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THE ACANTHACEAE OF COLOMBIA

By EMERY C. LEONARD

Associate Curator of Phanerogams
United States National Museum

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REMINGTON KELLOGG,
Director, United States National Museum.

Errata—Part 3

Page 426, line 9 from bottom : For "ultimal" read "ultimae."
Page 487, line 9 from bottom : For "*adhatoda*" read "*hyssopifolia.*"
Page 770, after line 1 insert the following line :

Page 3, line 17 : For "*Jacobinia magnifica*" read "*Jacobinia carnea* (Lindl.) Nicholson."

Page 772, line 14 : For "Page ii" read "Page iii."
Page 776, Index : For "Cyphaeanthus" read "Cyphacanthus."

CONTENTS

Page

PART 1. The Acanthaceae of Colombia, I: Subfamilies Nelsonioideae, Mendoncioideae, Thunbergioideae, Acanthoideae. (Published June 8, 1951) . . . 1–117

PART 2. The Acanthaceae of Colombia, II: Subfamily Acanthoideae, continued. (Published November 10, 1953) 119–322

PART 3. The Acanthaceae of Colombia, III: Subfamily Acanthoideae, completed. (Published February 4, 1958) 323–781

The Acanthaceae of Colombia

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VOLUME 31, PART 1

THE ACANTHACEAE OF COLOMBIA, I

By EMERY C. LEONARD

SMITHSONIAN INSTITUTION
UNITED STATES NATIONAL MUSEUM
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THE ACANTHACEAE OF COLOMBIA, I

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BULLETIN OF THE UNITED STATES NATIONAL MUSEUM

PREFACE

The present paper, by E. C. Leonard, associate curator of the Department of Botany, U. S. National Museum, is the first of three parts of a critical account of the Acanthaceae of Colombia. Mr. Leonard has studied this family over a period of many years and has prepared various systematic and regional revisions. The family is divided into four subfamilies, of which the first three are treated in their entirety in this first part; of the fourth and largest subfamily, 5 of its 13 tribes are covered in the present paper. The Acanthaceae include many showy and beautiful plants, which are or should be in cultivation; the family is cosmopolitan in the tropical and subtropical parts of the world and is especially well developed in Andean America. In Colombia the family demonstrates a high percentage of specific endemism. Fourteen genera, including 72 species, of which 30 are described as new, are discussed in the present treatment.

J. R. Swallen,
Head Curator, Department of Botany,
United States National Museum.

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CONTENTS

	Page
Introduction	1
Systematic treatment	4
Subfamily Nelsonioideae	4
Staurogyne	5
Elytraria	7
Nelsonia	10
Subfamily Mendoncioideae	10
Mendoncia	11
Subfamily Thunbergioideae	40
Thunbergia	40
Subfamily Acanthoideae	44
Series Contortae	44
Tribe Trichanthereae	45
Bravaisia	45
Trichanthera	47
Sanchezia	51
Tribe Hygrophileae	57
Hygrophila	58
Tribe Petalidieae	60
Blechum	60
Phaylopsis	64
Tribe Ruellieae	65
Ruellia	66
Tribe Barlerieae	109
Barleria	109
Teliostachya	111
Index	115

ILLUSTRATIONS

		Page
1.	*Staurogyne lepidagathoides* Leonard	6
2.	*Elytraria imbricata* (Vahl) Pers.	9
3.	*Nelsonia brunelloides* (Lam.) Kuntze	11
4.	*Mendoncia cordata* Leonard	17
5.	*Mendoncia mirabilis* Leonard	19
6.	*Mendoncia glabrescens* Leonard	24
7.	*Mendoncia pennellii* Leonard	26
8.	*Mendoncia glomerata* Leonard	27
9.	*Mendoncia rosea* Leonard	29
10.	*Mendoncia litoralis* Leonard	31
11.	*Mendoncia gilva* Leonard	33
12.	*Mendoncia odorata* Leonard	35
13.	*Mendoncia mutisii* Leonard	37
14.	*Mendoncia cuatrecasasii* Leonard	37
15.	*Mendoncia microchlamys* Leonard	40
16.	*Thunbergia fragrans* Roxb.	43
17.	*Bravaisia integerrima* (Spreng.) Standl.	47
18.	*Trichanthera gigantea* (Humb. & Bonpl.) Nees	49
19.	*Sanchezia lutea* Leonard	54
20.	*Sanchezia putumayensis* Leonard	56
21.	*Hygrophila guianensis* Nees	59
22.	*Blechum brownei* Juss. forma *puberulum* Leonard	61
23.	*Blechum haughtii* Leonard	63
24.	*Phaylopsis parviflora* Willd.	65
25.	*Ruellia tolimensis* Leonard	70
26.	*Ruellia potamophila* Leonard	72
27.	*Ruellia chariessa* Leonard	75
28.	*Ruellia grisea* Leonard	81
29.	*Ruellia ischnopoda* Leonard	83
30.	*Ruellia caucensis* Leonard	85
31.	*Ruellia rusbyi* Leonard	87
32.	*Ruellia viridiflora* Leonard	99
33.	*Ruellia pennellii* Leonard	101
34.	*Ruellia colombiana* Leonard	103
35.	*Ruellia aquatica* Leonard	104
36.	*Ruellia lasiostachya* Leonard	106
37.	*Ruellia putumayensis* Leonard	106
38.	*Ruellia uribei* Leonard	108
39.	*Barleria cristata* L.	111
40.	*Teliostachya lanceolata* Nees	114

THE ACANTHACEAE OF COLOMBIA, I

By Emery C. Leonard

INTRODUCTION

Prior to this present revision no attempt has been made to bring together taxonomic considerations of all the Colombian Acanthaceae. In DeCandolle's Prodromus (vol. 11, 1847), Nees published the then known Colombian species. Subsequently, a number of isolated ones were described by Lindau and other botanists, but no general work containing keys has yet been attempted. This present paper is by no means the final word, for almost any fair-sized new collection will still produce undescribed material, especially in the genera *Mendoncia, Ruellia, Aphelandra, and Dicliptera.* The specimens studied so far seem to indicate that botanical exploration is still needed in eastern Colombia. The new Putumayo material, for example, has furnished abundant novelties. What further or extensive collections will reveal from Amazonas, Vaupés, Arauca, eastern Caquetá, Meta, and Boyacá can be left only to conjecture.

