrsus densum angustum formantia, pedunculis brevibus angulatis, bifariam hirtellis; bracteae cymulas subtendentes parvae, lanceolatae vel triangulares, acutae, glabrae vel parce hirtellae, plus minusve ciliolatae; bractea exterior cymulas subtendens oblanceolata, subacuta, basi angustata, subcoriacea, ciliata, viridis (vel deorsum margine albida), supra dense puberula, subtus subglabra vel in costa et nervis parce hirtella, bractea interior lineari-lanceolata, acuta, basi leviter angustata, aliter bracteae exteriori similis; bracteae intimae anguste lanceolatae, apice acuminatae, puberulae, ciliatae, marginibus albidis et subhyalinis; calycis segmenta anguste triangularia, acuta, utrinque puberula; corolla 2 cm. longe, parce pilosula, pilis patulis, rectis vel leviter curvatis, tubo anguste hypocrateriformi, labiis subaequalibus, labio superiore apice obtuso, inferiore trilobato, lobis parvis rotundatis; stamina vix exserta, filamentis deorsum parce pilosulis; capsulae ovatae, planae, apice obtusae, apiculatae, hirtellae, pilis rectis, patulis vel deorsum retrorsis.

Herbs up to 30 cm. high or more; stems subhexagonal, hirtellous in 2 lines, the hairs up to 0.25 mm. long, retrorsely curved; leaf blades (only the uppermost present) narrowly ovate, up to 6 cm. long and 2 cm. wide below middle, acute or subacuminate, narrowed at base and decurrent on the petiole, entire or undulate, firm, both surfaces sparingly hirtellous, the hairs up to 0.25 mm. long, curved, ascending, confined chiefly to costa and lateral veins, these moderately conspicuous, more so beneath than above, the cystoliths obscure, minute, blackish, up to 250 μ long; petioles up to 8 mm. long, glabrous beneath, the channel densely appressed pilose, the hairs light greenish yellow, about 0.25 mm. long; capitula axillary and terminal, the uppermost forming a spikelike terminal thyrsus 5.5 cm. long and 2.5 to 3 cm. broad, the peduncles up to 3 mm. long, angular, hirtellous in 2 lines, the lowermost capitula sometimes compound, the secondary capitula borne on peduncles up to 2.5 cm. long, these subhexagonal and pilosulous in 2 lines; bracts subtending the cymes small, those of the lowermost cymes leaflike, lanceolate, 4 mm. long, 1 mm. wide, acute, petioled at base, firm, veiny, sparingly hirtellous and ciliate, the bracts subtending the upper cymes smaller, narrowly triangular, about 3 mm. long and 1 mm. wide at base, glabrous, sparingly ciliate, the posterior outer bract subtending the cymules oblanceolate, 12 mm. long, 4 mm. wide at 5 mm. below tip, subacute, narrowed at base, firm, green or with a narrow whitish marginal area near base, ciliate (the hairs up to 1.2 mm. long, spreading, straight), the inner surface densely puberulous, the outer subglabrous or the costa and predominating pair of lateral veins sparingly hirtellous, the anterior outer bract linear-lanceolate, 1 cm. long, 2.25 mm. wide at middle, acute, slightly

narrowed at base, in other respects similar to the posterior bract, the innermost bracts narrowly lanceolate, 5 to 6.5 mm. long, 1 to 1.25 mm. wide at 3 mm. above base, the tip slender, puberulous, the margins ciliate, the hairs white, spreading, up to 1 mm. long, the marginal area of the bracts, except at tip, whitish and subhyaline; calyx 4 mm. long, the segments narrowly triangular, 3 mm. long, 1 mm. wide at base, slenderly acute at tip, both surfaces minutely and rather densely puberulous; corollas 2 cm. long, pale yellow ("naranja palido," Hernández-C.), sparingly pilosulous, the hairs straight or slightly

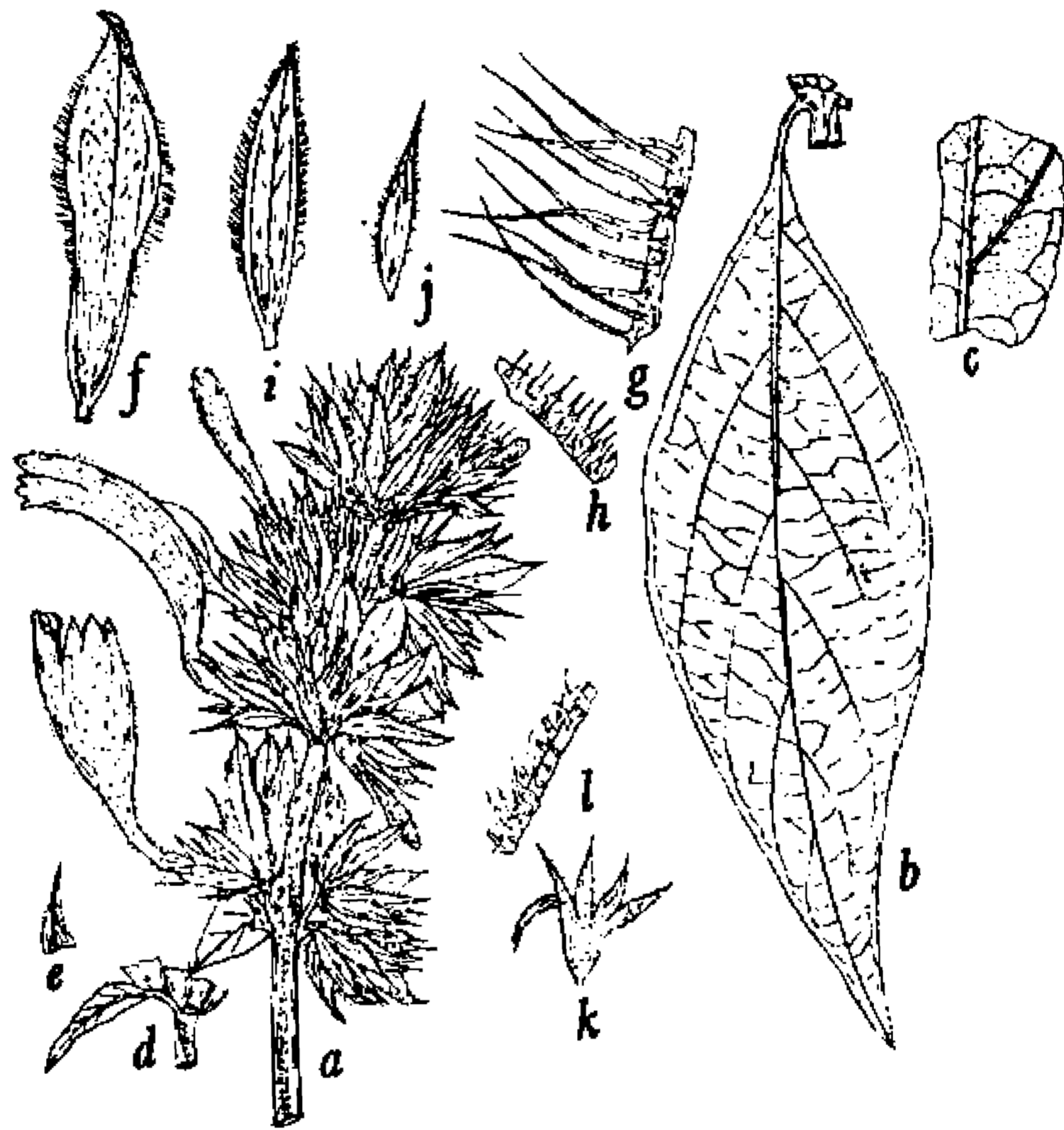


FIGURE 122.—*Dicliptera uribei* Leonard (*Uribe-Uribe* 343): *a*, Inflorescence at tip of stem; *b*, leaf; *c*, portion of leaf blade at costal region (lower surface) in detail to show venation, pubescence and cystoliths; *d*, one of a pair of bracts subtending a lowermost cyme; *e*, one of a pair of bracts subtending a cyme toward tip of inflorescence; *f*, the larger of the outer pair of bracts subtending a cymule; *g*, marginal hairs of same; *h*, pubescence of inner surface of same; *i*, the smaller of the outer pair of bracts subtending a cymule; *j*, one of the innermost bracts; *k*, calyx; *l*, pubescence of calyx. (*a-c*, Natural size; *d-f*, *i*, *j*, twice natural size; *g*, about 12 times natural size; *h*, 9 times natural size, *k*, 2½ times natural size; *l*, 15 times natural size.)

curved, spreading, the tube 2 mm. broad at base, narrowed to 1.25 mm. at 2.5 mm. above base, thence gradually enlarged to 4.25 mm. at throat, the lips subequal, ovate, the upper lip obtuse at tip, the lower 3-lobed, the lobes ovate, 0.5 mm. long and wide, rounded at tip; stamens reaching tip of the upper lip, the filaments sparingly pilosulous toward base; capsules ovate, 7 mm. long, 5 mm. broad, 1 mm. thick, obtuse and apiculate, hirtellous, the hairs about 0.25 mm. long, straight, spreading or the basal hairs slightly retrorse; seeds not seen.

Type in the U. S. National Herbarium, No. 1997178, collected in the mountains east of Santandercito, Department of Cundinamarca, Colombia, 1,800 to 2,000 meters altitude, 1939, by Lorenzo Uribe-Urbe (No. 343).

A specimen collected by Jorge Hernández-C., No. 809 (US), in woods at Laguna de Pedropalo, Municipio de Tena, Department of Cundinamarca, 2,100-2,200 meters altitude, July 21-25, 1953, is also of this species.

6. *Dicliptera bogotensis* Leonard, sp. nov.

FIGURE 123

Herba, caulibus erectis vel ascendentibus, subhexagonis, glabris vel bifariam hirtellis, pilis retrorse curvatis; lamina foliorum oblongo-ovata, acuminata (apice ipso plus minusve obtuso), basi angustata, in petiolum breviter decurrens, subcoriacea, integra vel undulata, supra glabra vel parce hirtella, costa et venis aliquanto hirtellis, pilis ascendentibus, plus minusve curvatis, subtus parce hirtella vel prope basim puberula, cystolithis minutis; petioli glabri, canale dense hirtelli, pilis subbrunneis, plus minusve curvatis; capitula axillaria et terminalia, pedunculis brevibus, hexagonis, plus minusve bifariam parce hirtellis; bracteae cymas subtendentes anguste triangulares, acuminatae, glabrae, costis prominentibus; bractea major exterior cymulam subtendens lanceolata, acuta, basi angustata, marginibus albidis, ciliata, pilis brevibus et longis intermixtis, extus parce hirtella, intus aliquanto dense hirtella; bractea minor cymulam subtendens lanceolata, acuminata, costa prope basim pilosa, aliter bracteae exteriori similis; bracteae intimae anguste lanceolatae, acuminatae, intus glabrae, extus hirtellae; calycis segmenta anguste triangularia, hirtella; corolla (immatura) dense hirtella, labiis aequalibus, labio superiore obtuso, inferiore trilobato, lobis parvis, rotundatis.

Herbs up to 30 cm. high or more; stems erect or ascending, subhexagonal, glabrous or hirtellous in two lines near the nodes, the hairs retrorsely curved, 0.25 to 0.5 mm. long; leaf blades (only the uppermost present) oblong-ovate, up to 4.5 cm. long and 2 cm. wide, acuminate (the tip itself obtuse), narrowed at base and briefly decurrent on the petiole, firmly thin, entire or undulate, the upper surface glabrous or very sparingly hirtellous except the densely hirtellous costa, the hairs ascending, mostly curved, 0.5 to 1.75 mm. long, the lateral veins (4 or 5 pairs) sparingly hirtellous, the lower surface sparingly hirtellous or puberulous toward base, the cystoliths on both surfaces minute, about 175 μ long; petioles up to 1 cm. long, glabrous except the channel, this densely hirtellous, the hairs brownish, mostly curved, up to 0.5 mm. long; capitula axillary and terminal, the lowermost peduncle 1 cm. long, the others successively shorter toward tip of inflorescence, all hexagonal, sparingly

hirtellous, the hairs sometimes arranged in 2 lines, the capitula subtended by small leaves, the cymes (often 3-parted) subtended by a pair of narrowly triangular bracts up to 4 mm. long and 0.75 mm. wide at base, slenderly acute, glabrous, the costa prominent; cymules borne on short quadrangular peduncles 0.5–1.5 mm. long; larger outer bract subtending the cymule lanceolate, up to 15 mm. long and 3.5 mm. wide near the middle, acute, narrowed and concave near base, green except narrow basal marginal whitish areas, ciliolate or some of the small hairs, especially towards base of bract, intermixed with long slender ones up to 0.75 mm. long, the outer surface of the

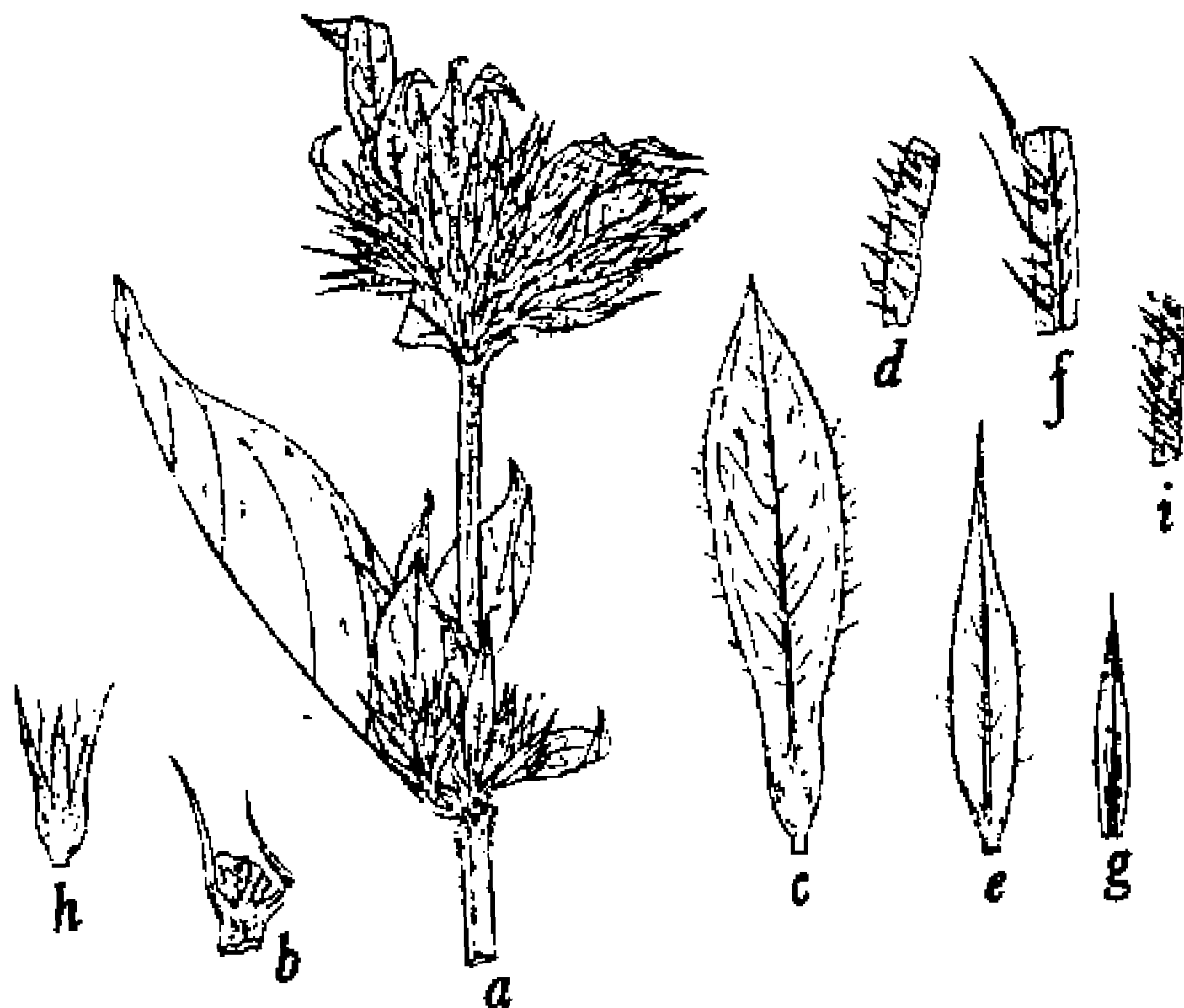


FIGURE 123.—*Dicliptera bogotensis* Leonard (*Triana*, Salto de Tequendama): *a*, Inflorescence; *b*, base of cyme to show subtending bracts; *c*, larger outer bract subtending the cymule; *d*, marginal hairs of same; *e*, smaller outer bract subtending the cymule; *f*, costal hairs of same; *g*, one of the innermost bracts; *h*, calyx; *i*, marginal hairs of one of the calyx segments. (*a*, Natural size; *b*, slightly over natural size; *c*, *e*, *g*, twice natural size; *d*, 12 times natural size; *f*, 10 times natural size; *h*, 2½ times natural size; *i*, 23 times natural size.)

bract sparingly hirtellous, the inner surface rather densely so, the hairs erect, 75 to 125 μ long; smaller outer bract subtending the cymule lanceolate, 11 cm. long, 2 mm. wide near the middle, slenderly acute, the costa, at least toward base, often bearing slender spreading hairs up to 1.25 mm. long, in other respects the smaller exterior bracts similar to the larger ones; innermost bracts narrowly lanceolate, 6 mm. long, 1 mm. wide near base, slenderly acute, glabrous within, hirtellous without, whitish toward base; calyx 4.5 mm. long, hirtellous, the hairs about 0.25 mm. long, the segments narrowly triangular, 3 mm. long, 1 mm. wide at base, acute, whitish; corollas (immature) densely hirtellous, the lips equal, the upper lip obtuse, the lower 3-lobed, the lobes rounded, the middle lobe broader than the lateral ones; capsules not seen.

Type in the Kew Herbarium, collected in the "Province of Bogota, en el Salto,"¹ 2,500 meters altitude, August 1855, by J. Triana (No. 4093-3). Isotype: Col.

7. *Dicliptera pilosa* H. B. K.

Dicliptera pilosa H. B. K. Nov. Gen. & Sp. 2: 237. 1817. Type locality: "prope Gonzanama, Malacates et Loxa Novo-Granatensium."

Herbs up to 30 cm. high or more; stems erect or ascending, green, moderately hirtellous, the hairs about 0.25 mm. long, retrorsely curved; leaf blades (only the uppermost present) ovate or obovate, up to 4 cm. long and 2 cm. wide, obtuse or rounded at tip, mucronate (the mucro slender, up to 2 mm. long), narrowed at base and briefly decurrent on the petiole, entire or undulate, ciliolate, thin, both surfaces sparingly hirtellous, the hairs curved, ascending, about 0.25 mm. long, the costa and lateral veins (4 or 5 pairs) moderately prominent, the veinlets coarsely reticulate, the cystoliths conspicuous under a lens, up to 0.5 mm. long, straight or slightly curved; petioles slender, up to 1.5 cm. long, sparingly hirtellous or the channel densely so, the hairs up to 0.35 mm. long, ascending or subappressed; capitula aggregated to form terminal spikelike thyrsi up to 19 cm. long and 2.5 cm. broad, or the lowermost axillary, the cymes sessile, some of the capitula of the terminal racemes subtended by obovate leaflike bracts up to 2.5 cm. long and 13 mm. wide, these conspicuously mucronate; bracts subtending the cymes subulate, up to 4 mm. long and 0.25 mm. wide at base, carinate, sparingly hirtellous, the outer pair of bracts subtending the cymules unequal, thin, green, mucronate, ciliate, both surfaces hirtellous, the marginal hairs up to 0.75 mm. long, straight, spreading, the surface hairs minute, ascending, the venation conspicuous, the costa and 2 pairs of lateral veins predominating, the veinlets parallel or coarsely reticulated, prominent, the posterior bract subrhombic, 1.5 cm. long, 6 mm. wide, acute at tip, cuneate at base, the anterior bract rhombic-obovate, 8 mm. long (mucro 2 mm. long), 3.5 mm. wide at 6 mm. above base, obtuse at tip, cuneate at base, the innermost bracts narrowly lanceolate, 2 to 2.5 mm. long, 0.5 mm. wide, acuminate, ciliolate; calyx 2 mm. long, the segments narrowly lanceolate, 0.25 mm. wide, ciliolate; corollas lavender, 12 mm. long, sparingly and minutely pubescent, the tube slender, about 1 mm. in diameter, the lips ovate, about 4 mm. long and 3 mm. wide; capsules 4 mm. long, 2 mm. broad, 0.5 mm. thick, obtuse and apiculate, pilose, the hairs about 0.25 mm. long, spreading at tip of the capsule, retrorse toward base; retinacula narrowly triangular, 0.75 mm. long, 0.25 mm. broad at base, acute at tip; seed light brown, flattened, suborbicular, 1.25 mm. in diameter,

¹ Salto de Tequandama, which often is called merely "El Salto" by the residents of Bogotá.

about 0.25 mm. thick, densely hirtellous, the hairs straight, spreading, retrorsely barbed.

The nature of the lobes of the lower lip of the corolla was not apparent in the few badly crumpled flowers present on the specimens examined.

EL VALLE: Roadside at Cali, Killip 8335 (GH, NY).

8. *Dicliptera caucensis* Leonard, sp. nov.

FIGURE 124

Suffrutex, caulibus sursum hexagonis, angulis anguste alatis, subviridibus, pilosulis (pilis rectis, patulis), deorsum subteretibus, glabratis; lamina foliorum ovata, acuta vel obtusa, basi angustata,



FIGURE 124.—*Dicliptera caucensis* Leonard (*Pérez-Arbeláez & Cuatrecasas 5977*): *a*, Tip of plant; *b*, one of a pair of bracts subtending cyme; *c*, outer bract subtending cymule; *d*, inner bract; *e*, a hair from the margin of one of these bracts; *f*, *g*, inner bracts subtending flowers; *h*, calyx segment; *i*, hair from margin of calyx segment; *j*, anther (dorsal view); *k*, anther (ventral view); *l*, valve of capsule; *m*, seed. (*a*, *b*, Natural size; *c*, *d*, *f*–*h*, twice natural size; *e*, about 10 times natural size; *i*, about 18 times natural size; *j*, *k*, 4 times natural size; *l*, $2\frac{1}{2}$ times natural size; *m*, about 3 times natural size.)

in petiolum breviter decurrens, membranacea, utrinque parce hirsuta, costa et venis lateralibus aliquanto prominentibus; petioli graciles, subtus glabri, canale dense pubescente; cymae axillares et terminales, cymae superiores confluentes, thyrsos densos terminales formantes; cymulae pleurumque 3-florae; bracteae virides, bractea exterior lanceolata, acuta et cuspidata, basi angustata, marginibus dense

ciliata, pilis patulis, utrinque parce pilosa, costa et venis lateralibus prominentibus, bractea interior similis sed aliquanto minor; bracteae interiores anguste lanceolatae, costatae, pilosae et ciliatae (pilis patulis), marginibus albidae; calycis segmenta parva, anguste lanceolata, hirsutula, pilis patulis; corolla parva, purpurascens, subtiliter pubescens, tubo angusto, labio superiore ovato, rotundato, labio inferiore oblongo, apice trilobato, lobis parvis, rotundatis; capsulae parvae, clavatae, pilosulae; retinacula parva, subulata; semina plana, nigra, glabra vel marginibus papillosis.

Suffrutescent plants up to 60 cm. high or more, branched, erect or ascending, the upper portions of the stems hexagonal, the angles narrowly winged, greenish yellow, pilosulous, the hairs straight, spreading, up to 0.5 mm. long, the lower portions of the stems subterete, glabrate; leaf blades ovate, up to 5 cm. long and 2.5 cm. wide, acute to obtusish, narrowed at base and briefly decurrent on the petiole, membranous, entire, both surfaces sparingly hirsute, the hairs up to 1 mm. long, spreading or ascending, the costa and lateral veins (4 or 5 pairs) rather prominent, the cystoliths prominent under a lens, up to about 0.25 mm. long, blackish; petioles slender, up to 2 cm. long, glabrous beneath, the channels densely pubescent; flowers borne in axillary and terminal cymes, the uppermost confluent, forming dense spikelike thyrsi up to 3 cm. long and 2 cm. broad, each cymule usually 3-flowered; bracts green, the outer one lanceolate, 13 mm. long, 3.5 mm. wide slightly above middle, acute and cuspidate, the cusp up to 1.5 mm. long, the base narrowed, the margins densely ciliate, the hairs about 1 mm. long, spreading, both surfaces sparingly pilose, the hairs somewhat shorter than the marginal ones, the costa and lateral nerves (1 pair) prominent, the inner bract similar but slightly smaller (10 mm. long and 2.5 mm. wide), the interior bracts lance-subulate, 5 to 7 mm. long, 0.5 to 0.75 mm. wide, costate, pilose and ciliate, the hairs white, spreading, up to 1 mm. long, the margins whitish; calyx 3 mm. long, the segments lance-subulate, subhyaline, hirsutulous, the hairs about 0.25 mm. long, spreading; corollas 15 mm. long, purplish ("rosado-violacea," Pérez-Arbeláez), finely pubescent, the hairs about 0.5 mm. long, spreading or retrorse, the tube 7 mm. long, 1.5 mm. broad near base, narrowed at 5 mm. above base to 1 mm., 2 mm. broad at mouth, the posterior lip ovate, 9 mm. long, 4.5 mm. wide, rounded, the lower lip oblong, 8 mm. long and 3.5 mm. wide, 3-lobed at tip, the lobes about 0.5 mm. long and wide, rounded; capsules 5 mm. long, 2 mm. broad, pilosulous, the hairs about 0.25 mm. long, white, spreading; retinacula subulate, about 1 mm. long; seed black, flattened, about 1.5 mm. long and broad, glabrous or the margins sparingly papillose.

Type in the U. S. National Herbarium, No. 1774439, collected between Puracé and Coconuco, Department of Cauca, Colombia, 2,300 to 2,400 meters altitude, July 12, 1939, by E. Pérez-Arbeláez and J. Cuatrecasas (No. 5977).

Kjell von Sneidern's No. 1032 (S), collected in thickets at El Tambo, Department of Cauca, altitude 1,700 meters, August 15, 1936, is also of this species.

9. *Dicliptera conformis* Leonard, sp. nov.

FIGURE 125

Herba debilis, caulibus erectis vel ascendentibus, subhexagonis, parce pilosulis, pilis retrorse curvatis; lamina foliorum ovata, acuta,

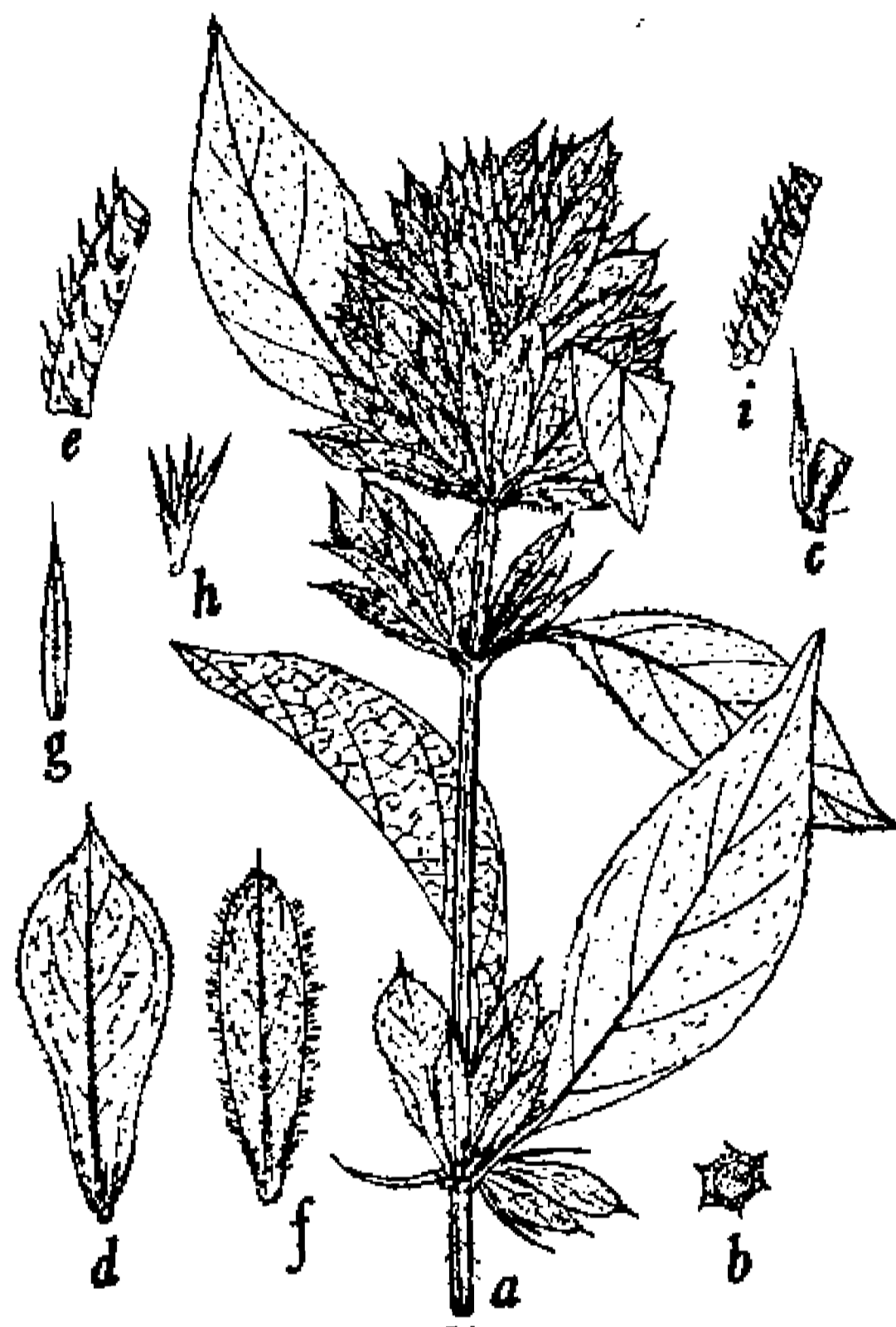


FIGURE 125.—*Dicliptera conformis* Leonard (*Triana*, Almaguer, El Cauca): *a*, Inflorescence; *b*, cross-section of stem; *c*, one of a pair of bracts subtending a cyme; *d*, the larger outer bract subtending a cymule; *e*, marginal hairs of same; *f*, the smaller outer bract subtending the cymule; *g*, one of the innermost bracts; *h*, calyx; *i*, marginal hairs of one of the segments. (*a*, Natural size; *b*, 3 times natural size; *c*, *d*, *f*-*h*, twice natural size; *e*, 10 times natural size; *i*, 15 times natural size.)

basi angustata, in petiolum breviter decurrens, membranacea, integra vel undulata, parce ciliolata, pilis curvatis, supra parce hirtella, cystolithis sub lente conspicuis, costa et venis lateralibus obscuris, subtus parce hirtella, costa et venis aliquanto prominentibus, venulis reticulatis; petioli graciles, subtus glabri, canale aliquanto dense hirtelli, pilis minutis, curvatis, subappressis; capitula axillaria et terminalia, sursum aggregata, thyrsos densos terminales formantia, pedunculis brevissimis, glabris vel parce hirtellis; capitula paribus

foliorum suffulta; cyma 3-partita, paribus bractearum lanceolato-subulatarum suffulta; cymulae pedunculus brevissimus, aliquanto hirtellus, pilis flavidis, ascendentibus; bractea exterior cymulam subtendens oblanceolata, subobtusa, cuspidata, basi angustata, convexa, viridis, marginibus basi albidis, extus hirtella, pilis rigidis, sursum curvatis, costa prominente, intus parce et subtiliter hirtella, paribus nervis basi prominentibus; bractea minor exterior cymulam subtendens bractee superiori similis; bractee intimae lanceolato-subulatae 1-nervatae, ciliatae, pilis patulis, extus parce hirtellae, intus glabrae; calycis segmenta albida, anguste triangularia, puberula; ovarium apice hirtellum, basi glabrum.

Weak herbs up to 15 cm. high or more; stems erect or ascending, 0.75 mm. in diameter, subhexagonal (the angles acute), sparingly pilosulous, the hairs about 0.25 mm. long, retrorsely curved; leaf blades ovate, up to 3 cm. long and 13 mm. wide, acute, narrowed at base and briefly decurrent on the petiole, firmly membranaceous, entire or undulate, sparingly ciliolate with curved hairs, the upper surface sparingly hirtellous, the cystoliths conspicuous, the costa and lateral veins (4 or 5 pairs) obscure, the lower surface sparingly hirtellous, the hairs about 0.25 mm. long, the costa and veins more prominent than above, the veinlets reticulate; petioles slender, up to 1 cm. long, glabrous beneath, the channel rather densely hirtellous with subappressed hairs about 0.25 mm. long; capitula axillary and terminal, the uppermost aggregated in a dense thyrses about 2.5 cm. long and 15 mm. broad, the peduncles up to 1 mm. long, glabrous or sparingly hirtellous, the capitula subtended by a pair of leaves, the cymes, mostly 3-parted, subtended by a pair of lance-subulate bracts about 5 mm. long and 0.5 mm. wide near base; cymules supported by peduncles 0.5 mm. long, moderately hirtellous with yellowish, retrorsely ascending hairs 0.5 mm. long, the larger outer bract subtending the cymule green except a narrow marginal basal whitish area, oblanceolate, 1 cm. long, 3.5 mm. wide at 5 mm. below tip, subobtuse, cuspidate (the cusp 0.75 mm. long), gradually narrowed from above middle to base, the basal portion convex, ciliate, the hairs mostly 0.75 mm. long, the outer surface hirtellous, the hairs stiff, upwardly curved, 0.5 mm. long, yellowish, the costa prominent, the lateral nerves obscure, the inner surface sparingly and finely hirtellous, the venation obscure except the basal portion of a pair of lateral submarginal nerves, the smaller outer bract subtending the cymule 9 mm. long, 2.25 mm. wide at 3 mm. below tip, in other respects similar to the larger outer bract; innermost bracts lance-subulate, up to 6.25 mm. long, 0.5 mm. wide, 1-nerved, ciliate, the hairs spreading, up to 0.5 mm. long, the outer surface sparingly hirtellous, the inner glabrous; calyx 2.5 mm. long, whitish, puberulous, the segments narrowly tri-

angular, 1.5 mm. long, 0.5 mm. wide at base; corolla not seen; ovary hirtellous toward tip, glabrous toward base; capsules not seen.

Type in the Kew Herbarium, collected at Almaguer, Province of Popayán, Department of El Cauca, Colombia, 2,000 meters altitude, August 1855, by J. Triana (No. 4093-2). Isotype in the Herbario Nacional Colombiano.

The bracts are marked by scattered minute black dots which may possibly represent parasites.

10. *Dicliptera ochrochlamys* Leonard, sp. nov.

FIGURE 126

Herba, caulibus erectis vel ascendentibus, glabris vel parce et subtiliter puberulis; lamina foliorum anguste oblongo-elliptica vel lanceolata, apice acuta vel subacuta, basi angustata, in petiolum decurrens, membranacea, marginibus integris vel undulatis, supra glabra, subtus costa parce puberula, costa et venis lateralibus prominentibus; petioli glabri vel parce pubescentes; cymae summis confluentes, thyrsos densos terminales formantes, infimae breviter pedunculatae, alterae sessiles vel subsessiles; cymulae pluriflorae, rhache et pedunculis plus minusve puberulis, bracteis exterioribus ellipticis, apice acutis et apiculatis, basi angustatus, plus minusve puberulis, ciliatis; bracteae intermediae lanceolatae, acuminatae, subhyalinae, apice virides, plus minusve puberulae; bracteae intimae parvae, anguste lanceolatae, albidae, puberulae; calycis segmenta parva, anguste lanceolata, subhyalina, minute et parce pubescentia; corolla (immatura) parva, subtiliter et parce pubescens, labiis oblongis, labio posteriore subobtusato, labio inferiore apice trilobato, lobis parvis, rotundatis, lobo medio subcucullato; stamina vix exserta, filamentis parce pilosis.

Herbs about 40 cm. high; stems erect or ascending, hexagonal, finely and rather sparingly puberulous or glabrate, the angles rounded, the lower nodes somewhat swollen; leaf blades narrowly oblong-elliptic to lanceolate, 3 to 7 cm. long, 1 to 2.5 cm. wide, acute to subacute at tip, narrowed at base and decurrent on the petiole, thin, entire or undulate, ciliolate, the upper surface glabrous, drying olive green, the lower surface drying to grayish green, glabrous or the costa sparingly puberulous, this and the lateral veins (4 or 5 pairs) prominent, more so beneath than above, the cystoliths of both surfaces slender, 0.25 mm. long, rather scattered; petioles slender, up to 2 cm. long, sparingly and minutely pubescent or glabrate; flowers borne in dense terminal and axillary thyrsi 1 to 3 cm. long and 1 to 1.5 cm. broad, these composed of verticillasters of 4 to 5 cymes each, the lowermost cymes of the thyrses short-peduncled, the others sessile or subsessile, the cymes usually several flowered, the rachis and peduncles more or less puberulous, the bracts subtending the cymes elliptic, 9 mm. long and 4 mm. wide, acute and cuspidate, thin, narrowed toward

base, puberulous, the lower half whitish, the upper light green, ciliate, the marginal hairs up to 1 mm. long, the intermediate bracts lanceolate, 7 mm. long, 2.5 mm. wide, acuminate, subhyaline, greenish toward tip, more or less puberulous, the innermost bracts lance-subulate, 4.5 mm. long, 0.5 mm. wide, whitish, puberulous; calyx 3.5 mm. long, the segments narrowly lanceolate, 3 mm. long, 0.25 mm. wide, subhyaline; corolla (immature) 12 mm. long, red (?), finely



FIGURE 126.—*Dicliptera ochrochlamys* Leonard (*García-Barriga* 5177): *a*, Tip of stem; *b*, cross-section of stem; *c*, portion of leaf blade (upper surface) enlarged to show cystoliths; *d*, outer bract subtending cymule; *e*, inner bract; *f*, marginal hairs of same; *g*, one of the bracts subtending flower; *h*, calyx segment; *i*, marginal hairs of same; *j*, corolla. (*a*, Natural size; *b*, about $4\frac{1}{2}$ times natural size; *c-e*, *g*, *h*, *j*, twice natural size; *f*, about $11\frac{1}{2}$ times natural size; *i*, 25 times natural size.)

pubescent, the hairs spreading, up to 0.25 mm. long, the lips oblong, 5 to 6 mm. long, the posterior lip 3 mm. wide, subobtusate at tip, the anterior lip 2.5 mm. wide, 3-lobed at tip, the lobes rounded, 0.25 mm. long, the middle one subcucullate; stamens reaching the tip of the upper lip, the filaments sparingly pilose, the hairs spreading, about 0.25 mm. long, the anthers cells attached one above the other, oval, each barely 2 mm. long; ovaries and capsules not seen.

Type in the U. S. National Herbarium, No. 1830673, collected at Restrepo, Intendencia of Meta, Colombia, January 1937, by H. García-Barriga (No. 5177). Isotype in the Herbario Nacional Colombiano.

The specific epithet (*ωχρός*, whitish, and *χλαμύς*, military cloak) alludes to the characteristic whitish bracts, which give a whitish appearance to the entire inflorescence.

11. *Dicliptera cuatrecasasii* Leonard, sp. nov.

FIGURE 127

Herba, caulibus ramosis, subhexagonis, sursum puberulis, deorsum glabris; lamina foliorum oblongo-elliptica, apice acuta vel acuminata,



FIGURE 127.—*Dicliptera cuatrecasasii* Leonard (*Cuatrecasas* 18783): *a*, Tip of plant; *b*, cymule; *c*, marginal hairs of the inner and outer cymule bracts; *d*, one of the inner bracts subtending the flower; *e*, calyx segment; *f*, hairs from the margin of the calyx segment. (*a*, Natural size; *b*, *d*, *e*, twice natural size; *c*, about 25 times natural size; *f*, about 40 times natural size.)

basi angustata, in petiolum breviter decurrens, integra vel undulata, ciliolata, supra glabra vel pilos paucos minutos ferens, in costa pubescens, costa et venis lateralibus obscuris, subtus glabra vel parce pubescens, costa et venis lateralibus mediocriter prominentibus; petioli graciles, subtus glabri, canale puberulenti, pilis curvatis; capitula axillaria et terminalia sursum confluentia, thyrsum densum angustum terminalem formantia, pedunculis brevibus, puberulis, pilis retrorse curvatis; bracteae capitula subtendentes foliiformes; bracteae cymulas subtendentes parvae, lanceolatae, acuminatae, 1-nervatae, majores exteriores oblanceolatae, subobtusae, apice spina parva terminantes, basi angustatae, glabrae vel puberulae, marginibus ciliolatis vel ciliolatis et ciliatis; bracteae intimae anguste lanceolatae, albidae apice subviridi exceptae, tenuiter ciliolatae, obscure 1-nervatae; calycis segmenta anguste triangularia, obscure 3-nervata, albida.

Dull green branching herbs; stems subhexagonal, the angles rounded, the tips puberulous, the lower portions glabrous, the base of the plant 7 mm. in diameter or more; leaf blades oblong-elliptic, acute or acuminate, narrowed at base and briefly decurrent on the petiole, thin, entire or undulate, ciliolate, the upper surface glabrous (or bearing a few minute hairs) except the costa, this puberulous and like the lateral veins (4 or 5 pairs) obscure, the cystoliths inconspicuous, the lower surface glabrous or bearing a few scattered minute hairs, the venation moderately conspicuous, the cystoliths conspicuous under a lens but not numerous; petioles slender, up to 4 cm. long, glabrous beneath, the channel puberulous with curved hairs; flowers borne in axillary and terminal capitula, the uppermost confluent, forming a narrow spike-like thyrses, the peduncles up to 5 mm. long, or the lowermost longer, puberulous, the hairs retrorsely curved; bracts subtending the cymes leaflike, lanceolate, about 10 mm. long and 2.5 mm. wide; bracts at base of cymules lance-subulate, usually up to 2.5 mm. long and 0.75 mm. wide at base, acuminate and 1-nerved, the pair of larger and outer bracts subtending and enclosing the cymules oblanceolate, the posterior bract 13 mm. long and 4 mm. wide slightly above middle, subobtuse and tipped by a spine about 1 mm. long, gradually narrowed from above middle to base (the base 2 mm. wide), firm, green, or whitish at base, glabrous or puberulous, ciliolate or both ciliolate and sparingly ciliate, the longer hairs up to 1 mm. long, the anterior bract similar but somewhat smaller, the inner bracts narrowly lanceolate, 7 mm. long, 1.25 mm. wide, whitish except toward tip, finely ciliolate, faintly 1-nerved; calyx segments narrowly triangular, 3 mm. long, 1 mm. wide at base, faintly 3-nerved, white; corollas and capsules not seen.

Type in the U. S. National Herbarium No. 1853821, collected near the confluence of the Río Pichindécito and the Río Pichindé, valley

of the Río Cali, Department of El Valle, Colombia, 1,580 to 1,640 meters altitude, November 7, 1944, by J. Cuatrecasas (No. 18783).

Dicliptera cuatrecasasi, as represented by the type specimen, is very robust for the genus. It is nearly glabrous and the entire plant is dull green in color. Many of the larger bracts subtending the cymules are merely ciliolate but others bear in addition to the minute marginal hairs a few or sometimes numerous long spreading ones.

12. *Dicliptera killipii* Leonard, sp. nov.

FIGURE 128

Herba, caulibus erectis vel ascendentibus, subhexagonis, pilis retrorse curvatis; lamina foliorum ovata, apice acuta, basi angustata, in petiolum breviter decurrens, membranacea, integra vel undulata, ciliata, supra parce hirsuta, costa et venis lateralibus obscuris, cystolithis parvis et obscuris, subtus hirsuta, pilis praecipue in costa et venis (eis aliquanto conspicuis), cystolithis obscuris; petioli graciles, parce hirtelli; capitula axillaria et terminalia, sursum confluentia, thyrsus densum angustum terminalem formantia, pedunculis brevibus, hirsutis; bracteae cymulas subtendentes parvae, lineares, lanceolatae, tenuiter acuminatae, marginibus et costa ciliatae; bracteae majores capitula subtendentes oblanceolatae, subobtusae et cuspidatae, basi angustatae, subcoriaceae, venosae, costa et nervis infimis magis prominentibus, ciliatae, utrinque parce hirtellae, sursum virides, basi albidae; bracteae intimae ciliatae, apice hirtellae et subvirides, deorsum albidae; calycis segmenta anguste triangularia, ciliolata, hirtella; corolla lilacina, parva, tubo gracili, sursum minute pubescente, labiis minute pubescentibus, labio superiore ovato, acuto, labio inferiore oblongo, apice 3-lobato, lobis parvis, rotundatis; stamina exserta, filamentis parce pilosis; capsulae parvae, apice obtusae, apiculatae, retrorse et minute pilosae; retinacula triangularia, minuta, acuminata; semina suborbicularia, nigra, marginibus parce papillosa.

Herbs, stems weak, erect or ascending, up to 30 cm. high or more, subhexagonal, hirtellous, the hairs retrorsely curved, about 0.25 mm. long; leaf blades ovate, up to 7 cm. long and 3 cm. wide, acute, narrowed at base and briefly decurrent on the petiole, membranaceous, entire or undulate, ciliate, the upper surface sparingly hirsute, the hairs ascending, up to 0.75 mm. long, the venation obscure, the cystoliths minute and obscure, about 0.25 mm. long, the lower surface hirsute, the hairs spreading or ascending, up to 0.75 mm. long, confined mostly to costa and veins (4 or 5 pairs, these barely conspicuous but more so than above), the reticulation of the veinlets conspicuous under a lens, the cystoliths inconspicuous; petioles slender, up to 2.5 cm. long, sparingly hirtellous; flowers borne in

axillary verticillasters, the uppermost confluent, forming a narrow spikelike thyse, the peduncles up to 1.5 mm. long, hirsute, the bracts subtending the cymes narrowly lanceolate, about 7 mm. long, 1 mm. wide at base, slenderly acuminate, costate, the margins and costa ciliate, the larger and outer pair of bracts subtending the cymule oblanceolate, subobtuse and abruptly cuspidate (the cusp 1.5 mm. long), narrowed gradually from above middle to base, rather

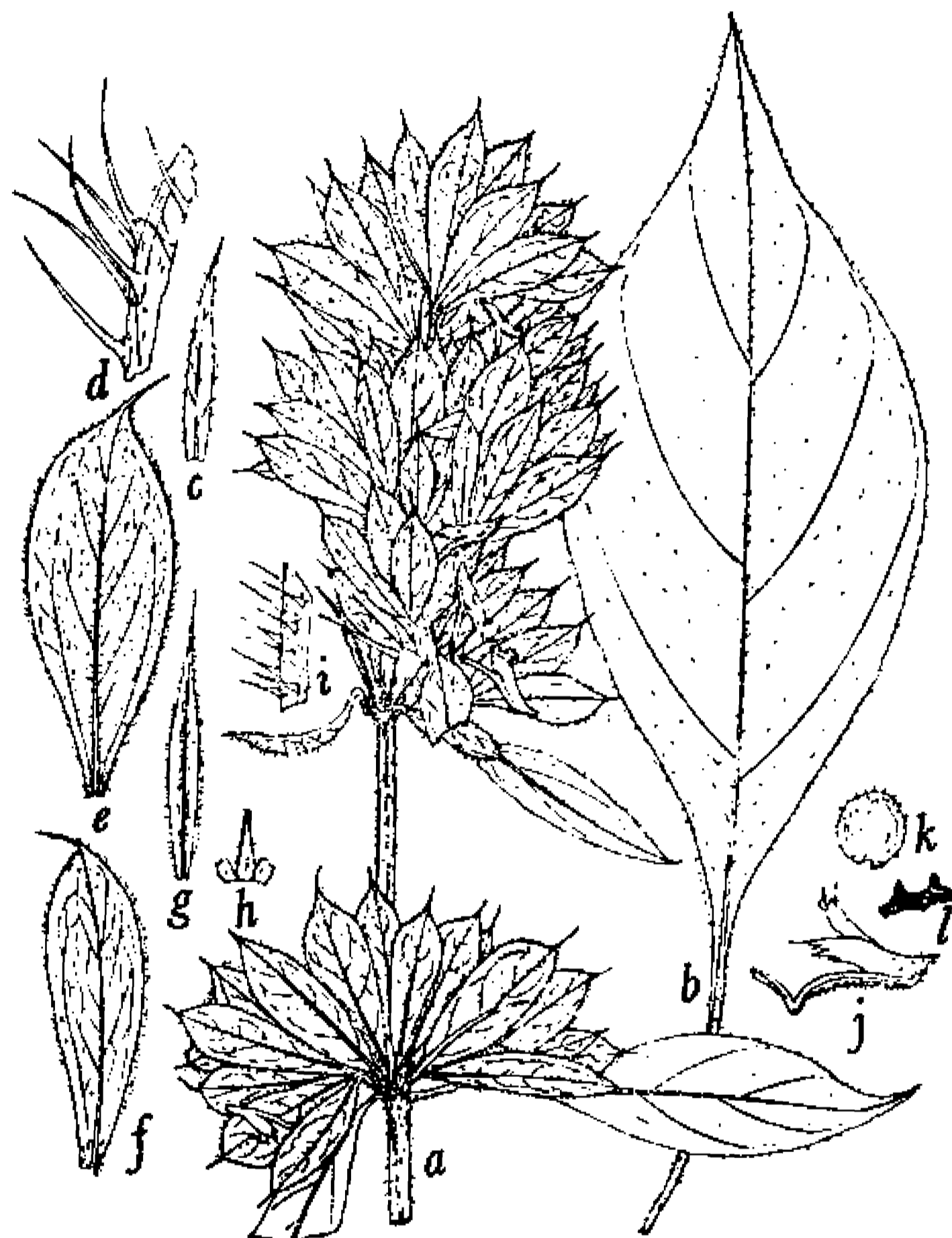


FIGURE 128.—*Dicliptera killipii* Leonard (Killip 6818): *a*, Tip of branch; *b*, leaf; *c*, bract subtending cymes; *d*, marginal hairs of the larger outer bract subtending the cymule; *e*, the larger of the outer pair of bracts subtending the cymule; *f*, the smaller bract of the large pair; *g*, one of the innermost bracts subtending the cymule; *h*, one of the calyx segments; *i*, marginal hairs of same; *j*, disrupted valve of calyx; *k*, seed; *l*, marginal papillae of same. (*a*, Natural size; *c*, *e-h*, *j*, twice natural size; *d*, 15 times natural size; *i*, about 20 times natural size; *k*, 4 times natural size; *l*, about 30 times natural size.)

firm, veiny, the costa and the lower pair of nerves predominating, the margins ciliolate, the hairs up to 0.5 mm. long, both surfaces rather sparingly hirtellous, the larger bracts 13 mm. long, and 5 mm. wide, the smaller one 11 mm. long and 3.5 mm. wide, both green toward tip, whitish toward base; innermost bracts narrowly lanceolate, the larger of these 9 mm. long and 1 mm. wide at 2.5 mm. above base, the smaller pair 5 to 6 mm. long, about 0.75 mm. wide above base, both pairs costate, ciliate, the tips hirtellous and greenish, whitish toward base; calyx segments narrowly triangular, 2.5 mm. long, 0.5 mm. wide

at base, whitish, ciliate and hirtellous, the hairs about 150 μ long; corollas lilac, about 8 mm. long, the tube about 2 mm. broad, narrowed near mouth to 1.5 mm., its upper portion and the lips finely pubescent, the hairs straight and spreading, about 0.25 mm. long, the upper lobe ovate, about 7 mm. long and 3 mm. wide, acute at tip, the lower lip oblong, about 6 mm. long and 2.5 mm. wide, 3-lobed at apex, the lobes rounded, about 0.75 mm. long and wide; stamens exerted about 4 mm. beyond the mouth of the tube, the filaments sparingly pilose; capsules 5 mm. long, about 2 mm. broad, 0.75 mm. thick, obtuse and apiculate at tip, retrorsely pilose, the hairs about 0.25 mm. long, whitish; retinacula triangular, acuminate, about 1 mm. long; seed suborbicular, flattened, 1.5 mm. in diameter, 0.5 mm. thick, black, sparingly papillose near margins, the papillae about 50 μ long.

Type in the U. S. National Herbarium, No. 1142190, collected between Canaan and Coconuco, Department of Cauca, Colombia, 2,300 to 2,800 meters altitude, June 17, 1922, by E. P. Killip (No. 6818). Isotypes: GH, NY.

Triana's specimens (Col, NY), collected at Almaguer, Department of Cauca, are also of this species.

13. *Dicliptera driophila* Leonard, sp. nov.

FIGURE 129

Herba vel suffrutex, caulibus ramosis, erectis vel ascendentibus, subhexagonis, striatis, sursum subtiliter pubescentibus, pilis plus minusve retrorse curvatis, praecipue in angulis positis, deorsum glabratis; lamina foliorum ovato-lanceolata, acuta vel acuminata, basi angustata, in petiolum breviter decurrens, membranacea, integra vel undulata, viridis, supra aliquanto hirtella, costa et venis lateralibus gracilibus, obscuris, cystolithis inconspicuis, subtus aliquanto dense hirtella, pilis praecipue in costa et venis (eis gracilibus sed conspicuis); petioli graciles, subtus glabri, canale hirtelli; capitula praecipue axillaria, pedunculis brevibus, hirtellis; bracteae cymas subtendentes parvae, subulatae, 1-nervatae, parce ciliolatae; bracteae majores cymulas subtendentes sursum virides, deorsum albidae, acutae, cuspidatae, subcoriaceae, ciliatae, parce hirtellae, costa et nervis infimis magis prominentibus, bractea posterior oblanceolata, inferior lanceolata, bracteae intimae anguste lanceolatae, tenuiter acuminatae, albidae, 1-nervatae, ciliolatae; calycis segmenta anguste triangularia, parva, albida, ciliolata; corolla pubescens; capsulae parvae, minute hirsutae, pilis patulis vel retrorsis; retinacula minuta, subulata.

Herbs, sometimes suffrutescent toward base, up to 40 cm. high or more; stems branched, erect or ascending, subhexagonal, striate, the upper portions finely pubescent, the hairs more or less retrorsely curved, up to 0.25 mm. long, confined chiefly to the angles, the lower portions of the stem glabrate; leaf blades ovate-lanceolate,

up to 9 cm. long and 3 cm. wide, acute to acuminate, narrowed at base and briefly decurrent on the petiole, membranaceous, entire or undulate, drying green, the upper surface moderately hirtellous, the hairs up to 0.75 mm. long, ascending or slightly curved, the costa and lateral veins slender, obscure, the cystoliths up to 0.5 mm. long, the lower surface rather densely hirtellous, the hairs ascending, up to 0.75 mm. long, confined chiefly to the costa and lateral veins; petioles slender, up to 2 cm. long, glabrous below, the channel hirtellous; capitula mostly axillary, a few of the uppermost sometimes more or less confluent, the peduncles up to 2.5 mm. long,

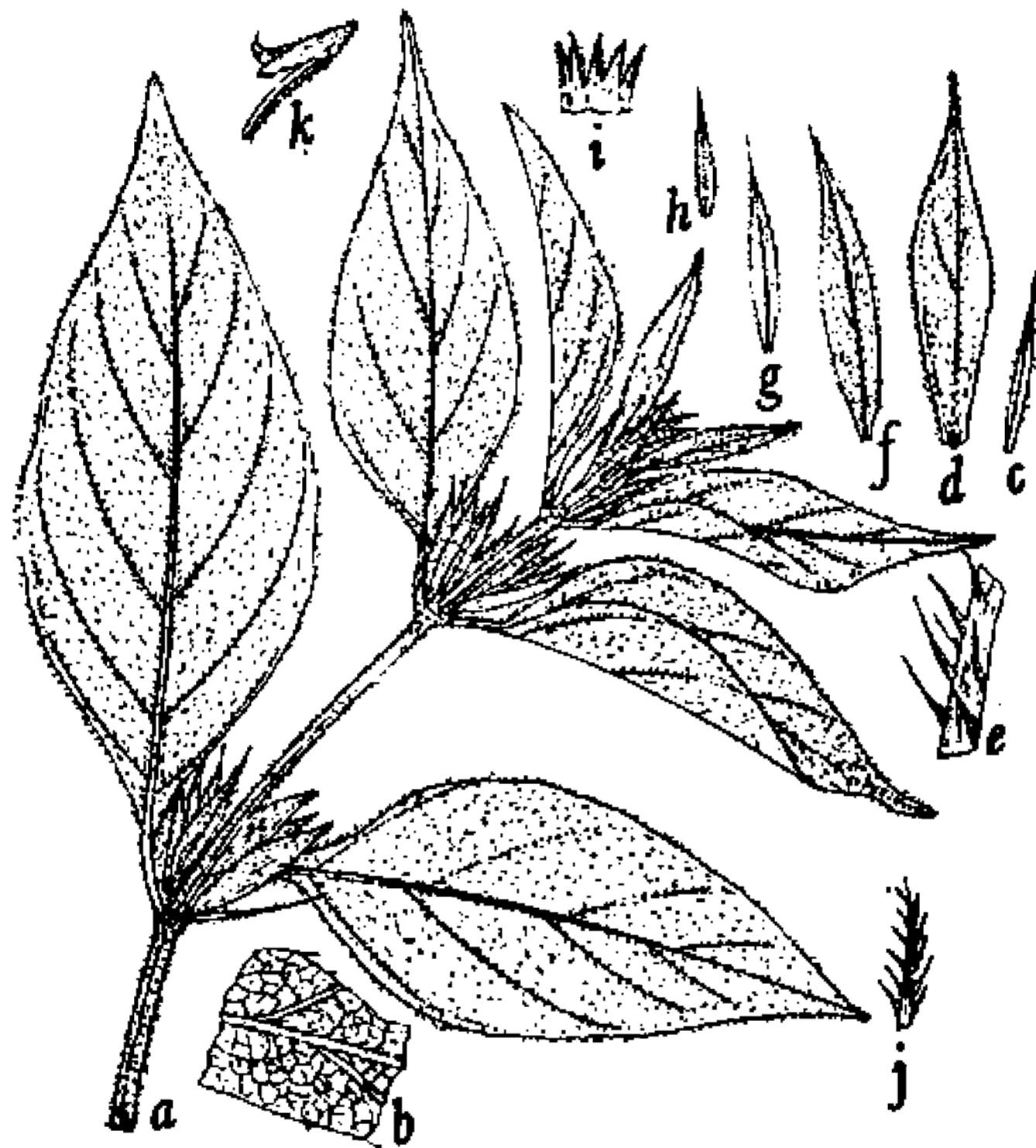


FIGURE 129.—*Dicliptera driophila* Leonard (*Cuatrecasas* 20947): *a*, Tip of branch; *b*, portion of leaf blade (upper surface) to show reticulation of veinlets; *c*, one of a pair of outer bracts subtending a cyme; *d*, the larger of a pair of outer bracts subtending a cymule; *e*, marginal hairs of same; *f*, the smaller of the two outer bracts subtending the cymule; *g*, one of a pair of inner bracts of a cymule; *h*, one of the innermost pairs of bracts; *i*, calyx spread to show lobes; *j*, tip of calyx lobe to show pubescence; *k*, valve of capsule. (*a*, Natural size; *c*, *d*, *f-i*, *k*, twice natural size; *b*, $1\frac{1}{2}$ times natural size; *e*, 34 times natural size; *j*, 14 times natural size.)

hirtellous; bracts subtending the cymes subulate, up to 6 mm. long and 0.5 mm. wide at base, strongly 1-nerved, sparingly ciliolate, the larger outer pair of bracts subtending the cymule oblong-lanceolate, up to 12 mm. long and 3.5 mm. wide slightly above the middle, acute and cuspidate (the cusp 1.5 mm. long), green toward tip, whitish toward base, subcoriaceous, ciliate and sparingly hirtellous, the hairs about 0.25 mm. long, the costa and a pair of lateral nerves predominating, the smaller bract lanceolate, up to 8 mm. long and 1.5 mm. wide, in other respects similar to the larger bract; innermost bracts

narrowly lanceolate, 6 mm. long and 0.75 mm. wide at 1.5 mm. above base, the smaller ones 3.5 mm. long and 0.5 mm. wide near base, both pairs whitish, slenderly acuminate, 1-nerved, ciliolate; calyx segments narrowly triangular, 1.5 mm. long, 0.5 mm. wide at base, whitish, ciliolate; corolla (immature) pubescent; capsules about 6 mm. long, clavate, pubescent, the hairs about 0.25 mm. long, spreading or retrorse, the retinacula subulate, nearly straight, 0.75 mm. long.

Type in the U. S. National Herbarium, No. 1900475, collected at Quebrada de los Osos, valley of the Río Bugalagrande, Department of El Valle, Colombia, 2,170 meters altitude, April 20, 1946, by J. Cuatrecasas (No. 20947). Isotype: US.

A specimen collected in thickets at Rioblanco, vicinity of Popayán, Department of Cauca, Colombia, 1,800 meters altitude, July 9, 1939, by Pérez-Arbeláez and Cuatrecasas, No. 5788 (US), is also of this species.

The color of the corolla is not apparent in the dried material. Only immature flowers were present and, judging from the completeness of the specimens in other respects, this absence of expanded corollas may have been due to cleistogamy. The specific epithet is derived from *δρλος*, thicket, and *φίλος*, loving.

14. *Dicliptera garciae* Leonard, sp. nov.

FIGURE 130

Suffrutex, caulibus erectis vel ascendentibus, subhexagonis, sulcatis, sursum pubescentibus, deorsum glabratibus; laminae foliorum (verticillasteres subtendentes) ovatae, subacutae, basi rotundatae vel obtusae, integrae, subcoriaceae, utrinque pubescentes, pilis praecipue in costa et venis positibus, costa et venis lateralibus supra obscuris, subtus aliquanto prominentibus; petioli breves, pubescentes; capitula axillaria, pedunculis brevibus; bracteae cymulas subtendentes parvae, lanceolatae, acuminatae, carinatae, parce pubescentes, 1-nervatae, majores exteriores oblanceolatae, acutae vel acuminatae, coriaceae, virides, ciliatae, parce hirtellae, costa et venis lateralibus obscuris, majores interiores aliquanto minores quam exteriores, lanceolatae, acuminatae, coriaceae, sursum virides, deorsum subflavo-virides, ciliolatae, hirtellae; bracteae intimae anguste lanceolatae, deorsum albidae, minute hirtellae, 1-nervatae; calycis segmenta triangularia, acuminata, subhyalina, sursum hirtella; corolla rubra, plus minusve pubescens, tubo anguste hypocrateriformi, labiis ovatis, labio superiore apice rotundato vel leviter emarginato, labio inferiore aliquanto longiore quam labio superiore, apice trilobato, lobis parvis, rotundatis; stamina vix exserta, filamentis planis, parce pilosis; capsulae planae, ovatae, pubescentes; retinacula parva, cucullata; semina plana, suborbicularia, plus minusve minute rugosa.

Suffrutescent herbs; stems branching, erect or ascending, subhexagonal, grooved, the tips pubescent, the hairs spreading or re-

trorsely recurved, barely 0.5 mm. long, the lower portions of the stem glabrate; leaf blades (only those subtending the verticillasters present) ovate, up to 3 cm. long and 1.6 cm. wide near base, subacute, rounded or obtuse at base, entire, rather firm, hirtellous on both sides, the hairs straight or nearly so, spreading or ascending, slightly less than 0.5 mm. long, confined chiefly to costa and lateral veins (4 or 5 pairs), the venation obscure above but fairly prominent beneath; petioles up to 4 mm. long, pubescent; flowers borne in axillary



FIGURE 130.—*Dichiptera garciae* Leonard (*Cuatrecasas & García-Barriga* 9820): *a*, Tip of plant; *b*, cymule; *c*, portion of one of the larger bracts of the cymule enlarged to show pubescence; *d*, one of the innermost bracts; *e*, one of the calyx segments; *f*, hairs from margin of calyx segment; *g*, disrupted capsule expanding from base; *h*, disrupted capsule expanding from tip. (*a*, Natural size; *b*, *d*, *e*, *g*, *h*, twice natural size; *c*, about 20 times natural size; *f*, about 25 times natural size.)

verticillasters, the internodes about 2 cm. long, the basal bracts subtending the cymes narrowly lanceolate, 2 mm. long, 0.75 mm. wide at base, acuminate, keeled, sparingly pubescent, the larger of the outer bracts subtending the cymule oblanceolate, 14 mm. long, 2.25 mm. wide at 5 mm. below tip, acute or acuminate, gradually narrowed from above middle to base, firm, green, ciliolate and sparingly hirtellous, the hairs stiff, more or less curved, about 150 μ long, the costa and lateral veins obscure, the inner bract subtending the cymule lanceolate,

about 10 mm. long and 1.5 mm. wide toward base, acuminate, firm, the upper half green, the lower half light yellowish green, the costa barely prominent, the pubescence that of the outer bract, the innermost bractlets narrowly lanceolate, about 6 mm. long, 1 mm. wide near base, whitish at least toward base, minutely hirtellous, 1-nerved; calyx segments triangular, 3.5 mm. long, 1.5 mm. wide at base, acuminate, white and subhyaline, 3-nerved, minutely ciliolate, hirtellous toward tip; corollas red, sparingly to rather densely pubescent, about 3 cm. long, 2 mm. broad at base, narrowed to 1 mm. at 5 mm. above base, thence gradually expanded, the throat 5 mm. broad, the lips ovate, the upper lip 6 mm. long and 4 mm. wide at base, rounded or shallowly emarginate at tip, the lower lip 8 mm. long and 5 mm. wide, 3-lobed at tip, the lobes rounded, about 0.5 mm. long and broad; stamens barely reaching tip of the upper lip, the filaments flat, sparingly pilose, the hairs about 0.25 mm. long; capsules ovate, strongly flattened, about 5 mm. long and 4 mm. broad and 1 mm. thick, pubescent, the hairs up to 165 μ long, spreading or retrorsely curved, the capsule dehiscing and rupturing either from base or tip, the retinacula cucullate, about 0.5 mm. long; seeds suborbicular, strongly flattened, about 3.5 mm. long, 2.5 mm. wide and about 0.75 mm. thick, more or less minutely roughened.

Type in the U. S. National Herbarium, No. 1799084, collected in dry thickets on the left slope of the valley of the Río Chicamocha, between Soatá and Tipacoque, Department of Boyacá, Colombia, 1,700 to 2,000 meters altitude, July 18, 1940, by J. Cuatrecasas and H. García-Barriga (No. 9820).

The main stem leaves, deciduous and lacking on the type specimen, may prove to be somewhat larger than those subtending the verticillasters. The stem is woody at base and the plant probably affects a sprawling habit. The exact height of the plant cannot be approximated from the type material, probably a basal portion. The branches are about 20 cm. long, but the main stem may reach 1 meter or more.

15. *Dicliptera ewanii* Leonard, sp. nov.

FIGURE 131

Herba vel suffrutex, caulibus ascendentibus, subquadrangularibus, sparse et retrorse bifariam hirtellis; lamina foliorum oblongo-ovata, acuminata, basi angustata, aliquanto firma, undulata, utrinque parce hirtella, costa et venis lateralibus conspicuis, cystolithis minutis; petioli subtus glabri, supra in canale dense hirtelli, pilis subappressis; capitula axillaria et terminalia, sursum aggregata, paribus foliorum suffulta; cymae planae, 3-5-partitae, breviter pedunculatae vel subsessiles, paribus bractearum subulatarum subglabrarum suffultae; bractea exterior cymulam subtendens herbacea, lanceolata, acuta,

extus parce et minute hirtella, intus puberula, costa et nervis submarginalibus prominentibus; bractea minor exterior cymulam subtendens anguste lanceolata, acuminata, extus parce hirtella, intus puberula, basi albida et striata, costa prominente; bractee intimae lanceolatae, parvae, puberulae, ciliolatae, basi albidae; calycis segmenta parva, angusta, albida, dense hirtella; corolla atrococcinea, pubescens, tubo hypocrateriformi, labiis ovatis, labio superiore obtuso, inferiore apice trilobato, lobis rotundatis, parvis; stamina vix exserta, filamentis planis, marginibus pilosis.



FIGURE 131.—*Dicliptera ewanii* Leonard (*Ewan* 15628): *a*, Tip of the stem; *b*, the larger of the outer cymule bracts; *c*, pubescence of its inner surface; *d*, the smaller of the outer cymule bracts; *e*, one of the larger innermost bracts; *f*, one of the smaller; *g*, calyx spread to show segments; *h*, pubescence of segments. (*a*, Half natural size; *b*, *d*-*g*, twice natural size; *c*, 15 times natural size; *h*, 13 times natural size.)

Herbs or suffrutescent plants 30 cm. high or more, the stems ascending, subhexagonal, sparingly and retrorsely hirtellous, the hairs about 0.25 mm. long, bifarious; leaf blades oblong-ovate, up to 13.5 cm. long and 4.5 cm. wide, slenderly acuminate, narrowed at base, rather firm, undulate, both surfaces glabrous or sparingly hirtellous, the hairs about 0.25 mm. long, the costa and lateral veins (6 to 8 pairs) prominent, the cystoliths minute, 125 μ long; petioles slender, up to 2 cm. long, glabrous beneath, the channel densely hirtellous, the hairs subappressed; capitula axillary or the 2 uppermost confluent forming a short thyse about 3 cm. long and 2.5 cm. broad, the leaves subtending the capitula similar to the lower stem leaves

but smaller (2 to 10 cm. long and 1 to 3 cm. wide), the cymes flat, composed usually of 3 to 5 cymules, subsessile or short-peduncled (the peduncle up to 4 mm. long, hirtellous in 2 lines), subtended by a pair of subulate subglabrous bracts up to 5 mm. long and 1 mm. wide at base; bracts subtending the cymules unequal, rather thin, herbaceous, the larger bract lanceolate, up to 2 cm. long and 4.5 mm. wide, acute, the outer surface sparingly and minutely hirtellous, the inner surface rather densely puberulous, the hairs spreading, 75 to 100 μ long, the costa and a pair of lateral submarginal nerves prominent, the smaller bract subtending the cymule narrowly lanceolate, acuminate, whitish, indurate and coarsely striate at base, the pubescence that of the outer bract, the costa prominent, the veinlets of both bracts rather coarsely but obscurely reticulate, the innermost bracts lanceolate, 3 to 8 mm. long, 0.75 to 1.5 mm. wide near base, puberulous and ciliolate, the lower half or sometimes the lower marginal areas whitish; calyx segments linear, 3.5 mm. long, 0.5 mm. wide, acute, whitish, densely hirtellous, the hairs ascending, 0.3 mm. long, the calyx tube campanulate, 1 mm. long, whitish, subhyaline, glabrous; corollas dull carmine with yellow throat (Ewan), 3 cm. long, moderately pubescent, the hairs up to 275 μ long, spreading, the tube 2 mm. broad at base, narrowed at 5 mm. above base to 1 mm., thence gradually enlarged to 5 mm. at mouth, the lips ovate, 7 mm. long, the upper lip 3 mm. wide, obtuse, the lower 4 mm. wide, 3-lobed at tip, the lobes ovate, obtuse, 1 mm. long, the middle one 1.25 mm. wide at base, the lateral ones slightly narrower; stamens slightly exceeding the lips, the filaments flat, their margins bearing a row of curved hairs up to 250 μ long, the anther lobes slightly superposed, 1.5 mm. long; ovaries and capsules not seen.

Type in the Tulane University Herbarium, collected in relict mountain rain forest at edge of Quebrada Chiniata, 7 kilometers east of Hilo, Department of Cundinamarca, Colombia, 2,430 meters altitude, May 1, 1944, by Joseph A. Ewan (No. 15628). Isotypes: K, US.

The ovaries of the type material have been destroyed by insects.

16. *Dicliptera haughtii* Leonard, sp. nov.

FIGURE 132

Suffrutex, caulibus erectis vel ascendentibus, subhexagonis, pilis minutis, retrorse curvatis; lamina foliorum ovata, acuminata (apice ipso obtuso), basi obtusa vel rotundata, supra aliquanto hirtella, subtus dense hirtella, costa et venis lateralibus prominentibus; petioli breves, dense hirtelli, pilis parvis, curvatis; capitula axillaria et terminalia, sursum aggregata, racemos densos terminales formantia, pedunculis brevibus, dense retrorse hirtellis; bracteae cymas subtendentes subulatae, carinatae, pilosulae, et ciliatae, marginibus albidae;

bractea major exterior cymulam subtendens anguste obovata, apice subobtusa et apiculata, basi angustata, carinata, marginibus albidis, utrinque dense hirtella; bractea minor exterior cymulam subtendens lineari-lanceolata, apice acuminata, basi angustata, marginibus albidis, costa prominente, utrinque dense hirtella; bracteae intimae anguste lanceolatae, acuminatae, ciliatae, albae (vel costa viridi), utrinque hirtellae; calycis segmenta anguste lanceolata, acuta, albida, minute ciliolata et puberula, pilis marginis rectis, ascendentibus apice acutis, pilis superficiem erectis, apice truncatis; corolla punicea, subtiliter pubescens, tubo anguste hypocrateriformi, labiis suberectis

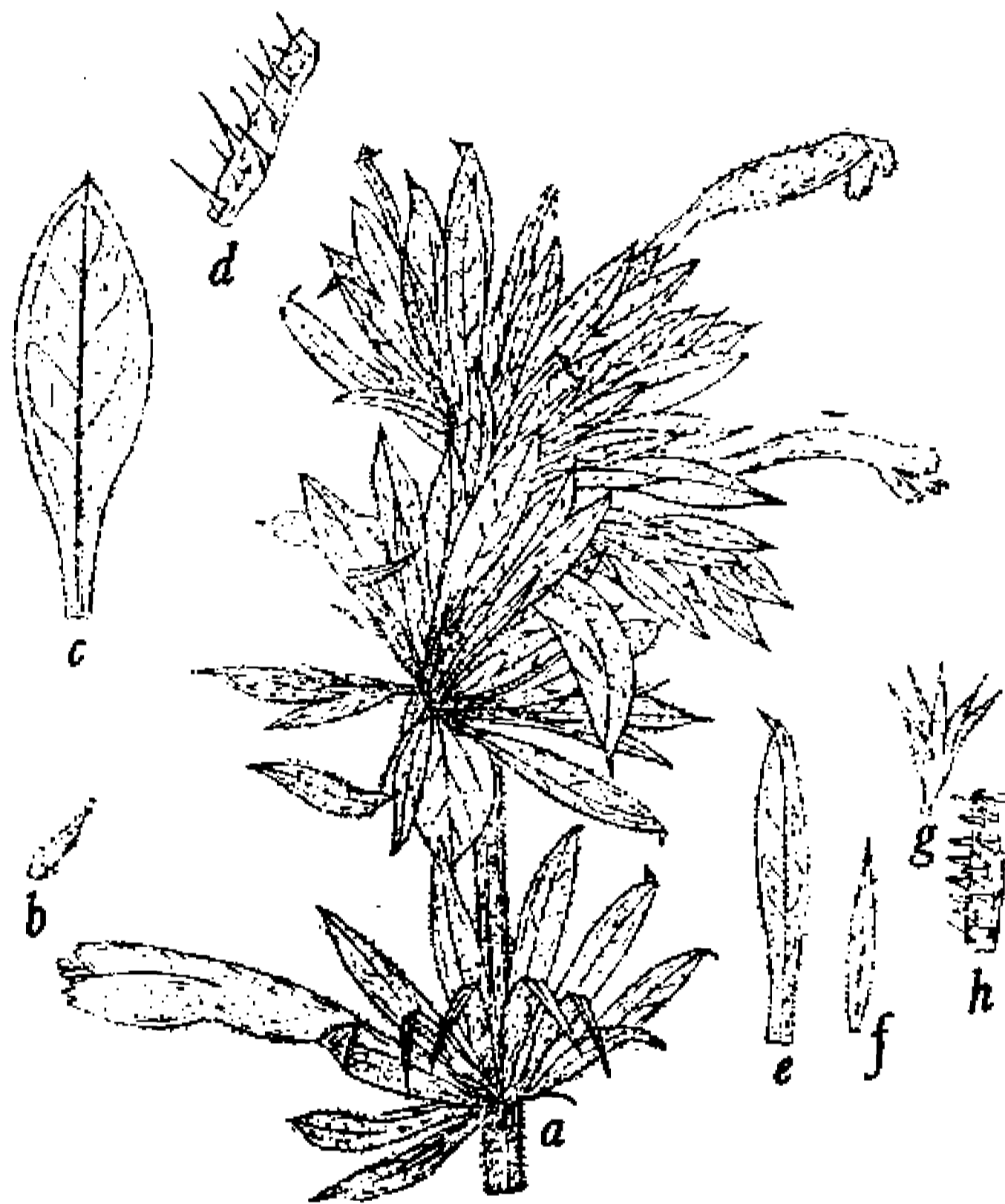


FIGURE 132.—*Dicliptera haughtii* Leonard (*Haught* 6179): *a*, Inflorescence; *b*, one of a pair of bracts subtending the cyme; *c*, the larger of the outer bracts subtending the cymule; *d*, marginal hairs of same; *e*, the smaller of the outer bracts subtending the cymule; *f*, one of the innermost bracts; *g*, calyx; *h*, pubescence of calyx. (*a*, Natural size; *b*, *c*, *e*, *f*, twice natural size; *d*, 6 times natural size; *g*, $2\frac{1}{2}$ times natural size, *h*, 12 times natural size.)

subaequalibus, labio superiore apice subobtusum, inferiore apice trilobato, lobis parvis, apice subobtusis; stamina vix exserta, filamentis planis, glabris vel deorsum pilosulis.

Suffrutescent herbs up to 50 cm. high; stems erect or ascending, subhexagonal, moderately branched, hirtellous, the hairs about 0.25 mm. long, retrorsely curved; leaf blades (only the uppermost present) ovate, up to 2.5 cm. long and 1.5 cm. wide at 1 cm. above base, acuminate (the tip itself obtuse), obtuse or rounded at base, entire or undulate, both surfaces hirtellous, the lower densely so, the costa and

lateral nerves (4 or 5 pairs) rather prominent; petioles up to 3.5 mm. long, densely hirtellous with small curved hairs; capitula axillary and terminal, the uppermost aggregated to form a spikelike thyrses up to 4 cm. long and 3 cm. broad, the peduncles up to 2 mm. long, densely hirtellous with retrorsely curved hairs about 0.25 mm. long; bracts subtending the cymes subulate, up to 5 mm. long and 1 mm. wide at base, carinate, pilosulous and ciliate, the margins whitish; larger outer bract subtending the cymule narrowly obovate, 12 mm. long, 4 mm. wide at 4 mm. below tip, subobtuse and apiculate, gradually narrowed from above middle to base, green or the narrow marginal areas near base whitish, the basal portion (about 4 mm. long) carinate, both surfaces rather densely hirtellous, the hairs spreading or ascending, the costa prominent, the lateral nerves obscure; smaller outer bract subtending the cymule linear-lanceolate, 1 cm. long, 1.5 mm. wide, acuminate at tip, narrowed at base, the costa prominent, the pubescence that of the larger outer bract, a narrow marginal basal area whitish; innermost bracts narrowly lanceolate, 6 to 7 mm. long, 1 mm. wide near base, acuminate, ciliate, whitish or the costa greenish, both surfaces hirtellous, the hairs about 0.25 mm. long; calyx 4 mm. long, the segments narrowly lanceolate, 3 mm. long, 0.75 mm. wide at base, acute, minutely ciliolate and puberulous, whitish, the marginal hairs up to 250μ long, straight, ascending, sharp-pointed, the surface hairs 125μ long, erect, blunt at tip corolla; bright red, finely pubescent, 2.5 cm. long, the tube about 1 mm. broad at base, 4.5 mm. broad at mouth, the lips suberect and subequal, about 9 mm. long, the upper lip 3.5 mm. broad at base, subobtuse at tip, the lower lip 5 mm. wide at base, 2-lobed at tip, the lobes ovate, 1 mm. long and wide, subobtuse at tip; stamens equaling or slightly exceeding the upper lip of the corolla, the filaments flattened, glabrous or pilosulous toward base; capsules not seen.

Type in the U. S. National Herbarium, No. 1995097, collected along gully on highway between Ubaté and Susa, Department of Cundinamarca, Colombia, 2,600 meters altitude, September 15, 1947, by Oscar Haught (No. 6179).

17. *Dicliptera koiei* Leonard, sp. nov.

FIGURE 132a

Suffrutex, caulibus deorsum subteretibus, parce subtomentosis, sursum subhexagonis, pilis albidis, curvatis; lamina foliorum siccitate laete viridis, ovata, subacuta vel subobtusa, basi cuneata vel rotundata et in petiolum breviter decurrens, aliquanto firma, integra, supra parce hirsuta, pilis ascendentibus, subtus dense tomentosa, pilis albidis, costa et venis lateralibus obscuris; petioli dense hirsuti, pilis albidis, ascendentibus; inflorescentiae cymosae sessiles, axillares et terminales, cymis flabelliformibus, supremis confluentibus thyrsos

densos terminales formantibus; cymulae saepe 3; bracteae cymas subtendentes foliiformes; bracteae cymulae subtendentes inaequales, exteriores oblanceolatae acutae, interiores breviores, anguste lanceolatae, acuminatae, extus dense hirsutae, pilis patulis vel ascendentibus, intus puberulae, costa obscura; bracteae calyces subtendentes anguste lanceolatae, acuminatae, ciliatae, puberulae, costa prominente; calycis segmenta anguste triangularia, longe acuminata, subglabra, ciliolata, subhyalina; corolla parce pubescens, labio superiore anguste ovato, apice obtuso vel rotundato, labio inferiore anguste ovato, apice 3-lobato, lobis brevibus, rotundatis; stamina exserta.

Suffruticose plants up to 0.5 meters high or more, drying bright green; stems subterete, 2.5 mm. in diameter at base, hexagonal and subtomentose toward tip, the pubescence dense at tip of plants, be-

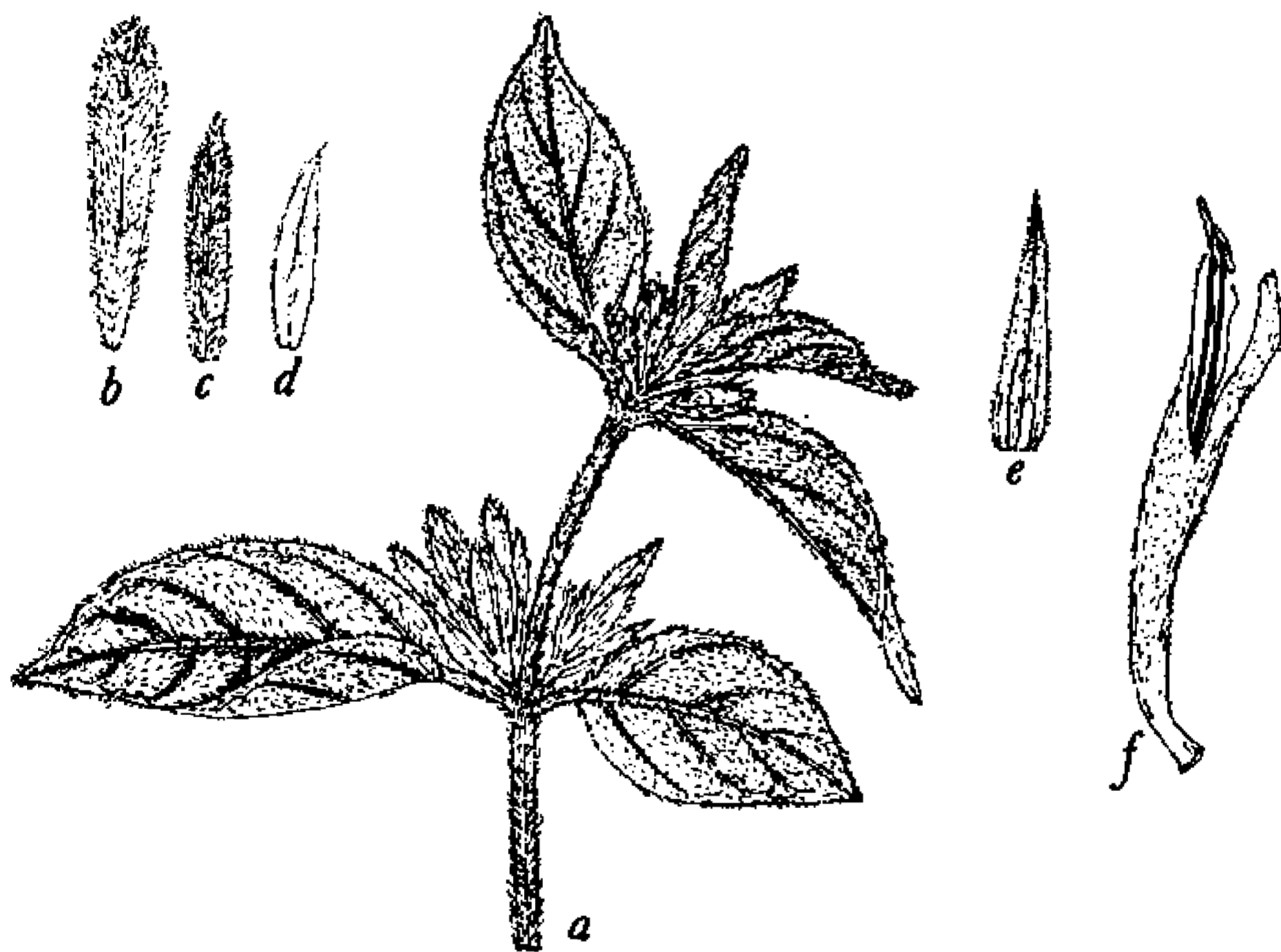


FIGURE 132a.—*Dicliptera koiei* Leonard (*Køie* 5056): *a*, Tip of plant; *b*, outer bract subtending cymule; *c*, inner bract subtending cymule; *d*, one of inner bracts subtending calyx; *e*, calyx segment; *f*, corolla. (*a*, *f*, Natural size; *b-d*, twice natural size; *e*, $3\frac{1}{2}$ times natural size.)

coming sparser towards base, the hairs whitish, variously curved, up to 0.5 mm. long; leaf blades ovate, up to 4.5 cm. long and 2 cm. wide, subacute to subobtuse at tip, cuneate to rounded at base and decurrent on the petiole, moderately firm, the upper surface sparingly hirsute, the hairs ascending, up to 0.8 mm. long, the lower surface densely subtomentose, the hairs whitish, up to 0.75 mm. long, the costa and lateral veins (4 or 5 pairs) rather obscure; petioles up to 5 mm. long, densely hirsute with whitish, ascending hairs about 0.45 mm. long; cymes axillary and terminal, the uppermost confluent, forming a thyse up to 3 cm. long and 1.5 cm. broad, the cymes sub-

sessile, fanlike, usually composed of 3 cymules; bracts subtending the cymes leaflike, mostly about 12 mm. long and 5 mm. wide, the pubescence that of the leaves; bracts subtending the cymules unequal, the outer oblanceolate, that of the middle cymule 15 mm. long, 3.5 mm. wide, acute, those of the lateral ones 11 mm. long, 2.5 mm. wide, subacute, the inner bracts narrowly lanceolate, that of the middle cymule 12 mm. long and 1.5 mm. wide, acuminate, those of the lateral cymules 10 mm. long and 1.5 mm. wide, acute, the outer surface of all of the cymule bracts rather densely hirsute with spreading or ascending yellowish hairs up to 0.5 mm. long, the inner surface of the cymule bracts puberulous, the costa obscure, the bracts (2 pairs) subtending the calyx narrowly lanceolate, 7 mm. long, 1.25 mm. wide, acuminate, puberulous and ciliate, the hairs spreading or ascending, up to 0.25 mm. long, the costa prominent, the margins subhyaline; calyx 5.5 mm. long, the segments narrowly triangular, sharply acuminate, 3 mm. long and 1 mm. wide at base, subglabrous, ciliolate, subhyaline; corolla rather sparingly pubescent, the hairs mostly spreading, up to 0.25 mm. long, some of them gland-tipped, the tube about 2 cm. long, 5 mm. broad at mouth, the lips 1 cm. long, the upper one narrowly ovate, 5 mm. wide at base, obtuse or rounded at tip, the lower lip narrowly ovate, 5.5 mm. wide at base, 3-lobed, the lobes about 1 mm. long, rounded; stamens exerted 6 mm. beyond the mouth of the corolla tube, the anther lobes linear, about 1.75 mm. long and 0.25 mm. broad, apiculate at tip, one superposed about 0.75 mm. above the other; ovary and capsule not seen.

Type in the Herbarium of the Botanical Museum of the University of Copenhagen, collected at Ubaté, Department of Cundinamarca, Colombia, 2600 meters altitude, June 1, 1952 by M. Kjøie (No. 5056).

The color of the corolla is not apparent in the dried material.

18. *Dicliptera danielii* Leonard, sp. nov.

FIGURE 133

Herba, caulibus debilibus, subhexagonis, glabris vel ad nodos pilos paucos retrorse curvatos ferentibus; lamina foliorum ovato-lanceolata, graciliter acuminata, basi angustata, membranacea, integra vel undulata, supra glabra vel parce hirsuta, costa et venis pubescentibus, obscuris, subtus glabra, costa et venis lateralibus aliquanto prominentibus, venulis prominente reticulatis, cystolithis utrinque subnigris, obscuris; petioli aliquanto breves, subtus glabri, canale pubescente, pilis subbrunnescentibus, curvatis; capitula fere terminalia, pedunculis brevibus, bifariam pilosulis; bracteae cymas subtendentes parvae, subulatae, carinatae, costa et marginibus parce ciliolatis; bracteae majores cymulas subtendentes inaequales, lanceolatae, acutae, deorsum rotundatae et carinatae, sursum planae, subcoriaceae, ciliolatae, supra minute hirtellae, subtus parce hirtellae, pilis praecipue in costa et venis positae; bracteae intimae parvae,

anguste lanceolatae, acutae, subalbidae, 1-nervatae, ciliolatae, glabrae vel ad costam pilos minutos ferentes; calycis segmenta anguste triangularia, acuta, 3-nervata, subtiliter pubescentia, pilis ascendentibus; corolla 2.5 cm. longa, angusta, labiis subaequalibus, labio posteriore ovato, subobtusio, labio inferiore oblongo, apice 3-lobato, lobis parvis, triangularibus, obtusis; stamina vix exserta, filamentis planis, deorsum parce pilosis.

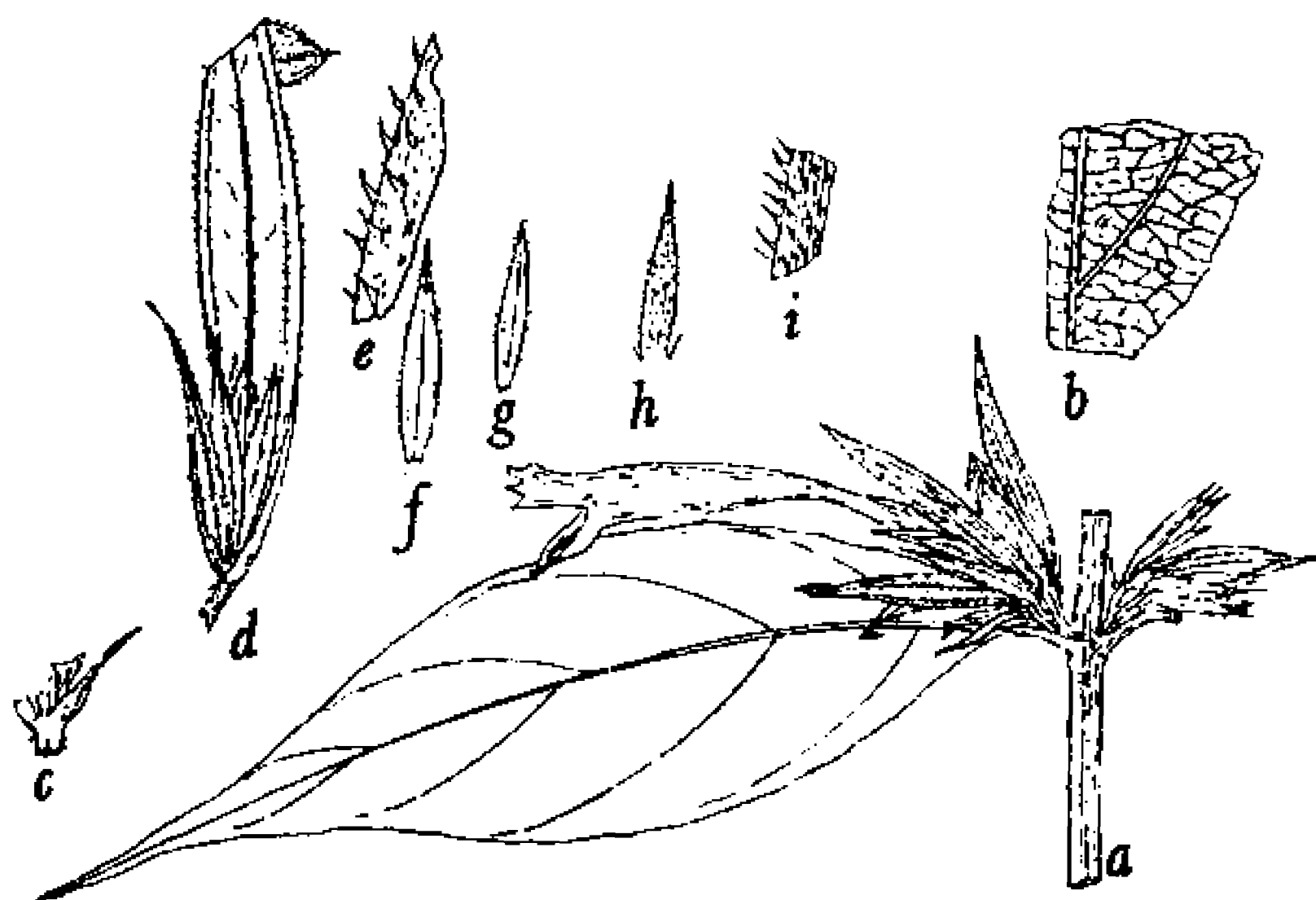


FIGURE 133.—*Dicliptera danielii* Leonard (Bro. Daniel 2970): *a*, Node showing leaf and inflorescence; *b*, portion of leaf blade (upper surface) to show reticulation of veinlets; *c*, one of the pair of bracts subtending the cyme; *d*, cymule; *e*, pubescence of margin of the larger outer bract subtending cymule; *f*, one of the larger of the innermost bracts; *g*, one of the smaller of the innermost bracts; *h*, calyx lobe; *i*, pubescence near tip of calyx lobe. (*a*, *b*, Natural size; *c*, *d*, *f*, *g*, twice natural size; *e*, 18 times natural size; *h*, 5 times natural size; *i*, about 30 times natural size.)

Herbs; stems weak, ascending, 30 cm. high or more, subhexagonal, glabrous or bearing a few minute retrorsely curved hairs near the nodes; leaf blades ovate-lanceolate, up to 9 cm. long and 3 cm. wide, slenderly acuminate, narrowed at base, membranous, entire or undulate, the upper surface glabrous or sparingly hirsute except the costa and lateral veins, these more or less densely pubescent, the venation obscure, the lower surface glabrous or nearly so, the costa and lateral veins rather prominent, the veinlets prominently reticulated, the cystoliths blackish, inconspicuous even under a lens; petioles up to 1.5 cm. long, glabrous beneath, the channel pubescent with brownish curved hairs similar to those of the costa; capitula mostly axillary or only the very uppermost more or less confluent, the peduncles up to 3 mm. long, pilosulous in 2 lines; bracts subtending the cymes subulate, 4 mm. long, 0.5 mm. wide at base, carinate, the costa and margins sparingly ciliate; bracts subtending the cymule unequal, the larger 10 to 15 mm. long and 3 to 3.5 mm. wide, the smaller one 7 to 8 mm. long and 1.5 mm. wide, both lanceolate, acute,

rounded and carinate toward base, flat toward tip, subcoriaceous, ciliolate, the inner or upper surface minutely hirtellous, the lower surface sparingly hirtellous, the hairs curved and confined chiefly to costa and veins, these prominent, the larger pair of the innermost bracts 7 mm. long and 1.5 mm. wide, the smaller 4.5 mm. long and 1 mm. wide, both pairs narrowly lanceolate, acute, whitish, 1-nerved, ciliolate, glabrous or the costa bearing a few minute hairs; calyx 4 mm. long, the segments narrowly triangular, 3 mm. long, 1 mm. wide at base, acute, 3-nerved, finely pubescent, the hairs ascending; corolla 2.5 cm. long, the tube 1.5 mm. broad at base, narrowed to 1 mm. at 6 mm. above base, 4 mm. broad at mouth, the lips subequal, about 8 mm. long, the upper one ovate, 5 mm. broad toward base, subobtuse, the lower lip oblong, 3 mm. wide, 3-lobed at apex, the lobes triangular, about 1 mm. long and broad, obtuse; stamens reaching the tip of the upper lip, the filaments flat, sparingly pilose toward base; capsules not seen.

Type in the U. S. National Herbarium, No. 1879088, collected in Jardín, southwest of Antioquia, Department of Antioquia, Colombia, July 1942, by Brother Daniel (No. 2970). Isotype: US.

The color of the corolla is not apparent in the dried material studied.

19. *Dicliptera scandens* Leonard, sp. nov.

FIGURE 134

Suffrutex diffusus, ramosus, caulibus subhexagonis, deorsum glabris, sursum puberulis, pilis curvatis, praecipue in angulis positis; lamina foliorum oblongo-lanceolata, acuta (apice ipso obtuso vel subacuto), basi angustata, in petiolum decurrens, membranacea, (sicca) saturate viridis, utrinque glabra vel in costa et venis lateralibus plus minusve hirtella; petioli graciles, glabri vel canale plus minusve hirtelli; capitula fere terminalia, confluentia, racemum densum latum brevem formantia, pedunculis brevibus, parce hirtellis, pilis curvatis; bracteae cymas subtendentes parvae, subulatae, hirtellae; bracteae majores cymulas subtendentes inaequales, lanceolatae, acuminatae, aliquanto dense hirtellae, virides; bracteae intimae anguste lanceolatae, albae, ciliolatae, marginibus hyalinis; calycis segmenta triangularia, 3-nervata, dense pubescentia, pilis ascendentibus; corolla pallide salmonacea, subtiliter pubescens, tubo aliquanto angusto, labiis aequalibus, labio superiore ovato, obtuso, labio inferiore ovato, trilobato, lobis parvis, obtusis; stamina vix exserta, filamentis planis, deorsum parce et minute pilosis.

A clambering suffrutescent herb up to 13 meters high; stem subhexagonal, glabrous or the upper portions puberulous, the hairs minute, curved, confined more or less to the angles; leaf blades oblong-lanceolate, up to 12 cm. long and 3.5 cm. wide, acuminate (the tip itself obtuse or acutish), narrowed at base and briefly decurrent on the

petiole, thin, drying dark olive green, glabrous on both sides or the costa and lateral veins (5 or 6 pairs) more or less hirtellous; petioles slender, up to 2 cm. long, glabrous or the channels more or less hirtellous; capitula mostly terminal, forming short compact thyrsi up to about 2 cm. long and 3 cm. broad, the cymes 3- to 5-parted, the peduncles up to 4 mm. long, flattened, puberulous, the subtending bracts subulate, up to 2.5 mm. long, and 1 mm. wide, connate at base, sparingly hirtellous and ciliolate; cymules borne on hirtellous pedun-

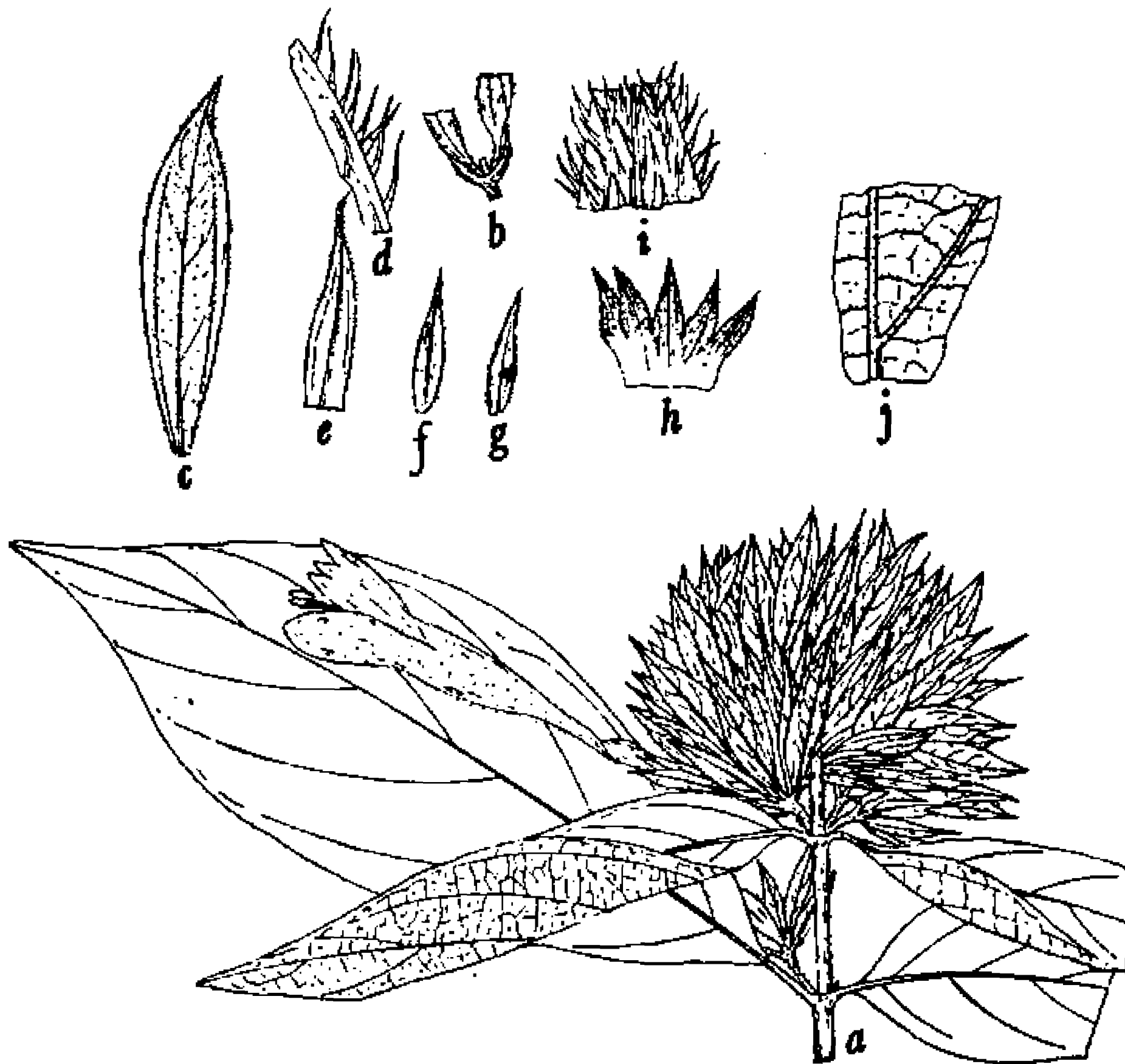


FIGURE 134.—*Dicliptera scandens* Leonard (*Archer* 1354): *a*, Tip of plant; *b*, base of cyme to show subtending bracts; *c*, the larger outer bract subtending the cymule; *d*, marginal hairs of same; *e*, smaller outer bract subtending the cymule; *f*, one of the larger pair of innermost bracts; *g*, one of the smaller pair of innermost bracts; *h*, calyx spread to show segments; *i*, upper portion of calyx lobe enlarged to show pubescence (outer surface); *j*, portion of leaf blade (lower surface) enlarged to show venation and pubescence. (*a*, *j*, Natural size; *b*, $1\frac{1}{2}$ times natural size; *c*, *e-h*, twice natural size; *d*, 11 times natural size; *i*, 14 times natural size.)

cles about 1 mm. long, the larger outer bracts of the cymule unequal, lanceolate, acute, ciliolate, sparingly hirtellous, the larger bract 14 mm. long and 4 mm. wide at middle, the costa and a pair of lateral nerves predominating, the smaller bract 9 mm. long and 2 mm. wide near base, the costa prominent, the innermost bracts narrowly lanceolate, slenderly acuminate, whitish, ciliolate, the hairs ascending, up to $250\ \mu$ long, the margins hyaline, the larger pair 6 mm. long and 1 mm. wide near base, the smaller pair 4 mm. long and slightly less

than 1 mm. wide at base; calyx 5 mm. long, the segments triangular, 3 mm. long and 1.5 mm. wide at base, acute, strongly 3-nerved, ciliolate and densely hirtellous, the hairs ascending, up to 250μ long; corolla pale salmon, finely pubescent, the hairs up to 0.7 mm. long, spreading, a few of them gland-tipped, the tube about 2 cm. long, 2.5 mm. broad at base, narrowed at 5 mm. above base to 1 mm., thence gradually enlarged to 6.5 mm. at mouth, the lips subequal, about 1 cm. long, the upper lip ovate, 7 mm. wide near base, the lower lip oblong, 7 or 8 mm. wide at throat, 3-lobed at apex, the lobes ovate, 2.5 mm. long, 1.5 mm. wide at base, obtuse; stamens reaching the tip of the lips, the filaments flat, glabrous near tip, sparingly and minutely pilose toward base, the hairs spreading or retrorsely curved, up to 550μ long; capsules not seen.

Type in the U. S. National Herbarium, No. 1515091, collected at La Sierra, 18 kilometers north of Medellín, Department of Antioquia, Colombia, 2,000 meters altitude, January 1931, by W. A. Archer (No. 1354).

20. *Dicliptera sarcochroma* Leonard, sp. nov.

FIGURE 135

Herba luxuriosa, caulibus ramosis, ascendentibus, foliosis, subhexagonis, deorsum glabratis, crassis, sursum puberulis, pilis minutis et retrorse curvatis; lamina foliorum ovato-lanceolata, acuminata, basi angustata, membranacea, integra vel undulata, (sicca) saturate oleo-viridis, utrinque glabra vel subglabra, costa et venis lateralibus gracilibus sed aliquanto prominentibus, cystolithis sub lente conspicuis, fere albidis; petioli graciles, glabri vel in canale parce puberuli, pilis curvatis; capitula axillaria, pedunculis brevibus, puberulis; bracteae cymas subtendentes parvae, subulatae, glabrae; bracteae majores cymulas subtendentes inaequales, ciliolatae, glabrae, graciliter venosae, costa plus prominente quam venis lateralibus; bractea superior rhombeo-ovata, acuta, inferior lanceolata, acuta, cuspidata; bracteae intimae anguste lanceolatae, acuminatae, minute ciliolatae, 1-nervatae, sursum hirtellae, marginibus subhyalinis; calycis segmenta anguste triangularia, parva, ciliolata, acuta, 3-nervata, sursum hirtella, subhyalina; corolla incarnata, parce et minute pubescens, tubo aliquanto angusto, labiis subaequalibus, ovatis, labio superiore obtuso, inferiore trilobato, lobis parvis, rotundatis.

Herbs up to 1 meter tall; stems ascending, branched, leafy, subhexagonal, the upper portions puberulous, the hairs minute and retrorsely recurved, the lower portions glabrous, stout, up to 7 mm. in diameter or more; leaf blades ovate-lanceolate, up to 16 cm. long and 6 cm. wide slightly below the middle, narrowed at base, acuminate, thin, entire or undulate, drying dark olive green, both surfaces glabrous or nearly so, the costa and lateral veins (5 or 6 pairs) slender

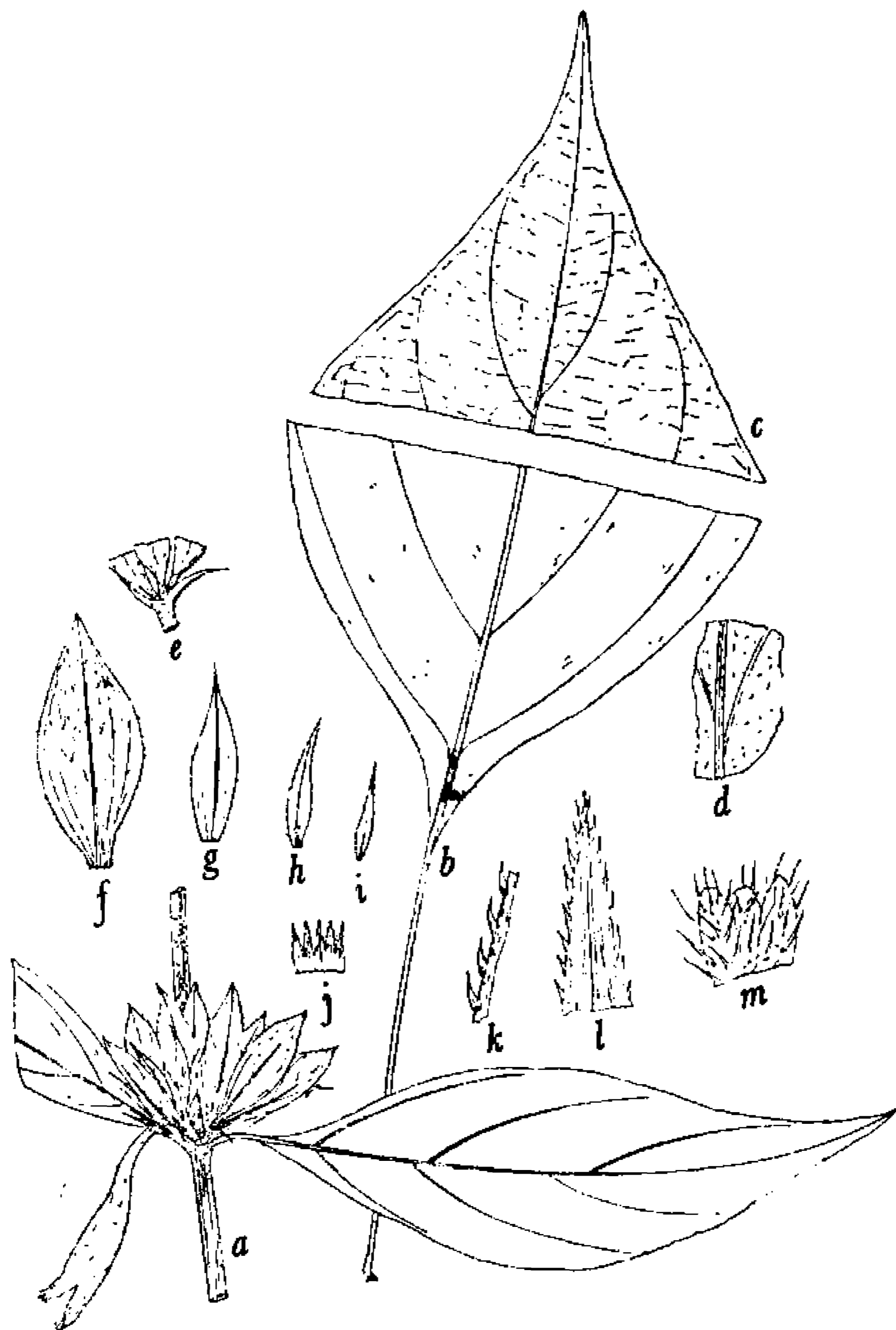


FIGURE 135.—*Dicliptera sarcochroma* Leonard (Cuatrecasas 15468): *a*, Node showing inflorescence; *b*, basal portion of stem leaf (upper side); *c*, tip of same (lower side); *d*, portion of leaf blade (lower surface slightly enlarged to show cystoliths); *e*, basal portion of cyme to show subtending bracts; *f*, the larger of the pair of bracts subtending a cymule; *g*, the smaller one; *h*, one of a pair (larger) of innermost bracts; *i*, one of a pair of smaller innermost bracts; *j*, calyx, spread to show lobes; *k*, pubescence from margin of bract (*f*, above); *l*, tip of calyx lobe to show pubescence; *m*, tip of lower lip of corolla (immature). (*a-c*, Natural size; *d, j*, $1\frac{1}{2}$ times natural size; *e*, 3 times natural size; *f-i*, twice natural size; *k*, 12 times natural size; *l*, 18 times natural size; *m*, 5 times natural size.)

but rather conspicuous, the cystoliths conspicuous under a lens, about 0.25 mm. long, usually whitish; petioles slender, 5 cm. long, glabrous or the channels sparingly puberulous with curved hairs; capitula axillary, the lowermost peduncles up to 7 mm. long, puberulous, those of the thyrsi up to 0.5 mm. long, puberulous; bracts

subtending the cymes subulate, usually up to 3.5 mm. long and 0.5 mm. wide, glabrous; outer bracts subtending the cymules unequal, glabrous, ciliolate, delicately veined, the costa more pronounced than the lateral veins, the superior bract rhombic-ovate, 12 mm. long, 5 mm. wide near the middle, acute, the inferior bract lanceolate, 7 mm. long and barely 2 mm. wide slightly below the middle, acute, cuspidate; innermost bracts narrowly lanceolate, acuminate, thin, minutely ciliolate, 1-nerved, hirtellous toward tip, the margins subhyaline, the larger pair 5 to 6 mm. long and 1 mm. wide near base, the smaller pair 4 mm. long and 0.75 mm. wide near base; calyx 3 mm. long, the segments narrowly triangular, 2 mm. long and 0.75 mm. wide at base, 3-nerved, acute, ciliolate, hirtellous toward tip, subhyaline; corolla flesh-colored, sparingly and minutely pubescent, the lower portion of the tube 1 mm. broad, the throat 4 mm. broad, the lips subequal, ovate, about 4 mm. long, the upper lip obtuse, the lower one 3-lobed, the lobes about 0.5 mm. long and wide, rounded; capsules not seen.

Type in the U. S. National Herbarium, No. 1852703, collected in forest at La Laguna, on the left side of the valley of the Rio Sanjuniqn, Department of El Valle, Colombia, 1,250 to 1,400 meters altitude, December 10-20, 1943, by J. Cuatrecasas (No. 15468).

Dicliptera sarcochroma is very closely related to *D. cuatrecasasi*, resembling it in many respects. Both are lush growers, have large thin and nearly glabrous leaf blades, thick subglabrous stems and similar bracts. In *D. sarcochroma*, however, the long marginal hairs of the larger bracts subtending the cymules are entirely lacking. The inflorescence of *D. cuatrecasasi* is much more crowded than that of *D. sarcochroma*, forming dense terminal spikelike thyrsi. The epithet *sarcochroma* (σάρξ, flesh, and χρώμα, color) alludes to the color of the corollas.

21. *Dicliptera hazenii* Leonard, sp. nov.

FIGURE 136

Herba vel suffrutex, caulibus ascendentibus, subramosis, subhexagonis vel deorsum teretibus, glabris vel sursum praecipue in nodis minute et parce hirtellis; folia reflexa, laminis ovato-lanceolatis, acuminatis (apice ipso obtuso vel acuto), basi angustatis, in petiolum breviter decurrentibus, membranaceis, integris vel undulatis, (siccis) saturate oleo-viridibus, supra glabris vel parce hirtellis, costa et venis lateralibus aliquanto dense hirtellis, pilis curvatis et subadpressis, subtus glabris vel parce hirtellis, costa et venis aliquanto hirtellis, venulis majoribus parallelis, minoribus crasse reticulatis, prominentibus, cystolithis albidis, parvis; petioli breves, pubescentes, pilis minutis adpressis; capitula praecipue axillaria vel sursum aggregata, thyrsos densos terminales formantia; pedunculi inaequales,

hexagoni, glabri vel aliquanto et minute hirtelli, pilis retrorse subadpressis; bracteae cymas subtendentes anguste lanceolatae, carinatae, 1-nervatae, ciliolatae, glabrae vel pilos paucos minutos ferentes; bracteae majores cymulas subtendentes inaequales; bractea superior lanceolata, acuta, basi angusta, 3-nervata, viridis (vel basi marginibus albida), minute et aliquanto hirtella extus et in marginibus pilos sursum adpressos subtus ascendentes ferens; bractea inferior oblonga, acuminata, ciliolata, 3-nervata, sursum subviridis, deorsum albida, utrinque minute hirtella; bracteae intimae anguste lanceolatae, acuminatae, ciliolatae, albidae vel apice subvirides; calycis segmenta anguste triangularia, acuminata, obscure plurinervata, minute ciliolata, glabra vel apice minute hirtella; corolla rutila, subtiliter pubescens, pilis patulis, tubo anguste hypocrateriformi, labiis subaequalibus, ovatis, labio superiore obtuso, labio inferiore apice trilobato, lobis rotundatis; stamina vix exserta, filamentis planis parce pilosis, pilis retrorse ascendentibus; capsulae parvae, complanatae, dense puberulae, pilis patulis vel basi retrorse ascendentibus; semina brunnea, suborbicularia levia vel obscure aspera.

Suffrutescent herbs up to 1 meter high or more; stems ascending, sparingly branched, subhexagonal (or the lower portions terete), glabrous or the tips minutely and sparingly hirtellous especially at the nodes; leaves usually reflexed, the blades ovate-lanceolate, up to 8 cm. long and 3 cm. wide, acuminate (the tip itself blunt or sharp), narrowed at base and briefly decurrent on the petiole, firmly membranaceous, entire or undulate, drying dark olive green, the upper surface glabrous or sparingly hirtellous except the costa and lateral veins (5 or 7 pairs), these rather densely hirtellous, the hairs curved and subappressed, the lower surface glabrous or sparingly hirtellous except the costa and lateral veins, these moderately hirtellous, the hairs curved and subappressed, up to 0.5 mm. long, the veinlets coarsely reticulate, the cystoliths whitish, 375μ long; petioles up to 5 mm. long, pubescent, the hairs minute, appressed; capitula mostly axillary but several of the uppermost confluent, forming a short terminal spikelike thryse, the peduncles of the capitula unequal, up to 6 cm. long, successively shorter toward summit of the plant, all subhexagonal, glabrous or moderately and minutely hirtellous, the hairs retrorsely subappressed; cymes usually 5-parted, the subtending bracts narrowly lanceolate, 2.5 mm. long, 1 mm. wide at base, carinate and 1-nerved, glabrous or bearing a few minute hairs, ciliate, the larger of the outer bracts subtending the cymules lanceolate, 8 to 10 mm. long, 1.5 to 2.25 mm. wide slightly above the middle, acute, gradually narrowed from above the middle to the base, 3-nerved, green (or the basal marginal area whitish), minutely and moderately densely hirtellous, the hairs about 350μ long, upwardly appressed on

the outer surface and margins, erect on the inner surface, the smaller outer bract subtending the cymules oblong, about 6.5 mm. long and 1.25 mm. wide, acuminate at the tip, ciliolate, 3-nerved, the upper half greenish, the lower half whitish, the pubescence that of the outer bract, the innermost bracts narrowly lanceolate, acuminate, ciliolate, whitish, the larger pair 6 mm. long, 1 mm. wide, the inner pair 4.5 to 5



FIGURE 136.—*Dicliptera hazenii* Leonard (Pennell, Killip & Hazen 8695): *a*, Node to show inflorescence; *b*, larger, outer bract subtending the cymule; *c*, marginal hairs of same; *d*, the smaller of the outer pair of bracts subtending the cymule; *e*, one of a pair (larger) of the innermost bracts; *f*, one of the pair of the smaller innermost bracts; *g*, calyx, spread to show lobes; *h*, portion of calyx lobe enlarged to show marginal hairs; *i*, tip of corolla, spread to show lobes of lower lip. (*a*, Natural size; *b*, *d*-*g*, twice natural size; *c*, $12\frac{1}{2}$ times natural size; *h*, 10 times natural size; *i*, $2\frac{1}{2}$ times natural size.)

mm. long, 0.75 mm. wide near base; calyx 4.5 mm. long, the segments narrowly triangular, 3 mm. long, 0.75 mm. wide near base, acuminate, obscurely several-nerved, glabrous except the tips, these minutely hirtellous; corolla peach red, up to 12 mm. long, finely pubescent, the hairs spreading, about 0.25 mm. long, the tube 2.25 mm. broad at base, narrowed at 3 mm. above base to 1 mm., thence gradually enlarged to 4.5 mm. at mouth, the lips subequal, ovate, 7 mm. long,

and 5 mm. wide near base, the upper lip obtuse, the lower 3-lobed, the lobes suborbicular, 0.75 mm. long and wide, rounded; stamens reaching the tip of the upper lip, the filaments flat, sparingly pilose, the hairs about 0.5 mm. long, retrorsely ascending; capsules 9 mm. long, 5 mm. broad, 2 mm. thick, densely puberulous, the hairs 375μ long, spreading, or the lowermost retrorsely ascending; seed brown, smooth or obscurely roughened, flat, suborbicular, barely 3 mm. in diameter, about 0.5 mm. thick.

Type in the U. S. National Herbarium, No. 1142664, collected on the bank of Río Quindío, above Armenia, Department of Caldas, Colombia, 1,300 to 1,500 meters altitude, July 25, 1922, by Francis W. Pennell, Ellsworth P. Killip, and Tracy E. Hazen (No. 8695). Isotype: Ph.

A specimen collected in a clearing along the Río San Rafael below Cerro Tatamá, Department of Caldas, Colombia, 2,200 to 2,400 meters altitude, September 7-11, 1922, by Francis W. Pennell (No. 10320) (G) is also of this species.

Pennell states that the corollas are jasper red externally and jasper pink internally. He tells us, furthermore, that this plant is a "tall herb," but there is no mention of its exact height.

22. *Dicliptera inamoena* Leonard, sp. nov.

FIGURE 137

Herba, caulibus erectis vel ascendentibus, subhexagonis, glabris vel parce puberulis, pilis retrorse curvatis, appressis, minutis; lamina foliorum (infima non visa) oblongo-ovata, acuta vel acuminata (apice ipso obtuso), basi obtusa, in petiolum breviter decurrens, integra vel undulata, subcoriacea, supra glabra, costa et venis lateralibus obscuris, costa dense puberula, pilis curvatis, subtus (sub lente) minute punctata, glabra vel parce hirtella, costa et venis lateralibus aliquanto prominentibus, cystolithis subnigris; petioli breves, glabri vel parce puberuli, pilis curvatis; capitula axillaria et terminalia, sursum aggregata, thyrsum densum formantia, pedunculis brevibus (vel infimis elongatis), hexagonis, puberulis, pilis retrorse curvatis, minutis, pedunculis cymularum brevibus, quadrangularibus, puberulis, pilis retrorsis, minutis; folia cymas subtendentes parva; bractea major exterior cymulam subtendens lanceolata, acuta, deorsum angustata, extus minute et aequaliter puberula, pilis minutis, arcte appressis, venulis obscuris, intus glabra vel minute hirtella, costa et venis ac venulis reticulatis, prominentibus; bractea minor cymulam subtendens lanceolata, acuminata, aliter bractee superiori similis; bractee intimae anguste lanceolatae, acuminatae, pallidae vel sursum virides, extus minute adpresse puberulae, intus subglabrae; calycis segmenta anguste triangularia, minute puberula, albida; corolla minute pilosa, tubo aliquanto angusto, labiis aequalibus,

labio superiore ovato, acuto, inferiore late ovato, apice rotundato, trilobato, lobis parvis, rotundatis; stamina vix exserta, filamentis planis, glabris vel deorsum parce pilosis; ovarium minute hirtellum.

Herbs up to 30 cm. high or more; stems erect or ascending, subhexagonal, glabrous or sparingly puberulous, the hairs retrorsely curved, appressed, 375μ long; leaf blades (only the upper ones present) oblong-ovate, up to 5.5 cm. long and 2.2 cm. wide, acute or acuminate (the tip itself blunt), obtuse at base and briefly decurrent on the petiole, entire or undulate, firmly membranaceous, the upper surface glabrous except the costa and lateral veins (4 or 5 pairs), these obscure, puber-



FIGURE 137.—*Dicliptera inamoena* Leonard (*Triana*, Túquerres): *a*, Tip of branch to show inflorescence; *b*, enlarged portion of leaf blade (lower surface) to show minute punctae; *c*, the larger of the outer pair of bracts subtending the cymule; *d*, marginal hairs of same; *e*, the smaller of the outer pair of bracts subtending the cymule; *f*, one of the innermost bracts; *g*, calyx; *h*, marginal hairs of one of the calyx segments. (*a*, Natural size; *b*, about 10 times natural size; *c*, *e*-*g*, twice natural size; *d*, 13 times natural size; *h*, 20 times natural size.)

ulous with minute curved hairs, the costa sometimes densely so, the lower surface minutely scurfy under lens, glabrous or sparingly hirtellous, the hairs about 0.2 mm. long, the venation more prominent than above, the cystoliths up to 0.2 mm. long, blackish; petioles up to 5 mm. long, glabrous or sparingly puberulous with curved hairs; capitula axillary, the uppermost aggregated to form terminal spike-like dense thyrsi about 2 cm. long and 1.5 cm. broad, the peduncles up to 5 mm. long (or the lowermost elongated, up to 6.5 cm. long),

hexagonal, puberulous, the hairs retrorsely recurved, about 125μ long, the cymules subsessile, their peduncles 0.5 mm. long, quadrangular, retrorsely puberulous; cymes 5-parted, subtended by small leaves up to 2.5 cm. long and 12 mm. wide, similar, except in size, to the lowermost stem leaves, the larger outer bract subtending the cymule lanceolate, 12.5 mm. long, 4 mm. wide (measurements made from middle cymule), acute, narrowed from middle to base, the outer surface minutely and evenly puberulous, the hairs 150μ long, closely appressed, the venation obscure, the inner surface glabrous or minutely and sparingly hirtellous, the costa, lateral veins and reticulated veinlets more prominent than on the outer surface, the smaller outer bract subtending the cymule lanceolate, 9 mm. long, 2 mm. wide, long-acuminate, the lower half not appreciably narrowed, pale toward base, in other respects resembling the larger bract; innermost bracts narrowly lanceolate, up to 8 mm. long and 1.25 mm. wide, acuminate, pale or greenish toward tip, the outer surface minutely appressed puberulous, the inner surface essentially glabrous; calyx 4.5 mm. long, minutely puberulous, whitish, the segments narrowly triangular, 3 mm. long and 0.75 mm. wide at base; corolla about 2 cm. long, pilose, the hairs spreading, about 0.25 mm. long, the tube 1.5 mm. broad at base, narrowed at 4.5 mm. above base to 0.75 mm., 3 mm. broad at mouth, the lips equal, 4 mm. long, the upper lip ovate, 2.5 mm. wide at base, acute, the lower lip broadly ovate, 3.25 mm. wide near base, the rounded tip 3-lobed, the lobes 0.25 mm. long and wide, obtuse; stamens barely exerted, the filaments sparingly and retrorsely pilose toward base; ovary sparingly and minutely hirtellous; capsules not seen.

Type in the Kew Herbarium, collected at Túquerres, Department of Nariño, Colombia, 1,700 meters altitude, June 1853, by J. Triana (No. 4093-1). Isotype: Col.

The color of the corolla is not apparent in the dried material of the type. The specific epithet alludes to the weedy appearance of the plant.

23. *Dicliptera megalochlamys* Leonard, sp. nov.

FIGURE 138

Herba luxurians, caulibus subhexagonis, retrorse puberulis; lamina foliorum oblongo-ovata, acuminata (apice ipso obtuso), basi angustata, tenuis, integra vel undulata, utrinque glabra, costa et venis lateralibus puberulis, cystolithis minutis, inconspicuis, atrobrunneis; petioli graciles, puberuli; cymae axillares pleurumque 3-partitae, pedunculis hexagonis, puberulis; bracteae cymas subtendentes subulatae; cymulae pedunculatae, bracteis cymulam subtendentibus magnis, duobus subsimilibus, late ovatis, obtusis et apiculatis, basi truncatis, firmis, integris, ciliolatis (pilis curvatis), glabris vel parce puberulis, costa et

venis lateralibus prominentibus, venulis conspicuis, crasse reticulatis; flores plures, conferti, sessiles; bracteae intimae plures, parvae, triangulares, acutae, ciliatae et parce hirtellae; calyx tenuis, subalbidus, intus glaber, extus dense puberulus, pilis glanduliferis et eglanduliferis instructus, segmentis anguste triangularibus, acuminatis; corolla alba, deorsum glabra, sursum hirtella, bilabiata, labio superiore lanceolato, apice obtuso, inferiore oblanceolato, apice minute trilobato, lobis parvis, rotundatis; stamina leviter exserta; antherae loculi superpositi; filamenta subglabra vel deorsum parce hirtella; ovarium apice parce hirtellum, basi annulum striatum, glabrum, minute lobatum ferens; capsulae ovatae, planae, acutae, puberulae; retinacula oblique acuta.

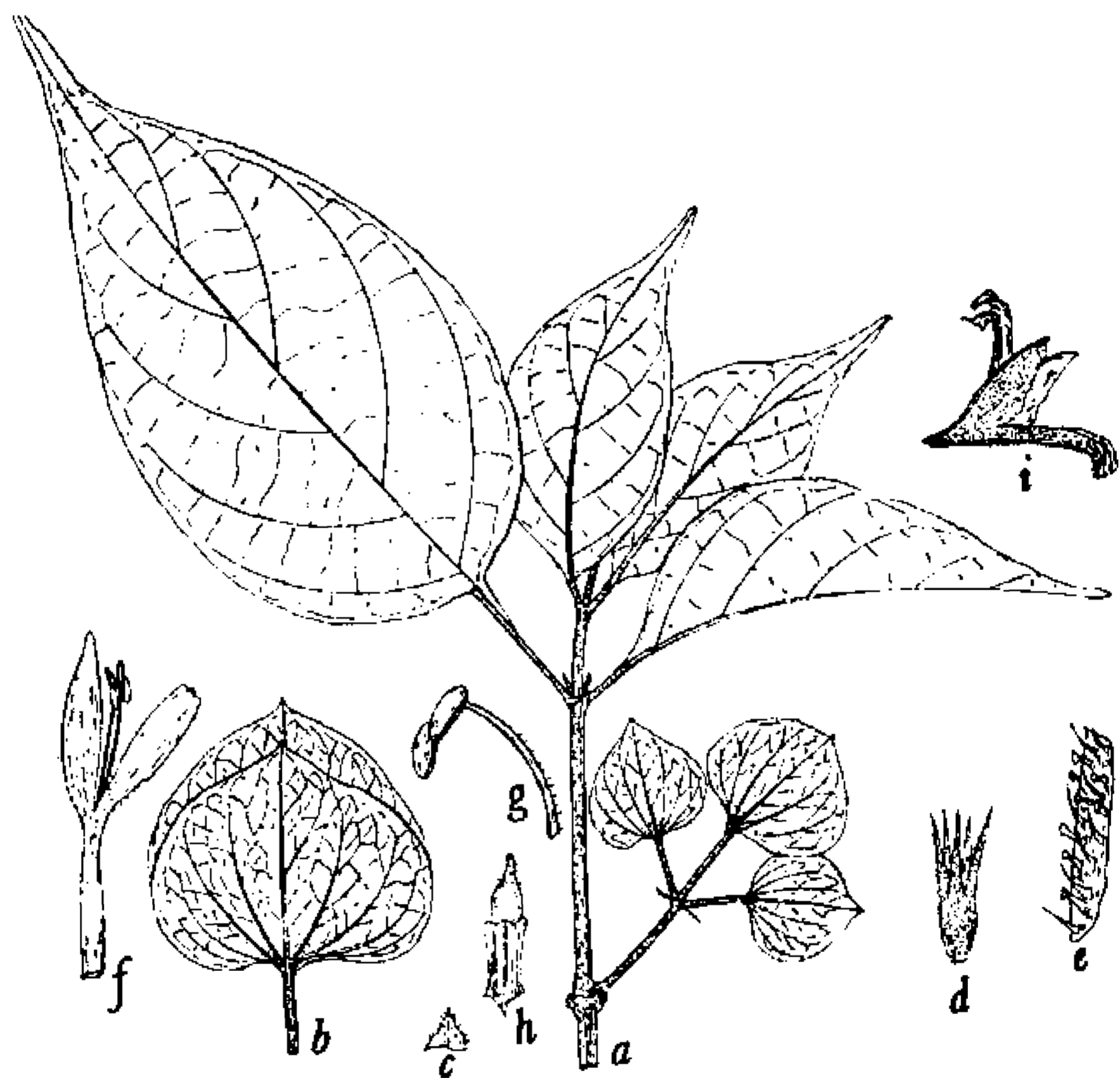


FIGURE 138.—*Dicliptera megalochlamys* Leonard (*a-e, i*, Pennell 4499; *f-h*, Herb. Bayón): *a*, Tip of plant; *b*, cymule bracts; *c*, one of the inner bractlets; *d*, calyx; *e*, pubescence of calyx; *f*, corolla; *g*, tip of stamen; *h*, ovary and disk; *i*, disrupted capsule valve. (*a*, Half natural size; *b, f*, natural size; *c*, 3 times natural size; *d*, twice natural size; *e*, 40 times natural size; *g, i*, 3 times natural size; *h*, 5 times natural size.)

Coarse herbs up to 60 cm. high or more; stems subhexagonal, retrorsely puberulous, the lower portions 5.5 mm. or more in diameter; leaf blades oblong-ovate, up to 14 cm. long and 8 cm. wide, acuminate (the tip itself obtuse), narrowed at base, sometimes obliquely so, thin, entire or undulate, both surfaces glabrous except the costa and lateral veins (4 to 6 pairs), these puberulous, the hairs 125 to 200 μ long, curved, subappressed, the cystoliths minute, inconspicuous,

dark brown, up to 250μ long; petioles slender, up to 6 cm. long or more, puberulous; cymules axillary, peduncled, usually in 3-parted peduncled cymes, these solitary or in pairs, the inflorescence of mature plants forming a loose panicle up to 30 cm. long and 10 cm. broad; peduncles of the cymes up to 15 mm. long from base to fork, above fork up to 1 cm. long (lateral) and 15 mm. long (middle), ascending hexagonal, puberulous with curved hairs; bracts subtending the cyme subulate, up to 4 mm. long and about 0.25 mm. wide at base; bracts subtending the cymules similar in size or one slightly smaller than the other, both broadly ovate, 1.2 to 2 cm. long, 2 to 2.5 cm. wide, obtuse and apiculate at tip, truncate at base, firm, entire, ciliate with curved hairs, otherwise glabrous or sparingly puberulous near base, the venation prominent, the costa and the 3 or 4 pairs of lateral nerves predominating, the veinlets coarsely and conspicuously reticulate, the intercostal areas if viewed under lens and against light, minutely reticulate; flowers 8 or more, crowded, sessile, the subtending bracts (several pairs) triangular, 1.5 mm. long and wide, acute, ciliate and sparingly hirtellous; calyx thin, whitish, 6 mm. long, subglabrous within, densely puberulous without a mixture of straight stout truncate or gland-tipped hairs 50μ long and longer straight or curved pointed ones up to 200μ long, the calyx segments narrowly triangular, 3 mm. long and 1 mm. wide at base, acuminate; corolla white, 2 cm. long, the lower half glabrous, the upper hirtellous, the hairs spreading, 125μ long, the tube 2 mm. broad at base, narrowed at 1 cm. above base to 1.5 mm., the mouth about 2.5 mm. broad, the upper lip lanceolate, 14 mm. long, 5 mm. wide, obtuse at tip, the lower lip oblanceolate, about 12 mm. long, 3.5 mm. wide near tip, minutely 3-lobed, the lobes rounded, about 0.5 mm. long and broad; stamens exerted about 6 mm. beyond the mouth of the corolla tube, the anther lobes superposed, 1.5 mm. long, 0.75 mm. wide, the filaments subglabrous or sparingly hirtellous toward base; ovary sparingly hirtellous at tip, the basal portion enclosed by a striate glabrous minutely lobed coroniform disk 1.25 mm. long and 1 mm. broad; capsules ovate, 1 cm. long, 5 mm. broad, 1.75 mm. thick, acute, puberulous; retinacula 1 mm. long, obliquely acute; seed not seen.

Type in the herbarium of the New York Botanical Garden, collected in forest at Boca Antizales, on Río Esmeralda, Department of Bolívar, Colombia, 800 to 1,100 meters altitude, February 26, 1918, by Francis W. Pennell (No. 4499).

A specimen collected at Tocarema, 2,200 meters altitude (ex Herb. Bayón) (Valle), is also of this species.

24. *Dicliptera batilliformis* Leonard, sp. nov.

FIGURE 139

Herba diffusa, caulibus ascendentibus, subhexagonis, deorsum glabris, sursum bifariam puberulis, pilis curvatis; lamina foliorum oblongo-ovata, acuminata (apice ipso subacuto), basi angustata, tenuis, integra vel undulata, utrinque glabra, costa et venis lateralibus basi dense puberulis, pilis subbrunneis et curvatis, cystolithis sub lente conspicuis; petioli aliquanto graciles, subtus glabri, supra puberuli; cymulae solitariae vel in paribus, axillares; pedunculi glabri vel bifariam puberuli, apice complanati, prope basim geniculati, aliquando bifurcati, in nodis bracteas parvas subulatas ferentes; bracteae cymulas subtendentes subsimiles, ovatae, apice rotundatae vel late obtusae et apiculatae, basi truncatae vel rotundatae, subchartaceae, glabrae, costa et venis lateralibus prominentibus, venulis crasse reticulatis, prominentibus; flores plures, subsessiles; bracteae intimae parvae, triangulares, subcostatae, acutae, ciliatae; calyx basi glaber, sursum dense puberulus, pilis conicis vel subtruncatis et gracilibus acutis intermixtis instructus, segmentis triangularibus, acutis; corolla alba labio purpureo-maculato, tubo deorsum glabro, sursum hirtello, limbo bilabiato, labio superiore obovato, rotundato vel obtuso, labio inferiore anguste ovato, apice trilobato, lobis parvis, rotundatis; stamina exserta, filamentis planis, hirtellis; antherae loculi superpositi; ovarium glabrum, annulo cupuliformi.

Rambling suffrutescent herbs up to 1.3 meters high; stems up to 2 cm. in diameter at base, ascending, subhexagonal, glabrous or the tips puberulous, the hairs curved and confined chiefly to the grooves; leaf blades oblong-ovate, up to 15 cm. long and 6.5 cm. wide, acuminate (the tip itself subacute), narrowed at base, thin, entire or undulate, both surfaces glabrous except the costa and basal portions of the lateral veins (5 or 6 pairs), these and the costa densely puberulous, the hairs brownish and curved, the cystoliths 125 to 175 μ long, conspicuous under a lens; petioles rather slender, up to 5.5 cm. long, glabrous ventrally, the channel puberulous as is the costa; cymes solitary or in pairs, axillary, the peduncle glabrous or bifariously puberulous, flattened and 3 to 3.5 mm. broad at tip, forked at 3 to 5 mm. above base, the portion above the node up to 3 cm. long, bearing at node a pair of minute subulate bracts about 1 mm. long, these often deciduous; the large cymule bracts similar but slightly different in size, the posterior bract up to 23 mm. long and 20 mm. wide, the anterior up to 18 mm. long and 15 mm. wide, both ovate, rounded or broadly obtuse and apiculate at tip, truncate or rounded at base, subchartaceous, glabrous, bearing prominent cystoliths, conspicuously veiny, the veinlets coarsely reticulate, the costa extended through the flattened portion of the peduncle; flowers

several, sessile, subtended by several pairs of thin subcostate triangular acute ciliate bracts about 1 mm. long and wide; calyx 3.5 mm. long, densely puberulous except the glabrous basal portion of the narrowly campanulate tube, the pubescence a mixture of conical or subtruncate and more slender sharply pointed hairs, the calyx segments triangular, 1 mm. long and 0.75 mm. wide at base, acute; corolla white with purple-mottled lip, glabrous except the medial portions and outer surface of the lips, these hirtellous, the hairs spreading, about 0.25 mm. long, the tube 12 mm. long, 2.5 mm. broad, the mouth 4 mm. broad, the upper lip obovate, about 11 mm. long and 5 mm. wide, rounded or obtuse, the lower lip narrowly ovate, 14 mm. long and 4 mm. wide, 3-lobed at apex, the lobes about 1 mm. long, rounded, the middle one 1 mm. wide, the lateral ones

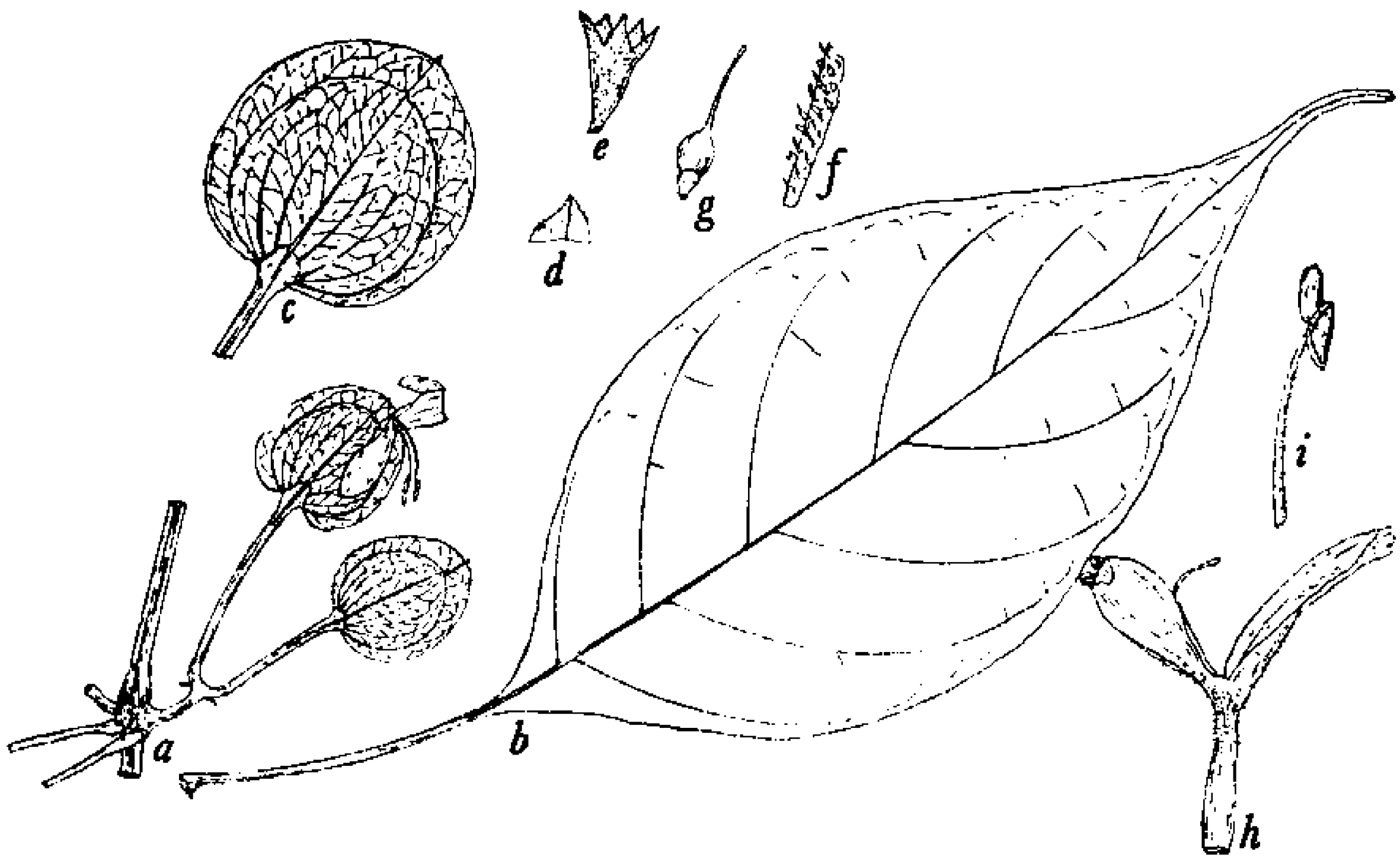


FIGURE 139.—*Dicliptera batilliformis* Leonard (*Lawrance* 258): *a*, Node showing portion of inflorescence; *b*, stem leaf; *c*, cymule; *d*, one of the inner bracts; *e*, calyx; *f*, pubescence of calyx; *g*, pistil; *h*, corolla; *i*, tip of stamen. (*a*, *b*, Half natural size; *c*, *h*, natural size; *d*, *e*, *i*, $2\frac{1}{2}$ times natural size; *f*, about 25 times natural size; *g*, $3\frac{1}{2}$ times natural size.)

slightly narrower; the stamens slightly exceeding the upper lip of the corolla, the anther lobes superposed, 2 mm. long and 0.75 mm. broad, the filaments flattened, dorsally hirtellous, the hairs up to 80μ long; ovary glabrous, the disk low and cupuliform; capsules not seen.

Type in the herbarium of the New York Botanical Garden, collected along a stream in thick forest in the region of Mount Chapón, De-

partment of Boyacá, Colombia, "3,400 ft." altitude, June 28, 1932, by A. E. Lawrance (No. 258). Isotype: US.

The specific epithet alludes to the shovel-shaped cymule bracts. *Dicliptera batilliformis* is closely related to *D. megalochlamys* differing chiefly from that species in its rounded ovate cymule bracts definitely longer than broad, and the short-stalked simple or forked cymes. The cymule bracts of *D. megalochlamys* are broader than long and cymes 3-parted instead of forked, the subtending bracts of the node larger, and the basal segment of the peduncle considerably longer.

25. *Dicliptera sanctae-martae* Leonard, sp. nov.

FIGURE 140

Herba, caulibus erectis vel ascendentibus, subhexagonis, glabris vel sursum aliquanto puberulis, pilis curvatis; lamina foliorum oblongo-lanceolata vel oblongo-ovata, subacuminata (apice ipso obtuso), basi angustata, tenuis, integra vel undulata, utrinque glabra vel in costa et venis lateralibus minute et parce hirtella, cystolithis sublente conspicuis, supra in costa densis et parallelis; petioli glabri vel parce hirtelli; cymae solitariae vel binae, axillares, plerumque 3-partitae; pedunculi leviter complanati, glabri vel parce hirtelli, pilis plus minusve curvatis, cystolithis sub lente prominentibus; bracteae cymas subtendentes subulatae vel aliquando anguste lanceolatae, parvae, glabrae vel parce hirtellae; bracteae cymulam subtendentes aliquanto parvae, bractea inferior aliquanto minor quam superior, ambae suborbiculares, rotundatae et apiculatae, basi cordatae, virides vel basi albidae, glabrae vel parce ciliatae, costa aliquanto prominente, venis et venulis reticulatis aliquanto obscuris; flores plures, conferti, sessiles; bracteae intimae parvae, lanceolatae, acuminatae, subhyalinae, glabrae vel parce ciliolatae; calyx tenuis, subalbidus, subhyalinus, minute hirtellus, pilis ascendentibus, segmentis triangularibus, acutis; corolla rosea, tubo deorsum glabro, sursum hirtello, pilis retrorsis ascendentibus, bilabiata, labio superiore ovato, rotundato, labio inferiore oblongo, apice trilobato, lobis parvis, rotundatis; stamina exserta; antherae loculi superpositi; filamenta complanata, sursum glabra, deorsum parce pilosa; ovarium glabrum vel parce hirtellum, basi annulum obliquum ferens.

Herbs up to 30 cm. high; stems erect or ascending, subhexagonal, glabrous or moderately puberulous, the hairs curved; leaf blades oblong-lanceolate to oblong-ovate, subacuminate (the tip itself obtuse), narrowed at base, thin to moderately firm, entire or undulate, both surfaces glabrous or the costa and lateral veins (5 or 6 pairs) sparingly and minutely hirtellous, the cystoliths conspicuous under a lens, about 0.5 mm. long, crowded and parallel on costa of the upper surface; petioles up to 4.5 cm. long, glabrous or sparingly hirtellous; cymes solitary or in pairs, axillary, mostly 3-parted, the peduncles

from base to node up to 2 cm. long, from node to cymules, up to 2.2 cm. long, subhexagonal, slightly flattened, glabrous or sparingly hirtellous, the hairs more or less curved, the cystoliths prominent under a lens; bracts subtending the cymes subulate or sometimes narrowly lanceolate, up to 4 mm. long, glabrous or sparingly hirtellous; cymule bracts suborbicular, up to 13 cm. long and wide, the posterior bract about 2 mm. longer and wider than the anterior bract, both bracts rounded and subapiculate at tip, cordate at base, thin, green (or in a small basal area whitish), glabrous or sparingly ciliatae, the costa rather prominent, the lateral veins and reticulations of the veinlets rather obscure, the cystoliths prominent under a lens; flowers several, subsessile, the subtending bracts lanceolate, 2.25 mm. long, 0.75 mm. wide, acumin-

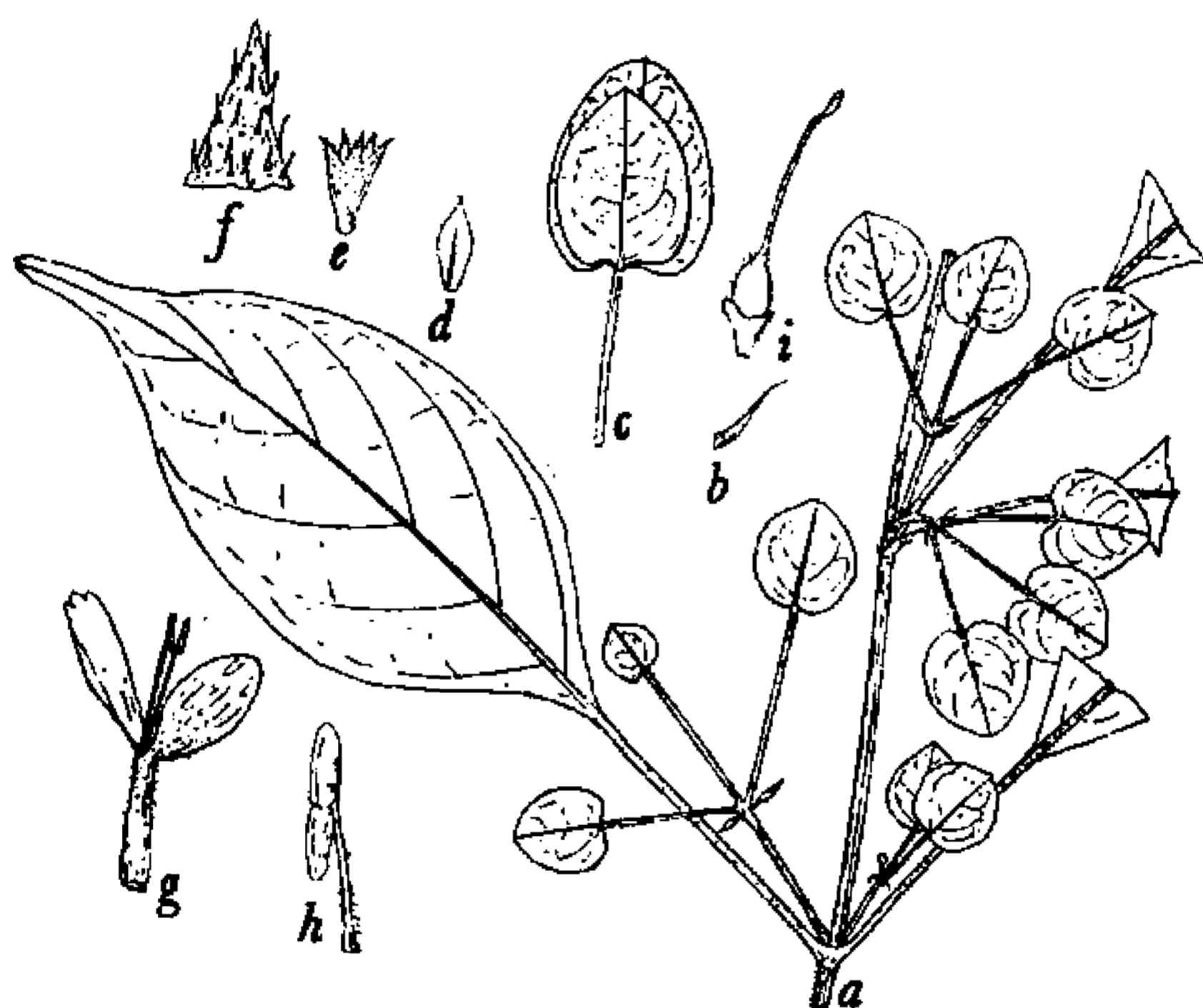


FIGURE 140.—*Dicliptera sanctae-martae* Leonard (*H. H. Smith* 1411): *a*, Inflorescence; *b*, one of a pair of bracts produced at peduncle node; *c*, cymule bracts; *d*, one of the innermost bracts subtending flowers; *e*, calyx; *f*, tip of calyx segment to show pubescence; *g*, corolla; *h*, tip of stamen; *i*, pistil. (*a*, Half natural size; *b*, *d*, *e*, 3 times natural size; *c*, *g*, natural size; *f*, 40 times natural size; *h*, $4\frac{1}{2}$ times natural size; *i*, 7 times natural size.)

ate, subhyaline, glabrous or sparingly ciliolate; calyx 2.25 mm. long, whitish, subhyaline, minutely hirtellous except the glabrous basal portion, the hairs ascending, the calyx segments triangular, 1.25 mm. long, about 0.5 mm. wide at base, acute; corolla 15 to 20 mm. long, rosy, moderately hirtellous (the basal portion glabrous), the hairs retrorse, up to 250μ long, the corolla tube 2 mm. broad at base, narrowed at 2 mm. above base to 1 mm., the mouth 2.5 mm. broad, the upper lip ovate, about 1 cm. long and 6 mm. wide, rounded at tip, the lower lip oblong, up to 11 mm. long, and 2.5 mm. wide, 3-lobed

at tip, the lobes rounded, about 0.5 mm. long and broad; stamens barely reaching tip of the upper corolla lip, the anther lobes superposed, about 1 mm. long and 0.5 mm. wide, the filaments flattened, glabrous at tip, sparingly pilose toward base; style slightly shorter than the stamens, the stigma bilobed, the lobes linear, obtuse, about 0.5 mm. long; ovary glabrous or very sparingly hirtellous, the basal disk oblique, about 0.5 mm. long; capsules not seen.

Type in the U. S. National Herbarium, No. 703911, collected along stream in damp woods, near Cacagualito, vicinity of Santa Marta, Department of Magdalena, Colombia, "1500 feet" altitude, December 1898, by H. H. Smith (No. 1411). Isotypes: GH, K, Mo, NY, S.

Dicliptera sanctae-martae, when compared with other Colombian species, is well marked by its small suborbicular cordate cymule bracts. According to Smith, it was not observed anywhere except in the type locality.

26. *Dicliptera rhombochlamys* Leonard, sp. nov.

FIGURE 141

Herba, caulibus ascendentibus, subhexagonis, puberulis, pilis curvatis; lamina foliorum ovata vel subacuminata (apice ipso obtuso) vel aliquando acuta, basi angustata, satis firma, integra vel undulata, utrinque glabra vel subglabra, costa et venis lateralibus puberulis, pilis curvatis, cystolithis pluribus et conspicuis; petioli aliquanto graciles, puberuli vel subtus glabri, pilis curvatis; cymae solitariae vel binae, axillares, 3-partitae, pedunculis subhexagonis, puberulis, pilis sursum curvatis et subappressis; bracteae cymas subtendentes subulatae; bracteae cymulam subtendentes rhombicae, bractea inferior aliquanto minor quam superior ambae acutae vel subobtusae, glabrae vel parce puberulae; bracteae intimae parvae, anguste triangulatae, acutae, puberulae, pilis subappressis; calycis segmenta anguste triangularia, hirtella, pilis acutis, eglanduliferis et pilis glanduliferis intermixtis; corolla violacea, deorsum glabra, sursum pilosula, pilis patulis vel recurvatis, tubo angusto, labio superiore anguste ovato, subobtusum, labio inferiore subsimili, apice trilobato, lobis parvis, rotundatis; stamina vix exserta; antherae loculi superpositi; filamenta complanata, deorsum parce et retrorse pilosula; capsulae ovoideae, complanatae, dense et retrorse pilosulae, pilis albis; retinacula parva, oblique cucullata.

Herbs up to 40 cm. high or more; stems erect or ascending, subhexagonal, puberulous with curved hairs; leaf blades ovate, up to 8 cm. long and 3 cm. wide, obtuse or subacuminate with blunt tip or sometimes acute, narrowed at base, moderately firm, entire or undulate, both surfaces glabrous or nearly so except costa and lateral veins (4 or 5 pairs), these more or less puberulous with curved hairs, the cystoliths numerous and conspicuous, up to 0.5 mm. long; petioles

rather slender, up to 2 cm. long, puberulous with curved hairs or sometimes glabrous beneath; cymes solitary or in pairs, axillary, 3-parted, the peduncles up to 5 mm. long from base to fork and 3 to 12 mm. long above fork, subhexagonal, puberulous, the hairs upwardly curved and subappressed; bracts at fork of peduncle subulate, 3 mm. long and 0.25 mm. wide at base; cymule bracts rhombic, the posterior bracts up to 15 mm. long and 13 mm. wide, the inferior slightly smaller, both acute or subobtuse, narrowed at base, firm, glabrous or sparingly puberulous toward base; interior bracts subtending the



FIGURE 141.—*Dicliptera rhombochlamys* Leonard (*Rusby & Pennell 487*): *a*, Tip of plant; *b*, bracts subtending cyme; *c*, one of the innermost bracts subtending flower; *d*, calyx; *e*, pubescence of tip of calyx segment; *f*, corolla; *g*, capsule valve disrupted. (*a*, *f*, Natural size; *b*, *g*, twice natural size; *c*, *d*, 4 times natural size; *e*, 25 times natural size.)

flowers narrowly triangular, 1.5 mm. long, 0.5 mm. wide at base, acute, puberulous, the hairs subappressed; calyx 3 mm. long, hirtellous except the glabrous base, the slender pointed hairs (up to 100 μ long and ascending) intermixed with gland-tipped hairs about 25 μ long, the segments narrowly triangular, 1.75 mm. long, 0.5 mm. wide at base, acute; corollas up to 17 mm. long, violet, finely and rather densely pilosulous except the basal portion, the hairs spreading or retrorsely curved, up to 0.25 mm. long, the tube 1.25 mm. broad at base, narrowed to 1.5 mm. slightly above base, thence gradually narrowed to 2 mm. at mouth, the upper lip narrowly ovate, 9 mm. long, 4 mm. wide, subobtuse, the lower lip lightly longer and narrower

than the upper, 3-lobed at tip, the lobes 0.75 mm. long and 0.5 mm. wide, rounded at tip; stamens exerted 6 mm. beyond mouth of corolla tube, the anther lobes superposed, 1 mm. long and 0.5 mm. broad, the filaments flattened, retrorsely and sparingly pilosulous toward base; capsules ovoid, flattened, 8 mm. long, 4 to 5 mm. broad, 1 mm. thick, densely and retrorsely pilosulous, the hairs white, up to 0.2 mm. long; retinacula 1 mm. long, obliquely cucullate and acute; seed not seen.

Type in the U. S. National Herbarium, No. 1041359, collected in quebrada thicket east of Neiva, Department of Huila, Colombia, 700 to 1,500 meters altitude, July 31, 1917, by H. H. Rusby and F. W. Pennell (No. 487). Isotypes: GH, NY.

A specimen collected at Anolaima, Department of Cundinamarca, 2,200 meters altitude, August 1855, by J. Triana (K), is also of this species.

The specific epithet is derived from $\rho\acute{o}\mu\beta\omicron\varsigma$ and $\chi\lambda\alpha\mu\acute{\upsilon}\varsigma$, in allusion to the rhomboid cymule bracts.

27. *Dicliptera nanodes* Leonard, sp. nov.

FIGURE 142

Herba parva, caulibus erectis vel ascendentibus, subhexagonis, glabris; lamina foliorum ovata, acuta vel subacuminata (apice ipso



FIGURE 142.—*Dicliptera nanodes* Leonard (*Pérez-Arbeláez* 3106): *a*, Tip of plant; *b*, base of cyme to show bracts; *c*, one of the innermost bracts subtending the flowers; *d*, calyx; *e*, tip of calyx segment to show character of pubescence; *f*, retinaculum. (*a*, Natural size; *b*, 3 times natural size; *c*, *f*, 5 times natural size; *d*, $4\frac{1}{2}$ times natural size; *e*, 40 times natural size.)

subobtusos), basi angustata, aliquanto firma, integra vel undulata, utrinque glabra, costa et venis lateralibus obscuris, cystolithis sublente pluribus et prominentibus; petioli aliquanto breves, glabri; cymae solitariae, 2- vel 3-partitae; pedunculi glabri; bracteae cymas

subtendentes subulatae, glabrae; bracteae cymularum rhombico-ovatae, acutae vel subacutae, basi angustatae, subchartaceae, glabrae, costa et venis reticulatis sub lente prominentibus, bractea inferior aliquanto minor quam superior; flores plures, sessiles; bracteae intimae lanceolatae, acutae, ciliatae, costa prominente; calycis segmenta anguste triangularia, acuta, ciliata, puberula, pilis brevibus, glanduliferis; corolla matura ignota; capsulae ovoideae, complanatae, puberulae, sursum pilis patulis vel ascendentibus, deorsum pilis retrorsis; retinacula parva, oblique cucullata, glabra vel prope basim parce puberula; semina suborbicularia, complanata, subbrunnea, leviter rugosa.

Low weak herbs up to 12 cm. high; stems erect or ascending, subhexagonal, glabrous; leaf blades ovate, up to 6 cm. long and 3 cm. wide, acute to subacuminate (the tip itself subobtuse), narrowed at base, moderately firm, entire or undulate, both surfaces glabrous, the costa and lateral veins (3 or 4 pairs) obscure, the cystoliths numerous and prominent under a lens, up to 375μ long, straight or slightly curved; petioles up to 5 mm. long, glabrous; cymes axillary, solitary, 2- or 3-parted, the peduncles glabrous, 1.5 to 2 mm. long from base to fork, 5 to 7 mm. long from fork to base of the cymule bracts, the pair of bracts produced at the peduncle nodes subulate, about 2 mm. long, glabrous; cymule bracts rhombic-ovate, acute to subacute, narrowed at base, firm, subchartaceous, glabrous, the veins coarsely reticulate, the costa and reticulations moderately prominent under a lens, the posterior bract up to 12 mm. long and 10 mm. wide, the anterior up to 10 mm. long and 5.5 mm. wide, more sharply acute at tip than the posterior bract; flowers several, sessile; bracts subtending the flowers lanceolate, 1.5 mm. long, 0.5 mm. wide near base, acute, ciliate, the hairs up to 75μ long, ascending, the costa prominent; bractlets similar to the bracts but smaller; calyx 2 mm. long, the basal portion glabrous, the lobes narrowly triangular, 1.5 mm. long, 0.3 to 0.4 mm. wide at base, acute, ciliate, the hairs ascending, 75μ long, the costa bearing a few hairs similar to the marginal ones, the outer surface of the calyx segments moderately puberulous with subpapilliform glandular hairs about 25μ long; mature corolla not seen; style slender, about 17 mm. long, the stigma oblong and rounded, slightly broader than the style, sparingly puberulous toward base; capsules ovoid, 5 mm. long, 3 to 4 mm. broad, 1 mm. thick, puberulous, the hairs spreading or ascending at tip of capsule, but retrorse towards base; retinacula 1 mm. long, obliquely cucullate, glabrous or bearing a few minute hairs toward base; seed suborbicular, flattened, about 2.5 mm. in diameter, light brown, slightly and minutely roughened.

Type in the U. S. National Herbarium, No. 1830088, collected at Tocaima, Department of Cundinamarca, July 22, 1934, by E. Pérez-Arbeláez (No. 3106).

Dicliptera nanodes is characterized by its small size, glabrous or nearly glabrous parts and relatively broad leaf blades. The specific epithet is from the Greek *νανώδης*, meaning dwarfish.

28. *Dicliptera columbiana* Leonard, sp. nov.

FIGURE 143

Herba, caulibus erectis vel ascendentibus, subhexagonis, glabris vel parce vel dense bifariam hirtellis, pilis recurvatis; lamina foliorum ovata, subacuta vel subacuminata, apice ipso obtuso, basi angustata, satis firma, integra vel undulata, utrinque glabra, costa et venis lateralibus plus minusve puberulis, pilis recurvatis, cystolithis pluribus sed inconspicuis, atroviridibus vel subnigris; petioli aliquanto graciles,

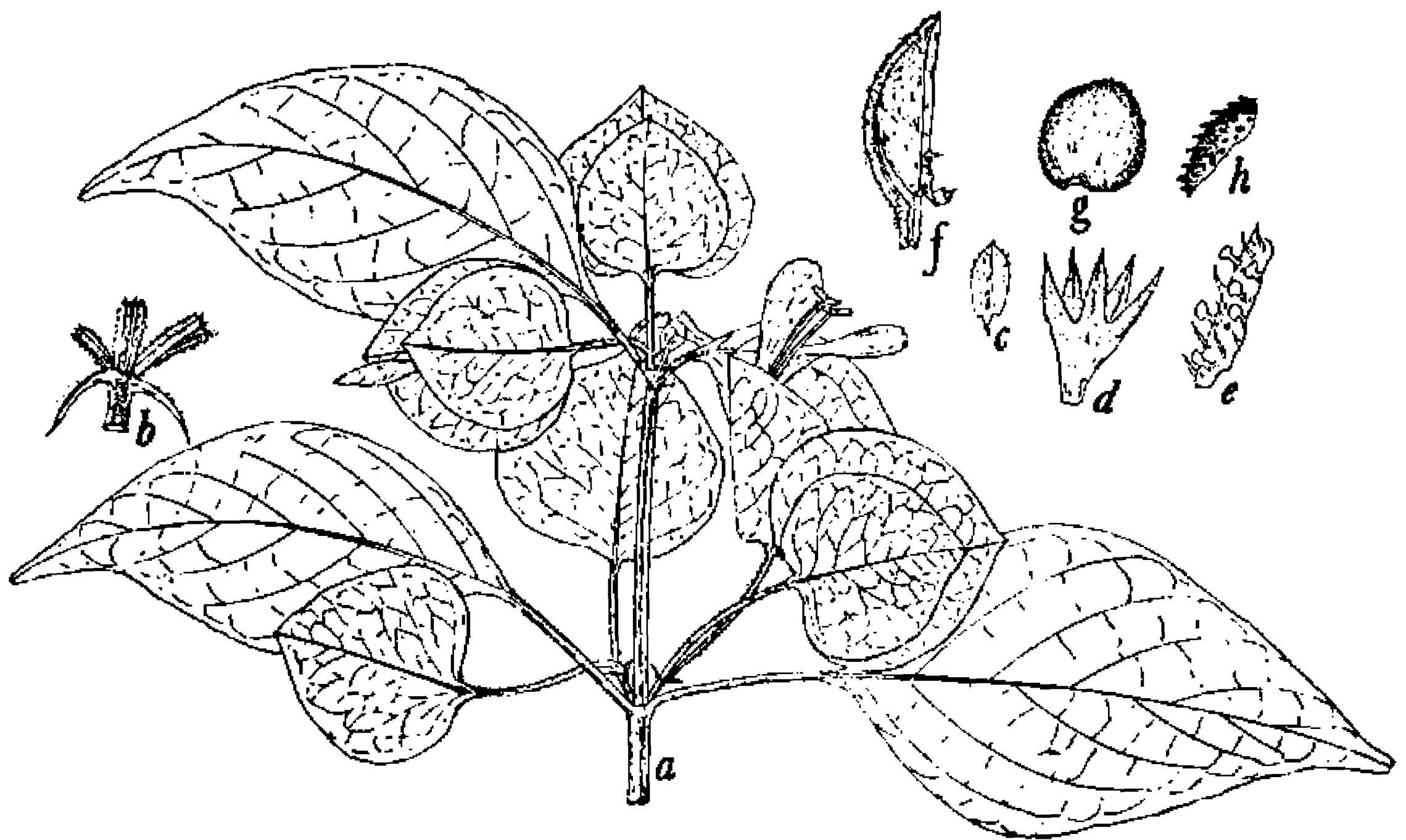


FIGURE 143.—*Dicliptera columbiana* Leonard (*García-Barriga* 12355): *a*, Tip of plant; *b*, node at base of cyme to show bracts and winged peduncles; *c*, one of the innermost bracts subtending flowers; *d*, calyx; *e*, pubescence of calyx; *f*, capsule valve; *g*, seed; *h*, surface of seed to show roughening. (*a*, Natural size; *b*, twice natural size; *c*, 5 times natural size; *d*, 4 times natural size; *e*, 35 times natural size; *f*, $2\frac{1}{2}$ times natural size; *g*, 3 times natural size; *h*, 30 times natural size.)

glabri vel supra puberuli; cymae plerumque solitariae, axillares, 2- vel 3-partitae; pedunculi hexagoni, anguste alati, hirtelli, pilis recurvatis; bracteae cymas subtendentes lineari-subulatae, acutae vel obtusae; bracteae cymulam subtendentes aliquanto magnae, bractea inferior aliquanto minor quam superior, ambae late ovatae, obtusae, basi truncatae, tenues, virides, glabrae vel parce puberulae, costa prominente, nervis lateralibus inconspicuis, venulis crasse reticulatis, sub lente prominentibus; bracteae intimae parvae, ovatae,

parce hirtellae, puberulae, pilis glanduliferis et eglanduliferis intermixtis; calycis segmenta anguste triangularia, acuta, puberula, pilis glanduliferis et eglanduliferis intermixtis; corolla subpurpurea, bilabiata, labio superiore ovato, obtuso, labio inferiore anguste obovato, apice minute trilobato; antherae loculi superpositi; filamenta complanata, parce hirtella; capsulae ovoideae complanatae, apice subobtusae, dense et retrorse puberulae; retinacula oblique bilobata; semina complanata, atrobrunnea, minute scabra.

Herbs up to 30 cm. high; stems erect or ascending, subhexagonal, glabrous or sparingly to densely puberulous in 2 lines, the hairs recurved; leaf blades ovate, up to 5.5 cm. long and 2.5 cm. wide, subacute or if subacuminate, the tip itself obtuse, narrowed at base, drying dark olive green, rather firm, entire, undulate, both surfaces glabrous except costa and basal portions of lateral veins (5 or 6 pairs), these sparingly to rather densely puberulous with recurved hairs, the cystoliths numerous but inconspicuous, dark green or blackish; petioles rather slender, up to 1.5 cm. long, glabrous or the channels more or less puberulous; cymes mostly 2-parted (sometimes 3-parted), the peduncles below the node 2 mm. long, hexagonal, hirtellous, above node, 6 to 10 mm. long, hexagonal and narrowly winged, hirtellous, the hairs recurved, 0.2 mm. long, the bracts borne at the node of the peduncle linear-subulate, 2 to 4.5 mm. long, acute to obtuse, the larger cymule bract up to 16 mm. long and 17 mm. wide, the smaller up to 13 mm. long and 13.5 mm. wide, both broadly ovate, obtuse, truncate at base, firm, green, glabrous or sparingly puberulous, the costa rather prominent, the lateral nerves inconspicuous, the veinlets coarsely reticulated, rather obscure unless viewed with a lens; innermost bracts ovate, about 1.25 mm. long and 0.5 mm. wide, acute to subacute, sparingly hirtellous; calyx 3 mm. long, puberulous with a mixture of glandular and eglandular hairs, the calyx segments narrowly triangular, 2 mm. long and 0.75 mm. wide at base, acute; corolla purplish (lilas o moradas), finely pubescent, about 10 mm. long, the upper lip ovate, about 7 mm. long and 2 mm. wide, obtuse, the lower lip about 8 mm. long and 4 mm. wide, 3-lobed at tip, the lobes broadly ovate, rounded, 0.5 mm. long; anther cells superposed, 1.25 mm. long and 0.5 mm. broad; filaments flattened, sparingly hirtellous; capsules ovoid, 8 mm. long, 4 mm. wide, 1.5 mm. thick, flattened, obtusish at tip, densely and retrorsely puberulous, the retinacula usually bilobed, 1 mm. long; seed suborbicular, flattened, 2.5 to 3 mm. in diameter, 1.5 mm. thick, dark brown, roughened by minute retrorse prickles.

Type in the U. S. National Herbarium, No. 1931893, collected along trail between Guaduas and Alto de Aguaclara, at the Hacienda Paramillo, west of Guaduas, Department of Cundinamarca, Colombia,

altitude 1,040 to 1,320 meters, July 24, 1947, by H. García-Barriga (No. 12355). García-Barriga's No. 12347 (US), collected at the same time and place, is also of this species.

Dicliptera columbiana is related to *D. megalochlamys* and resembles it in many ways; however, *D. columbiana* can be recognized by its much shorter peduncles, and smaller stature, cymule bracts, and leaf blades.

29. *Dicliptera compacta* Leonard, sp. nov.

FIGURE 144

Suffrutescens, caulibus erectis vel ascendentibus, subhexagonis, glabris vel nodis puberulis; lamina foliorum lanceolata, subacuminata (apice ipso obtuso), basi angustata, firma, integra vel undulata, utrinque glabra, costa et venis aliquanto obscura, cystolithis sub lente prominentibus; petioli glabri vel in marginibus canalis puberuli,

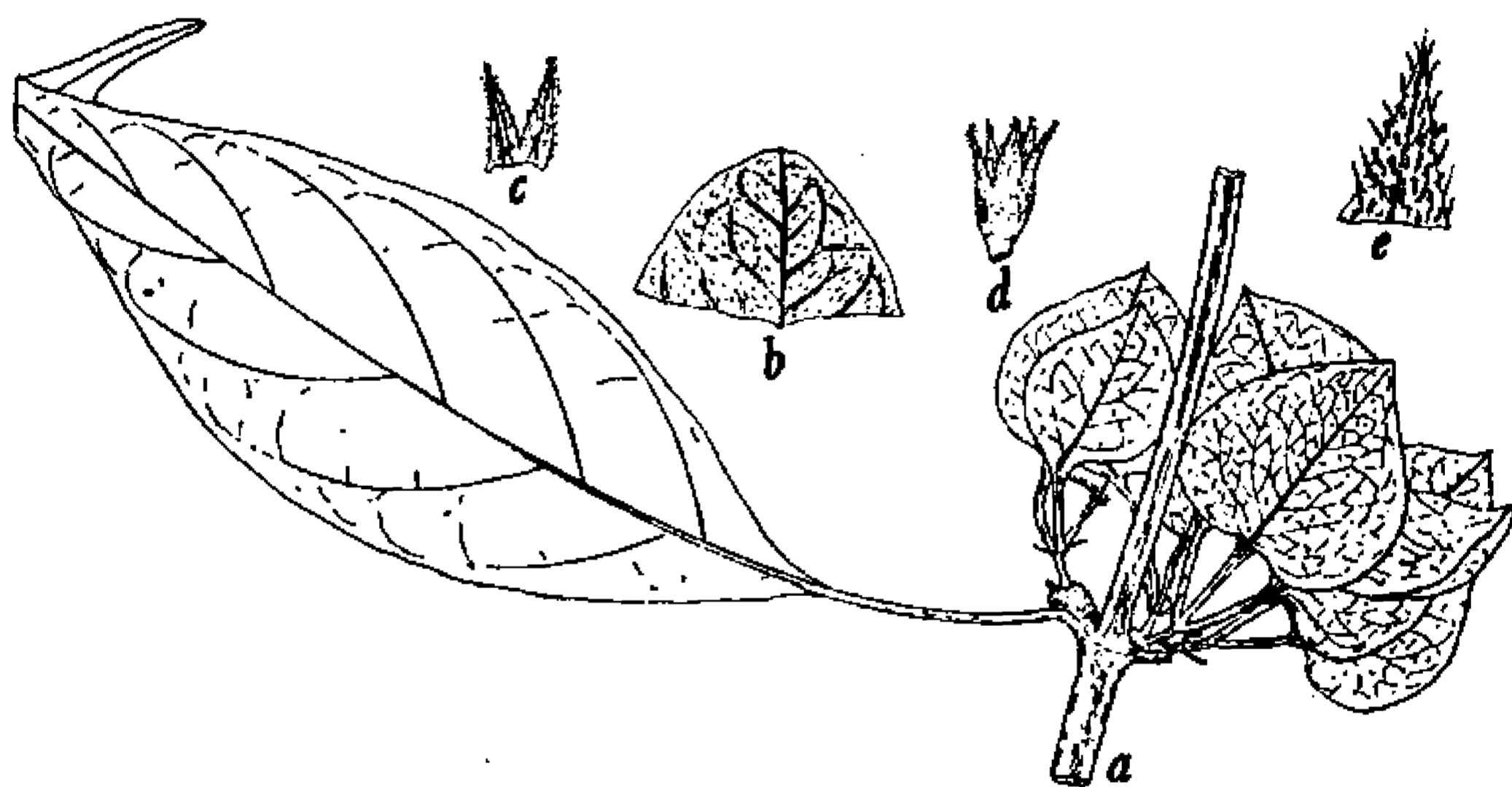


FIGURE 144.—*Dicliptera compacta* Leonard (*Triana*, Copó): *a*, Node to show inflorescence and leaf blade; *b*, tip of cymule bract to show venation and cystoliths; *c*, a pair of the innermost bracts; *d*, calyx; *e*, tip of calyx segment to show pubescence. (*a*, Natural size; *b*, twice natural size; *c*, $3\frac{1}{2}$ times natural size; *d*, 3 times natural size; *e*, 20 times natural size.)

pilis curvatis; cymae plures, axillares, compactae, 3-partitae; pedunculi infra nodum breves, glabri, hexagoni, apice complanati, angulis acutis; bracteae cymas subtendentes parvae, subulatae; bracteae cymulam subtendentes aliquanto magnae, bractea inferior aliquanto minor quam superior, ambae late ovatae, obtusae, plus minusve apiculatae, basi truncatae vel leviter cordatae, glabrae, subchartaceae, costa et venis prominentibus, venulis crasse reticulatis; bracteae intimae basi connatae, anguste triangulares, acutae, ciliatae, subhyalinae, cystolithis prominentibus instructae; calycis segmenta anguste triangularia, acuta, puberula, pilis glanduliferis et eglanduliferis intermixtis.

Suffrutescent plants up to 30 cm. high or more; stems erect or

ascending, subhexagonal, glabrous or the nodes puberulous with curved hairs; leaf blades lanceolate, up to 10 cm. long and 3 cm. wide, subacuminate (the tip itself obtuse), narrowed at base, glabrous, the costa and veins (5 or 6 pairs) rather obscure, the cystoliths prominent and numerous under a lens, 250 to 375 μ long; petioles up to 2 cm. long, glabrous or the margins of the channel puberulous with curved hairs; cymes 3-parted, usually several in each axil, the peduncles 2 mm. long from base to fork, 10 to 12 mm. long from fork to base of cymule bracts, glabrous, hexagonal, flattened toward tip, the angles acute, the cystoliths parallel, prominent under a lens; bracts produced at the fork of the cyme subulate, 2.5 mm. long, 0.25 mm. broad at base; cymule bracts ovate, obtuse and more or less apiculate, truncate or shallowly cordate at base, glabrous, firm, subchartaceous, the costa and the coarse reticulations of the veins prominent, the cystoliths numerous and conspicuous under a lens, the upper bract about 15 mm. long and wide, the lower 10 mm. long and wide; innermost bracts subtending the flowers connate at base, narrowly triangular, 1.5 mm. long, 0.5 mm. wide at base, acute, ciliate, subhyaline, bearing prominent cystoliths; calyx 3 mm. long, puberulous or glabrous near base, the pubescence a mixture of acute ascending hairs up to 100 μ long and shorter gland-tipped ones; corollas, ovaries and capsules not seen.

Type in the Kew Herbarium, collected at Copo near Tequendama, Department of Cundinamarca, 500 meters altitude, July 1833, by J. Triana (No. 4093-4). Isotype: Col.

Dicliptera compacta can be distinguished from *D. columbiana*, possibly its closest relative, by the crowded inflorescences and the relatively longer leaf blades. The specific epithet alludes to the crowded cymes.

Subtribe 11b. Odontoneminae

Odontoneminae Lindau; Engl & Prantl, Pflanzenf. IV. 3b: 287, 334. 1895

Shrubs or herbs; inflorescence variable; flowers mostly large and brightly colored; bracts and bractlets small; calyx mostly 5-parted, rarely 4-parted or more or less 2-lipped; corolla 2-lipped, the tube frequently long; stamens usually 2; staminodes 0 or 2; anther cells equally or unequally affixed, muticous or spurred; capsules 4-seeded. In Colombia the following genera are represented:

- 26. *Odontonema*
- 27. *Razisea*
- 28. *Siphonoglossa*

26. ODONTONEMA Nees

Odontonema Nees in *Linnaea* 16: 300. 1842. The epithet is derived from the Greek words *ὀδοντο-*, tooth, and *νήμα*, thread, referring to toothed filaments. Type species: *Odontonema lucidum* Nees (*Justicia lucida* Andr.). Type locality: "in Insula Barbados."

Thyrsacanthus Nees in *Mart. Fl. Bras* 9: 97, pl 13. 1847. The epithet is derived from *θύρσος*, thyrses, and *ἀκανθος*, acanthus. Type species.: *Thyrsacanthus barlerioides* Nees.

Herbs or shrubs; leaves often rather large, opposite, entire or undulate; flowers borne in narrow terminal panicles or racemes; calyx 5-parted, the segments subulate; corollas white, red, or yellow, the tube relatively slender, the throat only slightly enlarged, the limb 2-lipped, the lips subequal, the upper lip 2-lobed, the lower 3-lobed, the lobes usually rounded; stamens 2, the anther lobes parallel, narrow, blunt at base; staminodes 2; capsules clavate, the solid basal portion slender; seeds 4.

The genus consists of 40 species or more, limited to tropical regions of the Western Hemisphere. *Odontonema strictum* (Nees) Kuntze (also known as *Justicia coccinea*) is often found in cultivation. It is frequently difficult to distinguish between *Odontonema* and *Pseuderanthemum*, especially if the specimens offer only immature flowers. The flowers of both genera possess two stamens and two staminodes. The corollas of *Pseuderanthemum*, however, are usually smaller with very small regular lobes, the tube very narrow, and the stamens included. Those of *Odontonema* are larger, often several centimeters long, the limb definitely 2-lipped, the lobes rather large and the stamens exerted or at least reaching the mouth of the corolla tube.

KEY TO THE SPECIES

- Leaf blades reduced from above middle to a narrow rounded or subauriculate base.
 Flowers scarlet; panicle relatively broad (5 cm.) 1. *O. coccineum*
 Flowers white; panicle narrow (2 cm.) 2. *O. stenostachyum*
- Leaf blades cuneate at base.
 Vines 3. *O. ampelocaulis*
 Shrubs.
 Corolla lobes suborbicular 4. *O. rubrum*
 Corolla lobes oblong or oblong-lanceolate.
 Corolla up to 16 mm. long; leaf blades up to 7 cm. long. 5. *O. interruptum*
 Corolla up to 3.5 cm. long; leaf blades up to 15 cm. long.
 Corollas 2.5 to 3.5 cm. long 6. *O. bracteolatum*
 Corollas 1.5 to 1.7 cm. long 6a. *O. bracteolatum* var. *parviflorum*

1. *Odontonema coccineum* Leonard, sp. nov.

FIGURE 145

Frutex gracilis, erectus, caulibus subquadrangularibus, glabris, lenticellis parvis, orbicularibus vel ellipticis, plerumque in angulis instructis, cystolithis parvis, subpunctiformibus, inconspicuis; lamina

foliorum oblonga, acuminata (apice ipso obtuso), basi angustata, rotundata, firma, integra vel undulata vel leviter crenata, glabra, supra costa et venis obscuris, subtus minute albo-punctata, costa et venis lateralibus prominentibus, venulis crasse reticulatis, cystolithis minutis, inconspicuis; petioli breves, glabri; panicula terminalis, pedunculata, aliquanto densa, pedunculis et rhachibus parce hirtellis;

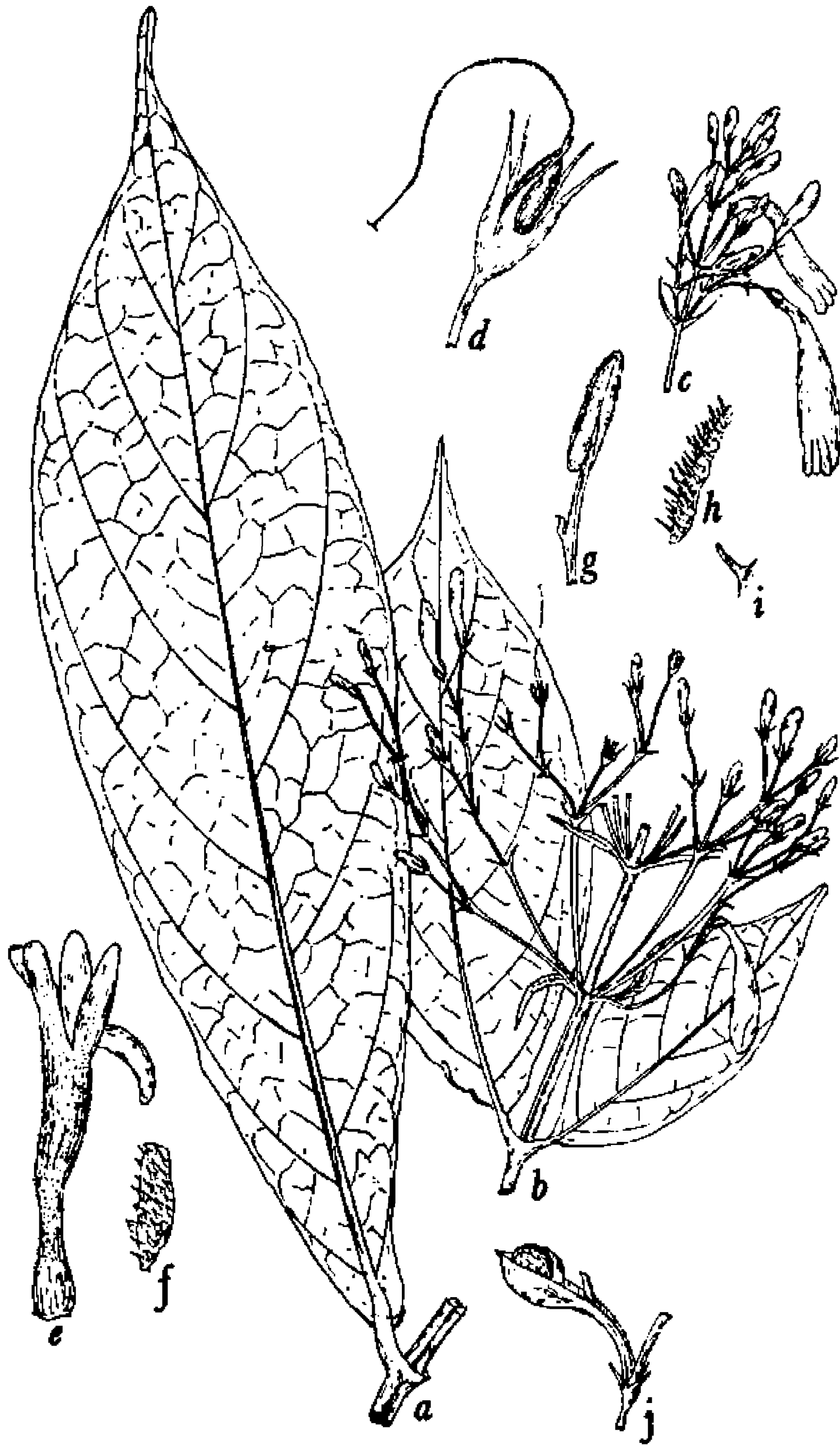


FIGURE 145.—*Odontonema coccineum* Leonard (a-i, Haught 2055; j, Haught 2841): a, Leaf blade; b, basal portion of panicle; c, tip of panicle; d, calyx and pistil; e, corolla; f, pubescence of corolla enlarged to show shape of hairs; g, stamen and staminode; h, pubescence of anther; i, one of the hairs from the anther enlarged to show shape; j, valve of disrupted capsule. (a-c, Half natural size; d, 3 times natural size; e, a little more than natural size; f, 20 times natural size; g, 3 times natural size; h, 25 times natural size; i, 50 times natural size; j, three-fourths natural size.)

bracteae subulatae, carinatae, parce hirtellae et ciliatae; pedicelli parce hirtelli; calycis segmenta subulata, glabra vel parce hirtella; corolla coccinea, puberula, subventricosa, bilabiata, labiis subaequalibus, superiore bilobato, lobis anguste ovatis, apice rotundatis, inferiore prope basim trilobato, lobis oblongis apice rotundatis, subcucullatis; stamina vix exserta, filamentis complanatis, glabris vel basi parce hirtellis, antheris oblongis, lateribus puberulis; staminodia inchoata; ovarium glabrum; stylus gracilis, glaber; lobi stigmatis minuti, recurvati, angusti; capsulae clavatae, glabrae, obtusae et apiculatae; retinacula subobtusa et subcucullata; semina suborbicularia, plana, brunnea, rugosa.

Shrubs up to 2 meters high, slender, erect; stems subquadrangular, glabrous, bearing scattered circular or elliptical corky lenticels mostly about 0.5 mm. in diameter, these borne chiefly on the angles, the cystoliths minute, subpunctiform, inconspicuous; leaf blades oblong, up to 24 cm. long and 7.5 cm. wide slightly above middle, acuminate (the tip itself obtuse), narrowed to a rounded base about 1 cm. wide, firm, entire, undulate, or shallowly and indistinctly crenate, glabrous, the cystoliths numerous, inconspicuous except under high magnification, 125μ long, the lower surface minutely white-punctate, the costa and lateral veins (9 or 10 pairs) obscure above, prominent beneath as are also the coarsely reticulate veinlets; petioles up to 5 mm. long, stout, glabrous; panicles terminal, peduncled, rather dense, up to 15 cm. long and about 5 cm. broad, the branches flattened, ascending, 1 to 3 pairs at each node, the lowermost up to 4 cm. long, the others successively shorter toward tip of panicle; peduncles 2 to 7 cm. long, secondary peduncles up to 2.5 cm. long, both rachis and peduncles sparsely hirtellous, the hairs about 0.25 mm. long, ascending; lowermost branches of the panicle subtended by small leaf blades; bracts subulate, up to 3 mm. long, 0.75 mm. wide at base, carinate, sparingly hirtellous and ciliolate; pedicels 3 to 5 mm. long, sparingly hirtellous; calyx 5 mm. long, glabrous or sparingly hirtellous, the segments subulate, 3.5 to 4 mm. long, 1 mm. wide at base; corollas bright scarlet, puberulous (the hairs flattened, triangular, 25 to 75μ long), subventricose, 2.5 cm. long, the tube 3 mm. broad at base, narrowed at 4 mm. above base to 2 mm. thence enlarged to 5 mm. at throat, the lips subequal, 12 mm. long, the upper lip 2-lobed, the lobes narrowly ovate, 6 mm. long and 2.5 mm. wide, the lower lip 3-lobed nearly to base, the lobes oblong, 3 mm. wide, these and the lobes of the upper lip rounded at tip, subcucullate; stamens slightly exserted, 7 mm. long, the filaments 4 mm. long, flattened, glabrous or sparingly hirtellous at base, the anthers oblong, 1 mm. broad, their lateral surfaces puberulous, the hairs erect, 75μ long, the staminodes 0.5 mm. long, glabrous; ovary glabrous; style about 2 cm.

long, slender, glabrous, the stigma lobes recurved, 0.25 mm. long, as broad as the style; capsules clavate, glabrous, 2.5 cm. long, 6 mm. broad, 4.5 mm. thick, obtuse and apiculate; retinacula 3.5 mm. long, subobtuse and subcucullate; seed suborbicular, about 6 mm. in diameter, 1.5 mm. thick, brown, furrowed.

Type in the U. S. National Herbarium, No. 1742321, collected along Viscaina Creek, 31 km. south of El Centro, in the vicinity of Barranca Bermeja, Magdalena Valley, between the Río Sogamoso and the Río Carare, Department of Santander, Colombia, 100 meters altitude, November 3, 1936, by Oscar Haught (No. 2055).

ANTIOQUIA: Dense woods along the Savaletas railway line between Puerto Berrio and Río Nuz, 300 to 500 meters altitude, Dec. 12, 1884, *Lehmann* 4104 (K).

SANTANDER: Damp place in lowland windfall along Margarita Creek, vicinity of Barranca Bermeja, 100 to 500 meters altitude, October 7, 1934, *Haught* 1379 (US). Along stream in forest about El Centro, vicinity of Barranca Bermeja, 100 meters altitude, June 11, 1939, *Haught* 2841 (US).

WITHOUT LOCALITY: *Purdie* s.n. (K).

Odontonema coccineum is a well-marked species easily recognized by its tall slender habit, by its large glabrous firm leaf blades narrowed to a small rounded base and supported by a short stout petiole, and by its rather large and compact panicle of brilliant showy crimson flowers. The leaf blades resemble those of *Odontonema amplexicaule* (Nees) Kuntze of Brazil, but that species has a racemose inflorescence and pubescent stems.

2. *Odontonema stenostachyum* Leonard, sp. nov.

FIGURE 146

Frutex gracilis, caulibus subquadrangularibus, (siccis) nigris, aliquanto puberulis; lamina foliorum sessilis vel subsessilis, late lanceolata vel oblongo-obovata, acuminata (apice ipso obtuso), basi angustata, plus minusve auriculata, aliquanto firma, undulata, supra (sicca) subnigra, glabra vel costa parce hirtella, cystolithis obscuris, minutis, subtus (sicca) atroolivacea, glabra, costa et venis lateralibus parce hirtellis, conspicuis, venulis subtiliter sed crasse reticulatis; panicula (sicca) nigra, terminalis, solitaria, longa, angusta, pedunculo et rhache hirtellis; bracteae parvae, acuminatae, glabrae vel parce hirtellae; pedunculi secundarii breves; pedicelli puberuli; bracteolae subulatae, acuminatae, carinatae, glabrae vel parce puberulae; calycis segmenta subulata, acuminata, glabra vel apice parce puberula; corolla alba, glabra, lobis ellipticis, rotundatis, venosis; stamina (immatura) brevia; staminodia parva; capsulae clavatae, basi solido gracili, (siccae) nigrae, obscure puberulae vel glabratae; semina atrobrunnea, plana, rugosa.