The purpose of this paper is to discuss, in an orderly fashion, all the known Colombian species of the family as a ready reference for botanists, so that they may identify their collections of acanthaceous plants or use the keys for detecting further undescribed species. Except for brief discussions to indicate the possible relationship of novelties to allied species, no attempt has been made in this paper to consider the phylogeny of the family. A thorough treatment of this subject is required in monographic works but is extraneous in a revision. For the same reason detailed morphological discussions, except for the formal descriptions, will also be omitted. Full synonomy has not been attempted. Only the name-bringing synonyms or those based wholly or partly on Colombian species, as a rule, have been included.

In tropical and subtropical regions, the family as a whole is cosmopolitan, although a number of genera are confined to one hemisphere only. Strange as it may seem, with the exception of a few species of *Acanthus* in the Mediterranean region, no Acanthaceae are to be found in Europe, even though Africa abounds in them. The following list will show in a general way the distribution of the genera treated in Part I of my revision:

Staurogyne: Both hemispheres.
Elytraria: Tropical America.
Nelsonia: Both hemispheres.
Mendoncia: Tropical America.
Thunbergia: Old World, but mostly African.
Bravaisia: Tropical America.
Trichanthera: Tropical America.
Sanchezia: Tropical America.
Hygrophila: Both hemispheres.
Blechum: Both hemispheres.
Phaylopsis: Eastern hemisphere. An escape in America.
Ruellia: Both hemispheres.
Barleria: Both hemispheres.
Teliostachya: Tropical America and west Africa.

In view of the mountainous nature of Colombia, endemism is to be expected; many of the new species treated here are based on a single collection, and the range of others is limited to a single department or to a few adjacent ones. Colombian species seldom occur in Peru. There is, nevertheless, some affinity along the eastern border to the plants of northwestern Brazil and western Venezuela. But, again, there is scarcely any affinity to the Panamanian flora except in the case of a few species that follow the mountain ranges of Panama down through El Chocó.

This large and complex group of plants has been placed by Engler, in his System,[1] between the small families Globulariaceae and Plantaginaceae, but it is near the larger and more complex family Gesneriaceae. Because of a superficial resemblance, confusion sometimes arises in distinguishing these two families. Certain characteristics are almost always present, however, by which an acanthaceous plant can be recognized. The most prominent and easiest to detect of these characters is the presence of cystoliths, small mineral concretions appearing as minute short lines on the upper surface of the leaf blades, the upper portions of the stems, on the branches of the inflorescence, and on the calyx. Similar cystoliths do occur in a few other distant families such as Urticaceae. In Acanthaceae they are lacking only on the members of the first three (relatively small) subfamilies (Nelsonioideae, Mendoncioideae, and Thunbergioideae), and for some unaccountable reason in the large genus *Aphelandra* of the fourth subfamily (Acanthoideae). In Mendoncioideae raised stelliform markings at the bases of the hairs on the upper surface of the leaf blades may appear to be of the nature of cystoliths. Bremekamp,[2] however, contends that they are merely large raised epidermal cells so elevated by differential shrinkage. A more general earmark of the family, and

[1] Syllabus der Pflanzenfamilien, ed. 5, 201, 1907.
[2] Rec. Trav. Bot. Néerl. 35: 141. 1938.

peculiar to it, is the unusual subulate hook-shaped extension of the funicle (retinacula), which supports the seed. This character is again lacking in the fruit of the first three subfamilies. Superficially there are actually few traits that associate these subfamilies with typical Acanthaceae.

Probably the best-known acanthaceous plants in cultivation belong to the genus *Acanthus* (ἄκανθος, thorny plant). This name was also given to bear's-breech or *Acanthus mollis* L. A conventionalized form of the leaf of *A. mollis* may have been the one used so extensively in Roman architecture. That ornamenting Corinthian columns was supposed to have been derived from *A. spinosus* L.[3]

Some of the plants of the family are reported to have medicinal qualities but are not included in the standard works of materia medica. Many others have beautiful and conspicuous flowers, especially in the genera *Sanchezia*, *Ruellia*, and *Aphelandra*, but most of these are difficult to grow, thrive only in greenhouses, and even there require especial care. *Jacobinia magnifica* Benth. & Hook., *Aphelandra aurantiaca* Lindl. or some of its forms, and *Sanchezia speciosa* Leonard are perhaps the species most often met with in greenhouses. Recently *Beloperone guttata* Brandeg., from Mexico, has become popular as a pot plant. In tropical regions a number of species of *Thunbergia* are encouraged as garden plants.

The sequence of subfamilies and tribes is that of Dalla Torre and Harms' Genera Siphonogamarum.

The specimens cited are chiefly those deposited in the U. S. National Herbarium. A few other herbaria have lent specimens for examination and citation in this paper. Of special interest in the Stockholm material were the Lawrance, Kjell von Sneidern, and Billberg collections. A considerable number of the specimens procured by Lawrance and von Sneidern were new to science. The Billberg collection was unique in being the oldest (1825–1826) plant material examined. By firsthand study of Billberg's No. 1 (the type of *Blechum angustius* Nees), I was able to place it in its proper genus, *Tetramerium*. Of interest in the New York loan was a complete set of the widely distributed H. H. Smith Santa Marta plants with full collector's data accompanying each sheet.

The photographs of types in European herbaria made by J. F. Macbride and distributed by the Chicago Natural History Museum have been of the greatest value. Where cited in this paper, the negative number of the photograph is given.

To the custodians who have so generously aided by lending material from other institutions, and especially to my associates in the U. S. National Herbarium, E. P. Killip, A. C. Smith, L. B. Smith, Jason

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[3] L. H. Bailey. Cyclopedia of Amer. Hort. 11. 1900.