Slender, sparingly branched shrubs up to 1 meter high or more; stems subquadrangular (the angles rounded), drying blackish, moderately puberulous, the hairs ascending, about 0.25 mm. long, the basal

portion of the stem 7 mm. in diameter or more; leaves sessile or subsessile, the blades broadly lanceolate or oblong-obovate, up to 26 cm. long and 8.5 cm. wide, acuminate (the tip itself blunt), narrowed to a more or less subauriculate base, moderately firm, undulate, the upper

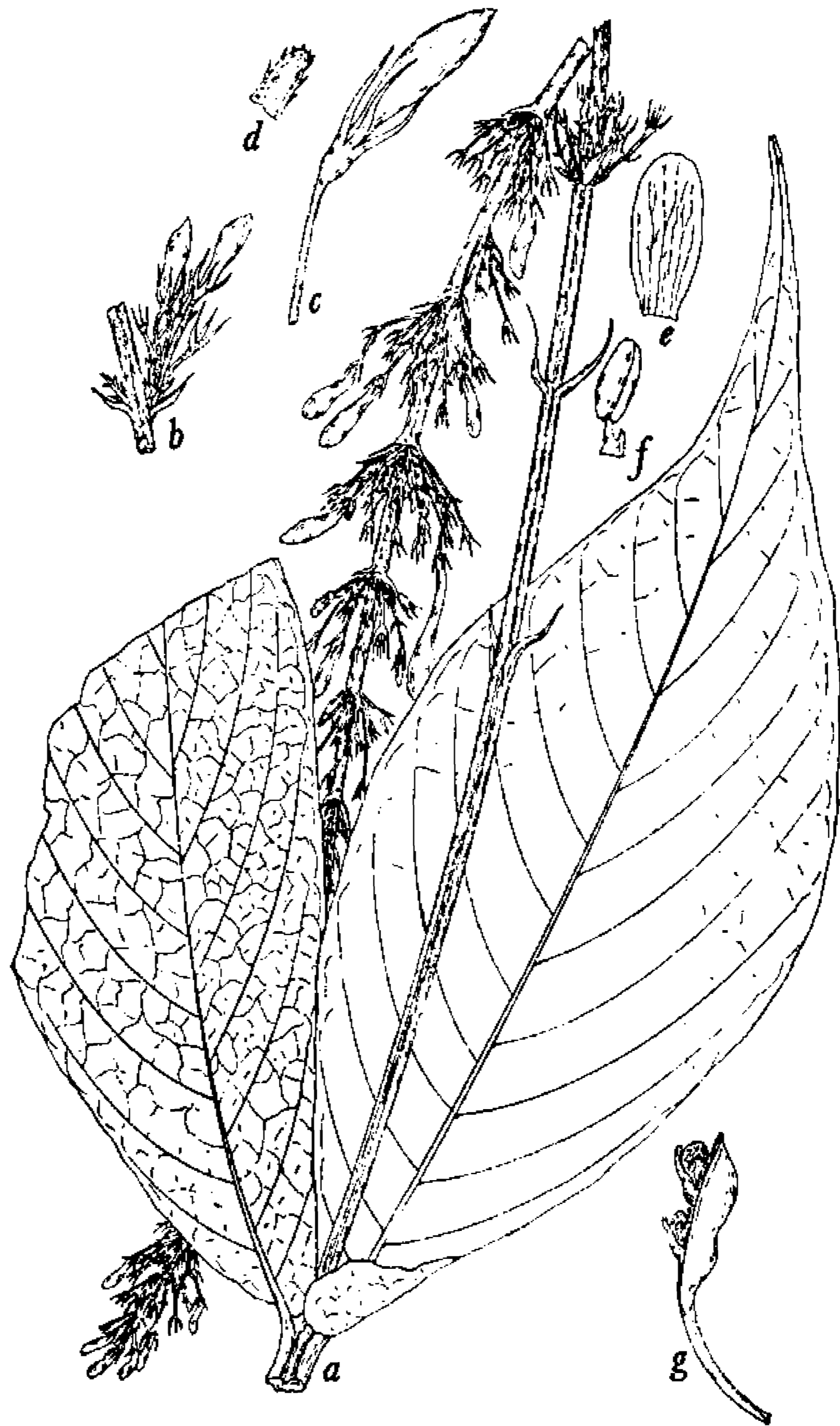


FIGURE 146.—*Odontonema stenostachyum* Leonard (Lopez & Sanchez 63): *a*, Tip of plant; *b*, node of inflorescence; *c*, calyx; *d*, tip of a calyx segment; *e*, a lobe of the corolla limb; *f*, stamen and staminode; *g*, valve of a disrupted capsule. (*a*, Half natural size; *b*, *g*, natural size; *c*, *f*, 3 times natural size; *d*, 15 times natural size; *e*, twice natural size.)

surface drying blackish, glabrous or the costa sparingly hirtellous, the hairs about 0.25 mm. long, the cystoliths obscure and minute, 125 μ long, the lower surface drying dark olive green, minutely roughened, glabrous except the costa and lateral veins (about 20 pairs),

these sparingly hirtellous, conspicuous, the veinlets delicately and rather coarsely reticulate; panicles drying black, terminal, solitary, narrow, up to 47 cm. long and 2 cm. broad, the peduncle up to the first pair of bracts as much as 20 cm. long, the lowermost internode up to 9 cm. long, the other successively shorter toward tip of panicle, the lowermost nodes (1 or 2) sterile, the others bearing fascicles of crowded short branches, the peduncle and rachis moderately hirtellous, the lowermost pair of bracts lanceolate, up to 7 mm. long, 1.5 mm. wide at base, acuminate, glabrous or sparingly hirtellous, the others similar but successively smaller toward tip of panicle; secondary peduncles up to 2 mm. long, pedicels up to 6 mm. long, both peduncles and pedicels puberulous; bracts of the panicle branches subulate, up to 3 mm. long, 0.75 mm. wide at base, carinate, acuminate, glabrous or sparingly puberulous; calyx 4 to 5 mm. long, deeply segmented, the segments subulate, 0.25 mm. wide at base, acuminate, glabrous or nearly so; corollas white, glabrous, about 1 cm. long (immature), the lobes elliptical, 8 mm. long, 3.5 mm. wide, rounded, the veins prominent; stamens 3 mm. long, the anthers 2 mm. long, 1 mm. broad, the staminodes 0.5 mm. long, rounded at tip; capsules clavate, 20 mm. long, 4.5 mm. broad, 3.5 mm. thick, drying black, obscurely puberulous or glabrous with age, the solid stipitate portion 12 mm. long, slender; retinacula 4 mm. long, minutely striate, 0.75 mm. thick at base, the tip thin and suberose; seed brownish black, flattened, about 3 mm. in diameter, roughened.

Type in the U. S. National Herbarium, No. 1995100, collected in rain forest along Carretera al Mar near Villa Arteaga, Department of Antioquia, Colombia, 150 meters altitude, December 26, 1948, by F. López and M. J. Sánchez (No. 63). Isotype: US, 1995101.

Hodge's No. 7034 (US), collected in the same locality, August 4-8, 1947, is also of this species.

Odontonema stenostachyum is easily recognized if compared with other Colombian species by its long slender panicle of relatively small white corollas and by its subauriculate leaf blades. The specific epithet is from the Greek, *στενός*, slender, and *στάχυς*, spike, i. e. inflorescence.

3. *Odontonema ampelocaula* Leonard, sp. nov.

FIGURE 147

Frutex scandens, caulibus glabris vel parce et minute strigosis, cortice pannoso; lamina foliorum oblongo-elliptica, breviter acuminata (apice ipso obtuso), basi angustata, aliquanto firma, integra vel undulata, supra glabra, cystolithis minutis, subtus glabra, costa et venis prominentibus parce strigosis exceptis, venulis crasse reticulatis; petioli breves crassi, glabri vel parce strigosi; racemi terminales, graciles, pedunculo parce hirtello, pilis patulis vel ascendentibus,

rhache dense hirtella, pilis antrorse curvatis, septatis; bracteae lineari-lanceolatae, subcarinatae, dense vel parce hirtellae et ciliatae; bracteolae anguste triangulatae, acutae, parce hirtellae et ciliatae; flores in nodis plures, pedicellis gracilibus, hirtellis, pilis fere patulis; calyces

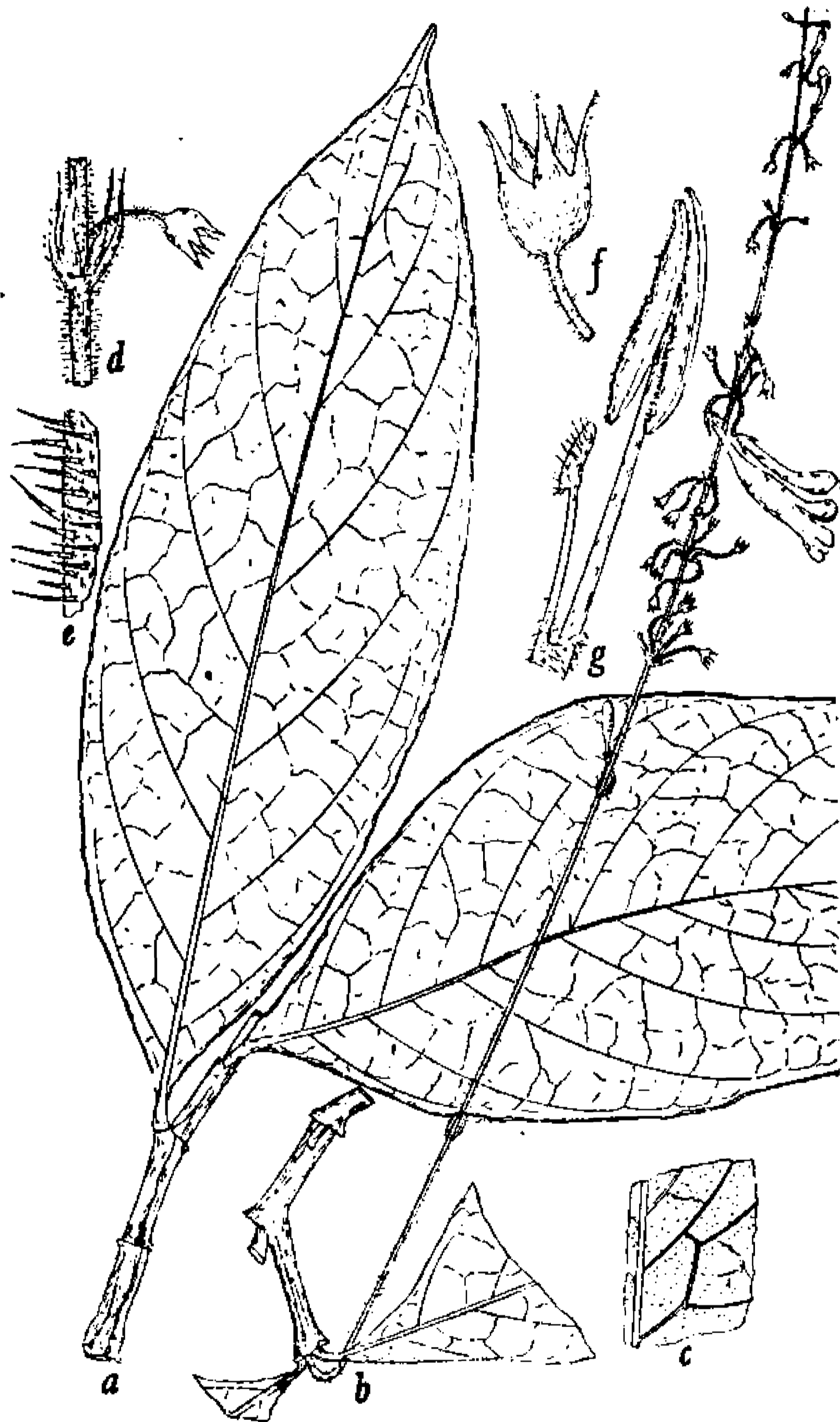


FIGURE 147.—*Odontonema ampelocaula* Leonard (*García-Barriga* 12473): *a*, Section from lower part of stem showing leaves; *b*, tip of branch showing inflorescence; *c*, portion of leaf blade (upper surface) showing veinlets and cystoliths; *d*, node of raceme showing bracts and bractlets; *e*, portion of internode of the raceme enlarged to show pubescence; *f*, calyx; *g*, stamen and staminode. (*a*, Half natural size; *b*, *c*, natural size; *d*, twice natural size; *e*, 18 times natural size; *f*, 4 times natural size; *g*, 6 times natural size.)

parce hirtelli, tubo campanulato, segmentis triangularibus, graciliter acuminatis; corolla aliquanto magna, rubra, puberula, tubo infundibulari, leviter ventricoso, intus basi dense retrorse piloso, labiis subaequalibus, lobis ovatis, rotundatis; stamina vix exserta, filamentis

planis, glabris vel pilis rectis ascendentibus praeditis, lobis antherarum divergentibus, dense dorso puberulis, pilis rigidis patulis; staminodia quam stamina breviora, filamentis planis, glabris, antheris sterilibus pilosis; stigma minute bilobatum, lobis obtusis; ovarium glabrum.

Vine; stems subquadrangular, glabrous or sparingly and minutely strigose, the bark sometimes separating in shreds loosely attached to the stems; leaf blades oblong-elliptic, up to 19.5 cm. long and 6.8 cm. wide, short-acuminate (the tip itself blunt), narrowed and acute or subacute at base, rather firm, entire or undulate, the upper surface glabrous, the cystoliths minute, up to 0.8 mm. long, the lower surface glabrous except the costa and veins (6 pairs), these sparingly strigose, the hairs up to 0.2 mm. long, the venation prominent, the veinlets coarsely reticulate; petioles up to 5 mm. long, glabrous or sparingly strigose; racemes terminal, slender, up to 25 cm. long, the peduncle 4 cm. long, 1 mm. in diameter, sparingly hirtellous, the hairs 0.25 mm. long, spreading or ascending, the lowermost internode of the raceme 6 cm. long, the others successively shorter toward the tip of the racemes, all rather densely hirtellous with curved ascending septate hairs up to 0.28 mm. long; bracts (the lowermost pair sterile) linear lanceolate, up to 5 mm. long and 0.5 mm. wide near base, hirtellous and ciliate; bractlets narrowly triangular, 1.5 mm. long, 0.25 mm. wide at base, acute, sparingly hirtellous and ciliate; flowers several at each node, the pedicels slender, up to 8 mm. long, hirtellous; calyx 3 to 4 mm. long, sparingly hirtellous, the tube campanulate, the segments triangular, 0.5 to 0.75 mm. wide at base, slenderly acuminate; flowers 2.5 cm. long, red, puberulous with hairs up to 1 mm. long, the tube 3 mm. broad at base, narrowed at 4 mm. above base to 1.25 mm., thence gradually enlarged to 6 mm. at mouth, slightly ventricose, densely and retrorsely pilose within near base, the lips subequal, 4 to 5 cm. long, the lobes 4 to 5 mm. long and 2.5 to 3 mm. wide, rounded, the margins rugose (dried flowers); stamens reaching the tip of the upper lip of the corolla, the filaments flattened, glabrous or bearing a few straight ascending hairs up to 0.24 mm. long, the anthers 3.25 mm. long and 1 mm. broad near base, the cells diverging, densely puberulous dorsally, the hairs stiff, spreading, up to 0.6 mm. long, the staminodes about two-thirds as long as the filaments of the fertile stamens, their filaments flat and glabrous, bearing sterile pilose anthers, the hairs up to 0.16 mm. long; style somewhat shorter than the stamens, the stigma bilobed, the lobes minute, obtuse; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 1932293, collected at the Hacienda Curiche, El Peñón, between the Ríos Bunque and Murca, Department of Cundinamarca, Colombia, 1,050 to 1,420 meters altitude, August 1-3, 1947, by H. García-Barriga (No. 12473).

The similarity of the leaf blades and inflorescence of *Odontonema ampelocaula* and *O. schomburgkianum* (Nees) Kuntze of British Guiana suggests a relationship between the two species. *O. schomburgkianum*, however, is a shrub only about 1 meter high and has a glandular inflorescence and larger flowers (up to 4 cm. long).

The type material consists of a section of stem about 45 cm. long bearing toward the lower end two short branches, one of which is terminated by the raceme. Both branches are noticeably reflexed. García-Barriga states in his label notes that the stems are quite thick ("tallos gruesos"), so the entire plant must reach a considerable height. Its scandent nature suggests its specific epithet which is from the Greek, ἄμπελος, vine, and κaulός, stem.

4. *Odontonema rubrum* (Vahl) Kuntze

Justicia rubra Vahl, *Eclog. Amer.* 2: 1. 1798. Type collected at Santa Marta, Department of Magdalena, Colombia, by Rohr.

Thysacanthus ruber Nees in DC. *Prodr.* 11: 326. 1847. Based on *Justicia rubra* Vahl.

Odontonema rubrum Kuntze, *Rev. Gen. Pl.* 2: 492. 1891. Based on *Justicia rubra* Vahl.

Suffrutescent, the branches spreading, the upper portions subtrigonal, rather sparingly hirtellous, the hairs spreading or ascending, up to about 0.5 mm. long, more or less curved and disposed in two lines, the lower portions subterete, light gray, subnitid; leaf blades lanceolate to elliptic, up to 10 cm. long and 5.2 cm. wide, short-acuminate, narrowed at base, moderately firm, entire or undulate, both surfaces glabrous or sparingly hirsute toward base, the hairs 1 mm. long, the upper surface drying dull olive, the costa and lateral veins (5 or 6 pairs) obscure, the lower surface lighter and nitid, the venation, including the coarsely reticulated veinlets, rather prominent; petioles up to 5 mm. long, glabrous or sparingly hirsute; spikes terminal, slender, the flowers more or less secund, the peduncle up to 2.5 cm. long, this and the rachis hirtellous, the hairs spreading, 0.5 mm. long; bracts lanceolate, the lowermost pair 10 mm. long and 1.5 mm. wide, the others successively smaller toward tip of spike, all acuminate, glabrous or sparingly hirsute; bractlets similar to the bracts but much smaller; pedicels slender, ca. 4 mm. long, hirtellous, the hairs 125 μ long; calyx 5 mm. long, the segments narrowly triangular, 4 to 4.5 mm. long, 1 to 1.25 mm. wide at base, acute, sparingly to moderately puberulous, the hairs up to 50 μ long; corollas 2.5 cm. long, red, finely and moderately puberulous, the tube 2 mm. broad at base, narrowed at 5 mm. above base to 1.25 mm., thence gradually enlarged to 6 mm. at 15 mm. above base and constricted again at throat to 3 to 4 mm., the lips 5 mm. long, subequal, the upper deeply 2-lobed, the lower 3-lobed, the lobes suborbicular, 4 mm. long and 3 mm. wide, obtuse;

filaments about 9 mm. long, glabrous; anthers 3.5 mm. long, 1.5 mm. broad; staminodes 4 to 5 mm. long, glabrous; ovary glabrous; style about 2 cm. long, glabrous, the stigma linear, but slightly broader than the style; capsules not seen.

The largish red flowers more or less secund in terminal loose racemes suggest, as Nees points out in his description of *Thyrsacanthus ruber*, the species *Odontonema schomburgkianum* from British Guiana. The above description was drawn from Smith's No. 1390, a plant which differs in several respects from Rohr's type. The leaf blades of Smith's specimen are broadly lanceolate or elliptic (5.2 cm. wide) instead of narrowly lanceolate (2 cm. wide) as in Rohr's collection, and the racemes are hirtellous instead of glabrous. The large red corollas, however, with their short lips divided into obtuse suborbicular lobes, typical of both Rohr's and Smith's specimens, leads one to include them in the same species. *O. bracteolatum* also varies in the relative width of the leaf blades and in the amount of pubescence on stems and inflorescences.

The following notes accompany H. H. Smith's sheet in the New York Botanical Garden: "Shrub, 2-4 ft. with few branches, and often drooping or procumbent; air roots are frequent. Flower scarlet. Locally common in damp mountain forest about 5000 ft. The specimens were collected above Las Nubes, Dec. 17."

MAGDALENA: Santa Marta, *H. H. Smith* 1390 (NY, GH, Ph, S); *Rohr* s.n., represented by photograph Field Mus. No. 22203 (US).

5. *Odontonema interruptum* (H. B. K.) Kuntze

Justicia interrupta H. B. K. Nov. Gen. & Sp. 2: 232. 1817. Type collected near Santa Ana, Colombia, by Humboldt.

Thyrsacanthus interruptus Nees in DC. Prodr. 11: 326. 1847. Based on *Justicia interrupta* H. B. K.

Odontonema interruptum Kuntze, Rev. Gen. Pl. 2: 484. 1891.

Shrub; branches terete, smooth, bearing scattered minute appressed hairs; leaf blades oblong, acuminate (the tip itself obtuse), narrowed at base, the upper surface blackish green, the lower pale, both surfaces reticulately veined, nitid, glabrous except the costa, this strigose-hirsute; petioles 4 to 6 mm. long, pubescent; racemes terminal, pedunculate, 7.5 to 10 cm. long; peduncles hirsute; flowers solitary, short-pedicelled, opposite, distant; bracts linear, hirsute, longer than the pedicels; calyx hirsute, the segments linear, equal; corolla 2-lipped, the upper lip 2-lobed, the lower 3-parted; stamens included, the anthers oblong, the locules approximate, parallel.

No specimens seen. The description is drawn from the original and that of Nees. The included stamens and small size of the corolla indicate a possibility that this may be a *Pseuderanthemum*. A photograph of Humboldt's specimen in the Berlin Herbarium is in

the U. S. National Herbarium (Field Mus. No. 9515); this shows that the leaf blades are 5–7 cm. long and 2–2.6 cm. wide, and that the corollas are about 1.6 cm. long, measurements somewhat larger than those given by Nees.

6. *Odontonema bracteolatum* (Jacq.) Kuntze

Justicia bracteolata Jacq. Coll. Bot. 3: 253. 1789.

Odontonema bracteolatum Kuntze, Rev. Gen. Pl. 2: 492. 1891. Based on *Justicia bracteolata* Jacq.

Suffrutescent plants up to 3 meters high, sometimes becoming diffuse and subscandent with age; stems erect, simple or sparingly branched, the lower portions terete, 7 mm. in diameter or more, glabrous, bearing minute subpunctiform cystoliths and low parallel elongated lenticels (up to 3 mm. long), the upper portion and rachis quadrangular or subquadrangular and more or less hirsute, the hairs whitish, spreading or ascending, up to 0.5 mm. long; leaf blades lanceolate or oblong-elliptic, up to 15 cm. long and 4.5 cm. wide but usually narrower, acuminate, narrowed at base, moderately firm, dull to subnitid, entire or undulate, both surfaces sparingly hirsute or glabrous, the hairs ascending or spreading, up to 0.5 mm. long, the cystoliths of the upper surface numerous, conspicuous under a lens, up to 225 μ long, the costa and lateral veins (5 or 6 pairs) obscure to rather prominent, the veinlets coarsely reticulate; petioles up to 1 cm. long but usually only about 5 mm. long, hirtellous to hirsute, or sometimes subglabrous; flowers borne in racemes or narrow terminal loose to dense panicles usually 10 to 20 cm. long and 1 to 5 cm. broad, the lateral branches of loose panicles usually basal, solitary or in pairs, up to 2 cm. long, several-flowered, the upper portion of the panicle often racemose, the flowers solitary in the axils of the bracts, the basal nodes of the inflorescence often bearing a pair of small leaves; peduncles of the lateral branches and pedicels slender, flattened, hirtellous, up to 5 mm. long; bracts subending the flowers subulate or narrowly triangular, curved, up to 3 mm. long, carinate, hirtellous, the hairs ascending, 0.25 mm. long; calyx 2 to 3.5 mm. long, hirtellous to subglabrous, the segments lanceolate, slenderly acuminate, 0.5 to 0.75 mm. wide at base; corollas scarlet, 2.5 to 3.5 cm. long, moderately pubescent, the hairs mostly spreading, 100 to 125 μ long, the tube 3.5 mm. broad at base, narrowed at 6 mm. above base to 1.5 mm., thence enlarged to 5 mm. at throat, the upper portion subventricose, the upper lip oblong, 10 to 15 mm. long, 4 to 5 mm. wide, 2-lobed at tip, the lobes oblong, 4 to 5 mm. long, 2 to 2.5 mm. wide, obliquely obtuse at tip, the lower lip equaling or slightly longer than the upper, deeply 3-lobed, the lobes oblong-lanceolate, up to 13 mm. long and 3 mm. wide, obliquely obtuse at apex; stamens reaching notch of the upper lip of the corolla, the filaments flattened, hirtellous near base, the hairs

up to 150 μ long, the anthers 4 mm. long and 1.5 mm. broad; staminodes up to 1 cm. long, tipped by rudimentary anthers; ovary glabrous; capsules clavate, up to 25 mm. long, 5 mm. broad, 4 mm. thick, the solid stipe slender, 1.5 mm. broad at base, 3.5 mm. broad at base of cavity, the tip of the capsule acute; retinacula 3 mm. long, subulate; seeds 4, suborbicular, 3.5 mm. long and broad, 1 mm. thick, light brown, deeply muricate.

Odontonema bracteolatum varies greatly in the relative width of leaf blades, the amount of pubescence of the rachis and upper portion of the stems, and in the amount of branching of the panicle. The leaf blades of Dugand & García-Barriga's No. 2493 do not exceed 21 mm. in width whereas in Allen's No. 866 they are as much as 4.5 cm. wide. Smith's Bonda specimen possesses a densely hirsute stem and rachis but a slender, lax, almost racemose inflorescence, only the lowermost flowers borne on sparingly branched peduncles. At the other extreme, Haught's No. 3946 has a rachis and upper stem portion almost glabrous and a compact crowded panicle, its lateral branches produced several in a cluster from the base to the tip of the inflorescence. Variation between these extremes are exhibited by the other specimens cited.

The species is usually found growing along shaded streams in forests at 70 to 800 meters altitude. It produces showy panicles of bright red corollas and blooms more or less throughout the year. Endemic.

ATLÁNTICO: Piojo, vicinity of Barranquilla, *Bro. Elias* 742 (US).

BOLÍVAR: Between Cartagena and Turbaco, *Dugand & Jaramillo* 2852 (US).

MAGDALENA: Bonda, *H. H. Smith* 1389 (in part) (NY, US). Cincinati, *Giacometto* 94 (US). Codazzi, *Haught* 3727 (US). Jiracasaca, *H. H. Smith* 1389 (in part) (NY, Ph). Manaure, *Haught* 3946 (US). Poponte, *Allen* 866 (Mo). Río Ariguani, near Caracolicito, *Dugand & García-Barriga* 2493 (US). Río Hacha, *Haught* 4484 (US). Minca, Sierra Nevada de Santa Marta, alt. 600 m., *Cardona, Gutiérrez & Barkley* 18C. 089 (Med, US).

NORTE DE SANTANDER: La Esmeralda, *Killip & Smith* 20932 (GH, NY, US).

WITHOUT LOCALITY: Photograph (Field Mus. No. 32704) of Jacquin Herbarium sheet from Vienna Herbarium (US).

6a. *Odontonema bracteolatum* (Jacq.) Kuntze var. *parviflorum* Leonard, var. nov.

Folia angusta, lanceolata; corolla parva, 15-17 mm. longa, cetera formam typicam similis.

Type in the U. S. National Herbarium, No. 2028723, collected at Cacaguilito, region of Santa Marta Mountains, Department of Magdalena, Colombia, "1500 ft." altitude, May 1899, by H. H. Smith (No. 1389, in part). Isotypes: Ph, NY. The variety is also represented by the following collections:

ATLÁNTICO: Hacienda Riodulce, vicinity of Los Pendales, 20 to 50 meters altitude, *Dugand & Jaramillo* 4153 (US).

MAGDALENA: Rincón Hondo, *Allen* 368 (Mo). Tucurinea, *Romero* 608 (Ch). Donama, *Giacometto* 78 (US).

WITHOUT LOCALITY: *Linden* 703, represented by photograph Field Mus. No. 32706 (US).

Odontonema bracteolatum var. *parviflorum* differs in no way from the typical form except in the size of the corolla, this being 15 to 17 mm. long instead of 25 to 35 mm. long. The leaf blades of the specimens examined are predominantly narrow, not exceeding 3 cm. in width. However, narrow-leafed plants of the typical form with large corollas are common.

Nees' *Thyrsacanthus bracteolatus* is based on Jacquin's plant and Linden's No. 703. Linden's collection, as can be readily seen from the photograph (No. 32706), is of the small-flowered form.

27. RAZISEA Oerst.

Razisea Oerst. Vid. Medd. Nat. For. Kjöbenhavn, 1854: 142. 1854. Named for Razis, an Arabian botanist of the 10th century. Type species; *Razisea spicata* Oerst. Type locality: Aguacate, Costa Rica

Shrubs bearing rather large, oblong-ovate, mostly glabrous leaves and terminal peduncled spikelike racemes of brilliant red flowers; pedicels short; bracts and bractlets lanceolate, small; calyx small, deeply segmented, the segments 5, narrowly triangular and short-acuminate; corolla narrowly infundibular, slightly curved, the lips short, the upper one narrow and acute, the lower lip broad, 3-lobed at tip, the lobes small and suborbicular; stamens 2, exserted, the filaments flattened; anthers 1-celled, blunt at each end; style exserted, the stigma 2-parted; ovary glabrous; capsules clavate, 4-seeded.

Distribution: Costa Rica, Panamá, and Colombia.

The genus consists of a single species.

1. *Razisea spicata* Oerst.

FIGURE 148

Razisea spicata Oerst. Vid. Medd., Nat. For. Kjöbenhavn 1845: 142. 1845.

Type collected in dense mountain woods of Aguacate, Costa Rica, by Oersted.

Shrubs up to 3 meters high; stems subquadrangular, nitid, glabrous or puberulous, the hairs minute, white, curved, disposed more or less in two rows; leaf blades oblong-ovate to elliptic, up to 21 cm. long and 9 cm. wide, short-acuminate, narrowed at base and decurrent on the petiole, rather thin, entire or undulate, the upper surface glabrous, subnitid, the cystoliths minute, obscure, the lower surface minutely white-papillose, drying a lighter green than the upper surface, glabrous or the lateral veins (8 to 12 pairs) and margins of the costa puberulous, the cystoliths sometimes numerous and conspicuous under a lens, up to 150 μ long, the venation rather prominent, more so than above; petioles up to 5 cm. long, glabrous; flowers

borne in narrow terminal spikelike racemes up to 20 cm. long and 6 cm. broad, the flowers erect or ascending, usually numerous, the peduncle up to 3 cm. long, glabrous or bifariously puberulous; rachis puberulous; pedicels up to 1.5 mm. long, puberulous, the hairs curved; lowermost bracts narrowly triangular, up to 3 mm. long and 1.5 mm. wide at base, acuminate, glabrous, the other bracts similar but successively smaller toward tip of inflorescence; bractlets triangular, up to 2 mm. long and 0.75 mm. wide at base, acute, glabrous; calyx 5 mm. long,

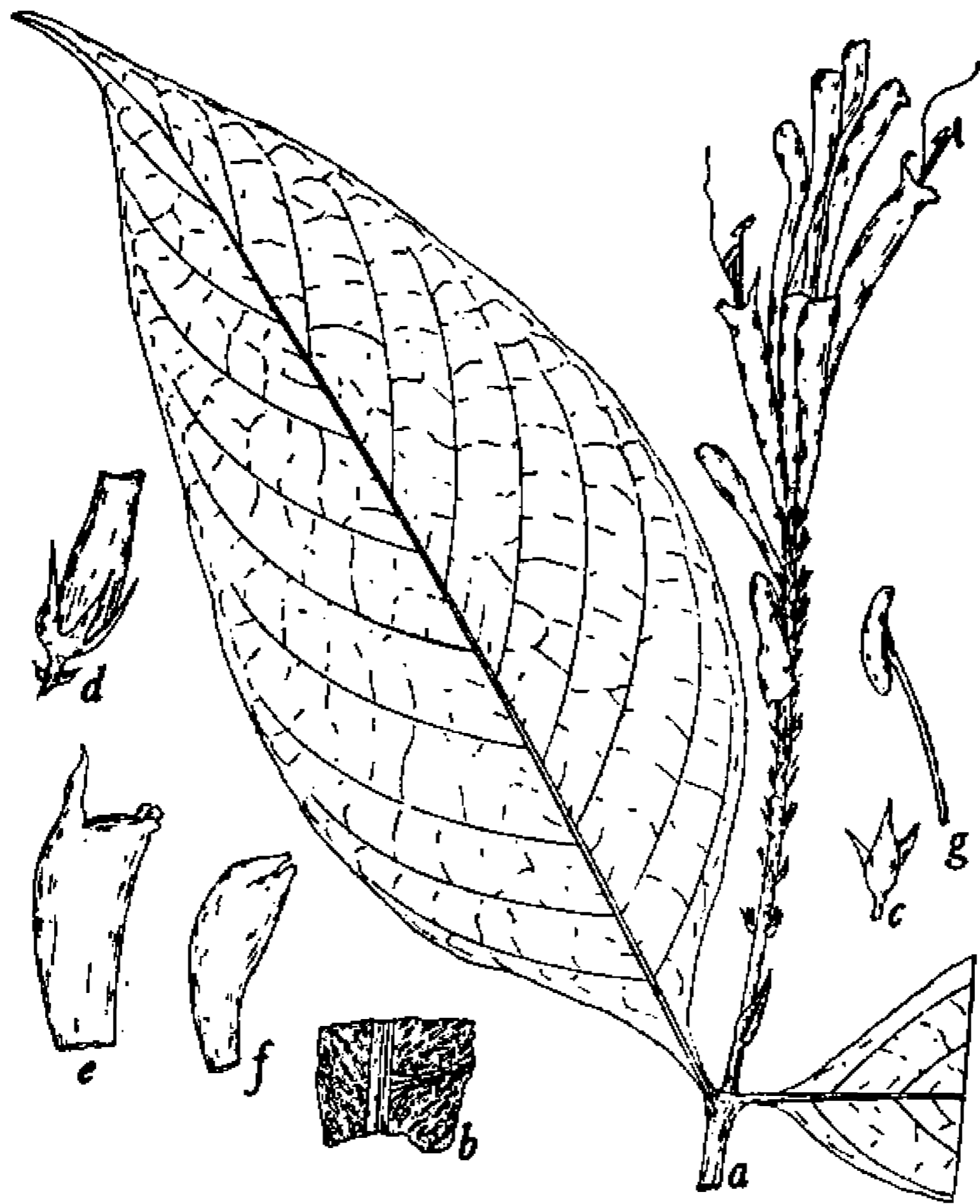


FIGURE 148.—*Razisea spicata* Oerst. (Lawrance 198): *a*, Tip of plant; *b*, portion of the leaf blade to show cystoliths and minute papillae of the lower surface; *c*, bract and bractlets; *d*, calyx; *e*, tip of expanded corolla; *f*, tip of corolla before expansion; *g*, anther. (*a*, Half natural size; *b*, 23 times natural size; *c*, $3\frac{1}{2}$ times natural size; *d*, $1\frac{1}{2}$ times natural size; *e*, *f*, natural size; *g*, $2\frac{1}{2}$ times natural size.)

deeply segmented, the segments narrowly triangular, 1 mm. wide at base, gradually narrowed to a slender tip, glabrous, bearing numerous minute cystoliths, these conspicuous under a lens; corolla brilliant red, glabrous or sparingly and minutely hirtellous, up to 4 cm. long, the tube 2.5 mm. broad near base, gradually enlarged to 7 mm. at mouth, the tip, before expansion, obliquely truncate, the upper lip ovate, 6 mm. long and about 4 mm. wide, abruptly bent before expansion of flower to cover the broad short more or less saccate

lower lip, this 3-lobed at tip, the lobes suborbicular, about 1 mm. long and broad; stamens exerted about 10 mm. beyond mouth of corolla tube, the filaments winged, glabrous; anthers glabrous, rounded at each end; style about as long as the stamens; ovary glabrous; capsules not seen.

Although limited in range in Colombia, this species seems to be rather widespread in Costa Rica and Panamá. In the last-named regions the species varies greatly in size of leaf blades, amount of pubescence, length of pedicels, and number of flowers.

BOYACÁ: Thick forested region of Mount Chapón, *Lawrance* 198 (K, NY, S, US).

CUNDINAMARCA: Forests of Pancho on the La Palma Highway, 1,000 meters altitude, *Haught* 6013 (US). Sasaima, Herbarium of Fidel Pombo (Col).

28. SIPHONOGLOSSA Oerst.

Siphonoglossa Oerst. Vid. *Medd. Nat. For. Kjöbenhavn*, 1854: 159 1854. From the Greek *σίφων*, tube, and *γλῶσσα*, tongue, in allusion, probably, to the slender-tubed corollas. Type species: *Siphonoglossa ramosa* Oerst. Type locality: Province of Tehuacán, Santa Lucía, México.

Shrubs or suffrutescent herbs; bracts none; bractlets small; leaf blades entire; flowers sessile, solitary or few, borne in the axils of the uppermost leaf blades or occasionally on short peduncles; calyx segments 4, narrow, short-acuminate; corollas white, blue, or purple, the tube slender, elongated, terete, the limb 2-lipped, the upper lip entire or 2-lobed, the lower lip 3-lobed, spreading; stamens 2, adnate to the mouth of the corolla tube, included or exerted but not reaching beyond the upper lip of the corolla, the anthers 2-celled, the cells more or less superposed; staminodes none; stigmas slightly 2-lobed; capsules clavate, usually 4-seeded.

Siphonoglossa is small genus of tropical or subtropical plants consisting of about a dozen species, ranging from the southern United States to northern South America.

1. *Siphonoglossa calcarea* Leonard, sp. nov.

FIGURE 149

Suffrutex parvus, caulibus striatus, teretibus, dense hirtellis, pilis albis, curvatis; lamina foliorum ovata, subacuta, basi rotundata, in petiolum breviter decurrens, supra glabra vel parce hirtella, costa dense hirtella, subtus mediocriter hirtella, costa et venis magis prominentibus, venulis subtiliter reticulatis; petioli graciles, breves, dense hirtelli, pilis curvatis; flores solitarii et axillares, vel pauci in pedunculis brevibus, dense hirtellis; bracteolae subulatae, parvae, hirtellae; calycis segmenta acuminata, hirtella; corolla purpurea, tubo angusto, cylindrico, hirtello, pilis patulis, bilabiata, labiis subglabris, labio superiore ovato, rotundato, labio inferiore trilobato,

lobis ellipticis, rotundatis; stamina vix exserta, filamentis brevibus, glabris, loculis antherarum plus minusve superpositis; stylus sursum glaber, deorsum minute hirtellus; stigma lineari-lanceolatum; capsulae clavatae, dense hirtellae, pilis patulis; retinacula brevia, apice truncato-rotundata; semina 4, plus minusve complanata, tuberculata.

Small branched suffrutescent plants up to 8 cm. high; stems up to 2 mm. in diameter, terete, striate (at least the upper portions), densely hirtellous, the hairs white, variously curved, about 0.25 mm. long; internodes mostly 1 cm. long, occasionally up to 2.5 cm. long; leaf

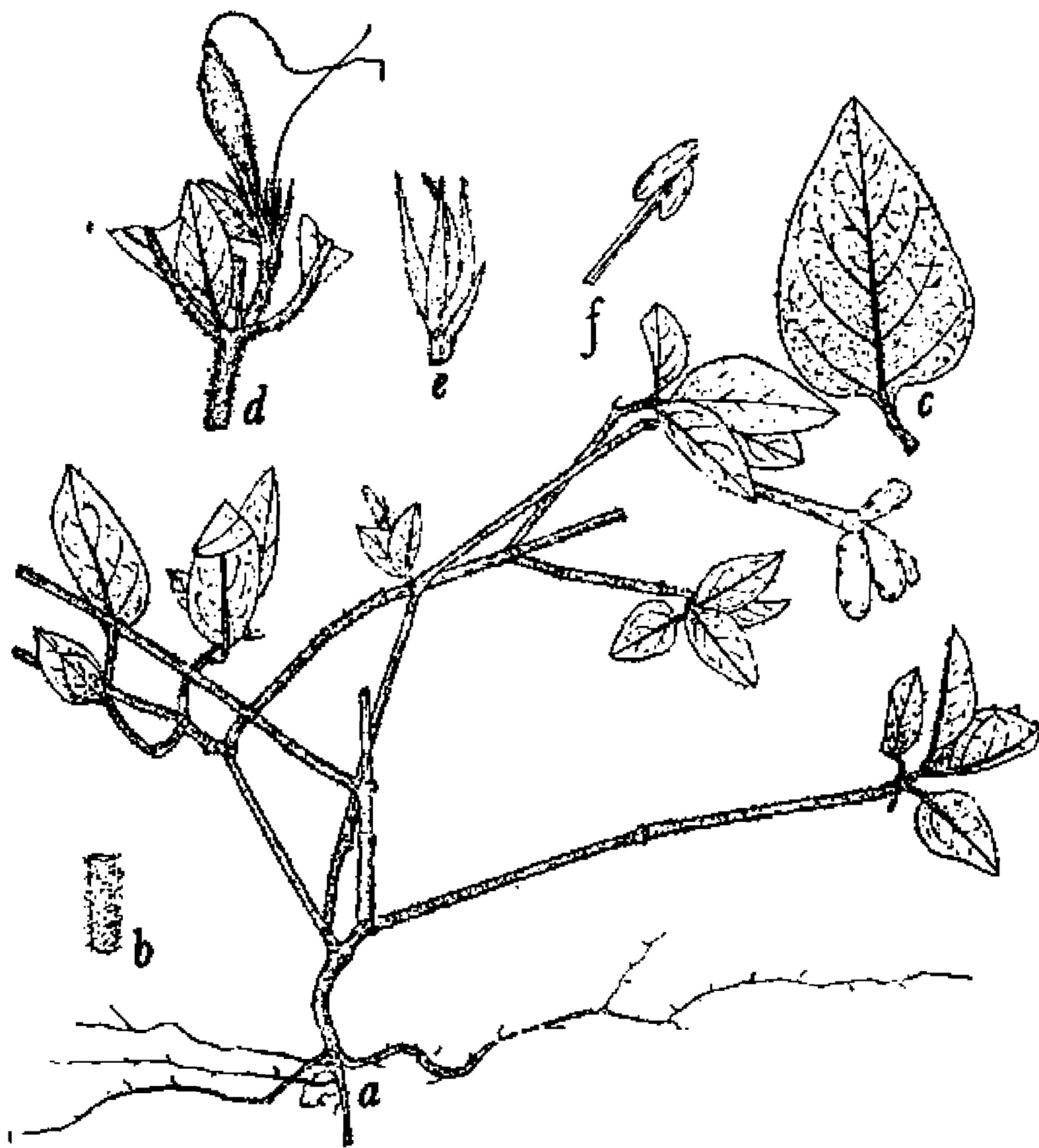


FIGURE 149.—*Siphonoglossa calcarea* Leonard (Haught 3929): *a*, Portion of plant; *b*, portion of stem to show pubescence; *c*, leaf; *d*, node from upper portion of stem to show inflorescence; *e*, calyx and one of a pair of bractlets; *f*, anther. (*a*, *c*, Natural size; *b*, *d*, twice natural size; *e*, $2\frac{1}{2}$ times natural size; *f*, 4 times natural size.)

blades ovate, up to 2 cm. long and 1.2 cm. wide, subacute, rounded at base and briefly decurrent on the petiole, the upper surface glabrous or sparingly hirtellous, the costa more densely so, the hairs about 0.25 mm. long, white, curved, the costa and lateral veins (4 or 5 pairs) delicate and rather obscure, the lower surface moderately and finely hirtellous, especially the veins, the hairs similar to those of the upper surface, the costa and lateral veins more prominent than those above, the veinlets rather finely and delicately reticulate; petioles slender, up to 4 mm. long, densely

hirtellous, the hairs similar to those of the leaf blades; flowers one to several, sessile in the axils of the uppermost leaves or terminating axillary peduncles up to 4 mm. long, these as are the stems, densely hirtellous; bractlets subtending the calyx subulate, up to 2.5 mm. long, 0.25 to 0.5 mm. wide at base, gradually narrowed to a slender point, hirtellous; calyx 5 mm. long, hirtellous, the segments narrow, 0.75 mm. wide at base, gradually narrowed to a slender tip; corollas purplish red (Haught), 15 to 17 mm. long, hirtellous (the lobes sparingly so), with spreading hairs about 0.25 mm. long, the tube cylindric, 1.5 mm. in diameter at base, reduced at 3 mm. above base to 1 mm., thence gradually enlarged to 1.5 mm. at mouth, the upper lip ovate, about 5 mm. long and 2 mm. wide near base, the tip rounded, the lower lip 3-parted, the lobes elliptic, about 6 mm. long and 3.5 mm. wide, rounded; stamens inserted near the mouth of the corolla tube, the filaments 2.5 mm. long, glabrous, the anthers 1.5 mm. long, their lobes more or less superposed; style about 15 mm. long, glabrous toward tip, minutely hirtellous from about the middle to base, the stigma linear-lanceolate; capsules clavate, 7 to 8 mm. long, 2.5 mm. broad, about 1.5 mm. thick, densely hirtellous, the hairs spreading, 100μ long, mostly straight and spreading, the capsule narrowed to a blunt tip, the solid basal stipe about 2.5 mm. long; retinacula 0.75 mm. long and nearly as broad, concave, rounded-truncate at tip; seeds 4, about 1.25 mm. in diameter, somewhat flattened, tuberculate.

Type in the U. S. National Herbarium, No. 1708760, collected on very dry limestone soil at La Paz, Department of Magdalena, Colombia, 200 meters altitude, January 14, 1944, by Oscar Haught (No. 3929).

Tribe 12. ISOGLOSSEAE

Isoglosseae Lindau, Bot. Jahrb. Engler 18: 47. 1893; Engl. & Prantl, Pflanzenf. IV, 3b: 287. 1895.

This tribe has Gürtelpollen (pollen grains usually lens-shaped or ellipsoidal with a pore at each of the poles and a prickly belt around the equator), and 2- or 1-celled anthers.

Subtribe 12a. Porphyrocominae

Shrubs or herbs; flowers often borne in thick spikes, the bracts imbricate; calyx 5-parted, the segments equal or unequal; corolla 2-lipped; stamens 4 or 2; anthers 2-celled, the sacs equally or unequally affixed; capsules 4-seeded. Four Colombian genera are represented:

29. *Fittonia*
30. *Kalbreyeriella*
31. *Syringidium*
32. *Megaskepasma*

29. FITTONIA E. Coem.

Fittonia E. Coem. Fl. des Serres 15: 185. 1865. Named for Elizabeth and Sarah Mary Fitton, authors of "Conversations on Botany" and friends of Robert Brown. Type species: *Fittonia verschaffeltii* (Lem.) E. Coem.

Herbs; leaves petioled, ovate, the blades rounded, cordate at base, the costa and veins colored; spikes peduncled, terminal, the flowers borne singly in the axils of the rather conspicuous ovate rounded overlapping 4-ranked bracts; calyx 5-parted, the segments lanceolate, ciliate; corolla hypocrateriform, 2-lipped, the upper lip narrow, entire, incurved, the lower one recurved, 3-lobed; stamens 2, included, attached to the corolla tube near its throat, the anthers 2-celled, the cells equal; capsules 4-seeded.

In addition to the type species, two others, *F. argyroneura* E. Coem. and *F. gigantea* Linden, have been described, both based on Peruvian material. Because of their attractive foliage with its brightly colored veins they are often found cultivated in greenhouses.

KEY TO THE SPECIES

Veins of the leaf blades white..... 1. *F. argyroneura*
 Veins of the leaf blades purple..... 2. *F. verschaffeltii*

1. *Fittonia argyroneura* E. Coem.

FIGURE 150

Fittonia argyoneura E. Coem. Fl. des Serres 16: 103. 1865-1867. Originally described from cultivated material whose source was probably Perú.

Repent herbs; stems pilose or subtomentose, the hairs dull whitish, more or less spreading, up to 2.5 mm. long, more or less disposed in two lines; leaf blades ovate, up to 6 cm. long and 4.5 cm. wide, obtuse or rounded at apex, rounded and subcordate at base, rather thin, entire or undulate, ciliate, the hairs up to 0.75 mm. long, spreading; the upper surface glabrous or sparingly hirtellous, nitid, drying bright green, marked by conspicuous white coarsely netted veins, the lower surface drying dull green, the costa and lateral veins (4 or 5 pairs) pilose, not colored as above; petioles up to 2.5 cm. long, pilose except the more or less glabrous channels, the hairs spreading, up to 1.75 mm. long; flowers borne in terminal peduncled spikes up to 3 cm. long or more and about 1 cm. broad, the peduncles (up to 6 cm. long) and rachises pilose, the bracts quadrifarious, ovate, up to 8 mm. long, and 5 mm. wide, obtuse to subacute, apiculate, ciliate and sparingly pilose, the hairs whitish, spreading or ascending, up to 1 mm. long, some of them gland-tipped; bractlets subhyaline, lanceolate, up to 5 mm. long, 0.75 mm. wide near base, gradually narrowed to a slender tip, rather sparingly hirtellous; calyx 5 mm. long, sparingly hirtellous or the basal portion glabrous, the segments narrowly lanceolate, 4 mm. long, 0.5 mm. wide at base, gradually narrowed to slender tips; corolla pale yellow, 12 to 13 mm. long, the throat 2.5 mm. broad, the

upper lip ovate, 2.5 mm. long, rounded, the lower lip 3-lobed, the lobes similar in size to the upper lip; stamens reaching the tip of the lobes, the anthers 2.5 mm. long, the lobes narrow, parallel, rounded at base, the filaments 4 mm. long, pubescent; ovary glabrous or sparingly hirtellous at tip. Style as long as the stamens, glabrous, the stigma bilobed, the lobes about 0.1 mm. long; capsules not seen.

Fittonia argyroneura, a forest plant, is mostly prostrate with only the tips ascending, the nodes rooting and the leaves often resting flat on the ground. All the species of the genus are distinguished by the conspicuous colored netted veining of the upper surface of the leaf blades. This one prefers rather low altitudes (300 to 760 meters). Specimens from Peru, Bolivia, and Colombia are in the U. S. National Herbarium.

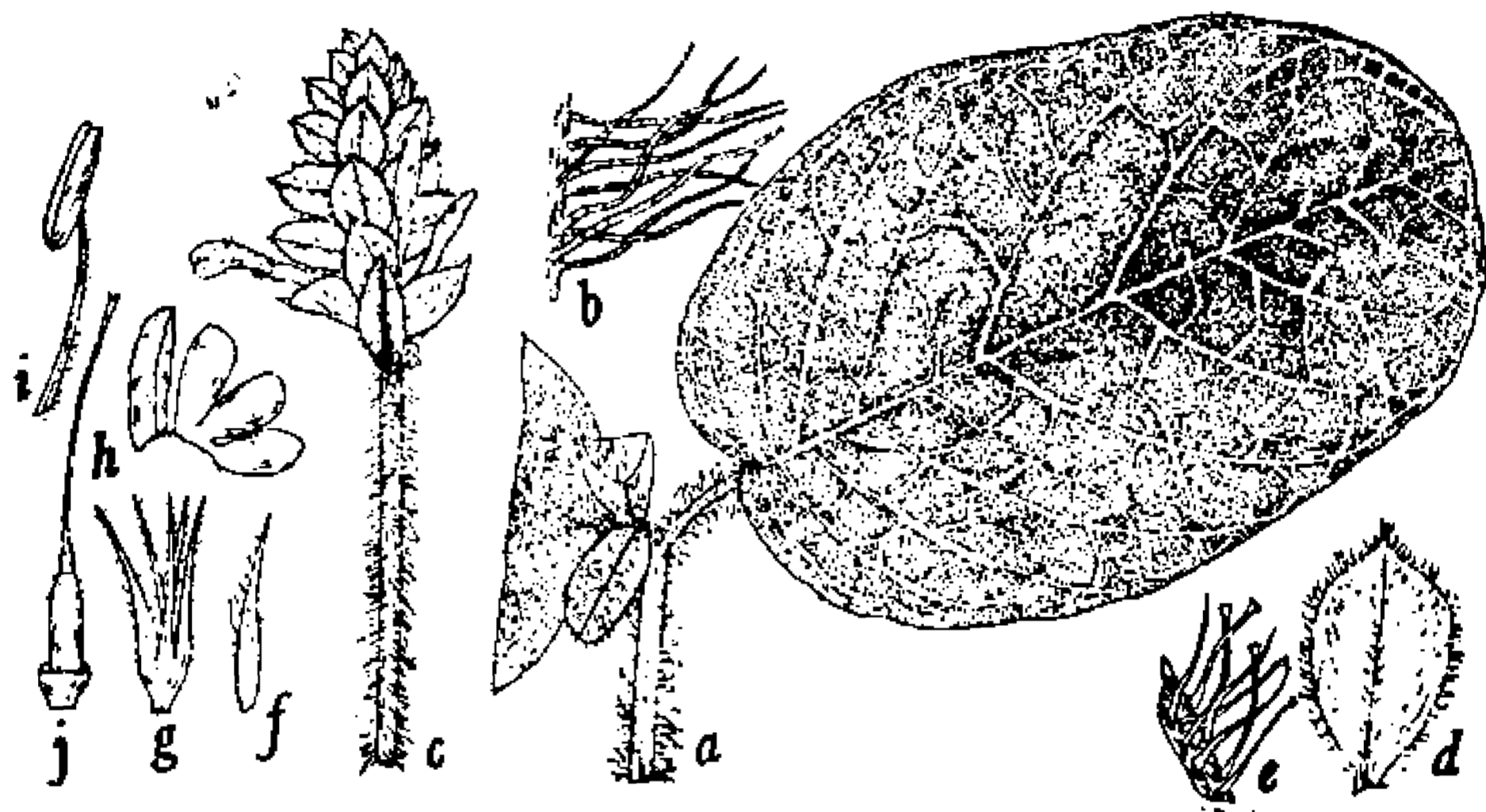


FIGURE 150.—*Fittonia argyroneura* Coem. (a, b, Killip 35534; c-e, h, i, Allard 22279 (Perú); f, g, j, White 2348 (Bolivia)): a, Tip of sterile plant; b, pubescence of stem; c, spike; d, bract; e, marginal hairs of bract; f, one of a pair of bractlets; g, calyx; h, corolla lobes; i, stamen; j, pistil. (a, c, Natural size; b, j, 5 times natural size; d, f, g, i, 3 times natural size; e, 7 times natural size; h, twice natural size.)

Lehmann gives the following field notes: "No. 4985: Weeds with thin stems up to 50 cm. in length, creeping on ground and ramified in form of a broad tail. Leaves paper-like, dark green with a network of milky white nerves. Flowers a delicate sulphur yellow. Colombia. Grows very frequently in small islands in dense damp forests around Las Juntas del Dagua, western littoral region of Buenaventura, 0-500 meters. Flowers in September and October.—Note: This species also occurs on the coast of Barbacoas and on the East Andes of Cuenca in the district of Gualaquiza Jabaros up to an altitude of 1000 meters."

"No. 5600.—Weed with procumbent stems up to 50 cm. in length. Leaves dark green with silver-white nerves. Flowers yellow. Colom-

bia. Grows on slate rubble in dense forests around Las Juntas del Dagua, West Andes of Cali, 200–400 m. March.”

EL VALLE: Cisneros, *Killip* 35534 (US). La Margarita, Río Dagua Valley, *Killip* 34892 (US). Dagua, *Lehmann* 4985 (K), 5600 (K).

LOCALITY INDEFINITE: “Prov. del Chocó i Barbacóas i Buenaventura,” 10 meters altitude, March 1852. *Triana* s. n. (K).

2. *Fittonia verschaffeltii* (Lem.) E. Coem.

Gymnostachyum verschaffeltii Lem. *Illustr. Hort.* 10: pl. 372. 1863. Based on cultivated material originally from Perú or Colombia.

Fittonia verschaffeltii E. Coem. *Fl. des Serres* 15: 186. 1865. Based on *Gymnostachyum verschaffeltii* Lem.

Repent or ascending herb up to 30 cm. long; stems pilose to subtomentose; leaf blades ovate to elliptic, up to 10 cm. long and 7 cm. wide, rounded or obtuse at tip, cordate at base, the upper surface dull green, the costa and conspicuously reticulated veins purple; spikes up to 8 cm. long and 1.5 cm. wide; peduncles up to 12 cm. long, pilose or subtomentose, the hairs disposed more or less in two rows; bracts oval, up to 13 mm. long and 8 mm. wide; corolla white or yellow.

Herbarium specimens of *Fittonia argyroneura* and *F. verschaffeltii* are very similar and dried specimens are extremely difficult to separate, especially since the purple coloring of the veins invariably fades. The habit of growth, pubescence, inflorescence, and corollas of the two species are practically identical. The upper surface of the leaf blades of *F. verschaffeltii* has been described as duller, the epidermis composed of more densely placed conical cells so as to present a velvety appearance in fresh plants. In contrast, the leaves of *F. argyroneura* are smoother and of a nitid green color. This contrast, strong as it may be in live plants, is weak indeed if herbarium material is studied and unless there yet remains a slight trace of the purple coloration in the veins, or the specimen is accompanied by proper field notes, it is practically impossible to decide to which of the two species any given specimen might belong.

In the Putumayo region, according to Schultes, the plant is called “Mee-ná-ku-ru” by the Kofán natives and is used medicinally. The two species treated here, as well as the suffrutescent *F. gigantea* Linden of Perú, are found in cultivation.

CAUCA: Between Juntas and La Peñita, Dagua Valley, *Pittier* 1506 (US).

CAQUETÁ: Florencia, *Pérez-Arbeláez* 733 (US)

PUTUMAYO: Quebrada Conejo, *Schultes* 3480 (GH).

30. KALBREYERIELLA Lindau

Kalbreyeriella Lindau, Notizbl. Berlin 8: 143. 1922. Named in honor of W. Kalbreyer, the collector of the type species, *K. rostellata* Lindau. Type species: *Kalbreyeriella rostellata* Lindau. Type locality: Near Plateado, Antioquia, Colombia.

Herbs or shrubs; leaves petioled, usually ovate or oblong-lanceolate; flowers borne in spikes, racemes or narrow panicles, these spicate or racemose toward tip; bracts and bractlets shorter than the calyx; calyx deeply segmented, the segments 5, lanceolate, thin, slenderly acute; corolla broadly tubular, slightly ventricose, scarlet, glabrous or hirtellous, rostrate at tip before the expansion of the lips, the upper lip in expanded flowers erect, narrow, embracing the stamens and pistil, the lower lip triangular, recurved, minutely trilobate at tip; stamens 2, exserted; anthers 1-celled (one of them 2-celled in *K. cabreræ*); ovary glabrous; mature capsules not seen.

The genus *Kalbreyeriella* is closely related to *Razisea*, differing mainly in its rostrate corollas (before expansion). Lindau described *K. rostellata* as having a 4-parted calyx, but I have found only 5-parted ones in the many specimens that I have examined of this genus, including the isotype material in the Kew Herbarium of Lindau's species.

KEY TO THE SPECIES

- Corolla yellow..... 1. *K. cabreræ*
 Corolla bright red.
 Herbaceous or suffrutescent; corollas glabrous or minutely strigose at tip; leaf blades narrowed at base; flowers borne in spikes or racemes (spicate toward tip)..... 2. *K. rostellata*
 Shrubs; corollas densely hirtellous toward tip, the hairs spreading or ascending, more or less septate; leaf blades noticeably large, rounded and cuneate at base; flowers borne in narrow panicles, these spicate or racemose toward tip.... 3. *K. gigas*

1. *Kalbreyeriella cabreræ* Leonard, sp. nov.

FIGURE 151

Suffrutex, caulibus subquadrangularibus, deorsum glabris sursum plus minusve dense et minute puberulis, pilis appressis; lamina foliorum oblongo-obovata vel oblonga, plus minusve abrupte acuminata, apice gracilis et aliquando curvata, basi cuneata et in petiolum decurrens, aliquanto tenuis, integra vel undulata, supra parce hirsuta, pilis subappressis, subtus in costa et venis minute strigosa, cystolithis subintegris; petioli alati, glabri; racemi terminales, angusti, floribus ad nodos 2 vel pluribus, rhache et pedunculo plus minusve dense hirtellis, pilis adpressis vel ascendentibus; bracteae et bracteolae similes, lanceolatae, acutae, subcarinatae, glabrae vel subglabrae, marginibus ciliolatae; pedicelli glabri vel parce et minute hirtelli; calycis segmenta rubra, lanceolata, acuta, graciliter nervata, minute ciliolata; corolla lutea, tubo anguste campanulato, deorsum glabro,

sursum puberulo, pilis plerumque patulis et curvatis, apice rostrata, labio superiore lanceolato, labio inferiore ovato, conduplicato, apice minute trilobato, lobis apice rotundatis; stamina vix exserta, glabra, antheris apice rotundatis vel mucronatis, una uniloculari, altera biloculari; capsulae glabrae; semina plana, brunnea, muricata.

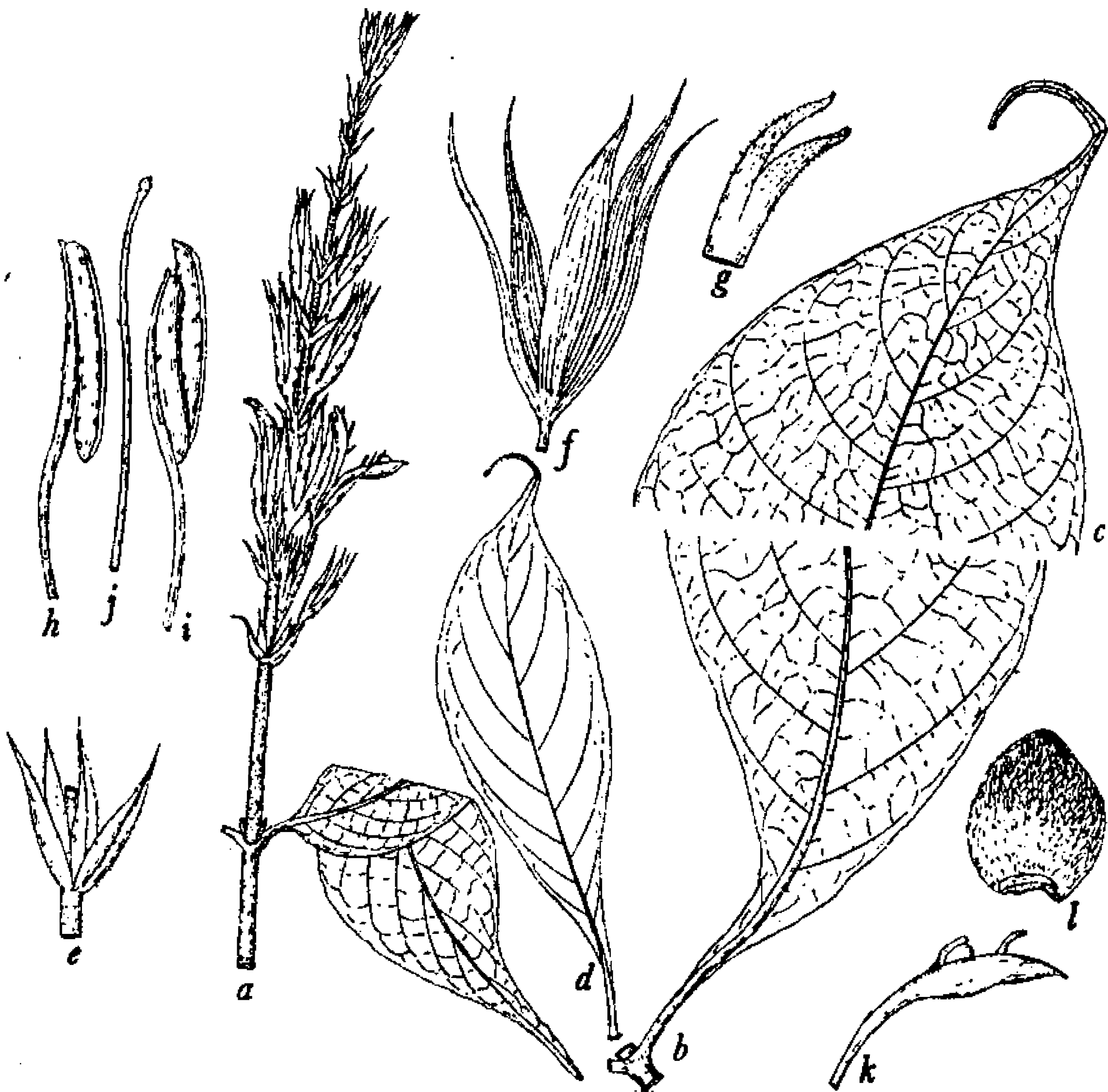


FIGURE 151.—*Kalbreyeriella cabreræ* Leonard (a-f, Schultes & Cabrera 19093; g-l, Schultes & Cabrera 19095): a, Inflorescence, b, basal part of leaf blade; c, tip of same; d, same leaf drawn on small scale to show general shape; e, node of inflorescence showing bracts and bractlets; f, calyx; g, tip of corolla; h, 1-celled anther, i, 2-celled anther of the pair; j, tip of pistil showing stigma; k, capsule valve; l, seed. (a-c, Half natural size; d, one-sixth natural size; e, twice natural size; f, $1\frac{1}{2}$ natural size; g, natural size; h-j, 4 times natural size; k, $1\frac{1}{2}$ times natural size; l, 5 times natural size.)

Suffrutescent plants up to 1.3 meters (type 5 ft. high, Schultes and Cabrera); stems subquadrangular, glabrous below, the upper portions more or less densely and minutely puberulous the hairs appressed, up to 0.16 mm. long; leaf blades oblong-obovate to oblong, up to 32 cm. long and 13.5 cm. wide, more or less abruptly acuminate, the tip slender and sometimes curved, cuneate at base and decurrent on the

petiole, rather thin, entire or undulate, the upper surface sparingly hirsute, the hairs 0.5 mm. long, subappressed, the lower surface minutely strigose on costa and veins, the hairs mostly closely appressed, up to 0.16 mm. long, the venation moderately prominent (lateral veins 12 to 14 pairs); cystoliths blackish, up to 0.2 mm. long; petioles up to 7 cm. long, winged nearly to the base, the width of the wing expanse 1 to 2 cm. at base of leaf blade; glabrous or nearly so; flowers borne in narrow racemes (up to 20 cm. long and 3 cm. broad), several to a node or in pairs near tip of inflorescence, the rachis and peduncle (up to 2.5 cm. long) minutely and densely hirtellous, the hairs up to 0.2 mm. long, appressed to ascending; bracts lanceolate, up to 6 mm. long and 2 mm. wide at base, gradually narrowed to a slender tip, subcarinate, glabrous or nearly so, ciliolate; bractlets similar to the bracts in size and shape, glabrate; pedicels up to 5 mm. long, sparingly and minutely hirtellous to glabrous; calyx red, the segments lanceolate, 25 mm. long, 3 mm. wide near base, gradually narrowed to a slender tip, glabrous, delicately nerved, minutely ciliolate; corolla yellow (Schultes and Cabrera), up to 4 cm. long (probably longer when fully expanded), the tube narrowly campanulate, 3 mm. broad at base, 6 mm. broad at throat, the lower part glabrous, puberulous above, the hairs more or less spreading and curved, up to 0.32 mm. long, the tip of the corolla rostrate, the upper lip lanceolate, 11 mm. long, 3.5 mm. wide at base, the lower lip ovate, conduplicate, 12 mm. wide at base, gradually narrowed to an obtuse tip, this 3-lobed, the lobes 1 mm. long, 0.5 mm. wide, rounded at tip; stamens 2, glabrous, exerted several mm. beyond mouth of corolla tube but slightly shorter than lips (perhaps more exerted in fully expanded flowers); anthers 5.5 mm. long, 1.5 mm. broad, rounded at both ends, the connective extended at tip, forming a small mucro, one of the anthers 2-lobed, the extra lobe about 4 mm. long; style reaching tip of corolla lips, the stigma oval, obtuse, about 0.75 mm. long and 0.5 mm. wide; capsule glabrous, about 2 cm. long, 4-seeded, the seed-bearing portion 11 mm. long, 4 mm. broad and 3 mm. thick; retinacula 2.5 mm. long, the tip lacerate and rounded; seed brown, flattened, ovate, 4 mm. long, 3 mm. broad, 0.5 mm. thick, the tip bearing an undulate rounded crest, 0.5 mm. long at middle, the surface of the seed muricate.

Type in the U. S. National Herbarium, No. 2124645, collected at Mocoa, Comisaría of Putumayo, Colombia, "1,800-2,400 feet" altitude, March 16, 1953, by Richard Evans Schultes and Isidoro Cabrera (No. 19093). Schultes and Cabrera's No. 19095, collected nearby on the same day, is also of this species.

Kalbreyeriella cabreræ is a well-marked species differing from the other two Colombian species in its large oblong to oblong-obovate leaves and the yellow flowers.

2. *Kalbreyeriella rostellata* Lindau

Kalbreyeriella rostellata Lindau, Notizbl. 8: 143. 1922. Type collected in shady woods near Plateado, Department of Antioquia, Colombia, 2,300 meters altitude, March 31, 1880, by W. Kalbreyer (No. 1524).

Suffrutescent plants up to 1 meter high; stems erect or ascending, simple or sparingly branched, glabrous to moderately hirtellous, the hairs appressed, ascending or recurved, up to 0.25 mm. long, septate; leaf blades oblong-lanceolate, oblong or oblanceolate, up to 24 cm. long and 10 cm. wide but usually about 10 cm. long and 4.5 cm. wide, short-acuminate, narrowed at base, moderately firm, entire or undulate, the upper surface glabrous to moderately pilose with curved ascending red-septate hairs up to 1 mm. long, the costa and lateral veins (9 or 10 pairs) moderately prominent, sometimes red, the lower surface glabrous or the costa and lateral veins hirtellous, the hairs about 0.25 mm. long, mostly curved and ascending, the venation more prominent than above, the cystoliths conspicuous under a lens, mostly straight or slightly curved, up to 225 μ long, these often absent on the upper leaf-surface; petioles usually about 2 cm. long but occasionally reaching 4 cm., glabrous or sparingly hirtellous; flowers borne in terminal loose peduncled spikes or racemes (spicate toward tip) up to 20 cm. long, the peduncles up to 2 cm. long, these and the rachises glabrous or sparingly or even densely hirtellous, the hairs variously curved, up to 0.25 mm. long, sometimes septate, the lowermost internodes 10 to 15 mm. long, the others successively shorter toward tip of inflorescence, the pedicels of the lowermost flowers slender, up to 4 mm. long, minutely hirtellous in two lines; bracts lanceolate, the lowermost 5 to 10 mm. long, and 2 to 3 mm. wide, the others becoming smaller towards tip of inflorescence, all acute, glabrous to moderately pilose; bractlets similar to the bracts but somewhat longer; calyx 16 mm. long, 5-parted, deeply segmented, the segments lanceolate, 10 mm. long, 3 mm. wide at middle, acute, thin, minutely and sparingly ciliolate, faintly nerved; corollas a bright showy red, up to 5.5 cm. long, glabrous or sparingly and minutely strigose at tip, this rostrate and recurved before expanding, the tube about 2.5 mm. broad at base, enlarged rather abruptly at 5 mm. above base to 12 mm. at middle, thence reduced to 10 mm. at mouth, the upper lip lanceolate, acute, 13 mm. long, 4 mm. wide at base, erect in expanded flowers, the tip straight or recurved, the lower lip triangular, recurved, 14 mm. wide at base, narrowed to an acute 3-lobed tip, the lobes about 1 mm. long and 0.5 mm. wide; stamens attached near base of corolla tube,

about 5 cm. long, exerted 15 mm. beyond mouth of corolla tube and slightly exceeding the upper lip which partially enfolds them, the anthers 5 mm. long and 1 mm. broad at middle, narrowed toward both ends to bluntish tips, both anthers and filaments glabrous; disc 1 mm. long, this and the ovary glabrous; style slightly shorter than the stamens, glabrous; capsules not seen.

There is variation in the amount of pubescence and the size of the leaf blades. The type material is strictly glabrous except the very young leaves. In Ariste-Joseph's No. 1085, the upper surfaces of the leaf blades are conspicuously covered with red-septate hairs; other specimens show the same character to a more or less marked degree. Again, the leaf blades of Ariste-Joseph's material do not exceed 9 cm. in length nor 2.8 cm. in width, whereas those of Cuatrecasas' No. 15160 are as much as 24 cm. long and 9 cm. wide. The type material possesses leaves intermediate between these two extremes.

The specific epithet alludes to the acutely tipped unexpanded corollas. The species is endemic in Colombia; it is partial to thick shady forests, usually of the middle altitudes (900 to 1,600 meters), although Haught's No. 4723 was collected as low as 100 meters. Its dark green leaves and brilliant red flowers make it an especially beautiful and conspicuous species.

ANTIOQUIA: Shady woods near Plateado, *Kalbreyer* 1524 (isotype, K). Low wet forest along the Río Chigorodo, 10 km. northeast of Chigorodo, *Haught* 4723 (US).

BOYACÁ: High thick forests in the region of Mount Chapón, *Lawrance* 234 (US); 367 (K, Mo, NY, S, US); 694 (GH, US).

CALDAS: La Selva, *von Sneidern* 5293 (US).

CAUCA: Quebrada Aguaclara, near its junction with Río Plateado, *Core* 1377 (US).

CHOCÓ: Dauro, *Toro* 1175 (NY).

CUNDINAMARCA: Albán, *Guevara-Amórtegui* 315 (US). Páime, *Ariste-Joseph* 1085 (NY, US).

EL VALLE: Chorrera La Elsa in the densely forested valley of Río Digua, *Killip* 34807 (US); Río Digua Valley between La Elsa and Río Blanco, *Killip* 34738 bis (US). Woods about La Laguna, on the left bank of Río Sanquinín, *Cuatrecasas* 15388 (Ch, US). Piedra de Moler, left bank of Río Digua, *Cuatrecasas* 15160 (US). Quebrada de San Juan, below Queremal, Río Digua Valley, *Cuatrecasas* 22728 (US).

3. *Kalbreyeriella gigas* Leonard, sp. nov.

FIGURE 152

Suffrutex, caulibus glabris vel subtiliter bifariam puberulis, pilis albis, appressis vel ascendentibus; lamina foliorum ovata, grandis, breviter acuminata (apice ipso obtuso?), basi rotundata et cuneata, in petiolum decurrens, crenata, supra subnitida, glabra vel parce hirtella, costa et venis aliquanto dense puberulis, pilis appressis, cystolithis paucis minutis inconspicuis, subtus glabra, sub lente minute papillosa, cystolithis pluribus et conspicuis, costa et venis

lateralibus prominentibus, venulis crasse reticulatis; petioli crassi, subtus glabri, canale pilosa; paniculae terminales, angustae, floribus apice panicularum sessilibus et solitariis, pedunculo subtiliter bifariam hirtello, rhache dense hirtella, pilis subbrunneis, varie curvatis; bracteae lanceolatae, calyce breviores, glabrae vel parce hirtellae, ciliatae; bracteolae similes sed minores; calycis segmenta coccinea, lanceolata, acuta, nervata, glabra vel apice hirtella, cystolithis gracilibus, parallelis; corolla coccinea, parce punctata, basi glabra, apice dense hirtella, labio superiore erecto, anguste lanceolato, labio inferiore triangulari, recurvato, acuto, apice minute trilobato; stamina exserta, filamentis planis, glabris vel basi parce pilosis; antherae glabrae, basi et apice rotundatae; ovarium glabrum.

Shrub; stems glabrous or finely and bifariously puberulous, the hairs white, appressed or ascending, up to 0.25 mm. long; leaf blades ovate, up to 35 cm. long and 10.5 cm. wide or more, short-acuminate (the tip probably blunt), rounded near base to a width of 3 cm., thence gradually narrowed and decurrent on the petiole, rather thin, crenate, the upper surface subnitid, glabrous or sparingly hirtellous except costa and lateral veins (about 15 pairs), these rather densely puberulous with appressed hairs up to 0.5 mm. long, the scattered hairs of the intercostal areas ascending, the cystoliths minute, inconspicuous and scattered, 100 to 150 μ long, the lower surface glabrous or nearly so, minutely papillose under a lens, the cystoliths numerous and conspicuous, the costa and lateral veins prominent, much more so than above, the veinlets coarsely and rather conspicuously reticulate; petioles (wingless portion) up to 5 cm. long, glabrous beneath, the channel pilose, the hairs ascending, septate, up to 0.5 mm. long; flowers borne in narrow spikelike panicles up to 20 cm. long and 5 cm. broad (near base), the peduncle up to 4 cm. long, its pubescence that of the stems, the rachis densely hirtellous, the hairs brownish, variously curved, up to 0.5 mm. long, the lowermost internode about 12 mm. long, the others successively shorter toward tip of the inflorescence, the lowermost flowers several, borne on branches about 10 cm. long, the uppermost flowers sessile, solitary, the pedicels about 2 mm. long, hirtellous, the lowermost pair of bracts leaflike, lanceolate, up to 14 mm. long and 6 mm. wide, acuminate, the succeeding pair of bracts firm, narrowly lanceolate, keeled, 13 cm. long, 3 mm. wide at base, gradually narrowed to a slender tip, glabrous or sparingly hirtellous, ciliate, the marginal hairs about 0.25 mm. long, ascending, the other bracts thin, lanceolate, 9 mm. long and 3 mm. wide, successively smaller toward tip of inflorescence, all acute, with about 3 pairs of delicate nerves, glabrous or sparingly hirtellous, ciliate, the lateral pair of bracts, those subtending the flowers, similar

but somewhat smaller; calyx crimson, 25 mm. long, deeply segmented, the segments lanceolate, 5 mm. wide, sharply acute, thin, delicately nerved, glabrous or sparingly hirtellous at tip, marked by slenderly linear parallel cystoliths; corollas 5 to 6 cm. long, crimson, distantly punctate, sparingly hirtellous except towards tip, here densely so,

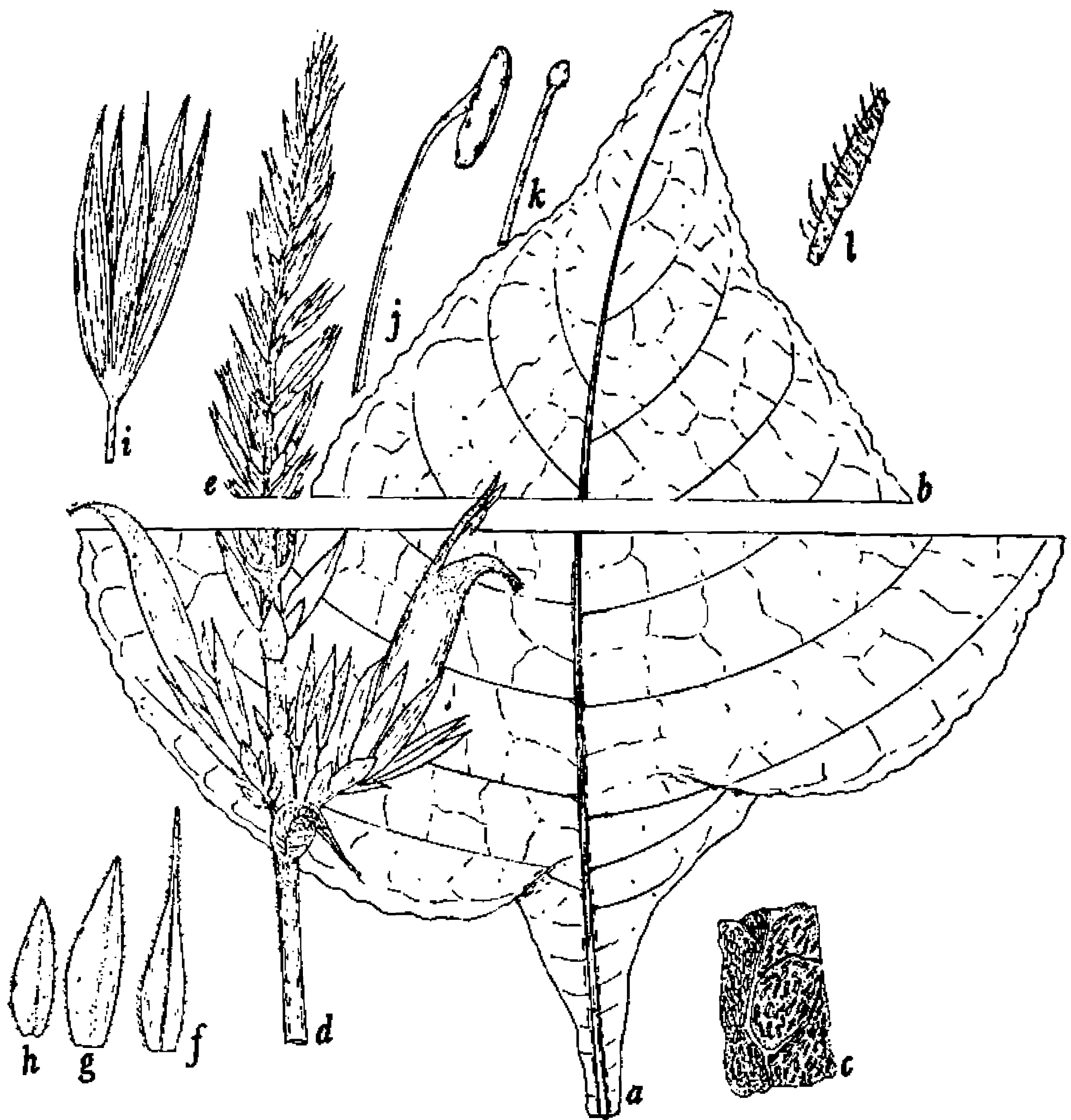


FIGURE 152.—*Kalbreyeriella gigas* Leonard (*Cuatrecasas* 11271): *a*, Base of leaf blade; *b*, tip of same; *c*, enlarged portion of lower surface to show cystoliths and minute papillae; *d*, base of inflorescence; *e*, tip of same; *f*, lower bract; *g*, one of the upper bracts; *h*, one of a pair of lateral bracts; *i*, calyx; *j*, anther; *k*, stigma; *l*, pubescence of tip of corolla. (*a*, *b*, *d*, *e*, Half natural size; *c*, 7 times natural size; *f*–*h*, *j*, *k*, twice natural size; *i*, $1\frac{1}{4}$ times natural size; *l*, 12 times natural size.)

the hairs about 0.25 mm. long, some of them septate, the corolla tube about 1 cm. broad from near base to mouth, the upper lip erect, narrowly lanceolate, 2 cm. long, 5 mm. wide at base, the lower lip triangular, recurved, 12 mm. wide at base, narrowed to a slender 3-lobed tip, the lobes ovate, about 1 mm. long and 0.75 mm. wide; stamens exerted 15 mm. beyond mouth of corolla tube, the filaments flat, glabrous or bearing several minute hairs near base; anthers 6 mm.

long, 1.5 mm. broad, rounded at tip and base, glabrous; style reaching tip of the upper corolla lip, glabrous, the stigma conical; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 1798547, collected in damp forests between Achipayaco and Mocoa, Comisaría of Putumayo, Colombia, 450 to 500 meters altitude, December 25, 1940, by J. Cuatrecasas, No. 11271.

When compared with *K. rostellata*, *Kalbreyeriella gigas* is easily recognized by its dense narrow panicle, large crimson calyces and remarkably large leaf blades. The specific epithet, *gigas*, is from the Greek *γίγας* meaning giant, in allusion to the large size of the plants of this species.

31. SYRINGIDIUM Lindau

Syringidium Lindau, Notizbl. 8: 142. 1922. Diminutive of *σῦριξ*, a little pipe, apparently in allusion to the nearly tubular corolla. Type species: *S. atropurpureum* Lindau (Colombia).

Small herbs; stems subquadrangular; leaves medium-sized, lanceolate, hirtellous; flowers borne in terminal hairy raceme-like panicles exceeding the uppermost leaves; bracts small, lanceolate; calyx 5-lobed, the segments lanceolate; corolla subcylindrical, 4-lobed at tip, the posterior lobe or lip minutely 2-lobed at tip; stamens 2, the anthers 1-celled; pollen grains subelliptical, aculeate, 2-pored; seeds 4.

Lindau places his genus after *Porphyrocoma*. Its subtubular corolla and lax inflorescence separate it from *Stenostephanus*. Both genera have 4-lobed (indistinctly 2-lipped) corollas and exerted stamens with 1-celled anthers, but in *Stenostephanus* the corolla tube is markedly ventricose and the inflorescence dense and spikelike. The genus *Syringidium* is represented by a single species.

1. *Syringidium atropurpureum* Lindau FIGURE 153

Syringidium atropurpureum Lindau, Notizbl. 8: 142. 1922. The specific epithet alludes to the dark purple corollas. Type collected in open place in forest at Espiritu Santo, vicinity of Ocaña, Norte de Santander, Colombia, November 18, 1879, by W. Kalbreyer (No. 1252). Type in the Berlin Herbarium. Photograph in U. S. National Herbarium (Field Mus. No. 8802).

Small repent herbs up to about 30 cm. long; stems subquadrangular, hirtellous, the hairs mostly upwardly curved, mostly about 0.3 mm. long or a few up to 0.5 mm. long; leaf blades lanceolate, up to 10 cm. long and 2.5 cm. wide, short-acuminate (the tip itself blunt), narrowed at base, moderately firm, entire, both surfaces hirtellous, the hairs curved, ascending, 0.2 to 0.5 mm. long, the costa and lateral veins (8 to 9 pairs) rather prominent; petioles 5 to 15 mm. long,

hirtellous; flowers borne in lax racemelike panicles up to 10 cm. long and 1 to 3 cm. broad, the peduncles (up to 3.5 cm. long) and the rachis densely hirtellous, the hairs mostly spreading, up to 0.25 mm. long, whitish, the branches of the panicle (lowermost up to 1 cm. long) slender, densely hirtellous, bearing at tip a pair of small bracts subtending a mature flower and 2 flanking immature ones; bracts subtending the branches of the inflorescence lance-subulate, the lowermost up to 5 mm. long and 0.75 to 1 mm. wide, gradually narrowed to a subacute tip, hirtellous; pedicels of mature flowers about 1 mm. long,

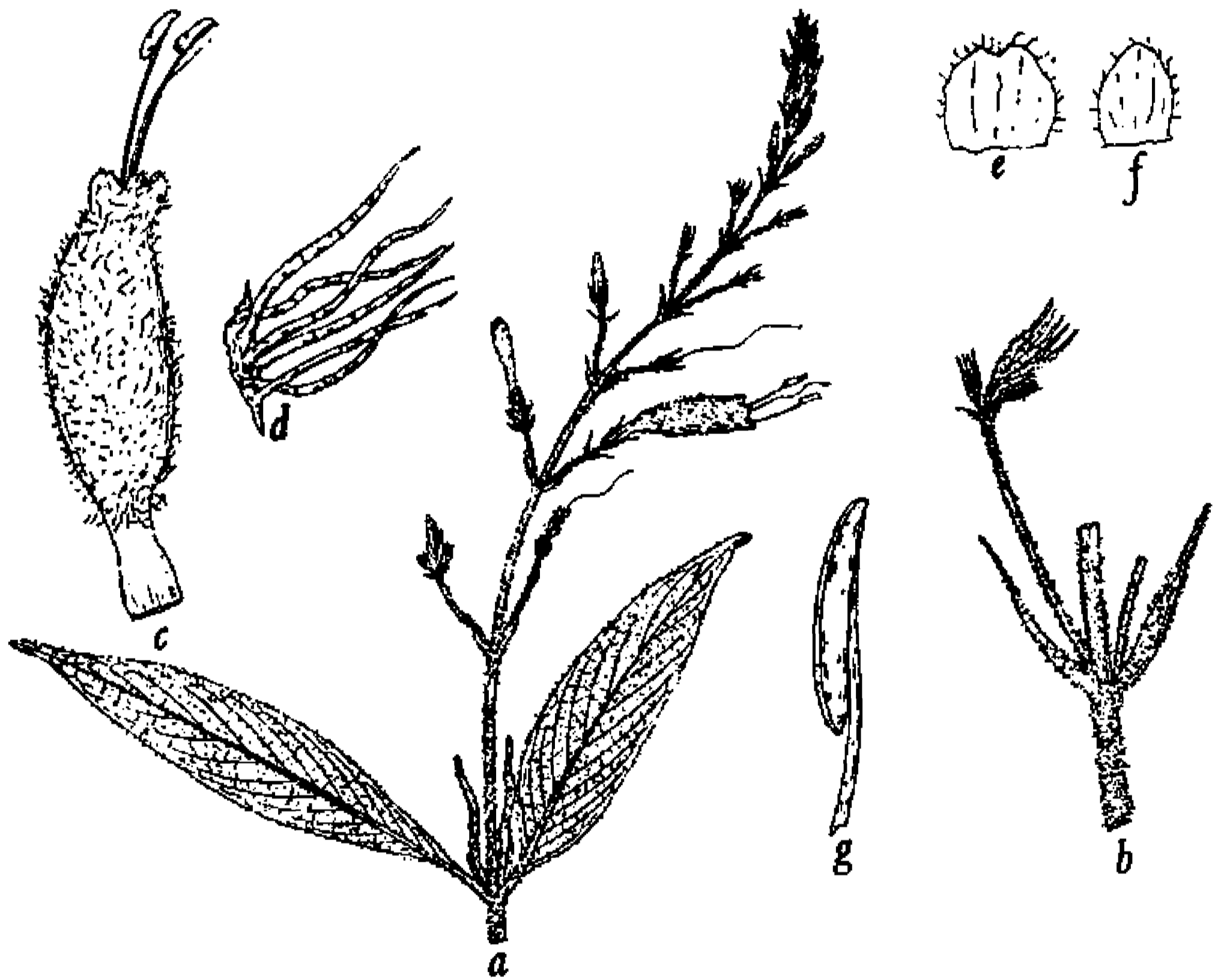


FIGURE 153.—*Syringidium atropurpureum* Lindau (*Kalbreyer* 1252): *a*, Tip of plant; *b*, node of inflorescence; *c*, corolla; *d*, hairs from corolla; *e*, posterior lip of the corolla; *f*, one of the anterior lobes; *g*, anther. (*a*, Half natural size; *b*, 3 times natural size; *c*, $1\frac{1}{2}$ times natural size; *d*, 50 times natural size; *e*, *f*, 5 times natural size; *g*, 7 times natural size.)

hirtellous; calyx 5 mm. long, densely hirtellous, the segments 5 mm. long, 0.5 mm. wide at base, gradually narrowed to a subacute tip; corolla 2 cm. long, densely white-pubescent (except the narrow glabrous portion), the hairs spreading or ascending, up to 0.64 mm. long, the corolla tube geniculate, 2.5 mm. broad at base, narrowed at 3 mm. above base to 1.5 mm., thence rather abruptly enlarged into a subcylindric subventricose tube 5.5 mm. broad near middle and 3.5 mm. broad at throat, the posterior lobe (or lip) broadly ovate and rounded, 2 mm. long, 2.5 mm. wide, minutely 2-lobed at tip, the 3 anterior lobes (lower lip) ovate, 1.5 mm. long and broad, rounded; stamens exerted

8 to 10 mm. beyond the mouth of the corolla tube, glabrous, the anthers 2.5 mm. to 3 mm. long and 1 mm. broad, rounded at both ends; style about 15 mm. long, the stigma minute; ovary glabrous; mature capsules not seen.

NORTE DE SANTANDER: Espiritu Santo, *Kalbreyer* 1252 (K, isotype).

32. MEGASKEPASMA Lindau

Megaskepasma Lindau Bull. Herb. Boiss. 5: 666. 1897. Derived from the Greek μέγας, large, and σκέπασμα, a covering, in reference to the large bracts. Type species: *M. erythrochlamys* Lindau.

Suffruticose; leaves large, oblong, abruptly acuminate with a blunt tip and cuneate at base, petioled; flowers borne in a terminal spike, the bracts and bractlets large, conspicuous, colored; calyx segments 5, equal; corollas narrowly hypocrateriform, the upper lip minutely bifid, the lower 3-lobed; stamens 2, the anthers bilocular; stigma subcapitate; capsules unknown.

The genus is monotypic.

1. *Megaskepasma erythrochlamys* Lindau

FIGURE 154

Megaskepasma erythrochlamys Lindau, Bull. Herb. Boiss. 5: 666. 1897. The specific epithet is from the Greek ἐρυθρός, red, and χλαμύς, bract. The type was collected in the Province of Mérida, Venezuela, by Funck & Schlim (No. 1171).

Suffruticose, up to 2 meters high; stems quadrangular, brown-puberulous; leaf blades oblong, up to 19 cm. long and 7 cm. wide (the lowermost probably larger), short-acuminate (the tip itself rounded and apiculate), cuneate at base, rather firm, entire or undulate, both surfaces sparingly and minutely hirtellous, the hairs confined chiefly to costa and lateral veins (12 to 15 pairs), up to 0.56 mm. long, cystoliths none; spikes solitary, terminal up to 18 cm. long and 4 cm. broad, the peduncle (about 3.5 cm. long) and rachis brown-puberulous, the hairs up to 0.32 mm. long, usually variously curved; bracts ovate, up to 44 mm. long and 17 mm. wide, subobtuse and mucronulate at tip, narrowed at base, purple or red, sparingly and finely strigose, the hairs up to 0.56 mm. long, confined chiefly to the costa; bractlets ovate-lanceolate, subfalcate, up to 36 mm. long and 8 mm. wide, acute, the pubescence similar to that of the bracts; calyx segments lanceolate, up to 15 mm. long and 3 mm. wide at base, narrowed to a slender blunt tip, rather densely hirsute, the hairs upwardly curved, brown, vitreous, up to 0.48 mm. long, some of the shorter ones gland-tipped; corolla white (Lindau) (becoming deep pink when young, Killip & Smith), pilosulous, the hairs mostly retrorsely curved, up to 0.4 mm. long, white, the corolla tube about 22 mm. long, 2 to 3 mm. broad,

straight or slightly curved, the upper lip lanceolate, 36 mm. long and 5 mm. wide, bilobed at tip, the lobes oblong, 1.5 mm. long, 0.5 mm. wide, recurved, the lower lip narrowly cuneate, 32 mm. long, 9 mm. wide near the middle, 3-lobed, the lobes 7 mm. long and 3 mm. wide,

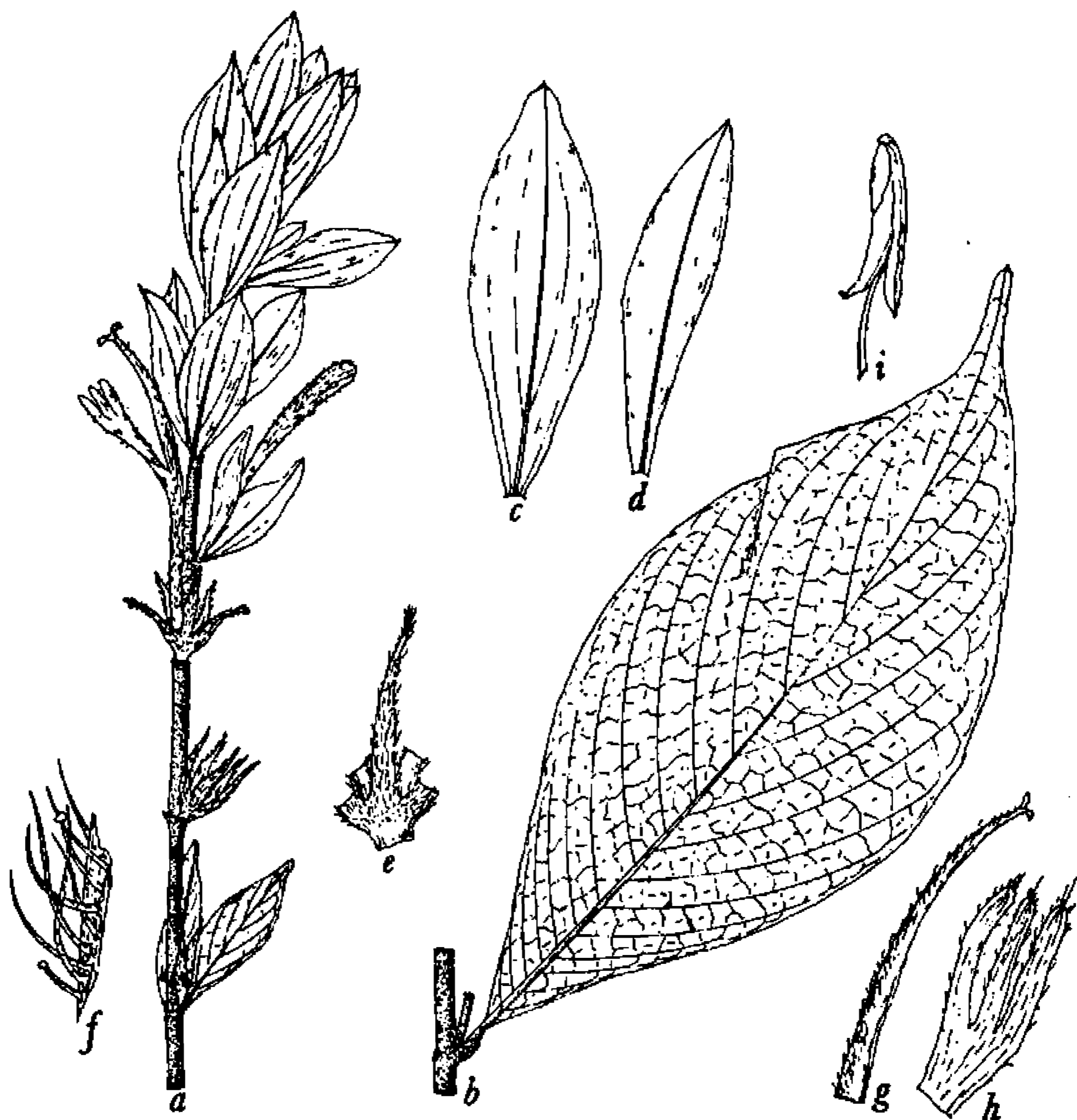


FIGURE 154.—*Megaskepasma erythrochlamys* Lindau (Killip & Smith 14979): *a*, Spike; *b*, leaf; *c*, bract; *d*, bractlet; *e*, calyx segment; *f*, portion of calyx segment enlarged to show pubescence; *g*, upper lip of the corolla; *h*, lower lip of same; *i*, anther. (*a*, *b*, *g*, *h*, Half natural size; *c*, *d*, natural size; *e*, *f*, about 35 times natural size; *i*, 4 times natural size.)

obtuse; stamens exerted about 3 cm. beyond the mouth of the corolla tube, the anthers 4.5 mm. long, 1.5 mm. broad, the bases of the lobes mucronulate; ovary 2 mm. long, glabrous; capsules not seen.

SANTANDER: Bucaramanga (cultivated), Killip & Smith 14979 (US).

Subtribe 12b. Isoglossinae

Shrubs or herbs; inflorescence and bracts variable; calyx 5-parted; corolla 2-lipped; stamens (in Colombian genera) 2; anthers 1-lobed,

muticous; capsules 4-seeded. Three Colombian genera are represented:

- 33. *Habracanthus*
- 34. *Hansteinia*
- 35. *Stenostephanus*

33. HABRACANTHUS Nees

Habracanthus Nees in DC. Prodr. 11: 312. 1847. (From ἀβρός, graceful, and ἀκανθος, acanthus). Type: *Habracanthus silvaticus* Nees. Type collected between San Bartolo and Pueblo Nuevo, Chiapas, México, by Linden.

Herbs or shrubs; leaves usually ovate to oblong, moderately firm, usually entire, hirtellous to glabrate, the venation usually prominent at least on the lower surface; flowers borne in terminal loose to dense panicles, the branches usually forked, the pedicels erect, the pubescence consisting of acute hairs or these mixed with gland-tipped trichomes; calyx deeply 5-parted, the segments narrowly lanceolate, those of some of the species bearing glandular trichomes; corolla glabrous or pubescent, blue, red, yellow, hypocrateriform, ringent, the lower portion of the corolla tube narrow, the upper part rather abruptly enlarged, tubular or subventricose, the upper lip narrow, entire, often contorted in dried material, the lower lip usually oblong-cuneate, 3-lobed at tip, the lobes rounded; stamens 2, exerted, divergent, the anthers 1-celled, the filaments attached below the middle of the anther; style exerted, the stigma minute; ovules 4; capsules 4-seeded, clavate, the lower half sterile and stipiform; seeds ovate-subrotund, discoid, more or less tuberculate, truncate and somewhat oblique at base, the angular raphe prominent.

Habracanthus consists of about 40 species, these found in México, Central America, and northern South America.

KEY TO THE SPECIES

A. Corollas blue or lavender.

Pedicels and rachilla hirtellous, the hairs minute and eglandular; corolla pale lavender..... 1. *H. syscius*

Pedicels and rachilla pilose or pubescent; corollas blue.

Panicles rather dense, ovoid; the longer hairs of the pedicels, rachilla and calyx segments conspicuous, spreading and gland-tipped. 2. *H. trichotus*

Panicles elongate and very lax; pedicels, rachilla and calyx segments pubescent, the hairs not conspicuously long and gland-tipped 3. *H. cyaneus*

A. Corollas variously colored, red, yellow, sulphur, purple, or bicolored.

B. Calyces without gland-tipped trichomes.

Panicles dense.

Corollas greenish yellowish white..... 4. *H. cuatrecasasi*

Corollas violet-purple or wine-red.

Leaf blades ovate; panicles conical..... 5. *H. aglaüs*

Leaf blades oblong; panicles cylindric..... 6. *H. pycnostachys*

- Panicles open.
- Calyces hispidulous..... 7. *H. hispidulus*
- Calyces glabrous to hirtellous, the hairs soft and septate.
- Calyces rather densely hirtellous.
- Panicles acute at tip..... 8. *H. heliophilus*
- Panicles rounded at tip..... 9. *H. erythranthus*
- Calyces nearly glabrous, bearing a few hairs on the margins or tips.
- Upper surface of the leaf blades conspicuously pilose.
10. *H. putumayensis*
- Upper leaf surface nearly glabrous or sparingly and inconspicuously hirtellous.
- Calyx segments lanceolate, up to 7 mm. long, drying greenish, the nerves more or less conspicuous; bracts subtending the branches of the inflorescence ovate to suborbicular, 1 to 1.5 cm. long.
11. *H. floriferus*
- Calyx segments linear, up to 12 mm. long, drying blackish, the nerves inconspicuous; bracts subtending the branches of the inflorescence cordate, up to 3 cm. long..... 12. *H. callianthus*
- B. Calyces bearing at least a few gland-tipped trichomes.
- Panicles lax, their branches few; leaf blades small, usually less than 10 cm. long.
- Branches of the inflorescence densely and conspicuously pilose.
13. *H. pilosus*
- Branches of the inflorescence hirtellous.
- Corollas up to 2.5 cm. long, bright red..... 14. *H. killipii*
- Corollas up to 1.5 cm. long, rose..... 15. *H. charien*
- Panicle branches numerous and crowded.
- Inflorescence conspicuously pilose.
- Hairs of inflorescence whitish, glandular; corolla red, conspicuously ventricose at middle, narrowed to throat, long-pilose.
16. *H. smithii*
- Hairs of inflorescence yellowish, jointed; corolla yellow, not ventricose, broadened to throat, minutely pubescent..... 17. *H. xanthothrix*
- Inflorescence not conspicuously soft gray-pilose.
- Corollas, at least the tips, more or less pilose or hirtellous.
- Corollas lemon yellow..... 18. *H. xantholeucus*
- Corollas orange-red..... 19. *H. ampelinus*
- Corollas strictly glabrous.
- C. Calyces with numerous glandular trichomes.
- Panicles open and diffuse.
- Corolla wine red..... 20. *H. caucensis*
- Corolla scarlet with yellow tip..... 21. *H. antipharmacus*
- Panicles compact.
- Leaf blades 4 to 7 cm. long, 2 to 3 cm. wide.. 22. *H. macrochilus*
- Leaf blades 12 to 19 cm. long, 5.5 to 7 cm. wide.
23. *H. oresbius*
- C. Calyces with few trichomes, these mostly at the tips of the segments.
- Panicles dense to rather dense, narrowly ovoid or subcylindric.
- Leaves and the leaf-like bracts subtending the branches of the inflorescence slenderly acuminate..... 24. *H. corei*

Leaves and leaf-like bracts subtending the branches of the inflorescence short-acuminate.

Leaf-like bracts subtending the branches of the inflorescence relatively large and conspicuous, the lowermost up to 4 cm. long and 3 cm. wide..... 25. *H. lamprus*

Leaf-like bracts subtending the branches of the inflorescence, relatively small, the lowermost about 10 mm. long and 16 mm. wide..... 26. *H. congestus*

Panicles rather open, broadly ovate or indefinite, many of the branches axillary and extending for some distance down the stems.

Acute hairs of the rachis 0.3 to 0.4 mm. long.

Corollas red with yellow tinge..... 27. *H. diversicolor*

Corollas lake-red..... 28. *H. pennellii*

Acute hairs of the rachis up to 0.16 mm. long.

Calyx segments subulate, gradually narrowed into slender recurved tips..... 29. *H. microcalyx*

Calyx segments narrowly triangular or lanceolate, the tips erect.

Corollas bright red..... 30. *H. hylobius*

Corollas sulphur yellow..... 31. *H. scolnikae*

1. *Habracanthus syscius* Leonard, sp. nov.

FIGURE 155

Herba vel suffrutex, caulibus ascendentibus, basi in nodis radicantibus, subquadrangularibus, glabris vel sursum minute strigosis, nodis tumidis; lamina foliorum ovata vel oblongo-ovata, apice graciliter acuminata, basi angustata, in petiolum decurrens, vel lamina ultima acuta vel breviter acuminata, basi obtusa vel rotundata, aliquanto firma, integra vel undulata, supra ubique appresso-hirsuta, subtus fere omnino glabra, costa et venis lateralibus aliquanto conspicuis et hirsutis exceptis, cystolithis inconspicuis vel nullis; petioli graciles, vulgo appresso-hirsuti, paniculae axillares et terminales, saepe multae, rigidae sed graciles, aliquanto parvae, pedunculis gracilibus, hirtellis, ramis inflorescentiae gracilibus, hirtellis, pilis ascendentibus; bracteae parvae, anguste triangulares, acutae, parce hirtellae; calycis segmenta anguste linearia, aliquanto hirtella, pilis minutis, ascendentibus, aliquando pilis paucis longis glandulosis intermixtis; corolla lilacina pallida, minute puberula, tubo subcylindrico, labio superiore lineare, apice angusto, contorto, labio inferiore plus minusve patulo, ovato, apice 3-lobato, lobis parvis, obtusis; stamina erecta, exserta, filamentis glabris, antheris purpureis; capsulae clavatae, glabrae; semina plana, suborbiculata, minute tuberculata.

Herbaceous or suffrutescent plants up to 1 meter high; stems ascending and rooting at the lower nodes, branched, subquadrangular, glabrous or minutely strigose, the hairs up to 0.16 mm. long, upwardly appressed, the nodes of the stem swollen, the internodes 1 to 5 cm. long, those of the lower part of the stem 5 mm. in diameter; leaf

blades ovate to oblong-ovate, up to 9 cm. long and 2.5 cm. wide, the larger and lower blades slenderly acuminate at the tip, narrowed and decurrent on the petiole at base, the uppermost blades acute to short-acuminate (the tip itself subacute), rounded at base, all moderately firm, entire or undulate, the upper surface evenly appressed-hirsute, the hairs about 0.16 mm. long, the lower surface essentially glabrous, the costa and lateral veins (7 or 8 pairs) moderately conspicuous,

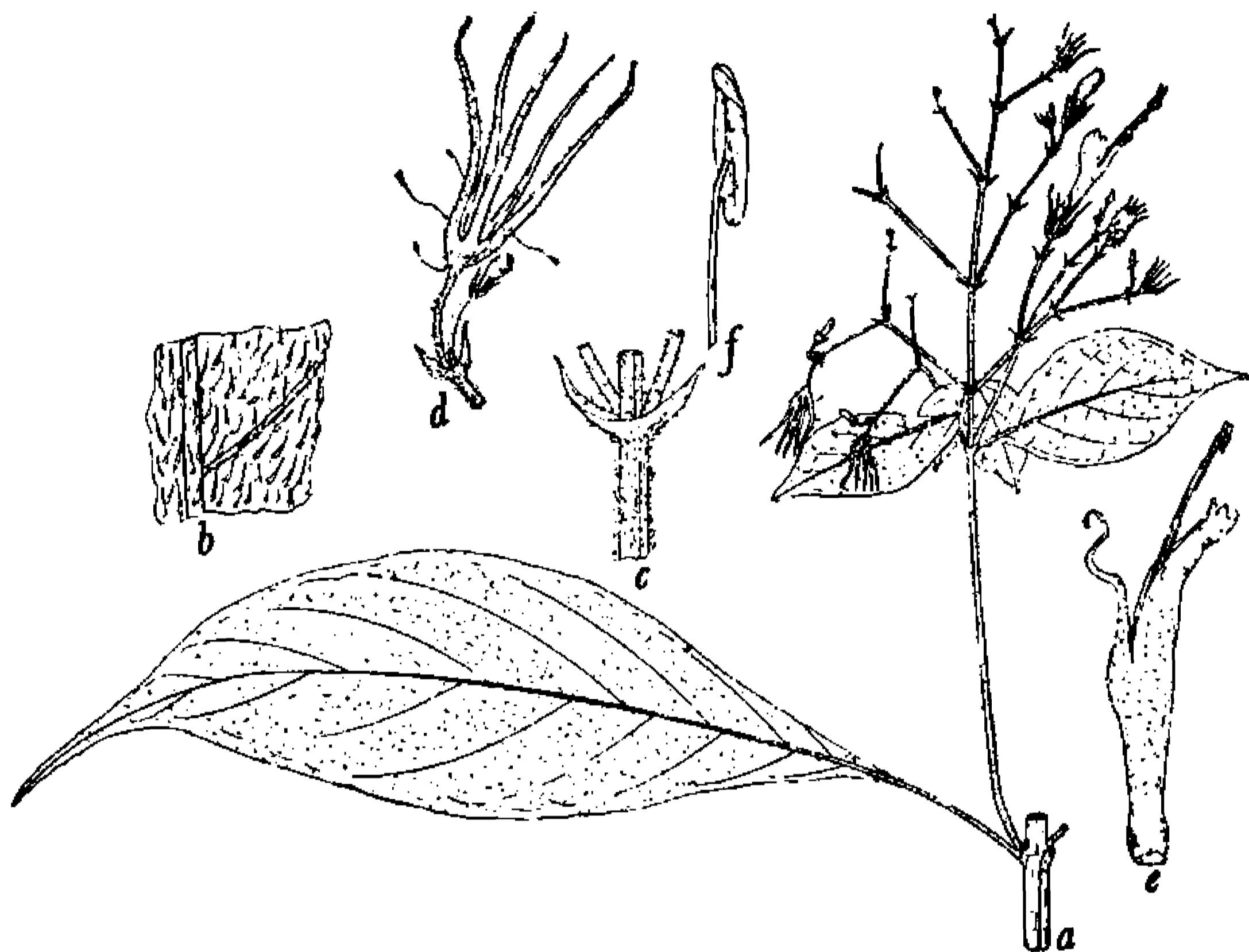


FIGURE 155.—*Habracanthus syscius* Leonard (Fosberg & Fassett 21733): *a*, Node showing lateral panicle and leaf blade; *b*, portion of tip of leaf blade (upper side enlarged to show pubescence); *c*, node of inflorescence enlarged to show bracts and pubescence; *d*, calyx; *e*, corolla; *f*, anther (cell dehisced). (*a*, Natural size; *b*, about 10 times natural size; *c*, 4 times natural size; *d*, $2\frac{1}{2}$ times natural size; *e*, $2\frac{1}{2}$ times natural size; *f*, $6\frac{1}{2}$ times natural size.)

appressed-hirsute, the hairs similar to those of the upper surface, the cystoliths inconspicuous or lacking; petioles slender, 1.5 cm. long (unwinged portion), appressed-hirsute; panicles axillary and terminal, becoming rather numerous, rigid but delicate, up to 5 cm. long and 2 to 4 cm. broad, the branches in pairs or solitary near the tip of the panicle, the peduncles slender, up to 3.5 cm. long and slightly over 0.25 mm. in diameter, the internodes of the panicle slender, up to 13 mm. long, hirtellous, the hairs ascending, about 0.16 mm. long, the lowermost branches subtended by small leaves, the others by small bracts, these narrowly triangular, 1.5 mm. long, barely 0.5 mm. wide at base, acute, sparingly hirtellous; calyx 8 mm. long, the segments

narrowly linear, 7 mm. long and 0.5 mm. wide, faintly 3-nerved, acute, moderately hirtellous with sharply ascending rigid hairs up to 0.1 mm. long and sometimes also bearing a few slender spreading elongate-glandular trichomes about 0.5 mm. in length; corolla pale lavender, minutely puberulent, 12 to 15 mm. long, the upper lip 8 mm. long, linear, about 2 mm. wide at base, narrowed to a slender contorted tip, the lower lip ovate, 5 mm. wide, 3-lobed at tip, the lobes about 1 mm. long and 0.5 to 0.75 mm. wide, obtuse at tip, stamens erect, exerted 10 mm. beyond the mouth of the corolla tube, the anthers 2 mm. long and 0.5 mm. wide, purplish, the filaments glabrous; style slightly exceeding the stamens, the stigma minute, subcapitate, the style glabrous; capsules clavate, flattened, 9 mm. long, 3 mm. broad and 1 mm. thick, glabrous; seed flat, suborbicular, about 2.25 mm. long and 2 mm. wide, white, minutely tuberculate.

Type in the U. S. National Herbarium, No. 2059037, collected on a steep, densely wooded slope of Quebrada Riocito, on the Hacienda San Luis, 6 km. northwest of Gramalote and 35 km. west of Cúcuta, Department of Norte de Santander, Colombia, 2,400 meters altitude, April 8, 1944, by R. F. Fosberg and N. C. Fassett (No. 21733).

Fosberg states in his label data that the Quebrada Riocito is on the headwaters of Río Peralonso and that the woods where his specimen was collected were rather dry, at least during the season of his visit, and that it was not a typical rain forest. Only one plant was seen.

The salient characters of *Habracanthus syscius* are the numerous, axillary, rather small, graceful but rigid panicles with their rather densely hirtellous rachises and pale lavender flowers, the slenderly petioled and tipped leaves, and the tumid, swollen jointed, ascending stems, glabrous below and minutely strigose toward tip. The specific epithet is from the Greek word *συσκιος*, meaning "in deep shade" in allusion to the habitat of the plant.

2. *Habracanthus trichotus* Leonard, sp. nov.

FIGURE 156

Herba, caulibus subquadrangularibus, pilosis, pilis ascendentibus, septatis; lamina foliorum oblongo-ovata, acuminata (apice ipso subobtusum), basi acuta vel (in foliis superioribus) rotundata, membranacea, integra vel undulata, utrinque nitida, aliquanto hirsuta, pilis ascendentibus, septatis, praecipue in costa et venis lateralibus positis, cystolithis prominentibus; petioli hirsuti, pilis ascendentibus, septatis; panicula terminalis, aliquanto densa, rigida, ovoidea, basi foliata, ramis plus minusve patulis vel ascendentibus, 1-vel 2-furcatis, cymas laxas helicoideas formantibus, rhachibus pilosis, pilis patulis vel leviter ascendentibus, septatis, pilis longioribus apice glandulosis; bracteae parvae, lineares, apice subobtusae, aliquanto pilosae; calycis segmenta anguste linearia, apice subobtusum, subtiliter 3-nervata,

aliquanto pilosa, pilis brevibus eglandulosis et pilis longioribus glandulosis intermixtis; corolla parva, caerulea, glabra, subventricosa, labio superiore ovato, apice rotundata, labio inferiore ovato, 3-lobato, lobis triangularibus, apice rotundatis; capsulae clavatae, glabrae vel deorsum parce pilosae; retinacula apice erosa; semina suborbicularia, plana, tuberculata.



FIGURE 156.—*Habracanthus trichotus* Leonard (Cuatrecasas, Schultes, & E. Smith 12419): *a*, Tip of plant; *b*, portion of lower surface of leaf blade enlarged to show pubescence and cystoliths; *c*, portion of inflorescence enlarged to show calyx and bracts; *d*, portion of rachis enlarged to show pubescence; *e*, section of calyx segment (inner surface) enlarged to show veins; *f*, corolla; *g*, capsule valve. (*a*, Half natural size; *b*, 5 times natural size; *c*, twice natural size; *d*, *e*, 6 times natural size; *f*, 6 times natural size; *g*, twice natural size.)

Herbs; stems subquadrangular, pilose, the hairs ascending, septate, up to ca. 0.4 mm. long; leaf blades oblong-ovate, up to 12 cm. long and 3.8 cm. wide, acuminate (the tip itself subobtuse), obtuse or rounded at base (the larger lower leaves acute), rather thin, entire or undulate, both surfaces nitid, moderately hirsute, the hairs ascending, up to 0.5 mm. long, septate, more numerous on the costa and lateral veins (8 or 9 pairs) than in the intercostal areas, the cystoliths prom-

inent, up to 0.16 mm. long, the venation moderately prominent; petioles up to 2 cm. long, rather densely hirsute, the hairs similar to those of the costa and leaf blades; panicles rather dense, ovoid, rigid, 14 cm. long, 8 cm. broad just below the middle, rounded at tip, the lower half leafy, the branches few-flowered, usually once or twice forked, forming loose helicoid cymes, the rachises densely pilose, the hairs spreading or slightly ascending, septate, up to 1.25 mm. long, the longer ones tipped by elongate glands, the lowermost branches subtended by typical oblong-ovate acutely based leaves, the middle branches by smaller ovate subsessile, round-based leaves about 2.5 cm. long and 1 to 1.5 cm. wide, the uppermost branches and the flowers subtended by linear bracts 1 to 2 mm. long and about 0.25 mm. wide at base, gradually narrowed to a bluntish tip, rather sparingly pilose; calyx 9 to 11 mm. long, deeply segmented, the segments narrowly linear, 0.75 mm. wide near the base, gradually narrowed to a bluntish tip, faintly 3-nerved, rather sparingly hirsute, the shorter hairs eglandular, about 0.5 mm. long, the longer glandular ones up to 1.5 mm. long; corollas blue, glabrous, 6 mm. long and 2.25 mm. broad (immature), subventricose, the upper lip ovate, 2 mm. long, rounded at tip, the lower lip ovate, 3-lobed, the lobes triangular, about 1.25 mm. long, rounded at tip; capsules clavate, 1 cm. long, 4 mm. broad, 2 mm. thick, glabrous or the solid stipe (4 mm. long) bearing a few hairs (?); retinacula 2 mm. long, about 1 mm. wide, the tip rounded and shallowly erose; seeds suborbicular, flattened, tuberculate.

Type in the U. S. National Herbarium, No. 1850282, collected in forest between Alto del Loro and Alto de Santa Inés, Region del Sarare, Department of Norte de Santander, Colombia, 1,800 to 2,200 meters altitude, October 18 to 21, 1941, by J. Cuatrecasas, R. E. Schultes, and E. Smith (No. 12419).

Habracanthus trichotus agrees with *H. cyaneus* Lindau in having blue flowers but differs in other respects. Contrasting sharply is the rigid, ovoid, and much denser panicle of *H. trichotus*. Those of *H. cyaneus* are very slender and lax, with only a few branches. Furthermore, the leaves of this new species are considerably larger than those of *H. cyaneus*, the corollas are glabrous instead of pilose, and the rachises densely pilose with spreading septate hairs instead of inconspicuously pubescent.

The height of the plant cannot be determined from the herbarium specimen, a lateral branch, but, judging from the thickness of the small section of main stem (about 5 mm.) represented, it could reasonably be as much as a meter. The plant was probably somewhat clambering in habit. Since the few corollas available are apparently immature or poorly developed, no complete description can be given.

The specific epithet is from the Greek word *τριχωτός*, furnished with hairs, in allusion to the densely pilose inflorescence.

3. *Habracanthus cyaneus* Lindau

Habracanthus cyaneus Lindau in Bull. Herb. Boiss. 5: 668. 1897. Type collected in "páramos," in the province of Ocaña, Department of Norte de Santander, Colombia, 2,700 to 3,300 meters altitude, by Schlim (No. 381).

Suffrutescent plants; young branches pubescent, becoming bifariously pilose, the lowermost portions glabrate; leaf blades ovate, up to 8 cm. long and 2 cm. wide, but mostly smaller, long-acuminate, narrowed at base, sparingly pilose, the cystoliths conspicuous; petioles 5 to 15 mm. long, pubescent; panicles lax, the peduncles and pedicels long and pubescent; bracts filiform, 3 to 5 mm. long; calyx segments 8 mm. long and 1 mm. wide, becoming about 12 mm. long in fruit, pubescent; corolla blue, ventricose, the tube 9 mm. long, 5 mm. broad at middle, 4 mm. at mouth, pilose without, the upper lip obtuse, 4 mm. long and 2 mm. wide, the lower lip 5 mm. long, 5 mm. wide at middle, trilobate, the middle lobe 2 mm. long and wide, the lateral lobes 1.5 mm. long and wide; filaments 12 mm. long, attached near the base of the corolla tube; anthers 3 mm. long, slightly exserted; style 15 mm. long; capsule 14 mm. long, 3 mm. wide, glabrous, the stipe 5 mm. long; seeds 4.

Herbarium material not seen. Description compiled from the original.

4. *Habracanthus cuatrecasasii* Leonard, sp. nov.

FIGURE 157

Herba, caulibus quadrangularibus, glabris, nodis plus minusve tumidis; lamina foliorum aliquanto magna, apice acuta, plus minusve falcata, basi cuneata, marginibus obscure et leviter crenatis, ciliatis, pilis curvatis, ascendentibus, valde septatis, utrinque glabra, costa et venis subtus prominentibus, supra obscuris, cystolithis minutis et obscuris; petioli saepe longi, glabri; paniculae floriferae terminales, glabrae, ramis subhelicoides, rhache at rhachilli cystolithos minutos subpunctiformes gerentibus; paniculae inferiores parvae, forsan steriles, apetalae, calycibus reductis, parvis; bracteae ramos panicularum subtendentes ovatae, sessiles, breviter acuminatae; bracteae ultimal (bracteolae) lanceolatae, parvae; calycis segmenta lineari-lanceolata, acuta, glabra; corolla glabra, viridi-flavido-alba, apice sordido-violacea, tubo subcylindrico, labio superiore lineari, apice acuta, recurvato vel cincinnato, labio inferiore patulo, ovato, conduplicato, apice 3-lobato, lobis brevibus, obtusis; stamina longe exserta, antheris muticis; ovarium glabrum.

Herbs up to 1 meter high or more; stems quadrangular, glabrous, the nodes more or less tumid; leaf blades lanceolate, up to 20 cm. long and 5.3 cm. wide, gradually narrowed from below middle to an

acute more or less falcate tip, cuneate at base, one side attached to petiole about 5 mm. above the other, rather firm, shallowly and obscurely crenate, glabrous except the ciliate margins, their hairs curved, ascending, conspicuously septate, the cystoliths minute and obscure, the costa and lateral veins prominent beneath, less so above, the veinlets coarsely reticulate; petioles up to 3 mm. long, glabrous; panicles terminal, about 8 cm. long and 5 cm. broad, the

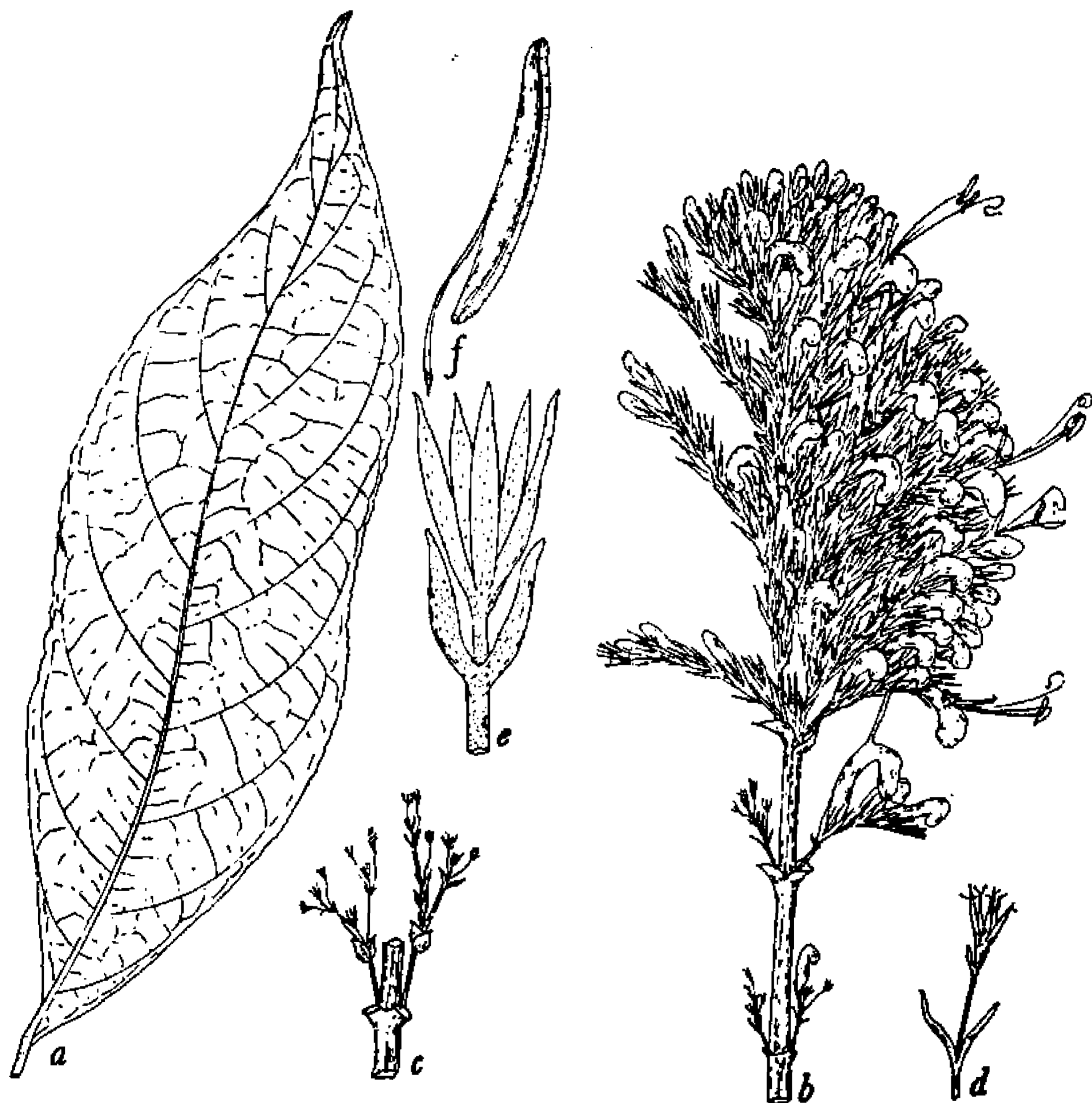


FIGURE 157.—*Habracanthus cuatrecasatii* Leonard (*Cuatrecasas* 8740): *a*, Leaf blade; *b*, inflorescence; *c*, node of stem showing small axillary and usually sterile panicles; *d*, calyx and bracts of same; *e*, calyx and bracts from flowering panicle; *f*, anther. (*a*, Half natural size; *b*, *c*, natural size; *d*, *e*, 3 times natural size; *f*, 6 times natural size.)

nodes of the stems below the terminal panicle bearing for some distance small apparently abortive cymose inflorescences up to 2 cm. long, the branches of the terminal inflorescence subhelicoid, the entire panicle strictly glabrous, the pedicels 1.5 mm. long, 0.75 mm. thick, bearing minute subpunctiform cystoliths, the bracts subtending the branches of the inflorescence ovate, about 8 mm. long and 5 mm. wide, short-acuminate, the ultimate bracts lanceolate,

about 4 mm. long and 1.25 mm. wide, acute; calyx 9 mm. long, glabrous, marked by slender linear cystoliths up to 0.2 mm. long, the calyces of the sterile axillary branches about 3 mm. long; corolla about 2 cm. long, glabrous, greenish-yellowish-white, the tips a sordid violet, the tube 3 mm. broad at mouth, slightly narrowed just below mouth, the upper lip linear, about 2 mm. wide, acute at tip, curled, the lower lip spreading, about 9 mm. long and 8 mm. wide, 3-lobed at tip, the lobes about 1 mm. long, obtuse; stamens exerted 15 mm. beyond the mouth of the corolla tube, glabrous, the anthers 4 mm. long and about 1 mm. broad, muticous at both ends; ovary glabrous; capsules not seen.

Type in the Herbarium of the Chicago Natural History Museum, No. 1273513, collected in open woods of Cajón de Pulido, Quebrada del Río Hacha, Cordillera Oriental, Comisaría del Caquetá, Colombia, 1,700 meters altitude, March 26, 1940, by J. Cuatrecasas (No. 8740).

5. *Habracanthus aglatis* Leonard, sp. nov.

FIGURE 158

Herba erecta, caulibus subquadrangularibus, glabris, cystolithis numerosis, parallelis; lamina foliorum ovata (ultima suborbiculares), apice breviter acuminata, basi obtusa, aliquanto firma, integra vel undulata, parce et minute hirtella, costa et venis et venulis crasse reticulatis, conspicuis, cystolithis nigris, obscuris; petioli subtus glabri, in canale parce hirtellis; panicula terminalis, ovoidea, rhache et rachillis glabris; pedicelli breves; calycis segmenta linearia, acuta, glabra vel apice paucos pilos gerentia, cystolithis conspicuis; bracteae ramos panicularum subtendentes suborbiculares, glabrae, ultima ovato-lanceolatae, acutae, glabrae; corolla glabra, rubra, tubo subcylindrico, labio superiore erecto, anguste lineari, graciliter 3-nervato, apice obtuso, contorto (sicco), labio inferiore patulo, ovato, conduplicato, apice 3-lobato, lobis rotundatis; stamina exserta, antheris muticis; stylus exsertus, glaber, stigmatibus rotundatis, minutis; ovarium glabrum.

Erect herbs or suffrutescent plants probably up to 1 meter high or more; stems subquadrangular, glabrous, the cystoliths numerous and parallel, up to 0.25 mm. long, conspicuous under a lens; leaf blades ovate, up to 17 cm. long and 9 cm. wide (the uppermost pair suborbicular, about 6 cm. in diameter), short-acuminate (the tip itself blunt), obtuse at base, entire or undulate, rather thin, minutely hirtellous, the hairs up to 0.3 mm. long, ascending, confined chiefly to costa and veins, the venation (lateral veins usually 12 pairs) prominent, the cystoliths obscure, blackish; petioles up to 5 cm. long, or those of the uppermost pair 1 cm. long, 1.5 to 2 mm. thick, glabrous or the channels sparingly hirtellous, the cystoliths similar to those of the stem; panicle terminal, dense and conical, about 13 cm. long and 7 cm. broad, the

3 nodes below the dense flowering portion of the inflorescence bearing sterile inflorescence branches about 1 cm. long, the upper leaves subtending similar branches up to 4 cm. long, the branches of the panicles forming helicoid cymes, the rachis and rachilla glabrous, bearing numerous cystoliths like those of the stems, the pedicels erect, about 2 mm. long, glabrous; calyx segments linear, 6.5 mm. long, 1 mm. wide at base, acute, glabrous or bearing occasionally a few minute acute hairs at tip, the cystoliths conspicuous under a lens; bracts

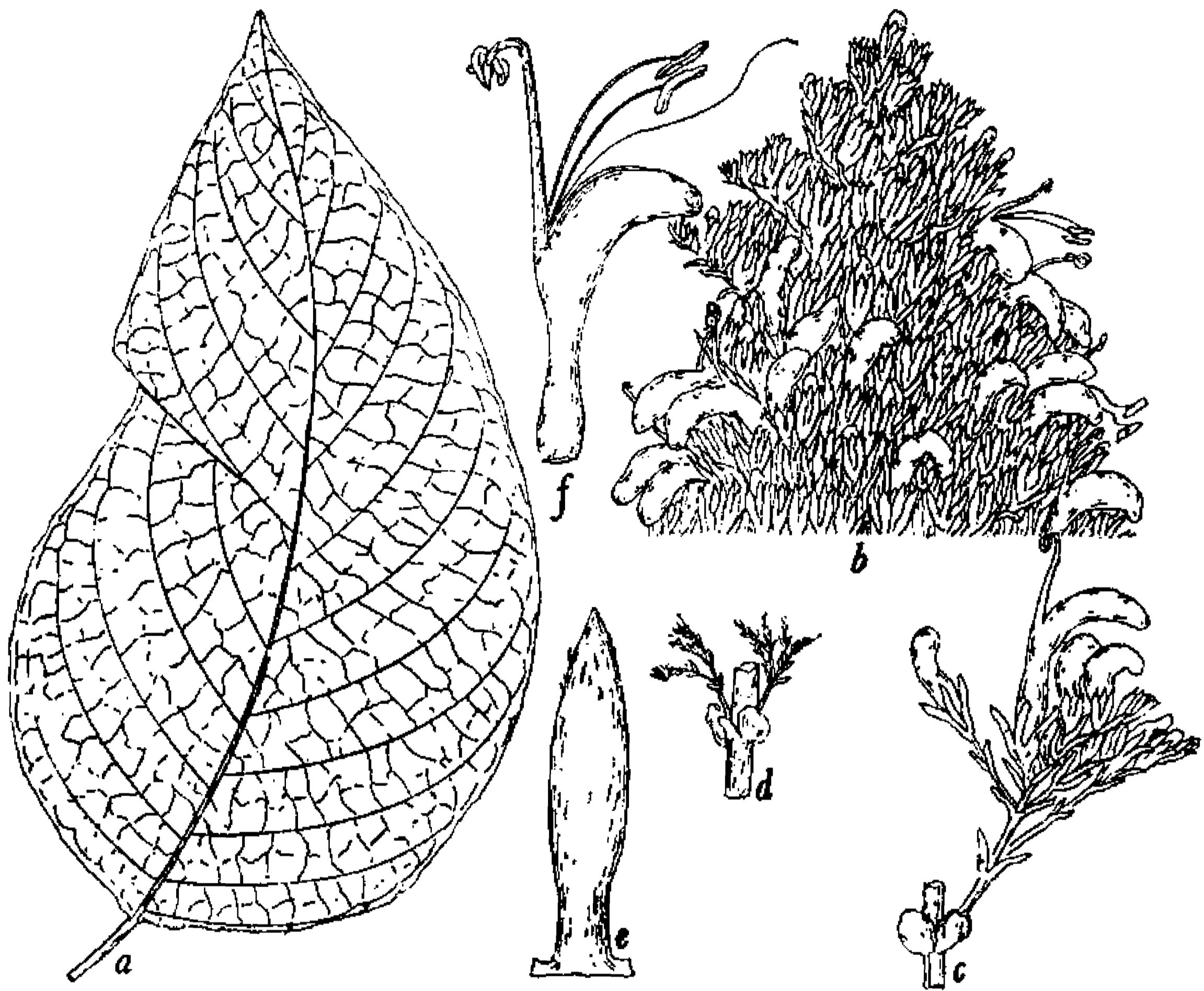


FIGURE 158.—*Habracanthus aglaüs* Leonard (*Cuatrecasas* 11435): *a*, Leaf blade; *b*, tip of panicle; *c*, node from just below tip of panicle; *d*, node at base of panicle; *e*, calyx segment; *f*, corolla. (*a*, Half natural size; *b-d*, natural size; *e*, 5 times natural size; *f*, about $1\frac{1}{4}$ times natural size.)

subtending the branches of the panicle suborbicular, sessile, about 5 mm. in diameter, glabrous, the ultimate bracts ovate-lanceolate, 3 mm. long and 1 mm. wide near base, acute, glabrous; corolla wine-red, glabrous, the tube 17 mm. long, 4.5 mm. broad near base, narrowed at 7 mm. above base to 3 mm., thence enlarged to 6 mm. at mouth, the upper lip erect, narrowly linear, 12 mm. long, 1.25 mm. wide, delicately 3-nerved, obtuse at tip, coiled or contorted when dry, the lower lip spreading, ovate, 12 mm. long, 10 mm. wide, conduplicate,

rounded and 3-lobed at tip, the lobes 1 mm. long and wide, rounded; stamens exerted 1 to 2 cm. beyond the mouth of the corolla tube, glabrous, the anthers 6 mm. long and 1.5 mm. thick, mucous at both ends; style exerted about 2 cm. beyond mouth of the corolla tube, the stigmas minute and rounded; ovary glabrous; capsules not seen.

Type in the National Herbarium of Colombia, collected at Planada de Minchoy, between Sachamates and San Francisco de Sibundoy, Comisaría del Putumayo, Colombia, 2,100 meters altitude, December 30, 1940, by J. Cuatrecasas (No. 11435).

The specific epithet is from the Greek *ἀγλαός*, meaning bright or beautiful.

6. *Habracanthus pycnostachys* Leonard, sp. nov.

FIGURE 159

Herba robusta vel suffrutex, caulibus subquadrangularibus, puberulis vel deorsum glabratis, pilis fere appressis; lamina foliorum oblongo-elliptica vel oblongo-ovata, breviter acuminata (apice ipso obtuso), basi acuta vel subacuta, aliquanto firma, integra vel undulata, pilis praecipue in costa et venis positis, venis et venulis crasse reticulatis subtus prominentibus, cystolithis conspicuis; petioli aliquanto longi, minute hirtelli; paniculae longae strictae, ramulis brevibus subhelicoideis praeditis; bracteae infimae foliaceae, ovatae, acutae vel acuminatae, basi rotundatae; bracteae flores subtendentes lineares, subulatae, acutae, parce hirtellae; calycis segmenta lanceolata, acuta vel subacuta, parce hirtella, pilis plerumque apice positis; corolla retrorse curvata, violaceo-purpurea, glabra, tubo aliquanto lato et brevi, labio superiore erecto, lineari, apice subacuto, labio inferiore patulo, ovato trilobato, lobis brevibus, rotundatis; stamina exserta, recurvata, glabra; stylus exsertus, glaber; stigma minutum, lobis ovatis; ovarium glabrum.

Robust herbs up to 1.5 meters high, becoming more or less shrubby; stems subquadrangular, puberulous or the lower portions glabrate, the hairs up to 0.08 mm. long, mostly appressed; leaf blades oblong-elliptic or oblong-ovate, up to 22 cm. long and 8.5 cm. wide, short-acuminate (the tip itself obtuse), acute to subacute at base, moderately firm, entire or undulate, both surfaces minutely hirtellous, the hairs confined chiefly to costa and lateral veins (12 to 14 pairs), the hairs up to 0.13 mm. long, appressed or ascending, the costa, lateral veins and the coarsely reticulated veinlets prominent beneath, less so above, the cystoliths prominent, up to 0.2 mm. long; petioles up to 4 cm. long and 1.5 thick, minutely and inconspicuously hirtellous; flowers borne in short subhelicoid cymes, 4 to 8 at each node, these forming dense cylindrical terminal panicles up to 22 cm. long and 4 cm. broad, the lowermost node of the inflorescence bearing a pair of ovate leaves up to 9 cm. long and 4 cm. wide, these sharply acuminate at tip, rounded

at base, the node above this separated by an internode as much as 6 cm. long and subtended by ovate foliose acuminate sessile bracts up to 2.5 cm. long, the subsequent internodes successively shorter and the corresponding foliose bracts smaller toward tip of panicle, the lower internodes of the rachis puberulous, the upper rather densely hirtellous with subappressed or ascending septate hairs up to 0.32 mm. long, the pedicels stout, 1 to 3 mm. long, appressed hirtellous,

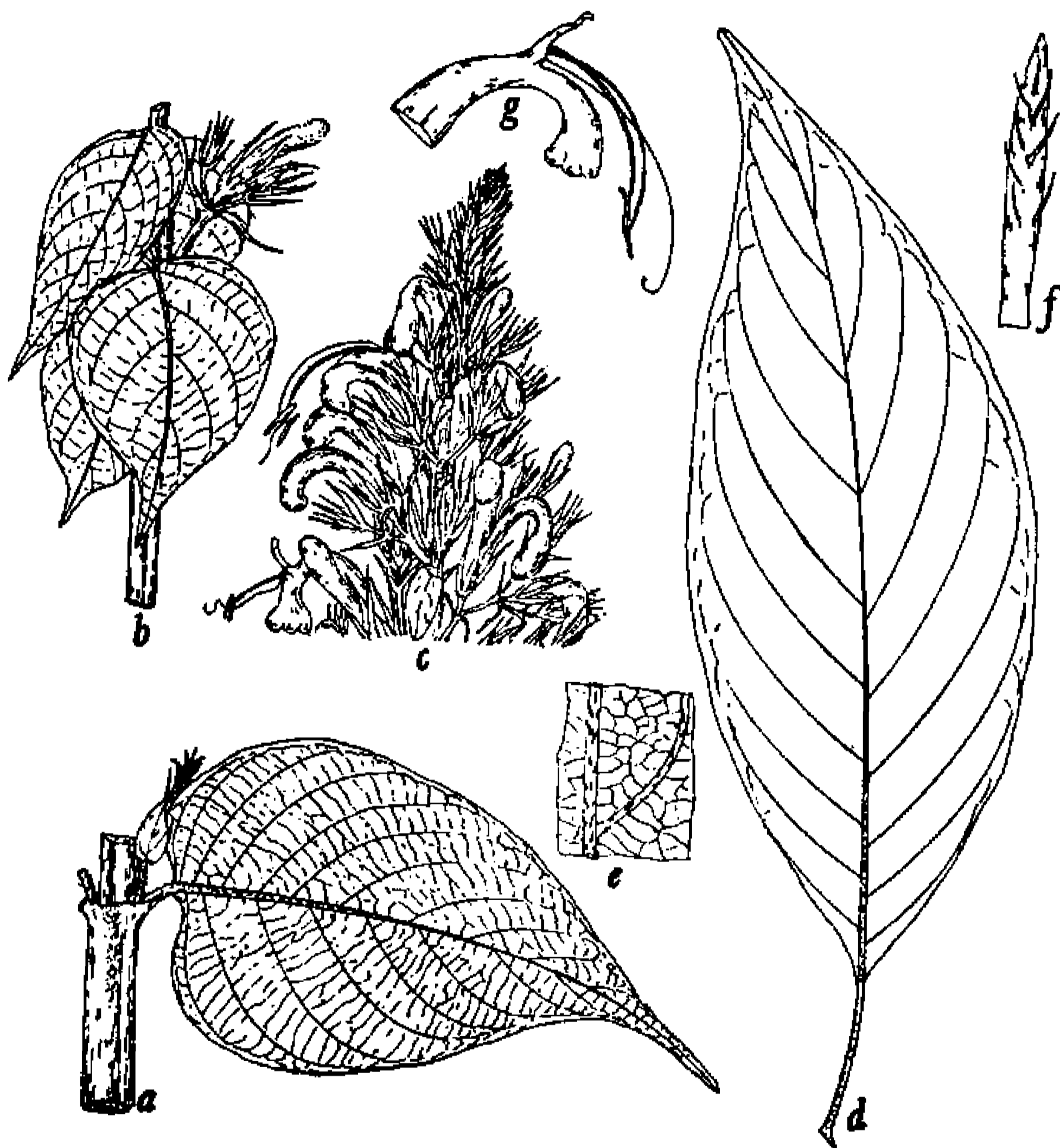


FIGURE 159.—*Habracanthus pycnostachys* Leonard (*Cuatrecasas* 18515): *a*, basal node of inflorescence; *b*, section of inflorescence near its base; *c*, tip of inflorescence; *d*, leaf; *e*, portion of leaf blade (lower surface) to show venation; *f*, calyx segment; *g*, corolla. (*a-c*, Natural size; *d*, half natural size; *e*, *g*, about $1\frac{1}{2}$ times natural size; *f*, 4 times natural size.)

erect; bracts subtending the flowers linear-subulate, up to 5 mm. long and about 0.5 mm. wide, acute, sparingly hirtellous; calyx segments lanceolate, 6.5 mm. long, 1 mm. wide at base, gradually narrowed to an acute tip, sparingly hirtellous, the hairs subappressed, mostly borne toward the tip, 0.2 mm. long; corolla violet-purple, recurved, glabrous, the tube 8 mm. long, about 4 mm. broad at base, narrowed to 2.5 mm. at throat, the upper lip erect, linear, 1 cm. long, 1.25 mm. wide,

subacute, the lower lip spreading-ovate, 1 cm. long, 0.5 mm. wide, rounded and subtruncate at tip and 3-lobed, the lobes low, 0.75 mm. long and 1 to 1.5 mm. wide, rounded at tip; stamens glabrous, recurved, exserted 7 mm. beyond the mouth of the corolla tube; anthers 5 mm. long, 1.5 mm. thick; style exserted 2.5 cm. beyond the mouth of the corolla, violet-purple, glabrous, the stigma lobes ovate, minute; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 1853812, collected at Los Cárpatos, in the valley of the Rio Cali, Department of El Valle, Colombia, about 2,000 meters altitude, November 3, 1944, by J. Cuatrecasas (No. 18515).

Also of this species are Cuatrecasas' No. 23929, collected at Las Colonias, above Queremal, valley of the Río Digua, Department of El Valle, 1,950 to 2,050 meters altitude, March 20, 1947, and J. M. Duque's No. 1660 collected at El Recuerdo, valley of the Río Cali, 1,600 to 1,800 meters, June 15, 1938.

Habracanthus pycnostachys should be easy to recognize by its narrow cylindric panicles with recurved, violet-red flowers. The label of the type bears the following field notes: "Hierba robusta, 1.5 m. Hoja verde haz, verde envés. Brácteas verdes. Raquis, pedúnculo y cáliz purpúreo violáceo oscuro. Corola violeta rojiza oscuro. Filamentos y estilo id." The label on Duque's sheet bears the following data: "Arbusto de 1 metro de altura, leñosos, y notable por sus bellas flores rojizas y digno de ser cultivado en jardines."

The specific epithet is from the Greek words *πυκνός*, close and compact, and *στάχυς*, spike, in allusion to the narrowed dense panicle.

7. *Habracanthus hispidulus* Leonard, sp. nov.

FIGURE 160

Herba erecta vel ascendens, caulibus subquadrangularibus, plus minusve bifariam puberulis, pilis appressis vel ascendentibus; lamina foliorum lanceolata, breviter acuminata (apice ispe obtuso), basi angustata, in petiolum decurrens, aliquanto firma, integra vel undulata, utrinque puberula, pilis curvatis, subappressis vel ascendentibus, pilis subtus praecipue in costa et venis lateralibus positis; petioli graciles, puberuli; paniculae terminales, modice densae, ramis cymosis 1-vel 2-furcatis; rhachillae et pedicelli plus minusve complanati, aliquanto vel dense hispiduli, pilis rigidis, plus minusve patulis, rectis vel leviter curvatis, septatis; bractee subulatae, parce hirtellae; calycis segmenta linearia, apice acuta, recurvata, extus aliquanto dense hispidulo, pilis rigidis rectis vel leviter curvatis, albidis, septatis, intus parce et minute hirtella; corolla punicea, pubescens, pilis septatis, tubo anguste hypocrateriformi, leviter ventricosus, labio superiore erecto, lineari, conduplicato, apice obtuso, integro, labio inferiore ovato, apice 3-lobato, lobis ovatis, apice rotundatis;

stamina exserta, glabra; capsulae clavatae, glabrae; retinacula leviter curvata, apice truncata et erosa; semina (immatura) tuberculata.

Herb; stems erect or ascending, subquadrangular, sparingly and more or less bifariously puberulous, the hairs appressed or ascending, up to 0.25 mm. long; leaf blades lanceolate, up to 10.5 cm. long and 3.3 mm. wide, short-acuminate (the tip itself blunt), narrowed at



FIGURE 160.—*Habracanthus hispidulus* Leonard (Hodge 6585): *a*, Tip of plant to show inflorescence and leaves; *b*, portion of leaf blade (under surface) enlarged to show pubescence and cystoliths; *c*, node of inflorescence enlarged to show bracts; *d*, calyx; *e*, portion of calyx tube enlarged to show pubescence; *f*, anther. (*a*, Natural size; *b*, *c*, about 5 times natural size; *d*, $3\frac{1}{2}$ times natural size; *e*, 14 times natural size; *f*, 5 times natural size.)

base and decurrent on the petiole, moderately firm, entire or undulate, both surfaces puberulous, the hairs curved, subappressed or ascending, up to 0.32 mm. long, septate, those of the lower surface confined chiefly to costa and lateral veins (8 to 10 pairs), the venation scarcely prominent, but more so beneath than above, the cystoliths prominent, up to 0.16 mm. long; petioles slender, up to 3 cm. long, puber-

ulous; panicles terminal and also axillary, the terminal ones about 8 cm. long and 6 cm. broad, moderately dense, the branches cymose, once- or twice-forked, the lowermost internodes 1 cm. long, the others successively shorter toward tip of panicle, the pedicels rather slender, up to 5 mm. long, these and the internodes of the panicle more or less flattened, moderately to densely hispidulous, the hairs rigid, more or less spreading, straight or somewhat curved, septate; bracts subulate, up to 6 mm. long and 0.5 mm. wide, sparingly hirtellous; calyx segments linear, up to 8 mm. long and 1.25 mm. wide, the tip acute and recurved, ciliolate, the outer surface rather densely hispidulous, the hairs rigid, straight or slightly curved, whitish, septate, up to 0.25 mm. long, the inner surface of the segments sparingly and minutely hirtellous; corolla scarlet, minutely pubescent, the hairs up to 0.16 mm. long, spreading or ascending, septate, the tube narrowly hypocrateriform, 2.3 cm. long, about 2 mm. broad from base to about 8 mm. above base, thence first rather abruptly then gradually enlarged to 5 mm. at throat, the upper lip erect, slender, linear, conduplicate 1 cm. long, about 0.5 mm. wide from costa to margin, obtuse at tip, the lower lip slightly spreading, ovate, 7 mm. wide, rounded and 3-lobed at tip, the lobes about 0.75 mm. long and 1 mm. wide, obtuse or rounded at tip; stamens exerted 11 mm. beyond the mouth of the corolla, glabrous, the anthers linear, slightly curved, 4.5 mm. long, 0.75 mm. broad; style about 5 mm. longer than the stamens, glabrous, retinacula 2 mm. long, slightly curved, truncate and erose at tip, seed (immature) whitish, tuberculate.

Type in the Gray Herbarium, collected in woods at base of a peak near Santa Elena, on the road from Medellín to Río Negro, Department of Antioquia, Colombia, 2,300 to 2,500 meters altitude, October 13, 1945, by W. H. Hodge (No. 6585).

Habracanthus hispidulus is characterized by its mostly spreading, slenderly petioled, lanceolate leaf blades, its noticeably though minutely hispidulous calyces and axes of the inflorescence, and its bright scarlet corollas.

8. *Habracanthus heliophilus* Leonard, sp. nov.

FIGURE 161

Herba, caulibus subquadrangularibus, puberulis, pilis retrorse curvatis, subappressis vel ascendentibus; lamina foliorum oblongo-elliptica vel leviter oblanceolata, breviter acuminata (apice ipso obtuso), basi angustata, aliquanto firma, integra vel undulata, puberula, pilis appressis vel ascendentibus, septatis, subtus pilis praecipue in costa et venis prominentibus positis, cystolithis prominentibus; petioli graciles, puberuli, pilis praecipue appressis; paniculae terminales, longae, angustae, ramis infimis panicularum foliis suffultis; rami panicularum furcati; rhachis strigoso-puberula, pilis rigidis; rhachillae

hirsutae, pilis patulis, septatis; pedicelli erecti, dense hirtelli, pilis patulis, septatis; bracteae anguste lanceolatae, parce hispidulae; calycis segmenta lanceolata, acuta (apice saepe recurvata), obscure trinervata, extus aliquanto dense hirtella, pilis rigidis, acutis, patulis vel ascendentibus, septatis, intus papillosa; corolla aliquanto pubescens, tubo angusto, labio superiore erecto, angustissimo, apice integro,

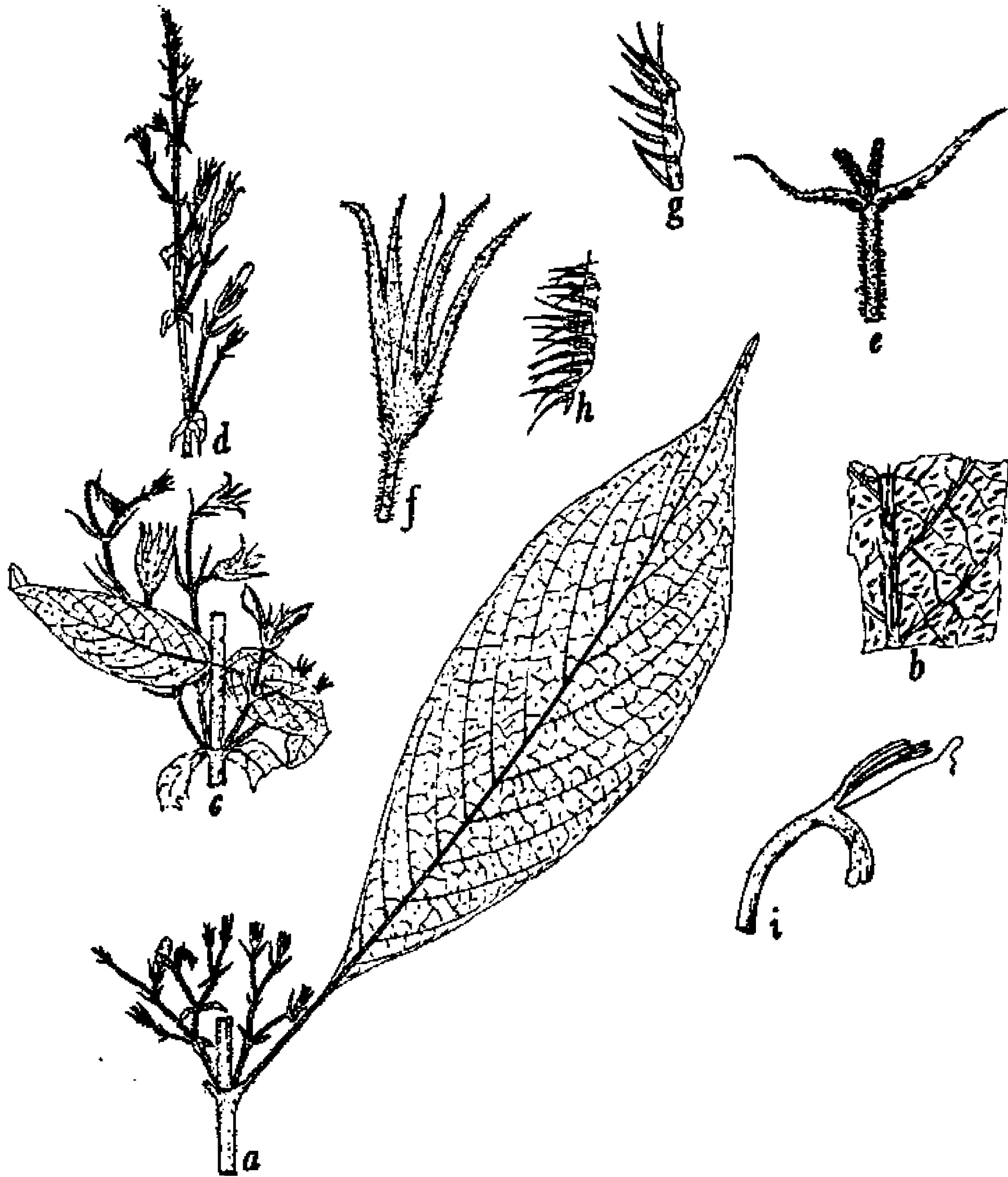


FIGURE 161.—*Habracanthus heliophilus* Leonard (*Molina* 35): *a*, Node of stem showing small axillary panicles and leaf; *b*, portion of leaf blade (lower surface) enlarged to show pubescence and cystoliths; *c*, portion of inflorescence from about the middle; *d*, tip of inflorescence; *e*, node of branch of inflorescence to show bracts; *f*, calyx; *g*, tip of calyx segment enlarged to show pubescence; *h*, portion of pedicel enlarged to show pubescence; *i*, corolla. (*a*, *c*, *d*, Half natural size; *b*, *e*, about 4 times natural size; *f*, 3 times natural size; *g*, 30 times natural size; *h*, $12\frac{1}{2}$ times natural size; *i*, natural size.)

labio inferiore plus minusve patulo, ovato, apice 3-lobato, lobis ovatis, apice rotundatis; stamina exserta, glabra, antheris angustis; capsulae clavatae, glabrae.

Herbs up to 1 meter high; stems subquadrangular, puberulous, the hairs retrorsely curved, appressed or ascending, 0.1 to 0.2 mm. long;

leaf blades oblong-elliptic or slightly oblanceolate, short-acuminate (the tip itself obtuse), narrowed at base, moderately firm, entire or undulate, puberulous, the hairs appressed or ascending, up to 0.3 mm. long, septate, those of the under surface more numerous on costa and lateral veins (10 to 12 pairs) than on the intercostal areas, the venation beneath prominent, less so above, the cystoliths prominent, up to 0.25 mm. long; petioles slender, up to 4 cm. long, 1 mm. thick, puberulous, the hairs up to 0.2 mm. long, mostly appressed; flowers borne in short, forked panicles (1 to 2 cm. long), the lower axillary, the upper forming a narrow terminal acute panicle (about 2.5 cm. broad), the rachis and rachilla rather densely pubescent, the hairs of the rachis appressed, those of the rachilla spreading; pedicels 1 to 1.5 mm. long, erect, densely hirtellous, the septate hairs about 0.3 mm. long; primary branches of the inflorescence subtended by small sessile ovate leaves 4 to 15 mm. long and 3 to 19 mm. wide, the pedicels subtended by linear-lanceolate bracts up to 10 mm. long and 0.5 mm. wide, these sparingly hispidulous; calyx segments lanceolate, acute, 8 mm. long, 1.25 mm. wide, acute (the tips often recurved), obscurely 3-nerved, the outer surface rather densely hirtellous with rigid sharp septate spreading or ascending hairs up to 0.25 mm. long, the inner surface papillose; corolla moderately pubescent, the hairs more or less spreading, septate, up to 0.25 mm. long, most numerous on the lips and on the dorsal portion of the tube, this narrow, 2 mm. broad, 12 mm. long, the upper lip linear, erect, 10 mm. long, about 1 mm. wide, the lower lip more or less spreading, ovate, about 3 mm. wide, 3-lobed at tip, the lobes 2.5 mm. long, the middle one 1.5 mm. wide, the lateral 1.25 mm. wide, all obtuse and subcucullate; stamens exerted slightly beyond the upper lip of the corolla, glabrous, the anthers 3 mm. long, 0.5 mm. broad; style about 8 mm. longer than the stamens, the stigma minute; capsules clavate, 8 mm. long, 3 mm. wide and about 2 mm. thick, glabrous; retinacula 2.5 mm. long, the tip obtuse, suberose; seeds not seen.

Type in the U. S. National Herbarium, No. 1951403, collected in the vicinity of Envigado, Department of Antioquia, Colombia, 1,600 meters altitude, October 1945, by Felix Molina (No. 35).

The color of the corolla is not apparent in the dried material. Molina states in his label notes that the plant was in an open and very sunny place, whence its specific epithet *ἥλιος*, the sun, and *φίλος*, loving.

9. *Habracanthus erythranthus* Leonard, sp. nov.

FIGURE 162

Herba erecta, caulibus subquadrangularibus, aliquanto parce puberulis vel deorsum glabratis, pilis curvatis, subappressis vel ascendentibus, septatis; lamina foliorum oblongo-ovata vel oblongo-elliptica,

breviter acuminata, basi cuneata, vel superiores basi rotundatae vel obtusae, membranacea, integra vel undulata, utrinque glabra vel parce puberula, costa et venis lateralibus vix prominentibus aliquanto dense puberulis exceptis, cystolithis vix prominentibus; petioli foliorum inferiorum graciles, puberuli, superiorum breves; paniculae terminales et laterales, ramis 1-vel 2-furcatis semi-helicoideis, foliis parvis suffultis, rhachibus et pedicellis aliquanto dense hirtellis, pilis patulis vel retrorse curvatis, conspicue septatis; segmenta calycis lineari-lanceolata, aliquanto hirtella et ciliata, pilis septatis; corolla rubra, subtiliter pubescens, tubo anguste hypocrateriformi, labio superiore oblongo-ovato, erecto, apice obtuso et minute apiculato, labio inferiore plus minusve patulo, ovato, 3-lobato, lobis brevibus, apiculatis; stamina exserta, glabra, antheris linearibus, utrinque muticis; capsulae clavatae, glabrae; semina, plana, ovata, tuberculata.

Erect herbs up to 1 meter high; stems subquadrangular, rather sparingly puberulous or the lower portions glabrate, the hairs curved, subappressed or ascending, about 0.2 mm. long, septate; leaf blades oblong-obovate or oblong-elliptic, up to 9 cm. long and 2.5 cm. wide, short-acuminate (the tip itself acute), cuneate at base or the uppermost rounded or obtuse, thin, entire or undulate, both surfaces glabrous or sparingly puberulous except costa and lateral veins, these more densely puberulous with appressed or ascending septate hairs up to 0.2 mm. long, the veinlets coarsely reticulate, these and the costa and lateral veins scarcely prominent but more so beneath than above, cystoliths scarcely prominent, up to 0.2 mm. long; petioles of the lower leaves slender, up to 1 cm. long, puberulous, those of the upper leaves very short (about 1 mm. long); flowers borne in terminal and axillary round-tipped panicles up to 20 cm. long and 5 cm. broad, the branches of the panicles once- or twice-forked, subhelicoid, the lowermost branches subtended by typical stem leaves, these becoming gradually smaller and more ovate with rounder bases toward the tip of the inflorescence, the rachis, rachilla and pedicels (1 to 5 mm. long) rather densely hirtellous with spreading or retrorsely curved and conspicuously septate hairs; calyx segments linear-lanceolate, up to 8 mm. long and 1 mm. wide, moderately hirtellous and ciliate with septate hairs up to 0.2 mm. long, these spreading or ascending; corollas red, finely and moderately pubescent (the hairs ascending, septate, 0.2 mm. long), about 23 mm. long (from base to tip of the upper lip), the tube 1.5 mm. broad at base, thence enlarged to 2 mm. at 5 mm. above base, and from that point gradually enlarged to 5 mm. at mouth, slightly saccate, the upper lip narrowly oblong-ovate, erect, about 9 mm. long and 1.5 mm. wide, the tip obtuse and minutely apiculate, the lower lip slightly spreading, ovate, 6 mm. long, about 8 mm. wide, 3-lobed at tip, the lobes 0.5 mm. long, 1 mm. wide at base, sharply

apiculate; stamens exceeding the upper lip of the corolla, glabrous, the anthers linear-oblong, 3 mm. long, 0.5 mm. broad, blunt at both ends; capsules clavate, 4-seeded, 12 mm. long, 4 mm. wide, about 2 mm. thick, glabrous; retinacula 2 mm. long, 0.5 mm. broad at base, narrowed to a subacute tip; seed (immature) whitish, flat, ovate, tuberculate.

Type in the U. S. National Herbarium, No. 1995127, collected in damp forest at base of La Cumbre de Santa Elena, on the road from

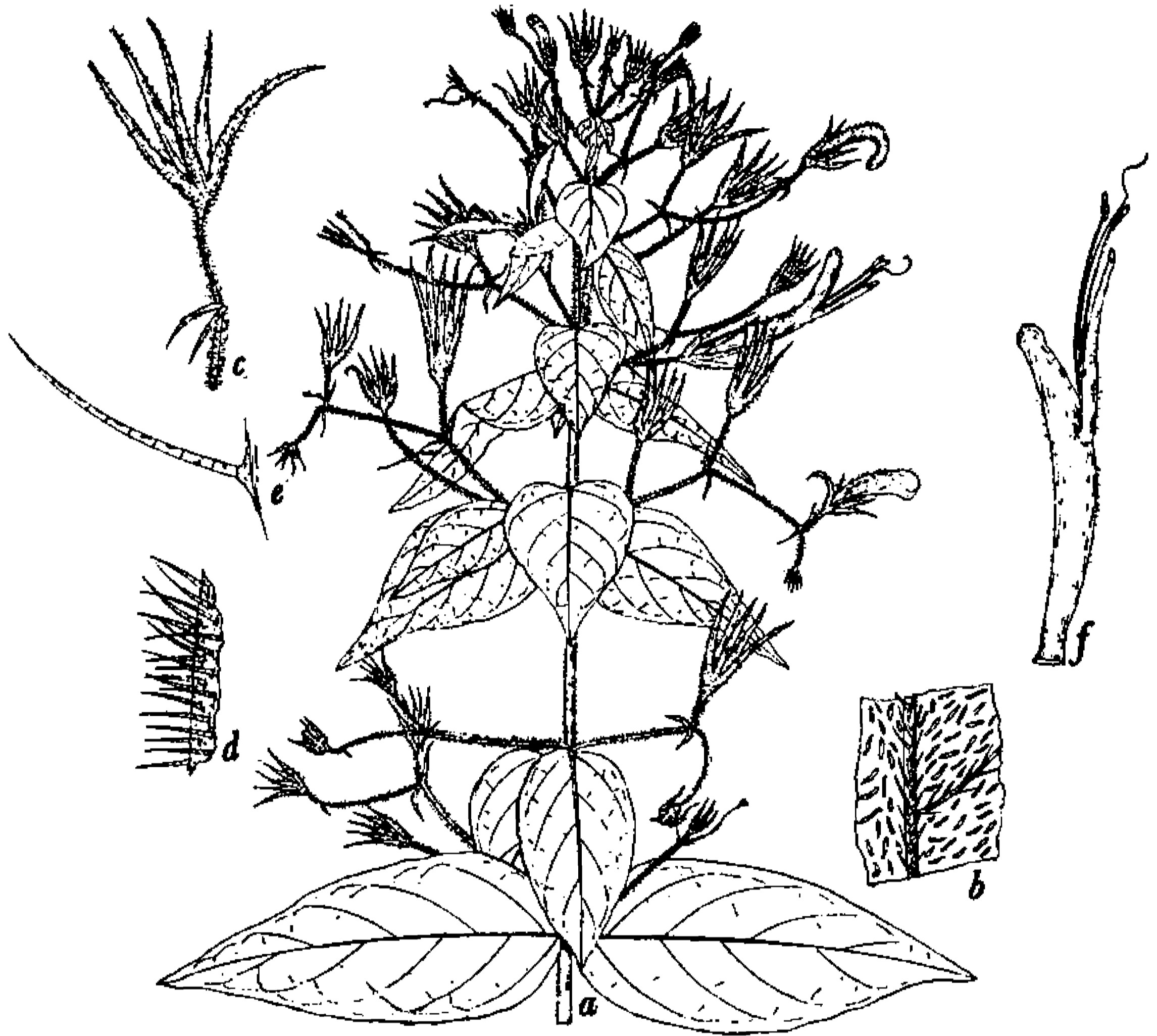


FIGURE 162.—*Habracanthus erythranthus* Leonard (Scolnik, Araque-M., & Barkley 19An. 340): *a*, Tip of plant; *b*, portion (under surface) of leaf blade enlarged to show trichomes and cystoliths; *c*, calyx and bracts; *d*, portion of pedicel enlarged to show trichomes; *e*, one of the trichomes; *f*, corolla. (*a*, Natural size; *b*, 8 times natural size; *c*, twice natural size; *d*, 17 times natural size; *e*, 65 times natural size; *f*, about half natural size.)

Medellín to Río Negro, Department of Antioquia, Colombia, about 2,500 meters altitude, April 2, 1949, by Rosa Scolnik, Jorge Araque Molina, and Fred A. Barkley (No. 19An.340).

Habracanthus erythranthus bears a general resemblance to *H. scolnikae* and may be closely related to it. The two species, however, should be easy to separate. The corollas of *H. scolnikae* are sulphur yellow, the segments of the calyx are tipped by several conspicuous

glandular trichomes, the pedicels inconspicuously and very sparingly hirtellous, and the leaf blades, even the lowermost, are of an ovate type, whereas in *H. erythranthus* the corollas are red, the calyx segments are devoid of any glandular trichomes, the pedicels are densely hirtellous with conspicuously septate hairs, and at least the lowermost leaf blades are oblong-obovate or oblong-elliptic.

The specific epithet is from the Greek *ἐρυθρός*, red, and *ἄνθος*, flower, alluding to the color of the corolla.

10. *Habracanthus putumayensis* Leonard, sp. nov.

FIGURE 163

Herba vel suffrutex, caulibus subquadrangularibus, glabris vel in nodis bifariam pilosis, pilis plus minusve patulis, septatis; lamina foliorum ovata vel rhombeo-ovata, apice breviter acuminata (apice ipso subobtusum), basi cuneata, aliquanto firma, integra vel undulata, supra dense pilosa, pilis debilibus, ascendentibus, septatis, subtus aliquanto pilosa, pilis praecipue in costa et venis lateralibus positis, cystolithis paginae superioris nigris, obscuris, paginae inferioris albis, pluribus, sub lente conspicuis; petioli subtus glabri, in canale plus minusve pilosi; paniculae terminales, oblongae, ramis infimis foliis suffultis, ramis superioribus bracteis deltoideo-ovatis, apice rotundatis suffultis, bracteis ultimis parvis, triangularibus, subacutis, rhache et rhachillis glabris vel parce hirtellis, pedicellis aliquanto brevibus, glabris; calycis segmenta extus glabra vel apice pilis paucis ascendentibus septatis praedita, intus glandulosa; corolla purpurea, glabra, tubo subcylindrico, labio superiore lineari, apice acuto, cincinnato vel contorto, labio inferiore patulo, ovato, conduplicato, apice 3-lobato, lobis ovatis, obtusis; stamina exserta, glabra; stylus exsertus; stigma parvum; ovarium glabrum.

Herbs or suffrutescent plants probably up to 1 m. high or more (only tips available for study); stems subquadrangular, glabrous or bifariously pilose in the nodal region, the hairs more or less spreading, up to 1 mm. long, septate; leaf blades ovate or rhombic-ovate, up to 12 cm. long and 5 cm. wide near middle, gradually narrowed to a short-subacuminate tip (the tip itself subobtusum) cuneate at base, moderately firm, entire or undulate, the upper surface conspicuously pilose, the hairs flaccid, ascending, up to 1 mm. long, septate, pilose on the costa and lateral veins (about 12 pairs), the cystoliths up to 0.144 mm. long, those of the upper surface black and inconspicuous, of the lower surface white, numerous and very conspicuous under a lens; petioles up to 3 cm. long, 1 mm. thick, the lower surface glabrous, the channels more or less pilose; panicles purple, up to 30 cm. long and 5 cm. broad, moderately dense, the lower branches subtended by typical stem leaves, the upper by deltoid-ovate leaf-like sessile bracts, rounded at tip, the lowermost of these about 4 mm. long and 2.5 mm.

wide, the others successively smaller, all glabrous or sparingly hirtellous, the ultimate bracts triangular, about 3 mm. long and 1 mm. wide at base, subacute; rachis and rachilla glabrous or bearing a few scattered hairs up to 0.32 mm. long, these ascending and septate; pedicels erect, up to 2 mm. long, glabrous, ascending; calyx 5 mm. long, glabrous or bearing a few acute hairs up to 0.16 mm. long on the outer surface, the inner surfaces glandular; corolla purple, glabrous, up to 23 mm. long, the tube up to 10 mm. long, about 2 mm. broad at base, enlarged to 2.5 mm. at 2 mm. above base, narrowed

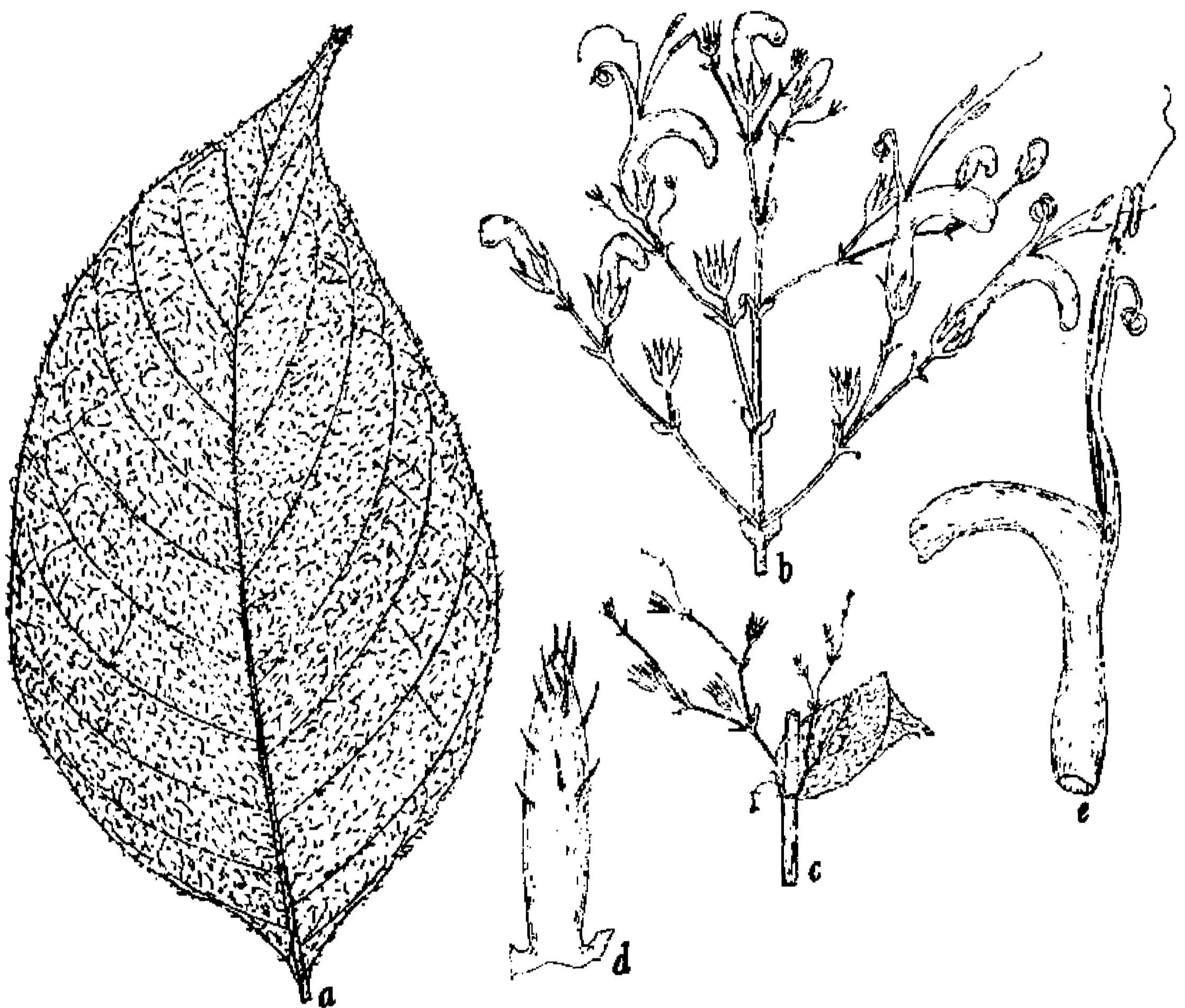


FIGURE 163.—*Habracanthus putumayensis* Leonard (Schultes & Villarreal 7740): *a*, Leaf blade; *b*, tip of panicle; *c*, basal node of same; *d*, calyx segment; *e*, corolla. (*a-c*, Natural size; *d*, 6 times natural size; *e*, $2\frac{1}{2}$ times natural size.)

to 2 mm. at 4 mm. above base, thence enlarged to 3 mm. at mouth, the upper lip erect, 13 mm. long, linear-lanceolate, about 1 mm. wide at base, gradually narrowed to an acute tip, the lower lip spreading, 8 mm. long and wide, conduplicate, the tip 3-lobed, the lobes ovate, about 1 mm. long and wide, obtuse; stamens exerted 15 mm. beyond the mouth of the corolla tube, glabrous, the anthers 4 mm. long and 1.25 mm. thick, muticous at both ends; style exceeding the stamens about 4 cm., the two stigma lobes minute, rounded; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 2124999, collected in Portachuelo, Valley of Sibundoy, Comisaría of Putumayo, Colombia, 2,250–2,400 meters altitude, May 31, 1946, by Richard Evans Schultes and Mardoqueo Villarreal (No. 7740). Isotype: US No. 2125000.

11. *Habracanthus floriferus* Leonard, sp. nov. FIGURE 164

Suffrutex, caulibus subteretibus, glabris, cystolithis subpunctiformibus; lamina foliorum ovata, aliquanto magna, apice breviter acuminata, basi lata cuneata vel laminae foliorum supremorum basi rotundatae vel obtusae, integra vel undulata, supra parce pilosa, laxe pilosula praecipue in venis, costa et venis lateralibus et venulis crasse reticulatis prominentibus, supra venulis aliquanto obscuris, cystolithis sub lente gracilibus sed conspicuis; petioli longi, glabri, cystolithis minutis, pluribus, parallelis; paniculae floriferae terminales, densae vel sublaxae, ramis subhelicoideis, 1-vel 2-furcatae; paniculae inferiores parvae, forsan steriles, apetalae, calycibus reductis, parvis; bracteae ramos panicularum subtendentes ovatae vel suborbiculares vel superiores rotundatae et apiculatae, basi rotundatae, sessiles; bracteolae lanceolatae, acutae; rhachis et rhachilla glabrae vel parce pilosulae; calycis segmenta lanceolata, glabra, graciliter nervata; corolla purpurea, glabra, apicibus labiorum paulo hirtellorum excepta, labio superiore erecto, lineari, apice curvato vel cincinnato, apice cucullato et acuto, labio inferiore patulo, ovato, apice rotundato, 3-lobato, lobis brevibus, rotundatis; stamina exserta, glabra, antheris linearibus, utrinque muticis; ovarium glabrum.

Suffrutescent plants up to 3 meters high; stems subterete, glabrous, the cystoliths subpunctiform; leaf blades ovate, up to 19 cm. long and 8.5 cm. wide, short-acuminate, broadly cuneate at base or the smaller uppermost blades rounded to obtuse, rather thin, entire or undulate, sparingly pilose above with flaccid, septate hairs 1 mm. long or more, obscurely pilosulous beneath, especially on costa, lateral veins (10 to 12 pairs), and veinlets, these prominent beneath, rather obscure above, the cystoliths slender but prominent under a lens, up to 0.2 mm. long; petioles up to 8 cm. long, glabrous, the cystoliths minute, numerous and parallel; flower-bearing panicles terminal, up to 10 cm. long and about 6 cm. broad, dense to sublax, the stem bearing small axillary, mostly sterile cymes up to 2 cm. long, the branches of the inflorescence subhelicoid, usually once-forked; bracts subtending the branches of the inflorescence ovate to suborbicular, 1 to 1.5 cm. long, about 1 cm. wide, the lowermost acute, the upper rounded and apiculate, rounded and sessile at base, the rachis and rachilla glabrous or rather sparingly pilosulous, the hairs up to 0.3 mm. long, the pedicels up to 3 mm. long, sparingly hirtellous; bracts subtending the flowers lanceolate, about 4 mm. long and 1.25 mm. wide near base,

acute; calyx 8 mm. long, glabrous, the segments lanceolate, 7 mm. long, 1.5 mm. wide, acute, faintly 3- to 5-nerved, the cystoliths obscure, the calyces of the sterile lower axillary inflorescences 2 to 3 mm. long; corolla purple, glabrous except the tips of the lips (these hirtellous, the hairs about 0.2 mm. long and ascending), 2.5 cm. long from the base to tip of the upper lip, the tube 3 mm. broad at base,

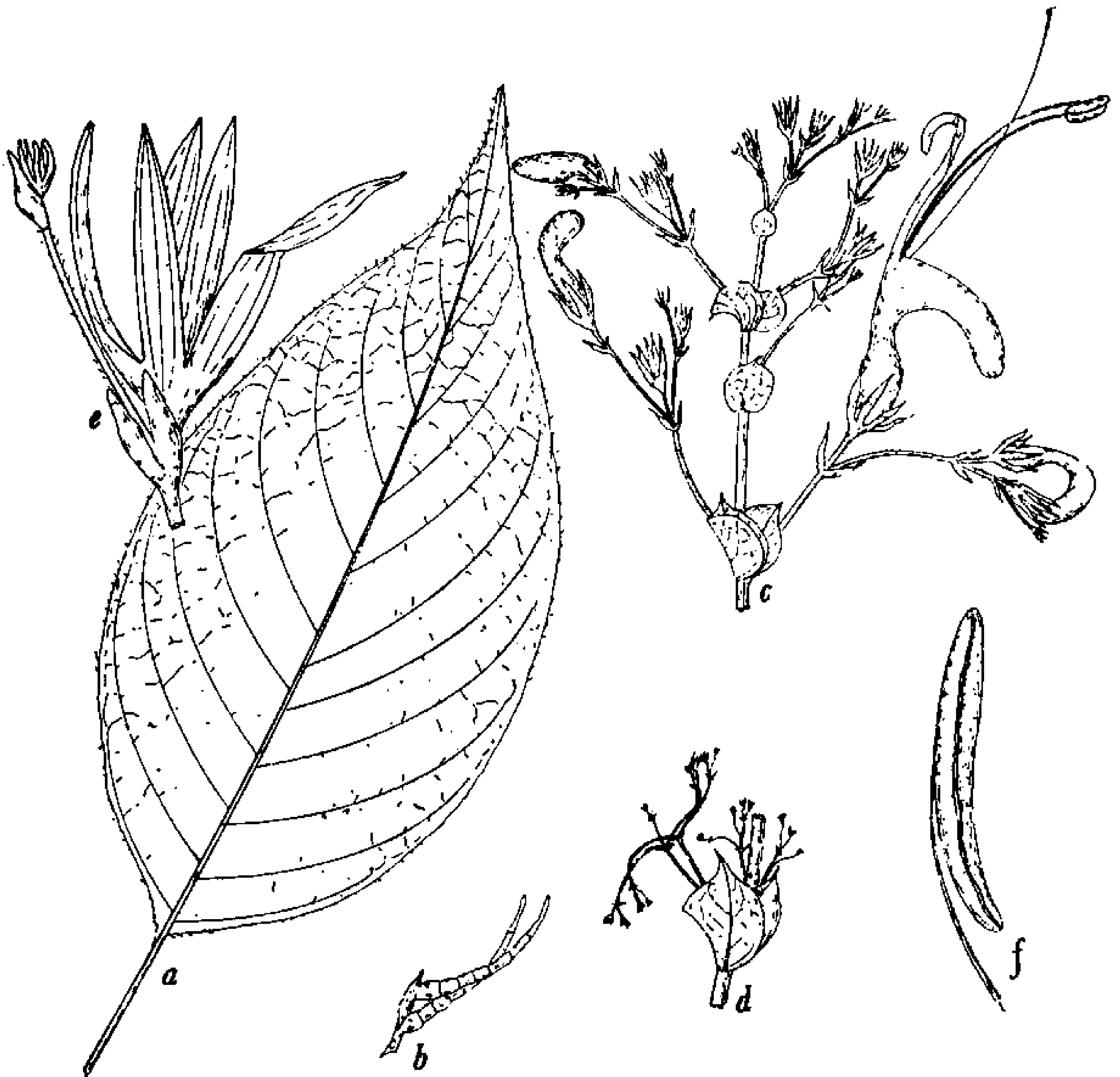


FIGURE 164.—*Habracanthus floriferus* Leonard (*Cuatrecasas* 8519): *a*, Leaf blade; *b*, hairs from margin of leaf blade; *c*, the upper flower-producing portion of the panicle; *d*, one of the lowermost nodes from the sterile basal portion of the panicle; *e*, calyx; *f*, anther. (*a*, Half natural size; *b*, 42 times natural size; *c*, *d*, natural size; *e*, about 4 times natural size; *f*, $5\frac{1}{2}$ times natural size.)

narrowed to 2.5 mm. at 6 mm. above base, 4 mm. broad at mouth, the upper lip linear, 1 cm. long, 1.25 mm. wide, the tip recurved or curled, cucullate and acute, the lower lip spreading, ovate, 1 cm. long, 7 to 8 mm. wide, rounded and 3-lobed at tip, the lobes 0.5 mm. long, 1.5 mm. wide, rounded; stamens exserted 25 mm. beyond the mouth of the corolla, glabrous, the anthers linear, 6 mm. long, 0.5

mm. broad, mucous at both ends; ovary glabrous; mature capsules not seen.

Type in the U. S. National Herbarium, No. 1799125, collected at the Quebrada del Río Hacha, below Gabinete, Cordillera Occidental, Comisaría de Caquetá, Colombia, 2,100 to 2,250 meters altitude, March 23, 1940, by J. Cuatrecasas (No. 8519).

12. *Habracanthus callianthus* Leonard, sp. nov.

FIGURE 165

Herba, caulibus subquadrangularibus, deorsum glabris, sursum parce lutescenti-strigillosis; lamina foliorum oblongo-ovata vel late oblongo-lanceolata, graciliter acuminata, saepe plus minusve curvata (apice ipso obtuso), basi cuneata, submembranacea, integra vel leviter undulata, glabra vel parce et minute hirtella, pilis subappressis, costa et venis lateralibus subtus conspicuis, supra obscuris; petioli aliquanto longi, glabri vel parce et minute hirtelli, paniculae terminales, ovoideae, foliiferae, rhache et rhachillis et pedicellis plus minusve hirtellis, pilis recurvatis; bractea ramos inflorescentiae subtendentes foliaceae cordatae, acutae, sessiles vel subsessiles; bracteolae lanceolatae, glabrae vel parce hirtellae; calycis segmenta linearia, acuminata (apice plus minusve curvato), glabra vel minute et parce hirtella; corolla coccinea, glabra, labio superiore lineari, apice obtuso, recurvato vel cincto, labio inferiore patulo, ovato, apice 3-lobato, lobis brevibus, rotundatis; stamina exserta, antheris linearibus, utrinque muticis; capsulae clavatae, glabrae; semina suborbicularia, subbrunnea, plus minusve muricata.

Herbs up to 1.5 meters high; stems subquadrangular, glabrous or rather sparingly yellowish-strigillose, the hairs up to 0.16 mm. long; leaf blades oblong-ovate or broadly oblong-lanceolate, up to 18 cm. long and 7 cm. wide, short and rather slenderly acuminate, often more or less curved (the tip itself blunt), cuneate at base, moderately thin, entire or lightly undulate, minutely pilosulous above on the surfaces, pilosulous beneath on the veins and veinlets, the costa and lateral veins (10 or 12 pairs) moderately prominent beneath, the veinlets coarsely reticulate, obscure; petioles up to 5 cm. long and 2 mm. thick, glabrous or bearing a few minute hairs; panicles ovoid, terminal, usually up to 20 cm. long and 10 cm. broad, more or less diffuse to rather dense, especially at and near the tip, the branches forked with a flower in the fork, the lowermost branches of the panicle subtended by foliage leaves, the upper with cordate, acuminate, subsessile bracts up to 3 cm. long, the uppermost and flowers subtended by lanceolate acuminate bracts up to 6 mm. long and 1.25 mm. wide near base, glabrous or sparingly hirtellous, the rachis and rachilla more or less hirtellous, the hairs recurved, up to 0.25 mm. long, the pedicels up to 8 mm. long and 0.38 mm. thick, moderately to rather

densely hirtellous with recurved hairs up to 0.3 mm. long; calyx segments linear, up to 12 mm. long and 1.5 mm. wide near base, acuminate (the tip more or less recurved), glabrous or bearing a few minute hairs on margins and near the tip; corolla scarlet, up to 24 mm. long, glabrous, the upper lip about 1 cm. long and 2 mm. wide, the tip obtuse, recurved or coiled, the lower lip ovate, spreading, 1

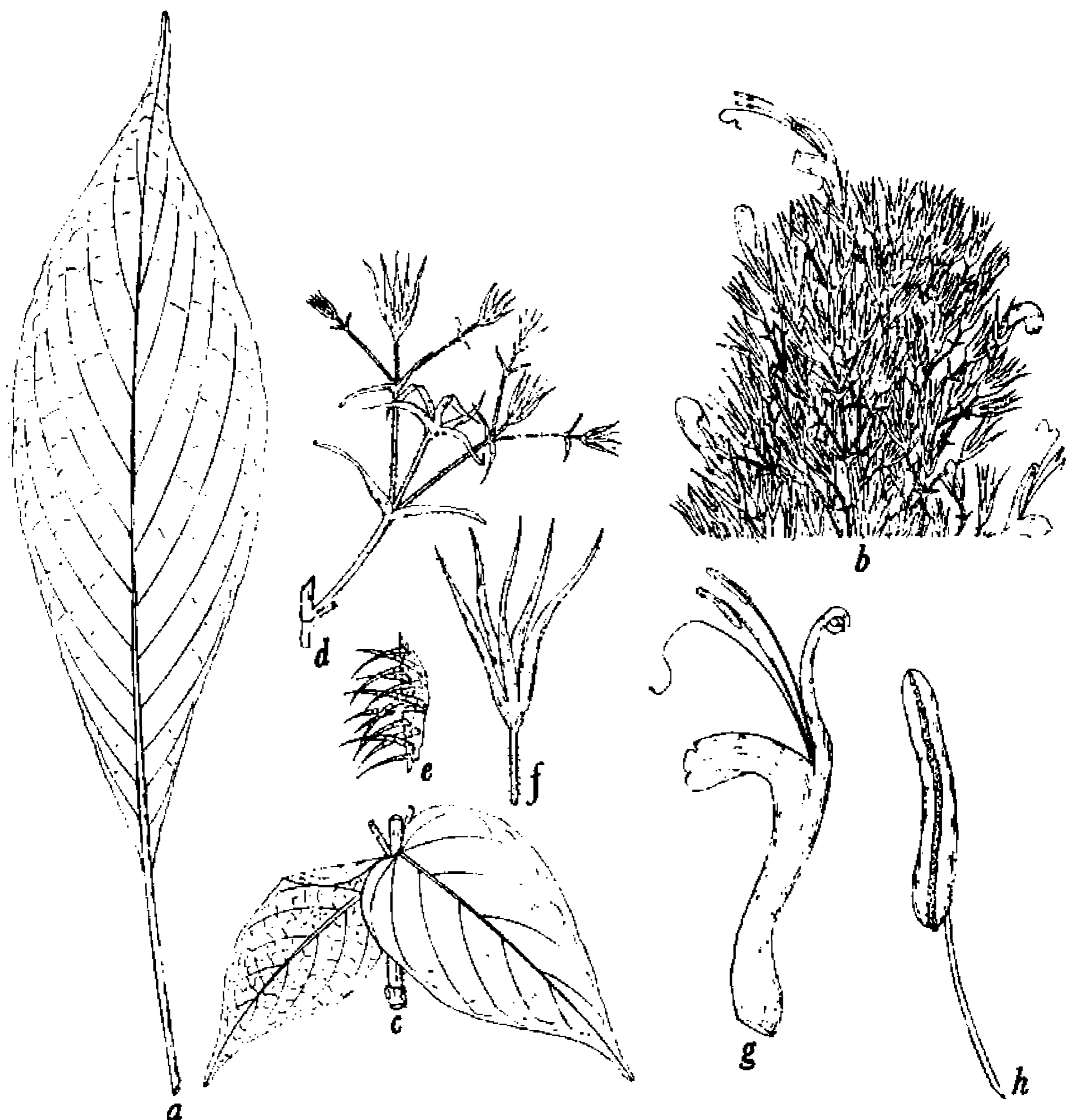


FIGURE 165.—*Habracanthus callianthus* Leonard (*a*, Pennell 2667; *b-h*, Grant 9011). *a*, Leaf; *b*, tip of panicle; *c*, basal node of panicle; *d*, branch of inflorescence from near its base; *e*, portion of rachilla enlarged to show pubescence; *f*, calyx; *g*, corolla; *h*, anther. (*a*, *b*, Half natural size; *c*, *d*, natural size; *e*, 30 times natural size; *f*, about 4 times natural size; *g*, twice natural size; *h*, 6 times natural size.)

cm. long and about 8 mm. wide, 3-lobed at tip, the lobes 1 mm. long, the middle one 2 mm. wide, the lateral ones 1.5 mm. wide, all rounded; stamens exerted about 1 cm. beyond the mouth of the corolla, glabrous, the anthers linear, about 6 mm. long and 0.75 mm. broad, rounded at both ends; pistils slightly exceeding the stamens, glabrous,

the stigma minute; capsules clavate, 12 mm. long, 5 mm. broad, 2.5 mm. thick, glabrous; retinacula 2.5 mm. long, narrowed to the truncate fimbriate tip; seed suborbicular, oblique at base, about 2.5 mm. in diameter, brownish, muricate at least near the margins.

Type in the U. S. National Herbarium, No. 2059078, collected in a clearing in temperate forests 3 km. southwest of Charquita and 25 km. west-southwest of Bogotá, Department of Cundinamarca, Colombia, 2,800 meters altitude, April 13, 1944, by Martin L. Grant (No. 9011).

Also of this species are Cuatrecasas' No. 209 (US), collected in a dense forest of La Hondonada, Salto de Tequendama, 2,250 to 2,300 meters altitude, October 2, 1938, and Pennell's No. 2667 (GH, NY), collected in a forest below El Peñon, southwest of Sibate, 2,600 to 2,800 meters altitude, October 29, 1917. Both collections are from the Department of Cundinamarca, Colombia.

The specific epithet is from the Greek *καλλι-*, beautiful, and *ἄνθος*, flower.

13. *Habracanthus pilosus* Leonard, sp. nov.

FIGURE 166

Herba, caulibus debilibus, subteretibus, pilosis, pilis patulis, septatis; lamina foliorum lanceolata vel oblongo-elliptica, acuta vel breviter acuminata (apice ipso subacuto), basi cuneata, membranacea, integra aliquanto dense pilosa et ciliata, pilis ascendentibus, costa et venis lateralibus inconspicuis; petioli pilosi; paniculae foliiferae laxae, floribus paucis, ramis simplicibus vel 1-furcatis, rhachis et rhachillis abundante pilosis, pilis patulis, acutis, conspicue septatis, pilis paucis in glandula parva conica terminantibus intermixtis; bracteae ultimae subulatae parvae, pilosae, apice recurvatae; calycis segmenta subulata, apice gracilia (apice ipso subobtusum), pilosa, pilis patulis septatis; corolla rubra, tubo deorsum piloso, pilis patulis, septatis, sursum glabro, labio superiore oblongo, apice rotundato, labio inferiore ovato, 3-lobato, lobis ovatis, rotundatis; stamina exserta, glabra, antheris muticis et minute apiculatis; capsulae clavatae, glabrae; retinacula gracilia, recta vel leviter curvata, apice rotundata, erosa; semina brunnea, levia vel leviter rugosa, basi obliqua.