R. Swallen, and C. V. Morton, for their valuable suggestions and the checking of the manuscript, I wish to extend thanks. The herbaria contributing material for this paper are indicated by the following letters:

Bog, Instituto de la Salle, Bogotá, Colombia.
Ch, Chicago Natural History Museum.
Col, Herbario Nacional de Colombia, Bogotá, Colombia.
GH, Gray Herbarium, Harvard University.
Med, Facultad de Agronomía, Universidad Nacional, Medellín, Colombia.
Mo, Missouri Botanical Garden.
NY, New York Botanical Garden.
Ph, Academy of Natural Sciences of Philadelphia.
S, Riksmuseet, Stockholm.
US, United States National Herbarium.
Valle, Facultad de Agronomía, Universidad Nacional, Cali, Colombia.

A summarizing list of exsiccatae will be published with the concluding portion of this treatment.

SYSTEMATIC TREATMENT

ACANTHACEAE J. St. Hil.: Acanthus Family

Acanthaceae J. St. Hil. Expos. Fam. 1: 236. 1805.

Herbs, shrubs, or small trees; leaves simple, opposite, exstipulate; flowers irregular to nearly regular, perfect; calyx persistent, inferior, the segments 5 or occasionally fewer; corolla gamopetalous, the limb 5-lobed or 2-lipped (rarely 1-lipped); stamens 4, didynamous, or 2 only; staminodes often present in the 2-stamened flowers; anther sacs 2 or 1, longitudinally dehiscent; ovary 2-celled, the ovules 2 to 10 in each cavity; style filiform, simple; stigmas 1 or 2; fruit a capsule (drupaceous in *Mendoncia*), 2-celled, 2-valved; seeds usually flat, borne on retinacula which are papilliform in a few genera but usually hook-shaped, the testa smooth or roughened, often mucilaginous when moistened.

KEY TO THE SUBFAMILIES

Funicle papilliform or lacking.
  Herbs (sometimes more or less shrubby) ---------- 1. NELSONIOIDEAE
  Vines.
    Fruit a drupe ---------- 2. MENDONCIOIDEAE
    Fruit a beaked capsule ---------- 3. THUNBERGIOIDEAE
Funicle hook-shaped (retinacula) ---------- 4. ACANTHOIDEAE

Subfamily 1. NELSONIOIDEAE

Nelsonioideae Lindau in Bot. Jahrb. Engler 18: 43. 1893.

Herbs without cystoliths; flowers solitary, borne in the axils of the leaves or bracts, mostly disposed in spikes; calyx more or less equally

5-parted; corolla 2-lipped or equally 5-lobed, the lobes imbricate; stamens 2 or 4; staminodes none or 2; anthers 2-celled; pollen marked by clefts or pores ("spaltenpollen": cleft-pollen); disk poorly developed; ovules numerous in each cell, borne in 2 rows; capsules beaked or pointed; retinacula mere papilliform projections of the funicle.

KEY TO THE GENERA

Stamens 4 ---------- 1. Staurogyne
Stamens 2.
  Scape densely covered by scalelike leaves ---------- 2. Elytraria
  Scapes none, the flowers borne in small peduncled or sessile spikes. 3. Nelsonia

1. STAUROGYNE Wall.

Staurogyne Wall. Pl. Asiat. Rar. 2: 80, *pl. 186*, 1831. The genus consists of 80 or more species, these widely distributed throughout the tropical regions of the world. The majority of the American species occur in Brazil. The name is derived from *σταυρός*, a cross, and *γυνή*, woman, i. e., pistil, in allusion to the 3-lobed cross-shaped stigma. Type species: *S. argentea* Wall. Type locality: Silhet.

Ebermaiera Nees in Wall. Pl. Asiat. Rar. 3: 75. 1832. The genus *Ebermaiera* was named for Henrich Ebermaier, a German physician of Dusseldorf, who, in collaboration with Frederich Nees, wrote and edited a Handbook of Medical-pharmaceutical Botany. Type species: *E. humilis* Nees. Type locality: Burma.

Erythracanthus Nees in Wall. Pl. Asiat. Rar. 3: 75. 1832. The name is derived from *ἐρυθρός*, red, and *ἄκανθος*, *Acanthus*, in allusion to the deep red-purple color of the lower surface of the leaf blades. Type species: *E. racemosus* Nees. Type locality: Penang.

Herbs or shrubs; stems (plants rarely acaulescent) erect, ascending, or repent, simple or branched, terete or subquadrangular (sometimes winged), glabrous, pilose, tomentose, or pubescent, the hairs or some of them often glandular; leaves opposite, usually petioled, entire; flowers sessile or short-pediceled, few or numerous, borne in terminal or axillary loose or compact spikes or racemes; calyx deeply 5-parted, the posterior segment oblong, usually conspicuously longer and broader than the others, the anterior pair usually linear, wider than the setaceous lateral pair; corolla usually red, purple, or yellow, tubular, the limb 2-lipped, the upper lip 2-lobed, the lower 3-lobed, the lobes rounded; stamens 4, usually included, a staminode usually present between the posterior pair; anthers 2-celled, their sacs ovate, subequal, muticous; stigma 2- or 3-parted; capsules oblong, obtuse, seed-bearing nearly its entire length; seeds numerous, minute, subglobose; retinacula none.

1. Staurogyne lepidagathoides Leonard, sp. nov. FIGURE 1

Herba, caulibus adscendentibus, pilosis vel subtomentosis; lamina foliorum oblonga, acuta, basi angustata, integra vel undulata, glabra,

costa et venis sparse pilosis exceptis; petioli pilosi; spicae terminales et axillares; bracteae lanceolatae utrinque acutae pilosae et glanduloso-puberulentae; bracteolae lineares; calycis segmenta pilosa et glanduloso-puberulenta, posticum lineare, trinerve, altera subulata, uninervia; corolla alba, glabra; capsulae oblongae, glabrae vel apice sparse pubescentes; semina minuta brunnea crasse verrucosa.

FIGURE 1.—*Staurogyne lepidagathoides* Leonard (*Pennell* 3983): *a*, Tip of branch; *b*, bract; *c*, bractlet; *d*, calyx; *e*, capsule; *f*, half of capsule showing arrangement of seed; *g*, lower lip of corolla; *h*, upper lip of corolla; *i*, stamen. (*a*, Natural size; *b–f*, about twice natural size; *g*, *h*, about three times natural size; *i*, about five times natural size.)

Herbs; stems ascending, up to about 15 cm. high, reddish brown, pilose or subtomentose, the hairs white, up to 2 mm. long; leaf blades oblong, up to 7.5 cm. long and 2.5 cm. wide (those subtending the spikelets smaller, usually about 4.5 cm. long and 1.5 cm. wide), acute at both ends (the tip blunt), entire or undulate, glabrous or the costa and veins (7 to 9 pairs) sparingly pilose, rather prominent; petioles up to 5 mm. long, pilose; flowers borne in terminal and lateral spikes up to 4 cm. long and 1 cm. in diameter; bracts lanceolate, 6.5 mm. long, 1.75 mm. wide, acute at both ends, the pubescence a mixture of white spreading hairs up to 1.5 mm. long and minute glandular ones, the bractlets linear, 0.5 mm. wide, otherwise similar to the bracts; calyx 6 mm. long, the pubescence a mixture of white spreading or ascending hairs 1 mm. long and minute glandular ones; the posterior segment linear, 0.5 mm. wide, 3-nerved, the others subulate, 0.25 mm. wide, 1-nerved, the nerves of the lateral segments enlarged near base; corolla white, glabrous, 4 mm. long; capsule oblong, 4 mm. long, 1 to 2.5 mm. broad, rounded at tip, glabrous or having a few minute apical hairs; seeds minute, brown, coarsely verrucose.

Type in the U. S. National Herbarium, No. 1042943, collected at edge of thicket near Buena Vista, east of Sincé, Department of Bolívar, Colombia, altitude 100 to 150 meters, January 24, 1918, by Francis W. Pennell (No. 3983). Isotypes in the Gray Herbarium and the herbarium of the New York Botanical Garden.

Staurogyne lepidagathoides is related to *S. agrestis* Leonard, from Panama and Nicaragua. From this, however, it can be easily separated by its narrower and less glandular bracts and by the narrow posterior segment of the calyx. In *S. agrestis* the bracts are as much as 5 mm. wide and the posterior segment of the calyx 1 mm. wide. The epithet *lepidagathoides* (*Lepidagathis* and *εἶδος*, resemblance) was selected because of the resemblance of the species to certain members of *Lepidagathis*, another acanthaceous genus subtribe Barlerieae.

2. ELYTRARIA Michx.

Elytraria Michx. Fl. Bor. Amer. 1: 8. 1803. The name *Elytraria* is derived from *ἔλυτρον*, sheath, in reference to the firm coriceous bracts covering the scapes and subtending the flowers. About a dozen species have been described from the Western Hemisphere, and several others are known to occur in the tropical regions of the Eastern Hemisphere. Type species: *Elytraria virgata* Michx. Type locality: Carolina.

Caulescent or acaulescent herbs; leaves alternate or sometimes subopposite, basal or crowded at the ends of the branches; flowers borne on dense peduncled spikes, both spikes and peduncles bearing imbricate coriaceous bracts; calyx scarious, the segments narrow, entire or toothed at apex; corolla white or blue, the tube slender, the limb 2-lipped, the lower lip 3-lobed; stamens 2, barely exserted; anthers 2-celled, the sacs equal, parallel, sometimes awn-tipped at base; staminodes usually wanting; ovary 2-celled; ovules 6 to 10 in each cavity; capsules narrow, contracted at base, acute at apex.

1. Elytraria imbricata (Vahl) Pers. FIGURE 2

Justicia imbricata Vahl, Ecol. Amer. 1: 1. 1796. Collector and locality not given. The specific name alludes to the bracted scapes and spikes.

Verbena squamosa Jacq. Pl. Hort. Schoenbr. 1: 3, *pl 5*. 1797. Type locality unknown. Again the specific name alludes to the close-bracted scapes and spikes.

Elytraria tridentata Vahl, Enum. Pl. 1: 107. 1804. Based on *Justicia imbricata* Vahl. Marcgrav's collection from Brazil and Rohr's from Santa Marta, Colombia, are cited. The specific name refers to the pointed 2-winged bracts of the spikes.

Elytraria imbricata Pers. Syn. 1: 23. 1805. Based on *Justicia imbricata* Vahl.

Elytraria frondosa H. B. K. Nov. Gen. & Sp. 2: 234. 1817. Two cotypes, both collected in Colombia by Humboldt and Bonpland, are cited, one from Carthagena de Yundias and the other growing in shade near Turbaco. A photograph of one of these specimens deposited in the Paris Herbarium is in the U. S. National Herbarium (No. 39434).

Elytraria scorpioides Roem. & Schult. Syst. Veg. Mant. 1: 128. 1822. Type collected in Santa Marta by Bertero. The specific epithet (*σκορπίος*, scorpion,

εἶδος, like) alludes to the fancied resemblance to a scorpion's tail of the slender, often curved spikes terminating their slender scapes.

Elytraria apargiifolia Nees in DC. Prodr. 11: 65. 1847. Two syntypes are cited, one collected on the border of Colombia and Panama by Cuming, the other along the La Plata River by Tweedie.

Elytraria squamosa Lindau, Anal. Inst. Fisco-Geogr. Costa Rica 8: 299. 1895. Based on *Verbena squamosa* Jacq.

Acaulescent or, if caulescent, the leaves crowded at the tip of a glabrous or sparingly pilosulous stem up to 30 cm. long or more; leaf blades ovate to oblong or obovate, rarely linear-lanceolate, usually 3 to 12 cm. long, 1.5 to 4 cm. wide, blunt or acutish at apex, narrowed at base to a slender winged petiole, both surfaces appressed-pilose or glabrate, the margins undulate; scapes numerous, axillary, usually 5 to 24 cm. long, simple or branched, sometimes leafy at tip, covered by tightly appressed-ovate to subulate bracts; spikes 1 to several, up to 6 cm. long; bracts oblong to elliptic, 3 to 6 mm. long, 1 to 2 mm. wide, firm, awn-tipped and bearing near the apex a pair of triangular or rhombic hyaline teeth or wings; bractlets subulate, 3 mm. long, the costa ciliate; calyx segments thin, the posterior one bidentate; corolla pale purplish, violet, blue, or blue-purple, 5 to 8 mm. long; capsule slenderly conic, about 3 mm. long, 1 mm. in diameter, glabrous.