Herbs; stems weak, 1 to 2 mm. in diameter, subterete, pilose, the hairs spreading, up to 1.5 mm. long, septate; leaf blades lanceolate to oblong-elliptic, up to 6 cm. long and 2 cm. wide, acute to short-acuminate (the tip itself subacute), cuneate at base, thin, entire, rather densely pilose on both surfaces and ciliate, the hairs ascending, up to 1 mm. long, the costa and lateral veins (about 6 pairs) barely prominent beneath, obscure above; petioles up to 2 cm. long, pilose; panicles lax, few-flowered, leafy, the branches simple or once-forked,

the rhachis and rachilla rather copiously pilose, the hairs spreading, conspicuously septate, occasionally a few of the hairs terminating in a minute brownish conical gland, the leaflike bracts subtending the branches of the inflorescence 1 to 3 cm. long, 5 to 15 mm. wide; bracts subtending the flowers subulate, up to 2 mm. long and 0.25 mm. wide at base, pilose, the tips usually recurved; calyx 12 mm. long at maturity, rather densely pilose with septate spreading hairs



FIGURE 166.—*Habracanthus pilosus* Leonard (Grant & Fosberg 9343): *a*, Tip of plant; *b*, node of inflorescence showing the bracts subtending the pedicels; *c*, portion of rachilla enlarged to show pubescence; *d*, calyx; *e*, a glandular and an acute-tipped trichome from calyx segment; *f*, tip of corolla; *g*, anther. (*a*, Natural size; *b*, 6 times natural size; *c*, $7\frac{1}{2}$ times natural size; *d*, $2\frac{1}{2}$ times natural size; *e*, 40 times natural size; *f*, 3 times natural size; *g*, $8\frac{1}{2}$ times natural size.)

up to 1.5 mm. long, the segments subulate, 1 mm. wide at base, gradually narrowed into a slender bluntish tip; corollas pale to dark red, 2 to 2.5 cm. long, the lower half rather sparingly pilose with septate hairs, these spreading and up to 0.5 mm. long, the upper half glabrous, the tube 1.5 mm. broad at base, narrowed to 1 mm. at 3 mm. above base, thence abruptly expanded to 5 mm., the lips erect or suberect, the upper lip oblong, 7 mm. long, 2 mm. wide near base, the tip rounded

and entire, not contorted, the lower lip equaling the upper, ovate, 4.5 mm. wide, 3-lobed, the lobes ovate, about 3 mm. long, the middle one about 2 mm. wide at base, the lateral ones about 1 mm. wide, all rounded; stamens exerted about 1 cm. beyond the mouth of the corolla, glabrous, the anthers 4.5 mm. long and about 1 mm. broad, blunt and minutely apiculate; style slightly exceeding the stamens, the stigma minute; capsule clavate, 13 mm. long, about 5 mm. broad, 2 mm. thick, glabrous; retinacula 2 mm. long, slender, straight or slightly curved, the tips rounded, erose; seeds brown, 3 mm. long, 2 mm. wide, 0.75 mm. thick, smoothish or slightly roughened, oblique at base.

Type in the U. S. National Herbarium, No. 2045428, collected in temperate forest around San Isidro, 7 km. south of Gachalá, Cordillera Oriental, Department of Cundinamarca, Colombia, 2,200 meters altitude, May 27, 1944, by Martin L. Grant and F. R. Fosberg (No. 9343).

Earl L. Core's No. 591 (US), collected in dense forest in the vicinity of Los Andes, on the Río Blanco, southeast of Guasca, "9,300 ft." altitude, April 19, 1944, is also of this species. The corollas of the holotype were stated to be pale red, and those of Core's No. 591 dark red.

14. *Habracanthus killipii* Leonard, sp. nov.

FIGURE 167

Herba vel suffrutex, caulibus subquadrangularibus, antrorse strigosis vel glabratis; lamina foliorum ovata vel oblongo-ovata, subacuta vel breviter acuminata, basi angustata, aliquanto membranacea, integra vel undulata, supra nitida, glabra vel parce hirsuta, pilis ascendentibus, cystolithis sum lente prominentibus, subtus pilosula, pilis curvatis, ascendentibus, praecipue in costa et venis positis, venis et venulis crasse reticulatis, subtus aliquanto prominentibus; paniculae terminales, magnae, graciles, laxae, pedunculis et ramis panicularum minute strigosis, pilis paucis patulis glandulosis intermixtis; pedicelli graciles minute hirtelli vel strigosi; bracteae infimae foliaceae; bracteae superiores minutae, subulatae, parce hirtellae; calycis segmenta linearia, angusta, apice acuta, minute hirtella, pilis rigidis, ascendentibus; corolla claro-punicea, glabra, tubo anguste campanulato, labio superiore lanceolato, apice agnustato, rotundato, labio inferiore suberecto, ovato, apice trilobato, lobis anguste triangularibus, apice obtusis; stamina exserta, filamentis puniceis, glabris, antheris utrinque muticis; ovarium glabrum.

Herbs or shrubby plants up to 2 meters high; stems subquadrangular, upwardly strigose or glabrate, the hairs up to 0.25 mm. long; leaf blades ovate to oblong-ovate, up to 10 cm. long and 3 mm. wide, subacute to short-acuminate, narrowed at base, rather thin, entire or undulate, the upper surface nitid, glabrous to sparingly hirsute,

the hairs up to 0.75 mm. long, ascending, the cystoliths rather prominent under a lens, about 0.08 mm. long, the lower surface pilosulous, the hairs confined chiefly to costa and veins (8 to 10 pairs), up to 0.2 mm. long, curved and ascending, the cystoliths prominent under a lens; petioles up to 2 mm. long, puberulous, the hairs appressed or ascending, up to 0.16 mm. long; flowers borne in loose terminal pan-



FIGURE 167.—*Habracanthus killipii* Leonard (Killip & Smith 19966): *a*, Tip of plant; *b*, calyx and bracts; *c*, portion of calyx segment enlarged to show pubescence; *d*, corolla; *e*, tip of lower lip of corolla. (*a*, Natural size; *b*, 2½ times natural size; *c*, 6 times natural size; *d*, *e*, 1½ times natural size.)

icles up to 30 cm. long and 10 cm. broad, the branches slender, ascending, few-flowered, the lower internodes of the inflorescence finely strigose or hirtellous, up to 4 cm. long, becoming shorter toward tip of panicle, the internodes of the ultimate branches about 1 cm. long and bearing in addition to the appressed hairs a few longer (0.75 mm.) more spreading ones, the lowermost branches of the

inflorescence subtended by leaves similar but somewhat smaller than the main stem leaves, the upper branches of the inflorescence subtended by subulate bracts 2 to 3 mm. long and about 3 mm. wide at base, sparingly hirtellous; pedicels about 3 mm. long, minutely strigose or hirtellous; calyx deeply segmented, the segments linear, 7 to 10 mm. long and 1 mm. wide at base, gradually narrowed to an acute tip, minutely hirtellous, the hairs rigid, ascending, up to 0.16 mm. long; corolla bright red, 2.5 mm. long, glabrous, the tube 1 cm. long, 2.5 mm. wide at base, narrowed at 2 mm. above base to 1.5 mm., thence expanded to 5 mm. at mouth, the upper lip about 1 cm. long, 4 mm. wide at base, gradually narrowed to a blunt tip, usually more or less contorted, the lower lip more or less spreading, 1.5 mm. long, ovate, 8 mm. wide slightly below the middle, thence narrowed to 3 mm. at tip and terminated by 3 narrowly triangular lobes about 2.5 mm. long, the middle one 1.5 mm. wide at base, the lateral ones 1 mm. wide, all obtuse; stamens slightly exerted beyond the lower lip, the filaments glabrous and bright red, the anthers 3 mm. long and 0.5 mm. broad; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 1355119, collected in dense woods on the road from Pamplona to Toledo, crossing the divide between Río Teja (Maracaibo drainage) and Río Mesme (Orinoco drainage), Department of Norte de Santander, Colombia, 2,800 to 3,000 meters altitude, February 27–28, 1927, by E. P. Killip and Albert C. Smith (No. 19966). Isotypes: GH, NY.

The species is also represented by Killip and Smith's No. 20451, collected along stream in woods in the vicinity of Loso, north of Toledo, Department of Norte de Santander, 2,200 to 2,400 meters altitude, March 6–7, 1927 (GH, NY, US).

Habracanthus killipii is characterized by its rather thin and relatively small leaf blades, bright red corollas, and slenderly branched large lax panicles.

15. *Habracanthus charien* Leonard, sp. nov.

FIGURE 168

Herba gracilis, caulibus erectis vel ascendentibus, subquadrangularibus, puberulis, pilis antrorse ascendentibus; lamina foliorum lanceolato-ovata, subobtusa vel breviter acuminata (apice ipso obtuso), basi angustata, aliquanto firma, integra, supra hirtella, pilis curvatis, ascendentibus, rigidis, subtus pilis rigidis subadpressis, rectis vel leviter curvatis praecipue in costa et venis positis, utrinque venis aliquanto conspicuis, cystolithis obscuris; petioli graciles, hirtelli; paniculae longae, graciles, ramis infimis ramosis, ramis ultimis racemosis, racemis laxis floribus paucis; pedunculi graciles, quadrangulares, hirtelli; pedicelli brevissimi, hirtelli; rami infimi paniculae foliis ovatis suffulti; rami ultimi et flores bracteis linearibus, acutis,

parce hirtellis, pilis rigidis, rectis, ascendentibus suffulti; bracteolae nullae; calycis segmenta 5, lineari-lanceolata, apice subacuta, dorso hirtella, pilis ascendentibus, rigidis, fere rectis (pilis paucis glandulosis), intus glabra; corolla rosea, lobis extus pilosis, alibi glabra, tubo subcylindrico, lobis ellipticis, rotundatis; stamina vix exserta, glabra; styli glabri; stigma subcapitatum, obscure bilobatum; ovarium glabrum.

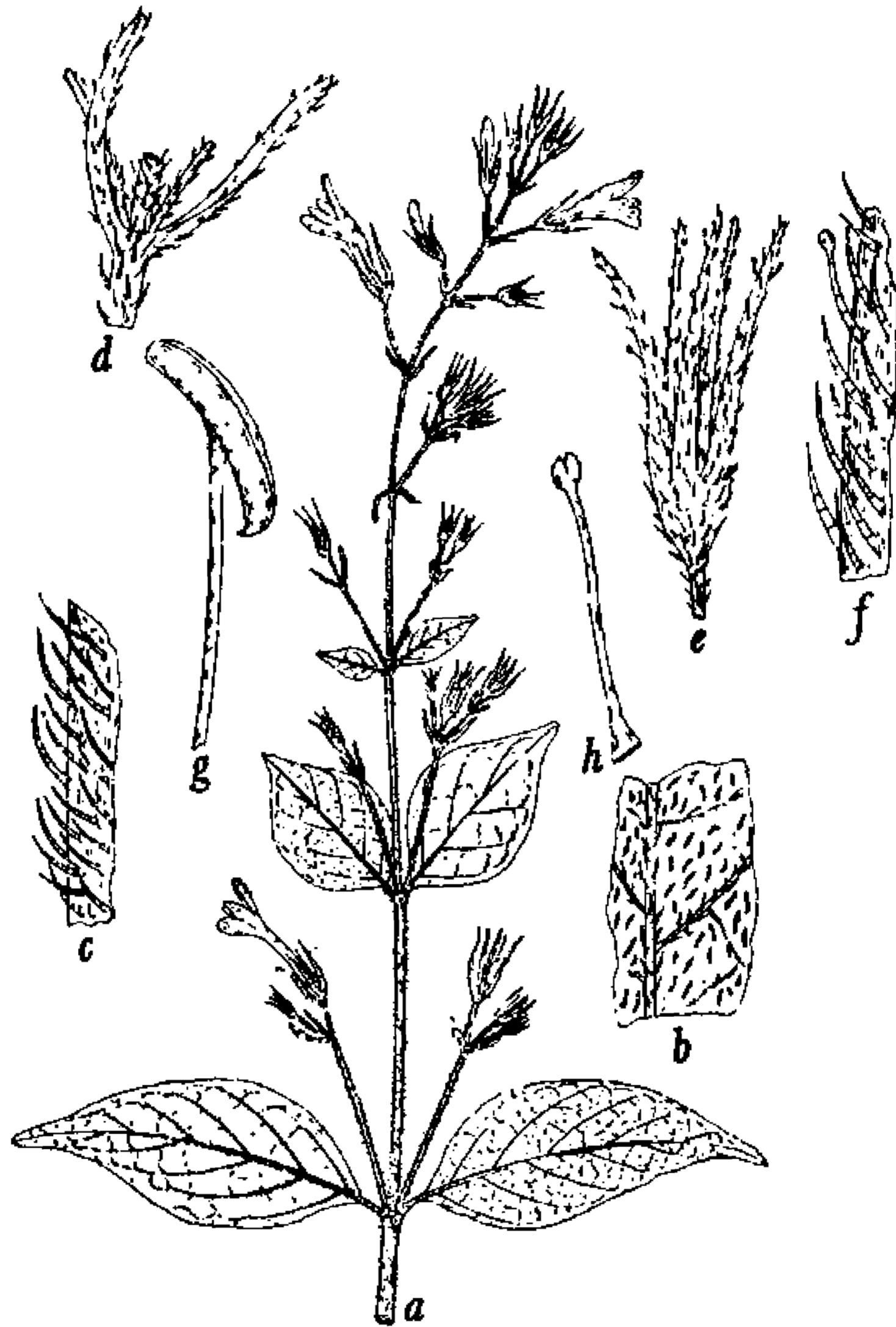


FIGURE 168.—*Habracanthus charien* Leonard (Grant 9439): *a*, Tip of plant to show upper portion of inflorescence; *b*, portion of undersurface of leaf blade to show pubescence and cystoliths; *c*, portion of rachis enlarged to show pubescence; *d*, node of inflorescence to show bracts; *e*, calyx; *f*, portion of calyx segment enlarged to show pubescence; *g*, anther; *h*, style. (*a*, Natural size; *b*, 10 times natural size; *c*, 25 times natural size; *d*, *h*, 5 times natural size; *e*, 3 times natural size; *f*, 37 times natural size; *g*, about 7 times natural size.)

Herb up to 60 cm. high; stems erect or ascending, slender, subquadrangular, puberulous, the hairs upwardly ascending, curved, septate (the septa black), up to 0.2 mm. long, the internodes of the stems up to 9.5 cm. long; leaf blades lance-ovate, up to 3 cm. long and 1 cm. wide, subobtusate to short-acuminate with a blunt tip,

narrowed at base, rather firm, entire, the upper surface hirtellous, the hairs mostly curved, ascending, rigid, up to 0.3 mm. long, the hairs of the lower surface confined chiefly to costa and lateral veins, rigid, subappressed, straight or slightly curved, up to 0.4 mm. long, the venation of both leaf surfaces moderately conspicuous, the cystoliths obscure; petioles slender, up to 5 mm. long, hirtellous; panicles slender, up to 30 cm. long and 5 cm. broad, the lowermost branches paniculate, the upper branches racemose, the flowers in each raceme few (usually 2 to 5 or 6), or the flowers in or near the tip of the panicle solitary; peduncles slender, up to 3 cm. long, quadrangular, 0.25 mm. in diameter, hirtellous, the hairs similar to those of the stems; pedicels short, not more than 1.5 mm. long and 0.3 mm. in diameter, hirtellous, the medial and lowermost branches of the panicle subtended by leaves, these progressively smaller toward tip of the inflorescence, the uppermost branches subtended by bracts, these linear, up to 4 mm. long and 0.5 mm. wide, acute, sparingly hirtellous, the hairs straight, rigid, ascending, up to 0.2 mm. long; bracts subtending the flowers similar but somewhat smaller; bractlets none; calyx deeply segmented, the segments 5, linear-lanceolate, 8.5 mm. long, 1 mm. wide near the base, subacute at the tip, moderately hirtellous dorsally, and ciliate, the hairs ascending, rigid, nearly straight, up to 0.16 mm. long, an occasional one gland-tipped, the inner surface of segments glabrous; corolla rose, 11–15 mm. long, glabrous except the lobes, these pilose dorsally, the hairs mostly spreading, up to 0.5 mm. long, white, the tube subcylindric, 1.5 mm. in diameter, the lobes elliptic, 7 mm. long, 3 mm. wide, rounded or obtuse, the posterior lobe subcucullate; stamens barely exerted, 7 mm. long, glabrous, the anthers 2.5 mm. long and 0.5 mm. broad; style 4 mm. long, glabrous, the stigma subcapitate, inconspicuously bilobed; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 2045429, collected in temperate forest, Cerro Negro, Hato Grande, on ridge east of Río Muchindote, 15 km. east of Gachetá, Department of Cundinamarca, Colombia, 2,735 meters altitude, June 13, 1944, by Martin L. Grant (No. 9439). Isotype: US.

The specific epithet is from the Greek *χαριεν*, meaning slender and graceful. Compared with other Colombian species, *Habracanthus charien* is unique in its small rose corollas with narrow tube, small throat, subequal lips (the upper lip relatively broad and not contorted) and in its short, barely exerted stamens. The species might possibly represent a new genus.

16. *Habracanthus smithii* Leonard, sp. nov.

FIGURE 169

Herba, caulibus subteretibus, glabris, cystolithis pluribus, minutis, parallelis, conspicuis; lamina foliorum ovata vel oblongo-ovata, apice graciliter acuminata, plus minusve curvata, basi rotundata et in petiolum decurrens, aliquanto firma, integra vel leviter undulata, utrinque glabra vel in costa et venis lateralibus parce hirsuta, cystolithis pluribus et conspicuis; petioli glabri, cystolithis conspicuis; paniculae magnae, terminales, pyramidatae vel anguste ovoideae, ramis pluribus, floribus erectis, pedicellis gracilibus, rhachibus et pedicellis dense pilosis, pilis patulis, albidis, apice glandulis elongatis terminatis; bracteae parvae, anguste triangulares, acutae, glanduloso-pilosae; calycis segmenta lineari-lanceolata, acuta, graciliter 5-nervata, intus glabra, extus glanduloso-pilosa; corolla rubra, glanduloso-pilosa, valde ventricosa, apice curvata, labio superiore plus minusve erecto, oblongo-obovato, apice rotundato, labio inferiore leviter patulo, 3-lobato, lobis ovatis, rotundatis; stamina exserta basi tubi corollae inserta, glabra, antheris oblongis, leviter curvatis; capsulae clavatae, glabrae; semina 4, brunnea, ovoidea, basi obliqua, plana, muricata.

Herbs up to 3 meters high or more; stems subterete, glabrous, the cystoliths minute and parallel, 0.03 to 0.16 mm. long, conspicuous and numerous toward tips of stems; leaf blades ovate or oblong-ovate, up to 23 cm. long and 11 cm. wide, slenderly and somewhat abruptly acuminate, the tip more or less curved, decurrent on the petiole from a rounded base, moderately firm, entire or shallowly undulate, both surfaces glabrous or the costa and lateral veins (about 12 pairs) sparingly hirsute, the cystoliths rather numerous and prominent, 0.48 to 0.96 mm. long; petioles (including winged portion) up to 12 cm. long, the wing up to 3 cm. broad at its widest part at base of leaf blade, glabrous, with numerous parallel cystoliths; panicle terminal, pyramidal or rather narrowly ovoid, 20 to 46 cm. long and 4 to 11 cm. broad, the flowers rather numerous, erect or suberect on slender pedicels 1 to 1.5 cm. long, the lowermost branches of the panicle subtended by narrow leaves, the inflorescence branches dichotomously or cincinnally branched, forming lax subhelicoid cymes, the entire inflorescence densely pilose with whitish spreading hairs up to 1 mm. long, terminated by elongated glands; bracts narrowly triangular, 2 to 2.5 mm. long, about 0.5 mm. wide at base, acute, glandular-pilose; calyx 10 to 15 mm. long, deeply segmented, the segments linear-lanceolate, 0.75 to 1.5 mm. wide, acute, densely glandular-pilose without, glabrous within, delicately 5-nerved; corollas red, 18 to 20 mm. long, pilose with long spreading glandular hairs, the tube 3 mm. broad at base, enlarged to 3 mm. at 3 mm. above base, thence abruptly

enlarged to 10 mm. at middle and again narrowed to 6 or 7 mm. at mouth, strongly ventricose, curved at tip, the upper lip oblong-obovate, more or less erect, 7 mm. long, 2 mm. wide at base, 3.5 mm. wide above middle, rounded and entire at tip, the lower lip slightly spreading, 5 mm. long, 10 mm. wide, 3-lobed, the lobes ovate, 2 mm. long, 3.75 mm. wide, rounded; stamens exerted 4 to 15 mm. beyond the mouth

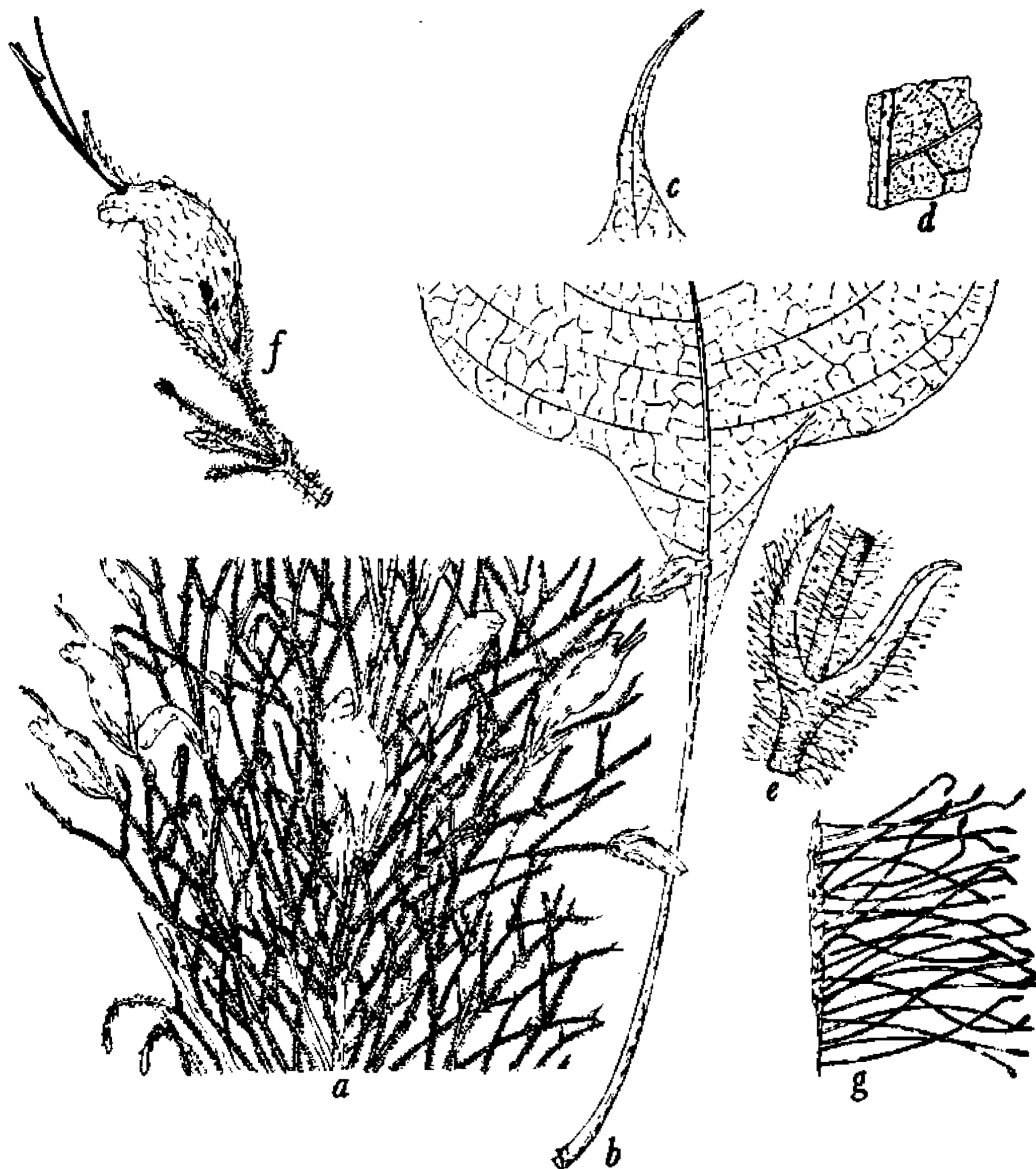


FIGURE 169.—*Habracanthus smithii* Leonard (Killip & Smith 19257): *a*, Section (about middle) of inflorescence; *b*, basal portion of leaf blade; *c*, tip of leaf blade; *d*, portion of leaf blade (upper surface) enlarged to show cystoliths; *e*, bracts; *f*, corolla; *g*, portion of pedicel enlarged to show trichomes. (*a-c*, Half natural size; *d*, 4 times natural size; *e*, 7 times natural size; *f*, natural size; *g*, about 30 times natural size.)

of the corolla and inserted at its base, glabrous; anthers 5 mm. long, 1.5 mm. broad, oblong and slightly curved; style slightly exceeding the stamens, glabrous, the stigma minute, obtuse; capsules clavate, glabrous, 16 mm. long, the seed-bearing portion 4 mm. wide and about 3 mm. thick, the solid stipe 6 mm. long and 3 mm. wide; seed 4, brown,

ovoid, oblique at base, 3 mm. long, 2 mm. broad, 0.75 mm. thick, muricate.

Type in the U. S. National Herbarium, No. 1354534, collected in dense woods on the west side of Mount Peña Blanca, near Charta, Department of Santander, Colombia, 2,500 to 2,600 meters altitude, February 11, 1927, by E. P. Killip and A. C. Smith (No. 19257). Isotypes: GH, NY.

Araque-M, and Barkley's No. 18S.341, collected in dense humid forests east of Bucaramanga, Department of Santander, Colombia, about 2,000 meters altitude, December 18, 1948, is also of this species.

Habracanthus smithii can be readily recognized by its large, densely glandular-pilose panicles of red flowers with conspicuously ventricose corollas.

17. *Habracanthus xanthothrix* Leonard, sp. nov.

FIGURE 169a

Herba, caulibus subquadrangularibus, sursum bifariam pubescentibus, pilis flavidis, retrorse curvatis, conspicue articulatis; lamina foliorum oblongo-elliptica, acuminata (apice ipso subobtusum), basi angustata, aliquanto firma, integra, supra hirsuta, pilis flavidis curvatis, articulatis, subtus dense hirsuta, pilis curvatis, flavidis, articulatis, utrinque pilis praecipue in costa et venis positus, costa et venis prominentibus, venulis crasse reticulatis; petioli in canalibus hirsuti, subtus glabri; paniculae terminales, grandes, laxae, foliaceae, ramulis dense et bifariam pilosis, pilis patulis vel retrorsis, articulatis; bractee ramulos subtendentes subulatae, parvae, parce ciliatae, minute hirsutae; pedicelli hirsuti, pilis retrorsis vel patulis articulatis; calycis segmenta oblonga, acuta, hirsuta, pilis flavis, articulatis, pilis acutis et pilis eglandulosis intermixtis; corolla flava, parce pubescens, tubo infundibuliformi, leviter sacciformi, labio superiore anguste lineari, acuto, labio inferiore triangulari-ovato, apice 3-lobato, lobis brevibus; stamina exserta, antheris lineari-oblongis, minute apiculatis.

Herbs up to 1 m. high or more, 4 mm. in diameter at about the middle, subquadrangular, glabrous or bifariously pubescent at tip, the hairs yellowish, retrorsely curved, up to 0.5 mm. long, conspicuously jointed (under lens); leaf blades oblong-elliptic, up to 16 cm. long and 5.5 cm. wide, acuminate, the tip itself bluntish, narrowed at base, moderately firm, entire, the upper surface hirsute with yellowish jointed curved hairs up to 0.75 mm. long, the lower surface more densely hirsute with similar hairs, these on both surfaces confined mostly to the veins and veinlets, the costa and lateral veins (about 14 pairs) prominent, the veinlets conspicuously and rather coarsely reticulate; petioles 2.5 cm. long, the channels hirsute with hairs similar to those of the leaf blades, the lower rounded portion glabrous; flowers borne in large open leafy terminal panicles, the branches densely and bifariously pilose with yellowish jointed spreading retrorse

hairs up to 1 mm. long, the bracts subtending the ultimate branches subulate, 5 mm. or less long, acuminate, 1 mm. broad at base, ciliate, sparingly and minutely hirsute with hairs up to 0.5 mm. long; pedicels 5 mm. long, about 0.75 mm. thick, these and the calyx moderately hirsute with yellowish spreading or retrorse jointed hairs up to 0.5 mm. long, some of these gland-tipped; calyx 8 mm. long, the segments oblong, about 7 mm. long, 1.5 mm. wide, acute; corolla 2 cm. long, yellow, sparingly pubescent the hairs more or less spreading, about 0.16 mm. long, the base of the corolla tube 2 mm. broad, 2.75 mm. broad at 2 mm. above base, then narrowed to 2.5 mm., thence en-

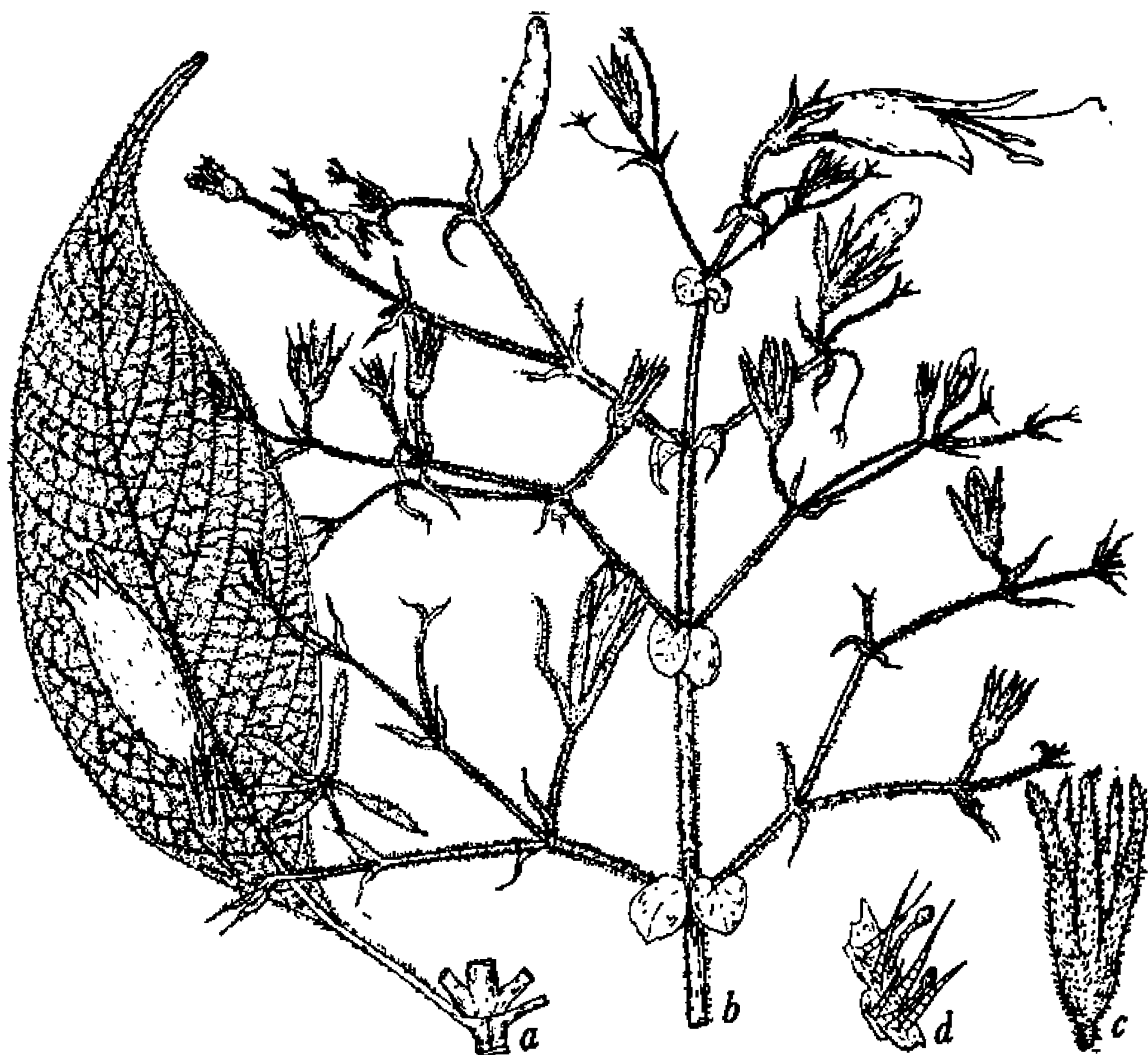


FIGURE 169a.—*Habracanthus xanthothrix* Leonard (Køie 4671): *a*, Leaf and node of stem; *b*, tip of inflorescence; *c*, calyx; *d*, portion of calyx enlarged to show hairs. (*a*, Half natural size; *b*, natural size; *c*, $2\frac{1}{2}$ times natural size; *d*, 50 times natural size.)

larged to 6 mm. at mouth, the throat moderately saccate, the upper lip narrowly linear, 8 mm. long and 2 mm. wide at base, acute, the lower lip triangular-ovate, 8 mm. long, 5 mm. wide, 3-lobed at tip, the lobes about 0.25 mm. long and 0.5 mm. broad; stamens exerted 5 mm. beyond the mouth of the corolla tube; anthers linear-oblong, 2.5 mm. long and 1 mm. broad, minutely apiculate at base; ovary glabrous; disk 1 mm. high; capsules not seen.

Type in the Herbarium of the Botanical Museum of the University of Copenhagen, collected at Nuñez, Department of Cundinamarca,

Colombia, 2400 meters altitude, June 11, 1952, by M. Køie (No. 4671).

The specific epithet is from the Greek *ξανθός*, yellow, and *θρίξ*, hair.

18. *Habracanthus xantholeucus* Leonard, sp. nov.

FIGURE 170

Suffrutex, caulibus subteretibus, glabris vel sursum minute puberulis, pilis appressis; lamina foliorum oblongo-ovata vel oblongo-elliptica, apice breviter acuminata, aliquando curvata, basi cuneata, aliquanto tenuis, integra vel leviter et obscure undulata, utrinque parce et minute puberula, pilis rigidis, ascendentibus vel appressis, in costa et venis praecipue positis; petioli subtus glabri, in canale puberuli, pilis subappressis; paniculae foliiferae, laxae, ramis 1- vel 2-furcatis, rhache et rhachillis aliquanto dense hirtellis, pilis subbrunneis vel leviter curvatis, pedicellis erectis vel ascendentibus, dense hirtellis, pilis acutis et pilis glandulosis intermixtis; paniculae inferiores axillares reductae, parvae, forsan steriles, apetalae, calycibus reductis, parvis; bracteae ultimae subulatae, acutae (apice ipso subobtusos), sparse et minute hirtellae; calycis segmenta lanceolata, acuta (apice ipso subobtusos), hirtella, pilis rigidis, patulis, ascendentibus, pilis longioribus glandulosis intermixtis; corolla citrina, tubo subcylindrico, glabro, labio superiore anguste lineari, apicem versus externe minute hirtella, apice obtuso, labio inferiore patulo, conduplicato, ovato, apice 3-lobato, lobis brevibus, rotundatis; stamina exserta, glabra, antheris linearibus; ovarium glabrum.

Shrub up to 5 meters high; stems subterete, glabrous or the upper portions minutely puberulous the hairs appressed, up to 0.16 mm. long; leaf blades oblong-ovate or oblong-elliptic, up to 30 cm. long and 11 cm. wide, short-acuminate, the tip sometimes curved, cuneate at base, rather thin, entire or shallowly and obscurely undulate, both surfaces minutely and sparingly puberulous, the hairs rigid, up to 0.16 mm. long, ascending to appressed, confined chiefly to costa and lateral veins (14 to 16 pairs), these, including the coarsely reticulated veinlets, rather conspicuous beneath, less so above, the cystoliths few and inconspicuous; petioles up to 7 cm. long and 1.5 mm. thick, the lower surface glabrous, the channel puberulous with subappressed hairs about 0.2 mm. long; panicles leafy, lax, up to about 10 cm. long and 6 cm. wide, the branches once or twice forked usually with a flower in the fork, the lowermost axillary panicles small, reduced, perhaps sterile, the calyces small, the rachis and rachilla rather densely hirtellous with light brownish spreading or slightly recurved hairs up to 0.16 mm. long, the pedicels up to 5 mm. long, erect or ascending, densely hirtellous with rigid spreading hairs 0.24 to 0.32 mm. long, a few of the longer ones gland-tipped, the ultimate bracts subulate, about 3 mm. long and 0.5 mm. wide at base, gradually narrowed to a

slender bluntish tip, sparingly and minutely hirtellous; calyx 9 mm. long (the small ones of the sterile lowermost panicles only 2 or 3 mm. long), hirtellous with rigid acute spreading or ascending hairs about 0.16 mm. long intermixed with slightly longer gland-tipped ones, the calyx segments 1 to 1.5 mm. wide at base, thence gradually narrowed to a slender bluntish tip; corolla lemon-yellow, the lower portion glabrous, the upper parts sparingly and minutely hirtellous, the length

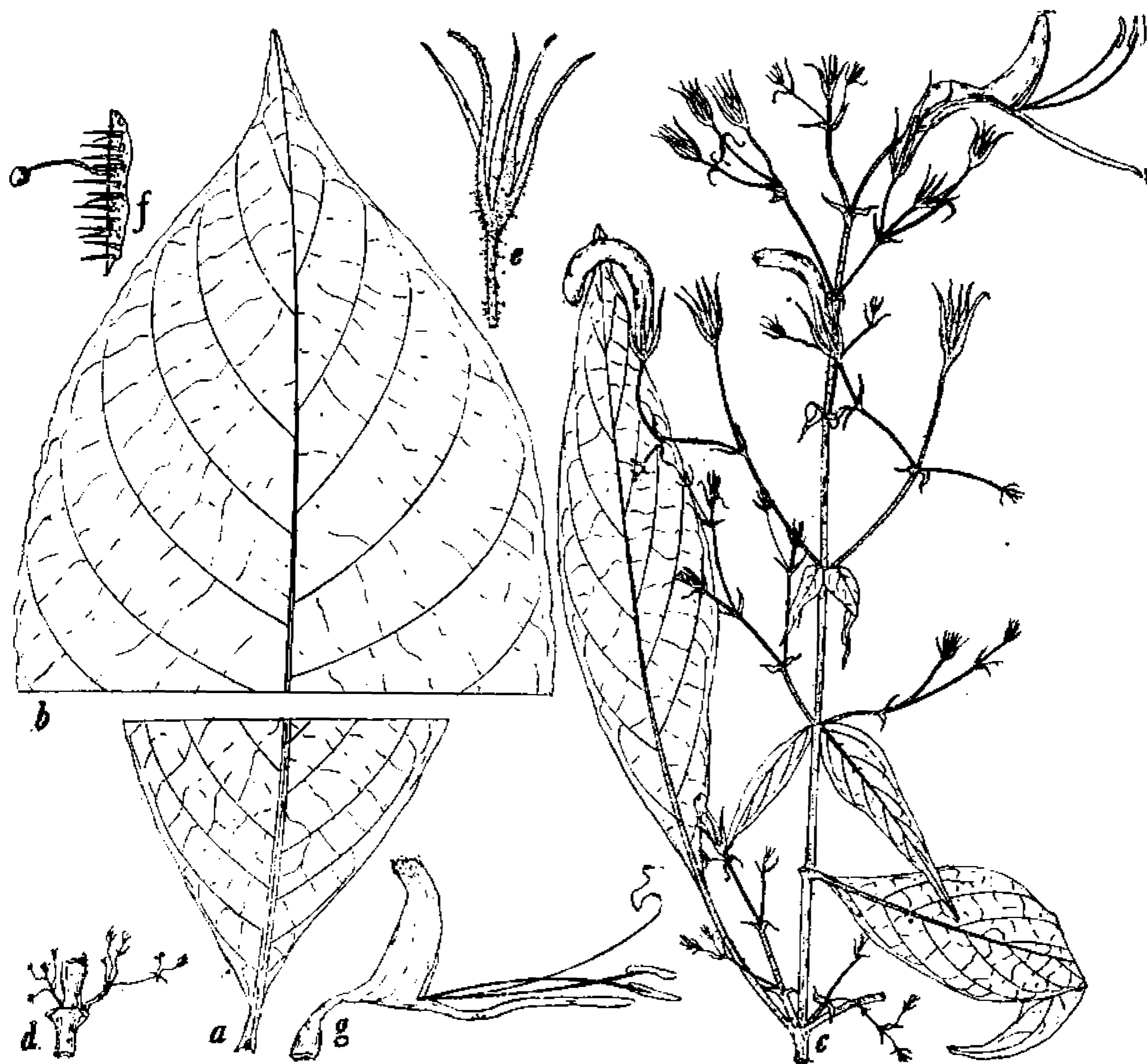


FIGURE 170.—*Habracanthus xantholeucus* Leonard (Grant & Fosberg 9326): *a*, Basal portion of leaf blade; *b*, upper half of same; *c*, panicle; *d*, node of stem showing small sterile axillary panicles; *e*, calyx; *f*, portion of pedicel enlarged to show pubescence; *g*, corolla. (*a*, *b*, Half natural size; *c*, *d*, *g*, natural size; *e*, $2\frac{1}{2}$ times natural size; *f*, 24 times natural size.)

of the corolla from base to tip of the upper lip about 3 cm., the tube 10 to 12 mm. long, 2.5 mm. broad at base, 3 mm. at mouth, the upper lip narrowly linear, 23 mm. long, 1 mm. wide, obtuse at tip, the lower lip spreading-ovate, conduplicate, 12 mm. long, 10 mm. wide, 3-lobed at tip, the lobes about 1 mm. long and 1.5 mm. wide, rounded; stamens exserted 22 mm. beyond the mouth of the tube, glabrous, the anthers

linear, 4 mm. long and barely 1 mm. broad; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 2045426, collected in temperate forest at San Isidro, 8 km. south of Gachalá, Cordillera Oriental, Department of Cundinamarca, Colombia, 2,450 meters altitude, May 26, 1954, by Martin L. Grant and F. R. Fosberg (No. 9326). Isotype: US.

Habracanthus xantholeucus is well marked among other Colombian species of the genus by the remarkably long, straight upper lip of the lemon-yellow corollas. The specific epithet is from the Greek word *ξανθόλευκος*, meaning pale yellow, in allusion to the color of the corolla.

19. *Habracanthus ampelinus* Leonard, sp. nov.

FIGURE 171

Suffrutex, aliquando subscandentes, caulibus subquadrangularibus, glabris vel bifariam minute strigosis; lamina foliorum oblongo-elliptica, graciliter acuminata, basi cuneata, aliquanto firma, integra vel undulata, utrinque hirtellis pilis rigidis, subappressis vel ascendentibus, praecipue in costa et venis positis; petioli plus minusve graciles, subtus glabri, in canalibus minute strigosis; paniculae longae et magnae, terminales, bracteis infimis foliaceis, bracteis ultimis linearibus, parce hirtellis, rhache et rhachillis dense hirtellis, pilis rigidis, patulis; pedicelli dense hirtelli, pilis acutis et pilis longioribus glandulosis intermixtis; calycis segmenta lanceolata, parce vel aliquanto dense hirtella, pilis patulis, rigidis, acutis et pilis glandulosis intermixtis; corolla plus minusve pilosa, aurantiaco-coccinea, tubo anguste infundibuliformi, labio superiore erecto, anguste lineari, apice acuto, labio inferiore ovato, conduplicato, apice 3-lobato, lobis oblongo-ovatis, obtusis; stamina exserta, glabra, antheris muticis; ovarium glabrum.

A shrub 2 meters high or sometimes becoming subscandent and reaching 3 meters or more in length; stems subquadrangular, glabrous or bifariously and minutely strigose, the hairs up to 0.28 mm. long; leaf blades oblong-elliptic, up to 15 cm. long and 6 cm. wide, slenderly acuminate, cuneate at base, moderately firm, entire or undulate, hirtellous, the hairs rigid, subappressed or ascending, up to 0.2 mm. long, confined mostly to costa and lateral veins (about 10 pairs), the venation rather prominent; cystoliths minute, up to 0.32 mm. long, some of them punctiform; petioles rather slender, up to 10 cm. long and 1.25 mm. thick, glabrous beneath, the channels minutely strigose; panicles terminal and axillary forming large complex inflorescences up to 30 cm. long and 23 cm. broad, leafy, the ultimate bracts linear, up to 0.5 mm. long and 0.5 mm. wide, sparingly hirtellous, the hairs more or less spreading, about 0.08 mm. long; rachis and rachilla hirtellous, the hairs spreading, about 0.08 mm. long; pedicels up to 1.5 cm. long, hirtellous; calyx 6 to 8

mm. long, sparingly to moderately hirtellous, the hairs spreading, the acute ones up to 0.16 mm. long, septate, the glandular trichomes scattered, up to 0.5 mm. long, the calyx segments up to 7 mm. long, lanceolate, acute, 1.25 mm. wide near base; corolla rather sparingly pilose (the hairs more or less spreading, ca. 3 mm. long, septate), orange-red, paler distally, the tube 2.5 mm. broad at base, gradually enlarged to 8 mm. at throat, the upper lip erect, narrowly linear,

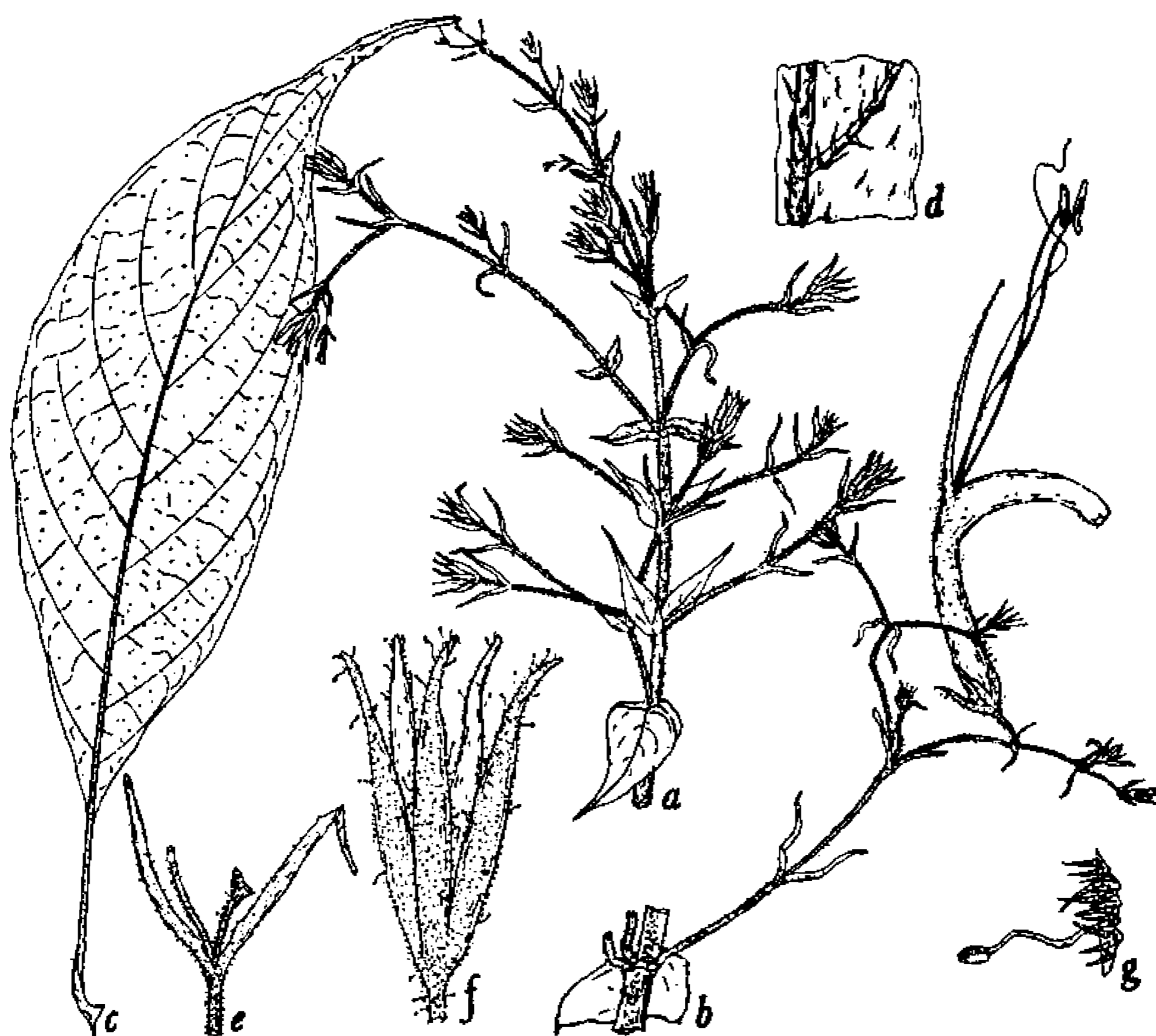


FIGURE 171.—*Habracanthus ampelinus* Leonard (Grant 9647): *a*, Tip of panicle; *b*, portion of inflorescence about 15 cm. below tip; *c*, leaf; *d*, portion of leaf blade (upper surface) enlarged to show pubescence; *e*, ultimate bracts; *f*, calyx; *g*, portion of calyx segment enlarged to show pubescence. (*a*, *b*, Natural size; *c*, half natural size; *d*, 8 times natural size; *e*, $3\frac{1}{2}$ times natural size; *f*, 5 times natural size; *g*, about 40 times natural size.)

16 mm. long, 1 mm. wide at base, acute at tip, the lower lip spreading, ovate, conduplicate, 11 mm. long, 12 mm. wide at base, 3-lobed, the lobes oblong-ovate, about 4 mm. long, 1.75 mm. wide, obtuse at tip; stamens exerted 2 cm. beyond the mouth of the corolla tube, glabrous, the anthers 4.5 mm., long, 1.5 mm. broad, muticous at both ends; style slightly longer than the stamens, the stigma lobes rounded, very minute; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 2045430, collected in temperate forest at Salitre, Taguaté Valley, 6 km. west of Gutiérrez

and 45 km. south of Bogotá, Department of Cundinamarca, Colombia, 2,715 meters altitude, July 23, 1944, by Martin L. Grant (No. 9647). Isotype: US.

Also of this species is F. R. Fosberg's No. 20901 (US), collected on a steep, densely wooded slope, where it was occasional, at Río del Nevado, east end of the Cordillera Las Cruces, south of Río Arroz across from El Capitolis, in the Sumapaz region, Intendencia of Meta, 2,675 meters altitude, August 27, 1943.

The specific epithet alludes to the vinelike nature often attained by this species.

20. *Habracanthus caucensis* Leonard, sp. nov.

FIGURE 172

Suffrutex gracilis, fere procumbens, inflorescentiis erectis, caulibus subquadrangularibus, glabris vel sursum parce puberulis; lamina foliorum oblongo-elliptica, breviter acuminata (apice ipso obtuso), basi angustata et cuneata, aliquanto firma, integra vel undulata, remote strigosis, pilis supra praecipue in costa et venis lateralibus conspicuis positis, venulis crasse reticulatis, cystolithis sub lente conspicuis; petioli parce puberuli; paniculae diffusae terminales et axillares, ramis furcatis, gracilibus, rhache et rhachillis parce hirtellis; bractee ramos panicularum subtendentes ovatae, sessiles, apiculatae; pedicelli graciles, cystolithis minutis praediti; bractee flores subtendentes lineares, apice acutae, glabrae vel parce et minute hirtellae; calycis segmenta lineari-lanceolata, apice subacuta, trinervata, glabra vel pilis glanduliferis plus minusve numerosis praedita; corolla rubescens, glabra, anguste infundibuliformis, labio superiore lineari, apice rotundato, graciliter trinervato, labio inferiore patulo, ovato, apice trilobato, lobis brevibus, rotundatis; stamina exserta, antheris linearibus; capsulae clavatae, glabrae; retinacula subacuta, apice erosa; semina plana, suborbicularia, muricata, basi obliqua.

Slender shrubby plants 1 to 2 meters long, usually procumbent with erect inflorescences; stems subquadrangular, glabrous or the upper portions very sparingly puberulous; leaf blades oblong-elliptic, up to 15.5 cm. long and 5 cm. wide, short-acuminate (the tip itself blunt), narrowed and cuneate at base, moderately firm, entire or undulate, remotely strigillose, the hairs up to 0.25 mm. long, those of the under surface confined chiefly to costa and lateral veins (about 10 pairs), these and the coarsely reticulated veinlets moderately conspicuous, the cystoliths numerous and rather conspicuous under a lens; petioles up to 3 cm. long and 1 mm. thick, sparingly puberulous; flowers borne in diffuse terminal and axillary panicles up to 14 cm. long and about 6 cm. broad, the terminal and axillary panicles often continuous, the branches of the panicle dichotomously forked, often with a flower in the fork, slender, sparingly hirtellous, the hairs more

or less spreading, up to 0.3 mm. long; bracts subtending the branches of the panicle ovate, sessile, 1 cm. long and about 8 mm. wide, apiculate or the lowermost pair much larger, up to 4 cm. long and 1.5 cm. wide, short-acuminate; bracts subtending the flowers linear, about 3 mm. long and 0.75 mm. wide, acute at tip, glabrous or minutely hirtellous; pedicels slender, up to 4 mm. long, 0.25 to 0.5 mm. thick,

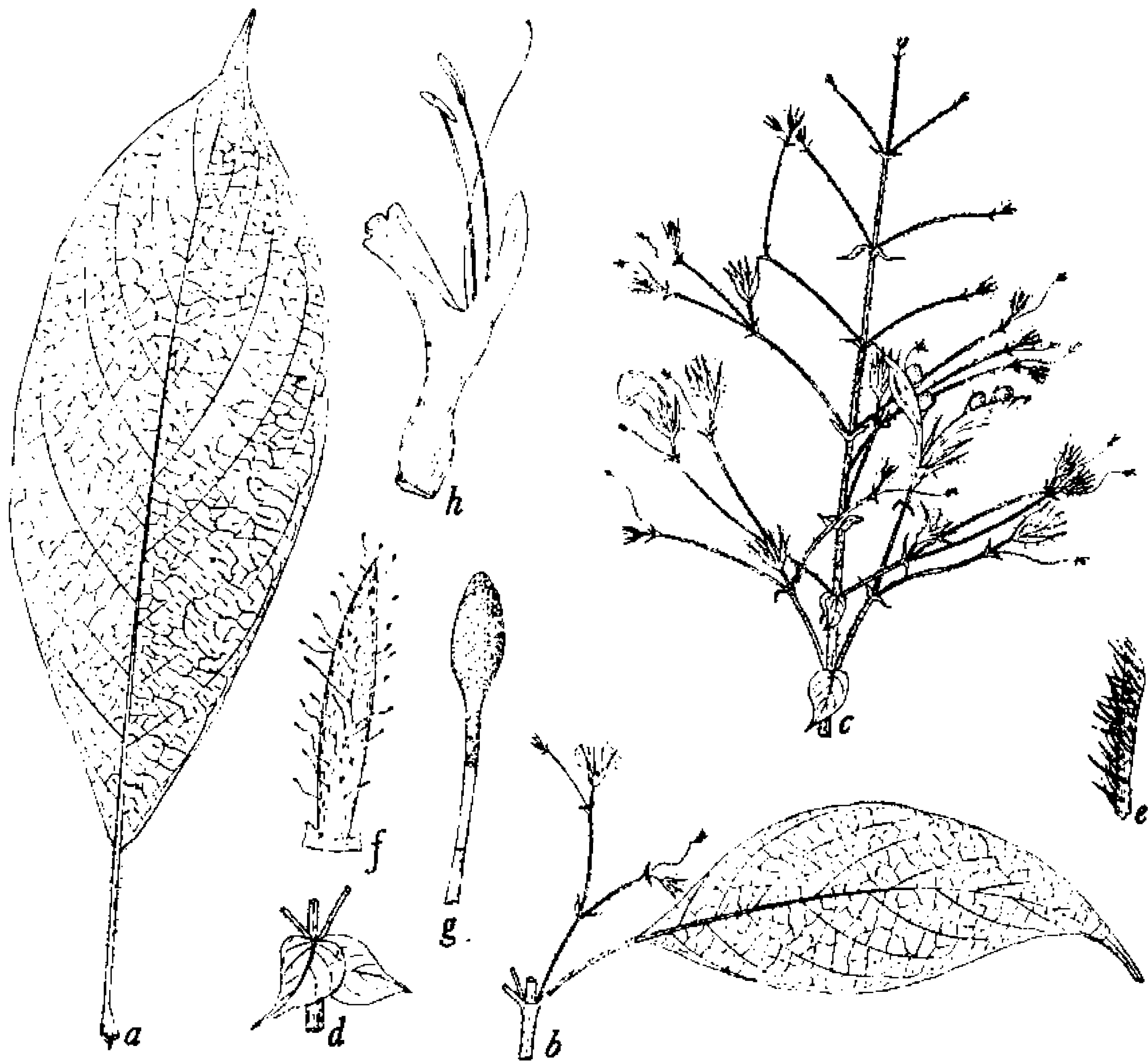


FIGURE 172.—*Habracanthus caucensis* Leonard (*a*, Fosberg 19941; *b-h*, Cuatrecasas 23468): *a*, Leaf; *b*, lowermost node of inflorescence; *c*, tip of inflorescence; *d*, a pair of bracts subtending lateral branches near base of panicle; *e*, portion of rachis from upper part of panicle enlarged to show pubescence; *f*, calyx segment; *g*, trichome from calyx; *h*, corolla. (*a*, Half natural size; *b*, *c*, natural size; *d*, $1\frac{2}{3}$ times natural size; *e*, about 20 times natural size; *f*, 4 times natural size; *g*, 150 times natural size; *h*, $1\frac{2}{3}$ times natural size.)

glabrous with scattered minute cystoliths; calyx segments linear-lanceolate, 6 to 7 mm. long and 1 mm. wide (the tip acute and bluntish), 3-nerved, glabrous or bearing a few more or less spreading glandular trichomes up to 0.5 mm. long; corolla wine-red, glabrous, the tube about 1 cm. long, 3 mm. broad near base, narrowed at 4 mm. above base to 2 mm., thence enlarged to 3 mm. at mouth, the upper

lip erect, linear, 7 mm. long, 2 mm. wide near base, somewhat narrowed toward the rounded tip, delicately 3-nerved, the lower lip spreading, ovate, about 8 mm. long and 7 mm. wide, terminated by 3 rounded lobes about 0.5 mm. long; stamens glabrous, exerted about 2 cm. beyond the mouth of the corolla tube, the anthers linear, 2.5 mm. long, 0.75 mm. thick; pistil not seen; capsules clavate, 13 mm. long, 4 mm. wide, 2 mm. thick, glabrous; retinacula 2.5 mm. long, subacute and erose; seed flattened, suborbicular, about 2 mm. long and broad, muricate or pebbled, oblique at base.

Type in the U. S. National Herbarium, No. 1950035, collected in woods at Aguabonita, valley of the Río San José, Moscopán Region, Cordillera Central, Department of Cauca, Colombia, 2,280 meters altitude, January 30, 1947, by J. Cuatrecasas (No. 23468).

Also of this species is Fosberg's No. 19941 (US), collected in thick brushy ground-cover under trees in mossy, ridge-type, wet forests with deep humus, at the head of Río Villalobos, southwest of Pitalito, on the boundary between the Departments of Huila and Cauca, Colombia, 2,300 meters altitude, February 6, 1943.

21. *Habracanthus antipharmacus* Leonard, sp. nov.

FIGURE 173

Suffrutex, caulibus subquadrangularibus, glabris vel parce pilosis, pilis appressis, inconspicuis, cystolithis parallelis; lamina foliorum oblongo-ovata vel oblonga-elliptica, subacuta vel breviter acuminata (apice ipso obtuso), basi sensim angustata in petiolum decurrens, membranacea, integra vel undulata, supra parce hirsuta, pilis curvatis, ascendentibus, albidus, septatis, subtus glabra, costa et venis lateralibus prominentibus, cystolithis raris, magnis; petioli glabri vel in canalibus hirtelli, pilis subappressis vel ascendentibus, cystolithis parallelis, magnis, conspicuis; paniculae terminales, anguste ovoideae, aliquanto laxae, ramis gracilibus, furcatis, leviter recurvatis, rhachibus dense pilosis, pilis rectis, patulis, acutis, vitreis, pilis longioribus glandulosis intermixtis; pedicelli erecti; calycis segmenta lanceolata, acuta, puberula et pilosa, pilis brevioribus rigidus, vitreis, acutis vel obtusis, pilis longioribus aliquanto raris, glandulosis, elongatis intermixtis; corolla glabra, coccinea, apice aurea, tubo basi angusto, abrupte dilatato, valide ventricosus, in fauce leviter angustato, labio superiore anguste obovato, erecto, plus minusve recurvato, obtuso, labio inferiore brevi, trilobato, lobis suborbicularibus; stamina exserta, glabra, antheris linearibus, curvatis; capsulae clavatae, subtiliter pubescentes, pilis gracilibus, ascendentibus, curvatis; retinacula angusta, basi dilatata, apice subobtusa; semina subnigra, plana, suborbicularia apice tuberculata.

Subshrubs up to 130 cm. high; stems subquadrangular, glabrous or inconspicuously and sparingly appressed-pilose, the hairs up to

0.48 mm. long, the cystoliths parallel, up to 0.35 mm. long; leaf blades oblong-ovate or oblong-elliptic, up to 10 cm. long and 7 cm. wide, subacute or short-acuminate (the tip itself blunt), gradually narrowed to an acute base and decurrent on the petiole, thin, entire or undulate, the upper surface sparingly hirsute, the hairs curved, ascending, up to 0.32 mm. long, whitish, septate, the lower surface

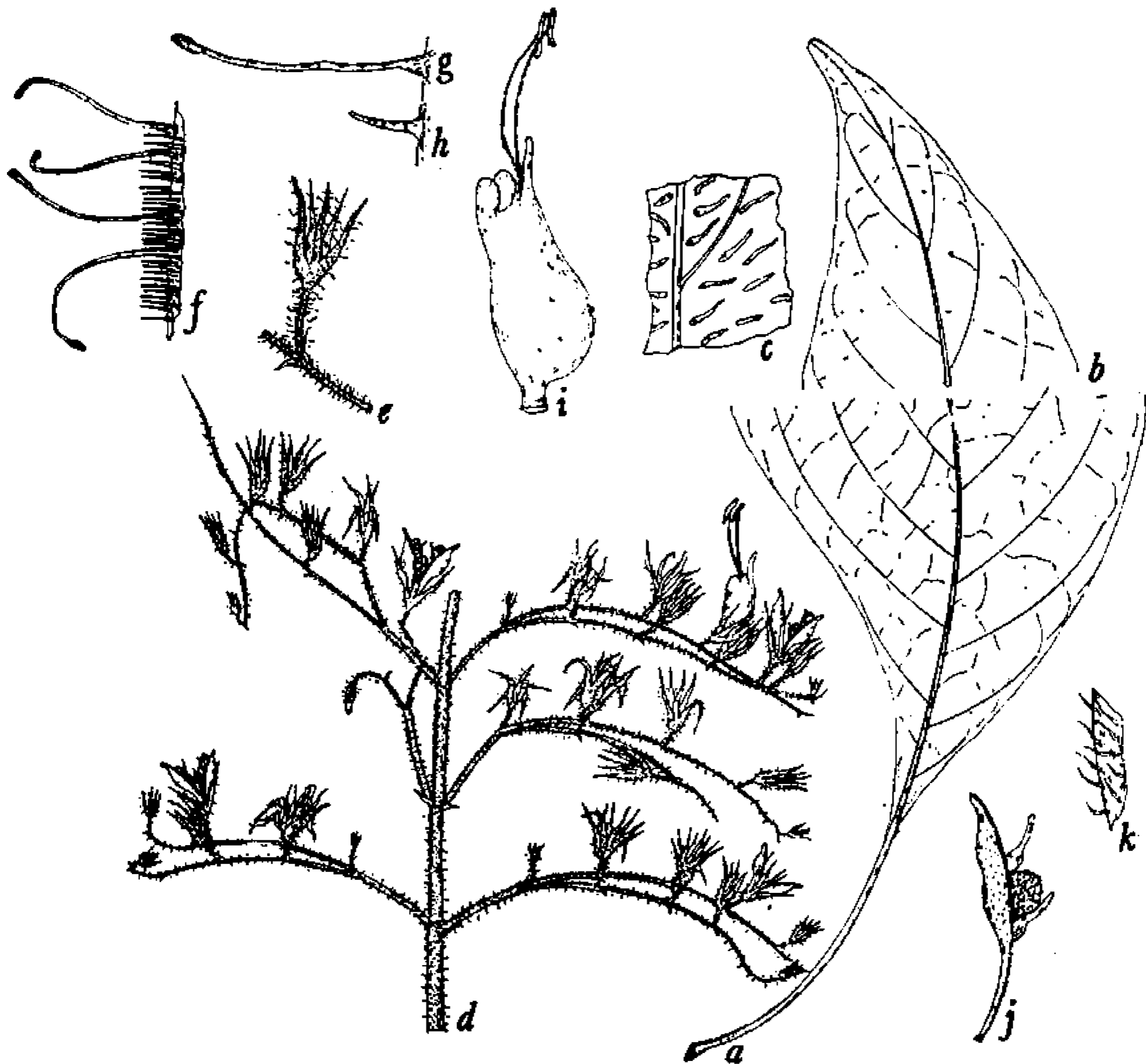


FIGURE 173.—*Habracanthus antipharmacus* Leonard (Grant 10731): *a*, Basal portion of leaf blade; *b*, tip of same; *c*, portion of the under surface of a leaf blade enlarged to show cystoliths; *d*, section of inflorescence (about middle); *e*, calyx (flowering stage), pedicel and bracts; *f*, pubescence of rachis; *g*, a large gland-tipped trichome from calyx; *h*, one of the glandular hairs from calyx; *i*, corolla; *j*, capsule valve; *k*, portion of capsule enlarged to show pubescence. (*a*, *b*, *d*, Half natural size; *c*, about 17 times natural size; *e*, *i*, $1\frac{1}{2}$ times natural size; *f*, about 28 times natural size; *g*, *h*, about 45 times natural size; *j*, twice natural size; *k*, about 38 times natural size.)

glabrous, the costa and lateral veins (10 to 12 pairs), prominent beneath, less so above, the cystoliths scattered but large and nearly straight, up to 0.27 mm. long; petioles (unwinged portion) up to 6 cm. long, 1 to 1.5 mm. thick, glabrous or the channels hirtellous, the hairs ascending or subappressed, the cystoliths large, conspicuous and parallel; panicles narrowly ovoid, rather lax, up to 30 cm. long

and 11 cm. broad, broadest below middle and gradually narrowed to tip, the peduncle about 6 cm. long, hirtellous, the lowermost internode of the inflorescence 2 cm. long, the others successively smaller towards tip, the branches slightly curved, usually (except the uppermost) forked, these and the main rachis densely pilose with straight spreading acute glassy hairs 0.16 mm. long, these intermixed with longer glandular ones up to 0.64 mm. long, the flowers usually 8 or fewer to a branch, erect, the pedicels up to 3 mm. long, the pubescence that of the branches; calyx 4 to 7 mm. long, becoming 10 to 12 mm. long at maturity, deeply segmented, the segments lanceolate, in flower 4 to 6 mm. long, in fruit 11 mm. long, 1 mm. wide near base, thence gradually narrowed to a slender tip, puberulous and pilose, the hairs spreading, the small ones ca. 0.07 mm. long, numerous, rigid, glassy and blunt tipped or acute, the large ones up to 0.73 mm. long, rather scattered, blackish, gland-tipped; corolla 1.5 to 2 cm. long, glabrous, scarlet with yellow tip, 2 to 2.5 mm. broad at base, abruptly enlarged at 3 mm. above base to 7 mm., thence narrowed to 4 mm. at throat, the upper lip narrowly obovate, erect, more or less recurved, 3 to 4 mm. long, about 1.25 mm. wide, obtuse and entire at tip, the lower lip broadly ovate, about 3 mm. long and 5 mm. wide, the lobes suborbicular, about 2 mm. long and 2.5 mm. wide; stamens exerted 10 to 15 mm. beyond the lips of the corolla, glabrous, the anthers linear, 4 mm. long, 0.75 mm. broad, slightly curved; capsule clavate, 12 to 13 mm. long, 4 mm. broad, 3 mm. thick, the solid basal stipe about 3 mm. long, finely pubescent, the hairs slender, curved and ascending; retinacula 3 mm. long, slender from an enlarged base, the tip subobtuse; seeds 4, flat, blackish, suborbicular, 3 mm. long, 2.5 mm. broad, the tip tuberculate.

Type in the U. S. National Herbarium No. 2045439, collected in subtropical forest on the Sierra Perijá, 6 km. east-northeast of Manaure, 42 km. east of Valledupar and 7 km. from the Venezuelan border, Department of Magdalena, Colombia, 1,735 meters altitude, February 1, 1945, by Martin L. Grant (No. 10731). Isotype: US.

Oscar Haught's No. 4510 (US), collected in "Africa," Sierra Perijá, Department of Magdalena, Colombia, about 1,500 meters altitude, December 16, 1944, is also of this species. Haught states in his label data that his plant was an erect herb up to 1.5 meters high, the flowers very showy, either all red, or red tipped more or less with bright yellow (in some plants more than half the corolla yellow), and that the species was very abundant locally, growing along streams and on moist slopes.

Habracanthus antipharmacus with its bicolored corollas suggests at once Lindau's *H. diversicolor*. The two species are closely related but if carefully compared show certain differences. In *H. diversicolor*

the leaf blades are rounded above the winged petiole instead of being gradually narrowed into the petiole wing, and the inflorescence is denser with the shorter ascending rigid branches, the branches of the forks widely spreading. In *H. antipharmacus* the branches are slender, spreading, recurved, and the branches of the forks are only slightly spreading and longer and more slender.

Grant tells us that the root is used as a remedy for snake bite, thus suggesting the specific epithet, *ἀντι-*, against, and *φάρμακον*, venom.

22. *Habracanthus macrochilus* Lindau

Habracanthus macrochilus Lindau, Bull. Herb. Boiss. 5: 669. 1897. Type collected in the Province of Ocaña, Department of Norte de Santander, Colombia, in woods at 2,700 meters altitude by Schlim (No. 429). Photograph of type material of the Berlin Herbarium (Field Mus. No. 8890) in the U. S. National Herbarium.

Shrubby plants with terete pubescent branches; leaf blades oblong, pubescent, 4 to 7 cm. long, 2 to 3 cm. wide or smaller, the tip prominently acuminate, attenuate at base, the cystoliths striiform; petioles slender, 5 to 7 mm. long; panicles subdichotomous, terminal, longer than the leaves or axillary and shorter than the leaves and terminating the lateral branches; the lateral panicles lax and few-flowered, the terminal dense; calyx segments 12 mm. long, 1 mm. wide, unequal, becoming 18 to 19 mm. long and 1.5 mm. wide at maturity, glandular-pubescent; corolla purple,² the tube 14 mm. long, 2 mm. wide at base, and 3 mm. wide at tip, the upper lip 28 mm. long and 4 mm. wide at base, narrowed to a subobtusate tip, the lower lip 28 mm. long, 10 mm. wide at middle, 4 mm. wide at tip and 3-toothed, the teeth 1.5 mm. long, obtuse; filaments 35 mm. long, inserted at tip of corolla tube and long-exserted; anthers 3.5 mm. long; style 50 mm. long, exserted; capsule 14 mm. long, 3 mm. wide, glabrous, the solid stipe 5 mm. long; seeds 4.

No specimens seen. Description compiled from the original. The specific epithet is from the Greek words *μακρός*, long, and *χείλος*, lip.

Lindau states in his discussion that his new species differs from the others known in the large lips of the corolla, and the long calyx segments, which, like the inflorescence, are coarsely pubescent.

23. *Habracanthus oresbius* Leonard, sp. nov.

FIGURE 174

Frutex, caulibus subquadrangularibus, apice aliquanto dense puberulis, pilis subbrunneis, appressis, septatis, deorsum glabratis; hirtellis, pilis subbrunneis, appressis, septatis, deorsum glabratis; lamina foliorum oblongo-elliptica, acuminata (apice ipso subacuto), basi cuneata, aliquanto firma, integra vel undulata, utrinque puberula,

² According to Lindau's description, but the original label of Schlim says "rouge foncée," i. e., dark red.

pilis rigidis, subappressis, septatis, subbrunneis, subtus praecipue in costa et venis lateralibus prominentibus positis, cystolithis pluribus, sub lente conspicuis; petioli dense hirsuti, pilis brunneis; paniculae terminales ovoideo-pyramidatae, densae, ramis panicularum bracteis foliaceis ovatis acutis vel acuminatis sessilibus suffultis, rhache et rhachillis dense brunneo-hirtellis, pilis patulis vel ascendentibus, pedicellis hirtellis, pilis patulis, conspicue septatis; bracteae flores subtendentes lanceolatae, acutae, parce ciliolatae et hirtellae, cystolithis conspicuis; calycis segmenta lanceolata, acuta, aliquanto parce hirtella et ciliolata, pilis ascendentibus; corolla rubra, glabra, tubo anguste infundibuliformi, labio superiore erecto, lineari, apice obtuso vel rotundato, labio inferiore patulo, ovato, apice rotundato, trilobato. lobis brevibus, rotundatis; stamina exserta, glabra; stylus exsertus, glaber; stigma minutum; capsulae clavatae, glabrae, retinaculis rectis vel leviter curvatis, apice anguste cucullatis, rotundatis, erosis; semina plana, brunnea, levia vel basi leviter muricata, aliquanto obliqua.

Shrubs; stems subquadrangular, the tips rather densely puberulous, the hairs appressed, brownish, septate, up to 0.25 mm. long, the lower portions of the stem glabrate; leaf blades oblong-elliptic, up to 19 cm. long and 7 cm. wide, acuminate (the tip itself subacute), narrowed to a cuneate base, rather firm, entire or undulate, puberulous, the hairs up to 0.32 mm. long, rigid, subappressed, septate, brownish, those of the lower surface confined chiefly to costa and veins, these as well as the coarsely reticulated veinlets prominent on the lower surface, the cystoliths numerous and conspicuous under a lens, up to 0.2 mm. long; petioles up to 3 cm. long, 1.5 mm. thick, densely hirsute with brownish hairs; flowers borne in rather dense pyramidal-ovoid terminal panicles, up to 15 cm. long and 6 cm. broad near the base, the branches of the inflorescence subtended by leaflike cordate sessile ovate acute or acuminate bracts, the lowermost about 2 cm. long and 1.5 cm. wide, the rachis and rachilla densely brown-hirtellous, the hairs spreading or ascending, septate; pedicels up to 3 mm. long, densely hirtellous with conspicuously septate spreading hairs up to 0.65 mm. long; bracts subtending the flowers lanceolate, up to 9 mm. long and 1 mm. wide, acute at tip, sparingly ciliate and hirtellous, the cystoliths conspicuous; calyx segments lanceolate, up to 13 mm. long, 1.25 mm. wide near base, gradually narrowed to an acute tip, rather sparingly hirtellous and ciliate, the hairs about 0.3 mm. long, some of them glandular; corolla red, glabrous, the tube 13 mm. long, 2.5 mm. wide just above base, narrowed at 4 mm. above base to 1.5 mm., thence gradually enlarged to 3.5 mm. at mouth, the upper lip erect, linear, 15 mm. long, 1.5 mm. wide, obtuse or rounded at tip, in dry material coiled and contorted, lower lip spreading, ovate, 6.5 mm.

wide, rounded at tip, terminated by 3 low lobes, these 0.5 mm. long, the middle one 1.5 mm. wide, the lateral ones about 1 mm. wide; stamens exserted 18 mm. beyond mouth of the corolla tube, glabrous, linear, the anthers 4 mm. long and 0.5 mm. thick; style exserted about 2.5 cm. beyond the mouth of the corolla tube, glabrous, the stigma minute; capsule clavate, 15 mm. long, 4 mm. wide, 2 mm. thick, glabrous; retinacula 2.25 mm. long, straight or slightly curved,

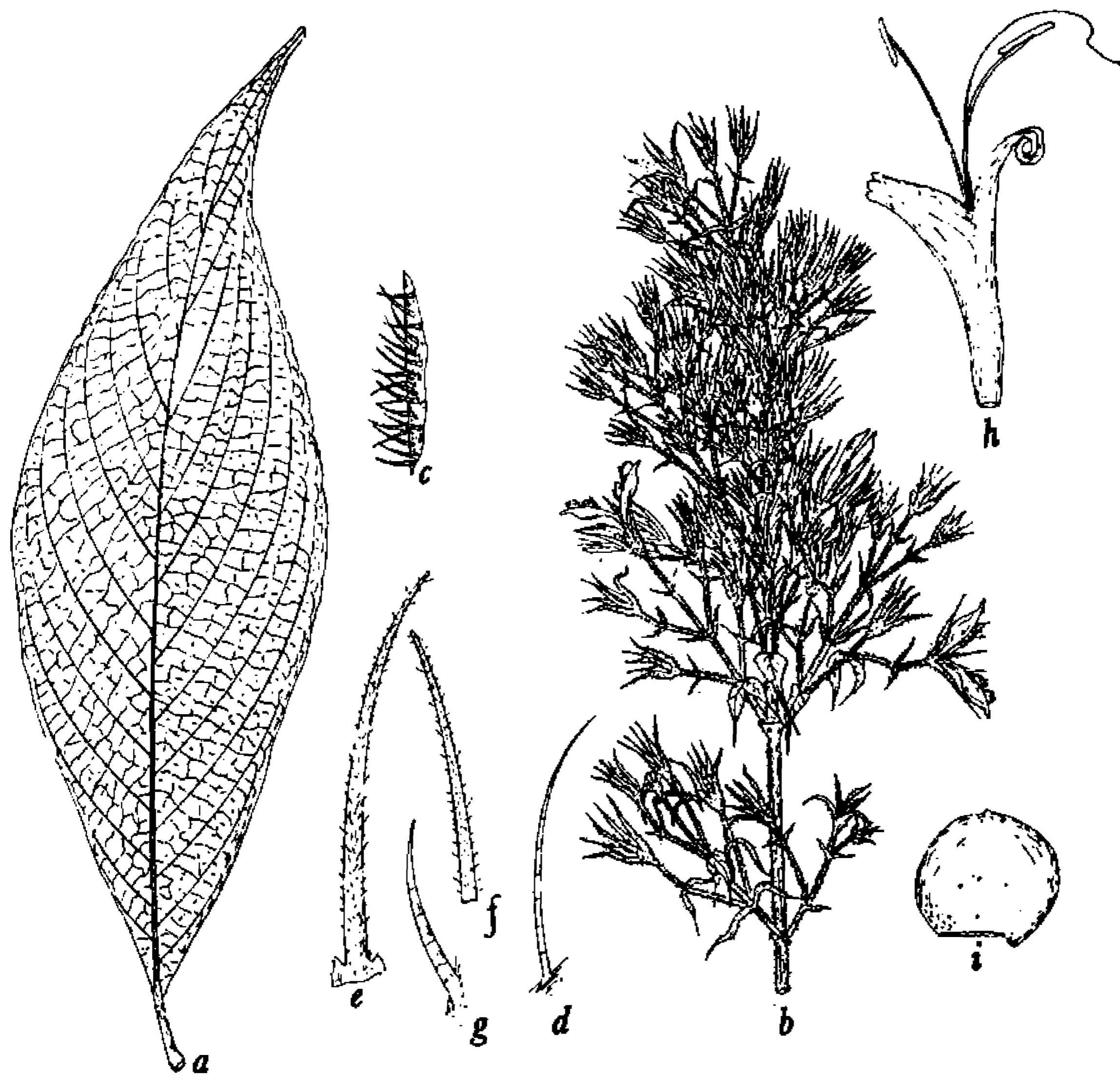


FIGURE 174.—*Habracanthus oresbius* Leonard (Pennell 7556): *a*, Leaf; *b*, panicle; *c*, portion of rachis enlarged to show pubescence; *d*, a hair from rachis; *e*, calyx segment (outer surface); *f*, upper half of calyx segment showing cystoliths and marginal hairs (inner surface); *g*, one of the hairs of the calyx segment; *h*, corolla; *i*, seed. (*a*, Half natural size; *b*, natural size; *c*, 16 times natural size; *d*, *g*, 100 times natural size; *e*, *f*, 3 times natural size; *h*, about $1\frac{1}{2}$ times natural size; *i*, about 4 times natural size.)

narrowly cucullate, the tip rounded and erose; seeds flattish, brown, orbicular, 3 mm. wide and broad, 1.25 mm. thick, smooth or slightly muricate, somewhat oblique at base.

Type in the Gray Herbarium, collected in forest at San José, San Antonio, Department of Cauca, Colombia, 2,400 to 2,700 meters altitude, June 30, 1922, by Francis W. Pennell (No. 7556). Isotypes: NY, US.

Also of this species is Pennell and Killip's No. 7436 (GH), collected in a bushy forest in the same locality as the type on June 28, 1922.

The specific epithet is from the Greek word *ὄρεσβιος*, living on mountains.

24. *Habracanthus corei* Leonard, sp. nov.

FIGURE 175

Suffrutex, caulibus subquadrangularibus, glabris, cystolithis numerosis minutis brunneis praeditis; lamina foliorum late elliptica vel ovata, apice graciliter sed breviter acuminata, basi rotundata in petiolum decurrens, tenuis, integra, in pagina superiore aliquanto pilosa, subtus pilis patulis vel ascendentibus praecipue in costa et venis aliquanto prominentibus positus, venulis crasse reticulatis, cystolithis obscuris, brunneis; petioli glabri, cystolithis minutis obscuris praeditis; paniculae longae, aliquanto angustae, sursum densae et confluentes, inferiores distantes, ramis infimis foliis parvis suffultis, rhache et rhachillis dense hirtellis, pilis plus minusve patulis; pedicelli hirtelli; bracteae flores subtendentes lanceolatae, subacutae, ciliolatae, aliquanto hirtellae; calycis segmenta lanceolata, subacuta, ciliolata, parce et minute hirtella, pilis ascendentibus, apice pilis paucis glandulosis praedita; corolla glabra, anguste infundibuliformis, labio superiore lineari, obscure trinervato, apice rotundata, torto, labio inferiore patulo, ovato, apice 3-lobato, lobis brevibus, rotundatis; stamina exserta, erecta, antheris linearibus, glabris; pistillum glabrum; stigma minutum.

Shrubs; stems subquadrangular, glabrous, the cystoliths minute, brownish, parallel; leaf blades broadly elliptical or ovate, up to 14 cm. long and 8.5 cm. wide, slenderly short-acuminate, short-cuneate (5 mm. long) from a rounded base, thin, entire, sparingly pilose above, sparingly pilosulous beneath, the hairs confined chiefly to costa and lateral veins (about 10 pairs), spreading or ascending, up to 0.48 mm. long, the veinlets coarsely reticulate, these and the costa and lateral veins rather prominent especially beneath, the cystoliths obscure, brownish; petioles up to 4 cm. long and 1.75 mm. thick, glabrous, the cystoliths minute and obscure; flowers ascending, borne in a narrow rather dense panicle up to 26 cm. long or more and 4 cm. broad, the lower branches distant, subtended by small ovate short-petioled (5 mm. long) leaves up to 5 cm. long and 2.5 cm. wide, but in other respects similar to the main stem leaves; bracts subtending the flowers 8 mm. long and 1.25 mm. wide, the tips subacute, ciliate and moderately hirtellous, the hairs up to 0.2 mm. long, the rachis and rachilla rather densely hirtellous, the hairs more or less spreading, up to 0.46 mm. long; pedicels up to 1 mm. long, hirtellous; calyx segments lanceolate, 5.5 mm. long, 1.25 mm. wide near base, subacute, ciliate and rather sparingly and minutely hirtellous, the hairs up to 0.16 mm. long, ascending, bearing near tip a few gland-tipped spreading trichomes up

to 0.46 mm. long; corolla glabrous, the tube 18 mm. long, 3 mm. broad just above base, narrowed at 8 mm. above base to 2 mm., 5 mm. broad at throat, the upper lip erect, linear, 15 mm. long, 2.25 mm. wide, rounded and entire at tip, obscurely 3-nerved, curled or contorted when dry, the lower lip spreading, ovate, 11 mm. wide, 3-lobed at tip, the lobes 1 mm. long, the middle one 1.5 mm. wide, the lateral

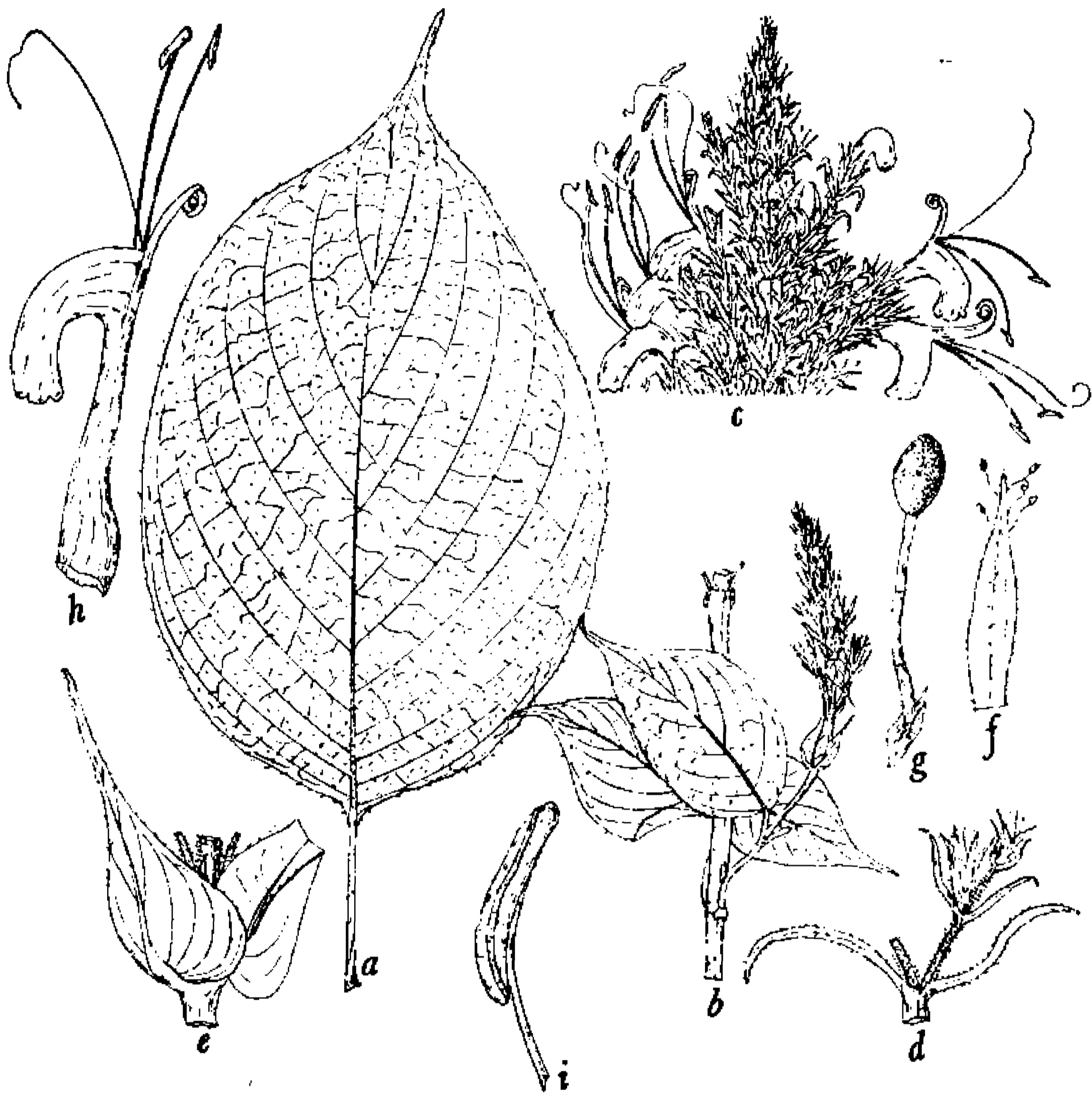


FIGURE 175.—*Habracanthus corei* Leonard (Core 1200): *a*, Leaf; *b*, the lowermost node of inflorescence; *c*, tip of inflorescence; *d*, node of inflorescence to show uppermost bracts; *e*, node of rachis to show bracts; *f*, calyx segment; *g*, trichome from tip of calyx segment; *h*, corolla; *i*, anther. (*a*, Half natural size; *b*, *c*, natural size; *d*, twice natural size; *e*, $2\frac{1}{2}$ times natural size; *f*, *i*, 5 times natural size; *g*, 40 times natural size; *h*, about $1\frac{1}{2}$ times natural size.)

ones about 1 mm. wide, all rounded; stamens exerted 2 cm. beyond mouth of the corolla tube, erect, glabrous; anthers linear, 3.5–4.5 mm. long, about 1 mm. broad; pistil about as long as the stamens, glabrous, the stigma minute; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 2045391, collected in dense shade along stream on the south slope of Cerro San Pedro,

Department of Cauca, Colombia, 2,500 meters altitude, September 10, 1944, by Earl L. Core (No. 1200).

Habracanthus corei differs from the majority of the Colombian species in its broadly elliptic leaf blades and the very sharply acuminate, short-petioled, cordate inflorescence leaves. The color of the corolla is not apparent in the dried material. It was probably some shade of red.

25. *Habracanthus lamprus* Leonard, sp. nov.

FIGURE 176

Suffrutex gracilis, caulibus subquadrangularibus, deorsum glabris, sursum hirtellis; lamina foliorum ovata, breviter acuminata, basi late cuneata et in petiolum decurrens, aliquanto membranacea, integra vel undulata, pilosa et ciliolata, pilis septatis, ascendentibus vel subappressis, costa et venis lateralibus subtus prominentibus, supra obscuris; petioli aliquanto crassi, pilosi; paniculae terminales et axillares (eae in axillis foliorum parvorum) aliquanto densae, rhache dense pilosa, pilis patulis, rhachillis et pedicellis gracilibus pubescentibus, pilis ascendentibus; bracteae ramos inflorescentiae subtendentes conspicuae, foliaceae, cordatae, sessiles vel subsessiles; bracteolae anguste lanceolatae, apice obtusae, pilosae; calycis segmenta anguste triangularia, acuta, deorsum glabra, apice parce hirtella, pilis minutis acutis et pilis glandulosis intermixtis; corolla atrorubens, glabra, anguste infundibuliformis, labio superiore lineari, apice cincinnato vel contorto, labio inferiore patulo, ovato, conduplicato, apice rotundato, 3-lobato, lobis brevibus, rotundatis; stamina exserta, glabra, antheris linearibus; ovarium glabrum.

Slender erect shrub up to 1 m. high, the stems subquadrangular, glabrous or sparingly hirtellous near the inflorescence; leaf blades ovate, up to 11 cm. long and 5.8 cm. wide, short-acuminate, rather broadly cuneate at base and decurrent on the petiole, moderately thin, entire or undulate, rather densely pilose, the hairs up to 1 mm. long, septate, ascending or subappressed, the margins ciliate, the costa and lateral veins (about 10 pairs) moderately prominent beneath, less so above, the cystoliths minute, up to 0.128 mm. long, obscure; petioles up to 1.5 cm. long and 1.25 mm. thick, pilose; panicles ovoid, up to 16 cm. long and 5 cm. wide, moderately dense, the several short, axillary panicles only 1 to 2 cm. long; bracts subtending the branches of the panicle conspicuous, leaf-like, cordate, sessile or subsessile, the lowermost pair up to 4 cm. long and 3 cm. wide, becoming gradually smaller toward tip of panicle, all short-acuminate, the pubescence that of the stem leaves, the rachis densely pilose, the hairs spreading, up to 0.5 mm. long, the rachilla and pedicels (up to 5 mm. long and 0.28 mm. thick) pubescent with ascending hairs up to 0.16 mm. long or occasionally a few of them longer; bracts

subtending the flowers, narrowly lanceolate, 2 to 3 mm. long and 0.25 mm. wide, blunt at tip, pilose; calyx 5 mm. long, glabrous below, sparingly hirtellous toward tip, the small acute hairs intermixed with gland-tipped trichomes about 0.5 mm. long, the segments narrowly triangular, 1.25 mm. wide at base, acute; corolla dark red, glabrous, 1.5 cm. long, the tube 3 mm. broad near base, narrowed at 4 mm. above base to 2 mm., the throat 2.5 to 4 mm. broad, the upper lip

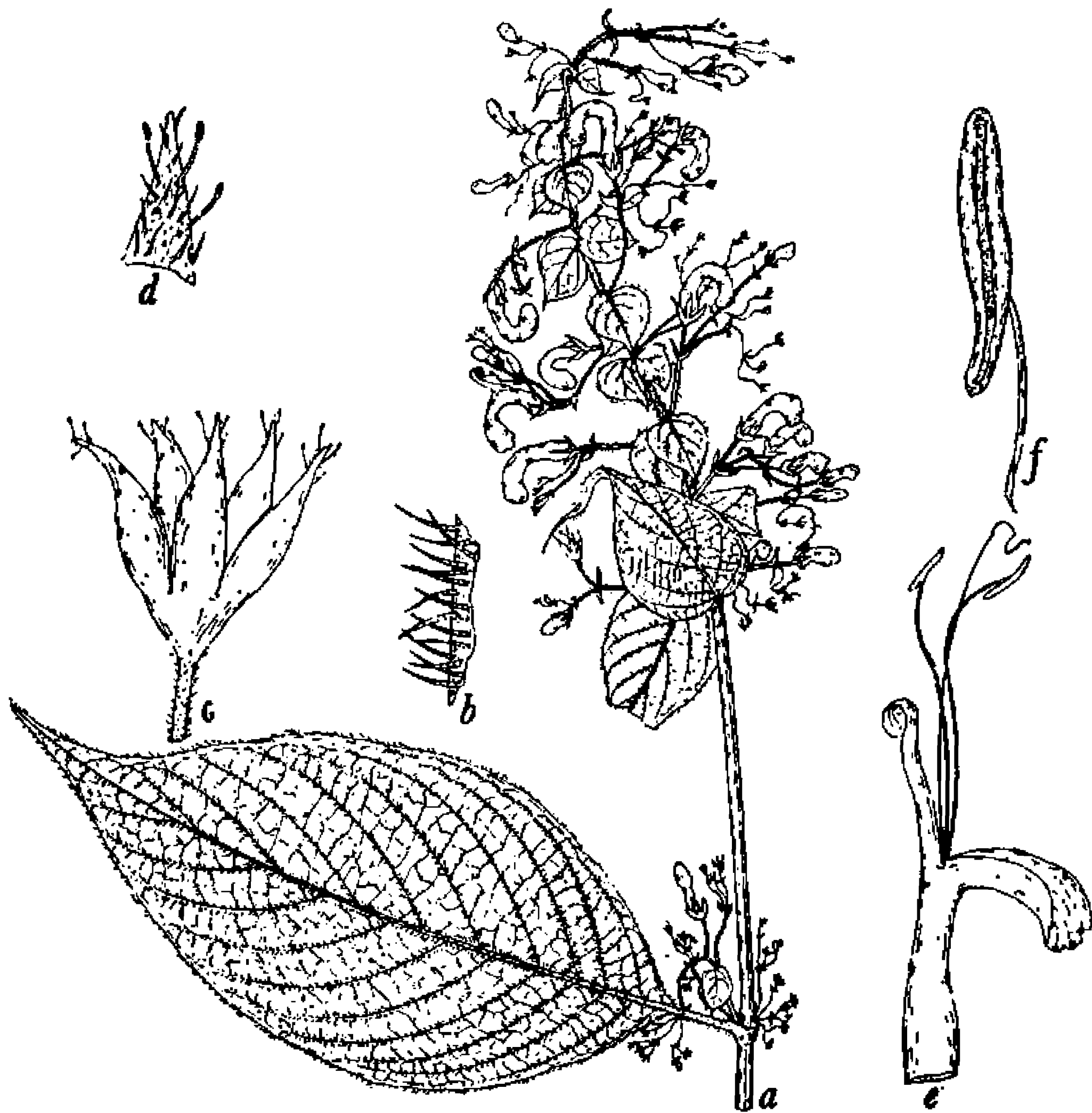


FIGURE 176.—*Habracanthus lamprus* Leonard (Haught 6031): *a*, Tip of plant showing panicle and leaf; *b*, portion of rachilla enlarged to show pubescence; *c*, calyx; *d*, tip of calyx segment enlarged to show hairs and glandular trichomes; *e*, corolla; *f*, anther. (*a*, Half natural size; *b*, *d*, 20 times natural size; *c*, $5\frac{1}{2}$ times natural size; *e*, $2\frac{1}{8}$ times natural size; *f*, $5\frac{1}{2}$ times natural size.)

linear, 12 mm. long, 1.5 mm. wide, the upper part curled and contorted, the tip itself rounded, the lower lip spreading, oval, 10 mm. long, 8 mm. wide, conduplicate, the tip rounded, 3-lobed, the lobes low, 0.75 mm. long, 1 mm. wide, rounded; stamens exerted about 12 mm. beyond the mouth of the corolla, glabrous, the anthers linear, 4.5 mm. long, 1.25 mm. thick; style exerted about 2 cm. beyond the mouth of the corolla, the stigma minute; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 1995096, collected along the highway between San Cayetano and Pacho, Department of Cundinamarca, Colombia, 2,800 meters altitude, August 2, 1947, by Oscar Haught (No. 6031).

Haught states that the flowers were a very dark red and very showy. The specific name is from the Greek *λαμπρός*, bright, radiant, in allusion to its attractive flowers.

26. *Habracanthus congestus* Leonard, sp. nov.

FIGURE 177

Herba vel suffrutex, caulibus subteretibus, glabris, cystolithis subpunctiformibus; lamina foliorum magna, ovata vel obovata, apice breviter acuminata, basi cuneata, integra vel undulata, aliquanto firma, utrinque conspicue pilosa, pilis ascendentibus, costa et venis lateralibus aliquanto conspicuis, cystolithis obscuris vel nullis; panícula terminalis, densa, apice subacuta, paniculae axillares minores, rhache parce hirtella, pilis ascendentibus vel patulis, rhachillis aliquanto dense hirtellis, pilis subbrunneis, septatis; bracteae ramos panicularum subtendentes suborbiculares, apiculatae, sessiles; bracteae ultimae lineari-lanceolatae, subacutae, parce hirtellae; calycis segmenta lanceolata, graciliter 3-vel 5-nervata, subacuta, apice parce hirtella, pilis rigidis acutis, ascendentibus, pilis glanduliferis intermixtis; corolla rubra, parva, glabra, labio superiore erecto, lineari, apice subobtusio, curvato vel cincinnato, labio inferiore patulo, ovato, conduplicato, apice 3-lobato, lobis ovatis, rotundatis; stamina exserta, glabra; ovarium glabrum.

Herbs or suffrutescent plants up to 2.5 meters high, stems subterete, glabrous, the cystoliths subpunctiform; leaf blades ovate or obovate, up to 20 cm. long and 11 cm. wide, short-acuminate at tip (?), cuneate at base, entire or undulate, moderately firm, rather densely and conspicuously pilose, the hairs ascending, about 1 mm. long, the costa and lateral veins (about 12 pairs) moderately conspicuous, the cystoliths inconspicuous or absent; terminal panicle narrow, dense, 17 cm. long, 2 to 3 cm. broad, subacute at tip, the axillary panicles 1 or more pairs, 8 cm. long and 2 cm. broad, the rachises sparingly hirtellous, the hairs ascending or spreading, about 0.28 mm. long, the rachilla rather densely hirtellous with light brownish septate ascending hairs about 0.08 mm. long, the bracts subtending the branches of the inflorescence suborbicular and apiculate, sessile, the lowermost pair about 10 mm. long and 16 mm. wide, the others successively smaller toward the tip of the inflorescence, the ultimate bracts linear-lanceolate, 4 mm. long, 0.75 mm. wide, subacute, sparingly hirtellous; calyx segments lanceolate, 5 mm. long, 1 mm. wide at base, subacute, delicately 3- to 5-nerved, sparingly hirtellous with rigid acute ascending hairs ca. 0.1 mm. long and intermixed with these a few gland-tipped trichomes up to about 0.5 mm. long; corolla red, about

14 mm. long, glabrous, the upper lip erect, about 8 mm. long, and 1 mm. wide, subobtuse, curled at tip, the lower lip spreading, about 10 mm. long, ovate, 3-lobed at tip, the lobes ovate, about 2 mm. long, rounded; stamens exerted 10 mm. beyond the mouth of the corolla tube, glabrous, the anthers 4 mm. long, 1 mm. thick; style slightly longer than the stamens, the stigma minute; ovary glabrous; capsules not seen.

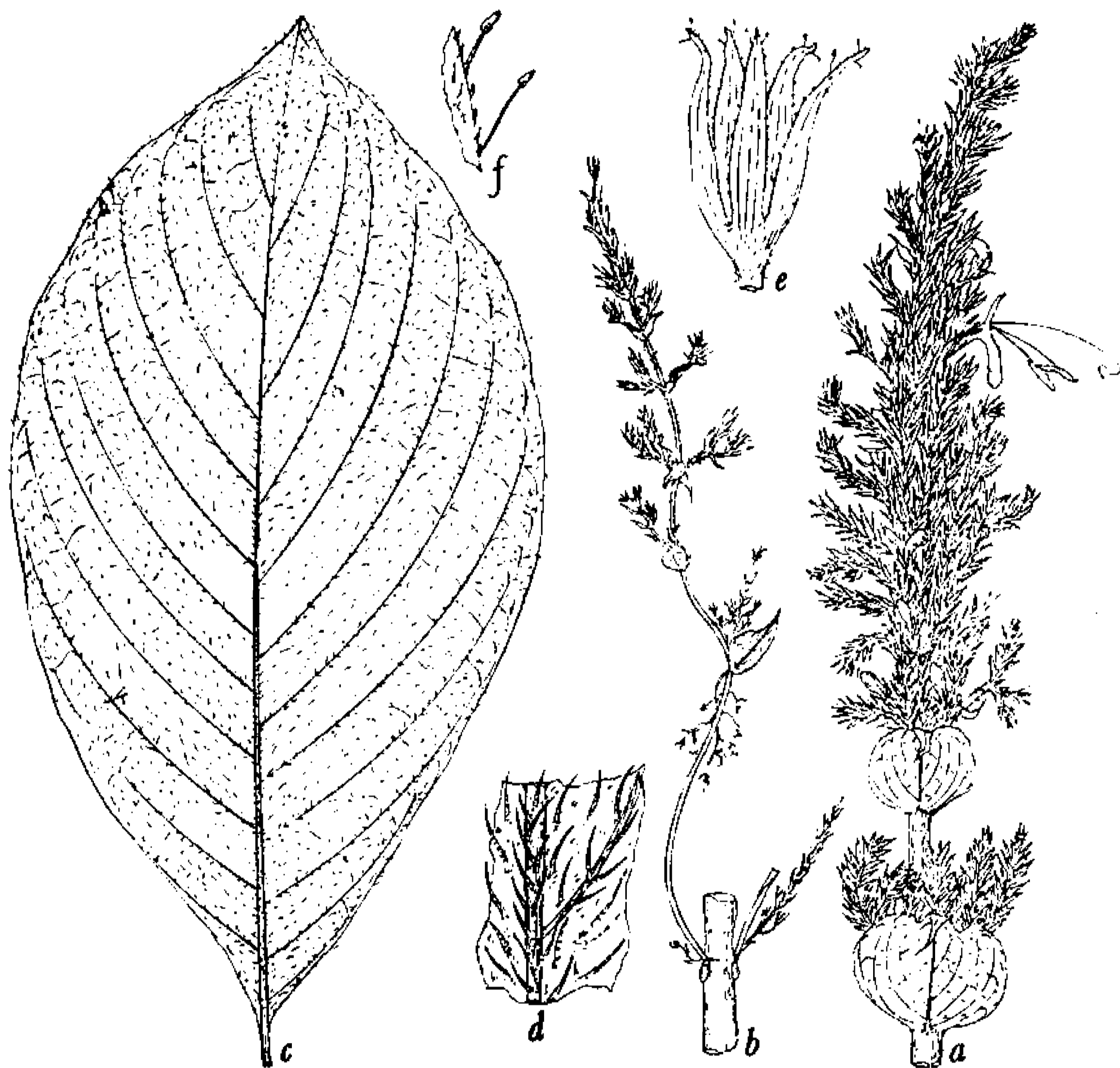


FIGURE 177.—*Habracanthus congestus* Leonard (von Sneidern 2646): *a*, Upper half of panicle; *b*, lowermost part of panicle; *c*, leaf blade; *d*, portion of leaf blade enlarged to show pubescence; *e*, calyx; *f*, portion from near tip of calyx segment enlarged to show pubescence. (*a*, Half natural size; *b*, *c*, natural size; *d*, 4 times natural size; *e*, 6 times natural size; *f*, 40 times natural size.)

Type in the Stockholm Herbarium, collected in virgin forests of La Plata, Department of Huila, Colombia, 2,600 meters altitude, March 25, 1939, by Kjell von Sneidern (No. 2646).

Characters making *Habracanthus congestus* easy to separate from other Colombian species are its narrow congested panicle, small red flowers, and large ovate or obovate hairy leaf blades. The specific name *congestus* alludes to the narrow dense panicles.

27. *Habracanthus diversicolor* Lindau

Habracanthus diversicolor Lindau, Bull. Herb. Boiss. 5: 669. 1897. Syntypes: Agua Obispo, Province of Truxillo, Venezuela, altitude 2,300 meters, Funck & Schlim (No. 791) (photograph in the U. S. National Herbarium, Field Mus. No. 8888). Province of Ocaña, Department of Norte de Santander, Colombia, altitude 2,300 meters, Schlim 458; La Baja, Province of Pamplona, Department of Norte de Santander, Colombia, 3,000 meters altitude, Funck & Schlim 1309.

Herbaceous or suffrutescent plants up to 3 meters high; stems subquadrangular, glabrous or bifariously puberulent, the hairs retrorsely recurved, 0.16 mm. long; leaf blades ovate, up to 20 cm. long and 8.5 cm. wide, slenderly acuminate, the rounded base decurrent on the petiole, moderately firm, entire or undulate, the upper surface nitid, sparingly hirsute, the hairs septate, ascending, up to 0.4 mm. long, those of the lower surface smaller and confined mostly to costa and lateral veins (about 10 pairs), the cystoliths prominent under a lens; petioles (unwinged portion) up to 4.5 cm. long, glabrous or the channels sparingly hirsute; panicle terminal, slenderly pyramidal, up to 40 cm. long or more and 9 cm. broad, the branches rigid, numerous, dichotomously or cincinnally branched, the flowers few and often erect, the rachises densely pubescent with spreading hairs, eglandular ones up to 0.3 mm. long and others up to 0.4 mm. long and tipped with elongated glands intermixed, the lower branches of the panicle subtended by large cordate-ovate subsessile leaflike bracts (2 to 8 cm. long and 1 to 6 cm. wide), the other branches subtended by small subulate bracts about 1 mm. long and 0.5 mm. wide at base, carinate and rather densely pubescent; pedicels 1 to 4 mm. long, densely pubescent with spreading hairs; calyx segments linear, 6 to 12 mm. long, 1 to 1.25 mm. wide, acute or subacute, densely pubescent with spreading glandular and eglandular hairs intermixed, the glandular ones longer than the eglandular ones (up to 0.25 mm. long); corolla red with yellow tinge (Killip & Smith), glabrous, the tube 10 to 15 mm. long, slightly subventricose, 2.5 mm. broad near base, narrowed to 2 mm. at 2.5 mm. above the base, 5.5 to 6 mm. broad at middle, and 3 to 4 mm. broad at mouth, the upper lip linear, 3.5 mm. long, about 1.5 mm. wide, entire, the lower lip of 3 lobes, the middle lobe 1.5 mm. long and broad, the lateral ones 1.5 mm. long and 2 mm. wide; stamens exserted, the filaments up to 28 mm. long, glabrous above, sparingly and finely pubescent toward base, the anthers 2 to 4 mm. long, curved; style up to 30 mm. long; capsules clavate, 13 to 14 mm. long, 3 to 4 mm. broad, 2 mm. thick, glabrous, the solid stipe 5 mm. long; retinacula 2.5 mm. long, rounded at tip and slightly erose; seeds 4, lenticular, suborbicular, about 2.5 mm. long and broad, 0.75 mm. thick, black, minutely and obscurely tuberculate.

NORTE DE SANTANDER: Woods along stream near Tapatá, Culagá Valley, 1,500 to 2,100 meters, March 3-8, 1927, Killip & Smith 20157 (US).

28. *Habracanthus pennellii* Leonard, sp. nov.

FIGURE 178

Herba, caulibus sursum subquadrangularibus, aliquanto parce bifariam hirtellis, pilis plus minusve patulis, deorsum subteretibus et glabratis, cystolithis paucis, minutis; lamina foliorum ovata, apice subobtusata vel breviter apiculata (apice ipso obtuso et plus minusve apiculato) basi angustata, aliquanto firma, integra vel undulata, utrinque plus minusve dense hirsuta, pilis ascendentibus, septatis,

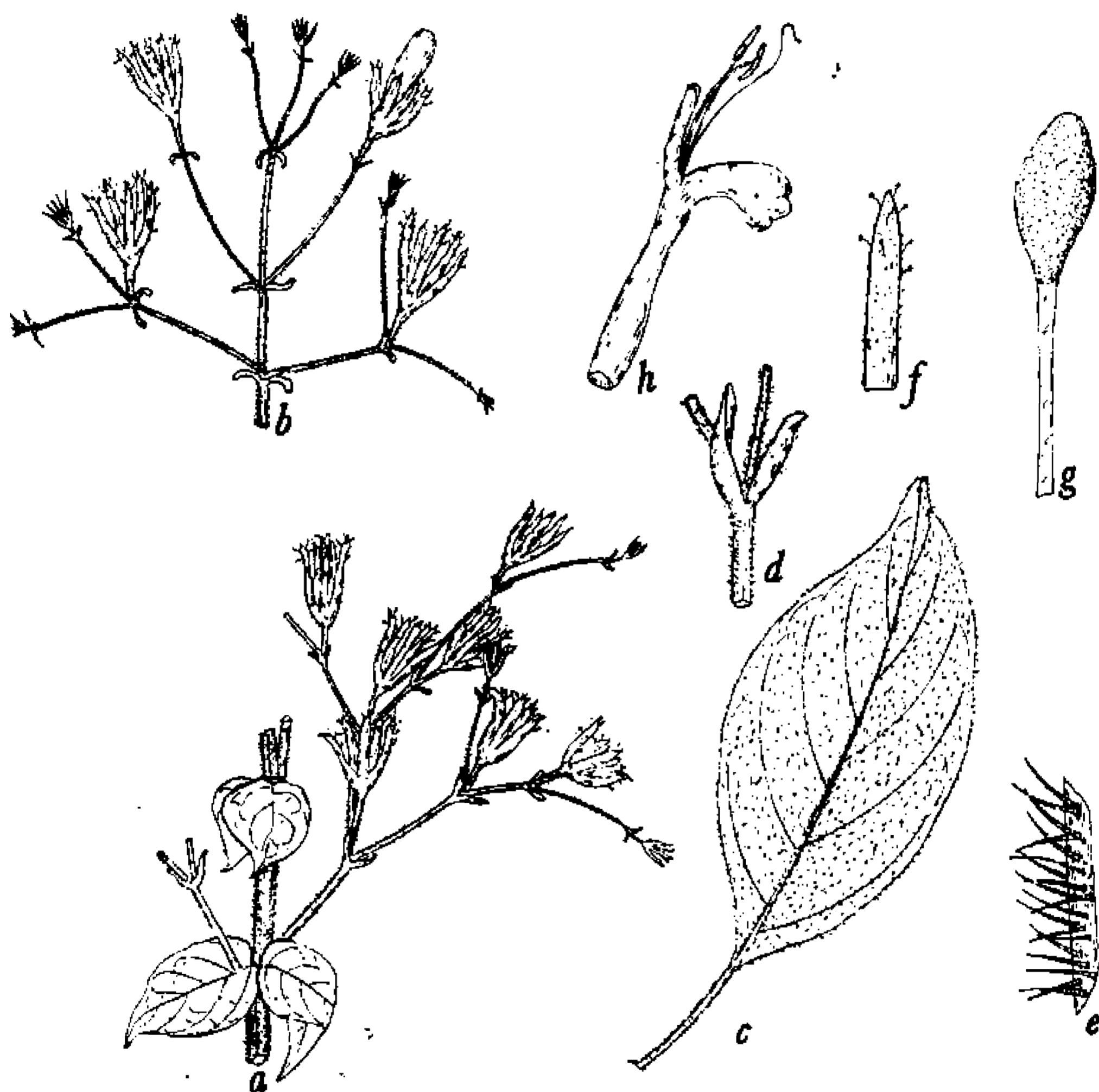


FIGURE 178.—*Habracanthus pennellii* Leonard (Pennell 10414): *a*, Section of the middle portion of a terminal panicle; *b*, tip of inflorescence; *c*, leaf; *d*, node of inflorescence to show bracts; *e*, portion of rachis enlarged to show pubescence; *f*, tip of a calyx segment enlarged to show trichomes; *g*, tip of a trichome; *h*, corolla. (*a-c*, Natural size; *d*, 5 times natural size; *e*, about 16 times natural size; *f*, 3 times natural size; *g*, about 150 times natural size; *h*, $2\frac{1}{4}$ times natural size.)

subtus praecipue in costa et venis lateralibus conspicuis positis; petioli graciles, hirtelli; paniculae terminales et axillares inferiores subtiles, interruptae, ramis 1- vel 2-furcatis, foliis parvis cordatis, acutis, sessilibus suffultis, rhache et rhachillis dense brunneo-hirtellis, pilis plus minusve patulis, septatis, pedicellis gracilibus, puberulis; bracteae flores subtendentes lineares, subobtusae, parce hirtellae; calycis segmenta lineari-lanceolata subito acuta, parce puberula, pilis parvis

acutis paucis pilis glandulosis intermixtis; corolla rubra, glabra, tubo angusto, labio superiore lineari, erecto, apice obtuso, labio inferiore plus minusve patulo, apice 3-lobato; stamina exserta, glabra, antheris linearibus; capsulae clavatae, glabrae; semina brunnea (matura), suborbicularia, plana, basi obliqua.

Herbs up to 1 meter high or more; stems subterete and glabrate below, subquadrangular and rather sparingly hirtellous in two lines toward tip, the hairs mostly spreading, septate, ca. 0.4 mm. long, the cystoliths few, minute; leaf blades ovate, up to 5 cm. long and 2.8 cm. wide, subobtuse or short-apiculate, narrowed at base, moderately firm, entire or undulate, both surfaces more or less hirsute, the hairs ascending, mostly up to 0.6 mm. long, septate, those of the lower surface confined mostly to the costa and lateral veins (7 or 8 pairs), the venation not noticeably conspicuous but more so beneath than above; petioles rather slender, up to 1 cm. long and 0.75 mm. thick, hirtellous, the hairs similar to those of the leaf blades; branches of the panicle 1 to 4 at each node, terminal and axillary, scattered for some distance along the stems forming long interrupted panicles, the terminal portion ovoid, up to 15 cm. long and 7 cm. broad, the upper branches of the panicles subtended by ovate-cordate leaflike bracts up to 12 mm. long and 9 mm. wide, these sessile, acuminate and acute at tip, the margins undulate, the surfaces sparingly hirtellous, the rachis and rachilla densely brown-hirtellous, the hairs more or less ascending, septate, up to 0.4 mm. long, the pedicels 3 to 5 mm. long and 0.25 to 0.5 mm. wide, the ultimate internodes of the branches of the inflorescence puberulous, the hairs up to 0.1 mm. long, the bracts subtending the flowers and ultimate forks linear, 1 to 2 mm. long, 0.25 mm. wide, subobtuse, sparingly hirtellous; calyx segments linear-lanceolate, up to 7 mm. long, and 1 mm. wide, abruptly acute, sparingly puberulous, some of them bearing in addition to the minute acute hairs several conspicuously longer glandular ones (up to 0.5 mm. long); corolla "lake-red," glabrous, 12 mm. long, the tube 2 mm. broad at base, narrowed at 3 mm. above base to 1.5 mm., thence cylindrical or nearly so to tip, the upper lip erect, linear, about 4 mm. long and 1 mm. wide, obtuse at tip, the lower lip ovate, more or less spreading, 3-lobed at tip; stamens exserted 4 mm. beyond mouth of corolla tube, glabrous, the anthers linear, 2.5 mm. long and 0.5 mm. wide; capsules clavate, about 12 mm. long, 3 mm. broad and 1.5 mm. thick, glabrous; retinacula 2.5 mm. long, obtuse and erose at the rather narrow obtuse tip; seed whitish and strongly muricate, becoming brown and more or less smooth at maturity, then suborbicular, flattened, slightly oblique at base, 2.5 mm. long and broad, 0.5 mm. thick.

Type in the Gray Herbarium, collected along stream in forest, Río

San Raphael, below Cerro Tatamá, Department of Caldas, Colombia, 2,500 to 2,800 meters altitude, September 7-11, 1922, by Francis W. Pennell (No. 10414).

Habracanthus pennellii is closely related to and resembles in many respects *H. scolnikae* from the Department of Antioquia. In *H. pennellii* the calyx lobes, although they bear scattered glandular trichomes like *H. scolnikae*, are linear and abruptly acute instead of being gradually narrowed from the base to a slender tip. The leaf blades of *H. scolnikae*, although small and ovate like those of *H. pennellii*, are acutely acuminate instead of subobtuse or bluntly short-acuminate. The corollas also are different in the two species: *H. scolnikae* has sulphur-yellow corollas reaching 15 mm. in length, whereas those of *H. pennellii* are lake-red and not over 12 mm. long. Both species are rank herbs with relatively thick tumid stems.

Only the uppermost leaves are represented by the type material of *H. pennellii*. The lower stem leaves might possibly be much larger than the dimensions given in the description.

29. *Habracanthus microcalyx* Leonard, sp. nov.

FIGURE 179

Herba, caulibus subquadrangularibus, glabris vel sursum parce et bifariam puberulis, pilis recurvatis et subappressis; folia caulina ignota; lamina foliorum panicularum aliquanto parva, ovata, breviter acuminata, basi cuneata, aliquanto firma, integra, glabra vel parce hirtella, pilis rigidis; petioli graciles, parce et minute hirtelli, cystolithis minutis et aliquanto inconspicuis; paniculae terminales et axillares, densae, multi-ramosae, ramis glabris vel parce puberulis, pilis recurvatis, cystolithis sub lente aliquanto conspicuis; pedicelli graciles, puberuli, pilis patulis vel recurvatis, septatis; calycis segmenta subulata, apice recurvata, pilis paucis, acutis et pilis glandulosis longioribus intermixtis praedita; corolla rubra (?), glabra, tubo anguste infundibuliformi, labio superiore erecto, oblongo-elliptico, apice subobtusum, labio inferiore patulo, ovato, apice truncato, 3-lobato, lobis brevibus, rotundatis; stamina ignota; ovarium glabrum.

Herbs; stems subquadrangular, glabrous or the upper portions sparingly and bifariously puberulous, the hairs up to 0.1 mm. long, recurved and subapressed; stem leaves not seen, those of the panicles narrowly ovate, up to 6 cm. long and 1.5 cm. wide, short-acuminate, cuneate at base, moderately firm, entire, glabrous or sparingly hirtellous, the hairs rigid, up to 0.1 mm. long; petioles slender, about 0.5 mm. long, sparingly and minutely hirtellous, the cystoliths minute and rather inconspicuous; panicles dense, much branched, terminal and axillary, occurring for some distance along the stems, the internodes 5 to 12 cm. long, the branches of the panicles dich-

tomous, 3 to 8 cm. long, slender, 1 to 0.25 mm. thick, glabrous or sparingly puberulous, the hairs up to 0.13 mm. long, recurved, the cystoliths rather conspicuous under a lens; pedicels up to 2 mm. long, 0.25 mm. thick, rather densely puberulous with spreading or recurved septate hairs up to 0.16 mm. long; calyx up to 8 mm. long, glabrous or bearing on the margins and tips of the segments a few gland-tipped trichomes up to 0.32 mm. long intermixed with minute rigid acute hairs about 0.08 mm. long, the segments subulate, 1 mm.



FIGURE 179.—*Habracanthus microcalyx* Leonard (*Ariste-Joseph* A 224): *a*, Node showing axillary panicle; *b*, leaf from inflorescence; *c*, calyx; *d*, tip of calyx segment enlarged to show hairs; *e*, corolla. (*a*, *b*, Natural size; *c*, about 3 times natural size; *d*, 40 times natural size; *e*, $2\frac{1}{2}$ times natural size.)

wide at base, gradually narrowed into a slender recurving tip; corolla 17 mm. long, red (?), glabrous, the tube 2 mm. broad at base, narrowed to 1 mm. at 2 mm. above base, thence gradually enlarged to 3 mm. at mouth, the upper lip oblong-elliptic, erect, 8 mm. long, 1.5 mm. wide, subobtuse and entire at tip, the lower lip spreading, ovate, 9 mm. long, 7 mm. wide, truncate and 3-lobed at tip, the lobes 1 mm. long, about 2 mm. wide, rounded; stamens not seen; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 888432, collected at Bogotá, Department of Cundinamarca, Colombia, 1911, by Bro. Ariste-Joseph (No. A224).

30. *Habracanthus hylobius* Leonard, sp. nov.

FIGURE 180

Herba ramis elongatis, caulibus subquadrangularibus, deorsum glabris, sursum plus minusve puberulis, pilis curvatis; lamina foliorum oblongo-ovato vel oblongo-elliptica, breviter acuminata vel acuta, basi cuneata, plus minusve firma, integra vel obscure et leviter undulata, utrinque parce puberula, pilis praecipue in costa et venis lateralibus positis, venulis crasse reticulatis, cystolithis parvis sed multis et sub lente conspicuis; petioli aliquanto puberuli; paniculae terminales et axillares, ramis furcatis, floribus plus minusve secundis, rhache et rachillis aliquanto dense hirtellis, pilis patulis vel recurvatis, septatis, pedicellis erectis vel ascendentibus, hirtellis, ramis infimis foliis parvis suffultis; bracteae subulatae, acutae, parce hirtellae; calycis segmenta lanceolata, apice gracilia (apice ipso subobtusum), minute et parce hirtella, pilis acutis parvis septatis patulis vel ascendentibus et pilis glandulosis paucis longioribus intermixtis; corolla punicea, glabra, tubo anguste infundibuliformi, labio superiore erecto, lineari, apice recurvato, subacuto, labio inferiore patulo, ovato, apice rotundato, 3-lobato, lobis ovatis, brevibus, obtusis; stamina exserta, glabra, antheris oblongis, utrinque muticis; capsulae clavatae, glabrae; retinacula fere recta, minute et graciliter striata, apice subacuta, obscure lacerata; semina plana, suborbicularia, albida (immatura), brunnea (matura), levia, marginibus muricatis.

Herbs up to 1 meter high, the branches elongate; stems subquadrangular, glabrous below, more or less puberulous toward tip, the hairs curved, up to 0.11 mm. long; leaf blades oblong-ovate or oblong-elliptic, up to 18 cm. long and 7 cm. wide, short-acuminate, acute at base, rather firm, entire or obscurely undulate, both surfaces rather sparingly puberulous, the hairs confined chiefly to the costa and lateral veins (usually about 12 pairs), the hairs up to 0.2 mm. long, subappressed, the venation rather prominent especially on the lower surface of the blades, the veinlets coarsely reticulate, the cystoliths minute but conspicuous under a lens; petioles 1 to 5 cm. long, sparingly puberulous; panicles terminal and axillary, the axillary ones borne for a considerable distance down the stems, the dense terminal part of the inflorescence ovoid-pyramidal, up to 22 cm. long and 12 cm. broad, the flowers more or less secund on the forked branches of the inflorescence, often with a flower in the fork, the rachis and rachilla rather densely hirtellous, the hairs spreading or recurved, up to 0.11 mm. long, septate, the pedicels erect or ascending, usually 1 to 3 mm. long, hirtellous, the hairs similar to those of the rachilla, the main nodes of the inflorescence bearing small leaves, the ultimate nodes producing subulate bracts up to about 6 mm. long and 0.5 mm. wide, gradually narrowed from base into a slender tip, sparingly hirtellous; fully

developed calyces 10 to 12 mm. long, minutely and sparingly hirtellous, the acute hairs up to 0.16 mm. long, spreading or ascending, septate, these intermixed with spreading gland-tipped trichomes up to 0.25 mm. long, the segments of the calyx 9 to 10 mm. long, 1 mm. wide at base, gradually narrowed into a rather bluntish tip; corollas

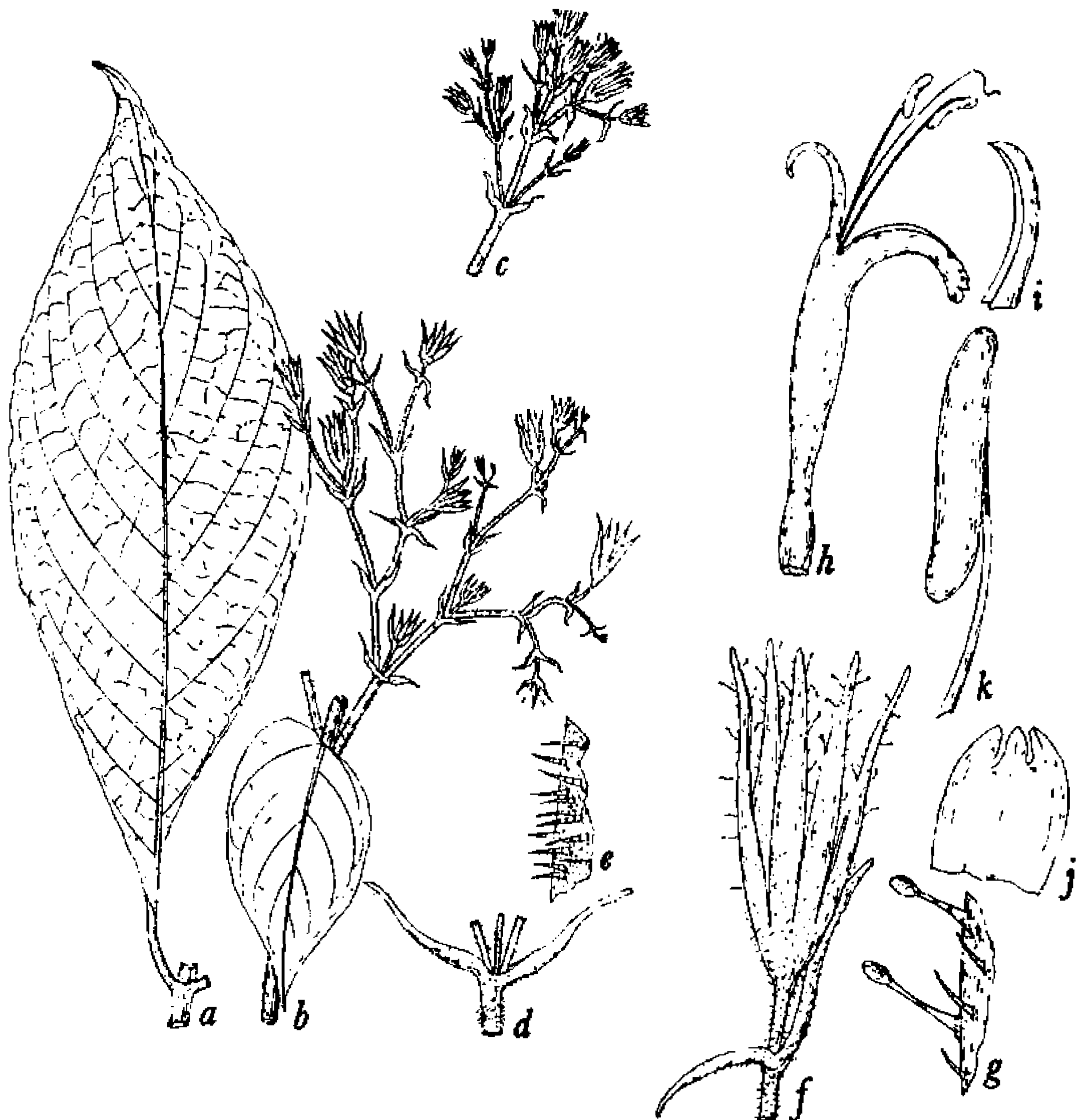


FIGURE 180.—*Habracanthus hylobius* Leonard (von Sneidern 647): *a*, Leaf; *b*, branch of inflorescence from near the base of the terminal panicle; *c*, tip of same; *d*, one of the ultimate nodes of the panicle showing bracts; *e*, portion of a rachilla enlarged to show pubescence; *f*, calyx; *g*, portion of calyx segment from near its tip, enlarged to show pubescence; *h*, corolla; *i*, tip of the upper lip of corolla; *j*, lower lip of same; *k*, anther. (*a*, Half natural size; *b*, *c*, natural size; *d*, *f*, *i*, *j*, 3 times natural size; *e*, 32 times natural size; *g*, 40 times natural size; *h*, twice natural size; *k*, 6 times natural size.)

bright red, glabrous, 20 to 25 mm. long, 3 mm. broad at base, enlarged to 3.5 mm. at just above base, then again slightly narrowed and then gradually enlarged to 5 mm. at the mouth of corolla tube, the upper lip erect, linear, 12 mm. long, 1.5 mm. wide at base, subcarinate, the tip more or less recurved and curled, subacute, the lower lip spreading, ovate, 12 mm. long, 7.5 mm. wide, rounded and 3-lobed

at tip, the lobes 1 mm. long and broad, obtuse; stamens exerted about 15 mm. beyond the mouth of the corolla, glabrous, the anthers oblong, 4 mm. long, 1.5 mm. broad, rounded at both ends; style slightly exceeding the stamens, glabrous, the stigma minute; capsules clavate, 12 mm. long, 4.5 mm. wide, 2.5 mm. thick; retinacula 2 mm. long, minutely and delicately striate, nearly straight, the upper portion oblong, the tip subacute, obscurely lacerate; seed suborbicular, flattish, about 2 mm. in diameter and 0.5 mm. thick, whitish, becoming brown at maturity, more or less muricate, becoming smooth at maturity except at margins.

Type in the herbarium of the Riksmuseet, Stockholm, collected in virgin forest at Munchique, near the village of El Tambo, Department of Cauca, Colombia, 2,500 meters altitude, April 26, 1936, by Kjell von Sneidern (No. 647).

The following are paratypes:

CAUCA: Virgin forests at La Costa, near the village of El Tambo, 1,800 meters altitude, March 7, 1935, *von Sneidern* 491 (S); 900 meters altitude, March 19, 1936, *von Sneidern* 621 (S); 1,600 meters altitude, May 28, 1936, *von Sneidern* 703 (S). Western bank of the Río Munchique, Cordillera Occidental, 2,400 meters altitude, July 23, 1948, *H. García-Barriga, J. G. Hawkes & M. Villarreal*, 12945 (US). Cerro de Munchique, Cordillera Occidental, above the Río Tambito, 2,000 to 2,500 meters altitude, July 16, 1939, *E. Pérez-Arbeláez & J. Cuatrecasas* 6260 (Col).

CUNDINAMARCA: Wet forested hillside, along the road from Bogotá to Fusagasugá, near San Miguel, eastern Cordillera, April 30, 1944, *E. P. Killip* 38086 (US). Salto de Tequendama, 2,800 meters altitude, July 1855, *Triana* s.n. (Col).

HUILA: Virgin forest at La Plata, 2,600 meters altitude, March 14, 1939, *Kjell von Sneidern* 2645 (S).

TOLIMA: Aguadita, January 27, 1938, *Bro. Laureano Javier* 17 (US). Quindío, 2,300 meters altitude, February 1852, *Triana* s.n. (Col).

Without DEFINITE LOCALITY: *J. Triana* s.n. (NY). *Mutis* 1508 (US).

The specific epithet is from the Greek *ὕλοβιος*, living in the woods.

31. *Habracanthus scolnikae* Leonard, sp. nov.

FIGURE 181

Suffrutex, caulibus quadrangularibus, parce hirtellis, pilis retrorse appressis vel interdum paulo patentibus, deorsum glabratis, nodis tumidis; lamina foliorum ovata vel oblongo-ovata, breviter acuminata, basi rotundata vel obtusa vel acuta in petiolum decurrens, utrinque inconspicue puberula, pilis subappressis vel subpatentibus, costa et venis lateralibus aliquanto conspicuis, cystolithis minutis, paucis, inconspicuis; petioli graciles, strigosi; paniculae terminales et axillares, tenues, ramis 1- vel 2-furcatis, foliis parvis sessilibus, cordatis suffultis, rhachibus et pedicellis gracillimis, parce vel aliquanto hirtellis, pilis ascendentibus, septatis; bracteae parvae, subulatae, minute ciliatae; calycis segmenta anguste triangularia, acuminata (apice ipso sub-obtusa), parce et minute hirtella, apice aliquando pilis minutis paucis glandulosis praedita, glandulis brunneis, elongatis; corolla sulphurea,

glabra, tubo subcylindrico, labio superiore lineari, apice rotundata, labio inferiore suborbiculari, 3-lobato, lobis brevibus, rotundatis; stamina exserta, glabra, antheris linearibus, utrinque muticis; stigma minutum; capsulae clavatae, glabrae; semina subbrunnea, muricata.

Suffrutescent plants up to 2 meters high; stems subquadrangular (the angles rounded), sparingly puberulous, the hairs closely and re-

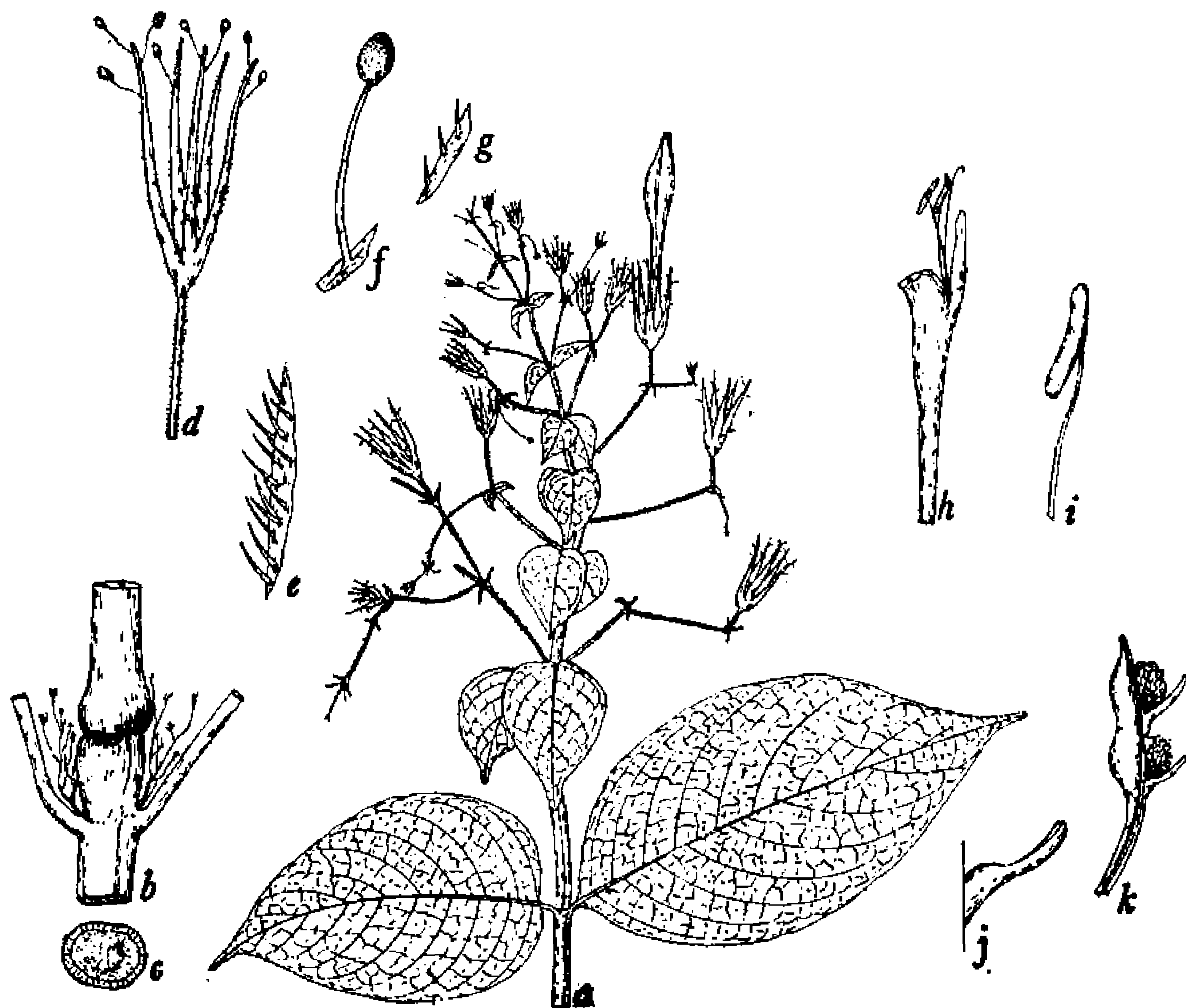


FIGURE 181.—*Habracanthus scolnikae* Leonard (*Scolnik, Barva-López & Barkley* 19 An. 199):
a, Tip of plant to show inflorescence; *b*, a lower node to show tumescence and small lateral panicles; *c*, cross-section of stem near node to show pith area; *d*, calyx; *e*, portion of pedicel enlarged to show pubescence; *f*, a trichome from near tip of calyx segment; *g*, portion of marginal region of calyx segment enlarged to show ciliation; *h*, corolla; *i*, anther; *j*, retinaculum; *k*, capsule valve. (*a*, Natural size; *b*, *c*, *h*, twice natural size; *d*, 3 times natural size; *e*, 50 times natural size; *f*, *g*, 30 times natural size; *i*, 3½ times natural size; *j*, 5½ times natural size; *k*, 1½ times natural size.)

trorsely appressed, or a few somewhat spreading, up to 0.13 mm. long, the lower portion of the stems 9 mm. in diameter or more, glabrate, the nodes swollen, the internodes 10 cm. long, the pith white and about 7 mm. in diameter; leaf blades ovate to oblong-ovate, up to 7 cm. long and 3.8 cm. wide, short-acuminate, rounded, obtuse or acute at base and decurrent on the petiole, thin, entire, both surfaces inconspicuously puberulous, the hairs subappressed or spreading,

up to 0.5 mm. long, the costa, lateral veins (7 or 8 pairs) and the coarsely reticulate veinlets moderately conspicuous, the cystoliths minute, sparse, inconspicuous, up to 0.16 mm. long; petioles slender, the unwinged portion up to 2 cm. long, strigose; flowers borne in small delicate terminal and axillary racemes 3 to 8 cm. long and 2 to 4.5 cm. broad, the peduncles 0.5 to 5 cm. long, sparingly and inconspicuously hirtellous, the branches of the panicle once or twice forked (sometimes with a flower in the first fork) and subtended by subsessile cordate acuminate recurved leaves 0.5 to 4 cm. long and 0.3 to 2 cm. wide, the pedicels and secondary branches of the panicle subtended by subulate bracts 2 to 5 mm. long and about 0.5 mm. wide, acute, minutely ciliate and sparingly hirtellous or glabrate, the lowermost internodes about 12 mm. long, the others successively shorter, the pedicels 1 to 4 mm. long, both the pedicels (0.24 mm. thick) and branches very slender, sparingly to moderately hirtellous, the hairs ascending, up to 0.16 mm. long, septate; calyx segments narrowly triangular, 5 to 8 mm. long, 1.25 mm. wide at base, gradually narrowed to a slender bluntish tip, sparingly and minutely hirtellous, the hairs ascending, the segments sometimes bearing at or near the tips a few long (0.4 mm.) hairs tipped by conical elongated brownish glands; corolla sulphur yellow, glabrous, reaching 15 mm. in length, the tube 3 mm. broad at base, enlarged at 2 mm. above base to 3.5 mm., thence narrowed at 4 mm. above base to 2.5 mm., from there gradually enlarged to 3.5 mm. at mouth, the upper lip linear, 7 mm. long, 1 mm. wide (flower young), rounded at tip, the lower lip suborbicular, 5 mm. long and 4 mm. wide, 3-lobed at tip, the lobes 0.5 mm. long, and 0.75 mm. wide, rounded; stamens exerted about 7 mm. beyond the mouth of the corolla, glabrous, the anthers 3.5 mm. long, 1.25 mm. broad, rounded at both ends; style slightly exceeding the stamens, glabrous, the stigma minute; capsules clavate, glabrous, 15 mm. long, 4 mm. wide, 3 mm. thick; retinacula 2 mm. long, linear-cucullate at tip, inconspicuously erose; seed light brownish (immature), 2 mm. long and broad, strongly muricate.

Type in the U. S. National Herbarium, No. 1995126, collected in a damp woods on a páramo 10 km. east of Sonsón, Department of Antioquia, Colombia, 2,700 meters altitude, March 18, 1949, by Rosa Scolnik, Nemesio Barva López, and Fred A. Barkley (No. 19An.199).

García-Barriga's No. 4857, collected at Yanaca, Maripi, Department of Antioquia, July 22, 1936, may also be of this species.

The relatively small thin leaf blades, numerous small delicate panicles of sulphur yellow flowers, and all the main branches of the panicles being subtended by small, sessile, cordate, pointed leaves are characters marking *Habracanthus scolnikae*.

34. HANSTEINIA Oerst.

Hansteinia Oerst. Nat. For. Kjöbenhavn Vid. Medd. 1854: 142. 1854. Named for Dr. Johannes Hanstein. Type species: *Hansteinia gracilis* Oerst. Type collected by Oersted in Costa Rica.

Galeottia Nees in DC. Prodr. 11: 311. 1847. Based on a single species, *G. gracilis* Nees, from Veracruz, México.

Glockeria Nees in DC. Prodr. 11: 728. 1847. A renaming of *Galeottia* Nees, non Rupr. (1842), non A. Rich. (1845); non *Glockeria* Goeppert, Nov. Act. Acad. Caes. Leop. 17: 379, pl. 39, figs. 2, 3. 1836.

Herbaceous or shrubby plants; flowers borne usually in terminal and axillary loose thyrsiform panicles; bracts small and subulate, calyx segments 5, narrow, equal; corollas red or yellow, tubular, narrow, usually constricted just above the ovary, thence abruptly and somewhat obliquely enlarged and oblong, often slightly constricted again at mouth, the upper lip erect, entire, the lower scarcely distinct from the corolla tube, 3-lobed; stamens 2, attached at tip of corolla tube, exserted, the anthers 1-celled, obtuse; capsules glabrous, clavate 4-seeded, the lower half stipiform and solid; seed compressed, lenticular, roughened.

Four species have been described in this genus, one from Bolivia and three from México and Central America.

1. *Hansteinia charitopes* Leonard, sp. nov.

FIGURE 182

Herba, caulibus subquadrangularibus, glabris, cystolithis inconspicuis; lamina foliorum oblongo-lanceolata, aliquanto graciliter acuminata, basi cuneata, aliquanto tenuis, integra vel undulata, utrinque glabra vel supra in costa inconspicue strigosa, venis subtus prominentibus, supra obscuris, cystolithis sub lente conspicuis; paniculae longae, angustae, laxae; bracteae ultimae parvae, triangulari-subulatae, inferiores foliaceae; rhachis et rhachillae glabrae, cystolithis minutis sed sub lente conspicuis; pedicelli graciles, glabri, cystolithis minutis conspicuis; calyx parvus, segmentis lineari-lanceolatis, acutis, glabris vel apice pilis paucis minutis gerentibus, cystolithis minutis sub lente conspicuis; corolla rubra, apice subpurpurea, glabra, tubo basi angusto, supra abrupte dilatato, labiis erectis, subaequalibus, labio superiore ovato, rotundato, labio inferiore trilobato, lobis suborbicularibus, apice rotundatis; stamina inclusa, glabra, antheris utrinque muticus; stylus leviter exsertus; stigma minutum; ovarium glabrum.

Erect herbs up to 1.5 meters high; stems subquadrangular, glabrous, the cystoliths inconspicuous, up to 0.112 mm. long; leaf blades oblong-lanceolate, up to 16 cm. long and 4 cm. wide, rather slenderly acuminate at tip, cuneate at base, rather thin, entire or undulate, both surfaces glabrous or the costa of the upper surface inconspicuously strigose, the costa and lateral veins and veinlets conspicuous beneath,

obscure above, the cystoliths up to 0.08 mm. long, conspicuous under a lens; flowers borne in a long narrow lax panicle, the small triangular-subulate bracts (3 mm. long, 0.75 mm. wide at base) gradually intergrading into the stem leaves; rachis and rachilla glabrous, bearing minute cystoliths, these conspicuous under a lens; ultimate bracts subulate or linear-subulate, 1.5 to 2.5 mm. long, 0.25 mm. wide, the cystoliths minute but conspicuous; pedicels slender, up to 15 mm. long and 0.25 mm. thick, glabrous and bearing minute cystoliths; calyx 4 mm. long, glabrous except a few minute acute hairs at tips

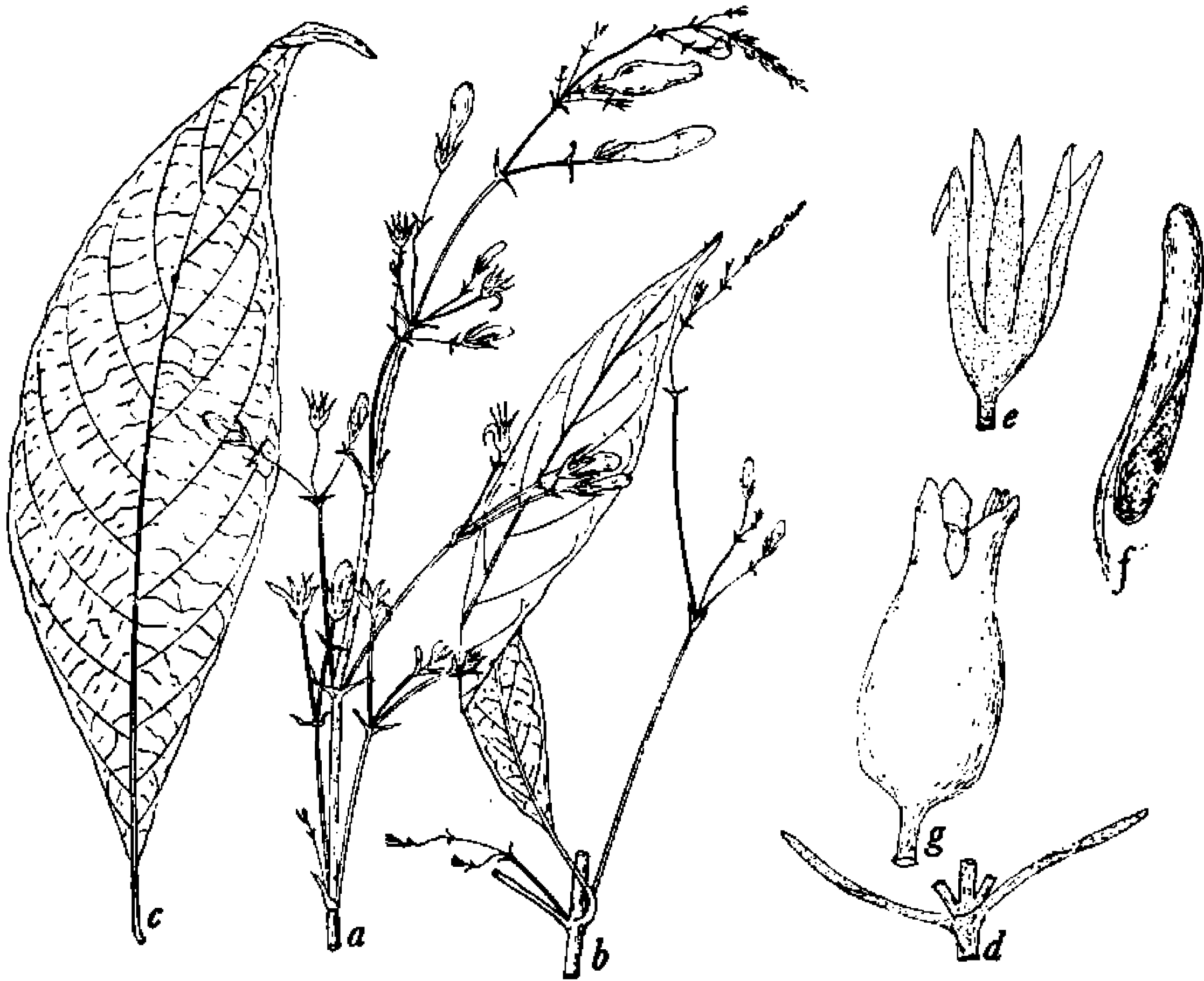


FIGURE 182.—*Hansteinia charitopes* Leonard (Fosberg 19791): *a*, Upper half of panicle; *b*, lower node of panicle; *c*, leaf blade; *d*, bracts; *e*, calyx; *f*, anther; *g*, corolla. (*a*, *b*, Natural size; *c*, half natural size; *d*, 5 times natural size; *e*, 6 times natural size; *f*, 7 times natural size; *g*, 1½ times natural size.)

of the segments, these linear-lanceolate, 3.5 mm. long and 0.75 mm. wide at base, acute, bearing numerous minute cystoliths (0.032 to 0.08 mm. long) conspicuous under a lens; corolla 2 cm. long, red, purplish toward tip (Fosberg), glabrous, the tube 1.5 mm. broad at base, at 3 mm. above base abruptly enlarged to 8 mm., 6 mm. broad at throat, the lips erect, subequal, 3.5 mm. long, the upper lip ovate, 2.5 mm. wide, rounded, the lower lip 3-lobed, the lobes 2 mm. long and broad, obtuse; stamens reaching the tips of the corolla lips, glabrous, the anthers 4 mm. long, 1.5 mm. thick, muticous; style

slightly exserted, the stigma minute; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 2045407, collected on a steep slope in a wet forest at the headwaters of the Río Fortalecillas, just below Paso de Las Cruces, 39 km. east of Neiva, Department of Huila, Colombia, 2,300 meters altitude, January 19, 1943, by F. R. Fosberg (No. 19791). Isotype: US.

The specific epithet is from the Greek *χαριτώπης*, meaning graceful.

35. STENOSTEPHANUS Nees

Stenostephanus Nees in Mart. Fl. Bras. 9: 91. 1847. *Στενός*, narrow, and *στέφανος*, crown or wreath, alluding possibly to the narrow thyrsoid panicle. Type species: *Stenostephanus lobeliaeformis* Nees. Type collected in damp woods of Serra dos Orgãos, Brazil, by Khotzky.

Herbs or shrubs; leaves usually thin, ovate, oblong or oblong-obovate; flowers red, yellow or pink, borne in a narrow terminal thyrsoid panicle; bracts subtending the flowers small; calyx 5-parted, the segments linear, equal; corolla contracted at base into a short narrow portion, upwardly abruptly enlarged and ventricose, narrowed slightly in throat, the limb bilabiate, the lips short, the upper narrow, entire, the lower lip shortly 3-lobed, the lobes ovate, obtuse or rounded; stamens 2; staminodes sometimes present; anthers 1-celled; style filiform, about as long as the stamens, the stigma minute; capsules clavate, the lower half stipiform, solid and sterile, the upper half more or less compressed, 4-seeded, the seed orbicular, flattened, usually verrucose.

Six species have been described, all from South America. A close relationship exists between *Stenostephanus*, *Hansteinia*, and *Habracanthus*. All have tubular corollas, with a narrow basal portion, the tube expanding abruptly and becoming subventricose, usually slightly narrowed in the throat, and the limb bilabiate, with the posterior lip erect and the lower more or less spreading and ending in 3 rounded lobes. In *Habracanthus* the lips are long, the upper narrowly linear and often curled or contorted in dried specimens, the lower cuneiform and flat. The panicles in this genus vary from loose and few-flowered to dense and many-flowered. In *Hansteinia* and *Stenostephanus* the corollas are of the same general plan but the tubes are relatively shorter and broader and more ventricose and the lips are very short, scarcely more than lobes extending from the rim of the corolla tube. The two last genera are most easily distinguished by the inflorescences, which are lax in *Hansteinia* and dense and narrow in *Stenostephanus*.

1. *Stenostephanus puberulus* Lindau

Stenostephanus puberulus Lindau, Bull. Herb. Boiss. 5: 670. 1897. Syntypes: Collected near La Baja, vicinity of Pamplona, Department of Norte de Santander, 2,800 meters altitude, by Funck & Schlim (No. 1309), photograph

(US) of specimen in Berlin Herbarium (Field Mus. No. 8885), and in woods, Province of Ocaña, Norte de Santander, 1,700 to 1,900 meters altitude, by Schlim (No. 1094).

Branching shrubs, the stems subtetragonal, glabrous; leaf blades ovate, 10 to 20 cm. long and 3 to 10 cm. wide, long-acuminate, gradually narrowed and decurrent on the petiole, glabrous, the cystoliths conspicuous; petioles 1 to 5 cm. long, glabrous; panicles terminal, thyriform, puberulous; bracts and bractlets filiform, 2 to 4 mm. long; flowers borne on pedicels; calyx segments lanceolate, 12 mm. long, 1.5 mm. wide, the outer surface cano-pubescent; corolla yellow or rosy, the tube pilose, 13 mm. long, the base 3 mm. broad, at 3 mm. above base abruptly enlarged to 7.5 mm. and ventricose, narrowed at throat to 5 mm.; upper lip liguliform, entire, the lower lip 3-lobed, the lobes 5 mm. long and 3.5 mm. wide; filaments exerted, 12 mm. long, affixed to the base of the corolla tube; anthers 4 mm. long; ovary 2.5 mm. long; style 25 mm. long; capsule unknown.

No specimens seen. Description compiled from the original.

Tribe 13. JUSTICIEAE

Justicieae Benth. & Hooker, Gen. Plant. 2: 1062. 1876, emend. Lindau, Bot. Jahrb. Engler 18: 48. 1893; Engl. & Prantl, Nat. Pflanzenfam. IV, 3b: 287. 1895.

This tribe is characterized by "Knötchenpollen" (the usual ribs replaced by 1 or 3 rows of small tubercles) and 2-stamened flowers.

Shrubs or herbs; flowers variously disposed; bracts imbricate or distant; bractlets often small; calyx 4- or 5-parted, rarely 2-lipped; stamens 2; anthers 2- or 1-lobed, the lobes superposed, the connective often more or less broad and oblique, spurred, apiculate or mucicous; capsules 4-seeded. The Colombian genera represented are:

- 36. *Justicia*
- 37. *Pelecostemon*
- 38. *Jacobinia*
- 39. *Chaetochlamys*
- 40. *Chaetothylax*

36. JUSTICIA Houst. ex L.

Justicia Houst. ex L. Sp. Pl. 15. 1753; Gen. Pl. 10. 1754. The genus is named for James Justice, a Scotch horticulturist and botanist of the 18th century. Type species: *J. adhatoda* L.

Dianthera Gronov. ex L. Sp. Pl. 27. 1753; Gen. Pl. 15. 1754. The generic epithet was introduced by Gronovius (Fl. Virgin. 5. 1742). The anther lobes in this genus are similar, or nearly so, in shape, with the lower lobe stalked instead of sessile as in typical *Justicia*. Type species: *D. americana* L.

Adhatoda Tourn. ex Medic. in Act. Acad. Theod. Palat. 6. Phys.: 393. 1790; Nees in Wall. Pl. As. Rar. 3: 76, 102. 1832. The generic epithet is a native name. Two species, *A. zeylanica* and *A. hyssopifolia*, are discussed; the first, a synonym of *Justicia adhatoda* L., may be chosen as type.

Leptostachya Nees in Wall. Pl. As. Rar. 3: 76, 105. 1832. Derivation: λεπτός, thin, fine or delicate, and σπάχης, spike. Two species are described, *L. virgata* Nees and *L. wallichii* Nees.

Beloperone Nees in Wall. Pl. As. Rar. 3: 76, 102. 1832. Derivation: βέλος, arrow, and περόνη, buckle. The name alludes to the arrow-shaped connective of the anther. In *Justicia*, according to Nees (DC. Prodr. 11: 426. 1847), the anther lobes are parallel, more or less superposed, and their bases blunt. In contrast, the anther lobes of *Beloperone* are usually superposed, one or both lobes spurred, and the connective arrow-shaped. When a large number of species of both genera are examined, so much variation in these characters are found that it does not seem feasible to maintain *Beloperone* as a separate genus. The type is *B. amherstiae* Nees.³

Rhytiglossa Nees in Lindl. Introd. Nat. Syst. Ed. 2, 444. 1836. Derivation: ρυτίς, wrinkle or crease, and γλώσσα, tongue, alluding apparently to the ridged or roughened palate of the corolla. Three syntypes are cited: *R. origanoides*, *R. eckloniana*, and *R. ciliata*. All three are from southern Africa.

Orthotactus Nees in Mart. Fl. Bras. 9: 131. pl. 21. 1847. Derivation: ὀρθός, straight or upright, and τακτός, arranged; alludes, apparently, to the tetra-stichous spikes of the genus. Of the 9 species described here by Nees, his No. 5, *O. venosus* illustrated by Pl. 21, can be chosen as the type species. It was collected on the Rio Maranhão in the Province of Goyaz, Brazil, by Pohl.

Psacadocalymma Bremekamp, Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 45: 54. 1948. Type: *Justicia comata* L.

Herbs or shrubs; leaves opposite, petiolate, usually ovate to oblong and entire, flowers spicate, paniculate or solitary; bracts various, small, linear or subulate, distant, to large, conspicuous and imbricate; calyx segments usually narrow and nearly equal, 5 or, in some species, 4 in number; corollas usually white, pink or purple, sometimes with purple or white makings in throat, the tube usually rather narrow, short to long, the limb 2-lipped, the upper lip 2-lobed, the lower 3-lobed; stamens 2, often slightly exerted but usually not exceeding the corolla lips; anther cells 2, more or less superposed, one or both cells apiculate or tailed, the connective narrow to broad, the lobes parallel or obliquely affixed; capsules clavate, 4-seeded.

KEY TO THE SPECIES

A. Calyx segments 4.

Leaf blades large, at least some of them as much as 5 to 8 cm. wide.

1. *J. cystolithosa*

Leaf blades smaller, 4 cm. wide or less.

Bracts conspicuous, oblong to elliptic, 4 to 5 mm. wide, acute to obtuse and apiculate.....2. *J. chlorostachya*

Bracts inconspicuous, subulate to lance-ovate, acute to acuminate, 2 mm. wide or less.

³ *Beloperone amherstiae* was described from cultivated material of unknown origin. Later, Nees himself (in Martius, Fl. Bras. 9: 139. 1847) stated that it was conspecific with *Justicia brasiliensis* Roth (Nov. Plant. Sp. 17. 1821). Consequently, Bremekamp has made the new combination *Beloperone brasiliensis* Bremekamp (Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2, 45: 52. 1948).

Corollas large, about 3 cm. long.

Leaf blades usually rounded or obtuse at base.....3. *J. ischnorhachis*

Leaf blades cuneate at base.

Corollas a clear purple; marginal hairs of the calyx segments up to 0.5 mm. long.....4. *J. charadrophila*

Corollas magenta; marginal hairs of the calyx segments up to 0.15 mm. long.....5. *J. oreopola*

Corollas smaller, 8–14 mm. long.

Pubescence of the inflorescence a mixture of glandular and acute hairs; flowers usually borne in terminal small lax panicles....6. *J. archeri*

Pubescence of the inflorescence without glandular hairs; flowers borne in solitary or paired spikes.

Calyx segments 2.75 mm. long.....7. *J. blackii*

Calyx segments 5.5 to 7.5 mm. long.

Leaf blades ovate to oblong-ovate.....8. *J. infelix*

Leaf blades lanceolate to oblong- or ovate-lanceolate.

Spikes dense.....9. *J. pleurolarynx*

Spikes lax.....10. *J. polygonoides*

A. Calyx segments 5.

B. Calyx irregular.

Posterior segments of the calyx connate except at tips.....11. *J. fuchsiifolia*

Posterior segments not connate, the anterior segment much smaller than the others.

Bracts conspicuous and imbricate, ovate.....12. *J. neurochlamys*

Bracts small and inconspicuous, triangular or subulate.

Spikes very small, 1 cm. long or less, axillary.....13. *J. rhodoides*

Spikes larger, 3 to 18 cm. long, usually terminal.

Leaf blades elliptic or ovate, rounded or broadly obtuse at tip.

14. *J. daidalea*

Leaf blades ovate, short-acuminate or acute.....15. *J. aëthes*

B. Calyx regularly 5-parted.

Golden yellow hairs present, at least at tip of stems.

Leaf blades up to 12 cm. wide, the lower surface densely and softly subtomentose.....16. *J. chrysocoma*

Leaf blades up to 4 cm. wide, the lower surface hirsute.....17. *J. chrysea*

Golden yellow hairs not present.

C. Bracts 3 to 4 cm. long, their tips long and filiform.

Leaf blades up to 5 cm. wide; bracts 0.5 to 0.75 mm. wide.

18. *J. chaetocephala*

Leaf blades up to 12 cm. wide; bracts up to 6 mm. wide.

Flowers white; bracts slenderly lanceolate to filiform.

19. *J. croceochlamys*

Flowers yellow; bracts lanceolate to ovate-lanceolate.

20. *J. bracteosa*

C. Bracts less than 3 cm. long, or if more than 3 cm. long their tips not long-filiform.

Stems or at least the upper portions conspicuously pilose with more or less spreading hairs, these from 2 to 5 mm. long.

Bracts acuminate.....21. *J. chaponensis*

Bracts rounded and apiculate

Bracts conspicuously long-clawed, up to 6 mm. wide.

22. *J. unguiculata*

- Bracts cuneate or rounded at base, up to 13 mm. wide.
 Leaf blades ovate.....23. *J. pampolystachys*
 Leaf blades oblong-ovate.
 Herbs.....24. *J. hyperdasys*
 Shrubs.....25. *J. schultesii*
- Stems not conspicuously pilose.
- D. Bracts 3 mm. wide or more, conspicuous and more or less imbricate.
- E. Leaf blades relatively small, up to 5 cm. wide and 14 cm. long.
 Bracts spatulate, rounded at tip.....26. *J. carthaginensis*
 Bracts ovate to lanceolate, acute to acuminate.
 Corolla red; bracts acuminate.....27. *J. erythrantha*
 Corolla white; bracts acute to subacuminate.
 Leaf blades lanceolate, up to 1.5 cm. wide.
 28. *J. leptochlamys*
 Leaf blades oblong-elliptic, up to 5 mm. wide.
 29. *J. gutierrezii*
- E. Leaf blades relatively large, 6 to 11 cm. wide and 20 to 26 cm. long.
 Bracts obtuse.
 Lobes of the lower lip of the corolla narrow, 0.75 to 1.5 mm. wide.....30. *J. macarenensis*
 Lobes of the lower lip of the corolla broad, 3 to 6 mm. wide.
 Bracts broadly obtuse or rounded at apex, unguiculate at base; corolla white with purple lines.....31. *J. pharmacodes*
 Bracts moderately obtuse, narrowed at base but not unguiculate; corolla blue with white lines.....32. *J. phytolaccoides*
- Bracts acute.
 Corollas white or yellow.
 Bracts up to 28 mm. long; corollas yellow.
 33. *J. xanthostachya*
- Bracts up to 12 mm. long; corollas white.
 Leaves large, up to 30 cm. long and 16 cm. wide; panicle large, terminal, up to 22 cm. long and 8 cm. broad.
 34. *J. rohrii*
 Leaves medium, up to 9 cm. long and 14 cm. wide; spikes solitary or in pairs, terminal or subterminal.
 35. *J. cabreræ*
- Corollas red or rose.
 Bracts glabrous or sparingly strigose, veiny.
 Corollas pale red, up to 3.3 cm. long.....36. *J. leucerythra*
 Corollas scarlet up to 6 cm. long.....37. *J. enarthrocoma*
 Bracts rather densely puberulous or moderately hirsute.
 Corollas up to 6.5 cm. long; bracts lanceolate, up to 18 mm. long.....38. *J. sanchezii*
 Corollas up to 2.3 cm. long; bracts subovate, up to 11 mm. long.....39. *J. homoea*
- D. Bracts less than 3 mm. wide, inconspicuous.
 Spikes forming a dense terminal panicle..... 40. *J. filibracteolata*
 Spikes solitary or several, not forming a dense terminal panicle.
- F. Corollas 3 to 6.5 cm. long.
 Upper surface of the leaf blades pilose, the hairs purplish, ascending and conspicuously septate.....41. *J. porphyrocoma*

Upper surface of the leaf blades not pilose with purplish septate hairs, the pubescence various.

G. Flowers borne in dense spikes.

Leaf blades narrowly lanceolate, up to 16 cm. long and 2.5 cm. wide; corollas up to 4.5 cm. long.

42. *J. periplocifolia*

Leaf blades oblong-ovate to elliptic or oblong-elliptic, up to 20 cm. long and 10.5 cm. wide; corollas 3 to 3.8 cm. long.

Stems glabrous..... 43. *J. sciota*

Stems minutely antrorsely strigose with yellowish hairs..... 44. *J. phlebophylla*

G. Flowers disposed in loose spikes or panicles.

Rachises and peduncles densely hirsute or strigose.

Pubescence of the panicle of grayish hairs, those more or less spreading, up to 1 mm. long.

45. *P. malacophylla*

Pubescence of the panicle of yellowish hairs, these minute and appressed, up to 0.2 mm. long.

46. *J. pelianthia*

Rachises and peduncles glabrous to moderately puberulous, strigose or hirsute.

Flowers borne in axillary racemes..... 47. *J. anabasa*

Flowers disposed at least in part in terminal panicles.

Panicles composed of subhelicoid cymes.

Corolla glabrous; leaf blades thin, glabrous.

48. *J. aurantiaca*

Corolla puberulous, firm, sparingly hirtellous

49. *J. jacobinioides*

Panicles composed of spikes.

Rachises rather thick, up to 1.5 mm. in diameter.

50. *J. novogranatensis*

Rachises slender, up to 0.5 mm. in diameter.

Corollas crimson..... 51. *J. secunda*

Corollas white... 51a. *J. secunda* var. *leucantha*

F. Corollas less than 3 cm. long.

Leaf blades pandurate.

Flowers borne in a narrow slender naked panicle; leaves large, up to 30 cm. long and 13 cm. wide. 52. *J. atacta*

Flowers borne in leafy spreading conspicuous panicles; leaf blades medium, up to 16 cm. long and 6.5 cm. wide.

53. *J. ephemera*

Leaf blades not pandurate but narrowed to rounded or subcordate at the base.

H. Spikes arranged in panicles.

Leaf blades large, up to 23 cm. long and 10 cm. wide.

Panicles dense..... 40. *J. filibracteolata*

Panicles open.

Flowers greenish white, crowded at the tips of the panicle branches.

54. *J. chloanantha*

Flowers purplish, disposed in spikes up to 5 cm. long.... 55. *J. helonoma*

Leaf blades small to medium, up to 15 cm. long and 2.5 cm. wide.

Pubescence of the inflorescence a mixture of glandular and eglandular hairs.

Leaf blades up to 11 cm. long and 2.5 cm. wide..... 56. *J. pectoralis*

Leaf blades up to 5 cm. long and 5 mm. wide.

56a. *J. pectoralis* var. *stenophylla*

Pubescence of the inflorescence eglandular.

Calyx 2.5 mm. long; lowermost spikes borne in peduncled umbels.

57. *J. comata*

Calyx 4 to 6 mm. long.

Flowers borne in slender axillary dichotomously or trichotomously branched panicles..... 58. *J. namatophila*

Flowers borne in dense terminal panicles comprised of verticillasters of numerous slender ascending spikes..... 59. *J. martiana*

H. Spikes not arranged in panicles.

Spikes axillary.

Peduncles up to 7 cm. long..... 60. *J. laevilinguis*

Peduncles up to 2 mm. long or lacking.

Bracts spatulate; spikes up to 6 cm. long, dense, the flowers conspicuously secund..... 61. *J. idiogenes*

Bracts linear-subulate; spikes up to 1.5 cm. long or lacking and the flowers disposed in close axillary clusters, these not conspicuously secund.

62. *J. fusagasugana*

Spikes terminal, solitary, paired, or in 3's.

Leaf blades narrowly lanceolate, up to 12 mm. wide..... 63. *J. scytophylla*

Leaf blades oblong-elliptic, ovate or oblong, 2 cm. wide or more.

Flowers white.

Bracts subtending the corollas narrowly ovate, subacute, conspicuously 3-nerved..... 64. *J. killipii*

Bracts subtending the corollas subulate to narrowly triangular, acute to acuminate.

Leaf blades up to 17 cm. long and 8 cm. wide; calyx segments 8 mm. long..... 65. *J. graphophylla*

Leaf blades up to 14 cm. long and 5.5 cm. wide; calyx segments 5 mm. long.

Connective of the anthers spurred..... 66. *J. petraea*

Connective of the anthers not spurred..... 67. *J. sterea*

Flowers lavender or lilac.

Leaf blades rounded at base..... 68. *J. sciera*

Leaf blades narrowed at base.

Corolla bearing glandular hairs..... 69. *J. stereostachya*

Corolla with acute hairs.

Capsules bearing minute gland-tipped hairs mixed with acute ones.

70. *J. hodgei*

Capsule bearing acute hairs only..... 71. *J. hygrobia*

1. *Justicia cystolithosa* Leonard, sp. nov.

FIGURE 183

Herba vel suffrutex, caulibus quadrangularibus (angulis rotundatis), sulcatis, glabris; lamina foliorum oblongo-ovata, apice acuta vel breviter et aliquanto graciliter sed plus minusve abrupte acuminata, basi rotundata vel obtusa, sessilis vel breviter petiolata, firma et aliquanto chartacea, integra vel undulata, glabra, subtus costa et

venis prominentibus, cystolithis pluribus et conspicuis; paniculae magnae, terminales, internodiis superioribus panicularum parce glanduloso-puberulis, infimis glabris; spicae apice ramorum panicularum breves, laxae, floribus secundis praeditae; bracteae subulatae glabrae, cystolithis conspicuis, parallelis; bracteolae bracteis similes sed leviter longiores; calycis segmenta 4, anguste lanceolata, apice graciliter acuta, parce et glanduloso-puberula, marginibus minute ciliolatis; corolla purpurea, parce et minute pubescens, aliquanto magna, tubo subcylindrico, labio superiore suberecto, triangulo-ovato, apice acuto, labio inferiore plus minusve patulo, aliquanto anguste obovato, apice 3-lobato, lobis brevibus, rotundatis; stamina exserta, filamentis glabris, lobis antherarum superpositis, obliquis, lobo superiore dorso puberulo, pilis rigidis, erectis, anguste triangularibus, acutis, lobo inferiore breviter calcarato; ovarium glabrum.

Herbaceous or suffrutescent plants up to 1.5 meters high; stems quadrangular (the angles rounded), sulcate, glabrous; leaf blades oblong-ovate, up to 22 cm. long and 8 cm. wide, acute to short but slenderly and more or less abruptly acuminate, rounded or obtuse at base, sessile or short petioled (petiole glabrous, up to 4 mm. long), firm and somewhat chartaceous, entire or undulate, glabrous, the venation (lateral veins 10 to 12 pairs) very prominent beneath, less so above, the cystoliths of both surfaces very numerous and conspicuous, 0.2–0.3 mm. long, straight or slightly curved; flowers rather numerous, borne in lax terminal panicles up to 20 cm. long and 8 cm. broad, the peduncles and lowermost internodes of the inflorescence up to 4 cm. long, the other internodes successively shorter towards the tip of the inflorescence, the ultimate ones slender, the flowers more or less secund, few to several (6 or more), borne at the tips of the branches of the inflorescence, the internodes of the flower-bearing spicate tips 5 mm. long, becoming shorter upward, the peduncle and lower inflorescence internodes glabrous, the upper ones sparingly puberulous with spreading glandular hairs about 0.1 mm. long; bracts subulate, up to 4 mm. long and 1 mm. wide at base, glabrous; bractlets similar to the bracts but slightly longer, the bracts and the internodes of the inflorescence bearing numerous conspicuous parallel cystoliths; calyx segments 4, 1 cm. long, narrowly lanceolate, 1 mm. wide near base, gradually narrowed into a slender tip, sparingly glandular-puberulous, the hairs similar to those of the inflorescence branches, the margins minutely ciliate with spreading hairs; corollas up to 36 mm. long, purple, very sparingly and minutely pubescent without, the basal portion within densely and retrorsely strigose with white hairs up to 0.5 mm. long, the tube 2 mm. broad at base, narrowed at 3 mm. above base to 1.5 mm., thence gradually enlarged to 7 mm. at mouth, the upper lip suberect, triangularly ovate, about 8 mm. wide at base,

acute at tip, the lower lip more or less spreading, rather narrowly obovate, 5 mm. wide at 4 mm. below tip, 4 mm. wide at tip, 3-lobed, the lobes low and rounded, 1 mm. long, the middle lobe 1.5 mm. wide, the lateral ones 1 mm. wide; stamens exerted about 9 mm. beyond

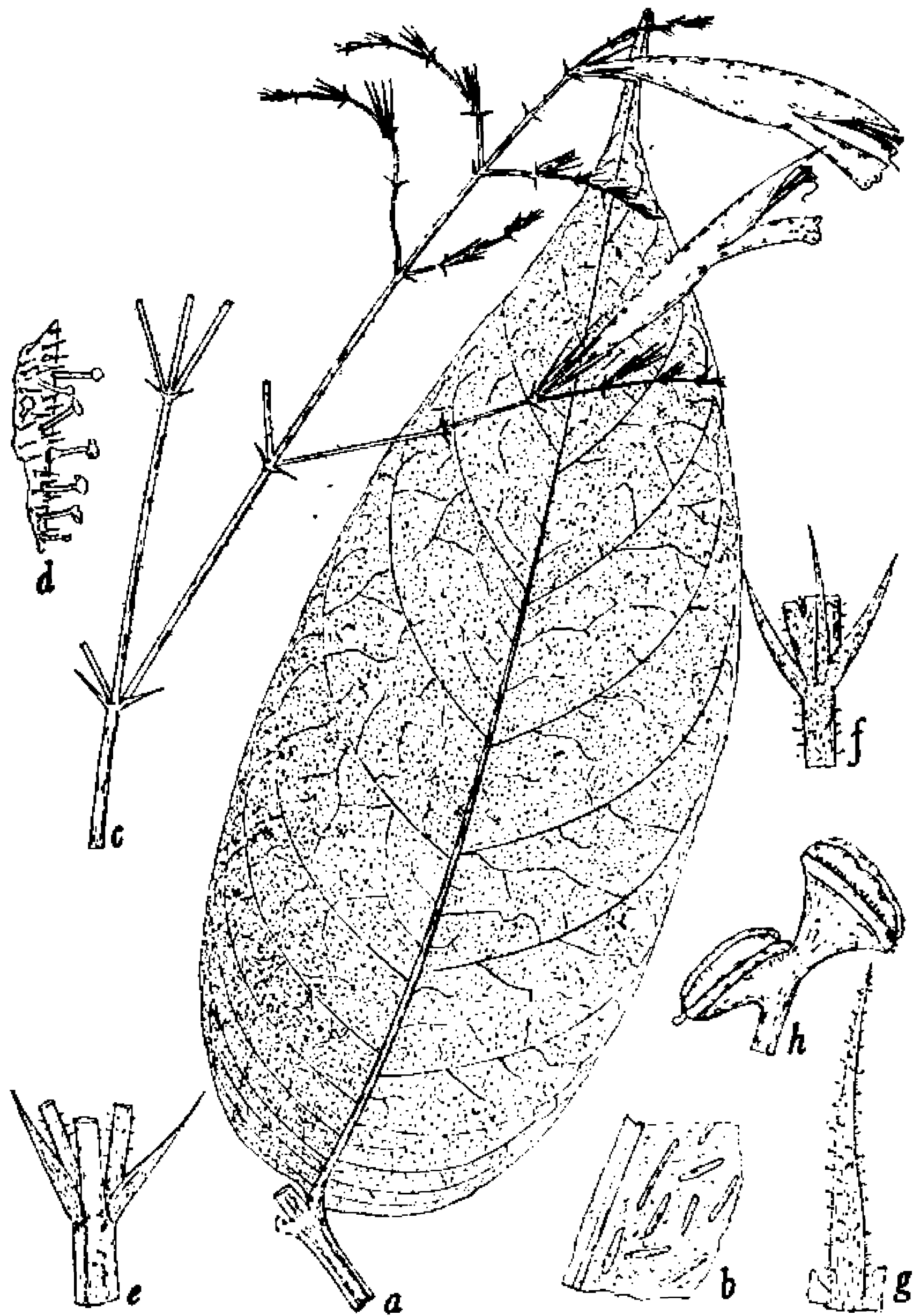


FIGURE 183.—*Justicia cystolithosa* Leonard (*Idrobo & Schultes* 825): *a*, Leaf showing cystoliths; *b*, small area of leaf blade (lower surface) enlarged to show cystoliths; *c*, portion of inflorescence; *d*, portion of an internode of the inflorescence enlarged to show pubescence; *e*, one of the lower nodes of the inflorescence enlarged to show bracts; *f*, bracts and one of a pair of bractlets subtending a flower; *g*, a segment of a calyx; *h*, anther. (*a*, Half natural size; *b*, $11\frac{1}{2}$ times natural size; *c*, natural size; *d*, 35 times natural size; *e*, *f*, 4 times natural size; *g*, 3 times natural size; *h*, 7 times natural size.)

the mouth of the corolla tube, the filaments glabrous, the anther cells superposed and obliquely attached to the connective, about 2 mm. long and 0.5 mm. thick, the upper lobe puberulous dorsally, the hairs stiff, erect, straight, narrowly triangular, 0.8 mm. long, white, the lower lobe terminated in a blunt tail 0.13 mm. long; style as long as

the stamens, glabrous or bearing a few minute hairs near base; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 2025698, collected on trail between Río Güejar and the "caño" Guapayita, Cordillera La Macarena, Intendencia of Meta, Colombia, 500 to 600 meters altitude, December 20-28, 1950, by Jesús M. Idrobo & Richard Evans Schultes (No. 825).

The following specimens, all from the Macarena region, are also of this species: Philipson & Idrobo's No. 1794 (BM), collected in dense forest on the central mountain approach ridge, 600 meters altitude, December 19, 1949; Idrobo and Schultes' No. 1283 (US), collected on the mesa of Río Sansa, 1,000 to 1,300 meters, January 23, 1951; and Philipson, Idrobo and Jaramillo's No. 2146 (US), collected in dense humid forests of the central mountains of the north ridge, 1,500 meters altitude, January 23, 1950.

Justicia cystolithosa is an attractive species easily recognized by its stiff, papery, almost sessile leaf blades conspicuously veined and covered with cystoliths and by its graceful panicles of rather large purple flowers.

2. *Justicia chlorostachya* Leonard sp. nov.

FIGURE 184

Herba, caulibus erectis vel ascendentibus (nodis infimis saepe radicanibus), subquadrangularibus, 4-sulcatis, deorsum glabris, sursum puberulis, pilis retrorse curvatis; lamina foliorum ovato-lanceolata, acuta vel acuminata (apice ipso obtuso), basi angustata, in petiolum decurrens, integra vel undulata, aliquanto firma, supra glabra vel plus minusve hirsuta, pilis ascendentibus, costa plus minusve appressopilosula, subtus glabra, costa et venis lateralibus prominentibus pilosulis, pilis appressis vel patentibus, curvatis; petioli aliquanto graciles, puberuli; spicae terminales, dense bracteosae, parvae, pedunculis gracilibus, puberulis; bracteae oblongo-ellipticae vel ovatae, acutae vel obtusae et apiculatae, subchartaceae, nitidae, virides, glabrae, marginibus ciliatis, cystolithis et venis prominentibus; bracteolae lanceolatae, acutae, basi angustae; calycis segmenta 4, anguste lanceolata, ciliata; corolla parva, aliquanto hirsuta (basi glabra), alba, rosea vel pallide violacea, labio superiore erecto, ovato, acuto, labio inferiore patulo, 3-lobato, lobis aequalibus, lobo medio orbiculato, lobis lateralibus ovatis, apice rotundatis; stamina leviter exserta, filamentis glabris, antherarum lobis obliquis, inaequalibus; stigma sursum glabrum, deorsum hirtellum; capsulae clavatae, parvae, glabrae vel parce pubescentes; retinacula ligulata, apice tenuia, rotundata; semina ovoidea, plana, brunnea, papillosa.

Herbs up to 1 meter high, erect or ascending, often rooting at the lower nodes; stems usually more or less branched, subquadrangular, 4-sulcate, puberulous, or the lower portions glabrous, the hairs evenly

disposed or more or less in 2 rows, retrorsely curved, up to 0.25 mm. long, white, the internodes up to 10 cm. long; leaf blades ovate to ovate-lanceolate, 1 to 10 cm. long and 0.5 to 4 cm. wide, acute to acuminate (the tip itself blunt) or occasionally obtuse, narrowed at base and decurrent on the petiole, ashy green (Cuatrecasas) or dark sea-green (Lehmann), entire or undulate, moderately firm, the upper surface glabrous or more or less hirsute, the hairs ascending, up to 1 mm. long, the costa often more or less appressed-pilosulous, the hairs 0.25 mm. long, the cystoliths usually conspicuous under a lens, the lower surface glabrous or nearly so except the costa and lateral veins (6 or 7 pairs), these prominent, pilosulous, the hairs subappressed or

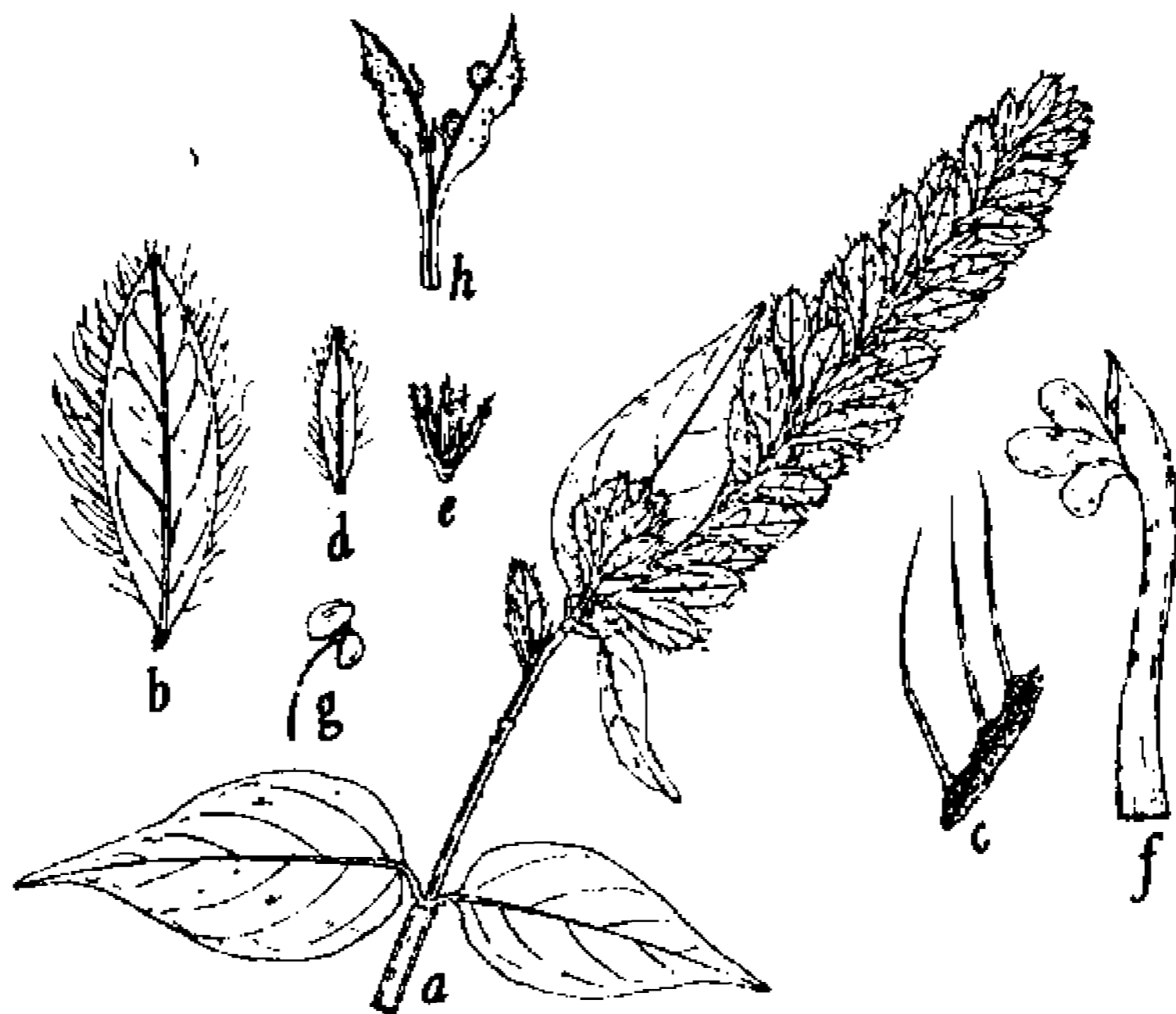


FIGURE 184.—*Justicia chlorostachya* Leonard (*a-e, h*, Killip & García 33671; *f, g*, García-Barriga, Hawkes & Villarreal 12960): *a*, Tip of branch to show spike; *b*, bract; *c*, enlarged hairs from margin of bracts; *d*, bractlet; *e*, calyx; *f*, corolla; *g*, anther; *h*, capsule, (*a*, Natural size; *b*, 3 times natural size; *c*, 10 times natural size; *d-f, h*, twice natural size; *g*, 4 times natural size.)

spreading, curved, up to 0.25 mm. long, the cystoliths few and obscure to numerous and conspicuous; petioles rather slender, up to 1.5 cm. long, more or less puberulous, the hairs curved, ascending or subappressed, up to 0.5 mm. long; spikes terminal, solitary or occasionally, in pairs, up to 8 cm. long and 8 to 15 mm. broad, densely bracted or the lower portions lax, the peduncles rather slender, up to 5 cm. long, puberulous, the hairs similar to those of the stems; bracts oblong-elliptic to ovate, up to 8 mm. long and 5 (usually 4) mm. wide, acute to obtuse and apiculate, narrowed at base, rather thin and subchartaceous, a bright nitid slate green ("empizarradas verde claras," Cuatrecasas), glabrous except the margins, these ciliate, the hairs spreading or ascending, up to 1.5 mm. long, the cystoliths usually prominent

under a lens, the costa and lateral veins rather prominent; bractlets lanceolate, 5 to 6 mm. long, 1.5 mm. wide, acute and narrowed at base, in other respects similar to the bracts; calyx 4 to 5 mm. long, deeply segmented, the segments 4, narrowly lanceolate, 0.5 mm. wide near base, gradually narrowed, the costa and margins ciliate, the hairs ascending, up to 1 mm. long; corolla about 1 cm. long, white, pink or pale violet (the lobes sometimes a deeper pink or violet or the upper lip pink or violet and the lower whitish), moderately hirsute except the glabrous basal portion, the hairs about 0.25 mm. long, the tube 7 mm. long, 1.75 mm. broad near base, narrowed gradually to 1 mm. at 5.5 mm. above base, 1.75 mm. broad at mouth, the posterior lip erect, ovate, 4 mm. long, 2.5 mm. wide, acute, the lower lip spreading, 4 mm. long, 3-lobed, the middle lobe orbicular, about 3 mm. in diameter, the lateral lobes oblong-ovate, 3 mm. long and 1.5 mm. wide, rounded; stamens adnate to the throat of the corolla tube, the free filaments slender and glabrous, 3 mm. long, the adnate parts hirtellous, the anther lobes attached obliquely on the connective, the larger of the lobes 0.75 mm. long, the smaller 0.5 mm. long; stigma 7.5 mm. long, the upper half glabrous, the lower hirtellous, the stigma narrowly lanceolate; capsule glabrous or sparsely pubescent, 7.5 mm. long, 3 mm. thick, 2 mm. broad, clavate, 4-seeded, the sterile solid basal stipitate portion 3 mm. long; retinacula ligulate, the basal portion about 0.5 mm. wide, the tip 0.25 mm. wide, flat and rounded; seeds ovoid, light brown, 1.5 mm. long and broad, about 0.5 mm. thick, papillose.

Type in the U. S. National Herbarium, No. 1770577, collected in dense forest at San Antonio, west of Cali, near summit of Cordillera Occidental, Department of El Valle, Colombia 1,900 to 2,350 meters altitude, February 26 to March 2, 1939, by E. P. Killip and Hernando García (No. 33671).

Other collections are:

ANTIOQUIA: Damp open woods along the Camino Real Antiguo to Boquerón de Medellín, 2,500 meters altitude, *Barkley, Correa & Pérez* 102 (US). Woods at Las Palmas, between Medellín and El Retiro, *Sarmiento* 6 (GH, Med). Damp woods near Santa Elena, between Medellín and Rionegro, *Barkley, Araque & Gómez* 406 (US); *Barkley, Scolnik & Ramírez* 522 (US). Dryish area 3 km. west of Santa Fé de Antioquia, *Scolnik, Barkley & Saiz* 428 (US).

CALDAS: Forests west of Río Boquía, Salento, *Killip & Hazen* 8795 (GH, NY, US). Thicket along stream, Río San Raphael, below Cerro Tatamá, *Pennell* 10347 (GH).

CAUCA: Woods at Carpinterías, between Cerro Munchique and Cerro Altamira, *Pérez-Arbeláez & Cuatrecasas* 6183 (Col). Virgin forests near El Tambo, La Costa, *von Sneidern* 624 (S); 700 (S); 958 (S). La Gallera, Micay Valley, *Killip* 7684 (GH), 7786 (GH). Virgin forest near El Tambo, Munchique, *von Sneidern* 711 (S). Shady place on the plateau of Popayán, *Lehmann* 5601 (K). Río Munchique, *García-Barriga, Hawkes & Villarreal* 12960 (US). Río Tambito,

Cerro de Munchique, *Pérez-Arbeláez & Cuatrecasas* 6267 (US). Forest below San José, San Antonio, *Pennell* 7622 (GH, NY, US). Popayán, *Yepes-Agreto* 202 (US).

CUNDINAMARCA: Mesa, 700 meters altitude, September 1855, *Triana* s.n. (Col).

EL VALLE: Dense forests of La Cumbre, *Killip* 5699 (NY, S, US); *Pennell & Killip* 5759 (GH, NY, US). Woods at La Elsa, valley of the Río Digua, *Cuatrecasas* 15303 (US). Monte La Guarida, above La Carbonera, between Las Brisas and Albán, *Cuatrecasas* 22210 (US). Woods, near La Laguna, valley of the Río Sanquinini, *Cuatrecasas* 15438 (US). Mount El Tabor, above Las Brisas, *Cuatrecasas* 22266 (US). La Trojita, along the Río Calima, *Cuatrecasas* 16444 (US). Between La Elsa and Río Blanco, Río Digua Valley, *Killip* 35666 (US).

TOLIMA: Forests of Líbano, *Pennell* 3397 (GH, NY, US).

VAUPÉS: Soratama, between the Ríos Pacoa and Kananari, *Schultes & Cabrera* 12703 (US).

WITHOUT LOCALITY: *Pennell & Killip* 12131 (NY, US).

Endemic. The species is usually found in more or less damp forests from 1,000 to 2,500 meters altitude. It has, however, been found as low as 5 to 50 meters (*Cuatrecasas* 16444). The color of the corolla varies considerably, from white through pink or purplish. Pennell gives a detailed description of the corolla of his No. 10347 while still fresh: "Corolla: 2 posterior lobes arched and united (apex acute, erect, distally purple); 3 anterior lobes of equal length, proximally white, distally phlox-pink; throat anteriorly 2-ridged and with horizontal processes white, with horizontal radiating areas on the ridges of phlox-purple." The specific epithet comes from *χλωρός*, green, and *στάχυς*, spike.

3. *Justicia ischnorhachis* Leonard, sp. nov.

FIGURE 185

Sufrutex aliquando subscandens, caulibus subquadrangularibus, glabris vel sursum bifariam puberulis, pilis parvis, retrorse recurvatis; lamina foliorum lanceolata vel oblongo-ovata vel elliptica, breviter vel graciliter acuminata (apice saepe curvato), basi obtusa vel rotundata, aliquanto firma, integra vel undulata, supra glabra vel in costa et venis lateralibus parce puberula, pilis subappressis, subtus glabra vel in costa et venis aliquanto prominentibus parce puberula, cystolithis (sub lente) conspicuis; petioli breves, glabri vel parce puberuli; spicae terminales et axillares, pedunculis gracilibus, quadrangularibus (angulis leviter alatis), glabris vel bifariam hirtellis; bracteae lanceolato-ovatae, acutae vel acuminatae, aliquanto firmae, striato-venosae, hirtellae, pilis patulis, rectis vel leviter curvatis; bracteolae subulatae, ciliatae, glabrae, costa prominente hirtella; calycis segmenta subulata, apice filiformia, hirtella, pilis patulis, apice acutis vel cyathiformibus; corolla rubra vel rubro-straminea vel fusco-coccinea vel violacea, parce pubescens, pilis septatis, apice acutis vel interdum cyathiformibus, tubo longo, anguste infundibuliformi, labio superiore ovato, erecto, apice acuto, inferiore oblongo,

plus minusve patulo, 3-lobato, lobis ovatis, obtusis; stamina exserta, glabra, lobis antherarum plus minusve obliquis; capsulae clavatae, glabrae vel parce puberulae, apice acutae; semina ovata, plana, longitudinaliter rugosa, dilute brunnea, levia vel minute papillosa.



FIGURE 185.—*Justicia ischnorhachis* Leonard (*a-f, i, j, Apollinaire "D"; g, h, Apollinaire "H"*): *a*, Tip of branch showing inflorescence and leaves; *b*, bract; *c*, bractlet (side view); *d*, bractlet, dorsal view; *e*, calyx segment; *f*, pubescence from margin of calyx segment; *g*, tip of corolla; *h*, anther; *i*, valve of capsule; *j*, seed. (*a*, Natural size; *b-e*, $3\frac{1}{2}$ times natural size; *f*, 16 times natural size; *g*, $1\frac{3}{4}$ times natural size; *h*, $5\frac{3}{4}$ times natural size; *i*, twice natural size; *j*, 5 times natural size.)

Suffrutescent plants sometimes becoming subscandent, up to 60 cm. high or more; stems subquadrangular, glabrous or the upper portions more or less bifariously puberulous, the hairs up to 0.5 mm. long, retrorsely curved; leaf blades lanceolate to oblong-ovate or

elliptic, up to 20 cm. long and 5 cm. wide, shortly to slenderly acuminate, the tip often curved, obtuse or rounded at base or sometimes acute, moderately firm, entire or undulate, the upper surface glabrous or the costa and lateral veins (6 or 7 pairs) sparingly puberulous, the hairs subappressed, the lower surface likewise glabrous or sparingly puberulous on costa and veins, these more prominent than those of the upper surface, the cystoliths moderately conspicuous under a lens, up to 0.28 mm. long; petioles 3 to 8 mm. long, glabrous or sparingly puberulous; spikes terminal and axillary, the uppermost spike sometimes forked or sparingly branched forming a loose panicle, slender, 3 to 12 cm. long, the peduncles slender, up to 7 cm. long, quadrangular, the angles faintly winged, glabrous or hirtellous, the hairs arranged more or less in two lines, up to 0.5 mm. long, the rachis slender, subquadrangular, more or less flattened near the nodes, moderately hirtellous; bracts lance-ovate, average size 4.5 mm. long, 2 mm. wide, acute or acuminate, rather firm, striate-veined (the costa and lateral veins prominent), moderately hirtellous, the hairs rigid, spreading, straight or slightly curved, up to 0.16 mm. long; bractlets subulate, 5.5 mm. long, 0.5 mm. wide, ciliate, otherwise glabrous except the costa, this prominent and sparingly hirtellous; calyx about 8 mm. long, hirtellous, the hairs up to 0.16 mm. long, more or less spreading, some of them cyathiform, the segments 4, subulate, 0.5 mm. wide at base, gradually narrowed to a slender filiform tip up to 3 mm. long; corollas red, reddish straw-color, dull crimson, violet or reddish orange, sparingly pubescent, the hairs up to 0.2 mm. long, more or less conspicuously septate, a few cyathiform hairs sometimes present, the corolla tube 1.5 mm. broad at base, gradually enlarged to 5 mm. at mouth, the upper lip erect, 8 mm. long, 3 mm. wide, acute at tip, the lower lip somewhat spreading, oblong, 3 mm. wide, 3-lobed, the lobes ovate, 1.5 mm. long, the middle lobe 1.5 mm. wide, the lateral ones 1 mm. wide, all obtuse; stamens exerted 5 mm. beyond the mouth of the corolla tube, glabrous, the anthers 1.5 mm. long, 1.25 mm. broad, equally and somewhat obliquely attached to the connective (0.5 mm. wide at base), one lobe 1.5 mm. long, the other 1.25 mm. long; capsules clavate, 1 cm. long, 2 mm. broad, 1.5 mm. thick, glabrous or sparingly puberulous, acute at tip; retinacula 1.5 mm. long, the tip rounded, flattened, erose; seeds flattened, 2 mm. long, 1.5 mm. wide, 0.5 mm. thick, light brown, longitudinally ridged, smooth or minutely papillose.

Type in the U. S. National Herbarium, No. 1830660, collected at Villavicencio, Intendencia of Meta, Colombia, December 1928, by Brother Apollinaire "D."

Other collections are:

META: Cabuyaro, *Sprague* 12 (K). On boulders in stream bed, Caño Grande, near Villavicencio, 700 meters altitude, Jan. 22, 1939, *Haught* 2560 (US). Rich damp rocky woods along the Río Guatiquia, vicinity of Villavicencio, 350 meters altitude, Nov. 20, 1948, *Araque-M. & Barkley* 18M.018 (US). In primeval woods between Salitre and Upin, January 1876, *André* 1094 (K). Servita, 700 meters altitude, *Triana*, s.n. (K, NY). Villavicencio, *Bro. Apollinaire* "G" (US); "H" (US); "I" (US); "J" (US); 500 meters, *Cuatrecasas* 4518 (US); 4709 (US); moist situation in semishade, 1,600 feet altitude, February 7, 1948, *Sandeman* 5814 (K). Macizo Renjifo, Cordillera La Macarena, 1,300–1,900 m., *Idrobo & Schultes* 959 (US).

NORTE DE SANTANDER: Valley of Río Margua, between Junín and Córdoba, 920 to 1,240 meters altitude, November 22, 1941, *Cuatrecasas* 13382 (US).

Justicia ischnorhachis can easily be recognized by its strongly nerved green bracts and slender spikes of flowers. The specific epithet is from the Greek *ισχνός*, slender, and *ράχis*, rachis.

4. *Justicia charadrophila* Leonard, sp. nov.

FIGURE 186

Suffrutex, caulibus subquadrangularibus, sursum antrorse strigosis, pilis subbrunneis, rectis vel leviter curvatis, rigidis; lamina foliorum lanceolata, apice acuminata (apice ipso obtuso), basi angustata, aliquanto integra vel undulata, supra glabra vel parce strigosa, cystolithis saepe obscuris, subtus parce strigosa, pilis minutis, costa et venis aliquanto prominentibus, cystolithis obscuris; petioli strigosi; spicae terminales, aliquanto laxae, pedunculo et rhache hirsutis et puberulis, pilis magnis ascendentibus, rigidis, rectis vel leviter curvatis, pilis minutis, patulis vel retrorse curvatis; bracteae lanceolatae, acutae, conduplicatae, hirsutae, pilis praecipue in costa et venis et marginibus positis, rigidis, fere rectis, ascendentibus; bracteolae lanceolatae, acutae, glabrae, planae, costa et marginibus hirtellis exceptis, costa prominente; calycis segmenta 4, lanceolata, segmenta anteriora et posteriora quam segmenta lateralia latiora, graciliter acuta, 3-nervata, extus hirtella, intus glabra; corolla purpurea, parce hirtella, tubo anguste campanulato, labio superiore suberecto, triangulo-ovato, apice acuto, curvato, labio inferiore plus minusve patulo, oblongo, apice 3-lobato, lobis suborbicularibus; stamina exserta, filamentis glabris, lobis antherarum leviter superpositis, lobo superiore fere horizontali, pilis dorsalibus rectis subalbidis praedito, lobo inferiore glabro, recto, basi apiculato; ovarium glabrum.

Suffrutescent plants; stems subquadrangular, upwardly strigose, the hairs brownish, straight or slightly curved, stiff, ascending to appressed, up to 0.75 mm. long; leaf blades lanceolate, up to 14 cm. long and 4 cm. wide, gradually narrowed from below middle to tip (the tip itself blunt), narrowed at base, rather firm, entire or undulate, the upper surface glabrous or sparingly strigose, the hairs stiff, ca. 0.75 mm. long, the cystoliths about 0.2 mm. long, often obscure, the lower surface sparingly strigose but the hairs much smaller, about 0.38 mm.

long, the costa and lateral veins (7 or 8 pairs) moderately prominent beneath, obscure above, the cystoliths of the lower surface obscure; petioles 0.5 to 1 cm. long, strigose like the stems; spikes terminal, up to 6 cm. long and 8 mm. broad, rather lax, the peduncle 8 mm. long, the lower internode of the spike 5 mm. long, the other internodes



FIGURE 186.—*Justicia charadrophila* Leonard (*Idrobo & Schultes* 1079): *a*, Tip of plant showing leaves and inflorescence; *b*, portion of peduncle enlarged to show pubescence; *c*, bract and bractlet; *d*, posterior calyx segment; *e*, one of the lateral calyx segments; *f*, anther. (*a*, Natural size; *b*, about 20 times natural size; *c*, $6\frac{2}{3}$ times natural size; *d*, *e*, 4 times natural size; *f*, 8 times natural size.)

successively shorter toward tip of spike, both peduncle and rachis hirsute and puberulous, the large hairs ascending, stiff, straight or slightly curved, up to 0.8 mm. long, the small ones spreading or retrorsely recurved, up to 0.13 mm. long; bracts lanceolate, 3.25 mm. long, 1 mm. wide, acute, conduplicate, hirsute, the hairs mostly costal

and marginal, up to 0.57 mm. long, stiff, nearly straight, ascending; bractlets lanceolate, 3.5 mm. long, acute, flat, glabrous except costa and margins, these bearing ascending slightly curved hairs up to 0.48 mm. long, the costa prominent; calyx 7 mm. long, deeply segmented, the segments 4, lanceolate, the anterior and posterior segments 0.75 mm. wide below middle, the lateral segments about 0.5 mm. wide, all narrowed to a slender tip, delicately 3-nerved, the outer surface hirtellous, the hairs up to 0.5 mm. long, ascending, the inner surface glabrous; corolla a clear bright purple, 2.8 cm. long, sparingly hirtellous, the hairs mostly spreading, straight, up to 0.28 mm. long, the tube narrowly campanulate, 1.5 mm. broad at base, narrowed at 2 mm. above base to 0.5 mm., thence enlarged to 6 mm. at mouth, the upper lip suberect, 1 cm. long, 8 mm. wide at base, narrowed to a rather slender acute slightly recurved tip, the lower lip more or less spreading, oblong, about 3 mm. wide, 3-lobed at tip, the lobes suborbicular, about 1.5 mm. in diameter, rounded or subtruncate; stamens exerted 7 mm. beyond mouth of the corolla tube, the filaments glabrous, the anther lobes slightly superposed, the upper lobe attached almost horizontally to the connective, bearing dorsally a row of stiff straight whitish hairs up to 0.11 mm. long, the lower lobe glabrous, vertically attached to the connective, the upper tip touching the upper lobe, the lower tip apiculate, the apiculus whitish, blunt, about 0.38 mm. long; style slightly longer than the stamens, the stigma 2-lobed, the lobes minute, rounded, one slightly longer than the other; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 2025704, collected on the bank of a quebrada on the Renjifo Massive, Cordillera La Macarena (extreme northeast tip), Intendencia of Meta, Colombia, 1,300 to 1,900 meters altitude, January 6–20, 1951, by Jesús M. Idrobo and Richard Evans Schultes (No. 1079).

The corollas of *Justicia charadrophila* are strikingly similar to those of *Justicia cystolithosa* Leonard. In other respects however the two species are highly dissimilar. The leaves of *J. cystolithosa* are much larger (up to 22 cm. long and 7.5 cm. wide), glabrous, strongly veined, and bear numerous cystoliths, and the flowers are in largish panicles.

The specific epithet is from the Greek, *χαράδρα*, ravine, and *φίλος*, fond of, in allusion to its habitat.

5. *Justicia oreopola* Leonard, sp. nov.

FIGURE 187

Herba, caulibus quadrangularibus vel deorsum subquadrangularibus, dense hirsutis vel glabratis, pilis plus minusve patulis; lamina foliorum ovata vel oblongo-ovata, breviter acuminata, basi acuta vel subacuta, aliquanto firma, integra, utrinque hirsuta, cystolithis raris, gracilibus, obscuris; petioli breves, dense hirsuti; spicae terminales,

sublaxae, pedunculo hirsuto, rhache hirtello et hirsuto, pilis brevibus et longis intermixtis; bracteae lanceolatae, ciliatae, bracteolae anguste lanceolatae, parce hirsutae et ciliatae, costa prominente; calycis segmenta 4, anguste lanceolata, hirsuta et hirtella; corolla rubro-lilacina, aliquanto pubescens, tubo anguste hypocrateriformi, labiis subaequalibus, labio superiore erecto, subacuto (apice ipso obtuso), labio inferiore cuneiformi, 3-lobato, lobis ovatis, obtusis vel rotun-

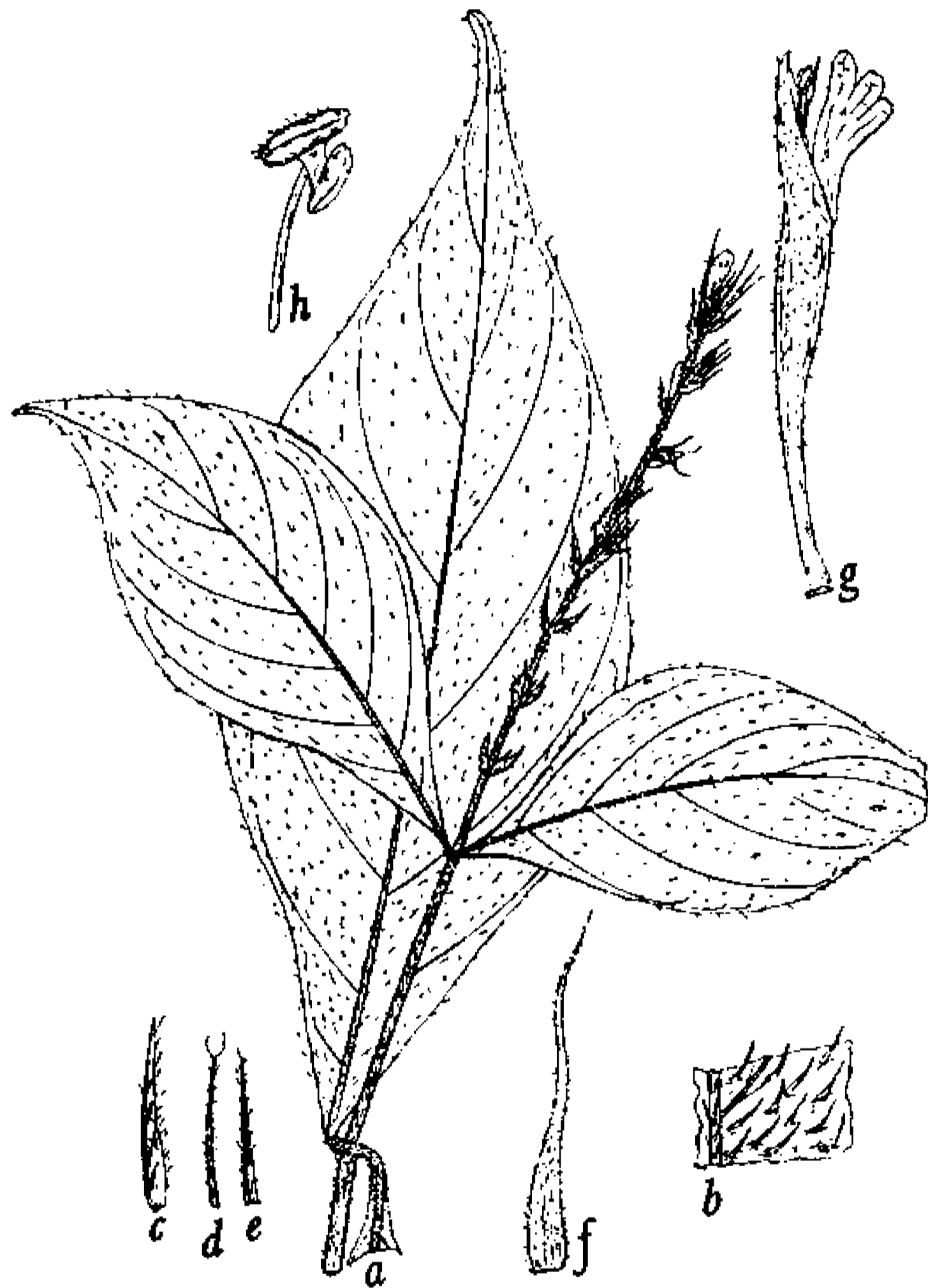


FIGURE 187.—*Justicia oreopola* Leonard (Philipson, Idrobo & Jaramillo 2183): *a*, Tip of plant showing inflorescence and leaves; *b*, portion of leaf blade to show hairs of upper surface; *c*, bract; *d*, bractlet, side view; *e*, bractlet, dorsal view; *f*, calyx segment; *g*, corolla; *h*, anther. (*a*, Natural size; *b*, 3 times natural size; *c-f*, 4 times natural size; *g*, $1\frac{1}{2}$ times natural size; *h*, 5 times natural size.)

datis; stamina exserta, filamentis glabris, lobis antherarum leviter superpositis obliquis, lobo superiore dorso hirtello; ovarium glabrum.

Herbs up to 1 meter high; stems quadrangular or the lower portions subquadrangular, densely hirsute or glabrate with age, the hairs more or less spreading, up to 0.76 mm. long; leaf blades ovate to oblong-ovate, short-acuminate, acute to subacute at base, moderately firm, entire, both surfaces hirsute, the hairs 0.5 to 1.5 mm. long, the cystoliths slender, scattered and obscure; petioles 5 to 8 mm. long, densely

hirsute; spikes terminal, 2 to 4 cm. long, the lowermost internodes about 5 mm. long, the others successively shorter towards tip of spike, the peduncles 3 to 7 mm. long, hirsute, the rachis both hirtellous and hirsute, the smaller hairs up to 0.8 mm. long, the longer ones up to 1 mm. long, all more or less spreading, straight or slightly curved; bracts lanceolate, boat-shaped but not keeled, 3.5 mm. long, 0.75 mm. wide, acute, the margins ciliate, otherwise glabrous, the hairs up to 0.38 mm. long, the costa prominent but not conspicuous; bractlets lanceolate, 3.5 mm. long, 0.5 mm. wide, acute, sparingly hirsute and ciliate, the costa prominent; calyx 8 mm. long, the segments 4, narrowly lanceolate, 0.75 mm. wide near base, gradually narrowed to a slender tip, moderately both hirsute and hirtellous, the marginal hairs up to 0.15 mm. long; corollas 3 cm. long, magenta, moderately pubescent without, the hairs spreading, 0.28 mm. long, densely and retrorsely hirtellous toward base, the hairs about 0.3 mm. long, the tube 1.5 mm. broad near base, thence gradually enlarged to 6 mm. at mouth, the lips subequal, about 6 mm. long, the upper lip ovate, erect, 9 mm. long, 5 mm. wide, subacute (the tip itself blunt), the lower lip 3-lobed, cuneiform, 11 to 12 mm. long, 7.5 mm. wide near base of lobes, the lobes ovate, 2.5 mm. long, the middle one 3 mm. wide, the lateral ones 2.5 mm. wide, all obtuse or rounded; stamens exserted 8 mm. beyond mouth of corolla, the filaments glabrous, the anther cells slightly superposed, attached obliquely to a flat connective 0.75 mm. wide, the upper cell 2 mm. long, nearly horizontal, hirtellous dorsally, the lower cell 1.5 mm. long, nearly vertical, minutely apiculate at base, both cells glabrous; pistil about as long as the stamens, sparingly and minutely hirtellous near base, the stigma minutely 2-lobed; ovary glabrous; capsule not seen.

Type in the U. S. National Herbarium, No. 2025719, collected by stream in dense damp forest on a connecting ridge in the central mountains of the Sierra de la Macarena, Intendencia of Meta, Colombia, 1,450 meters altitude, January 21, 1950, by W. R. Philipson, J. M. Idrobo, and R. Jaramillo (No. 2183). Isotype in the Herbarium of the British Museum.

Justicia oreopola is allied in a general way to *J. ischnorhachis*. There is a noticeable similarity in the leaves and flowers of the two species. *J. oreopola* can, however, easily be recognized by its much denser spike and by its hirsute pubescence. The specific epithet is from the Greek *ὄρεοπόλος*, haunting mountains.

6. *Justicia archeri* Leonard, sp. nov.

FIGURE 188

Herba, caulibus erectis vel ascendentibus, sursum plus minusve bifariam hirtellis, pilis curvatis, deorsum glabratis, purpureis; lamina foliorum ovata vel oblongo-ovata, acuta vel breviter acuminata

(apice ipso obtuso), basi angustata et in petiolem decurrens, firma vel submembranacea, integra, utrinque glabra vel in costa et venis lateralibus conspicuis parce hirtella, pilis curvatis, subappressis; petioli glabri vel parce hirtelli; spicae terminales, laxae, saepe paniculas laxas formantes, pedunculis quadrangularibus (angulis acutis), bifariam hirtellis, pilis sursum curvatis, internodiis panicularum gracilibus, acute quadrangularibus, hirtellis, pilis curvatis, subappressis, eglandulosis et patulis glandulosis intermixtis praeditis, floribus sessilibus vel breviter pedicellatis; bracteae et bracteolae parvae, subulatae, subcarinatae, glabrae vel apice parce ciliatae; calycis segmenta anguste lanceolata, graciliter acuminata, aliquanto hirtella, pilis eglandulosis et pilis paucis glandulosis intermixtis praedita; corolla aliquanto parva, pallide lilacina, parce et minute pubescens, labiis subaequalibus, labio superiore suberecto, anguste ovato, apice bilobato, lobis parvis, labio inferiore patulo, trilobato, lobis ovatis, rotundatis; stamina inclusa, glabra, lobis antherarum leviter superpositis, lobo superiore obliquo, lobo inferiore fere recto, basi apiculato; capsulae clavatae, parce et retrorse puberulae, retinaculis leviter curvatis, apice fimbriatis, planis; semina 4, ferruginea, leviter planata, minute papillosa, basi obliqua.

Herbs up to 50 cm. long or more, erect or ascending, the stems subquadrangular, the upper portions hirtellous, the hairs curved, about 0.15 mm. long, arranged more or less in 2 lines, the lower portions of the stem glabrate, purplish, the lower internodes 2.5 mm. in diameter; leaf blades ovate to oblong-ovate, up to 7.5 cm. long and 3.1 cm. wide, acute or short-acuminate (the tip itself blunt), narrowed at base and decurrent on the petiole, moderately firm to membranous, entire, both surfaces glabrous or the costa and lateral nerves (7 or 8 pairs) rather conspicuous and sparingly hirtellous, the hairs curved, subappressed, up to 0.2 mm. long; petioles up to 1.5 cm. long, glabrous or sparingly hirtellous; flowers borne in terminal lax spikes or terminal panicles of lax spikes up to 10 cm. long and 3 cm. broad, the spikes up to 4 cm. long with rarely more than 4 flowers to each spike, the peduncles up to 5 cm. long, quadrangular (the angles sharp), bifariously hirtellous, the hairs upwardly curved, up to 0.2 mm. long, the lowermost internodes of the inflorescence up to 2 cm. long, the others successively shorter toward the tip of the inflorescence, all slender, sharply quadrangular, hirtellous with a mixture of small curved hairs about 0.1 mm. long and spreading stouter straight glandular ones up to 0.2 mm. long, the flowers sessile or borne on short pedicels up to 1 mm. long; bracts subulate, firm, up to 3 mm. long and 0.5 mm. wide at base, subcarinate, glabrous or sparingly ciliate near tip, the hairs rigid and toothlike, about 0.4 mm. long, the cystoliths prominent; bractlets similar to the bracts but often slightly

longer; calyx 7 to 8 mm. long, segmented nearly to base, the segments 4, narrowly lanceolate, 0.75 mm. wide near base, gradually narrowed to a slender tip, moderately hirtellous, the hairs slender, ascending, nearly straight, intermixed with a few spreading slightly longer and more rigid glandular ones, the cystoliths prominent; corollas pale lavender, sparingly and minutely pubescent, 11 mm. long, the tube 1.5 mm. broad near base, narrowed at 4 mm. above base to 1.25 mm., about 3 mm. broad at mouth, the lips subequal, the upper lip sub-

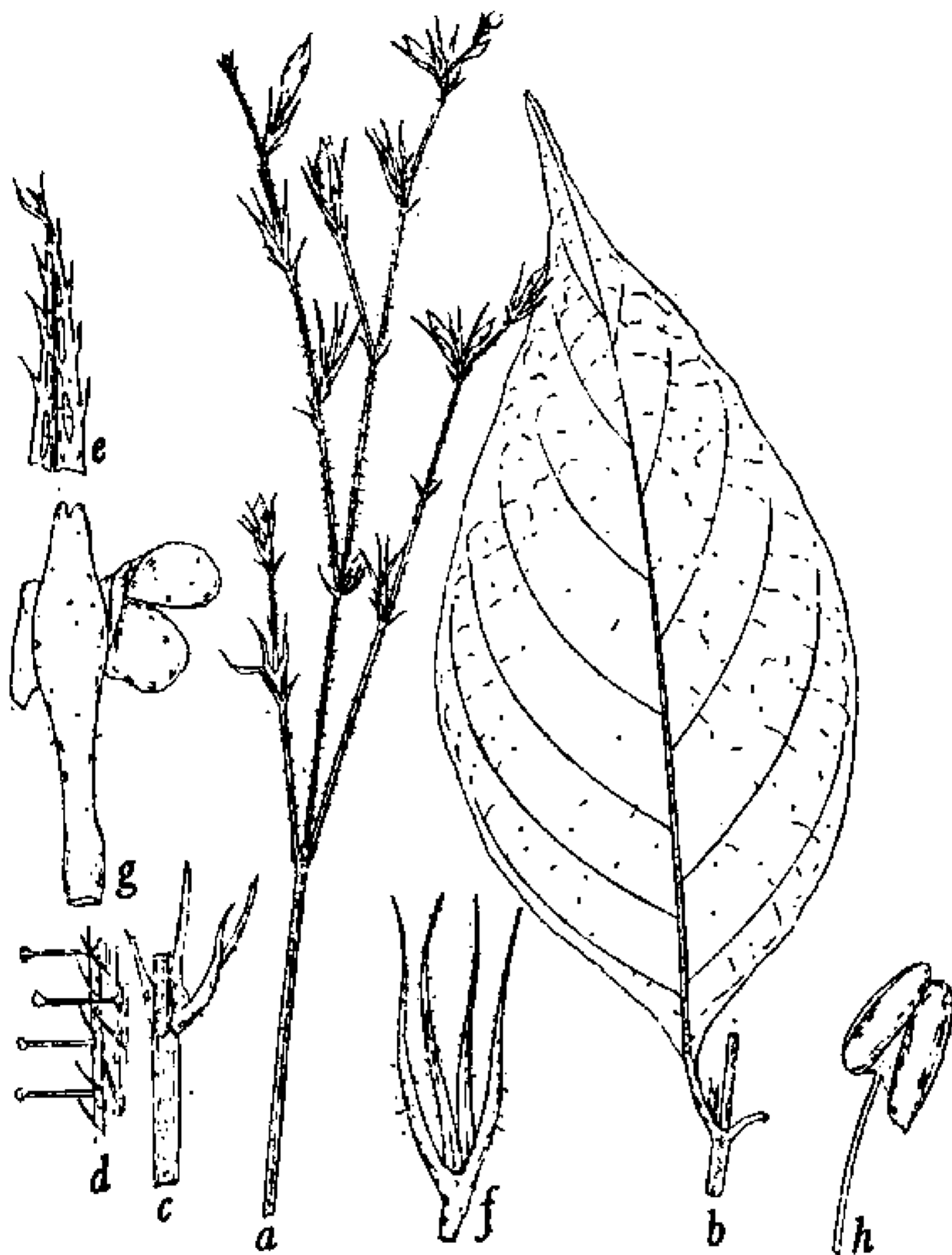


FIGURE 188.—*Justicia archeri* Leonard (*Archer* 1640): *a*, Inflorescence; *b*, leaf; *c*, node of inflorescence to show bract and bractlets; *d*, portion of rachis to show pubescence; *e*, tip of bract enlarged to show marginal hairs and cystoliths; *f*, calyx; *g*, corolla; *h*, anther. (*a*, *b*, Natural size; *c*, 3 times natural size; *d*, $6\frac{1}{2}$ times natural size; *e*, twice natural size; *f*, *g*, 3 times natural size; *h*, 16 times natural size.)

erect, narrowly ovate, 2.5 mm. wide near base, gradually narrowed to a rounded bilobed tip 1 mm. wide, the lobes about 0.25 mm. long, the lower lip spreading, deeply 3-lobed, the lobes ovate, 4 mm. long, the middle lobe 3.5 mm. wide, the lateral ones 2.25 mm. wide, all rounded at tip; stamens barely reaching the mouth of the corolla tube, glabrous, the filaments slender, the anther lobes slightly superposed, about 0.75 mm. long and 0.25 mm. thick, the upper lobe obliquely attached, the lower nearly vertical, minutely apiculate

at base; capsules 4-seeded, clavate, 7 mm. long, 2 mm. broad, 1.5 mm. thick, rather sparingly and retrorsely puberulous, the retinacula 1 mm. long, slightly curved, thin and fimbriate at tip; seeds oval, slightly flattened, reddish brown, 1.5 mm. long, 1.25 mm. broad, about 0.25 mm. thick, oblique at base, minutely papillose.

Type in the U. S. National Herbarium, No. 1517478, collected at La Sierra, 18 km. north of Medellín, Department of Antioquia, Colombia, 2,000 meters altitude, March 8, 1931, by W. A. Archer (No. 1640).

Justicia archeri resembles *J. leptophylla* Leonard in many respects and is probably rather closely related to it. However, the paniculate inflorescence of *J. archeri*, with its mixed pubescence of straight glandular hairs and shorter eglandular curved ones, differs from the usually spicate inflorescence of *J. leptophylla*, which has no glandular hairs.

7. *Justicia blackii* Leonard, sp. nov.

FIGURE 189

Herba, caulibus erectis vel ascendentibus, subquadrangularibus, glabris vel sursum bifariam puberulis, pilis curvatis et subappressis, nodis tumescentibus; lamina foliorum ovata vel late lanceolata, breviter acuminata (apice ipso obtuso), basi acuta vel obtusa, tenuis, integra vel undulata, glabra, costa parce hirtella, costa et venis laterali-bus obscuris, cystolithis pluribus et sub lente conspicuis; petioli graciles, glabri vel parce puberuli, cystolithis pluribus, minutis et parallelis; spicae graciles, terminales et axillares, pedunculis gracilibus, subquadrangularibus, sursum planis, bifariam hirtellis, rhachibus planis, glabris, parce hirtellis; bracteae lanceolato-subulatae, carinatae, glabrae, costa prominente; bracteolae lanceolato-subulatae, glabrae; calycis segmenta 4, lanceolata, glabra vel parce ciliolatae, costa obscura; corolla extus alba, intus purpurea, glabra vel labiis intus puberulis, tubo subcylindrico, labiis subaequalibus, labio superiore erecto, ovato, apice rotundato, labio inferiore plus minusve patulo, 3-lobato, lobis suborbicularibus, apice rotundatis; stamina vix exserta, filamentis gracilibus, glabris, antheris glabris, connectivo lato, plano, lobo superiore obliquo, inferiore plus minusve recto; capsulae clavatae, glabrae.

Erect or ascending herbs up to 40 cm. high; stems subquadrangular, glabrous or the upper portions puberulous in two lines, the hairs curved and subappressed, up to 0.15 mm. long, the nodes of the stems swollen; leaf blades up to 9 cm. long and 2.7 cm. wide, ovate to broadly lanceolate, short-acuminate (the tip itself blunt), acute to obtuse at base, thin, entire or undulate, glabrous or the costa sparingly hirtel-lous, this and the lateral veins (about 5 pairs) faint, the cystoliths numerous and conspicuous under a lens, up to 0.2 mm. long; petioles

slender, 5 to 10 mm. long, glabrous or sparingly puberulous, the cystoliths numerous, minute and parallel; spikes slender, terminal and axillary, 2 to 4 cm. long, 2 to 4 mm. wide, the peduncles slender, 5 to 10 mm. long, subquadrangular, flattened toward tip, hirtellous in 2 lines, the hairs up to 0.5 mm. long, the rachis flattened, glabrous or sparingly hirtellous, lowermost internodes 5 mm. long, successively shorter toward the tip of the spike; bracts lance-subulate, 3 mm. long, 0.75 mm. wide at base, carinate, glabrous, the costa prominent;



FIGURE 189.—*Justicia blackii* Leonard (Schultes & Black 8697): *a*, Tip of plant showing leaves and inflorescence; *b*, calyx; *c*, bract; *d*, bractlet; *e*, corolla; *f*, anther. (*a*, Natural size; *b-d*, about 6 times natural size; *e*, 3 times natural size; *f*, about 10 times natural size.)

bractlets lance-subulate, 2 mm. long, 0.25 mm. wide near base, glabrous; calyx 2.75 mm. long, the segments 4, lanceolate, 0.5 mm. wide near base, narrowed to a slender tip, glabrous, or sparingly ciliolate, the costa obscure; corolla white externally, purple within, glabrous or the inner surface of the lips puberulous, 12–14 mm. long, the tube 1.5 mm. broad at base, subcylindrical, 2 mm. broad at throat, the lips subequal, 3.5 mm. long, the upper lip erect, ovate, 2 mm. wide at base, rounded at tip, the lower lip more or less spreading, 3-lobed,

the lobes suborbicular, about 1.5 mm. wide, rounded; stamens barely exerted, the filaments slender, flattened, glabrous, the anther lobes attached to a flattened connective 0.75 mm. wide, the upper cell oblique, 0.75 mm. long, the lower cell 0.5 mm. long, attached more or less vertically, both glabrous; capsules clavate, 12 mm. long, 2.5 mm. broad, 1.25 mm. thick, glabrous.

Type in the U. S. National Herbarium, No. 1989433, collected along the Loretoyacu River, in the "trapezio amazónico," Intendencia of Amazonas, Colombia, about 100 meters altitude, September 1946, by Richard Evans Schultes and George A. Black (No. 8317). *Schultes & Black* No. 8697, collected in the same general region, is also of this species.

8. *Justicia infelix* Leonard, sp. nov.

FIGURE 190

Herba vel suffrutex, caulibus breviter striatis, deorsum teretibus, sursum subtetragonis, glabris vel aliquanto bifariam hirsutis; lamina foliorum oblongo-ovata, acuta vel breviter acuminata (apice ipso obtuso), basi acuta vel rotundata, in petiolum breviter decurrens, aliquanto firma, integra, glabra vel costa et venis lateralibus obscuris, plus minusve hirsuta, pilis curvatis, cystolithis parvis et obscuris; petioli glabri vel aliquanto hirsuti; spicae terminales et axillares, plus minusve laxae, pedunculo subquadrangulati, glabro vel aliquanto hirsuto, pilis curvatis, rhache hirsuta; bractee ovatae graciliter acuminatae, glabrae vel pilos paucos ad apicem ferentes, costa non prominente; bracteolae anguste lanceolatae ad apicem graciliter angustatae, carinatae, parce hirsutae, pilis curvatis; calycis segmenta 4, lanceolata, parce hirsuta, costa prominente; corolla parva, aliquanto hirtella, pilis patulis, tubo brevi, labiis subaequalibus, labio superiore ovato, apice truncato et leviter emarginato, labio inferiore puniceo, cuneiformi, trilobato, lobis ovatis, rotundatis et leviter marginatis; stamina vix exserta, filamentis planis, sursum glabris, deorsum parce hirtellis, lobis antherarum leviter superpositis, lobo superiore horizontali, margine dorsali parce hirtello, inferiori verticali; capsulae clavatae, glabratae; semina 4, apice truncata vel obtusa, basi oblique cordata, subnigra, leviter verrucosa.

Herbaceous or suffrutescent plants up to 1 meter high; stems shallowly grooved, the lower portions terete, the upper subtetragonal, glabrous to moderately hirsute, the hairs more or less bifarious, curved, up to 0.57 mm. long; leaf blades ovate to oblong-ovate, up to 10 cm. long and 5 cm. wide, acute or short-acuminate (the tip itself blunt), acute to rounded at base and briefly decurrent on the petiole, moderately firm, entire, glabrous or the costa and lateral veins (4 or 5 pairs) rather obscure, more or less hirsute, the hairs curved, 0.28 to 0.38 mm. long, the cystoliths small and obscure; petioles 5 to 10 mm.

long, glabrous to moderately hirsute; spikes terminal and axillary, 2 to 6 cm. long, 1 cm. broad, rather loose, the internodes up to 5 mm. long, the peduncles 1 to 1.5 cm. long, subquadrangular, glabrous to moderately hirsute with curved hairs 0.28 mm. to 0.38 mm. long, the rachis hirsute with curved hairs 0.28 mm. long; bracts ovate, 3.5 mm. long, 1.5 mm. wide at base, slenderly acuminate, glabrous or bearing toward the tip a few hairs 0.2 mm. long, the costa barely prominent; bractlets narrowly lanceolate, 3.5 mm. long, 0.5 mm. wide at base,



FIGURE 190.—*Justicia infelix* Leonard (Killip 35574): *a*, Portion of stem showing spike and a pair of leaves; *b*, bract; *c*, bractlet; *d*, calyx; *e*, upper lip of corolla; *f*, lower lip of corolla; *g*, anther; *h*, valve of capsule; *i*, seed. (*a*, Natural size; *b*, *c*, $3\frac{1}{2}$ times natural size; *d*, 4 times natural size; *e*, *f*, 3 times natural size; *g*, 5 times natural size; *h*, twice natural size; *i*, $3\frac{1}{8}$ times natural size.)

gradually narrowed to a slender tip, carinate, sparingly hirsute dorsally with curved hairs about 0.2 mm. long, the costa not prominent; calyx 7.5 mm. long, the segments 4, lanceolate, about 7 mm. long, 0.75 mm. wide, sparingly hirsute dorsally, the costa prominent; corolla 10 mm. long with a pink lower lip, moderately hirtellous, the hairs spreading, about 0.2 mm. long, the tube 1.25 mm. broad at base, enlarged to 2 mm. at 2.5 mm. above base and narrowed to 1.25 mm. at middle, the throat 2.5 mm. broad, the upper lip ovate, 6 mm. long,

3 mm. wide at base, gradually narrowed to 1.25 mm. at tip, the tip itself truncate and shallowly emarginate, the lower lip cuneiform, 6 mm. long, 7 mm. wide at base of lobes, the lobes 3, ovate, 3 mm. long, the middle lobe 3.5 mm. wide, rounded and shallowly emarginate at tip, the lateral lobes 2 mm. wide, rounded, the lip swollen and plaited in throat of corolla; stamens exerted 2.5 mm. beyond mouth of corolla, the filaments flattened, glabrous toward tip, bearing a few hairs about 0.1 mm. long, the anther cells attached to a flat connective 0.5 mm. wide, slightly superposed, the upper cell 1 mm. long, horizontally attached, the lower one slightly shorter, vertically attached, sparingly hirtellous dorsally, the hairs about 0.11 mm. long; capsules 4-seeded, slenderly clavate, 1 cm. long, 4 mm. broad, 1.75 mm. thick, glabrate; retinacula 2 mm. long, slightly curved, the tip thin, obtuse; seed ovoid, 2.5 mm. long, 2 mm. broad, 1 mm. thick, truncate or obtuse at tip, obliquely cordate at base, dark blackish brown, verrucose.

Type in the U. S. National Herbarium, No. 1772277, collected at Cisneros, in a thicket along the Río Dagua, Department El Valle, Colombia, 300 to 500 meters altitude, May 5, 1939, by E. P. Killip (No. 35574). Also of this species are Haught's No. 6383 (US), collected at an irrigation canal take-off along the Río Saldaña, Department of Tolima, altitude 400 meters, March 23, 1949, and Pérez-Arbeláez & Cuatrecasas' No. 6372 (US), collected in woods at the Hacienda Valparaiso, Zarzal, near Bugalagrande, Department El Valle, 1,020 meters altitude, July 20, 1939.

Justicia infelix is related to *J. polygonoides* H. B. K., but can be separated by its relatively broader leaf blades, broader bracts, larger calyces and corollas, and hirsute rachises. The specific epithet refers to the nondescript, weedy appearance of the plant.

Haught's plant was a very slender undershrub, 40 cm. high, found growing on igneous rocks where water often overflowed; the flowers were purple with lighter lines. The color of the corolla of Killip's collection is not stated.

9. *Justicia pleurolarynx* (Blake) Leonard

Dianthera pleurolarynx Blake, Contr. Gray Herb. n. ser. 53: 51. 1918. Type collected at Puerto Cabello, State of Carabobo, Venezuela, June 14, 1917, by H. N. Curran & M. Haman (No. 1145).

Justicia pleurolarynx (Blake) Leonard, Fieldiana, Bot. 28: 561. 1953.

Branching herbs; stems subquadrangular, bifariously hirtellous, the hairs retrorsely curved, up to 0.2 mm. long; leaf blades lanceolate or ovate-lanceolate, usually up to 4 cm. long (occasionally as much as 7 cm.) and 1.5 cm. wide, acute to acuminate (the tip itself obtuse to subacute), narrowed to rounded at base, moderately firm, entire, glabrous or sparingly hirtellous, the hairs confined chiefly to costa

and lateral veins (4 or 5 pairs), curved, up to 0.32 mm. long, the cystoliths usually obscure; petioles 3 to 4 mm. long, hirtellous; spikes solitary or in pairs, terminating the branches, rigid, straight or slightly curved, up to 7 cm. long and 1 cm. wide, moderately dense, the peduncles usually 0.5 to 2 cm. long, and rachis bifariously hirtellous; bracts and bractlets subulate-acuminate, 1.5 to 3.5 mm. long, 0.5 mm. wide at base, sparingly hirtellous; calyx 4-parted, the segments linear-subulate, 6 mm. long, 1.25 mm. wide near base, sparingly to rather densely hirtellous, the costa and a pair of lateral veins rather prominent; corolla 9 mm. long, hirtellous, the tube 3.5 mm. long, the hairs more or less spreading, up to 0.2 mm. long, the upper lip narrowly ovate, entire, rounded, 2-lamellate within and pilose, the lower lip deltoid, cuneate at base, the tip 3-lobed, the lobes short, rounded, the palate plicate-lamellate, papillose; stamens about 3 mm. long, the anther lobes rounded, obliquely attached to a relatively broad flattened connective 2 mm. broad and about 0.5 mm. thick; capsule clavate, 10 mm. long, glabrous, 4-seeded; seeds ca. 1.7 mm. long, densely papillose.

The specific epithet is from the Greek words *πλευρά*, rib, and *λάρυγξ*, throat, alluding to the plicate-lamellate lower lip of the corolla.

CUNDINAMARCA: Jerusalén, *Pérez-Arbeláez* 587 (US).

10. *Justicia polygonoides* H. B. K.

Justicia polygonoides H. B. K. Nov. Gen. & Sp. 2:232. 1817. Type collected along the Cauca River between Popayán and Cartago, Colombia, by Humboldt and Bonpland. Photograph US (Field Mus. No. 39429.)

Rhytiglossa polygonoides Nees in DC. Prodr. 11: 353. 1847. Based on *Justicia polygonoides* H. B. K.

Herbs or suffrutescent plants up to 1 meter high; stems ascending, usually much branched, subquadrangular, hirtellous, the hairs more or less curved, up to 0.75 mm. long, usually arranged in two rows; leaf blades lanceolate to oblong-lanceolate, up to 12 cm. long and 4 cm. wide, acute or short-acuminate (the tip itself obtuse), acute to obtuse at base, bright green, moderately firm, entire, both surfaces glabrous or the costa and lateral veins (4 to 6 pairs) hirtellous, the hairs curved, about 0.5 mm. long, the venation rather prominent beneath, less so above, the cystoliths more or less conspicuous under a lens, up to 0.28 mm. long; petioles up to 10 mm. long, glabrous to moderately hirtellous; spikes terminal and axillary, slender, rather lax (the internodes about 5 mm. long), up to 14 cm. long and 5 mm. broad, the peduncles slender, up to 15 mm. long, these and the rachises puberulous in two lines; bracts subulate or narrowly lanceolate, 3.5 mm. long, 1 mm. wide at base, narrowed into a slender tip, ciliate, the costa prominent; bractlets subulate, 3 mm. long, 0.5 mm. wide at base, sparingly ciliate; calyx 4-parted, deeply segmented, rather

sparingly hirtellous, the segments narrowly lanceolate, 5.5 to 7 mm. long, 0.75 mm. wide, acuminate, ciliate; corolla violet-pink or rose, minutely hirtellous (the hairs about 0.1 mm. long, straight or slightly curved), 11 mm. long, 1.5 mm. broad at base, enlarged to 1.75 mm. at 2 mm. above base and again narrowed to 1.25 mm. at 5 mm. above base, the throat 2.25 mm. broad, the upper lip erect, ovate, 5 mm. long, 2 mm. wide, rounded at tip, the lower lip cuneate, more or less spreading, 5 mm. long, 4 mm. wide near tip, 3-lobed, the lobes ovate, about 1.25 mm. long and wide, rounded; stamens exerted about 2 mm. beyond the mouth of the corolla, the filaments glabrous, the anther cells slightly superposed, the uppermost and larger cell 1.25 mm. long, attached somewhat obliquely, the lower (0.75 mm. long) attached vertically, both cells glabrous; capsules clavate, 1 cm. long, 3 mm. broad, 1.5 mm. thick, the retinacula unguiform, 1.25 mm. long, rounded and thin at tip; seeds (immature) suborbicular, flattened, tuberculate.

Justicia polygonoides occurs at elevations between 75 and 1,400 meters. The leaf blades of Holton's 594 are much wider than those of typical specimens. Haught states that the leaves of his No. 4953 were red beneath.

Humboldt's type had white flowers lined with violet and calyces with 5 segments. In other respects both the description and photograph of his type agree reasonably well with the material cited here. Nees, in his description of *Rhytiglossa polygonoides*, states definitely that the calyces are 4-parted, as they are in all of the specimens I have seen. Since the bracts and calyx segments are quite similar it would be easy to mistake the number of segments. The corollas of the species are typically violet or pink.

J. polygonoides may be closely related to the Mexican *J. breviflora*, a species usually with much larger flowers, broader leaf blades, and larger heavier spikes.

ANTIOQUIA: Sandstone rocks along the Río Mulatos where submerged rather frequently, vicinity of Turbo, *Haught* 4953 (US).

BOLÍVAR: Forests of Boca Verde on the Río Sinú, *Pennell* 4206, in part (NY).

CAUCA: La Paila, *Holton* 594 (GH, NY).

CUNDINAMARCA: La Palma, along the road to Pacho by the Río Murca, *García-Barriga* 12381 (US).

EL VALLE: Vicinity of Zaragoza, *Cuatrecasas* 22770 (US). Low forest east of Zarzal, *Pennell, Killip & Hazan* 8414 (GH, NY).

TOLIMA: In pastures, Armero, *Cuatrecasas* 10524 (US).

WITHOUT DEFINITE LOCALITY: *Mutis* 725 (US).

11. *Justicia fuchsifolia* Leonard, sp. nov.

FIGURE 191

Suffrutex, caulibus subquadrangularibus (angulis rotundis), plus minusve bifariam hirtellis, pilis retrorse curvatis; lamina foliorum oblongo-ovata vel oblongo-elliptica, acuta vel breviter acuminata,

basi angustata, aliquanto firma, integra, marginibus recurvatis, utrinque plus minusve bullata, supra glabra, costa et venis lateralibus hirtellis exceptis, pilis curvatis, ascendentibus, subtus glabra vel in costa et venis pubescens, cystolithis obscuris vel deficientibus; petioli breves, hirtelli; paniculae terminales, laxae, floribus secundis, pedunculis et pedicellis (brevibus) quadrangularibus, pilosis vel hirtellis; bracteae et bracteolae parvae, triangulares, acutae, ciliolatae; calyces glabri vel apice parce puberuli, segmenta 3 posteriora adnata vel apice plus minusve disjuncta, segmentum elliptico-ovatum acutum formantia, segmenta 2 anteriora lanceolata, acuta; corolla aliquanto magna, flava, puberula, tubo subcylindrico, labiis subaequalibus, labio superiore erecto, bilobato, lobis triangularibus acutis, labio inferiore 3-lobato, lobis ellipticis, obtusis, apiculatis; stamina vix exserta, lobis antherarum leviter superpositis, lobo inferiore calcarato, filamentis glabris; ovarium glabrum.

Suffrutescent, up to 2 meters high; stems subquadrangular with rounded angles, hirtellous, the hairs retrorsely curved, up to 0.5 mm. long, more or less bifariously arranged; leaf blades oblong-ovate or oblong-elliptic, up to 6 cm. long and 2.5 cm. wide, acute to short-acuminate, narrowed at base to an obtusish lobulate base, rather firm, entire, the margins recurved, the upper surface glabrous or nearly so except the costa and lateral veins (about 6 pairs), these moderately hirtellous with mostly curved ascending hairs up to 0.5 mm. long, the lower surface glabrous or the venation sparingly and finely pubescent, both surfaces more or less bullate, the cystoliths obscure or lacking; petioles up to 2 mm. long, hirtellous; flowers secund, borne in terminal panicles of short loose racemes (up to 2 cm. long and broad), the peduncles up to 2 cm. long, subquadrangular, pilose, the hairs spreading or retrorse, up to 0.5 mm. long, whitish, the lowermost internodes of the panicle about as long as the peduncles, the others successively shorter toward the tip of the panicle, the pedicels 1 to 1.5 mm. long, more or less hirtellous; bracts triangular, 2 mm. long and 1 mm. wide at base, acute, ciliate, the hairs about 0.5 mm. long; bractlets similar to the bracts but slightly narrower and longer; calyx campanulate, about 13 mm. long, glabrous or bearing a few hairs at tips of the segments, usually 3-parted, the 3 posterior segments adnate (except sometimes at tip) forming an ovate-elliptic segment 6 mm. wide, this acute, the 2 anterior segments separate nearly to base of calyx, lanceolate, 3 mm. wide near base, acute; corolla 3.5 to 4 cm. long, yellow, puberulous, the tube 4 mm. broad at base, narrowed to 2 mm. at 5 mm. above base, thence gradually enlarged to 7 mm. at mouth, the lips subequal, ciliate, 17 mm. long, the upper lip elliptic, 6 mm. wide, bilobed at tip, the lobes triangular, acute, about 1 mm. long and broad, incurved, the lower

lip 3-lobed, about 8 mm. wide near base of lobes, these elliptic, 4.5 mm. long, 2.5 mm. wide, obtuse, apiculate; stamens exerted slightly beyond the mouth of the corolla tube, the anther lobes slightly superposed, 3 mm. long, 1 mm. broad, glabrous, the lower lobe calcarate at base, the filaments glabrous; pistil reaching the tips of the corolla lips; ovary glabrous; capsules not seen.

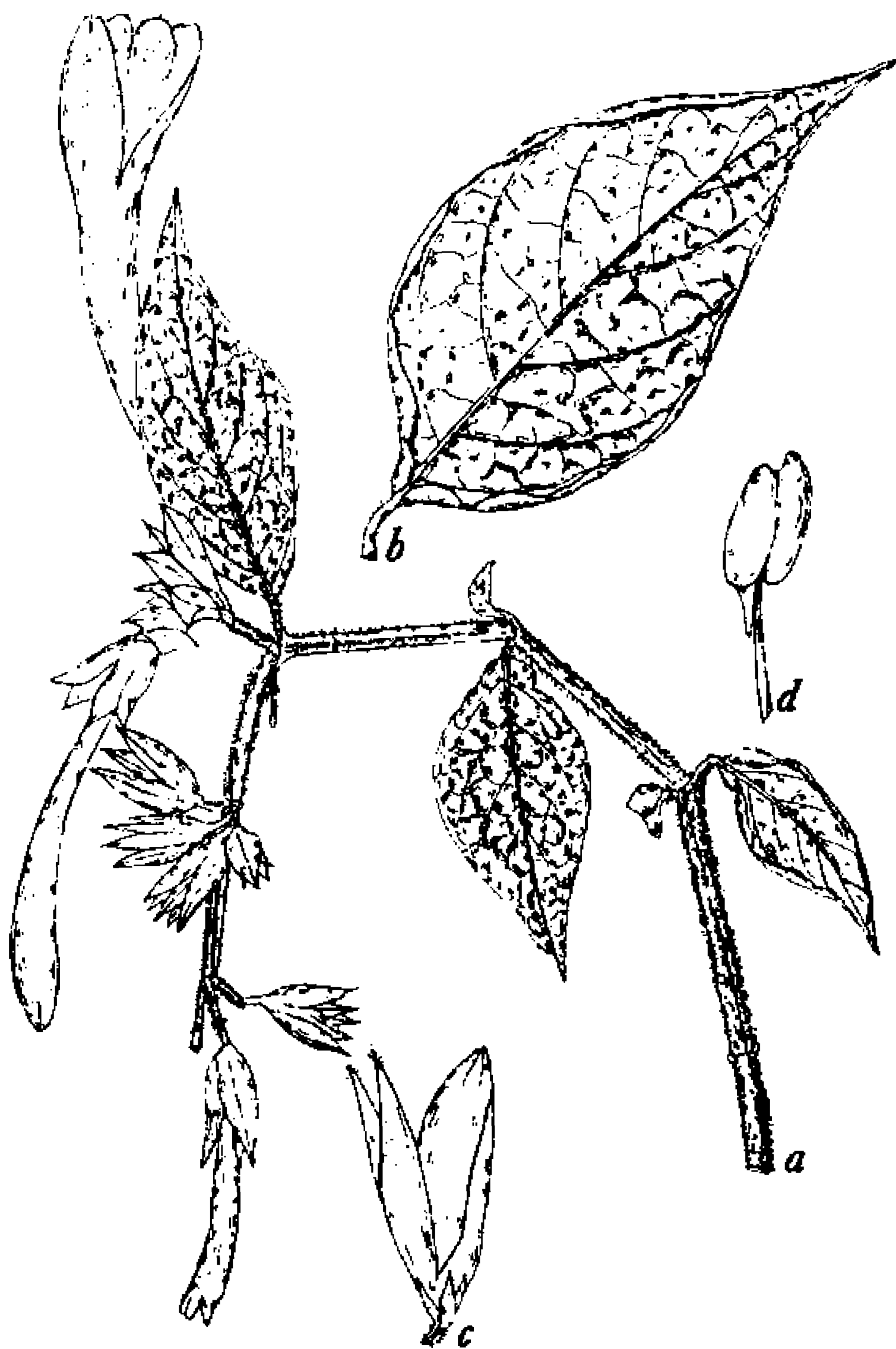


FIGURE 191.—*Justicia fuchsifolia* Leonard (Cuatrecasas, Schultes & Smith 12511): *a*, Tip of branch showing inflorescence and upper leaf blades; *b*, one of the lower stem leaves (under surface); *c*, calyx; *d*, anther. (*a*, *b*, Natural size; *c*, slightly less than twice natural size; *d*, 3 times natural size.)

Type in the U. S. National Herbarium, No. 1850755, collected in woods between Alto del Loro and Alto de Santa Inés, Sarare Region, Department of Norte de Santander, Colombia, 1,800 to 2,200 meters altitude, October 18–21, 1941, by J. Cuatrecasas, R. E. Schultes & E. Smith (No. 12511).

Kalbryer's No. 1171 (K), collected in forest between Ocaña and Pamplona, Department of Norte de Santander, is also of this species.

The loose paniculate inflorescence of pedicelled yellow flowers, the relatively large campanulate irregular calyces and the firm subbullate leaf blades of *Justicia fuchsiifolia* mark it as an easily recognized species. It apparently has no close relatives.

On his label Kalbreyer described the plant as a "soft-wooded shrub 3 to 6'; leaf stiff dark green; fl. yellow."

12. *Justicia neurochlamys* Leonard, sp. nov.

FIGURE 192

Herba, caulibus erectis vel ascendentibus, subquadrangularibus, bifariam hirsutis, pilis retrorse curvatis; lamina foliorum ovata vel lanceolata, acuta vel breviter acuminata (apice ipso obtuso), basi acuta vel rotundata, aliquanto firma, integra vel undulata, supra glabra, subtus hirtella, pilis curvatis, cystolithis raris et obscuris, venis vix prominentibus; petioli breves, hirtelli, pilis curvatis; spicae terminales et laterales, bracteis imbricatis et quadrifariis, pedunculis brevibus, aliquanto dense hirtellis, pilis curvatis, rhache hirtella, pilis curvatis; bracteae virides, ovatae, subacutae, basi obtusae, supra glabrae, subtus puberulae, pilis curvatis, marginibus ciliatis, costa et venis lateralibus et venulis reticulatis prominentibus; bracteolae virides, oblongo-lanceolatae, utrinque acutae, supra glabrae, subtus puberulae; calyx parvus, tubo anguste alato, segmentis anguste lanceolatis (apicem gracilibus), subhyalinis, hirtellis et ciliolatis, segmento posteriore subulato, parvo, costa prominente; corolla alba, basi glabra, sursum parce hirtella labiis subaequalibus, labio superiore erecto, oblongo, acuto, labio inferiore plus minusve patulo, cuneiformi, 3-lobato, lobis rotundatis; stamina exserta, filamentis gracilibus, subhyalinis, lobis antherarum obliquis, glabris; ovarium glabrum.

Herbs up to 60 cm. high, erect or ascending, stems subquadrangular, hirsute in two lines, the hairs retrorsely curved, up to 0.48 mm. long; leaf blades ovate to lanceolate, up to 9 cm. long and 2.5 cm. wide, acute to short-acuminate (the tip itself obtuse), rounded or acute at base, moderately firm, entire or undulate, the upper surface glabrous, the lower moderately hirtellous with curved hairs up to 0.16 mm. long, the cystoliths usually scattered and obscure, the venation scarcely prominent (lateral veins 4 or 5 pairs) but more so beneath than above; petioles 3 to 10 cm. long, hirtellous with curved hairs; spikes terminal and lateral, 2 to 5 cm. long, 8 to 10 mm. broad, the bracts imbricate and quadrifarious, the peduncles about 5 mm. long, rather densely hirtellous with curved hairs, the rachis hirtellous with hairs 0.2 mm. long; bracts imbricate, green, and ovate, about 10 mm. long, 5 mm. wide, subacute, obtuse at base, the upper surface glabrous, the lower moderately puberulous with curved hairs about 0.1 mm. long, the margins ciliate with straight or curved hairs up to 0.76 mm. long, the costa, lateral veins (5 pairs), and coarsely reticulated veinlets promi-

ment, especially on the upper surface where not obscured by the pubescence; bractlets green, oblong-lanceolate, 8 mm. long, 1.5 mm. wide, acute at both ends, the pubescence and venation that of the bracts; calyx 5 mm. long, the posterior segment subulate, about half as long as the other 4, the calyx tube glabrous, triangular in cross section, the angles narrowly winged, the segments narrowly lanceolate, subhyaline, moderately hirtellous and ciliolate, the hairs up to 0.25 mm. long, the

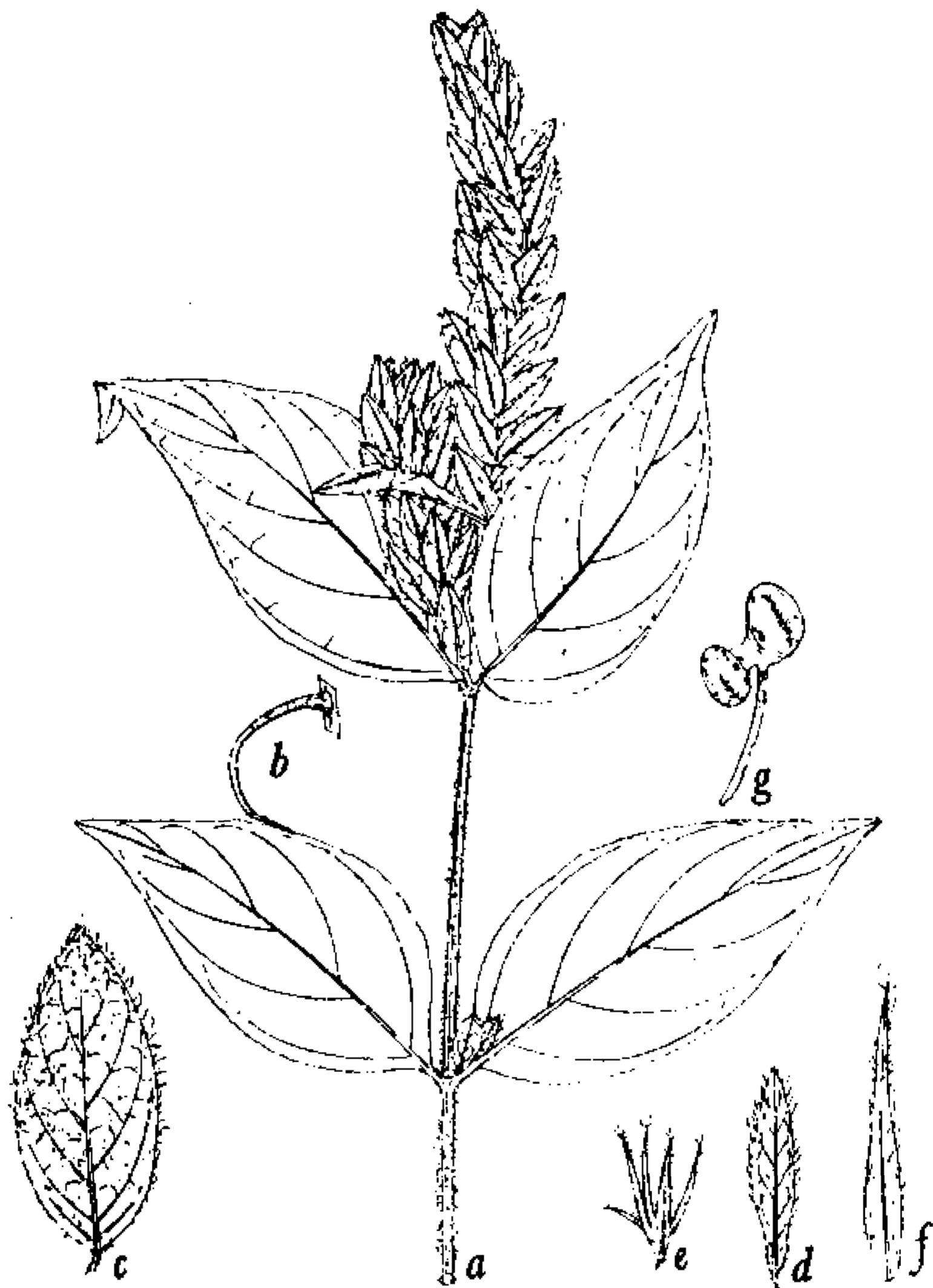


FIGURE 192.—*Justicia neurochlamys* Leonard (García-Barriga 14096): *a*, Tip of plant to show inflorescence and leaves; *b*, a hair from stem; *c*, bract; *d*, bractlet; *e*, calyx; *f*, calyx segment; *g*, anther. (*a*, Natural size; *b*, about 40 times natural size; *c*, *d*, 2½ times natural size; *e*, twice natural size; *f*, 5 times natural size; *g*, 13 times natural size.)

costa prominent; corolla delicate, white, 12 mm. long, glabrous below, the upper portion sparingly hirtellous with hairs about 0.8 mm. long, the tube 1.5 mm. broad at base, 1.75 mm. broad at 2 mm. above base, narrowed 1 mm. at middle, the throat 2 mm. broad, the lips subequal, 4 mm. long, the upper lip erect, oblong, 0.75 mm. wide, acute, the lower lip more or less spreading, cuneiform, 3 mm. wide near base of lobes, the lobes about 3 mm. long, the middle one about 2 mm. wide, the

lateral ones 1 mm. wide, all rounded; stamens exerted 2.5 mm. beyond the mouth of the corolla tube, the filaments slender, subhyaline, the anther cells obliquely attached to a flattened connective about 0.25 mm. wide, the upper cell 0.75 mm. long, the lower slightly shorter, both glabrous, the pistil equalling the stamens, slender and glabrous; ovary glabrous.

Type in the U. S. National Herbarium, No. 2057245, collected at Soratama, on the Río Apaporis between the Ríos Kananarí and Pacoa, Intendencia of Amazonas, Colombia, 250 meters altitude, December 15–19, 1951, by H. García-Barriga (No. 14096).

García-Barriga's 13653 (Col), collected at Lagunas del Churuco, on the Río Apaporis, Amazonas—Vaupés, Colombia, 280 meters altitude, November 22, 1951, is also of this species.

Justicia neurochlamys resembles and is probably very closely related to *J. chlorostachya* Leonard. However, the former can be readily recognized by the delicate white corollas and by the puberulous upper surface of the bracts. The corollas of *J. chlorostachya* are pink or pale violet and the bracts are essentially glabrous on both surfaces. The specific epithet is from the Greek, *νεῦρον*, nerve, and *χλαμύς*, bract.

13. *Justicia rhodoides* Leonard, sp. nov.

FIGURE 193

Herba, caulibus ramosis, plus minusve patulis, subquadrangularibus, obscure sulcatis (sulcis viridibus), aliquanto dense puberulis, pilis varie curvatis, albis, cystolithis parallelis, subinde cum pilis obscuratis; lamina foliorum ovata, apice acuta vel subobtusa, basi rotundata vel obtusa, aliquanto firma, undulata, supra glabra vel parce hirsuta, in costa et venis aliquanto hirsuta, subtus plus minusve hirsuta, cystolithis utrinque conspicuis; petioli graciles, breves, hirsuti; flores axillares, solitarii vel in spicis parvis praediti, pedunculis brevibus et rhachibus puberulis; bracteae subulatae parvae, extus puberulae, intus glabrae, costa aliquanto prominente; calycis segmenta 5, inaequalia, 1 minutissima, subulata, 4 maiora anguste lanceolata, omnes graciliter acuta, puberula; corolla aliquanto parva, rosea, puberula, pilis fere patulis, tubo corollae cylindrico, basi expanso, lobis corollae ovatis, apice rotundatis; stamina vix exserta, glabra, lobis antherarum leviter superpositis, basi obtusis; capsulae clavatae, aliquanto dense puberulae, pilis patulis vel basi retrorsis; retinacula late cucullata, apice rotundata; semina suborbiculata, plana, muricata.

Herbs up to 50 cm. high, branched and more or less spreading; stems subquadrangular, faintly sulcate (sulci green), rather densely puberulous, the hairs variously curved, up to 0.35 mm. long, white, the cystoliths parallel and, if not concealed by the hairs, conspicuous; leaf blades ovate, up to 4 cm. long and 2.3 cm. wide, gradually narrowed from near base to an acute or subobtuse tip, obtuse or rounded at base and briefly decurrent on the petiole, moderately firm, undulate,

drying green, the upper surface glabrous or sparingly hirsute (the hairs ascending, up to 0.5 mm. long) except the costa and lateral veins (4 or 5 pairs), these moderately hirsute, the lower surface similar to the upper except slightly more hirsute, the venation of both surfaces moderately conspicuous, the cystoliths prominent, up to 0.2 mm. long; petioles slender, up to 4 mm. long, hirsute; flowers sessile in the axils of the leaves or borne in small axillary spikes up to 1 cm. long,

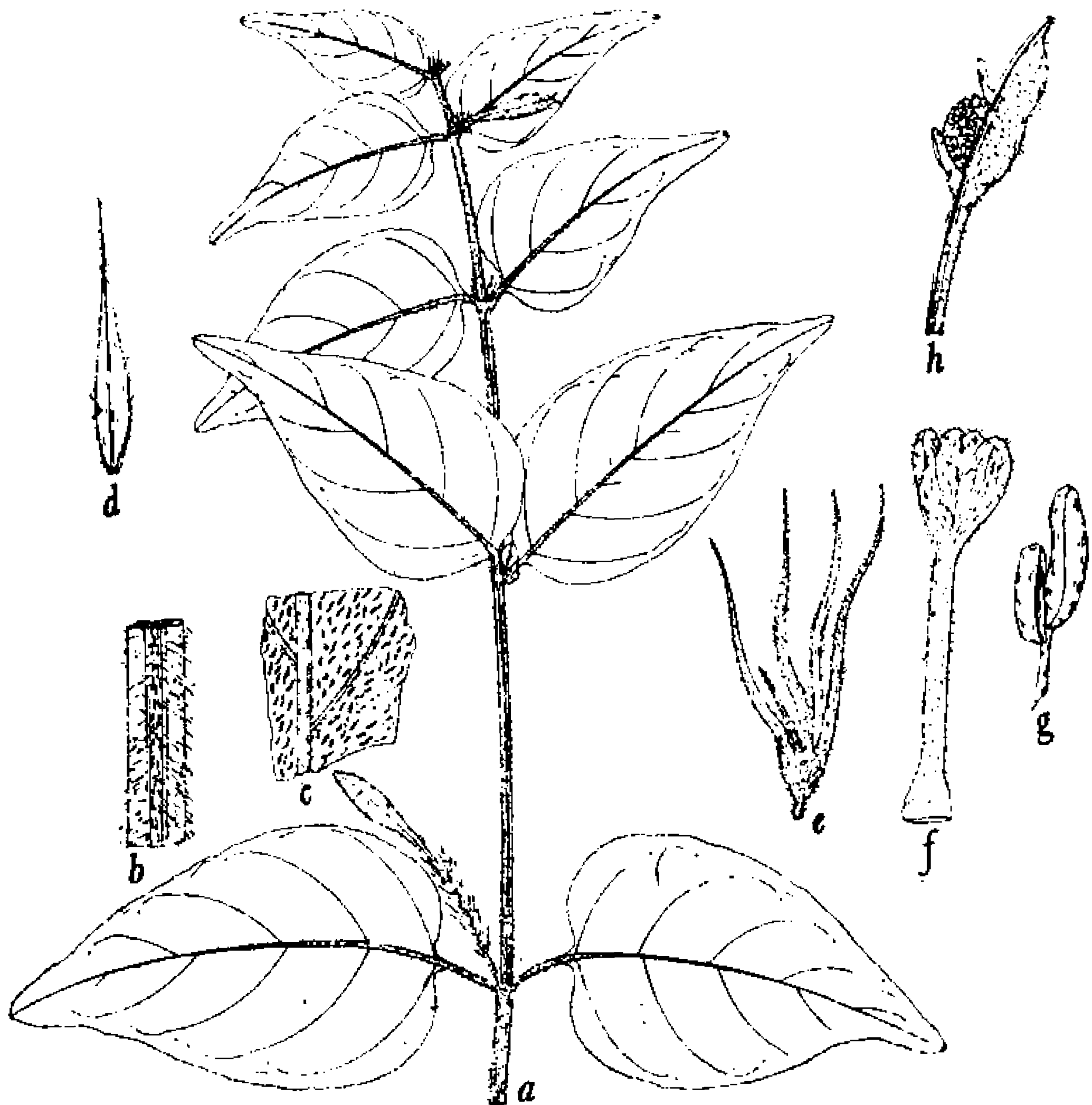


FIGURE 193.—*Justicia rhodoides* Leonard (*a-e, h*, Smith 1358, collected Nov. 29; *f, g*, Smith 1358, collected June 6): *a*, Tip of plant; *b*, portion of stem enlarged to show pubescence and cystoliths; *c*, portion of the under side of a leaf blade enlarged to show pubescence and cystoliths; *d*, bract; *e*, calyx; *f*, corolla; *g*, anther; *h*, capsule valve. (*a*, Natural size; *b*, 6 times natural size; *c*, 5 times natural size; *d*, 8 times natural size; *e*, 7 times natural size; *f, h*, 3 times natural size; *g*, 9 times natural size.)

the peduncles up to 2 mm. long, slender and like the rachis puberulous; bracts subulate, up to 2.5 mm. long and 0.5 mm. wide at base, the outer surface puberulous, the inner glabrous; bractlets similar but smaller; calyx deeply segmented, the segments 5, subulate, 4 large and one small, the larger ones 3.5 to 4 mm. long and 0.5 mm. wide at base, the small one 1 mm. long and 0.2 mm. wide at base, all gradually narrowed to a slender tip and puberulous; corolla 12 mm. long, rosy,

puberulous, the hairs mostly spreading, up to 0.2 mm. long, the corolla tube slender, tubular, 0.75 mm. in diameter, abruptly expanded at base to 2.5 mm., the lips ovate, about 4 mm. long, probably about 1.25 mm. wide, rounded at tip; stamens barely exerted, about 3 mm. long, glabrous, the anther lobes slightly superposed, one 1.25 mm. long, the other, 0.75 mm. long, both blunt at base; capsules clavate, up to 9 mm. long, 2.5 mm. broad and about 0.75 mm. thick, rather densely puberulous, the hairs spreading or, towards base of the capsule, retrorsely ascending, up to 0.17 mm. long; retinacula about 1 mm. long, broadly cucullate, rounded at tip; seeds suborbicular, flattened, muricate.

Type in the U. S. National Herbarium, No. 703897, collected in dry forest 3 to 5 miles north of Bonda, Santa Marta Mountains, Department of Magdalena, Colombia, 100 to 300 feet altitude, November 29, 1898, by Herbert H. Smith (No. 1358). Isotypes: PH, NY, S.

One specimen of the type number was collected June 6 (NY), presumably in the vicinity of Bonda.

Justicia rhodoides resembles and is probably very closely related to the West Indian *J. sessilis* Jacq. That species has, however, sparingly glandular puberulous or essentially glabrous capsules and the calyx segments, usually 4 in number, are much less puberulous, becoming, in fact, glabrate at maturity.

Smith states that this plant was common in the locality where he collected it, but not in good flowering condition at the time. His specimen collected in June bears several corollas, but unfortunately these were ruined in the process of gluing, rendering dissection impossible; consequently, the corolla lobes and lips could not be described. The specific epithet is from the Greek word *ῥοδοειδής*, meaning rosy, in allusion to the color of the flowers.

14. *Justicia daidalea* Leonard, sp. nov.

FIGURE 194

Herba ascendens, caulibus quadrangularibus, aliquanto dense puberulis, pilis retrorse curvatis; lamina foliorum oblongo-elliptica vel elliptica vel ovata, apice rotundata vel late obtusa, basi acuta, vel obtusa vel subcordata, aliquanto firma, integra, supra glabra, viridimaculosa, subtus hirsuta, pilis curvatis, ascendentibus, praecipue in costa et venis lateralibus prominentibus positis, cystolithis prominentibus; petioli aliquanto breves et crassi, hirsuti; spicae terminales, simplices vel basi furcatae, pedunculis et rhachibus retrorse hirsutis; bracteae parvae, triangulares, acute, glabrae vel in costa prominente hirsutae; bracteolae parvae, lanceolatae, acutae; calycis segmenta anguste lanceolata, plus minusve glabra, costa et marginibus ciliata; corolla parva, parce pubescens, punicea, tubo subcylindrico, labiis subaequalibus, labio superiore erecto, anguste ovato, labio inferiore

patulo, trilobato, lobis oblongis, apice rotundatis; stamina vix exserta, glabra, lobis antherearum valde superpositis, lobo inferiore calcarato; capsulae clavatae, hirtellae, pilis patulis vel retorsis; retinacula leviter curvata, apice plana et truncata; semina (immatura) subbrunnea, plana, subcordata, leviter tuberculata.

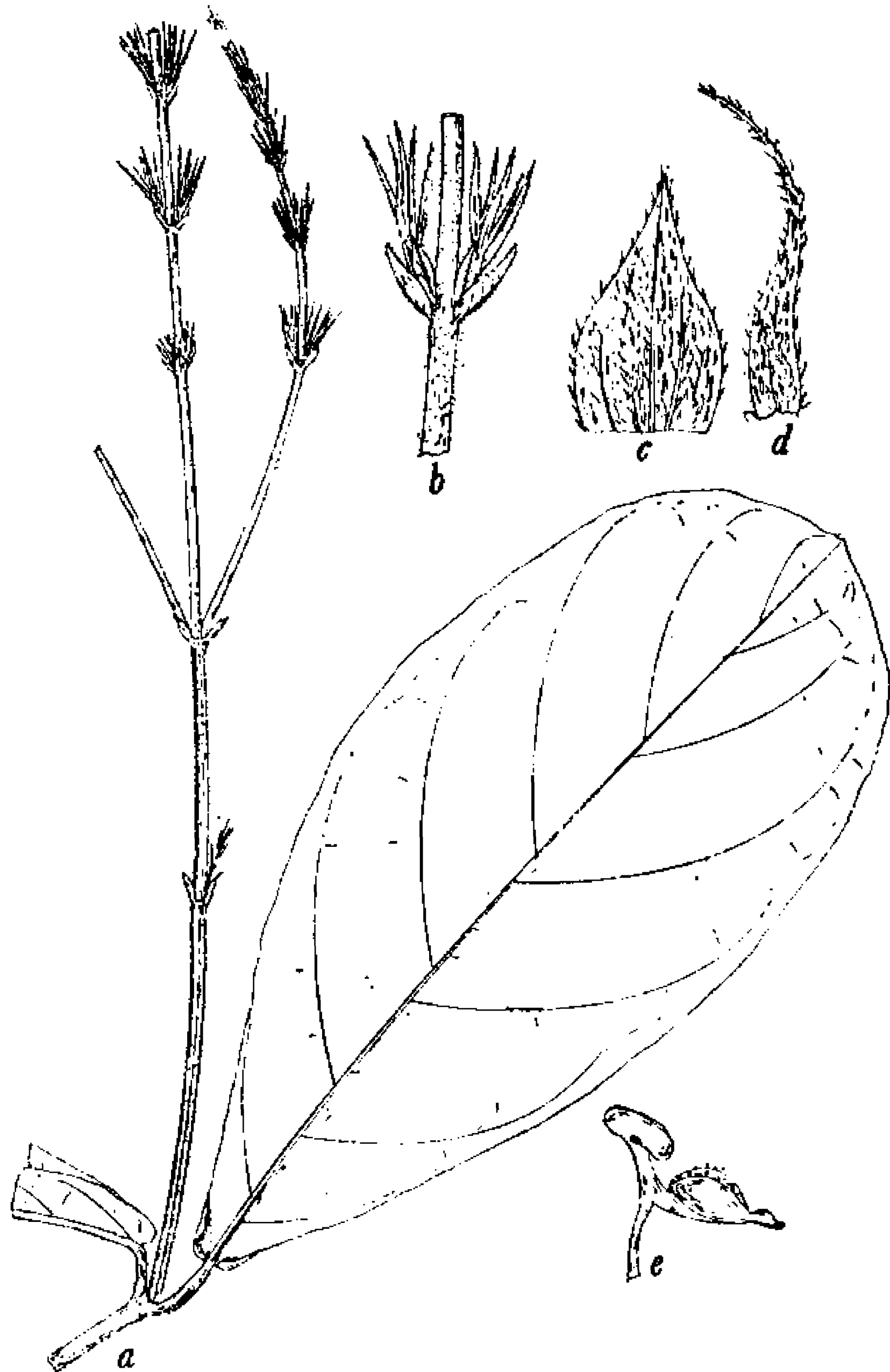


FIGURE 194.—*Justicia daidalea* Leonard (*Haught* 1603): *a*, Tip of plant showing leaf and lower part of inflorescence; *b*, node of inflorescence showing bracts, bractlets and calyx; *c*, bract; *d*, one of the calyx segments; *e*, anther. (*a*, Natural size; *b*, about $2\frac{1}{2}$ times natural size; *c*, *d*, 8 times natural size; *e*, 10 times natural size.)

Trailing or ascendent herbs up to 30 cm. high, rather densely puberulous with retrorsely recurved hairs up to 0.28 mm. long, these septate, the internodes up to 5 cm. long and 2 mm. thick, quadrangular; leaf blades oblong-elliptic to elliptic or obovate, up to 9 cm. long and 5.5 cm. wide, rounded or broadly obtuse at tip, acute to

obtuse or slightly cordate at base, moderately firm, entire, the upper surface glabrous, mottled green, the cystoliths prominent, up to 0.28 mm. long, the lower surface hirsute, the hairs curved, ascending, up to 0.5 mm. long, confined chiefly to costa and lateral veins (6 or 7 pairs), these prominent on both surfaces but more so beneath than above, the cystoliths prominent; petioles rather stout, up to 1.5 mm. long, hirsute; flowers borne in simple terminal lax spikes up to 18 cm. long, these sometimes branched, bearing a pair of lateral spikes near the base, the peduncles up to 5 cm. long, retrorsely hirsute, the pubescence that of the stems, the lowermost internodes of the spikes up to 3.5 cm. long, the others successively shorter toward the tip of the spikes, hirsute like the stems and peduncles; bracts triangular, 3 mm. long, 1.5 mm. wide at base, acute, mostly glabrous except the costa, this stout and more or less hirsute; bractlets lanceolate, about 3 mm. long and 0.5 mm. wide, acute; calyx 5 to 6 mm. long, deeply segmented, the segments 5, narrowly lanceolate, four of these 5 mm. long and 0.75 mm. wide at base, the other 3.5 mm. long and 0.5 mm. wide at base, all glabrous except the costa and margins, these hirtellous and ciliate with hairs about 0.2 mm. long; corolla pink, rather sparingly hirtellous, 10 to 12 mm. long, the tube subcylindric, 1.5 mm. broad at base, 2 mm. broad at mouth, the lips subequal, 6 mm. long, the upper lip erect, narrowly ovate, about 2 mm. wide, the lower lip spreading, 3-lobed, the lobes oblong, about 2 mm. wide, rounded; stamens reaching the tip of the upper corolla lip, glabrous, the lobes superposed, the upper lobe separated about 0.5 mm. from the lower by the connective, rounded at base, the lower lobe strongly calcarate, both lobes about 0.75 mm. long; capsules clavate, about 1 cm. long, 3 mm. broad and 1.5 mm. thick, hirtellous, the hairs spreading or retrorse, septate, about 0.1 mm. long; retinacula 1.5 mm. long, slightly curved, the tip thin and truncate; seed (immature) brownish, about 2 mm. long and broad, faintly tuberculate.

Type in the U. S. National Herbarium, No. 1661602, collected at Camp Puente, in the vicinity of Barranca Bermeja, in the Magdalena Valley between the Ríos Sogomoso and Colorado, Department of Santander, Colombia, 100 to 500 meters altitude, February 27, 1935, by Oscar Haught (No. 1581).

Haught's No. 1603, collected in the Carare Valley in the vicinity of Puerto Berrio, between the Ríos Carare and Magdalena, Santander, 100 to 700 meters altitude, March 25, 1935, is also of this species.

Justicia daidalea is very closely related to *Justicia steyermarkii* Leonard, comb. nov. (*Beloperone steyermarkii* Leonard, Fieldiana 28: 555. 1953) from Venezuela (type collected in Yaracuy). *Justicia steyermarkii* is a smaller plant, not exceeding 18 cm. in height; its leaves are thinner, with no indication of the white mottling so promi-

ment in *J. daidalea*; the inflorescence is much smaller in all parts, the spikes rarely exceeding 4 cm. in length; and the corollas are purple instead of pink.

No dissection could be made of the few corollas present on the specimens cited to show whether the upper lip was lobed or entire. The specific epithet is from the Greek *δαιδάλεος*, curiously wrought or variegated, in allusion to the handsome mottled leaves.

15. *Justicia aëthes* Leonard, sp. nov.

FIGURE 195

Suffrutex humilis, dense ramosus, caulibus subquadrangularibus vel deorsum teretibus, puberulis, pilis valde recurvatis; lamina foliorum ovata, acuta vel breviter acuminata, basi angustata, in petiolum decurrens, integra, aliquanto tenuis, supra viridis (sicca), glabra vel subglabra, costa parce hirtella, subtus cano-viridis (sicca), puberula, cystolithis pluribus et sub lente conspicuis; petioli graciles, parce puberuli; spicae solitariae ramos terminantes, aliquanto laxae, pedunculis quadrangularibus, puberulis, pilis curvatis; bracteae et bracteolae similes et subaequales, subulatae, puberulae, ciliolatae; calycis segmenta 5, subulata, segmentum anterius reductum, puberula, ciliolata, costa prominente; corolla (immatura) pallido-purpurea, basi glabra, sursum puberula, labiis subaequalibus, labio superiore ovato, rotundato, labio inferiore 3-lobato, lobis rotundatis; stamina vix exserta, lobis antherarum superpositis, lobo superiore obliquo, inferiore recto, filamentis glabris; capsulae clavatae, parce puberulae; semina plana, suborbicularia, nigra, muricata.

Low, densely branched shrubs up to 60 cm. high; stems subquadrangular, or the lower portions terete, puberulous, the hairs strongly recurved, about 0.1 mm. long; leaf blades ovate, 3 to 8 cm. long, 1.3 to 3 cm. wide, short-acuminate or acute, narrowed at base and decurrent on the petiole, entire, rather thin, the upper surface drying green, glabrous or nearly so or the costa sparingly hirtellous, the lower surface gray green, puberulous, the hairs up to 0.11 mm. long, ascending or those of the costa somewhat longer, the venation faint but more prominent beneath than above, the cystoliths numerous and conspicuous under a lens, up to 0.28 mm. long; petioles slender, 5 to 13 mm. long; spikes solitary, terminating the branches, 3 to 6 cm. long, about 5 mm. thick, the internodes 2 to 4 mm. thick, the peduncle 5 or 6 mm. long, quadrangular, puberulous with curved hairs; bracts and bractlets similar and subequal, subulate, 4 mm. long, about 1 mm. wide at base, puberulous, ciliate, the costa prominent; calyx segments 5, subulate, 4 of them 5 mm. long, 0.5 mm. wide at base, the anterior segment rudimentary, 1.5 mm. long, all puberulous and ciliate, the costa prominent; corolla (immature) 8 mm. long, light purple, puberulous except the lower glabrous portion, the lips sub-

equal, 4 mm. long, the upper lip ovate, rounded, the lower 3-lobed, the lobes rounded; stamens barely exerted, the anthers superposed, 0.75 mm. long, the upper one obliquely attached to a flattened connective 0.25 mm. wide, the lower vertically attached, the filaments glabrous; capsules clavate, sparingly puberulous, 7 mm. long, 2 mm. broad, 1 mm. thick; retinacula 1.5 mm. long, thin and rounded at tip; seed flattened, suborbicular, black, muricate.

Type in the U. S. National Herbarium, No. 1709421, collected along stream in dense forest along the Caño Blanco, 7 km. southeast



FIGURE 195.—*Justicia aëthes* Leonard (Haught 3632): *a*, Tip of branch showing leaves and inflorescence; *b*, section of stem to show pubescence; *c*, calyx; *d*, bract; *e*, bractlet; *f*, tip of calyx segment to show hairs; *g*, anther; *h*, valve of capsule. (*a*, Natural size; *b*, $3\frac{1}{2}$ times natural size; *c*–*e*, 3 times natural size; *f*, 8 times natural size; *g*, 6 times natural size; *h*, $2\frac{1}{2}$ times natural size.)

of Río La Jagua, Department of Magdalena, Colombia, 200 to 300 meters altitude, August 21, 1943, by Oscar Haught (No. 3632).

Justicia aëthes, though closely related to *J. polygonoides*, can be easily recognized by its puberulous stems, leaves, and spikes and by the peculiar rudimentary anterior calyx lobe. The specific epithet is from the greek *ἀήθης*, peculiar.

16. *Justicia chrysocoma* Leonard, sp. nov.

FIGURE 196

Frutex erectus, ramosus, caulibus crassis, subquadrangularibus, late 4-sulcatis, dense hirtellis vel subtomentosis, pilis aureis, curvatis; lamina foliorum ovata vel oblongo-ovata, acuta vel breviter acuminata

(apice ipso obtuso), basi acuta vel obtusa, aliquando firma, integra vel undulata, supra dense hirtella, pilis curvatis, septatis, fulvis, cystolithis utrinque parvis, obscuris, subtus dense et molliter subtomentosa, pilis aureis, curvatis, costa et venis prominentibus; petioli dense tomentosi, pilis aureis; paniculae terminales, pedunculis crassis et internodiis panicularum dense hirtellis vel subtomentosis, pilis aureis, curvatis, ramis panicularum ascendentibus, floribus et bracteis secundis, densis; bracteae oblongo-ovatae, acutae vel subacutae, subhyalinae, saepe roseae, extus puberulae, intus glabrae; bracteolae lanceolatae, subacutae; calycis segmenta lanceolata, acuta, intus glabra, extus puberula, costa et venis obscuris; corolla rosea, pubescens, basi glabra, labiis subaequalibus, labio superiore erecto, ovato, integro, obtuso, labio inferiore trilobato, lobis ovatis, rotundatis; stamina exserta, filamentis planis, glabris vel deorsum parce hirtellis, lobis antherarum leviter superpositis, subparallelis, lobo inferiore calcarato; capsulae clavatae, tenuiter hirtellae; retinacula apice truncata; semina plana, papillosa.

Slender erect, much-branched shrubs up to 6 meters high; stems stout, obtusely quadrangular, broadly 4-sulcate, densely hirtellous or subtomentose, the hairs golden yellow, variously curved, up to 0.75 mm. long; leaf blades ovate or oblong-ovate, up to 25 cm. long and 12 cm. wide, acute to subacuminate (the tip itself obtuse), acute to obtuse at base, moderately firm, entire or undulate; the upper surface moderately to rather densely hirtellous, the hairs yellowish, septate, curved, up to 0.75 mm. long, the costa and lateral veins (14 or 15 pairs) prominent but less so than those of the lower surface, the cystoliths minute (about 0.2 mm. long) and obscure on both surfaces, the lower surface densely and softly subtomentose with golden yellow curved hairs up to 0.75 mm. long; petioles up to 8 cm. long, densely golden yellow tomentose or at least the channels so; panicles terminal sometimes with branches in the axils of the upper leaf blades, usually 10 to 20 cm. long and 6 to 8 cm. broad, more or less narrowed to tip; peduncles stout, these and the internodes of the inflorescence golden brown hirtellous or subtomentose, the lowermost nodes of the inflorescence producing small leaf blades, the branches of the inflorescence ascending, bearing crowded more or less secund flowers and bracts; bracts subtending the flowers oblong-ovate, up to 12 mm. long and 5 mm. wide, acute or subacute, narrowed to 2 mm. at base, thin, subhyaline, usually pink, puberulous without (the hairs up to 175μ long), glabrous within, the costa and a pair of lateral nerves predominating; bractlets lanceolate, 8 mm. long, 2 mm. wide, subacute, in other respects similar to the bracts; calyx 8 to 12 mm. long, deeply segmented, the segments lanceolate, 1.5 to 2 mm. wide, acute, the inner surface glabrous, the outer puberulous with papilliform hairs,

the costa and lateral nerves obscure; corolla pink or light red, moderately and finely pubescent except the glabrous basal portion (the hairs up to 128μ long, the pointed ones intermixed with a few stouter

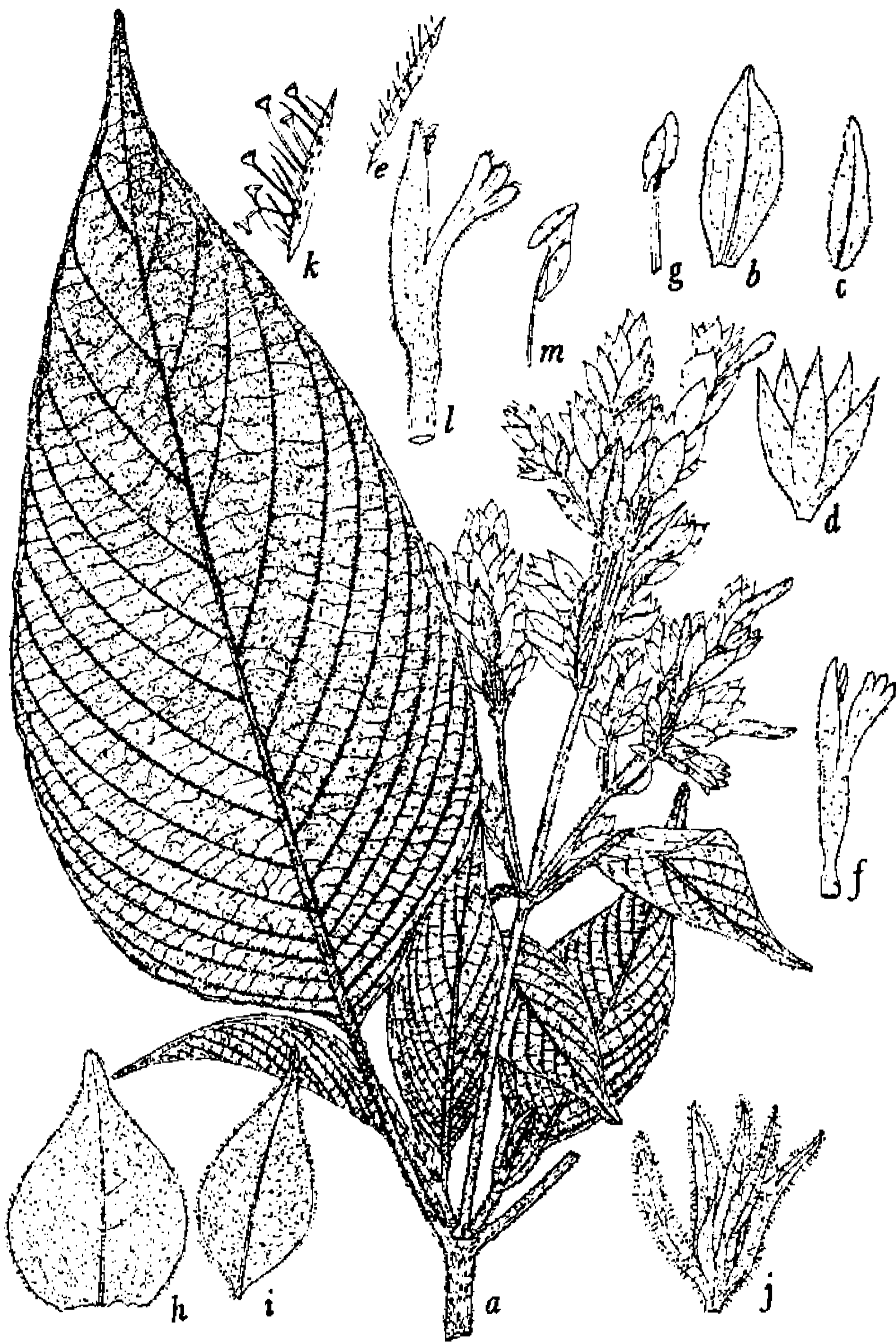


FIGURE 196.—*Justicia chrysocoma* Leonard, a-g (Killip & Smith 16797) and *Justicia rohrii* Vahl, h-m (Killip & Smith 21100): a, Tip of plant showing inflorescence and leaves; b, bract; c, bractlet; d, calyx; e, pubescence from margin of bract; f, corolla; g, anther; h, bract; i, bractlet; j, calyx; k, pubescence from margin of bract; l, corolla; m, anther. i(a, Half natural size; b-d, h-j, twice natural size; e, 12 times natural size; f, l, natural size; g, $3\frac{1}{2}$ times natural size; k, 10 times natural size; m, 3 times natural size.)

glandular ones), up to 35 mm. long, the tube 3 mm. broad at base, enlarged to 4 mm. and reduced to 3 mm. at 4 mm. above base, thence gradually enlarged to 4 or 5 mm. at mouth, the lips subequal, 12 to

15 mm. long, the upper lip erect, ovate, about 8 mm. wide at base, obtuse at tip, the lower lip strongly recurved, about 5 mm. wide near tip, 3-lobed, the lobes ovate, 3 to 5 mm. long, obtuse or rounded, the middle one 2 mm. wide, the lateral ones slightly narrower; stamens exerted, reaching tip of the upper lip of the corolla, the filaments flat, adnate to the corolla tube about 5 mm. below its mouth, glabrous or bearing a few minute hairs near base, the anther lobes slightly superposed, nearly parallel, 2 mm. long and 0.75 mm. broad, the lower cell ending in a blunt whitish tail about 0.5 mm. long and 0.25 mm. broad; pistil slightly shorter than the stamens, sparingly and minutely hirtellous; capsules clavate, 15 mm. long, 4 mm. broad, 3 mm. thick, finely hirtellous, the hairs about 125μ long, those at the tip spreading, the others retrorse; retinacula 2 mm. long, flat and truncate at tip; seeds suborbicular, flattened, about 2.5 mm. broad and long, strongly papillose.

Type in the U. S. National Herbarium, No. 1352491, collected in a thicket between Suratá and California, Department of Santander, Colombia, 1,740 to 2,000 meters altitude, January 8-11, 1927, by E. P. Killip & Albert C. Smith (No. 16797). Isotypes: GH, NY.

MAGDALENA: Forest near stream above Manaure, 800 meters altitude, *Haught* 3947 (US). Cincinnati, *Giacometto* 80 (US).

SANTANDER: Woods between El Roble and Toma, 1,500 to 1,900 meters, *Killip & Smith* 19391 (GH, NY, US). Thicket in the Río Suratá Valley, between El Jaboncillo and Suratá, 1,500 to 1,800 meters altitude, *Killip & Smith* 16462 (GH, NY, US).

Justicia chrysocoma is closely related to *J. rohrii*, the inflorescences of the two species being quite similar in general appearance. Several striking differences exist, however. In *J. chrysocoma*, the leaf blades, especially on the lower surface, the petioles, stems, and internodes of the inflorescence are densely subtomentose with golden hairs, the bracts, bractlets, and calyces, as well as the internodes of the inflorescence, bear no patelliform hairs, and the corollas are pink or red. On the other hand, in *J. rohrii* the stems are minutely puberulous, the leaves are almost, if not entirely, glabrous, the bracts, bractlets, and calyces, as well as the internodes of the inflorescence, bear, in addition to the pointed hairs, some terminating in large patelliform glands, and the corollas are white or yellowish. There is also a marked difference in size. The plants of *J. rohrii* rarely exceed 2 meters in height, whereas those of *J. chrysocoma* may reach as much as 6 meters.

The characters delineating *J. chrysocoma* are not so well marked in *Haught's* No. 3947. A fair percentage of the hairs of the inflorescence is patelliform, and the tomentum is neither so dense nor of so

golden a yellow as in typical specimens. Haught's plant seems to be intermediate between *J. chrysocoma* and *J. rohrii*.

The specific epithet, *chrysocoma*, is from the Greek χρυσόκομος, golden-haired.

17. *Justicia chrysea* Leonard, sp. nov.

FIGURE 197

Herba, caulibus subquadrangularibus (angulis rotundatis) deorsum retrorse puberulis vel glabratis, pilis curvatis, sursum hirsutis, pilis rectis vel leviter curvatis, patulis vel plus minusve retrorsis, fulvis; lamina foliorum oblongo-ovata vel oblongo-elliptica, acuta vel breviter acuminata, basi obtusa vel acuta, aliquanto firma, integra, supra hirsuta, pilis ascendentibus vel subappressis, fulvis, subtus hirsuta, pilis praecipue in costa et venis prominentibus positus, cystolithis supra minutis et inconspicuis, subtus pluribus et conspicuis; petioli hirsuti; rami apice dense aureo-hirsuti, pilis patulis, longis; pedunculi terminales, solitarii, quadrangulares, dense aureo-hirsuti, apice furcati; spicae solitariae vel plures, rhachibus et pedunculis dense hirsutis; bractee firmas, lanceolatae, acutae, glabrae vel apice parce hirsutae, marginibus dense ciliatis, pilis fulvis, longis, costa prominente; bractee firmas, subulatae, carinatae, ciliatae; calycis segmenta anguste triangularia, graciliter acuta, sursum ciliata; corolla pallide lilacina, deorsum glabra, sursum hirsuta, labiis subaequalibus, labio superiore triangulo-ovato, acuto, labio inferiore 3-lobato, lobis parvis, rotundatis; stamina vix exserta, lobis antherarum superpositis, glabris, suberectis, lobo inferiore basi calcarato; capsulae (immaturae) clavatae, sursum puberulae, deorsum glabrae; retinacula leviter curvata, apice anguste cucullata.

Herbs; stems subquadrangular with rounded angles, the lower parts retrorsely puberulous or glabrate, the hairs curved, about 0.1 mm. long, the upper portions hirsute, the hairs straight or slightly curved, spreading or more or less retrorse, yellowish brown, up to 1.5 mm. long; leaf blades oblong-ovate or oblong-elliptic, up to 10.5 cm. long and 4 cm. wide, acute or short-acuminate (the tip itself subacute), obtuse or acute at base, moderately firm, entire, the upper surface moderately hirsute, the hairs ascending or subappressed, up to 1.5 mm. long, yellowish brown, the lower surface hirsute, the hairs densest on costa and lateral veins (about 10 pairs), these prominent beneath, less so above, the hairs similar to those of the upper surface, the cystoliths minute and obscure on the upper surface, more numerous and conspicuous on the lower surface; petioles up to 3 cm. long, those of the upper leaves more or less densely hirsute, those of the lower leaves glabrate or puberulous, the tip of the branches densely golden hirsute, the hairs mostly spreading and up to 1.5 mm. long; peduncles terminal, solitary, up to 7 cm. long, quadrangular, densely hirsute

with golden spreading or slightly retrorse hairs up to 1.5 mm. long, branching at tip and producing 1 to several spikes up to 5 cm. long and 8 mm. broad, the rachis, like the peduncles, densely hirsute; bracts firm, lanceolate, 8 mm. long, 1.25 mm. wide, gradually nar-



FIGURE 197.—*Justicia chrysea* Leonard (*Guatrecasas* 13731): *a*, Tip of plant showing inflorescence and leaves; *b*, bract; *c*, one of a pair of bractlets and the calyx; *d*, hairs on margin of bractlet; *e*, anther. (*a*, Natural size; *b*, *c*, 4 times natural size; *d*, 26 times natural size; *e*, 8 times natural size.)

rowed from below middle to an acute tip, glabrous or sparingly hirsute dorsally except the margins, these rather densely ciliate, the hairs mostly ascending, those near base up to 1.5 mm. long, the others about 0.75 mm. long, all yellowish brown, the costa broad, low but prominent, flanked by 2 pairs of marginal nerves; bractlets firm,

subulate, 6 mm. long, about 0.5 mm. wide, carinate, ciliate, the hairs spreading or ascending, up to 0.5 mm. long; calyx 5.5 mm. long, the tube glabrous, the segments narrowly triangular, 0.75 mm. wide at base, gradually narrowed from base to a slender tip, the lower portion glabrous, the upper ciliate, the hairs up to 0.5 mm. long; corolla (immature) light lilac, about 6 mm. long, the lower portion glabrous, hirsute above, the lips rather densely so, the upper lip triangular-ovate, acute, the lower lip 3-lobed, the lobes about 1 mm. long, rounded; stamens reaching the tip of the subequal lips, the lobes superposed, about 1 mm. long and 0.5 mm. broad, glabrous, the cells subvertically attached to the connective, the lower cell calcarate at base, the tail about 0.25 mm. long, blunt and whitish, the style about as long as the stamens, the stigma minute; capsule (immature) about 1 cm. long, clavate, the upper half moderately puberulous, the lower solid stipate portion glabrous; retinacula 1.5 mm. long, the tip slightly curved, narrowly cucullate; seed not seen.

Type in the U. S. National Herbarium, No. 1852681, collected in the valley of the Río Anchicayá, Quebrada del Danubio, Department of El Valle, Colombia, 300 to 350 meters altitude, December 20, 1942, by J. Cuatrecasas (No. 13731).

Justicia chrysea should be readily recognizable because of the dense golden stiffish hairs, especially those clothing the branchlets. The specific epithet is from the Greek word, χρύσεος, golden.

18. *Justicia chaetocephala* (Mildbr.) Leonard, comb. nov.

Beloperone chaetocephala Mildbr. Notizblatt Bot. Gart. Berlin 11: 70. 1930.

Type in the Berlin Herbarium, collected at La Portada, Santa Marta, Department of Magdalena, Colombia, 250 meters altitude, December 23, 1926, by Arnold Schultze, No. 679. Photograph US (Field Mus. No. 8925). Name is from χαίτη, hair, and κεφαλή, head.

Slender, sometimes half scandent shrubs up to 1.5 meters high; stems subquadrangular, 4-sulcate, glabrous to moderately puberulous, the hairs curved, subappressed, about 0.25 mm. long; internodes 1 to 9 cm. long; leaf blades elliptic to ovate-lanceolate, 3 to 12 cm. long, 1 to 5 cm. wide, acuminate, acute to obtuse at base, moderately firm, entire or undulate, the upper surface glabrous or the costa puberulous, the cystoliths numerous and conspicuous under a lens, the lower surface more or less minutely punctate, sparingly to moderately puberulous, the hairs up to 0.5 mm. long, spreading or ascending, the cystoliths usually less conspicuous than above, the costa and lateral veins (5 to 7 pairs) more prominent than above; petioles rather slender, up to 3 cm. long, puberulous; flowers borne in crowded terminal subcapitate corymbs; lower bracts usually foliaceous, lanceolate, about 2 cm. long and 5 mm. wide, slenderly acuminate; upper bracts linear-filiform, up to 4 cm. long, 0.5 to 0.75 mm. wide, more or less triangular in cross

section, rather densely hirtellous, the hairs ascending, 0.5 mm. long, sometimes a few additional gland-tipped hairs present; bractlets similar but slightly shorter; calyx up to 13 mm. long, deeply segmented, the segments lanceolate, 1.5 to 2 mm. wide, acuminate, rather sparingly hirtellous and ciliate, the hairs ascending, up to 0.5 mm. long; corolla 3.5 to 4 cm. long, bright red, scarlet or pink, sparingly glandular-pubescent, the hairs 75 to 150 μ long, the tube 2.5 cm. long, 3 mm. broad at base, narrowed at 4 mm. above base to 2.5 mm., thence gradually enlarged to 5 mm. at mouth, the upper lip erect, lance-ovate, 2.5 cm. long, 6 mm. wide near base, bidentate at tip, the lobes 1 mm. long, 0.75 mm. wide, spreading from a rounded sinus, the lower lip spreading, 3-lobed, about 2 cm. long, the lobes obovate, subequal, about 1 cm. long and 7 mm. wide, rounded at tip; stamens exserted about 12 mm. beyond mouth of corolla tube, the filaments glabrous; anther cells widely divergent, slightly superposed, the upper cell horizontal, 2.5 mm. long, 1 mm. broad, muticous at base, the lower cell 3 mm. long, 1.5 mm. broad, the basal spur white, blunt, 0.3 mm. long, the connective about 1 mm. broad; pistil exserted 1 cm. beyond mouth of corolla tube, glabrous; ovary glabrous.

Endemic. Limited to damp forests or thickets of Magdalena. Haught's No. 3716 was collected at 300 meters altitude. Vageler's No. 22, a paratype probably in the Berlin Herbarium, was cited by Mildbraed. This was collected in a forest at Banco, Department of Magdalena.

MAGDALENA: Road to east from Becerril, about 60 km. northeast of Chiriguaná, *Haught* 2302 (US). Forest of Cerro Chimichagua, about 4 km. north of Chimichagua, *Haught* 2360 (US). Damp forest near Codazzi, *Haught* 3716 (US). Forests near La Jagua, 40 km. northeast of Chiriguaná, *Cyril Allen* 628 (GH); *Haught* 2283 (US); *Haught* 3645 (US). Bushland, lower Magdalena, *Dawe* 440 (K, US).

WITHOUT LOCALITY: *Mutis* 3904 (US).

19. *Justicia croceochlamys* Leonard, sp. nov.

FIGURE 198

Herba vel suffrutex, caulibus subquadrangularibus, glabris vel sursum bifariam strigosis; lamina foliorum oblongo-elliptica, subacuta vel breviter acuminata (apice ipso obtuso), basi angustata et in petiolum decurrens, firma, undulata, glabra, costa et venis lateralibus prominentibus; petioli glabri; thyrsus terminalis, subhelicoideus, pedunculis et internodiis inflorescentiae quadrangularibus, bifariam et retrorse hirsutis; bracteae infimae foliaceae; bracteae cymas subtendentes graciliter lanceolatae, glabrae vel parce hirsutae; bracteae flores subtendentes filiformes, longae, flavae, graciliter striatae, parce ciliatae; bracteolae bracteis similes sed longiores; calycis segmenta flava, lanceolata, graciliter acuta, striata, ciliata; corolla longa, alba, parce glanduloso-pubescent, tubo subcylindrico, intus basi dense hirsuto,

labiis subaequalibus, labio superiore erecto, oblongo-ovato, apice emarginato, labio inferiore plus minusve patulo, 3-lobato, lobis oblongis, apice rotundatis; stamina exserta, in labio antico corollae declinata, lobis antherarum leviter superpositis, lobo superiore obliquo, inferiore fere recto, basi calcarato; ovarium glabrum.

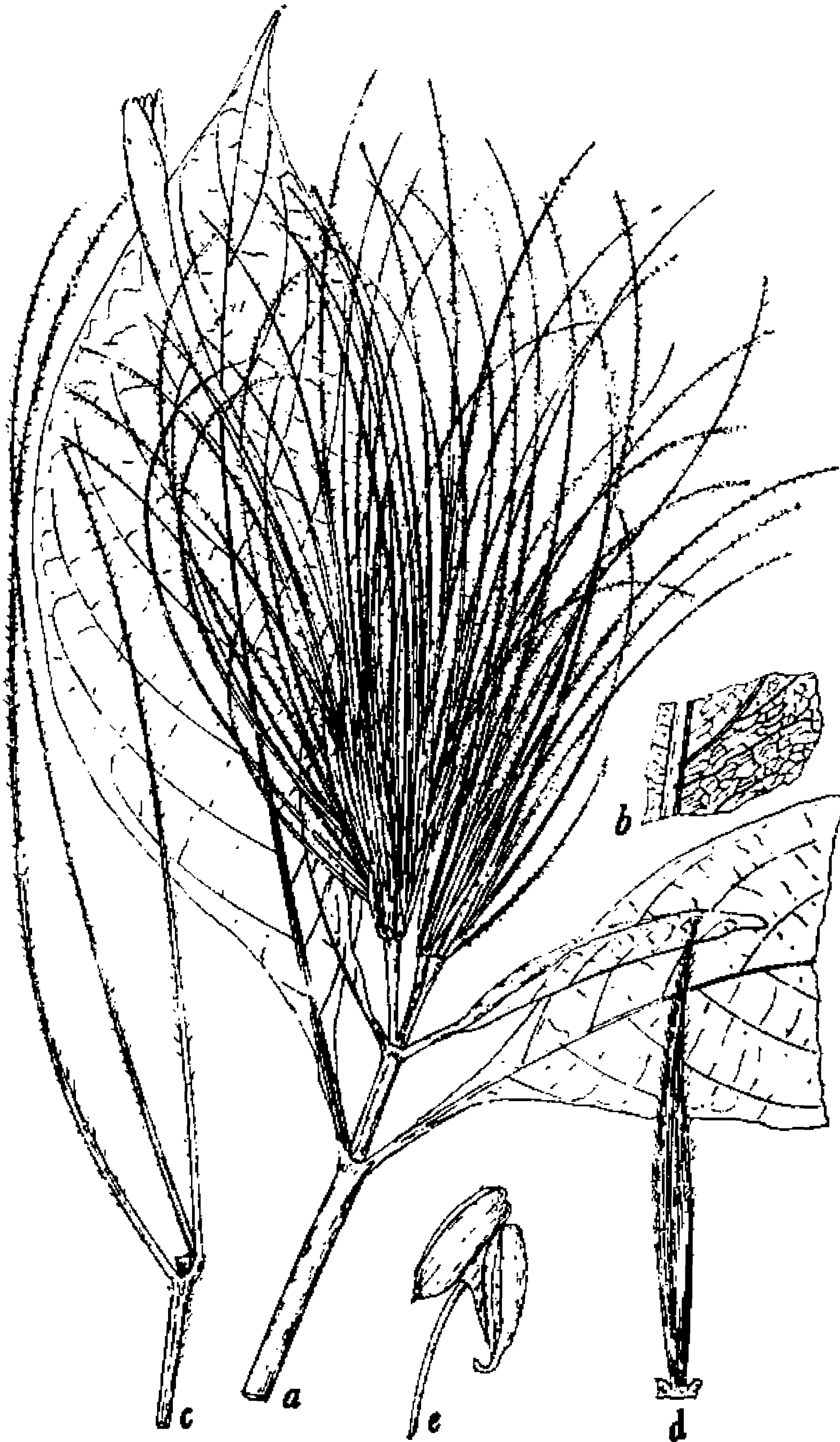


FIGURE 198.—*Justicia croceochlamys* Leonard (*Cuatrecasas* 7383): *a*, Tip of plant to show inflorescence and leaves; *b*, portion of leaf blade (under surface) in detail to show venation; *c*, bract and bractlets; *d*, one of the calyx segments; *e*, anther. (*a*, *b*, Natural size; *c*, *d*, $2\frac{1}{2}$ times natural size; *e*, about 3 times natural size.)

Herbs or suffrutescent plants up to 70 cm. high; stems subquad-rangular, the angles rounded, glabrous or the tips bifariously strigose, the hairs up to 0.5 mm. long; leaf blades oblong-elliptic, up to 25 cm. long and 7 cm. wide, subacute to short-acuminate (the tip itself

blunt), narrowed to base and decurrent on the petiole, firm, undulate, glabrous, the costa, lateral veins (9 or 10 pairs) and veinlets prominent, but more so beneath than above; petioles up to 1.5 cm. long, glabrous; flowers borne in terminal subhelicoid thyrsi up to 7 cm. long and 5 cm. wide, the peduncles about 1 cm. long, these and the internodes of the inflorescence (the lowermost 1 cm. long, the others successively shorter) quadrangular, enlarging at tip, bifariously and retrorsely hirsute, the hairs about 0.75 mm. long, whitish; bracts subtending the lowermost cymes leaflike, about 3 cm. long and 1 cm. wide, those subtending the cymes slenderly lanceolate, up to 4 cm. long and 2.5 mm. wide, glabrous or sparingly hirsute, those subtending the flowers filiform, up to 3 cm. long and 0.5 mm. wide, yellow, finely striate, sparingly ciliate, the hairs up to 1 mm. long; bractlets similar to the bracts but somewhat longer; calyx yellow, 18 mm. long, the tube about 1 mm. long, the segments lanceolate, about 2 mm. wide, gradually narrowed from below middle to a slender tip, finely striate, ciliate, the hairs up to 0.75 mm. long; corollas about 4 cm. long, rather sparingly glandular-pubescent without, white, the tube subcylindrical, about 8 mm. broad at mouth and 5 mm. at base, slightly narrowed at about 5 mm. above base, densely hirsute within at base, the lips subequal, the upper lip erect, oblong-ovate, 6 mm. wide near base, emarginate at tip, the lower lip more or less spreading, 3-lobed nearly to the base, the lobes oblong, about 4 mm. wide, rounded at tip; stamens almost reaching the tip of the upper lip of the corolla, the anther lobes slightly superposed, the upper lobe obliquely attached, 4 mm. long, the lower nearly vertical, about 5 mm. long, calcarate, the tail 0.5 mm. long, both lobes pilose dorsally; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 1774448, collected in woods at San José del Guaviare, Caño Grande, Comisaría del Vaupés, Colombia, 240 meters altitude, November 2, 1939, by J. Cuatrecasas (No. 7383).

Philipson, Idrobo & Fernandez' No. 1579 (BM, US), collected in dense humid forest along the Río Guapaya, Sierra de la Macarena, Intendencia del Meta, 450 meters altitude, November 26, 1949, is also of this species.

The relatively long and very slender yellow flower bracts serve to distinguish *Justicia croceochlamys*, which apparently has no close relative in Colombia. The specific epithet is from the Greek κρόκεος, yellow, and χλαμύς, bract.

20. *Justicia bracteosa* (Mildbr.) Leonard, comb. nov.

Beloperone bracteosa Mildbr. Notizblatt Bot. Gart. Berlin 11: 69. 1930.

Type in the Berlin Herbarium, collected at Aracataca, at the southern base of the Sierra Nevada de Santa Marta, Department of Magdalena, Colombia, 50 meters altitude, December 17, 1925, by Arnold Schultze (No. 234). Photograph US (Field Mus. No. 8923). The specific epithet, *bracteosa*, alludes to the conspicuous bracts.

Erect, sparingly branched leafy shrubs up to 2.5 meters high; stems quadrangular, glabrous or finely puberulous, 4-sulcate (herbarium material), the internodes 1.5 to 8 cm. long and 4 to 6 mm. in diameter; leaf blades oblong-elliptic, up to 28 cm. long and 12 cm. wide, acuminate, acute or the larger leaves obtuse at base, moderately firm, entire or undulate, the upper surface glabrous or minutely appressed puberulous, the hairs 0.25 mm. long, the lower surface glabrous or nearly so, the cystoliths of both surfaces obscure, 125 to 150 μ long, the costa and lateral veins (about 12 pairs) prominent beneath, less so above; petioles 2 to 5 cm. long, glabrous or sparingly puberulous, 1.5 to 2 mm. broad; inflorescence a dense ovoid-cylindrical panicle up to 30 cm. long and 8 cm. broad, usually acute at tip, one or more of the lateral stem branches often bearing smaller panicles; bracts conspicuous, greenish white, lanceolate to ovate-lanceolate, up to 4 cm. long, 5 to 6 mm. wide near base, filiform-acuminate, narrowed at base, thin, entire, finely pubescent and ciliate, the hairs white, ascending, about 0.5 mm. long, the costa rather prominent, the lateral veins obscure; bractlets similar to the bracts but somewhat narrower and shorter; calyx about 10 mm. long, deeply segmented, the segments lanceolate, 7 to 8 mm. long, 1.5 mm. wide, acuminate, thin, greenish-white, softly and rather densely pubescent, except the glabrous basal portion, the hairs ascending, up to 1 mm. long; corolla lemon-yellow (Pennell), 25 to 33 mm. long, the tube 2 mm. broad at base, abruptly contracted to 1.5 mm. at 2.5 mm. above base, thence gradually enlarged to 4 mm. at throat, the upper lip erect, narrowly ovate, 13 mm. long, 5 mm. wide near base, thence gradually narrowed to a blunt tip, the lower lip spreading, about 15 mm. long, cuneate, 4 mm. wide near tip, gradually narrowed to base, 3-lobed, the lobes subequal, up to 2.5 mm. long and 1.5 mm. wide, rounded; stamens 15 mm. long, adnate to corolla tube slightly below mouth, the filaments glabrous or minutely and sparingly hirtellous near base, the anther cells about 2 mm. long and 0.5 mm. broad, superposed, one about 0.5 mm. above the other, the lower cell calcarate at base, the spur 0.75 mm. long, 0.25 mm. thick, rounded at tip, the connective narrow; style about 28 mm. long, glabrous, the stigma minute and capitate;

capsules clavate, 13 mm. long, 3.5 mm. broad, 3 mm. thick, finely pubescent, the hairs about 0.25 mm. long, ascending at tip of capsule, the others retrorse; retinacula about 2 mm. long and 0.75 mm. wide, flattened and truncate at tip; seed ovate, 3 mm. long, 2.5 mm. broad near base, narrowed to a rounded tip, muricate.

Vernacular names: "Cresta de gallo" (*Bro. Elias*) and "gallito" (*Schultze*).

Justicia bracteosa is usually found in wooded regions at rather low altitudes (mostly from 20 to 500 meters). The densely bracted slender panicles, although greenish in color, nevertheless very conspicuous, according to Haught.

ATLÁNTICO: Barranquilla, *Bro. Elias* 1498 (US). Woods at Hacienda Riodulce, Los Pendales, *Dugand & Jaramillo* 4096 (US). Luruaco, *Apolinar-Angel* 488 (US); *Bro. Elias* 496 (Bog, US). Piojó, *Bro. Elias* 670 (US). Arroyo del Higuera, Usiacurí, *Dugand & García-Barriga* 2272 (US). Usiacurí, *Bro. Elias* 1180 (US).

BOLÍVAR: Buenavista, east of Sincé, *Pennell* 4021 (GH, US). Cartagena, *Bro. Heriberto* 276 (US); *Bro. Hilarino-Angel* 50 (US).

MAGDALENA: Barro Blanco, *Haught* 4750 (US). Damp woods near Valledupar, *Haught* 3928 (US).

SANTANDER: Bucaramanga, *Sandeman* 5999 (K). Roadside north of Pescadero, on the Río Sogamoso, *Steere* 7095 (US). Dry sandy bank of Río Chicamocha, *Araque-M. & Barkley* 18S.275 (US).

21. *Justicia chaponensis* Leonard, sp. nov.

FIGURE 199

Herba, caulibus erectis, subquadrangularibus, sulcatis, sulcis inconspicuis, puberulis et etiam pilosis, pilis magnis rectis, late patentibus, badiis, et parvis subappressis, curvatis intermixtis; lamina foliorum lanceolato-elliptica, apice acuta, basi angustata et in petiolem breviter decurrens, firma, undulata, supra dense pilosa, pilis ascendentibus, badiis, costa puberula et etiam longe pilosa, subtus pilosa, marginibus ciliata, costa et venis utrinque prominentibus, cystolithis obscuris vel nullis; petioli aliquanto crassi, pilosi; spicae plures, axillares vel terminales, erectae vel ascendentes, floribus densis et secundis, pedunculis brevibus, rhachibus puberulis et etiam longe pilosis, pilis longis, patulis, badiis; bracteae quadrifariae, dorsales steriles, ventrales flores subtendentes; bracteae steriles lineares, pilosae, pilis longis, fere in margine positae, badiis; bracteae flores subtendentes late elliptico-obovatae, cuspidatae, firmae, parce pilosae et dense ciliatae, pilis plus minusve patulis, badiis; bracteolae anguste lineares, dense ciliatae, pilis longis patulis, badiis; calycis segmenta 5, lanceolata, acuminata, parce hirtella et ciliata, pilis ascendentibus, costa obscura; corollae desunt; capsulae clavatae, basi glabrae, apice hirtellae, pilis patulis vel retrorse appressis.

Herbs up to 1.6 meters high; stems erect, subquadrangular, inconspicuously sulcate, both puberulous and pilose, the longer hairs

mostly spreading, straight, up to 2.25 mm. long, septate but not conspicuously so, the smaller hairs recurved and subappressed, up to 0.28 mm. long; leaf blades lance-elliptic, up to 18 cm. long and 6 cm. wide, acute at tip, narrowed at base and briefly decurrent on the petiole, firm, undulate, the upper surface rather densely pilose, the hairs ascending, similar to those of the stem as are also the additional small curved hairs of the costa, the pubescence of the lower surface

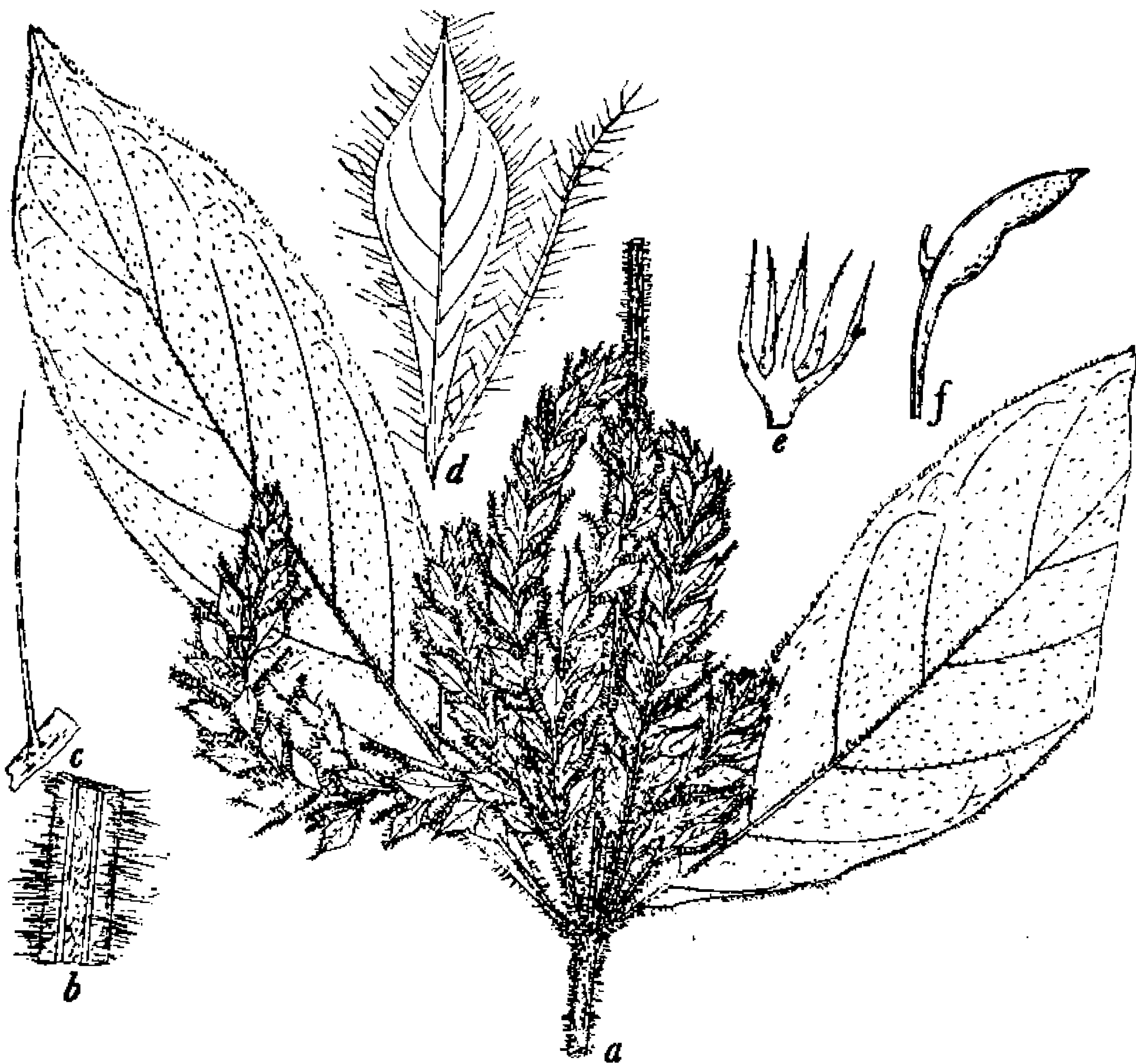


FIGURE 199.—*Justicia chaponensis* Leonard (Lawrance 60): *a*, Node showing inflorescence and leaves; *b*, portion of stem enlarged to show pubescence; *c*, a hair from the stem; *d*, bract and bractlet; *e*, calyx; *f*, valve of capsule. (*a*, Half natural size; *b*, twice natural size; *c*, 10 times natural size; *d*, 3 times natural size; *e*, 5 times natural size; *f*, 3 times natural size.)

similar to that of the upper except for the absence of the small curved hairs on the costa, the margins ciliate, the venation of both surfaces (lateral veins 9 to 10 pairs) rather prominent, the veinlets coarsely reticulate but not conspicuously so, the cystoliths minute and obscure, sometimes lacking; petioles up to 1.5 cm. long, pilose; spikes axillary, several pairs produced at each node, up to 12 cm. long and about 1 cm. broad, the flowers secund, rather crowded, erect or ascending; peduncles up to 1 cm. long, pilose; rachis both pilose with long spreading

hairs and puberulous with short curved subappressed ones; dorsal bracts sterile, linear, pilose, the hairs up to 3.25 mm. long, mostly marginal, more or less spreading, brown; ventral bracts broadly elliptic obovate, long-cuspidate, 12 mm. long, 4 mm. wide, acuminate, rather firm, sparingly pilose and densely ciliate, the hairs more or less spreading, reddish brown, up to 3.25 mm. long; bractlets narrowly linear, 8 or 9 mm. long, 0.5 mm. wide, rather densely ciliate, the hairs similar to those of the bracts; calyx 5 mm. long, deeply segmented, the segments 5, lanceolate, 3.5 mm. long, 0.5 mm. wide near base, gradually narrowed to a slender tip, sparingly hirtellous and ciliate, the hairs ascending, up to 0.48 mm. long, the costa evident but rather obscure; corolla not seen; capsules clavate, about 10 mm. long, 3 mm. broad and 2 mm. thick, glabrous toward base, sparingly hirtellous toward tip, the hairs spreading or retrorse and subappressed, up to 0.2 mm. long; retinacula 1.5 mm. long, obtuse and more or less fimbriate at tip; seeds not seen.

Type in the U. S. National Herbarium, No. 1482402, collected in thick low forest in the region of Mount Chapón, Department of Boyacá, Colombia, "3,500 feet" altitude, May 27, 1932, by A. E. Lawrance (No. 60). Isotype: GH.

Justicia chaponensis is closely related to and resembles in some respects *J. hyperdasya* and *J. pampolystachys*. The leaf blades of these species are more of an ovate shape and the bracts subtending the flowers are larger, elliptic or suborbicular in shape, and obtuse and apiculate at the tip.

No corollas could be found on either of the two sheets cited, but according to the label notes they were mauve with purple stripes. They are probably small in size and somewhat similar to those of the two related species.

22. *Justicia unguiculata* Leonard, sp. nov.

FIGURE 200

Herba recta, parce ramosa, basi aliquando decumbens, caulibus subquadrangularibus (angulis rotundatis), sursum bifariam pilosis, pilis longioribus patulis et pilis minutis recurvatis intermixtis, deorsum aliquando glabratis; lamina foliorum oblongo-ovata, acuta vel acuminata (apice ipso obtuso), basi acuta, aliquanto tenuis, integra vel undulata, supra glabra vel parce hirtella, pilis appressis, praecipue in costa et venis positis, subtus hirsuta et hirtella, pilis in costa et venis longis, plus minusve patulis, pilis intercostalibus minutis appressis, cystolithis minutis, subpunctiformibus; petioli pilosi; spicae terminales et axillares, erectae vel ascendentes, laxae, floribus secundis, rhachibus bifariam et minute strigosis pilis longioribus parvulis intermixtis; bractae suborbiculares, apice obtusae vel rotundatae, apiculatae, basi unguiculatae (unguiculis gracilibus),

ciliatae, pilis longis, patulis; bracteolae subulatae, glabrae vel apice pilosae; calycis segmenta lanceolata, parva, acuminata, glabra vel apice ciliata; corolla parva, lilacina, minute pubescens, tubo subcylindrico, labio superiore erecto, trianguli-ovato, apice bilobato, lobis minutis, rotundatis, labio inferiore plus minusve patulo, cuneato, trilobato, lobis ovatis, apice rotundatis; stamina vix exserta, lobis

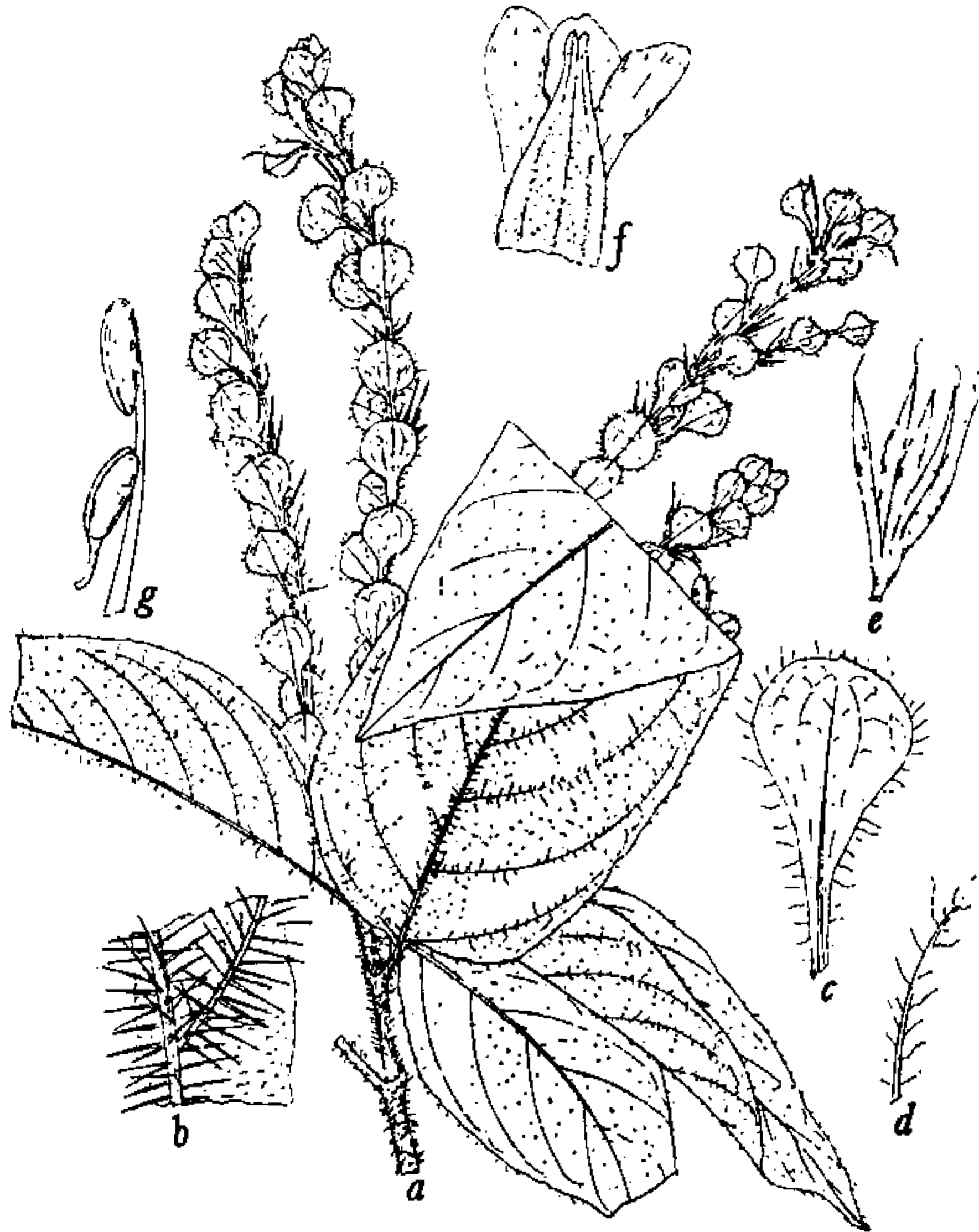


FIGURE 200.—*Justicia unguiculata* Leonard (a-f, Schiefer 813A; g, Schiefer 813): a, Tip of plant showing inflorescence and leaves; b, portion of leaf blade (under surface) to show pubescence; c, bract; d, bractlet; e, calyx; f, corolla lips; g, anther. (a, Natural size; b, about $2\frac{1}{2}$ times natural size; c, twice natural size; d, 3 times natural size; e, 4 times natural size; f, $3\frac{1}{2}$ times natural size; g, 6 times natural size.)

antherarum superpositis, rectis, glabris, lobo inferiore basi calcarato; capsulae parvae, clavatae, glabrae; retinacula curvata, apice tenuia, leviter cucullata, erosa; semina suborbicularia plana, brunnea, tuberculosa.

Herbs up to about 30 cm. high, erect or sparingly branched, sometimes decumbent at base, the stems subquadrangular (the angles

rounded), pilose, the hairs up to 2 mm. long, these intermixed with minute retrorsely recurved hairs, both kinds of hairs more or less bifariously arranged, the lowermost portions of the stem sometimes terete and glabrate; leaf blades oblong-ovate, up to 15 cm. long and 6 cm. wide, acute to acuminate (the tip itself obtuse), narrowed from below middle to an acute base, rather thin, entire or undulate, the upper surface glabrous or sparingly hirtellous, the hairs mostly confined to the costa and lateral veins, up to 0.48 mm. long, appressed, the lower surface hirsute and hirtellous, the hairs confined to costa and lateral veins, more or less spreading, up to 1.5 mm. long, those of the intercostal areas up to 0.38 mm. long and appressed, the venation (lateral veins 8 to 10 pairs) scarcely prominent, the cystoliths (?) minute and subpunctiform; petioles up to 1 cm. long, pilose; flowers secund, borne in rather lax spikes up to 6 cm. long and 1 to 1.5 cm. broad, these forming terminal leafy panicles usually up to about 6 cm. broad, the spikes erect or ascending, the internodes of the inflorescence (lowermost up to 14 mm. long) and rachises bifariously and minutely strigose with additional spreading brownish hairs (up to 2 mm. long) present in more or less abundance; bracts subtending the flowers loosely imbricate, suborbicular, about 6 mm. in diameter, obtuse or rounded and apiculate at apex, unguiculate at base (the claw slender, 4 to 5 mm. long), ciliate, the hairs spreading, mostly up to 1.5 mm. long, the flat surfaces glabrous or the costa and lateral veins (usually 2 pairs) minutely and sparingly strigose; bractlets subulate, barely 0.5 mm. wide, thin, glabrous except the pilose tips; calyx 4 to 5 mm. long, deeply segmented, the segments lanceolate, 0.5 mm. wide, acuminate (the tips slender), glabrous or bearing a few scattered hairs; corolla about 14 mm. long, lilac, minutely pubescent, the tube about 1.5 mm. broad at base, 3.5 mm. broad at mouth, the upper lip erect, triangular-ovate, 3 mm. wide at base, gradually narrowed to tip, this bilobate, the lobes about 0.25 mm. long and wide, rounded, the lower lip more or less spreading, cuncate, 6 mm. wide at base of lobes, these ovate, about 4 mm. long and 2 to 3 mm. wide, rounded at tip; stamens exerted about 2 mm. beyond the mouth of the corolla tube, the anthers 1.75 mm. long, the lobes superposed, vertically attached to the connective, glabrous, the lower lobe calcarate, the tail about 0.25 mm. long, blunt; capsules clavate, 1 cm. long, 3 mm. wide, 1.5 mm. thick, glabrous; retinacula 1.5 mm. long, the tip rounded, thin, shallowly cucullate, erose; seed suborbicular, about 1.5 mm. in diameter and 0.5 mm. thick, brown, tuberculate.

Type in the U. S. National Herbarium, No. 2029221, collected at Villavicencio, Intendencia of Meta, Colombia, July 12, 1945, by Helen Schiefer (No. 813A).

Also of this species are Helen Schiefer's No. 813 (GH) collected with the type and Cuatrecasas' No. 13198 at El Banco, at the confluence of the Ríos Cubugón and Cobaría, in the region of Sarare, Department of Norte de Santander, altitude 320 meters, November 15, 1941.

Justicia unguiculata is easily recognized among other Colombian species by its conspicuous unguulate ciliated bracts. These are strikingly similar to those of *Jacobinia axiologa* but are much smaller. The closest relative is probably *Justicia pilosa* (Nees) Lindau of Perú. This it resembles in many respects, especially as to the inflorescences. The ovate leaf blades of the Peruvian species however are much smaller, the uppermost barely exceeding the spikes or even shorter, and gradually narrowed from below the middle to an obtuse tip. In size they rarely exceed 5 cm. in length and 2.5 cm. in width, whereas the thinner blades of *J. unguiculata* are as much as 15 cm. long and 6 cm. wide and are often slenderly acuminate.

The specific epithet, *unguiculata*, alludes to the unguiculate or clawed bracts.

23. *Justicia pampolystachys* Leonard, sp. nov.

FIGURE 201

Frutex, caulibus subquadrangularibus (angulis rotundatis), pilosis, pilis brunneis, patulis vel ascendentibus, longis; lamina foliorum ovata, breviter acuminata (apice ipso obtuso), basi angustata, submembranacea, integra vel undulata, supra parce pilosa, pilis brunneis, appressis vel ascendentibus, subtus aliquanto dense pilosa, cystolithis obscuris; petioli dense pilosi; spicae plures, terminales et axillares, imbricatae, bracteis imbricatis, secundis, rhache hirtella, pilis curvatis; bracteae suborbiculares, apiculatae, basi cuneatae, membranaceae, glabrae vel supra pilos paucos ferentes, marginibus dense ciliatis, pilis patulis, brunneis, nitidis, septatis; bracteolae lineari-subulatae, apice longe ciliatae, deorsum glabrae; calycis segmenta lanceolata, apice subulata, glabra vel apice paullo pilifera, costa gracili; corolla caerulea, hirtella, labiis subaequalibus, labio superiore ovato, apice rotundato, emarginato, labio inferiore patulo, 3-lobato, lobis suborbiculatis, rotundatis; stamina vix exserta, filamentis planis, submembranaceis, costa conspicua, lobis antherarum superpositis, loculo inferiore calcarato; capsulae clavatae, parvae, glabrae vel apice parce hirtellae; retinacula apice tenuia, anguste cucullata.

Shrubs; stems subquadrangular (the angles rounded and separated by 4 narrow light brown grooves), pilose, the hairs brown, spreading or ascending, up to 4 mm. long; leaf blades ovate, up to 10 cm. long and 5 cm. wide, short-acuminate, the tip blunt, narrowed at base, rather thin, entire or undulate, the upper surface sparingly pilose, the hairs brown, appressed or ascending, up to 2.25 mm. long, the lower surface

more densely pilose with similar hairs, the costa and lateral veins (6 to 8 pairs) barely conspicuous, the cystoliths obscure above, more prominent beneath; petioles up to 2 cm. long, densely pilose with long hairs; spikes numerous and crowded, terminal and in the axils of the upper leaf blades, 6 to 8 cm. long, 13 to 14 mm. broad, the bracts closely imbricate, secund, the rachis slender, hirtellous, the hairs curved, about 0.5 mm. long; bracts suborbicular, about 8 mm. in diameter, apiculate, the apicula about 1 mm. long, abruptly narrowed to a small cuneate base, 1.5 to 2 mm. long, thin, glabrous or the upper surface bearing a few brown hairs up to 2 mm. long, the margins



FIGURE 201.—*Justicia pampolystachys* Leonard (Klug 1724): *a*, Portion of plant showing lower part of the inflorescence and a leaf blade; *b*, bract and bractlet; *c*, a trichome from margin of bract; *d*, calyx; *e*, corolla; *f*, stamen (*a*, Half natural size; *b*, *e*, twice natural size; *c*, 13 times natural size; *d*, 4 times natural size; *f*, 6 times natural size.)

densely ciliate with spreading nitid brown hairs up to 3 mm. long and about 10-jointed; bractlets linear-subulate, 3 to 10 mm. long, ciliate toward tip with spreading brown hairs up to 2 mm. long; calyx 5 mm. long, the segments lance-subulate, thin, glabrous or bearing 1 to several hairs at or near tip, these up to 1 mm. long, the costa delicate; corolla blue, 13 mm. long, moderately pubescent except at base, the hairs about 0.2 mm. long, the tube 2 mm. broad at base, narrowed to 1.5 mm. at middle, the throat 3 mm. broad, lips subequal, 5 mm. long, the upper lip ovate, 3.5 mm. wide at base, narrowed to a rounded emarginate tip, the lower lip broadly cuneate, 7 mm. wide near tip, 3-lobed, the lobes suborbicular, rounded, the middle lobe 3.25 mm.

wide, the lateral lobes 2.25 mm. wide; stamens attached near throat, the filaments 4 mm. long, flattened, membranous, terminating a slender vascular strand, the anther cells superposed, the upper about 0.25 mm. above the lower, or the cells contiguous, the upper cell 0.75 mm. long, the lower 1 mm. long, the base tipped by a blunt white tail 0.5 mm. long; capsule clavate, about 6 mm. long, 2 mm. broad and 1.5 mm. thick, 4-seeded, glabrous; retinacula 1 mm. long, thin and narrowly cucullate at tip; mature seed not seen.

Type in the U. S. National Herbarium, No. 1517999, collected in forest in the vicinity of Umbría, Comisaría of Putumayo, Colombia, 325 meters altitude, October to November 1930, by G. Klug (No. 1724).

The specific epithet is from the greek words, *πάμπολυς* very many, and *στάχυς*, spike.

24. *Justicia hyperdasya* Leonard, sp. nov.

FIGURE 202

Herba, caulibus ascendentibus, subquadrangularibus, sulcatis, bifariam subtomentosis etiam pilosis, pilis longis, patulis, nitidis, septatis, brunneis; lamina foliorum oblongo-ovata, breviter acuminata (apice ipso obtuso), basi angustata, membranacea, undulata, supra aliquanto pilosa, pilis ascendentibus, subtus dense pilosa, cystolithis obscuris vel nullis; petioli breves, dense pilosi, pilis longis, patulis, brunneis; spicae terminales et axillares, bracteis imbricatis et secundis, rhache angulata, glabra vel aliquanto hirtella, pedunculis brevibus, pilosis; bracteae ellipticae, obtusae, apice apiculatae, basi cuneatae, membranaceae, utrinque glabrae vel parce pilosae, marginibus dense ciliatis, pilis patulis, septatis, nitidis, brunneis; bracteolae lineari-subulatae, ciliatae, pilis longis; calycis segmenta lanceolata, acuminata, apice parce pilosa, deorsum glabra; corolla alba, aliquanto hirtella, tubo subcylindrico, labiis subaequalibus, labio superiore oblongo, erecto, apice rotundato et emarginato, labio inferiore patulo, 3-lobato, lobis obovatis, rotundatis; stamina brevia, vix exserta, loculis antherarum superpositis, loculo inferiore calcarato; capsulae parvae, clavatae, glabrae, vel apice parce hirtellae; retinacula apice obtusa et subcucullata; semina plana, subbrunnea, leviter tuberculata.

Herbs up to 30 cm. high or more, ascending; stems subquadrangular, grooved, both pilose and bifariously subtomentose, the longer hairs spreading, nitid, septate, up to 5 mm. long, those arranged in lines about 0.5 mm. long, dense and retrorsely curved; leaf blades oblong-ovate, up to 12 cm. long and 5.5 cm. wide, short-acuminate (the tip itself blunt), narrowed at base, rather thin, undulate, the upper surface moderately pilose, the hairs ascending, brown, nitid, septate, the lower surface densely pilose, the hairs similar to those of the upper surface, the costa and lateral veins (6 to 8 pairs) obscure above, less so beneath, the cystoliths obscure or lacking; petioles up to 1.5 cm.

long, densely pilose, the hairs resembling those of the stem; spikes terminal and axillary, up to 5 cm. long and 1 cm. wide, the bracts closely imbricate, secund, the rachis angled, glabrous or moderately hirtellous with curved hairs, the peduncle up to 5 mm. long, pilose; bracts elliptic, up to 14 mm. long and 13 mm. wide, obtuse and apiculate (the apiculus about 0.5 mm. long), cuneate at base, thin, the

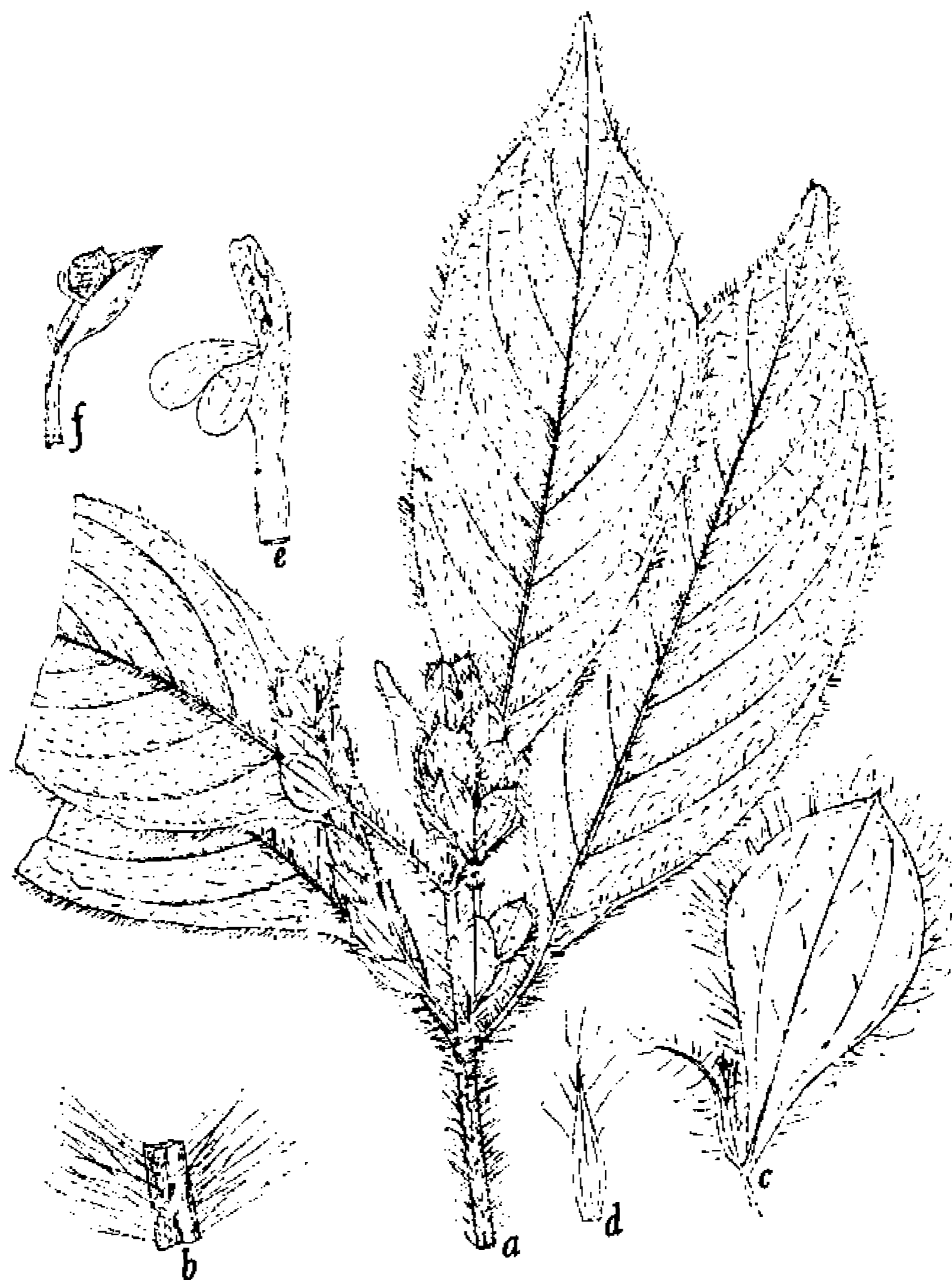


FIGURE 202.—*Justicia hyperdasya* Leonard (*a-d, f*, Cuatrecasas 7542; *e*, Cuatrecasas 7536): *a*, Tip of plant showing leaves and inflorescence; *b*, portion of stem enlarged to show pubescence; *c*, bract, bractlet and calyx; *d*, a calyx segment; *e*, corolla; *f*, valve of capsule. (*a*, Half natural size; *b, c*, twice natural size; *d*, $3\frac{1}{2}$ times natural size; *e*, natural size; *f*, $2\frac{1}{2}$ times natural size.)

costa and veins rather prominent, both surfaces glabrous or bearing a few scattered hairs, the margin densely ciliate with nitid spreading septate brown hairs up to 4 mm. long; bractlets linear-subulate, up to 7 mm. long, and 0.5 mm. wide at base, ciliate, the hairs similar to those of the bracts; calyx 4 mm. long, the segments lanceolate, 3.5 mm. long, 0.75 mm. wide, slenderly acuminate, bearing several

trichomes (up to 1.5 mm. long) at and near tip, otherwise glabrous; corolla white, about 2 cm. long, moderately hirtellous, the hairs up to 0.28 mm. long, the tube 2 mm. broad at base, 3.5 mm. broad at mouth, the upper lip oblong, erect, 6.5 mm. long, about 3 mm. wide, rounded and emarginate at tip, the lower lip spreading, 3-lobed, the lobes obovate, 5 mm. long, 3 mm. wide, rounded at tip; stamens about 4 mm. long, the cells superposed, nearly vertically attached, about 1 mm. long, 0.5 mm. broad, the lower cell terminated by a conspicuous white tail 0.5 mm. long, this flattened and rounded at tip; capsule 8 mm. long, 2.5 mm. broad and 1.5 mm. thick, glabrous or sparingly hirtellous near tip; retinacula 1 mm. long, narrowed, blunt and subcucullate at the tip; seed brownish, ovate, 2 mm. long, 1.5 mm. wide, faintly tuberculate.

Type in the Herbario Nacional Colombiano, collected in woods along the Río Guayabero, Comisaría del Vaupés, Colombia, 240 meters altitude, Nov. 8, 1939, by J. Cuatrecasas (No. 7536). Cuatrecasas' No. 7542 (Col), collected on the same day nearby, is also of this species.

Justicia hyperdasya is closely related to *J. pampolystachys* Leonard, differing chiefly in its herbaceous nature, the white flowers, and oblong or oblong-ovate leaf blades. *J. pampolystachys* is a shrub with blue flowers and ovate leaf blades. The specific epithet is derived from the greek *ὑπέρδασυς*, meaning very hairy.

25. *Justicia schultesii* Leonard, sp. nov.

FIGURE 203

Suffrutex, caulibus quadrangularibus, sursum dense cinereo-pilosis, pilis patulis; lamina foliorum oblongo-elliptica, breviter acuminata (apice ipso obtuso vel rotundato), basi angustata et in petiolum decurrens, aliquanto firma, integra vel undulata, utrinque pilosa, pilis ascendentibus, costa et venis lateralibus subtus prominentibus, supra obscura; spicae solitariae vel 2, terminales et subterminales; bracteae quadrifariae; bracteae dorsales ovatae, subacutae, basi angustatae vel rotundatae, leviter obliquae, ciliatae, pilosae; bracteae ventrales ellipticae, acutae, basi angustatae, ciliatae, puberulae; bracteolae lineares, ciliatae, glabrae vel plus minusve pilosae; calycis segmenta lineari-lanceolata, apice gracilia, puberula, costa prominente; corolla alba, aliquanto parva, deorsum sursum pubescens, tubo hypocrateriformi, labio superiore erecto, triangulari, apice angustato, obtuso, leviter emarginato, labio inferiore cuneato, apice trilobato, lobis ovatis; stamina vix exserta, glabra, lobis superpositis, rectis, connectivo gracili, lobo inferiore calcarato; capsulae clavatae, pubescentes; semina plana, glabra.

Shrubs; stems quadrangular, at least the upper portion densely gray-pilose, the hairs spreading, up to 2 mm. long; leaf blades oblong-

elliptic, up to 17 cm. long and 5.5 cm. wide, obscurely short-acuminate (the tip itself obtuse or rounded), narrowed at base and decurrent on the petiole, moderately firm, entire or undulate, ciliate, both surfaces pilose, the hairs ascending, up to 2 mm. long, the costa and lateral veins (7 or 8 pairs) rather prominent beneath but obscure above, the cystoliths minute and scattered; spikes solitary or paired, terminal



FIGURE 203.—*Justicia schultesii* Leonard (Schultes & Cabrera 13322): *a*, Tip of stem showing a leaf and the inflorescence; *b*, bract (dorsal); *c*, bract (ventral); *d*, calyx and one of a pair of bractlets; *e*, lower corolla lip; *f*, upper lip of same; *g*, anther. (*a*, Half natural size; *b*, *c*, 3 times natural size; *d*, $3\frac{1}{2}$ times natural size; *e*, *f*, $2\frac{1}{2}$ times natural size; *g*, 9 times natural size.)

and subterminal, up to 4 cm. long and 12 to 17 mm. broad; peduncles up to 5 mm. long, these and the rachises densely pilose; bracts quadrifarious, those of the dorsal ranks ovate, 10 or 11 mm. long and 8 mm. wide, subacute, narrowed or rounded and more or less oblique at base, ciliate with hairs more or less spreading and up to 1.5 mm. long, their upper faces evenly pilose with ascending hairs mostly 0.5 to 1 mm.

long, the ventral bracts elliptic, 10 or 11 mm. long, 4.5 mm. wide, acute at both ends, ciliate, their faces puberulous with hairs up to 0.16 mm. long or those on the costa and lateral veins somewhat longer (0.5 to 1 mm. long); bractlets linear, 8 mm. long, 0.5 mm. wide, ciliate, the flat surfaces glabrous or more or less pilose dorsally; calyx segments 5, linear-lanceolate, 5.5 mm. long, 0.75 mm. wide near the base, gradually narrowed into a slender tip, puberulent, the costa rather prominent; corolla white, about 2 cm. long, the lower half glabrous, the upper half finely pubescent, the tube 2.5 mm. broad near base, 3.5 mm. broad at throat, the upper lip erect, triangular, 3.5 mm. wide at base, narrowed to an obtuse slightly emarginate tip, the lower lip ovate, about 1 cm. long and 6.5 mm. wide at middle, rounded and 3-lobed at tip, the lobes ovate, 1 mm. long, 1.25 mm. wide at base; stamens slightly exserted beyond the mouth of the corolla tube, glabrous, the anthers 3 mm. long, the lobes superposed, nearly vertical, the connective slender, about 0.5 mm. long and 0.2 mm. wide, the lower anther cell spurred, the spur 0.25 mm. long, rounded at tip; capsules clavate, pubescent, 7.5 mm. long, the fruiting portion about 3 mm. wide and thick, the lower half solid, 1 mm. wide near base of stipe, 2 mm. wide at base of seed-bearing cavity; retinacula 1.75 mm. long, the tip thin, subcucullate, rounded and more or less erose; seeds lenticular, about 2.5 mm. in diameter, glabrous.

Type in the U. S. National Herbarium, No. 2124632, collected on the Cerro Isibukuri, along the Río Kananarí, Comisaría of Vaupés, Colombia, 250 to 700 meters altitude, August 4, 1951, by Richard Evans Schultes and Isidoro Cabrera (No. 13322). Isotype: US.

26. *Justicia carthaginensis* Jacq.

Justicia carthaginensis Jacq. Enum. 11. 1760. Jacquin's "Enumeration" was republished without change again in 1762. The specific epithet means "found in Cartagena."

Adhatoda carthaginensis Nees in DC. Prodr. 11: 403. 1847.

Herbaceous or suffrutescent, up to 1.5 meters high; stems erect or ascending, branched, subquadrangular (the angles rounded), shallowly sulcate, glabrous or rather densely hirtellous, the hairs straight or curved, spreading or retrorse, up to 0.5 mm. long, whitish; leaf blades ovate, elliptic-ovate or broadly lanceolate, 2 to 8 cm. long, 1.5 to 5 cm. wide, short to rather slenderly acuminate with blunt or acutish tips, or sometimes acute, obtuse or even rounded, narrowed or occasionally rounded at base and decurrent on the petiole, glabrous to rather densely hirtellous, the lower surface even velvety to touch, the costa and veins (7 or 8 pairs) moderately prominent on both surfaces, the cystoliths usually 150 to 250 μ long; petioles up to 2 cm. long, glabrous to hirtellous; flowers borne in dense terminal bracted spikes 2 to 7 cm. long and about 2 cm. broad; bracts spatulate, usu-

ally 10 to 15 mm. long and 2.5 to 6 mm. wide, rounded or obtuse at tip, more or less apiculate, narrowed from about the middle to a slender claw, subglabrous to moderately hirtellous and ciliate, the hairs spreading or ascending, up to 0.5 mm. long, some of them gland-tipped, the cystoliths usually conspicuous; bracts subtending the flowers narrowly spathulate, usually 7 to 10 mm. long and 1 to 3 mm. wide, rounded or obtuse, more or less hirtellous with glandular and eglandular hairs; calyx segments 5, narrowly lanceolate, 10 to 11 mm. long, 1 to 1.5 mm. wide, slenderly pointed, white-margined, more or less hirtellous and ciliate; corollas reddish purple, violet, or rarely white, glabrous to sparingly hirsute, the hairs up to 0.1 mm. long, sometimes a few of them gland-tipped, the tube 1.5 mm. long, 4 mm. broad at base, narrowed at 3 mm. above base to 3 mm., thence gradually expanded to about 4 mm. at mouth, the upper lip erect, triangular-ovate, about 10 mm. long and wide, rounded and notched at tip, the lower lip spreading, up to 17 mm. long, 3-lobed, the middle lobe 8 mm. wide, the lateral ones 7 mm. wide, all ovate and rounded at tip; stamens exerted about 5 mm. beyond mouth of corolla tube, the filaments 11 mm. long, glabrous, the anther lobes 2.2 mm. long, spreading, the upper lobe attached 1 mm. above the short-spurred lower lobe; style 20 to 22 mm. long, sparsely hirtellous toward base; stigma more or less 2-lobed; capsules clavate, 16 mm. long, 6 mm. broad and 3 mm. thick, subobtuse at tip (the solid basal portion 7 mm. long), puberulous, the hairs spreading or the lower ones retrorse; retinacula stout, 3 mm. long and 1 mm. wide, flattened, rounded at tip, this entire or coarsely erose; seeds only slightly flattened, almost spherical, puberulous or glabrate, 2.5 to 3 mm. in diameter, whitish, or black at maturity.

Justicia carthaginensis is usually found on slopes, in waste places, and thickets, these occasionally coastal. Although more common at lower altitudes, it has been found as high as 1,300 meters.

The species exhibits considerable variation. The upper lip of the corollas of Killip and Smith's No. 14711 was reported to be transversely white-barred at center. This may be a common character, but color markings are usually not apparent in dried herbarium material. The width of the bracts is especially variable. For instance, those of H. H. Smith's No. 566 from Bonda are fully 7 mm. wide with broadly rounded, almost truncate, and subemarginate apiculate tips, and those of Pennell's No. 2722 are barely 1 mm. wide and subacute. The pubescence of most of the specimens cited is sparse, but Haught's No. 4391 from Fonseca is dense, and soft and velvety to the touch. None of these characters, however, are consistent enough to warrant the maintenance of varieties or forms.

ATLÁNTICO: Isolated bush formations about Barranquilla, *Lehmann* 4062 (K), *Torregroza, Araque-M., & Barkley* 18At.502 (US), 18At.504 (US), 18At.522 (US); *Bro. Elias* 351 (US). Puerto Colombia, *Bro. Elias* 1034 (GH, NY, US); *Pennell* 12046. Dryish woods along the Isabel López road, near Usiacurí, *Dugand & García-Barriga* 2343 (US). Woods in Arroyo Cagón, Usiacurí, *Dugand & García-Barriga* 2354 (US).

BOLÍVAR: Thickets along river at Calamar, *Killip & Smith* 14711 (GH, NY, US). Ramparts of Cartagena, *Schott* 6 (NY). Thicket at Sincelejo, *Pennell* 4071 (GH, NY, US). Coastal thicket on Tierrabomba Island, *Killip & Smith* 14148 (GH, NY, US).

CUNDINAMARCA: Open bush formation about La Boca, *Lehmann* 6107 (K). Puente Natural de Icononzo, near Pandi, *Uribe-Uribe* 1683 (US); *Pennell* 2812 (NY). Between Fusagasugá and Pandi, *Pennell* 2722 (GH, NY).

MAGDALENA: On clay soil at Barro Blanco, *Haught* 4753 (US). Damp places in dry forest near Bonda, *H. H. Smith* 566 (in part) (Ph, NY, US). Along streams at Cerrejón, *Haught* 6716 (US). Irrigated lands near seashore at Ciénaga, *H. H. Smith* 566bis (GH, NY, US). Roadside near Fonseca, *Haught* 4391 (US). Los Olivos, east of Santa Marta, *Giacometto* 1000 (US). Río Frío, *Salt "C"* (US).

27. *Justicia erythrantha* Leonard, sp. nov.

FIGURE 204

Suffrutex, caulibus subteretibus, glabris vel in nodis minute et parce strigosis, cystolithis minutis et subpunctiformibus; lamina foliorum oblongo-ovata, acuta vel acuminata vel breviter acuminata, basi angustata, integra vel undulata, subtus in axillis venarum pilosa, alibi glabra vel minute et parce strigosa, pilis praecipue in costa et venis positis, cystolithis minutis et obscuris; spicae terminales et axillares, pedunculis subquadrangularibus, plus minusve planis, glabris vel minute strigosis, rhache puberula, pilis sursum curvatis, brevibus; bracteolae lanceolatae, acuminatae, basi angustatae, aliquanto tenues, venosae (costa prominente), plus minusve dense glanduloso-papillosae, marginibus ciliatis; calycis segmenta parva, tenuia, acuta, parce glanduloso-papillosa, pilis paucis longis intermixtis, marginibus ciliolatis; corolla rubra, aliquanto tenuiter pubescens, pilis patulis, rectis vel leviter curvatis, tubo subcylindrico, labio superiore erecto, oblongo-ovato, apice bilobato, lobis parvis, rotundatis, labio inferiore plus minusve patulo, cuneato, 3-lobato, lobis ovatis, rotundatis; stamina vix exserta, in labio antico corollae declinata, lobis antherarum superpositis, perpendicularibus, lobo inferiore caudato; capsulae aliquanto parvae, clavatae, glabrae; retinacula apice rotundata, erosa; semina 4, cordata, plana, brunnea, muricata.

Shrubs up to 1.5 meters high; stems subterete, glabrous or the nodes minutely and sparingly strigose, the cystoliths minute and subpunctiform; leaf blades oblong-ovate to ovate, up to 14 cm. long and 4.5 cm. wide, acute to acuminate or short-acuminate, narrowed at base, rather firm, entire or undulate, the axils of the lower surface pilose, otherwise glabrous or minutely and sparingly strigose, the hairs confined chiefly to the costa and lateral veins (7 or 8 pairs),

the venation rather obscure, the cystoliths minute (about 0.08 mm. long), often obscure; flowers borne in terminal and axillary spikes up to 6 cm. long and about 1.5 cm. broad, the peduncles up to 2 cm. long, subquadrangular, more or less flattened, glabrous or sparingly and minutely strigose, the rachis puberulous, the hairs upwardly curved, up to 0.16 mm. long; bracts lanceolate, 10 to 12 mm. long, 3 to 4 mm. wide, acuminate, narrowed at base, rather thin and veiny (the costa prominent), more or less minutely glandular-papillose, rather sparingly ciliate, the hairs 0.2–0.4 mm. long; bractlets linear-lanceolate, about 9 mm. long and 1 mm. wide, rather sparingly glandular-

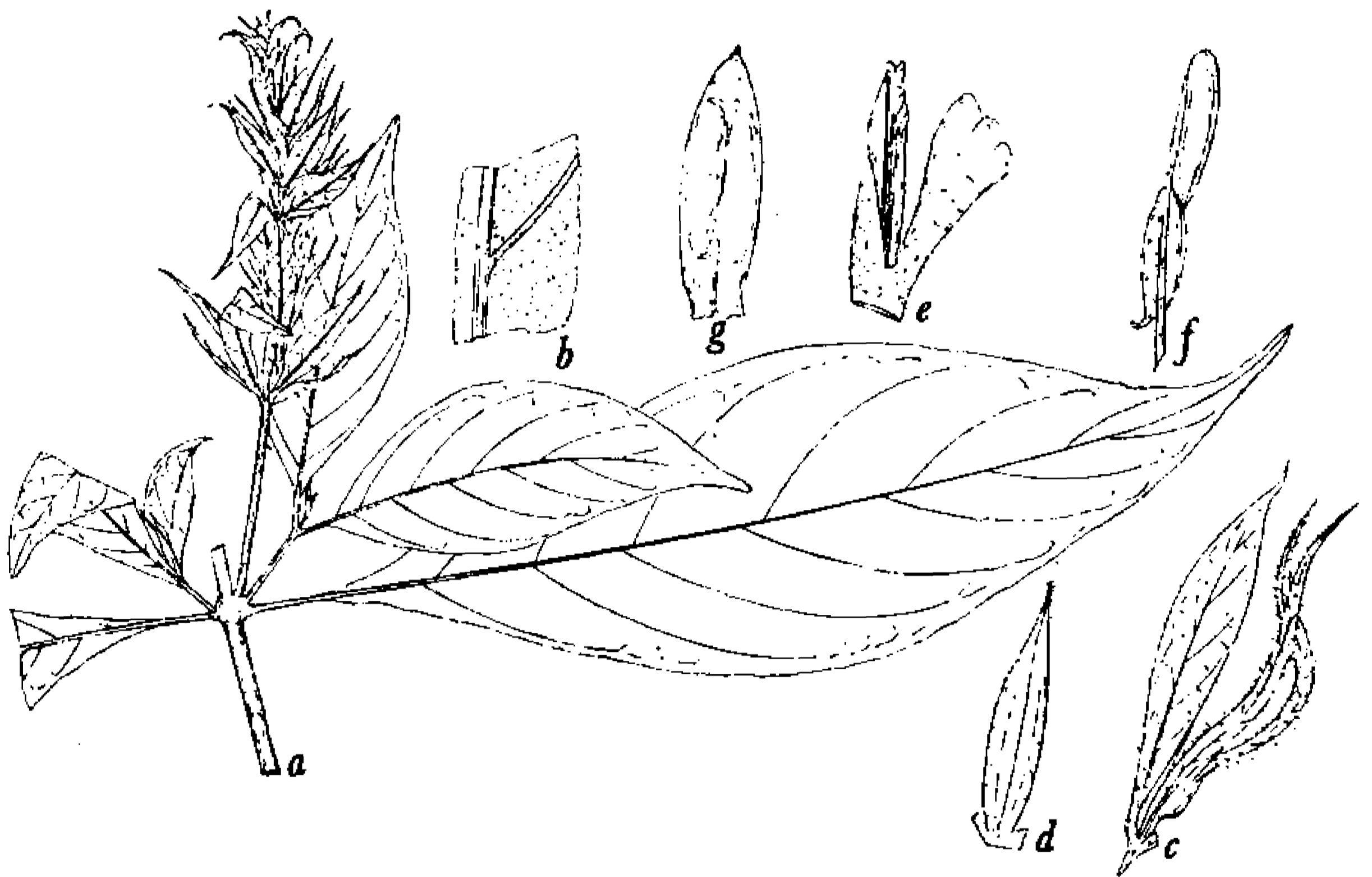


FIGURE 204.—*Justicia erythrantha* Leonard (Killip, Dugand & Jaramillo 38284): *a*, Node toward tip of plant showing a spike, branchlets and leaf blade; *b*, portion of leaf blade (under surface) enlarged to show pubescence and cystoliths; *c*, bract and bractlets; *d*, calyx segment; *e*, tip of corolla; *f*, anther; *g*, capsule valve. (*a*, *e*, Natural size; *b*, twice natural size; *c*, 3 times natural size; *d*, 7 times natural size; *f*, 6 times natural size; *g*, twice natural size.)

puberulous with a few larger eglandular hairs intermixed with the smaller ones, the margins ciliate with hairs up to 0.45 mm. long; calyx 4 mm. long, the segments lanceolate, 3 mm. long, 0.75 mm. wide, acute, thin, sparingly glandular-papillose and like the bracts and bractlets with a few longer eglandular hairs intermixed, the margins ciliolate with hairs about 0.13 mm. long; corolla red, about 3 cm. long, finely and rather sparingly pubescent, the hairs spreading, straight or slightly curved, up to 0.16 mm. long, the tube 2.5 mm. broad at base, narrowed to 1.75 mm. at 3 mm. above base, thence gradually enlarged to 3.5 mm. at mouth, the upper lip erect, oblong-

ovate, 17 mm. long and 8 mm. wide at base, the tip bilobate, the lobes about 0.5 mm. long and broad, rounded, the lower lip more or less spreading, cuneate, 7 mm. wide at base of the lobes, these 3, ovate, about 3.5 mm. long, rounded; stamens reaching within 2 mm. of tip of the upper lip of the corolla and partially enfolded by it, the anthers about 4 mm. long, the lobes superposed, vertically attached, their tips overlapping about 0.5 mm., the base of the lower lobe apiculate or caudate, the tail about 0.25 mm. long; style reaching within 0.5 mm. of the tip of the upper lip of the corolla, the stigma minute and conical; capsules about 1 cm. long, 4 mm. wide and 2.5 mm. thick, 4-seeded, glabrous, the tip obtuse, the solid basal portion 3.5 mm. long and 3 mm. wide; retinacula about 2 mm. long and 0.5 mm. wide, curved, the tip rounded and erose; seeds cordate, flattened, brown, about 2.5 mm. long and broad, muricate.

Type in the U. S. National Herbarium, No. 1855848, collected along stream in woods at Hacienda El Cucharo, between Tocaima and Pubenza, Department of Cundinamarca, Colombia, 350 meters altitude, May 7, 1944, by E. P. Killip, A. Dugand and R. Jaramillo (No. 38284).

Also of this species are Francis W. Pennell's No. 2831 (GH, NY, US), collected in woods at Natural Bridge, Pandi, Department of Cundinamarca, 800 to 900 meters altitude, December 1-3, 1917; Triana's specimen (K) collected in the "Province of Cauca" 1853, Oscar Haught's No. 2396, collected in forest near the mouth of the Río Totare, Department of Tolima, about 300 meters altitude, October 28, 1938, and Lorenzo Uribe-Urbe's No. 2309, collected between Tocaima and Pubenza, Cundinamarca.

Characterizing *Justicia erythrantha* are the rather short spikes, the ovate acuminate bracts, and the red corollas. The specific epithet is from the Greek words *ερυθρός*, red, and *άνθος*, flower.

28. *Justicia leptochlamys* Leonard, sp. nov.

FIGURE 205

Herba, caulibus deorsum teretibus, glabris, sursum subquadrangularibus, glabris vel bifariam puberulis, pilis subbrunneis, patulis vel retrorse curvatis; lamina foliorum lanceolata, acuminata (apice ipso obtuso), basi angustata, aliquanto tenuis, integra vel undulata, glabra vel subtus costa parce hirtella, cystolithis pluribus et conspicuis; petioli brevi, plus minusve minuti hirtelli; spicae terminales vel laterales, pedunculis brevibus, gracilibus, hirtellis, rhache glabra; bracteae rhombico-ovatae, acutae vel subacuminatae, basi angustatae, tenues, integrae, parce ciliatae, cystolithis conspicuis; bracteolae anguste lanceolatae, anguste acuminatae, apice ciliatae; calycis segmenta subulata, glabra vel parce hirtella, ciliolata; corolla alba, labiis subaequalibus, labio superiore erecto, integro, labio inferiore plus

minusve patulo, 3-lobato; stamina exserta, lobis antherarum superpositis; capsulae clavatae, glabrae vel apice minute hirtellae; semina ovata, plana, glabra.

Herbs up to 1 meter high; stems terete or the upper portions subquadrangular, glabrous or puberulous in 2 lines, the hairs brownish, up to 0.15 mm. long, spreading or retrorsely recurved, the internodes 1 to 4 cm. long; leaf blades lanceolate, up to 9 cm. long and 1.5 cm. wide, acuminate (the tip itself obtuse), narrowed at base, rather thin, entire or undulate, glabrous or the costa of the lower surface sparingly hirtellous, the lateral veins (5 or 6 pairs) obscure, the cystoliths of both surfaces numerous and conspicuous under a lens, up to 0.24 mm.



FIGURE 205.—*Justicia leptochlamys* Leonard (*Pennell 4529*): *a*, Tip of plant showing inflorescence and leaves; *b*, bract; *c*, bractlet; *d*, calyx. (*a*, Natural size; *b-d*, twice natural size.)

long; petioles up to 0.5 cm. long, more or less minutely hirtellous; spikes terminal and lateral, up to 3 cm. long and 1.5 cm. broad, rather lax at maturity, the peduncles about 0.5 mm. long, hirtellous, the hairs septate, up to 0.46 mm. long, the rachis glabrous or sparingly hirtellous, the cystoliths usually conspicuous under a lens; bracts rhombic-ovate, up to 13 mm. long and 7 mm. wide, acute or subacuminate, narrowed at base, thin, entire, sparingly ciliate with hairs up to 0.75 mm. long, otherwise glabrous or nearly so, the cystoliths conspicuous under a lens but less numerous than on the leaf blades; bractlets narrowly lanceolate, up to 8 mm. long and 1 mm. wide near base, slenderly acuminate, ciliate toward tip, otherwise glabrous; calyx 4 mm. long, deeply segmented, the segments subulate, about 0.5 mm. wide near base, gradually narrowed to a slender tip, glabrous

or sparingly hirtellous and ciliolate; corolla white, about 1 cm. long, 1 mm. broad at base and mouth, narrowed to 0.5 mm. above base, the lips about 2 mm. long, the upper lip erect, entire, the lower more or less spreading, 3-lobed at tip, the stamens exerted beyond the mouth of the corolla tube but not exceeding the corolla lips, the anthers 1.5 mm. long, 0.25 mm. thick, superposed, vertically attached to connective; capsule 7 mm. long, 2 mm. broad, 1 mm. thick, minutely hirtellous toward tip, becoming glabrous; retinacula about 3 mm. long, flat and rounded at tip; seed ovate, flattened, about 3 mm. long and 2 mm. broad, glabrous.

Type in the herbarium of the New York Botanical Garden, collected on the Río Esmeralda, between Las Dantas and Puerto Canoa, Department of Bolívar, Colombia, 400 to 800 meters altitude, February 27, 1918, by Francis W. Pennell (No. 4529).

The specific epithet is from the greek λεπτός, thin or delicate, and χλαμύς, bract.

29. *Justicia gutierrezii* Leonard, sp. nov.

FIGURE 206

Arbor parva, caulibus subteretibus, dense strigosis vel subtomentosis, pilis subbrunneis; lamina foliorum oblongo-elliptica, breviter acuminata (apice ipso subobtusum) basi angustata, aliquanto firma, integra, supra glabra vel parce et minute strigosa, costa et venis dense strigosis, subtus aliquanto dense et molliter strigosa vel subtomentosa; petioli graciles, dense strigosi vel subtomentosi; spicae terminales et axillares, bracteis quadrifariis dorsalibus sterilibus, ventralibus flores subtendentibus, pedunculo breviter et rhache dense hirsutis vel subtomentosis; bracteae dorsales ovatae, subobtusae, apice subapiculatae, basi obtusae, submembranaceae, hirsutae, ciliatae, costa et venis aliquanto prominentibus; bracteae ventrales late oblanceolatae, acutae, basi angustatae, submembranaceae, hirsutae et ciliatae; bracteolae lanceolatae acuminatae, basi angustatae, parce hirsutae, ciliatae; calycis segmenta lanceolata, graciliter acuminata, ciliata; corolla alba, sursum parce pilosa, deorsum glabra, tubo aliquanto angustato, labiis subaequalibus, labio superiore erecto, triangulo-ovato, apice angustato, subacuto, labio inferiore plus minusve patulo, obovato, trilobato, lobis oblongo-ovatis, rotundatis, lateralibus leviter incurvatis; stamina vix exserta, loculis antherarum superpositis, rectis, lobo inferiore basi calcarato.

Small trees; stems subterete, rather densely strigose or subtomentose with light brownish hairs up to 0.5 mm. long; leaf blades oblong-elliptic, up to 12 cm. long and 5 cm. wide, short-acuminate (the tip itself blunt) narrowed at base, rather firm, entire, the upper surface glabrous or sparingly and minutely strigose, the costa and lateral veins (about 6 pairs) more densely so, the hairs up to 0.28 mm. long,

the lower surface rather densely and softly strigose or hirsute, the venation rather prominent, the cystoliths obscure or lacking; petioles up to 3.5 cm. long, slender, densely strigose or subtomentose; spikes terminal and subterminal, up to 2.5 cm. long and 12 mm. broad, the bracts closely imbricate, quadrifarious and secund, the peduncles up to 1 cm. long, these and the rachises densely hirsute or subtomentose with ascending hairs; dorsal bracts sterile, ovate, 11 mm. long and 8 mm. wide, subobtuse and subapiculate, obtuse at base, submembrana-

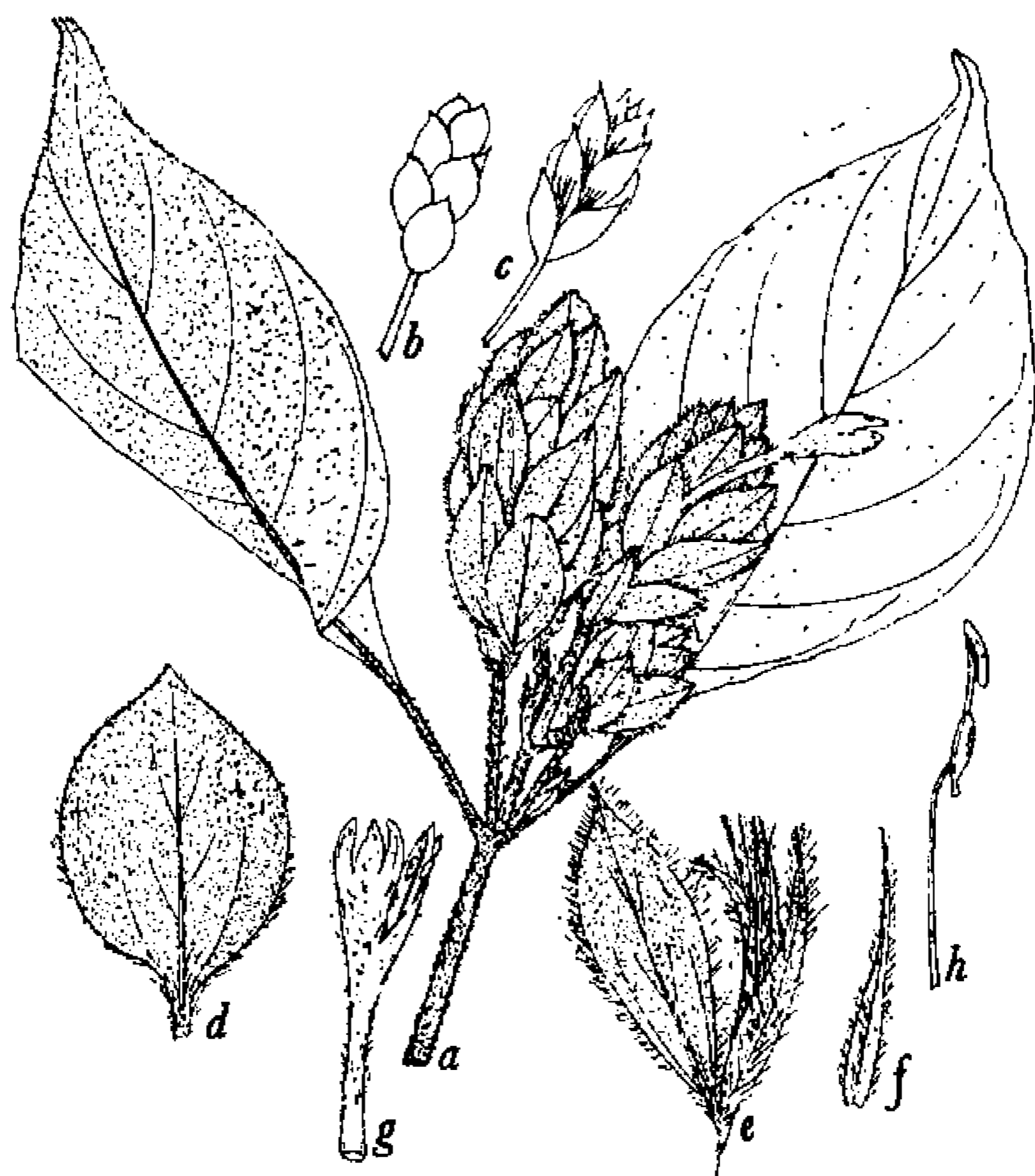


FIGURE 206.—*Justicia gutierrezii* Leonard (*Gutierrez-V & Schultes 606*): *a*, Tip of plant showing leaves and inflorescence; *b*, dorsal view of spike; *c*, ventral view of spike; *d*, dorsal bract; *e*, bract, bractlet, and tip of calyx (from ventral side of spike); *f*, one of the calyx segments; *g*, corolla; *h*, stamen. (*a*, *g*, Natural size; *b*, *c*, half natural size; *d*-*f*, twice natural size, *h*, 4 times natural size.)

ceous, hirsute and ciliate, the hairs up to 1.25 mm. long, spreading or ascending, the costa and about 4 pairs of lateral veins rather prominent; ventral bracts (those subtending the flowers) broadly oblanceolate, 14 mm. long, 4 mm. wide, acute, gradually narrowed from about the middle to base, submembranaceous, hirsute and ciliate, the hairs up to 2 mm. long, the costa and a pair of lateral veins rather prominent; bractlets lanceolate, 9 mm. long and 1.5 to 2 mm. wide, acuminate, pilose and ciliate; calyx 1 cm. long, the segments lanceolate, 0.75 mm. wide, slenderly acuminate, ciliate and sparingly hirsute;

corolla white, about 2.5 cm. long except the glabrous basal portion, sparingly pilose, the hairs spreading or retrorsely ascending, up to 0.5 mm. long, the lips subequal, the upper lip erect, 1 cm. long, triangular-ovate, 3.5 mm. wide near base, rather gradually narrowed to a subacute tip, the lower lip more or less spreading, obovate, 4 mm. wide near middle, 3-lobed, the lobes oblong-ovate, 3 mm. long, 1.25 mm. wide, rounded, the outer lobes slightly incurved; stamens reaching the tip of the upper lip, slender, glabrous, flattened, subhyaline, the anther-lobes superposed, 1.25 mm. long, 0.5 mm. wide, vertically attached to the connective, this about 0.75 mm. long, the lower anther lobe calcarate, its tail about 0.5 mm. long, white, the upper anther-lobe subacute at the base; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 1953042, collected along the Río Apoporis, on the Cerro de "El Castillo," Comisaría of Caquetá, Colombia, January 16, 1944, by G. Gutiérrez-V. and R. E. Schultes (No. 606). Isotype: Valle.

The bracts, bractlets, and calyx of the dried specimens are red.

30. *Justicia macarenensis* Leonard, sp. nov.

FIGURE 207

Herba, caulibus subquadrangularibus, glabris vel bifariam puberulis, pilis subbrunneis, septatis, retrorse curvatis; lamina foliorum oblongo-elliptica vel oblongo-lanceolata, anguste acuminata (apice ipso obtuso), basi angustata, firma, integra vel undulata, supra glabra, costa et venis lateralibus obscuris, subtus glabra, costa et venis lateralibus prominentibus, parce puberulis, cystolithis inconspicuis; petioli puberuli, pilis apice acutis vel cyathiformibus; spicae terminales et subterminales, oblongae, pedunculis bifariam puberulis, pilis subbrunneis; bracteae rubrae vel aeneo-purpureae, anguste ovatae, obtusae, basi rotundatae, glabrae vel plus minusve puberulae, parce ciliolatae, costa et venis prominentibus, venulis crasse reticulatis; bracteolae oblongo-lanceolatae, acutae, tenues, glabrae vel basi parce strigosae, parce ciliatae; calycis segmenta lanceolata, anguste acuminata, puberula, pilis acutis et glandulosis intermixtis; corolla alba vel lobis subrubris, basi glabra, sursum pubescens, tubo aliquanto angustato, labiis aequalibus, labio superiore erecto, lanceolato, acuto, labio inferiore patulo, trilobato, lobis lateralibus oblongis, rotundatis; stamina exserta, filamentis glabris, planis, lobis antherarum superpositis, lobo inferiore breviter calcarato; ovarium glabrum.

Herbs up to 70 cm. high; stems subquadrangular, glabrous or puberulous in 2 lines, the hairs about 0.25 mm. long, brownish, septate, retrorsely curved; leaf blades oblong-elliptic or oblong-lanceolate, up to 25 cm. long and 6 cm. wide, slenderly acuminate (the tip itself blunt), gradually narrowed to base, firm, entire or undulate, the upper surface glabrous, the venation obscure, the lower surface glabrous except the costa and lateral veins, these prominent and rather spar-

ingly puberulous, the cystoliths inconspicuous; petioles up to 2.5 cm. long, puberulous, some of the hairs cyathiform; spikes 1, terminal, or if two terminal and subterminal, oblong, up to 12 cm. long and 2 cm. broad, the peduncles ca. 1 cm. long, puberulous in 2 lines, the rachis puberulous with brownish hairs about 0.16 mm. long; bracts red or bronze purple, oblong-ovate, 4-5 cm. long, 16 mm. broad near base,

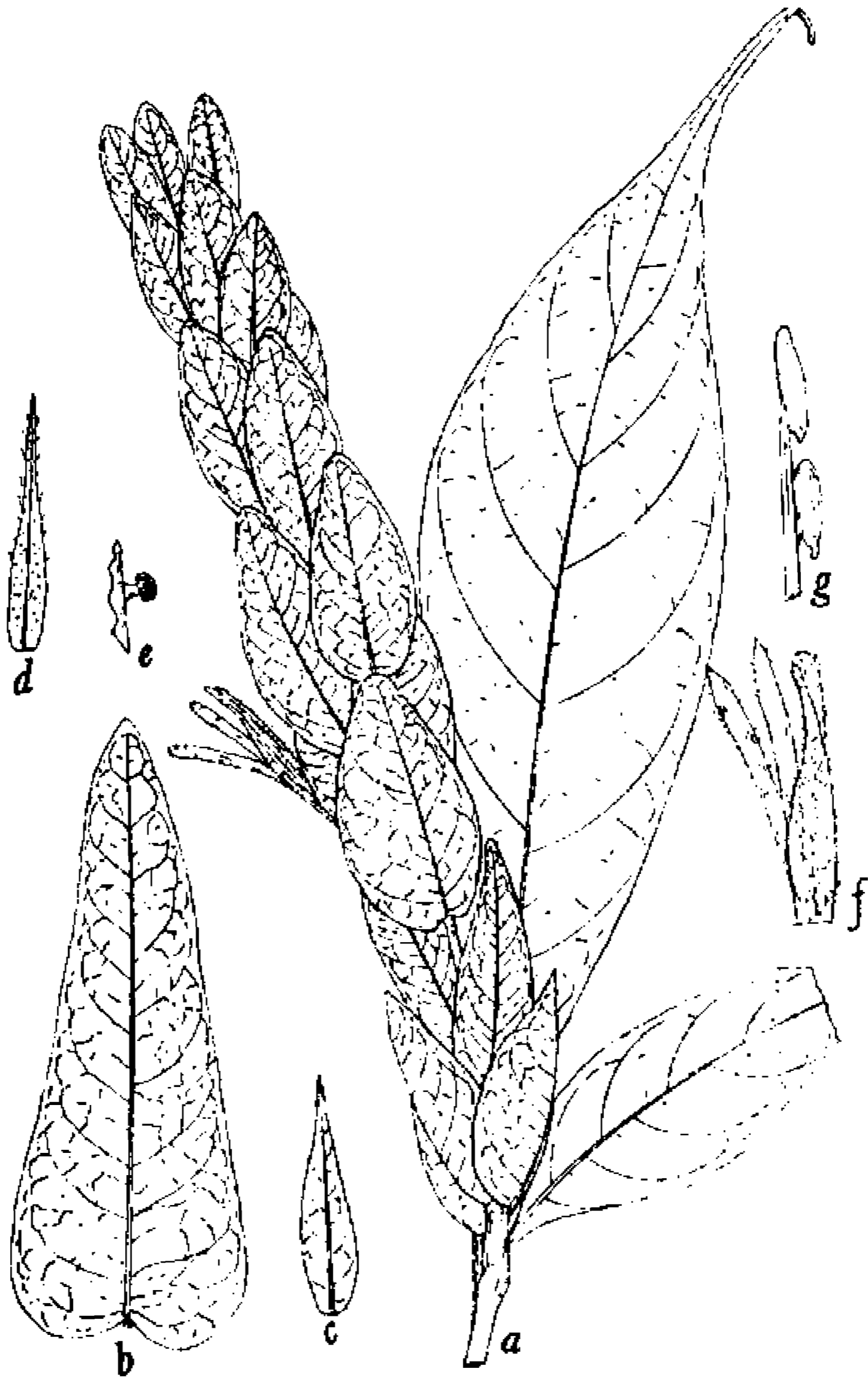


FIGURE 207.—*Justicia macarenensis* Leonard (Philipson, Idrobo & Fernández 1578): *a*, Tip of plant showing spike and leaf blades; *b*, bract; *c*, bractlet; *d*, calyx segment; *e*, a glandular hair from calyx segment; *f*, tip of corolla to show lips; *g*, anther. (*a*, Half natural size; *b*, *c*, *f*, natural size; *d*, twice natural size; *e*, about 60 times natural size; *g*, 4 times natural size.)

obtuse at apex, rounded at base, thin, sparingly ciliate (the hairs up to 0.75 mm. long), otherwise glabrous except the more or less puberulous costa, the veins and the coarsely reticulate veinlets prominent; bractlets oblong-lanceolate, 17 mm. long and 3 mm. wide, acute, thin, glabrous or sparingly strigose toward base, sparingly ciliate, coarsely reticulate-veined; calyx 11 mm. long, deeply segmented,

the segments 5, lanceolate, 10 mm. long, 1 mm. wide near base, slenderly acuminate, ciliate toward tip, moderately puberulous with blackish glandular hairs 50 to 125 μ long (appearing as dark specks under a lens), these, intermixed with acute hairs, sometimes also present on the bractlets; corolla white or the lobes sometimes reddish, up to 32 mm. long, rather densely pubescent, except the enlarged lower glabrous portion, the tube 3 mm. broad at base, narrowed to 2.5 mm. at 3 mm. above base, thence gradually enlarged to 4 mm. at mouth, the lips equal, 11 mm. long, the upper lip erect, lanceolate, about 2 mm. wide, acute, the lower lip somewhat spreading, 3-lobed at tip, the lobes 2.5 mm. long, the middle lobe 1.5 mm. wide, the lateral ones 0.75 mm. wide, all rounded at tip; stamens exerted 8 mm. beyond mouth of corolla tube, the filaments flat and glabrous; anthers 5 mm. long, the lobes vertical, superposed, the upper 1 mm. above the lower, the upper lobe 2 mm. long and 0.75 mm. broad, muticous, the lower 2.5 mm. long, muticous or briefly and bluntly spurred; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 2025712, collected in dense humid forest on the bank of the Río Guapaya, Sierra de la Macarena, Intendencia of Meta, Colombia, 450 meters altitude, November 26, 1949, by W. R. Philipson, J. M. Idrobo, and A. Fernández, No. 1578. Isotype in the British Museum.

The following also represent the species:

META: Rocky side of shaded ravine along the Río Duda, at Uribe, altitude 770 meters, December 21, 1942, *Fosberg* 19492 (US). Vicinity of the Los Micos landing strip on the left bank of the Río Güejar, on the Sabanas de San Juan de Arama, 500 meters altitude, January 22, 1951, *Jesus M. Idrobo & Richard E. Schultes* 1218 (US).

The thin veiny reddish bracts and narrow white or reddish corollas are characters by which *Justicia macarenensis* can be readily recognized.

31. *Justicia pharmacodes* Leonard, sp. nov.

FIGURE 208

Suffrutex ramosus, caulibus subquadrangularibus, puberulis vel deorsum glabratis, pilis curvatis, subappressis vel paucis patulis; lamina foliorum ovata vel oblongo-ovata, breviter acuminata (apice ipso obtuso), basi angustata et in petiolum breviter decurrens, aliquanto firma, integra vel undulata, supra parce puberula, subtus aliquanto puberula, pilis minute curvatis, ascendentibus, cystolithis obscuris; petioli aliquanto longi, puberuli; spicae axillares, aliquanto breves; pedunculi longi, erecti vel ascendentes, puberuli, rhache puberula; bracteae suborbiculares, apice obtusae vel rotundatae, minute apiculatae, basi unguiculatae, puberulae, costa et venis lateralibus obscuris; bracteolae ellipticae, apice late obtusae vel rotundatae, minute apiculatae, basi unguiculatae, puberulae; bracteae

et bracteolae pilis minutis glandulosis in marginibus praeditae; calycis segmenta parva, 5, lanceolata, acuta, apice parce hirtella, pilis subappressis vel ascendentibus, curvatis; corolla alba, lineis purpureis insignis, puberula, tubo lato, brevi, labio superiore erecto, late cucullato, apice marginibus rugosis, labio inferiore lato, 3-lobato, lobis ovatis, apice rotundatis, marginibus rugosis; stamina in labio antico corollae declinata, glabra vel deorsum parce furfuracea, lobis antherarum leviter superpositis, lobo inferiore caudato; capsulae clavatae, glabrae.