Vernacular names: Anamú (*Killip & Smith* 14288); cilantro de monte (*Dugand & Jaramillo* 2767); soldado parado (*Dugand & García-Barriga* 2318; *Bro. Paul* B–7; *Bro. Elias* 915).

Elytraria imbricata is extremely variable in its habit of growth, ranging from small plantainlike herbs a few centimeters high to large subligneous-stemmed plants 25 cm. high or more. Allen's 839 was taken from a "semiherb 6 ft. long," bearing bright-green leaves and blue-purple flowers.

In Central America the plant is used as a remedy for dysentery, and the crushed leaves are said to cure pimples. In Colombia it has been used as a remedy to reduce fever (*Dugand & García-Barriga* 2318).

Usually found in old fields, on grassy banks, brushy slopes, in thickets, or in other waste places. It is a plant of low altitudes usually found below 300 meters. Range: Arizona and Texas to northern and western South America. It is also found in the West Indies and has been introduced into India and the Philippine Islands.

Atlántico: Barranquilla, *Bro. Elias* 160 (US). Juan Mina, *Dugand* 3639 (US). Mare Caribe near Salgar, *Dugand & Jaramillo* 2725 (US). Near Miramar, Puerto Colombia, *Dugand* 3623 (US). Puerto Colombia, *Bro. Elias* 915 (US). Between Sabanalarga and Campeche, *Dugand & Jaramillo* 2767 (US). Near Salgar, *Pennell* 12069 (GH, Ph). Sonto Tomás, *Bro. Paul* B–7 (US). Isabel López Road, Usiacurí, *Dugand & García-Barriga* 2318 (US).

FIGURE 2.—*Elytraria imbricata* (Vahl) Pers. (*Haught* 3865): *a*, Plant; *b*, side view of bract; *c*, bractlet; *d*, ventral view of bract; *e*, one of a lateral pair of calyx segments; *f*, posterior calyx segment; *g*, anterior calyx segment; *h*, capsule. (*a*, Half natural size; *b–h*, about five times natural size.)

BOLÍVAR: Cartagena, *Billberg*, s. n. (S); *Bro. Heriberto* 136 (US); 312 (US). La Popa, near Cartagena, *Darbin* s. n. (S). San Lázaro, *Billberg* 113 (S). Vicinity of Turbaco, *Killip & Smith* 14186 (US, NY), 14288 (US, NY).

MAGDALENA: Bonda, *H. H. Smith* 1412 (US, NY, Ph, Mo, GH). About 15 km. northwest of Codazzi, *Haught* 3865 (US). Poponte in the Magdalena Valley, *Cyril Allen* 839 (Mo). Santa Marta, *Bertero* s. n. (Mo. isotype of *E. scorpoides;* US, photograph).

3. NELSONIA R. Br.

Nelsonia R. Br. Prodr. 480. 1810. The genus, named for David Nelson, a gardener accompanying Cook on his last voyage, consists of a single species. Type species: *Justicia brunelloides* Lam. Type locality: Java.

A diffuse softly villous herb; leaves entire; flowers borne in terminal and axillary, bracted spikes; calyx 4-lobed, the lower lobe 2-toothed or 2-cleft; corolla blue or purple, the tube slender, the limb 2-lipped, the upper lip 2-cleft, the lower one 3-lobed; stamens 2, the filaments short, the anther sacs mucronulate at base; ovules several in each cavity; stigma 2-lobed; capsule oblong, beaked.

1. Nelsonia brunelloides (Lam.) Kuntze FIGURE 3

Justicia brunelloides Lam. Tab. Encycl. 1: 40. 1791. Type locality: Java.

Nelsonia albicans H. B. K. Nov. Gen. & Sp. 2: 234. 1817. Type collected in a damp place at mouth of the Río Sinú near El Zapote, Colombia.

Nelsonia brunelloides Kuntze, Rev. Gen. Pl. 2: 493. 1891. Based on *Justicia brunelloides* Lam.

Stem slender, prostrate or ascending, branched, 15 to 60 cm. long; leaves ovate, 1.5 to 7 cm. long, obtuse or acutish at apex, rounded at base or short-decurrent on the petiole; petioles 2 to 20 mm. long; spikes dense, peduncled or sessile, 2 to 6 cm. long; bracts ovate, acute or acuminate, imbricate, about 6 mm. long and 4 mm. wide; calyx about 5 mm. long, the upper lobe ovate, the others lanceolate; corolla tube 4 to 5 mm. long, the limb about 2 mm. broad; capsule sessile, glabrous, 4 mm. long, 4-seeded; seeds globose, light brown, subverrucose, sparingly pilosulous, the hairs anchoraeform.

Partial to moist sandy places. Mexico, Central America, West Indies, northern South America, Old World Tropics.

ATLÁNTICO: Barranquilla, *Bro. Elias* 473 (US).

Subfamily 2. MENDONCIOIDEAE

Mendoncioideae Lindau in Engl. & Prantl, Pflanzenfam. IV. 3b: 289. 1895.

Mostly high climbing vines; leaves opposite, petioled, the blades usually ovate, entire, their upper surfaces sometimes scabrous because of the raised stellate bases of the hairs; flowers 1 to several, axillary, pediceled (peduncles rarely present), racemose in *Monochlamys*, subtended and partly enclosed by two usually rather large more or less

connate bracts; calyx reduced usually to a mere entire or low-lobed annulus; corollas purple, red, or whitish, tubular or narrowly campanulate, regularly 5-lobed or somewhat 2-lipped; stamens 4; staminodes none; anthers 2-celled, the cells parallel, the basal lobes blunt, more or less barbellate; pollen globular, smooth, bearing three equatorial pores; disc annular; ovary at first bilocular, later becoming unilocular, the ovules 1 or 2; style filiform, the stigma briefly 2-lobed, the anterior lobe often the larger; fruit drupaceous, ovoid-compressed, more or less oblique at apex, the mesocarp more or less fleshy, the endocarp bony; retinacula none.