Branching shrubs up to 3 meters high; stems subquadrangular, puberulous or the lower portions glabrate, the hairs up to 0.48 mm. long, curved, mostly subappressed, a few ascending; leaf blades ovate or oblong-ovate, up to 25 cm. long and 10 cm. wide, short-acuminate (the tip itself obtuse), narrowed at base and briefly decurrent on the petiole, moderately firm, entire or undulate, the upper surface sparingly puberulous, the lower surface moderately puberulous but more densely so than the upper, the hairs up to 0.32 mm. long, curved and ascending, the cystoliths obscure, the venation moderately prominent (the lateral veins 8 to 10 pairs); petioles up to 6 cm. long, puberulous; flowers borne in axillary spikes, these usually 2 to 5 cm. long and 2 to 2.5 cm. broad, sometimes subcapitate, the peduncles erect or ascending, up to 10 cm. long, puberulous; rachis puberulous, the lowermost internode 4 mm. long, the others successively shorter toward tip; bracts suborbicular, up to 13 mm. long and 7 mm. wide, broadly obtuse or rounded at the apex and minutely apiculate, unguiculate at base, the narrowed portion 4 to 6 mm. long and 1 to 2.5 mm. wide, the entire blade puberulous, the costa and lateral veins evident but not prominent; bractlets elliptic, up to 1 cm. long and 4 to 4.5 mm. wide, broadly obtuse and minutely apiculate at apex, unguiculate at base, the entire bractlet puberulous, both bracts and bractlets often bearing glandular marginal hairs up to 0.16 mm. long, these intermixed with the shorter eglandular ones; calyx 4.5 mm. long, deeply segmented, the segments 5, lanceolate, 4 mm. long, 1.5 mm. wide, acute, hirtellous and ciliolate toward tip, the hairs ascending or subappressed, curved, up to 0.13 mm. long; corolla 18 mm. long, white, marked with purple lines, puberulous, the hairs straight or curved, up to 0.2 mm. long, the corolla tube about 1 cm. long, 4 mm. broad at base, 10 mm. broad at mouth, the upper lip erect, ovate, 8 mm. long, about 12 mm. wide, cucullate, enclosing the stamens, the lower lip about 13 mm. long and 1 cm. wide at base of the 3 lobes, these ovate, 8 mm. long and 6 mm. wide, rounded, the margins of both lips crinkled at tip; stamens 18 mm. long, glabrous or sparingly scurfy toward base; anthers 3.5 mm. long and 2 mm. broad, slightly superposed, the lower lobe terminating

in a short tail about 0.1 mm. long; capsules clavate, glabrous, 2 cm. long, 6 mm. broad, 3 mm. thick, the broad seed-containing portion obscurely and irregularly furrowed, the solid stipe 15 mm. long and 4 mm. broad; retinacula 4.5 mm. long, nearly straight, rounded at tip; seeds not seen, but, as indicated by the retinacula, 2 in number (one pair abortive).



FIGURE 208.—*Justicia pharmacodes* Leonard (a-f, Haught 4072; g, Haught 3816): a, Tip of plant; b, bract; c, marginal pubescence of bract; d, bractlet and calyx; e, corolla; f, anther; g, capsule valve. (a, Half natural size; b, d, twice natural size; c, 28 times natural size; e, natural size; f, 5 times natural size; g, 1½ times natural size.)

Type in the U. S. National Herbarium, No. 1708866, collected near stream in forest, vicinity of Manaure, Department of Magdalena, 700 meters altitude, April 13, 1944, by Oscar Haught (No. 4072).

Paratypes are Haught's No. 3999 (US), collected near Barrancas, 170 meters altitude, February 16, 1944, and his No. 3816 (US), collected in the forest 12 km. north of Codazzi, both localities in the Department of Magdalena, and Schlim's No. 887 (K), collected in

forest at the foot of the Sierra Nevada, at Ríoacha, Department of Magdalena.

Haught tells us in his label notes that this species is strictly a forest plant and is probably poisonous. It dries with a peach-kernel odor and is not eaten by stock. The flowers are early deciduous, opening in the early morning and falling by noon.

The spatulate bracts remind one of *J. carthaginensis*, but that species does not have long-pedunculate inflorescences, and its bracts are relatively narrower and the leaf blades smaller. The specific epithet is from the Greek *φαρμακώδης*, meaning poisonous.

32. *Justicia phytolaccoides* Leonard, sp. nov.

FIGURE 209

Herba vel suffrutex, caulibus subquadrangularibus, glabris vel sursum aliquanto strigosis; lamina foliorum oblongo-ovata vel ovato-lanceolata, acuta vel breviter acuminata vel aliquando obtusa, basi acuta vel obtusa vel rotundata, plus minusve obliqua, firma, integra vel leviter undulata, glabra vel costa et venis lateralibus parce strigosa, subtus venis prominentibus, cystolithis sub lente prominentibus; petioli crassi, glabri vel parce strigosi; spicae 1 vel plures, terminales vel axillares, breviter pedunculatae, rhache puberula; bracteae obovatae, obtusae, crassae, minute puberulae et ciliolatae, costa et venis lateralibus prominentibus, venulis crasse reticulatis; bracteolae oblongo-lanceolatae, subacutae, minute puberulae et ciliolatae, costa et venis prominentibus; calycis segmenta oblongo-lanceolata, minute punctata, ciliata; corolla caerulea, albolineata, puberula, labiis subaequalibus, labio superiore erecto, ovato, apice angustato (apice ipso obtuso), labio inferiore 3-lobato, lobis suborbicularibus, rotundatis; stamina exserta, lobis superpositis, lobo superiore mutico, clavato-pubescente, lobo inferiore glabro, calcarato, filamentis planis, glabris; capsulae glabrae, apice acutae, minute puberulae; retinacula ligulata, apice tenuia, rotundata; semina brunnea, plana, tuberculata.

Herbs or shrubs up to 2 meters high; stems subtetragonal, glabrous or the upper portions sparingly to moderately strigose, the hairs more or less in two rows; leaf blades oblong-ovate or ovate-lanceolate, up to 25 cm. long and 11 cm. wide, acute to short-acuminate or occasionally obtuse at apex, acute to obtuse or rounded and more or less oblique at base, rather firm, entire or undulate, glabrous or the costa and lateral veins (8 to 12 pairs) sparingly strigose, the venation prominent beneath, less so above, the cystoliths numerous, conspicuous under a lens, about 0.28 mm. long; petioles rather stout, up to 6 cm. long, glabrous or sparingly strigose; spikes solitary and terminal or sometimes both terminal and axillary, up to 11 cm. long, 2 cm. broad, the peduncles usually about 5 mm. long, these and the rachis puberulous; bracts obovate, averaging 17 mm. long and 8 mm. wide, obtuse at tip, narrowed to 3 mm. at base, firm, entire, minutely puberulous

and ciliolate, veiny, the costa and about 6 pairs of lateral veins prominent, the veinlets coarsely reticulate; bractlets oblong-lanceolate, 10 mm. long, 3 mm. wide, subacute, 1.75 mm. wide at base, minutely puberulous and ciliolate, the costa and lateral veins (3 or 4 pairs) prominent; calyx 12 mm. long, deeply segmented, minutely punctate

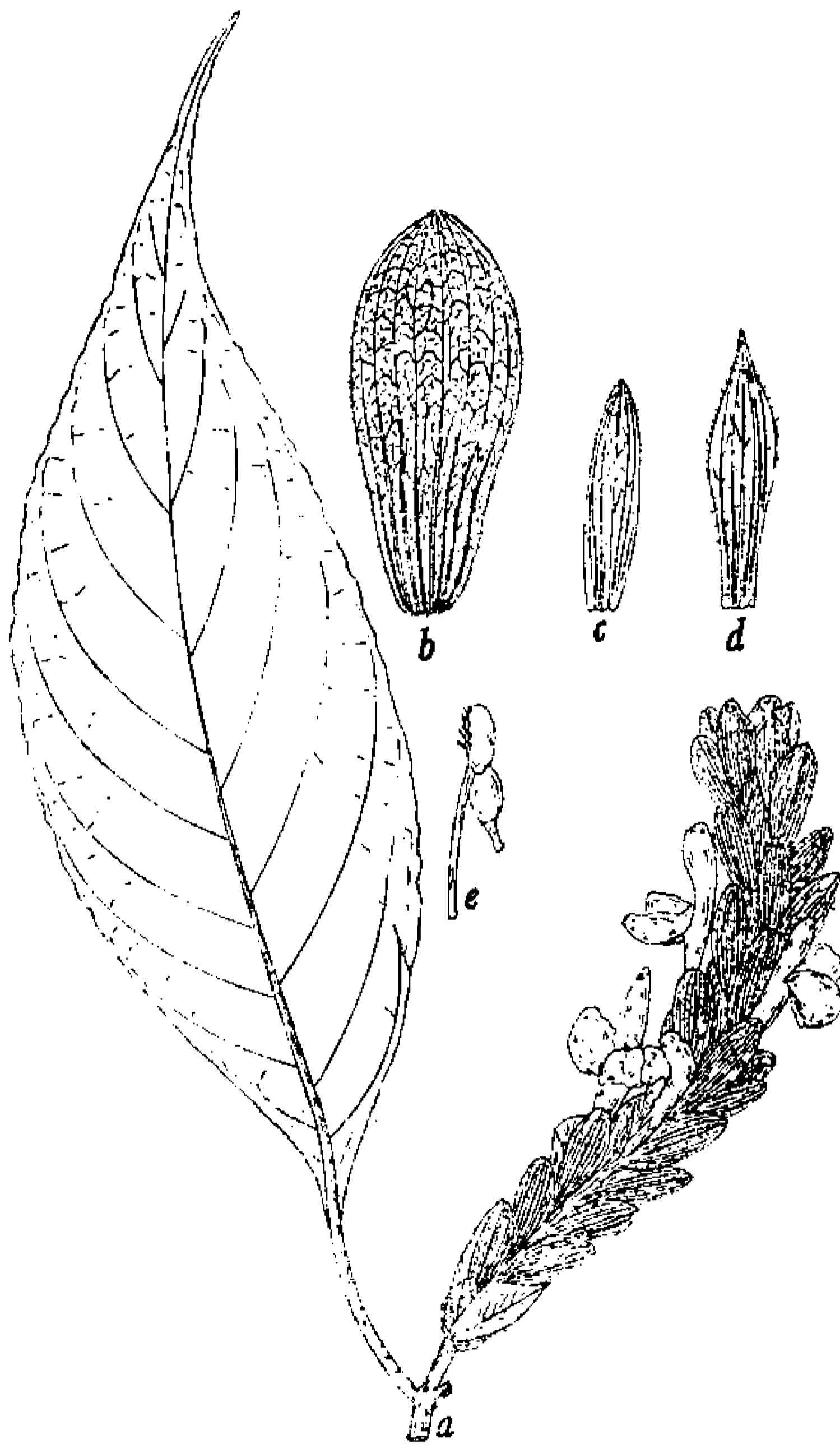


FIGURE 209.—*Justicia phytolaccoides* Leonard (Haught 6242): *a*, Tip of stem showing spike and leaf; *b*, bract; *c*, bractlet; *d*, calyx segment; *e*, anther. (*a*, Half natural size; *b-d*, twice natural size; *e*, $3\frac{1}{2}$ times natural size.)

and ciliolate, the segments oblong-lanceolate, 10 mm. long, 2.75 mm. wide; corollas 3 cm. long, blue, lined with white, puberulous except the enlarged glabrous basal portion, this 4 mm. broad at base, the corolla tube narrowed at 7 mm. above base to 3 mm., thence gradually enlarged to 4 mm. at mouth, the upper lip erect, ovate, 15 mm. long,

5 mm. wide, narrowed to an obtuse tip, the lower lip spreading, 15 mm. long, ovate, suborbicular, 3-lobed, the middle lobe 3.5 mm. long and 4 mm. wide, rounded, the lateral lobes 3 mm. wide, obtuse, somewhat oblique; stamens exerted 12 mm. beyond the mouth of the corolla tube, the anthers 3.5 mm. long, the lobes superposed vertically or nearly so, the upper lobe mucicous, dorsally densely pubescent, the lower lobe glabrous, calcarate, the tail blunt, about 0.75 mm. long, the filaments flattened, glabrous; capsules clavate, 16 to 18 mm. long, 5 mm. wide, 3.5 mm. thick, acute, finely puberulous; retinacula ligulate, 2.5 mm. long, 0.5 mm. wide, the tip thin, whitish, rounded; seed 4 mm. long, 3.25 mm. wide, 1 mm. thick, brown, tuberculate.

Type in the U. S. National Herbarium, No. 2045848, collected along stream at San Antonio, Department of Cundinamarca, Colombia, 200 meters altitude, June 14, 1948, by Oscar Haught (No. 6242).

Other collections are:

ANTIOQUIA: Dry rocks of Río Magdalena at Angostura de Nare, *André* 447 (K).

CUNDINAMARCA: Hacienda Paramillo, on road between Guaduas and Alto de Aguacilara, 1,040–1,320 meters altitude, July 24, 1947, *García-Barriga* 12353 (US); 12646 (US).

SANTANDER: San Juan Valley in the vicinity of Puerto Berrío, between Carare and Magdalena Rivers, 100–700 meters altitude, June 15, 1935, *Haught* 1788 (US); June 24, 1935, *Haught* 1807 (US). Along stream in forest at San Fernando, between Puerto Berrío and Río Carare, 300 meters altitude, June 30, 1939, *Haught* 2853 (US).

TOLIMA: Cañón del Río Gualí, on the road from Fresno to Falán, 1,120–1,700 meters altitude, December 5, 1939, *García-Barriga* 8341 (US). Falán, region of "Calamonte," 1,120 meters altitude, December 7, 1939, *García-Barriga* 8346 (US).

WITHOUT LOCALITY: *Mutis* 892 (US); 1503 (US).

García-Barriga (No. 12353) describes the flowers of his collection as being "amarillas." This may possibly be an error since some of the bluish coloration still remains in one of the dried corollas. Aside from this possible color variation, *García-Barriga's* specimen is identical with the other specimens cited. The flowers of *Haught's* No. 1807 were rose, lined with white, showing that there is some color variation.

33. *Justicia xanthostachya* Leonard, sp. nov.

FIGURE 210

Frutex, caulibus subquadrangularibus, sursum strigosis, pilis rigidis; lamina foliorum oblongo-elliptica vel oblongo-ovata, apice subacuta, basi acuta, aliquando firma, integra vel undulata, utrinque glabra vel parce strigosa, costa et venis prominentibus, cystolithis obscuris vel nullis; petioli parce strigosi; spicae terminales, solitariae vel plures paniculam laxam terminalem formantes, pedunculis subquadrangularibus, strigosis, rhachibus hirtellis, pilis albis patulis; bractea membranaceae, imbricatae, sulphureo-flavae, elliptico-ovatae, utrinque acutae, hirtellae, pilis crassis glandulosis et pilis gracilibus

eglandulosus intermixtis, costa et venis lateralibus gracilibus; bracteolae bracteis similes sed minores; calycis segmenta puberula, pilis papilliformibus, crassis, glandulosus et pilis gracilibus eglandulosus intermixtis; corolla clara sulphureo-flava, hirtella, pilis patulis vel retrorsis, tubo subcylindrico, labiis subaequalibus, labio superiore erecto, oblongo-ovato, acuto, labio inferiore oblongo-obovato, apice trilobato, lobis suborbicularibus, apice rotundatis; stamina exserta,

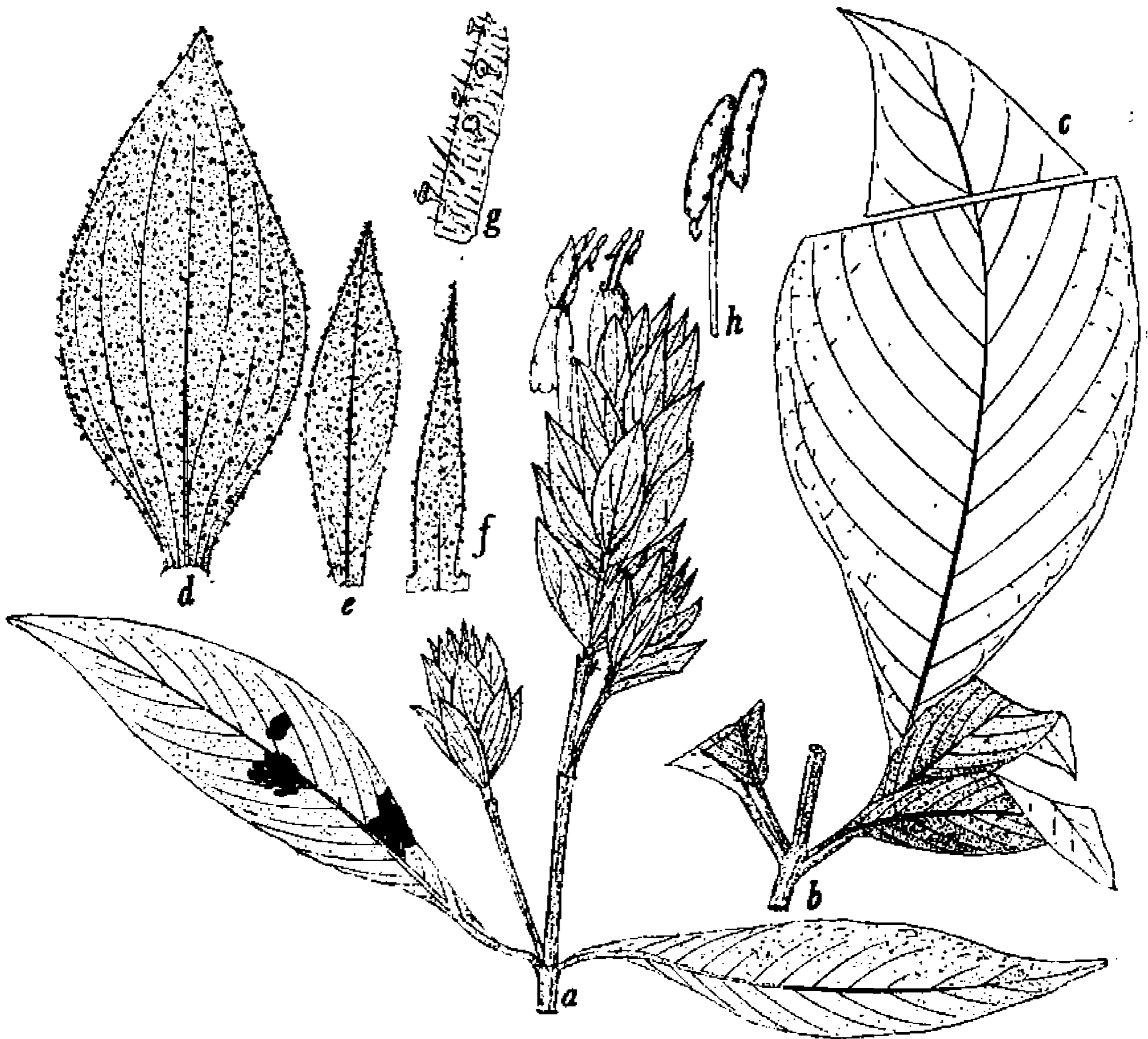


FIGURE 210.—*Justicia xanthostachya* Leonard (Kalbreyer 930): *a*, Tip of plant; *b*, node of stem to show leaf blades; *c*, tip of leaf; *d*, bract; *e*, bractlet; *f*, segment of calyx; *g*, portion of bract enlarged to show pubescence; *h*, anther. (*a-c*, Half natural size; *d-f*, twice natural size; *g*, $23\frac{1}{2}$ times natural size; *h*, $4\frac{1}{2}$ times natural size.)

labium superiorem aequalia, lobis antherarum superpositis verticalibus, lobo inferiore caudato; ovarium nitidum, papillosum.

Shrubs up to 2 meters high; stems subquadrangular, upwardly strigose, the hairs up to 0.11 mm. long, rigid; leaf blades oblong-elliptic or oblong-ovate, up to 24 cm. long and 6.5 cm. wide, subacute at tip, acute at base, rather firm, entire or undulate, the upper surface drying dark olive-green, glabrous or sparingly strigose, the hairs up to 0.19 mm. long, the costa and lateral veins (14 to 16 pairs) promi-

ment on both surfaces, the lower surface drying light olive-green, nitid and sparingly strigose, the cystoliths obscure or lacking; petioles up to 1.5 cm. long, sparingly strigose; flowers borne in terminal spikes up to 7 cm. long and 3 cm. broad, these solitary or several, forming a loose panicle; peduncles up to 3 cm. long, subquadrangular, strigose; rachis hirtellous, the hairs spreading, up to 0.11 mm. long, white; bracts imbricate, bright sulphur yellow, elliptic-ovate, up to 28 mm. long, and 11 mm. wide, acute at both ends, hirtellous, up to 0.13 mm. long, some heavy and gland-tipped, others slender and eglandular, the costa and 2 or 3 pairs of lateral veins evident but not prominent; bractlets similar to the bracts but smaller, up to 18 mm. long and 6 mm. wide; calyx 15 mm. long, puberulous, the hairs a mixture of heavy subpapillate gland-tipped ones and fine slender eglandular ones, all spreading and up to 0.16 mm. long; corolla 3 cm. long, bright sulphur yellow, hirtellous, the hairs up to 0.2 mm. long, spreading or retrorse, the tube subcylindric, 3 mm. broad at base, constricted at 4 mm. above base to 2.5 mm. thence abruptly enlarged to 4 mm., then gradually to 5 mm. at mouth, the upper lip more or less erect, oblong-ovate, about 1 cm. long and 4 mm. wide, acute, the lower lip more or less spreading, oblong-obovate, 1 cm. long, 3.5 mm. wide at base of the three lobes, these suborbicular, 1.5 mm. long and rounded at the tip, the middle lobe about 2 mm. wide, the lateral ones somewhat narrower; stamens reaching tip of the upper corolla lip, the filaments glabrous, at least above, the anthers 4 mm. long, the cells superposed and vertically attached to the connective, each 2 mm. long and 0.5 mm. thick, the lower cell tailed, the tail about 0.75 mm. long and 0.25 mm. wide; style about 3 cm. long, sparingly and minutely hirtellous near base, otherwise glabrous, the stigma minute and bilobed; ovary nitid, papillose; capsules not seen.

Type in the Kew Herbarium, collected at Carmen, between Ocaña and Pamplona, Department of Norte de Santander, Colombia, "25-3000'" altitude, January 27, 1879, by W. Kalbreyer (No. 930).

This well marked species should be easily recognized by its showy bright sulphur-yellow glandular spikes. There are apparently no close relatives. The specific epithet is from the Greek *ξανθός*, yellow, and *στάχυς*, spike.

34. *Justicia rohrii* Vahl

FIGURE 196

Justicia rohrii Vahl, Symb. 3: 6. 1794. Type locality: Cajenna (Guyane Française). Collected by Rohr.

Beloperone rohrii Nees in DC. Prodr. 11: 415. 1847. Based on *Justicia rohrii* Vahl. Photograph US (Field Mus. No. 22159).

Beloperone rohrii Nees β *latifolia* Nees in DC. Prodr. 11: 415. 1847. Type locality: Santa Marta, Magdalena, Colombia. Collected by Bertero. Type

in the Delessert Herbarium. Photograph of type in the U. S. National Herbarium (Field Mus. No. 7849).

Beloperone sanmartensis Rusby, Descr. So. Am. Pl. 128. 1920. Type collected in low damp parts of the dry forest region near Mamatoca, Santa Marta, Department of Magdalena, Colombia, 100 feet altitude, November 1898, by H. H. Smith, No. 96 (Ph, NY [holotype], S, US).

Shrub up to 2 meters high or more; stems stout, obtusely quadrangular, broadly sulcate, minutely puberulous; leaf blades ovate, oblong-ovate, elliptic or somewhat obovate, 15 to 30 cm. long, 7 to 16 cm. wide, short-acuminate or acute, usually narrowed to an obtuse, rounded or subcordate base although occasionally acute, rather thin, entire or undulate, the upper surface glabrous or sparingly and minutely puberulous, the hairs subappressed, the costa impressed, this and the lateral veins rather obscure, the lower surface glabrous or the costa and veins (14 or 15 pairs) minutely and inconspicuously puberulous, the venation prominent, the cystoliths of both surfaces minute (about 0.3 mm. long) and obscure; petioles 2 to 7 cm. long, minutely puberulous; panicles terminal, up to 22 cm. long and 8 cm. broad, more or less narrowed toward tip; peduncles stout, up to 5 cm. long, appressed-puberulous; lowermost nodes of the inflorescence subtended by small leaves; branches of the inflorescence ascending, up to 9 cm. long, the internodes both of the branches and the rachis densely hirtellous, the longer hairs gland-tipped, up to 0.5 mm. long, the flowers and bracts crowded and more or less secund; lowermost bracts subtending the flowers ovate, 12 mm. long, 9 mm. wide near base, acute (the tip itself obtuse), rounded at base, densely hirtellous, the hairs up to 0.3 mm. long, some of them terminating in large patelliform glands, the costa rather prominent, the lateral veins delicate, the bractlets oblong-elliptic, 12 mm. long, 5 mm. wide, acute, narrowed at base, the pubescence and venation that of the bracts, the succeeding bracts and bractlets similar to the lowermost but becoming gradually smaller toward tip of the inflorescence branches; calyx 13 mm. long, deeply segmented, the pubescence and venation that of the bracts and bractlets, the segments lanceolate, slenderly acute, 2.25 mm. wide; corolla white or pale yellow, up to 3 cm. long, rather densely pubescent except the lower glabrous portion, the hairs spreading, or retrorse, up to 1 mm. long, the tube 2.25 mm. broad at base, enlarged to 3 mm. slightly above base and narrowed to 2.25 mm. at 4 mm. above base, thence gradually enlarged to 4 mm. at throat, the lips subequal, about 15 mm. long, the upper lip erect, ovate, acute, 7 mm. wide at base, the lower lip recurved, 3-lobed, 4 mm. wide at base of lobes, the lobes oblanceolate, 7 mm. long, 2 mm. wide near tip, rounded; stamens exerted, reaching tip of the upper corolla lip, the filaments glabrous, the anther cells obliquely attached to the connective and superposed, the upper lobe 2.25 mm. long and 0.75 mm.

broad, blunt at base, borne at a 40-degree angle from the horizontal, the lower lobe 2.5 mm. long and 0.75 mm. broad, vertical, the lower tip terminated by a blunt tail 0.5 mm. long; styles slightly shorter than the stamens, essentially glabrous; capsules clavate, 12 mm. long, 4 mm. broad, about 3 mm. thick, the solid stipitate basal portion 4 mm. long and 3 mm. wide, the outer surface finely pubescent, the hairs up to 0.25 mm. long, those at and near the tip spreading, the others retrorse; retinacula 3 mm. long, thin, whitish and subtruncate at tip; seed suborbicular, flattened, about 2.5 mm. long and broad, strongly papillose.

Limited in Colombia apparently to the arid forested coastal belt of the Santa Marta region. The following note accompanies H. H. Smith's No. 96: "Shrub, 4-6 ft. Common locally in low damp parts of the dry forest region below 1000 ft. Flowers Nov.-Dec. pale yellow."

MAGDALENA: Guamacito, *Record* 35 (NY). Arid coastal belt south of Santa Marta, *Killip & Smith* 21100 (NY, US).

35. *Justicia cabreræ* Leonard, sp. nov.

FIGURE 211

Herba ramosa, caulibus ascendentibus, in nodis basalibus radicantibus, subquadrangularibus, puberulis, pilis retrorse curvatis; lamina foliorum ovata vel elliptica, apice obtusa, basi angustata et in petiolum decurrens, aliquanto firma, integra vel undulata, costa et venis lateralibus puberulis, cystolithis nullis; petioli puberuli; spicae terminales, anguste ovoideae, rhachibus puberulis; bractee ovatae vel ellipticae, acutae, basi angustatae, parce puberulae, ciliatae, pilis patulis vel ascendentibus; bracteolae lineari-lanceolatae, ciliatae; calycis segmenta lineari-lanceolata, apice gracilia, hirtella; corolla alba, deorsum glabra, labiis minute hirtellis, tubo hypocrateriformi, labio superiore erecto, ovato-lanceolato, apice obtuso, emarginato, labio inferiore plus minusve patulo, apice trilobato, labio medio ovato, obtuso, lobis lateralibus triangularibus, apice obtusis; stamina vix exserta, glabra, antheris superpositis, rectis, connectivo lato; ovarium apice hirtellum.

Branching herbs up to 20 cm. high, ascending, rooting at the lower nodes; stems subquadrangular, puberulous, the hairs retrorsely curved, up to 0.16 mm. long; leaf blades ovate to elliptic, up to 8 cm. long and 4 cm. wide, obtuse at tip, narrowed at base and decurrent on the petiole, moderately firm, entire or undulate, the costa and lateral veins (8 pairs) puberulous, the hairs similar to those on the stems, the intercostal areas essentially glabrous or minutely hirtellous toward the margins with narrowly triangular septate hairs, the venation rather obscure, at least not prominent, the cystoliths lacking; petioles up to 1.5 cm. long, puberulous; spikes terminating the branches forming poorly defined leafy panicles, the spikes themselves narrowly

ovoid, up to 5 cm. long and 1.5 to 2 cm. broad, the rachis puberulous; bracts ovate to elliptic, 1 to 1.5 cm. long, 6 to 10 mm. wide, acute, narrowed at base, the flat surfaces sparingly puberulous, the margins ciliate with spreading or ascending hairs up to 1.5 mm. long, pinnately veined, the veinlets coarsely reticulate; bractlets linear-lanceolate, 9 mm. long, 1 mm. wide, ciliate with hairs up to 1 mm. long, the flat surfaces essentially glabrous; calyx 5 mm. long, the segments 5, linear-lanceolate, 4.5 mm. long, 0.5 mm. wide at base, narrowed to a

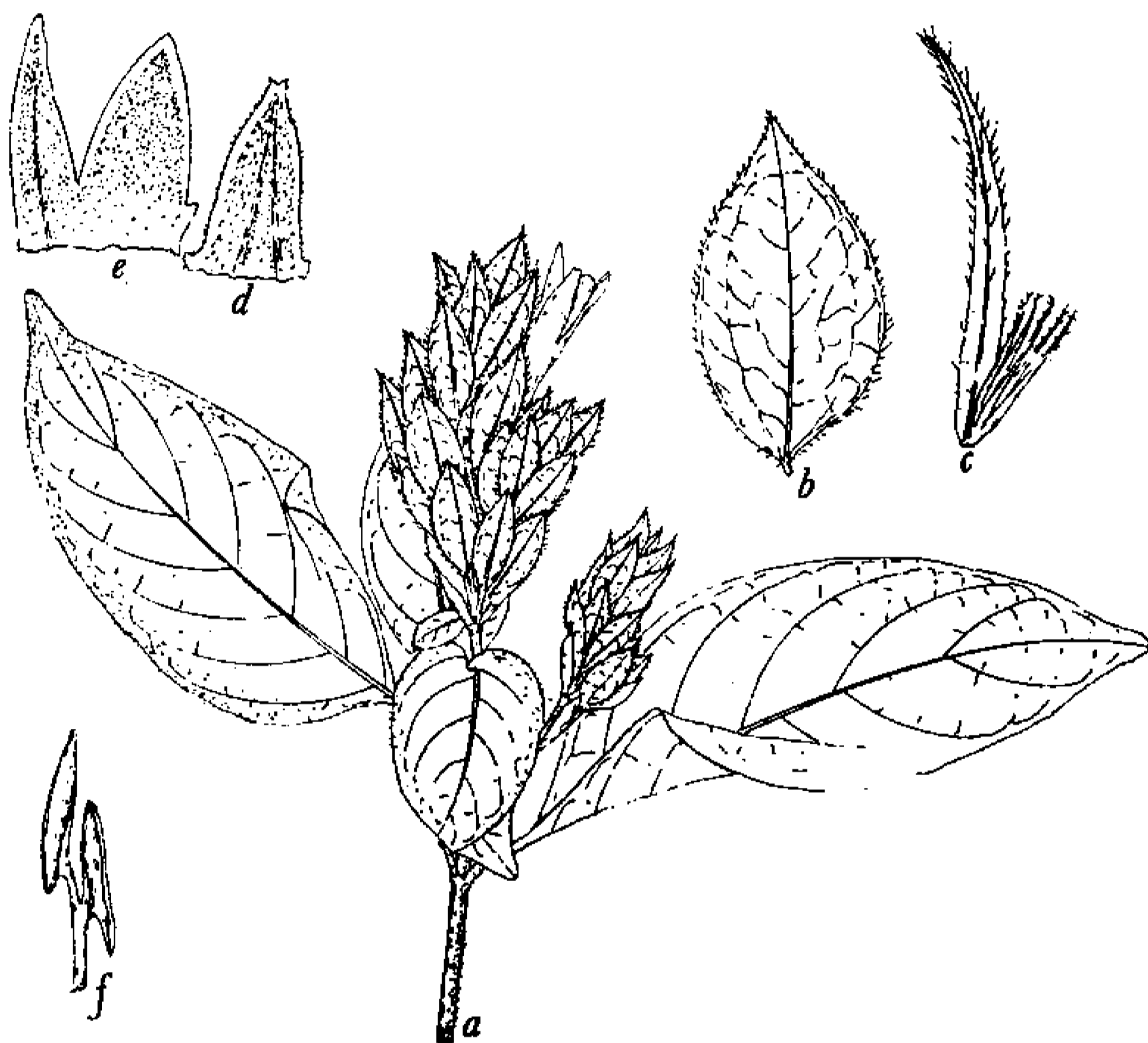


FIGURE 211.—*Justicia cabreræ* Leonard (*a, d, e*, Schultes & Cabrera 12701; *b, c, f*, Schultes & Cabrera 12679): *a*, Tip of plant to show inflorescence and leaves; *b*, bract; *c*, calyx and one of a pair of bractlets; *d*, upper lip of corolla, *e*, lower lip showing middle and one of the lateral lobes; *f*, anther. (*a*, Natural size; *b*, 3 times natural size; *c-e*, 4 times natural size; *f*, 11 times natural size.)

slender tip, the upper part hirtellous (the hairs at tip up to 0.25 mm. long), the lower portion glabrous; corolla white, about 2 cm. long, glabrous except the lips, these minutely hirtellous, the tube 2 mm. broad near the base, about 4.5 mm. broad at throat, the upper lip erect, ovate-lanceolate, 4 mm. long and 2 mm. wide at base, obtuse and emarginate at tip, the lower lip more or less spreading, ovate, 7 mm. long, 6 mm. wide at base of lobes, these 4 mm. long, the middle one ovate, 4 mm. wide at base, the lateral ones triangular, 2.5 mm.

wide at base, all three lobes obtuse at tip; stamens glabrous, slightly exerted beyond the mouth of the corolla tube, the anther cells 1.5 mm. long and 0.25 mm. wide, superposed, vertical, about 0.5 mm. apart, the upper one on a short slender stalk about 5 mm. long, the connective 0.25 mm. wide; style as long as the stamens, the stigma 2-lobed, the lobes lanceolate, slightly recurved, 0.75 mm. long, 0.25 mm. wide; top of ovary and the base of the style sparingly hirtellous, the hairs straight, ascending or spreading, up to 0.8 mm. long; capsules not seen.

Type in the U. S. National Herbarium, No. 2124630, collected at Soratama, along the Río Apaporis, between Río Pacoa and Río Kananarí, about 250 meters altitude, June 20, 1951, by Richard Evans Schultes and Isidoro Cabrera (No. 12701).

Schultes and Cabrera's No. 12679 (US), collected on a flood bank on the same date and in the same general region as the type, is also of this species.

36. *Justicia leucerythra* Leonard, sp. nov.

FIGURE 212

Herba vel suffrutex, caulibus erectis, quadrangularibus, glabris vel bifariam puberulis, pilis retrorse curvatis, subappressis; lamina foliorum oblongo-ovata vel elliptica vel oblongo-obovata, acuminata (apice ipso obtuso), basi angustata, aliquanto firma, integra vel undulata, utrinque glabra vel costa et venis lateralibus puberulis, cystolithis inconspicuis et raris; petioli glabri vel puberula, pilis curvatis; spicae 1 vel plures, terminales vel subterminales, oblongae, apice obtusae vel truncatae, pedunculatae, rhache puberula, pilis curvatis, subappressis; bracteae ovatae, acutae vel breviter acuminatae, basi angustatae, firmae, glabrae vel parce strigosae, pilis appressis, ciliatae, costa et venis (crasse reticulatis) aliquanto prominentibus; bracteolae lanceolatae, apice acuto, sensim angustatae, parce et minute strigosae et ciliatae, costa prominente, venis lateralibus obscuris; calycis segmenta 5, lineari-lanceolata, ciliolata, minute et parce strigosa; corolla punicea vel aliquando rubra, subiliter pubescens, labiis subaequalibus, labio superiore lanceolato, acuto, labio inferiore plus minusve patulo, 3-lobatis, lobis oblongis, apice rotundatis; stamina exserta, lobis antherarum superpositis, plus minusve obliquis, lobo inferiore basi breviter calcarato, lobo superiore mutico, filamentis planis, glabris; capsulae (immaturae) clavatae, glabrae; semina suborbiculata, plana, muriculata, subrubra.

Slender erect herbs (becoming suffrutescent at maturity) up to 1 meter high; stems subquadrangular, glabrous or puberulous, the hairs retrorsely curved, subappressed, arranged more or less in two rows; leaf blades oblong-ovate, elliptic or oblong-obovate, 20 cm. long and 6 cm. wide, short-acuminate (the tip itself obtuse), narrowed at base, rather firm, entire or undulate, the costa and lateral veins (6 to 8

pairs) puberulous, the cystoliths often inconspicuous and scattered; petioles up to 3 cm. long, glabrous or puberulous with curved hairs; spikes one or several, terminal and subterminal, up to 7 cm. long and 2.5 cm. broad, obtuse or truncate at tip, the peduncles usually about 1 cm. long, the rachis sparingly puberulous, the hairs curved, sub-appressed, about 0.2 mm. long; bracts ovate, ca. 18 mm. long, 8 mm. wide, acute or short-acuminate, narrowed to base, firm, glabrous or sparingly strigose (hairs appressed, white, ca. 75μ long), sparingly ciliate with hairs up to 0.5 mm. long, the veins coarsely reticulate,

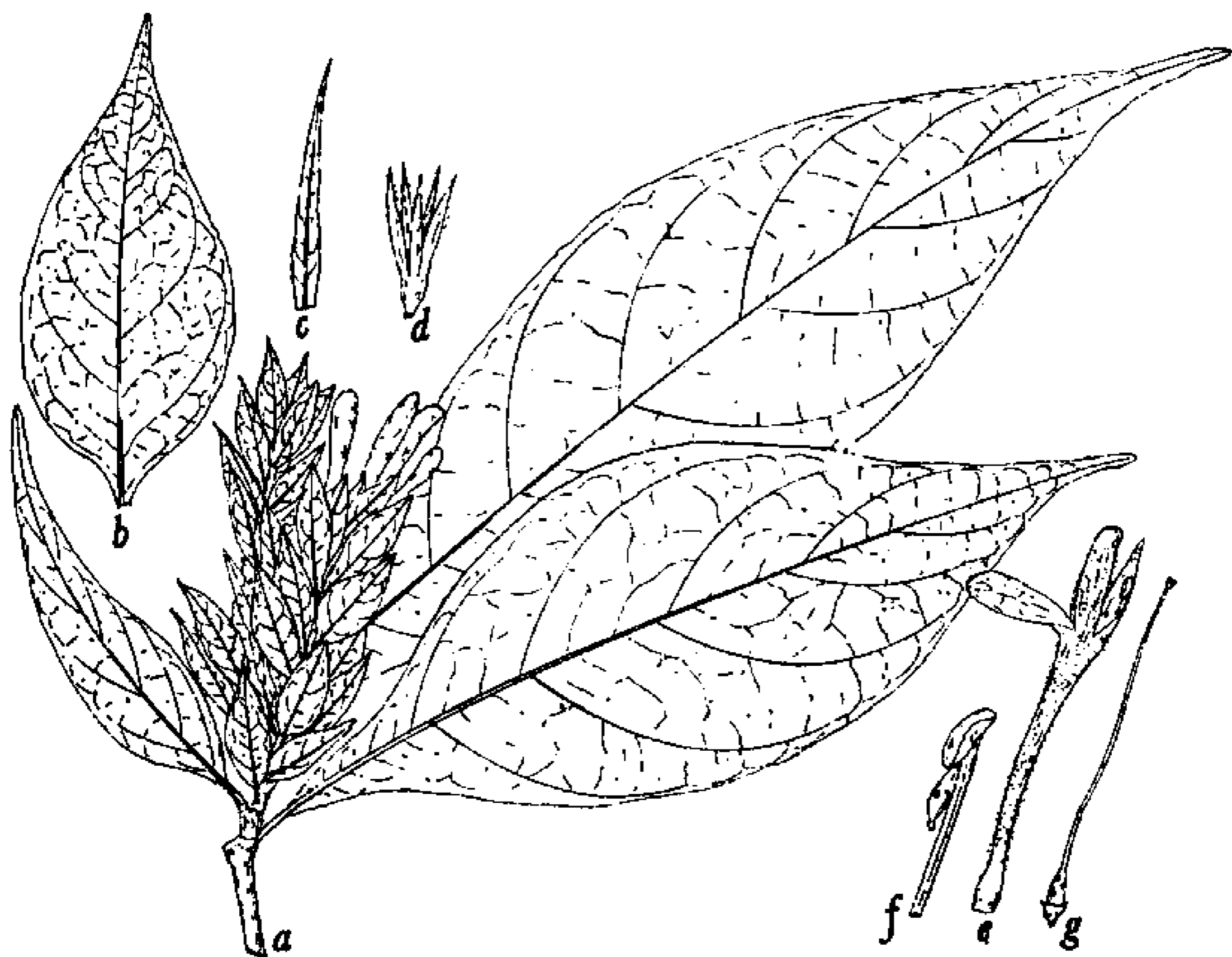


FIGURE 212.—*Justicia leucerythra* Leonard (Haught 6729): *a*, Tip of plant showing leaves and inflorescence; *b*, bract; *c*, bractlet; *d*, calyx; *e*, corolla; *f*, anther; *g*, pistil. (*a*, Half natural size; *b-d*, twice natural size; *e*, *g*, natural size; *f*, 4 times natural size.)

these and the costa rather prominent; bractlets lanceolate, up to 8 mm. long, 1 mm. wide, gradually narrowed to an acute tip, sparingly and minutely strigose and ciliate, the costa prominent, the lateral veins obscure; calyx 5 mm. long, 5-parted, the segments linear-lanceolate, 4.5 mm. long, ca. 0.6 mm. wide, ciliolate, minutely and sparingly strigose; corolla pink or occasionally red, up to 33 mm. long, finely pubescent, the hairs up to 0.2 mm. long, the tube 22 mm. broad at base, narrowed to 1.5 mm. at 3 mm. above base, thence gradually enlarged to 3 mm. at mouth, the lips subequal, 11 mm. long, the upper

lip lanceolate, 3 mm. wide, acute, the lower lip more or less spreading, 3-lobed, the lobes oblong, 10 mm. long, 4.5 mm. wide, rounded at tip, delicately veined; stamens exerted 8 mm. beyond mouth of the corolla tube, the anthers 3 mm. long, the lobes 0.5 mm. long, superposed, somewhat obliquely attached to the connective (0.5 mm. broad), the upper lobe muticous, the lower terminating at base in a short blunt spur 0.25 mm. long, the filaments flat, glabrous; ovary glabrous; style 2.5 cm. long, glabrous; stigma bilobed, minute; capsules (immature) 10 mm. long, 3 mm. broad, 2.5 mm. thick; seed orbicular, flattened, reddish, muriculate.

Type in the U. S. National Herbarium, No. 2046312, collected in flood-plain forest at Cerrejón, Department of Magdalena, Colombia, 100 meters altitude, December 3, 1949, by Oscar Haught (No. 6729).

ATLÁNTICO: Woods around Los Pendales, Hacienda Ríodulce, altitude 20 to 50 meters, *Dugand & Jaramillo* 4160 (US). Luruaco, *Bro. Apolinar* 490 (US). Piojó, *Bro. Elias* 681 (US). Puerto Colombia, *Bro. Elias* 1411 (GH, NY, US). Arroyo del Higuierón, Usiacurí, 100 meters altitude, *Dugand & García-Barriga* 2287 (US).

MAGDALENA: Forest east of Codazzi, 200 meters altitude, *Haught* 3739 (US). Fucurínca, *Romero-Castañeda* 557 (Ch, US). Hacienda Juan León, 150 meters altitude, *Haught* 4763 (US).

Justicia leucerythra bears a general resemblance to the Peruvian species *J. glabribracteata* Lindau., but in that species the bracts are relatively broader and often obtuse or rounded instead of sharply acute, and the capsules are more or less hirtellous. The specific epithet is from the Greek λευκέρυθος, meaning pink, in allusion to the pink corollas.

37. *Justicia enarthrocoma* Leonard, sp. nov.

FIGURE 213

Suffrutex, caulibus subquadrangularibus, bifariam pilosis, pilis curvatis, plus minusve patulis, septatis, aurco-brunneis; lamina foliorum oblongo-ovata vel oblongo-obovata, plus minusve panduriformis, acuminata (apice ipso obtuso), basi angustata, aliquanto tenuis, integra vel undulata, supra subnitida, glabra vel costa parce puberula, subtus glabra, costa et venis lateralibus puberulis, pilis aureobrunneis, septatis, cystolithis parvis, inconspicuis; petioli breves, hirtelli; spicae terminales vel subterminales, pedunculis glabris vel parce pilosulis, rhache glabra; bracteae oblongo-ellipticae, acutae, basi subobtusae, tenues, glabrae, parce ciliatae; bracteolae oblongo-lanceolatae, acutae, basi sessiles et obtusae, glabrae, costa prominente; calycis segmenta lanceolata, acuta, aliquanto tenuia, costa prominente; corolla coccinea, basi glabra, deorsum aliquando pilosa, pilis retrorse curvatis vel patulis, labiis subaequalibus, labio superiore erecto, ovato, apice bilobato, lobis rotundatis, labio inferiore patulo, trilobato, lobis oblongo-ovatis, apice rotundatis; stamina exserta, fla-

mentis glabris, antherarum lobis obliquis, leviter superpositis, basi muticis vel minute apiculatis; ovarium glabrum; styli glabri.

Shrub up to 2 meters high, a little branched, the stems subquad-rangular, the hairs curved, more or less spreading, arranged in 2 rows, conspicuously septate, golden brown; leaf blades oblong-ovate or obovate (some of them slightly panduriform), ca. 20 cm. long, 7 cm.

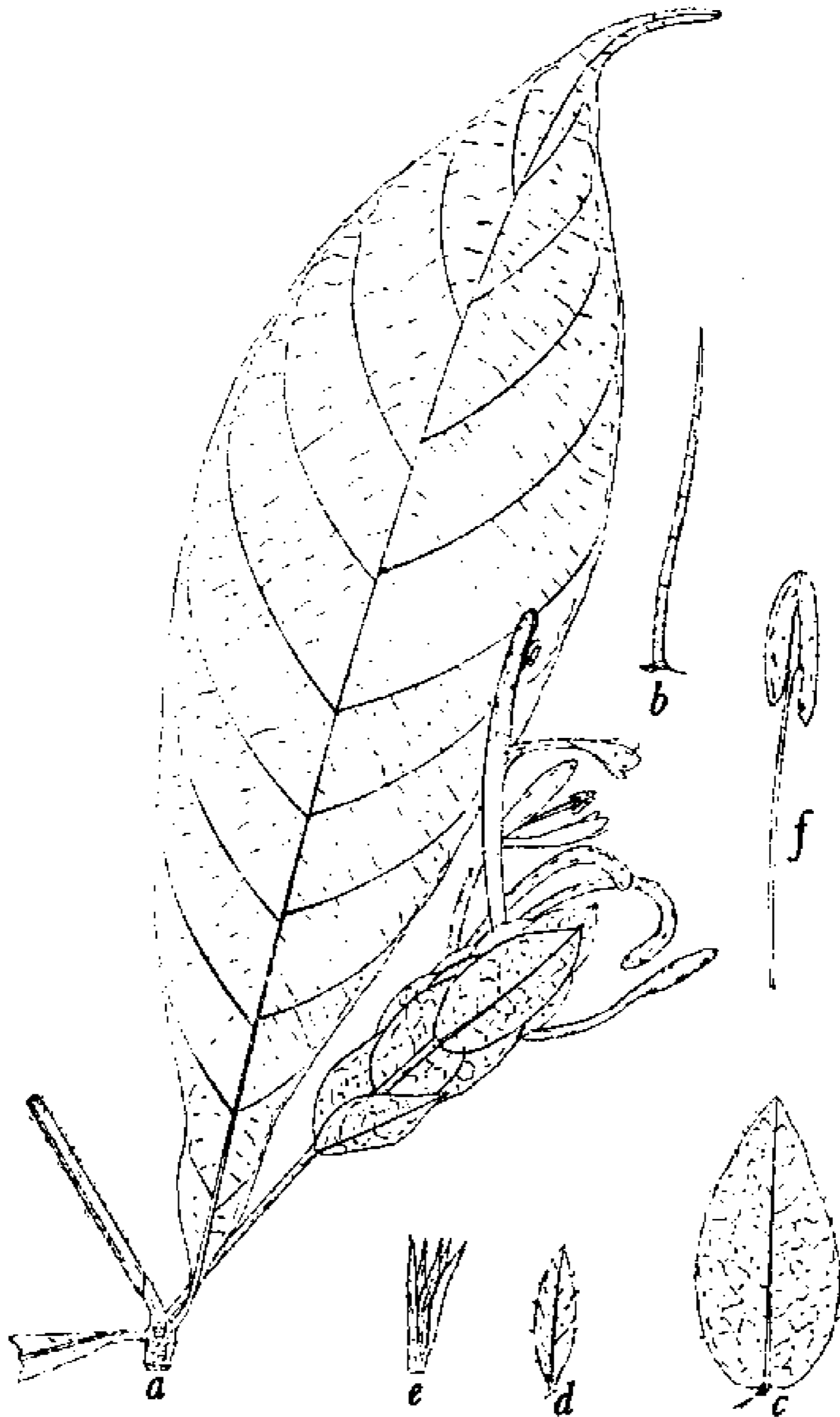


FIGURE 213.—*Justicia enarthrocoma* Leonard (Grant 10900): *a*, Tip of stem, showing leaf and inflorescence; *b*, hair from upper portion of stem; *c*, bract; *d*, bractlet; *e*, calyx; *f*, anther. (*a*, Half natural size; *b*, 36 times natural size; *c*-*e*, slightly less than natural size; *f*, 3½ times natural size.)

wide, acuminate, narrowed at base, rather thin, entire or undulate, the upper surface subnitid, glabrous or the costa bearing a few small hairs, the cystoliths 0.25 mm. long, inconspicuous, the lower surface glabrous except the costa and lateral veins (9 or 10 pairs), these hirsutellous with ascending golden brown septate hairs up to about 0.25 mm. long, the cystoliths about 0.2 mm. long, inconspicuous, sometimes drying

blackish in young leaves; petioles up to 5 mm. long, hirtellous; spikes terminal or subterminal, the peduncles up to 3 cm. long, glabrous or sparingly hirtellous, the rachis glabrous, marked by a few parallel cystoliths; bracts oblong-elliptic, 25 mm. long, 10 mm. wide, acute, obtuse at base, thin, glabrous, sparingly ciliate, the veinlets coarsely but rather obscurely reticulate; bractlets oblong-lanceolate, 11.5 mm. long, 3.5 mm. wide, acute, obtuse at base, thin, glabrous, the costa rather prominent, the lateral veins delicately and coarsely reticulate; calyx 12.5 mm. long, deeply segmented, the segments lanceolate, 1.5 mm. wide at middle, acute, rather thin, the costa prominent, the 6 or more pairs of lateral veins obscure; corolla scarlet, up to 6 cm. long, except the glabrous basally enlarged portion, rather densely pilose with spreading or retrorsely curved brownish septate hairs up to 0.5 mm. long, the tube 3 mm. wide at base, enlarged to 4 mm. at 3 mm. above base and contracted to 1.5 mm. at 6 mm. above base, thence gradually enlarged to 6 mm. at mouth, densely and retrorsely pilose at and below the insertion of the stamens within the tube, the lips subequal, the upper lip erect, ovate, 12 mm. long, 10 mm. wide near base, 2 mm. wide near tip, bilobed, the lobes 0.75 mm. long, rounded, the lower lip spreading, 13 mm. long, 3-lobed, the lobes oblong-ovate, 11 mm. long, 4.25 mm. wide, rounded at tip; stamens exerted 15 mm. beyond mouth of corolla tube, the filaments glabrous, the anthers 3.5 mm. long, the cells slightly superposed and somewhat obliquely attached by a connective about 0.5 mm. wide, muticous or minutely apiculate at base; ovary glabrous; style glabrous, rather short; mature capsule not seen.

Type in the U. S. National Herbarium, No. 2045441, collected in subtropical forest 12 km. east of Codazzi in the Espíritu Santo Valley of the Sierra de Perijá, Cordillera Oriental, and 13 km. from the Venezuelan border, Department of Magdalena, Colombia, 1,250 meters altitude, February 11, 1945, by Martin L. Grant (No. 10900).

Justicia enarthrocoma is closely related to *J. leucerythra*, differing in the subpanduriform leaf blades, the septate golden brown hairs on stems and young leaf blades, and the much larger scarlet corollas, these with a bilobed upper lip. The specific epithet is from the Greek *ἐναρθρος*, jointed, and *κόμη*, hair.

38. *Justicia sanchezoides* Leonard, sp. nov.

FIGURE 214

Suffrutex, caulibus subquadrangularibus, glabris vel parce bifariam strigosis, pilis plus minusve curvatis; lamina foliorum oblongo-elliptica vel late lanceolata, apice acuta vel breviter acuminata (apice ipso obtuso), basi angustata, firma, integra vel leviter undulata, glabra, costa et venis lateralibus subtus prominentibus, supra obscuris; petioli crassi, glabri vel minute strigosi; paniculae terminales, spicarum unilateralium compositae; pedunculi dense plus minusve bifariam

hirsuti, pilis curvatis, subbrunneis vel purpureis; rhachis hirsuta, pilis plus minusve glandulosis; bracteae acutae et bracteolae acuminatae subaequales, lanceolatae, intus glabrae vel apice hirsutae, extus aliquanto hirsutae, marginibus ciliatae, pilis ascendentibus, nervis obscuris; calycis segmenta 5, lanceolata, apice angustata, intus strigosa, extus hirtella, pilis subflavis; corolla rosea, parce pubescens, pilis plus minusve glandulosis, tubo sursum gradatim ampliato, labio superiore erecto, oblongo-ovato, apice obtuso, labio inferiore patulo, cuneato, apice trilobato, lobis ovatis, rotundatis; stamina exserta, filamentis planis, glabris vel deorsum parce et minute hirtellis, lobis antherarum superpositis, basi albo-caudatis; ovarium glabrum.

Suffrutescent plants up to 3 meters high; stems subquadrangular, glabrous or sparingly and bifariously strigose, the hairs more or less curved; leaf blades oblong-elliptic to broadly lanceolate, ca. 28 cm. long, 8 cm. wide, acute to short-acuminate, narrowed at base, firm, entire or shallowly undulate, glabrous, the costa and lateral veins (10 to 15 pairs) prominent beneath, obscure above, the cystoliths numerous and rather prominent under a lens, up to 0.3 mm. long; petioles stout, up to 1.5 cm. long and 2 mm. in diameter, glabrous or minutely strigose; inflorescence a terminal panicle composed of several unilateral spikes up to 12 cm. long and about 1 cm. wide, the peduncles up to 2 cm. long, densely and more or less bifariously hirsute, the hairs curved, about 0.3 mm. long, brownish or purple, the rachis similarly hirsute or some of the hairs spreading and glandular; bracts and bractlets subequal, lanceolate, the inner surface glabrous or hirsute toward tip, the outer surface moderately hirsute, the hairs yellowish brown, about 0.5 mm. long, the margins ciliate with ascending hairs, the bracts 18 mm. long and 3 mm. wide near base, acute, the bractlets slightly longer than the bracts, 1 to 2 mm. wide, acuminate, both bracts and bractlets obscurely nerved; calyx 17 mm. long, the segments 5, lanceolate, 15 mm. long, 2 mm. wide at middle, gradually narrowed to a slender tip, strigose within, hirtellous without, the hairs yellowish, about 0.3 mm. long, the costa and lateral veins obscure; corolla 6.5 cm. long, pale purple ("cárdeno pálida," Cuatrecasas) or bright rose (Klug), the tube rather gradually ampliate upwardly, the basal portion (5 mm. long) 2 mm. in diameter, thence expanding to 6 mm. at throat, sparingly and finely pubescent, some of the hairs glandular, the upper lip erect, oblong-ovate, up to 37 mm. long and 8 mm. wide near base, gradually narrowed to 2 mm. at the rounded subtruncate tip, the lower lip spreading, 7 mm. wide near tip, gradually narrowed to 5 mm. at base, the 3 lobes ovate, 4 mm. long and 3 mm. wide, rounded; stamens reaching to 7 mm. below tip of the upper lip of the corolla, the filaments flat, glabrous or sparingly and minutely hirtellous toward

base, the anther cells slightly superposed, 2.5 mm. long, 1.25 mm. broad, caudate at base, the tails whitish, about 0.5 mm. long; pistil extending about 5 mm. beyond the stamens, the stigma capitate; ovary glabrous.



FIGURE 214.—*Justicia sanchezoides* Leonard (*Cuatrecasas* 10581): *a*, Tip of plant showing inflorescence and leaf blade; *b*, bract; *c*, bractlet; *d*, a marginal hair from bract; *e*, tip of bractlet enlarged to show pubescence (dorsal surface); *f*, a glandular hair from a bractlet; *g*, a segment of the calyx (dorsal surface); *h*, corolla; *i*, anther. (*a*, Half natural size; *b*, *c*, *g*, natural size; *d*, *f*, 40 times natural size; *e*, 10 times natural size; *h*, about $1\frac{1}{2}$ times natural size; *i*, 5 times natural size.)

Type in the U. S. National Herbarium, No. 1798530, collected in the wet forests along the Río Putumayo at Puerto Ospina, Comisaría of Putamayo, Colombia, 230 meters altitude, November 14, 1940, by J. Cuatrecasas (No. 10581).

CAQUETÁ: Florencia, December 1930 *Pérez-Arbeláez* 746 (US).

PUTUMAYO: Forests at Umbría, 325 meters altitude, October to November, 1930, *Klug* 1693 (US). Mocoa, May 23, 1899, *Sprague* 387 (K).

SANTANDER: San Gil, *Apolinar-María* 92 (GH). Forests of Soto, *Schlim* 1093 (K).

Justicia sanchezoides is easily recognized by its inflorescence of unilateral spikes, the narrow bracts and bractlets (these similar), the large pink flowers, and large glabrous leaf blades.

39. *Justicia homoea* Leonard, sp. nov.

FIGURE 215

Suffrutex gracilis, caulibus subquadrangularibus (angulis rotundatis), minute et antrorse strigosis, pilis aureo-brunneis; lamina foliorum oblongo-ovata, apice breviter acuminata, basi subobtusa, firma, undulata vel leviter et obscure crenulata, utrinque glabra, costa et venis subtus conspicuis parce strigosis excepta, venulis graciliter reticulatis, cystolithis pluribus et conspicuis; petioli aliquanto longi, minute strigosi, pilis aureo-brunneis; spicae magnae, binae vel ternae, densae, axillares et terminales, bracteis quadrifariis, pedunculis et rhachibus subquadrangularibus, dense hirtellis, pilis ascendentibus, rigidis, rectis; bracteae paululum obovatae, acutae, sessiles, valde parallelo-nervatae, aliquanto dense puberulae, pilis subpapilliformibus, vel apice pilis paucis longioribus eglandulosis praeditae, marginibus ciliatis; bracteae similes sed minores; calycis segmenta lineari-lanceolata, acuta, puberula, pilis papillosis glandulosis et pilis longioribus eglandulosis intermixtis; corolla rosea, dense et retrorse hirtella, pilis rigidis, tubo subcylindrico, labiis subaequalibus, labio superiore erecto, oblongo-ovato, apice rotundato, labio inferiore valde recurvato, cuneato, trilobato, lobis ovatis, rotundatis; stamina vix exserta, filamentis sursum glabris, basi auriculatis, dense pilosis, pilis rectis, patulis, subalbidis, antheris glabris, lobis verticalibus superpositis, lobo inferiore caudato; ovarium glabrum.

Slender shrubs up to 2 meters high; stems subquadrangular, the angles rounded, minutely and antrorsely strigose, the hairs up to 0.2 mm. long, golden brown; leaf blades oblong-ovate, up to 26 cm. long and 11.5 cm. wide, short-acuminate, subobtuse at base, firm, undulate or shallowly and indistinctly crenate, both surfaces glabrous except the costa and lateral veins, these conspicuous especially beneath and sparingly strigose, the hairs up to 0.24 mm. long, the veinlets delicately reticulate beneath, the cystoliths numerous and conspicuous under a lens, up to 0.32 mm. long; petioles up to 4 cm. long and 2.75 mm. thick, minutely strigose with yellowish hairs; flowers borne in dense axillary and terminal spikes, these borne in pairs or in threes, up to 10 cm. long and 13 mm. thick, the bracts quadrifarious, the peduncles about 1 cm. long, these and the rachis subquadrangular, densely hirtellous with yellowish ascending straight rigid hairs up to 0.2 mm. long; bracts slightly obovate, 11 mm. long, 4.25 mm. wide slightly above the middle, acute, sessile, strongly parallel-nerved (4 to 6 pairs of lateral nerves), rather densely puberulous with erect straight glandular subpapillate hairs up to 0.03 mm. long and bearing

toward tip a few additional ascending eglandular hairs up to 0.24 mm. long, the inner surface essentially glabrous, the margins ciliate with hairs about 0.16 mm. long; bractlets similar but smaller (6.5 mm. long, 2 mm. wide); calyx 1 cm. long, the segments linear-lanceolate, 8.5 mm. long, 1.5 mm. wide, the pubescence similar to that of the bracts and bractlets; corolla rose color, 2.3 cm. long, densely and retrorsely

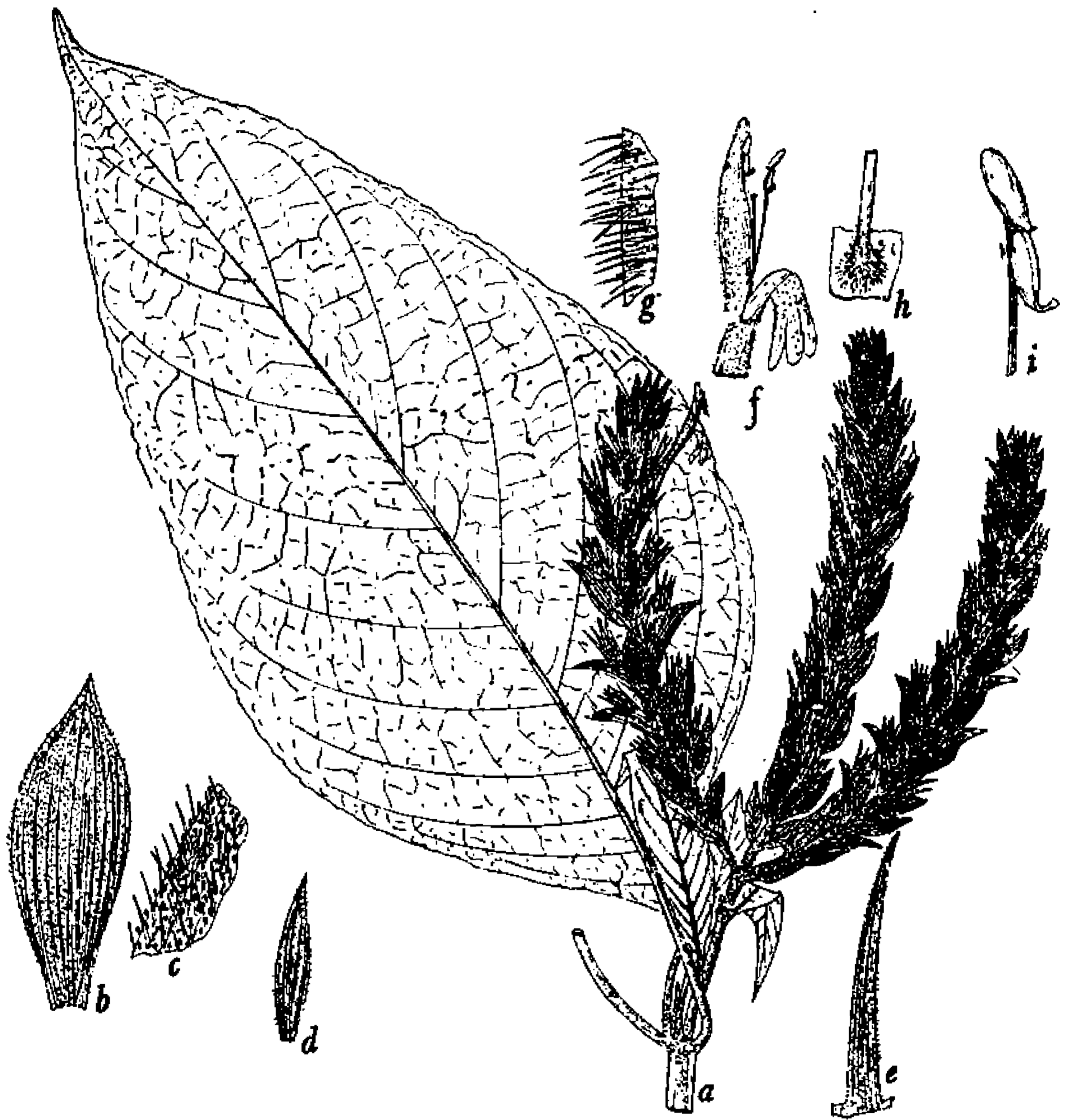


FIGURE 215.—*Justicia homoea* Leonard (*Haught* 4565): *a*, Tip of plant; *b*, bract; *c*, portion of bract to show nature of pubescence; *d*, bractlet; *e*, calyx segment; *f*, tip of corolla; *g*, portion of corolla tube enlarged to show nature of pubescence; *h*, base of stamen; *i*, anther. (*a*, Half natural size; *b*, *d*, *e*, 3 times natural size; *c*, *g*, 44 times natural size; *f*, twice natural size; *h*, 6 times natural size; *i*, 5 times natural size.)

hirtellous with rigid hairs up to 0.16 mm. long, the tube rather narrowly cylindrical, 2.5 mm. broad at base, narrowed at 5 mm. above base to 1.5 mm., thence enlarged to 2 mm. at the throat, the lips subequal, 8 mm. long, the upper lip erect, oblong-ovate, about 4 mm. wide near base, 1 mm. wide at tip, rounded, the lower lip strongly recurved, cuneate, about 6 mm. wide at base of the lobes, these 3, ovate, 3.5 mm.

long, the middle one 2 mm. wide, the lateral ones slightly narrower, all rounded; stamens reaching tip of the upper lip of the corolla, the filaments flat, glabrous except the auriculate base, the auricles densely pilose with straight spreading whitish hairs about 0.32 mm. long, the anthers 3.5 mm. long, 0.75 mm. broad, glabrous, the cells superposed and vertically attached to the connective, the cells about equal in length, the lower one caudate, the tail about 0.75 mm. long and 0.25 mm. wide, rounded at tip; style exerted about 5 mm. beyond the mouth of the corolla tube, glabrous toward tip, hirtellous toward base, the stigma minute, subcapitate; ovary glabrous except the hirsute tip, the hairs ascending, up to 0.32 mm. long, capsules not seen.

Type in the U. S. National Herbarium, No. 1995082, collected in wet forest southeast of Chigorodo, 40 km. south of Turbo, Department of Antioquia, Colombia, 50 meters altitude, April 15, 1945, by Oscar Haught (No. 4565).

Justicia homoea has the same habit and general appearance as *J. phlebophylla* Leonard (Haught, No. 4564); in fact, plants of the two species were growing in the same colony. Both are slender shrubs 2 meters high, with large, almost glabrous, veiny leaves bearing numerous conspicuous cystoliths. The spikes of the two species are, however, definitely dissimilar. Those of *J. homoea* have oblong, slightly obovate, strongly nerved bracts up to 11 mm. long and 4.25 mm. wide and the flowers are 4-ranked; in *J. phlebophylla* the flowers are secund and the bracts are ovate and 3 mm. long and 1.5 mm. wide. The corolla of the latter is purple, marked with light lines; that of *J. homoea* is rose color. The specific epithet is from the Greek word *ὁμοιος*, meaning similar, in allusion to its resemblance to *J. phlebophylla*.

40. *Justicia filibracteolata* Lindau

Justicia filibracteolata Lindau, Bull. Herb. Boiss. 5: 673. 1897. Type collected along the Río Guacaica near Manizales, Department of Antioquia, Colombia, 1,800 meters altitude, September 14, 1883, by F. C. Lehmann, No. 3094. Photograph of type (B) in the U. S. National Herbarium (Field Mus. No. 8826).

Dianthera secunda (Vahl) Griseb. var. *holtonii* Hochr. Bull. N. Y. Bot. Gard. 6: 287. 1910. Type collected at La Paila, Department of Cauca, Colombia, June 6, 1853, by I. F. Holton, s. n. Holotype NY, isotype K.

Herbs rarely over 1 meter high, erect or ascending, simple or moderately branched; stems obscurely quadrangular, shallowly sulcate, at least above, glabrous or sparingly puberulous, the hairs curved and subappressed, about 0.25 mm. long, disposed more or less in 2 rows, the internodes of the stems up to 12 cm. long but usually 6 cm. or less; leaf blades lanceolate, up to 20 cm. long and 6 cm. wide but averaging 15 cm. in length and 3 cm. in width, acuminate, often slenderly so (the tip itself acute or obtuse), narrowed at base, rather thin, entire or undulate, the upper surface glabrous or sparingly to

moderately hirsute, the hairs up to 0.75 mm. long, more or less curved, the lower surface glabrous or very sparingly hirtellous or occasionally rather densely so, the hairs curved, up to 0.38 mm. long, the costa and lateral veins (9 or 10 pairs) prominent, the cystoliths of both surfaces small but rather prominent under a lens, up to 0.2 mm. long; petioles 1 to 1.5 cm. long or occasionally up to 4 cm. long, the channels more or less densely puberulous with curved hairs; flowers borne in dense panicles usually up to 10 cm. long and 3 cm. broad, the flowers and bracts more or less secund, the rachises and peduncles rather densely puberulous, the hairs retrorsely curved, about 0.1 mm. long, the peduncles 2 to 6 cm. long, the lower branches of the panicle often borne in the axils of the uppermost leaf blades; bracts subulate, usually up to 12 mm. long, 0.5 mm. wide at base, keeled, glabrous or sparingly hirtellous, the hairs up to 0.2 mm. long, brownish; bractlets subulate, up to 3 mm. long and 0.25 mm. wide, glabrous or sparingly hirtellous; calyx 1 cm. long, deeply segmented, the segments lanceolate, 9 mm. long, 1.5 mm. wide slightly above middle, rather densely hirtellous, the hairs straight, brownish, up to 0.3 mm. long, the costa, veins and reticulated veinlets prominent; corolla 2 to 4 cm. long, pink, purple, violet or lilac, glabrous below, finely pilose toward tip, the hairs spreading, up to 0.4 mm. long, the nerves conspicuous, the tube 1 cm. long, 2.5 mm. broad at base, gradually enlarged to 4 mm. at mouth, the upper lip oblong-elliptic, more or less erect, 12 mm. long, 4 mm. wide at middle, plicate, dorsally pilose, minutely glandular-puberulous on the upper surface, rounded and emarginate at tip, the lower lip ovate, spreading, 13 mm. long, 9 mm. wide, transversely fluted, saccate, 3-lobed, the lobes ovate, rounded, 3 mm. long, 2.5 mm. wide; stamens exserted 8 mm. beyond the mouth of the corolla, the filaments glabrous or bearing a few hairs near the base, the staminal plaits densely and retrorsely pilose, the anther lobes slightly superposed, the connective 0.75 mm. broad, the upper lobe 1.5 mm. long, 0.75 mm. broad, white-puberulous on margin, muticous and subapiculate at base, the lower cell 1 mm. long and 0.5 mm. broad, white-puberulous on margin, tipped by a white tail about 0.2 mm. long; style 17 mm. long, glabrous, the stigma minutely bilobed; capsule short-clavate, 8 mm. long, 3 mm. broad, 2.5 mm. thick (the solid basal portion 3.5 mm. long), rather sparingly and finely puberulous, the hairs white, up to 0.15 mm. long, retrorsely ascending except at tip of capsule, there spreading; retinacula 2 mm. long, curved, the tip thin, obtuse, subcucullate, minutely lacerate; seeds 4, ovate, flattened, 2.5 mm. long, 2 mm. broad, about 0.5 mm. thick, glabrous, the margin recurved over a concave surface and bordered by a row of flattish hairs up to 0.2 mm. long, these merging to form a thin lamina toward base of seed.

The species is partial to forests and thickets, often growing along streams. It occurs at various altitudes (50 to 2,000 meters) but seems to be most common between 1,000 and 2,000 meters.

ANTIOQUIA: Cocorná, *Bro. Daniel* 1790 (US). Fredonia, *Archer* 638 (US); Toro 842 (NY). Jericó, *Bro. Daniel & Bro. Tomás* 3366 (US). Medellín, *Archer* 871 (US). Turbo, *Haught* 4772 (US); 4773 (US). Santo Domingo, *Scolnik, Araque & Barkley* 19 An. 439 (US).

CALDAS: La Sombra, east of Apía, *Pennell* 10273 (GH, NY). Río Quindío, above Armenia, *Pennell, Killip & Hazen* 8697 (GH, Ph, NY, US).

CAUCA: Timbiquí, *Lehmann B. T.* 435 (K, NY).

CHOCÓ: Cupica, *Fernández* 350 (US). Quebrada Guarapo, near Andagoya, *Killip* 35198 (US).

CUNDINAMARCA: Choachí, January 18, 1854, *Holton* s.n., (NY). La Esperanza *García-Barriga* 3067 (US). Paime, *Ariste-Joseph* 1082 (US). Guaduas, *Uribe-Urbe* 2336 (US).

EL VALLE: Valley of Albán, between Quebradita del Retiro and Río Albán, *Cuatrecasas* 22620 (US). Cuchilla, east of Zarzal, *Pennell, Killip & Hazen* 8505 (GH, NY, US).

META: Macoya Guafa, Río Meta, *Cuatrecasas* 4139 (Col).

NORTE DE SANTANDER: Vicinity of Chinácota, *Killip & Smith* 20807 (US). Villamarina, between Pamplona and Cúcuta, *Garganta-Fábrega* 782 (US).

SANTANDER: Vicinity of California, *Killip & Smith* 17031 (US). Vicinity of Charta, *Killip & Smith* 19040 (GH, US).

TOLIMA: Buenavista, *Triana* s.n. (Col, NY). Líbano, *Pennell* 3390 (GH, NY, US).

WITHOUT LOCALITY: *Mutis* 1512 (US).

KEY TO THE VARIETIES

Stems glabrous, puberulous or sparingly hirtellous.

Leaf blades lanceolate, acuminate (usually slenderly so) narrowed at base; corollas pink, red, purple or red-violet..... var. *filibracteolata*

Leaf blades ovate to oblong-ovate, obtuse, acute or short-acuminate at tip, rounded or abruptly narrowed at base; corollas blue..... var. *azurea*

Stems rather densely pilose or hirsute, the hairs more or less disposed in two lines.

Inflorescence conspicuously gray-pilosulous..... var. *pubescens*

Inflorescence not gray-pilosulous, the hairs brownish.

Corollas white..... var. *leucantha*

Corollas orange-yellow..... var. *aurantiaca*

Corollas lilac..... var. *lilacina*

40a. *Justicia filibracteolata* Lindau var. *azurea* Leonard, var. nov.

Herba, caulibus subquadrangularibus, puberulis, pilis retrorse curvatis; lamina foliorum ovata vel oblongo-ovata, obtusa, vel acuta vel breviter acuminata (apice ipso acuto), basi rotundata vel acuta, in petiolum decurrens, utrinque glabra vel costa et venis parce puberulis; bracteae et bracteolae et calycis segmenta minute hirtella et ciliolata; corolla azurea.

Herbs about 1.8 meters high, stems subquadrangular, puberulous, the hairs retrorsely curved; leaf blades ovate to oblong-ovate, obtuse, acute, or short-acuminate (the tip itself acute), rounded or narrowed

at base and decurrent on the petiole; petioles up to 2 cm. long, puberulous with recurved hairs; rachises, bracts, bractlets and calyx segments minutely hirtellous and ciliolate; corolla blue.

Type in the U. S. National Herbarium, No. 1772289, collected in thicket along the Río Dagua, near Cisneros, Department of El Valle, Colombia, 300 to 500 meters altitude, May 5, 1939, by E. P. Killip (No. 35589).

40b. *Justicia filibracteolata* Lindau var. *pubescens* Lindau

Justicia filibracteolata Lindau var. *pubescens* Lindau, Bull. Herb. Boiss. 5: 674. 1897. Type collected in the vicinity of Ocaña, Department of Norte de Santander, Colombia, 3,500 meters altitude, by L. Schlim, No. 196.

Suffrutescent subscandent herbs up to 1 meter high or more; stems and leaf blades moderately to rather densely hirsute, the hairs up to 0.6 mm. long, more or less curved, spreading or ascending; bracts, bractlets, and calyx densely gray-pilosulous, the hairs more or less spreading, white, up to 0.5 mm. long; calyx segments often purple; corolla pinkish red to bright red.

Justicia filibracteolata var. *pubescens* is a forest plant usually found between 1,600 and 2,200 meters altitude.

CUNDINAMARCA: La Palma, road to Pacho along the Río Murca, *García-Barriga* 12417 (US). El Peñón, Hacienda Curiche, *García-Barriga* 12467 (US).

NORTE DE SANTANDER: Woods in the vicinity of Toledo, *Killip & Smith* 20080 (GH, NY, US).

SANTANDER: Vicinity of California, *Killip & Smith* 17042 (GH, NY, US). Vicinity of Suratá, *Killip & Smith* 16491 (GH, NY, US), 16816 (GH, NY, US). San Juan Valley, vicinity of Puerto Berrio, *Haught* 1862 (US).

40c. *Justicia filibracteolata* Lindau var. *leucantha* Leonard, var. nov.

Herba, caulibus subquadrangularibus, dense bifariam pilosis, pilis retrorse curvatis; lamina foliorum magna, oblongo-elliptica; corolla alba.

Suffrutescent herbs up to 1 meter high or more; stems subquadrangular, pilose, the hairs retrorsely curved, disposed in two lines, brownish, up to 1 mm. long; leaf blades oblong-elliptic, up to 20 cm. long and 9 cm. wide, short-acuminate (the tip itself acute), narrowed at base and decurrent on the petiole, the upper surface glabrous to sparingly pilose, the lower surface more densely so, the hairs of both surfaces brownish, up to 1.5 mm. long, subappressed to ascending, more numerous on costa and veins of the lower leaf-surface than elsewhere; corolla white; capsules densely puberulous, in other respects similar to the typical variety.

Type in the U. S. National Herbarium, No. 1853617, collected at 500 meters altitude at Villavicencio, Intendencia of Meta, Colombia, by J. Cuatrecasas (No. 4513). Isotype in the U. S. National Herbarium, No. 2056178.

The following also represent the variety:

CUNDINAMARCA: Moist forest between Pipiral and Susumuco, southeast of Quetame, *Pennell* 1714 (GH, NY).

META: Dense humid forests on the bank of Río Guapaya, Sierra de la Macarena, *Philipson, Idrobo & Fernández* 1580 (BM, US). Rich soil of damp rocky woods along the Río Guatiquía, vicinity of Villavicencio, *Araque & Barkley* 18M.015 (US); 18M.026 (US); 18M.027 (US). Ocoa, near Villavicencio, *Schiefer* 828 (GH). Villavicencio, *Killip* 34355 (US); *Sprague* 139 (K). Along the Río Guamal between Acacías and San Martín, 430 meters altitude, *Uribe-Uribe* 1320 (US).

The heavy brownish bifarious pilosity of the stems, the large oblong-elliptic short-acuminate leaf blades, and the white corollas are characters of *Justicia filibracteolata* var. *leucantha* which readily separate it from the typical variety. Pennell's No. 1714 was collected between 1,100 and 1,300 meters, the other specimens cited were from between 350 and 500 meters. The specific epithet *leucantha* is from the greek λευκός, white, and άνθος, flower.

40d. *Justicia filibracteolata* Lindau var. *aurantiaca* Leonard, var. nov.

Suffrutex, caulibus subquadrangularibus, pilosis, pilis brunneis, plus minusve bifariam dispositis; lamina foliorum plus minusve dense pilosis; corolla aurantiaca.

Suffrutescent; stems subquadrangular, these and the rachises rather densely pilose, the hairs brownish, up to 2 mm. long, more or less disposed in two rows; leaf blades oblong-lanceolate, up to 17 cm. long and 6 cm. wide, acute or short-acuminate, narrowed at base and decurrent on the petiole, both surfaces pilose, the younger leaves densely so, the hairs brownish, up to 1.5 mm. long, subappressed to spreading; petioles about 1 cm. long, pilose at least above; bracts and calyx segments conspicuously ciliate, the hairs up to 0.75 mm. long, mostly spreading, brownish; corollas orange-yellow.

Type in the U. S. National Herbarium, No. 1773531, collected at Villavicencio, Intendencia of Meta, Colombia, 500 meters altitude, November 11, 1938, by J. Cuatrecasas (No. 4701).

Justicia filibracteolata var. *aurantiaca* seems to be more closely related to the variety *pubescens* than to the typical variety.

40e. *Justicia filibracteolata* Lindau var. *lilacina* Leonard, var. nov.

Herba vel suffrutex, caulibus plus minusve bifariam pilosa, pilis brunneis, lamina foliorum saepe magna, oblongo-elliptica, acuta vel breviter acuminata; corolla lilacina.

Herbs becoming suffrutescent; stems subquadrangular, pilose, the hairs brownish, curved, up to 1 mm. long, more or less disposed in two rows; leaf blades oblong-elliptic, up to 20 cm. long and 8.5 cm. wide, acute or short-acuminate, narrowed at base and decurrent on the petiole; corollas lilac.

Type in the U. S. National Herbarium, No. 1799251, collected in woods between Sucre and La Portada, Comisaría del Caquetá, Colombia, 1,200 to 1,350 meters altitude, April 5, 1940, by J. Cuatrecasas (No. 9147).

META: Stones on river bank, Río Guapaya, Sierra de la Macarena, 450 meters altitude, November 29, 1949, Philipson, Idrobo & Fernández 1627 (BM, US); 1634 (BH).

PUTAMAYO: Umbría, Klug 1768 (GH, S, US).

41. *Justicia porphyrocoma* Leonard, sp. nov.

FIGURE 216

Herba vel suffrutex, ascendens, in nodis radicans, caulibus subquadrangularibus, deorsum glabris, sursum retrorse pilosis, pilis septatis; lamina foliorum oblongo-elliptica, acuta vel acuminata, basi angustata, supra dense pilosa, pilis purpureis, curvatis, ascendentibus, conspicue septatis, subtus plus minusve glabra, costa et venis hirtellis, pilis parvis, patentibus, cystolithis obscuris; petioli graciles, plus minusve pilosi; spicae terminales, pedunculo aliquanto longo, quadrangulati, bifariam hirsuto, pilis ascendentibus, rhache glabra vel parce hirtella; bracteae lanceolatae, acutae, glabrae, cystolithis minutis, parallelis, conspicuis; bracteolae lanceolatae, glabrae vel apice hirtellae; calycis segmenta anguste lanceolata, acuminata, glabra, marginibus minute ciliolatis exceptis, pilis ascendentibus, cystolithis plus minusve conspicuis; corolla ignota; capsulae clavatae, glabrae; retinacula angusta, curvata, apice acuta; semina plana, subbrunnea, muricata.

Herbs or suffrutescent plants up to 60 cm. high or more, ascending, rooting at the nodes; stems subquadrangular, about 4 mm. in diameter near base, the lower parts glabrous, the upper parts retrorsely pilose, the hairs up to 0.6 mm. long, conspicuously septate; leaf blades oblong-elliptic, up to 10 cm. long and 2.5 cm. wide, acute to acuminate, narrowed at base, the upper surface rather densely pilose, the hairs purplish, curved, ascending, up to 0.75 mm. long, conspicuously septate; the lower surface more or less glabrous except the costa and veins (about 8 pairs), these hirtellous, the hairs ascending, about 0.28 mm. long, the cystoliths obscure; petioles up to 1.5 cm. long, rather slender, more or less pilose; flowers borne in terminal spikes up to 6 cm. long and 15 mm. broad; peduncles 2 to 3 cm. long, quadrangular, bifariously hirsute, the hairs ascending, the rachis glabrous or sparingly hirtellous; bracts lanceolate, about 5 mm. long and 2 mm. wide, acute, glabrous, the cystoliths minute, parallel, conspicuous; bractlets lanceolate, about 6.5 mm. long and 1.5 mm. wide, acute, glabrous or hirtellous near tip; calyx 22 mm. long, glabrous, deeply segmented, the segments narrowly lanceolate, 1.5 mm. wide, acuminate, minutely ciliolate, the hairs ascending, the cystoliths more or

less conspicuous; corollas not seen; capsules clavate, 18 mm. long, 4 mm. broad, 3 mm. thick, glabrous, the retinacula 2 mm. long, curved, narrow, acute at tip; seed (immature) ovoid, flattened, about 2 mm. long and 1.5 mm. wide, brownish, muricate.

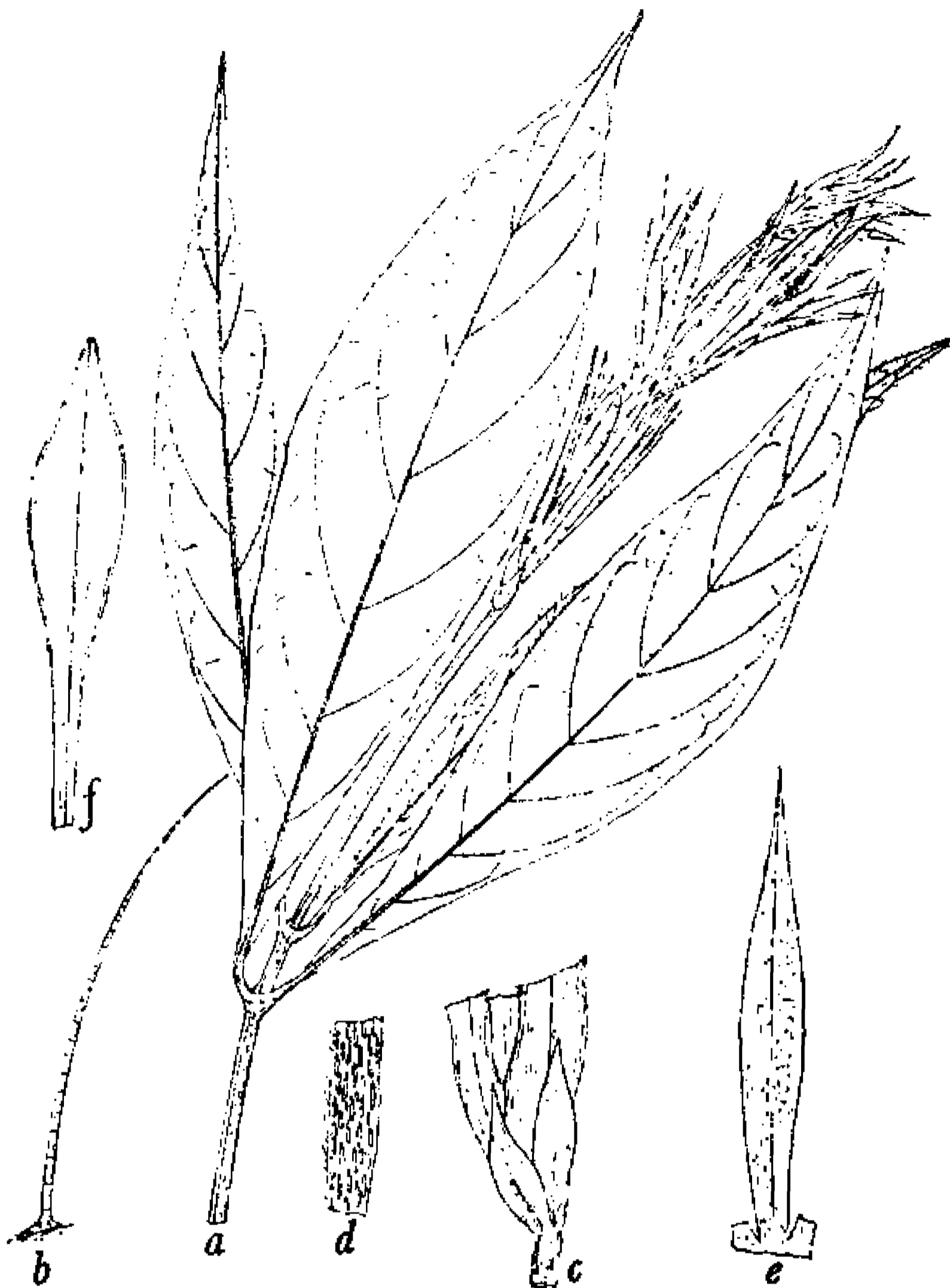


FIGURE 216.—*Justicia porphyrocoma* Leonard, sp. nov. (*Ariste-Joseph* "B"): *a*, Tip of plant to show leaves and inflorescence; *b*, a hair from the upper surface of a leaf blade; *c*, node of inflorescence to show a bract and bractlet; *d*, a small portion of a bract to show cystoliths and ciliolated margin; *e*, a calyx segment; *f*, valve of a capsule, dorsal view. (*a*, Natural size; *b*, 25 times natural size; *c*, $2\frac{1}{2}$ times natural size; *d*, about 9 times natural size; *e*, $1\frac{1}{3}$ times natural size; *f*, twice natural size.)

Type in the U. S. National Herbarium, No. 1122813, collected at Paimé, Department of Cundinamarca, Colombia, 1922, by Bro. Ariste-Joseph (No. "B").

The specific epithet is from the Greek *πορφύρεος*, purple, and *κόμη*, hairs, in allusion to the pubescence of the upper surface of the leaf blades.

42. *Justicia periplocifolia* Jacq.

Justicia periplocifolia Jacq. Collect, Suppl. 5, pl. 7, fig. 2. 1796. Type collected at Caracas, Venezuela, by Jacquin. Photograph of type in the Vienna Herbarium in the U. S. National Herbarium (Field Mus. No. 32730).

Justicia reflexiflora Vahl, Enum. 1: 157. 1804. Type collected on gravelly mountain, St. Thomas, West Indies, by Richard.

Adhatoda periplocifolia Nees in DC. Prodr. 11: 395. 1847. Based on *Justicia periplocifolia* Jacq.

Adhatoda reflexiflora Nees in DC. Prodr. 11: 398. 1847. Based on *Justicia reflexiflora* Vahl.

Suffrutescent plants, sometimes weakly clambering over small bushes; stems terete or the upper portions obscurely quadrangular, glabrous or the nodes bearing a few minute curved subappressed hairs; leaf blades usually narrowly lanceolate, but sometimes oblong-ovate, up to 16 cm. long and 2.5 cm. wide, acuminate, often slenderly so, narrowed, obtuse or rounded at base, moderately firm, entire or undulate, both surfaces glabrous or the costa and lateral veins (5 or 6 pairs) sparingly puberulous, the hairs subappressed, up to 0.15 mm. long, the venation obscure, the cystoliths minute and inconspicuous; petioles up to 1 cm. long, minutely puberulous; flowers sessile, axillary or the uppermost forming dense to lax spikes, these sometimes up to 6 cm. long and 2.5 cm. broad; bracts and bractlets subequal, linear-lanceolate, 15 mm. long, the bracts 1.5 mm. wide, the bractlets 1 mm. wide, both bracts and bractlets slenderly acuminate, sparingly hirtellous, the hairs ca. 0.2 mm. long, usually some of them glandular; calyx 12 mm. long, deeply segmented, sparingly hirtellous, the segments lanceolate, 1.5 mm. wide, slenderly acuminate, white-margined; corolla up to 4.5 cm. long, rose-red, sparingly pubescent, the hairs up to 0.2 mm. long, some of them glandular, the corolla tube up to 2.5 cm. long, 3 mm. broad at base, narrowed at 4 mm. above base to 2 mm., thence gradually enlarged to 5.5 mm. at mouth, the upper lip conical-ovate, 2 cm. long, erect, 8 mm. wide at base, 1.5 mm. wide at tip, rounded or shallowly emarginate, the lower lip spreading, oblong, 10 mm. wide, trilobate at tip, the lobes ovate, 7 mm. long, 4 mm. wide at base, rounded; stamens exserted 15 mm. beyond mouth of the corolla, the filaments flat, glabrous, the anther lobes superposed, the connective 0.5 mm. wide, the upper lobe 2.5 mm. long, 1 mm. wide, the lower 3.5 mm. long and 1 mm. wide, the base tipped by a white blunt sigmoid tail 1 mm. long and 0.5 mm. wide; style reaching tip of stamens, glabrous or bearing a few minute hairs toward base; capsules clavate, 15 mm. long, 6 mm. broad, 5 mm. thick (the solid basal portion flat, 7 mm. long, 4 mm. wide), obtuse, finely puberulous; retinacula 2.5 mm. long, the tip flat and bidentate; seed subspherical, 3 mm. in diameter, 2 mm. thick, minutely gray tomentose, the coating deciduous leaving the seed reddish brown to black, smooth and nitid.

Occasional in northern South America but more general in México and the West Indies. Thickets, slopes, and banks, limited more or less to coastal regions.

ARAUCA: Río Casanare, Barranco de Atahuarpa, altitude 120 meters, *Cuatrecasas* 4269.

43. *Justicia sciota* Leonard, sp. nov.

FIGURE 217

Herba, caulibus subquadrangularibus, glabris; lamina foliorum oblongo-elliptica, breviter acuminata (apice ipso obtuso), basi angustata, firma, integra, utrinque glabra vel costa et venis prominentibus, puberulis, cystolithis prominentibus; petioli glabri; spicae axillares, solitariae vel binae, graciles, pedunculis et rhachibus minute et parce strigosis; bracteae subulatae, subcarinatae, parce strigosae; bracteolae anguste triangulares, acutae, parvae; calycis segmenta parva, triangularia, acuta, ciliata; corolla alba, puberula, tubo aliquanto angusto, labiis subaequalibus, labio superiore triangulo-ovato, apice rotundato et emarginato, labio inferiore oblongo, trilobato, lobiis oblongo-ovatis, apice rotundatis; stamina vix exserta, filamentis glabris, lobis antherarum superpositis, rectis, glabris, lobo inferiore subacuto; ovarium glabrum.

Herbs up to 130 cm. high; stems subquadrangular, glabrous; leaf blades oblong-elliptic, up to 20 cm. long, 7 cm. wide, short-acuminate (the tip itself blunt), narrowed at base, firm, entire, both surfaces glabrous or the costa and lateral veins (7 or 8 pairs) sparingly puberulous, the hairs curved, about 0.2 mm. long, the venation rather prominent, more so beneath than above, the cystoliths prominent beneath, up to 0.2 mm. long, obscure above; petioles up to 15 cm. long, glabrous; spikes solitary or in pairs, up to 4 cm. long and 8 mm. broad, rather dense, the peduncles (up to 3 cm. long) and rachises minutely and sparingly strigose, the hairs up to 0.1 mm. long; bracts subulate, subcarinate, 5 mm. long, 0.5 mm. wide near base, sparingly strigose, the hairs about 0.1 mm. long; bractlets narrowly triangular, 1.5 mm. long, 0.5 mm. wide at base, sharply acute, ciliate; calyx 3 mm. long, the segments nearly triangular, 0.75 mm. wide at base, sharply acute, ciliate, bearing several small trichomes at tip; corolla white, puberulous, up to 38 mm. long, the tube 2.5 mm. broad at base, narrowed to 1.5 mm. at 3 mm. above base, thence gradually enlarged to 5 mm. at mouth, the lips up to 11 mm. long, the upper lip triangular ovate, 5 mm. wide at base, emarginate and rounded at tip, the lower lip oblong, 5 mm. wide at base, 3-lobed at tip, the lobes oblong-ovate, about 8 mm. long, the middle lobe 4 mm. wide, the lateral slightly narrower, all rounded; stamens exserted about 10 mm. beyond mouth of corolla, the filaments glabrous the anthers superposed, almost vertically attached, the connective 1.5 mm. long between points of

attachment and 0.5 mm. wide, the lobes 2.25 mm. long, 0.5 mm. broad, glabrous, the lower lobe subacute at base; ovary glabrous; capsule not seen.

Type in the Herbarium of the Missouri Botanical Garden, No. 1014436, collected in forest at Poponte, in the Magdalena Valley,



FIGURE 217.—*Justicia sciota* Leonard (Cyril Allen 844): *a*, Tip of plant showing inflorescence and leaf blade; *b*, bract, bractlet and calyx; *c*, bractlet enlarged to show pubescence; *d*, calyx segment; *e*, corolla; *f*, anther. (*a*, Half natural size; *b*, $3\frac{1}{2}$ times natural size; *c*, *d*, 6 times natural size; *e*, natural size; *f*, 4 times natural size.)

Department of Magdalena, Colombia, December 12, 1924, by Cyril Allen (No. 844). Isotype: K.

The specimens examined had dried to a dark olive-black color. The corollas of the Kew specimens were much smaller (about 24 mm. long) than those of the Missouri sheet. The specific epithet is from the Greek *σκιωτός*, meaning shaded.

44. *Justicia phlebophylla* Leonard, sp. nov.

FIGURE 218

Frutex gracilis, caulibus quadrangularibus, sursum minute antrorse strigosis, pilis subflavis, deorsum glabris; lamina foliorum oblongo-ovata vel elliptica, apice acuta vel breviter acuminata, basi acuta vel obtusa vel rotundata, firma et aliquanto chartacea, glabra vel subtus in costa minute strigosa, cystolithis pluribus et conspicuis; petioli crassi, glabri vel parce et minute strigosi; spicae solitariae vel plures, terminales, floribus secundis dense praeditae, pedunculis minute strigosis vel subglabris, rhache dense puberula, pilis brunneis; bractee arcte appressae, ovatae, acutae, valde 5-7-nervatae, puberulae; bractee flores subtendentes triangulares, acutae, striato-nervatae, minute hirsutae et ciliolatae; bracteolae triangulares, acutae, ciliatae; calycis segmenta lineari-lanceolata, acuta vel subacuta, obscure striata, graciliter et parce pubescentia et ciliata; corolla aliquanto parva, purpurea, in fauce albo-lineata, tubo subcylindrico, labio superiore erecto, triangulo-ovato, apice acuto, labio inferiore patulo, 3-lobato, lobis rotundatis; stamina exserta, filamentis in margine pilis minutis glandulosis praeditis, lobis antherarum superpositis, rectis, lobo inferiore breviter albo-calcarato; ovarium apice pubescens.

Slender shrub; stems quadrangular, glabrous below, the upper portions minutely and upwardly strigose, the hairs yellowish, up to 0.11 mm. long; leaf blades oblong-ovate to elliptic, up to 20 cm. long and 10.5 cm. wide, acute or short-acuminate, acute, obtuse or rounded at base, firm and somewhat chartaceous, both surfaces glabrous or the costa beneath minutely and inconspicuously strigose, the cystoliths numerous and conspicuous; petioles up to 5.5 cm. long and 2.25 mm. thick, glabrous or sparingly and minutely strigose; spikes one to several, terminal, up to 8 cm. long and 1 cm. broad, densely flowered, the peduncles up to 4 cm. long, minutely strigose to subglabrous, the rachis densely brown-puberulous with hairs up to 0.2 mm. or occasionally longer, the flowers secund; sterile bracts opposite the flowers closely appressed to the rachis, ovate, 3 mm. long, 1.5 mm. wide near base, acute, strongly 5- to 7-nerved, puberulous like the rachis; bracts subtending the flowers triangular, 3 mm. long, 1.5 mm. wide at base, acute, striate nerved, minutely hirsute and ciliolate; bractlets triangular, 1.75 mm. long, 0.5 mm. wide at base, acute, ciliate, the basal hairs up to 0.5 mm. long, otherwise glabrous or nearly so, the cystoliths minute but conspicuous on both bracts and bractlets; calyx 1 cm. long, the segments subulate, 6-8 mm. long, 0.5-1 mm. wide, acuminate, striate, finely and sparingly pubescent and ciliate, the hairs up to 0.25 mm. long; corolla 3 cm. long, rather densely pubescent with hairs variously curved and about 0.16 mm. long, purple with light lines on the medial inner surface of lips and throat, the corolla tube 2 mm.

broad at base, narrowed to 1.5 mm. at 4 mm. above base, thence gradually enlarged to 5 mm. at mouth, the upper lip erect, triangular, about 5 mm. wide at base, gradually narrowed to a slender tip, the lower lip spreading, oblong with narrowed base, 6.5 mm. wide, trun-

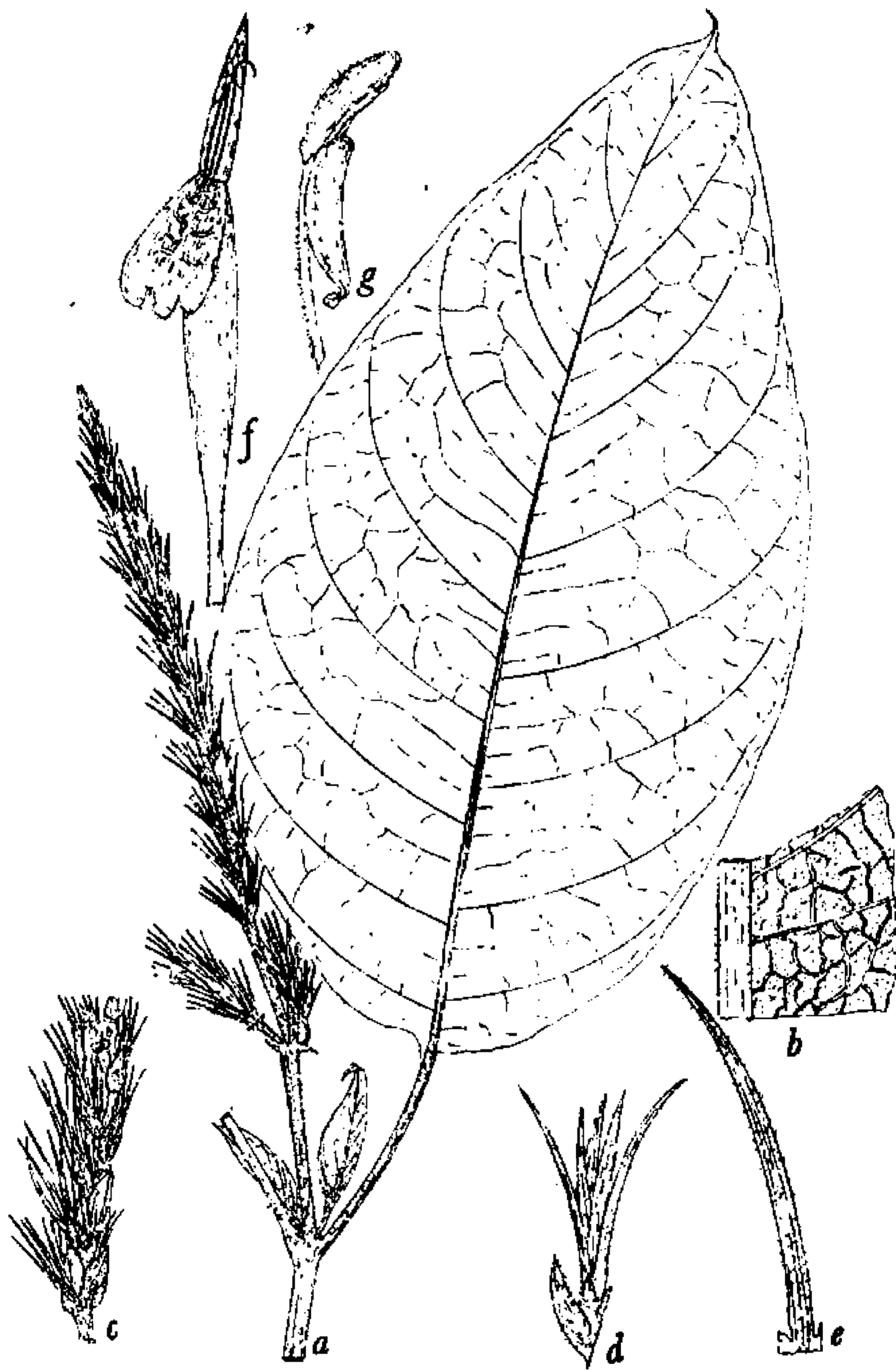


FIGURE 218.—*Justicia phlebophylla* Leonard (*a, b, d-g, Haught 4564; c, Hodge 6978*): *a*, Tip of plant showing leaf and inflorescence; *b*, portion of leaf blade bordering costa (under surface) enlarged to show veinlets and cystoliths; *c*, portion of spike, ventral view; *d*, bract, a bractlet and calyx; *e*, a calyx segment; *f*, corolla; *g*, anther. (*a*, Half natural size; *b*, about 4 times natural size; *c*, natural size; *d*, $2\frac{1}{2}$ times natural size; *e*, 4 times natural size; *f*, twice natural size; *g*, 8 times natural size.)

cate at tip and 3-lobed, the lobes rounded, 1 mm. long, the middle one 2.5 mm. wide, the lateral ones 2 mm. wide; stamens almost reaching the tip of the upper lip of the corolla, the filaments bearing a row of minute glandular hairs, the anthers 3 mm. long and 0.75 mm. thick,

the lobes superposed, 1.5 mm. long, vertically attached to the connective, the lower lobe terminating in a blunt white spur 0.5 mm. long; ovary pubescent at tip; capsules not seen.

Type in the U. S. National Herbarium, No. 1995081, collected along a stream in wet forest southeast of Chigorodo, 40 km. south of Turbo, Department of Antioquia, Colombia, 50 meters altitude, April 15, 1945, by Oscar Haught (No. 4564).

ANTIOQUIA: Dense damp forests between Río Guapá and Río León, 100 meters altitude, March 18, 1948, *Eduardo Ruiz Landa, Rafael Rivera, & Fred A. Barkley* 18C.430 (US). Trail through rain forests near Villa Arteaga, 150 meters altitude, December 6, 1948, *F. López & M. J. Sanchez* 41 (US); August 4 to 8, 1947, *W. H. Hodge* 6978 (US).

The dense spikes, with small triangular bracts, the slender calyx segments, and the relatively large, papery, conspicuously veiny leaf blades covered with cystoliths are the distinguishing characteristics of *J. phlebophylla*. The specific epithet is from the Greek $\phi\lambda\epsilon\psi$, vein, and $\phi\acute{\upsilon}\lambda\lambda\omicron\nu$, leaf.

45. *Justicia malacophylla* Leonard, sp. nov.

FIGURE 219

Frutex, caulibus subquadrangularibus, sursum dense hirtellis vel plus minusve tomentosus, pilis appressis vel ascendentibus vel patulis, deorsum teretibus, glabratis, cortice cinereo, nodis tumidis; lamina foliorum lanceolato-ovata, breviter acuminata (apice ipso obtuso), basi angustata, firma, integra vel undulata, supra hirsuta, pilis ascendentibus vel subappressis, costa et venis lateralibus dense hirsutis, pilis patulis, subbrunneis, subtus dense et molliter hirsuta, pilis rectis vel leviter curvatis, patulis, subbrunneis, costa et venis prominentibus, cystolithis utrinque subter pilis obscuris; petioli dense hirsuti; paniculae terminales, foliosae, ramis spicatis, erectis vel suberectis; pedunculi et rhaches dense et molliter hirsuti, pilis subbrunneis ascendentibus; bracteae lanceolatae, apice subobtusae, dense et molliter hirsutae; bracteolae bracteas similes sed angustiores; calycis segmenta 5, lanceolata, acuminata, aliquanto dense hirtella, saepe erecta; corolla aliquanto magna, rubra, minute pubescens, pilis rectis, patulis, tubo anguste infundibuliformi, labiis subaequalibus, labio superiore oblongo-ovato, apice bilobato, lobis rotundatis, marginibus subhyalinis et glabris, labio inferiore suberecto, 3-lobato, lobis oblongis, apice rotundatis; stamina exserta, filamentis glabris, lobis antherarum superpositis, recte ad connectivo annexis, lobo inferiore breviter caudato; capsulae clavatae, subobtusae, glabrae, retinaculis curvatis, oblongis, apice rotundatis; semina (immatura) brunnea, plana, muricata, glabra.

Shrubs; stems hirtellous or more or less tomentose, densely so near the tips, the hairs appressed, ascending or spreading, 0.3 to 0.5 mm.

long, the main stems terete, glabrate, up to 6.5 mm. in diameter or more, the bark gray, the nodes swollen; leaf blades lance-ovate, up to 10.5 cm. long and 4 cm. wide, short-acuminate (the tip itself obtuse),



FIGURE 219.—*Justicia malacophylla* Leonard (*Cuatrecasas* 20941): *a*, Tip of plant to show leaves and inflorescence; *b*, node and basal portion of branch from lower part of stem; *c*, portion of under side of leaf blade enlarged to show pubescence; *d*, node of inflorescence to show calyx and scars left by fallen bracts and bractlets (one bractlet remaining); *e*, node of inflorescence from near the tip to show bract and bractlets; *f*, corolla; *g*, anther. (*a*, Natural size; *b*, about half natural size; *c-e*, twice natural size; *f*, $1\frac{1}{2}$ times natural size; *g*, about 6 times natural size.)

narrowed and acute at base, firm, entire or undulate, the upper surface hirsute, the hairs ascending to subappressed, up to 0.5 mm. long, the costa densely hirsute with brownish spreading hairs, it and the

lateral veins obscure, the lower surface densely and softly hirsute, the hairs straight or slightly curved, 0.5 mm. long, light brownish, erect, the costa and lateral veins prominent, the cystoliths of both surfaces obscured by the pubescence; petioles 5 to 15 mm. long, densely hirsute; flowers borne in leafy panicles of erect or suberect spikes up to 11 cm. long and 8 mm. broad (excluding corollas), the panicles up to 17 cm. long and 6 cm. broad, the peduncles up to 2.5 cm. long, the lowermost internodes of the rachis 5 mm. long, the others successively shorter toward tip of spikes, both peduncle and rachis densely and softly hirsute with light brownish ascending hairs; bracts lanceolate, 8 mm. long, 2.25 mm. wide, obtusish at tip, densely and softly hirsute; bractlets 1.25 mm. wide, in other respects similar to the bracts; calyx 6.5 mm. long, deeply divided into 5 segments, these lanceolate, 1.75 mm. wide near base, acuminate, rather densely hirtellous, erect or appressed to the ovary; corolla up to 4.7 cm. long, red, minutely pubescent with straight spreading hairs up to 0.2 mm. long, the tube 2.5 mm. broad at base, narrowed at 4 mm. above base to 1.5 mm. thence gradually enlarged to 7 mm. at throat, the lips subequal, 22 mm. long, the upper lip erect, oblong-ovate, 8 mm. wide at base, bilobed at apex, the lobes rounded, 0.5 mm. long, 0.75 mm. wide, the margins subhyaline and glabrous, the lower lip suberect, 3-lobed, the lobes oblong, 1 cm. long, 2.5 mm. wide, rounded at tip; stamens exerted 15 mm. beyond the mouth of the corolla tube, the filaments glabrous, the anthers 5 mm. long, the lobes superposed, 2.75 mm. long, 0.75 mm. broad, vertically attached to the connective, the basal end of the lower lobe terminating in a blunt whitish tail; capsules clavate, 17 mm. long, 4.25 mm. broad, 3.5 mm. thick, subobtuse, glabrous; retinacula curved, oblong, 2 mm. long, the tip rounded; seed (immature), glabrous, brown, flattened, muricate, the projections rounded.

Type in the U. S. National Herbarium, No. 1900474, collected in the Quebrada de los Osos, in the valley of the Río Bugalagrande, Cordillera Central, Department of El Valle, Colombia, 2,170 meters altitude, April 20, 1946, by J. Cuatrecasas (No. 20941).

Justicia malacophylla has apparently no close relatives among the Colombian species of Acanthaceae. The specific epithet is from the Greek and was suggested by the soft velvety leaves, *μαλακός*, soft, and *φύλλον*, leaf.

46. *Justicia pelianthia* Leonard, sp. nov.

FIGURE 220

Frutex parvus, caulibus subquadrangularibus (angulis rotundatus), minute et plus minusve bifariam strigosis, sursum pilis aureo-brunneis; lamina foliorum oblongo-elliptica vel obovata, apice subobtusa et apiculata, basi angustata, in petiolum decurrens, aliquanto firma, integra vel undulata, supra glabra, costa et venis lateralibus minute

strigosis exceptis, subtus glabra, costa et venis dense et minute strigosis exceptis, pilis aureo-brunneis, cystolithis conspicuis; petioli aliquanto crassi, minute strigosi; panicula terminalis, ramis spicatis, floribus paucis, secundis, internodiis panicularum minute bifariam strigosis, pilis aureo-brunneis, pedicellis brevibus, subglabris; bracteae infimae foliaceae, bracteae summae et bracteolae parvae, lanceolatae, acutae, firmae, minute strigosae, pilis aureo-brunneae; calycis segmenta lanceolata, acuta, firma, strigosa vel puberula, pilis curvatis, minutis, aureo-brunneis; corolla purpurea, parce et minute pubescens, pilis patulis, glandulosis, tubo corollarum subcylindrico, labio superiore recto, lineari-oblongo, apice rotundato et leviter emarginato, labio inferiore plus minusve patulo, oblongo, apice truncato, leviter 3-lobato, lobis rotundatis vel obtusis; stamina exserta, lobis antherarum superpositis, lobo superiore horizontali, lobo inferiore plus minusve recto, basi calcarato; ovarium glabrum.

Small shrub; stems subquadrangular (the angles rounded), minutely strigose, the hairs averaging 0.13 mm. in length, more or less bifari-ously arranged on the lower portion of the stem, those of the upper part of the stem golden-brown; leaf blades oblong-elliptical or obovate, up to 21 cm. long and 9 cm. wide, subobtuse and apiculate, narrowed at base and decurrent on the petiole, rather firm, entire or undulate, the upper surface glabrous except costa and lateral veins, these minutely strigose, the hairs similar to those of the stems, the cystoliths prominent, the lower surface glabrous except the costa and lateral veins (10 to 12 pairs) these densely but minutely strigose, the hairs golden-brown, up to 0.32 mm. long, those of the costa confined chiefly to its margins, the cystoliths conspicuous, 0.25 to 0.32 mm. long; petioles up to 3.5 cm. long, rather stout, minutely strigose like the stems; flowers secund, borne in a terminal panicle about 16 cm. long and broad, the lateral branches of the inflorescence composed of 1 to 3 rather loose spikes, these few-flowered, up to about 3 cm. long, the peduncle 2 mm. long, the lowermost internodes of the panicle 2 cm. in length, the others successively shorter towards the tip of the inflorescence, all of the internodes minutely and densely golden-brown strigose, the hairs averaging 0.2 mm. in length, more or less bifari-ously arranged, the pedicels up to 2 mm. long, glabrous or nearly so, the lowermost branches of the inflorescence subtended by small leaves, the other branches by lanceolate bracts, these up to 5 mm. long and 1.25 mm. wide, acute, firm, strigose with minute golden-brown hairs; bractlets resembling the bracts; calyx 7 mm. long, deeply segmented, the segments lanceolate, 3.5 mm. wide at about the middle, acute, firm, 3-nerved, strigose or puberulous, the hairs curved, averaging 0.13 mm. in length, golden-brown; corollas purple, up to 6.5 cm. long, sparingly and minutely pubescent, the hairs spreading,

up to 0.2 mm. long, gland-tipped, the corolla tube subcylindric, about 2.5 mm. broad at base, 5 mm. broad at mouth, the upper lip erect, linear-oblong, 3.3 cm. long, about 6 mm. wide near base, 3 mm. wide near the rounded shallowly emarginate tip, the lower lip more

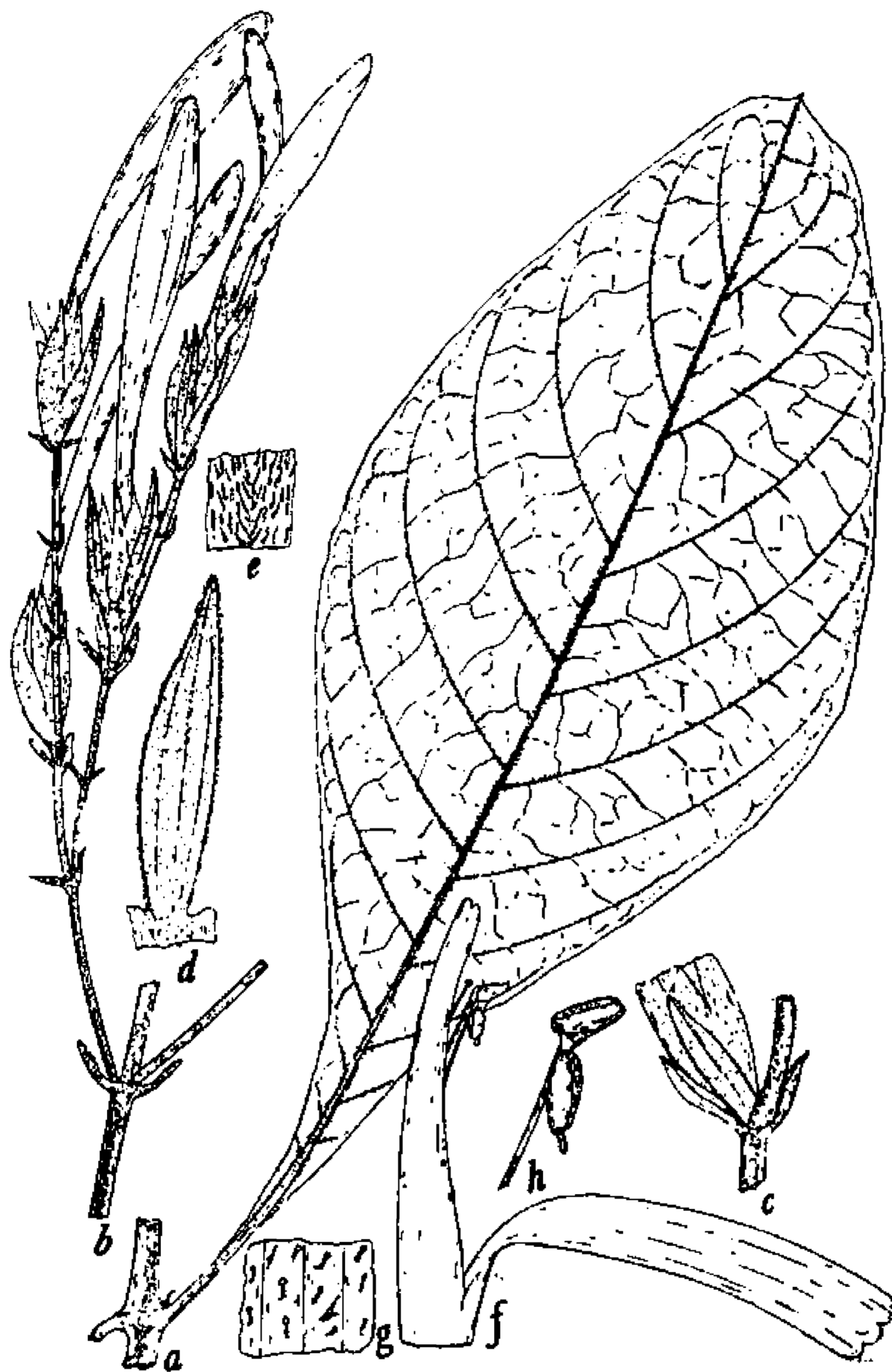


FIGURE 220.—*Justicia pelianthia* Leonard (Cuatrecasas 11157): *a*, Node and leaf; *b*, basal branch of inflorescence; *c*, node of inflorescence to show bracts and one of a pair of bractlets; *d*, a segment of the calyx; *e*, dorsal portion of calyx segment enlarged to show hairs and cystoliths; *f*, tip of corolla; *g*, pubescence of corolla; *h*, anther. (*a*, Half natural size; *b*, *f*, natural size; *c*, *d*, about twice natural size; *e*, about $8\frac{1}{2}$ times natural size; *g*, $11\frac{1}{2}$ times natural size; *h*, about 4 times natural size.)

or less spreading, oblong, 3.5 cm. long, 1 cm. wide, truncate and shallowly 3-lobed at tip, the lobes rounded or obtuse, 2.5 mm. wide and 1 mm. long; stamens glabrous, exerted 2.5 cm. beyond the mouth of the corolla tube, the anther lobes superposed one about 0.5 mm.

above the other, the upper lobe horizontally attached, the lower more or less vertical and terminated at base by a white blunt spur 0.5 mm. long; style slightly shorter than the stamens; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 1798544, collected in wet woods between Quebrada de la Hormiga and San Antonio del Güamués, Comisaría of Putumayo, Colombia, 330 meters altitude, December 18, 1940, by J. Cuatrecasas (No. 11157).

Justicia pelianthia is readily recognized by its large erect purplish corollas, by the flowers being secund in short spikes, these forming a broad, rather flat panicle, and by the minute golden-brown pubescence of the panicle branches. Apparently it has no close relatives among the Colombian species. The specific epithet is from the Greek *πελιδός*, livid, and *ἀνθειον*, blossom.

47. *Justicia anabasa* Leonard, sp. nov.

FIGURE 221

Suffrutex scandens, caulibus subquadrangularibus, substrigosis, demum glabratis, pilis curvatis, rigidis; lamina foliorum ovata vel elliptica, breviter acuminata (apice ipso obtuso), basi angustata, aliquanto firma, integra vel undulata, utrinque parce hirsuta, costa et venis lateralibus aliquanto hirsutis, pilis curvatis, rigidis, cystolithis obscuris; petioli dense hirsuti, pilis antrorse curvatis, rigidis; racemi axillares et terminales, laxi, pedunculis et rhachibus subquadrangularibus, hirsutis, pilis curvatis, plus minusve patulis; bracteae flores subtendentes parvae, oblongo-ovatae, acutae, subcarinatae, parce hirsutae; bracteae ramos racemi subtendentes oblongae, obtusae, hirsutae et ciliatae vel bracteae infimae foliiformes; calycis segmenta linearia, acuta, aliquanto hirsuta, pilis antrorse ascendentibus vel subappressis, pilis marginalibus longioribus, ascendentibus; corolla brunneo-aurantiaca, dorsum pallida, aliquanto hirsuta, pilis plus minusve patulis vel basi retrorsis, glandulosis et eglandulosis intermixtis, tubo anguste infundibuliformi, labiis curvatis, subaequalibus, labio superiore oblongo-ovato, apice bilobato, lobis aliquanto parvis, apice rotundatis, labio inferiore leviter patulo, oblongo-ovato, 3-lobato, lobis aliquanto parvis, apice rotundatis; stamina labium corollae aequalia vel subaequalia, filamentis glabris, lobis antherarum glabris, superpositis, verticalibus, lobo inferiore breviter caudato; pistillum exsertum labium corollae excedens, glabrum vel parce et minute hirtellum; stigma minute, rotundatum; ovarium glabrum.

Woody vine; stems subquadrangular, hirsute to substrigose, the hairs upwardly curved, up to 0.26 mm. long, rigid, septate but not conspicuously so, the lower parts of the stems glabrate; leaf blades ovate to elliptic, up to 8 cm. long and 4 cm. wide, short-acuminate (the tip itself obtuse), narrowed at base, moderately firm, entire or

undulate, both surfaces sparingly hirsute except the costa and lateral veins (about 5 pairs), these inconspicuous and rather densely hirsute, the hairs curved and rigid, up to 0.4 mm. long; cystoliths very obscure; petioles up to 8 mm. long, densely hirsute with rigid upwardly curved hairs; flowers borne in axillary few-flowered racemes (2–4 pairs of flowers), these both terminal and axillary, and borne for some distance along the stems, up to 5 cm. long; peduncles 10 to 20 mm. long, 0.75 to 1.25 mm. thick, subquadrangular, hirsute, the hairs curved, more or

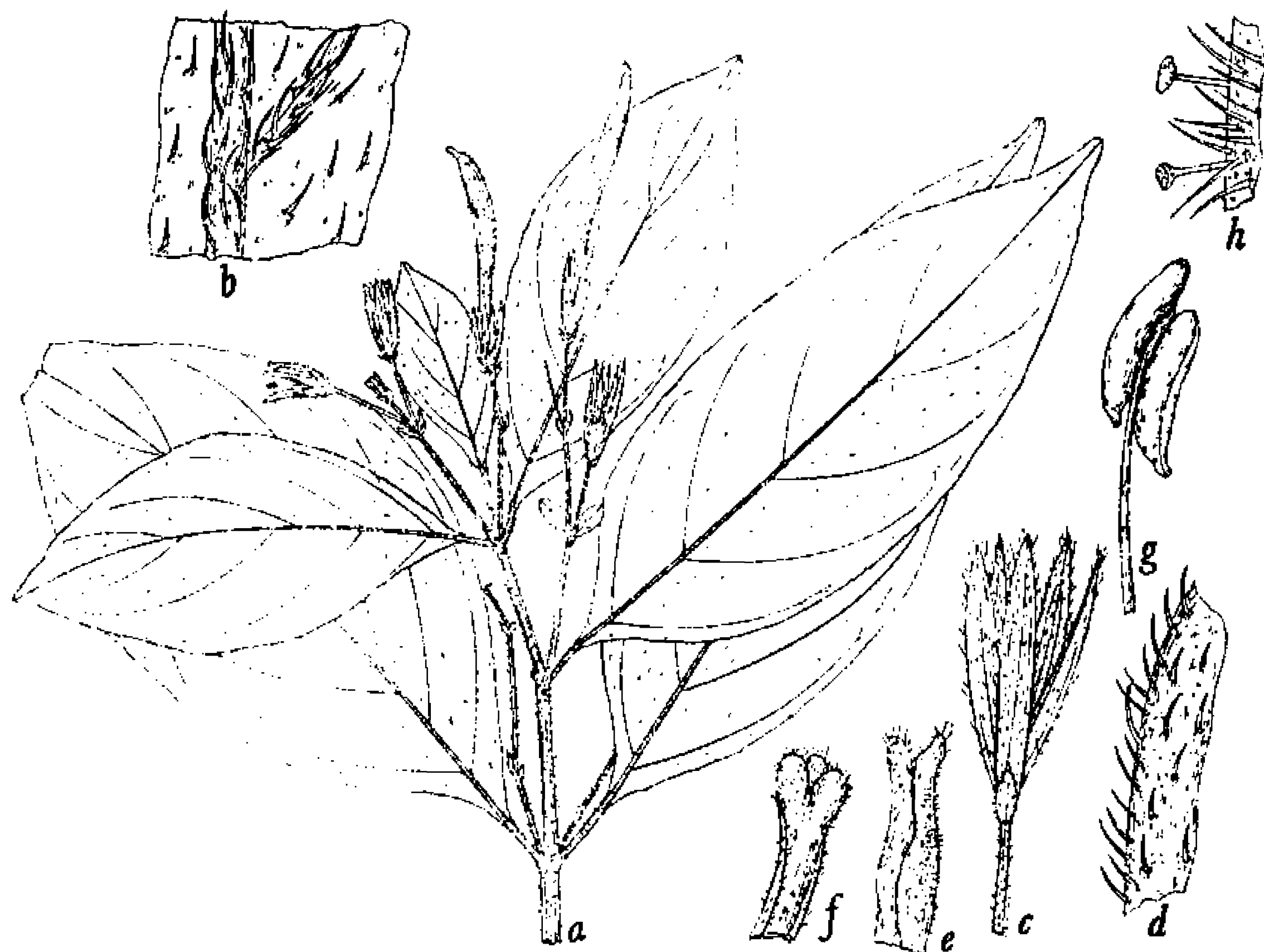


FIGURE 221.—*Justicia anabasa* Leonard (Killip & Smith 16091): *a*, Tip of branch to show inflorescence and leaves; *b*, portion of under surface of leaf blade enlarged to show pubescence; *c*, calyx and bract; *d*, portion of calyx segment enlarged to show pubescence; *e*, upper lip of corolla, *f*, lower lip of corolla, *g*, anther; *h*, portion of corolla enlarged to show pubescence. (*a*, Natural size; *b*, $4\frac{1}{2}$ times natural size; *c*, $2\frac{1}{2}$ times natural size; *d*, 16 times natural size; *e*, *f*, about 3 times natural size; *g*, about 6 times natural size; *h*, about 37 times natural size.)

less spreading, up to 0.32 mm. long, the rachis similar to the peduncles, the internodes usually 10 to 15 mm. long, slender; calyx sessile or subsessile at the tips of the slender pedicel-like branches, these 5 to 8 mm. long, hirsute like the rachis and bearing an apical pair of oblong-ovate bracts 0.75 mm. long, 0.5 mm. wide, acute, subcarinate, sparingly hirsute; bracts subtending the flower-bearing branches oblong, about 3 mm. long, 0.75 mm. wide, obtuse, hirsute and ciliate or the lowermost pair broader and leaflike; calyx 7 to 8 mm. long, the seg-

ments linear, 6.5 mm. long, 1.25 mm. wide, acute, moderately hirsute, the hairs up to 1 mm. long, ascending to upwardly subappressed or the marginal ones longer (up to 0.25 mm. long) and ascending; corollas "burnt orange, paler proximally" (Killip & Smith), 3 to 3.5 cm. long, rather densely hirsute, the hairs more or less spreading except toward base, here retrorse, up to 0.13 mm. long, some of them gland-tipped, the tube 2 mm. broad at base, narrowed at 3 mm. above base to 1.5 mm., thence enlarged, first abruptly, then gradually to 5 mm. at mouth, the lips subequal, curved, about 2 cm. long, the upper lip oblong-ovate, about 4 mm. broad near base, thence gradually narrowed to a 2-lobed tip, the lobes about 1.5 mm. long and 0.5 mm. wide, rounded at tip, the lower lip slightly spreading, oblong-ovate, about 4 mm. wide at base, 3-lobed, the lobes oblong, about 2 mm. long and 1 mm. wide, rounded at tip; stamens exerted, reaching within 2 mm. of the tip of the upper lip and partially enfolded by it, the filaments glabrous, the anthers cells curved, 2.5 mm. long, 0.5 mm. broad, glabrous, superposed and attached vertically to the connective, their lower and upper tips overlapping 1.25 mm., the lower cell calcarate, the tail blunt at tip; style slightly exceeding the lips of the corolla, glabrous except at base, here sparingly and minutely hirtellous, the stigma bilobed, the lobes minute and rounded; ovary glabrous; capsule not seen.

Type in the U. S. National Herbarium, No. 1351865, collected in woods in the vicinity of Las Vegas, Department of Santander, Colombia, 2,600 to 3,000 meters altitude, December 21-23, 1926, by E. P. Killip and Albert C. Smith (No. 16091). Isotypes: GH, NY.

Justicia anabasa has apparently no close relatives. The specific epithet is from the Greek word *ἀναβάσα*, meaning ascending or climbing, in allusion to the habit of the plant.

48. *Justicia aurantiaca* Leonard, sp. nov.

FIGURE 222

Frutex vel suffrutex, caulibus subquadrangularibus, glabris; lamina foliorum elliptica, breviter acuminata, basi angustata, membranacea, integra vel undulata, utrinque glabra, cystolithis nullis; petioli aliquanto graciles, glabri; cymae subhelicoideae, axillares et terminales, pedunculo glabro, subquadrangulari; internodia inflorescentiae apice dilatata, glabra vel bifariam et parce hirtella, pilis subappressis; bracteolae nullae; calyx anguste campanulatus, segmentis lanceolatis, acutis, membranaceis, glabris, obscure nervatis; corolla aurantiaca, glabra, aliquanto magna, tubo anguste infundibuliformi, labio superiore erecto, oblongo-ovato, apice subacuto, labio inferiore patulo vel recurvato, cuneato, 3-lobato, lobis oblongo-ovatis, rotundatis; stamina exserta, glabra, lobis antherarum superpositis, recte ad connectivo annexis, lobo inferiore basi breviter caudato; pistillum stamina leviter

excedens; stigma minutum, bilobatum, lobis inaequalibus, rotundatis; ovarium glabrum.

Shrubs or suffruticose herbs up to 1.5 meters high or more; stems quadrangular, glabrous; leaf blades elliptic, up to 21 cm. long and 10 cm. wide, short-acuminate, narrowed at base, thin, entire or undulate, glabrous on both surfaces; cystoliths lacking; petioles up to 4 cm. long, glabrous; flowers borne in axillary and terminal sub-helicoid cymes 2.5 to 4 cm. long (excluding corollas), the peduncles

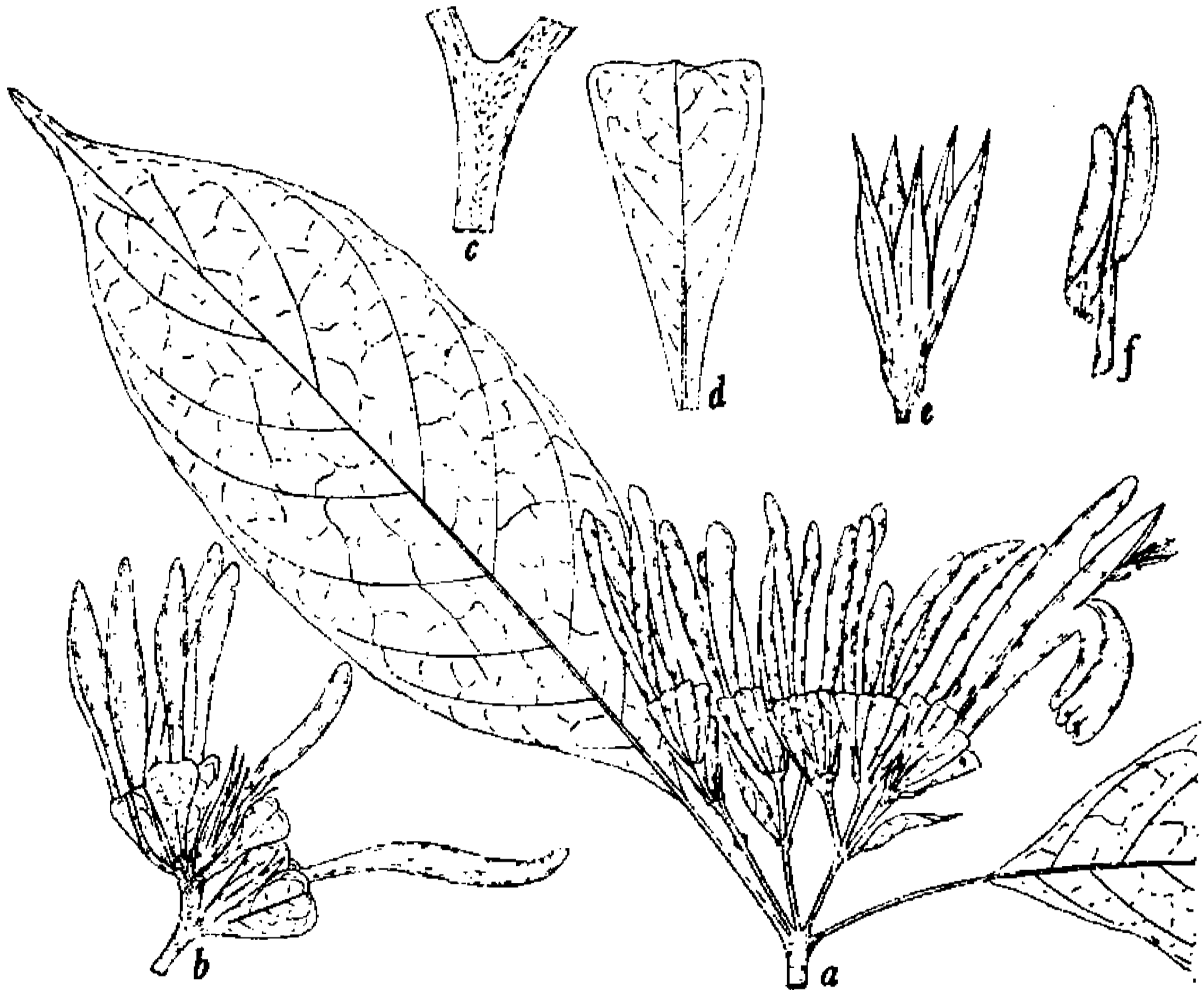


FIGURE 222.—*Justicia aurantiaca* Leonard (Grant & Fosberg 9341): *a*, Tip of plant showing leaves and inflorescence; *b*, portion of cyme; *c*, ultimate node of inflorescence to show pubescence; *d*, bract; *e*, calyx; *f*, anther. (*a*, *b*, Half natural size; *c*, 4 times natural size; *d*, 3 times natural size; *e*, $2\frac{1}{2}$ times natural size; *f*, 5 times natural size.)

1 cm. long, subquadrangular, glabrous, the internodes of the inflorescence up to 5 mm. long, 0.75 mm. in diameter at base, 2 mm. broad at their tips, glabrous or bifariously and sparingly hirtellous, the hairs about 0.1 mm. long and subappressed; bracts thin, cuneate, up to 1 cm. long, up to 6 mm. wide at tip, truncate or subemarginate, glabrous; calyx narrowly campanulate, 1 cm. long, the segments lanceolate, 8 mm. long, 1.75 mm. wide, gradually narrowed from 2.5 mm. above base to an acute tip, thin, glabrous, obscurely nerved; corollas orange, glabrous, up to 5.8 cm. long, 2.5 mm. broad near base, thence gradu-

ally enlarged to 6 mm. at throat, the upper lip erect, oblong-ovate, 2.2 cm. long, 6 mm. wide, subacute at tip, the lower lip spreading or recurved, cuneate, 2.5 cm. long, 1 cm. wide near tip, the 3 lobes oblong-ovate, 7 mm. long, the lateral ones 3.5 mm. wide, the middle one 5 mm. wide, all rounded; stamens exserted 1.5 cm. beyond the mouth of the corolla tube, glabrous, the anthers 4.25 mm. long, the cells 3.25 mm. long, 0.5 mm. broad, superposed and vertically attached to the connective, the lower cell briefly caudate; pistil slightly exceeding the stamens, the stigma minute, unequally bilobed, the lobes ovate, rounded; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 2045427, collected in temperate forest at San Isidro, 7 km. south of Gachalá, Department of Cundinamarca, Colombia, 2,200 meters altitude, May 27, 1944, by Martin L. Grant and F. R. Fosberg (No. 9341).

Also of this species is Grant's No. 10278, collected in temperate forest at Toquiza, Gazaunta Valley, Cordillera de Helicon, 15 km. northwest of Medina, Cundinamarca, 2,135 meters altitude, September 24, 1944.

Justicia aurantiaca can be easily recognized by the cuneate truncate bracts and large orange flowers.

49. *Justicia jacobinioides* Leonard, sp. nov.

FIGURE 223

Herba ramosa, caulibus subquadrangularibus, angulis acutis, glabris vel parce pubescentibus, pilis retrorse curvatis; lamina foliorum ovata, breviter acuminata (apice ipso obtuso), basi angustata, firma, integra vel undulata, parce hirtella, subtus pilis praecipue in costa et venis prominentibus, cystolithis obscuris vel nullis; petioli breves, parce hirtelli; paniculae parvae, laxae, axillares, floribus ternis, pedunculis primariis et secundariis aequalibus, parce hirtellis, quadrangularibus, angulis acutis; bracteae ramorum paniculae parvae foliaceae; bracteae flores subtendentes oblongae, acutae, ciliatae, glabrae vel subglabrae; calycis segmenta oblonga, acuta, 3-nervata, nervis prominentibus, extus glabra, in marginibus parce hirtella, intus minute et parce hirtella; corolla rutila, basi glabra, sursum aliquanto dense puberula, labio superiore anguste ovato, erecto, apice 2-lobato, lobis parvis, rotundatis, labio inferiore plus minusve patulo, obovato, basi cuneato, apice rotundato, breviter trilobato, lobis rotundatis; stamina exserta sed labiis corollae breviora, lobis antherarum superpositis, basi breviter caudatis; ovarium glabrum.

Erect branched herbs up to 1 meter high; stems subquadrangular, the angles minutely acute, glabrous or sparingly pubescent, the hairs retrorsely curved, about 0.16 mm. long; leaf blades ovate, up to 6 cm. long and 2.5 cm. wide, short-acuminate (the tip itself obtuse), narrowed at base, firm, entire or undulate, both surfaces sparingly hirtellous,

the hairs of the lower surface confined chiefly to the costa and lateral veins, the hairs up to 0.3 mm. long, more or less curved, the venation (lateral veins 5 to 7 pairs) prominent beneath, less so above, the cystoliths obscure or lacking; petioles up to 5 mm. long and 1 mm. thick, sparingly hirtellous; flowers (1 to 3) borne in small axillary panicles up to 3 cm. long, the peduncles up to 11 mm. long, the secondary peduncles up to 8 mm. long, both primary and secondary peduncles sparingly hirtellous with more or less curved hairs, sub-



FIGURE 223.—*Justicia jacobinioides* Leonard (Kalbreyer 1043): *a*, Tip of plant; *b*, tip of a calyx segment; *c*, corolla; *d*, anther. (*a*, *c*, Slightly over natural size; *b*, about 4 times natural size; *d*, 5 times natural size.)

quadrangular, the angles acute; bracts subtending the secondary peduncles leaflike, ovate, 4 mm. long, 2 mm. wide, subacute at tip, narrowed at base, sparingly hirtellous, the petioles about 1 mm. long; bracts subtending the flowers oblong, 1.5 mm. long, about 0.5 mm. wide, acute, ciliate, the flat surfaces glabrous or nearly so; calyx 1 cm. long, the segments 5, oblong, 8.5 mm. long, 1.5 mm. wide, acute, conspicuously 3-nerved, the outer surface glabrous or bearing a few small hairs near or on the margins, the inner surface sparingly and minutely hirtellous; corollas, from base to tips of the lips, 4.4 cm.

long, puberulous except the glabrous basal portion, yellowish-red, the tube 2.5 mm. broad at base, expanding at 8 mm. above base to 4 mm., the upper expanded portion cylindric, the upper lip narrowly ovate, 2 cm. long, 7 mm. wide at base, thence gradually narrowed to a small 2-lobed tip, the lobes about 0.75 mm. long and 0.5 mm. wide, rounded, the lower lip ascending, 18 mm. long, 6.5 mm. wide just above middle, the basal portion cuneate, the tip rounded and minutely 3-lobed, the lobes 0.5 mm. long and 0.75 mm. wide, rounded; stamens exerted about 13 mm. beyond the mouth of the corolla; anther lobes superposed, 3 mm. long, 1 mm. thick, both lobes short-caudate at base; ovary glabrous; capsules not seen.

Type in the Kew Herbarium, collected in border of forest at La Obrell, between Ocaña and Pamplona, Department of Norte de Santander, March 25, 1879, by W. Kalbreyer (No. 1043).

Justicia jacobinioides may be related to *J. aurantiaca*. The two species have similar calyces and anthers, and the corollas are of the same general shape. The corollas of *J. aurantiaca*, however, are strictly glabrous instead of rather densely puberulous and the leaf blades are much larger, thinner, and glabrous. Moreover, the inflorescence of *J. jacobinioides* is axillary, whereas in *J. aurantiaca* it is terminal and more compound.

50. *Justicia novogranatensis* Leonard, sp. nov.

FIGURE 224

Suffrutex, caulibus subteretibus, glabris vel in nodis parce antrorse strigosis; lamina foliorum oblongo-ovata, acuminata (apice ipso obtuso), basi angustata et in petiolum breviter decurrens, aliquanto firma, integra vel undulata, glabra vel parce hirsuta, costa et venis lateralibus aliquanto strigosis exceptis, cystolithis obscuris; petioli glabri vel in canalibus hirtellis; spicae rigidae laxae, fere rectae, ascendentes, pedunculis aliquanto longis, subteretibus, glabris vel parce strigosis, rhachibus subteretibus vel in nodis planis, glabris vel parce pubescentibus, pilis ascendentibus vel subappressis; flores solitarii, in nodis rhachium; bracteae lanceolatae, graciliter acuminatae, glabrae vel parce hirtellae et ciliolatae; bracteolae lanceolatae, acuminatae, glabrae vel parce hirtellae et ciliolatae; calycis segmenta lanceolata, graciliter acuminata, glabra vel parce hirtella et ciliata, costa et nervis obscuris; corolla aliquanto magna, minute hirtella, pilis rigidis, anguste triangularibus, patulis, tubo aliquanto angusto, labiis subaequalibus, labio superiore oblongo-ovato, apice angustata, rotundata, emarginato, labio inferiore cuneato, plus minusve patulo, 3-lobato, lobis oblongis, apice obtusis; stamina in labio antico corollae declinata, filamentis glabris, basi retrorse hirtellis exceptis, antheris glabris, lobis superpositis rectis, lobo inferiore obscure caudato; capsulae clavatae, glabrae; semina (immatura) papillosa.

Suffrutescent plants; stems subterete, glabrous or sparingly and antrorsely strigose near the nodes, the hairs straight, up to 0.32 mm. long; leaf blades oblong-ovate, up to 10 cm. long and 4.5 cm. wide, short-acuminate (the tip itself blunt), narrowed at base and briefly decurrent on the petiole, moderately firm, entire, undulate, glabrous or sparingly hirsute except the costa and lateral veins, these strigose,

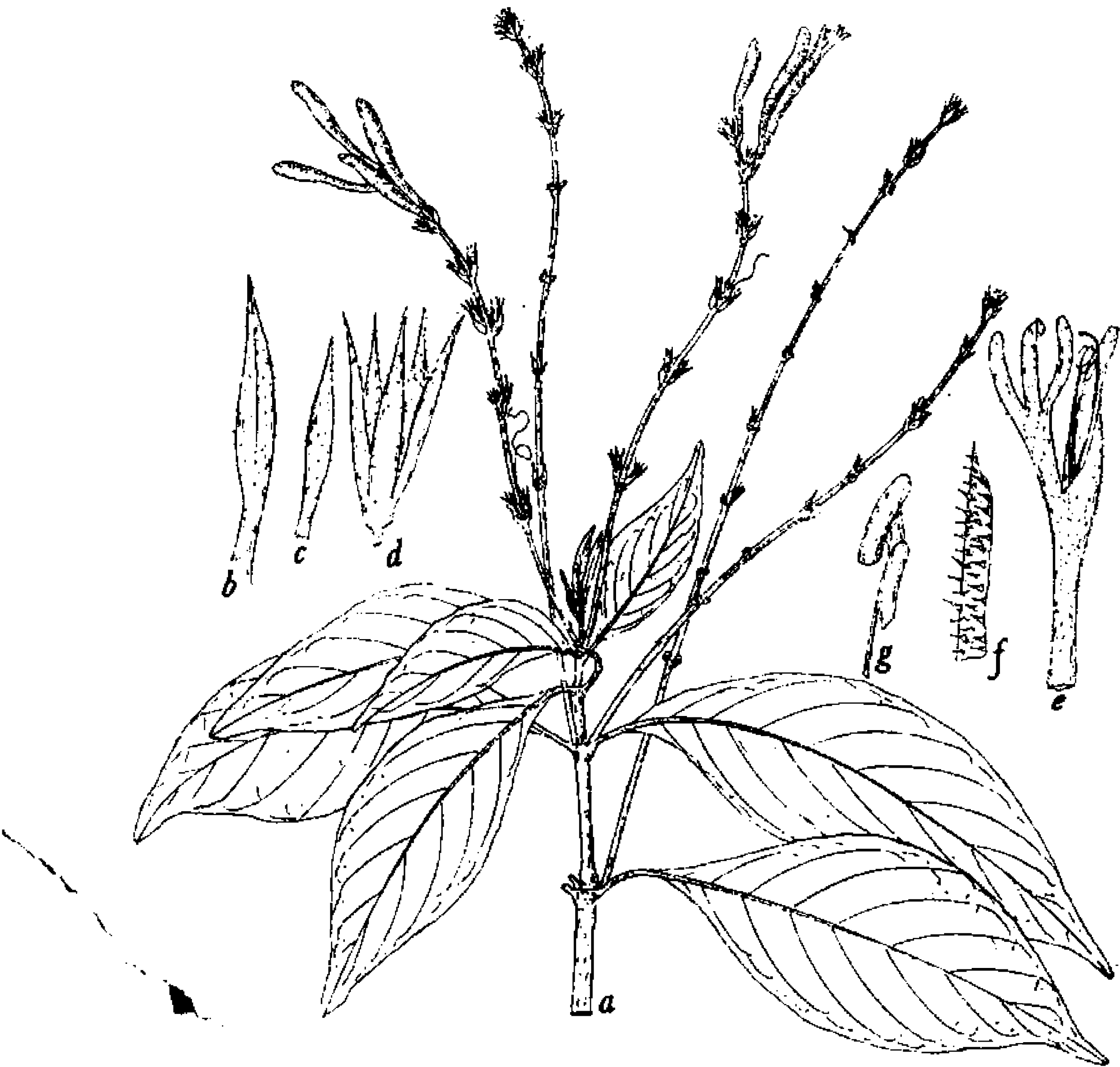


FIGURE 224.—*Justicia novogranatensis* Leonard (*Triana s. n.*, Popayán): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, calyx; *e*, corolla; *f*, portion of corolla tube to show pubescence; *g*, anther. (*a*, Half natural size; *b-d*, $4\frac{1}{2}$ times natural size; *e*, slightly more than natural size; *f*, 23 times natural size; *g*, $2\frac{1}{2}$ times natural size.)

the hairs up to 0.32 mm. long, straight or nearly so, the cystoliths obscure; petioles rather slender, up to 1 cm. long, glabrous or the channel hirtellous; spikes axillary, lax, nearly straight, rigid, ascending, up to 10 cm. long and 6 mm. broad, the peduncles up to 4 cm. long and 1.75 mm. thick, subterete, glabrous or sparingly strigose, the lowermost internodes of the spikes up to 2 cm. long, the others

successively shorter, somewhat flattened near the nodes, glabrous or sparingly pubescent, the hairs ascending to subappressed, up to 0.2 mm. long, the flowers in pairs; bracts lanceolate, 6 mm. long, 1.25 mm. wide near the middle, slenderly acuminate, glabrous or sparingly hirtellous and ciliolate, the hairs about 0.08 mm. long; bractlets lanceolate, 4.5 mm. long and 0.75 mm. wide, acuminate, glabrous or sparingly hirtellous and ciliolate; calyx 5.5 mm. long, the segments 5, these lanceolate, 5 mm. long, 1 mm. wide near base, gradually narrowed to a slender tip, glabrous or sparingly hirtellous and ciliate, the costa and a pair of lateral nerves evident when viewed against a strong light; corolla about 3 cm. long, minutely hirtellous with rigid narrowly triangular spreading hairs, the tube narrow, 1.5 mm. broad at base, gradually enlarged to 5 mm. at mouth, the lips subequal, about 16 mm. long, the upper lip oblong-ovate, 5 mm. wide at base, gradually narrowed to an emarginate rounded tip 1 mm. wide, the lower lip more or less spreading, cuneate, about 4 mm. wide at the base of the 3 lobes, these oblong, 7 mm. wide near the middle, the tip obtuse; stamens exerted 13 mm. beyond the mouth of the corolla and not quite reaching the tip of the upper lip and partly enfolded by it, the filaments glabrous except near base, there bearing a band of retrorse hairs about 0.13 mm. long, the anthers glabrous, their cells superposed, attached nearly vertically to the connective, each about 3.5 mm. long and 1 mm. thick, the lower cell obscurely caudate; style reaching the tip of the upper corolla lip, glabrous, the stigma rounded, minute and bilobate; capsule clavate, about 17 mm. long, 6 mm. broad and 3 mm. thick, glabrous; retinacula oblong, curved, 1 mm. long, rounded and flattened at tip; seed (immature) papillose.

Type in the Kew Herbarium, collected in the "Province de Prøpayan," Department of Cauca, Colombia, 1,300 meters altitude, July 1853, by J. Triana (No. 4084-1). Isotypes: Col, NY.

There is a photograph apparently of the same Triana collection in the Berlin Herbarium (Field Mus. No. 8912) that bears an unpublished name of Lindau's.

The color of the corolla is not apparent in the dried material but is probably red.

51. *Justicia secunda* Vahl

Justicia secunda Vahl, Symb. Bot. 2: 7. 1791. Type collected in Trinidad by Rohr.

Rhytiglossa secunda Nees in DC. Prodr. 11: 340. 1847 (except var. β). Based on *Justicia secunda* Vahl.

Rhacodiscus secundus Bremekamp, Verh. Kon. Ned. Akad. Wetensch. Afd. Natuurk., Sect. 2, 45: 53. 1948.

Suffrutescent; stems subquadrangular, glabrous or sparingly puberulous, the hairs retrorsely curved, subappressed; leaf blades

ovate to oblong-ovate, up to 15 cm. long and 6 cm. wide, acute to short-acuminate (the tip itself acute), subcordate, rounded, obtuse or acute at base, sometimes obliquely so, moderately firm, entire or undulate, both surfaces glabrous except the costa and lateral veins (6 to 8 pairs), these more prominent beneath than above, puberulous with recurved hairs about 0.2 mm. long; petioles slender, up to 2 cm. long, the channels puberulous with minute curved hairs; panicles terminal, small at first but becoming large and much branched, up to 17 cm. long and 8 cm. broad, the flowers secund and crowded on the branches of the panicles or distant (5 to 7 mm.) with age, the rachises moderately puberulous with curved hairs; bracts subulate or narrowly triangular, glabrous or sparingly hirtellous, keeled, the lowermost pairs about 7 mm. long, the succeeding bracts subtending the flowers triangular, 1.5 mm. long, 0.5 mm. wide at base, sharply acute, the lower branches of the panicles subtended by small narrow leaf blades; bractlets subulate, up to 2 mm. long and 0.25 mm. wide at base; calyx up to 7 mm. long, deeply segmented, hirtellous with a mixture of glandular hairs (0.08 mm. long) and eglandular ones (up to 0.3 mm. long), the segments of the calyx oblong-lanceolate, 1.25 mm. wide, acute, thin and herbaceous, ciliate; corollas dull crimson, 3 cm. long, the upper portions sparingly puberulous, some of the hairs glandular, the tube about 12 mm. long and 3 mm. broad, the lips subequal, 22 mm. long, the upper one erect, narrowly ovate, about 7 mm. wide near base, rounded and entire at tip, the lower lip spreading, oblong, about 6 mm. wide, 3-lobed at tip, the lobes ovate, 2.5 mm. long, 1 mm. wide, rounded at tip; stamens lying in upper lip and barely reaching its tip, the filaments glabrous; anther lobes subparallel, subequally attached by a connective 0.5 mm. broad, one lobe 2 mm. long, the other 1.5 mm. long, both about 0.5 mm. broad; style slightly shorter than the stamens, sparingly and minutely hirtellous, the stigma minute and subcapitate; capsule short-clavate, about 1 cm. long, 4.5 mm. broad, 2.5 mm. thick (the solid stipitate portion 5 mm. long, 0.5 mm. thick and 2.5 mm. broad) puberulous, some of the hairs glandular; retinacula 2 mm. long, the tip thin, erose, subcucullate; seeds 4, glabrous, slightly roughened.

Justicia secunda, common in the West Indies but rare in Colombia, is very closely related to Lindau's *J. filibracteolata*. Superficially the two species resemble each other very closely, differing in the shorter bracts and bractlets of *J. secunda*. In *J. filibracteolata* the panicles usually remain compact and the branches of the inflorescence do not tend to become elongated as in *J. secunda*.

MAGDALENA: Near Bonda, Santa Marta region, "1000 ft." altitude, *H. H. Smith* 377 (Ph, NY, US).

51a. *Justicia secunda* Vahl var. *leucantha* Leonard, var. nov.

A var. *typica* lamina foliorum lanceolata, corolla alba recedit.

Shrubby, leaf blades lanceolate, up to 16 cm. long and 4 cm. wide, acuminate; corolla white, in other respects similar to the typical variety.

Type in the U. S. National Herbarium, No. 533522, collected along the Agua Dulce Road, Santa Marta region, Department of Magdalena, Colombia, "800 feet" altitude, by H. H. Smith (No. 1413). Isotypes: NY, Ph.

52. *Justicia atacta* Leonard, sp. nov.

FIGURE 225

Suffrutex, caulibus subquadrangularibus, glabris, sursum cystolithis crassis parallelis praeditis; lamina foliorum oblongo-ovata, apice breviter acuminata, basi angustata, rotundata, plus minusve panduriformis, membranacea, integra vel undulata, utrinque glabra, costa et venis lateralibus prominentibus, cystolithis minutis et inconspicuis; petioli breves, glabri, crassi; paniculae valde graciles, axillares, pedunculo et rhache gracilibus, sulcatis glabris vel parce hirtellis, ramis paniculae parvis, spicatis vel paniculatis, floribus plus minusve secundis; bracteae flores subtendentes subulatae, parvae, apice graciles (apice ipso obtuso), carinatae, parce hirtellae, pilis rigidis, ascendentibus; bracteolae bracteolis similes sed longiores; calycis segmenta parva, lanceolata, acuminata, parce hirtella; corolla parva, glabra, viridi-alba, tubo brevi, cylindrico, labiis subaequalibus, labio superiore ovato, erecto, apice minute bilobato, lobis rotundatis, labio inferiore plus minusve patulo, 3-lobato, lobis brevibus et latis, rotundatis; stamina vix exserta, filamentis gracilibus, glabris, lobis antherarum leviter superpositis, verticalibus, lobo inferiore minute caudato, connectivo aliquanto lato; ovarium glabrum.

Shrubby plants with glabrous subquadrangular stems, their tips densely covered with thick parallel cystoliths; leaf blades oblong-ovate, up to 30 cm. long and 13 cm. wide, short-acuminate at tip, rounded at base, pandurate, thin, entire or undulate, glabrous, the costa and lateral veins (about 12 pairs) moderately prominent especially beneath, the cystoliths minute and inconspicuous; petioles about 3 mm. long, thick and glabrous; panicles very slender, axillary up to 30 cm. long and 8 mm. broad, the peduncle up to 10 cm. long, glabrous, sulcate, 1.25 mm. thick, the lowermost node of the rachis 4 cm. long, the others successively shorter toward the tip of the raceme, all sulcate, glabrous or sparingly hirtellous; flowers more or less secund, crowded in small slender spikes or panicles, several of these at each axil of the main rachis; bracts subtending the spikes or secondary panicles narrowly triangular, up to 3 mm. long and 0.3 mm. wide at base, subcarinate, narrowed to a slender tip, glabrous or hirtellous toward tip; bracts subtending the flowers subulate, about

1.25 mm. long, 0.25 mm. wide, gradually narrowed from base to a slender bluntish tip, carinate, sparingly hirtellous, the hairs rigid, ascending, 0.8 mm. long; bractlets similar but slightly longer; pedicels 1.5 mm. long, slender, glabrous; calyx 2.5 mm. long, the segments 5, lanceolate, 2 mm. long, 0.5 mm. wide near base, narrowed to a slender tip, sparingly hirtellous with rigid ascending hairs 0.32 mm. long, the costa evident but not prominent; corollas greenish white, about 5 mm. long, sparingly and finely pubescent, the tube subcylindric,

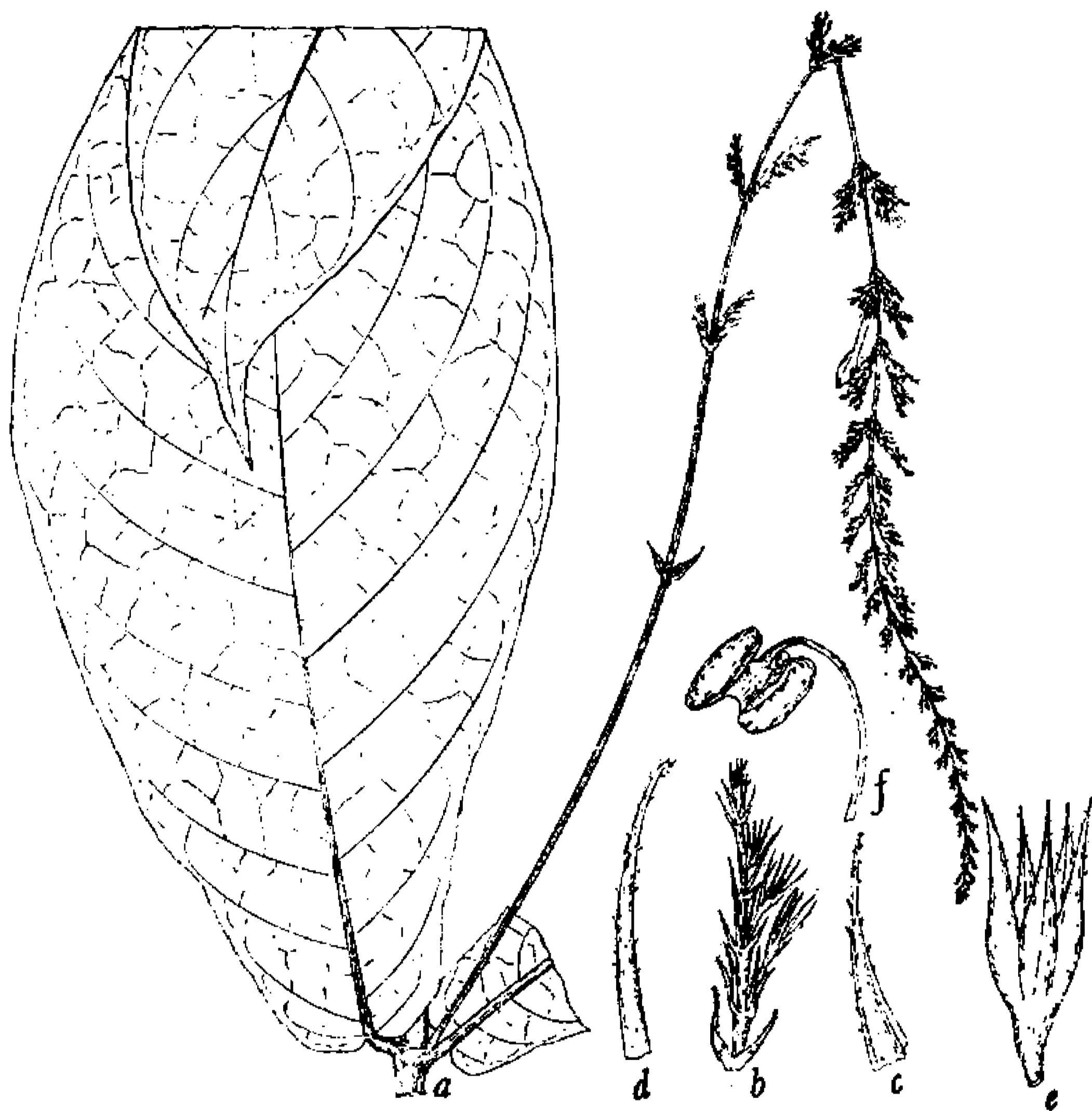


FIGURE 225.—*Justicia atacta* Leonard (Fosberg 21244): *a*, Tip of plant; *b*, spike; *c*, bract; *d*, bractlet; *e*, calyx; *f*, anther. (*a*, Half natural size; *b*, $4\frac{1}{2}$ times natural size; *c*, *d*, 12 times natural size; *e*, 8 times natural size; *f*, 6 times natural size.)

3.5 mm. long and 1 mm. broad at base, enlarged to 1.5 mm. from just above base to throat, the lips about 3 mm. long, the upper lip erect, oblong-ovate, about 1.5 mm. wide, minutely bilobed at tip, the lobes rounded, the lower lip more or less spreading, 1.5 mm. wide near base of the 3 lobes, these 1.5 mm. wide, 0.75 mm. long, rounded; stamens 3 mm. long, their filaments very slender, glabrous, the anthers glabrous, the cells slightly superposed, attached vertically to a relatively broad connective, the upper cell 1.75 to 2 mm. long, the lower 1.5

mm. long and short-caudate; style slightly longer than the stamens; stigma minute and bilobate; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 2045413, collected in a shaded wet place in rather scrubby, brushy woods on white clay soil, 2 km. east of Barbacoas and just south of the Río Telembí, Department of Nariño, Colombia, 100 meters altitude, October 13, 1943, by F. R. Fosberg (No. 21244). Isotype: US.

Chocó: Juntos de Tamaná, March 1853, *Triana* s.n. (K, Col). San Pablo, March 1853, *Triana* s.n. (K).

Justicia atacta has a strong superficial resemblance to a *Pseuderanthemum*, having panduriform leaf blades and a long very slender inflorescence, the extremely small spicate or paniculate branches simulating the clusters of pediceled flowers in *Pseuderanthemum*. Yet a close examination of the flowers reveals superposed anther lobes, the lower one tailed, and no staminodes.

The specific epithet is from the Greek *ἀρακτος*, meaning irregular or atypical.

53. *Justicia ephemera* Leonard, sp. nov.

FIGURE 226

Suffrutex vel frutex, caulibus ramosis, sursum subquadrangularibus, bifariam pilosis, pilis patulis, plus minusve rectis, deorsum subteretibus, glabratis; lamina foliorum oblongo-elliptica, aliquanto subito sed graciliter acuminata, basi panduriformis, cordata, aliquanto firma, integra vel leviter crenata, glabra vel parce hirsuta, costa et venis subtus prominentibus, supra obscura, cystolithis minutis et obscuris; petioli brevi, crassi, glabri vel in canalis marginibus pilos paucos gerentes; flores plures, secundi in spicis dispositi, his paniculas terminales pyramidatas formantibus, pedunculis et internodiis panicularum bifariam hirsutis; bracteae triangulares, acutae, parce hirsutae; bracteolae bracteis similes sed minores; calycis linearis, graciliter trinervata, obtusa, glabra vel apice hirtella et ciliata, pilis rigidis, ascendentibus; corolla alba, tubo brevi et lato, labiis aequalibus, labio superiore ovato, apice obtuso, labio inferiore trilobato, lobis ovatis apice rotundatis; stamina inclusa, glabra, lobis antherarum leviter superpositis, obliquis, basi diversis; ovarium papillosum.

Suffrutescent herbs or shrubs up to 2 meters high; stems much branched, their upper portions subquadrangular, bifariously pilose, the hairs up to 0.8 mm. long, more or less straight and spreading, the lower portions of the stems subterete and glabrate; leaf blades oblong-elliptic, up to 16 cm. long, and 6.5 cm. wide, rather abruptly but slenderly acuminate, gradually narrowed to a panduriform cordate base, moderately firm, entire or shallowly crenate, glabrous or bearing a few spreading marginal hairs at base, the costa and lateral veins

(5 or 6 pairs) moderately prominent, more so beneath than above, the cystoliths numerous but minute and rather obscure, up to 0.13 mm. long; petioles very short and rather thick, up to 1 mm. long, glabrous or bearing a few hairs on the margins of the channels; flowers numerous and secund in spikes up to 6 cm. long, these forming terminal pyramidal panicles up to 10 cm. long and 13 cm. broad, the nodes of the panicle bearing 1 or 2 pairs of branches, the peduncles up to 3.5 cm. long, quadrangular, bifariously hirsute, the lowermost node of the central axis of the panicle bearing a pair of leaves, the blades oblong-elliptic, up to 7 cm. long and 2 cm. wide, abruptly and

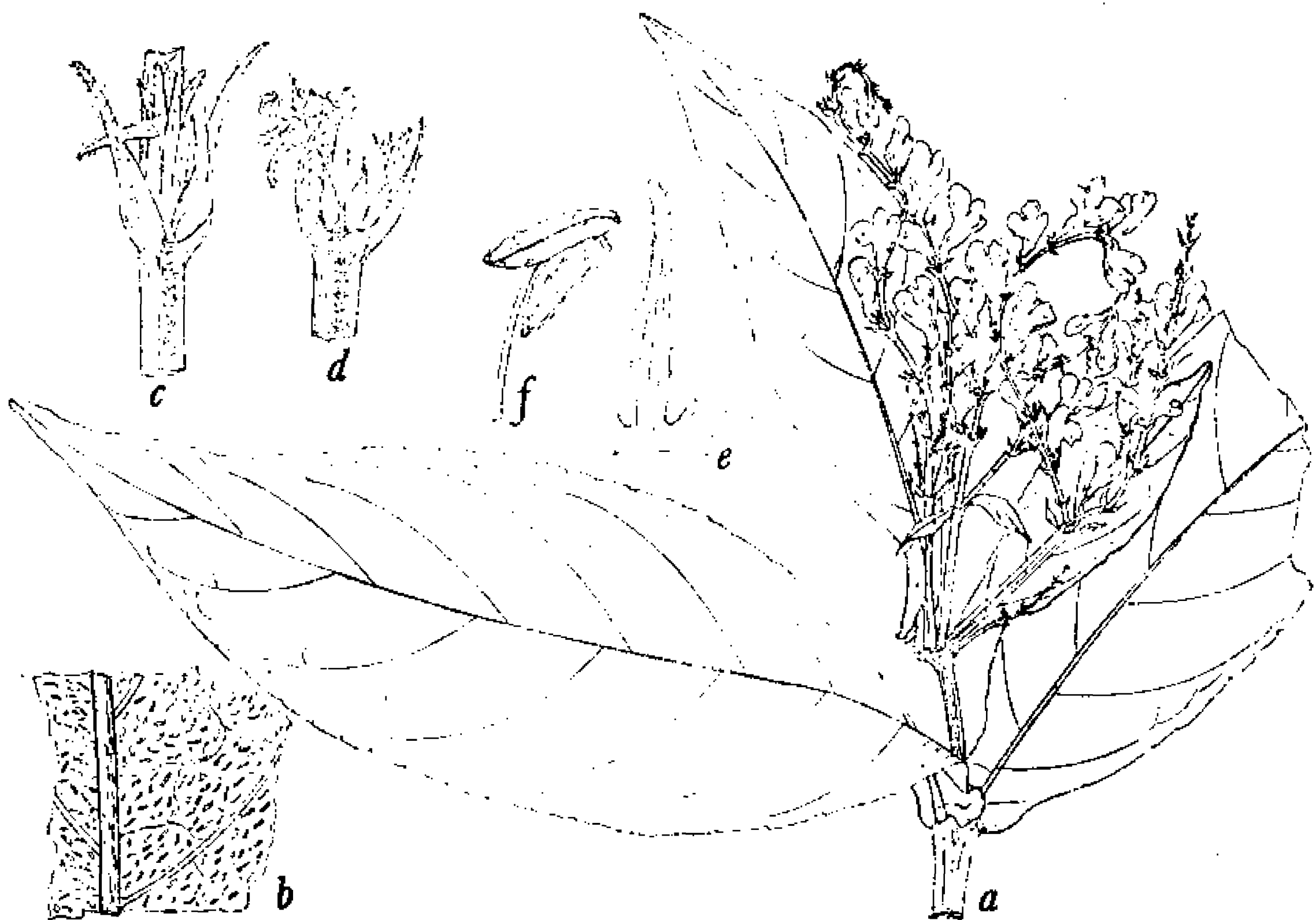


FIGURE 226.—*Justicia ephemera* Leonard (*Haught* 4775): *a*, Tip of plant; *b*, portion of the under surface of leaf blade enlarged to show veining and cystoliths; *c*, node of inflorescence; *d*, inflorescence node from near tip; *e*, calyx segment; *f*, anther. (*a*, Half natural size; *b*, about 6 times natural size; *c*, *d*, 4 times natural size; *e*, 8 times natural size; *f*, 12 times natural size.)

slenderly acuminate, narrowed to base, the petioles about 2 mm. long and ciliate on the margins of the channels, the internodes of the panicle similar to the peduncles but successively shorter and more densely hirsute toward the tips, the uppermost bracts narrowly triangular, 2.5 mm. long, 0.75 mm. wide at base, narrowed to an acute tip, sparingly hirsute, the hairs up to 0.2 mm. long; bractlets similar to the bracts but only about half as large; calyx segments linear, 2.5 mm. long, 0.5 mm. wide, subobtuse, glabrous except the margins toward tips, these ciliate with rigid ascending hairs up to 1 mm. long, the costa and a pair of lateral nerves slender and obscure;

corolla white, 8–12 mm. long, the tube short and relatively broad, 1 mm. broad at base, 1.25 mm. at 1 mm. above base, thence enlarged to 3 mm. at throat, the lips equal, 4.5–6 mm. long, the upper lip ovate, about 2 mm. wide, obtuse at tip, the 3 lobes of the lower lip ovate, 3.5 mm. long and 3 mm. wide, rounded at tip; stamens included, 3.5 mm. long, glabrous, the anther lobes somewhat superposed, about 1 mm. long and 0.5 mm. wide, obliquely attached to the connective, the bases divergent; pistil 2.5 mm. long, the style minute, 2-lobed; stigma glabrous; ovary papillose; capsules not seen.

Type in the U. S. National Herbarium, No. 1995088, collected in a forest at Turbo, Department of Antioquia, Colombia, less than 50 meters altitude, March 28, 1946, by Oscar Haught (No. 4775).

Also of this species is Haught's No. 4554, collected in low wet forest near Vijagual, 30 km. south of Turbo, Department of Antioquia, 40 meters altitude, April 12, 1945.

Justicia ephemera is a well-marked species apparently without near relatives. The panduriform leaf blades are like many of those in *Pseuderanthemum*. Staminodes, however, so constant in *Pseuderanthemum*, are definitely absent in this species. Haught states that the flowers are fragrant forming a showy inflorescence during the mornings but falling by afternoon. The plant is said to be in bloom only two or three days. The specific epithet is from the Greek word *ἐφήμερος*, meaning ephemeral or short-lived, in allusion to the fugacious blossoms.

54. *Justicia chloanantha* Leonard, sp. nov.

FIGURE 227

Suffrutex, caulibus subquadrangularibus (angulis rotundatis), glabris vel bifariam parce puberulis, pilis parvis, varie curvatis, cystolithis subpunctiformibus, minutis; lamina foliorum oblongo-ovata vel oblongo-elliptica, breviter acuminata (apice ipso obtuso), basi acuta in petiolum decurrens, aliquanto tenuis, integra vel undulata, utrinque glabra vel parce strigosa, costa et venis prominentibus strigillosis; petioli puberuli; paniculae terminales, ramis patulis, pedunculo subquadrangulati, puberulo, pilis sursum curvatis, parvis, ramis panicularum puberulis; flores in apicibus ramorum spissi, sessiles vel subsessiles; bracteae ramos ultimos panicularum subtendentes lanceolatae, acutae, parvae, parce ciliatae, costa prominente; bracteae et bracteolae flores subtendentes subulatae, parvae, acutae, apice ciliatae; calycis segmenta 5, parva, lineari-lanceolata, acuta vel graciliter acuminata, aliquanto tenuia, glabra vel in costa et marginibus parce ciliata, pilis dorsalibus aliquando glandulosis; corolla viridi-alba, tubo subcylindrico, parce et minute pubescente, labio superiore erecto, ovato, apice obtuso, labio inferiore cuneato, 3-lobato, lobis suborbicularibus; stamina exserta, in labio antico corollae declinata,

lobis antherarum superpositis, rectis, lobo superiore et connectivo hirtellis, lobo inferiore basi calcarato; capsulae clavatae, glabrae vel parce hirtellae, pilis patulis, glandulosis; retinacula curvata, apice rotundata; semina (immatura) tuberculata.

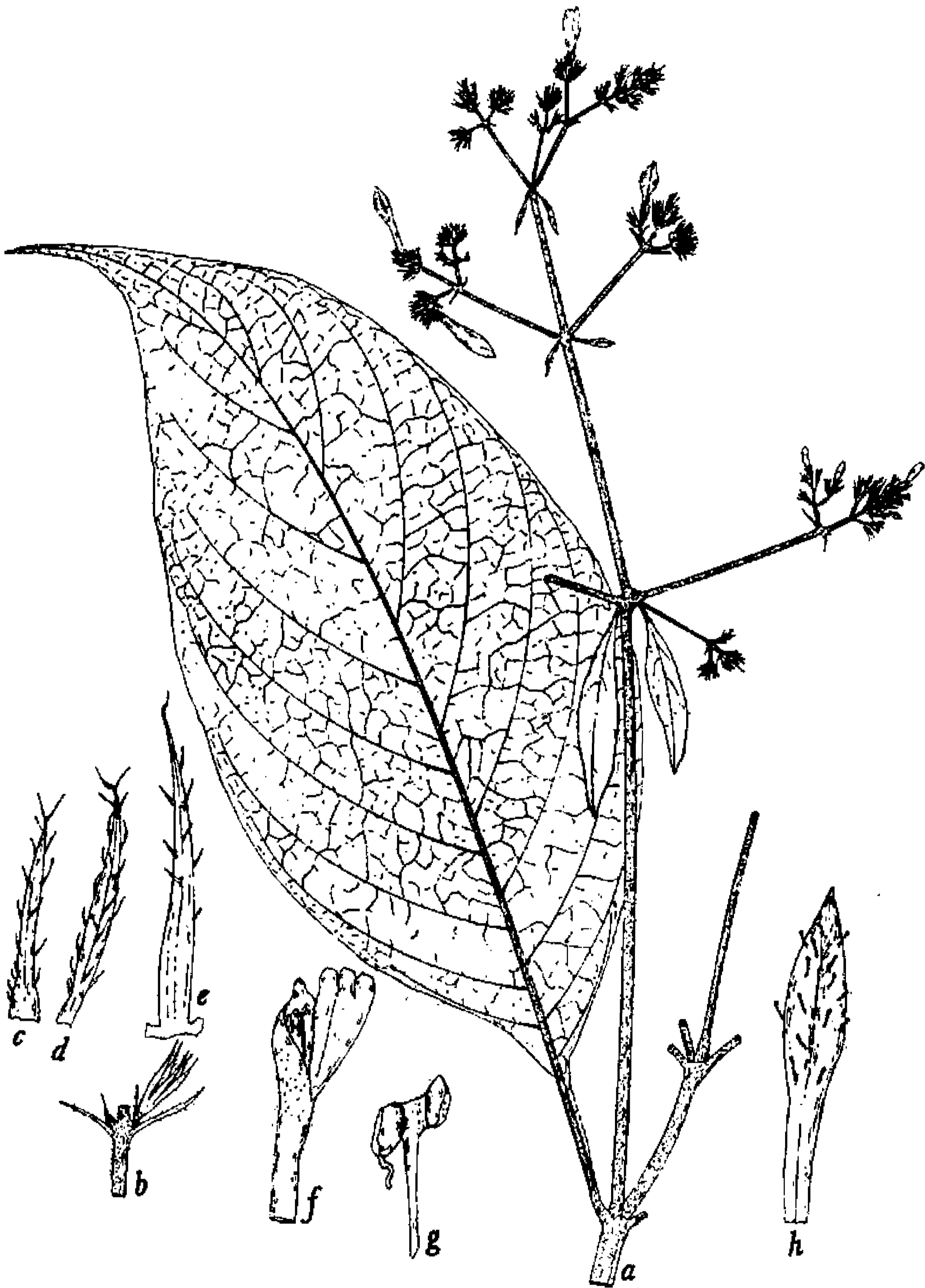


FIGURE 227.—*Justicia chloanantha* Leonard (*a-e, h, Cuatrecasas* 11137; *f, g, Cuatrecasas* 10933): *a*, Node from near tip of plant showing leaf blade and branch of the inflorescence; *b*, node from tip of inflorescence showing bracts, bractlets and calyx; *c*, bractlet; *d*, bract; *e*, a segment of the calyx; *f*, corolla; *g*, anther; *h*, dorsal view of capsule valve. (*a*, Half natural size; *b*, twice natural size; *c, d*, 10 times natural size; *e*, $7\frac{1}{2}$ times natural size; *f*, about twice natural size; *g*, 8 times natural size; *h*, 3 times natural size.)

Shrubby plants up to 1 meter high; stems subquadrangular (the angles rounded) glabrous or bifariously and sparingly puberulous, the hairs about 0.16 mm. long, variously curved, the cystoliths numerous, minute and subpunctiform; leaf blades oblong-ovate or oblong-elliptic, up to 22 cm. long and 9 cm. wide, short-acuminate (the tip itself blunt), acute at base and decurrent on the petiole, rather thin, entire or undulate, sparingly strigose, or glabrous except the minutely strigose costa and lateral veins (about 9 pairs), the hairs up to 0.2 mm. long, the costa and veins rather prominent beneath, less so above, the cystoliths about 0.2 mm. long; petioles up to 3 cm. long, puberulous; flowers borne in terminal and axillary panicles up to 12 cm. long and 7 cm. broad, the branches spreading, the peduncles up to 12 cm. long, subquadrangular, puberulous, the hairs upwardly curved, about 0.2 mm. long, the lowermost internodes of the panicles up to 5 cm. long, the others successively shorter towards the tips of the branches, these like the peduncles puberulous, the branches of the panicles subtended by small leaf blades usually 1 to 3 cm. long and 3 to 7 mm. wide, the flowers usually 6 to 10, crowded at the tips of the branches of the inflorescence, sessile or subsessile (pedicels up to 0.75 mm. long); bracts subtending the ultimate branches of the inflorescence lanceolate, up to 5 mm. long and 0.75 mm. wide, acute, sparingly ciliate, the costa prominent; bracts subtending the flowers subulate, up to 4 mm. long and about 0.25 mm. wide, acute, sparingly ciliate; bractlets similar to the bracts but shorter, up to 2.25 mm. long; calyx 5 mm. long, deeply segmented, the segments 5, linear-lanceolate, 0.5 mm. wide, acute or slenderly acuminate, rather thin, glabrous or the costa and margins sparingly ciliate, the hairs up to 0.57 mm. long, the costal hairs sometimes gland-tipped; corolla greenish white (the tip white), 15 to 16 mm. long, the tube subcylindric, 1.5 mm. broad at base, 2 mm. broad just above base, 2.5 mm. broad at mouth, sparingly and minutely pubescent, the upper lip erect, ovate, 4 mm. long, 5 mm. wide near base, narrowed to a blunt tip, the lower lip 5 mm. long, 3-lobed, 5 mm. wide near base of lobes, the lobes suborbicular, about 1.25 mm. in diameter; stamens reaching tip of upper lip, the anthers 1.5 mm. long, the lobes superposed, attached to the connective almost vertically, the upper lobe and part of connective hirtellous, the lower lobe glabrous, terminated at base by a whitish spur about 0.3 mm. long, the filaments glabrous; style slightly exceeding the stamens, glabrous toward tip, sparingly hirtellous toward base; capsules clavate, about 12 mm. long, 2.5 mm. broad, 1.5 mm. thick, glabrous or bearing a few spreading glandular hairs about 0.38 mm. long; retinacula 1.5 mm. long, slender, curved, rounded at tip; seed (immature) tuberculate.

Type in the U. S. National Herbarium, No. 1798543, collected in the wet forests along the Río San Miguel at the Quebrada de la

Hormiga, Comisaría of Putumayo, Colombia, 290 meters altitude, December 17, 1940, by J. Cuatrecasas (No. 11137).

Also of this species is Cuatrecasas' No. 10933 (Col), collected in wet forests of the Río San Miguel at the mouth of the Río Conejo, Colombian-Ecuadorian border, 300 meters altitude, December 9, 1940, and *Sprague* 396 (K), collected at Mocoa, Putumayo, May 25, 1899.

Justicia chloanantha has no close relatives among the Colombian species. A similarity of the inflorescences suggests *Justicia cuzcoensis* Lindau of Perú, but that species has much smaller, ovate, and more hairy leaf blades (up to 9 cm. long and 4 cm. wide) and yellowish white and purplish corollas. The specific epithet is from the Greek *χλωανός*, greenish, and *ἄνθος*, flower.

55. *Justicia helonoma* Leonard, sp. nov.

FIGURE 228

Frutex, caulibus quadrangularibus, glabris vel sursum parce bifariam tomentosus; lamina foliorum oblongo-elliptica vel oblongo-obovata, utrinque subacuta, firma, integra vel undulata, utrinque glabra vel foliorum juvenilium subtus parce hirtella, costa et venis lateralibus prominentibus, venulis crasse reticulatis; petioli breves, crassi, glabri; paniculae terminales, laxae, ramis in spicas compactas terminantibus, pedunculis et internodiis panicularum quadrangularibus, glabris vel parce hirtellis; bracteae flores subtendentes triangulares, acutae (apice ipso obtuso), firmae, parce hirtellae et ciliolatae, nervis 3, crassis sed non conspicuis, pilis parvis, rigidis, ascendentibus vel subappressis; bracteolae anguste triangulares, subacutae, carinatae, parce hirtellae et ciliatae; calycis segmenta 5, lanceolata, acuta et minute hirtella et ciliolata, pilis rectis vel leviter curvatis, ascendentibus; corolla aliquanto parva, subpurpurea, hirtella, pilis fere rectis, rigidis, patulis vel retrorsis, tubo subcylindrico, labiis subaequalibus, labio superiore erecto, oblongo, apice emarginato, labio inferiore cuneata, aliquanto patulo, 3-lobato, lobis oblongo-ovatis, apice rotundatis; stamina exserta, filamentis sursum glabris, deorsum hirtellis, lobis antherarum superpositis, rectis, lobo inferiore caudato; ovarium hirtellum.

Shrub about 1 meter high; stems quadrangular, glabrous or, near the tips, sparingly and bifariously tomentose, the hairs up to about 1 mm. long; leaf blades oblong-elliptic or oblong-obovate, up to 23 cm. long and 10 cm. wide, subacute at both ends, firm, entire or undulate, glabrous or the younger leaves sparingly hirtellous beneath, the costa and lateral veins (usually 8 pairs) prominent but more so beneath than above, the veinlets coarsely reticulate, the cystoliths obscure; petioles 5 mm. long, 2.5 mm. thick, glabrous; flowers borne in spikes up to 5 cm. long and up to 8 mm. broad, these forming an open terminal panicle up to 17 cm. long and 10 cm. broad, the lowermost

internodes of the panicle up to 8 cm. long, the peduncles of the spikes up to 2.5 cm. long, both the peduncles and the internodes of the panicle quadrangular and glabrous or sparingly hirtellous, the nodes of the panicle bearing a pair of small leaves (their blades about 1.5 cm. long and 8 mm. wide); bracts subtending the flowers triangular, 3.5 mm. long and 2 mm. wide at base, acute (the tip itself blunt), firm, sparingly hirtellous and ciliate, the hairs rigid, mostly straight, up to 0.16 mm.



FIGURE 228.—*Justicia helonoma* Leonard (*Haught* 1754): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, calyx; *e*, corolla; *f*, portion of corolla tube enlarged to show pubescence; *g*, anther. (*a*, Half natural size; *b*, *c*, 6 times natural size; *d*, 3 times natural size; *e*, $1\frac{1}{2}$ times natural size; *f*, 50 times natural size; *g*, $6\frac{1}{2}$ times natural size.)

long or the marginal hairs somewhat longer, ascending to subappressed, the 3 nerves thick and broad but not conspicuous; bractlets narrowly triangular, 1.5 mm. long, 1 mm. wide at base, subacute and carinate, sparingly hirtellous and ciliate; calyx 9 mm. long, sparingly hirtellous, the segments lanceolate, 6 mm. long, 1 mm. wide near base, gradually narrowed upwardly to a slender acute tip, ciliolate, the hairs straight or slightly curved, up to 0.16 mm. long; corolla 19 mm. long, purplish, hirtellous, the hairs rigid, mostly straight, spreading or

retorse, up to 0.13 mm. long, the corolla tube 11 mm. long, 2.25 mm. broad near the base, 3 mm. broad at throat, the upper lip erect, oblong, 8 mm. long, 3 mm. wide at base, the tip 1 mm. wide, emarginate, the lower lip somewhat spreading or ascending, cuneate, 9 mm. long, 5 mm. wide at base of the 3 lobes, these oblong-ovate, about 4 mm. long, 2 mm. wide, rounded; stamens exerted 6 mm. beyond the mouth of the corolla, the filaments glabrous toward tip, hirtellous toward base, the anthers 2 mm. long, 0.75 mm. broad, the lobes superposed, vertically attached to the connective, the lower cell tailed, the tail about 1 mm. long, bent vertically to the axis of the lobe; style exerted about 2 mm. beyond the mouth of the corolla tube, hirtellous, the stigma minutely bilobed; ovary hirtellous toward tip; capsules not seen.

Type in the U. S. National Herbarium, No. 1661616, collected in swamp-forest at Puerto Araujo, on the Río Carare, Department of Santander, Colombia, 100 to 700 meters altitude, June 6, 1935, by Oscar Haught (No. 1754).

Haught's No. 2186, a shrub 1 meter high with red-purple flowers collected in flood-plain forest at Raizudo, Department of Santander, about 200 meters altitude, April 28, 1937, also represents the species.

Justicia helonoma has no close relatives among the species treated in this paper. The large, more or less succulent, glabrous leaf blades and narrow paniced spikes of purplish flowers should serve as characters by which it can be readily recognized. The specific epithet is from the Greek word *ἑλονόμος*, alluding to the swampy habitat.

56. *Justicia pectoralis* Jacq.

Justicia pectoralis Jacq. Enum. Pl. Carib. 11. 1760. Type locality: "Insulis Caribaeis."

Dianthera pectoralis Gmel. Syst. Nat. 36. 1796. Based on *Justicia pectoralis* Jacq.

Stethoma pectoralis Raf. Fl. Tellur. 4: 61. 1836 [1838].

Psacadocalymma pectorale Bremekamp, Verh. Kon. Ned. Akad. Wetensch. Afd. Natuurk., Sect. 2, 45: 55. 1948.

Herbs up to 1 meter high; stems weak, erect or ascending, simple or moderately branched, often rooting at the lower nodes, subquad-rangular, shallowly and coarsely grooved, glabrous or hirsutulous, the hairs retrorsely curved, up to 0.5 mm. long, disposed more or less in two lines, the internodes 1 to 7 cm. long, the cystoliths numerous, subpunctiform; leaf blades narrowly to rather broadly lanceolate, 3 to 11 cm. long, 3 to 25 mm. wide, acuminate (the tip itself acute to obtuse), acute to obtuse at base, entire or undulate, moderately firm, the upper surface glabrous or the costa hirtellous, the hairs curved, up to 0.2 mm. long, the cystoliths prominent under a lens, 125 to 200 μ long, the lower surface glabrous, the cystoliths obscure,

the costa and lateral veins (5 or 6 pairs) barely prominent but more so than above; petioles slender, 2 to 12 mm. long, hirtellous, the hairs curved, about 0.2 mm. long; flowers borne in rather loose terminal panicles usually 5 to 16 cm. long and up to 6 cm. broad, the branches paired or verticillate, simple or the lower ones branched, subterete, puberulous, the eglandular hairs numerous, spreading, 50μ long, the glandular ones fewer, stouter, 75μ long, with broad turbinate tips, the lower internode usually 2 or 3 cm. long, the others successively shorter toward tip of panicle; lower bracts narrowly lanceolate, 5 to 10 mm. long, 0.5 mm. wide, acuminate, costate, glabrous or the margins and costa more or less hirtellous, the succeeding bracts subulate, 1 to 2 mm. long, about 0.2 mm. wide at base, acuminate, costate, puberulous with glandular and eglandular hairs; bractlets similar to the bracts but smaller; calyx 5-parted, deeply segmented, the segments subulate, 2.5 mm. long, about 0.25 mm. wide at base, acuminate, puberulous with both glandular and eglandular hairs; corollas white, lilac, or purple, up to 8 mm. long, the throat transversely plicate, sometimes spotted with dark purple, the outer surface of the corolla moderately pubescent, the hairs spreading, 125 to 175μ long, the tube about 1 mm. broad at base, 1.5–2.5 mm. broad at throat, the upper lip triangular, erect, 2.5 mm. wide at base, terminating in a subtubular oblong subcucullate tip 1.5 mm. long and 1 mm. broad, the tip itself truncate and coarsely erose, the lower lip more or less spreading, cuneate, 4 mm. wide near tip, 3-lobed, the lobes 1.5 mm. long, the middle one 2 mm. wide, the lateral ones 1.5 mm. wide, all rounded; stamens attached to corolla tube, their free portions 2.5 mm. long, exerted about 1 mm. beyond throat of the corolla, the filaments glabrous except the adnate portion, this pilose, the hairs retrorse, the anther lobes equally attached or slightly superposed, borne on a connective about 0.25 mm. wide; style 7 mm. long, glabrous or bearing a few minute hairs near base; capsules clavate, 8 mm. long, 1.5 mm. broad, puberulous, the eglandular hairs intermixed with a few glandular ones; retinacula 2 mm. long, the tip rounded; seed flattish, 1.5 mm. broad, reddish brown, roughened.

Justicia pectoralis is closely related to *J. comata*, but typical plants of the former can be readily recognized by their terminal inflorescence with subterete glandular puberulous branches. The inflorescence of *J. comata*, on the other hand, is often both terminal and lateral with flattened branches, these hirtellous, usually bearing few if any glandular hairs.

The species is found in woods, waste places, and in cultivated fields

in the West Indies as well as in continental tropical America. It prefers the lower altitudes, usually below 600 meters.

BOLÍVAR: Quebrada in forest, Tierra Alta, on the Río Sinú, *Pennell* 4654 (GH, US). Forests of Boca Verde on the Río Sinú, *Pennell* 4206 (in part) (NY).

MAGDALENA: Thin dry woods of Minca, Sierra Nevada of Santa Marta, *Cardona, Gutiérrez & Barkley* 18C.049 (US). Forest of Poponte, *Cyril Allen* 913 (Mo). Santa Marta region, *H. H. Smith* 1407 (Ph, US).

VAUPÉS: Cachivera de Jirijirimo, on the Río Apaporis, *Schultes & Cabrera* 14033 (US); 14079 (US); *García-Barriga* 13718 (US). Soratama, Río Apaporis, *Schultes & Cabrera* 12575 (US), 16124 (US). Raudal Itapinima, on the Río Kuduyarí, *Schultes, Baker & Cabrera* 18556 (US). Raudal de Jirijirimo, Río Apaporis, November 27, 1951, *Schultes & Cabrera* 14568 (US), 14619 (US), 14941A (US).

WITHOUT LOCALITY: *Apolinar-María* 157 (GH).

Humboldt collected a specimen of this species at Turbaco, Department of Bolívar.

56a. *Justicia pectoralis* Jacq. var. *stenophylla* Leonard, var. nov.

Herba parva compacta; folia numerosa, lamina anguste lanceolata; inflorescentia parva.

Herbs usually not exceeding 20 cm. in height, erect or ascending, the internodes of the stems short, usually less than 2 cm. long; leaf blades numerous, narrowly lanceolate, 2 to 6 cm. long, 1 to 5 mm. wide; inflorescence often becoming dense, up to 10 cm. long but usually 3 to 6 cm. long.

Type in the U. S. National Herbarium, No. 1320301, collected at Jiramena, Llano de San Martín, Intendencia of Meta, Colombia, 220 meters altitude, January 1856, by J. Triana. Isotype: Col.

EL VALLE: Buenaventura, *Triana* (Col, K). Cali, *Duque* 1339 (Cali).

VAUPÉS: Banks of the Río Pacoa, *Schultes & Cabrera* 15244 (US).

Vernacular names: Abrojo, descansé, rojizo.

The original herbarium label on the isotype sheet bears the following note: "Fortificante para lavar los niños." On the label of the Cali sheet, Duque gives the following information: "Hierba de 30 cm. de altura, erecta, notable porque sirve para orlar las eras o líneas divisorias de la geometría de los parques."

57. *Justicia comata* (L.) Lam.

Dianthera comata L. Syst. Nat., ed. 10, 850. 1759. Type locality: Jamaica.

Justicia comata Lam. Encycl. 1: 632. 1783. Based on *Dianthera comata* L.

Leptostachya comata Nees in DC. Prodr. 11: 381. 1847.

Psacadocalymma comatum Bremekamp, Verh. Kon. Ned. Akad. Wetensch. Afd. Natuurk., Sect. 2, 45: 55. 1948.

Herbs up to 1 meter high; stems weak, ascending to nearly erect, more or less branched, often rooting at the lower nodes, subquadrangular (the angles rounded), more or less grooved, glabrous or sparingly

puberulous (the hairs about 0.25 mm. long, spreading or retrorse and disposed more or less in 2 lines) or occasionally pilose with spreading hairs up to 3.5 mm. long, the cystoliths numerous, parallel, 100 to 200 μ long; leaf blades lanceolate to oblong or oblong-ovate, usually about 6 cm. long and 2 cm. wide but occasionally reaching a length of 15 cm. and a width of 4 cm., acuminate or acute at apex, rounded, obtuse or narrowed at base and decurrent on the petiole, entire or shallowly undulate, moderately firm, both surfaces glabrous or sparingly hirtellous, the costa and lateral veins (about 6 pairs) obscure, the cystoliths slender, about 150 μ long, not often conspicuous; petioles up to 2 cm. long (including winged portion), the uppermost leaves often sessile; inflorescence terminal or axillary, the flowers secund in slender simple or branched spikes, these fasciated or the lowermost disposed in peduncled umbels, the peduncles up to 5 cm. long, the spikes forming in aggregate a terminal panicle or sometimes a paniculate inflorescence involving nearly the entire plant, the branches of the inflorescence very slender and almost filiform, more or less angular, minutely hirtellous, often with longer (up to 300 μ) gland-tipped hairs intermixed; bracts subtending the flowers lanceolate, barely 1.6 mm. long and 0.35 mm. wide, sharply acute, glabrous, strongly costate; bractlets about 1 mm. long, 0.25 mm. wide, in other respects similar to the bracts; calyx 2.5 mm. long, the segments narrowly lanceolate, 2 mm. long, about 0.5 mm. wide at base, slenderly acute, glabrous; corollas white, lilac, light blue, purplish white, rose or greenish pink (Pennell), often marked with purplish lines or spots, 4.5 to 7 mm. long, glabrous or the upper part of the tube bearing a few minute spreading hairs, the tube ca. 1.2 mm. broad at the base, slightly enlarged upwardly, contracted at about the middle, here ca. 1.5 mm. wide, thence ampliate to the throat, this 2 to 3.5 mm. wide, the limb bilabiate, the upper lip erect, ovate, 2.5 mm. long, 1.25 mm. wide, rounded or obtuse at tip, the lower lip spreading, triangular, 1.5 mm. wide at base, 3 mm. wide near tip, 3-lobed, the lobes ovate, 0.5 mm. long, 1 mm. broad, obtuse; stamens exerted about 2 mm. beyond the mouth of the corolla tube, the filaments slender, pilose at base, otherwise glabrous; anthers purple, the cells obliquely attached to a relatively broad connective, the upper 0.5 mm. long, and 0.25 mm. wide, the lower one smaller, the connective about 0.25 mm. broad; style exerted about 3 mm. beyond mouth of the corolla tube, glabrous; capsules clavate, 4 to 5 mm. long, 2 mm. broad and 1 mm. thick, 4-seeded, sparingly hirtellous or glabrate; retinacula about 0.75 mm. long, narrowly cucullate at tip; seeds reddish brown, somewhat flattened, barely 1 mm. in diameter, about 0.25 mm. thick, roughened or indistinctly papillose.

Justicia comata, distributed throughout tropical America, generally grows at low elevations of 500 meters or less, but may be found occasionally as high as 2,000 meters. It is weedy in nature, and is equally at home in damp or dryish thickets, on slopes, in woods, on river banks, in waste places in general, on margins of ponds or small streams, or even growing in shallow water. As to be expected of a species of such an extensive range, considerable variation is exhibited. Plants in wet situations, especially those growing in water, tend to produce long narrow leaf blades gradually narrowed to a sessile base. Killip's No. 34261 and von Sneidern's Nos. 494 and 2644 are plants of this nature. The leaf blades of these plants vary from 4 to 17 cm. in length but rarely exceed 13 mm. in width. Moreover, Killip's specimen shows a transition stage between the aquatic form and the typical form, which has broader blades with rounded or obtuse bases. Plants with strictly terminal inflorescences rather strongly hirtellous or even puberulous with a predominance of glandular hairs are likely to be confused with *J. pectoralis*. Killip & Garcia's No. 33598 is such a plant. Remarkable also is the development of pilosity in Pennell's No. 1473 and Killip & Smith's No. 14719. In these the hairs of the stems are white, spreading, straight, and up to 3.5 mm. long.

AMAZONAS: Trail bordering a thicket near the Amazon, near Letitia, *Hermann* 11287 (US). Río Hamacayacu, between the Amazon and Putumayo watersheds, *Schultes* 8248 (US).

ANTIOQUIA: Forest along river opposite Boca Carare, *Pennell* 3822 (GH, NY). Damp area west of Santa Fé de Antioquia, *Barkley, Skolnik & Gómez* 413 (US). Margin of open pool, Valparaiso, *Pennell* 10811 (Ph, US).

BOLÍVAR: Ditch in thicket along river, Calamar, *Killip & Smith* 14719 (US). Vicinity of Cartagena, *Bro. Heriberto* 367 (US). Desiccated place at edge of thicket, Chinú, *Pennell* 4098 (GH). Edge of thicket, Sincé, *Pennell* 4041 (GH, US). Swampy lagoon-filled plateau, Hacienda Martinica, in the region of Sinú, 15 km. from Montería, *Bechara, Araque & Barkley* 19Bo.094 (US). Quebrada in forest at Tierra Alta, on the Río Sinú, *Pennell* 4657 (GH, US).

CAUCA: Cultivated fields at Cali, *Duque* 1051 (Cali). River bank, El Tambo, *von Sneidern* 494 (S); 2644 (S). Guayabal, on the Río Micay, *Cuatrecasas* 14111 (Ch).

EL CHOCÓ: Rich damp mountain valley near El Piñón, *Araque & Barkley* 19Ch.112 (US). Clearing along Quebrada Jella, vicinity of Bahía Solano near Ciudad Mutis, *Killip & García* 33598 (US). Rich sandy plateau along the Río Atrato, near Quibdo, *Araque & Barkley* 19Ch.058 (US); *Archer* 1925 (NY, US); 2220 (US).

CUNDINAMARCA: Junín, *Triana* s.n. (Col). La Esperanza, Granjo Cafetera Enrique Soto, *Gutierrez* 416 (Ch, Med, US).

EL VALLE: Barco, Río Cajambre, *Cuatrecasas* 17093 (US). Río Anchicayá, between Sabaletas and Quebrada del Tatabro, *Cuatrecasas* 22063 (US). Río Naya, between Puerto Merizalde and Meregildo, *Cuatrecasas* 14345 (US). Río Yurumanguí, between Isla de Golondro and La Amargura, *Cuatrecasas* 16060

(US). Swamp at Santa Rosa, *Killip* 11565 (Ph, US). Woods at Veneral, Río Yurumanguí, *Cuatrecasas* 15916 (US); 16003 (Cali).

HUILA: Río Cabrera, about 18 km. northeast of Villavieja, upper basin of the Río Magdalena, 450 m., *Galen Smith* 1199 (US).

MAGDALENA: Carare, *André* 301 (GH). Santa Marta region, *H. H. Smith* 1208 (Ph, US); 1416 (Ph, US).

META: Puerto López, Río Matico, *Cuatrecasas* 3577 (US). In water of small stream in dense forest southeast of Villavicencio, *Killip* 34261 (US). Moist forest at Villavicencio, *Pennell* 1473 (GH).

SANTANDER: Alluvial thicket at Badillo, Río Magdalena, *Pennell* 3927 (GH, US). Marsh in the vicinity of Puerto Wilches, *Killip & Smith* 14936 (Ph, US).

TOLIMA: Running water along the Ambalema-Ibague railroad near Caldas, *Haught* 2388 (US).

VICHADA: Puerto Carreño, Río Orinoco, *Cuatrecasas* 3978 (US).

WITHOUT DEFINITE LOCALITY, *Mutis* 1488 (US).

58. *Justicia namatophila* Leonard, sp. nov.

FIGURE 229

Suffrutex gracilis, caulibus ramosis, subquadrangularibus, sursum puberulis, pilis curvatis, deorsum glabratis; lamina foliorum lanceolata, anguste acuminata (apice ipso obtuso), basi angustata, aliquanto firma, undulata, supra parce strigosa, subtus costa et venis minute strigosis, cystolithis minutis et obscuris; petioli breves; paniculae axillares, graciles, ramosae, puberulae, pilis curvatis; bracteae et bracteolae lineares vel subulatae, strigosae; calycis segmenta subulata, hirtella, pilis plus minusve patulis; corolla purpurea, retrorse hirsuta, labiis venosis, labio superiore erecto, ovato, acuto, labio inferiore plus minusve patulo, 3-lobato, lobis obovatis, rotundatis; stamina vix exserta, filamentis planis, glabris, antheris superpositis, lobis obliquis, glabris, lobo inferiore caudato; capsulae clavatae, puberulae, pilis patulis vel retrorsis; semina brunnea, plana, ovata, papillosa.

Slender suffrutescent plants up to 50 cm. high; stems branched, subquadrangular, puberulous with upwardly curved whitish hairs about 0.1 mm. long, the lower suffruticose portions glabrate, the internodes 1 to 4 cm. long; leaf blades lanceolate, up to 11 cm. long and 1.5 cm. wide, slenderly acuminate (the tip itself blunt), narrowed to a sessile base, moderately firm, undulate, the upper surface sparingly strigose, the hairs up to 0.5 mm. long, the lower surface minutely strigose, the hairs about 0.2 mm. long and confined chiefly to costa and veins (6 or 7 pairs), these slender and scarcely prominent, the cystoliths obscure and minute; petioles up to 3 mm. long, puberulous with curved hairs; flowers borne in slender axillary dichotomously and trichotomously branched panicles up to 6 cm. long, the peduncles usually 1 to 3 cm. long, 0.5 to 0.75 mm. in diameter, flattened, these and the branches of the inflorescence puberulous with curved hairs; pedicels slender, 2 mm. long, 0.28 mm. thick, puberulous, the hairs curved; bracts subtending the lowermost pair of branches of the panicle linear, 4 mm. long and 0.5 mm. wide, strigose, the subsequent

bracts subulate, 1.5 to 2.5 mm. long, strigose; bractlets minute, subulate; calyx 6 mm. long, hirtellous, the hairs mostly spreading, rigid, up to 0.15 mm. long, the segments subulate, 5 mm. long, 0.75 mm. wide at base; corolla purple, 15 mm. long, retrorsely hirsute, the hairs up to 0.2 mm. long, the lower half of the tube 1 mm. broad, the mouth 4 mm. broad, the lips veiny, the upper lip erect, ovate, 4 mm. long and 2.5 mm. wide, acute, the lower lip more or less spreading,



FIGURE 229.—*Justicia namatophila* Leonard (Haught 2135): *a*, Tip of plant to show leaves and inflorescence; *b*, portion of inflorescence enlarged to show calyx; *c*, anther; *d*, corolla. (*a*, Half natural size; *b*, 3 times natural size; *c*, 7 times natural size; *d*, $1\frac{1}{2}$ times natural size.)

5 mm. long, 3-lobed, the lobes obovate, rounded, the middle lobe 2.5 mm. wide, the lateral ones 1.5 mm. wide; stamens slightly exerted beyond the mouth of the corolla tube, about 4.5 mm. long, the filaments flattened, glabrous, the anthers lobes slightly superposed and obliquely attached to the connective, the lobes 0.75 mm. long, glabrous, the lower lobe caudate, the tail about 0.15 mm. long; pistil slightly longer than the stamens, curved at tip, the stigma lobes minute and

rounded; capsules clavate, 11 mm. long, 2 mm. broad, 1.5 mm. thick, puberulous, the hairs straight, spreading or retrorse, about 0.1 mm. long, the solid stipitate portion of the capsule 5 mm. long; retinacula 1 mm. long, the tip flattened, rounded; seed dark brown, strongly flattened, ovate, 1.75 mm. long, 1.5 mm. wide, strongly papillose.

Type in the U. S. National Herbarium, No. 1740624, collected along a stream in the Quebrada Pontoná, about 18 km. west of La Dorada, Department of Caldas, Colombia, 400 meters altitude, December 30, 1936, by Oscar Haught (No. 2135).

Justicia namatophila is a well marked species easily recognized by its narrowly lanceolate leaf blades and numerous axillary panicles with slender branches and the subulate calyx segments. The specific epithet is derived from the Greek words *ναμα*, running water, and *φίλος*, loving.

59. *Justicia martiana* (Nees) Lindau

Leptostachya martiana Nees ex Benth. Bot. Voy. *Sulphur* 147. 1844. Type from Guayaquil, Ecuador, *Sinclair*.

Justicia martiana Lindau, Engl. & Prantl, Nat. Pflanzenf. 4, Abt. 3b: 350. 1895. Based on *Leptostachya martiana* Nees.

Herbs; stems subquadrangular, coarsely sulcate, hirsute, the hairs spreading or ascending, borne more or less in two lines, the cystoliths slender, parallel, up to 0.15 mm. long; leaf blades narrowly lanceolate, up to 16 cm. long and 22 mm. wide, slenderly acuminate, narrowed or rounded at base, moderately firm, entire or undulate, both surfaces glabrous or minutely and sparingly hispid, the hairs up to 0.3 mm. long, the cystoliths of the upper surface easily seen under a lens, up to 0.28 mm. long; petioles up to 12 mm. long, glabrous or rather sparingly hirtellous; flowers borne in dense terminal panicles, branching at base and composed of verticillasters of numerous slender ascending spikes, the panicles up to 25 cm. long and 12 cm. broad at base, the spikes up to 4 cm. long, the lowermost internode of the main rachis about 2 cm. long, the others successively shorter towards tip of inflorescence, the internodes of the spikes 2 to 7 mm. long, these and the main rachis rather densely hirsute, the hairs variously curved and up to 1.5 mm. long, the flowers secund; bracts subtending the verticillasters subulate, up to 5 mm. long, 0.5 mm. wide at base, glabrous or sparingly hirtellous; bractlets up to 3 mm. long, subulate, carinate, glabrous or sparingly hirtellous, the bracts and bractlets subtending the flowers similar to those subtending the verticillasters but slightly smaller; calyx 4 mm. long, deeply segmented, minutely hirtellous, the hairs ascending, up to 0.1 mm. long, the segments subulate, up to 0.5 mm. wide near base; corolla blue (Klug), sparingly pubescent (the hairs up to 0.13 mm. long), 6 mm. long, the upper lip 2.5 mm. long, 1 mm. wide, emarginate at tip, the lower lip spreading,

3 mm. long, about 3 mm. wide, 3-lobed, the lobes rounded, about 1 mm. in diameter; stamens 2.5 mm. long, the filaments slender, the anther lobes slightly superposed, somewhat obliquely attached, the upper 0.4 mm. long and 0.2 mm. wide, the lower slightly shorter, both rounded at base, the connective 0.25 mm. wide; style 5 mm. long, glabrous, the stigma minutely bilobed and rounded.

Woods, ditches, and grassy meadows in Colombia, Brazil, French Guiana, and Ecuador.

Justicia martiana is closely related to *J. comosa* but can be easily recognized by its large dense hirsute panicles. The species shows considerable variation. The flowers vary from white to blue. Schomburgk's No. 305, the type of var. *hispida* Nees, from French Guiana, has a glandular pubescent inflorescence and ovate leaf blades with rounded or subcordate bases. Klug's specimens, cited here, have slenderly lanceolate leaf blades gradually narrowed to the base, but those of Uribe-P., although likewise narrowly lanceolate, are rounded at base and briefly decurrent on the petiole. The capsules of Schomburgk's plant are 4 mm. long, 2.25 mm. wide, and about 1 mm. thick, short-clavate and rather densely hirtellous.

CAQUETÁ: Without locality, Uribe-P. s. n. (US).

PUTUMAYO: Forest of Umbría, 325 meters, Klug 1742 (GH, NY, US).

60. *Justicia laevilinguis* (Nees) Lindau

Rhytiglossa laevilinguis Nees in Mart. Fl. Bras. 9, pt. 7: 120. 1847. Several syntypes, all from Brazil, are cited; a photograph (US) of a Sellow specimen without specific locality probably represents type material (Field Mus. No. 8838).

Rhytiglossa obtusifolia Nees, *loc. cit.* Two syntypes are cited: Buenos Aires, Argentina (Herb. Arnott), and Porto Alegre, Rio Grande do Sul, Brazil, Sellow; there is a photograph (US) of a specimen in the Berlin Herbarium collected in Brazil (without specific locality) by Sellow that may be type material (Field Mus. No. 8848).

Justicia laevilinguis Lindau, Bot. Jahrb. Engler 19, Beibl. 48: 20. 1894.

Dianthera laevilinguis Durand & Jackson, Ind. Kew. Suppl. 1: 132. 1902 (attributed erroneously to Lindau).

Justicia obtusifolia Lindau Bull. Herb. Boiss. Ser. 2, 3: 633. 1903. Based on *Rhytiglossa obtusifolia* Nees.

Herbs; stems simple or moderately branched, erect or ascending and rooting at the lower nodes, more or less succulent, 4-sulcate, glabrous or sparingly and retrorsely pilose, the hairs septate, up to 1 mm. long; leaves sessile or the lowermost short-petioled (up to 3 mm. long), linear or narrowly lanceolate, up to 13 cm. long and 23 mm. wide, slenderly acuminate (the tip itself obtuse), acute, obtuse or rounded at base, both surfaces glabrous or the costa of the lower surface bearing a few scattered hairs, the cystoliths minute and inconspicuous; spikes terminal and axillary, up to 6 cm. long, rather slender, the flowers secund, the rachis glabrous, its internodes up to

5 mm. long at maturity, the peduncles up to 7 cm. long, glabrous or nearly so; bracts triangular, up to 2 mm. long, 1 mm. wide at base, acuminate, glabrous; bractlets subulate, 1 mm. long, 0.5 mm. wide at base, glabrous; calyx up to 7 mm. long, deeply segmented, the segments linear-lanceolate, 0.75 mm. wide, acuminate, glabrous or sparingly ciliolate toward tip, the minute delicate cystoliths rather prominent under a lens; corolla white, tinged with violet, blue violet or purple, glabrous or minutely and sparingly pubescent, rarely over 15 mm. long, the tube 6 mm. long, 1.5 mm. broad at base, 3 mm. broad at mouth, the upper lip obovate, up to 1 cm. long and 4.5 mm. wide, rounded, entire, the lower lip spreading, up to 13 mm. long and about 15 mm. wide, 3-lobed, the lobes ovate, about 6 mm. long and wide, rounded, delicately veined; stamens exerted about 3 mm. above mouth of corolla tube, glabrous, the anther cells superposed, the upper cell horizontal, 1.25 mm. long, 0.5 mm. broad, the lower vertical, 1.75 mm. long, 0.5 mm. broad, acute at base, both cells glabrous, the connective about 0.5 mm. wide; capsules ovate-stipitate, 17 mm. long, 6 mm. wide, 0.75 mm. thick (the solid stipe 7 mm. long and 0.75 mm. thick and 0.5 mm. wide), acute at tip, glabrous; retinacula 3 mm. long, slightly curved, bidentate at tip; seed suborbicular, 5 mm. long, 5.5 mm. broad, barely 0.5 mm. thick, gray or flecked brown, glabrous, the margin thin, lacerate or toothed at tip and base.

Justicia laevilinguis, a plant of swampy regions, is widely distributed throughout tropical America. In spite of its great range, specimens are not often collected, probably because it is not abundant in any particular place. The specimens cited were all from below 50 meters altitude.

Its broad strongly flattened capsules and thin orbicular gray or brown flecked, thin-margined seeds are unique.

ATLÁNTICO: Barranquilla and vicinity, *Bro. Elias* 287 (US); *Bro. Paul* B-19 (US).

BOLÍVAR: River marsh at Magangué, *Pennell* 3948 (NY); 3958 (GH, NY, US).

MAGDALENA: Savanna, Chiriguana, *Cyril Allen* 25 (Mo). Wet soil, El Blanco, *Pennell & Rusby* 24 (NY).

61. *Justicia idiogenes* Leonard, sp. nov.

FIGURE 230

Suffrutex, caulibus subquadrangularibus, sursum dense hirsutis, pilis patulis, deorsum glabratis; lamina foliorum oblongo-elliptica, apice acuta vel acuminata (apica ipso obtuso), basi angustata, aliquanto firma, integra, supra glabra, subtus hirtella, pilis praecipue in costa et venis positis, curvatis, ascendentibus, cystolithis minutis, inconspicuis; petioli hirsuti; spicae axillares, solitariae vel binae, plus minusve curvatae, floribus secundis, pluribus et densis, rhache et pedunculo gracilibus, hirtellis; bracteae spathulatae, obtusae vel rotundatae, basi angustatae, aliquanto hirtellae et ciliatae; bracteolae

similes sed paulo angustiore; calycis sementa lanceolato-subulata, glabra; corolla alba (interdum lilacina), parva, labiis subaequalibus, labio superiore erecto, ovato, apice subobtusum et emargiantum, labio inferiore 3-lobato, plus minusve patulo, lobis ovatis, rotundatis; stamina vix exserta, lobis antherarum leviter superpositis, glabris, lobo inferiore calcarato, filamentis planis, subhyalinis; capsulae parvae, clavatae, parce hirtellae; retinacula fere recta, apice tenuia; semina suborbicularia, plana, nigra, glabra.

Shrubs up to 1.5 meters high; stems subquadrangular, up to 5 mm. in diameter, densely hirsute, the hairs coarse, spreading, up to 0.65 mm. long, the lower portions of the stems glabrate; leaf blades oblong-



FIGURE 230.—*Justicia idiogenes* Leonard (*a, b*, Cuatrecasas 10757; *c-e*, Klug 1813): *a*, Tip of plant to show inflorescence and leaves; *b*, calyx, bract and bractlet; *c*, bract; *d*, stamen; *e*, capsule valve. (*a*, Half natural size; *b*, 4 times natural size; *c*, 5½ times natural size; *d*, 6 times natural size; *e*, 1½ times natural size.)

elliptic, up to 25.5 cm. long and 9 cm. wide, acute to subacuminate (the tip itself subobtusum), narrowed at base, rather firm, entire, the upper surface glabrous, the lower surface hirtellous, the hairs confined chiefly to costa and lateral veins, curved, ascending, about 0.2 mm. long, the venation rather prominent, more so beneath than above, the cystoliths minute and inconspicuous, blackish; petioles up to 13 mm. long, hirsute; spikes solitary or in pairs, axillary, sessile, up to 6 cm. long, 5 mm. broad, more or less curved, the flowers secund, numerous, crowded, the rachis slender, hirtellous, the peduncle short; bracts spatulate, 4.25 mm. long, 1.5 mm. wide

near tip, obtuse or rounded, narrowed and slender toward base, rather sparingly hirtellous and ciliolate; bractlets similar but narrower (0.75 mm. wide); calyx 4 mm. long, glabrous, the segments lance-subulate, about 0.25 mm. wide at base; flowers white (lilac and red-brown, *Klug* 1813), 8 mm. long, glabrous, 1.5 mm. broad at base, 2.5 mm. broad at mouth, the lips subequal, 2.5 mm. long, the upper lip ovate, erect, 2 mm. wide near base, obtusish and emarginate at tip, the lower lip more or less spreading, 3-lobed, the lobes ovate, 1.5 mm. long, 0.5 mm. wide, rounded; stamens slightly exerted beyond the mouth of the corolla tube, the anther lobes slightly superposed, 0.75 mm. long, 0.25 mm. broad, glabrous, the lower cell calcarate, the filaments flat and subhyaline; stigma slightly exceeding the upper lip of the corolla; capsules (*Klug* 1813) clavate, sparingly hirtellous, 8 mm. long, 3.5 mm. broad, 1.5 mm. thick, the stipitate solid basal portion 1.25 mm. broad; retinacula 1.5 mm. long, nearly straight, the margins and tip thin; seeds suborbicular, flat, black, smooth.

Type in the U. S. National Herbarium, No. 1798533, collected in damp forests along the Río Putumayo at Puerto Porvenir, Comisaría of Putumayo, Colombia, 230 to 250 meters altitude, November 22, 1940, by J. Cuatrecasas (No. 10757).

The following specimens also may be of this species: *Klug's* No. 1813, collected in the forests of Umbria, Comisaría of Putumayo, 325 meters altitude, October or November 1930, and Richard Evans Schultes' No. 3538, collected along the Río San Miguel, in the vicinity of Conejo, Putumayo, 300 meters altitude, April 2-5, 1942.

Klug's specimen differs from the type in its lilac and red-brown (not white) flowers and in the slightly wider and more slenderly stipitate bracts. It does not seem expedient, however, to assign specific or varietal rank to this plant until further material can be examined.

Schultes' specimen was taken from a large herb and was called in the Kofán vernacular, "chu-ru-ko-pu."

The specific epithet is from the Greek *ιδιογενής*, meaning peculiar of its kind, in allusion to the peculiar curved secund spikes.

62. *Justicia fusagasugana* Leonard, sp. nov.

FIGURE 231

Herba ramosa, caulibus subteretibus, dense bifariam hirtellis, pilis retrorse curvatis, nodis tumidis; lamina foliorum oblongo-ovata vel lanceolata, apice obtusa, acuta vel acuminata, basi rotundata vel cuneata, aliquanto firma, integra vel undulata, hirtella, pilis patulis, plus minusve curvatis; petioli dense hirtelli; flores sessiles vel in spicis brevibus dispositi, terminales et axillares, rhachibus hirtellis; bracteae lineari-subulatae, carinatae, parce hirtellae, pilis acutis et pilis glandulosis intermixtis; segmenta calycis lanceolata,

ciliolata, extus parce hirtella, intus papillosa, marginibus albis et subhyalinis; corolla lilacina, minute pubescens, tubo angusto hypocrateriformi, labio superiore anguste ovato, labio inferiore cuneiformi, 3-lobato, lobis rotundatis; stamina vix exserta, lobis antherarum rectis, superpositis, lobo inferiore caudato; ovarium dense puberulum.

Branching herbs up to 1 meter high; stems subterete, rather densely hirtellous, the hairs more or less disposed in two lines, retrorsely curved, up to 0.4 mm. long, the nodes swollen; leaf blades oblong-ovate to lanceolate, up to 8 cm. long and 2.5 cm. wide, obtuse,

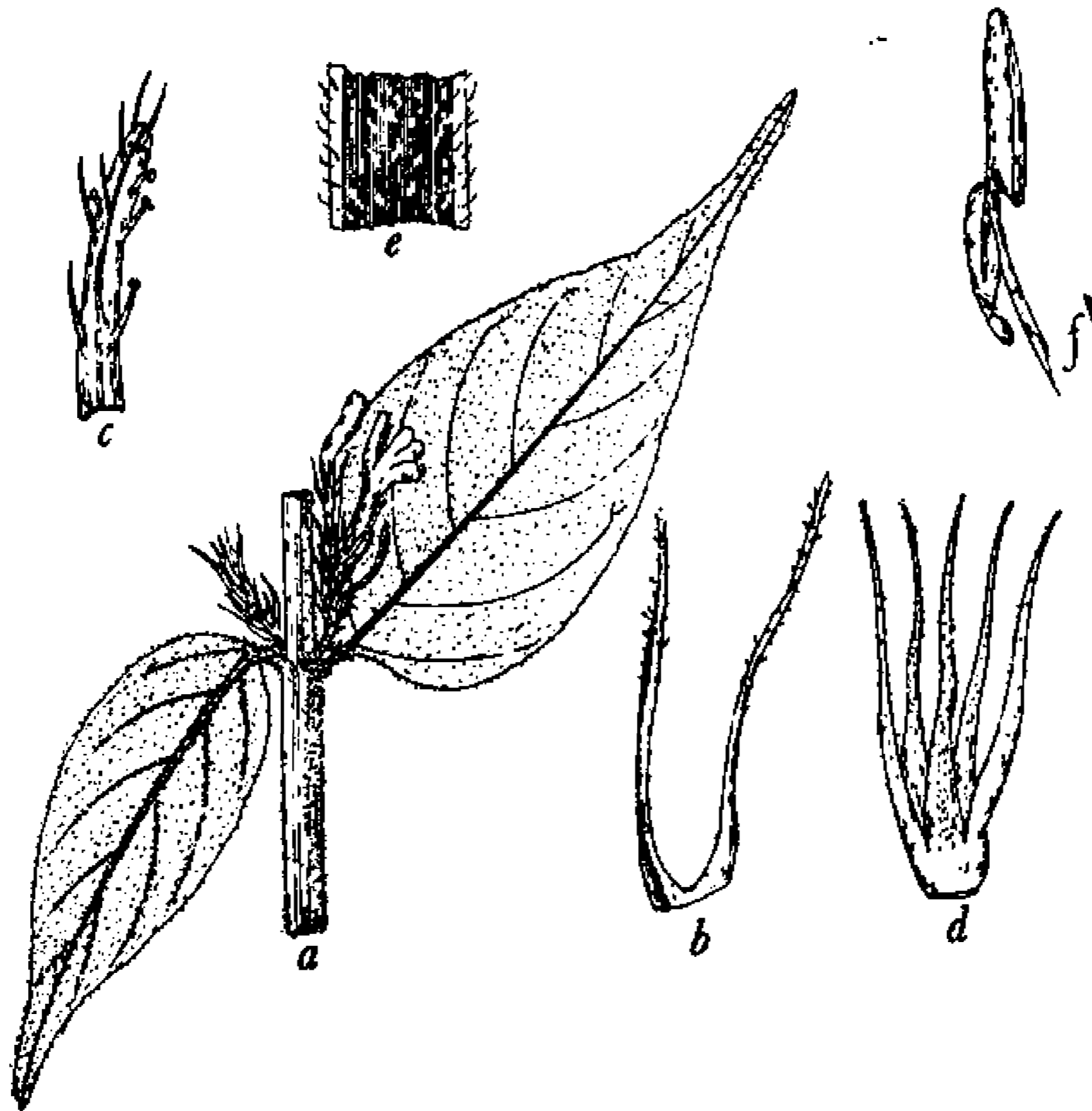


FIGURE 231.—*Justicia fusagasugana* Leonard (André 1517): *a*, Node of stem showing inflorescence; *b*, bracts; *c*, tip of bract enlarged to show type of hairs; *d*, calyx; *e*, section of calyx segment (outer surface) enlarged to show hyaline margins; *f*, anther. (*a*, Natural size; *b*, $3\frac{1}{2}$ times natural size; *c*, 25 times natural size; *d*, 3 times natural size; *e*, *f*, 10 times natural size.)

acute or acuminate, rounded to narrowed at base, moderately firm, entire or undulate, hirtellous, the lower surface sometimes densely so, the hairs up to 0.4 mm. long, mostly spreading and more or less curved; petioles up to 1.5 cm. long, hirtellous, usually densely so; flowers several, borne in close axillary clusters or sometimes in short axillary spikes up to 1.5 cm. long with hirtellous rachises; bracts linear-subulate, up to 8 mm. long, 0.5 mm. wide at base, carinate, sparingly hirtellous, the hairs 0.25 mm. long, some of them gland-tipped; calyx segments lanceolate, 9 mm. long, 1.5 mm. wide at base,

0.5 mm. wide at middle, thence gradually narrowed into a slender tip, ciliolate, the outer surface sparingly hirtellous, the hairs up to 0.25 mm. long, the inner surface papillose, the margins whitish and subhyaline; corolla lilac, sparingly and minutely pubescent, the tube 9 mm. long, the throat about 4 mm. broad, the upper lip narrowly ovate, about 6 mm. long, the lower cuneiform, 11 mm. long, 3-lobed, the lobes 2.5 mm. long, 1.5 mm. wide, rounded; stamens exserted, reaching to middle of lips of the corolla, the anther lobes superposed and vertical, 1.5 mm. long, 0.5 mm. broad, the lower one caudate, the tail 0.75 mm. long; ovary densely puberulent; capsules not seen.

Type in the Kew Herbarium, collected at Fusagasugá, Department of Cundinamarca, Colombia, 1,780 meters altitude, February 4, 1876, Ed. André (No. 1517).

Cundinamarca: Tocaima, 500 meters altitude, January 1858, *Triana s. n.* (Col).

Justicia fusagasugana is closely related to and superficially resembles the Mexican *J. furcata* Jacq. The habit of growth, leaf blades, stems, and inflorescences of the two species are very similar. The bracts and calyces are, however, definitely different. In *J. furcata*, the bracts are thick, narrowly obovate, up to 3 mm. wide and broadest above the middle, acute at tip, the costa prominent, and the calyces are noticeably larger and their segments oblong instead of slenderly acuminate.

63. *Justicia scytophylla* Leonard, sp. nov.

FIGURE 232

Herba vel suffrutex, caulibus ramosis, subquadrangularibus, angulis rotundatis, deorsum leviter sulcatis, glabris, sursum bifariam hirtellis, pilis albis, curvatis; lamina foliorum lanceolata, apice acuta, basi obtusa, breviter in petiolum decurrens, coriacea, integra vel undulata, glabra vel in costa et area marginali parce hirtella, costa et venis lateralibus et venulis crasse reticulatis utrinque prominentibus, cystolithis nullis; petioli breves, minute puberuli, pilis subappressis; spicae densae, terminales, rhachibus minute puberulis, pilis curvatis, pedunculis bifariam puberulis; bracteae parvae, anguste lanceolatae, acutae, ciliatae, parce et minute hirtellae, costa prominente; bracteolae subulatae, costa prominente, ciliatae et parce hirtellae; calycis segmenta lanceolata, apice acuta, gracilia, ciliata, parce et minute hirtella; corolla hypocrateriformis, sursum pubescens, deorsum glabra, labio superiore anguste ovato, apice bilobato, lobis parvis, obtusis, labio inferiore cuneato, 3-lobato; stamina vix exserta, glabra, lobis antherarum superpositis, minute dorsale pilosis, connectivo lato; capsulae clavatae, pubescentes.

Herbs or suffrutescent plants; stems branching, subquadrangular, the angles rounded, the lower portions shallowly grooved, glabrous,

the upper parts bifariously hirtellous, the hairs white, variously curved, up to 0.45 mm. long; leaf blades lanceolate, up to 6.5 cm. long and 12 mm. wide near base, gradually narrowed to an acute tip, narrowed or obtuse at base and briefly decurrent on the petiole, coriaceous, entire or undulate, glabrous or the costa and marginal regions sparingly hirtellous, the hairs on the costa curved, subappressed, up to 0.24 mm. long, those on and near the margins of the leaf blades rigid, mostly ascending and about 0.08 mm. long, the costa, lateral veins (about 7 pairs) and the coarsely reticulated veinlets prominent on both surfaces of the leaf blade, the cystoliths not apparent; petioles 1 to 3 mm. long, finely puberulous with subappressed hairs; flowers borne in dense spikes 1 to 2.5 cm. long and 5 to 10 mm. broad, these terminating the branches, the rachises minutely puberul-

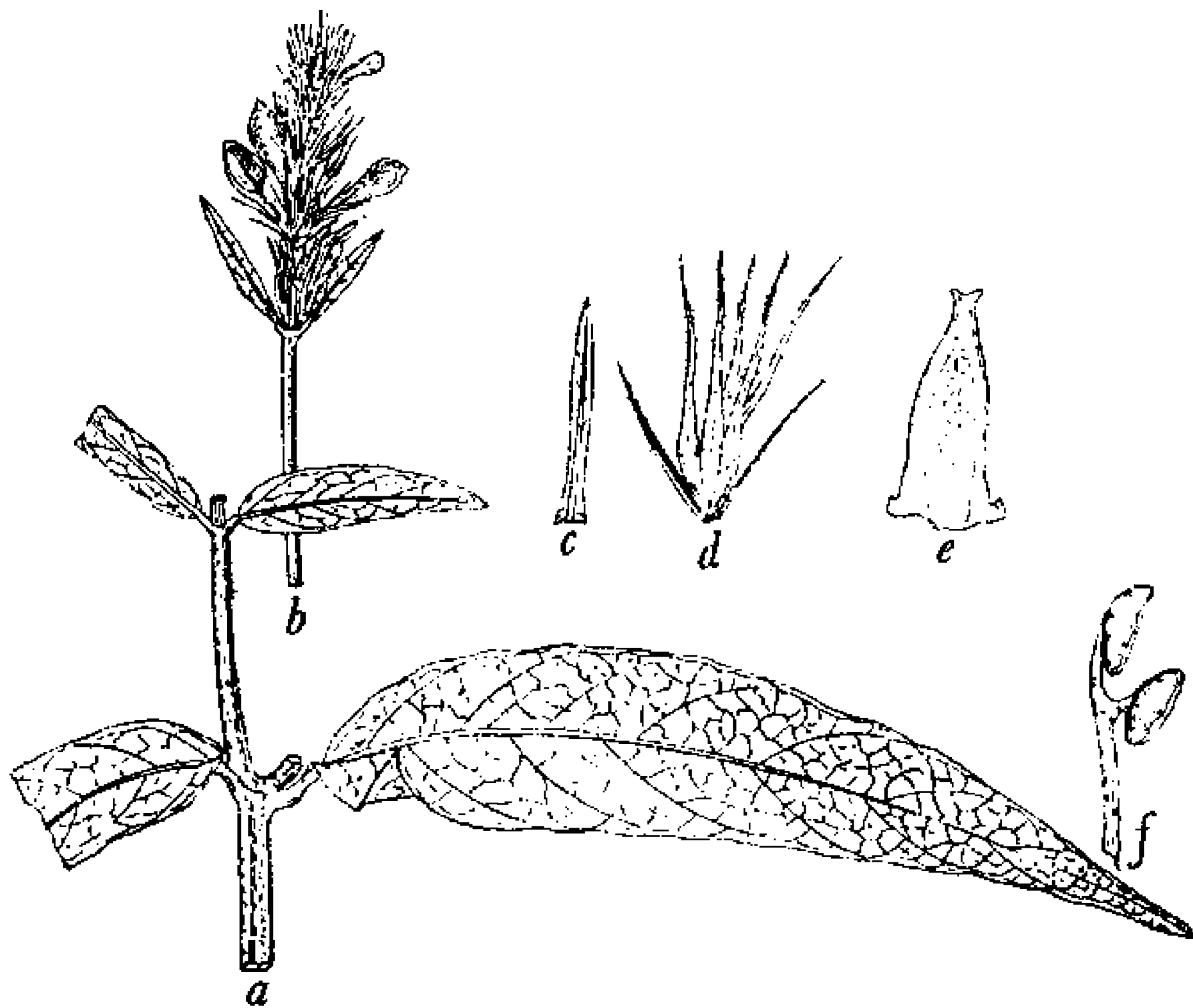


FIGURE 232.—*Justicia scytophylla* Leonard (Schultes & Cabrera 17545): *a*, Portion of stem 5 cm. below spike; *b*, spike; *c*, bract; *d*, calyx and bractlets; *e*, upper lip of corolla; *f*, anther. (*a*, *b*, Natural size, *c*, *e*, $3\frac{1}{2}$ times natural size; *d*, 3 times natural size; *f*, about 9 times natural size.)

ous with more or less curved hairs, only a few of which exceed 0.16 mm. in length; peduncles up to 3 cm. long, bifariously puberulous with curved hairs; bracts narrowly lanceolate, 4.5 mm. long, 0.5 mm. wide near the middle, acute, sparingly and minutely hirtellous and ciliate, the costa prominent; bractlets subulate, 5 mm. long, 0.25 mm. wide at base, the hairs and costa similar to those of the bracts; calyx segments 5, lanceolate, 5.5 mm. long, 0.5 mm. wide near base and middle, thence narrowed into a slender tip, sparingly and minutely hirtellous

and ciliate, the hairs up to 0.08 mm. long; corolla 8 mm. long, the upper part finely and rather sparingly pubescent, the lower part glabrous, the tube 1.5 mm. broad at base, 2 mm. broad at the throat, the upper lip rather narrowly ovate, 6 mm. long, 2 mm. wide at base, narrowed from middle to a minutely bilobed tip 0.5 mm. wide, the lobes 0.25 mm. long, obtuse, the lower lip subovate, about 6 mm. long and 4 mm. wide, rather shallowly 3-lobed at tip; stamens about 3 mm. long, slightly exerted, the filaments slender, glabrous, the anther cells superposed, 0.75 mm. long, 0.25 mm. thick, minutely pilose dorsally, the connective 0.25 mm. wide; capsules clavate, 7 mm. long, the seed-bearing part 4 mm. long, 3 mm. broad and about 2 mm. thick, the surface rather densely pubescent, the hairs spreading near tip, retrorse toward base of capsule; retinacula 1.5 mm. long, the tip thin, oval, cucullate.

Type in the U. S. National Herbarium, No. 2124584, collected along the Río Piraparaná, a tributary of the Río Apaporis, Comisaría of Vaupés, September 18, 1952, by Richard Evans Schultes and Isidoro Cabrera (No. 17545). Isotype: US.

The color of the corolla is not apparent in the dried material. The specific epithet is from the Greek *σκῦτος*, leather, and *φύλλον*, leaf, in allusion to the coriaceous texture of the leaf blades.

64. *Justicia killipii* Leonard, sp. nov.

FIGURE 233

Herba ascendens, caulibus subquadrangularibus, minute et subtiliter et retrorse strigosis; lamina foliorum ovata, breviter acuminata (apice ipso obtuso), basi acuta vel obtusa, aliquanto firma, integra, utrinque glabra, costa et venis lateralibus subtus prominentibus, strigosis, cystolithis gracilibus et aliquanto obscuris; petioli strigosi vel hirtelli; spicae trifurcatae, terminales, angustae, pedunculo communi longo, quadrangulati, hirsuto, pilis ascendentibus, pedunculis secundariis brevioribus hirsutis; bracteae spicas subtendentes anguste lanceolatae, carinatae, hirsutae, pinnati-nervatae; bracteae flores subtendentes lanceolatae, subacutae, parce hirtellae, pilis fere marginalibus patulis vel ascendentibus, rectis vel suberectis, costa at nervis prominentibus; bracteolae anguste triangulares, acutae, parce hirtellae, costa et nervis lateralibus prominentibus; calycis segmenta hirtella (pilis glandulosis leviter curvatis) et puberula (pilis patulis, glandulosis), costa et nervis prominentibus; corolla alba, minute hirtella, pilis rectis, plus minusve patulis, labio superiore erecto, oblongo-ovato, apice subacuto, labio inferiore plus minusve patulo, cuneiformi, 3-lobato, lobis suborbicularibus; stamina exserta, in labio antico corollae declinata, filamentis sursum glabris, deorsum retrorse hirsutis, lobis antherarum superpositis, verticalibus, lobo inferiore

caudato; capsulae clavatae, hirtellae et puberulae, pilis patulis glandulosis et pilis longioribus acutis, rigidis, patulis vel basi retrorsis vel apice ascendentibus intermixtis; retinacula leviter curvata, apice alba, truncata, erosa.

Herbs up to 25 cm. high, ascending; stems subquadrangular, minutely and finely retrorsely strigose, the hairs up to 0.11 mm. long; leaf blades ovate, up to 9 cm. long and 4.8 cm. wide, short-acuminate

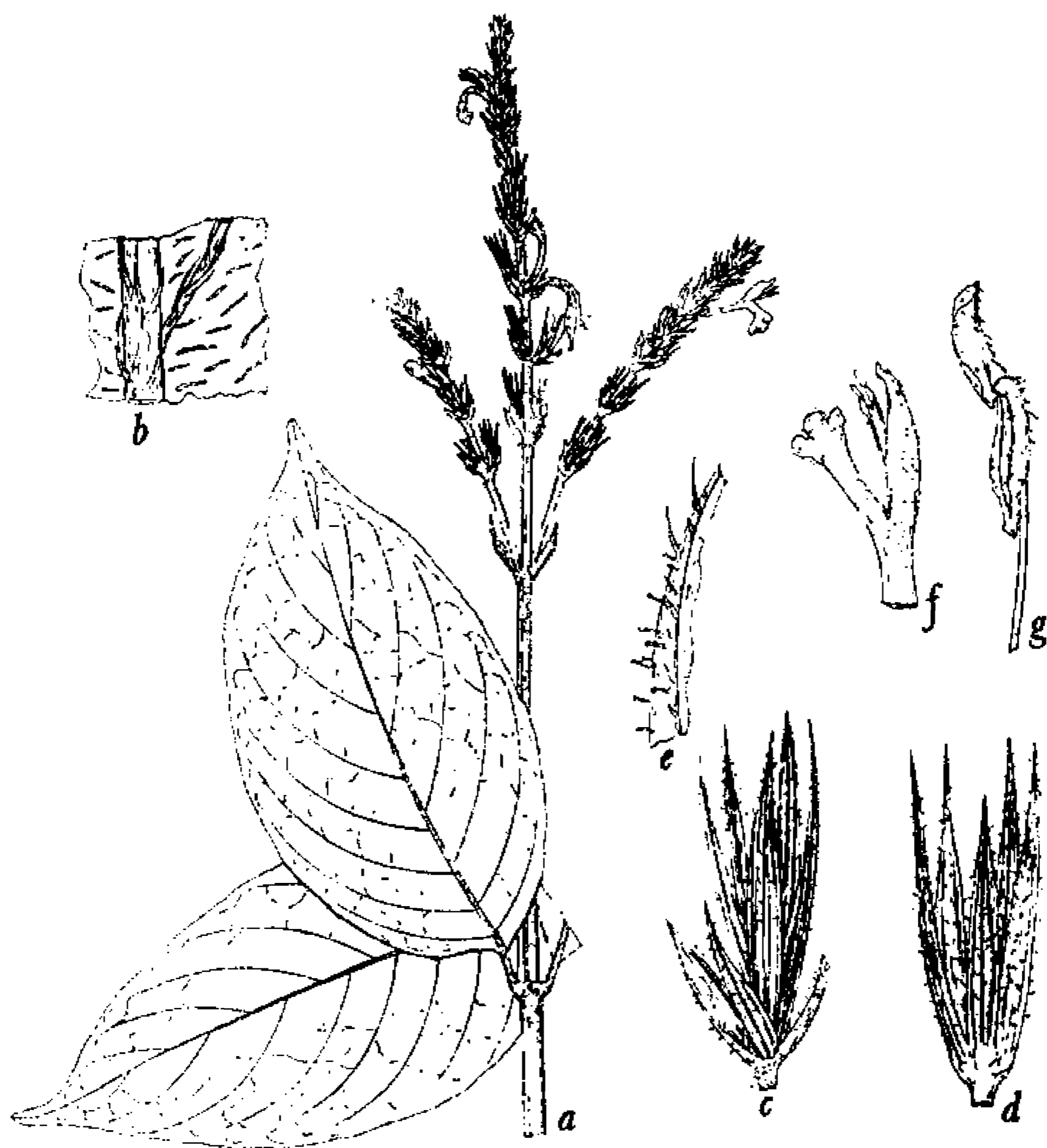


FIGURE 233.—*Justicia killipii* Leonard (Killip 35469): *a*, Tip of plant; *b*, portion of leaf (under side) in detail to show hairs and cystoliths; *c*, bracts, a bractlet and calyx; *d*, calyx; *e*, portion of bract enlarged to show pubescence; *f*, tip of corolla; *g*, anther. (*a*, Half natural size, *b*, 20 times natural size; *c*, *d*, 4 times natural size; *e*, 25 times natural size; *f*, $1\frac{1}{2}$ times natural size; *g*, 9 times natural size.)

(the tip itself blunt), acute to obtuse at base, rather firm, entire, glabrous on both surfaces except the strigose costa and lateral veins (8 or 9 pairs) of the lower surface, the cystoliths slender, up to 0.24 mm. long, rather obscure; petioles up to 1 cm. long, sparingly strigose or hirtellous, the hairs up to 0.16 mm. long; flowers borne in trifurcate spikes up to 7 cm. long and 5 mm. broad, the common peduncle 10.5 cm. long, subquadrangular, 1.5 mm. thick, hirsute, the hairs ascending,

up to 0.32 mm. long, septate, the secondary peduncle of central spike 17 mm. long, those of the lateral ones 15 mm. long, all hirsute, the bracts subtending the 3 spikes lanceolate, 7 mm. long, 2.5 mm. wide, carinate, closely penninerved, hirsute, the hairs mostly marginal and costal; bracts subtending the flowers narrowly ovate, subacute, 4.5 mm. long, 1.25 mm. wide at base, sparingly hirtellous, the hairs mostly marginal, up to 0.19 mm. long, spreading or ascending, straight or nearly so, the costa and lateral nerves (2 or 3 pairs) prominent; bractlets narrowly triangular, 4 mm. long, 0.75 mm. wide at base, sparingly hirtellous, acute, costa and lateral nerves 1 or 2 pairs, prominent; calyx 7 mm. long, hirtellous and puberulous, the longer hairs eglandular, slightly curved, up to 0.19 mm. long, the smaller hairs straight, spreading, up to 0.06 mm. long, tipped by small spherical glands, the costa and the 2 pairs of lateral nerves prominent; corolla 15 mm. long, white, minutely hirtellous, the hairs straight or slightly curved, more or less spreading, the tube 6 mm. long, 2 mm. broad at base, narrowed at 3 mm. above base to 1.5 mm., thence enlarged to 2 mm. at throat, the upper lip erect, oblong, about 9 mm. long, 3 mm. wide near base, acutish at tip, the lower lip more or less spreading, about 7 mm. long, cuneate, 2 mm. wide at base of the lobes, these suborbicular, about 1.25 mm. in diameter, the stamens reaching the tip of and partly lying in the upper lip of the corolla, declinate, the filaments glabrous except at base, here retrorsely hirsute, the hairs about 0.16 mm. long, straight, slender; anthers 2.5 mm. long and 0.5 mm. thick, the cells superposed, vertically attached to the connective, the lower cell terminating in a blunt tail 0.5 mm. long; capsules clavate, about 1 cm. long, 2 mm. broad, 1.75 mm. thick, both hirtellous and puberulous, the longer hairs rigid, eglandular, spreading or retrorse toward base and ascending toward tip, up to 0.13 mm. long, the smaller hairs spreading, up to 0.06 mm. long, glandular; retinacula 4, about 2 mm. long, white, truncate, erose.

Type in the U. S. National Herbarium, No. 1772180, collected in dense forests at Istmina, on the Río San Juan, Intendencia of Chocó, Colombia, about 75 meters altitude, April 29, 1939, by E. P. Killip (No. 35469).

CHOCO: Río San Juan, vicinity of Palestina, 0-40 meters, May 29, 1946' Cuatrecasas 21428 (Valle).

Justicia killipii is closely related to *J. sterea* Leonard but can be separated by its smaller size, the more ovate-shaped leaves and the much larger spikes. The plants of *J. sterea* often exceed 70 cm. in height, thus being at least twice as high as those of *J. killipii*; their elliptic leaves are up to 13.5 cm. long and 5.5 cm. wide instead of only 9 cm. long and 4.8 cm. wide, and their spikes are only 3 cm. long instead of 7 cm.

65. *Justicia graphophylla* Leonard, sp. nov.

FIGURE 234

Herba magna, caulibus subquadrangularibus, glabris vel in nodis parce puberulis, pilis rigidis, antorse appressis, cystolithis multis, subpunctiformibus; lamina foliorum oblongo-elliptica, breviter acuminata (apice gracili), basi angustata, firma, undulata, utrinque glabra, costa et venis lateralibus et venulis crasse reticulatis prominentibus, cystolithis utrinque multis, conspicuis; petioli glabri vel parce strigosi; spicae axillares et terminales; pedunculi antorse hirtelli, pilis rigidis; rhaches subquadrangulares, dense hirtellae, pilis rigidis, antorse subappressis; bracteae infimae subulatae, carinatae, conduplicatae, parce hirtellae, pilis rigidis ascendentibus, cystolithis multis et conspicuis; bracteae supremae subulatae vel anguste triangulares, parvae, acuminatae, carinatae, parce hirtellae, cystolithis multis et conspicuis; bracteolae bracteis similes vel leviter breviores; calycis segmenta anguste linearia, parce hirtella, pilis rigidis, ascendentibus, cystolithis multis, conspicuis; corolla alba, labio anteriore violaceo-maculato, tubo angusto, basi glabro, sursum aliquanto dense hirtello, pilis plus minusve patulis, rigidis, labio superiore erecto, oblongo-ovato, apice rotundato, emarginato, labio inferiore patulo vel recurvato, oblongo, intus glanduloso-papilloso, apice 3-lobato, lobis parvis, rotundatis, lobo medio cucullato; stamina exserta labium corollae aequalia vel leviter breviora, filamentis glabris, lobis antherarum hirsutis, superpositis, verticalibus, lobo inferiore breviter caudato; ovarium glabrum.

Large herbs, probably up to 1 meter high or more; stems subquadrangular, glabrous or sparingly puberulous at the nodes, the hairs rigid, upwardly appressed, the cystoliths numerous, subpunctiform; leaf blades oblong-elliptic, up to 17 cm. long and 8 cm. wide, short-acuminate, the tip slender, narrowed at base, firm, undulate, both surfaces glabrous, the costa, lateral veins (usually 8 pairs) and the coarsely reticulated veinlets prominent, the cystoliths of both surfaces numerous and conspicuous, 0.24 mm. long; petioles 2 to 2.5 cm. long, glabrous or sparingly strigose; spikes axillary and terminal, usually about 6 cm. long; peduncles 8 to 13 mm. long, upwardly hirtellous, the hairs rigid, subappressed, mostly about 0.11 mm. long; rachis subquadrangular, about 0.75 mm. in diameter, densely hirtellous with rigid upwardly subappressed hairs, the internodes up to about 8 mm. long, the lowermost pair of bracts subulate, 4 mm. long, 0.5 mm. wide at base, carinate and conduplicate, sparingly hirtellous, the hairs ascending, rigid, about 0.16 mm. long, the cystoliths numerous and conspicuous, the upper bracts subulate or narrowly triangular, about 1.5 to 2.5 mm. long, narrowed from base to a slender tip, carinate, sparingly hirtellous and covered with cystoliths; bractlets similar to the bracts, equaling them or slightly shorter; calyx segments narrowly linear, 8.5 mm. long, about 0.75 mm. wide, sparingly hirtellous, the

hairs rigid and ascending, up to 0.2 mm. long, the cystoliths numerous, parallel and conspicuous; corolla white with the anterior lip spotted with violet (Pennell), 26 mm. long, rather densely hirtellous except at base, the hairs more or less spreading, up to 0.24 mm. long, rigid, the corolla tube narrow, 2 mm. broad at base, narrowed at 5 mm. above base to 1.5 mm., thence gradually enlarged to 2.5 mm. at mouth,

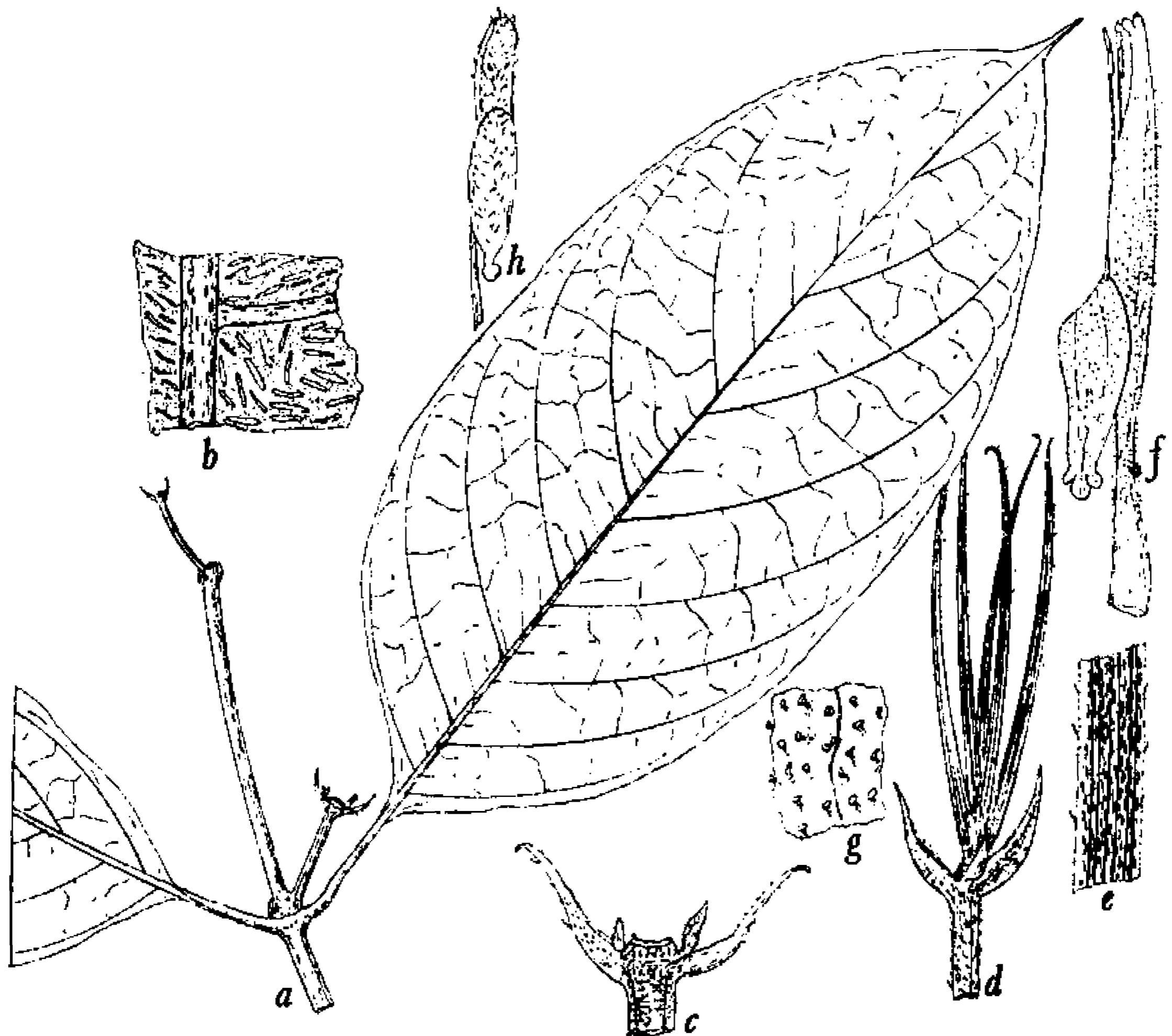


FIGURE 234.—*Justicia graphophylla* Leonard (Pennell 4500): *a*, Section of plant showing node, internode, leaf, peduncle and lowermost pairs of bracts (spikes fragmented); *b*, portion of leaf blade (under surface) enlarged to show veins and cystoliths; *c*, lowermost pair of bracts; *d*, section of spike showing bracts, a bractlet and calyx; *e*, section of calyx segment enlarged to show nerves, pubescence and cystoliths; *f*, corolla; *g*, portion of lower lip of corolla enlarged to show capitate-glandular hairs; *h*, anther. (*a*, Half natural size; *b*, about 14 times natural size; *c*, *d*, 4 times natural size; *e*, 12 times natural size; *f*, twice natural size; *g*, about 30 times natural size; *h*, 7 times natural size.)

the upper lip erect, oblong-ovate, 12 mm. long, 4 mm. wide at base, 0.75 mm. wide at tip, rounded, emarginate, the lower lip spreading or recurved, the inner surface papillose, oblong, 5 mm. wide, 3-lobed at tip, the lobes about 1 mm. long and 1.5 mm. wide, rounded, the middle one cucullate; stamens exserted, equaling or slightly shorter than the corolla lips, the filaments glabrous, the anthers 3.5 mm. long, 0.5 mm. broad, dorsally hirsute, the cells superposed and vertically attached

to the connective, the cells slightly overlapping, the lower one short-caudate, the tail rounded at tip, about 0.32 mm. long; ovary hirtellous.

Type in the herbarium of the New York Botanical Garden, collected in forest of Boca Antizales, on the Río Esmeralda, Department of Bolívar, Colombia, 800 to 1,200 meters altitude, February 26, 1918, by Francis W. Pennell (No. 4500).

Justicia graphophylla bears a close relationship to *J. phlebophylla* and resembles it in many respects, especially in the large glabrous or nearly glabrous leaf blades, these densely covered by cystoliths. In *J. phlebophylla*, the rachis of the spike is heavy and the flowers secund; the rachis does not show any tendency to fragmentation as in *J. graphophylla*. The specific epithet is from the Greek γράφω, engrave or draw, and φύλλον, leaf, in allusion to the design formed by the conspicuous cystoliths.

66. *Justicia petraea* Leonard, sp. nov.

FIGURE 235

Suffrutex, caulibus ascendentibus, fere simplicibus, sursum subquadrangularibus, basi in nodis radicanibus, hirtellis, pilis subbrunneis, retrorse curvatis, deorsum teretibus, retrorse puberulis; lamina foliorum oblongo-ovata vel oblongo-elliptica, apice breviter acuminata (apice ipso obtuso), basi obtusa vel rotundata, aliquanto firma, integra, utrinque glabra vel parce hirsuta, costa et venis lateralibus subtus prominentibus, supra obscuris, cystolithis prominentibus; petioli crassi, hirtelli; spicae terminales, simplices vel furcatae, pedunculis et rhachibus aliquanto hirtellis, pilis brunneis, plus minusve patulis; bractea parvae, anguste lanceolatae, apice obtusae, firmae, subcarinatae, striatae, hirtellae; bracteolae lineari-lanceolatae, apice obtusae, hirtellae; calycis segmenta anguste lanceolata, apice acuta, parce hirtella, graciliter 3-nervata; corolla alba, labiis purpureo-lineatis, parce puberula, labiis subaequalibus, labio superiore oblongo-ovato, apice rotundatis; stamina exserta, antherae lobis superpositis, lobo inferiore calcarato, calcare apice cucullato, rotundato, connectivo calcarato, pubescente, filamentis sursum glabris, basi retrorse hirtellis, pilis rigidis, rectis; capsulae clavatae, aliquanto hirtellae, pilis acutis et pilis brevioribus glandulosis intermixtis; semina plana, obscure muricata.

Suffrutescent plants up to 1.15 meters high or more; stems ascending, mostly simple, subquadrangular, hirtellous, the hairs brownish, about 0.28 mm. long, retrorsely curved, the lower portions of the stems subterete, glabrate or sparingly and retrorsely puberulous, the horizontal portions rooting at the nodes; leaf blades oblong-ovate or oblong-elliptic, 14 cm. long, 5.5 cm. wide, short-acuminate (the tip itself obtuse or rounded), obtuse or rounded at base, rather firm, entire, both surfaces glabrous or sparingly hirsute, the hairs brownish,

up to 1.5 mm. long, ascending or subappressed, up to 1.5 mm. long, those of costa and lateral veins (10 to 12 pairs) smaller, up to 0.5 mm. long, the venation prominent beneath, less so above, the cystoliths numerous and conspicuous, up to 0.25 mm. long; petioles stout, 2 to 4 mm. long, hirtellous with brownish ascending hairs up to 0.2 mm. long; spikes terminal, single or forked, up to 12 cm. long, the secondary peduncles about 2.5 cm. long, the lowermost internode of

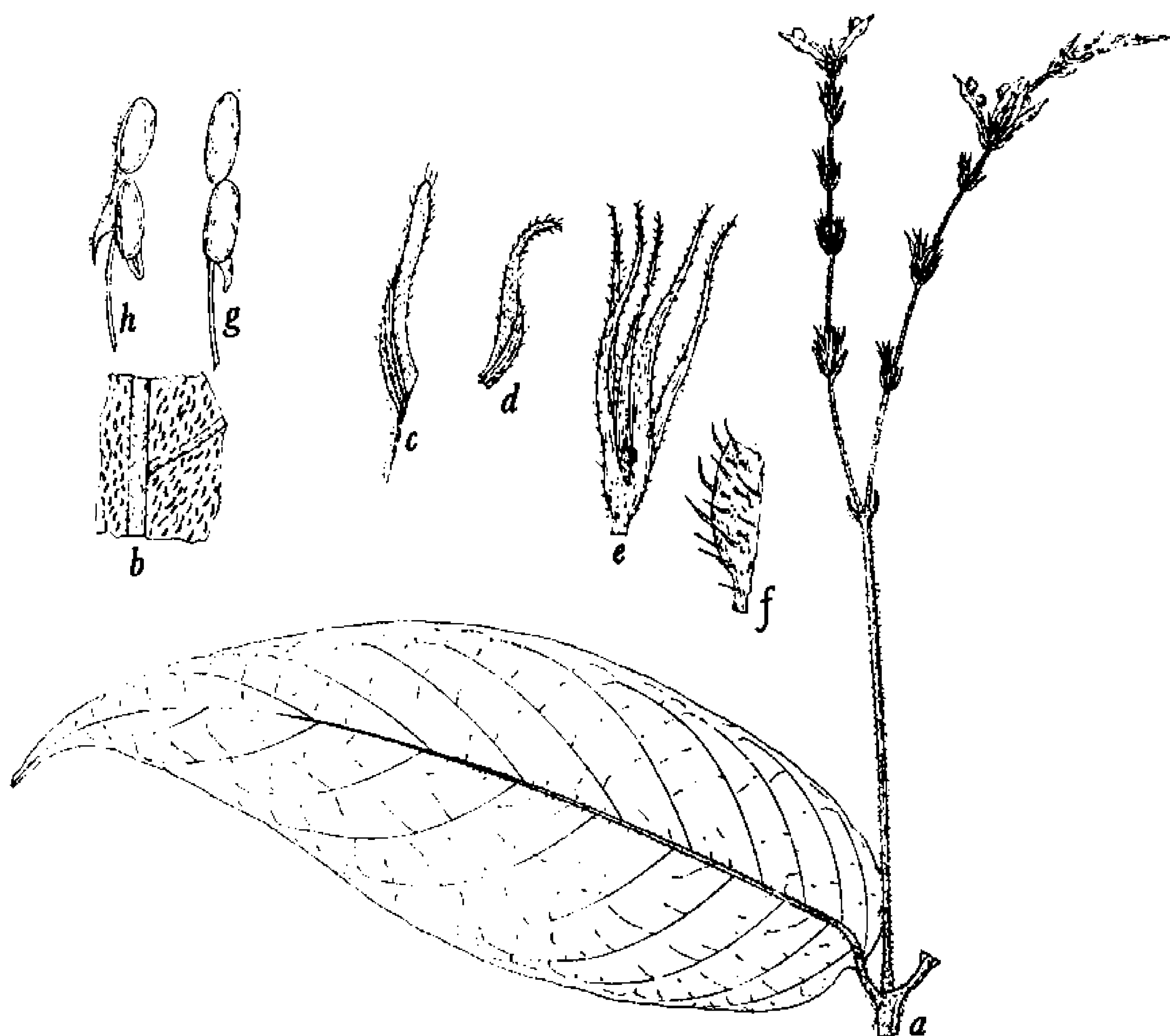


FIGURE 235.—*Justicia petraea* Leonard (C. L. Collenette 614): *a*, Tip of plant; *b*, portion of under surface of leaf blade enlarged to show pubescence and cystoliths; *c*, bract; *d*, bractlet; *e*, calyx; *f*, portion of capsule enlarged to show pubescence; *g*, anther (front view); *h*, same (lateral view). (*a*, About half natural size; *b*, 10 times natural size; *c-e*, 5 times natural size; *f*, about 20 times natural size; *g, h*, 8 times natural size.)

the rachis 1.5 cm. long, the others successively shorter toward tip of spike, these and the peduncles rather densely hirtellous, the hairs brown, more or less spreading, up to 0.3 mm. long; bracts subtending spikes subulate, 4 or 5 mm. long, about 1 mm. wide at base, gradually narrowed to a blunt tip, subcarinate, firm, hirtellous like the rachis; bracts subtending the flowers subulate, the lowermost pair linear-lanceolate, 3.5 mm. long, 0.75 mm. wide, blunt at tip, striate, hirtellous, the others successively smaller toward tip of spike; bractlets

linear, up to 3.5 mm. long and 0.5 mm. wide, blunt at tip, hirtellous; calyx 6 mm. long, the segments narrowly lanceolate, 5 mm. long, 0.5 mm. wide near the base, gradually narrowed to an acute tip, sparingly hirtellous with spreading or ascending hairs up to 0.5 mm. long, delicately 3-nerved; corolla 13 mm. long, white with mauve markings on lip, rather sparingly puberulous, the hairs spreading, up to 0.13 mm. long, the lips subequal, 6 mm. long, the upper one oblong-ovate, about 3 mm. wide, rounded at tip, the lower one cuneate, 7 mm. wide at base of the 3 lobes, these ovate, 3 mm. long, the middle one 3 mm. wide at base, the lateral ones 2 mm. wide, all rounded at tip; stamens slightly exerted, the anthers 2 mm. long, dorsally pubescent, the cells vertical or slightly oblique at maturity, superposed, 1 mm. long, 0.5 mm. wide, the lower one calcarate, the tail 0.5 mm. long, cucullate and rounded at tip, the connective spurred, the filaments glabrous except at base, here retrorsely hirtellous with straight rigid hairs up to 0.24 mm. long; capsules 4-seeded, clavate, 1 cm. long, 2 mm. broad, 1.5 mm. thick, rather sparingly hirtellous, the hairs more or less spreading, up to 0.11 mm. long or a few at the tip of the capsule reaching 0.18 mm. in length, the acute hairs intermixed with shorter gland-tipped ones; retinacula curved or bent at middle, 1.5 mm. long, the tip rounded, thin, obscurely erose; seeds flat, about 2 mm. in diameter, light brown, obscurely tuberculate.

Type in the Kew Herbarium, collected on rocks in narrow gorge near stream, Gorgona Island (off coast of Cauca), Colombia, "200 ft." altitude, October 18, 1924, by C. L. Collenette (No. 614).

Justicia petraea may be related to *J. sterea*, a species with a similar inflorescence but with the leaf blades acute at base and the petioles longer. The specific epithet is from the Greek *πετραῖος*, meaning living on or among rocks, in allusion to its habitat.

67. *Justicia sterea* Leonard, sp. nov.

FIGURE 236

Herba recta, rigida, caulibus simplicibus vel parce ramosis, subquadrangularibus, sursum bifariam retrorse strigosis, pilis minutis, deorsum glabris, cystolithis minutis et parallelis; lamina foliorum oblongo-elliptica, apice breviter acuminata et saepe curvata, basi angustata, firma, crassa, integra, supra glabra, subtus glabra, costa et venis prominentibus minute strigosis exceptis, cystolithis conspicuis sed plus minusve raris; petioli crassi, minute strigosi; spicae bifurcatae, pedunculis aliquanto longis, hirtellis, pilis brunneis, recurvatis, rhache hirtella, pilis plus minusve rectis et patulis; bracteae spicas subtendentes subulatae, acutae, carinatae, cystolithis densis conspicuis parallelis; bracteae flores subtendentes anguste triangulares, acutae, hirsutae et ciliatae, cystolithis parallelis, prominentibus; bracteolae similes sed angustiores; calycis segmenta 5, parva, lanceolata, acuta,

3-nervata, costa et marginibus parce ciliolata; corolla alba, aliquanto puberula (pilis eglandulosis et pilis glandulosis intermixtis), aliquanto parva, tubo subcylindrico, labio superiore erecto, oblongo, apice minute bilobato, lobis rotundatis, labio inferiore patulo, cuneato, trilobato, lobis rotundatis; stamina exserta, in labio antico corollae declinata, lobis antherarum superpositis, rectis, lobo inferiore calcarato; ovarium apice hirsutum.

Stiff erect herbs up to 66 cm. high or more; stems simple or sparingly branched, subquadrangular, the upper portion bifariously and retrorsely strigose (the hairs up to 0.16 mm. long), glabrous below,

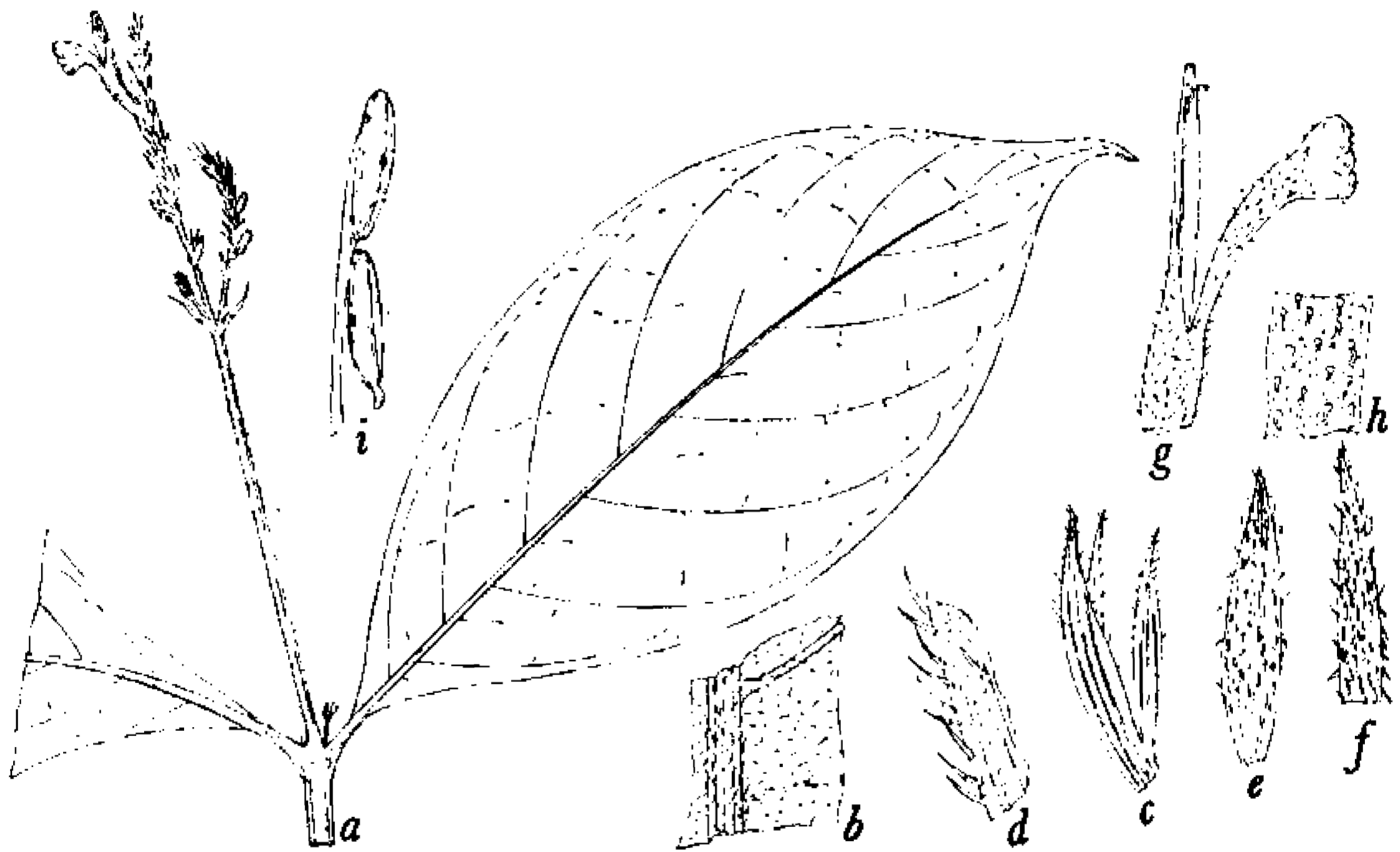


FIGURE 236.—*Justicia sterea* Leonard (Cuatrecasas 16811): *a*, Tip of plant to show leaf and inflorescence; *b*, portion of leaf blade (lower surface) enlarged to show pubescence and cystoliths; *c*, bract and bractlets; *d*, margin of bract (near tip) enlarged to show pubescence; *e*, calyx segment (inner surface); *f*, tip of calyx segment (outer surface); *g*, tip of corolla; *h*, portion of inner surface of upper lip enlarged to show glandular pubescence; *i*, anther. (*a*, Half natural size; *b*, *g*, 3 times natural size; *c*, 5 times natural size; *d*, 18 times natural size; *e*, *f*, 4½ times natural size; *h*, 30 times natural size; *i*, 15 times natural size.)

the cystoliths minute and parallel; leaf blades oblong-elliptic, up to 13.5 cm. long and 5.5 cm. wide, short-acuminate, the tips often curved (the tip itself blunt), narrowed at base, firm and fleshy, entire, the upper surface glabrous, the lower surface glabrous except the costa and lateral veins (8 or 9 pairs), these minutely strigose, the venation prominent beneath, obscure above, the cystoliths conspicuous under lens but more or less scattered; petioles up to 2 cm. long and 1.75 mm. thick, minutely strigose; flowers borne in terminal forked spikes up to 3 cm. long and 6 mm. broad, the peduncle up to

6 cm. long, hirtellous, the hairs brownish, recurved, up to 0.16 mm. long, the rachis hirsute, the hairs similar to those of the peduncle but straighter and more spreading, the bracts subtending the spikes subulate, 6 mm. long, 1.5 mm. wide at base, acute, carinate, hirsute, the cystoliths dense, parallel, conspicuous where not obscured by the hairs; bracts subtending the flowers narrowly triangular, 3 mm. long, 1 mm. wide at base, acute and ciliate, densely covered by parallel cystoliths; bractlets similar to the bracts but slightly narrower; calyx segments 5, about 5 mm. long, lanceolate, acute, 3-nerved, the costa and margins sparingly ciliolate; corolla white, rather sparingly puberulous, some of the hairs glandular, the upper lip erect, oblong, 6.5 mm. long, 1.5 mm. wide at base, gradually narrowed to a minutely bilobed tip 0.5 mm. wide, the lower lips spreading, cuneate, about 3 mm. wide at the base of the lobes, these 3, rounded, about 1.5 mm. long and wide; stamens barely reaching the tip of the upper corolla lip and partly enfolded by it, the anther lobes superposed, vertically attached to the connective, each lobe about 0.75 mm. long, the lower one spurred, the style slightly longer than the stamens; ovary hirsute at the tip.

Type in the herbarium of the Facultad de Agronomía del Valle, Palmira, Colombia, collected at La Trojita, on the Río Calima, Department of El Valle, Colombia, 5 to 50 meters altitude, February 19 to March 10, 1944, by J. Cuatrecasas (No. 16811).

The label on the type sheet bears the following notes by J. Cuatrecasas: "Hierba erguida, rigida. Hoja herbacea, crasiuscula, verde grisacea; bracteas y calices verde pálidas. Corola blanca." *Justicia sterea* has apparently no close relatives, except perhaps *J. petraea* or *J. hodgei*. The specific epithet is from the Greek *στερεός*, meaning stiff or rigid, in allusion to the habit of the plant.

68. *Justicia sciera* Leonard, sp. nov.

FIGURE 237

Herba parva ascendens, caulibus in nodis radicanibus, sursum glabris vel retrorse puberulis; lamina foliorum oblonga, apice obtusa, basi rotundata, aliquanto firma, integra, glabra vel subtus costa minute hirtella, pilis curvatis, costa et venis prominentibus, cystolithis prominentibus; petioli longi, graciles, glabri vel minute hirtelli; spicae terminales, pedunculo longo et rhache puberulis; bracteae spathulatae, minute et parce puberulae et ciliolatae, obtusae, basi anguste cuneatae; bracteolae oblanceolatae, apice rotundatae, basi angustatae, parce puberulae et ciliolatae; calycis segmenta lanceolata, acuminata, parce puberula et ciliolata; corolla ignota; capsulae clavatae, aliquanto parvae, glabrae vel apice pilis paucis minutis praeditae; retinacula leviter curvata, marginibus graciliter striata, apice plana, obtusa, erosa; semina subbrunnea, cordata, muricata.

Ascending herbs up to 20 cm. high; stems rooting at the lower nodes, subquadrangular, glabrous or retrorsely puberulous, the hairs up to 0.38 mm. long; leaf blades oblong, up to 7 cm. long and 28 mm. wide, obtuse at tip, rounded at base, moderately firm, entire, glabrous

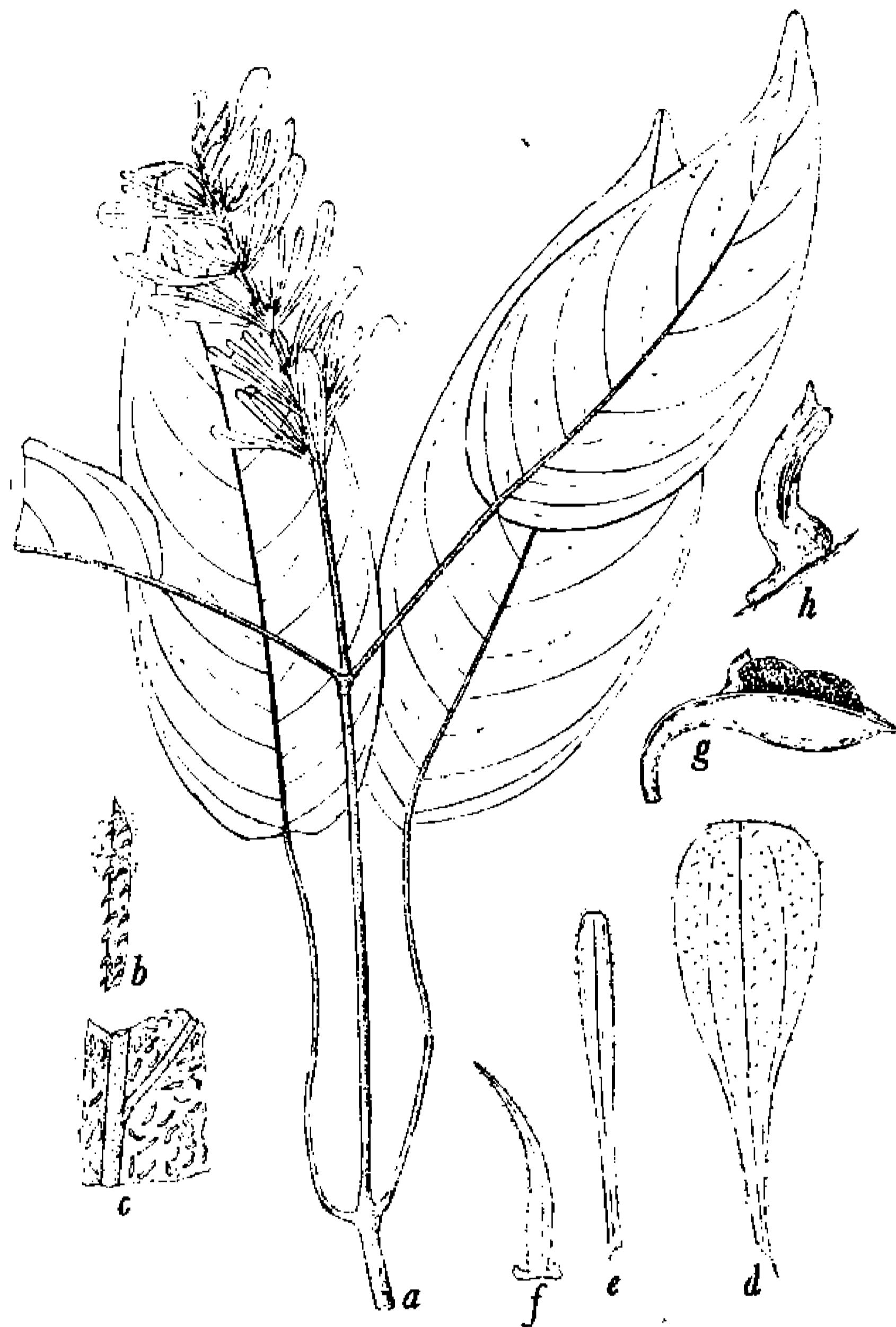


FIGURE 237.—*Justicia sciara* Leonard (*Gutiérrez-V.* 1300): *a*, Tip of plant showing leaves and inflorescence; *b*, portion of upper part of stem enlarged to show pubescence; *c*, portion of leaf blade (under surface) enlarged to show cystoliths; *d*, bract; *e*, bractlet; *f*, calyx segment; *g*, capsule valve; *h*, retinaculum. (*a*, Natural size; *b*, about 30 times natural size; *c*, 10 times natural size; *d*-*f*, 3 times natural size; *g*, 2 times natural size; *h*, $6\frac{1}{2}$ times natural size.)

or the costa of the lower surface roughened by minute curved hairs, the venation rather prominent beneath (the lateral veins 6 or 7 pairs) obscure above, the cystoliths rather prominent under a lens; petioles slender, up to 4 cm. long, glabrous or roughened by minute curved hairs; flowers borne in terminal spikes up to 4 cm. long and 2 cm.

broad, the peduncle 1.5 cm. long, this and the rachis puberulous; bracts spathulate, 12 mm. long, 3 to 3.5 mm. wide near tip, obtuse, gradually narrowed to base; bractlets oblanceolate, 1 cm. long, 1.5 mm. wide, rounded at tip, gradually narrowed to base, both bracts and bractlets sparingly puberulous and ciliolate, the costa moderately prominent; calyx segments lanceolate, 7 mm. long, 0.75 mm. wide near base, gradually narrowed to a slender tip, sparingly puberulous and ciliolate; corolla not seen; capsules clavate, 12 mm. long, 2.5 mm. broad, about 1 mm. thick, glabrous or bearing a few minute subappressed hairs toward tip, these about 0.06 mm. long; retinacula 2.5 mm. long, slightly curved, the margins finely striate, the tip flattened, obtuse, erose; seed brownish, cordate, flattened, about 2.5 mm. long and 2 mm. broad, muricate, the projections low and rounded.

Type in the herbarium of the Facultad de Agronomía, Universidad Nacional, Medellín, Colombia, collected in a damp shady place on the bank of the Río Verde de los Montes, in the Municipio de Sonsón, Department of Antioquia, Colombia, January 31, 1947, by Gabriel Gutiérrez-V. (No. 1300).

The flowers, according to label notes, are lilac. Apparently there are no close relatives. The specific epithet is from the Greek *σκίερός*, meaning "in the shade."

69. *Justicia stereostachya* Leonard, sp. nov.

FIGURE 238

Herba, caulibus rectis vel ascendentibus, subquadrangularibus, deorsum glabris, sursum bifariam hirsutis, pilis curvatis; lamina foliorum oblongo-elliptica, acuta vel breviter acuminata (apice ipso obtuso), basi angustata, in petiolum decurrens, aliquanto firma et subcoriacea, integra vel undulata, supra glabra, obscure viridis (sicca), cystolithis sub lente conspicuis, subtus olivacea, glabra, costa et venis conspicuis, aliquanto puberulis, pilis subappressis; petioli breves, strigillosi; spicae terminales, solitariae vel ternae, rigidae, pedunculis gracilibus, acute quadrangularibus, hirsutis, pilis curvatis, patulis vel ascendentibus, septatis, rhache plana, hirsuta; bracteae ovatae, firmas, ciliatae, hirsutae, pilis rectis, septatis, acutis vel cyathiformibus, costa et venis lateralibus prominentibus, cystolithis conspicuis (sub lente); bracteolae ovatae, parvae, acutae, plus minusve hirsutae; calycis segmenta rigida, lanceolata, acuta, glabra vel pilos cyathiformibus ferentes, costa prominente; corolla lilacina, puberula, pilis patulis, glandulosis, labiis subaequalibus, labio superiore triangulato-ovato, apice obtuso et apiculato, labio inferiore cuneiformi, plicato, 3-lobato, lobis orbicularibus, rotundatis; stamina exserta, lobis superpositis et contiguis, verticalibus, lobo inferiore calcarato; capsulae graciliter clavatae, puberulae, pilis appressis; semina (immatura) plana, apice rotundata, basi oblique subcordata, glabra.

Erect or ascending herbs up to 40 cm. high or more; stems subquadrangular, glabrous below, the upper portions bifariously hirsute, the hairs about 0.3 mm. long, curved; leaf blades oblong-elliptical, up to 13 cm. long and 5.2 cm. wide, acute or short-acuminate (the tip

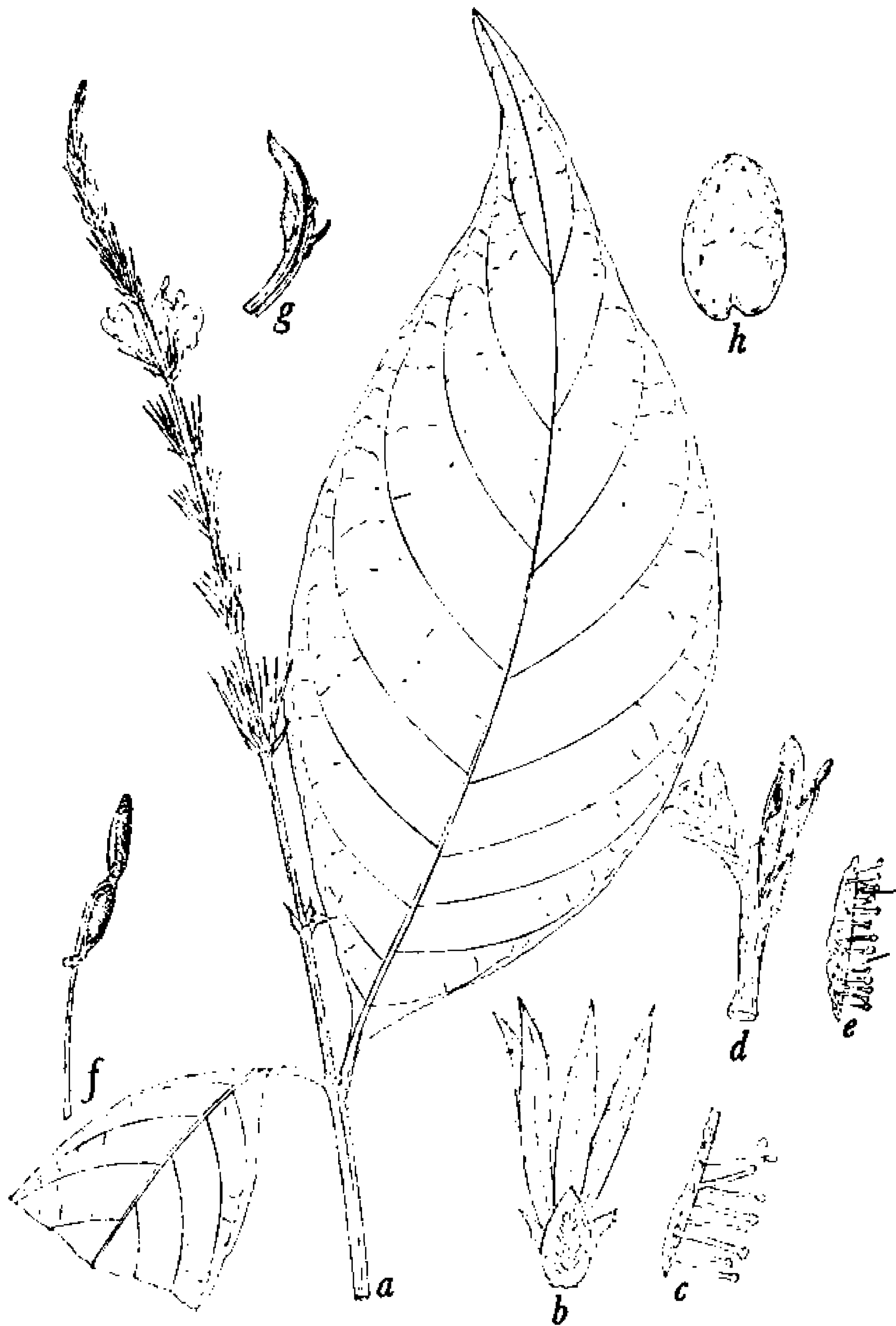


FIGURE 238.—*Justicia stereostachya* Leonard (Cuatrecasas 13061): *a*, Tip of plant showing leaf blades and spike; *b*, calyx, bracts and bractlets; *c*, hairs from dorsal region of bract; *d*, corolla; *e*, pubescence of corolla; *f*, anther; *g*, capsule valve; *h*, seed. (*a*, Natural size; *b*, about 3 times natural size; *c*, 30 times natural size; *d*, twice natural size; *e*, 4 times natural size; *f*, $7\frac{1}{2}$ times natural size; *g*, $1\frac{1}{2}$ times natural size; *h*, 6 times natural size.)

itself obtuse), narrowed at base and decurrent on the petiole, rather firm and leathery, entire or undulate, the upper surface glabrous, drying dull green, minutely alveolar, the costa and lateral veins (6 to 8 pairs) obscure, the cystoliths conspicuous under a lens, up to

0.24 mm. long, the lower surface drying light olive-green, glabrous except costa and lateral veins, these conspicuous, moderately puberulous, the hairs curved, up to 0.11 mm. long, subappressed; petioles 5 mm. long, appressed-puberulous; spikes solitary or in 3's, rigid, up to 5 cm. long and 4 mm. broad, the peduncles slender, up to 2.4 cm. long, sharply quadrangular, 0.75 mm. thick gradually increased to 1.75 mm. at base of first pair of bracts, there somewhat flattened, hirsute, the hairs straight or curved, spreading or ascending, septate, the rachis flattened, the lower internodes about 6 mm. long, the others successively shorter toward tip of the spike, the hairs similar to those of the peduncles; bracts ovate, 3 mm. long, 1.5 mm. wide, acute, firm, hirsute, the hairs about 0.2 mm. long, erect, septate, some of them cyathiform, the margins ciliate, the costa prominent, the cystoliths conspicuous; bractlets ovate, 1.75 mm. long, 0.75 mm. wide, acute, the pubescence that of the bracts; calyx 6 mm. long, the segments rigid, lanceolate, 4 mm. long, 1 mm. wide slightly above middle, acute, glabrous or bearing a few cyathiform hairs, sparingly ciliate, the costa and a pair of lateral nerves prominent; corolla lilac, densely puberulous with spreading glandular hairs about 0.8 mm. long, except the lower portion, this glabrous, the tube 6 mm. long, the basal portion 2.5 mm. broad, narrowed at middle to 2 mm., thence enlarged to 2.5 mm. at throat, the lips subequal, about 6 mm. long, the upper lip triangular-ovate, 3 mm. broad at base, obtuse and apiculate at tip, the lower lip cuneiform, 5 mm. wide near tip, 3-lobed, the lobes orbicular, the middle one 2.5 mm. wide, the lateral ones 1.75 mm. wide, all rounded, the throat swollen and plaited; stamens exerted 5 mm. beyond the mouth of the corolla, the lobes 1 mm. long, superposed and contiguous, attached vertically to the connective, the lower cell spurred, the spur ligulate, curved, flattened, rounded at tip, the filaments flattened, their ventral surface densely glandular-puberulous; style about as long as the stamens; ovary glabrous; capsules slenderly clavate, 1 cm. long, 2 mm. broad, 1.5 mm. thick, puberulous, the hairs appressed, about 0.1 mm. long, the retacula 1.5 mm. long; seed (immature) flattened, 2.5 mm. long, 1.5 mm. wide, rounded at tip, obliquely subcordate at base, glabrous.

Type in the U. S. National Herbarium, No. 1850311, collected in the valley of the Río Cubugón, between El Caraño and El Indio, in the vicinity of Sarare, Department of Norte de Santander, Colombia, 470 to 600 meters altitude, November 12, 1941, by J. Cuatrecasas (No. 13061).

Justicia stereostachya can be easily recognized by its rigid spikes, densely glandular corollas with swollen plaited throat, and by the leathery leaf blades. The specific epithet is from the greek *στερεός*, rigid, and *στάχυς*, spike.

70. *Justicia hodgei* Leonard, sp. nov.

FIGURE 239

Suffrutex, caulibus quadrangularibus vel deorsum subteretibus, glabris vel in nodis hirtellis, pilis rigidis fere patulis; lamina foliorum oblongo-ovata vel oblongo-elliptica, breviter acuminata, apice saepe curvata, basi angustata, in petiolum decurrens, aliquanto firma, integra vel undulata, glabra vel costa et venis prominentibus parce et minute hirtellis, pilis rigidis, cystolithis obscuris; petioli aliquanto crassi, glabri vel minute hirtelli; spicae solitariae, terminales, densae vel basi in maturitate laxae, pedunculis quadrangularibus, minute et parce hirtellis, rhachibus minute hirtellis, pilis rigidis fere patulis; bracteae ovatae, acutae (apice ipso obtuso), glabrae, marginibus ciliolatis, pilis rigidis, patulis vel ascendentibus; bracteolae lanceolatae, parvae, acutae, glabrae, marginibus ciliolatis, ambis bracteis et bracteolis cystolithis crassis conspicuis praeditis; calycis segmenta lanceolata, graciliter acuminata, glabrae vel subglabrae, marginibus ciliolatis, cystolithis paucis gracilibus; corolla aliquanto parva, lilacina, dense hirtella, pilis rigidis, patulis, tubo subcylindrico, labio superiore erecto, oblongo-ovato, apice emarginato, labio inferiore trilobato, lobis oblongo-ovatis, apice rotundatis, marginibus ciliolatis; stamina vix exserta, lobis antherarum superpositis, lobo superiore obliquo, inferiore verticali, obscure caudato; capsulae clavatae, minute hirtellae, pilis rigidis, patulis.

Suffrutescent plants up to 1 meter high; stems quadrangular or the lower parts subterete, glabrous or hirtellous at the nodes, the hairs rigid, up to 0.13 mm. long, mostly spreading; leaf blades oblong-ovate or oblong-elliptic, up to 21 cm. long and 9 cm. wide, short-acuminate, the tip often curved, narrowed at base and decurrent on the petiole, rather firm, entire or undulate, glabrous or the costa and veins sparingly and minutely hirtellous, the hairs rigid, up to 0.08 mm. long, the venation prominent beneath, less so above, the cystoliths obscure; petioles up to 1 cm. long, 1.5 mm. thick, glabrous or sparingly and minutely hirtellous; spikes solitary, terminal, dense or, at maturity, lax toward base, up to 5 cm. long and 15 mm. broad, the peduncles up to 2 cm. long, quadrangular, minutely and sparingly hirtellous, the rhachis minutely hirtellous, the hairs rigid, for the most part about 0.13 mm. long, or a few at the nodes as much as 0.32 mm. long, mostly spreading; bracts ovate, 4 mm. long, 2.5 mm. wide near base, acute (the tip itself blunt), glabrous except the margins, these ciliate with rigid spreading or ascending hairs up to 0.16 mm. long; bractlets lanceolate, 2.25 mm. long, 0.75 mm. wide, acute, glabrous except the ciliate margins, both bracts and bractlets densely covered with thick conspicuous parallel cystoliths up to 0.13 mm. long; calyx 7-8 mm. long, the segments lanceolate, 6 mm. long, 1.75 mm. wide near base, gradually narrowed to a slender acute tip, obscurely

and delicately 3-nerved at base, glabrous except the margins, these ciliolate, the cystoliths few, slender, rarely over 0.06 mm. long; corolla about 12 mm. long, lavender, densely hirtellous, the hairs rigid, spreading, up to 0.13 mm. long, the tube subcylindric, 2 mm. broad at mouth, the upper lip erect, oblong-ovate, emarginate at tip, the lower lip 3-lobed, the lobes oblong-ovate, rounded at tip, ciliolate; stamens slightly exerted but not extending beyond the corolla lips,

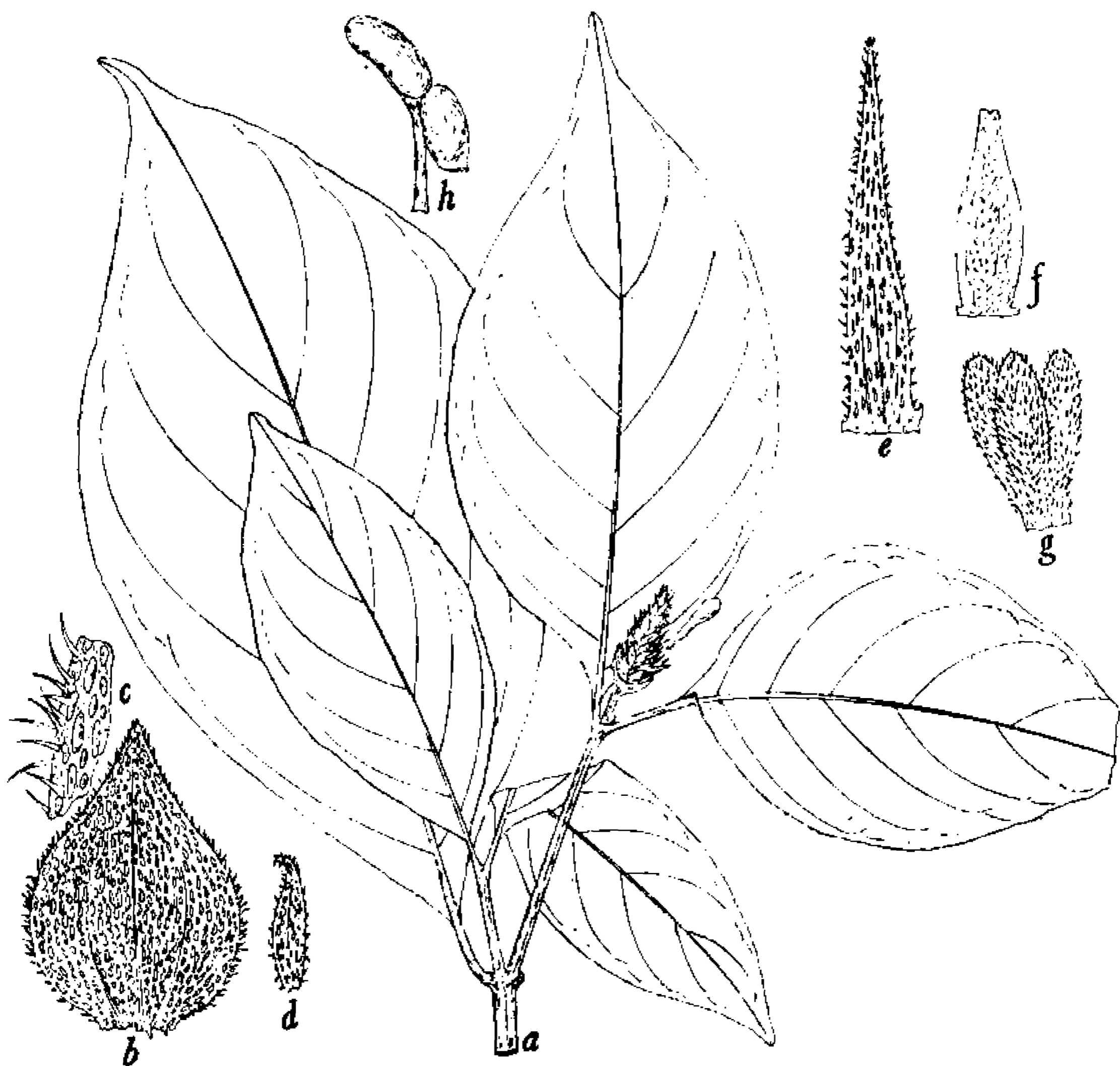


FIGURE 239.—*Justicia hodgei* Leonard (Hodge 6504): *a*, Tip of plant; *b*, bract; *c*, portion of bract enlarged to show marginal hairs and cystoliths; *d*, bractlet; *e*, calyx segment; *f*, upper lip of corolla (immature); *g*, lower lip of corolla (immature); *h*, anther. (*a*, Natural size; *b*, *d*, $7\frac{1}{2}$ times natural size; *c*, 25 times natural size; *e*, 5 times natural size; *f*, *g*, $2\frac{1}{2}$ times natural size; *h*, 8 times natural size.)

the anther lobes superposed, 1.25 mm. long and 0.75 mm. broad, the upper lobe obliquely, the lower vertically attached to the connective and obscurely subcaudate at base; capsules clavate, 18 mm. long, about 3 mm. broad and 2 mm. thick, minutely hirtellous, the hairs mostly spreading, rigid, up to 0.03 mm. long, some of them gland-tipped.

Type in the Gray Herbarium, collected on floor of rain forest along

the Río Carare, Department of Santander, Colombia, 300 to 400 meters altitude, September 28, 1945, by W. H. Hodge (No. 6504). Isotype: Med.

Justicia hodgei resembles and may be related to *J. sterea*. The latter species has, however, a forked spike and white corollas, these rather sparingly pubescent with slender hairs. In *J. hodgei* the spikes are simple and the corollas are lavender and densely clothed with minute spreading rigid hairs. Because of the scarcity of material it was not desirable to dissect the single immature corolla and capsule.

71. *Justicia hygrobia* Leonard, sp. nov.

FIGURE 240

Herba, caulibus rectis vel ascendentibus, subquadrangularibus, glabris; lamina foliorum oblongo-elliptica, breviter sed aliquanto graciliter acuminata (apice ipso obtuso), basi angustata, firma, undulata, glabra vel in costa et venis prominentibus puberula, cystolithis conspicuis; petioli aliquanto crassi, glabri vel parce puberuli; flores in spicis vel paniculis laxis dispositi, pedunculo subquadrangulari, obscure strigoso, rhache hirtella, pilis retrorse curvatis; bracteae parvae, anguste ovatae, acutae, 3-nervatae, parce hirtellae, pilis leviter curvatis, ascendentibus; bracteolae lanceolatae, parvae, con-duplicatae, hirtellae; calycis segmenta lineari-lanceolata, acuta, aliquanto tenuia, hirtella, pilis patulis (paucis glandulosis) vel ascendentibus; corolla lilacina, parva, hirtella, pilis leviter et retrorse curvatis (paucis glandulosis), tubo subcylindrico, labiis subequalibus, labio superiore suberecto, oblongo-ovato, subcucullato, labio inferiore patulo, 3-lobato, lobis ovatis, rotundatis; stamina in labio antico corollae declinata, filamentis glabris vel basi parce hirtellis, lobis antherarum superpositis, suberectis, lobo inferiore calcarato; pistillum hirtellum, stamina aequans; capsulae clavatae, puberulae, apice pilis patulis deorsum retrorsis praeditae; retinacula curvata apice plana, rotundata, erosa; ovula 4.

Herbs up to 40 cm. high or more; stems erect or ascending, subquadrangular, glabrous, the lower portions 5.5 mm. in diameter or more; leaf blades oblong-elliptic, up to 18 cm. long and 6.8 cm. wide, shortly but rather slenderly acuminate (the tip itself blunt), narrowed at base, firm, undulate, glabrous or inconspicuously puberulous along costa on the lower surface, the venation prominent, more so beneath than above, the lateral veins usually 6 pairs, the cystoliths rather prominent, up to 0.38 mm. long; petioles up to 1.5 cm. long, glabrous or sparingly puberulous, 1.75 mm. thick; flowers borne in terminal spikes, these often branched at or near base to form a loose panicle; peduncles up to 3 cm. long, subquadrangular, minutely and inconspicuously strigose; rachis hirtellous, the hairs retrorsely curved, up to 0.16 mm. long, the lowermost internode of the rachis 8 mm. long, the others successively shorter toward the tip of the inflorescence;

bracts narrowly ovate, 5.5 mm. long, 1.75 mm. wide near base, acute, 3-nerved, sparingly hirtellous, the hairs slightly curved, ascending, up to 0.2 mm. long; bractlets lanceolate, 5 mm. long, about 1 mm. wide at base, conduplicate, hirtellous with minute ascending straight or slightly curved hairs; calyx 11 mm. long, deeply segmented, the segments 5, linear-lanceolate, 0.75 mm. wide, narrowed to a slender

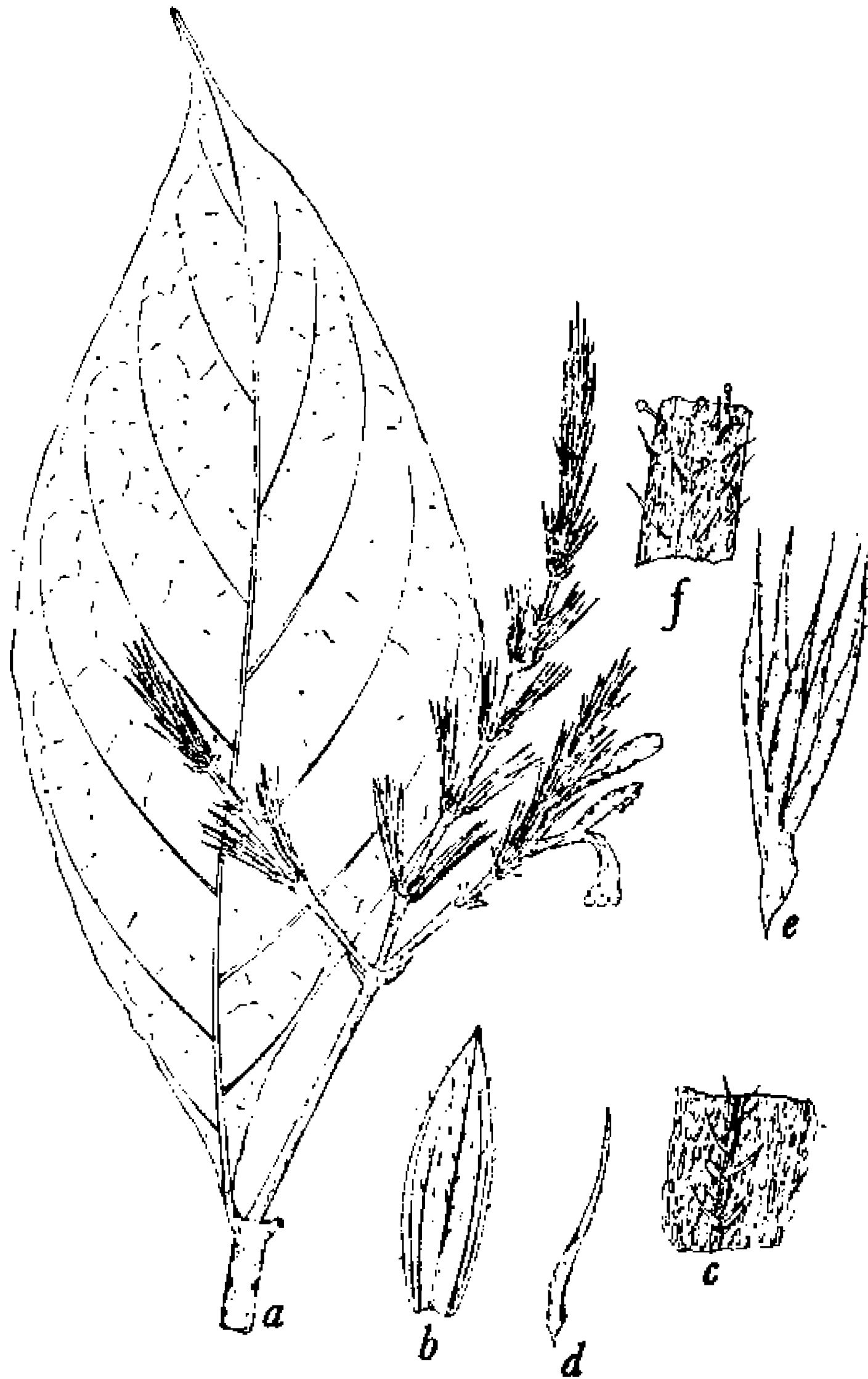


FIGURE 240.—*Justicia hygrobia* Leonard (*Cuatrecasas* 10848): *a*, Tip of plant showing leaf and inflorescence; *b*, bract; *c*, portion of bract (medial dorsal) enlarged to show hairs and cystoliths; *d*, bractlet; *e*, calyx; *f*, portion of calyx segment to show hairs and cystoliths. (*a*, Natural size; *b*, *d*, 4 times natural size; *c*, *f*, about 20 times natural size; *e*, twice natural size.)

tip, rather thin, hirtellous, the hairs spreading or ascending, up to 0.13 mm. long, some of spreading ones gland-tipped; corollas lilac, about 12 mm. long, hirtellous, the hairs up to 0.16 mm. long, slightly and retrorsely curved, some of them gland-tipped, the tube about 2 mm. broad at base, 4 mm. broad at mouth, the lips subequal, 7 mm. long, the upper lip oblong-ovate, about 3 mm. wide, subcucullate,

enfolding the stamens, the lower lip spreading, about 3.5 mm. wide, 3-lobed, the lobes ovate, rounded; stamens reaching the tip of the upper lip, the filaments glabrous or bearing a few hairs near base, the anthers 2.5 mm. long, the lobes superposed one above the other, subvertically attached to the connective, the lower lobe terminating in a blunt white spur 0.5 mm. long; pistil equalling the stamens, hirtellous; capsules clavate, 12 mm. long, 3 mm. broad, 1.5 mm. thick, 4-seeded, puberulous, the hairs up to 0.06 mm. long, spreading or retrorse; retinacula 1.5 mm. long, curved or bent, the tip flat, rounded, erose.

Type in the U. S. National Herbarium, No. 1798535, collected in wet forests along the Río Putumayo at Puerto Ospina, Comisaría of Putumayo, Colombia, 230 meters altitude, November 29, 1940, by J. Cuatrecasas (No. 10848).

The holotype specimen is forked at the tip, the two branches about 20 cm. long and each bearing at the tip of the single internode (about 12 cm. long) a pair of leaves and an inflorescence. This mode of forking may or may not be normal for the species. The lobation of the lips was not discernible in the immature corollas of the type material. The species apparently has no close relatives and is probably confined to the Putumayo region. The specific epithet is from the Greek word *ὕγροβιος*, meaning "living in wet places."

***Justicia sanctae-martae* Lindau**

Justicia sanctae-martae Lindau, Bot. Jahrb. Engler 21: 377. 1895. Type collected in the vicinity of Santa Marta, Department of Magdalena, Colombia, by Dr. Alfons Stuebel.

Suffruticent, branches green-striate, the cystoliths punctiform; leaf blades oblong, abruptly acuminate at tip, narrowed at base and decurrent on the petiole, the costa of the upper surface puberulous, otherwise glabrous, the cystoliths prominent; spikes dense, terminal and axillary; bracts obovate, stipitate, those of the middle part of the spike 1 cm. long and 5 mm. wide, glandular-pubescent; bractlets lanceolate, glandular-pilose at tip; calyx segments equal, puberulous, 6 mm. long, 1 mm. wide; corolla tube 12 mm. long, 3 mm. broad at base, 4 mm. broad at tip, the upper lip 10 mm. long, 3 mm. wide, the lower 12 mm. long, the segments 5 mm. long and wide; filaments 19 mm. long, the anthers 2 mm. long, the upper lobe minutely spurred; capsules 13 mm. long, 5 mm. wide, puberulous, the stipe 5 mm. long and 3 mm. wide; seeds subglobose, nitid, black, 12.5 mm. in diameter.

Dr. C. E. B. Bremekamp treats this species as a synonym of *Justicia carthaginensis* (Flora of Suriname 4: 241. 1938).

Justicia sp.

E. P. Killip & Hernando Garcia's No. 33571 undoubtedly represents an undescribed species of *Justicia*. Their specimens were collected in dense forest along the Quebrada Jilita, Department of Chocó, 50–100 meters altitude, February 1939. The plant from which the specimens were taken was about 50 cm. high and bore white flowers. Colloquially called "yerbabuenilla," it was used as a remedy for snake bites.

The specimen deposited in the National Herbarium is an ascending branched herb about 40 cm. high, the stems subquadrangular, bifariously hirtellous with retrorsely curved white septate hairs up to 0.22 mm. long; the internodes of the stem are short and rather numerous, not exceeding 2 cm. in length. The leaf blades are ovate, up to 23 mm. long and 14 mm. wide, obtuse or rounded at tip and narrowed at base, rather firm, entire or undulate, nitid, glabrous or the margins and the costa and lateral nerves (these moderately conspicuous) bearing a few rigid ascending hairs about 0.2 mm. long; petioles thick, about 1.5 mm. long, sparingly hirtellous. The specimen examined was definitely sterile without the faintest vestige of a flower.

Leptostachya crinita Nees

Leptostachya crinita Nees in Benth. Voy. Sulphur 147. 1844. Type locality: Colombia. Type collected by Sinclair.

Stems repent at base, glabrous; leaf blades oval-oblong, obtuse at the tip, long-decurrent on the petiole at base; spikes more or less umbellate, half as long as the leaves, forming a panicle at the tip of the stem; rachis pilose with spreading hairs; anther cells blunt.

No specimen seen. Description compiled from the original.

The brief description suggests a close relationship with *Justicia comata*.

Rhytiglossa oblonga Nees

Orthotactus oblongus Nees in Benth. Voy. Sulphur 147. 1844. Type collected in Colombia by Sinclair.

Rhytiglossa oblonga Nees in DC. Prodr. 11: 343. 1847.

Herb; stems geniculate and rooting at the lower nodes, hoary towards tip; leaf blades oblong, the lower 7 to 8 inches long and 2 inches wide, the upper 4 to 5 inches long and 1.5 inches wide, all gradually narrowed to a blunt tip, acute at base, glabrous, thin, flaccid; spikes in the axils of the upper leaves and shorter than the blades; bracts rhombic-ovate, acuminate, ciliate, veiny; corolla 2-lipped, the upper lip bifid, the lower one 3-lobed, the lobes oval, obtuse, puberulous.

No specimens seen. Description compiled from the original.

37. PELECOSTEMON Leonard, gen. nov.

Suffrutex, caulibus subquadrangularibus; laminae foliorum aliquanto magnae, apice acuminatae, basi cuneatae, integrae, cystolithis parvis sed conspicuis; paniculae terminales, angustae, puberulae, pilis acutis et pilis glandulosis intermixtis; bracteae parvae, subulatae; calycis segmenta 4, linearia; corolla hypocrateriformis, labiis duobus, labio superiore apice rotundato, labio inferiore trilobato, lobis rotundis; stamina 2, lobo uno antherarum normali, lobo altero in ala triangulari apice acuta incurva reducto; stigma parvum, bilobatum; ovarium glabrum.

Shrubs; stems subquadrangular; leaves rather large, acuminate, narrowed at base, entire, the cystoliths small but conspicuous under a lens; petioles short; spikes lax, erect, forming a narrow terminal panicle, this minutely puberulous with a mixture of glandular and eglandular hairs; bracts small and subulate; calyx segments 4, linear; corolla 2-lipped, the upper lip rounded at the tip, the lower lip 3-lobed; stamens 2, the anthers each with one fertile cell, the other reduced to a thin triangular wing terminating in an acute curved tip; stigma minute, bilobed.

Pelecostemon differs from *Justicia* in its peculiar anthers. The name, of Greek origin and derived from *πέλεκυς*, halberd, and *στήμων*, stamen, was suggested by a fancied resemblance of the anther to a certain type of ancient battle-ax.

1. *Pelecostemon trianae* Leonard, sp. nov.

FIGURE 241

Suffrutex, caulibus glabris vel in nodis parce pilosis; lamina foliorum oblongo-obovata, breviter acuminata, basi angustata, in petiolum decurrens, aliquanto firma, integra vel undulata, utrinque glabra, nitida, costa et venis lateralibus et venulis crasse reticulatis subtus prominentibus, supra plus minusve obscuris; spicae erectae, laxae, paniculam terminalem formantes, pedunculis subquadrangularibus, glabris, nitidis vel sursum parce puberulis, pilis glandulosis et eglandulosis intermixtis, rhachibus aliquanto dense puberulis, pilis glandulosis et eglandulosis intermixtis; bracteae glabrae vel basi puberulae, ciliatae; calycis segmenta linearia, ciliata, intus hirsuta, pilis subappressis, extus puberula, pilis glandulosis et eglandulosis intermixtis; corolla (immatura) parce hirsuta; stamina inclusa (?); ovarium glabrum.

Suffrutescent; stems subquadrangular, glabrous or sparingly pilose; leaf blades oblong-obovate, up to 24 cm. long and 6.5 cm. wide, short-acuminate, narrowed at base and decurrent on the petiole, moderately firm, entire or undulate, both surfaces glabrous and nitid, the costa and lateral veins (7 or 8 pairs) prominent beneath, less so above, the cystoliths rather loosely scattered but prominent under a

lens, averaging 0.11 mm. in length; flowers borne in loose spikes up to about 9 cm. long, these several, erect, forming a loose panicle about 16 cm. long, the peduncle 4 cm. long, subquadrangular, glabrous, nitid or the upper portion minutely and sparingly puberulous with glandular and eglandular hairs up to 0.64 mm. long, the lowermost internodes of the panicle 3 cm. long, the others successively shorter toward the tip of the inflorescence, the pubescence that of the peduncle

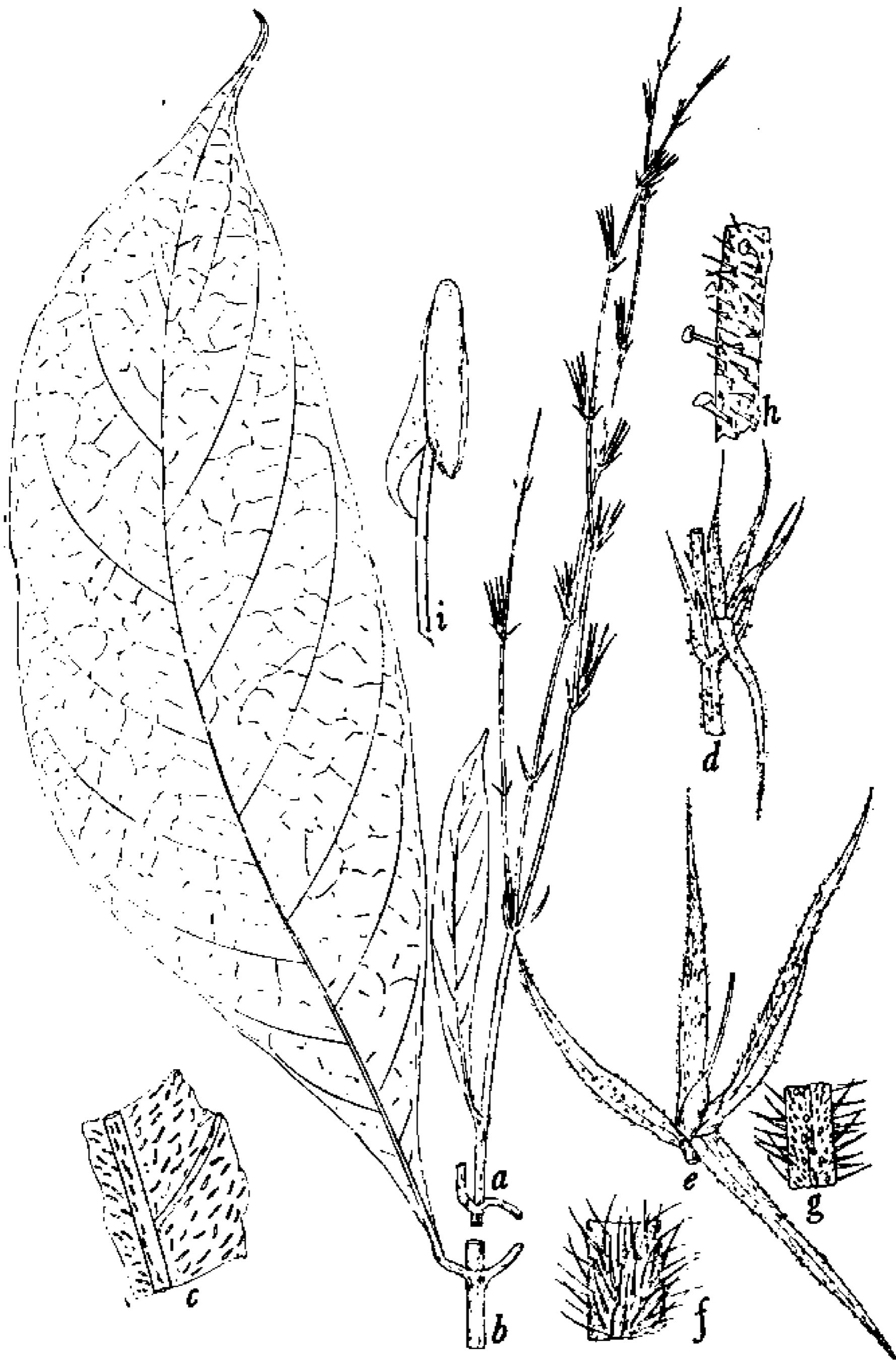


FIGURE 241.—*Pelecostemon trianae* Leonard (*Triana*, Villavicencio): *a*, Inflorescence; *b*, node showing leaf; *c*, portion of the under surface of a leaf blade enlarged to show cystoliths; *d*, node of inflorescence; *e*, calyx; *f*, portion of calyx segment (inner surface) enlarged to show pubescence; *g*, same (outer surface); *h*, portion of rachis enlarged to show pubescence; *i*, anther. (*a*, *b*, Half natural size; *c*, 9 times natural size; *d*, twice natural size; *e*, 3 times natural size; *f*–*h*, about 10 times natural size; *i*, 7 times natural size.)

but somewhat denser; lowermost pair of bracts subulate, 7 mm. long, 0.75 mm. wide at base, gradually narrowed to a slender tip, carinate, glabrous or bearing a few small hairs near the tip; bracts subtending the flowers subulate, 4 to 5 mm. long, about 1 mm. wide at base, glabrous or puberulous near the base like the rachis, ciliate with rigid ascending hairs about 0.8 mm. long; bractlets similar to the bracts but smaller, 3 mm. long and 0.5 mm. wide at base; calyx 11 to 12 mm. long, the segments 4, linear, 0.75 mm. wide, ciliate, the inner surface hirtellous with ascending or subappressed hairs up to 0.13 mm. long, the outer surface puberulent with more or less spreading glandular and eglandular hairs mostly less than 0.5 mm. long; corolla (immature) 4 mm. long, sparingly hirsute, the upper lip 1.5 mm. long, 0.75 mm. wide, rounded at tip, the lower lip 3-lobed, the lobes 1.5 mm. long and 1 mm. wide, rounded; stamens 3 mm. long, the fertile cell 2.5 mm. long and 1.5 mm. broad, blunt at base, the sterile cell represented by a membranous triangular wing incurved at base, the filaments glabrous; style glabrous toward tip, hirtellous toward base; stigma bilobed, minute; capsules not seen.

Type in the Kew Herbarium, collected at Villavicencio, Intendencia of Meta, Colombia, December 1855, by J. Triana.

38. JACOBINIA Nees ex Moric.

Jacobinia Nees ex Moric. Pl. Nouv. Am. 156, Pl. 92. 1846. Origin of name unknown. Type species *Jacobinia lepida* Nees ex Moric. Type locality: Brazil.

Cyrtanthera Nees in Mart. Fl. Bras. 9: 99. 1847. Derivation: *κυρτός*, curved, and *ἀνθήρας*, anther. The first of the species described, and the one illustrated, *C. magnifica* Nees, may be the lectotype.

Sericographis Nees in Mart. Fl. Bras. 9: 107. 1847. Derivation: *σηρικός*, silken, and *γραφίς*, style, probably in allusion to the conspicuous cystoliths. The first of the 12 species described, and the one illustrated, *S. rigida* Nees, may be the lectotype.

Herbs or shrubs; leaf blades usually oblong or ovate, entire, petioled; flowers sessile or short-pedicellate in the axils of bracts, solitary, cymose, spicate or paniculate; calyx 5-parted, the segments usually narrow; corolla usually red or yellow, the tube usually elongate, straight or curved, the limb 2-lipped, the upper lip narrow, erect, entire or shallowly 2-lobed, the lower lip 3-lobed; stamens 2, the anther cells more or less unequal, muticous, the connective narrow, ovules 2 in each cell.

About 120 authentic species have been described, all from tropical America.

KEY TO THE SPECIES

Bracts large and conspicuous, orbicular or oblong, 1.5 to 2 cm. long.

Flowers borne in a dense terminal thyrse up to 8 cm. broad; corollas lilac, red or pink.....1. *J. carnea*

Flowers borne in terminal or axillary spikes up to 3 cm. broad; corollas pale yellow.....2. *J. axiologa*

Bracts small and inconspicuous, spatulate, or triangular, up to 5 mm. long.

Calyx segments up to 16 mm. long; flowers yellow.....3. *J. amphibola*

Calyx segments up to 3 mm. long; flowers red or orange, the spicate branches up to 7 cm. long.

Flowers borne in cymose panicles.....4. *J. spicigera*

Flowers borne in axillary spikes up to 7 cm. long.....5. *J. tinctoria*

1. *Jacobinia carnea* (Lindl.) Nicholson

Justicia carnea Lindl. in Edward's Bot. Reg. 17: pl. 1397. 1831. Type a cultivated plant, originally introduced from Rio de Janeiro, Brazil.

Cyrtanthera magnifica, Nees in Mart. Fl. Bras. 9: 100. 1847. Type locality: Brazil.

Jacobinia carnea Nicholson, Illustr. Dict. Gard. 2: 206. 1885.

Jacobinia magnifica Lindau in Engl. & Prantl, Pflanzenfam. IV. 3b: 351. 1895.

Based on *Cyrtanthera magnifica* Nees.

Herbs or suffrutescent plants up to 2 meters high; stems subquad-rangular, grooved (the angles rounded), glabrous or minutely puberulous with curved hairs; leaf blades oblong-ovate, up to 25 cm. long and 7 cm. wide, acuminate (the tip itself blunt), acute to rounded at base and decurrent on the petiole, moderately firm, undulate or entire, both surfaces sparingly and inconspicuously hirtellous or puberulous, the hairs up to 0.2 mm. long, subappressed, the venation rather prominent, the cystoliths obscure to conspicuous; petioles up to 5 cm. long, puberulous; thyrsi sessile or subsessile, solitary, terminal, dense, up to 19 cm. long and 8 cm. broad, the rachis puberulous, the lowermost thyrsulas subtended often by small leaf blades, the upper thyrsulas by elliptic bracts 2 cm. long and 1 cm. wide (these reduced in size towards tip of thyrse), obtuse or rounded, moderately firm, glabrous or sparingly hirtellous, sparingly ciliate, the hairs up to 0.8 mm. long; bracts subtending the flowers oblong, 2 cm. long, 1.5 cm. wide, rounded at tip, glabrous and ciliate; bractlets lanceolate, 15 mm. long, 1.5 mm. wide, narrowed to an obtuse tip, glabrous and ciliate, the venation of both bracts and bractlets obscure; calyx 11 mm. long, the segments lanceolate, 10 mm. long, 2 mm. wide, acute, subhyaline, glabrous or sparingly hirtellous and ciliate near tip, the costa and lateral nerves delicate; corolla lilac, red or pink, sparingly glandular-puberulous (the hairs spreading, up to 0.2 mm. long), up to 6.5 cm. long, 4 mm. broad at base, abruptly narrowed to 2.5 mm. at 4 mm. above base, thence gradually expanded to 5 mm. at throat, the upper lip erect, arched and bilobed at tip, the lobes about 1 mm. long and 0.75 mm. wide, rounded, the lower lip spreading or recurved,

3-lobed, cuneate, 8 mm. wide at base of lobes, these ovate, about 3 mm. long and 2 mm. wide, rounded; stamens barely reaching the tip of the upper corolla lip, the anther lobes slightly superposed, 3 mm. long and 1.25 mm. broad, the filaments flattened, 0.75 mm. wide; pistil slightly longer than the stamens, the stigma bilobed, minute and rounded; capsules not seen.

Vernacular names: "Tango rojizo" and "Isopo rojizo" (*Duque* 1570A).

The specimens in the U. S. National Herbarium are from Brazil, Argentina, Colombia and Ecuador. Cultivated plants of this species are often found in parks and gardens.

CAUCA: La Hermita on the road to Puracé, vicinity of Popayán, 1,760 to 1,820 meters altitude, July 17, 1948, *Garcia-Barriga & Hawkes* 12685 (US).

EL VALLE: Cultivated in Cali, 1,000 meters, *Duque* 1570A (US).

2. *Jacobinia axiologa* Leonard, sp. nov.

FIGURE 242

Suffrutex, caulibus quadrangularibus, deorsum glabris, sursum bifariam pilosis, pilis patulis, brunneis, septatis; lamina foliorum ovato-lanceolata vel oblongo-elliptica, graciliter acuminata, basi acuta vel obtusa vel rotundata vel subcordata, aliquanto firma, integra vel leviter crenata, glabra, vel juventute pilos⁴ paucos⁵ ferens, subtus aliquanto dense hirsuta, pilis patentibus vel ascendentibus, pilis praecipue in costa et venis lateralibus prominentibus positus, cystolithis minutis, saepe punctiformibus; petioli crassi, brunneo-pilosi, pilis septatis; spicae terminales et aliquando laterales solitariae, vel 2 vel 3, pedunculis et rhachibus hirtellis; bracteae infimae foliosae; bracteae flores subtendentes orbiculares apice abrupte acuminatae, apice ipso gracili, basi unguatae, ungula gracili, supra glabrae, subtus puberulae, pilis glandulosis et pilis paucis longioribus eglandulosis intermixtis, marginibus ciliatis; bracteolae lanceolatae, subhyalinae, glabrae vel apice pilos rigidos ferentes; calycis segmenta 4, anguste triangularia, acuminata, glabra vel apice pilos paucos rigidos ferentes, basi ciliolata; corolla flava, apice hirtella, pilis patulis, deorsum glabra, tubo subcylindrico, labiis aequalibus, labio superiore oblongo, apice 2-lobato, lobis parvis, rotundatis, labio inferiore patulo, 3-lobato, lobis anguste ovatis, apice rotundatis; stamina vix exserta, antheris angustis, lobis parallelis, basi obtusis; capsulae clavatae, planae, glabrae; retinacula recta vel leviter curvata, acuta; semina suborbicularia, plana, pallida, leviter rugosa, papillosa.

Suffrutescent plants up to 2 meters high; stems quadrangular, glabrous or the upper portions bifariously pilose with spreading hairs, sometimes densely so, the hairs 1.5 mm. long, brown, septate; leaf blades ovate-lanceolate or oblong-elliptic, up to 32 cm. long and 11 cm. wide, acuminate, often slenderly so, gradually narrowed

from about the middle to an acute, obtuse or often a narrow rounded or subcordate base, moderately firm, entire or shallowly crenate, the upper surface glabrous or bearing on the younger leaves a few scattered ascending hairs 0.75 mm. long, the lower surface rather densely

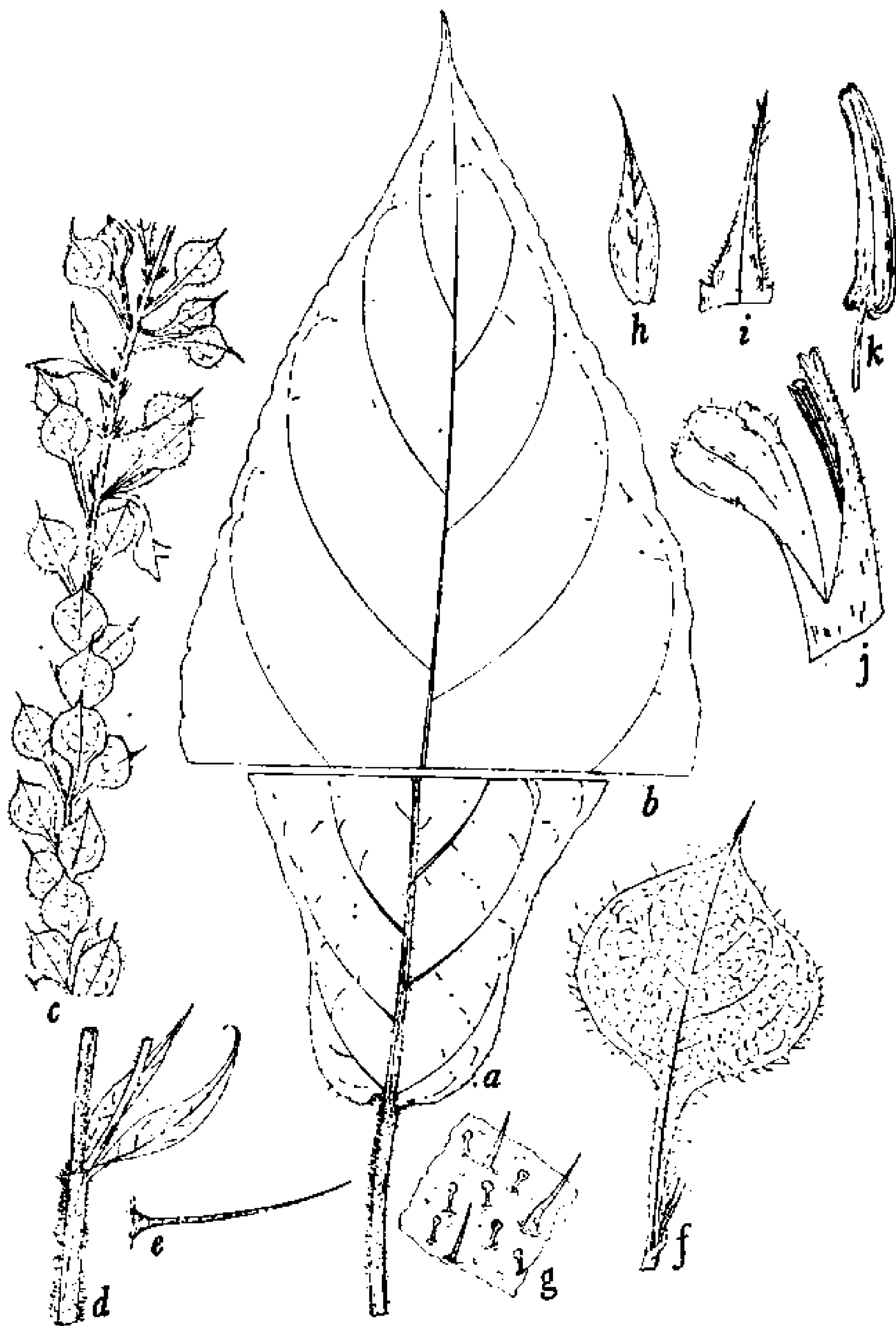


FIGURE 242.—*Jacobinia axiologa* Leonard (Haught 1986): *a*, Basal portion of leaf blade; *b*, tip of leaf blade; *c*, portion of spike (middle); *d*, basal node of inflorescence; *e*, one of the hairs from basal node; *f*, bract; *g*, pubescence of lower surface of bract; *h*, one of a pair of bractlets; *i*, a calyx segment; *j*, tip of corolla; *k*, anther. (*a-d*, Half natural size; *e*, 14 times natural size; *f*, twice natural size; *g*, 41 times natural size; *h, i*, 3 times natural size; *j*, 3 times natural size; *k*, 8 times natural size.)

hirsute, the hairs spreading or ascending, up to 1.5 mm. long, densest on the costa and lateral veins (9 or 10 pairs), the venation prominent beneath, less so above, the cystoliths minute, many of them punctiform; petioles rather stout, up to 7 cm. long and 3 mm. in diameter,

brown-pilose, often densely so, the hairs spreading, up to 1.5 mm. long, septate; flowers borne in terminal and sometimes axillary spikes, these solitary, paired or in threes and up to 20 cm. long and 3 cm. broad, the peduncles (up to 3 cm. long) and rhachis hirtellous; bracts subtending the spikes and lowermost flowers lanceolate, leaflike, up to 3 cm. long and 1 cm. wide; typical bracts subtending the flowers orbicular, 1.5 cm. long, 1 cm. wide, abruptly and slenderly acuminate, the slender tip about 3 mm. long, abruptly narrowed at middle to a slender claw, the upper surface glabrous, the lower puberulous with minute erect papular hairs and a few longer curved eglandular ones intermixed, the margins ciliate with spreading hairs up to 1 mm. long; bractlets lanceolate, 3.25 mm. long, 1 mm. wide near base, slenderly acuminate, subhyaline, glabrous or bearing a few curved stiff hairs about 0.18 mm. long, sparingly ciliate; calyx 4-parted, 5 mm. long, deeply segmented, the segments narrowly triangular, about 0.5 mm. wide at base, gradually narrowed from base to a slender tip, thin, glabrous except at tip, here bearing a few stiff curved ascending hairs about 0.18 mm. long, sparingly ciliate toward base; corolla pale yellow, 2.5 to 3 cm. long, sparingly hirtellous at tip, otherwise glabrous, the tube about 2 mm. broad at base, slightly constricted above base, the mouth 4.5 mm. broad, the lips subequal, 7 mm. long, the upper lip suberect, oblong, about 3 mm. wide at base, gradually narrowed to 1 mm. near tip, 2-lobed, the lobes about 0.5 mm. long and broad, rounded, the lower lip somewhat spreading, 3-lobed, narrowly ovate, about 5 mm. long, rounded at tip; stamens reaching within about 2 mm. of the tip of the upper lip and lying in it, glabrous, the anthers 2.5 mm. long, the lobes narrow and parallel and rounded at base, the connective very narrow; pistil about as long as the stamens, sparingly hirtellous; capsules 13 to 15 mm. long, 5 mm. wide and 2.5 mm. thick, 4-seeded, glabrous, the solid stipitate portion about 6 mm. long and 2 mm. broad; retinacula straight or slightly curved, about 2.5 mm. long, acute; seed suborbicular, 5 mm. long and 4 mm. broad, 0.75 mm. thick, whitish, faintly wrinkled, papillose.

Type in the U. S. National Herbarium, No. 1742247, collected about 20 km. south of El Centro, in the vicinity of Barranca Bermeja, Magdalena Valley, between the Ríos Sogamoso and Carare, Department of Santander, Colombia, 100 meters altitude, September 29, 1936, by Oscar Haught (No. 1986).

Also of this species are Haught's No. 1672, collected at Camp Carare IV in the vicinity of Puerto Berrio, between the Río Carare and Río Magdalena, Department of Santander, 100 to 700 meters altitude, April 25, 1935 (US), and Hodge's No. 6511, collected in rain

forest along the Río Carare, Department of Santander, 300 to 400 meters altitude, September 28, 1945 (GH, Med).

Jacobinia axiologa apparently has no close relative in Colombia. It is readily recognizable by its peculiar orbicular apiculate clawed bracts. Hodge states that the flowers of his No. 6511 were creamy white. The specific epithet is from the Greek ἀξιόλογος, meaning remarkable or worthy of mention.

3. *Jacobinia amphibola* Leonard, sp. nov.

FIGURE 243

Suffrutex, caulibus subquadrangularibus, glabris; lamina foliorum oblongo-ovata, breviter acuminata (apice ipso obtuso), basi acuta, obtusa vel rotundata, aliquanto firma, undulata vel leviter serrata, supra glabra vel subglabra, subtus puberula, costa et venis lateralibus prominentibus, venulis crasse reticulatis; petioli aliquanto graciles, glabri vel parce puberuli; paniculae terminales, glabrae, ramis subquadrangularibus; bracteae ramos ultimos panicularum subtendentes lineares, parvae, glabrae, apice obtusae vel rotundatae; bracteae flores subtendentes spathulatae, obtusae, glabrae; bracteolae nullae; calycis segmenta 5, lanceolata, acuta, graciliter nervata; corolla flava, glabra, tubo subcylindrico, labio superiore erecto, oblongo, apice bilobato, lobis trianguli-ovatis, obtusis, incurvatis, labio inferiore patulo, cuneato, 3-lobato, lobis trianguli-ovatis, apice rotundatis, erosis, lobo medio plus minusve emarginato; stamina exserta, glabra, lobis antherarum parallelis, basi subapiculatis, connectivo angusto; ovarium glabrum;

Suffruticose plants up to 1 meter high; stems subquadrangular, glabrous, the internodes up to 12 cm. long or more; leaf blades oblong-ovate, up to 13 cm. long and 6 cm. wide, short-acuminate (the tip itself blunt), acute, obtuse or rounded at base, rather firm, undulate or shallowly serrate, the teeth low (0.5 mm. long) and broad, the upper surface glabrous or nearly so, the lower surface puberulous, the hairs (up to 0.16 mm. long) confined more or less to the veins, the costa and lateral veins (about 6 pairs) prominent beneath, less so above, the veinlets coarsely reticulate, cystoliths not apparent; petioles rather slender, up to 3 cm. long, glabrous or sparingly puberulous; flowers borne in terminal panicles about 10 cm. long and 6 cm. broad, the lowermost internodes of the panicle about 2 cm. long, the others successively shorter toward the tip of the inflorescence, all glabrous and subquadrangular; bracts subtending the ultimate branches of the inflorescence linear, about 3 mm. long and 0.75 mm. wide, obtuse or rounded, glabrous, those subtending the flowers spathulate, 5 mm. long, 1.5 mm. wide near tip, narrowed to 1 mm. at 1.5 mm. below tip, obtuse, glabrous; bractlets lacking; calyx 2 cm. long, glabrous, the segments 5, lanceolate, up to 16 mm. long and 3.5 mm.

wide, acute, the costa and 2 pairs of lateral nerves slender but rather prominent; corolla yellow, glabrous, up to 4.8 cm. long, the tube subcylindric, 7 mm. broad at base, narrowed to 3 mm. at 5 mm. above base, 6 mm. broad at mouth, the upper lip suberect, oblong, 1.8 cm. long, 5.5 mm. wide, bilobed at tip, the lobes triangular-ovate,

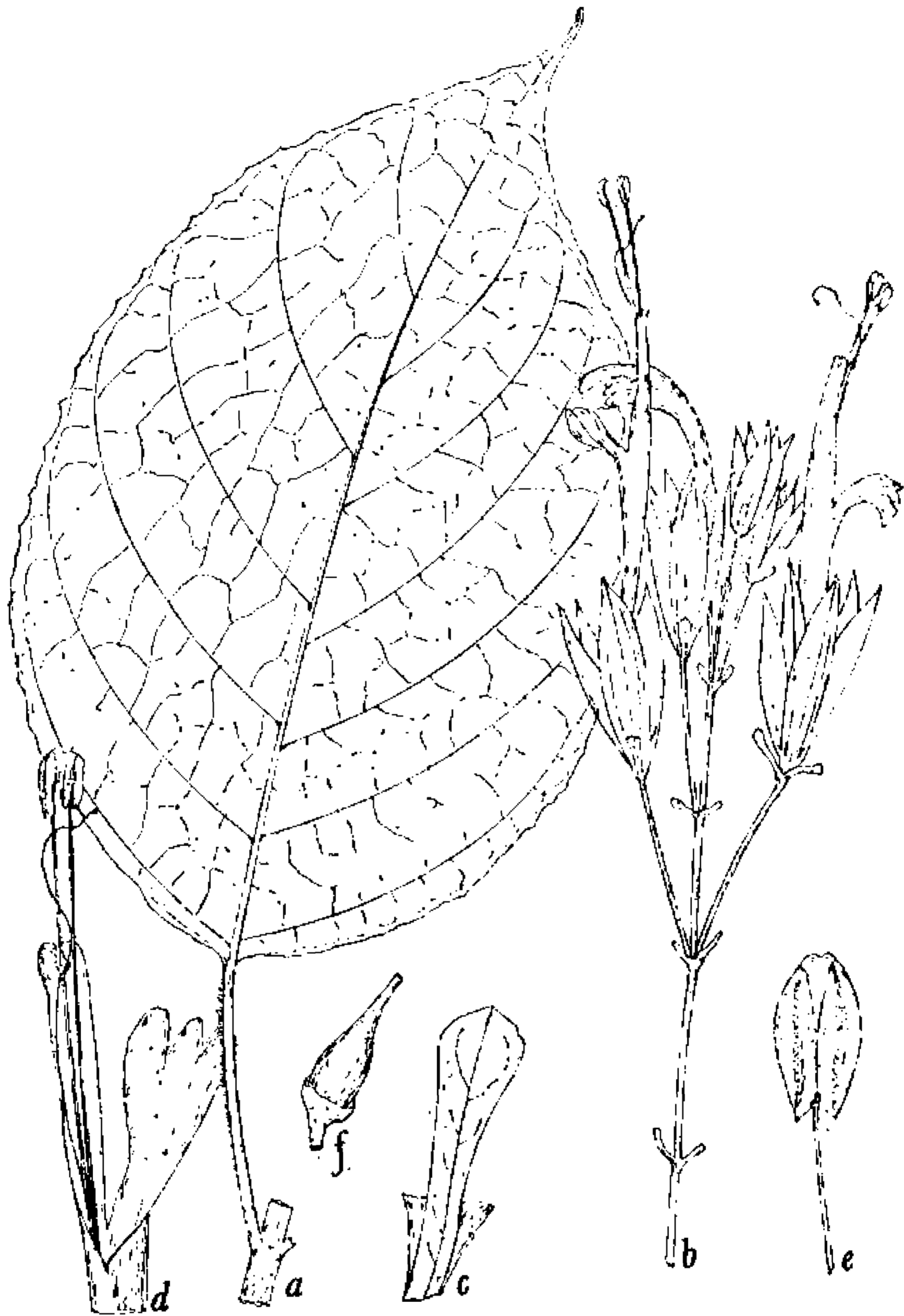


FIGURE 243.—*Jacobinia amphibola* Leonard (*Cuatrecasas* 23467): *a*, Leaf; *b*, branch of panicle; *c*, bract; *d*, tip of corolla to show lips, stamens and style; *e*, anther; *f*, ovary. *a*, *b*, Natural size; *c*, 5 times natural size; *d*, $1\frac{1}{2}$ times natural size; *e*, 4 times natural size; *f*, 6 times natural size.)

3 mm. long, 1.5 mm. wide at base, obtuse, incurved, the lower lip cuneate, about 12 mm. long, 11 mm. wide at base of lobes, the lobes triangular-ovate, 2.5 mm. long, the middle lobe 4.5 mm. wide, the lateral ones 3.25 mm. wide, all rounded and erose at tip, the middle one more or less emarginate; stamens exserted about 2 cm. above the mouth of the corolla tube, glabrous, the anthers 4 mm. long, the lobes

1 mm. broad, parallel (the connective narrow), subapiculate at base; style about as long as the stamens, glabrous; ovary glabrous, 4-ovuled; capsules not seen.

Type in the U. S. National Herbarium, No. 1950034, collected at Aguabonita, valley of the Rio San José, in the vicinity of Moscopán, Department of Cauca, Colombia, 2,280 meters altitude, January 30, 1947, by J. Cuatrecasas (No. 23467).

Fosberg's No. 20115 (US), collected in a wet forest on a flat ridge-top northwest of Quebrada la Candela, Río Naranjo, 20 km. southwest of San Agustín, Department of Huila, Colombia, 2,100 to 2,300 meters altitude, February 13, 1943, is also of this species.

Cuatrecasas gives on his label the following notes: "Suffrutex 1 met. Hoja verde brillante, haz verde grisáceo envés, peciolo y nervios violáceos. Caliz amarillo con márgenes verdosos. Corola amarilla. Anteras violetas."

Fosberg's collection was from an herb less than a meter tall with a yellow-green calyx and yellow corolla.

This species is doubtfully placed in the family Acanthaceae. Should it belong in the genus *Jacobinia*, the shallowly toothed leaves and the lack of cystoliths and bractlets would be unique. The specific name is from the Greek *ἀμφίβολος*, meaning ambiguous or doubtful.

4. *Jacobinia spicigera* (Schlecht.) L. H. Bailey

Justicia spicigera Schlecht. *Linnaea* 7: 395. 1832. Type locality: Jalapa, México. Collected by G. Schiede in 1829.

Jacobinia spicigera L. H. Bailey, *Stand. Cycl. Hort.* 1715. 1915. Based on *Justicia spicigera* Schlecht.

Shrub up to 2 meters high; stems subquadrangular, bifariously pubescent (the hairs curved) or glabrate; leaf blades lance-oblong to ovate, up to 17 cm. long and 7 cm. wide, acute to acuminate (the tip itself blunt), narrowed or rounded at the base and decurrent on the petiole, glabrous or sparingly hirtellous, the hairs curved, up to 0.5 mm. long; petioles up to 2 cm. long, glabrous or the channels hirtellous; flowers secund on the branches of axillary or terminal cymose panicles usually up to 7 cm. long, the branches of the inflorescence glabrous or bifariously hirtellous, the peduncles usually up to 2 cm. long; bracts and bractlets triangular, about 1.5 mm. long, acute; calyx segments lanceolate, up to 3 mm. long, acute, glabrous; corollas glabrous, red or orange, 3 to 4.5 cm. long, the tube 2 mm. broad at base, slightly narrowed above base, thence gradually enlarged to 5 mm. at mouth, the lips about 1.5 mm. long, the upper lip narrowly ovate, erect, acute, the lower lip erect or somewhat spreading, 3-lobed, the lobes 2 to 3 mm. long, rounded; stamens barely reaching the tip of the upper lip of the corolla, the lobes slightly superposed, nearly parallel, about 2 mm. long; mature capsules not seen.

The Lehmann notes relating to the cited specimens are as follows:

"Up to 2 m. high, soft-wooded shrub with squarrose irregular ramification. Leaves yellow-green. Flowers scarlet. Grows in dense, luxuriant forests around Dabeiba, western slopes of the West Andes of Antioquia, 300-500 m."

The species is common in México and Central America and has been found in Trinidad, where it is probably only in cultivation.

ANTIOQUIA: Dabeiba, *Lehmann* 4740 (K).

5. *Jacobinia tinctoria* (Oerst.) Hemsl.

Sericographis tinctoria Oerst. Nat. For. Kjöbenhavn. Vid. Medd. 1854: 150.

1854. Type locality: Woods in the vicinity of Cartago, Costa Rica.

Jacobinia tinctoria Hemsl. Biol. Centr. Amer. Bot. 2: 522. 1882. Based on *Sericographis tinctoria* Oerst.

Glabrous shrubs or suffrutescent plants up to 2 meters high; stems subquadrangular, the angles rounded; leaf blades lanceolate to oblong-lanceolate, up to 10.5 cm. long and 3 cm. wide, short-acuminate (the tip itself blunt), narrowed at base, firm, entire, glabrous, the cystoliths minute and obscure; petioles up to 1 cm. long, glabrous; flowers secund, born in lax axillary spikes up to 7 cm. long, the peduncles up to 2 cm. long, glabrous; the rachis quadrangular, glabrous, its internodes for the most part about 5 mm. long; bracts and bractlets triangular-subulate, up to 2 mm. long, and 0.75 mm. wide near base, glabrous; calyx segments triangular-subulate, 1.5 to 2.5 mm. long and about 1 mm. wide near base, ciliate, the hairs spreading, up to about 0.2 mm. long; corollas 3 to 3.5 cm. long, red, glabrous, nitid, the tube rather slender, 2 mm. wide near base, reduced to 1.5 mm. at 3 mm. above base, thence gradually enlarged to 5 mm. at throat, the lips subequal, the posterior lip ovate, 12 mm. long, 5 to 6 mm. wide at base, subobtuse at tip, the lower lip oblong, erect or somewhat spreading, 5 mm. wide near tip, 3-lobed, the lobes about 1 mm. long and 1.25 mm. wide, rounded; stamens barely reaching the tip of the lips, the anther lobes slightly superposed and obliquely attached to the connective, 2.5 mm. long and 0.75 mm. broad, the filaments flattened, glabrous; capsules not seen.

Vernacular names: Azul (*Idrobo & Fernández* 243; *Lehmann* B. T. 428, B. T. 438, 7851) and pánciga (*Duque* 1701)

Jacobinia tinctoria is a cultivated plant in Colombia often planted in parks, gardens, or patios. The leaves and young branches macerated in water yield a deep blue dye which in a diluted solution can be used as a substitute for indigo for washing white clothes. The species occurs more frequently in Central America, where it may have originated.

According to Lehmann's notes, his No. 7851 was taken from "Densely bushy and erect shrubs 2 m. in height. Leaves seagreen. Flowers

dark vermilion, yellow at base." The plants from which his No. B. T. 428 was taken were propagating by slender underground rooting branches.

CAUCA: El Tambo, Corregimiento de López, 1,750 meters altitude, August 23, 1949, *Idrobo & Fernández* 243 (US).

EL VALLE: Cali, 1,000 meters altitude, June 15, 1938, *Duque* 1701 (US). Popayán (cultivated), *Lehmann* B. T. 428 (K, NY), B. T. 438 (K, NY), 7851 (K). Toro, 970 meters altitude, October 7, 1943, *Cuatrecasas* 15275 (GH, US).

DOUBTFUL SPECIES

Jacobinia lindaviana Rusby

Jacobinia lindaviana Rusby, *Descr. So. Am. Pl.* 128. 1920.

The type has not been available for study. Following is the original description:

"A glabrous shrub, the branchlets short, stout and leafy. Petioles 3 mm. long, slender; blades 15–30 mm. long, 10–20 mm. wide, ovate, rounded at the base, obtuse at summit, dark-green, thickish, the veins dark, strongly ascending. Flowers few, in the upper axils, subsessile, 2-bracteolate at the base of the calyx, the bracts minute, subulate. Calyx 10 mm. long, the lobes lanceolate, acuminate, acutish. Corolla-tube 15 mm. long, nearly straight, dilating very near the summit, the lobes partially destroyed by insects in my specimen. The short stamens equalling the corolla tube, the longer ones exserted, the lower anther cell with about two-thirds of its length below the base of the upper, which is short mucronate. Style not equalling the longer stamens, stout, sharply declined, above.

"Species dedicated to Dr. Lindau who has kindly confirmed my determination.

"Collected at Playa Brava on the northern coast of Colombia, on a dry, rocky hillside on June 6, 1899, by Herbert H. Smith, who reports it as a foot high, and having crimson flowers. (No. 2821)."

39. CHAETOCHLAMYS Lindau

Chaetochlamys Lindau in *Bull. Herb. Boiss.* 3: 490. 1895. From the Greek *χαίτη*, hair, and *χλαμύς*, bract. The name was probably suggested by the rather conspicuous filiform bracts and bractlets. The genus is based on 3 species, *C. macrosiphon* (Kuntze s. n., Bolivia), *C. marginata* (Kuntze s. n., Paraguay), and *C. rusbyi* (Kuntze s. n., Bolivia). The first of these can be considered as the type species.

Herbs or suffrutescent plants; leaf blades ovate to lanceolate; flowers borne in short spikes, these crowded in a terminal congested head; bracts and bractlets narrow; calyx segments 5, narrow; corolla hypocrateriform, the limb 2-lipped, the upper lip 2-lobed, the lower lip 3-lobed; stamens 2, exserted, the anther lobes affixed at different heights, the lower lobe spurred; stigma capitate; capsules clavate, 4-seeded.

Some 14 species have been described in this genus, all from tropical America.

1. *Chaetochlamys columbiensis* Leonard, sp. nov.

FIGURE 244

Suffrutex, caulibus subteretibus, sursum bifariam retrorse puberulis, pilis curvatis, deorsum lignosis, glabris, cortice cinereo; lamina foliorum ovata, apice obtusa vel subacuta, basi acuta vel obtusa, aliquanto firma, integra vel undulata, supra glabra vel in costa strigosa vel hirsuta, pilis appressis vel curvatis et ascendentibus, cystolithis pluribus et conspicuis, subtus glabra vel in costa et venis parce hirtella, cystolithis pluribus densis et conspicuis; petioli breves, glabri vel in canale parce puberuli; capitula terminalia, foliis ovatis suffulta; bracteae lanceolatae, virides et foliaceae, acutae, venosae, glabrae vel intus basi puberulae, marginibus ciliatis, pilis ascendentibus; bracteolae anguste lanceolatae, apice graciles (apice ipso obtuso), glabrae vel intus basi puberulae, marginibus ciliatis; calycis segmenta lanceolata, acuminata, apice curvata, costa prominente, marginibus ciliatis, pilis conspicuis, albis, patulis vel ascendentibus; corollae purpurea, hirtella vel basi extus glabra, pilis patulis, tubo subcylindrico, labio superiore erecto, anguste ovato, apice bilobato, lobis oblongis, rotundatis, labio inferiore plus minusve patulo, 3-lobato, lobis ovatis, rotundatis; stamina exserta, lobis antherarum superpositis, obliquis, lobo inferiore calcarato; capsulae ovoideae, abrupte acutae, glabrae; retinacula fere recta, apice tenuia, erosa; semina subsphaerica, subbrunnea, glabra.

Suffrutescent herbs up to 50 cm. high; stems simple or moderately branched, subterete, bifariously puberulous, the hairs retrorsely curved, up to about 0.16 mm. long, the internodes 2 to 5 cm. long, the lower woody portions of the stems glabrous, the bark gray; leaf blades ovate, up to 6 cm. long and 2.5 cm. wide, obtuse to subacute at tip, acute to obtuse at base, moderately firm, entire or undulate, the upper surface glabrous or the costa strigose or hirsute, the hairs about 0.16 mm. long, appressed or curved and ascending, the cystoliths numerous and conspicuous, up to 0.1 cm. long, the lower surface glabrous or the costa bearing a few scattered hairs, the cystoliths conspicuous, crowded and numerous; petioles up to 4 mm. long, glabrous or the channels sparingly puberulous; flowers borne in green terminal sessile heads about 2 cm. long and 2 to 3 cm. broad, these subtended by a pair of ovate leaves up to 5 cm. long and 2 cm. wide; bracts lanceolate, green and leaflike, up to 1.8 cm. long and 3.5 mm. wide, acute, veiny, the surfaces glabrous except the puberulous lower inner surface, the margins ciliate, the hairs ascending, up to 1 mm. long; bractlets narrowly lanceolate, up to 15 mm. long and 1.75 mm. wide near base, gradually narrowed to a slender tip (the tip itself blunt), glabrous except a small puberulous area at base of inner surface and the ciliate margins; calyx segments lanceolate, up to 12.5 mm. long and 2 mm. wide near base, acuminate, the tip curved,

the costa prominent, bearing dorsally a few ascending hairs up to 1 mm. long, the margins ciliate, the hairs white, spreading or ascending, up to 1.5 mm. long; corollas purplish-red, rather copiously hirtellous except the glabrous basal portion, the hairs spreading, up to 0.16 mm. long, the tube 3 mm. broad at base, enlarged to 4 mm. immediately above base, thence gradually narrowed to 3 mm. at mouth, the upper lip erect, narrowly ovate, 1 cm. long, 3 mm. wide at base, narrowed to a slender bilobed tip, the lobes oblong, 2 mm. long, 0.75 mm. wide, rounded, the lower lip more or less spreading, about 10 mm. long, 3-lobed, the lobes ovate, about 7 mm. long and 6.5 mm. wide, rounded; stamens exerted about 4 mm. beyond the mouth of the corolla, the

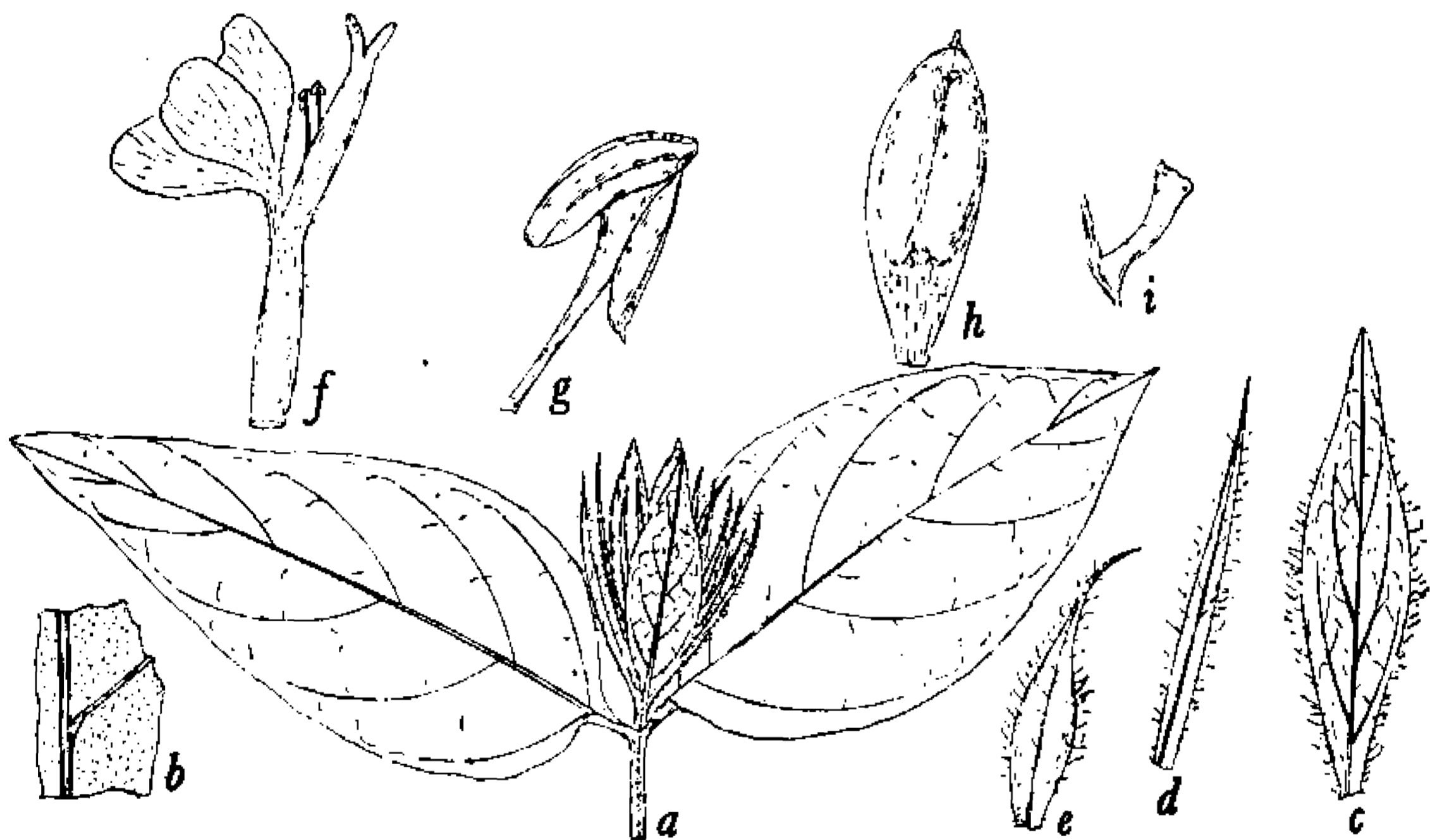


FIGURE 244.—*Chaetochlamys columbiensis* Leonard (Haught 2414): *a*, Tip of plant to show inflorescence and leaves; *b*, portion of leaf blade (medial area and lower surface) to show cystoliths; *c*, bract; *d*, bractlet; *e*, a calyx segment; *f*, corolla; *g*, anther; *h*, a capsule valve (dorsal surface); *i*, retinaculum. (*a*, Natural size; *b*–*e*, twice natural size; *f*, $1\frac{1}{2}$ natural size; *g*, 7 times natural size; *h*, $1\frac{1}{5}$ times natural size; *i*, 4 times natural size.)

anther lobes superposed and obliquely attached to the connective, about 2 mm. long and 0.5 mm. broad, the lower lobe bluntly spurred, the spur 0.26 mm. long and broad; capsules ovoid, 14 mm. long, 6 mm. wide, 3 to 4 mm. thick, abruptly acute, glabrous, 4-seeded; retinacula nearly straight, 2.25 mm. long, the tip 1 mm. wide, thin, erose; seeds subspherical, light brown, glabrous.

Type in the U. S. National Herbarium, No. 1707050, collected near Guataquicito, Department of Tolima, Colombia, 500 meters altitude, November 3, 1938, by Oscar Haught (No. 2414).

Pérez Arbeláez's No. 3105 (US), collected at Purificación, Department of Tolima, July 3, 1934, and Killip, Dugand and Jaramillo's

No. 38289 (US), collected at the Hacienda El Cucharo between Tocaima and Pubenza, Department of Cundinamarca, 350 meters altitude, May 7, 1944, are also of this species.

Chaetochlamys columbiensis has the general appearance of *C. ciliata* Lindau from the State of Pará, Brazil, but that species has larger flowers (the tube 25 mm. long instead of 18 to 20 mm. and its upper lip entire instead of bilobed) and larger leaf blades (10 to 12 cm. long and 4 cm. wide).

40. CHAETOTHYLAX Nees

Chaetothylax Nees in Mart. Fl. Bras. 9: 153, pl. 26. 1847. Type species *C. tocanthus* Nees. Type collected on the Rio Tocantins, Province of Goyaz, Brazil, by Pohl. Derivation of epithet: *χαίτη*, hair, and *θύλαξ*, sack, in allusion to the vestigial lower anther lobe. In plate 26 this is pictured as a short hair, although in most species the lower lobe is shaped much like the upper but much smaller and evidently sterile.

Herbs; leaf blades ovate to oblong; flowers more or less secund, borne in short dense terminal and axillary spikes, these often forming panicles; bracts narrow, ending in filiform tips, hirtellous and ciliate; calyx segments 4, resembling the bracts; corollas white or some shade of purple, finely pubescent, the tube narrow, the lips subequal, the upper lip narrowly ovate, the lower deeply 3-lobed, the lobes rounded; stamens, slightly exserted but not exceeding the corolla lips, the upper anther lobe oblong, 1-celled, the lower lobe reduced or vestigial, or, as in the type species, hairlike, the lobes separated by a slender filiform connective; capsule clavate, 4-seeded; seed papillose or otherwise roughened.

About a dozen species are now recognized, these all confined to tropical America.

KEY TO THE SPECIES

- Spikes relatively narrow, up to 5 mm. broad..... 1. *C. umbrosus*
 Spikes 8 mm. or more broad.
 Corollas white..... 2. *C. leucanthus*
 Corollas violet or magenta.
 Leaf blades up to 12 cm. long; corollas magenta, up to 2.8 cm. long..... 3. *C. haughtii*
 Leaf blades up to 6 cm. long; corollas violet, up to 1.4 cm. long..... 4. *C. huilensis*

1. *Chaetothylax umbrosus* Nees

Chaetothylax umbrosus Nees in DC. Prodr. 11: 313. 1847. Two syntypes are cited: Nova Granada [Colombia], Goudot, and St. Xaver [Argentina], Tweedie 1262.

Herbs up to 80 cm. high; stems branched, subquadrangular, bifariously pilose, the hairs variously curved, ca. 0.5 mm. long, the cystoliths numerous, conspicuous, parallel, in some plants arranged in striae; leaf blades ovate to oblong, up to 9 cm. long and 3.5 cm.

wide, subacute and aristate at tip, the seta about 1 mm. long, narrowed at base and decurrent on the petiole, moderately firm, entire, hirsute, the upper surface usually sparingly so, the hairs of the lower surface often rather dense and evenly distributed, straight or slightly curved, spreading or ascending, up to 1 mm. long, the cystoliths numerous and prominent; flowers borne in numerous terminal and axillary spikes, these frequently forming large panicles, the spikes oblong, usually up to 1.5 cm. long, although at times as much as 3 cm. long, mostly 3 to 5 mm. broad (the flowers secund), sessile or short-pedunculate (1 mm.), the rachis puberulous; bracts lanceolate, 3.5 mm. long, 0.75 mm. wide, ciliate, the hairs ascending, up to 0.5 mm. long, the flat surfaces glabrous, the costa prominent; calyx segments linear, 7 mm. long, 0.75 mm. wide, narrowed to a slender tip, ciliate, the hairs up to 0.25 mm. long, the dorsal surface hirtellous with straight gland-tipped hairs ca. 0.06 mm. long; corollas violet to white, about 1.5 cm. long, finely pubescent except at base, the hairs up to 0.16 mm. long, mostly retrorsely curved, the tube 1.25 mm. broad at base, narrowed just above ovary to 1 mm., the throat 1.5 mm. broad, the upper lip erect, narrowly ovate, 4.5 mm. long, 2 mm. wide at base, obtuse or rounded at lip, the lower lip 4 mm. long, deeply 3-lobed, the lobes obovate, 1.5 mm. wide, rounded; stamens exserted 2 mm. beyond the mouth of the corolla tube, the upper lobe 0.75 mm. long and 0.25 mm. thick, the lower lobe affixed about 0.5 mm. below the upper, vestigial; capsule clavate, 7 mm. long, 1.5 mm. broad and thick, minutely and rather sparingly puberulous; retinacula truncate or irregular at tip; mature seed not seen.

No Colombian specimens examined. The description is based on material from Argentina.

2. *Chaetothylax leucanthus* Leonard, sp. nov.

FIGURE 245

Herba, caulibus erectis vel ascendentibus, plus minusve ramosis, hirtellis, pilis albidis, plus minusve retrorse curvatis; lamina foliorum oblonga vel elliptica, apice acuta et cuspidata, basi cuneata et in petiolum decurrens, aliquanto firma, integra, hirtella, cystolithis obscuris; petioli hirtelli; paniculae terminales et axillares, densae, ex spicis densis floribus secundis compositae; bracteae lineari-subulatae, apice aristatae, ciliatae et aliquanto hirtellae, pilis leviter curvatis, ascendentibus; calycis segmenta lineari-subulata, ciliata et parce hirtella; corolla alba, tenuiter pubescens, basi glabra excepta, pilis retrorse curvatis, tubo anguste cylindrico, labiis subaequalibus, labio superiore anguste ovato, apice emarginato, labio inferiore trilobato, lobis obovatis, obtusis; stamina vix exserta, glabra, lobis antherarum superpositis, lobo superiore fertili, lobo inferiore sterili, parvo; capsulae

clavatae, minute pubescentes, pilis retrorse ascendentibus; semina (immatura) papillosa.

Herbs up to 30 cm. high, erect or ascending; stems more or less branched, subquadrangular, up to 1.75 mm. thick, hirtellous, the hairs fine, more or less retrorsely curved, whitish, up to 0.38 mm. long; leaf blades ovate, oblong or elliptic, up to 5 cm. long and 2 cm. wide, acute and cuspidate at tip, the cusp up to 1 mm. long, narrowed at base and decurrent on the petiole, moderately firm, entire, both surfaces moderately and evenly hirtellous, the hairs on the costa and lateral veins (5 or 6 pairs) up to 0.67 mm. long, straight or slightly curved, spreading or ascending, the cystoliths obscure; petioles up to



FIGURE 245.—*Chaetothylax leucanthus* Leonard (*Pennell* 3985): *a*, Tip of plant to show leaves and inflorescence; *b*, bract; *c*, calyx; *d*, portion of calyx segment from near the middle enlarged to show pubescence; *e*, corolla; *f*, anther. (*a*, Natural size; *b*, $4\frac{1}{2}$ times natural size; *c*, 3 times natural size; *d*, 12 times natural size; *e*, 3 times natural size; *f*, 13 times natural size.)

0.5 cm. long, hirtellous, the hairs ca. 0.38 mm. long, curved; flowers borne in terminal and axillary panicles of dense straight or slightly curved, more or less 1-sided spikes, these up to 2 cm. long and 8 mm. broad, the lowermost internodes about 1.5 mm. long, hirtellous, the others successively shorter toward tip of spike, the panicles subtended by small leaves, the bracts linear-subulate, 7 mm. long, 0.4 mm. wide, gradually narrowed to a whitish aristate tip 1 mm. long, ciliate and rather sparingly hirtellous, the hairs up to 0.67 mm. long, slightly curved and ascending; calyx segments 1 cm. long, in other respects similar to the bracts; corolla 13 mm. long, finely pubescent except at base, the hairs retrorsely curved, up to 0.28 mm. long, the tube nar-

rowly cylindrical, 0.75 mm. broad, the throat 1 mm. broad, the upper lip narrowly ovate, 2.5 mm. long, 1 mm. wide at base, emarginate at tip, the lower lip 3-parted nearly to base, the lobes obovate, about 3 mm. long, the middle lobe 2 mm. wide, the lateral lobes 1.5 mm. wide, all obtuse; stamens glabrous, exserted 2.5 mm. beyond the mouth of the corolla, the upper anther lobe 0.75 mm. long, 0.5 mm. broad, the lower anther lobe affixed 0.5 mm. below the upper, sterile and reduced; capsule clavate, 5 mm. long, about 2 mm. broad and 1 mm. thick, minutely pubescent, the hairs up to 0.08 mm. long, retrorsely ascending; seed (immature) papillose.

Type in the herbarium of the New York Botanical Garden, collected at edge of thicket in Buenavista, east of Sincé, Department of Bolívar, Colombia, 100 to 200 meters altitude, January 24, 1918, by Francis W. Pennell (No. 3985). Isotype in the Gray Herbarium.

Pennell's No. 4236 (NY), collected in a forest at Boca Verde, on the Río Sinú, Department of Bolívar, Colombia, 100 to 300 meters altitude, February 13-14, 1918, is also of this species.

The specific epithet is from the Greek *λευκός*, white, and *ἄνθος*, flower.

3. *Chaetothylax haughtii* Leonard, sp. nov.

FIGURE 246

Herba gracilis, caulibus bifariam pilosis, pilis patulis vel retrorse curvatis; lamina foliorum oblonga, apice acuta vel subacuminata, interdum curvata, basi cuneata et in petiolum decurrens, aliquanto firma, integra, supra glabra vel subglabra, costa parce hirtella, cystolithis pluribus, subtus aequaliter hirtella, pilis patulis vel ascendentibus, costa et venis lateralibus prominentibus; petioli hirtelli; spicae terminales et axillares, leviter curvatae, densae, floribus secundis, pedunculis brevibus, hirtellis, pilis curvatis; bractae linearilanceolatae, hirtellae, costa prominente; calycis segmenta lanceolato-subulata, aliquanto et parce hirtella, costa prominente; corolla purpureo-rubra, parce hirtella, tubo anguste cylindrico, labiis subaequalibus, labio superiore suberecto, anguste ovato, apice minute bilobato, labio inferiore patulo, trilobato, lobis obovatis, obtusis; stamina vix exserta, lobis antherarum superpositis, lobo superiore fertili, lobo inferiore sterili, parvo; ovarium glabrum.

Slender herbs up to 1 meter high; stems subquadrangular, pilose, the hairs spreading or retrorsely curved, up to 0.68 mm. long, more or less bifariously arranged; leaf blades oblong, up to 12 cm. long and 3.5 cm. wide, acute or subacuminate and sometimes curved at tip, cuneate at base and decurrent on the petiole, rather firm, entire, the upper surface glabrous or nearly so, except the costa, this sparingly hirtellous, the cystoliths numerous, the lower surface evenly hirtellous, the hairs straight or slightly curved, spreading or ascending, up to 0.28 mm. long except those of the costa and lateral veins (6

or 7 pairs), these up to 0.96 mm. long, the venation of the lower surface prominent, that of the upper obscure, the margins ciliate; petioles (unwinged portion) up to 2 cm. long, hirtellous; flowers secund, borne in dense slightly curved terminal and axillary spikes up to 2 cm. long and about 8 mm. broad; peduncles up to 5 mm. long, hirtellous with curved hairs, the lowermost pair of bracts leaflike, oblong-lanceolate, up to 12 mm. long and 3 mm. wide, acute, hirtellous, the succeeding bracts linear-lanceolate, up to 6 mm. long



FIGURE 246.—*Chaetothylax haughtii* Leonard (*Haught 3775*): *a*, Node showing leaf and spike; *b*, bract; *c*, calyx; *d*, corolla; *e*, posterior lip of corolla; *f*, middle lobe and one of the lateral lobes of the lower lip of the corolla; *g*, anther. (*a*, Natural size; *b*, 4 times natural size; *c*, $3\frac{1}{2}$ times natural size; *d*, $1\frac{1}{2}$ times natural size; *e*, *f*, 5 times natural size; *g*, 12 times natural size.)

and 0.5 mm. wide, hirtellous, the costa prominent; calyx segments narrowly lance-subulate, up to 1 cm. long and 0.75 mm. wide, moderately to sparingly hirtellous, some of the hairs minute and gland-tipped, the costa prominent, this and the basal portion and marginal area of the segments whitish; corolla magenta, 28 mm. long, rather sparingly hirtellous, glabrous at base, the hairs more or less spreading, up to 0.18 mm. long, the tube narrowly cylindrical, 1 mm. broad, enlarged at base and mouth to 1.5 mm., the lips about 4 mm. long,

the upper one suberect, narrowly ovate, minutely bilobed at tip, the lower lip spreading, 3-lobed nearly to base, the lobes obovate, 3.5 mm. long, the middle one 3 mm. wide above middle, the lateral ones 2 mm. wide, all obtuse; stamens barely exerted, glabrous, the anthers 2-lobed, the lobes 1-celled, superposed, the upper lobe fertile, 0.75 mm. long and 0.25 mm. broad, the lower lobe affixed about 0.25 mm. below the upper, vestigial and sterile, about 0.25 mm. long; style about as long as the stamens; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 1709430, collected on trail from Codazzi to Sierra, Department of Magdalena, Colombia, 500 meters altitude, October 23, 1943, by Oscar Haught (No. 3775).

4. *Chaetothylax huilensis* Leonard, sp. nov. FIGURE 247

Herba, caulibus quadrangularibus, plus minusve ramosis, erectis vel ascendentibus, bifariam hirsutis, pilis rectis et patulis vel retrorse curvatis; lamina foliorum ovata, apice obtusa vel acuta et aristata, basi cuneata, aliquanto firma, integra, supra parce hirtella, pilis ascendentibus, subtus aequaliter hirtella, pilis rectis et patulis vel curvatis et ascendentibus, cystolithis pluribus sed obscuris; petioli hirtelli; paniculae terminales et axillares, densae, foliatae, ex spicis parvis densis formatae; bracteae lineares, ciliatae, hirsutae, pilis albis, plus minusve patulis, costis prominentibus; calycis segmenta linearia, apice filiformia, conspicue ciliata et pilosa, pilis fere patulis et rectis, costa obscura; corolla violacea, tubo subcylindrico, basi glabro, sursum aliquanto dense hirtello, pilis rectis et patulis vel retrorse curvato, labiis subaequalibus, labio superiore anguste ovato, apice minute bilobato, labio inferiore plus minusve patulo, 3-lobato, lobis obovatis, rotundatis; stamina vix exserta, lobis antherarum superpositis, lobo superiore fertili, lobo inferiore sterili, parvo; capsulae clavatae, minute et parce pubescentes, pilis retrorse curvatis; semina papillosa.

Herbs up to 30 cm. high or more; stems more or less branched, subquadrangular, erect or ascending, hirsute, the hairs straight and spreading or retrorsely curved, up to 1 mm. long, more or less arranged in 2 rows; leaf blades ovate, up to 6 cm. long and 3 cm. wide, obtuse to acute and often aristate (the awn up to 3 mm. long), cuneate at base, rather firm, entire, the upper surface sparingly hirtellous, the hairs ascending, 0.67 mm. long, the lower surface more densely and evenly hirtellous, the hairs on costa and veins (5 or 6 pairs) mostly straight and spreading, up to 0.67 mm. long, the others curved and ascending and usually less than 0.5 mm. long, the cystoliths rather numerous but obscure; petioles (unwinged portion) up to 1 cm. long, hirtellous; flowers borne in dense terminal and axillary subsessile panicles up to 2.5 cm. long and broad, these composed of dense spikes 1.5 cm. long and 8 to 10 mm. broad and intermixed with small leaves,

the lowermost internodes of the spikes 1 mm. long, the others successively shorter, sparingly hirtellous; bracts linear, up to 12 mm. long and 0.5 mm. wide, ciliate and hirsute, the hairs white, straight, mostly spreading, up to 0.75 mm. long, the costa prominent; calyx segments narrowly linear, up to 11 mm. long and 0.5 mm. wide, gradually narrowed into a filiform tip, conspicuously ciliate and pilose, the hairs white, mostly straight and spreading, up to 1 cm. long, the costa obscure, apparent only toward base; corollas violet, 1.5 cm. long, the tube subcylindric, 1 mm. broad at base, enlarged to 1.5 mm. just above the ovary, thence narrowed to 0.75 mm., 1.5 mm. wide at throat,

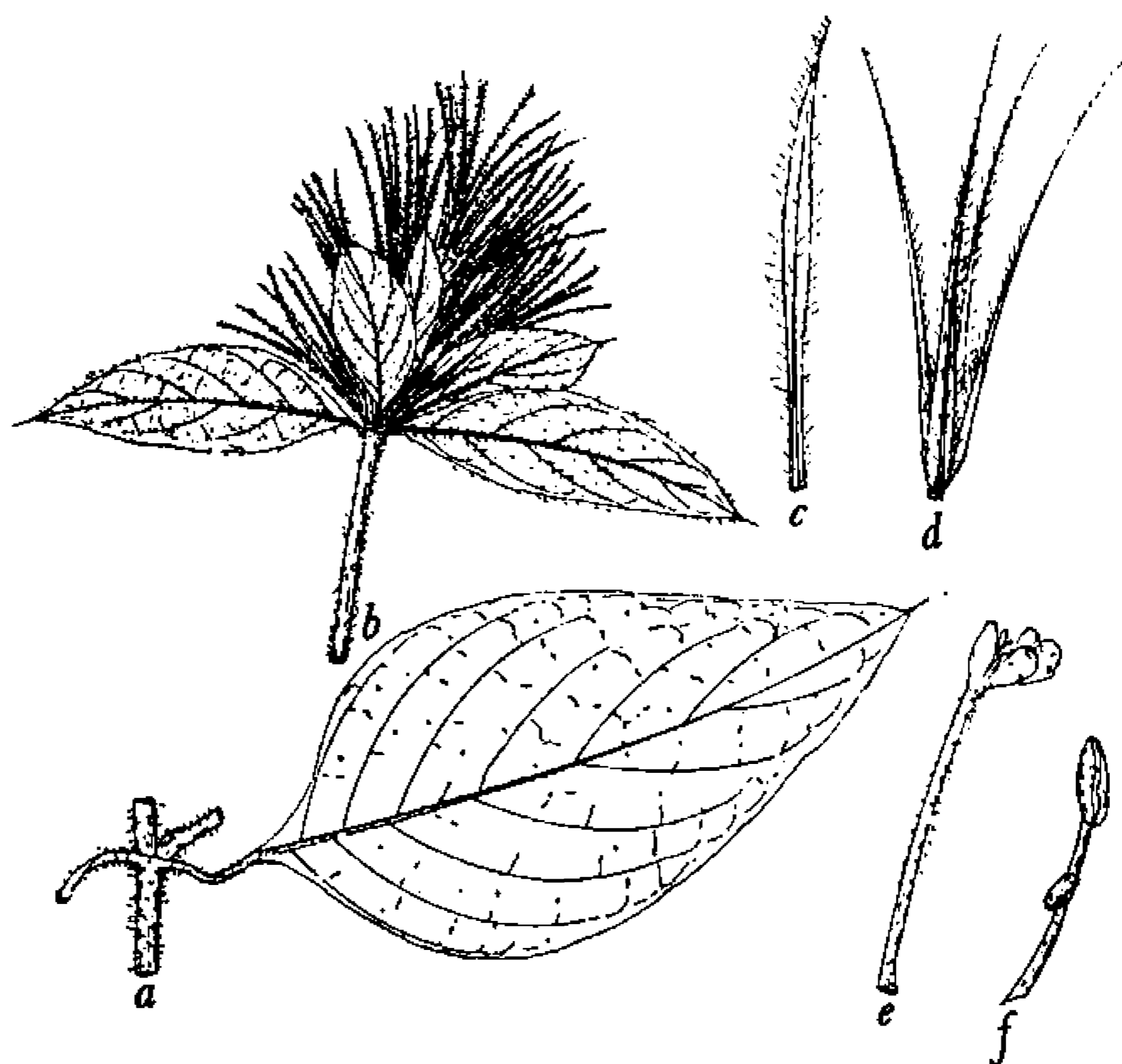


FIGURE 247.—*Chaetothylax huilensis* Leonard (*a, b*, S. Galen Smith 1164; *c-f*, Rusby & Pennell 486): *a*, Stem node and leaf; *b*, tip of plant showing inflorescence; *c*, bract; *d*, calyx; *e*, corolla; *f*, anther. (*a, b*, Natural size; *c, d*, 3 times natural size; *e*, twice natural size; *f*, 8 times natural size.)

glabrous at base, otherwise rather densely hirtellous with white straight spreading or retrorsely curved hairs up to 0.25 mm. long, the upper lip narrowly ovate, about 3.5 mm. long and 1 mm. wide at base, the tip minutely bilobed, the lower lip 3.5 mm. long, 3-lobed nearly to base, the lobes obovate, the middle one 1.5 mm. wide, the lateral ones slightly narrower, all rounded; stamens exerted 1 mm. beyond the mouth of the corolla, glabrous, the upper anther lobe 0.75 mm. long and 0.5 mm. broad, the lower lobe affixed 0.75 mm. below the upper, about 0.5 mm. long, sterile, the connective between the 2 lobes slender: capsules clavate, whitish, 7 mm. long, about 2 mm. broad and 1.25

mm. thick, minutely and sparingly pubescent, the hairs up to 0.08 mm. long and retrorsely recurved, the retinacula 1.5 mm. long, the tips up to 0.25 mm. broad and suberose, the seed flattened, about 2 mm. in diameter, papillose.

Type in the U. S. National Herbarium, No. 1041358, collected in a quebrada thicket in the Cordillera Oriental, east of Neiva, Colombia, 700 to 1,500 meters altitude, July 31, 1917, by H. H. Rusby and Francis W. Pennell (No. 486). Isotypes: GH, NY.

S. Galen Smith's No. 1164 (US), collected on a dissected plateau at Cabrera Lajas, about 11 km. east of Villavieja, on the road to Baraya, Department of Huila, 460 meters altitude, July 7, 1950, is also of this species.

SUPPLEMENT

The specimens cited or described in this supplement were received after the publication of Parts I and II.

The page number in parentheses after the species heading indicates where the entry would occur in Parts I or II.

PART I

1. STAUROGYNE Wall.

2. *Staurogyne leptocaulis* Leonard, sp. nov. (Page 7.) FIGURE 248

Herba gracilis, caulibus decumbentibus, subteretibus, pilosis, pilis debilibus, albis, appressis vel subappressis; lamina foliorum oblongo-elliptica, apice obtusa, basi cuneata, firma, integra, puberula et pilosa, pilis minutis, acutis, rigidis, ascendentibus et pilis alteris longis, albis, gracilibus, ascendentibus; petioli breves, pilosi; spicae terminales et laterales, graciles, apice interdum curvatae, rhache pilosa; bracteae oblongae, foliis similes sed minores; bracteolae oblongo-lineares, obtusae, pilosae, ciliatae; pedicelli breves, pilosi; calycis segmenta anguste lanceolata, acuminata, segmentum posterius quam 4 anteriora angustius, dense pilosa, pilis gracilibus, albis, ascendentibus; corolla alba, puberula, basi glabra, labio superiore brevi, erecto, bilabiato, lobis rotundatis, labio inferiore patulo, trilobato, lobis rotundatis, plus minusve emarginatis; stamina inclusa; capsulae parvae, oblongae, glabrae vel apice parce puberulae; semina minuta, brunnea, globosa, verrucosa.

Delicate herbs up to 13 cm. high; stems decumbent, producing erect branches from the nodes, 0.5 to 0.75 mm. in diameter, subterete, reddish brown, pilose, the hairs white, appressed to subappressed, up to 0.6 mm. long; leaf blades oblong-elliptic, up to 25 mm. long and 4 mm. wide, obtuse at tip and cuneate at base, firm, entire, both surfaces puberulous and pilose, the minute hairs rigid, acute, up to 0.03 mm. long, the long hairs weak, white, up to 2 mm. long, both long and short hairs ascending, the mature blades becoming more or less glabrate at maturity, the lower surface more densely pilose than the upper; petioles up to 2 mm. long, pilose; spikes both terminal and lateral, up to 4 cm. long and 5 to 10 mm. broad, the rachis pilose, the hairs similar to those of the stem; bracts at tip of spike about 5 mm. long and 1 mm. wide, becoming, toward base, larger and intergrading

into the stem leaves; bractlets oblong-linear, 2.5 mm. long and 0.5 mm. wide, obtuse and ciliate; pedicels 0.5 mm. long, pilose; calyx 5 mm. long, the segments narrowly lanceolate, acuminate (tip itself blunt), the posterior segment 0.5 to 0.75 mm. wide, the anterior segments 4, about 0.25 mm. wide, all densely white-pilose, the hairs similar to those of the stem; corolla white, puberulous above, glabrous at base, 5 to 6 mm. long, the tube 2.5 mm. long and 0.75 mm. in diam-

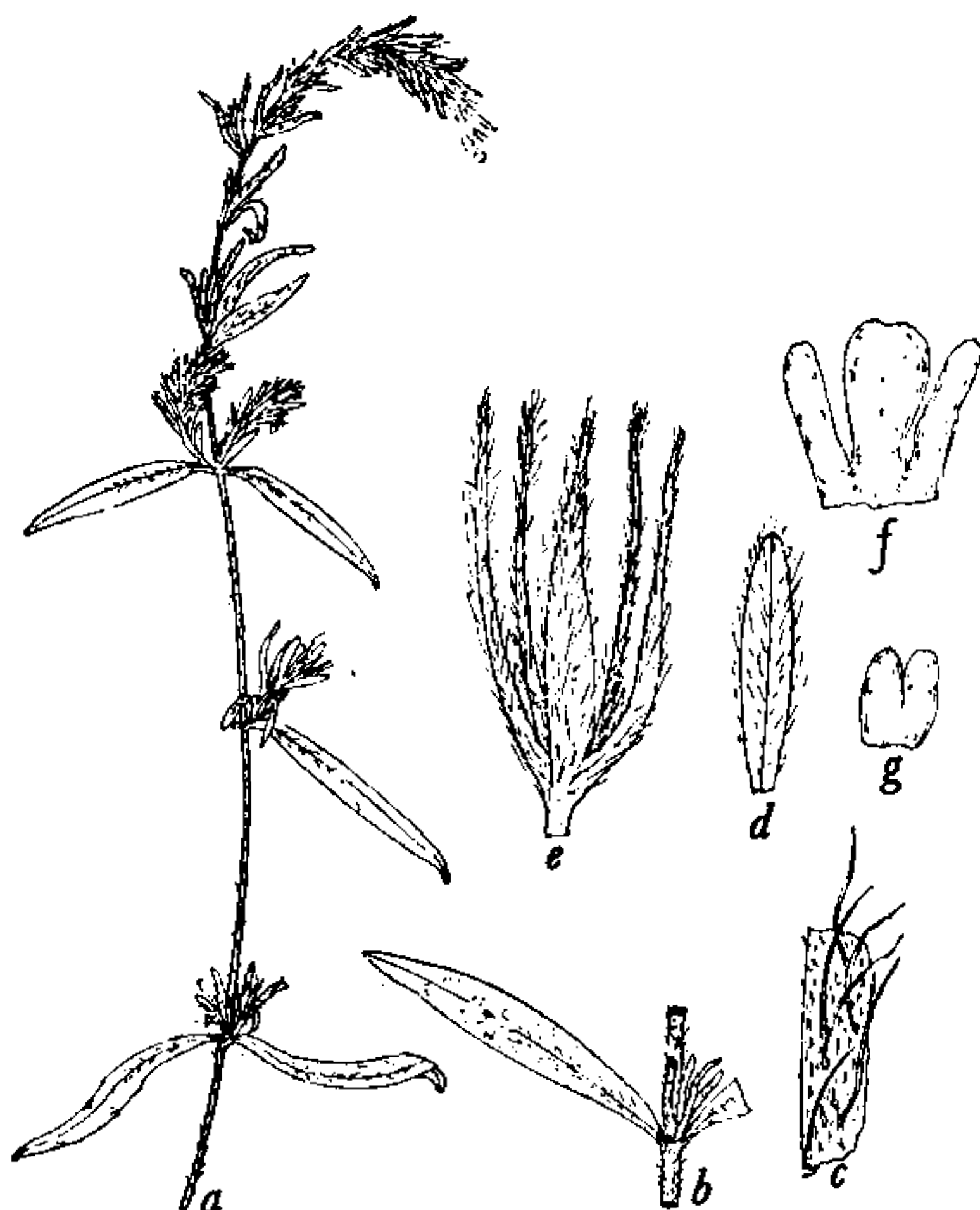


FIGURE 248.—*Staurogyne leptocaulis* Leonard (Sprague 27): *a*, Branch; *b*, node of stem enlarged to show leaf in detail; *c*, portion of leaf blade (upper surface) enlarged to show pubescence; *d*, bractlet; *e*, calyx; *f*, lower lip of corolla; *g*, upper lip of same. (*a*, Natural size; *b*, twice natural size; *c*, 10 times natural size; *d*, 8 times natural size; *e*, 5 times natural size; *f*, *g*, $4\frac{1}{2}$ times natural size.)

eter at base and 1.25 mm. at mouth, the upper lip about 1 mm. long, bilobed, the lobes rounded, the lower lip 2.5 mm. long, 3-lobed, the middle lobe obovate, 2 mm. long, 1.4 mm. wide, rounded and shallowly emarginate, the lateral lobes oblong, 1.25 mm. long and 0.75 mm. wide, rounded; stamens included, the shorter pair reaching about the middle of the corolla tube, the longer pair reaching the mouth of the corolla; style about 2 mm. long, glabrous, the stigma bilobed, the lobes minute; capsules 4 mm. long, 0.75 mm. wide and 0.5 mm. thick,

glabrous below, puberulous at tip; seed spherical, brown, about 0.25 mm. in diameter, verrucose.