FIGURE 3.—*Nelsonia brunelloides* (Lam.) Kuntze (*Bro. Elias* 473): *a*, Branch; *b*, bract; *c*, anterior calyx lobe; *d*, posterior calyx lobe; *e*, one of a lateral pair of calyx lobes; *f*, valve of capsule showing placenta; *g*, an anchoraeform hair from seed. (*a*, Natural size; *b–f*, about 2½ times natural size; *g*, about 25 times natural size.)

This subfamily consists of four genera, *Mendoncia*, confined to tropical America, and three small African genera, *Monochlamys*, *Afromendoncia*, and *Gilletiella*.

4. MENDONCIA Vell.

Mendoncia Vell. ex Vand. Fl. Lusit. Bras. 43, *pl. 3, fig. 22.* 1788. The genus was named for Cardinal Mendonça, Patriarch of Lisbon. More than 90 species have been described, the majority of these limited to tropical America. No specific combination was made either by Vandelli in his Florae Lusitanicae

or by Ruiz and Pavón in their Prodromus, nor can the plants figured in each publication be assigned with certainty to any known species. The first species to be definitely established were those of Ruiz and Pavón (Syst. Veg. Peruv. Chil. 158. 1798), namely, *Mendozia aspera* and *M. racemosa*, the latter a very doubtful species. These were transferred in 1847 to *Mendoncia* (correctly spelled) by Nees (in DC. Prodr. 11). Previous to Nees' work in the Prodromus only two valid specific combinations had been made, namely, *Mendoncia albida* and *M. coccinea*, both published by Vellozo in his Florae Fluminensis (263. 1825). Type species: *Mendozia aspera* Ruiz & Pav. Type locality: Peru.

Mendozia Ruiz & Pav. Fl. Peruv. Chil. Prod. 89. *pl. 17.* 1794. The name *Mendozia* is merely an alteration of *Mendoncia* on the part of Ruiz and Pavón. It has not appeared in botanical literature since last used by Nees in Martius' Flora Brasiliensis (1874). Type species: *Mendozia aspera* Ruiz & Pav. Type locality: Peru.

Engelia Nees in DC. Prodr. 11: 721. 1847. Named for Engelio, a director of the Berlin Theater. Two species are described, both from Colonia Tovar, Venezuela (not Colombia), by Nees. These are *E. tovarensis* and *E. villosa.* Photographs of the types of both species are in the U. S. National Herbarium. A careful examination of these photographs leads one to no other course than to regard these plants as true *Mendoncia* in spite of the statement in Nees' generic description that the corollas possess short spurs, a split limb, and a staminode. Corollas are not shown in either photograph nor are mature corollas present on *Mutis* 895, undoubtedly representing *Engelia villosa.* More ample material is needed to clear up this troublesome point. Type species: *Engelia tovarensis* Kl. & Karst. ex Nees. Type locality: Colonia Tovar, Venezuela.

Tall vines; stems herbaceous, or shrubby at base; leaves opposite, petioled, entire, pinnately veined; flowers axillary, 1 to several or occasionally many in each axil, each flower borne on a slender pedicel and subtended by 2 bracts, these flat or keeled, more or less connate; calyx short, annular or cupular, often membranous, usually glabrous; corolla tubular or funnelform, usually expanded at the base, the throat often oblique, the lobes reflexed or spreading; stamens 4, included, didynamous, the filaments short, the anthers linear-lanceolate, usually flat and acute at apex, lobed at base, the lobes more or less unequal, glandular-puberulent at tip; disk annular; ovary oblique, compressed, lenticular; style filiform, the stigma 2-lobed; fruit an ovoid, compressed drupe, often oblique at tip, the endocarp hard and bony, the mesocarp fleshy or pulpy; seeds 1 or 2.

KEY TO THE SPECIES

A. Bracts lanceolate, often subfalcate; corollas red.
  Pedicels and bracts densely and softly fulvous-pubescent, the hairs appressed or ascending ---------- 1. *M. aspera*
  Pedicels and bracts pilose, the hairs spreading.
    Leaf blades thin, never softly or velvety pilose beneath; bracts narrowly lanceolate, 7 mm. wide or less ---------- 2. *M. pilosa*
    Leaf blades firm, usually densely and velvety pilose beneath; bracts oblong-lanceolate, about 10 mm. wide ---------- 3. *M. lindavii*