Type in the Kew Herbarium, collected on llano at edge of woods at Cabuyaro, on the Río Meta, Meta, Colombia, January 7, 1899, by T. A. Sprague (No. 27). Isotype: K.

Staurogyme leptocaulis is readily distinguishable from *S. lepidagathoides* Leonard (described from the Department of Bolívar) by its slenderer spikes and narrower leaf blades. In *S. lepidagathoides* the latter are as much as 7.5 cm. long and 2.5 cm. wide. The specific name is from the Greek λεπτός, slender, and καυλός, stem.

2. ELYTRARIA Michx.

1. *Elytraria imbricata* (Vahl) Pers. (Page 7.)

ATLÁNTICO: Thin dry woods in the vicinity of Puerto Colombia, *Barkley & Gutiérrez* 1836 (US). Thin shrubby woods south of Barranquilla, *Torreyroza, Araque-M. & Barkley* 18At.521 (US).

BOLÍVAR: Southwest of Montería, *Araque-M. & Barkley* 19Bol.83 (US).

MAGDALENA: Open forests of Cerrejón, *Haught* 6711 (US). Wet sandy soil on the bank of the Río Manzanares near Santa Marta, *Giacometto* 1049 (US).

4. MENDONCIA Vell.

1. *Mendoncia aspera* (Ruiz & Pav.) Nees. (Page 14.)

VAUPÉS: Soratama, on the Río Apaporis between Río Pacoa and Río Kananarí, *Schultes & Cabrera* 13710 (US).

3. *Mendoncia lindavii* Rusby. (Page 15.)

ANTIOQUIA: Road between El Socorro and Mulato, east of Argelia, *Core* 825 (US). Río Samaná, near the road to Sonsón, *Uribe-Uribe* 2151 (US). Wet woods of the Fuentes Termales de Santo Domingo, *Scolnik, Araque-M. & Barkley* 19An.478 (US).

META: Plaza Bonita, Sierra de la Macarena, *Philipson, Idrobo & Fernández* 1496 (BM, US).

3a. *Mendoncia lasiophyta* Leonard. (Page 16.)

Mendoncia lasiophyta, Leonard, Bot. Mus. Leaflet. Harvard Univ. 16: 92, pl. xv. 1953. Type collected in the vicinity of Leticia, on the Río Amazonas, Comisaría de Amazonas, Colombia, November 1948, by Richard Evans Schultes & Francisco López, No. 10400K (US, 1989479). Isotype: US 1989478.

Mendoncia lasiophyta is a rampant liana, clambering over grasses and low shrubs. The leaf blades are large, orbicular or suborbicular, and firm, but somewhat papery, and the lanceolate bracts, up to 4 cm. long are, like the stout peduncles, clothed with a dense yellowish brown tomentum. The corollas, exerted for about half their length beyond the bracts, are red. The specific epithet, derived from λάσιος,

shaggy, and *φυτόν*, plant, alludes to the densely fulvous-tomentose inflorescence, leaves, and stems. Its closest relative is *M. gigas* Lindau, of Peru.

4. *Mendoncia pedunculata* Leonard. (Page 16.)

VAUPÉS: Caño Churruco, highland above the Río Apaporis in the vicinity of Soratama (above mouth of Río Kananari), about "900 feet" altitude, January 31, 1952, *Schultes & Cabrera* 15113 (US).

9. *Mendoncia hirsuta* (Poepp. & Endl.) Nees. (Page 21.)

VICHADA: Amanavén, November 22, 1948, *Romero* 1225 (US). Dense woods along the Río Guaviare in the región de Amanabel, 250 meters altitude, November 23, 1948, *Araque-M & Barkley* 18 Vi. 128 (US).

9a. *Mendoncia trichota* Leonard, sp. nov. (Page 21.)

FIGURE 248a

Suffrutex volubilis, caulibus sulcatis, subteretibus, pilosis et puberulis, pilis longis patulis brunneis et parvis albidis intermixtis;

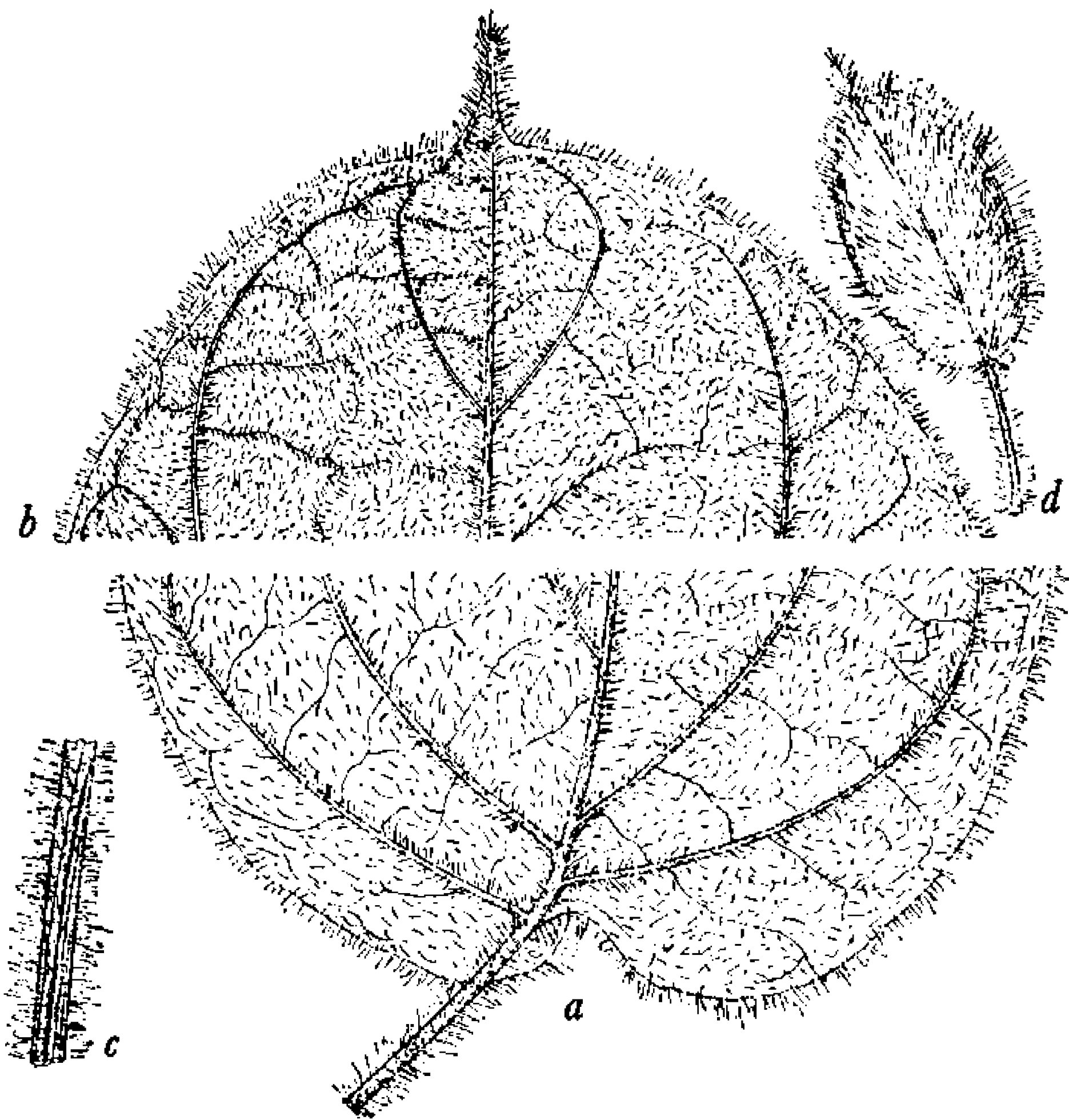


FIGURE 248a.—*Mendoncia trichota* Leonard (*Koeie* 5043): *a*, Lower portion of leaf; *b*, upper portion of leaf; *c*, portion of stem; *d*, bract. (*a*, *b*, Half natural size; *c*, *d*, natural size.)

lamina foliorum grandis, ovata, apice acuminata, basi cordata, tenuis, integra, ciliata, utrinque pilosa, pilis ascenduntibus, longis, brunneis, e basi stellata orientibus, costa et venis lateralibus prominentibus, venulis crasse reticulatis; petioli pilosi; flores axillares, fasciculati;

pedicelli pilosi; bracteae ellipticae, utrinque obtusae vel rotundatae, apice mucronulatae, recurvatae, extus dense brunneo-pilosae, intus puberulae; drupa ellipsoidalis, leviter compressa, puberula.

Large vines; stems grooved, subterete, 5 mm. in diameter (near flowering node), pilose and puberulous, the long hairs mostly spreading, up to 7 mm. long, brown, the small hairs up to 0.2 mm. long, whitish, spreading; leaf blades ovate, up to 25 cm. long and 18 cm. wide, acuminate at tip, cordate at base, rather thin, entire, ciliate, both surfaces pilose, the hairs ascending, mostly 3 to 6 mm. long, brownish, arising from stellate bases, these bases larger and more conspicuous on the upper surface than on the lower, the costa and lateral veins (4 pairs) rather prominent, the veinlets coarsely reticulate; petioles up to 8 cm. long, 2.5 mm. in diameter, the pubescence that of the stems; flowers axillary, in threes, at least the lowermost; pedicels 4 cm. long, 1.25 mm. in diameter, the pubescence that of the stems; bracts elliptic, 3 cm. long, 11 to 17 mm. wide, obtuse or rounded at both ends, mucronate at tip, the mucro 5 to 8 mm. long, rigid, densely brown pilose, the hairs similar to those of the stems, the inner surface puberulous, the hairs up to 0.3 mm. long, mostly spreading; corollas not seen; drupe (mature ?) ellipsoidal, slightly flattened, 22 mm. long, 9 mm. broad, 6.25 mm. thick, puberulous, the hairs up to 0.5 mm. long.

Type in the Botanical Museum of the University of Copenhagen, collected at Tres Esquinas, on the Río Caquetá, Intendencia de Amazonas, Colombia, 200 meters altitude, August 1952 by M. Køie (No. 5043).

Mendoncia trichota is well marked by its large thinnish cordate leaves and its dense brownish pilosity. Its nearest relative is *Mendoncia cordata* Leonard, based on a specimen collected in the forest along the Río Anchicayá, Department of El Valle, Colombia, by J. Cuatrecasas (No. 15216). From this *M. trichota* differs in its predominantly longer hairs, the dense (under lens) understory of minute hairs on the stems, the larger leaf blades, and the smaller bracts. The leaf blades of *M. cordata* are up to 20 cm. long and 14 cm. wide and the hairs of the under surface are denser, giving it a velvety touch that is lacking in *M. trichota*, with its more scattered hairs. The bracts of *M. cordata* are as much as 3.5 cm. long and 2.5 cm. wide, but in *M. trichota* do not exceed 3 cm. in length and 1.7 cm. in width.

The specific epithet is from the Greek word *τριχωτός*, meaning provided with hairs.

10. *Mendoncia villosa* (Klotzch & Karst. ex Nees) Leonard. (Page 21.)

CUNDINAMARCA: Guaduas, on road to Paramillo, 1,000 meters altitude, January 8, 1953, Uribe-Uribe 2496 (US).

META: Río Güejar, north of La Macarena, Sabanas de San Juan de Arama, 500 meters altitude, August 23, 1950, *Idrobo* 566 (US).

12. *Mendoncia sprucei* Lindau. (Page 23.)

NORTE DE SANTANDER: Tall forest east of Río Valegra, Municipal de Chitagá, Cordillera Oriental, 2,000 meters altitude, November 16, 1942, *Fosberg* 19129 (US).

12a. *Mendoncia phalacra* Leonard, sp. nov. (Page 23.)

FIGURE 248b

Planta volubilis, caulibus subteretibus, leviter sulcatis, glabris; lamina foliorum oblongo-elliptica, breviter acuminata et apiculata, basi acuta vel obtusa vel rotundata, firma, subcoriacea, integra, utrinque glabra, costa et venis lateralibus mediocriter prominentibus; petioli plus minusve sulcati, glabri; flores solitarii vel gemini, axillares; pedicelli sulcati, glabri, apice subquadrangulares, deorsum teretes; bracteae oblongo-ellipticae, apice rotundatae et mucronulatae, plus

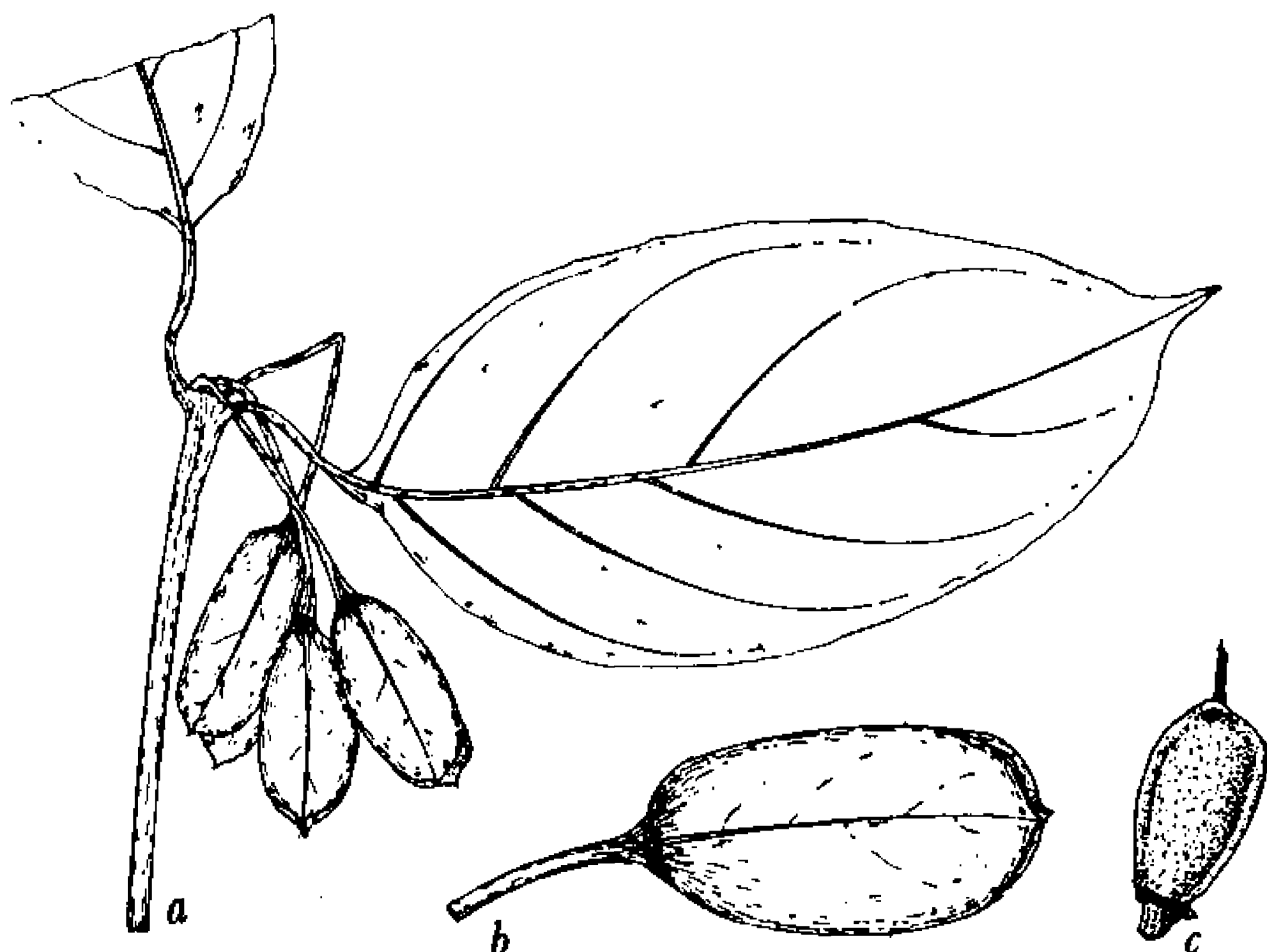


FIGURE 248b.—*Mendoncia phalacra* Leonard (*García-Barriga* 14403): *a*, Portion of plant; *b*, bracts; *c*, drupe. (*a*, Half natural size; *b*, *c*, natural size.)

minusve recurvatae, basi rotundatae, virides, glabrae, costa obscura; drupa obovoidea, leviter compressa, apice obliqua, glabra, flava.

Vine; stems shallowly grooved, subterete, glabrous, 3 mm. in diameter near the fruiting nodes; leaf blades oblong-elliptic, up to 12.5 cm. long and 7.5 cm. wide, short-acuminate and bluntly apiculate, entire, both surfaces glabrous, the costa and lateral veins (4 pairs) moderately prominent; petioles 1.5 to 2.5 cm. long, more or less sulcate, glabrous; flowers solitary or in pairs in the axils of the upper leaves; peduncles up to 4 cm. long, toward base terete and 1 mm. in diameter, gradually enlarged to 3 mm. at the subquadrangular tip,

sulcate, glabrous; bracts oblong-elliptic, up to 3 cm. long and 1.5 cm. wide, rounded and mucronulate, the tip of the bract and the mucro more or less recurved, rounded at the base, green, glabrous, the costa faint; mature corollas not seen; drupe 17 mm. long, 1 cm. broad, 7 mm. thick, obtuse, flattened and oblique at tip, yellow, glabrous.

Type in the U. S. National Herbarium, No. 2173522, collected at Jino-Gojé, between the Ríos Piraparaná and Popeyaká, in the Río Apaporis valley, Vaupés, Colombia, 250 meters altitude, September 3 to 11, 1952, by H. García-Barriga (No. 14403).

Mendoncia phalacra is unique in being strictly glabrous and in the rounded, more or less recurved, mucronulate tips of the bracts, which are very noticeable. The species has no close relatives among those known to grow in Colombia. The specific epithet is from the Greek word *φαλακρός*, meaning smooth or glabrous.

17a. *Mendoncia garciae* Leonard, sp. nov. (Page 31.)

FIGURE 248c

Frutex volubilis, caulibus leviter sulcatis, subteretibus, basi glabratis, apice dense pilosis, pilis arcte appressis, brunneis; lamina foliorum elliptica, apice acuta vel abrupte acuminata, basi rotundata,

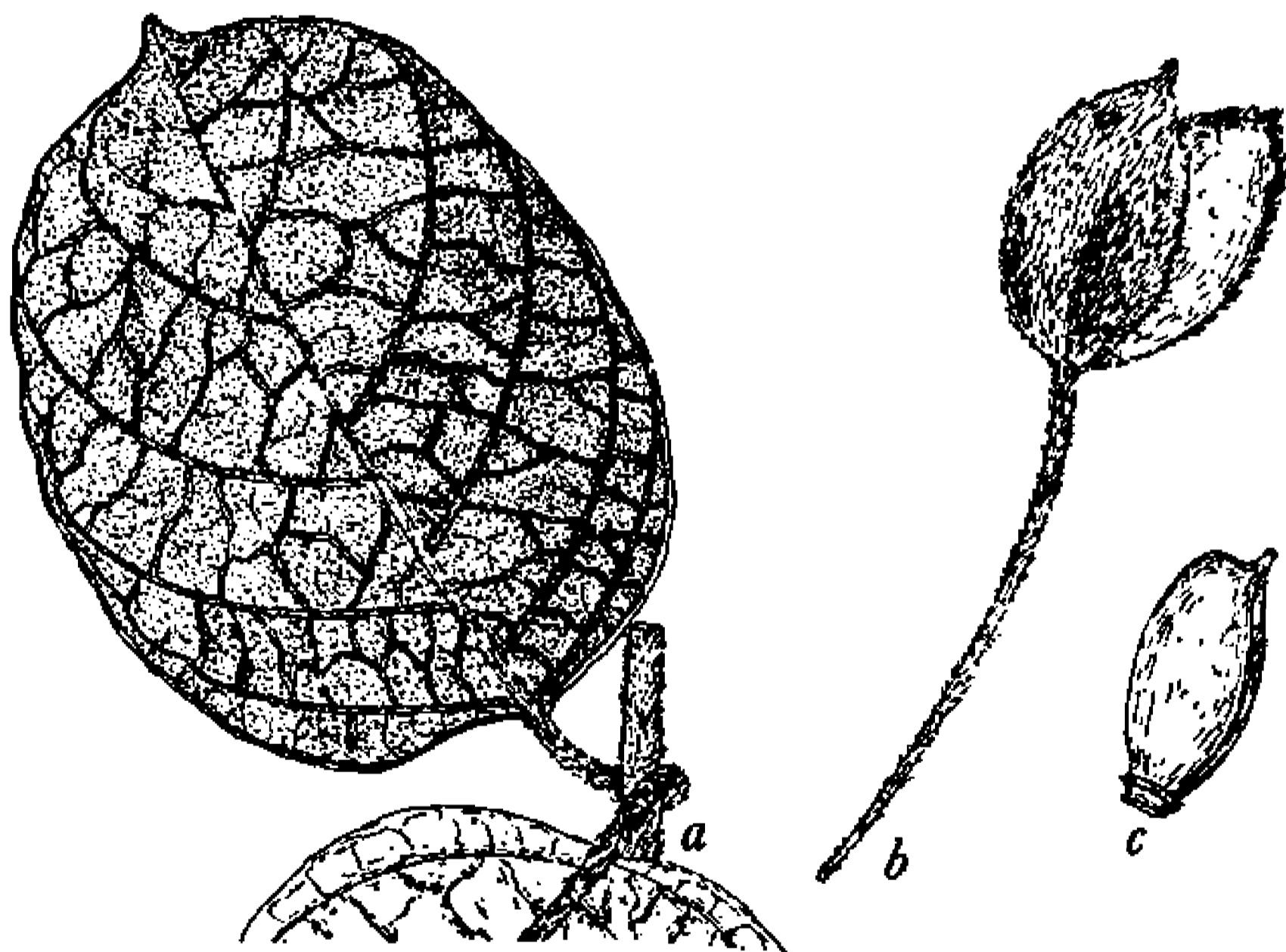


FIGURE 248c.—*Mendoncia garciae* Leonard (*García-Barriga* 14399): *a*, Node showing leaves, both upper and lower surface, and portion of stem; *b*, bracts and pedicel; *c*, drupe (*a*, Half natural size; *b*, *c*, natural size.)

firma, supra parce puberula, integra, subtus dense et molliter tomentosa, pilis flavescens, costa et venis lateralibus prominentibus, supra arcte impressis; petioli dense pilosi, pilis appressis, subbrunneis; flores axillares; pedicelli teretes, dense tomentosi, pilis mollibus, subtilibus, subbrunneis; bracteae oblongo-ovatae, apice rotundatae et mucronatae, basi rotundatae, externe dense tomentosae, pilis mollibus,

subflavi-brunneis, costa obscura, intus glabrae; drupa subobovoidea, leviter compressa, apice obtusa et obliqua, glabra.

Shrubby vine up to 3 meters high; stems subterete, shallowly sulcate, 4.5 mm. in diameter toward tip, densely and upwardly pilose, the hairs brown, up to 2.5 mm. long, closely appressed, the older portions of the stems glabrate; leaf blades elliptic, up to 10 cm. long and 7.5 cm. wide, abruptly acute to short-acuminate, rounded at base, firm, entire, the upper surface sparingly puberulous, the hairs up to 0.16 mm. long, more or less curved, the lower surface yellowish and densely and softly tomentose, the hairs up to 0.75 mm. long, the costa and lateral veins (4 pairs) very prominent, the veinlets coarsely reticulate, the venation of the upper surface conspicuously impressed; petioles 1.5 cm. long, 2 mm. in diameter, densely appressed-pilose with brownish hairs; corollas not seen (yellow, *García-Barriga*); flowers axillary, one or more (?) in each axil; pedicels 2.5 cm. long, 1.5 mm. in diameter, terete, densely tomentose with soft fine brownish hairs up to 2 mm. long; bracts oblong-ovate, 2 cm. long, 1 cm. wide, rounded and mucronate, the mucro about 1 mm. long but obscured by the dense tomentose pubescence covering the outer surface of the bracts, the hairs soft, yellowish brown, about 2 mm. long, the costa obscure, the inner surface of the bracts glabrous; drupes 1.5 cm. long, 8 mm. broad, 6 mm. thick, obtuse and oblique at tip, somewhat flattened, glabrous.

Type in the U. S. National Herbarium, No. 2173519, collected at Jino-Gojé, between the Ríos Piraparaná and Popeyaká, in the valley of the Río Apaporis, Vaupés, Colombia, 250 meters altitude, September 3 to 11, 1952, by H. García-Barriga (No. 14399).

Mendoncia garciae is easily recognized by its thick, elliptic, almost suborbicular leaf blades, with yellowish brown-tomentose lower surfaces and subglabrous, veiny upper surfaces. There are apparently no close relatives.

19. *Mendoncia gracilis* Turrill. (Page 33.)

CAUCA: Quindío, *Triana* (K).

5. THUNBERGIA Retz.

1. *Thunbergia alata* Bojer. (Page 41.)

CAUCA: Cuchilla del Tambo, *Idrobo & Fernandez* 30 (US).

2. *Thunbergia fragrans* Roxb. (Page 43.)

ANTIOQUIA: Thin woods in the vicinity of Antioquia, *Barkley & Arboleda-R.* 3 (US).

3. *Thunbergia grandiflora* Roxb. (Page 44.)

ATLÁNTICO: Barranquilla, *Bro. Elias* 1408 (Ch).

CHOCÓ: Along the Río Atrato, in the vicinity of Quibdó, *Araque-M. & Barkley* 19Ch.034 (US).

3a. *Thunbergia grandiflora* Roxb. forma *alba* Leonard, f. nov. (Page 44.)

A forma typica corolla alba recedit.

Type in the U. S. National Herbarium, No. 1443113, collected at Barranquilla, Department of Atlántico, Colombia, December 1929, by Brother Elias (No. 794).

3b. *Thunbergia grandiflora* Roxb. forma *citrina* Leonard, f. nov. (Page 44.)

A forma typica corolla citrina recedit.

Type in the U. S. National Herbarium, No. 2105913, collected at Pato, in the drainage of Río Nechi, Department of Antioquia, Colombia, June 23–25, 1944, by Joseph A. Ewan (No. 15833).

Label note: "Cultivated vine in garden; fls. showy, lemon yellow, leaves glossy green." The leaf blades of the type are rather narrowly ovate, 12 cm. long and 5.5 cm. wide, slenderly acuminate, subcordate at base, coarsely and bluntly toothed and some of them obscurely lobed. In other respects it resembles the typical form.

6. BRAVAISIA DC.

1. *Bravaisia integerrima* (Spreng.) Standl. (Page 47.)

The citation for *Bravaisia floribunda* DC. given on page 46 is erroneous. At the time of the publication of the genus *Bravaisia*, DeCandolle provided a combined generic and specific description. The citation should be:

Bravaisia floribunda DC. Bibl. Univ. Genève n. ser. 17: 132. 1838. The type was collected near Caracas, Venezuela, by Vargas. The other synonyms and specimens mentioned above on page 46 under *B. floribunda* should be deleted.

ATLÁNTICO: A common tree at Convento, near Galapa, *Dugand* 412 (Ch). El Prado, near Barranquilla, *Dugand* 168 (Ch). In an arroyo at Juanmina, *Dugand & Jaramillo* 4094 (US). Near Puerto Colombia, *Dugand* 13 (Ch). Tubará, *Elias* 952 (US). Sabanilla Lagoon, *Dugand* 83 (Ch). El Pajar forest, *Dugand* 542 (Ch).

MAGDALENA: On the Río Rancheria, near Barrancas, *Haught* 3989 (US).

7. TRICHANTHERA H. B. K.

1. *Trichanthera gigantea* (Humb. & Bonpl.) Nees. (Page 49.)

ANTIOQUIA: Rain forest near Villa Arteaga, *López & Sanchez* 61 (US).

CAUCA: In field along the Río San Juan, *Core* 1501 (US). El Tambo, *Kjell von Sneidern* 2652 (US), 2653 (US).

HUILA: East of San Antonia Fortalecillas, *Little* 7930 (US).

META: Dense forest on bank of the Río Guapaya, Sierra de la Macarena, *Philipson, Idrobo & Fernández* 1639 (US).

2. *Trichanthera corymbosa* Leonard. (Page 50.)

SANTANDER: In open, more or less dry forests north of Bucaramanga, *Araque-M. & Barkley* 18S.212 (US).

8. *SANCHEZIA* Ruiz & Pav.

On page 51 above, a mention of the type was omitted. There were two species described by Ruiz and Pavon, of which I chose *S. ovata* as lectotype (Journ. Washington Acad. Sci. 16: 484. 1926).

1. *Sanchezia pennellii* Leonard. (Page 52.)

AMAZONAS: Lowland along the Río Caquetá, at La Pedrera, *Schultes & Cabrera* 17714 (US).

CALDAS: Near Salamina, on the Río Pozo, *Bro. Tomás* 2452 (US).

CUNDINAMARCA: Villetta, *André* 512 (K). Chipaque to Coqueza, *André* 513 (K).

META: On river bank in dense humid forests of Plaza Bonita, Sierra de la Macarena, *Philipson, Idrobo & Fernández* 1722 (US).

SANTANDER: Tagual, *André* 266 (K).

VAUPÉS: Mesa La Lindosa, 15–20 km. south of San José de Guaviare, *Idrobo & Schultes* 682 (US). Río Guaviare, near San Fernando, 250 m. alt., *Araque M. & Barkley* 18Va.068 (US).

2a. *Sanchezia thinophila* Leonard. (Page 53.)

Sanchezia thinophila, Leonard, Bot. Mus. Leaf. Harvard Univ. 16: 94, pl. 16. 1953. Type collected along the Río Loretoyacu, Trapecio Amazónico, Intendencia of Amazonas, Colombia, about 100 meters altitude, October 20–30, 1945, by Richard Evans Schultes, No. 6607 (US, 1995537).

Schultes states that the type was taken from a plant growing on a sandy beach at the mouth of the Río Loretoyacu. This suggested the specific epithet, *thinophila*, from the Greek *thls*, beach, and *philos*, loving.

2b. *Sanchezia thinophila* Leonard forma *glabra* Leonard, f. nov. (Page 53.)

A forma typica folia glabra recedit.

A shrub with yellow flowers and red bracts collected in the same general locality as the type of the typical form.

Type in the U. S. National Herbarium, No. 1989366, collected along the Río Loretoyacu, Trapecio Amazónico, Intendencia de Amazonas, Colombia, altitude about 100 meters, November 1945, by Richard Evans Schultes (No. 6937).

3. *Sanchezia lutea* Leonard. (Page 53.)

CAUCA: Marshy jungle on bank of stream near sea level, Gorgona Island, *Collenette* 557 (K).

9. *HYGROPHILA* R. Br.1. *Hygrophila guianensis* Nees. (Page 58.)

ANTIOQUIA: Wet places at Copacabana, *Bro. Daniel* 3965 (US).

META: Wet rocky forest along the Río Guatiquía, in the vicinity of Villavicencio, *Araque-M. & Barkley* 18M.041 (US).

PUTUMAYO: Wet forest on steep slope of ridge above Sachamates and opposite

the mouth of Quebrada Patoyaco, on the Río Susunga (upper Río Mocoa), 17 km. west of Mocoa, *Fosberg* 20386 (US).

SANTANDER: Pailas, 5 km. from Pie de Cuesta, *Araque-M. & Barkley* 18S.247 (US).

2. *Hygrophila tyttha* Leonard, sp. nov. (Page 60.)

FIGURE 249

Herba gracilis, caulibus erectis vel ascendentibus, simplicibus vel parce ramosis, acute quadrangularibus vel angulis anguste alatis, glabris vel in nodis tumidis parce hirtellis; lamina foliorum lineari-



FIGURE 249.—*Hygrophila tyttha* Leonard (*a-j*, Killip 35383; *k*, Cuatrecasas 16672): *a*, Plant; *b*, node showing inflorescence; *c*, interpetiolar hairs; *d*, bract; *e*, calyx; *f*, portion of mature calyx segment to show pubescence; *g*, tip of young calyx lobe; *h*, upper portion of corolla to show stamens; *i*, anther; *j*, valve of capsule; *k*, seed, moistened to show gelatinous pilosity. (*a*, Natural size; *b*, twice natural size; *c*, 12 times natural size; *d*, *e*, $3\frac{1}{2}$ times natural size; *f*, 35 times natural size; *g*, 6 times natural size; *h*, $2\frac{1}{2}$ times natural size; *i*, 18 times natural size; *j*, twice natural size; *k*, 10 times natural size.)

lanceolata, apice obtusa, basi perspicue angustata, in superficie glabra, costa et venis lateralibus obscuris parce hirtellis, marginibus aliquando parce ciliolatis, cystolithis parvis, raris, inconspicuis; flores axillares, pedicellis planis, anguste alatis; bracteae lanceolatae, acutae vel obtusae, glabrae vel in costa parce hirtellae et in marginibus albidis

parce ciliolatae; pili interpetiolares plani, albidi, septati; calyx parvus tubo glabro, segmentis linearibus, subcarinatis, glabris vel parce hirtellis et ciliatis, pilis ascendentibus; corolla alba vel lilacina, puberula, lobis ovatis, rotundatis; stamina inclusa, antheris linearibus; capsulae lineares, obtusae et apiculatae, glabrae; retinacula brevia, acuta; semina brunnea, plana, apice rotundata, basi obliqua (sicca), marginibus madefacta mucoso-pilosis.

Slender herbs up to 30 cm. high; stems erect or ascending, simple or sparingly branched forming dense clumps, sharply quadrangular or the angles narrowly winged, glabrous or sparingly hirtellous at the nodes, these more or less swollen, the basal portion of the stems 1 to 1.5 mm. in diameter; leaf blades linear-lanceolate, up to 5 cm. long and 1.5 to 4.5 mm. wide, gradually narrowed to an obtuse tip and into a slender base, glabrous except the costa (prominent) and lateral veins (4 or 5 pairs, obscure), these sparingly hirtellous, the margins of the leaves sometimes sparingly ciliate, the cystoliths usually small, scattered and inconspicuous; interpetiolar hairs whitish, up to 0.64 mm. long, flattened, septate; flowers axillary, solitary or several in a cluster, the pedicels up to 3 cm. long, flattened, narrowly winged; bracts subtending the pedicels lanceolate, 5 mm. long, 0.5 mm. wide, acute to obtuse, glabrous, the costa and margins whitish, the costa sparingly hirtellous and the margins sparingly ciliate with hairs about 0.2 mm. long; calyx 5 mm. long, the tube glabrous, the segments linear, about 5 mm. long, subcarinate, glabrous or sparingly hirtellous and ciliate, the hairs ascending, about 0.2 mm. long; corolla white or lilac, 7 mm. long, puberulous, the lobes ovate, 1.5 mm. long and 1.25 mm. wide, rounded at tip; stamens included, the longer pair 3.5 mm. long, the shorter 1.5 mm. long, the anthers linear, 1 mm. long, 0.25 mm. broad; capsules linear, 10 mm. long, 1.25 mm. broad, 0.75 mm. thick, obtuse and apiculate, glabrous; retinacula 0.35 mm. long, acute; seed usually 16 in each capsule, brown, flattened, ca. 1 mm. long, 0.6 mm. wide, 0.25 mm. thick, rounded at tip, oblique at base, glabrous when dry but mucilaginous-pilose when moistened.

Type in the U. S. National Herbarium, No. 1772097, collected on the sandy and gravelly bank of Río San Juan, near Andagoya, Intendencia of Chocó, Colombia, 60 meters altitude, April 27, 1939, by E. P. Killip (No. 35383). Also represented by:

EL VALLE: Río Cajambre, at Barco, *Cuatrecasas* 17101 (US). Río Calima, between La Herradura de Ordóñez and Peña de Campotriste, *Cuatrecasas* 16672 (US). Río Calima, between Pailón and El Coco, *Cuatrecasas* 21246 (US). Río

Naya, between Puerto Merizalde and Meregildo, *Cuatrecasas* 14346 (US). Wet rocky soil on edge of Río Sabaletas, at Sabaletas, km. 29 of highway from Buenaventura to Cali, *Killip & Cuatrecasas* 38856 (US).

The specimens cited were all collected at low altitudes (5 to 80 meters). The plants, often forming dense clumps, are of a bright green color. Killip states that it is a characteristic plant along the Río San Juan. The species is unique in the genus *Hygrophila* because of its small size, hence its name from the Greek *τυτθός*.

10. BLECHUM P. Br.

1. *Blechum brownei* Juss. f. *puberulum* Leonard. (Page 62.)

ANTIOQUIA: Damp shaded place 2 km. north of Antioquia, *Gutiérrez & Barkley* 17C.036 (US). Open places in rich alluvial soil in the vicinity of Medellín, *Barkley* 17C.345 (US). Along trail, 3 km. west of Santa Fé de Antioquia, *Barkley, Barros-N. & Alvarez-D.* 381 (US); *Ríos-C., Barkley & Betancourt-O.* 605 (US). Trail near the Río Ampurrumiadó, *Gutiérrez & Barkley* 17C.174 (US).

ATLÁNTICO: Hacienda El Paraíso, on the bank of Río Magdalena between Palmar de Varela and Ponedera, *Dugand* 4420 (US).

BOLÍVAR: Hacienda Martinica in the vicinity of Sinú, 15 km. from Montería, *Bechara, Araque-M. & Barkley* 19Bo.085 (US). Rich soil west of Montería, near the Río Sinú, *Cervantes, Araque-M. & Barkley* 19Bo.054 (US).

EL VALLE: La Paila, *Holton* s.n. (NY). Near Queremal, *Core* 1482 (US).

HUILA: Wet silt near river and rice fields, Río Cabrera, 18 km. northeast of Villavieja, *S. Galen Smith* 1203 (US).

MAGDALENA: Santa Marta, *Bertero* s.n. (Mo).

11. PHAULOPSIS Willd.

1. *Phaulopsis oppositifolia* (Wendl.) Lindau. (p. 65).

Micranthus oppositifolius Wendl. Bot. Beob. 39. 1798.

Phaulopsis parviflora Willd. Sp. Pl. 3: 342. 1800 (*nom. illegit.*).

Phaulopsis oppositifolia Lindau in Engler & Prantl, Nat. Pflanzenfam. Nachtr. II-IV, Teil. 1: 305. 1897 (*as oppositifolius*).

On page 64 above, I adopted the original spelling "*Phaylopsis*"; however, when this genus was added to the list of *nomina conservanda* the etymologically correct spelling *Phaulopsis* was adopted. The specific epithet *parviflora* was superfluous when published, and must be replaced by the earlier *oppositifolia*. The fact that the genus *Micranthus* Wendl. has been rejected in favor of *Phaulopsis* does not render specific names published under *Micranthus* illegitimate.

META: Villavicencio, *Bro. Apollinaire* C (US), E (US), F (US). About 12 km. southeast of Villavicencio, 400 meters altitude, January 9, 1939, *Haught* 2532 (US).

12. RUELLIA Plum. ex L.

Dipteracanthus Nees ex Wall. The species *D. ciliatus* mentioned as the type on page 66 is a lectotype rather than a type. Bremekamp (Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., sect. 2, 45: 15, 1948) chose another species, *D. prostratus* (Poiret) Nees, as lectotype in 1948, and his choice must be followed.

Stemonacanthus. The species *S. salviifolius* is a lectotype, the fourth of five original species; it was chosen because it is the one illustrated by Nees.

Arrhostoxylum. On page 66, I stated that the type of this genus is *A. laxum* Nees, but this was an error. There were 18 original species in the genus, of which the third, *A. glabrum* Nees, was chosen as lectotype by Bremekamp (*loc. cit.*) because it is the species illustrated by Nees. Bremekamp's choice must be followed.

1. *Ruellia fulgida* Andr. var. *angustissima* (Hochr.) Leonard. (Page 69.)

CUNDINAMARCA: Santandercito, *Uribe-Uribe* 2207 (US).

CAUCA: Open forests about Popayán, *Lehmann* 7850 (K). La Paila, *Holton* 23 (NY).

NORTE DE SANTANDER: Ocaña, *Schlim* 136 (K).

2. *Ruellia tolimensis* Leonard. (Page 71.)

CUNDINAMARCA: Fusagasugá, *André* 1445 (K).

3. *Ruellia potamophila* Leonard. (Page 73.)

EL VALLE: Forest at Cisneros, 300 to 500 meters altitude, Sept. 21, 1922, *Killip* 11477 (GH, NY).

META: Dense humid forest in ravine, Caño Cierno, Sierra de la Macarena, *Philipson, Idrobo & Jaramillo* 2046 (BM). Along path at Guapayita, between the Río Güejar and Caño Guapayita, Cordillera La Macarena, 500 to 600 meters altitude, December 1950, *Idrobo & Schultes* 920 (US).

6. *Ruellia paniculata* L. (Page 76.)

ATLÁNTICO: Luruaco, *Bro. Apolinar-Angel* 496 (US).

Bolívar: Desert scrub savanna, Caribbean coast, 7 km. east of Cartagena, *Grant* 10706 (US).

MAGDALENA: Pantano, Río Hacha, *Schlim* 894 (K).

7. *Ruellia inundata* H. B. K. (Page 77.)

ATLÁNTICO: Hacienda El Paraíso on the banks of the Río Magdalena between Palmar de Varela and Ponedera, *Dugand* 4427 (US).

8. *Ruellia tuberosa* L. (Page 79.)

ANTIOQUIA: Damp woods 2 km. north of Antioquia, *Gutiérrez-V. & Barkley* 17C.041 (US). Woods near Antioquia, *Barkley, Klevens & Gutiérrez-V.* 17C.380 (US). Dry rocky soil along road to sea 1 km. east of Puente de Occidente, *Barkley, Barros-N. & Alvarez-D.* 393 (US); *Scolnik, Araque-M. & Barkley* 19An.317 (US). Damp place 3 km. west of Santa Fé de Antioquia, *Scolnik, Rios-C. & Betancourt-O.* 624 (US).

BOLÍVAR: Hacienda El Covao, Montería, on the banks of the Río Sinú, *García-Barriga* 13415 (US); *Cervantes, Araque-M. & Barkley* 19Bo.066 (US).

CUNDINAMARCA: Viotá to Toacima, *André* 1713 (K).

HUILA: Sand bar at Cabrera Lajas, about 11 km. east of Villavieja, on the road to Baraya, upper Río Magdalena basin, *S. Galen Smith* 1137 (US). Road from Villavieja to Colombia, upper Río Magdalena basin, *Mason* 13978 (UC).

MAGDALENA: Along weedy roadside in cultivated grounds of Prado de Magdalena, Santa Marta, *Fosberg* 22126 (US).

NORTE DE SANTANDER: Cúcuta, *Miguel de Garganta-Fábrega* 902 (US). In rather dry, sandy, rocky soil near the Río Pamplonita, east of Cúcuta, *Araque-M. & Barkley* 18NS.153 (US). In rather dry, rocky soil along the Río Peralonso in the vicinity of Santiago, *Araque-M. & Barkley* 18NS.106. (US).

TOLIMA: Open bushwoods above Prado and near La Unión, *Lehmann* 6410 (K).

9. *Ruellia macrophylla* Vahl. (Page 80.)

MAGDALENA: Tucurínca, *Romero* 597 (Ch). Temperate forests 8 km. east-northeast of Manaure and 44 km. east of Valledupar, Sierra de Perijá, *Grant* 10764 (US). Subtropical forest in the Espíritu Santo Valley, 15 km. east of Codazi, Sierra Perijá, *Grant* 11000 (US).

DEPARTMENT?: Valle de Caesar, *Dawe* 616 (K).

11. *Ruellia ischnopoda* Leonard. (Page 84.)

ANTIOQUIA: Loreto, *Toro* 859 (NY). El Boquerón, along road to sea in vicinity of Medellín, *Uribe-Uribe* 2273 (US).

CUNDINAMARCA: Barroblanco, near Fusagasugá, *André* 1439 (K). On bank of the Río Magdalena at Guataquí, *André* 1881 (K).

NARIÑO: La Unión, in the Río Cauca valley, *André* 2916 (K).

TOLIMA: Dry heaps of rubble around Guadalupe and Suaza, *Lehmann* 8692 (NY, K). Río Saldaña, *Haught* 6382 (US).

13. *Ruellia rusbyi* Leonard. (Page 88.)

CAUCA: La Víbora, *Lehmann* 4478 (K). Los Arboles, in the Río Cauca Valley, *André* 2848 (K).

TOLIMA: Pitalito, *Sprague* 246 (K).

15. *Ruellia humboldtiana* (Nees) Lindau. (Page 89.)

Stemonacanthus humboldtianus Nees in Benth. London Journ. Bot. 4: 635. 1845 [*humboldtianus*].

The above citation is the first publication, two years earlier than that cited above on page 89, i. e. Nees in DC. Prodr. 11: 206. 1847. This brings up a peculiar nomenclatural difficulty. Bentham was preparing his list of the British Guiana collections of Schomburgk, and Nees contributed a description of his proposed new species in advance of its intended publication in the Prodr. The Bentham publication came out earlier, but it does not cite the intended type (a Humboldt collection from the Aragua Valley, Venezuela), but only a Schomburgk collection from British Guiana, which Nees was considering a new variety—*S. humboldtianus* var. β . The short specific description is however based on the Humboldt specimen, even though this is not cited, and consequently it must be considered the type. The Schomburgk specimen has not been examined; it very probably represents a different species.

In DC. Prodrumus, Nees lists under the typical variety (called var. α) a Linden collection (*Linden* 1526) from Cuba. This was an error; Nees very likely intended to list this specimen under his var. β . In any case, this collection, as shown by a photograph of a specimen, does not represent *R. humboldtiana*. On page 89 above, I stated that it might be an undescribed species, but further study indicates that it is *R. macrophylla* Vahl, a species rather common in Cuba.

CUNDINAMARCA: Subtropical forest in the Gazaunta Valley, 9 km. northwest of Medina, Cordillera Oriental, *Grant* 10388 (US).

META: Between Quetame and Villavicencio, *Lehmann* 8822 (K). Rain forest, Río Ocoa, 9 km. southeast of Villavicencio, *Fosberg* 20160 (US). Moist forest just west of Servita in the canyon of Río Negro, 10 km. west-northwest of Villavicencio, *Fosberg* 21445 (US). Between Servita and Villavicencio, 300-900 meters, *Triana* 4043-3 (K).

16. *Ruellia tubiflora* H. B. K. (Page 91.)

CUNDINAMARCA: Between Río Seco and Parada, Province of Tequendama, *Triana* 4043-1 (Col, K).¹ Guaduas, *Uribe-Uribe* 2335 (US). San Antonio, *Haught* 6256 (US).

NORTE DE SANTANDER: Aguachica, Ocaña, *Schlim* 779 (K).

SANTANDER: Consuelo, *Kalbreyer* 2049 (K).

TOLIMA: Shaded forest near watercourse, Chicoral, *Haught* 6385 (US), 6429 (US). Mariquita, *Uribe-Uribe* 2567 (US).

16a. *Ruellia tubiflora* H. B. K. var. *tetrastichantha* (Lindau) Leonard. (Page 92.)

BOLÍVAR: Forests between Las Dantes and Puerto Canoa, *Pennell* 4542 (NY).

CUNDINAMARCA: Cordillera de Viota, on the road to Fusagasuga, *Triana* 4043-5 (K).

META: Susumuco, *André* 900 (K). Villavicencio, *Paul H. & Dorothy O. Allen* 3229 (Mo); *Pérez-Arbeláez* 5343 (Herbarium of Pérez-Arbeláez). Between Susumuco and Villavicencio, 300-1000 meters, *Triana* 32-4 (K).

16b. *Ruellia tubiflora* H. B. K. var. *tetrastichantha* (Lindau) Leonard f. *bicolor* Leonard. (Page 92.)

CAUCA: La Costa, El Tambo, *von Sneidern* 864 (S).

META: In rich soil in damp rocky woods on the bank of Río Guatiquía, in the vicinity of Villavicencio, *Araque-M. & Barkley* 18M.058 (US). Guapayita, on trail between the Río Güejar and Caño Guapayita, Cordillera de Macarena, *Idrobo & Schultes* 916 (US). Dense humid forests on the Río Güejar south of the El Mico Airstrip of Camp 1, Cordillera de Macarena, *Philipson, Idrobo & Fernández* 1364 (US). Los Micos, along the Río Güejar, Sabanas de San Juan de Arama, Cordillera de Macarena, *Idrobo & Schultes* 568 (US). Moist shady place along stream, Villavicencio, *Sandeman* 5821 (K). Villavicencio, *André* 1014 (K); *Sprague* s.n. (K); *Pennell* 1478 (NY).

16c. *Ruellia tubiflora* H. B. K. var. *tetrastichantha* (Lindau) Leonard forma *caesiolineata* Leonard, f. nov. (Page 93.)

A forma typica corolla labio inferiore caesiolineato recedit.

A shrub 8 feet high; corolla white with lavender lines on the lower lip, 7 cm. long, the tube 5 mm. broad at base, narrowed at 2 cm.

¹ The Kew specimen is erroneously numbered "4041-1," according to a copy of the Triana catalog in the possession of Dr. Cuatrecasas.

above base to about 3 mm., thence rather abruptly enlarged to a cylindrical throat 1.5 cm. broad, the limb about 4 cm. broad.

Type in the U. S. National Herbarium, No. 2045436, collected in tropical forest at San Mateo, Gazaguan Valley, 6 kilometers northwest of Medina, Department of Cundinamarca, Colombia, 800 meters altitude, October 6, 1944, by Martin L. Grant (No. 10431). Iso-type: US.

16f. *Ruellia tubiflora* H. B. K. var. *parviflora* Leonard forma *alba* Leonard. (Page 94.)

Leaf blades lanceolate, 2.5 to 6 cm. long and 0.8 to 2 cm. wide.

AMAZONAS: Soratama, on the Río Apaporis between Río Pacoa and Río Kananari, *Schultes & Cabrera* 13570 (US).

17. *Ruellia lorentziana* Griseb. (Page 94.)

TOLIMA: Piedras, on the Río Chipalo, *André* 1865 (K).

17a. *Ruellia aurantiaca* Leonard, sp. nov. (Page 95.) FIGURE 249a

Suffrutex, caulibus subquadrangularibus, subtomentosis; lamina foliorum ovato-lanceolata, apice acuminata (apice ipso subobtusum), basi rotundata vel acuta, aliquanto firma, crenata, supra glabra, subtus puberula, pilis praecipue in costa et venis positis, venis utrinque obscuris, cystolithis prominentibus; petioli puberuli, pilis fere appressis; spicae terminales et subterminales, floribus in fasciculis basi interruptis apice confluentibus; bracteae fasciculas subtendentes foliaceae; bracteae flores subtendentes oblongae, apice rotundatae, ciliatae et utrinque parce pilosae, pilis patulis vel ascendentibus, extus costa subtomentosa, pilis curvatis et appressis; calycis segmenta linearia pilosa et ciliata, pilis patulis vel ascendentibus; corolla pallide aurantiaca hypocrateriformis, pubescens, lobis orbicularibus, emarginatis; stamina vix exserta, antheris oblongis, utrinque rotundatis, filamentis glabris; capsulae clavatae, puberulae, pilis retrorsis apice ascendentibus; retinacula gracilia linearia recta et leviter curvata, apice plana et fimbriata.

Suffrutescent, probably up to 1 meter high; stems quadrangular, subtomentose, the hairs up to 1 mm. long; leaf blades ovate-lanceolate, 16 cm. long and 6 cm. wide, rounded to acute at base, acuminate at tip (the tip itself subobtuse), moderately firm, crenate, the upper surface glabrous, the lower puberulous, the hairs confined chiefly to the costa and veins (10 to 12 pairs), subappressed, up to 0.25 mm. long, the venation rather obscure, the cystoliths prominent, up to 0.16 mm. long; petioles up to 4 cm. long, puberulous, the hairs up to 0.16 mm. long, mostly appressed; flowers borne in fascicles, these sessile, forming up to three terminal and subterminal spikes, the longer 9 cm. long and all about 2 cm. broad, the fascicles interrupted

toward base of spikes and confluent toward tip; bracts subtending the fascicles leaflike, mostly up to 2.5 cm. long and up to 8 mm. wide; bracts subtending the flowers oblong, 8 to 10 mm. long and 2.5 to 4 mm. wide, rounded at tip, ciliate and loosely pilose, the hairs spreading or ascending, up to 1.5 mm. long, dorsally the costa subtomentose with appressed, curved hairs up to 0.25 mm. long; calyx

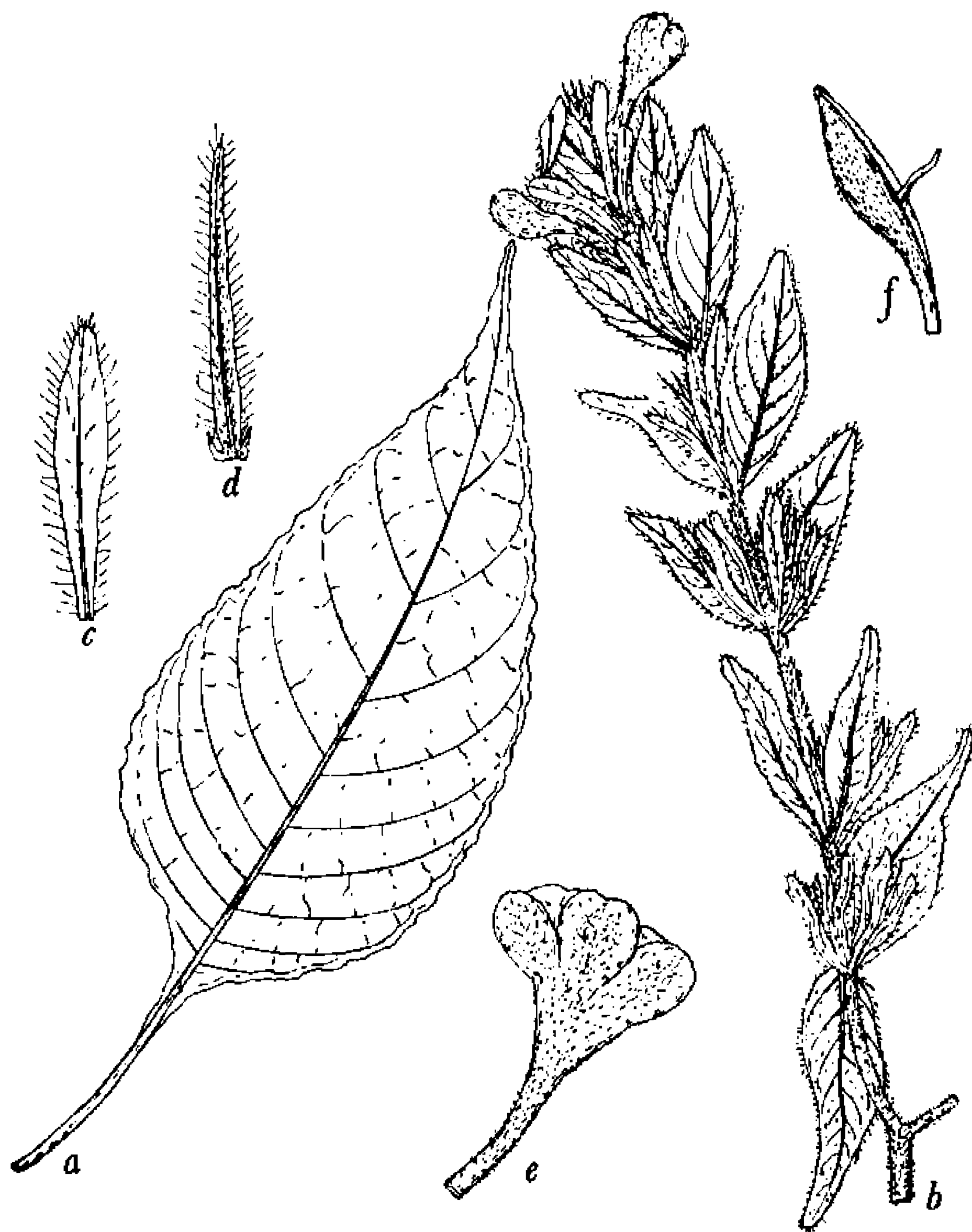


FIGURE 249a.—*Ruellia aurantiaca* Leonard (André 1203): *a*, Leaf; *b*, tip of inflorescence; *c*, floral bract; *d*, calyx segment; *e*, corolla; *f*, capsule valve. (*a*, Half natural size; *b*, *e*, natural size; *c*, $2\frac{1}{2}$ times natural size; *d*, $2\frac{1}{2}$ times natural size; *f*, twice natural size.)

parted nearly to base, the segments linear, 12 mm. long, gradually narrowed from 1 mm. wide at base to a slender obtuse tip, pilose and ciliate with spreading or ascending hairs up to 1.5 mm. long, the dorsal surface bearing additional appressed hairs up to 0.25 mm. long; corolla light orange, pubescent (the hairs variously curved, up to 0.5 mm. long), up to 3 cm. long, the tube 2 mm. broad at base, gradually en-

larged to 2.5 at 2 cm. above base, thence expanded into a funnelform throat 7 mm. broad at mouth, the lobes orbicular, about 7 mm. in diameter, emarginate, the limb about 2 cm. broad, the longer pair of stamens slightly exserted beyond the mouth of the mouth of the corolla, the shorter pair more or less included, the anthers oblong, 4 mm. long, 1 mm. broad, rounded at both ends, the filaments glabrous, the style about 2 cm. long, glabrous toward tip, minutely and sparingly puberulous toward base; capsules clavate, about 12 mm. long, 5 mm. broad, 1.5 mm. thick, puberulous, the hairs ascending at tip, retrorse toward base, up to 0.3 mm. long; retinacula slender, linear, slightly curved, thin and fimbriate at tip, about 0.5 mm. wide; seeds not seen.

Type in the Kew Herbarium, collected in the woods about Salitre, Department of Cundinamarca, Colombia, 400 meters altitude, January 5, 1876, by Edouard André (No. 1203).

There seem to be no close relatives of this species in Colombia. The specific epithet was suggested by the color of the corolla.

18. *Ruellia geminiflora* H. B. K. (Page 95.)

In the discussion on page 95 above regarding the various varieties of *Ruellia geminiflora* proposed by Nees under the name *Dipteracanthus geminiflorus*, I stated that none of these have been validly published except β and ϵ . Of course, they were validly published; I intended to say that they had not been validly transferred to the genus *Ruellia*, except for the two varieties mentioned.

CUNDINAMARCA: Hacienda Tobia, Nocaima, *García-Barriga* s.n. (Col).

CAUCA: Woods in the District of Saladito, 15 km. west of Cali, *Alma Moldenke, Willard & Barkley* 18VC.000 (US).

EL VALLE: Upper Río Dagua, 1400–1600 meters, *Lehmann* 5505 (K).

HUILA: Flats along stream in dissected plateau in the upper basin of the Río Magdalena about 5 km. north of Villavieja, *Mason* 13817 (US).

MAGDALENA: Poponte, *Cyril Allen* 934 (K).

META: La Poyata, *García-Barriga* 5196 (Col).

NORTE DE SANTANDER: Ocaña, *Kalbreyer* 1257 (K).

TOLIMA: Wooded bank of stream west of Chaparral, *S. Galen Smith* 1272 (UC). Near Piedras, *André* 1859bis (K).

18a. *Ruellia geminiflora* H. B. K. var. *angustifolia* (Nees) Griseb. (Page 96.)

ANTIOQUIA: Open woods on Cerro "El Volador," east of Medellín, *Araque-M. & Barkley* 18An.360 (US).

META: Cabuyaro, *Sprague* 52 (K).

19a. *Ruellia obtusa* Nees f. *albiflora* Leonard f. nov. (Page 97.)

A forma typica corolla alba recedit.

Type in the U. S. National Herbarium, No. 2025721, collected near Sahagún, on the road to Cereté, Department of Bolívar, Colombia, 120 meters altitude, June 1, 1950, by H. García-Barriga (No. 13454).

Ruellia obtusa f. *albiflora* is an herb up to 1 meter high. It resembles the typical form except for its white flowers.

20. *Ruellia colorata* Baill. (Page 98.)CAUCA: Popayán, *Lehmann* 3164 (K).22. *Ruellia pennellii* Leonard. (Page 101.)ANTIOQUIA: Woods in the Quebrada de Barígamo, between Pavarandocito and Mutatá, in the vicinity of Urabá, *Uribe-Uribe* 2029 (US).BOLÍVAR: Forest at Tierra Alta, on the bank of the Río Sinú, *Pennell* 4178 (in part) (GH).CAQUETÁ: Without locality, *C. Uribe-P.* (US).MAGDALENA: Isla Brava, *André* 402 (K).22a. *Ruellia grantii* Leonard, sp. nov. (Page 102.)

FIGURE 250

Herba, caulibus quadrangularibus, angulis acutis, pilosis vel subtomentosis, pilis appressis, albidis; lamina foliorum ovata vel oblongo-ovata, breviter acuminata (apice ipso obtuso), basi cuneata, aliquanto

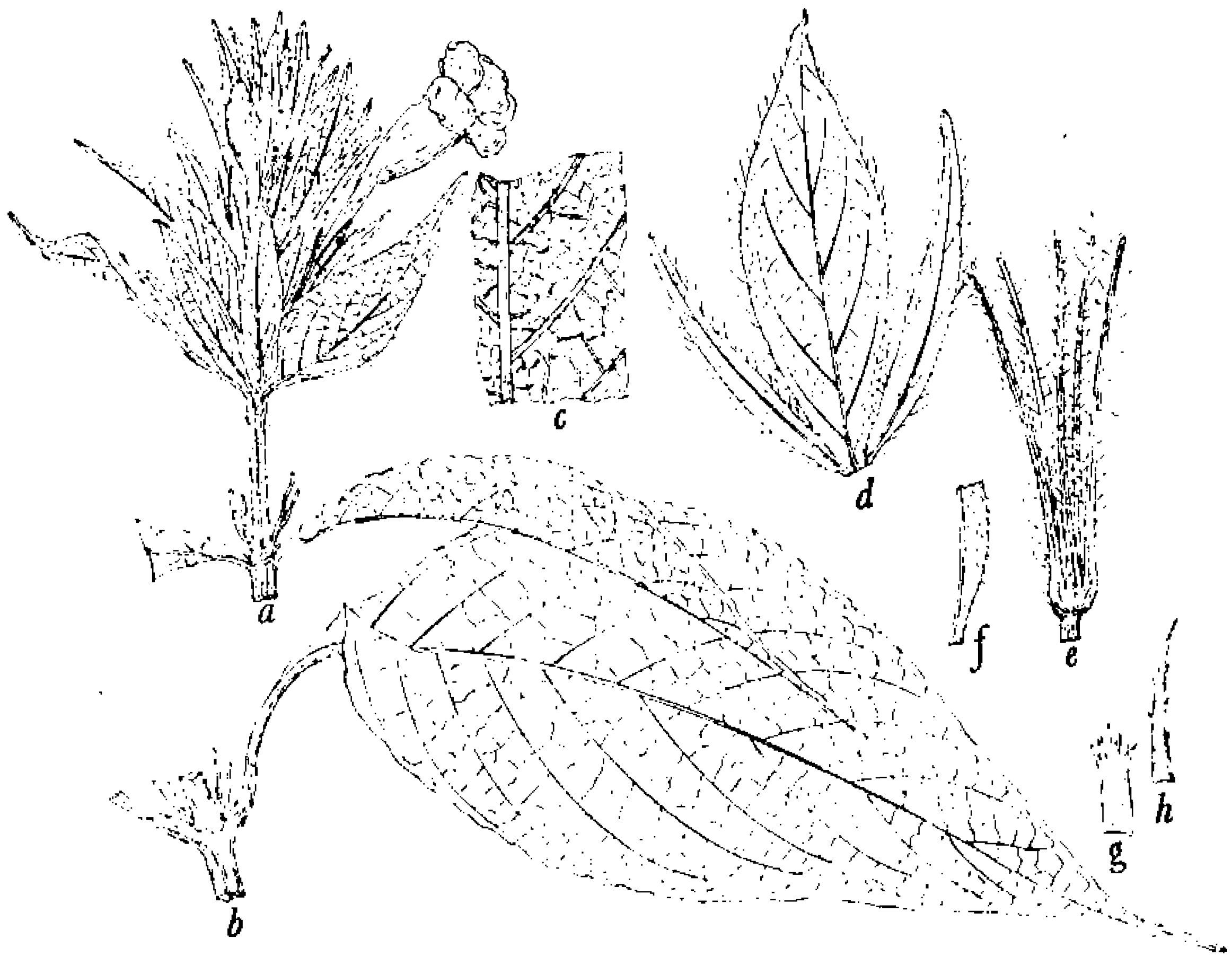


FIGURE 250.—*Ruellia grantii* Leonard (*Grant* 10013): *a*, Inflorescence; *b*, stem node and leaf; *c*, portion of under surface of leaf blade enlarged to show venation and cystoliths; *d*, bract and bractlets; *e*, calyx; *f*, portion of capsule near its base enlarged to show pubescence; *g*, tip of lowermost retinaculum; *h*, same of upper retinaculum. (*a*, *b*, Natural size; *c*, *d*, twice natural size; *e*, 2½ times natural size; *f*, 10 times natural size; *g*, *h*, 8 times natural size.)

firma, undulata vel crenato-serrata, supra glabra vel pilos paucos ferens, subtus parce vel aliquanto dense pilosa, pilis praecipue in costa et venis positis, appressis vel ascendentibus, costa et venis et venulis prominentibus, cystolithis aliquanto obscuris; petioli pilosi, pilis appressis; spicae terminales, bracteis et bracteolis prominentibus, lance-

olatis, pilosis et ciliolatis, apice subacutis vel subobtusis; calycis segmenta linearia (apice ipso obtuso), ciliata et parce pilosa, pilis patulis vel ascendentibus, costa prominente; corolla alba, minute pubescens, tubo hypocrateriformi, lobis suborbicularibus; stamina plus minusve inclusa, filamentis sursum glabris, basi puberulis, antheris linearibus; capsulae clavatae, dense puberulae, apice pilis patulis vel ascendentibus, basi pilis retrorsis; retinacula suberecta, inferiora apice rotundata, laciniata, superiora apice acuminata, minute laciniata; semina brunnea, madefacta dense mucoso-tomentosa.

Herb up to 0.5 meter high; stems quadrangular, the angles sharp or the lower portions subquadrangular, pilose to subtomentose, the hairs appressed, whitish, up to 0.5 mm. long; leaf blades ovate to oblong-ovate, up to 13 cm. long and 6 cm. wide, short-acuminate (the tip itself obtuse), cuneate at base, rather firm, undulate or crenate-serrate, the upper surface glabrous or bearing a few scattered hairs, the lower surface sparingly to rather densely pilose, especially the costa and lateral veins (about 10 pairs), the hairs appressed to ascending, up to 0.16 mm. long, the venation prominent beneath, less so above, the cystoliths rather obscure, up to 0.112 mm. long; petioles up to 4 cm. long, appressed-pilose, the hairs similar to those on the stems; flowers borne in terminal spikes up to 7 cm. long and 3 cm. broad, the bracts and bractlets conspicuous, lanceolate, moderately pilose and ciliate, the hairs up to 1.25 mm. long, ascending, the bracts 2 cm. long and 0.5 mm. wide or the lowermost larger, the bractlets 1.5 cm. long and 2.25 mm. wide, both bracts and bractlets subacute to subobtuse; calyx about 14 mm. long, the segments linear, about 12 mm. long and 0.75 mm. wide, gradually narrowed to a blunt tip, ciliate and sparingly pilose, the hairs spreading or ascending, up to 1.25 mm. long, the costa prominent; corolla 3.5 cm. long, white, minutely pubescent, the tube 2.5 mm. in diameter, expanding from about the middle to 8 mm. at throat, the lobes suborbicular, about 7 mm. in diameter; stamens reaching or slightly exceeding the mouth of the corolla, the filaments glabrous except toward the puberulous base, the anthers linear, 3 mm. long, 0.5 mm. wide; capsules 14 mm. long, clavate, 4 to 5 mm. broad, 3 mm. thick, rather densely pubescent, the hairs up to 0.16 mm. long, ascending or spreading at and near tip, retrorse toward base, the retinacula nearly straight, 4 mm. long and 0.5 mm. wide near base, acute to rounded and more or less fimbriate at tip; seed brown, about 3 mm. long and 2.5 mm. wide and 0.5 mm. thick, mucilaginous-tomentose when moistened.

Type in the U. S. National Herbarium, No. 2045435, collected on creek bank in subtropical forest in the Quebrada Playón, in the Río Manzanares Valley, 20 km. west of La Esperanza and 42 km. west of Villavicencio, Cordillera Oriental, Intendencia of Meta, Colombia,

1,200 meters altitude, August 29, 1944, by Martin L. Grant (No. 10013). Isotype: US, 2107000.

Ruellia grantii should be easy to recognize in the field by its stiff habit, square stems and largish spikes with conspicuous narrow bracts and bractlets, and by the white, puberulous corollas.

22b. *Ruellia macarenensis* Leonard, sp. nov. (Page 102.) FIGURE 251

Herba decumbens, caulibus parce ramosis, subquadrangularibus, glabris vel parce bifariam pilosis, lineis stipularibus dense pilosis, pilis albis, rectis, ascendentibus, cystolithis pluribus, parallelis; lamina foliorum oblongo-ovata, apice graciliter falcato-acuminata (apice ipso obtuso), basi angustata, in petiolum decurrens, utrinque minute strigosa, pilis in costa et venis lateralibus aliquanto prominentibus positis, cystolithis conspicuis; petioli aliquanto breves, subtus glabri, supra et in marginibus canalis plus minusve dense pilosi; flores axillares; bractee oblongo-lanceolatae, foliaceae; pedunculi breves, crassi; calycis segmenta anguste lanceolata, subaequalia, graciliter acuminata, intus glabra, extus parce pilosa, in marginibus dense ciliata; corolla magna, alba (?), parce pubescens, pilis in venis positis, tubo basi angusto, supra magno, plus minusve ventricoso, lobis magnis, suborbicularibus; stamina inclusa, filamentis glabris, basi puberulis exceptis.

Decumbent herbs up to 1.5 meters long; stems sparingly branched, subquadrangular, glabrous or sparingly pilose in two lines, the hairs up to 0.38 mm. long, the stipular lines between the bases of the petioles densely pilose, the hairs white, straight, ascending, up to 0.7 mm. long, the cystoliths numerous, parallel, up to 0.16 mm. long, obscure; leaf blades oblong-ovate, up to 14 cm. long and 4 cm. wide, slenderly falcate-acuminate (the tip itself blunt), narrowed and cuneate at base and decurrent on the petiole, both surfaces minutely strigose, the hairs confined to costa and lateral veins (6 or 7 pairs), up to 0.7 mm. long, the venation moderately prominent, the cystoliths conspicuous, up to 0.16 mm. long; petioles 5 to 10 mm. long, glabrous or sparingly pilose beneath, the channels and margins densely pilose; flowers solitary in the axils of the upper leaves, each subtended by a pair of leaflike bracts, these oblong-lanceolate, up to 2 cm. long and 5 mm. wide, acute; pedicels 1 mm. long, stout; calyx segments narrowly lanceolate, subequal, 16 to 20 mm. long, 1.75 mm. wide, gradually narrowed to a slender tip, the margins densely ciliate with white spreading or ascending hairs up to 1.5 mm. long, the inner surface glabrous, the outer rather sparingly pilose toward tip; corolla 6 cm. long, white (?), sparingly pubescent, the hairs confined to the nerves, spreading, up to 0.75 mm. long, the tube 3 mm. broad at base, gradually narrowed to 2 mm. at 2 cm. above base, thence abruptly enlarged to 16 mm. at throat, the enlarged portion about 2.5 cm. long and

somewhat ventricose, the lobes suborbicular, about 12 mm. in diameter; stamens included, the longer pair 2 cm. long, the shorter 1.5 cm. long, the filaments glabrous except at base, here minutely puberulous, the anthers 4.5 mm. long, 1.5 mm. broad; style slightly exceeding the stamens in length, glabrous except at base, here puberulous, the stigma lobes very unequal, one linear, 2.25 mm. long and 0.3 mm.



FIGURE 251.—*Ruellia macarenensis* Leonard (S. Galen Smith & Idrobo 1486): *a*, Tip of plant; *b*, portion of leaf blade (lower surface) enlarged to show pubescence and cystoliths; *c*, portion of stem enlarged to show cystoliths; *d*, node of stem; *e*, bract; *f*, calyx; *g*, portion of calyx segment enlarged to show ciliation; *h*, anther; *i*, stigma. (*a*, Half natural size; *b*, *c*, about 5 times natural size; *d*, *e*, 2½ times natural size; *f*, *i*, twice natural size; *g*, 7½ times natural size; *h*, 4½ times natural size.)

wide, the other ovate, rounded, about 0.75 mm. long and wide; capsule not seen.

Type in the Herbarium of the University of California, No. 941780, collected in dense forest on north bank of the Río Güejar near its junction with the Río Zanza, at the northern end of the Cordillera Marcarena, Intendencia of Meta, 500 meters altitude, August 20, 1950, by S. Galen Smith and Jesús M. Idrobo (No. 1486). Isotype: US.

Ruellia macarenensis resembles in a general way *R. puri* Mart. of Brazil, but that species has longer corollas with a much more slender tube (lower narrow portion 1 mm. broad and as much as 5 cm. long and the expanded upper portion about 1 cm. long and 5 mm. wide at mouth) and its leaf blades are less slenderly acuminate and falcate.

The plants from which the type specimens were obtained were hanging from the steep river bank. They were sparingly branched and were from 0.5 to 1.5 meters long.

25. *Ruellia lasiostachya* Leonard. (Page 106.)

CALDAS: Piedra de Moler, on the banks of the Río de la Vieja, André 2406 (K).

META: Servita, 900 meters, Triana 32-2 (K).

26a. *Ruellia gorgonensis* Leonard, sp. nov. (Page 107).

FIGURE 252

Herba, caulibus simplicibus vel parce ramosis, erectis vel ascendentibus, subquadrangularibus, dense pilosis, pilis longis, rigidis, brunneis, vitreis, plus minusve patulis; lamina foliorum ovata vel oblonga-ovata, subacuta vel breviter acuminata, basi acuta vel obtusa, in petiolum decurrens, aliquanto firma, integro vel leviter dentata, utrinque pilosa, pilis rigidis, subbrunneis, ascendentibus, costa et venis lateralibus supra obscuris, subtus prominentibus, pilis longis rigidis et pilis parvis appressis intermixtis praeditis, cystolithis prominentibus; petioli pilis longis patulis et pilis parvis appressis intermixtis praediti; flores plures sessiles in fasciculis parvis dispositi, bracteis magnis foliiformibus suffulti; bracteolae lineares vel spathulatae, pilosae, pilis rigidis; calycis segmenta lanceolata, acuminata, parce hirsuta; corolla dilute lilacina, minute pubescens, pilis patulis, tubo deorsum anguste cylindrico, sursum hypocratiformi et leviter ventricoso, lobis suborbicularibus; stamina inclusa, filamentis glabris; ovarium hirtellum.

Simple or sparingly branched herbs up to 1.6 meters high; stems erect or ascending, subquadrangular, densely pilose, the hairs rigid, brownish, vitreous, more or less spreading, up to 3.5 mm. long; leaf blades ovate to oblong-ovate, up to 14 cm. long and 5.5 cm. wide, subacute to short-acuminate, acute to obtuse at base and decurrent on the petiole, moderately firm, entire or shallowly and obscurely dentate, both surfaces rather densely pilose with rigid brownish ascending hairs up to 2.5 mm. long, the costa and lateral veins (5 or 6 pairs) of the upper surface obscure, those of the lower surface prominent and in addition to the long rigid spreading hairs mostly bearing numerous small (about 0.16 mm. long) appressed ones, the cystoliths prominent, up to 0.2 mm. long; petioles 5 to 10 cm. long, bearing both long rigid spreading hairs and smaller closely appressed ones; flowers borne in small clusters, the calyces and bractlets hidden by the terminal leaves or, in mature plants, the flower clusters arranged in

terminal spikes usually about 6 cm. long, the clusters subtended by small sessile lanceolate leaves, these mostly 1.5 to 5 cm. long and 0.5 to 1.5 cm. wide, acuminate to acute (the tips often curved), the pubescence that of the main stem leaves, each flower subtended by a pair of linear or spatulate pilose bractlets up to 1 cm. long and

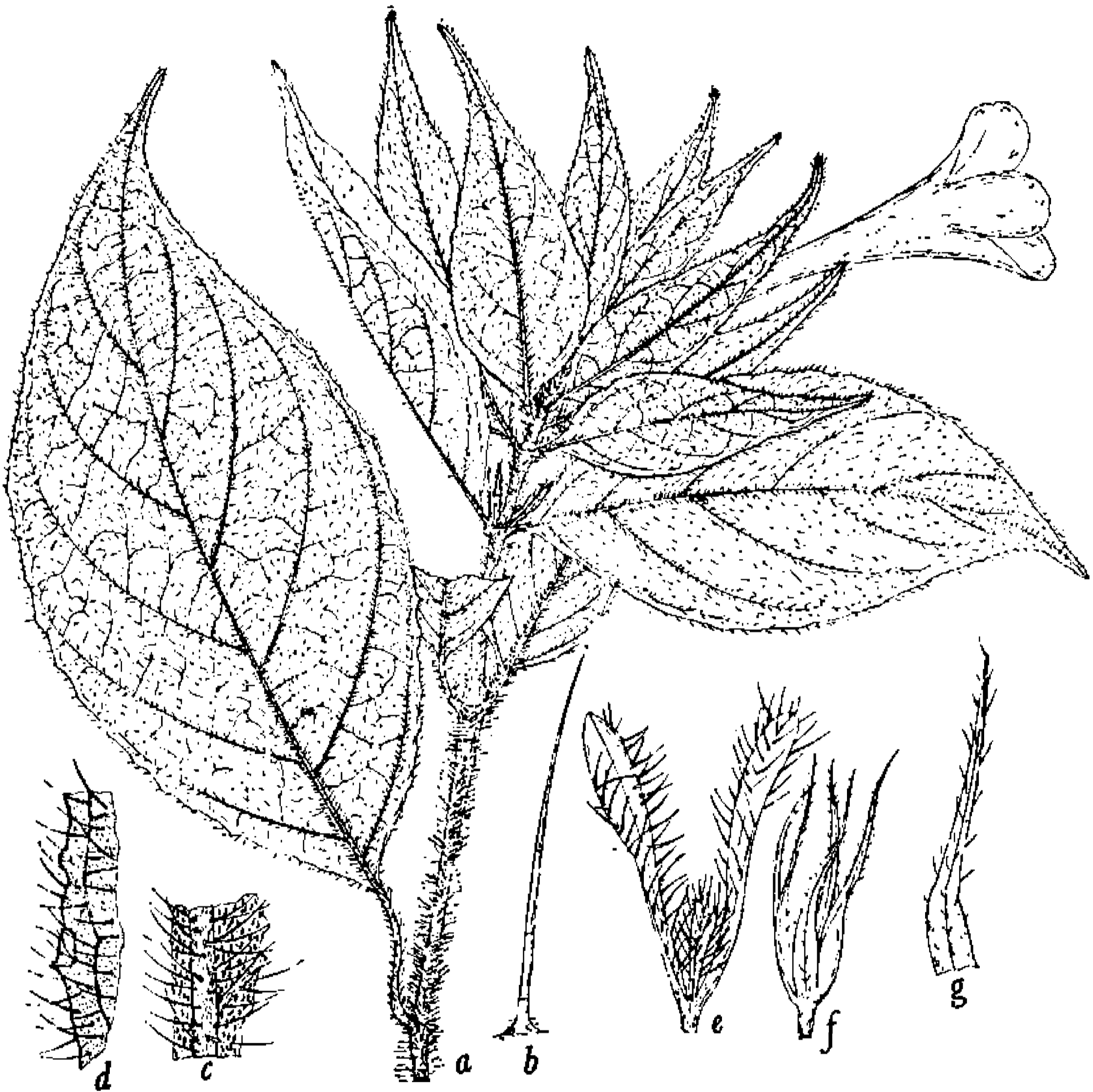


FIGURE 252.—*Ruellia gorgonensis* Leonard (*a-d*, Cheesman 533; *e-g*, Longfield 381): *a*, Tip of plant; *b*, trichome from stem; *c*, portion of under surface of leaf blade enlarged to show pubescence and cystoliths; *d*, same for marginal portion of leaf blade; *e*, bractlets; *f*, calyx; *g*, tip of calyx segment. (*a*, Natural size; *b*, 12 times natural size; *c*, *d*, *e*, twice natural size; *f*, 4 times natural size; *g*, 7 times natural size.)

2 mm. wide; mature calyx 6.5 mm. long, the segments lanceolate, 5 mm. long, 0.75 mm. wide near base, thence gradually narrowed into a slender tip, sparingly hirtellous, the hairs about 0.16 mm. long, subappressed or ascending, confined mostly to the costa and tips of the segments; corolla pale pink or lavender, minutely pubescent, the narrow portion of the corolla tube (except at base) densely so with

more or less spreading hairs up to 0.16 mm. long, the lower half of the corolla tube narrowly cylindrical, 1.5 mm. in diameter, the upper portion funnelliform, slightly ventricose, 12 mm. broad at mouth, the limb 2 cm. broad, the lobes suborbicular, about 7 mm. in diameter; stamens included, attached near the summit of the narrow portion of the corolla tube, the filaments of the longer pair about 7 mm. in length, those of the shorter pair 5 mm., all glabrous, the anthers 2.5 mm. long, 0.5 mm. broad; stigma reaching the tip of the shorter pair of stamens, the developed lobe flat, oblong, rounded; ovary and style hirtellous with minute spreading or ascending hairs; capsules not seen.

Type in the Kew Herbarium, collected in a dense jungle near shore of Gorgona Island (west of Cauca), Colombia, Oct. 8, 1942, by L. E. Cheesman (No. 533).

C. Longfield's No. 381, collected in a clearing formed by fallen trees in an old wet jungle near seashore of Gorgona Island, "11-7-24," is also of this species.

Ruellia gorgonensis is probably related to *R. putumayensis*, which it rather closely resembles. The leaf blades of *R. putumayensis*, however, are elliptic rather than ovate and the corolla white and striped with lilac.

DOUBTFUL SPECIES

Dipteracanthus leucanthus Nees in Benth. Pl. Hartweg. 236. 1846. Type collected at Guaduas, Province of Cundinamarca, Colombia. Represented in the U. S. National Herbarium by a photograph (Field Mus. No. 26597). This appears to be *Ruellia tubiflora* H. B. K.

14. TELIOSTACHYA Nees

The synonym *Lepidagathis* Willd., given on page 112, is to be deleted. It is a valid genus. The intention above was *Lepidagathis sensu auctt. plur., non Willd.*

2. *Teliostachya lanceolata* Nees. (Page 114.)

META: Rich soil of damp rocky woods on the banks of the Río Guatiquía in the vicinity of Villavicencio, Araque-M. & Barkley 18M.054 (US).

2a. *Teliostachya lanceolata* Nees var. *crispa* Nees. (Page 114.)

META: On stones on the bank of the Río Guapaya, Sierra de la Macarena, Philipson, Idrobo & Fernández 1627a (BM).

3. *Teliostachya petraea* Leonard, sp. nov. (Page 114.)

FIGURE 253

Herba, caulibus erectis, basi decumbentibus, in nodis radicanibus, quadrangularibus, glabris vel aliquanto parce strigosis, internodiis summo glanduloso-puberulis, pilis patulis; lamina foliorum lanceolata, apice fere obtusa, basi cuneata, in petiolum decurrens, aliquanto firma, integra, glabra vel pilis paucis praedita, supra obscure squamosa,

cystolithis obscuris; spicae terminales cylindricae vel anguste ovoideae, densae; bracteae lanceolatae vel oblanceolatae, acutae, glabrae vel parce puberulae, pilis aliquis glandulosis; bracteolae lineari-lanceolatae, parce puberulae, pilis glandulosis, costa prominente; calycis segmenta inaequalia, segmentum posterius anguste oblongo-ovatum, aristatum, parce puberulum, pilis glandulosis, costa et nervis lateralibus prominentibus, segmenta anteriora et lateralia lineari-oblonga, costa et nervis prominentibus, parce puberulis, pilis paucis glandulosis; rhachis hirtella, pilis acutis et glandulosis intermixtis; corolla parva, alba, glabra, labio superiore oblongo, apice emarginato, labio inferiore

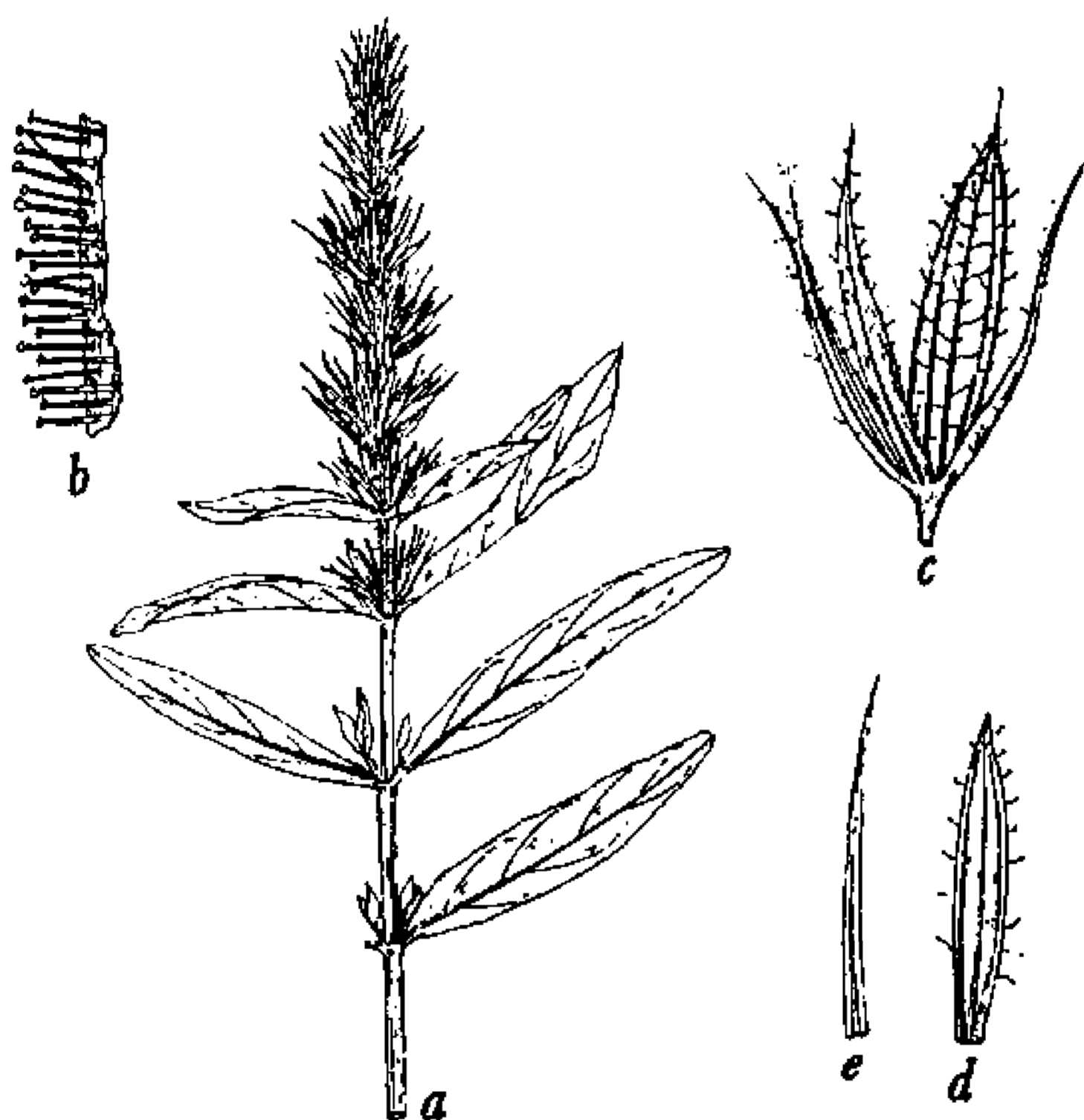


FIGURE 253.—*Teliostachya petraea* Leonard (Schultes & Cabrera 15342): *a*, Tip of plant; *b*, portion of uppermost internode enlarged to show glandular pubescence; *c*, calyx; *d*, bract; *e*, bractlet. (*a*, Natural size; *b*, 40 times natural size; *c-e*, 4 times natural size.)

3-lobato, lobis suborbicularibus; stamina inclusa; capsulae cylindricae, acutae, apice puberulae; semina plana, subbrunnea, glabra.

Herbs up to 20 cm. high; stems erect from procumbent rooting bases, quadrangular, up to 1.25 mm. in diameter, glabrous or sparingly strigose (the hairs up to 0.4 mm. long and upwardly appressed) except the internode immediately below the spike, this, in addition to the appressed acute hairs, more or less densely glandular-puberulent, the glandular hairs spreading and up to 0.13 mm. long; leaf blades lanceolate, up to 15 mm. long and 8 mm. wide (averaging 5 mm. in width), obtuse at tip, cuneate at the base and decurrent on the petiole, rather firm, entire, glabrous or bearing a few scattered ascending hairs, the upper surface obscurely squamose, the costa and lateral

veins (4 or 6 pairs) barely prominent, the cystoliths obscure; spikes terminal, up to 3.5 cm. long and 1 cm. broad, cylindric or narrowly ovoid, usually rounded at tip, dense, the flowers solitary or in pairs, the lowermost 1 or 2 nodes subtended by leaves, the others by bracts, these lanceolate or oblanceolate, about 5 mm. long and 0.75 mm. wide, firm, acute, glabrous or sparingly puberulous, the costa and lateral pair of nerves prominent; bractlets linear-lanceolate, 3.5 mm. long, 0.25 mm. wide, acute, sparingly glandular-puberulent, the hairs spreading or ascending, up to 0.11 mm. long; calyx segments unequal, the posterior segment narrowly oblong-ovate, 6 mm. long, 1.5 mm. wide, aristate, the awns about 1 mm. long, sparingly glandular-puberulent, the hairs similar to those of the bracts and bractlets, the costa and 2 pairs of lateral nerves prominent, the anterior and lateral segments (the anterior segments connate at base) linear-oblong, 5 mm. long, 0.5 to 0.75 mm. wide, acute and minutely aristate, the costa and a pair of lateral nerves prominent, the pubescence similar to that of the posterior segment, the rachis hirtellous with a mixture of glandular and acute spreading or ascending hairs up to 0.16 mm. long; corolla white, glabrous, 6 to 7 mm. long, the upper lip oblong, 4.5 mm. long, 1.25 mm. wide at base, minutely bilobed at tip, the lower lip 3.5 mm. long, 2 mm. wide, 3-lobed, the lobes suborbicular, the middle lobe 1.5 mm. in diameter, the lateral pair about 1 mm.; capsules cylindric, acute, puberulous at tip, otherwise glabrous, 4 mm. long, 1 mm. broad, about 0.5 mm. thick; retinacula 0.5 mm. long; seed lenticular, light brown, glabrous, about 1 mm. broad and long.

Type in the U. S. National Herbarium, No. 2124583, collected on quartzite rocks of falls at Raudal Yayacopi (La Playa), Río Apaporis, Amazonas-Vaupés, "800 feet" altitude, February 15, 1952, by Richard Evans Schultes and Isidoro Cabrera (No. 15342).

Teliostachya petraea, when compared with other species of the genus, can be easily separated by its glandular pubescence. The specific epithet is from the Greek *πετραῖος*, living on rocks.

PART II

15. NERIACANTHUS Benth.

S. Moore (Journ. Bot. Brit. & For. 65: 221. 1927) reduced the genus *Neriacanthus* to *Salpinxantha* Hooker (Bot. Mag. Curtis pl. 4158. 1845), but I am inclined to regard the two as distinct. *Neriacanthus* has dense spikes with large, closely imbricated, ascending bracts, and corollas with narrow tubes abruptly expanding into a rather conspicuous limb. These characters contrast strongly with those of *Salpinxantha*, which has loose spikes with distant spreading flowers

subtended by minute bracts, and corollas with gradually expanded tubes and relatively small lobes, which do not form a sharply differentiated limb.

2. *Neriacanthus lehmannianus* (Lindau) Lindau. (Page 124.)

In the note on page 123 regarding the type of *Neriacanthus lehmannianus* Lindau, I quoted Lindau in saying that *Lehmann* 7852 came from Ecuador; this type collection was actually from Colombia, from the Andes west of Cali, in the Department of El Valle, as cited below.

CAUCA: Headwaters of the Río Pinche, west of Argelia, *Core* 1324 (US). Timbiquí, upper Río Mangüi, *Lehmann* B. T. 449 (K). In dense forest, no further data, *Core* 1322.

EL VALLE: Forest above La Cumbre, *Pennell & Killip* 5789 (K). San Antonio, *Lehmann* 2966 (K). Dense damp forest on the watershed of the west Andes of Cali, *Lehmann* 7852 (K). Semishade in rainforest above Cali, *Sandeman* 140 (K).

WITHOUT LOCALITY: *Langlassé* 44 (K).

16. STENANDRIUM Nees

3. *Stenandrium dulce* (Cav.) Nees. (Page 127.)

CUNDINAMARCA: La Boca del Monte, on the western edge of the highland of Bogotá, *Lehmann* 6442 (K). Facatativá, *André* 665 (K).

4. *Stenandrium humboldtianum* Nees. (Page 127.) FIGURE 254

Stenandrium humboldtianum Nees, DC. Prodr. 11: 284. 1847. Type collected at "Atures, Maypures" by Humboldt. Atures is on the east bank of the Río Orinoco and in Territorio Federal of Amazonas, Venezuela, but Maypures is located on the west bank several miles south of Atures in the Comisaria, of Vichada in Colombia. Thus the exact type locality is uncertain.

EMENDED DESCRIPTION: Suffrutescent herbs up to 30 cm. high; stems woody at base, 5 mm. in diameter (the internodes 1 to 2.5 cm. long), decumbent, pilose, the upper part densely so, the hairs spreading, about 1.5 mm. long; leaf blades oblong, up to 20 cm. long and 6.6 cm. wide, acute or short-acuminate (the tip itself subacute), long-cuneate at base and decurrent on the petiole, moderately firm, both surfaces rather densely pilose, the hairs ascending, up to 1.25 mm. long, the costa and lateral veins (about 12 pairs) moderately prominent beneath, less so above, the cystoliths not apparent; petioles (unwinged portion) up to 3 cm. long, pilose; flowers borne in axillary spikes 3 to 4 cm. long, becoming 6 to 8 cm. long at maturity, the spikes solitary or in 3's, the lateral pair branching from the lowermost node of the spike and shorter than the central spike, the peduncles up to 25 cm. long, somewhat flattened toward tip, the pubescence moderately dense, consisting of a mixture of long acute hairs up to 1 mm. long, minute acute hairs up to 0.13 mm. long and slender gland-tipped ones up to 0.32 mm. long, all more or less spreading, the pubescence of the rachis similar to that of the peduncles, the lowermost internode of the spike

up to 14 mm. long, the others successively shorter toward the tip of the spike, the lowermost pair of bracts lanceolate, 6 mm. long, 1.5 mm. wide, the others similar in size but progressively smaller toward tip of spike, all entire, acute (the tip itself blunt), the pubescence similar to that of the peduncle, but with a predominance of the longer acute hairs on the costa of the lower surface, the costa flanked by

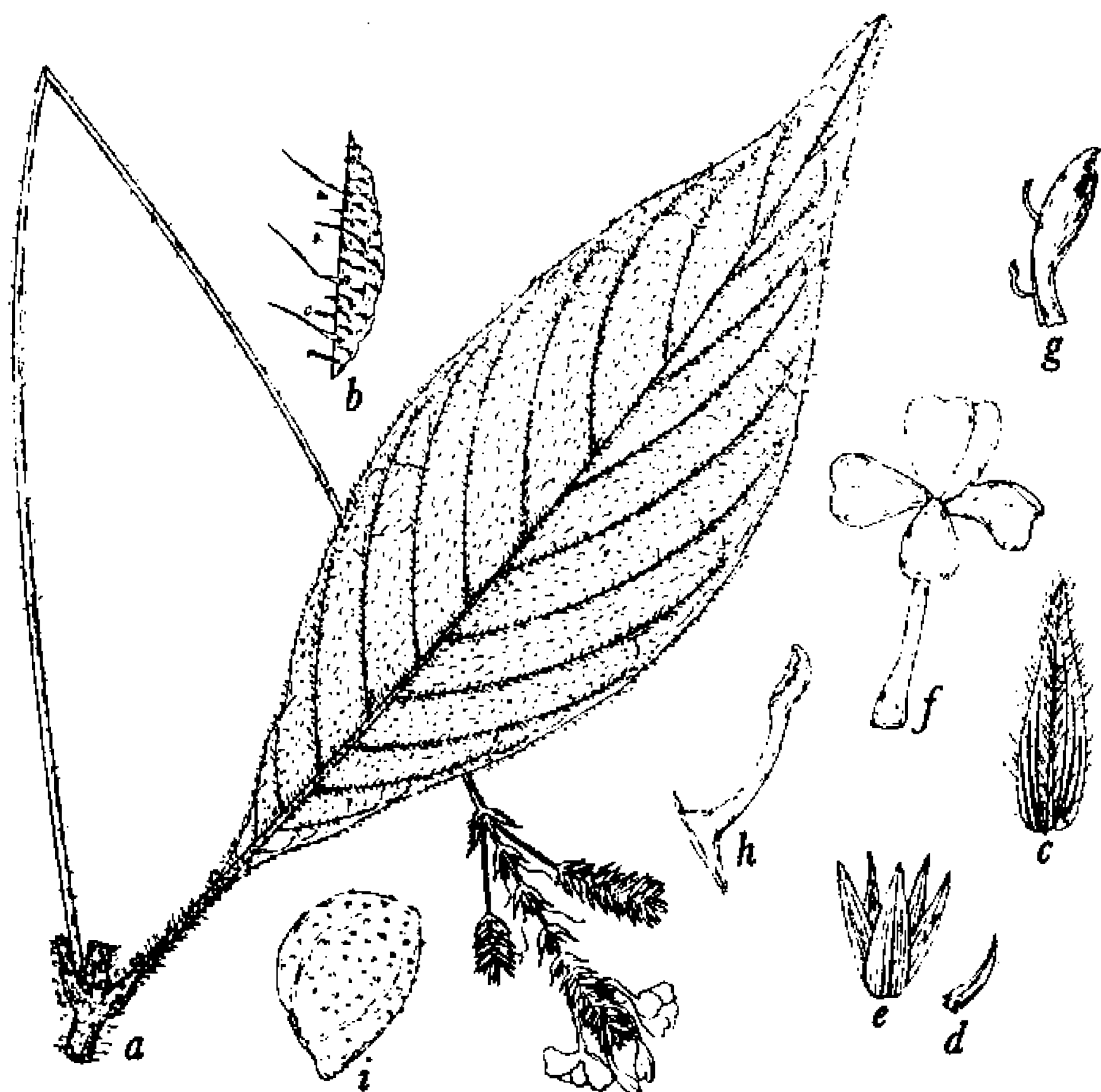


FIGURE 254.—*Stenandrium humboldtianum* Nees (Ewan 15622): *a*, Node with a leaf and flower branch; *b*, portion of peduncle enlarged to show pubescence; *c*, one of the lowermost bracts; *d*, bractlet; *e*, calyx; *f*, corolla; *g*, capsule valve; *h*, retinaculum; *i*, seed. (*a*, Half natural size; *b*, about 30 times natural size; *c*–*e*, about 3 times natural size; *f*, $1\frac{1}{2}$ times natural size; *g*, about twice natural size; *h*, 10 times natural size; *i*, 5 times natural size.)

several pairs of prominent parallel nerves, the bractlets lanceolate, 2.5 mm. long, 0.75 mm. wide, acute, entire, puberulous; calyx regular, about 4 mm. long, the segments lance-subulate, about 1.5 mm. wide near base, gradually narrowed to a sharp apex, rigid, erect, strongly ciliolate near tip, conspicuously parallel-nerved dorsally; corolla glabrous, bright pink (Ewan), up to 18 mm. long, the tube narrowly cylindrical, 15 mm. long, 2.25 mm. broad at base, rather abruptly narrowed to 1 mm. just above base, expanding at throat to about 2 mm., the lobes subequal, obcordate, 6 mm. long, 5.5 mm. wide,

rounded and emarginate at tip; stamens included; capsules ovoid, 8 mm. long, 4 mm. broad, 2 mm. thick, glabrous, yellowish, nitid, bearing several irregular purple spots near tip of each valve; retinacula about 2 mm. long, slender and cucullate at tip; seeds reddish-brown, ovoid, oblique at base, 3 mm. long, 2.5 mm. wide, 0.75 mm. thick, obscurely and minutely papillose.

Stenandrium humboldtianum Nees is definitely caulescent, even though Nees starts his description with the word "acaule." The photograph of Humboldt's specimen in the Berlin Herbarium, the specimen cited by Nees, shows, in addition to a flowering tip of a plant, a section of stem (about 6 cm. long) with a pair of attached leaves.

CUNDINAMARCA: On moist shaded slope beneath trees in the valley of Quebrada Chiniata, 7 km. east of Hilo, 2,430 meters altitude, May 1, 1944, *Ewan* 15622 (Tulane University Herb., US). La María, between the Quebradas La María and La Victoria, *García-Barriga* 12595 (Col).

17. APHELANDRA R. Br.

1. *Aphelandra runcinata* Klotzsch. (Page 135.)

ANTIOQUIA: Alto de Santa Elena, Medellín, *Uribe-Uribe* 1857 (US). Quebrada Naranjal, tributary of the Río Aures, Cordillera Central, *Ewan* 15732 (US).

CUNDINAMARCA: Rocky massif east of Santandercito, *Uribe-Uribe* 2115 (US).

WITHOUT LOCALITY: *Purdie* (K).

3a. *Aphelandra grangeri* Leonard, sp. nov. (Page 139.)

FIGURE 255

Suffrutex spinosus, caulibus subteretibus, deorsum glabris, sursum puberulis, pilis plus minusve appressis; lamina foliorum oblongo-elliptica vel oblongo-lanceolata, apice acuta vel subacuta, basi obtusa vel rotundata, glabra, supra nitida, coriacea, serrato-dentata, dentibus triangularibus, spina acuta terminatis, subtus costa et venis prominentibus, supra obscuris; petioli breves, parce puberuli; bractee interpetiolares parvae, rhombicae, integrae vel dentatae, spinosae; spicae terminales sessiles, rhache dense puberula; bractee foliis similes sed minores; bracteolae lanceolatae, acuminatae, costa spina terminata, glabrae vel parce puberulae, ciliatae; calycis segmenta lanceolata, acuminata, apice spina terminata, glabra vel parce puberula, conspicue ciliata, costa prominente, nervis lateralibus pluribus; corolla dense pubescens, tubo anguste hypocrateriformi, leviter ventricoso, labio superiore erecto, lineari, apice bilobato, lobis oblongis, rotundatis et emarginatis, labio inferiore trilobato, lobis suborbicularibus; stamina vix exserta, antheris glabris, apice arachnoideis, filamentis basi minute pilosis, sursum glabris; ovarium glabrum.

Shrubs; stems glabrous, subterete, their tips puberulous, the hairs more or less appressed, up to 0.25 mm. long; leaf blades oblong-elliptic to oblong-lanceolate, up to 9 cm. long and 3 cm. wide, acute or subacute, rounded or obtuse at base, glabrous, nitid above, coriaceous, the margins serrate-dentate, the teeth triangular, 2 to 5 mm. high, terminating in sharp spines up to 3 mm. long, the costa and lateral veins (8 to 10 pairs) prominent beneath, obscure above; petioles up to 3 mm. long, glabrous or sparingly puberulous, the

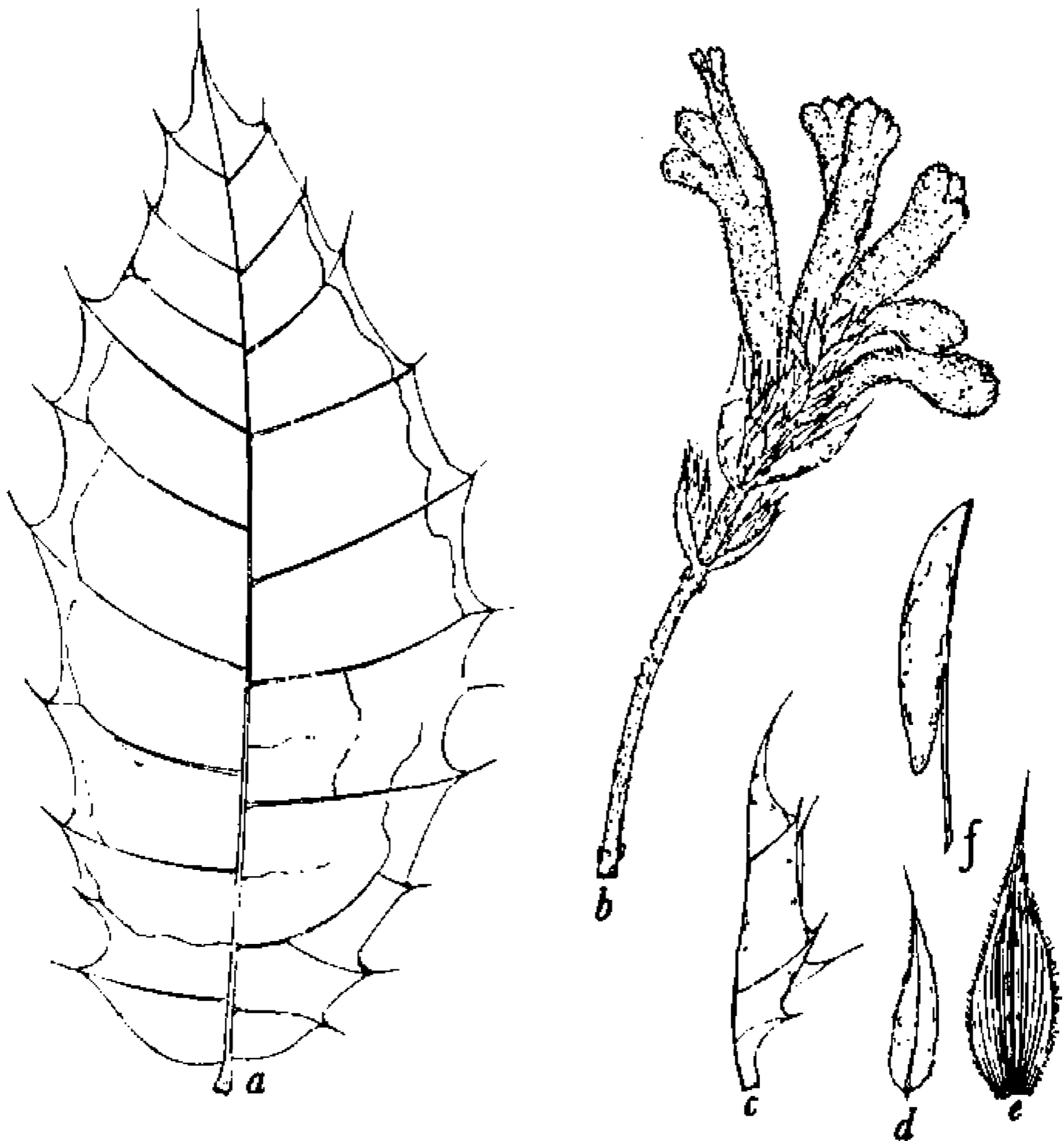


FIGURE 255.—*Aphelandra grangeri* Leonard (*Granger & Rodriguez-A 10*): *a*, Leaf, *b*, spike; *c*, bract; *d*, bractlet; *e*, one of the calyx segments; *f*, anther. (*a*, Natural size; *b*, two-thirds natural size; *c*, $1\frac{1}{2}$ times natural size; *d*, *e*, twice natural size; *f*, $5\frac{1}{2}$ times natural size.)

hairs similar to those of the stems; interpetiolar bracts small, rhombic or suborbicular, up to 2 mm. long and 1.5 mm. wide, tipped by a spine about 1.25 mm. long, sometimes bearing a pair of lateral spines about 0.5 mm. long; flowers borne in terminal spikes up to 3.5 cm. long and 1.5 cm. broad (the corollas excluded), sessile, the rachis densely puberulous, the hairs similar to those of the stems, the lowermost internode up to 8 mm. long, the others successively shorter toward the tip of the spike; bracts resembling the leaf blades but

smaller, the lowermost about 3 cm. long and 10 mm. wide, the other successively smaller toward tip of spike; bractlets lanceolate, up to 9 mm. long and 1.5 mm. wide near the base, slenderly acuminate, terminating in a spine about 1.5 mm. long, glabrous or sparingly puberulous, except the margins, these ciliate, the hairs more or less spreading, up to 0.5 mm. long; calyx segments lanceolate, 9 mm. long, 3 mm. wide near base, acuminate, terminated by a sharp spine about 0.5 to 1 mm. long, glabrous or bearing a few minute dorsal hairs, the margins densely ciliate, the hairs more or less spreading, about 0.5 mm. long, the costa prominent, the lateral nerves numerous and rather prominent; corolla 4 cm. long, rather densely pubescent, the hairs spreading, up to 0.25 mm. long, the corolla tube 3 mm. broad at base, enlarged to 4 mm. just above the base, then narrowed to 3 mm. at 1 cm. above base, thence enlarged to 7.5 mm. at throat, the upper lip becoming erect, linear, about 1 cm. long, 3 mm. wide, bilobed at tip, the lobes oblong, about 3 mm. long and 1.5 mm. wide, rounded and emarginate at tip, the lower lip divided to base into 3 suborbicular lobes, these 4 mm. long and 3.5 mm. wide, rounded; stamens reaching the throat of the corolla, the anthers 4.5 mm. long, 1.5 mm. broad, glabrous, the filaments minutely pilose at base, glabrous above; style 3.5 cm. long, glabrous, the stigma cupular and fimbriate; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 2045423, collected on the Finca Las Mercedes, near Silvia, Department of Cauca, Colombia, 3,300 meters altitude, 1943, by J. S. Granger and C. Rodriguez-A. (No. 10). Isotype: US.

Aphelandra grangeri is related to *A. euopla*, which it closely resembles, but from which it can, however, be readily separated by its strongly ciliated calyx segments and bractlets. In *A. euopla* these are at most only very sparingly ciliate. The color of the corolla is not apparent in the dried material.

4. *Aphelandra porphyrocarpa* Leonard. (Page 140.)

EMENDED DESCRIPTION: Corolla yellow, densely pubescent (the hairs up to 0.5 mm. long, more or less spreading), up to 5.5 cm. long from base to tip of upper lip, the tube funnelform, slightly ventricose, 6 mm. broad at base, narrowed gradually to about 4 mm. near the middle, thence enlarged to 1 cm. at mouth, the upper lip erect, 2 to 2.5 cm. long, 6 mm. wide at base, 1 cm. wide at base of the 2 lobes, these obovate, about 8 mm. long, 7 to 8 mm. wide near tip, rounded, the lower lip more or less spreading, divided nearly to base into 3 obovate lobes 8 to 9 mm. long and 7 mm. wide, rounded, the longer pair of stamens reaching nearly to tip of the upper lip, the anthers

of both pairs linear, about 7 mm. long and 2 mm. broad, these and the filaments glabrous.

HUILA: Ravine in temperate forest, between Hacienda Balsillitas, Meta, and El Cedral, "9000 ft." altitude, June 16, 1944, *Elbert L. Little* 8030 (US). Moist wet soil of temperate forest at Hacienda Pensilvánica, 15 km. east of Baraya, Cordillera Oriental, "8100 ft." altitude, June 24, 1944, *Elbert L. Little* No. 8135 (US)

4a. *Aphelandra gilva* Leonard, sp. nov. (Page 142.)

FIGURE 256.

Frutex, caulibus subquadrangularibus, glabris vel sursum substrigosis, pilis fere appressis; lamina foliorum late oblongo-lanceolata, apice acuta, basi angustata, incisa, lobis triangularibus, ascendentibus, marginibus serratis, apice spina acuta fulva armatis, supra glabra vel parce hirtella, pilis praecipue in costa et venis positis, subtus aliquanto dense hirtella, costa et venis lateralibus et venulis crasse reticulatis utrinque aliquanto prominentibus; petioli crassi, parce hirtelli; bracteae interpetiolares flabelliformes, spinis 4-7, acutis fulvis armatae, bracteis et spinis deorsum parce hirtellis, spinis apice vernicosis; spicae (maturae) longae terminales, solitariae, angustae, deorsum plus minusve laxae, rhache hirtella, pilis appressis vel ascendentibus; bracteae lanceolatae, graciliter acutae, apice recurvatae (maturae), marginibus serratae, dentibus et apice spinis armatae, glabrae vel parce hirtellae; bracteolae lanceolatae, apice graciliter acutae, apice spina terminatae, integrae, minute ciliatae, glabrae vel parce hirtellae; calycis segmenta lanceolata, acuta, graciliter puberula et ciliolata, chartacea; corolla gilva, basi glabra vel parce hirtella, sursum dense tomentosa, pilis fulvis, labio superiore erecto vel leviter recurvato, obovato, bilobato, lobis ovatis, rotundatis, labio inferiore ascendente vel recurvato (maturo), profunde trilobato, lobis suborbicularibus, rotundatis; stamina vix exserta, antheris glabris, filamentis glabris vel basi parce pilosis; ovarium glabrum.

Shrubs; stems subquadrangular, glabrous or the upper portions hirtellous, the hairs for the most part closely appressed, up to 0.7 mm. long; leaf blades broadly oblong-lanceolate in outline, up to 30 cm. long and 10 cm. wide (from tip to tip of lobes), acute at apex, terminating in a yellowish spine 1.5 mm. long, gradually narrowed from middle to a cuneate base, deeply incised, the lobes triangular, ascending, up to 4 cm. long and 3.5 cm. wide at base, acute and terminated by spines up to 5 mm. long, the entire margin irregularly serrate, the teeth triangular, the larger ones about 4 mm. long and 6 mm. wide, all terminated by sharp yellowish spines 1 to 4 mm. long, the upper surface glabrous or sparingly hirtellous, the hairs up to 0.5 mm. long, confined chiefly to the costa and lateral veins (about 12 pairs), the lower surface drying light brownish, more densely

hirtellous, the hairs about 0.5 mm. long, confined mostly to the costa, veins and veinlets, the latter coarsely reticulate, the hairs interspersed with scattered small glandular particles, the venation rather prominent beneath, less so above; petioles up to 2.5 cm. long and 3 mm. thick, sparingly hirtellous; interpetiolar bracts flabelliform, armed with 4 to 7 sharp ascending yellowish spines, the lowermost 1.5 mm.

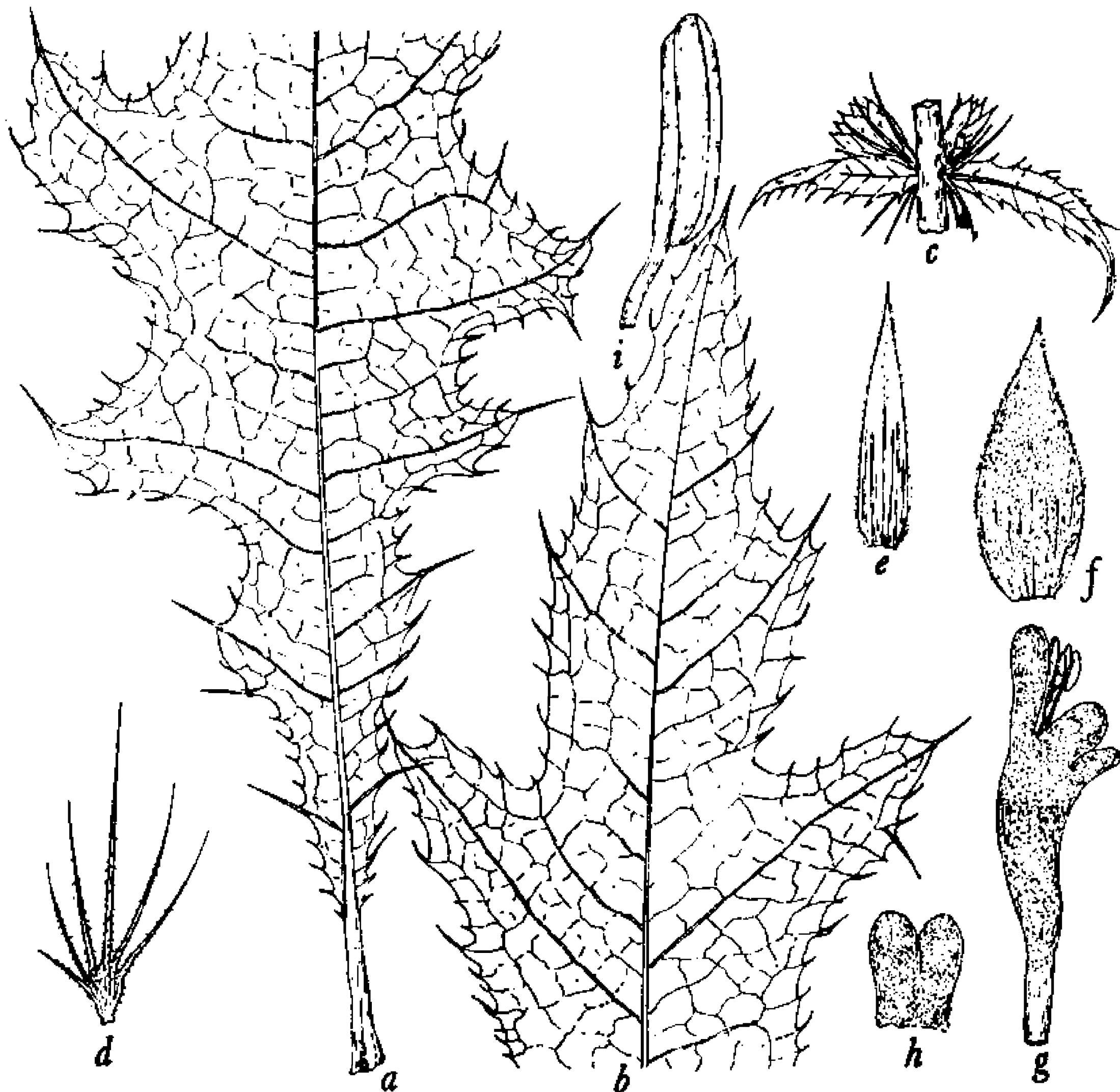


FIGURE 256.—*Aphelandra gilva* Leonard (Ewan 16501): *a*, Lower half of leaf blade; *b*, upper half of same; *c*, lowermost node of spike; *d*, interpetiolar bract; *e*, bractlet; *f*, calyx segment; *g*, corolla; *h*, upper lip of corolla; *i*, anther. (*a*, *b*, Half natural size; *c*, $\frac{1}{2}$ natural size; *d*, 6 times natural size; *e*, 3 times natural size; *f*, $3\frac{1}{2}$ times natural size; *g*, *h*, $1\frac{1}{2}$ times natural size; *i*, 3 times natural size.)

long, the others increasing in length to 13 mm. for the middle one, the surface of the bracts sparingly hirtellous except the glabrous varnished tip of the spines; spikes terminal, solitary, up to 30 cm. long at maturity, about 3 cm. broad, more or less lax toward base, the rachis hirtellous with ascending or appressed hairs up to 0.5 mm. long; bracts (mature) lanceolate, 2 cm. long, 4 mm. wide, slenderly acute, terminated by a spine about 1 mm. long, the tip recurved at

maturity, glabrous or sparingly hirtellous, the margins armed with spine-tipped teeth, the spines from 1 to 3 mm. long; bractlets lanceolate, 8 mm. long, 2.5 mm. wide near base, gradually narrowed to a slender tip, terminated by a spine 0.5 mm. long, the margins entire and minutely ciliolate, the surface glabrous or sparingly hirtellous; calyx segments lanceolate, 1 cm. long, 3.5 mm. wide, acute, finely puberulous and ciliolate, chartaceous; corolla pale cream-yellow (Ewan), about 3 cm. long, the tube densely yellowish-tomentose except the basal portion, this glabrous or sparingly hirtellous with appressed hairs, the base 5 mm. broad, the mouth 6 mm. broad, the upper lip erect or slightly recurved, obovate, 1 cm. long, 5 mm. wide at base, 8 mm. wide near tip, bilobed, the lobes ovate, rounded, the lower lip ascending, or recurved at maturity, 5 mm. long, 3-lobed, the lateral lobes 4 mm. long and broad, the middle one somewhat smaller, all rounded; stamens reaching or slightly exceeding the upper lip of the corolla, the anthers 7.5 mm. long, 2 mm. broad, rounded at each end, glabrous; filaments glabrous except a few small hairs at base; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 2045402, collected in a heavy thicket near Río Tellez, in the vicinity of Funes, Cordillera Oriental, Department of Nariño, Colombia, 2,600 meters altitude, December 1, 1944, by Joseph A. Ewan (No. 16501). Isotype: US 2144296.

Aphelandra gilva is close to *A. porphyrocarpa*, but distinct from this species in its acute calyx segments and incised leaf blades. In *A. porphyrocarpa* the calyx segments are rounded, mucronate and dentate at tip, and the leaf blades are shallowly incised. The specific epithet *gilva*, pale yellow, alludes to the color of the corolla.

5. *Aphelandra acanthus* Nees. (Page 143.)

CAUCA: Forests of El Tambo, *von Sneider* 1512 (S).

NARIÑO: Sparsely wooded brushy ravine, Quebrada Panaeual, 8 kilometers south of Piedrancha, Río Guabo drainage, *Fosberg* 21113 (US).

TOLIMA: Quindío, *Holton* 592 (K, NY); *Purdie* (K). Rosalito to Murillo, in forest, *Pennell* 3132 (NY).

WITHOUT LOCALITY: *Purdie* (K).

7. *Aphelandra huilensis* Leonard. (Page 147.)

TOLIMA: Río Hereje, near Albania, 2,000 meters altitude, November 20, 1944, *Core* 1619 (US).

11. *Aphelandra crispata* Leonard. (Page 152.)

PUTUMAYO: Mocoa and vicinity, *Schultes & Cabrera* 19093 bis.

15. *Aphelandra botanodes* Leonard. (Page 157.)

The type can be identified a little more definitely; it bears the annotation "N. g. post 80 *Lagochilium*, no. 5," which refers to the Triana catalog, a typescript of which is in the possession of Dr.

Cuatrecasas. This annotation indicates that Triana considered this plant to belong to a new genus to be inserted after *Acanthaceae* genus No. 80 [*Lagochilium*]; the "no. 5" indicates the species, which is actually in the catalog No. 5 of *Lagochilium*. The Triana specimen from San Pablo cited above as possibly the same species is *Lagochilium* No. 6 of the catalog.

15a. *Aphelandra andrei* Leonard, sp. nov. (Page 157.)

FIGURE 257

Herba, caulibus ascendentibus, basi in nodis radicanibus, aliquanto dense hirsutis, pilis appressis vel ascendentibus; lamina foliorum oblonga, breviter acuminata (apice ipso obtuso), basi angustata, aliquanto membranacea, integra, utrinque pilosa, pilis ascendentibus vel subappressis; petioli pilosi; inflorescentia terminalis, trifurcata, spicis parvis, pedunculo gracili, plus minusve dense piloso, pilis subappressis vel patulis, pedunculis secundariis quam spicis brevioribus, dense pilosis, rhache dense hirsuta, pilis ascendentibus, albidis; bracteae oblongae, apice acutae, basi angustatae, membranaceae, integrae, utrinque hirtellae, pilis ascendentibus, marginibus ciliatae, costa et nervis lateralibus gracilibus; bracteolae anguste lineares, apice acuminatae, acutae, extus sursum dense pilosae, intus glabrae, striato-nervatae; calycis segmenta anguste lanceolata, acuta, apice minute puberula, deorsum glabra, striato-nervata; corolla deorsum glabra, sursum aliquanto pubescens, pilis plus minusve curvatis, ascendentibus, tubo anguste infundibuliformi, labio superiore bilobato, lobis suborbicularibus emarginatis, labio inferiore 3-lobato, lobis obcordatis; stamina vix exserta; ovarium apice hirsutum, deorsum glabrum.

Herbs up to 30 cm. high, the stems ascending, rooting at the lower nodes, rather densely hirsute, the hairs close and upwardly appressed or on the upper portions of the stem ascending, 0.5 to 0.75 mm. long; leaf blades oblong, up to 8 cm. long and 2.5 cm. wide, short-acuminate (the tip itself obtuse), narrowed at base, rather thin, entire, both surfaces moderately pilose, the hairs ascending to subappressed, about 0.75 mm. long; petioles slender, up to 4 cm. long, more or less pilose; spikes in 3's terminating a slender peduncle 7 cm. long, this rather densely pilose with hairs 0.75 mm. long, some of them more or less spreading, others appressed, each spike about 1.5 cm. long and 1 cm. broad, borne on secondary densely pilose peduncles up to 7 mm. long, the three spikes subtended by a pair of small leaves 18 mm. long and 8 mm. wide, subobtuse and narrowed at base to a winged petiole about 3 mm. long, the pubescence that of the stem leaves, the rachis densely hirsute with ascending whitish hairs about 0.75 mm. long; bracts thin, oblong, 7 mm. long and 4 mm. wide, acute at tip, narrowed at base, thin, entire, both surfaces hirtellous, the hairs up to

0.5 mm. long, mostly ascending, the margins ciliate, the costa and 1 or 2 pairs of lateral nerves slender; bractlets narrowly linear, 5.5 mm. long, 0.5 mm. wide at base, gradually narrowed to a slender tip, the outer surface pilose, densely so toward the tip, the inner surface glabrous, striate-nerved; calyx segments narrowly lanceolate, acute, 0.75 mm. wide, striate-nerved, minutely puberulous toward the tip; corolla 18 mm. long, the lower half glabrous or nearly so, the upper half rather densely pubescent, the hairs up to 0.28 mm. long, more or less curved, ascending, the tube 1.5 mm. broad at base, enlarged over



FIGURE 257.—*Aphelandra andrei* Leonard (*André* 4661): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, calyx segment; *e*, ovary; *f*, lower lip of corolla; *g*, upper lip of same. (*a*, Half natural size; *b-d*, $2\frac{2}{3}$ times natural size; *e*, 6 times natural size; *f*, *g*, 3 times natural size.)

ovary to 2 mm., then narrowed to 1.25 mm., thence gradually enlarged to 4 mm. at mouth, the upper lip about 3 mm. long and 4 mm. wide, bilobed, the lobes 2 mm. long and wide, rounded and emarginate at tip, the lower lip 4 mm. long, 3-lobed, the lobes obcordate, 2 mm. long and wide, emarginate; stamens reaching the mouth of the corolla tube; ovary glabrous except the hirsute tip; capsules not seen.

Type in the Kew Herbarium, collected in shade of virgin forests at San Ignacio, "Cordillera Orientalis Bogotensis," Colombia, January 1876 by Edouard André (No. 4661).

Aphelandra andrei belongs to the *Lagochilium* group of Nees, plants midway between *Stenandrium* and *Aphelandra*. It is probably nearest to *A. botanodes*, as indicated by its small size, herbaceous habit, and trifurcate inflorescences of 3 small spikes. It differs strikingly,

however, from that species in its rather densely hirsute stems and entire bracts.

16a. *Aphelandra quadrifaria* Leonard, sp. nov. (Page 158.) FIGURE 258

Herba, caulibus erectis vel ascendentibus, subteretibus, dense antrorse strigosis; lamina foliorum oblongo-elliptica, apice subobtusa, basi cuneata, in petiolum decurrens, aliquanto firma, integra vel undulata, parce hirsuta, pilis appressis vel ascendentibus, praecipue in costa et venis subtus positis, venis subtus aliquanto prominentibus, supra obscuris, petioli strigillosi; spica terminalis, pedunculis dense strigillosis; bracteae conspicuae, subchartaceae, ovatae, apice acutae et apiculatae, glabrae, deorsum integrae, sursum serratae, costa et venis et venulosis crasse et conspicue reticulatis prominentibus; bracteolae lanceolatae, subhyalinae, subchartaceae, acuminatae, carinatae, minute ciliolatae, obscure striato-nervatae; calycis segmenta lanceolata, subhyalina, subchartacea, acuta, apice spinescentia, glabra vel inconspicue ciliolata, graciliter striato-nervata; corolla flava, parce et minute hirtella, labiis subaequalibus, labio superiore cuneato, bilobato, lobis rotundatis, labio inferiore 3-lobato, lobis rotundatis; stamina vix exserta, antheris glabris, apice arachnoideis, filamentis parce pilosis; ovarium glabrum.

Herbs up to 35 cm. long; stems suberect or ascending, subterete, strigose, the hairs upwardly directed, up to 0.25 mm. long, the internodes up to 5 cm. long; leaf blades oblong-elliptic, up to 10 cm. long and 4.5 cm. wide, subobtuse at tip, cuneate at base and decurrent on the petiole, moderately firm, entire or undulate, sparingly hirsute, the hairs appressed or ascending, up to 0.5 mm. long, confined chiefly to costa and lateral veins (9 or 10 pairs), these and the coarsely reticulate veinlets moderately prominent beneath, obscure above; petioles up to 1.5 cm. long, appressed-hirtellous, the hairs resembling those on the stem; spikes terminal, up to 3 cm. long and 1.5 to 2 cm. broad (excluding spread of corollas), the peduncles about 2 mm. long, densely sericeous-strigose, the bracts quadrifarious, subchartaceous, ovate, up to 12 mm. long and 10 mm. wide at middle, the lower half entire, the upper half serrate, the teeth (about 5) ascending, abruptly acuminate from a broad base, about 1 mm. long, the tip of the bracts acute and apiculate, the base broadly cuneate, both surfaces glabrous, the costa and 1 or 2 pairs of lateral nerves prominent; veinlets coarsely and prominently reticulate; bractlets lanceolate, subhyaline, subchartaceous, 4.5 mm. long, 0.75 mm. wide just above base, acuminate, carinate, minutely ciliate, the hairs ascending, the costa prominent and bearing a few small hairs; calyx segments lanceolate, 7 mm. long, subchartaceous and subhyaline, acute and terminating in weak spines about 1 mm. long, glabrous or inconspicuously ciliate, delicately striate-nerved, the posterior segment about 2 mm. wide, the lateral

segments 1 mm. wide, the anterior ones 1.5 mm. wide; corolla yellow, sparingly and minutely hirtellous, 2 cm. long, the tube 2 mm. wide at base, narrowed to 1.25 mm. at 2 mm. above base, the throat 4 to 5 mm. broad, the lips ascending, about equal, 6 to 7 mm. long, the upper lip cuneate, about 6 mm. wide near tip, bilobed, the lobes 3 mm. long, 3.5 mm. wide, rounded, the lower lip 3-lobed, the lobes obovate, about 5 mm. long, the middle one 6 mm. wide, the lateral ones 3.5 mm. wide, all rounded; stamens slightly exerted but not exceeding the lips,

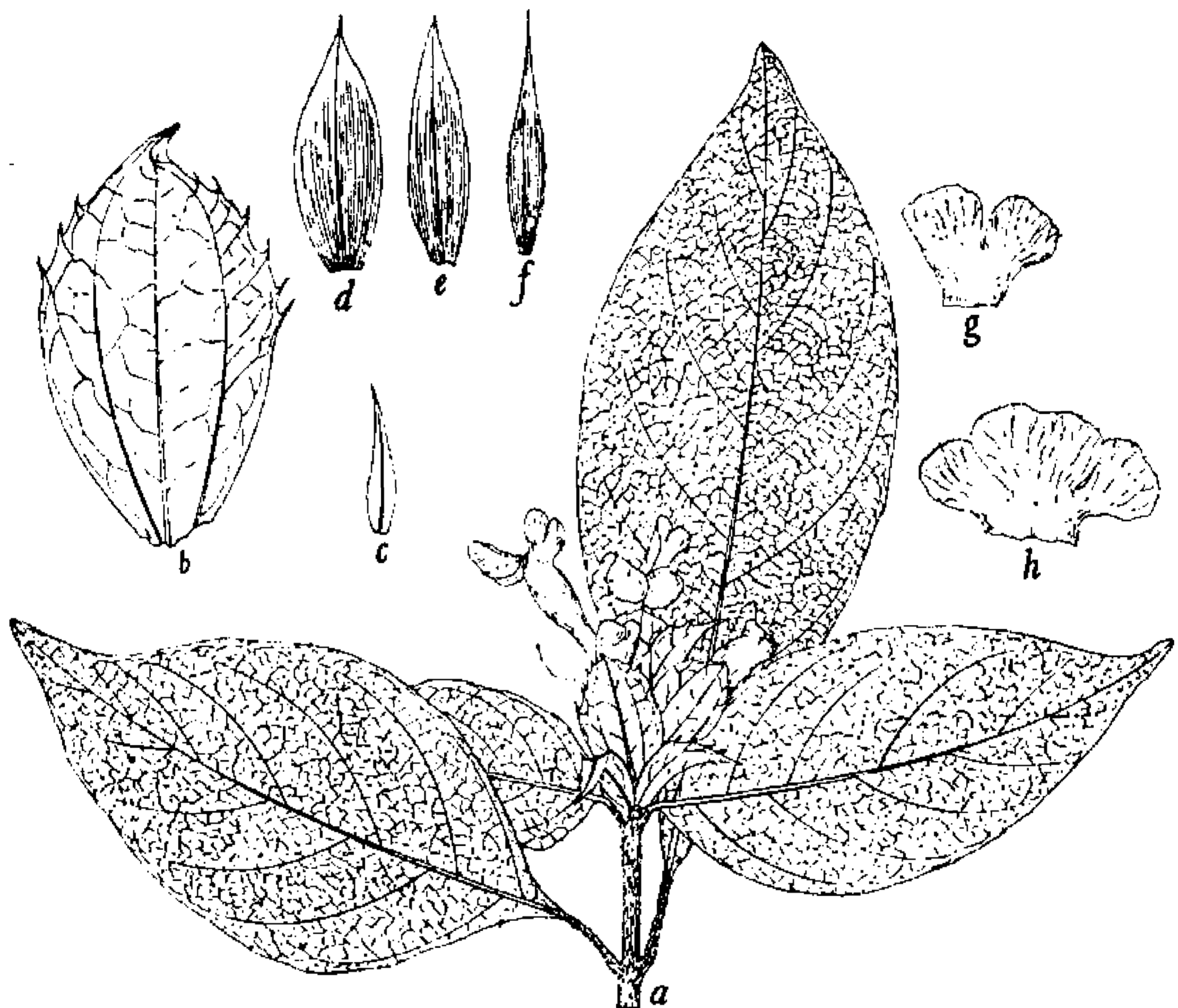


FIGURE 258.—*Aphelandra quadrifaria* Leonard (Grant 9811): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, posterior calyx segment; *e*, one of the anterior segments; *f*, one of the lateral segments; *g*, upper lip of the corolla; *h*, lower lip. (*a*, Natural size; *b*–*f*, about 3 times natural size; *g*, *h*, about twice natural size.)

the anthers glabrous except the arachnoid cohering tips, the filaments sparingly pilose; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 2045431, collected in subtropical forest in the San Antonio Valley, 15 km. southeast of Gutiérrez and 60 km. south of Bogotá, Cordillera Oriental, Department of Cundinamarca, Colombia, 1,575 meters altitude, August 2, 1944, by Martin L. Grant (No. 9811). Isotype: US 2144013.

The nearest relative of *Aphelandra quadrifaria* seems to be *A. silvicola*, which it superficially resembles. That species has variegated

leaves and smaller bracts, these rather densely and softly appressed-pubescent and with fewer teeth on their margins. The specific epithet alludes to the 4-ranked bracts of the spikes.

Kalbreyer's No. 1849, collected in forest shade on the Río Verde, Department of Antioquia, 4,500–5,000 feet altitude, June 27, 1880, is also of this species. The following notes are on the Kalbreyer sheet: "4–12 inch stem, repent, lf. glossy green, thin; fl. bright yellow with purple veinlets."

16b. *Aphelandra fosbergii* Leonard, sp. nov. (Page 158.) FIGURE 259

Herba, caulibus subteretibus, ascendentibus, nodis infimis radicantibus, hirsutis, pilis ascendentibus vel appressis, subbrunneis; lamina foliorum oblongo-elliptica, apice breviter acuminata (apice ipso subacuto), basi angustata in petiolum decurrens, aliquanto firma, integra vel undulata, utrinque hirsuta, pilis subappressis vel as-

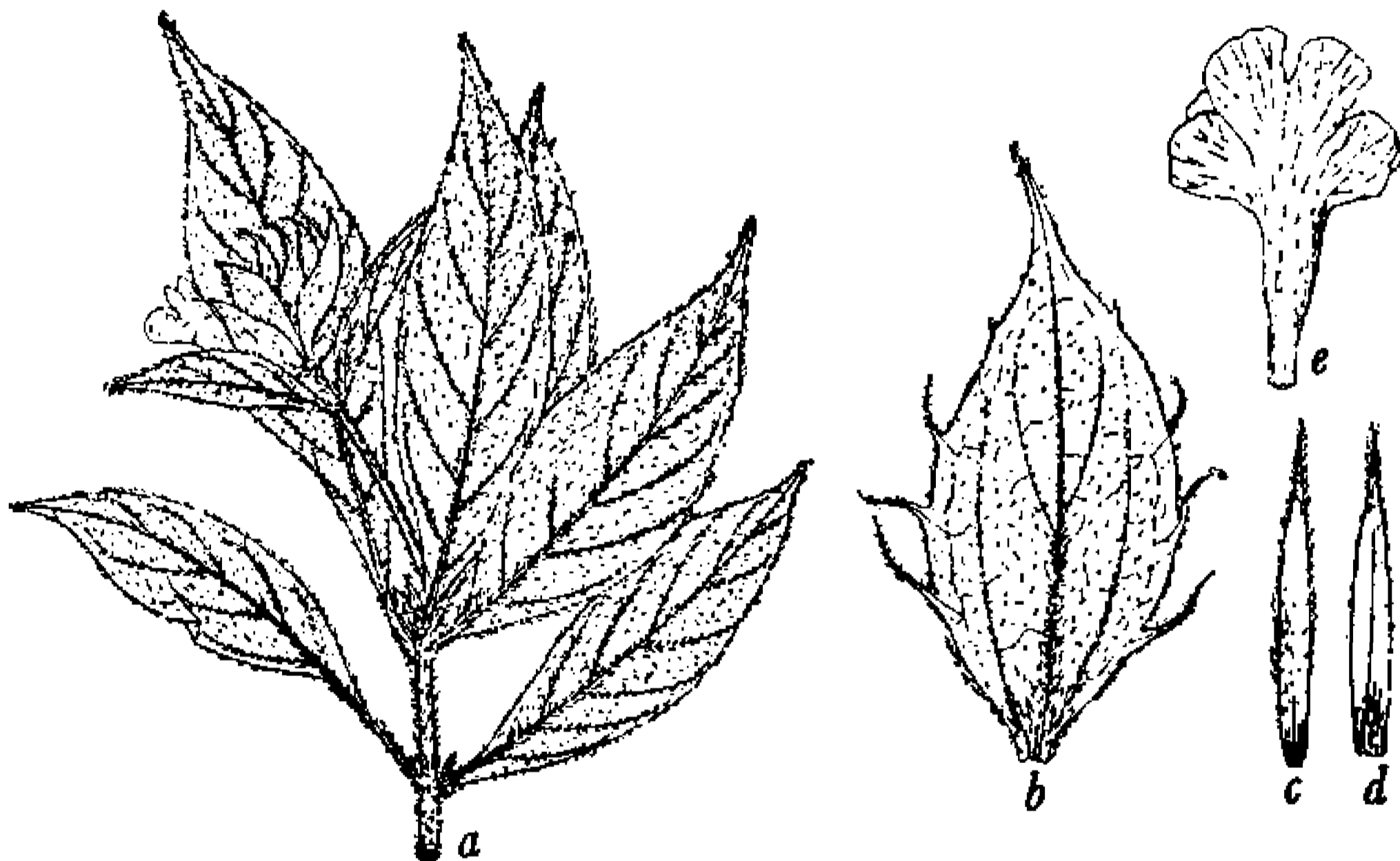


FIGURE 259.—*Aphelandra fosbergii* Leonard (Grant & Fosberg 9319): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, calyx segment; *e*, upper portion of corolla. (*a*, Half natural size; *b*–*d*, twice natural size; *e*, slightly over natural size.)

pendentibus, subbrunneis, subtus costa et venis aliquanto prominentibus, supra obscuris; petioli pilosi; spica terminalis solitaria, brevis, rhache dense subbrunneo-pilosa; bracteae ovatae, herbaceae, acuminatae, intus glabrae vel basi parce hirsutae, extus hirsutae, pilis praecipue in costa et venis positae, ciliatae; bracteolae anguste lanceolatae, striato-nervatae, intus glabrae, extus hirsutae, pilis ascendentibus; calycis segmenta anguste lanceolata, sursum hirsuta et ciliata, deorsum glabra; corolla rosea, parce et minute pubescens, tubo anguste hypocrateriformi, labiis subaequalibus, ascendentibus, labio superiore obcordato, labio inferiore trilobato, lobis suborbicularibus, rotundatis; stamina inclusa; ovarium glabrum.

Herbs up to 30 cm. high; stems subterete, ascending, rooting at the lower nodes, hirsute, the hairs ascending or spreading, light brown, up to 1.5 mm. long; leaf blades oblong-elliptic, up to 6.5 cm. long and 2 cm. wide, short-acuminate (the tip itself subacute), narrowed at base and decurrent on the petiole, moderately firm, entire or undulate, both surfaces hirsute, the hairs up to 1.25 mm. long, ascending or subappressed, light brownish, the costa and lateral veins (about 6 pairs) more or less prominent beneath (hidden somewhat by the pubescence), obscure above; petioles about 0.5 cm. long, pilose, the hairs similar to those of the stem; spikes terminal, solitary, about 1.5 cm. long and broad, the rachis densely brownish pilose; bracts ovate, herbaceous, 2 cm. long and 16 mm. wide (at least the lowermost pair), acuminate, the margins ciliate (hairs up to 1 mm. long) and bearing about 4 slender ascending teeth up to (the lowermost) 4 mm. long, the upper or inner surface glabrous or sparingly hirsute at base, the lower or outer surface hirsute, the hairs mostly borne in the costal region but diminishing toward the margins; bractlets narrowly lanceolate, 12.5 mm. long, 0.75 mm. wide, striate-nerved, the inner surface glabrous, the outer hirsute, the hairs up to 1.5 mm. long, ascending; calyx 12 mm. long, the segments narrowly lanceolate, the upper half hirsute and ciliate, the lower half glabrous, in other respects resembling the bractlets; corolla rose, sparingly and minutely pubescent, 22 mm. long, narrowly hypocrateriform, the lower part of the tube about 1 mm. broad, the mouth 2.5 mm. broad, the lips subequal, about 8 mm. long, ascending, the upper obcordate, about 6 mm. wide, the lower 3-lobed, the lobes suborbicular, about 3 mm. long, the middle one 4 mm. wide, the lateral 3 mm. wide, all rounded; stamens reaching the mouth of the corolla tube, the anthers about 1.5 mm. long; ovary glabrous, tipped by a few straight erect white hairs about 0.38 mm. long; capsules not seen.

Type in the U. S. National Herbarium, No. 2059099, collected in temperate forest at San Isidro, 8 km. south of Gachala, Cordillera Oriental, Department of Cundinamarca, Colombia, 2,450 meters altitude, May 26, 1944, by Martin L. Grant and F. R. Fosberg (No. 9319).

Aphelandra fosbergii is nearest *A. silvicola*. In that species, however, the leaf blades have colored veins and the teeth of the bracts are all low instead of sharp and slender.

20a. *Aphelandra phalacra* Leonard, sp. nov. (Page 166.)

FIGURE 260

Herba, caulibus ascendentibus, subquadrangularibus; folia reflexa, lamina foliorum oblonga, breviter acuminata (apice ipso obtuso vel rotundato), basi angustata, glabra; spica terminalis sessilis; rhachis glabra; bracteae erectae vel ascendentes, lanceolatae, glabrae vel minute et inconspicue papilloso-puberulae, costa et nervis lateralibus

conspicuis; bracteolae paucae, subulatae, carinatae, glabrae; calycis segmenta lanceolata, acuminata, apice tenuia, glabra, striato-nervata, costa prominente; corolla pubescens, pilis plus minusve patentibus; stamina vix exserta; ovarium glabrum vel apice minute hirsutum.

Herbs; stems ascending, subquadrangular, glabrous; leaves reflexed, the blades oblong, up to 8 cm. long and 4 cm. wide, short-acuminate, (the tip itself obtuse or rounded), narrowed at base, glabrous; petioles up to 2 cm. long, glabrous; spike solitary, terminal, sessile, 5 cm.

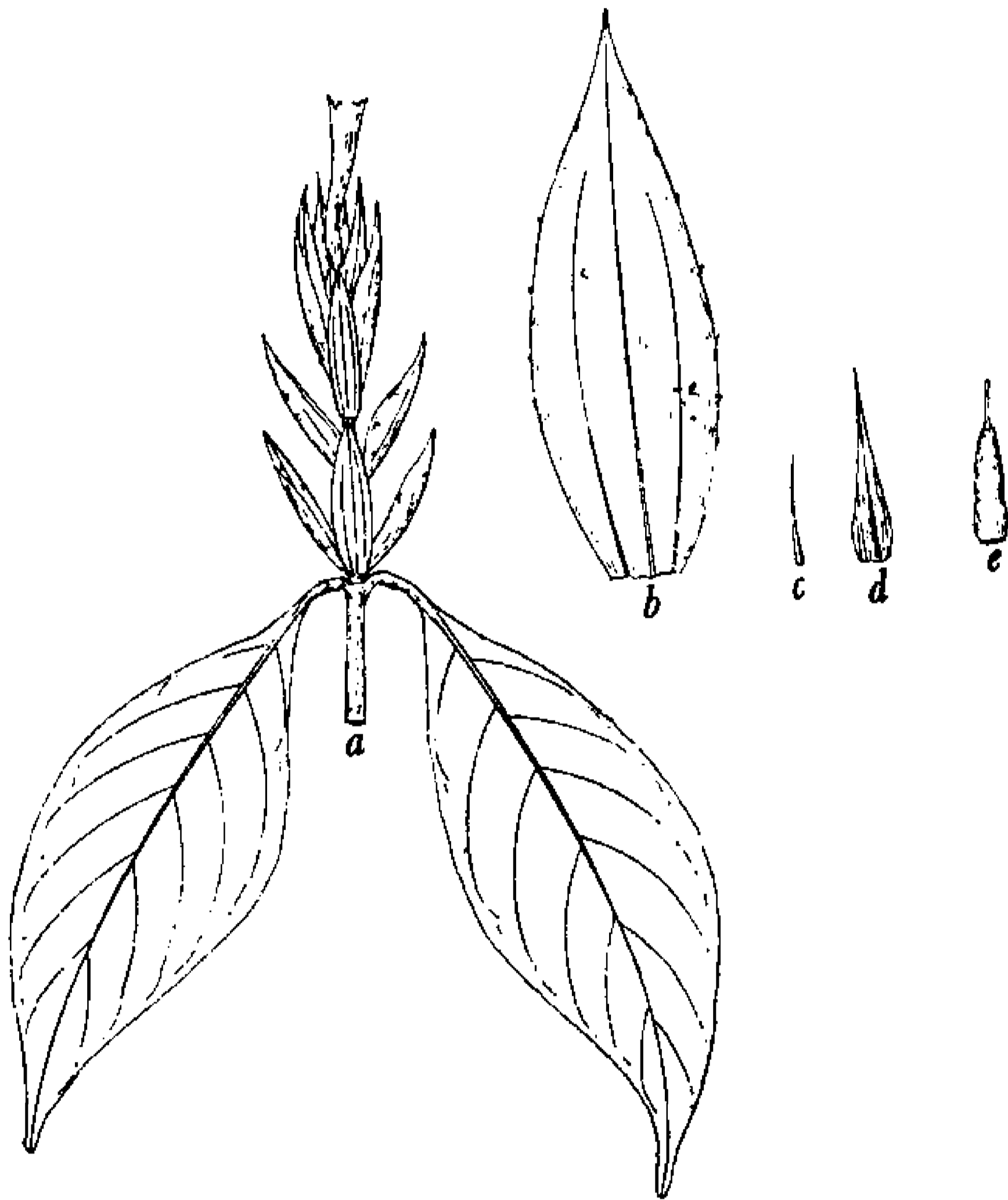


FIGURE 260.—*Aphelandra phalacra* Leonard (*Jervise* s. n.): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, calyx segment; *e*, ovary. (*a*, Half natural size, *b-d*, twice natural size; *e*, 3 times natural size.)

long and 10 mm. wide (if bracts are not spreading), the rachis glabrous; bracts lanceolate, 2 cm. long, 6.25 mm. wide near the middle, 3 mm. at base, minutely dentate, glabrous or very minutely and inconspicuously papillose, puberulous, the costa and a pair of lateral nerves prominent, several additional pairs less so; bractlets subulate, 4 mm. long, 0.25 mm. wide at base, carinate, the costa prominent, glabrous; calyx segments lanceolate, 7 mm. long, 1.25 mm. wide at base, narrowed to a fine slender tip, glabrous, the costa prominent,

striate-nerved; corolla pubescent, the hairs up to 0.2 mm. long, more or less spreading, the tube about 2 mm. broad at base, 5 mm. broad at mouth; stamens slightly exserted, glabrous at least above; ovary glabrous; capsules not seen.

Type in the Kew Herbarium, collected in Antioquia, Colombia, by W. Jervise.

Aphelandra phalacra is very closely related to *A. lonchochlamys* and may be merely a form of that species. It differs in being strictly glabrous in all parts except for a very minute and inconspicuous papillar puberulence sometimes present on the bracts. The leaf blades are relatively shorter and broader.

The specific epithet is from the Greek *φαλακρός*, meaning smooth.

The flowers are too poorly preserved to describe the lips; their color is not apparent in the dried material.

27. *Aphelandra lamprantha* Leonard. (Page 178.)

META: Dense humid forest of Plaza Bonita, Sierra de la Macarena, 400 meters altitude, November 14, 1949, *Philipson, Idrobo & Fernandez* 1419 (BM).

28. *Aphelandra lasia* Leonard. (Page 181.)

CUNDINAMARCA: Woods east of Guaduas, 1,100 meters altitude, June 1952, *Uribe-Uribe* 2337 (US).

30. *Aphelandra deppeana* Schlecht. & Cham. (Page 185.)

META: Woods along the Río Casanare, at Esmeralda, *Cuatrecasas* 3810 (Col).

VAUPÉS: Calamar, on the Río Unilla, *Cuatrecasas* 7339 (Col).

34a. *Aphelandra diachyla* Leonard, sp. nov. (Page 191.) FIGURE 261

Herba, caulibus glabris subquadrangularibus; lamina foliorum oblanceolata, breviter acuminata (apice ipso rotundato), basi angustata, costa et venis aliquanto obscuris, cystolithis obscuris vel nullis; petioli glabri; racemi terminales vel subterminales, laxi, pedunculo longo, glabro, rhachibus parce et minute hirtellis, floribus sessilibus; bractee oblanceolatae, acutae (apice ipso obtuso), glabrae, venis obscuris; bracteolae anguste triangulares, parvae, glabrae, venis obscuris; calycis segmenta lanceolata, apice acuta, striato-nervata, apice minute et parce hirtella et ciliolata; corolla glabra, tubo angusto, lobis obovatis, apice obtusis; stamina inclusa; ovarium glabrum.

Herbs; stems glabrous, subquadrangular; leaf blades oblanceolate, up to 21 cm. long and 5.8 cm. wide, short-acuminate (the tip itself 1 mm. wide and rounded), gradually narrowed from above middle to base, moderately firm, entire, both sides glabrous, the costa and veins (8 to 10 pairs) scarcely prominent, cystoliths obscure or lacking; petioles up to 15 mm. long and 1.5 mm. thick, glabrous; panicles terminal or subterminal, about 12 cm. long and 6 cm. broad, the internode between the 2 pairs of branches 3.5 cm. long, the peduncle 8 cm. long, 1.75 mm. thick, the flowers solitary and sessile in the axils of

the bracts, the lower internodes of the flower-bearing branches 5 to 19 mm. long, the peduncles glabrous, the rachises sparingly and minutely pubescent, the hairs up to 0.06 mm. long, ascending; bracts oblanceolate, up to 14 mm. long and 4 mm. wide, narrowed from above the middle to a small obtuse tip, glabrous, the veins obscure; bractlets narrowly triangular, 2.5 mm. long, 0.75 mm. wide at base, gradually narrowed to tip, ciliate, the hairs 0.06 mm. long,



FIGURE 261.—*Aphelandra diachyla* Leonard (*Triana* s. n.): *a*, Node and leaf; *b*, inflorescence; *c*, corolla; *d*, bract; *e*, bractlet; *f*, calyx segment. (*a*, Half natural size; *b*, two-thirds natural size; *c*, twice natural size; *d*, $2\frac{1}{2}$ times natural size; *e*, 7 times natural size; *f*, 5 times natural size.)

the flat surfaces glabrous, the costa and a pair of nerves conspicuous through transmitted light; calyx 5 mm. long, the segments lanceolate, 1.25 mm. wide near base, gradually narrowed to an acute tip, striate-nerved, minutely and sparingly hirtellous and ciliate at tip, otherwise glabrous, conspicuously striate-nerved through transmitted light; corollas glabrous, up to 2 cm. long (from base of tube to tip of corolla lobes), the tube 11.5 mm. long, 1.5 mm. broad at base, slightly en-

larged over the ovary, narrowed to 0.75 mm. near tip, the mouth 2.5 mm. broad, the corolla lobes obovate, 7 mm. long and 3 mm. wide, obtuse at tip, delicately nerved; stamens included, 2 mm. long, the filaments slender, 0.5 mm. long; ovary glabrous; capsules not seen.

Type in the Kew Herbarium, collected at San Pablo, Intendencia of Chocó, Colombia, 100 meters altitude, March 1853, by J. Triana. Isotype: Col.

On page 157 above, I referred this collection to *Aphelandra botanodes*, but it differs in the more open inflorescence and in the entire, more distant bracts. The specific epithet is from the Greek διάχυλος, meaning succulent.

36. *Aphelandra lasiophylla*. (Page 193.)

The type can be more definitely identified by the number "4074-10," which appears on the label. In the typescript of the Triana catalog this appears (by error?) as "4072-10."

36a. *Aphelandra pinarotricha* Leonard, sp. nov. (Page 193.) FIGURE 262

Suffrutex, caulibus dense pilosis, pilis sordidis, patulis vel ascendentibus; lamina foliorum oblonga, breviter acuminata (apice ipso subobtusum), basi angustata, firma, integra, pilosa, pilis sordidis, patulis vel ascendentibus, praecipue in costa et venis positis; petioli dense pilosi; spicae 1 vel 3, terminales et laterales, pedunculis longis, dense pilosis, pilis sordidis, rhache aliquanto pilosa, excavata; bractae lanceolatae, subacutae, deorsum et apice pilosae, pilis ascendentibus, obscure nervatae; bracteolae lanceolatae, parce pilosae, ciliatae, graciliter nervatae; calycis segmenta aequalia, acuta, glabra vel apice parce et graciliter ciliolata, striato-nervata; corolla aurantiaca, deorsum glabra, sursum graciliter pubescens, tubo aliquanto anguste infundibuliformi, labio superiore erecto, ovato, subacuto, labio inferiore erecto vel patulo, 3-lobato, lobis lanceolatis, acutis; stamina exserta, antheris et filamentis glabris; ovarium glabrum.

Shrubs; stems subquadrangular, densely pilose, the hairs sordid, spreading or ascending, up to 2 mm. long; leaf blades oblong, up to 7 cm. long and 2.2 cm. wide, short-acuminate (the tip itself subobtusum), narrowed at base, firm, entire, pilose, the hairs spreading or ascending, sordid, confined chiefly to costa and lateral veins (about 10 pairs), these rather prominent beneath but obscure above; petioles up to 1 cm. long, densely pilose; spikes usually 3, terminal and subterminal, up to 4 cm. long and 2 cm. broad (excluding corollas), the peduncle of the terminal spike about 1 cm. long, those of the lateral spikes 3 to 4 cm. long, all densely and sordidly pilose, the hairs spreading or ascending, the rhachis moderately pilose, furrowed; bracts lanceolate, 16 mm. long, 5 mm. wide, subacute, the lower half pilose with ascending hairs up to 2 mm. long, the upper half becoming glabrous just

below the tip, ciliate, obscurely nerved; bractlets lanceolate, 9 mm. long, 1.5 mm. wide, acute, sparingly pilose dorsally, ciliate, delicately nerved; calyx 8 mm. long, the posterior segment 3 mm. wide, the anterior segments 1.5 mm. wide, the lateral segments 1 mm. wide, all acute, glabrous, finely ciliolate at tip, striate-nerved; corolla orange, the lower part glabrous, the upper part finely pubescent (the hairs mostly up to 0.5 mm. long), 4 cm. long from base of tube to tip of upper lip, the tube narrowly funnelform, 2.5 mm. broad at base,

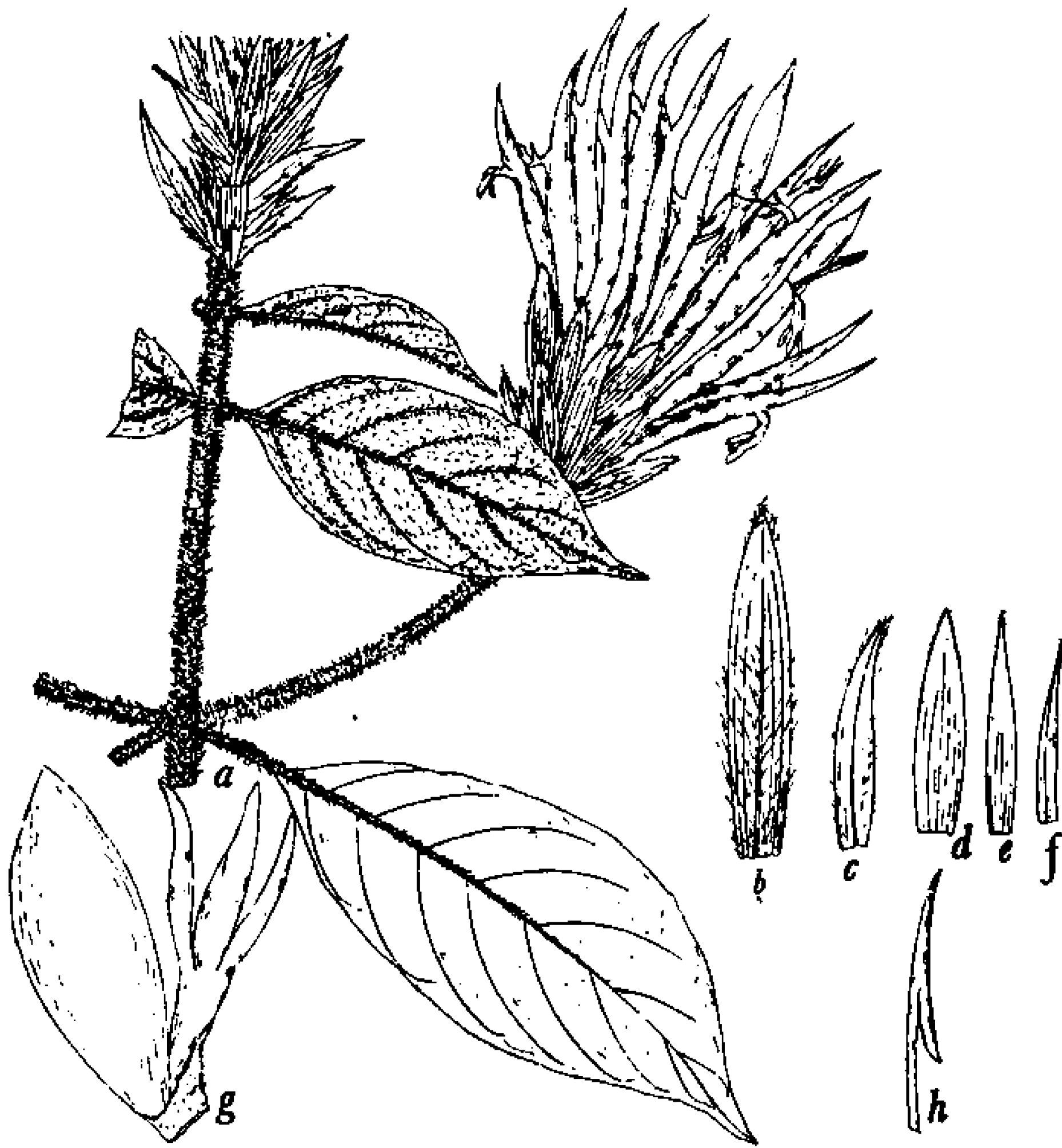


FIGURE 262.—*Aphelandra pinarotricha* Leonard (Grant, Killip & Fosberg 9124): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, posterior calyx segment; *e*, an anterior segment of the calyx; *f*, a lateral segment; *g*, corolla lips; *h*, anther. (*a*, Natural size; *b*-*g*, about twice natural size; *h*, 3 times natural size.)

4 to 5 mm. broad at mouth, the upper lip erect, ovate, 4 mm. wide at base, 6 mm. wide at middle, subacute, the lower lip 17 mm. long, 5 mm. wide at base, erect to spreading, 3-lobed, the middle lobe lanceolate, 12 mm. long, 3.5 mm. wide just below middle, acute, the lateral lobes linear, 10 mm. long, 1.5 mm. wide, acute; stamens exserted 12 mm. beyond the mouth of the corolla, the anthers 4.5 mm. long, 0.75 mm. broad, acute at both ends, glabrous, the filaments glabrous; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 2045424, collected in temperate forest between Sibaté and Fusagasugá, 35 km. southwest of Bogotá, Cordillera Oriental, Department of Cundinamarca, Colombia, 2,650 meters altitude, April 30, 1944, by Martin L. Grant, E. P. Killip, and F. R. Fosberg (No. 9124).

Aphelandra pinarotricha is somewhat like *A. phlogea* from the Department of Magdalena, but that species has a glandular pubescence, and much larger leaves, flowers and bracts. Its stems are glabrous. The specific epithet is from the Greek *πυρρός*, sordid, and *θρίξ*, hair.

37. *Aphelandra conformis* Leonard. (Page 195.)

CUNDINAMARCA: Forest above El Colegio, La Mesa, 6,000 ft. altitude, April 8, 1917, *Mrs. Tracey* 152 (K).

41. *Aphelandra arisema* Leonard. (Page 202.)

The isotype in the Herbario Nacional Colombiano bears the annotation "80. *Lagochilium*, no. 2," which identifies it with the entry in the Triana catalog.

CAUCA: Marshy jungle, Gorgona Island, *Collenette* 630 (K).

43. *Aphelandra cuatrecasasii* Leonard. (Page 205.)

EL VALLE: Quebrada La Brea, near Córdoba, *Core* 1558 (US).

46. *Aphelandra pilosa* Leonard. (Page 211.)

VAUPÉS: Circasia, sandy savannah with quartzite base along the Río Vaupés, "about 800 feet" altitude, November 1951, *Schultes & Cabrera* 19633 (US). Savannah of Yapobodá, along the Río Kuduyarí (tributary to the Río Vaupés), "700-800 ft." altitude, Nov. 18, 1952, *Schultes, Baker & Cabrera* 18455 (US).

49a. *Aphelandra grantii* Leonard, sp. nov. (Page 218.)

FIGURE 263

Frutex vel arbor parva, caulibus subteretibus, sursum pilosis, pilis albidis appressis, deorsum glabratis; lamina foliorum oblongo-ovata vel oblongo-obovata, breviter sed graciliter acuminata, basi cuneata et in petiolum decurrens, aliquanto firma, integra vel leviter undulata, glabra vel parce hirsuta, pilis appressis vel ascendentibus, nitida, subtus costa et venis lateralibus prominentibus, supra obscuris; petioli glabri vel parce hirsuti; spicae plures, terminales, pedunculis ascendentibus, appresso-hirsutis, pilis albidis; rhachis dense albo-floccosa; bracteae ovatae, subacutae, coriaceae, marginibus scariosis, parce ciliatis, costa et nervis lateralibus aliquanto prominentibus; ocelli plures, elliptici, nitidi, brunnei; bracteolae anguste ovatae, acutae, plus minusve falcatae, carinatae, carina dense albo-floccosa, in margine glabrae, ciliatae; calyx glaber vel apice parce puberulus, graciliter striatus, segmento posteriore ovato, subacuto, segmentis lateralibus oblongis, apice truncatis et apiculatis, parce ciliatis, segmentis anterioribus oblongo-ovatis, acutis, parce ciliatis; corolla cinnabarina, papilloso-puberula, base glabra, tubo hypocrateriformi, leviter curvato et ventricoso, labio superiore erecto, bilabiato, lobis

anguste triangularibus, acuminatis, labio inferiore trilobato, lobo leviter curvato et ventricoso, labio superiore erecto, bilabiato, lobis lateralibus parvis, triangularibus, cum labio superiore basi connatis; stamina vix exserta, antheris glabris vel apice arachnoideis, filamentis sursum glabris, deorsum hirtellis; ovarium glabrum.

Shrubs up to 5 meters high; stems subterete, pilose, the hairs white, closely appressed, up to 0.5 mm. long, the lower portions of the stems glabrate; leaf blades oblong-ovate to oblong-obovate, up to 23



FIGURE 263.—*Aphelandra grantii* Leonard (Grant 10363): *a*, Tip of plant; *b*, leaf; *c*, bract; *d*, bractlet; *e*, posterior segment of calyx; *f*, one of the anterior segments of the calyx; *g*, tip of corolla; *h*, portion of corolla tube enlarged to show pubescence. (*a*, *g*, Natural size; *b*, half natural size; *c*–*f*, about 4 times natural size; *h*, about 50 times natural size.)

cm. long and 6.5 cm. wide, somewhat abruptly but slenderly acuminate, cuneate at base and decurrent on the petiole, moderately firm, entire or slightly undulate, glabrous or very sparingly hirsute with appressed or ascending hairs up to 0.5 mm. long, the costa and main lateral nerves (about 12 pairs) prominent beneath, obscure above, the upper surface more or less nitid; petiole (unwinged portion) up to 3 cm. long, glabrous or sparingly hirsute, the hairs similar to those of the blades; spikes several (5 or 7), borne in a terminal paniculate

inflorescence, up to 5 cm. long and 11 mm. broad, the peduncles ascending, about 2 cm. long, appressed-hirsute, the hairs about 0.5 mm. long, whitish, the lowermost nodes of the inflorescence producing leaves similar to those of the stem but somewhat smaller, the peduncles bearing at their tips a pair of lanceolate acuminate appressed-hirsute bracts 5.5 mm. long and 2 mm. wide, and sometimes just below these a pair of small narrow leaves about 12 mm. long and 2 mm. wide; rachis densely white-floccose; bracts subtending the flowers ovate, 6 mm. long and 4 mm. wide just below the middle, subacute, coriaceous, glabrous or essentially so, the margins scarious and sparingly ciliate, the costa and 2 pairs of lateral nerves rather prominent; ocelli usually 5, elliptic, up to 0.32 mm. long and 0.16 mm. wide, nitid, brown; bractlets narrowly ovate, 5 mm. long, 1 mm. wide, acute, somewhat falcate, carinate, dorsally white-floccose, except the thin nearly glabrous ciliate margins; calyx 6 mm. long, glabrous or sparingly puberulous at tip, the posterior segment ovate, 2.5 mm. wide just below the middle, subacute, essentially glabrous, finely striate, the lateral segments oblong, 1.5 mm. wide, truncate and apiculate, finely striate, glabrous, inconspicuously ciliate at tip, finely striate, the anterior segments oblong-ovate, 2 mm. wide, acute, sparingly ciliate at tip, finely striate; corolla orange-scarlet, 4.5 cm. long, papillose-puberulous except base and the subscarious margins of the upper lip, the tube 4.5 mm. broad at base, narrowed at 8 mm. above base to 1.5 mm., thence enlarged to 8 mm. at throat, the tube slightly curved and ventricose, the upper lip erect, 14 mm. long, 2-lobed, the lobes narrowly triangular, 4.5 mm. long, 1.5 mm. wide at base, acuminate, the lower lip usually recurved or coiled, lanceolate, about 15 mm. long and 5 mm. wide above base, slenderly acuminate, the lateral lobes adnate to the upper lip, the free portions triangular, about 0.5 mm. long and broad; stamens exerted 5 mm. beyond the mouth of the corolla tube, the anthers 4 mm. long, 1 mm. wide near base, acute and minutely arachnoid at tip, puberulous dorsally, the filaments hirtellous toward the base, the upper portions glabrous; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 2045433, collected in subtropical forest at Caño de la Muerta, in the Gazaunta Valley, 15 km. northwest of Medina, Department of Cundinamarca, Colombia, 1,950 meters altitude, October 4, 1944, by Martin L. Grant (No. 10363). Isotype: US.

Aphelandra grantii is closely related to *A. parvispica*. Its leaf blades are larger than those of *A. parvispica*, reaching 23 cm. in length and 6.5 cm. in width, whereas those of *A. parvispica* do not exceed 19 cm. in length or 5 cm. in width. The color of the corolla is orange-scarlet, in contrast with the red flowers of *A. parvispica*,

and the stems, especially the upper portions, are noticeably pilose instead of being essentially glabrous. Its spikes are broader and the ocelli are relatively large and conspicuous under a lens; in *A. parvispica* the ocelli are small or even lacking.

51. *Aphelandra barkleyi* Leonard. (Page 223.)

META: Between Acacias and San Martín, 430 meters, July 28, 1946, Uribe-Urbe 1319 (Col).

TOLIMA: "Andes de Mariquita," Quindío, Triana s.n. (K).

55. *Aphelandra trianae* Leonard. (Page 232.)

The holotype bears only the notation "New Granada, Dr. J. Triana"; the data cited on page 232 come from the isotype specimen in the Herbario Nacional Colombiano.

57. *Aphelandra macrophylla* Leonard. (Page 237)

Aphelandra tetragona Nees β *grandis* Nees (DC. Prodr. 11: 295. 1847), based on Moritz 1272 from Mérida, Venezuela, is a synonym of this species. A specimen in the Kew Herbarium, collected by Moritz (no data) is probably his No. 1272.

NORTE DE SANTANDER: Ocaña, Schlim 258 (K).

WITHOUT LOCALITY: Triana (K).

57a. *Aphelandra coccinantha* Leonard, sp. nov. (Page 237.) FIGURE 264

Frutex, caulibus subquadrangularibus, puberulis, pilis subbrunneis, appressis; lamina foliorum oblongo-elliptica, breviter acuminata, basi acuta, firma, integra vel undulata, supra parce hirsuta, subtus aequaliter et aliquanto dense hirsuta, pilis ascendentibus vel appressis, subbrunneis, costa et venis lateralibus et venulis crasse reticulatis prominentibus, supra obscuris; petioli aliquanto longi et crassi, hirtelli, pilis appressis; spicae multae, ternae, paniculam magnam terminalem ferentes, pedunculis pubescentibus, pilis appressis vel subtomentosis, rhache floccosa, pilis brunneis; bracteae ovatae, glabrae, basi et marginibus tomentosae, ciliatae; ocelli terni, prominentes; bracteolae minutae, lineari-lanceolatae, glabrae, subhyalinae; calycis segmenta striato-nervata, glabra vel apice parce ciliolata, segmentum posterius ovatum, subobtusum, segmenta lateralia et anteriora lanceolata, subacuta; corolla coccinea, papilloso-puberula, basi glabra excepta, tubo anguste hypocrateriformi, leviter curvato et subventricosa, labio superiore erecto, ovato, bilobato, lobis triangularibus, acutis, labio inferiore trilobato, lobo medio lanceolato, recurvato, graciliter acuminato, intus puberulo, lobis lateralibus parvis, triangularibus, subobtusis, cum labio superiore basi connatis; stamina vix exserta, antheris utrinque acutis, glabris vel apice arachnoideis, filamentis basi hirtellis, sursum glabris; ovarium glabrum.

Shrubs up to 3 meters high; stems subquadrangular, puberulous, the hairs upwardly appressed, up to 0.32 mm. long, brownish; leaf blades

oblong-elliptic, up to 22 cm. long and 10.5 cm. wide, short-acuminate, acute at base, moderately firm, entire or undulate, the upper surface sparingly hirsute, the hairs 0.5 mm. long, the lower surface rather densely and evenly hirsute, the hairs ascending or appressed, about 0.5 mm. long, light brownish, the costa, lateral veins (18 to 20 pairs)

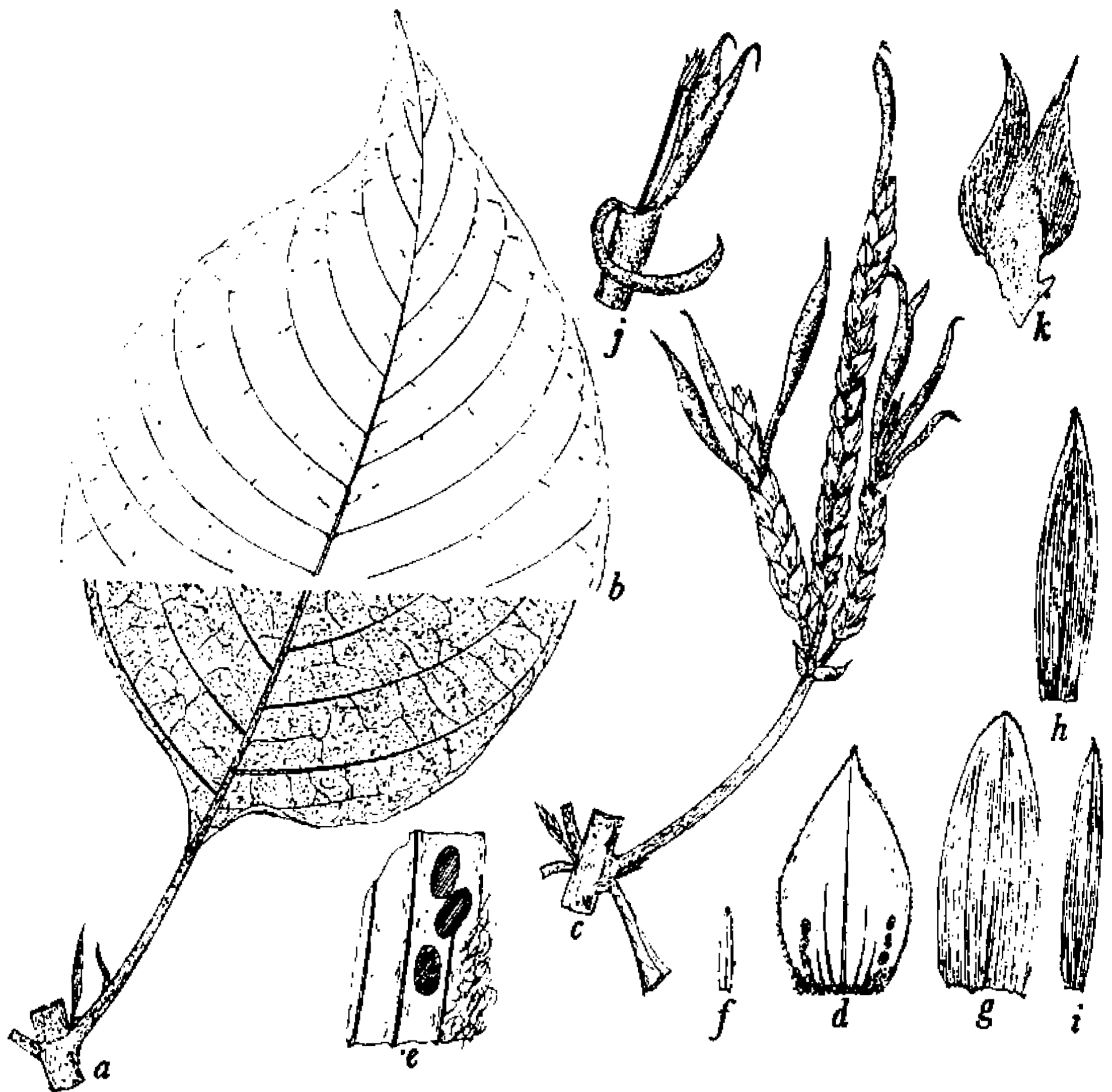


FIGURE 264.—*Aphelandra coccinantha* Leonard (Fosberg 19131): *a*, Node with basal portion of leaf blade; *b*, tip of leaf blade; *c*, lowermost node of inflorescence showing a branch with 3 spikes; *d*, bract; *e*, ocelli; *f*, bractlet; *g*, posterior calyx segment; *h*, one of a pair of anterior calyx segments; *i*, one of a pair of lateral calyx segments; *j*, tip of corolla; *k*, upper lip of corolla spread to show detail. (*a-c*, Half natural size; *d, f-i*, 3 times natural size; *e*, 10 times natural size; *j*, about $1\frac{1}{2}$ times natural size; *k*, twice natural size.)

and coarsely reticulated veinlets prominent beneath, obscure above; petioles up to 4 mm. long and 2 or 3 mm. thick, the pubescence that of the stems; spikes numerous, in 3's, forming a terminal panicle about 25 cm. long and 12 cm. broad, the peduncles up to 4 cm. long, the secondary peduncles 8 to 10 mm. long, all closely appressed-pubescent

or subtomentose, the rachis floccose, the hairs brown; bracts reddish-green (Fosberg), ovate, 7 mm. long, 4 mm. wide, subacute, coriaceous, tomentose, the margins tomentose-ciliate, the glands in groups of three, elliptic, brown, well-defined, 0.46 mm. long, 0.16 mm. wide; bractlets linear-lanceolate, 2.5 mm. long and 0.25 mm. wide, subobtusate, glabrous, subhyaline, the posterior calyx segment ovate, 7 mm. long, 3 mm. wide near base, ciliolate toward tip, otherwise glabrous, striate-nerved, subobtusate, lateral segments lanceolate, 1 mm. wide, the anterior segments lanceolate and 1.5 mm. wide, subacute, in other respects resembling the posterior segment; corolla scarlet, 4 to 5 cm. long, papillose-puberulent except the glabrous base, the corolla tube 1.5 mm. broad at base, slightly enlarging over the ovary, 8 mm. broad at mouth, the lips 12 mm. long, the upper lip erect with acuminate recurved tips, ovate, 7 mm. wide near base, the terminal lobes triangular, finely pilose on inner surface, 5 mm. long, 2.5 mm. wide at base, the middle lobe of the lower lip recurved, lanceolate, 4.5 mm. wide at middle, slenderly acuminate, puberulous on the inner surface, the lateral segments small, subtriangular, subobtusate, adnate to the lowermost part of the upper lip; stamens nearly reaching the tip of the upper lip, the anthers 4.5 mm. long, 1 mm. broad, acute at both ends, arachnoid dorsally, otherwise glabrous, the filaments hirtellous at base, glabrous toward tip; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 2045405, collected on forested hill east of the Río Valegrá and south of Quebrada Valegrá, in the Municipio of Chitagá, Department of Norte de Santander, Colombia, 2,000 meters altitude, November 16, 1942, by F. R. Fosberg (No. 19131).

Aphelandra coccinantha would follow *A. macrophylla* in the key. It differs, however, from that species in its relatively shorter leaf blades, these evenly and rather densely hirsute beneath instead of glabrous or subglabrous. In *A. macrophylla*, furthermore, the panicles are smaller and the spikes are noticeably shorter and thicker, and, lastly, the corollas are orange-red instead of scarlet as in *A. coccinantha*.

The specific epithet is from the Greek κόκκινος, scarlet, and άνθος, flower.

60. *Aphelandra incarnata* Leonard. (Page 243.)

ANTIOQUIA: Dense forests around Savaletas, 200-500 meters altitude, *Lehmann* 7845 (K).

CUNDINAMARCA: San Antonio, 200 meters altitude, June 14, 1948, *Haught* 6243 (US).

60a. *Aphelandra trichota* Leonard, sp. nov. (Page 244.)

FIGURE 265

Suffrutex, caulibus subquadrangularibus, dense hirsutis, pilis patulis vel retrorse subappressis; lamina foliorum oblongo-obovata, apice breviter acuminata (apice ipso subobtusato), basi cuneata, in

petiolum decurrens, aliquanto firma, integra vel undulata, supra parce hirsuta, subtus dense hirsuta, pilis patulis vel ascendentibus, costa et venis prominentibus; petioli breves, dense hirsuti; spicae 1 vel 3, terminales, sessiles vel subsessiles, magnae et longae, rhache glabra vel puberula; bracteae obovatae, apice obtusae et apiculatae, subchartaceae, glabrae, striato-nervatae; bracteolae lanceolatae, basi subcarinatae, apice acutae, pilosae, pilis appressis, striato-nervatae; calycis segmenta glabra vel apice parce puberula et ciliata, striato-

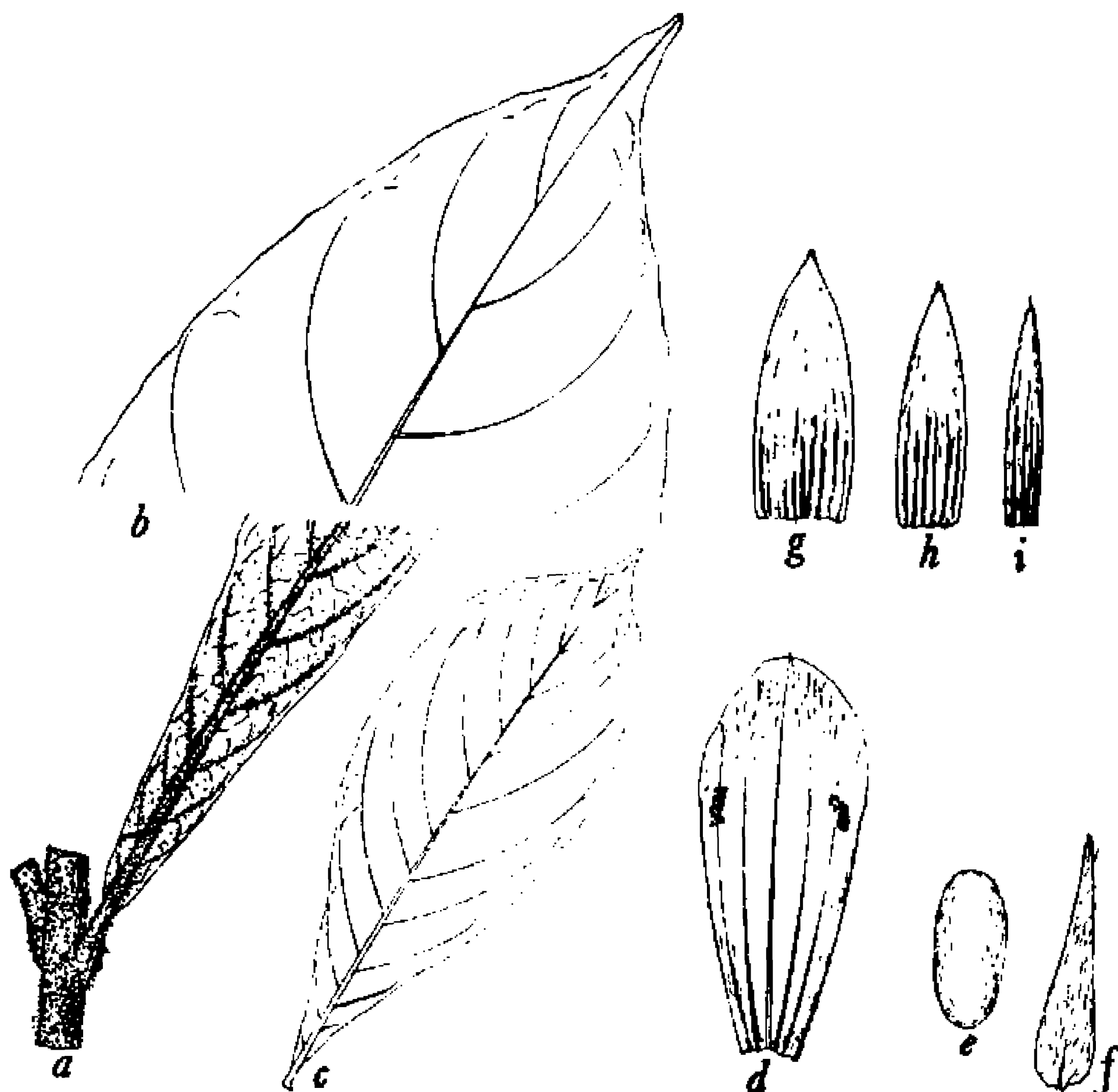


FIGURE 265.—*Aphelandra trichota* Leonard (Fosberg & Fassett 21809): *a*, Node with basal portion of leaf; *b*, tip of leaf blade; *c*, leaf, reduced to show shape; *d*, bract; *e*, ocellus; *f*, bractlet; *g*, posterior calyx segment; *h*, an anterior segment; *i*, a lateral segment. (*a*, *b*, Half natural size; *c*, about $\frac{1}{6}$ natural size; *d*, natural size; *e*, about 40 times natural size; *f*–*i*, twice natural size.)

nervata, segmentum superioris ovatum, subobtusum, segmenta inferiora lanceolata; corolla ignota; capsulae obtusae, glabrae, minute punctatae, nitidae; retinacula linearia, apice rotundata et cucullata; semina brunnea, obovata, glabra vel apice minute puberula.

Shrubs up to 2 meters tall; stems subquadrangular, densely hirsute, the hairs spreading or retrorsely subappressed, up to 1.5 mm. long; leaf blades oblong-obovate, up to 36 cm. long and 12 cm. wide, short-acuminate at tip (the tip itself subobtuse), cuneate at base and

decurrent on the petiole, rather firm, entire or undulate, the upper surface sparingly hirsute, the lower rather densely so, the hairs spreading or ascending, up to 1.5 mm. long, the costa and lateral veins (about 16 pairs) prominent on the lower surface, obscure on the upper; petioles (unwinged portion) stout, 5 to 10 mm. long, densely hirsute; spikes terminal, solitary or in 3's, sessile or subsessile, up to 45 cm. long and 2.5 cm. broad, the rachis glabrous to puberulous with subappressed hairs up to 0.28 mm. long; bracts obovate, up to 30 cm. long and 13 mm. wide between middle and tip, obtuse and minutely apiculate, chartaceous, orange-red (Fosberg & Fassett), glabrous, striate-nerved, the nerves becoming reticulate toward margin; ocelli numerous, minute (the larger about 0.32 mm. long and 0.25 mm. wide), confined in an irregular oval area about 3 mm. long and 1.5 mm. wide; bractlets lanceolate, subcarinate, 1 cm. long, 3 mm. wide near base, thence gradually narrowed to an acute tip, appressed-pilose, striate-nerved; calyx 1 cm. long, the posterior segment ovate, 5 mm. wide near base, subobtuse, the anterior segments lanceolate, 3 mm. near base, acute, the lateral segments lanceolate, 2.5 mm. wide near base, acute and apiculate, all glabrous or sparingly puberulous and ciliolate, striate-nerved; corollas not seen; capsules 13 mm. long, 6 mm. broad, about 4 mm. thick, obtuse and minutely punctate, glabrous, nitid; retinacula linear, 3.5 mm. long, rounded and cucullate at tip; seeds brown, obovate, 4.5 mm. long, 4 mm. wide, 1.75 mm. thick, glabrous or the upper margin rather minutely puberulous.

Type in the U. S. National Herbarium, No. 2045416, collected in thick forest on steep slope at Jordán, on the north side of the Cuchillo de Los Micos, 20 km. north-northwest of Velez, 8 km. south-southeast of Landazuri, Department of Santander, Colombia, 1,100 meters altitude, April 17, 18, 1944, by F. R. Fosberg and N. C. Fassett (No. 21809). Isotype: US 2144298.

Aphelandra trichota can be recognized by its densely hirsute stems, large leaves, hirsute on the lower surface, and large spikes. The specific epithet is from the Greek *τραχωτός*, meaning beset with hairs.

61. *Aphelandra sericantha* Leonard. (Page 246.)

The type specimen can be identified a little more definitely by the number "4074-1" appearing on the label; in the Triana catalog, this appears as "4072-1," perhaps by error.

62. *Aphelandra hartwegiana* Nees. (Page 248.)

DEPARTMENT (?): Playa, *Lehmann* 9047 (K).

66. *Aphelandra sericophylla* Leonard. (Page 255.)

The type can be identified a little more accurately by the number appearing on the label, namely "4074-5"; in the Triana catalog this appears (by error?) as "4072-5."

CUNDINAMARCA: Hacienda Cucharo, between Tocaima and Pubenza, 1,000 meters altitude, April 14, 1952, *Uribe-Uribe* 2308 (US).

68. *Aphelandra crenata* Leonard. (Page 261.)

ANTIOQUIA: Urabá, 100 meters altitude, January 17, 1947, *Uribe-Uribe* 1502 (Col).

69. *Aphelandra glabrata* Willd. ex Nees. (Page 262.)

TOLIMA: Along stream east of Chaparral, about 38 km. on road to Coyaima, Cordillera Central, *S. Galen Smith* 1314 (US).

70a. *Aphelandra atecmarta* Leonard, sp. nov. (Page 265.)

FIGURE 266

Suffrutex, caulibus subquadrangularibus, puberulis, pilis appressis, albidis; lamina foliorum oblonga, apice breviter acuminata, basi cuneata, in petiolum decurrens, aliquanto tenuis, integra vel undulata, supra glabra vel costa et venis lateralibus parce et minute hirtellis, subtus aequaliter puberula, pilis appressis, costa et venis aliquanto prominentibus; petioli puberuli, pilis appressis; spicae solitariae, terminales, rhache glabra, pedunculo brevi; bracteae ovatae, acutae, glabrae vel minute ciliolatae, striato-nervatae, areola elliptica opaca pro ocellis substituta; bracteolae falcato-lanceolatae, acutae, costa et apice dense et molliter hirsutae, pilis plus minusve appressis, marginibus glabrae vel parce et minute papillosae; segmenta calycis glabra vel apice pilis paucis praedita, parce et minute papillosa, segmentum superius ovatum, subobtusum, segmenta anteriora lanceolata, acuta, segmenta lateralia lanceolata, subobtusum et apiculata; corolla aurantiaca, papillosa, basi glabra, tubo subcylindrico vel anguste hypocrateriformi, labio superiore erecto, ovato, apice bilobato, lobis anguste triangularibus acuminatis, labio inferiore trilobato, lobo medio ascendente, ovato acuto, lobis lateralibus parvis, triangularibus, subacutis, cum labio superiore basi connatis; stamina vix exserta, glabra, antheris utrinque acutis, apice arachnoideis; ovarium glabrum.

Shrubs up to 2 meters high; stems subquadrangular, puberulous, the hairs closely and upwardly appressed, whitish, up to 0.2 mm. long; leaf blades oblong, up to 28 cm. long and 10 cm. wide, short-acuminate, narrowed from about the middle to a cuneate base and decurrent on the petiole, rather thin, entire or undulate, the upper surface glabrous or the costa sparingly and minutely puberulous, the lower surface evenly hirtellous, the hairs appressed, resembling those of the stem, the costa and lateral veins (about 12 pairs) moderately prominent; petioles (unwinged portion) up to 4 cm. long, the pubescence that of the stem; spikes solitary, terminal, up to 23 cm. long and 1.5 cm. broad, the

rachis glabrous; peduncle 5 mm. long, appressed-puberulous; bracts orange (Grant), ovate, 13 mm. long, 11 mm. wide, acute (the tip itself obtuse), glabrous or minutely ciliolate, striate-nerved, the glandular area dull, oval, about 1.5 mm. long and 1 mm. wide; bractlets falcate-lanceolate, 12–14 mm. long, about 3 mm. wide at middle, acute,

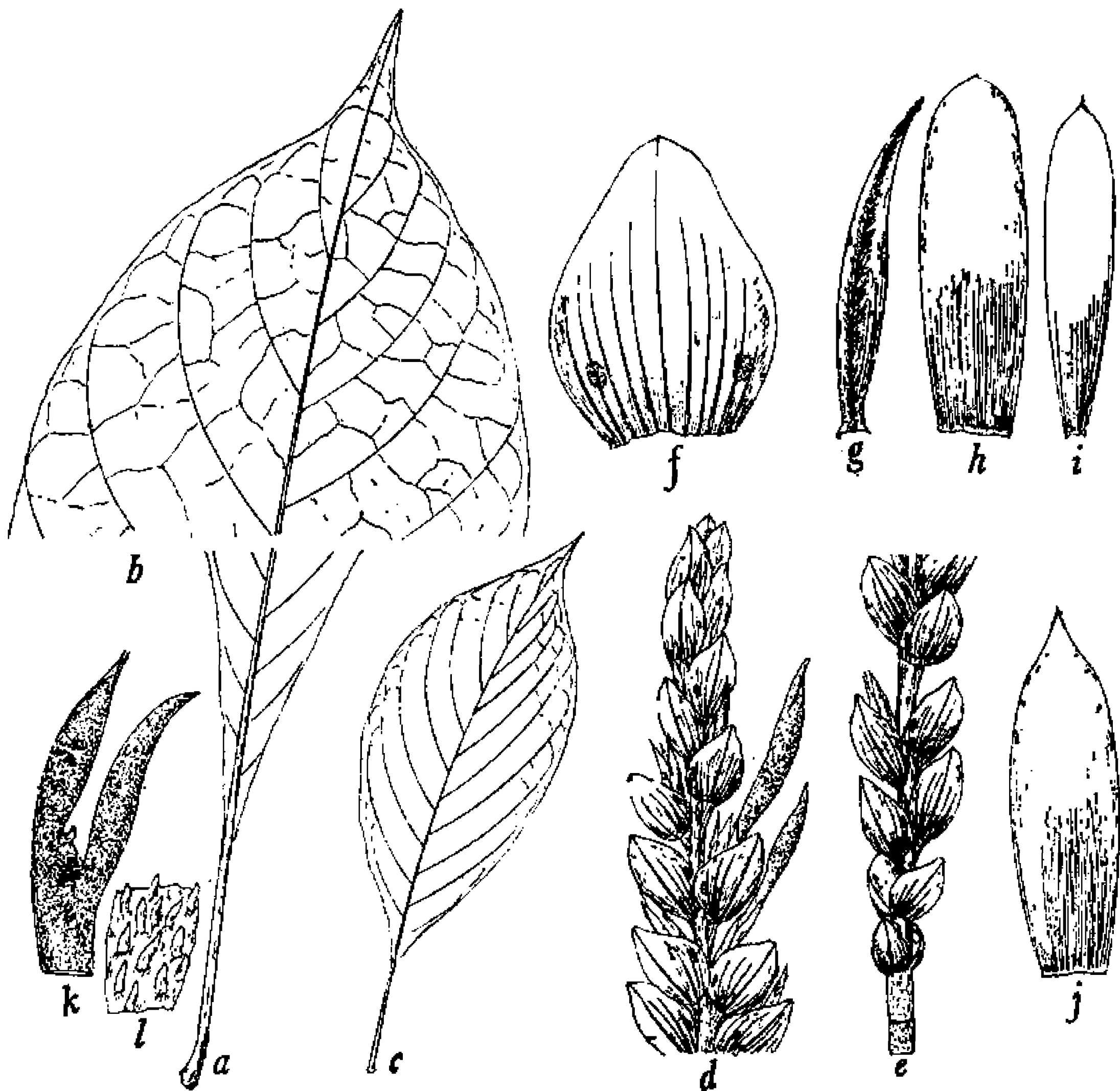


FIGURE 266.—*Aphelandra atecmarta* Leonard (Grant 9167): *a*, Basal part of leaf; *b*, tip of leaf; *c*, leaf reduced to show shape; *d*, tip of spike; *e*, base of spike; *f*, bract; *g*, bractlet; *h*, posterior calyx segment; *i*, a lateral calyx segment; *j*, an anterior calyx segment; *k*, tip of corolla; *l*, portion of corolla enlarged to show pubescence. (*a*, *b*, *d*, *e*, Half natural size; *c*, $\frac{1}{6}$ natural size; *f*–*i*, $2\frac{1}{2}$ times natural size; *k*, natural size; *l*, about 30 times natural size.)

the costal region and tip densely and softly hirsute, the hairs more or less appressed, up to 0.25 mm. long, the marginal region (about 1 mm. wide) glabrous and sparingly and minutely papillose; calyx 1.5 cm. long, the segments glabrous, rather sparingly and minutely papillose dorsally and tipped by a few minute hairs, the posterior segment ovate, about 6 mm. wide, subobtuse, the anterior segments lanceolate, about 4 mm. wide, acute, the lateral segments lanceolate, about 3.5 mm. wide, subobtuse and apiculate; corolla orange, up to 6 cm. long,

papillose except the glabrous basal portion, the tube subcylindrical or rather narrowly infundibuliform, 3 to 4 mm. wide at or near base, 7 mm. wide at mouth, the upper lip erect, ovate, bilobed at tip, the lobes narrowly triangular, 3 mm. long, 1.5 mm. wide at base, acuminate, the middle lobe of lower lip ascending, oval, acute, about 10 mm. wide at middle, the lateral lobes adnate to the upper lip, the free portion triangular, subacute, 1.5 mm. long and 1 mm. wide at point of attachment; stamens reaching the tip of the upper lip, the anthers glabrous except the arachnoid tip, 7 mm. long, 2 mm. broad, acute at both ends, the style glabrous or sparingly pilose at base; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 2045425, collected in temperate forest on the Caracha Range, east of Ibama, 13 km. east of Yacopí, near the Boyacá border, Department of Cundinamarca, 2,250 meters altitude, May 8, 1944, by Martin L. Grant (No. 9167). Isotype: US, 2144299.

Aphelandra atecmarta in the key would follow *A. crenata*, but it differs in having entire instead of crenate leaves. The spikes of *A. crenata*, too, are shorter and more compact.

The specific epithet is from the Greek *ἀτέκμαρος*, meaning without distinctive mark.

73. *Aphelandra lingua-bovis* Leonard. (Page 270.)

CHOCÓ: Fairly common between La Oveja and Quibdó, April 1, 2, 1931, *Archer* 1731 (US).

76. *Aphelandra pharangophila* Leonard. (Page 277.)

EL VALLE: Timba, *von Sneider* 1113 (S).

22. PACHYSTACHYS Nees

1. *Pachystachys riedeliana* Nees. (Page 291.)

EL VALLE: Thickets along the Río Dagua at Cisneros, 300–500 meters altitude, May 5, 1939, *Killip* 35590 (US).

23. PSEUDERANTHEMUM Radlk.

It appears that the citation given above on page 292, i. e., Radlk. in *Sitzungsb. Math. Phys. Kl. Akad. Wiss. München* **13**: 282. 1883, is incorrect, even though it is the one usually given. At this place the name is a *nomen nudum*, for there is only a listing of species and no description. Nor is there any reference to a description of the genus under another name. *Pseuderanthemum* is said to be the *Eranthemum* of authors not Linnaeus, and there is mention of Nees' treatment (in DC. *Prodromus*), but Nees included in *Eranthemum* the species of true *Eranthemum* as well as those that Radlkofer wished to separate as *Pseuderanthemum*, and did not provide any description of the latter as a group. The species were mostly those grouped by Nees and

briefly characterized as "Parvibracteatae," but included also a species (*E. palatiferum*) from another section of the genus. Radlkofer gave a reference also to two papers by T. Anderson, but at these places Anderson merely listed several species as *Eranthemum* and did not give any generic description. Apparently, the first valid publication of *Pseuderanthemum* must be attributed to Lindau, and the citation will be:

Pseuderanthemum Radlkofer ex Lindau, in Engler & Prantl, Nat. Pflanzenfam. IV. 3b: 330. 1895.

No one species seems to have a particular claim as a lectotype, and so the species illustrated by Lindau (*op. cit. fig. 133*), *P. bicolor* Schrank) Radlkofer, may appropriately be chosen.

EMENDED KEY TO THE SPECIES (PAGE 292)

- Tips and bases of the seeds bearing a spiny crest; panicles large and many-flowered. 1. *P. ctenospermum*
- Tips and bases of the seed without a spiny crest (*P. chilianthium* bearing a single spinelike projection at base of seed).
- A. Leaves of each pair very unequal, the larger alternating with the smaller of the next succeeding pair.
- Tips of the leaf blades slenderly acuminate..... 2. *P. chilianthium*
- Tips of leaf blades short-acuminate, the tip itself blunt.... 3. *P. diachylum*
- A. Leaves of each pair equal or subequal.
- B. Leaf blades ovate; corolla tube 2 cm. long or more, very slender.
- Leaf blades sessile or subsessile, rounded at base, those subtending the lowermost branches of the inflorescence similar to the main stem leaves but somewhat smaller..... 4. *P. cladodes*
- Leaf blades abruptly narrowed into long winged petioles, those subtending the lowermost branches of the inflorescence orbicular or suborbicular, sessile or subsessile, differing noticeably from the main stem leaves. Flowers dark red; bracts subtending the flowers triangular, up to 2 mm. long..... 5. *P. haughtii*
- Flowers purple; bracts subtending the flowers lanceolate or oblanceolate, up to 4 mm. long..... 6. *P. idroboi*
- B. Leaf blades elliptic to oblong or lanceolate, rarely ovate, the petioles short.
- C. Calyx with some glandular hairs.
- Leaf blades (lower surface) glabrous or bearing a few scattered minute hairs; cystoliths black..... 7. *P. leiophyllum*
- Leaf blades (lower surface) definitely puberulous or hirtellous; cystoliths whitish.
- Lobes of the corolla conspicuously purple-dotted.. 8. *P. poecilanthum*
- Lobes of the corolla uniformly colored.
- Corollas greenish yellow..... 9. *P. galbanum*
- Corollas not greenish yellow, usually violet, purple, pink, or white. Base of the leaf blades (dried material) strongly recurved and crisped making the blades apparently subpanduriform. 10. *P. micranthum*

- Bases of the leaf blades (dried material) flat, not noticeably recurved and crisped.
- Corollas pure white..... 11. *P. ellipticum*
- Corollas violet, purple, or pink.
- Corollas pale pink, the lobes up to 7 mm. long; leaf blades gland-dotted beneath..... 12. *P. ewanii*
- Corollas violet, the lobes up to 3.5 mm. long; leaf blades not gland-dotted beneath..... 13. *P. pennellii*
- C. Calyx without gland-tipped hairs.
- Leaf blades predominantly 2 cm. wide or less.
- Calyx glabrous..... 14. *P. lanceum*
- Calyx puberulous..... 15. *P. sneidernii*
- Leaf blades, or at least some of them, 2.5 cm. wide or more.
- Rachis glabrous; leaf blades predominantly obtuse or rounded at tip..... 16. *P. atropurpureum*
- Rachis pubescent; leaf blades acuminate.
- D. Flowers borne in racemes, these simple or forked or 3-parted at the lowermost node.
- Leaf blades (dried material) flat at base... 17. *P. potomophilum*
- Leaf blades (dried material) recurved and crisped at base so as to give the blades a subpanduriform appearance.
- Flowers solitary or several at each node of the inflorescence; leaves firm..... 18. *P. hylophilum*
- Flowers few to numerous at each node of the inflorescence; leaves thin..... 10. *P. micranthum*
- D. Flowers borne in panicles.
- Corollas densely glandular-papillose.
- Pedicels stout, 1 mm. long or less..... 19. *P. chaponense*
- Pedicels slender, up to 4 mm. long..... 20. *P. thelothrix*
- Corollas sparingly puberulous or pubescent.
- Tube of the corolla narrow, the throat 1.5 mm. broad; branches of the panicle few (2 or 3)..... 21. *P. stenosiphon*
- Tube of the corolla relatively broad; branches of the panicle several (3 or more).
- Shrubs; margins of the basal part of the leaf blades recurved and crisped to give the blade a subpanduriform appearance..... 22. *P. cuatrecasasi*
- Herbs; margins of the basal portions of the leaf blades flat, not noticeably recurved and crisped.
- Tips of the leaf blades slenderly acuminate; panicle open, the branches straight and more or less spreading, up to 9 cm. long..... 23. *P. dawei*
- Tips of the leaf blades abruptly and shortly acuminate; panicles dense, the branches suberect, up to 4 cm. long. 24. *P. chocoense*

1. *Pseuderanthemum ctenospermum* Leonard, sp. nov.

FIGURE 267

Suffrutex, caulibus erectis, quadrangularibus, plus minusve crassis, glabris vel parce puberulis, pilis curvatis; lamina foliorum oblongo-elliptica, breviter acuminata (apice ipso obtuso), basi angustata, in petiolum decurrens (lamina foliorum summorum basi plus minusve auriculata), firma et crassa, integra vel undulata, supra glabra, cysto-

lithis minutis, subtus glabra, costa et venis prominentibus, puberulis vel strigosis, cystolithis minutis, venulis crasse reticulatis; petioli alati, glabri vel parce strigosi; paniculae terminales, in nodis ramis pluribus et aliquando floribus sessilibus vel subsessilibus praeditae, pedunculis et rachibus subquadrangularibus, striatis, hirtellis, pilis curvatis, patulis vel ascendentibus, subbrunneis, septatis; bracteae ramos infimos subtendentes foliaceae; bracteae ramos superiores subtendentes lineares; bracteae flores subtendentes triangulares, acutae (apice ipso obtuso), parce hirtellae et ciliatae; bracteolae lineares, apice subobtusae, parce hirtellae; pedicelli graciles, puberuli, pilis patulis vel ascendentibus, subbrunneis; calycis segmenta anguste triangularia, apice graciliter acuta, parce hirtella, pilis ascendentibus; corollae parvae, lilacinae, parce puberulae, pilis fere patulis aliquis glandulosis, tubo cylindrico, lobis ovatis, subobtusis; stamina inclusa, glabra, lobis antherarum basi leviter divergentibus; staminodia parva, oblanceolata, glabra; capsulae clavatae, basi graciles, parce puberulae, pilis fere patulis, glandulosis; retinacula gracilia, curvata, apice rotundata; semina brunnea, plana, glabra, suborbicularia, apice et basi cristis spinosis praedita, spinis albidis, triangularibus, minute striatis, retrorse hirtellis, pilis rigidis, minutis.

Erect shrubby plants up to 1 meter high; stems quadrangular, more or less fleshy, glabrous or sparingly puberulous, the hairs variously curved, up to 0.24 mm. long; leaf blades oblong-elliptic, up to 15 cm. long and 6 cm. wide, short-acuminate (the tip itself blunt), narrowed at base and decurrent on the petiole, the uppermost leaves more or less auriculate at base, firm and fleshy, entire or undulate, the upper surface glabrous, the cystoliths minute, up to 0.1 mm. long, the lower surface glabrous except the costa and lateral veins (12 to 16 pairs), these sparingly puberulous or strigose, the hairs up to 0.32 mm. long, the cystoliths similar to those of the upper surface, the venation prominent, the veinlets coarsely reticulate, the axils of the leaves often bearing small leafy shoots; petioles winged nearly to the base, glabrous or sparingly strigose; panicles terminal, up to 15 cm. long and broad, the nodes bearing 1 to several pairs of branches and sometimes additional sessile or subsessile flowers (flowering branches also occurring in the axils of the upper stem leaves); peduncles 5 cm. long, the lowermost internode 3 cm. long, the others successively shorter toward the tips of the branches, both peduncle and internodes of the inflorescence subquadrangular, striate, hirtellous, the hairs variously curved, spreading or ascending, up to 0.28 mm. long, septate, brownish; bracts subtending the lowermost branches of the inflorescence leaflike, about 2 cm. long and 5 mm. wide, those subtending the upper branches of the inflorescence linear, 10 mm. long and 0.75 mm. wide or smaller; bracts subtending the flowers triangular, 3 mm. long and 1.5 mm. wide at

base, acute (the tip itself blunt), sparingly hirtellous and ciliate; bractlets linear, about 2.5 mm. long and 0.25 mm. wide, bluntish at tip, sparingly hirtellous; pedicels 5 to 7 mm. long, rather slender, puberulous, the hairs spreading or ascending, brownish, up to 0.16 mm. long; calyx 5 mm. long, the segments 5, narrowly triangular, 4 mm.

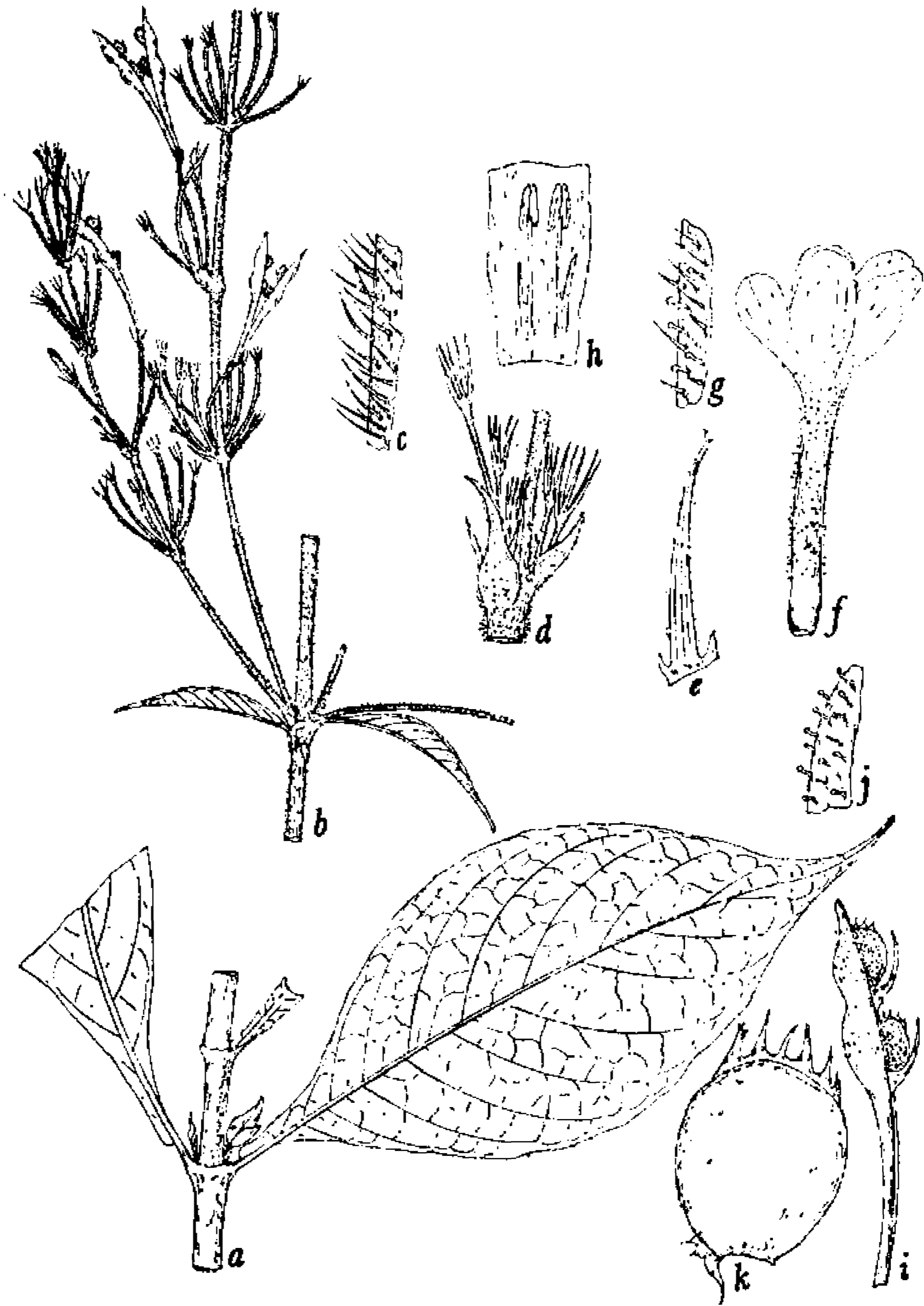


FIGURE 267.—*Pseuderanthemum ctenospermum* Leonard (Cuatrecasas 16433): *a*, Stem node showing leaves; *b*, lower node of panicle; *c*, portion of internode of panicle enlarged to show pubescence; *d*, node from near tip of panicle to show bract and bractlets; *e*, calyx segment; *f*, corolla; *g*, a portion of corolla tube enlarged to show pubescence; *h*, stamens; *i*, capsule valve; *j*, a portion of capsule valve from near its tip enlarged to show pubescence; *k*, seed. (*a*, Half natural size; *b*, natural size; *c*, 21 times natural size; *d*, 3 times natural size; *e*, about 6½ times natural size; *f*, *h*, 3 times natural size; *g*, 45 times natural size; *i*, twice natural size; *j*, 23 times natural size; *k*, 7 times natural size.)

long, 0.5 mm. wide at base, gradually narrowed to a slender tip, sparingly hirtellous, the hairs ascending, up to 0.13 mm. long; corollas up to 12 mm. long, lilac, rather sparingly puberulous, the hairs mostly spreading, up to 0.1 mm. long, some of them gland-tipped, the tube cylindric, 1.5 mm. in diameter, the lobes ovate, 4 to 5 mm. long, 2.5 to 3 mm. wide, subobtuse; stamens included, 3.25 mm. long, glabrous, the anthers 1.5 mm. long, 0.75 mm. wide near base, the lobes slightly divergent; staminodes about 1 mm. long, oblanceolate, glabrous; capsules clavate, about 18 mm. long, 4 mm. wide and 1.5 mm. thick, sparingly puberulous, the hairs mostly spreading, 0.1 mm. long, gland-tipped, the solid basal portion of the capsule slender, 12 mm. long, 1.5 mm. broad, 2 mm. thick; retinacula slender, 2.5 mm. long, curved, the tip rounded; seed suborbicular, 3 mm. long, 2.5 mm. wide and 0.5 mm. thick, brown, glabrous, bearing on the upper edge a crest of usually 7 triangular whitish spines, these about 0.75 mm. long, the anterior one multiple, and bearing also on the projecting basal edge a similar but shorter crest of 2 or 3 spines, all of the spines striate, whitish, broad-based, retrorsely hirtellous with rigid hairs about 0.02 mm. long.

Type in the U. S. National Herbarium, No. 1852484, collected along the Río Calima at La Trojita, Department of El Valle, Colombia, 5–50 meters altitude, February 19 to March 10, 1944, by J. Cuatrecasas (No. 16433).

Collected also in the same general region are the following: In dense forest along the Río Dagua, about 20 kilometers east of Buenaventura, 40 meters altitude, February 15, 1939, *E. P. Killip* and *Hernando García*, No. 33318 (US). Highway between Buenaventura and Cali at Km. 100, 100 meters altitude, December 5, 1946, *Haught*, No. 5323 (US). Wet forests of Chuare, Cauca, 90 meters altitude, December 24, 1946, *Haught*, No. 5390 (US). "Andes de Mariquita, Antioquia," 2,200 meters altitude, February 1852, *Triana* (K).

According to the label notes, *Haught's* No. 5390 was taken from an epiphyte with very succulent shoots 1 meter long and having a showy purple inflorescence, and his No. 5323 was taken from an erect suffrutescent plant 1 meter high or less which possessed a showy inflorescence with the axes and flowers light purple. *Killip* and *García* describe their No. 33318 as an herb 80 cm. high, the stems in clusters bearing distichous panicles, and with both flowers and inflorescence branches pink. The type sheet bears the following note: "Sufrutex de ramas erguidas 1 m.; hojas rugosas, verde grisáceas; brácteas, cáliz y corola lilas."

Pseuderanthemum ctenospermum can be easily recognized by its peculiar crested seed and rather large rugose leaves. This comblike crest suggests the specific epithet taken from the Greek *κράϊς*, comb, and *σπέρμα*, seed.

2. *Pseuderanthemum chilianthium* Leonard, sp. nov.

FIGURE 268

Herba erecta vel interdum suffrutex scandens, caulibus apice subquadrangularibus, glabris vel parce puberulis, pilis ascendentibus vel subappressis, cystolithis paucis vel aliquando multis et contiguis et parallelis, deorsum caulibus parce ramosis, teretibus, glabris, cortice pannoso; folia per paria inaequalia; lamina foliorum oblongo-ob lanceolata vel oblongo-obovata, plus minusve panduriformis, tenuiter acriter acuminata (apice angusto gracili), basi angusta, subcordata, aliquando firma, integra vel undulata, utrinque glabra vel parce puberula, nitida, pilis ascendentibus, subtus costa et venis lateralibus et venulis crasse reticulatis prominentibus, supra obscuris, cystolithis utrinque obscuris; petioli crassi, breves, glabri vel parce hirtelli, cystolithis pluribus; flores plures in paniculis terminalibus pyramidalibus magnis positi; pedunculi et rhaches parce hirtelli, pilis ascendentibus; pedicelli graciles, hirtelli; bracteae parvae, subulatae, parce hirtellae; calycis segmenta parva, linearia, parce hirtella, pilis ascendentibus; corolla lilacina, tubo basi glabro, sursum parce puberulo, pilis glandulosis et eglandulosis intermixtis, lobis corollarum ovatis, apice rotundatis; stamina inclusa; staminodia parva; capsulae clavatae, glabrae vel pilos paucos minutos glandulosos papilliformes ferentes; semina plana, ovata, glabra vel apice truncata, crenata, dense puberula, basi spina parva praedita.

Herbs or shrubs usually up to 2 meters high but sometimes becoming scandent and reaching 10 meters in height, the upper portions of the stems subquadrangular, glabrous or sparingly puberulous, the hairs up to 0.2 mm. long, subappressed or ascending, septate, the cystoliths few or sometimes numerous and parallel, the lower portions of the stems tough, woody, subterete, glabrous, sparingly branched, the bark brown and becoming shredded; leaves of each pair unequal, the smaller leaf of each pair alternating with the larger of the next pair, the blades oblong-lanceolate or oblong-obovate, up to 30 cm. long and 9 cm. wide, slightly panduriform, more or less slenderly acuminate, the tip slender, narrowed to a rounded narrow subcordate base, rather firm, entire or undulate, both surfaces nitid, glabrous or sparingly puberulous, the hairs ascending, the costa, lateral veins (14 to 16 pairs) and the coarsely reticulated veinlets prominent beneath, obscure above, the cystoliths obscure; petioles thick (unwinged portions), glabrous or sparingly hirtellous, the cystoliths sometimes numerous; flowers numerous, borne in terminal pyramidal panicles up to 30 cm. long and 26 cm. wide, the nodes bearing 3 or 4 branches, the branches of the ultimate nodes slender, 1 to 3 cm. long, several-flowered, dichotomously branched, forming lax dichasia or the flowers sometimes secund on the racemes; peduncles up to 6 cm. long, these and the rachises sparingly to rather densely hirtellous, the hairs

ascending, up to 0.25 mm. long, septate, the pedicels slender, hirtellous, up to 5 mm. long; bracts subulate, up to 1 cm. long, 1.5 mm. wide at the base, sparingly hirtellous, the lowermost often foliaceous; calyces up to 4.5 mm. long, the segments 4 mm. long, 0.5 mm. wide at base, gradually narrowed to an acute tip, sparingly hirtellous with ascending hairs about 0.06 mm. long; corollas purplish blue or lilac, 10 to 17 mm. long, sparingly puberulous with a mixture of glandular papilliform hairs (about 0.03 mm. long) and curved ascending

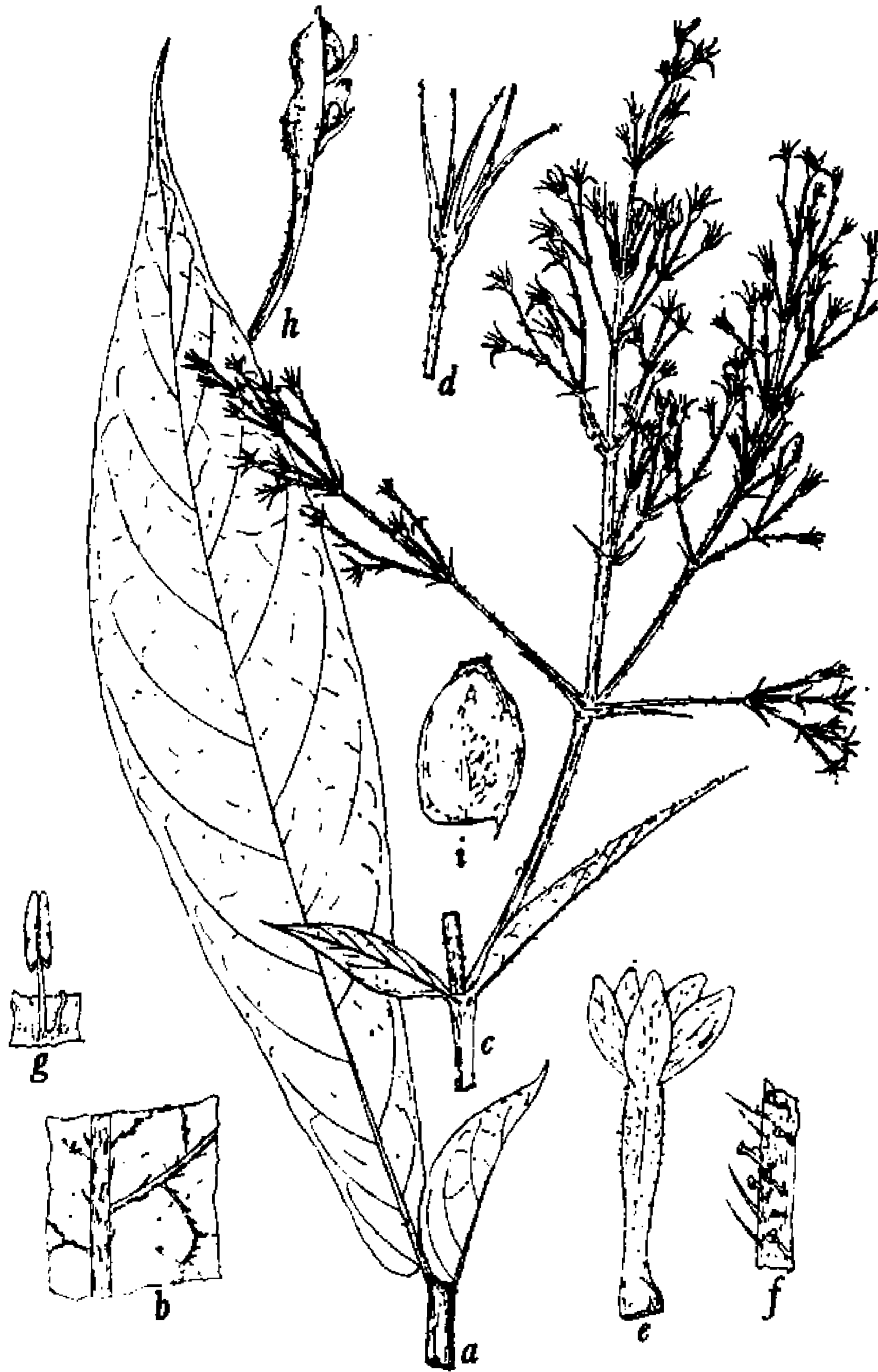


FIGURE 268.—*Pseuderanthemum chilianthium* Leonard (Killip 35270): *a*, Node of stem to show pair of dissimilar leaves; *b*, portion of lower surface of leaf blade enlarged to show pubescence; *c*, branch of panicle; *d*, calyx; *e*, corolla; *f*, portion of corolla tube enlarged to show pubescence; *g*, stamen and staminode; *h*, capsule valve, *i*, seed. (*a*, *c*, Half natural size; *b*, 5 times natural size; *d*, $3\frac{1}{2}$ times natural size; *e*, *h*, twice natural size; *f*, 40 times natural size; *g*, 7 times natural size; *i*, 5 times natural size.)

eglandular ones up to 0.13 mm. long, the corolla tube cylindrical, 1 cm. long, 2 mm. broad at base, narrowed to 1.5 mm. at 2 mm. above base, thence gradually enlarged to 2 mm. at mouth, or the tube of the smaller flowers only about 7 mm. long, 1.5 mm. wide at base and 1 mm. wide at their narrowest point, the corolla lobes oval, 4 to 6 mm. long, 2.5 mm. wide, rounded at the tip; stamens included, those of the smaller flowers 1.5 mm. long, the anthers 0.75 mm. long, the staminodes 0.5 mm. long, the stamens of the larger flowers 3.5 mm. long with anthers 1 mm. long, the staminodes 1 mm. long; capsules 16 mm. long, 3 mm. broad, about 2 mm. thick, the solid basal stipe about 1 cm. long and 1.25 mm. broad, the surface of the capsule glabrous or bearing a few small papilliform glandular hairs near tip, the retinacula curved, about 1.75 mm. long, the tip rounded, thin, finely striate and subfimbriate; seed ovate, flat, 3 mm. long, 1.5 mm. wide, the margin winged, the wing 1.5 mm. long at tip of seed, obtuse, rather densely puberulous with whitish hairs, the basal angle bearing a small, spikelike projection.

Type in the U. S. National Herbarium, No. 1772005, collected in the Corcovada Region of the upper Río San Juan, in a dense forest on a ridge along the Yeracúí Valley, Intendencia of Chocó, Colombia, 200 to 275 meters, April 24, 25, 1939, by E. P. Killip (No. 35270).

ANTIOQUIA: Mariquita, 2,200 meters altitude, February 1852, *Triana* s.n. (K).

CAUCA: Damp forests at Coteje, along the Río Timbiquí, 0 to 500 meters altitude, February 1898, *Lehmann* s.n. (K).

CHOCÓ: Between Carmen de Atrato and Tutunendo, 500–600 meters, July 25, 26, 1944, *García-Barriga* 11128 (US). La Concepción, 15 km. east of Quibdó, 75 meters altitude, April 20 to May 23, 1931, *W. A. Archer* 2097 (US). Between La Oveja and Quibdó, April 1–2, 1931, *W. A. Archer* 1673 (US). Tutunendo, 20 km. north of Quibdó, 80 meters altitude, May 19, 20, 1931, *W. A. Archer* 2120 (US). Damp woods along the Río Huanchiradó (Cuenca del Atrato), June 2, 3, 1949, *Rosa Scolnik* 1636 (NY).

EL VALLE: Quebrada del Corosal, Río Cajambre, 0–5 meters altitude, May 17, 1944, *Cuatrecasas* 17736 (NY). San Isidro, Río Cajambre, 5–100 meters altitude, May 2–5, 1944, *Cuatrecasas* 17317 (NY).

META: Tiramena, Llano de San Martín, 250 meters altitude, *J. Triana* s.n. (Col).

Pseuderanthemum chilianthium must be an attractive plant with its large dense panicles of lilac flowers. Archer states that the pedicels are also colored like the corollas. Archer's No. 2120, representing the small flowered form, has lavender corollas with darker stripes on the lobes. The plant of the holotype had leaves deep purple beneath. More material should be examined before any of these variations can be used as characters on which to base varieties or closely related species. The specific epithet is from the Greek χίλιος, thousand, and άνθειον, blossom, in allusion to its numerous flowers.

3. *Pseuderanthemum diachylum* Leonard, sp. nov.

FIGURE 269

Herba erecta, succulenta, caulibus subquadrangularibus, nitidis, deorsum glabratis, sursum parce puberulis, pilis curvatis, septatis, cystolithis parallelis, inconspicuis, raris; folia per paria inaequalia; lamina foliorum oblongo-elliptica, breviter acuminata (apice ipso obtuso), basi acuta vel obtusa, in petiolum decurrens, aliquanto firma, integra, undulata, supra nitida, parce puberula, pilis appressis, septatis, cystolithis inconspicuis, costa et venis lateralibus obscuris, subtus puberula, pilis praecipue in costa et venis prominentibus positis, venulis crasse reticulatis, cystolithis inconspicuis; petioli (pars non alatus) breves, parce hirtelli; paniculae terminales, floribus in nodis 4 vel 5 productis, pedicellis gracilibus sed aliquanto brevibus, dense hirtellis, pilis ascendentibus, pedunculo longo, subquadrangulari, minute striato, aliquanto dense hirtello, pilis retrorse curvatis, septatis; bracteae triangulares, aliquanto parvae, acutae (apice ipso obtuso), carinatae, hirtellae, pilis ascendentibus, septatis, ciliatae; bracteolae parvae, triangulares, acutae, hirtellae; calycis segmenta subulata, nitida, minute et parce hirtella, pilis glandulosis et eglandulosis intermixtis; corolla dilute purpurea, parce hirtella, pilis minutis, glandulosis et eglandulosis intermixtis, tubo subcylindrico, lobis corollae ovatis apice rotundatis; stamina inclusa, filamentis glabris vel basi pilis paucis praeditis, antheris glabris; staminodia parva, linearia; ovarium glabrum.

Erect succulent herbs up to 60 cm. high, stems subquadrangular, nitid, sparingly puberulous with curved septate hairs up to 0.24 mm. long, the lower portions of the stem glabrate, the cystoliths straight, parallel, up to 0.11 mm. long, inconspicuous and scattered; leaves of a pair noticeably unequal, the larger leaves alternate with the smaller of the succeeding pair, the blades oblong-elliptic, up to 21 cm. long and 7.5 cm. wide, short-acuminate (the tip itself obtuse), acute to obtuse at base and decurrent on the petiole, rather thick, entire or undulate, the upper surface nitid, sparingly puberulous, the hairs up to 0.19 mm. long, septate, appressed, the cystoliths inconspicuous, up to 0.08 mm. long, the costa and lateral veins (about 8 pairs) obscure, the lower surface puberulous, the hairs confined chiefly to costa and veins, these and the coarsely reticulated veinlets conspicuous, the cystoliths inconspicuous; petioles (unwinged portion) up to 4 mm. long, with the winged portion up to 3.5 cm. long, the wings gradually enlarged from base to 1 cm. wide at foot of blade, the petiole sparingly hirtellous; panicles terminal, about 10 cm. long and 5 cm. broad, each node producing a large and a small branch, these alternating throughout the panicle, the flowers as many as 4 or 5 at each node, the peduncle 8.5 cm. long, subquadrangular, about 2 mm. thick, finely striate, rather densely hirtellous, the hairs retrorsely curved, up to 0.2 mm.

long, septate, the lowermost internode of the panicle 3 cm. long, the others successively shorter toward tip of the inflorescence, all hirtellous, the hairs spreading or ascending, septate and up to 0.2 mm. long; bracts triangular, up to 5 mm. long, 1.5 mm. wide at base, gradually narrowed to a blunt tip, carinate, hirtellous, the hairs ascending, mostly marginal and dorsal, septate; bractlets triangular, up to 3 mm.

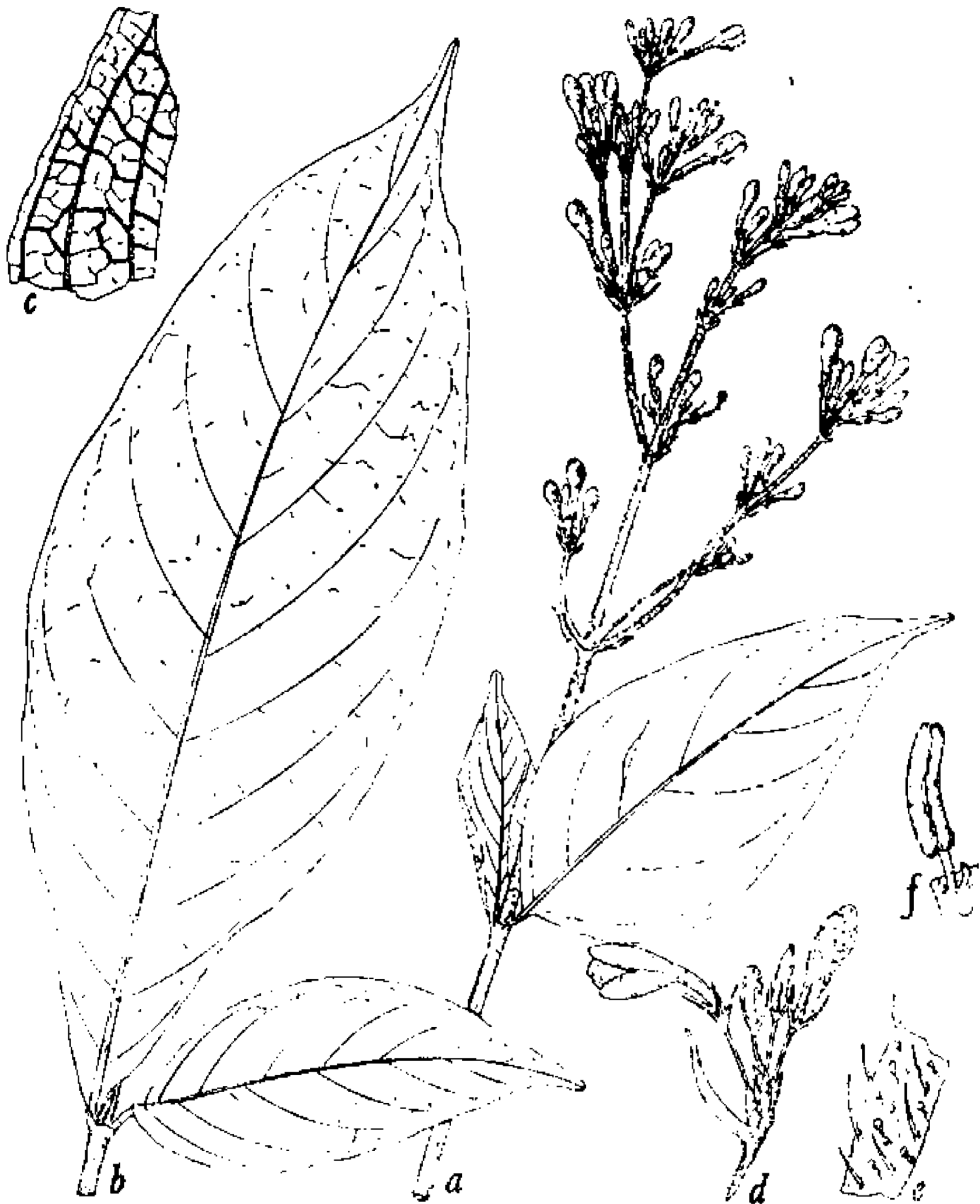


FIGURE 269.—*Pseudcranthemum diachylum* Leonard (Haught 5489): *a*, Tip of plant; *b*, a pair of stem leaves; *c*, portion of leaf blade, lower surface, to show venation; *d*, portion of inflorescence from node showing bract, bractlets and flowers; *e*, portion of calyx enlarged to show pubescence; *f*, stamen and staminode. (*a-c*, Half natural size; *d*, natural size; *e*, 30 times natural size; *f*, 6½ times natural size.)

long, 1.25 mm. wide at base, acute, hirtellous; pedicels slender, up to 3 mm. long, densely hirtellous with ascending hairs up to 0.13 mm. long; calyx up to 4 mm. long, the segments subulate, 3 mm. long, 0.5 mm. wide near base, nitid, minutely and sparingly hirtellous, the hairs about 0.06 mm. long, some of them gland-tipped; flowers showy, light purple, 16 mm. long, sparingly hirtellous, the hairs up to 0.1

mm. long, some of them gland-tipped, the tube 1 mm. broad at base, narrowed at 2 mm. above base to 0.75 mm., thence gradually enlarged to 2 mm. at throat, the lobes ovate, 8 mm. long, 4 mm. wide, rounded at tip; stamens reaching the mouth of the corolla tube, the filaments 0.75 mm. long, glabrous or bearing a few minute hairs at base, the anthers 1.75 mm. long, 0.5 mm. broad, glabrous; staminodes linear, 0.5 mm. long; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 1995094, collected in a wet forest glade along the Río Nuqui, Intendencia of Chocó, Colombia, about 300 meters altitude, January 25, 1947, by Oscar Haught (No. 5489).

Pseuderanthemum diachylum is characterized by its large leaves, attractive light purple flowers, and succulent texture. The plant from which the type was taken was the only one seen by the collector. The specific epithet is from the Greek, *διάχυλος*, meaning succulent.

4. *Pseuderanthemum cladodes* Leonard, sp. nov. FIGURE 270

Herba, caulibus gracilibus, profuse ramosis, striatis, aliquanto pilosis, pilis patulis; lamina foliorum ovata, graciliter acuminata, basi rotundata, hirsuta, pilis saepe in costa et venis positis, cystolithis sub lente conspicuis pyriformibus; petioli breves vel nulli; spicae laxae, paucae, paniculam formantes; bractae ramos panicularum subtendentes foliaceae sed minores, sessiles; bractae flores subtendentes lanceolatae, parvae, acuminatae, parce hirtellae; rhachis hirsuta; calycis segmenta lanceolata, acuta, parce hirtella; corolla lilacino-rubra, tubo angustissimo, lobis plus minusve patulis, obovatis, apice rotundatis; stamina inclusa; staminodia parva; capsulae clavatae, parce puberulae, pilis minutis, glandulosis; semina muricata.

Herbs up to 1 meter high; stems slender and profusely branched, furrowed, moderately pilose, the hairs spreading, up to 0.58 mm. long, evenly or sometimes bifariously distributed, the lowermost internodes 10 cm. long or more; leaf blades ovate, up to 6.5 cm. long and 3.5 cm. wide, slenderly acuminate, rounded at base, hirsute, the hairs mostly confined to the costa and lateral veins (4 or 5 pairs), up to 0.5 mm. long, the upper surface bearing numerous crowded whitish cystoliths, these very conspicuous under a lens and up to 0.13 mm. long; petioles about 4 mm. long, rather sparingly hirsute and conspicuously marked by cystoliths; flowers borne in lax spikes, these both terminal and axillary, up to 18 cm. long, forming loose terminal panicles up to 30 cm. long, the lowermost pairs of bracts subtending the axillary spikes resembling the stem leaves but slightly smaller and sessile, the other pairs progressively smaller toward tip of panicle, the lowermost pair of bracts subtending the flowers suborbicular, about 5 mm. in diameter, sessile, long-apiculate, the succeeding

floral bracts lanceolate, up to 3 mm. long and 1 mm. wide at base, acuminate, sparingly hirtellous, the lowermost internode of the flowering spike 1.5 to 2 cm. long, the others successively shorter, these and the internodes of the panicle hirsute, the hairs similar to those of the stems, the flowers borne in pairs at the nodes of the spike (sometimes accompanied by one or more rudimentary flowers); calyx about 5 mm. long, the segments lanceolate, 3 mm. long, 0.5 mm.

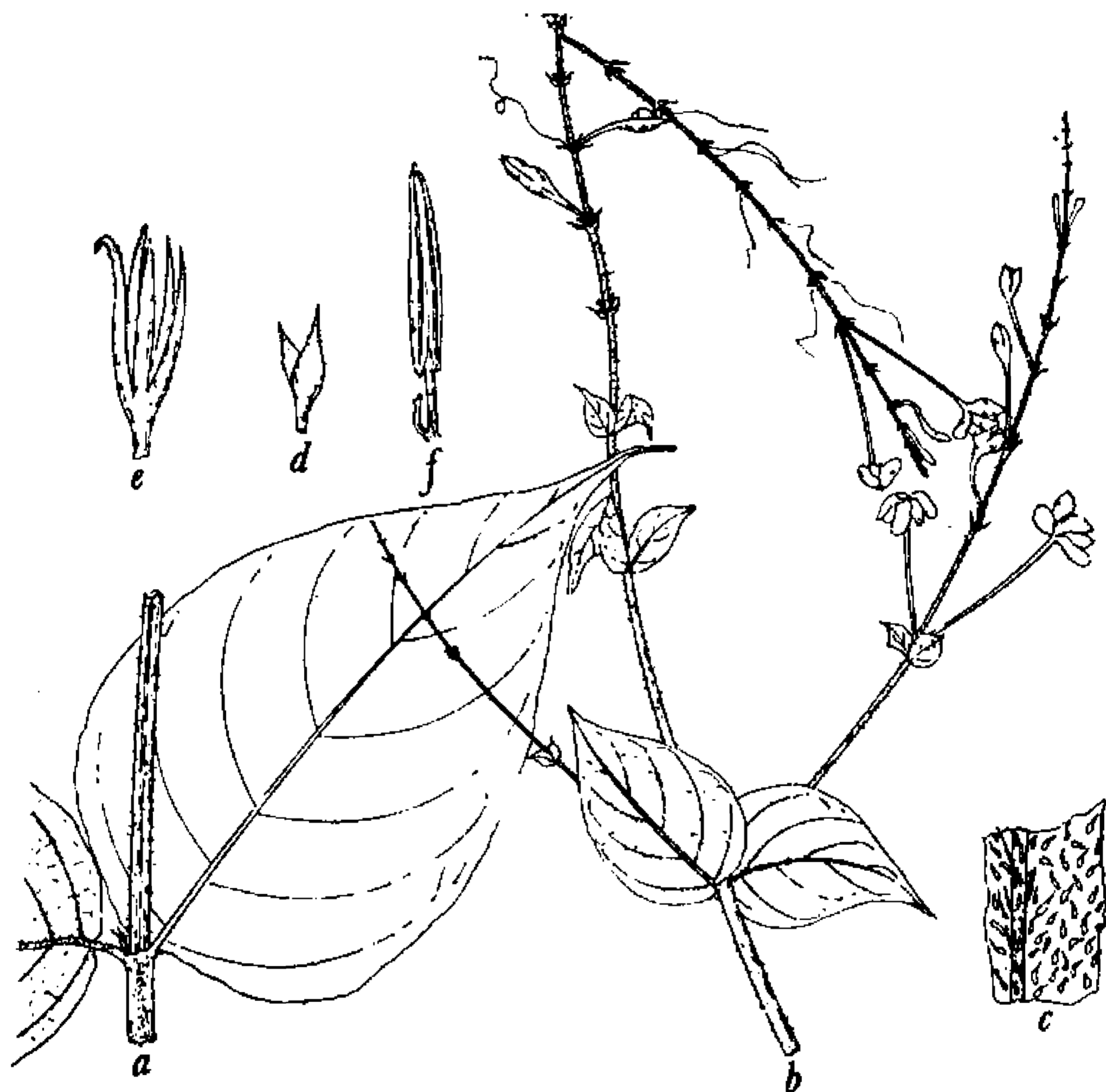


FIGURE 270.—*Pseuderanthemum cladodes* Leonard (Lehmann 7266): *a*, A lower node showing leaf blade; *b*, inflorescence; *c*, portion of leaf blade (upper surface) showing cystoliths; *d*, bracts; *e*, calyx; *f*, stamen and staminode. (*a*, Natural size; *b*, half natural size; *c*, 20 times natural size; *d*, 4 times natural size; *e*, 5 times natural size; *f*, 10 times natural size.)

wide at base, sparingly hirtellous; corolla lilac-red (Lehmann), glabrous, the tube up to 2.5 cm. long, very slender, 1.25 mm. in diameter at base, gradually reduced to 0.75 mm. about the middle and thence enlarged to 2 mm. at mouth, the lobes more or less spreading, obovate, about 8 mm. long and 3 mm. wide, rounded at tip; stamens included, 2.5 mm. long, glabrous; anthers 1.5 mm. long, 0.25 mm. broad; staminodes 0.5 mm. long; capsules clavate, 1.8 cm. long, the

slender solid stipe 7 mm. long, 1 mm. in diameter, glabrous, the seed-bearing portion 3 mm. broad and about 1 mm. thick, sparingly puberulous, the hairs spreading, 0.11 mm. long, gland-tipped; seed flat, whitish, muricate.

Type in the Kew Herbarium, collected in a forest glade along the Río Sucio, between Dabeiba and Uramita, Department of Antioquia, Colombia, 400 to 800 meters altitude, October 1891, by F. C. Lehmann (No. 7266).

According to Lehman's notes the plants of this species are "Weeds up to 1 m. in height with profusely ramified and thin stems." The leaves are "dark sap-green" and the flowers "lilac-red."

The specific epithet is from the Greek *κλαδώδης*, abounding in young shoots, in allusion to the branching habit of the plant.

5. *Pseuderanthemum haughtii* Leonard

See page 293.

6. *Pseuderanthemum idroboi* Leonard

See page 295.

7. *Pseuderanthemum leiophyllum* Leonard

See page 297.

8. *Pseuderanthemum poecilanthum* Leonard

See page 299.

9. *Pseuderanthemum galbanum* Leonard, sp. nov.

FIGURE 271

Frutex, caulibus deorsum glabris, sursum puberulis, pilis curvatis; lamina foliorum aliquanto magna, apice breviter acuminata (apice ipso rotundato), basi angustata, in petiolum decurrens, aliquanto firma, integra, utrinque glabra vel subtus in costa parce et minute puberula, cystolithis obscuris et raris; petioli breves, minute puberuli, pilis curvatis; racemi solitarii, terminales, rhache et pedunculis dense et minute puberulis, pilis glandulosis et acutis intermixtis; bracteae (par infimum sterile) lanceolatae, graciliter acutae, minute hirtellae, pilis glandulosis et acutis, plus minusve patulis intermixtis; bracteolae ovatae vel lanceolatae, acutae, aliquanto parce et minute hirtellae; pedicelli dense hirtelli, pilis glandulosis et acutis intermixtis; calycis segmenta anguste lanceolata, acuta, pilis glandulosis et acutis intermixtis; corolla galbana; capsulae graciles, minute hirtellae, pilis patulis vel ascendentibus, glandulosis et acutis intermixtis; semina brunneo-purpurea, plana, suborbicularia, crasse rugosa.

Shrubs up to 3 meters high; stems glabrous below, the upper portions puberulous, the hairs upwardly curved, up to 0.13 mm. long; leaf blades oblong, up to 19 cm. long and 9 cm. wide, short-acuminate (the tip itself rounded), narrowed at base and decurrent on the petiole, moderately firm, entire, both surfaces glabrous or the lower

minutely and sparingly puberulous on costa, cystoliths obscure and scattered; petioles up to 1 cm. long (including the wing at the base of the blade, this 6 to 7 mm. wide), minutely puberulous with upwardly curved hairs; racemes solitary, terminal, narrow and lax, the flower-bearing portion about 9 cm. long and 8 mm. broad, the peduncle 4 cm. long, the lowermost internode of the raceme 2 cm. long, the

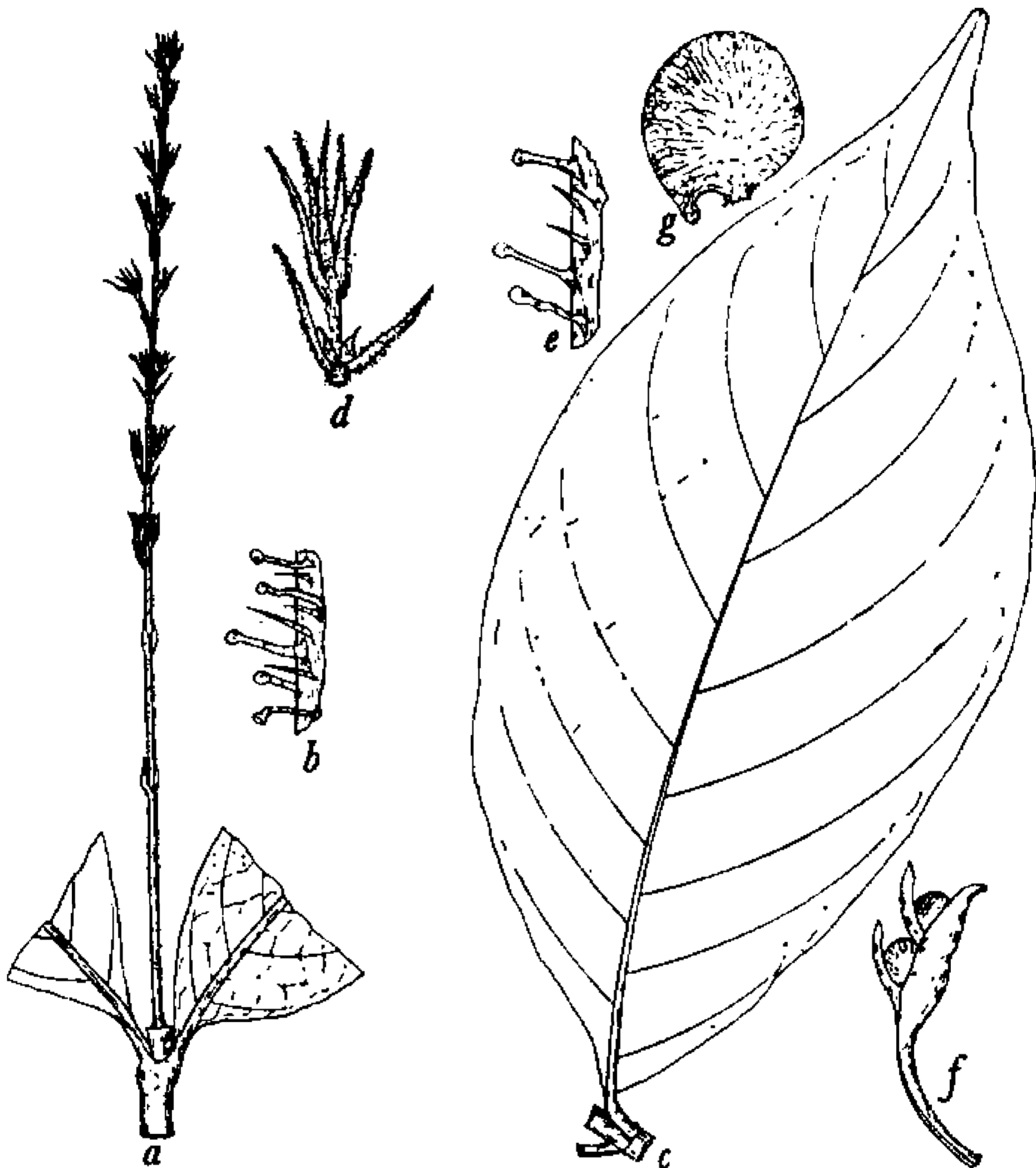


FIGURE 271.—*Pseuderanthemum galbanum* Leonard (*García-Barriga* 14377): *a*, Tip of plant; *b*, portion of rachis enlarged to show pubescence; *c*, leaf; *d*, calyx, pedicel, bracts and bractlets; *e*, portion of calyx segment enlarged to show pubescence; *f*, valve of capsule; *g*, seed. (*a*, *c*, Half natural size; *b*, *e*, about 50 times natural size; *d*, 3 times natural size; *f*, natural size; *g*, $3\frac{1}{2}$ times natural size.)

others successively shorter toward tip of inflorescence, both peduncle and rachis rather densely and minutely hirtellous with both glandular and acute hairs, these spreading or ascending and up to 0.25 mm. long; bracts (the lower pair without flowers) lanceolate, slenderly acute, the larger ones 4 mm. long and about 0.75 mm. wide at base, minutely hirtellous with a mixture of more or less spreading glandular and acute hairs; bractlets ovate to lanceolate, 2 mm. long, 0.75 mm. wide at base, acute, rather sparingly and minutely hirtellous; pedicels

rather stout, up to 2.5 mm. long, rather densely hirtellous with minute glandular and acute hairs; calyx segments narrowly lanceolate, 6.5 mm. long, 0.75 mm. wide at base, narrowed to a slender acute tip, minutely and more or less densely hirtellous with glandular and acute hairs; corolla not seen (greenish yellow, García-Barriga); capsules minutely hirtellous with glandular and acute, spreading or ascending hairs (up to 0.16 mm. long), the solid stipe about 1.5 cm. long, 2 mm. broad, curved after dehiscence, the seed-bearing tip (4-seeded) 12 mm. long, 8 mm. broad, 3 mm. thick, subacute; seed brownish-purple, flattened, suborbicular, 4 mm. broad and long, 2 mm. thick, coarsely wrinkled, the wrinkles more pronounced toward margins of seed.

Type in the U. S. National Herbarium, No. 2144877, collected in Caño Unguyá, at Jino-Gojé, between the Ríos Piraparaná and Popeyaká, tributaries of Río Apaporis, Amazonas-Vaupés, Colombia, 250 meters altitude, September 3–11, 1952, by H. García-Barriga (No. 14377).

In many respects *Pseuderanthemum galbanum* resembles *P. poecilanthum*; the inflorescence, the shape and size of the bracts and bractlets, and the pubescence of the two species are practically identical. There are, however, several striking differences. *P. poecilanthum* is herbaceous, rarely if ever exceeding 30 cm. in height, the leaves are relatively smaller, and the flowers white with conspicuously purple-spotted lobes. In contrast, *P. galbanum* is a shrub or small tree as much as 3 meters high; its leaves are relatively larger, and the corollas are greenish yellow. It is to the color of the corolla that the specific epithet, *galbanum*, alludes.

10. *Pseuderanthemum micranthum* Leonard, sp. nov.

FIGURE 272

Herba, caulibus subquadrangularibus, glabris vel parce et minute hirtellis, fere ascendentibus, cystolithis subpunctiformibus; lamina foliorum oblanceolata, breviter acuminata (apice ipso obtuso), basi cuneata, marginibus recurvata et crispata, siccitate subpanduriformis tenuis, integra vel undulata, glabra, costa et venis minute hirtellis, pilis ascendentibus excepta, subtus costa venis et venulis crasse reticulatis prominentibus, supra obscuris; racemi graciles, laxi, terminales, solitarii vel terni, floribus in nodis paucis vel multis, pedunculis glabris vel parce hirtellis, rhache aliquanto dense puberula, pilis curvatis, pedicellis gracilibus, puberulis; bracteae triangulares, glabrae vel parce puberulae, acutae; bracteolae triangulares, parvae; calycis segmenta lanceolata, acuta, minute hirtella, pilis acutis, ascendentibus, pilis minutis glandulosis intermixtis; corolla parva, sursum puberula, basi glabra, lobis ovatis, rotundatis; stamina inclusa; ovarium minute hirtellum.

Herbs; stems subquadrangular, glabrous or sparingly and minutely hirtellous, the hairs up to 0.2 mm. long, mostly ascending, the cystoliths subpunctiform; leaf blades oblanceolate, up to 18.5 cm. long and 5.5 cm. wide slightly above middle, short-acuminate (the tip itself blunt), gradually narrowed to a crisped recurved apparently subpanduriform base, thin, entire or undulate, glabrous except the costa and veins (8 to 10 pairs), these minutely hirtellous with ascend-

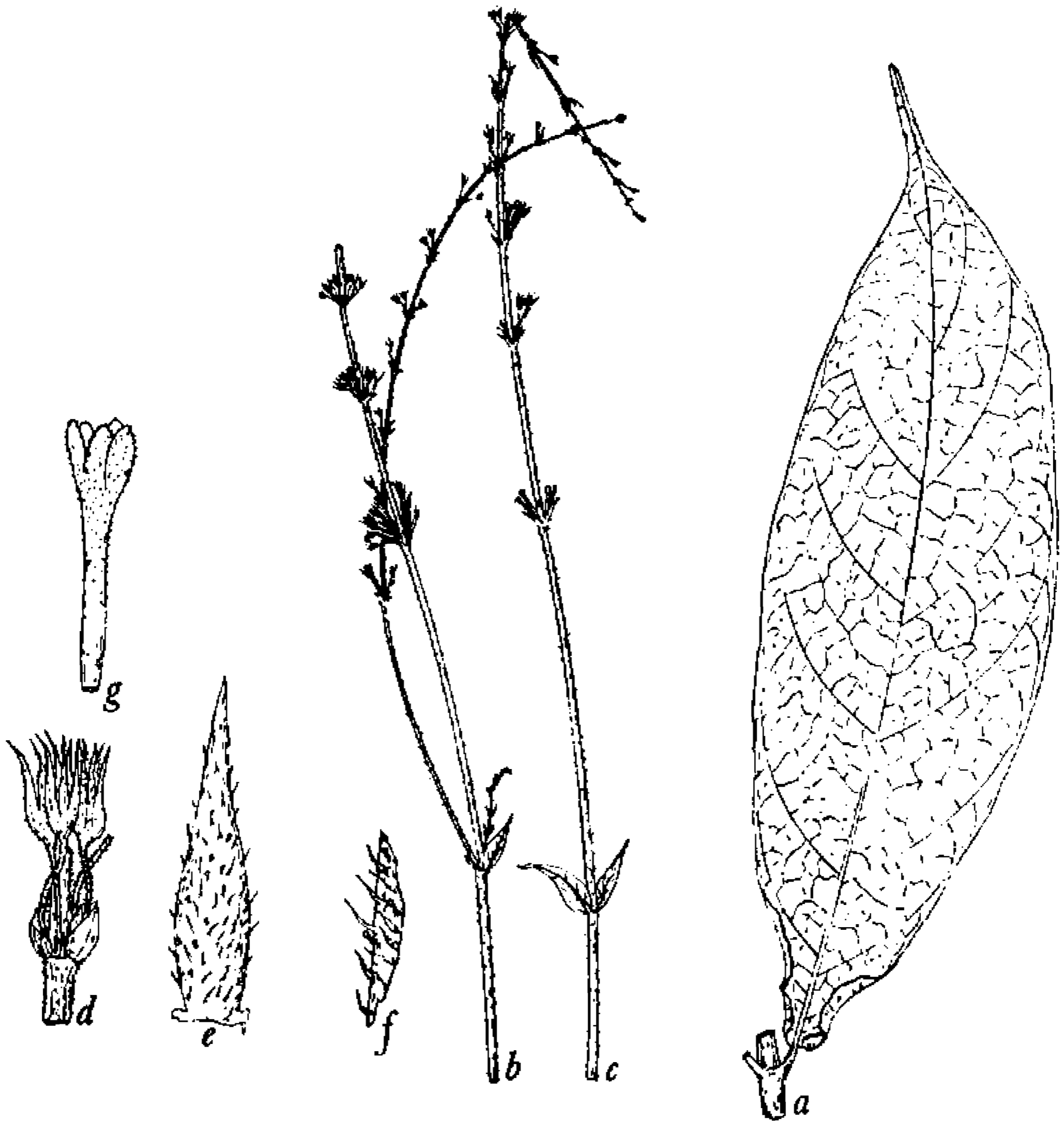


FIGURE 272.—*Pseuderanthemum micranthum* Leonard (*Triana* s. n.): *a*, Leaf and node; *b*, inflorescence; *c*, inflorescence (Col); *d*, node of inflorescence; *e*, a segment of the calyx; *f*, portion of calyx segment enlarged to show pubescence; *g*, corolla. (*a-c*, Half natural size; *d*, 3 times natural size; *e*, 15 times natural size; *f*, 40 times natural size; *g*, 4 times natural size.)

ing hairs up to 0.16 mm. long, the costa, lateral veins and the coarsely reticulated veinlets prominent on the lower surface, obscure on the upper, the cystoliths scattered and inconspicuous; flowers usually several to numerous, forming dense fascicles up to 1 cm. broad and 0.5 cm. long at the nodes of the slender, lax, simple, forked or 3-parted racemes, the peduncles up to 10 cm. long, glabrous or sparingly hirtellous, bearing a pair of lance-ovate, acuminate, sessile leaves up to

15 mm. long and 4 mm. wide, the lowermost internode of the raceme up to 7 cm. long, the others successively shorter, the rachis rather densely puberulous, the hairs upwardly curved, up to 0.3 mm. long; pedicels slender, up to 1.5 mm. long, puberulous; bracts subtending the flowers triangular, 1.5 mm. long and 0.75 mm. wide, glabrous or sparingly puberulous; bractlets similar but smaller; calyx segments 2 mm. long, 0.5 mm. wide at base, gradually narrowed to a slender acute tip, minutely hirtellous, the acute hairs up to 0.1 mm. long, ascending, these intermixed with a few shorter gland-tipped hairs; corolla 6 mm. long, puberulous toward tip, the tube 0.5 mm. broad, the mouth 1 mm. broad, the lobes ovate, 1.5 mm. long, about 1 mm. wide, rounded at tip; stamens included; ovary minutely hirtellous; capsules not seen.

Type in the Kew Herbarium, collected in the "Province of Buenaventura," Department of El Valle, Colombia, 1,600 meters altitude, July 1853, by J. Triana (No. 101-1). Isotype: Col.

The corollas of the type material were probably immature and thus smaller than fully developed ones. The color of the flower was not apparent in the dried material. The specific epithet is from the Greek *μικρός*, small, and *άνθος*, flower.

11. *Pseuderanthemum ellipticum* Turrill

See page 301.

CALDAS: Thicket along stream east of Balen, *Pennell* 10625 (GH).

CUNDINAMARCA: Densely wooded mountain in the vicinity of Laguna de Pedro Palo, 3 km. north of Tena, Municipio of Tena, 2,080 meters, May 19, 1952, *Fernández & Mora* 1442 (US).

12. *Pseuderanthemum ewanii* Leonard

See page 302.

CUNDINAMARCA: Quebrada Chiniata, *Ewan* 15629 (US, isotype).

13. *Pseuderanthemum pennellii* Leonard

See page 304.

14. *Pseuderanthemum lanceum* (Nees) Radlk.

See page 305.

15. *Pseuderanthemum sneidernii* Leonard

See page 306.

16. *Pseuderanthemum atropurpureum* (Bull) Bailey

See page 307.

17. *Pseuderanthemum potamophilum* Leonard

See page 308.

PUTUMAYO: San José, *Sprague* s.n. (K).

18. *Pseuderanthemum hylophilum* Leonard

See page 310.

19. *Pseuderanthemum chaponense* Leonard

See page 312.

20. *Pseuderanthemum thelothrix* Leonard, sp. nov.

FIGURE 273

Herba, caulibus basi plus minusve suffrutescentibus, erectis vel ascendentibus, subquadrangularibus, glabris vel sursum minute puberulis, pilis appressis; lamina foliorum ovata vel oblonga, plus minusve abrupte acuminata (apice ipso acuto, subinde curvato), basi angustata vel rotundata, in petiolum alatum decurrens, aliquanto firma, integra vel undulata, supra parce puberula, subtus minute et aliquanto dense puberula, pilis brunneis, curvatis, subappressis; petioli minute puberuli; flores solitarii vel in cymas parvas positi, paniculam plus minusve laxam terminalem formantes, pedunculo et rhache et pedicellis gracilibus, minute hirtellis, pilis curvatis, ascendentibus; bracteae subulatae vel lanceolato-subulatae, subglabrae vel parce et minute hirtellae; calycis segmenta linearia parce hirtella; corolla alba, tubo basi glabro excepto minute glanduloso-puberula, lobis corollae spathulatis, apice rotundatis; stamina inclusa, glabra; staminodia glabra, gracilia.

Herbs, sometimes suffrutescent at base; stems erect or ascending, up to 30 cm. high or more; stems quadrangular, glabrous or the upper portions minutely puberulous, the hairs upwardly appressed, up to 0.2 mm. long; leaf blades ovate to oblong, up to 12 cm. long and 6 cm. wide, more or less abruptly acuminate (the tip itself acute and sometimes curved), rounded or narrowed at base, passing into a winged petiole, moderately firm, entire or undulate, the upper surface sparingly puberulous, the hairs up to 0.28 mm. long, the lower surface rather densely and minutely puberulous, the hairs brownish, curved, subappressed, up to 0.2 mm. long, the cystoliths obscure or lacking; petioles up to 5 cm. long, the wing 1 to 1.5 cm. wide at base of blade, gradually narrowed to or below the middle of the petiole, the petiole itself minutely brown-puberulous; flowers solitary or in cymes up to 2 cm. long, several to each node forming a rather loose terminal raceme up to 7 cm. long and 2 to 3 cm. broad at base, the lowermost internode of the inflorescence about 2 cm. long, the others successively shorter, the peduncles 3 to 4 cm. long, these and the branches of the panicle including the pedicels (slender and up to 5 mm. long) minutely hirtellous, the hairs ascending, curved, up to 0.13 mm. long; nodal bracts lance-subulate, up to 8 mm. long and 1 mm. wide near base, the bracts subtending the pedicels similar but smaller, 1.5 to 3 mm. long, 0.25 to 0.5 mm. wide at base, all subglabrous to sparingly and minutely hirtellous with curved hairs; calyx segments linear, 5 mm.

long, 0.5 mm. wide at base, rather sparingly and minutely hirtellous; flowers white, the tube (8 mm. long and about 1 mm. in diameter) densely covered without by minute glandular hairs up to 0.05 mm. long, the corolla lobes spatulate, about 5 mm. long, 2 mm. wide above middle, rounded at tip, papillose but less densely so than the tube; stamens included, reaching within 1.5 mm. of the mouth of



FIGURE 273.—*Pseuderanthemum thelothrix* Leonard (Core 819): *a*, Tip of plant; *b*, stem node showing leaf and branchlet; *c*, node of inflorescence (second from base); *d*, calyx; *e*, corolla; *f*, portion of corolla tube enlarged to show pubescence; *g*, stamen and staminode. (*a*, *b*, Half natural size; *c*, $1\frac{1}{2}$ times natural size; *d*, $3\frac{1}{2}$ times natural size; *e*, 3 times natural size; *f*, about 70 times natural size; *g*, 5 times natural size.)

the corolla tube, glabrous, the filaments 1.25 mm. long, the anthers 1.5 mm. long, 0.75 mm. broad; staminodes slender, 0.5 mm. long; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 2105340, collected in moist thicket along road between Alto del Tigre and El Socorro, east of Argelia, Department of Antioquia, Colombia, 900 to 1,710 meters altitude, June 1, 1944, by Earl L. Core (No. 819).

Pseuderanthemum thelothrix is near *P. chaponense* in its relationship and general appearance. The pedicels of *P. chaponense*, however, do not exceed 1 mm. in length, whereas in this new species they are noticeably slender and are usually as much as 5 mm. long.

The specific epithet is from the Greek *θηλή*, nipple, and *τριξ*, hair, in allusion to the papillose puberulence of the corolla.

21. *Pseuderanthemum stenosphon* Leonard

See page 314.

BOLÍVAR: Edge of forest at Antizales, Pennell 4453 (NY).

22. *Pseuderanthemum cuatrecasasii* Leonard

See page 316.

CAUCA: Forest at La Gallera, Killip 7742 (GH); 7783 (GH). In primitive forest of La Costa, vicinity of El Tambo, 800 to 1,000 meters altitude, *von Sneidern* 493 (S); 612 (S); 617 (S); 775 (S); 809 (S); 822 (S). Munchique, vicinity of Tambo, 2,500 meters altitude, *von Sneidern* 821 (S).

EL VALLE: Woods of La Laguna, valley of the Río Sanjuniquín, 1,250–1,400 meters altitude, December 10–20, 1943, Cuatrecasas 15506 (US).

The specimens cited above are all large-leaved plants closely resembling Killip's No. 7742. The leaves of the type specimen, Cuatrecasas' No. 21646, are atypical in size, being the smaller leaves of terminal secondary branches. The leaf blades of Killip's No. 7742 are as much as 18 cm. long and 5.5 cm. wide.

23. *Pseuderanthemum dawei* Turrill

See page 318.

EL VALLE: La Cumbre, Killip 5962 (GH, NY).

WITHOUT DEFINITE LOCALITY: "Andes de Mariquita i Antioquia," 2,200 meters altitude, February 1852, Triana s.n. (Col).

24. *Pseuderanthemum chocoense* Leonard, sp. nov.

FIGURE 274

Herba, caulibus subquadrangularibus, glabris vel in nodis parce hirtellis, pilis ascendentibus; lamina foliorum obovata, breviter acuminata, basi cuneata, submembranacea, integra vel undulata, utrinque glabra, costa et venis lateralibus parce hirtellis; petioli parce hirtelli, aliquanto breves; panicula modice densa, anguste ovoidea, apice acuta, rhachibus aliquanto dense pubescentibus, pilis septatis, pedunculo aliquanto longo, hirtello; bracteae infimae lanceolatae, apice acutae, subobtusae, recurvatae, intus glabrae, extus hirtellae; bracteae flores subtendentes lanceolatae, carinatae, hirtellae; pedicelli graciles, aliquanto parce hirtelli; calycis segmenta anguste lanceolata, apice acuta, glabra vel apice parce hirtella; corolla sursum puberula, basi glabra, lobis ovatis, rotundatis; stamina inclusa; staminodia parva, curvata; ovarium glabrum.

Herbs; stems subquadrangular, glabrous or sparingly hirtellous at and near the nodes, the hairs ascending, 0.28 mm. long; leaf blades obovate, up to 16 cm. long and 5.8 cm. wide above middle, short and rather abruptly acuminate (the tip itself blunt), narrowed at base, rather thin, entire or undulate, both surfaces glabrous except costa and lateral veins (8 to 10 pairs), these sparingly hirtellous, the hairs up to 0.16 mm. long, subappressed, the venation of both surfaces scarcely prominent but more so beneath than above; petioles

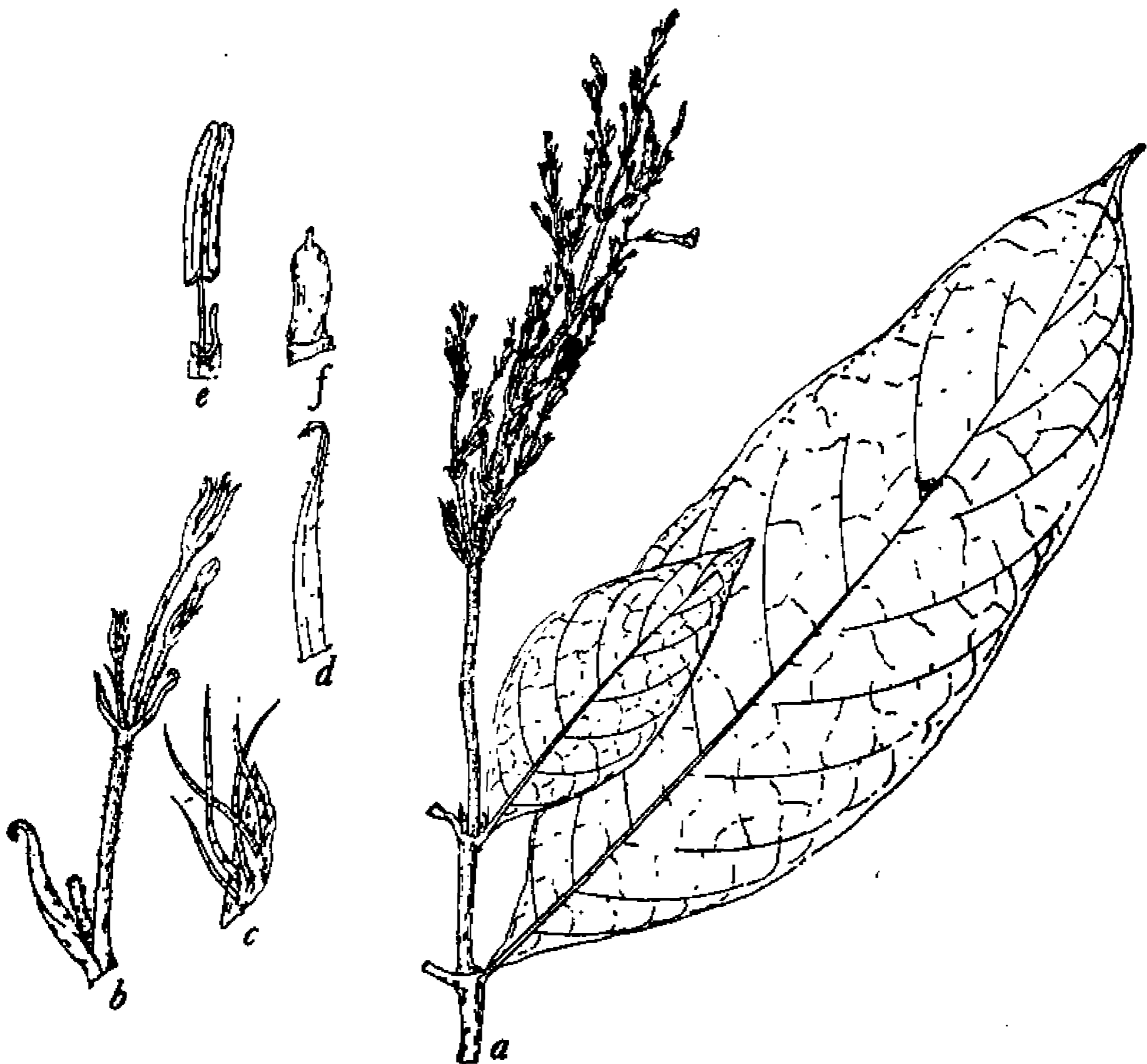


FIGURE 274.—*Pseuderanthemum chocoense* Leonard (*Triana* s. n. "Prov. del Choco"): *a*, Tip of plant; *b*, a branch of the inflorescence; *c*, hairs from a portion of the rachis; *d*, calyx segment; *e*, stamen and staminode; *f*, ovary. (*a*, Half natural size; *b*, $2\frac{1}{2}$ times natural size; *c*, 70 times natural size; *d*, 4 times natural size; *e*, *f*, 10 times natural size.)

up to 6 mm. long and 1.25 mm. thick, sparingly hirtellous, the hairs similar to those on the stems; panicles rather dense, up to 8 cm. long and 3 cm. broad, narrowly ovoid and acute at tip, the branches (1 to 2 pairs at each node) mostly 3 to 4 cm. long, the rachises rather densely pubescent with ascending hairs up to 0.25 mm. long, these conspicuously septate under a lens, the peduncle 4.5 cm. long, 1.75 mm. thick, hirtellous, the hairs similar to those of the rachises but not so numerous, the first internode of the panicle 2.5 cm. long,

the others successively shorter; bracts subtending the branches of the panicle lanceolate, 6 mm. long, 1.5 mm. wide near base, narrowed to an acute bluntish recurved tip, the inner surface glabrous, the outer hirtellous, the hairs similar to those of the rachises; bracts subtending the flowers lanceolate, 3 mm. long, 0.75 mm. wide at base, carinate, hirtellous; pedicels up to 5 mm. long, rather sparingly hirtellous; calyx 5 mm. long, the segments narrowly lanceolate, 4 mm. long, 0.75 mm. wide near base, narrowed to an acute tip, glabrous or bearing a few hairs on tips and margins; corolla 1 cm. long, moderately puberulous except the glabrous base (the hairs about 0.08 mm. long), the tube 1.5 mm. broad at base, narrowed above ovary to 0.75 mm., thence gradually enlarged to 1.5 mm. at mouth, the lobes ovate, about 2 mm. long and 1.25 mm. wide, rounded at tip; stamens included, 2.5 mm. long, the anthers 1.5 mm. long, the staminodes 1 mm. long, curved; ovary glabrous; capsules not seen.

Type in the Kew Herbarium, collected in the "Prov. del Chocó," Colombia, 150 meters altitude, March 1853, by J. Triana (No. 101-5).

The color of the corolla is not apparent in the dried material.

APPENDIX

LIST OF NUMBERED SPECIMENS

Parts I-III

- | | |
|---|--|
| <p style="text-align: center;">ALFARO-P., S.</p> <p>27. <i>Hygrophila guianensis</i></p> <p style="text-align: center;">ALLEN, CYRIL</p> <p>25. <i>Justicia laevilinguis</i>
 368. <i>Odontonema bracteolatum</i> var.
 <i>parviflorum</i>
 628. <i>Justicia chaetocephala</i>
 839. <i>Elytraria imbricata</i>
 841. <i>Blechum brownei</i> f. <i>puberulum</i>
 844. <i>Justicia sciota</i> (type)
 845. <i>Aphelandra pulcherrima</i>
 865. <i>Ruellia macrophylla</i>
 866. <i>Odontonema bracteolatum</i>
 876. <i>Trichanthera gigantea</i>
 912. <i>Teliostachya alopecuroidea</i>
 913. <i>Justicia pectoralis</i>
 934. <i>Ruellia geminiflora</i></p> <p style="text-align: center;">ALLEN, PAUL H., AND ALLEN,
 DOROTHY O.</p> <p>3229. <i>Ruellia tubiflora</i> var. <i>tetrastichan-
 antha</i></p> <p style="text-align: center;">ANDRÉ, EDOUARD</p> <p>266. <i>Sanchezia pennellii</i>
 287. <i>Aphelandra glabrata</i>
 301. <i>Justicia comata</i>
 402. <i>Ruellia pennellii</i>
 447. <i>Justicia phytolaccoides</i>
 512. <i>Sanchezia pennellii</i>
 513. <i>Sanchezia pennellii</i>
 665. <i>Stenandrium dulce</i>
 900. <i>Ruellia tubiflora</i> var. <i>tetrastichan-
 tha</i>
 1014. <i>Ruellia tubiflora</i> var. <i>tetrasti-
 chantha</i> f. <i>bicolor</i>
 1055. <i>Aphelandra lamprantha</i> (type)
 1094. <i>Justicia ischnorachis</i>
 1203. <i>Ruellia aurantiaca</i> (type)
 1439. <i>Ruellia ischnopoda</i></p> | <p>1445. <i>Ruellia tolimensis</i>
 1517. <i>Justicia fusagasugana</i> (type)
 1658. <i>Aphelandra conformis</i> (type)
 1713. <i>Ruellia tuberosa</i>
 1859bis. <i>Ruellia geminiflora</i>
 1865. <i>Ruellia lorentziana</i>
 1881. <i>Ruellia ischnopoda</i>
 2047. <i>Aphelandra acanthus</i>
 2406. <i>Ruellia lasiostachya</i>
 2848. <i>Ruellia rusbyi</i>
 2916. <i>Ruellia ischnopoda</i>
 4661. <i>Aphelandra andrei</i> (type)</p> <p style="text-align: center;">ANTONIO-MIGUEL, BROTHER</p> <p>121. <i>Ruellia fulgida</i> var. <i>angustissima</i></p> <p style="text-align: center;">APOLINAR-ANGEL, BROTHER</p> <p>488. <i>Justicia bracteosa</i>
 490. <i>Justicia leucerythra</i>
 491. <i>Aphelandra pulcherrima</i>
 496. <i>Ruellia paniculata</i>
 515. <i>Ruellia macrophylla</i>
 704. <i>Hygrophila guianensis</i>
 762. <i>Pseuderanthemum atropurpureum</i></p> <p style="text-align: center;">APOLINAR-MARÍA, BROTHER</p> <p>92. <i>Justicia sanchezioides</i>
 157. <i>Justicia pectoralis</i></p> <p style="text-align: center;">ARAQUE-M., JORGE, & BARKLEY,
 FRED A.</p> <p>18An.360. <i>Ruellia geminiflora</i> var. <i>an-
 gustifolia</i>
 19An.032. <i>Aphelandra blandii</i>
 19At.081. <i>Aphelandra pulcherrima</i>
 19Bo.033. <i>Aphelandra pulcherrima</i>
 19Bol.83. <i>Elytraria imbricata</i>
 19Ch.034. <i>Thunbergia grandiflora</i>
 19Ch.058. <i>Justicia comata</i>
 19Ch.112. <i>Justicia comata</i>
 18M.015. <i>Justicia filibracteolata</i> var.
 <i>leucantha</i></p> |
|---|--|

- 18M.018. *Justicia ischnorhachis*
 18M.026. *Justicia filibracteolata* var. *leucantha*
 18M.027. *Justicia filibracteolata* var. *leucantha*
 18M.033. *Aphelandra barkleyi* (type)
 18M.041. *Hygrophila guianensis*
 18M.054. *Teliostachya lanceolata*
 18M.058. *Ruellia tubiflora* var. *tetrastichantha* f. *bicolor*
 18NS.106. *Ruellia tuberosa*
 18NS.153. *Ruellia tuberosa*
 18S.212. *Trichanthera corymbosa*
 18S.247. *Hygrophila guianensis*
 18S.275. *Justicia bracteosa*
 18S.316. *Tetramerium nervosum*
 18S.321. *Tetramerium nervosum*
 18S.341. *Habracanthus smithii*
 18Va.068. *Sanchezia pennellii*
 18Vi.128. *Mendoncia hirsuta*
- ARAQUE-M., JORGE; OTALORA, ANTONIO; & BARKLEY, FRED A.
- 18NS.066. *Aphelandra pulcherrima*
- ARCHER, W. A.
14. *Blechum brownei* f. *puberulum*
 47. *Thunbergia alata*
 88. *Blechum brownei* f. *puberulum*
 460. *Hygrophila guianensis*
 523. *Trichanthera gigantea*
 574. *Trichanthera gigantea*
 638. *Justicia filibracteolata*
 818. *Mendoncia gracilis*
 871. *Justicia filibracteolata*
 899. *Hygrophila guianensis*
 1093. *Aphelandra runcinata*
 1354. *Dicliptera scandens* (type)
 1417. *Blechum brownei* f. *puberulum*
 1640. *Justicia archeri* (type)
 1673. *Pseuderanthemum chilianthium*
 1708. *Mendoncia glabrescens*
 1731. *Aphelandra lingua-bovis*
 1803. *Sanchezia pennellii*
 1925. *Justicia comata*
 2003. *Aphelandra dolichantha*
 2012. *Aphelandra lingua-bovis* (type)
 2097. *Pseuderanthemum chilianthium*
 2120. *Pseuderanthemum chilianthium*
 2174. *Sanchezia lutea* (type)
 2220. *Justicia comata*
- ARISTE-JOSEPH, BROTHER
- A224. *Habracanthus microcalyx* (type)
 A360. *Aphelandra glabrata*
 A375. *Pseuderanthemum atropurpureum*
 A946. *Ruellia paniculata*
 A973. *Ruellia tubiflora*
 1019. *Aphelandra glabrata*
 1055. *Thunbergia alata*
 1061. *Trichanthera gigantea*
 1081. *Aphelandra grandis*
 1082. *Justicia filibracteolata*
 1085. *Kalbreyeriella rostellata*
- BARKLEY, FRED A.
- 17C.345. *Blechum brownei* f. *puberulum*
- BARKLEY, FRED A., & ARAQUE-M., JORGE
20. *Ruellia tuberosa*
 21. *Ruellia tuberosa*
 22. *Ruellia lorentziana*
- BARKLEY, FRED A.; ARAQUE-MOLINA, JORGE; & GÓMEZ-J., JAVIER
406. *Justicia chlorostachya*
 424. *Aphelandra runcinata*
- BARKLEY, FRED A., & ARBOLEDA-R., L. L.
3. *Thunbergia fragrans*
- BARKLEY, FRED A.; BARROS-N., OVIDIO; & ALVAREZ-A., RICARDO
381. *Blechum brownei* f. *puberulum*
 393. *Ruellia tuberosa*
- BARKLEY, FRED A.; CORREA-V., JAIRO; & PÉREZ-F., CÉSAR A.
102. *Justicia chlorostachya*
- BARKLEY, FRED A.; CORREA-V., JAIRO; & POSADA-S., SAMUEL
101. *Aphelandra runcinata*
- BARKLEY, FRED A., & GUTIÉRREZ-V., GABRIEL
1834. *Ruellia paniculata*
 1835. *Ruellia inundata*
 1836. *Elytraria imbricata*
 1857. *Dicliptera assurgens*

BARKLEY, FRED A.; KLEVENS, MILTON
JON; & GUTIÉRREZ-V., GABRIEL

17C.380. *Ruellia tuberosa*

BARKLEY, FRED A.; RÍOS-C., DANILO; &
BETANCOURT-O., ALBERTO

618. *Aphelandra scolnikae*

BARKLEY, FRED A.; SKOLNIK, ROSA; &
GÓMEZ, JAVIER

413. *Justicia comata*

BARKLEY, FRED A.; SCOLNIK, ROSA; &
OROZCO, TOMÁS G.

523. *Aphelandra scolnikae* (type)

BARKLEY, FRED A.; SCOLNIK, ROSA; &
RAMÍREZ, EMILIO

522. *Justicia chlorostachya*

BECHARA-ZAINUM, JUAN; ARAQUE-M.,
JORGE; & BARKLEY, FRED A.

19Bo.085. *Blechum brownei* f. *puberulum*

19Bo.094. *Justicia comata*

19Bo.218. *Aphelandra pulcherrima*

BILBERG, JOHAN I.

1. *Tetramerium nervosum*

3. *Ruellia paniculata*

113. *Elytraria imbricata*

CAMILO, H. ANTONIO

78. *Sanchezia lutea*

CARDONA-GONZÁLEZ, LUIS; GUTIÉRREZ-V., GABRIEL; & BARKLEY, FRED A.

18C.049. *Justicia pectoralis*

18C.077. *Aphelandra daemonia*

18C.089. *Odontonema bracteolatum*

CERVANTES, JULIO; ARAQUE-M., JORGE;
& BARKLEY, FRED A.

19Bo.054. *Blechum brownei* f. *puberulum*

19Bo.066. *Ruellia tuberosa*

CHEESMAN, L. E.

533. *Ruellia gorgonensis* (type)

COLLENETTE, C. L.

557. *Sanchezia lutea*

630. *Aphelandra arisema*

614. *Justicia petraea* (type)

CORE, EARL L.

591. *Habracanthus pilosus*

819. *Pseuderanthemum thelothrix*
(type)

825. *Mendoncia lindavii*

1200. *Habracanthus corei* (type)

1322. *Neriacanthus lehmannianus*

1324. *Neriacanthus lehmannianus*

1377. *Kalbreyeriella rostellata*

1482. *Blechum brownei* f. *puberulum*

1501. *Trichanthera gigantea*

1558. *Aphelandra cuatrecasasii*

1619. *Aphelandra huilensis*

CUATRECASAS, J.

209. *Habracanthus callianthus*

214. *Dicliptera sciaphila* (type)

1088. *Ruellia tuberosa*

1119. *Ruellia tuberosa*

1924. *Trichanthera gigantea*

1985. *Teliostachya lanceolata* var. *crispa*

3577. *Justicia comata*

3810. *Aphelandra deppeana*

3816. *Aphelandra deppeana*

3978. *Justicia comata*

4046. *Aphelandra deppeana*

4139. *Justicia filibracteolata*

4195. *Aphelandra deppeana*

4269. *Justicia periplocifolia*

4422. *Blechum brownei* f. *puberulum*

4513. *Justicia filibracteolata* var. *leucantha* (type)

4518. *Justicia ischnorhachis*

4535. *Ruellia tubiflora* var. *tetrastichantha*

4536. *Ruellia humboldtiana*

4538. *Aphelandra barkleyi*

4591. *Ruellia tubiflora* var. *hirsuta*
(type)

4627. *Sanchezia lutea*

4631. *Ruellia tubiflora* var. *tetrastichantha*

4701. *Justicia filibracteolata* var. *aurantiaca*

4709. *Justicia ischnorhachis*

4727. *Ruellia geminiflora*

6878. *Aphelandra deppeana*

7075. *Ruellia humboldtiana*
 7223. *Aphelandra pilosa* (type)
 7317. *Ruellia humboldtiana*
 7339. *Aphelandra deppeana*
 7383. *Justicia croceochlamys*
 7442. *Sanchezia pennellii*
 7456. *Aphelandra impressa*
 7478. *Aphelandra pilosa*
 7536. *Justicia hyperdasya* (type)
 7542. *Justicia hyperdasya*
 7586. *Teliostachya lanceolata*
 7640. *Ruellia geminiflora* var. *angustifolia*
 8519. *Habracanthus floriferus* (type)
 8740. *Habracanthus cuatrecasatii* (type)
 8859. *Mendoncia coccinea*
 9052. *Aphelandra pilosa*
 9064. *Mendoncia pilosa*
 9147. *Justicia filibracteolata* var. *lilacina* (type)
 10524. *Justicia polygonoides*
 10529. *Ruellia tubiflora*
 10529a. *Ruellia tolimensis* (type)
 10562. *Aphelandra pilosa*
 10581. *Justicia sancheziioides* (type)
 10629. *Pseuderanthemum potamophilum* (type)
 10656. *Aphelandra pilosa*
 10671. *Pseuderanthemum poecilanthum* (type)
 10733. *Trichanthera gigantea*
 10757. *Justicia idiogenes* (type)
 10848. *Justicia hygrobia* (type)
 10918. *Sanchezia pennellii*
 10919. *Sanchezia putumayensis*
 10933. *Justicia chloanantha*
 11007. *Aphelandra impressa*
 11027. *Ruellia colorata*
 11044. *Teliostachya lanceolata*
 11051. *Sanchezia pennellii*
 11086. *Pseuderanthemum potamophilum*
 11109. *Sanchezia speciosa*
 11134. *Mendoncia cuatrecasatii* (type)
 11137. *Justicia chloanantha* (type)
 11157. *Justicia pelianthia* (type)
 11231. *Sanchezia parvibracteata*
 11241. *Hygrophila guianensis*
 11271. *Kalbreyeriella gigas* (type)
 11276. *Ruellia tubiflora* var. *parviflora* f. *alba* (type)
 11352. *Aphelandra crispata* (type)
 11435. *Habracanthus aglaüs* (type)
 11631. *Aphelandra phobera*
 12873. *Aphelandra macrophylla* (type)
 12883. *Aphelandra parvispica* (type)
 12897. *Aphelandra macrophylla*
 12976. *Ruellia humboldtiana*
 13061. *Justicia stereostachya* (type)
 13109, in part. *Mendoncia coccinea* var. *elliptica*
 13109, in part. *Mendoncia sprucei*
 13198. *Justicia unguiculata*
 13374. *Aphelandra impressa*
 13382. *Justicia ischnorhachis*
 13437. *Trichanthera gigantea*
 13731. *Justicia chrysea* (type)
 14111. *Justicia comata*
 14236. *Hygrophila guianensis*
 14345. *Justicia comata*
 14346. *Hygrophila tyttha*
 14461. *Thunbergia alata*
 14510. *Blechum brownei* f. *puberulum*
 14530. *Ruellia malacosperma*
 15035. *Ruellia potamophila*
 15160. *Kalbreyeriella rostellata*
 15205. *Mendoncia glabrescens*
 15216. *Mendoncia cordata* (type)
 15275. *Jacobinia tinctoria*
 15303. *Justicia chlorostachya*
 15317. *Pseuderanthemum hylophilum* (type)
 15388. *Kalbreyeriella rostellata*
 15400. *Aphelandra arborescens* (type)
 15436. *Aphelandra leiophylla* (type)
 15438. *Justicia chlorostachya*
 15468. *Dicliptera sarcochroma* (type)
 15506. *Pseuderanthemum cuatrecasatii*
 15625. *Neriacanthus grandiflorus* (type)
 15916. *Justicia comata*
 16003. *Justicia comata*
 16060. *Justicia comata*
 16069. *Aphelandra hartwegiana*
 16322. *Sanchezia pennellii*
 16334. *Blechum brownei* f. *puberulum*
 16355. *Aphelandra hartwegiana*
 16424. *Ruellia colombiana* (type)
 16433. *Pseuderanthemum ctenospermum* (type)
 16444. *Justicia chlorostachya*
 16672. *Hygrophila tyttha*
 16705. *Aphelandra cuatrecasatii* (type)
 16811. *Justicia sterea* (type)
 16847. *Mendoncia glabrescens*
 17093. *Justicia comata*
 17101. *Hygrophila tyttha*

17182. *Mendoncia glabrescens*
 17231. *Aphelandra hartwegiana*
 17238. *Mendoncia glabrescens* (type)
 17317. *Pseuderanthemum chilianthium*
 17529. *Mendoncia litoralis* (type)
 17605. *Aphelandra hartwegiana*
 17736. *Pseuderanthemum chilianthium*
 18314. *Mendoncia gracilis*
 18484. *Aphelandra phobera* (type)
 18515. *Habracanthus pycnostachys*
 (type)
 18656. *Blechum brownei* f. *puberulum*
 18716. *Teliostachya lanceolata*
 18751. *Aphelandra arborescens*
 18783. *Dicliptera cuatrecasatii* (type)
 19710. *Ruellia ischnopoda*
 20236. *Aphelandra euopla* (type)
 20941. *Justicia malacophylla* (type)
 20947. *Dicliptera driophila* (type)
 21205. *Sanchezia pennellii*
 21206. *Aphelandra hartwegiana*
 21246. *Hygrophila tyttha*
 21428. *Justicia killipii*
 21641. *Mendoncia microchlamys*
 21646. *Pseuderanthemum cuatrecasatii*
 (type)
 22063. *Justicia comata*
 22210. *Justicia chlorostachya*
 22266. *Justicia chlorostachya*
 22283. *Aphelandra porphyrolepis* (type)
 22284. *Aphelandra taborensis* (type)
 22620. *Justicia filibracteolata*
 22631. *Trichanthera gigantea*
 22728. *Kalbreyeriella rostellata*
 22764. *Thunbergia alata*
 22770. *Justicia polygonoides*
 23321. *Aphelandra acanthus*
 23462. *Aphelandra huilensis*
 23467. *Jacobinia amphibola* (type)
 23468. *Habracanthus caucensis* (type)
 23848. *Pseuderanthemum cuatrecasatii*
 23866. *Hygrophila guianensis*
 23929. *Habracanthus pycnostachys*
 23947. *Ruellia potamophila*

CUATRECASAS, J., & GARCÍA-BARRIGA, H.

9820. *Dicliptera garciae* (type)

CUATRECASAS, J.; SCHULTES, R. E.; &
 SMITH, E.

12419. *Habracanthus trichotus* (type)
 12511. *Justicia fuchsiifolia* (type)
 12516. *Aphelandra parvispica*

CURRAN, H. M.

54. *Trichanthera gigantea*
 99. *Aphelandra deppeana*
 111. *Aphelandra deppeana*
 222. *Bravaisia integerrima*
 264a. *Ruellia obtusa*
 308. *Bravaisia integerrima*
 317. *Bravaisia integerrima*
 321. *Aphelandra pulcherrima*
 415. *Ruellia tuberosa*

DANIEL, BROTHER

897. *Hygrophila guianensis*
 1790. *Justicia filibracteolata*
 2172. *Aphelandra runcinata*
 2970. *Dicliptera danielii* (type)
 2974. *Mendoncia gracilis*
 3965. *Hygrophila guianensis*
 4024. *Aphelandra runcinata* var. *pilosa*

DANIEL, BROTHER, & TOMÁS, BROTHER

2589. *Aphelandra blandii*
 3366. *Justicia filibracteolata*

DAWE, M. T.

201. *Stenandrium dulce*
 229. *Mendoncia lindavii*
 440. *Justicia chaetocephala*
 616. *Ruellia macrophylla*
 766. *Aphelandra runcinata*
 789. *Ruellia macrophylla*
 847. *Pseuderanthemum dawei* (type)
 900. *Aphelandra pilosa*

DRYANDER, E.

47. *Trichanthera gigantea*
 413. *Thunbergia fragrans*
 681. *Aphelandra arborescens*
 2140. *Neriacanthus lehmannianus*
 2288. *Neriacanthus lehmannianus*
 2337. *Ruellia geminiflora*

DUGAND, A.

13. *Bravaisia integerrima*
 83. *Bravaisia integerrima*
 168. *Bravaisia integerrima*
 412. *Bravaisia integerrima*
 542. *Bravaisia integerrima*
 580. *Bravaisia integerrima*
 1063. *Ruellia paniculata*
 3605. *Pseuderanthemum atropurpureum*

3623. *Elytraria imbricata*
 3630. *Ruellia inundata*
 3633. *Ruellia paniculata*
 3639. *Elytraria imbricata*
 4014. *Ruellia inundata*
 4420. *Blechum brownei* f. *puberulum*
 4427. *Ruellia inundata*

DUGAND, A., & GARCÍA-BARRIGA, H.

2272. *Justicia bracteosa*
 2273. *Aphelandra pulcherrima*
 2287. *Justicia leucerythra*
 2318. *Elytraria imbricata*
 2324. *Bravaisia integerrima*
 2343. *Justicia carthaginensis*
 2354. *Justicia carthaginensis*
 2362. *Ruellia paniculata*
 2369. *Ruellia obtusa*
 2371. *Dicliptera assurgens*
 2383. *Ruellia obtusa*
 2384. *Blechum brownei* f. *puberulum*
 2436. *Ruellia inundata*
 2445. *Ruellia paniculata*
 2493. *Odontonema bracteolatum*
 2535. *Barleria cristata*
 2539. *Ruellia obtusa*
 2545. *Ruellia paniculata*
 2549. *Aphelandra pulcherrima*

DUGAND, A., & JARAMILLO, R.

2701. *Aphelandra pulcherrima*
 2725. *Elytraria imbricata*
 2740. *Ruellia paniculata*
 2767. *Elytraria imbricata*
 2797. *Ruellia inundata*
 2798. *Dicliptera vahliana*
 2800. *Aphelandra pulcherrima*
 2852. *Odontonema bracteolatum*
 2920. *Ruellia tubiflora* var. *tetrastichantha* f. *bicolor*
 3113. *Ruellia humboldtiana*
 3117. *Aphelandra pilosa*
 3242. *Ruellia obtusa*
 3280. *Ruellia obtusa*
 3871. *Mendoncia gracilis*
 4053. *Aphelandra pulcherrima*
 4061. *Barleria micans*
 4091. *Ruellia paniculata*
 4094. *Bravaisia integerrima*
 4096. *Justicia bracteosa*
 4154. *Barleria micans*

4153. *Odontonema bracteolatum* var. *parviflorum*
 4155. *Ruellia macrophylla*
 4160. *Justicia leucerythra*
 4164. *Blechum brownei* f. *puberulum*

DUQUE, J. M.

1051. *Justicia comata*
 1339. *Justicia pectoralis* var. *stenophylla*
 1396. *Thunbergia fragrans*
 1446. *Ruellia lorentziana*
 1570A. *Jacobinia magnifica*
 1660. *Habracanthus pycnostachys*
 1701. *Jacobinia tinctoria*
 1804. *Thunbergia fragrans*

ELIAS, BROTHER

143. *Pseuderanthemum atropurpureum*
 160. *Elytraria imbricata*
 234. *Pseuderanthemum atropurpureum*
 247. *Ruellia obtusa*
 287. *Justicia laevilinguis*
 351. *Justicia carthaginensis*
 433. *Ruellia paniculata*
 440. *Aphelandra pulcherrima*
 444. *Bravaisia integerrima*
 473. *Nelsonia brunelloides*
 487. *Bravaisia integerrima*
 496. *Justicia bracteosa*
 502. *Barleria cristata*
 622. *Asystasia gangetica*
 670. *Justicia bracteosa*
 676. *Blechum brownei* f. *puberulum*
 681. *Justicia leucerythra*
 695. *Ruellia macrophylla*
 705. *Aphelandra pulcherrima*
 707. *Ruellia inundata*
 720. *Ruellia paniculata*
 735. *Barleria micans*
 742. *Odontonema bracteolatum*
 746. *Ruellia inundata*
 753. *Barleria cristata*
 788. *Ruellia macrophylla*
 794. *Thunbergia grandiflora* f. *alba* (type)
 821. *Ruellia paniculata*
 857. *Ruellia inundata*
 860. *Aphelandra pulcherrima*
 915. *Elytraria imbricata*
 952. *Bravaisia integerrima*
 974. *Bravaisia integerrima*

980. *Barleria cristata*
 988. *Ruellia obtusa*
 1034. *Justicia carthaginensis*
 1155. *Ruellia inundata*
 1180. *Justicia bracteosa*
 1265. *Bravaisia integerrima*
 1375. *Ruellia paniculata*
 1385. *Ruellia inundata*
 1408. *Thunbergia grandiflora*
 1411. *Justicia leucerythra*
 1498. *Justicia bracteosa*
 1507. *Bravaisia integerrima*

EWAN, JOSEPH A.

15622. *Stenandrium humboldtianum*
 15628. *Dicliptera ewanii* (type)
 15629. *Pseuderanthemum ewanii* (type)
 15732. *Aphelandra runcinata*
 15833. *Thunbergia grandiflora* f. *citrina*
 (type)
 16501. *Aphelandra gilva* (type)
 16785. *Ruellia tubiflora* var. *parviflora*
 (type)

FERNÁNDEZ, A.

254. *Aphelandra fernandezii* (type)
 350. *Justicia filibracteolata*
 354. *Aphelandra hartwegiana*

FERNÁNDEZ, A., & MORA, L. E.

1442. *Pseuderanthemum ellipticum*

FOSBERG, F. R.

19129. *Mendoncia sprucei*
 19131. *Aphelandra coccinantha* (type)
 19492. *Justicia macarenensis*
 19791. *Hansteinia charitopes* (type)
 19941. *Habracanthus caucensis*
 20115. *Jacobinia amphibola*
 20160. *Ruellia humboldtiana*
 20386. *Hygrophila guianensis*
 20901. *Habracanthus ampelinus*
 21113. *Aphelandra acanthus*
 21244. *Justicia atacta* (type)
 21438. *Dicliptera assurgens*
 21445. *Ruellia humboldtiana*
 22126. *Ruellia tuberosa*

FOSBERG, F. R., & FASSETT, N. C.

21733. *Habracanthus syscius* (type)
 21809. *Aphelandra trichota* (type)

FOSTER, M. B.

2360. *Ruellia tuberosa*

FUNCK, NICOLAS, & SCHLIM, LOUIS
JOSEPH

694. *Ruellia tuberosa*

GABRIEL, H. ANTONINO

6. *Stenandrium dulce*

GARCÍA-BARRIGA, H.

3067. *Justicia filibracteolata*
 4314. *Trichanthera gigantea*
 4702. *Blechum brownei* f. *puberulum*
 4704. *Thunbergia alata*
 4857. *Habracanthus scolnikae*
 5107. *Ruellia geminiflora*
 5126. *Ruellia humboldtiana*
 5131. *Ruellia geminiflora* var. *angustifolia*
 5158. *Ruellia geminiflora*
 5177. *Dicliptera ochrochlamys* (type)
 5181. *Phaulopsis oppositifolia*
 5196. *Ruellia geminiflora*
 5304. *Mendoncia lindavii*
 6327. *Hygrophila guianensis*
 7658. *Trichanthera gigantea*
 7720. *Mendoncia odorata*
 8337. *Mendoncia gracilis*
 8341. *Justicia phytolaccoides*
 8346. *Justicia phytolaccoides*
 10998. *Ruellia longifilamentosa*
 11128. *Pseuderanthemum chilianthium*
 11524. *Hygrophila guianensis*
 11727. *Aphelandra deppeana*
 12049. *Pseuderanthemum atropurpureum*
 12114. *Trichanthera gigantea*
 12137. *Ruellia tuberosa*
 12148. *Ruellia tuberosa*
 12193. *Trichanthera gigantea*
 12203. *Trichanthera gigantea*
 12268. *Aphelandra lasia*
 12273. *Aphelandra acanthus*
 12322. *Ruellia fulgida* var. *angustissima*
 12323. *Aphelandra lasia*
 12347. *Dicliptera columbiana*
 12353. *Justicia phytolaccoides*
 12355. *Dicliptera columbiana* (type)
 12358. *Aphelandra glabrata*

12381. *Justicia polygonoides*
 12390. *Hygrophila guianensis*
 12394. *Mendoncia lindavii*
 12417. *Justicia filibracteolata* var. *pubescens*
 12467. *Justicia filibracteolata* var. *pubescens*
 12473. *Odontonema ampelocaula* (type)
 12478. *Ruellia longifilamentosa*
 12543. *Trichanthera gigantea*
 12589. *Pseuderanthemum ellipticum*
 12595. *Stenandrium humboldtianum*
 12646. *Justicia phytolaccoides*
 13415. *Ruellia tuberosa*
 13454. *Ruellia obtusa* f. *albiflora* (type)
 13653. *Justicia neurochlamys*
 13718. *Justicia pectoralis*
 14096. *Justicia neurochlamys* (type)
 14377. *Pseuderanthemum galbanum* (type)
 14399. *Mendoncia garciae* (type)
 14403. *Mendoncia phalacra* (type)

GARCÍA-BARRIGA, H., & HAWKES, J. G.

12685. *Jacobinia magnifica*

GARCÍA-BARRIGA, H.; HAWKES, J. G.; & VILLARREAL, M.

12945. *Habracanthus hylobius*
 12960. *Justicia chlorostachya*

GARGANTA-FÁBREGA, MIGUEL DE

782. *Justicia filibracteolata*
 902. *Ruellia tuberosa*
 1075. *Ruellia tuberosa*

GIACOMETTO, JUAN

78. *Odontonema bracteolatum* var. *parviflorum*
 80. *Justicia chrysocoma*
 94. *Odontonema bracteolatum*
 1000. *Justicia carthaginensis*
 1049. *Elytraria imbricata*

GRANGER, J. S., & RODRIGUEZ-A., C.

10. *Aphelandra grangeri* (type)

GRANT, MARTIN L.

9011. *Habracanthus callianthus* (type)
 9167. *Aphelandra atectmarta* (type)

9439. *Habracanthus charien* (type)
 9647. *Habracanthus ampelinus* (type)
 9811. *Aphelandra quadrifaria* (type)
 10013. *Ruellia grantii* (type)
 10278. *Justicia aurantiaca*
 10363. *Aphelandra grantii* (type)
 10388. *Ruellia humboldtiana*
 10431. *Ruellia tubiflora* var. *tetrastichantha* f. *caesolineata* (type)
 10706. *Ruellia paniculata*
 10731. *Habracanthus antipharmacus* (type)
 10764. *Ruellia macrophylla*
 10900. *Justicia enarthrocoma* (type)
 11000. *Ruellia macrophylla*

GRANT, MARTIN L., & FOSBERG, F. R.

9319. *Aphelandra fosbergii* (type)
 9326. *Habracanthus xantholeucus* (type)
 9341. *Justicia aurantiaca* (type)
 9343. *Habracanthus pilosus* (type)

GRANT, MARTIN L.; KILLIP, E. P.; & FOSBERG, F. R.

9124. *Aphelandra pinarotricha* (type)

GUEVARA-AMÓRTEGUI, B.

260. *Aphelandra grandis* (type)
 267. *Pseuderanthemum ellipticum*
 315. *Kalbreyeriella rostellata*

GUTIÉRREZ-V., GABRIEL

410. *Thunbergia grandiflora*
 416. *Justicia comata*
 1146. *Aphelandra runcinata*
 1300. *Justicia sciera* (type)

GUTIÉRREZ-V., GABRIEL, & BARKLEY, FRED A.

- 17C.036. *Blechum brownei* f. *puberulum*
 17C.041. *Ruellia tuberosa*
 17C.174. *Blechum brownei* f. *puberulum*
 17C.523. *Blechum brownei* f. *puberulum*

GUTIÉRREZ-V., GABRIEL, & SCHULTES, RICHARD EVANS

506. *Aphelandra schultesii*
 606. *Justicia gutierrezii* (type)
 789. *Mendoncia pedunculata*
 936. *Aphelandra schultesii* (type)

HAUGHT, OSCAR

1315. *Aphelandra incarnata* (type)
 1379. *Odontonema coccineum*
 1464. *Aphelandra crenata* (type)
 1496a. *Ruellia aquatica*
 1497. *Aphelandra mollis*
 1498. *Ruellia pennellii*
 1538. *Sanchezia pennellii*
 1561. *Ruellia pennellii*
 1580. *Ruellia pennellii*
 1581. *Justicia daidalea* (type)
 1603. *Justicia daidalea*
 1672. *Jacobinia axiologa*
 1750. *Aphelandra straminea* (type)
 1754. *Justicia helonoma* (type)
 1762. *Ruellia aquatica* (type)
 1788. *Justicia phytolaccoides*
 1799. *Mendoncia gilva* (type)
 1807. *Justicia phytolaccoides*
 1821. *Mendoncia lindavii*
 1835. *Sanchezia pennellii*
 1862. *Justicia filibracteolata* var. *pubescens*
 1936. *Aphelandra grandis*
 1948. *Aphelandra haughtii* (type)
 1986. *Jacobinia axiologa* (type)
 2055. *Odontonema coccineum* (type)
 2086. *Aphelandra haughtii*
 2099. *Ruellia pennellii*
 2098. *Aphelandra incarnata*
 2135. *Justicia namatophylla* (type)
 2138. *Teliostachya lanceolata* var. *crispa*
 2186. *Justicia helonoma*
 2283. *Justicia chaetocephala*
 2302. *Justicia chaetocephala*
 2360. *Justicia chaetocephala*
 2364. *Ruellia ischnopoda* (type)
 2388. *Justicia comata*
 2396. *Justicia erythrantha*
 2414. *Chaetochlamys columbiensis* (type)
 2449. *Aphelandra glabrata*
 2458. *Ruellia humboldtiana*
 2494. *Mendoncia odorata* (type)
 2501. *Aphelandra deppeana*
 2528. *Aphelandra barkleyi*
 2532. *Phaulopsis oppositifolia*
 2536. *Aphelandra pilosa*
 2560. *Justicia ischnorhachis*
 2569. *Ruellia tubiflora* var. *tetrastichantha* f. *bicolor* (type)
 2596. *Ruellia geminifolia* var. *angustifolia*
 2613. *Aphelandra deppeana*
 2812. *Ruellia humboldtiana*
 2841. *Odontonema coccineum*
 2853. *Justicia phytolaccoides*
 3632. *Justicia aëthes* (type)
 3645. *Justicia chaetocephala*
 3659. *Ruellia macrophylla*
 3716. *Justicia chaetocephala*
 3727. *Odontonema bracteolatum*
 3739. *Justicia leucerythra*
 3746. *Ruellia macrophylla* var. *puberula* (type)
 3759. *Aphelandra pulcherrima*
 3775. *Chaetothylax haughtii* (type)
 3816. *Justicia pharmacodes*
 3864. *Ruellia inundata*
 3865. *Elytraria imbricata*
 3928. *Justicia bracteosa*
 3929. *Siphonoglossa calcarea* (type)
 3930. *Ruellia inundata*
 3931. *Tetramerium nervosum*
 3944. *Aphelandra phlogea* (type)
 3945. *Aphelandra lasia* (type)
 3946. *Odontonema bracteolatum*
 3947. *Justicia chrysocoma*
 3974. *Pseuderanthemum haughtii* (type)
 3989. *Bravaisia integerrima*
 3999. *Justicia pharmacodes*
 4021. *Ruellia paniculata*
 4072. *Justicia pharmacodes* (type)
 4282. *Mendoncia speciosa*
 4384. *Ruellia obtusa*
 4391. *Justicia carthaginensis*
 4484. *Odontonema bracteolatum*
 4510. *Habracanthus antipharmacus*
 4545. *Sanchezia pennellii*
 4549. *Trichanthera gigantea*
 4554. *Justicia ephemera*
 4564. *Justicia phlebophylla* (type)
 4565. *Justicia homoea* (type)
 4699. *Aphelandra hartwegiana*
 4723. *Kalbreyeriella rostellata*
 4750. *Justicia bracteosa*
 4751. *Ruellia inundata*
 4753. *Justicia carthaginensis*
 4760. *Tetramerium nervosum*
 4763. *Justicia leucerythra*
 4766. *Ruellia paniculata*
 4772. *Justicia filibracteolata*
 4773. *Justicia filibracteolata*
 4775. *Justicia ephemera* (type)

4922. *Mendoncia mirabilis* (type)
 4929. *Ruellia chariessa* (type)
 4953. *Justicia polygonoides*
 4976. *Blechum haughtii* (type)
 5174. *Aphelandra phobera*
 5323. *Pseuderanthemum ctenospermum*
 5337. *Aphelandra craura* (type)
 5390. *Pseuderanthemum ctenospermum*
 5489. *Pseuderanthemum diachylum* (type)
 5528. *Aphelandra incarnata*
 6013. *Razisea spicata*
 6031. *Habracanthus lamprus* (type)
 6108. *Aphelandra runcinata* var. *straminea* (type)
 6179. *Dicliptera haughtii* (type)
 6242. *Justicia phytolaccoides* (type)
 6243. *Aphelandra incarnata*
 6256. *Ruellia tubiflora*
 6382. *Ruellia ischnopoda*
 6383. *Justicia infelix*
 6385. *Ruellia tubiflora*
 6429. *Ruellia tubiflora*
 6711. *Elytraria imbricata*
 6716. *Justicia carthaginensis*
 6729. *Justicia leucerythra* (type)
 6730. *Aphelandra daemonia*

HAWKES, J. G.

587. *Aphelandra mildbraediana*

HERIBERTO, BROTHER

100. *Ruellia tuberosa*
 136. *Elytraria imbricata*
 188. *Ruellia tubiflora* var. *tetrastichantha*
 268. *Aphelandra pulcherrima*
 276. *Justicia bracteosa*
 303. *Ruellia paniculata*
 304. *Ruellia paniculata*
 312. *Elytraria imbricata*
 357. *Aphelandra deppeana*
 367. *Justicia comata*
 410. *Thunbergia fragrans*
 415. *Aphelandra pulcherrima*
 460. *Ruellia macrophylla*

HERMANN, F. J.

10926. *Trichanthera gigantea*
 10942. *Ruellia humboldtiana*

10973. *Aphelandra deppeana*
 11102. *Ruellia geminiflora* var. *angustifolia*
 11117. *Ruellia tubiflora* var. *tetrastichantha* f. *bicolor*
 11156. *Teliostachya alopecuroidea*
 11198. *Ruellia geminiflora*
 11287. *Justicia comata*

HERNÁNDEZ-C., JORGE

809. *Dicliptera uribei*

HILARINO-ANGEL, BROTHER

50. *Justicia bracteosa*
 97. *Blechum brownei* f. *puberulum*
 109. *Pseuderanthemum atropurpureum*

HODGE, W. H

6504. *Justicia hodgei* (type)
 6511. *Jacobinia axiologa*
 6513. *Aphelandra hodgei* (type)
 6585. *Habracanthus hispidulus* (type)
 6605. *Aphelandra runcinata*
 6978. *Justicia phlebophylla*
 7012. *Aphelandra lingua-bovis*
 7034. *Odontonema stenostachyum*
 7053. *Aphelandra hartwegiana*

HOLTON, I. F.

10. *Sanchezia pennellii*
 23. *Ruellia fulgida* var. *angustissima*
 25. *Ruellia ischnopoda*
 282. *Ruellia tubiflora*
 592. *Aphelandra acanthus*
 594. *Justicia polygonoides*
 595. *Aphelandra glabrata*
 597. *Ruellia geminiflora*
 598. *Ruellia lorentziana*
 600. *Ruellia ischnopoda*

IDROBO, J. M.

536. *Pseuderanthemum idroboi* (type)
 566. *Mendoncia villosa*

IDROBO, J. M., & FERNÁNDEZ, A.

30. *Thunbergia alata*
 243. *Jacobinia tinctoria*

IDROBO, J. M., & SCHULTES, RICHARD
 EVANS

568. *Ruellia tubiflora* var. *tetrastichantha* f. *bicolor*
 631. *Aphelandra pilosa*

682. *Sanchezia pennellii*
 825. *Justicia cystolithosa* (type)
 840. *Aphelandra impressa*
 885. *Aphelandra crenata*
 916. *Ruellia tubiflora* var. *tetrastichantha* f. *bicolor*
 920. *Ruellia potamophila*
 959. *Justicia ischnorhachis*
 1079. *Justicia charadrophila*^r (type)
 1207. *Aphelandra lamprantha*
 1218. *Justicia macarenensis*
 1223. *Aphelandra deppeana*
 1283. *Justicia cystolithosa*

JOHNSON, WILLIAM, & BARKLEY,
 FRED A.

- 18C.409. *Aphelandra glabrata*
 18C.448. *Ruellia colombiana*

KALBREYER, W.

344. *Aphelandra nana*
 611. *Aphelandra mildbraediana*
 794. *Aphelandra lasia*
 930. *Justicia xanthostachya* (type)
 1043. *Justicia jacobinioides* (type)
 1171. *Justicia fuchsiifolia*
 1252. *Syringidium atropurpureum*
 (type)
 1257. *Ruellia geminiflora*
 1524. *Kalbreyeriella rostellata*
 1849. *Aphelandra quadrifaria*
 2049. *Ruellia tubiflora*
- KILLIP, E. P.
5078. *Blechum brownei* f. *puberulum*
 5290. *Blechum brownei* f. *puberulum*
 5294. *Hygrophila guianensis*
 5676. *Aphelandra pharangophila* (type)
 5692. *Pseuderanthemum dawei*
 5699. *Justicia chlorostachya*
 6147. *Mendoncia gracilis*
 6796. *Aphelandra phobera*
 6818. *Dicliptera killipii* (type)
 7684. *Justicia chlorostachya*
 7742. *Pseuderanthemum cuatrecasasii*
 7783. *Pseuderanthemum cuatrecasasii*
 7786. *Justicia chlorostachya*
 8335. *Dicliptera pilosa*
 11175. *Mendoncia pennellii*
 11451. *Blechum brownei* f. *puberulum*
 11477. *Ruellia potamophila*
 11565. *Justicia comata*

388179—57—29

11584. *Mendoncia gracilis*
 11635. *Ruellia geminiflora*
 11788. *Aphelandra dolichantha*
 34261. *Justicia comata*
 34330. *Ruellia geminiflora* var. *angustifolia*
 34345. *Trichanthera gigantea*
 34354. *Ruellia tubiflora* var. *tetrastichantha* f. *bicolor*
 34355. *Justicia filibracteolata* var. *leucantha*
 34361. *Ruellia humboldtiana*
 34377. *Mendoncia lindavii*
 34489. *Aphelandra barkleyi*
 34738. *Aphelandra dolichantha*
 34738bis. *Kalbreyeriella rostellata*
 34747. *Ruellia potamophila* (type)
 34807. *Kalbreyeriella rostellata*
 34839. *Hygrophila guianensis*
 34890. *Blechum brownei* f. *puberulum*
 34892. *Fittonia argyroneura*
 34938. *Aphelandra cuatrecasasii*
 35008. *Sanchezia pennellii*
 35198. *Justicia filibracteolata*
 35270. *Pseuderanthemum chilanthium*
 (type)
 35365. *Thunbergia fragrans*
 35374. *Aphelandra killipii* (type)
 35383. *Hygrophila tyttha* (type)
 35386. *Teliostachya lanceolata*
 35399. *Sanchezia pennellii*
 35469. *Justicia killipii* (type)
 35534. *Fittonia argyroneura*
 35574. *Justicia infelix* (type)
 35586. *Aphelandra glabrata*
 35589. *Justicia filibracteolata* var. *azurea* (type)
 35590. *Pachystachys riedeliana*
 35666. *Justicia chlorostachya*
 37107. *Ruellia macrophylla* var. *lutea*
 (type, Venezuela)
 38086. *Habracanthus hylobius*
- KILLIP, E. P.; BARKLEY, FRED A.; &
 DANIEL, BROTHER
39837. *Aphelandra runcinata* var. *pilosa*
 (type)
- KILLIP, E. P., & CUATRECASAS, J.
38856. *Hygrophila tyttha*
 38857. *Ruellia pennellii*
 39123. *Aphelandra garciae*

KILLIP, E. P.; DUGAND, A.; & JARAMILLO, R.

38155. *Aphelandra glabrata*
 38237. *Aphelandra glabrata*
 38257. *Ruellia lorentziana* Griseb.
 38284. *Justicia erythrantha* (type)
 38289. *Chaetochlamys columbiensis*
 38346. *Aphelandra longispica* (type)

KILLIP, E. P., & GARCÍA, HERNANDO

33318. *Pseuderanthemum ctenospermum*
 33400. *Blechnum brownei* f. *puberulum*
 33444. *Aphelandra dolichantha*
 33532. *Aphelandra garciae* (type)
 33559. *Ruellia pennellii*
 33576. *Aphelandra incarnata*
 33589. *Trichanthera gigantea*
 33598. *Justicia comata*
 35639. *Aphelandra hartwegiana*
 33671. *Justicia chlorostachya* (type)
 33678. *Neriacanthus lehmannianus*
 33889. *Neriacanthus lehmannianus*

KILLIP, E. P., & HAZEN, TRACY E.

8795. *Justicia chlorostachya*
 11152. *Neriacanthus lehmannianus*

KILLIP, E. P., & SMITH, ALBERT C.

14148. *Justicia carthaginensis*
 14186. *Elytraria imbricata*
 14212. *Ruellia obtusa*
 14288. *Elytraria imbricata*
 14310. *Aphelandra pulcherrima*
 14516. *Aphelandra pulcherrima*
 14711. *Justicia carthaginensis*
 14719. *Justicia comata*
 14767. *Blechnum brownei* f. *puberulum*
 14895. *Mendoncia lindavii*
 14936. *Justicia comata*
 14979. *Megaskepasma erythrochlamys*
 15368. *Mendoncia rosea* (type)
 15452. *Trichanthera gigantea*
 16091. *Justicia anabasa* (type)
 16138. *Aphelandra runcinata*
 16283. *Aphelandra albert-smithii* (type)
 16355. *Barleria micans*
 16426. *Trichanthera gigantea*
 16462. *Justicia chrysocoma*
 16491. *Justicia filibracteolata* var. *pubescens*
 16797. *Justicia chrysocoma* (type)

16816. *Justicia filibracteolata* var. *pubescens*
 17031. *Justicia filibracteolata*
 17042. *Justicia filibracteolata* var. *pubescens*
 19040. *Justicia filibracteolata*
 19257. *Habracanthus smithii* (type)
 19262. *Aphelandra runcinata*
 19359. *Ruellia tubiflora* var. *tetrastichantha*
 19391. *Justicia chrysocoma*
 19966. *Habracanthus killipii* (type)
 20080. *Justicia filibracteolata* var. *pubescens*
 20140. *Trichanthera corymbosa* (type)
 20157. *Habracanthus diversicolor*
 20451. *Habracanthus killipii*
 20504. *Trichanthera gigantea*
 20534. *Trichanthera gigantea*
 20807. *Justicia filibracteolata*
 20891. *Trichanthera gigantea*
 20931. *Aphelandra pulcherrima*
 20932. *Odontonema bracteolatum*
 20978. *Ruellia tuberosa*
 21100. *Justicia rohrii*

KILLIP, E. P., & VARELA, GUILLERMO

34685. *Aphelandra acanthus*

KLUG, G.

1653. *Sanchezia putumayensis* (type)
 1693. *Justicia sanchezioides*
 1696. *Ruellia putumayensis* (type)
 1710. *Mendoncia glomerata* (type)
 1724. *Justicia pampolystachys* (type)
 1742. *Justicia martiana*
 1760. *Mendoncia aspera*
 1768. *Justicia filibracteolata* var. *lilacina*
 1813. *Justicia idiogenes*
 1918. *Mendoncia pedunculata*

KØIE, M.

4671. *Habracanthus xanthothrix* (type)
 5043. *Mendoncia trichota* (type)
 5056. *Dicliptera koiei* (type)

LANGLASSÉ, E.

44. *Neriacanthus lehmannianus*

LAUREANO-JAVIER, BROTHER

17. *Habracanthus hylobius*

LAWRANCE, A. E.

18. *Aphelandra chaponensis* (type)
 60. *Justicia chaponensis* (type)
 69. *Mendoncia lindavii*
 198. *Razisea spicata*
 201. *Aphelandra parviflora* (type)
 234. *Kalbreyeriella rostellata*
 243. *Aphelandra lawranceae*
 244. *Aphelandra lawranceae* (type)
 252. *Aphelandra lawranceae*
 258. *Dicliptera batilliformis* (type)
 264. *Mendoncia microchlamys* (type)
 291. *Aphelandra parviflora*
 363. *Mendoncia odorata*
 367. *Kalbreyeriella rostellata*
 441. *Pseudoranthemum chaponense*
 (type)
 491. *Ruellia viridiflora* (type)
 501. *Pseudoranthemum chaponense*
 f. *lilacinum* (type)
 502. *Cyphacanthus atopa* (type)
 564. *Ruellia tubiflora* var. *tetrastichantha* f. *bicolor*
 565. *Aphelandra boyacensis* (type)
 601. *Aphelandra alexandri* (type)
 680. *Aphelandra adscendens* (type)
 694. *Kalbreyeriella rostellata*
 761. *Mendoncia pennellii*

LEHMANN, F. C.

- B.T.428. *Jacobinia tinctoria*
 B.T.435. *Justicia filibracteolata*
 B.T.438. *Jacobinia tinctoria*
 B.T.449. *Neriacanthus lehmannianus*
 B.T.654. *Blechum brownei* f. *puberulum*
 B.T.1165. *Aphelandra pharangophila*
 1854. *Thunbergia alata*
 1887. *Pachystachys riedeliana*
 2966. *Neriacanthus lehmannianus*
 3040. *Trichanthera gigantea*
 3164. *Ruellia colorata*
 3335. *Ruellia ischnopoda*
 4062. *Justicia carthaginensis*
 4104. *Odontonema coccineum*
 4478. *Ruellia rusbyi*
 4739. *Ruellia fulgida* var. *angustissima*
 4740. *Jacobinia spicigera*
 4985. *Fittonia argyroneura*
 5505. *Ruellia geminiflora*
 5506. *Aphelandra sericophylla*
 5600. *Fittonia argyroneura*

5601. *Justicia chlorostachya*
 6107. *Justicia carthaginensis*
 6410. *Ruellia tuberosa*
 6442. *Stenandrium dulce*
 7266. *Pseudoranthemum cladodes* (type)
 7440. *Aphelandra colombiensis* (type)
 7574. *Aphelandra runcinata*
 7845. *Aphelandra incarnata*
 7846. *Aphelandra runcinata*
 7849. *Dicliptera vahliana*
 7850. *Ruellia fulgida* var. *angustissima*
 7851. *Jacobinia tinctoria*
 7852. *Neriacanthus lehmannianus*
 (type)
 8534. *Pseudoranthemum dawei*
 8632. *Aphelandra puberula*
 8692. *Ruellia ischnopoda*
 8822. *Ruellia humboldtiana*
 9047. *Aphelandra hartwegiana*
 9048. *Encephalosphaera vitellina* (type)

LINDEN, J. J.

703. *Odontonema bracteolatum* var. *parviflorum*

LITTLE, ELBERT L.

7930. *Trichanthera gigantea*
 8030. *Aphelandra porphyrocarpa*
 8135. *Aphelandra porphyrocarpa*

LONGFIELD, C.

381. *Ruellia gorgonensis*

LÓPEZ, F., & SANCHEZ, M. J.

41. *Justicia phlebophylla*
 53. *Odontonema stenostachyum* (type)
 61. *Trichanthera gigantea*

MASON, HERBERT L.

13817. *Ruellia geminiflora*
 13978. *Ruellia tuberosa*

MESA-B., D.

82. *Hygrophila guianensis*

METCALF, R. D.

30019. *Ruellia tuberosa*

METCALF, R. D., & CUATRECASAS, J.

30075. *Ruellia pennellii*

- MOLDENKE, ALMA; WILLARD, LUIS; & BARKLEY, FRED A.
18VC.000. *Ruellia geminiflora*
MOLINA, FELIX
35. *Habracanthus heliophilus* (type)
MUTIS, JOSÉ CELESTINO
440. *Ruellia ischnopoda*
720. *Aphelandra glabrata*
725. *Justicia polygonoides*
892. *Justicia phytolaccoides*
894. *Mendoncia lindavii*
895. *Mendoncia villosa*
916. *Mendoncia mutisii* (type)
924. *Mendoncia lindavii*
1488. *Justicia comata*
1489. *Aphelandra deppeana*
1494. *Aphelandra aurantiaca*
1498. *Ruellia ischnopoda*
1500. *Pseuderanthemum pennellii*
1501. *Aphelandra straminea*
1502. *Aphelandra longispica*
1503. *Justicia phytolaccoides*
1504. *Aphelandra glabrata*
1508. *Habracanthus hylobius*
1509. *Aphelandra chaponensis*
1512. *Justicia filibracteolata*
1943. *Aphelandra mutisii* (type)
1944. *Aphelandra phobera*
3904. *Justicia chaetocephala*
NIEMEYER, ERNESTINE H.
1. *Sanchezia pennellii*
27. *Ruellia macrophylla*
NOVAL, MARIA DI PALMA, & BARKLEY, FRED A.
18C.484. *Aphelandra runeinata*
PAUL, BROTHER
B-7. *Flytraria imbricata*
B-19. *Justicia laevilinguis*
B-26. *Dicliptera vahliana*
B-34. *Ruellia paniculata*
B-36. *Ruellia inundata*
C-11. *Ruellia obtusa*
25. *Pseuderanthemum atropurpureum*
42. *Ruellia paniculata*
PENNELL, FRANCIS W.
1384. *Mendoncia sprucei*
1397. *Mendoncia lindavii*
1473. *Justicia comata*
1475. *Mendoncia lindavii*
1478. *Ruellia tubiflora* var. *tetrastichantha* f. *bicolor*
1551. *Hygrophila guianensis*
1630. *Ruellia humboldtiana*
1714. *Justicia filibracteolata* var. *leucantha*
2191. *Stenandrium dulce*
2667. *Habracanthus callianthus*
2700. *Pseuderanthemum ellipticum*
2722. *Justicia carthagenensis*
2783. *Ruellia geminiflora*
2812. *Justicia carthagenensis*
2831. *Justicia erythrantha*
2842. *Thunbergia alata*
3132. *Aphelandra acanthus*
3218. *Hygrophila guianensis*
3320. *Aphelandra pharangophila*
3390. *Justicia filibracteolata*
3397. *Justicia chlorostachya*
3675. *Ruellia geminiflora*
3752. *Blechum brownei* f. *puberulum*
3798. *Sanchezia pennellii* (type)
3822. *Justicia comata*
3927. *Justicia comata*
3948. *Justicia laevilinguis*
3958. *Justicia laevilinguis*
3983. *Staurogyne lepidagathoides* (type)
3985. *Chaetothylax leucanthus* (type)
4021. *Justicia bracteosa*
4026. *Tetramerium nervosum*
4028. *Ruellia inundata*
4030. *Blechum brownei* f. *puberulum*
4037. *Dicliptera vahliana*
4041. *Justicia comata*
4057. *Aphelandra deppeana*
4071. *Justicia carthagenensis*
4098. *Justicia comata*
4101. *Trichanthera gigantea*
4104. *Barleria micans*
4108. *Aphelandra pulcherrima*
4115. *Ruellia macrophylla*
4178, in part. *Ruellia macrophylla*
4178, in part. *Ruellia pennellii*
4182. *Ruellia colombiana*
4206, in part. *Justicia polygonoides*
4206, in part. *Justicia pectoralis*
4236. *Chaetothylax leucanthus*
4436. *Pseuderanthemum stenosphon* (type)

4453. *Pseuderanthemum stenosphon*
 4499. *Dicliptera megalochlamys* (type)
 4500. *Justicia graphophylla* (type)
 4526. *Ruellia colombiana*
 4529. *Justicia leptochlamys* (type)
 4542. *Ruellia tubiflora* var. *tetrastichantha*
 4573. *Sanchezia pennellii*
 4580. *Aphelandra hartwegiana*
 4581. *Aphelandra incarnata*
 4654. *Justicia pectoralis*
 4657. *Justicia comata*
 4658. *Ruellia pennellii* (type)
 4697. *Bravaisia integerrima*
 4728. *Ruellia paniculata*
 4743. *Ruellia paniculata*
 4750. *Dicliptera vahliana*
 4764. *Ruellia obtusa*
 4779. *Dicliptera vahliana*
 5475. *Ruellia geminiflora*
 5676. *Aphelandra glabrata*
 6047. *Ruellia geminiflora*
 7556. *Habracanthus oresbius* (type)
 7622. *Justicia chlorostachya*
 9704. *Aphelandra acanthus*
 10158. *Aphelandra runcinata*
 10184. *Ruellia pennellii*
 10273. *Justicia filibracteolata*
 10291. *Thunbergia alata*
 10320. *Dicliptera hazenii*
 10347. *Justicia chlorostachya*
 10414. *Habracanthus pennellii* (type)
 10593. *Hygrophila guianensis*
 10601. *Mendoncia pennellii* (type)
 10624. *Aphelandra arborescens*
 10625. *Pseuderanthemum ellipticum*
 10684. *Pseuderanthemum pennellii* (type)
 10798. *Blechum brownei* f. *puberulum*
 10802. *Thunbergia alata*
 10811. *Justicia comata*
 10940. *Aphelandra runcinata*
 10974. *Blechum brownei* f. *puberulum*
 12046. *Justicia carthaginensis*
 12047. *Ruellia obtusa*
 12069. *Elytraria imbricata*

PENNELL, FRANCIS W., & KILLIP, E. P.

5759. *Justicia chlorostachya*
 5789. *Neriacanthus lehmannianus*
 5970. *Ruellia geminiflora*
 6193. *Trichanthera gigantea*
 7392. *Aphelandra phobera*

7436. *Habracanthus oresbius*
 8270. *Hygrophila guianensis*
 12131. *Justicia chlorostachya*

PENNELL, FRANCIS W.; KILLIP, E. P.;
& HAZEN, TRACY E.

8414. *Justicia polygonoides*
 8493. *Hygrophila guianensis*
 8505. *Justicia filibracteolata*
 8572. *Blechum brownei* f. *puberulum*
 8630. *Hygrophila guianensis*
 8630a. *Pseuderanthemum ellipticum*
 8635. *Thunbergia alata*
 8637. *Hygrophila guianensis*
 8695. *Dicliptera hazenii* (type)
 8697. *Justicia filibracteolata*

PENNELL, FRANCIS W., & RUSBY, H. H.

18. *Ruellia obtusa*
 24. *Justicia laevilinguis*
 199a. *Hygrophila guianensis*

PÉREZ-ARBELÁEZ, E.

35. *Aphelandra barkleyi*
 50. *Ruellia humboldtiana*
 379. *Thunbergia grandiflora*
 382. *Thunbergia fragrans*
 385. *Pseuderanthemum atropurpureum*
 399. *Ruellia lorentziana*
 417. *Aphelandra glabrata*
 576. *Ruellia tubiflora* var. *tetrastichantha*
 577. *Thunbergia fragrans*
 587. *Justicia pleurolarynx*
 733. *Fittonia verschaffeltii*
 746. *Justicia sanchezioides*
 2380. *Hygrophila guianensis*
 2471. *Ruellia tuberosa*
 2518. *Ruellia lorentziana*
 3031. *Stenandrium dulce*
 3105. *Chaetochlamys columbiensis*
 3106. *Dicliptera nanodes* (type)
 3148. *Pseuderanthemum atropurpureum*
 4890. *Ruellia tuberosa*
 5343. *Ruellia tubiflora* var. *tetrastichantha*

PÉREZ-ARBELÁEZ, E., &
CUATRECASAS, J.

5320. *Aphelandra runcinata*
 5346. *Thunbergia alata* var. *bakeri*
 5369. *Hygrophila guianensis*

5788. *Dicliptera driophila*
 5977. *Dicliptera caucensis* (type)
 6183. *Justicia chlorostachya*
 6260. *Habracanthus hylobius*
 6267. *Justicia chlorostachya*
 6332. *Trichanthera gigantea*
 6333. *Thunbergia alata*
 6372. *Justicia infelix*
 8132. *Trichanthera gigantea*
 8336. *Ruellia grisea* (type)
- PHILIPSON, W. R., & IDROBO, J. M.
 1794. *Justicia cystolithosa*
- PHILIPSON, W. R.; IDROBO, J. M.; & FERNÁNDEZ, A.
 1351. *Aphelandra barkleyi*
 1364. *Ruellia tubiflora* var. *tetrastichantha* f. *bicolor*
 1419. *Aphelandra lamprantha*
 1496. *Mendoncia lindavii*
 1578. *Justicia macarenensis* (type)
 1579. *Justicia croceochlamys*
 1580. *Justicia filibracteolata* var. *leucantha*
 1627. *Justicia filibracteolata* var. *lilacina*
 1627a. *Teliostachya lanceolata* var. *crispa*
 1634. *Justicia filibracteolata* var. *lilacina*
 1639. *Trichanthera gigantea*
 1722. *Sanchezia pennellii*
- PHILIPSON, W. R.; IDROBO, J. M.; & JARAMILLO, R.
 2046. *Ruellia potamophila*
 2146. *Justicia cystolithosa*
 2183. *Justicia oreopola* (type)
- PITTIER, H.
 610. *Neriacanthus lehmannianus*
 1506. *Fittonia verschaffeltii*
- PRING, GEORGE H.
 36. *Stenandrium dulce*
- RECORD, S. J.
 35. *Justicia rohrii*
 36. *Aphelandra daemania*
- RÍOS-C., DANILO; BARKLEY, FRED A.; & BETANCOURT-O., ALBERTO
 605. *Blechum brownei* f. *puberulum*
 ROMERO-CASTEÑEDA, R.
 34. *Bravaisia integerrima*
 257. *Ruellia macrophylla*
 557. *Justicia leucerythra*
 583. *Aphelandra daemania*
 597. *Ruellia macrophylla*
 608. *Odontonema bracteolatum* var. *parviflorum*
 1225. *Mendoncia hirsuta*
- RUIZ-L., EDUARDO; RIVERA, RAFAEL; & BARKLEY, FRED A.
 18C.316. *Blechum brownei* f. *puberulum*
 18C.388. *Aphelandra incarnata*
 18C.430. *Justicia phlebophylla*
- RUSBY, H. H.
 4799. *Ruellia obtusa*
- RUSBY, H. H., & PENNELL, FRANCIS W.
 167. *Ruellia tuberosa*
 250. *Ruellia tubiflora*
 398. *Ruellia geminiflora*
 409. *Aphelandra glabrata*
 470. *Aphelandra anomala* (type)
 486. *Chaetothylax huilensis* (type)
 487. *Dicliptera rhombochlamys* (type)
 510. *Ruellia rusbyi*
 548. *Ruellia rusbyi*
 891. *Aphelandra porphyrocarpa* (type)
 1000. *Ruellia rusbyi* (type)
 1060. *Ruellia ischnopoda*
 1104. *Ruellia ischnopoda*
 1163. *Ruellia tuberosa*
 1178. *Blechum brownei* f. *puberulum*
- SANDEMAN, CHRISTOPHER
 140. *Neriacanthus lehmannianus*
 5814. *Justicia ischnorhachis*
 5821. *Ruellia tubiflora* var. *tetrastichantha* f. *bicolor*
 5999. *Justicia bracteosa*
- SARMIENTO, A.
 6. *Justicia chlorostachya*

SCHIEFER, HELEN

757. *Ruellia humboldtiana*
 790. *Mendoncia lindavii*
 791. *Aphelandra schieferae* (type)
 813. *Justicia unguiculata*
 813A. *Justicia unguiculata* (type)
 828. *Justicia filibracteolata* var. *leucantha*
 851. *Aphelandra barkleyi*

SCHLIM, LOUIS JOSEPH

136. *Ruellia fulgida* var. *angustissima*
 258. *Aphelandra macrophylla*
 278. *Aphelandra deppeana*
 537. *Aphelandra mildbraediana*
 779. *Ruellia tubiflora*
 780. *Aphelandra nana* (type)
 887. *Justicia pharmacodes*
 894. *Ruellia paniculata*
 1093. *Justicia sanchezioides*

SCHOTT, A.

5. *Dicliptera vahliana*
 6. *Justicia carthaginensis*

SCHULTES, RICHARD EVANS

3480. *Fittonia verschaffeltii*
 3507. *Ruellia colorata*
 3538. *Justicia idiogenes*
 6607. *Sanchezia thinophila* (type)
 6630. *Aphelandra aurantiaca*
 6937. *Sanchezia thinophila* f. *glabra* (type)
 8248. *Justicia comata*

SCHULTES, RICHARD EVANS; BAKER, R. E. D.; & CABRERA, ISIDORO

18455. *Aphelandra pilosa*
 18556. *Justicia pectoralis*

SCHULTES, RICHARD EVANS, & BLACK, GEORGE A.

8317. *Justicia blackii* (type)
 8697. *Justicia blackii*

SCHULTES, RICHARD EVANS, & CABRERA, ISIDORO

12575. *Justicia pectoralis*
 12679. *Justicia cabreræ*
 12701. *Justicia cabreræ* (type)
 12703. *Justicia chlorostachya*
 13322. *Justicia schultesii* (type)

13570. *Ruellia tubiflora* var. *parviflora* f. *alba*

13710. *Mendoncia aspera*
 14033. *Justicia pectoralis*
 14079. *Justicia pectoralis*
 14568. *Justicia pectoralis*
 14619. *Justicia pectoralis*
 14941A. *Justicia pectoralis*
 15113. *Mendoncia pedunculata*
 15244. *Justicia pectoralis* var. *stenophylla*

15342. *Teliostachya petraea* (type)
 16124. *Justicia pectoralis*
 17545. *Justicia scytophylla* (type)
 17714. *Sanchezia pennellii*
 19093. *Kalbreyeriella cabreræ* (type)
 19093bis. *Aphelandra crispata*
 19095. *Kalbreyeriella cabreræ*
 19633. *Aphelandra pilosa*

SCHULTES, RICHARD EVANS, & LÓPEZ, FRANCISCO

- 10400K. *Mendoncia lasiophyta* (type)

SCHULTES, RICHARD EVANS, & VILLARRREAL, MARDOQUEO

7740. *Habracanthus putumayensis* (type)

SCOLNIK, ROSA

1636. *Pseuderanthemum chilianthium*

SCOLNIK, ROSA; ARAQUE-M., JORGE; & BARKLEY, FRED A.

- 19An.317. *Ruellia tuberosa*
 19An.439. *Justicia filibracteolata*
 19An.340. *Habracanthus erythranthus* (type)
 19An.478. *Mendoncia lindavii*

SCOLNIK, ROSA; BARKLEY, FRED A.; & PEÑA, LUIS

554. *Aphelandra scolnikæ*

SCOLNIK, ROSA; BARKLEY, FRED A.; & SAIZ-A., LUIS E.

428. *Justicia chlorostachya*

SCOLNIK, ROSA; BARVA LÓPEZ, NEMESIO; & BARKLEY, FRED A.

- 19An.199. *Habracanthus scolnikæ* (type)

SCOLNIK, ROSA; RÍOS-C., DANILO; &
BETANCOURT-O., ALBERTO

624. *Ruellia tuberosa*

SILVANO-J., BROTHER

178. *Ruellia fulgida* var. *angustissima*

SMITH, HERBERT H.

81. *Blechum brownei* f. *puberulum*
89. *Hygrophila guianensis*
96. *Justicia rohrii* (*Beloperone sanmartensis*, type)
377. *Justicia secunda*
381. *Ruellia macrophylla*
566. *Justicia carthaginensis*
746. *Ruellia tuberosa*
1137. *Mendoncia speciosa*
1208. *Justicia comata*
1358. *Justicia rhodoides* (type)
1359. *Ruellia paniculata*
1389, in part. *Odontonema bracteolatum*
1389, in part. *Odontonema bracteolatum* var. *parviflorum* (type)
1390. *Odontonema rubrum*
1407. *Justicia pectoralis*
1408. *Tetramerium nervosum*
1409. *Blechum brownei* f. *puberulum*
1410. *Ruellia inundata*
1411. *Dicliptera sanctae-martae* (type)
1412. *Elytraria imbricata*
1413. *Justicia secunda* var. *leucantha* (type)
1414. *Aphelandra mildbraediana* (type)
1415. *Aphelandra daemonia* (type)
1416. *Justicia comata*
1488. *Dicliptera vahliana*
1869. *Bravaisia integerrima*
1973. *Tetramerium nervosum*
2114. *Blechum brownei* f. *puberulum*

SMITH, S. GALEN

1137. *Ruellia tuberosa*
1164. *Chaetothylax huilensis*
1199. *Justicia comata*
1203. *Blechum brownei* f. *puberulum*
1272. *Ruellia geminiflora*
1314. *Aphelandra glabrata*

SMITH, S. GALEN, & IDROBO, JESÚS M.

1486. *Ruellia macarenensis* (type)

SNEIDERN, KJELL VON

311. *Hygrophila guianensis*
491. *Habracanthus hylobius*
493. *Pseuderanthemum cuatrecasasii*
494. *Justicia comata*
612. *Pseuderanthemum cuatrecasasii*
617. *Pseuderanthemum cuatrecasasii*
621. *Habracanthus hylobius*
624. *Justicia chlorostachya*
647. *Habracanthus hylobius* (type)
700. *Justicia chlorostachya*
703. *Habracanthus hylobius*
711. *Justicia chlorostachya*
775. *Pseuderanthemum cuatrecasasii*
809. *Pseuderanthemum cuatrecasasii*
821. *Pseuderanthemum cuatrecasasii*
822. *Pseuderanthemum cuatrecasasii*
864. *Ruellia tubiflora* var. *tetrastichantha*
868. *Aphelandra sneidernii* (type)
869. *Aphelandra puberula* (type)
923. *Aphelandra silvicola* (type)
958. *Justicia chlorostachya*
971. *Ruellia pennellii*
1012. *Ruellia pennellii*
1032. *Dicliptera caucensis*
1061. *Ruellia geminiflora*
1062. *Ruellia geminiflora*
1113. *Aphelandra pharangophila*
1240. *Trichanthera gigantea*
1512. *Aphelandra acanthus*
2643. *Ruellia ischnopoda*
2644. *Justicia comata*
2645. *Habracanthus hylobius*
2646. *Habracanthus congestus* (type)
2647. *Ruellia caucensis* (type)
2649. *Aphelandra huilensis* (type)
2650. *Blechum brownei* f. *puberulum*
2651. *Ruellia geminiflora*
2652. *Trichanthera gigantea*
2653. *Trichanthera gigantea*
5042. *Pseuderanthemum sneidernii* (type)
5075. *Ruellia potamophila*
5080. *Aphelandra lingua-bovis*
5293. *Kalbreyeriella rostellata*

SOTO-HERRERA, GENTIL

944. *Aphelandra glabrata*

SPRAGUE, T. A.

12. *Justicia ischnorhachis*

27. *Staurogyne leptocaulis* (type)
 52. *Ruellia geminiflora* var. *angustifolia*
 139. *Justicia filibracteolata* var. *leucantha*
 246. *Ruellia rusbyi*
 387. *Justicia sanchezioides*
 394. *Aphelandra lonchochlamys* (type)
 396. *Justicia chloanantha*
 402. *Mendoncia spraguei* (type)
 601. *Aphelandra ochrolarynx* (type)

STEERE, WILLIAM C.

7095. *Justicia bracteosa*

TARRAGON, HUGO DE; ARAQUE-M.,
 JORGE; & BARKLEY, FRED A.

- 18Cu.100. *Stenandrium dulce*

TOMÁS, BROTHER

770. *Aphelandra runcinata*
 2452. *Sanchezia pennellii*

TORO, RAFAEL A.

12. *Thunbergia alata*
 78. *Trichanthera gigantea*
 554. *Thunbergia fragrans*
 842. *Justicia filibracteolata*
 859. *Ruellia ischnopoda*
 943. *Pseuderanthemum leiophyllum*
 (type)
 960. *Mendoncia gracilis*
 1175. *Kalbreyeriella rostellata*
 1260. *Aphelandra runcinata* var. *pilosa*
 1369. *Thunbergia fragrans*

TORREGROZA, MANUEL; ARAQUE-M.,
 JORGE; & BARKLEY, FRED A.

- 18At.502. *Justicia carthaginensis*
 18At.504. *Justicia carthaginensis*
 18At.521. *Elytraria imbricata*
 18At.522. *Justicia carthaginensis*

TRACEY, MRS.

152. *Aphelandra conformis*

URIBE-URIBE, LORENZO

343. *Dicliptera uribei* (type)
 1319. *Aphelandra barkleyi*
 1320. *Justicia filibracteolata* var. *leucantha*
 1436. *Aphelandra glabrata*
 1437. *Aphelandra uribei* (type)
 1502. *Aphelandra crenata*
 1505. *Aphelandra hartwegiana*
 1517. *Aphelandra glabrata*
 1683. *Justicia carthaginensis*
 1754. *Pseuderanthemum ellipticum*
 1857. *Aphelandra runcinata*
 1862. *Aphelandra xanthantha* (type)
 2029. *Ruellia pennellii*
 2115. *Aphelandra runcinata*
 2151. *Mendoncia lindavii*
 2207. *Ruellia fulgida* var. *angustissima*
 2273. *Ruellia ischnopoda*
 2308. *Aphelandra sericophylla*
 2309. *Justicia erythrantha*
 2335. *Ruellia tubiflora*
 2336. *Justicia filibracteolata*
 2337. *Aphelandra lasia*
 2496. *Mendoncia villosa*
 2567. *Ruellia tubiflora*

WALKER, FRED

1205. *Ruellia tuberosa*
 1282. *Dicliptera assurgens*

YEPES-AGREDO, SILVIO

202. *Justicia chlorostachya*

YEPES, EMILIO; BLAIR, ENRIQUE; &
 BARKLEY, FRED A.

- 18C.300. *Aphelandra incarnata*

ERRATA

Parts I and II

- Page iii (of Part I), line 14: For "72" read "73."
- Page 5, line 20: For "Henrich" read "Heinrich."
- Page 7, line 2: For "Buena Vista" read "Buenavista."
- Page 8, line 15: For "appressed-ovate" read "appressed, ovate."
- Page 8, fifth line from bottom: Delete "Marc Caribe."
- Page 8, second line from bottom: For "Sonto" read "Santo."
- Page 10, line 11: Delete the line reading "Type species: *Justicia brunelloides* Lam. Type locality: Java," and substitute "There were two original species, *N. campestris* R. Brown and *N. rotundifolia* R. Brown, of which the first may be chosen as lectotype."
- Page 12, line 14: For "1874" read "1847."
- Page 12, line 16: For "Nees" read "Karsten ex Nees"; for "Engelio" read "Engel."
- Page 12, line 26: For "Type" read "Lectotype."
- Page 17, line 1: For "rotudatae" read "rotundatae."
- Page 18, line 23: For "palide" read "pallide."
- Page 18, line 26: For "hisuta" read "hirsuta."
- Page 21, line 27: For "1947" read "1847."
- Page 22, line 11: After "Crucis" add "oppidum."
- Page 22, line 12: For "Provincia" read "Provinciae".
- Page 23, line 9 from bottom: For "dipositi" read "dispositi."
- Page 26, line 14: For "Santurario" read "Santuario."
- Page 29, line 18 from bottom: For "1790" read "1825."
- Page 30, line 25: For "Cubujón" read "Cubugón."
- Page 36, line 9: For "1260" read "1280."
- Page 36, line 11: For "Bayaca" read "Boyaca."
- Page 43, line 2: For "1639" read "1369."
- Page 44, line 17: For "species" read "series."
- Page 44, line 18: For "at" read "in."
- Page 44, line 19: For "at" read "in."
- Page 44, line 5 from bottom: For "*Phaylopsis*" read "*Phaulopsis*."
- Page 45, line 19: For "stamens 2 or 3" read "stamens 2 or 4."
- Page 45, line 20 from bottom: For "Bignonaceae" read "Bignoniaceae."
- Page 46, line 20: For "arborea" read "arboreus."
- Page 46, line 20: For "pl. 149" read "pl. 159."
- Page 49, line 4 from bottom: For "4213" read "4314."
- Page 49, last line: For "Freijito" read "Frejito."
- Page 50, line 16: For "*Tricanthera*" read "*Trichanthera*."
- Page 50, line 18: For "March 4" read "March 3-8."
- Page 52, line 19: Add "10" after "Holton."
- Page 52, line 21: For "Bermega" read "Bermeja."
- Page 55, line 13: For "fasiculis" read "fasciculis."
- Page 58, line 6 from bottom: For "Porcesito" read "Porcecito."
- Page 58, line 5 from bottom: For "Killip & Hazen" read "Pennell, Killip, & Hazen."
- Page 59, line 12 from bottom: For "Neuva" read "Nueva."

- Page 60, line 18: For "*Phaylopsis*" read "*Phaulopsis*."
- Page 60, line 22: For "Type species *Ruellia blechum* L." read "Lectotype: *Blechum brownei* Jussieu."
- Page 60, line 9 from bottom: For "disseptiment" read "dissepiment."
- Page 61, line 7 from bottom: For "the type" read "their types."
- Page 62, line 6: For "*Landa, Rivera, & Barkley*" read "*Ruiz-Landa, Rivera, & Barkley*."
- Page 62, line 12: For "654" read "B. T. 654."
- Page 62, line 19: For "Gordona" read "Gorgona."
- Page 62, line 28: For "Playa Barba" read "Playa Brava."
- Page 62, line 16 from bottom: For "hirellis" read "hirtellis."
- Page 65, line 7 from bottom: For "*Appollinaire*" read "*Apollinaire*."
- Page 66, line 9: For "musilaginous" read "mucilaginous."
- Page 66, line 15: For "Wall." read "Nees in Wall."
- Page 66, line 23: For "Verat." read "Vratisl."
- Page 69, line 9: For "plubescens" read "pubescent."
- Page 69, line 5 from bottom: For "Santandersito" read "Santandercito."
- Page 69, line 3 from bottom: For "*Holton 599*" read "*Holton 23*."
- Page 74, line 5: For "Cauca" read "El Valle;" for "Gordona" read "Gorgona."
- Page 74, line 16: For "puberulentes" read "puberulentae."
- Page 74, line 13 from bottom: For "unludate" read "undulate."
- Page 76, line 7-10: Delete these lines.
- Page 76, line 19: For "*Ruellia paniculata* H. B. K." read "*Dipteracanthus turbacensis* Nees."
- Page 77, line 22: After "Syst." add "ed. 2."
- Page 79, line 12: For "*Pennell & Rusby*" read "*Rusby & Pennell*."
- Page 79, line 23: Transfer the entry "*Tocaima, Pérez-Arbeláez 2471 (US)*" from the Department of Tolima up to the Department of Cundinamarca (line 13).
- Page 80, line 23: For "*Apollinar*" read "*Apolinar*."
- Page 81, line 8: For "pediceli" read "pedicelli."
- Page 84, line 14: For "Palmarrosa" read "Palmarosa."
- Page 84, line 21: For "1069" read "1060."
- Page 88, line 9: For "Wein" read "Wien."
- Page 90, line 22: For "Guadas" read "Guaduas."
- Page 91, line 18 from bottom: For "Susumoco" read "Susumuco."
- Page 91, line 11 from bottom: Add "and $\alpha\theta\sigma$, flower."
- Page 92, line 9: For "Collector?" read "Heriberto."
- Page 92, line 13: For "forcibus" read "faucibus."
- Page 93, line 18 from bottom: For "petiolun" read "petiolum."
- Page 95, line 10: For "29431" read "39431."
- Page 95, line 8 from bottom: For "Vergel" read "Verjel."
- Page 97, line 17 from bottom: For "4348" read "4384."
- Page 98, line 19: For "pubescentia" read "pubescens."
- Page 100, line 2 from bottom: For "Tierra Alba" read "Tierra Alta."
- Page 100, last line: Add "March 7-10, 1918."
- Page 102, line 10: For "decumbentae" read "decumbentes."
- Page 103, line 12: For "*Johnston*" read "*Johnson*."
- Page 103, last line: For "calvatae" read "clavatae."
- Page 104, line 6 from bottom: Add "No. 1661618" after "Herbarium."
- Page 104, line 5 from bottom: Add "Vicinity of Puerto Berrio" after "Camp VI."
- Page 106, line 18 from bottom: For " $\sigma\rho\acute{\alpha}\chi\upsilon\varsigma$ " read " $\sigma\rho\acute{\alpha}\chi\upsilon\varsigma$."
- Page 106, line 12 from bottom: For "bracteoli" read "bracteolae."
- Page 106, line 11 from bottom: For "angularis" read "angularibus."

- Page 107, line 4 from bottom: For "November" read "October–November."
- Page 108, line 4: For "tenuia" read "tenuis."
- Page 109, line 6 from bottom: For "Jaques" read "Jacques."
- Page 109, line 5 from bottom: For "1634" read "1606."
- Page 109, line 3 from bottom: For "Type" read "Lectotype."
- Page 111, line 4 from bottom: For "στάχος" read "στάχυς."
- Page 112, line 3: For "radically" read "radially."
- Page 112, line 10: For "Type" read "Lectotype."
- Page 112, line 12: For "*Lepidagathis* Willd." read "*Lepidagathis sensu auctt. non Willd.*"
- Page 112, line 12: For "1801" read "1800."
- Page 112, line 3 from bottom: For "*alopecuroides*" read "*alopecuroidea*."
- Page 113, line 8 from bottom: For "Brass." read "Bras."
- Page ii (of Part II), line 8: For "106" read "105."
- Page 121, line 19: For "pendunculi" read "pedunculi."
- Page 122, line 6 from bottom: For "bank" read "side of the valley."
- Page 124, line 9: For "*Hazen & Killip*" read "*Killip & Hazen*."
- Page 125, line 22: For "Colombia" read "Columbia."
- Page 125, line 23: Delete parenthesis after "Hooker" and insert parenthesis at end of sentence.
- Page 127, line 11 from bottom: For "83" read "85."
- Page 133, line 23: For "earmine" read "carmine."
- Page 135, line 7 from bottom: For "Subita" read "Subata."
- Page 136, line 7: Insert "(US)" after "4024."
- Page 136, line 8: Insert "(NY)" after "1260."
- Page 136, line 7 from bottom: For "integrading" read "intergrading."
- Page 137, line 4 from bottom: For "tooth-leaved" read "toothed-leaved."
- Page 145, line 12 from bottom: For "unde" read "under."
- Page 145, line 11 from bottom: For "pos" read "pos-."
- Page 145, line 3 from bottom: For "amarillo" read "amarilla."
- Page 149, line 2 from bottom: For "Tabor" read "El Tabor."
- Page 152, line 1: For "179548" read "1798548."
- Page 157, line 20: For "βοραγώδης" read "βορανώδης."
- Page 160, line 6 from bottom: For "*Rhombochamys*" read "*Rhombochlamys*."
- Page 166, line 9: For "Caquetá" read "Putumayo."
- Page 170, line 10 from bottom: For "bank" read "side of the valley."
- Page 181, line 25: For "pleurumque" read "plerumque."
- Page 183, line 21 from bottom: For "Scheide" read "Schiede."
- Page 191, line 18 from bottom: For "Riksmuseet, Stockholm" read "Royal Botanic Gardens, Kew."
- Page 191, line 16 from bottom: For "Kew" read "Riksmuseet, Stockholm."
- Page 197, line 1: For "aliquando" read "aliquanto."
- Page 197, line 5 from bottom: For "these" read "this."
- Page 202, line 7: For the garbled Greek word read "ἀπισημος."
- Page 204, line 4: For "Department" read "Intendencia."
- Page 204, line 5: For "27" read "20–30."
- Page 212, line 17 from bottom: For "supper" read "upper."
- Page 214, line 6 from bottom: For "1.75" read "0.5–0.7."
- Page 217, line 21: For "glaborous" read "glabrous."
- Page 218, line 4 from bottom: Delete the word "et."
- Page 219, line 2: For "lucenti" read "lucentes."
- Page 220, line 6: Transfer parenthesis from after "Isotypes" to before the word.
- Page 224, line 10 from bottom: For "ofter" read "often."

- Page 234, line 12 from bottom: For "pendunculis" read "pedunculis."
- Page 242, line 12: For "pendunculatae" read "pedunculatae."
- Page 245, line 7: For "pracecipue" read "praecipue."
- Page 246, line 12 from bottom: For "Cauca" read "Caldas."
- Page 255, line 6 from bottom: For "Limbo" read "Limba;" for "100" read "800."
- Page 256, first line of legend to figure 92: For "Limbo" read "Limba."
- Page 258, bottom line: For "Department" read "Intendencia."
- Page 261, line 24: For "Nees" read "Willd. ex Nees."
- Page 262, line 9 from bottom: For "*Herrera*" read "*Soto Herrera*."
- Page 263, line 16: For "Suffretescent" read "Suffrutescent."
- Page 269, line 2 from bottom: For "April 30" read "April 20–May 23."
- Page 272, line 6 from bottom: For "Department" read "Intendencia."
- Page 273, line 4: For "acutae" read "acuta."
- Page 279, line 24: For "bank" read "side of the valley," for "Sanguinini" read "Sanquinini."
- Page 283, line 11: For "braceteolae" read "bracteolae."
- Page 290, line 7: Add parenthesis after "1947"; for "ἡάχος" read "πάχυσ."
- Page 302, line 5: For "8630" read "8630a."
- Page 302, line 19: For "petoli" read "petioli."
- Page 307, line 7 from bottom: For "1: 619. 1875" read "n. ser. 3: 619. 1875."
- Page 312, line 9: For "bank" read "side of the valley."
- Page 312, line 17 from bottom: For "bractolae" read "bracteolae."
- Page 314, line 13 from bottom: Before "fasciculis" add "floribus in."
- Page 318, line 17: For "in the valleys of the Cali and Pichindé rivers" read "on Río Pichindé, in the valley of Río Cali."
- Page 318, line 15 from bottom: For "142565" read "1423565."

INDEX

[Synonyms in *italics>. Page numbers of principal entries in boldface.]*

Abrojo.....	615	Aphelandra—Continued	
Acanthaceae.....	1, 2, 4	diachyla.....	714, 715
Acanthoideae.....	2, 4, 44, 119, 323	dolichantha.....	131,
Acanthus.....	1, 3, 5, 282		204, 205, 206, 207, 209
<i>mollis</i>	3	euopla.....	129, 138, 139, 703
<i>spinosus</i>	3	fascinator.....	131, 191
<i>Adhatoda</i>	487	fernandezii.....	133, 270, 272
<i>carthaginensis</i>	547	flava.....	230, 279, 280
<i>hyssopifolia</i>	487	fosbergii.....	711, 712
<i>periplocifolia</i>	584	garciae.....	133, 256, 258, 259, 270
<i>reflexiflora</i>	584	gilva.....	704, 705, 706
<i>zeylanica</i>	487	glabrata.....	133,
Afromendocia.....	11		254, 256, 261, 262, 268, 726
Amasonia integerrima.....	46	glischrochlamys.....	130, 186, 188
Anamú.....	8	grandis.....	132, 226, 227, 228
<i>Ancylogyne</i>	51	grangeri.....	701, 702, 703
<i>capitata</i>	51	grantii.....	718, 719, 720
<i>macrocnemis</i>	51	<i>haenkeana</i>	183
<i>munita</i>	51	hartwegiana.....	133,
<i>peruviana</i>	51		246, 261, 268, 725
Andrographideae.....	285	haughtii.....	132, 234, 239, 241
<i>Aphanandrium</i>	120, 123	hodgei.....	133, 252, 262, 264
<i>lehmannianum</i>	120, 123	huilensis.....	129, 146, 147, 706
Aphelandra.....	1, 2, 3, 119, 120, 127,	impressa.....	130, 168, 175, 178, 179
	128, 157, 280, 282, 286, 324, 701	incarnata.....	132, 242, 243, 244, 723
<i>acanthus</i>	129, 141, 142, 144, 147, 706	killipii.....	131, 202, 203, 204, 205, 206
<i>acutifolia</i>	168	lamprantha.....	130, 176, 178, 714
<i>adscendens</i>	129, 158, 160	lasia.....	130, 179, 180, 181, 714
<i>albert-smithii</i>	132, 232, 233, 234	lasiophylla.....	131, 192, 193, 716
<i>alexandri</i>	131, 191, 192	lawranceae.....	131, 192, 195
<i>andrei</i>	707, 708	leiophylla.....	130, 169, 170, 171
<i>anomala</i>	130, 185, 186, 190	lingua-bovis.....	133,
<i>arborescens</i>	134, 277, 278, 279		223, 268, 270, 275, 728
<i>arisema</i>	131, 200, 201, 718	lonchochlamys.....	130, 165, 166, 714
<i>aristei</i>	132, 228, 229, 230, 232, 280	longispica.....	133, 252, 265, 266, 267
<i>arnoldii</i>	129, 153	lyrata.....	129, 150
<i>atecmarta</i>	726, 727, 728	lyrata var. <i>arguta</i>	150
<i>aurantiaca</i>	3, 130,	lyrata var. <i>latibractea</i>	150
	164, 166, 168, 169, 170, 173, 191	lyrata var. <i>laxior</i>	150
<i>barkleyi</i>	132, 221, 222, 223, 721	macrophylla.....	132,
<i>blandii</i>	133, 259, 267, 268		218, 234, 236, 237, 239, 721, 723
<i>botanodes</i>	129,	melgariensis.....	280
	155, 156, 157, 706, 708, 716	mildbraediana.....	132, 218, 220
<i>boyacensis</i>	131, 198, 199, 200	<i>mollis</i>	129, 154, 158
<i>chaponensis</i>	133, 273, 274, 275	mutisii.....	129, 136, 137
<i>cirsioides</i>	139	nana.....	130, 171, 173
<i>coccinantha</i>	721, 722, 723	ochrolarynx.....	129, 160, 162
<i>colombiensis</i>	131, 196, 197, 198	parviflora.....	129, 153
<i>conformis</i>	131, 194, 195, 718	parvispica.....	132,
<i>craura</i>	131, 207, 208, 209		216, 218, 237, 720, 721
<i>crenata</i>	133, 259, 260, 261, 726, 728	<i>pectinata</i>	183
<i>crispata</i>	129, 151, 152, 706	phalacra.....	712, 713, 714
<i>cuatrecasasii</i>	131, 204, 205, 718	pharangophila.....	134,
<i>daemonia</i>	130, 132, 223, 225, 226		275, 276, 277, 728
<i>deppeana</i>	130, 181, 183, 714	phlogea.....	130, 189, 190, 718

Aphelandra—Continued

phobera	129, 143, 144, 145
pilosa	131, 209, 211, 212, 718
pinarotricha	716, 717, 718
porphyrocarpa	129, 140, 141, 703, 706
porphyrolepis	129, 148, 149, 150
prismatica	200
puberula	130, 166, 167, 168, 175
pulcherrima	128, 131, 183, 212, 216, 218, 220, 226, 228, 234, 259, 262, 272, 275.
quadrifaria	709, 710
quercifolia	129, 150
repanda	166
runcinata	129, 134, 150, 701
runcinata var. pilosa	129, 135
runcinata var. straminea	129, 135
schiedeana	280
schieferae	131, 213, 215, 216
schultesii	132, 237, 238, 239
scolnikae	133, 252, 254
sericantha	133, 245, 246, 725
sericophylla	133, 254, 256, 726
silvicola	129, 157, 158, 710, 712
sinclairiana	243
sneidernii	130, 167, 174, 175
straminea	133, 250, 252, 264, 265, 267
taborensis	130, 181, 182, 183, 277
tetragona	128, 234, 259, 272, 275
tetragona var. grandis	721
trianae	132, 230, 231, 232, 721
trichota	723, 724, 725
uribei	130, 162, 164
xanthantha	133, 248, 249, 250
Aphelandreae	119, 120
Aphragmia	66
haenkei	66, 77
Aro-blanco	48
Arrhostoxylum	66, 684
fulgidum var. angustissimum	68
glabrum	684
hartwegianum	90
laxum	66, 684
Asystasia	120, 287, 323
coromandeliana	288
gangetica	288
intrusa	287
Asystasiaeae	119, 287
Azul	658
Babosa	207
Barleria	2, 44, 109
anomala	46
cristata	110, 111
discolor	110
micans	110
prionitis	109
Barlerieae	44, 109
Beloperone	488
amherstiae	488
bracteosa	535
brasiliana	488
chaetocephala	531
guttata	3
rohrii	564

Beloperone—Continued

rohrii var. latifolia	564
sanmartensis	565
steyermarkii	523
Bignonia bibracteata	46
Blechnum	2, 45, 60, 683
angustius	3, 63, 326
brownei	60, 61, 683, 771
brownei f. puberulum	60, 61, 63, 683
costaricense	63
haughtii	60, 62, 63
Bravaisia	2, 45, 679
floribunda	45, 46, 679
integerrima	46, 47, 679
Campanula morada	94
Canchelahua dulce	125
Canilla de golero	332
Canilla de laura	332
Chaetochlamys	323, 487, 659
ciliata	662
columbiensis	660, 661, 662
macrosiphon	659
marginata	659
rusbyi	659
Chaetothylax	324, 487, 662
haughtii	662, 665, 666
huilensis	662, 667, 668
leucanthus	662, 663, 664
tocantinus	662
umbrosus	662
Chu-ru-ko-pu	624
Cilantro de monte	8
Contortae	44
Cresta de gallo	135, 213, 536
Cryphiacanthus	66, 324
barbadensis	66, 78
Culantro	76
Cyphaeanthus	119, 120, 282, 324
atopus	283, 284
Cyrtanthera	650
magnifica	650, 651
Descansé	615
Dianthera	487
americana	487
comata	615
laevilinguis	621
pectoralis	613
pleurolarynx	512
secunda var. holtonii	577
Dicliptera	1, 60, 323, 325, 327
assurgens	328, 330, 332
batilliformis	329, 376, 377, 378
bogotensis	328, 329, 339, 340
caucensis	328, 342
chinensis	327
columbiana	330, 384, 386, 387
compacta	330, 386, 387
conformis	328, 344
cuatrecasasi	328, 329, 348, 350, 368
danielii	329, 362, 363
driophila	329, 352, 353
ewanii	329, 356, 357
garciae	329, 354, 355
haughtii	329, 358, 359
hazenii	329, 368, 370
inamoena	329, 371, 372

Justicia	127, 324, 487, 647, 648	Justicia—Continued	
<i>adhatoda</i>	487	<i>leucerythra</i>	490, 568, 569, 570, 572
<i>aëthes</i>	489, 524, 525	<i>lucida</i>	388
<i>anabasa</i>	491, 594, 595, 596	<i>macarenensis</i>	490, 555, 556, 557
<i>archeri</i>	489, 505, 507, 508	<i>malacophylla</i>	491, 589, 590, 591
<i>assurgens</i>	330	<i>martiana</i>	492, 620, 621
<i>atacta</i>	491, 604, 605, 606	<i>melgariensis</i>	280
<i>aurantiaca</i>	491, 596, 597, 598	<i>namatophila</i>	492, 618, 619, 620
<i>blackii</i>	489, 508, 509	<i>neurochlamys</i>	489, 517, 518, 519
<i>bracteolata</i>	398	<i>novogranatensis</i>	491, 600, 601
<i>bracteosa</i>	489, 535, 536	<i>obtusifolia</i>	621
<i>brasiliana</i>	488	<i>oreopola</i>	489, 503, 504, 505
<i>breviflora</i>	514	<i>pampolystachys</i>	490, 538, 541, 542, 545
<i>brunelloides</i>	10, 770	<i>pectoralis</i>	492, 613, 614, 617
<i>cabrerae</i>	490, 566, 567	<i>pectoralis</i> var. <i>stenophylla</i>	492, 615
<i>carnea</i>	651	<i>peliantha</i>	491, 591, 593, 594
<i>carthaginensis</i>	490, 547, 548, 560, 646	<i>periplocifolia</i>	491, 584
<i>chactocephala</i>	489, 531	<i>petraea</i>	492, 633, 634, 635
<i>chaponensis</i>	489, 536, 537, 538	<i>pharmacodes</i>	490, 557, 559
<i>charadrophila</i>	489, 501, 502, 503	<i>phlebophylla</i>	491, 577, 587, 588, 589, 633
<i>chinensis</i>	327	<i>phytolaccoides</i>	490, 560, 561
<i>chloanantha</i>	491, 608, 609, 611	<i>pilosa</i>	541
<i>chlorostachya</i>	488, 495, 496, 519	<i>pleurolarynx</i>	489, 512
<i>chrysea</i>	489, 529, 530, 531	<i>polygonoides</i>	489, 512, 513, 514, 525
<i>chrysocoma</i>	489, 525, 527, 528, 529	<i>porphyrocoma</i>	490, 582, 583
<i>coccinea</i>	388	<i>pulcherrima</i>	127, 212
<i>comata</i>	488, 492, 614, 615, 617, 647	<i>reflexiflora</i>	584
<i>cristata</i>	127	<i>rhodoides</i>	489, 519, 520, 521
<i>croceochlamys</i>	489, 532, 533, 534	<i>rohrii</i>	490, 527, 528, 529, 564
<i>cuzcoensis</i>	611	<i>rubra</i>	396
<i>cystolithosa</i>	488, 492, 494, 495, 503	<i>sanchezioides</i>	490, 572, 574, 575
<i>daidalea</i>	489, 521, 522, 523, 524	<i>sanctae-martae</i>	646
<i>enarthrocoma</i>	490, 570, 571, 572	<i>scabra</i>	127
<i>ephemera</i>	491, 606, 607, 608	<i>schultesii</i>	490, 545, 546
<i>erythrantha</i>	490, 549, 550, 551	<i>sciera</i>	492, 637, 638
<i>filibracteolata</i>	490, 491, 577, 603	<i>sciota</i>	491, 585, 586
<i>filibracteolata</i> var. <i>aurantiaca</i>	579	<i>scytophylla</i>	492, 626, 627
	581	<i>secunda</i>	491, 602, 603
<i>filibracteolata</i> var. <i>azurea</i>	579	<i>secunda</i> var. <i>leucantha</i>	491, 604
<i>filibracteolata</i> var. <i>leucantha</i>	579, 580, 581	<i>sessilis</i>	521
<i>filibracteolata</i> var. <i>lilacina</i>	579, 581	<i>spicigera</i>	657
<i>filibracteolata</i> var. <i>pubescens</i>	579, 580	<i>sterea</i>	492, 630, 635, 636, 637, 644
<i>fuchsiifolia</i>	489, 514, 516, 517	<i>stereostachya</i>	492, 639, 640, 641
<i>furcata</i>	626	<i>steyermarkii</i>	523
<i>fusagasugana</i>	492, 624, 625, 626	<i>unguiculata</i>	489, 538, 539, 541
<i>gangetica</i>	288	<i>xanthostachya</i>	490, 562, 563
<i>glabribracteata</i>	570	Justicieae	119, 323, 487
<i>graphophylla</i>	492, 631, 632, 633	Kalbreyeriella	324, 404, 408
<i>gutierrezii</i>	490, 553, 554	<i>cabrerae</i>	408, 409, 411
<i>helonoma</i>	491, 611, 612, 613	<i>gigas</i>	408, 412, 414, 415
<i>hodgei</i>	492, 642, 643, 644	<i>rostellata</i>	408, 411, 415
<i>homoca</i>	490, 575, 576, 577	<i>Lagochilium</i>	127, 157, 202, 286, 707, 708, 718
<i>hygrobia</i>	492, 644, 645	<i>maximilianum</i>	127
<i>hyperdasya</i>	490, 538, 543, 544, 545	<i>molle</i>	154
<i>hyssopifolia</i>	487	<i>Lepidagathis</i>	7, 111, 112, 696, 772
<i>idiogenes</i>	492, 622, 623	<i>alopeкуроidea</i>	112, 772
<i>imbricata</i>	7	<i>cristata</i>	112
<i>infelix</i>	489, 510, 511, 512	<i>Leptostachya</i>	488
<i>interrupta</i>	397	<i>comata</i>	615
<i>ischnorhachis</i>	489, 498, 499, 501, 505	<i>crinita</i>	647
<i>jacobinioides</i>	491, 598, 599, 600	<i>martiana</i>	620
<i>killipii</i>	492, 628, 629, 630	<i>martiana</i> var. <i>hispida</i>	621
<i>laevilinguis</i>	492, 621, 622	<i>virgata</i>	488
<i>leptochlamys</i>	490, 551, 552	<i>wallichii</i>	488
<i>leptophylla</i>	508		

- Lila* 111
Mee-ná-ku-ru 407
Megaskepasma 324, 404, 417
 erythrochlamys 417, 418
Mendoncia 1, 2, 4, 11, 12, 673
 albida 12, 38
 aspera 12, 14, 673
 coccinea 12, 13, 29
 coccinea var. *elliptica* 13, 30
 coccinea var. *sparatteria* 13, 30
 cordata 13, 16, 17, 18, 675
 cuatrecasasii 14, 37, 38
 fulva 30
 garciae 677, 678
 gigas 674
 gilva 14, 33, 34
 glabrescens 13, 23, 24, 26
 glomerata 13, 27, 28, 38
 gracilis 13, 32, 36, 678
 hirsuta 13, 21, 674
 lasiophyta 673
 lindavii 12, 15, 673
 litoralis 13, 31, 32
 microchlamys 14, 39, 40
 mirabilis 13, 18, 19
 mutisii 14, 36, 37, 38
 odorata 14, 34, 35, 36
 pedunculata 13, 16, 674
 pennellii 13, 25, 26
 phalacra 676, 677
 pilosa 12, 14
 puberula 13, 22
 rosea 13, 28, 29
 selloviana 22
 speciosa 13, 18, 19
 splitgerberiana 22
 spraguei 13, 20
 sprucei 13, 23, 676
 trichota 674, 675
 velloziana 29
 velloziana var. *sparatteria* 30
 villosa 13, 21, 22, 676
Mendoncioideae 2, 4, 10
Mendozia 12
 aspera 12, 14
 hirsuta 21
 pilosa 14
 puberula 22
 puberula var. *micropus* 22
 pubescens 22
 racemosa 12
 selloviana 22
 velloziana 29
 velloziana var. *sparatteria* 30
Mentha pulegium 60
Meyenia 40
Micranthus 683
 oppositifolius 683
Monochlamys 11
Nacadero 48
Nelsonia 2, 5, 10
 albicans 10
 brunelloides 10, 11
 campestris 770
 rotundifolia 770
Nelsonioideae 2, 4
Neriacanthus 119, 120, 123, 324, 698
 grandiflorus 121, 122
 lehmannianus 121, 122, 123, 699
 purdieanus 120, 121, 123
Odontonema 323, 387, 388
 ampelocaula 388, 393, 394, 396
 amplexicaule 391
 bracteolatum 388, 397, 398, 399
 bracteolatum var. *parviflorum* 388,
 399, 400
 coccineum 388, 389, 391
 interruptum 388, 397
 lucidum 388
 rubrum 388, 396
 schomburgkianum 396, 397
 stenostachyum 388, 391, 392, 393
 strictum 388
Odontonemeae 119, 323, 325
Odontoneminae 387
Onychacanthus 45
 arboreus 46
 berlandierianus 45, 46
 cumingii 45, 46
 speciosus 46
Oreja de mula 97
Orthotactus 488
 oblongus 647
 venosus 488
Pachystachys 120, 289, 290, 323, 728
 albiflora 290
 coccinea 291
 riedeliana 290, 291, 728
Palo de agua 46
Pánciga 658
Pelecostemon 324, 487, 648
 trianae 648, 649
Petalidieae 44, 60
Petalidium 60
Phaulopsis 683, 770, 771
 oppositifolia 683
 parviflora 683
Phaylopsis 2, 44, 60, 64, 683, 770, 771
 parviflora 64, 65
Picigallo 213
Pico de ave 42
Pié de gallo 213
Pisigallo 213
Porphyrocoma 415
Porphyrocominae 404
Psacadocalymma 488
 comatum 615
 pectorale 613
Pseuderanthemeae 119, 291
Pseuderanthemum 120, 291,
 292, 323, 388, 606, 608, 728
 alatum 295
 atropurpureum 293,
 307, 308, 730, 745
 bicolor 729
 chaponense 293, 312,
 313, 314, 730, 746, 748
 chaponense f. *lilacinum* 313, 314
 chilianthium 729, 734, 735, 736
 chocoense 730, 748, 749
 cladodes 729, 739, 740
 cordatum 319

Pseuderanthemum—Continued

ctenospermum	729, 730, 732, 733
cuatrecasasi	293, 316, 317, 318, 730, 748
cuspidatum	295
dawei	293, 318, 730, 748
diachylum	729, 737, 738, 739
ellipticum	292, 301, 305, 730, 745
ewanii	292, 302, 303, 730, 745
galbanum	729, 741, 742, 743
haughtii	292, 293, 294, 295, 729, 741
hylophilum	293, 310, 311, 312, 730, 746
idroboi	292, 295, 296, 297, 729, 741
lanceum	293, 305, 730, 745
leiophyllum	292, 297, 298, 299, 729, 741
micranthum	729, 730, 743, 744
pennellii	292, 304, 305, 730, 745
pocilanum	292, 299, 300, 301, 729, 741, 743
potamophilum	293, 308, 309, 310, 730, 745
sneidernii	293, 306, 307, 730, 745
stenosiphon	293, 314, 315, 316, 730, 748
thelothrix	730, 746, 747, 748
Pseudocalyx	40
Raiz preta	30
Razisea	324, 387, 400, 408
spicata	400, 401
Rhacodiscus secundus	602
Rhombochlamydeae	119, 285
Rhombochlamys	119, 285, 286, 324, 772
elata	285, 286, 287
rosulata	160, 285, 286, 287, 772
Rhytiglossa	488
ciliata	488
eckloniana	488
laevilinguis	621
oblonga	647
obtusifolia	621
origanoides	488
polygonoides	513, 514
secunda	602
Rojizo	615
Rompebarringa	48
Ruellia	1, 2, 3, 45, 48, 49, 60, 66, 684
albicaulis	77
alopecuroides	111, 112
aquatica	68, 103, 104, 105
aurantiaca	687, 688
blechum	60, 771
caucensis	67, 84, 85, 86, 88
chariessa	67, 74, 75
clandestina	78
colombiana	68, 102, 103
colorata	68, 97, 690
dulcis	125, 126
fulgida	68, 69, 684
fulgida var. angustissima	67, 68, 69, 684
geminiflora	68, 95, 96, 689
geminiflora var. angustifolia	68, 95, 96, 689

Ruellia—Continued

geminiflora var. hirsutior	95
gigantea	47, 48
gorgonensis	694, 695, 696
grantii	690, 692
grisea	67, 81, 82
humboldtiana	67, 89, 685, 686
inundata	67, 77, 684
ischnopoda	67, 82, 83, 84, 86, 685
lasiostachya	68, 105, 106, 694
longifilamentosa	67, 88
lorentziana	68, 94, 687
macarenensis	692, 693, 694
macrophylla	67, 73, 79, 81, 685, 686
macrophylla var. lutea	81
macrophylla var. puberula	67, 80
macrophylla var. pubescens	80
malacosperma	67, 68, 73
nudiflora	78
obtusa	68, 94, 96
obtusa f. albiflora	689
paniculata	67, 76, 684, 771
pennellii	68, 100, 101, 102, 103, 690
potamophila	67, 71, 72, 73, 684
purdieana	90
puri	694
putumayensis	68, 106, 107, 696
ruiziana	84
rusbyi	67, 86, 87, 88, 685
sprucei	109
stuebelii	90
tetrastichantha	91
tolimensis	67, 70, 71, 684
tuberosa	66, 67, 78, 94, 684
tubiflora	68, 89, 90, 91, 686, 696
tubiflora var. hirsuta	67, 93
tubiflora var. parviflora	68, 93, 687
tubiflora var. parviflora f. alba	68, 93, 687
tubiflora var. tetrastichantha	68, 91, 686
tubiflora var. tetrastichantha f. bicolor	67, 92, 686
tubiflora var. tetrastichantha f. caesiolineata	686
tubiflora var. tetrastichantha f. flava	68, 92, 93
turbacensis	76
uribei	68, 106, 108, 109
viridiflora	68, 98, 99
viscosa	76
Ruelliacae	44, 65, 292
Salpinxantha	698
Sancarano	46
Sanchezia	2, 3, 45, 51, 680
lutea	51, 53, 54, 680
oblonga	51
ovata	680
parvibracteata	51, 56, 57
parviflora	55
pennellii	51, 680
putumayensis	51, 55, 56
speciosa	3, 51, 52
sprucei var. salvadorensis	56
sylvestris	56

Sanchezia—Continued

<i>thinophila</i>	680
<i>thinophylla</i> f. <i>glabra</i>	680
<i>Sancho arafia</i>	46
<i>San Joaquín</i>	308
<i>San José</i>	308
<i>Scorodoxyllum</i>	66
<i>hartwegianum</i>	66, 90
<i>Sericographis</i>	650
<i>rigida</i>	650
<i>tinctoria</i>	658
<i>Siphonoglossa</i>	323, 387, 402
<i>calcareo</i>	402, 403
<i>ramosa</i>	402
<i>Soldado parado</i>	8
<i>Staurogyne</i>	2, 5, 671
<i>agrestis</i>	7
<i>argentea</i>	5
<i>lepidagathoides</i>	5, 6, 7, 673
<i>leptocaulis</i>	671, 672, 673
<i>Stemonacanthus</i>	66, 684
<i>humboldtianus</i>	89, 685
<i>macrophyllus</i>	79
<i>salviifolius</i>	66, 684
<i>Stenandrium</i>	119, 120, 124, 127, 157, 286, 324, 699, 708
<i>corymbosum</i>	124, 125
<i>dulce</i>	125, 126, 699
<i>humboldtianum</i>	125, 127, 699, 700, 701
<i>mandioccanum</i>	124
<i>radicosum</i>	124, 125
<i>Stenostephanus</i>	324, 415, 419, 486
<i>lobeliaeformis</i>	486
<i>puberulus</i>	486
<i>Stethoma pectoralis</i>	613
<i>Syringidium</i>	324, 404, 415
<i>atropurpureum</i>	415, 416
<i>Tango rojizo</i>	652
<i>Teliostachya</i>	2, 44, 109, 111, 112, 696
<i>alopécuroidea</i>	111, 112

Teliostachya—Continued

<i>cataractae</i>	111, 112
<i>diffusa</i>	111
<i>lanceolata</i>	112, 113, 696
<i>lanceolata</i> var. <i>crispa</i>	112, 114, 696
<i>petraea</i>	696, 697, 698
<i>Tetramerium</i>	3, 64, 324, 325
<i>nervosum</i>	325, 326
<i>polystachyum</i>	325
<i>Thunbergia</i>	2, 3, 40, 678
<i>alata</i>	40, 41, 42, 678
<i>alata</i> var. <i>alba</i>	42
<i>alata</i> var. <i>bakeri</i>	41, 42
<i>aurantiaca</i>	42
<i>aurantiaca</i> subvar. <i>doddsii</i>	42
<i>capensis</i>	41
<i>cordifolia</i>	43
<i>fragrans</i>	41, 42, 43, 678
<i>fryeri</i>	42
<i>grandiflora</i>	41, 43, 678
<i>grandiflora</i> f. <i>alba</i>	679
<i>grandiflora</i> f. <i>citrina</i>	679
<i>lutea</i>	42
<i>sulphurea</i>	42
<i>volubilis</i>	42
<i>Thunbergioideae</i>	2, 4, 40
<i>Thyrsacanthus</i>	388
<i>barlerioides</i>	388
<i>bracteolatus</i>	400
<i>interruptus</i>	397
<i>ruber</i>	396, 397
<i>Titirigallo</i>	213
<i>Trichanthera</i>	2, 44, 45, 47, 48, 679
<i>corymbosa</i>	48, 50, 679
<i>gigantea</i>	48, 49, 679
<i>Trichanthereae</i>	44, 45
<i>Verbena squamosa</i>	7, 8
<i>Yerbabuenilla</i>	647
<i>Yuca de puerco</i>	78
<i>Yuca-e-puerco</i>	78
<i>Yuquilla</i>	95