A. Bracts oblong, ovate, or elliptic.
  Flower clusters more or less peduncled ---------- 4. *M. pedunculata*
  Flower clusters sessile; bracts usually ovate or elliptic.
    B. Stems pilose, the hairs spreading or retrorse.
      Bracts 3 to 5 cm. long.
        Leaves cordate ---------- 5. *M. cordata*
      Leaves rounded, obtuse or acute at base.
        Bracts cordate at base, 4.5 cm. long ---------- 6. *M. mirabilis*
        Bracts rounded at base, 3.5 cm. long or less.
          Ovary densely pubescent; corolla funnelform ---------- 7. *M. speciosa*
          Ovary minutely papillose; corolla cylindric ---------- 8. *M. spraguei*
      Bracts 2.8 cm. long or less.
        Hairs of the bracts mostly 3 to 5 mm. long ---------- 9. *M. hirsuta*
        Hairs of the bracts 1 mm. long or less.
          Pedicels densely hirsute ---------- 10. *M. villosa*
          Pedicels sparingly to moderately hirsute but not conspicuously so ---------- 11. *M. puberula*
    B. Stems glabrous to densely pubescent, the hairs, when present upwardly appressed.
      C. Bracts glabrous or essentially so.
        Pedicels 4 cm. long or more; flowers usually solitary ---------- 12. *M. sprucei*
        Pedicels 1 to 1.5 cm. long; flowers 4 to 9 in each axil.
          Corolla glandular puberulous within tube and basal portions of the lobes; leaf blades glabrous or the costa beset with inconspicuous hairs about 125μ long ---------- 13. *M. glabrescens*
          Corolla glabrous or nearly so; the costa of the leaf blades bearing hairs about 250μ long ---------- 14. *M. pennellii*
      C. Bracts definitely pubescent.
        D. Pubescence of the bracts dense, soft, silky.
          Bracts small, 12 mm. long or less, the pubescence whitish; flowers numerous ---------- 15. *M. glomerata*
          Bracts large, 2 to 3 cm. long, the pubescence fulvous; flowers 1 to several.
            Bracts elliptic, 2 cm. wide ---------- 17a. *M. coccinea* var. *elliptica*
            Bracts lanceolate-ovate, oblong-elliptic, or oblong-ovate, 1.7 cm. wide or less.
              Bracts truncate at base, 1.7 cm. wide. 17b. *M. coccinea* var. *sparatteria*
              Bracts rounded or subtruncate at base, 1 to 1.5 cm. wide.
                Leaf blades acute or gradually acuminate ---------- 16. *M. rosea*
                Leaf blades rounded or short-acuminate at apex ---------- 17. *M. coccinea*
        D. Pubescence of the bracts thin, not soft and silky.
          E. Bracts 1.5 to 2 cm. long.
            Stems densely appressed-hirsute; leaf blades firm, the costa, veins, and veinlets prominent.
              Leaf blades ovate to elliptic, the hairs of the lower surface confined chiefly to costa and veins ---------- 18. *M. litoralis*
              Leaf blades elliptic to oblong-elliptic, the lower surface evenly pubescent ---------- 19. *M. gracilis*
            Stems glabrous or sparingly to moderately pilose or hirtellous; leaf blades thin, the costa, veins, and veinlets not conspicuously prominent.

Flowers solitary; hairs of the bracts at least 1.5 mm. long, some of them more or less ascending; corolla cream ---------- 20. *M. gilva*

Flowers usually several in each axil; hairs of the bracts 0.5 mm. long or less, closely appressed; corolla cream with brownish markings ------ 21. *M. odorata*

E. Bracts 13 mm. long or less.

Leaf blades rather copiously hirtellous beneath ------ 22. *M. mutisii*

Leaf blades essentially glabrous beneath.

Bracts 8 to 10 mm. long; plants drying olive green. 23. *M. cuatrecasasii*

Bracts 5 to 6 mm. long; plants drying black -- 24. *M. microchlamys*

1. **Mendoncia aspera** (Ruiz & Pav.) Nees

Mendozia aspera Ruiz & Pav. Syst. Veg. Peruv. Chil. 158. 1798. Type collected in wooded region near the village of Chinchao and the Masapata Estate, Peru, by Ruiz & Pavón. The specific name alludes to the roughened upper surface of the mature leaf blades.

Mendoncia aspera Nees in DC. Prodr. 11: 51. 1847. Based on *Mendozia aspera* Ruiz & Pav.

Stem appressed-pubescent; leaf blades elliptic, 5 to 12 cm. long, 3 to 6.5 cm. wide, acuminate at apex (usually tipped by a mucro 1 to 4 mm. long), rounded or narrowed at base, appressed-pubescent above, becoming scabrous with age, the hairs about 0.5 mm. long, each one arising from a stellate base, the lower surface rather densely and softly appressed-pubescent, the hairs yellowish, up to 1 mm. long; flowers 1 to 3 in each axil; pedicels 2 to 6 cm. long, appressed-pubescent; bracts oblong-lanceolate to ovate-lanceolate, 3 to 3.5 cm. long, 1.2 to 1.5 cm. wide, often subfalcate, acute at apex, tipped by a short mucro, rounded at base, densely and softly sericeous, the hairs yellowish brown, closely appressed or ascending; corolla bright red, 3.5 cm. long, the throat about 4 mm. broad; ovary puberulent; style glabrous; fruit deep purple, 1.5 cm. long, 10 mm. broad, somewhat compressed, sparingly puberulous.

Woods and thickets, usually below 400 meters. Colombia, Peru, Brazil, and Surinam.

PUTUMAYO: Umbría, *Klug* 1760 (GH, Mo, NY, US).

2. **Mendoncia pilosa** (Mart.) Nees

Mendozia pilosa Mart. Nov. Gen. & Sp. 3: 21. *pl. 209.* 1829. Type collected by Martius. Type locality: "In sylvis aboriginibus fluvium Japura inumbrantibus, e. g. prope Manacuru Indorum Juri habitationes, et prope Porto dos Miranhas," Colombia. Photograph of type material (Munich Herbarium) in the U. S. National Herbarium, No. 20540. The specific name was suggested by the numerous long spreading hairs covering the stems, leaves, peduncles, and bracts.

Mendoncia pilosa Nees in DC. Prodr. 11: 50. 1847. Based on *Mendozia pilosa* Mart.

Small suffrutescent vine; stems terete, densely pilose, the hairs brownish, spreading, up to 5 mm. long; leaf blades ovate to oblong, up to 12 cm. long and 6.5 cm. wide, slenderly acuminate, often mucronate, the mucro up to 5 mm. long, rounded, obtuse or acutish at base, entire or shallowly sinuate-dentate, thin, ciliate, pilose on both surfaces, the hairs arising from star-shaped bases, the costa and lateral veins (5 or 6 pairs) fairly prominent; petioles up to 2 cm. long, densely pilose, the hairs brown, spreading; flowers solitary or in pairs, borne in the axils of the upper leaves; pedicels up to 4.5 cm. long, 2 to 3 mm. broad at tip, tapering towards a slender base, densely brown pilose; bracts narrowly lanceolate, 3 to 4 cm. long, up to 7 mm. wide, acute and often slenderly mucronate at apex, rounded at base, more or less subfalcate, densely brown pilose without, glabrous within; corolla bright red, glabrous, 4 to 5 cm. long, the tube slender, 5 to 6 mm. broad at throat, the lobes erect-spreading, obovate, about 6 mm. long and 3 to 4 mm. wide, rounded or shallowly emarginate; style and calyx glabrous; fruit (immature) finely pilosulous.

Cuatrecasas' specimen was taken April 4, 1940, from a flowering plant growing in forests between 1,000 and 1,300 meters altitude. The corolla was a livid red (rojo cárdena).

Forests of southern Colombia and northwestern Brazil.

CAQUETÁ: Sucre, *Cuatrecasas* 9064 (US).

3. Mendoncia lindavii Rusby

Mendoncia lindavii Rusby, Mem. Torrey Club 4: 241. 1895. Type collected at Yungas, Bolivia, 1890, by Miguel Bang, No. 532. Isotype in the U. S. National Herbarium, No. 942655. Paratypes are also in the U. S. National Herbarium, Nos. 58334 and 942656, both collected at Tipuani-Guanai, Bolivia, by Miguel Bang, No. 1707. The species was named for Gustav Lindau, a specialist on the family Acanthaceae.

A suffrutescent vine; branches ferruginous-pilose or glabrescent; leaf blades ovate to broadly oval, 5 to 10 cm. long, 2 to 5.5 cm. wide, acuminate at apex, and usually terminating in a small awnlike tip up to 5 mm. long, rounded at the base, firm, subcoriaceous, ciliate, the upper surface papillose, scabrous-pilose, the hairs appressed or ascending, arising from stellate bases, the lower surface ferruginous-pilose, often densely so and velvety to the touch; pedicels stout, 2 to 3 cm. long, ferruginous-pilose; bracts oblong-lanceolate, falcate or subfalcate, 3 to 4 cm. long, about 1 cm. wide, acuminate at apex, usually ending in an awnlike tip 2 to 3 cm. long, rounded at base, partly connate, densely ferruginous-pilose; corolla red or pink, paler within and proximally without, 4 to 5 cm. long, 6 to 7 mm. broad at throat, the lobes rounded, 4 to 5 mm. long; style 4 cm. long, glabrous above, the lower portion hispid; drupe oblong-ovate, about 2 cm. long and 1 cm. broad, oblique at apex and tipped by a portion of the persistent style, densely brown puberulous.

Usually found in damp situations along streams in thickets and forests of the lower mountain slopes from 100 to 1,400 meters altitude. The corollas are red or bright scarlet and the ripe drupes purple black (*Pennell* 1397). Bolivia, north to British Honduras and Guatemala.

BOYACÁ: Region of Mount Chapón, northwest of Bogotá, *Lawrance* 69 (Mo, NY, US).

CUNDINAMARCA: Along the road to Pacho on the Río Murca, vicinity of La Palma, *García-Barriga* 12394 (US).

META: Llanos de San Martín, near Villavicencio, *Dawe* 229 (US). Menegua, *García-Barriga* 5304 (US). Along the Río Ocoa, southeast of Villavicencio, *Killip* 34377 (US). Villavicencio, *Helen Schiefer* 790 (GH, NY); *Pennell* 1397 (NY), 1475 (NY).

SANTANDER: Between the Río Carare and Magdalena, in the vicinity of Puerto Berrío, *Haught* 1821 (US). "Kilometer 16" between Puerto Wilches and Puerto Santos, *Killip & Smith* 14895 (US).

WITHOUT DEFINITE LOCALITY: *Mutis* 894 (US); 924 (US).

4. **Mendoncia pedunculata** Leonard

Mendoncia pedunculata Leonard, Journ. Washington Acad. Sci. **21**: 150. 1931. Type collected in forest at Mishuyacu, near Iquitos, Peru, 100 meters altitude, December 13, 1929, by G. Klug, No. 659 (U. S. National Herbarium, No. 1455658).

Stem terete, sulcate, sparingly puberulent toward tip, the hairs appressed; leaf blades elliptic, 10 to 16 cm. long, 6 to 10 cm. wide, abruptly acuminate at apex and tipped by a mucro 1 to 2 mm. long, obtuse at base and decurrent on the petiole, glabrous; petioles 2 to 3 cm. long, glabrous; flowers 1 to 4, borne on axillary peduncles up to 2.5 cm. long, these and the pedicels (5 to 7 mm. long) minutely appressed-pubescent; bracts violet (Klug), oblong, 4 cm. long, 1.4 to 1.8 cm. wide, rounded at both ends, tipped by a short mucro, inconspicuously and minutely appressed-pubescent without, glabrous within; corolla white, marked by reddish brown within, glabrous, 5 to 6 cm. long, the tube curved, 2.5 cm. long, the throat 1 cm. broad, the limb 3 cm. wide, the lobes oval, 1 to 1.5 cm. long; style about 5 cm. long; ovary sparingly puberulous; fruit not seen.

The specimens cited were collected during January and February.

Forests of the lower mountain slopes from 100 to 325 meters. Peru and southern Colombia.

PUTUMAYO: Umbría, *Klug* 1918 (Mo, NY, US).

VAUPÉS: Miraflores, *Gutiérrez & Schultes* 789 (Ch, GH).

5. **Mendoncia cordata** Leonard, sp. nov. FIGURE 4

Suffrutex volubilis, caulibus quadrangularibus, dense pilosis, pilis patentibus, brunneis; lamina foliorum magna, membranacea, crasse reticulata, elliptico-ovata, abrupte acuminata, caudata, basi cordata, dense pilosa, pilis brunneis; petioli dense pilosi; flores axillares fasciculati; pedicelli tenues, pilosi; bracteae magnae, ovato-ellipticae,

apice rotudatae vel obtusae, caudatae, dense pilosae; drupa oblonga, compressa, pilosa.

Suffruticose; stem subquadrangular, densely pilose, the hairs spreading, brown, 4 to 8 mm. long; leaf blades ovate to elliptic-ovate, 12 to 20 cm. long, 8 to 14 cm. wide, abruptly acuminate, the tips of the upper leaves terminating in cauda up to 14 mm. long, the bases of all of the leaves strongly cordate, both surfaces densely brown-pilose, the hairs ascending, 1.5 mm. long, the lower surface minutely punctate, the costa and lateral veins (4 or 5 pairs) obscure above and prominent beneath, the veinlets of the lower leaves forming coarse

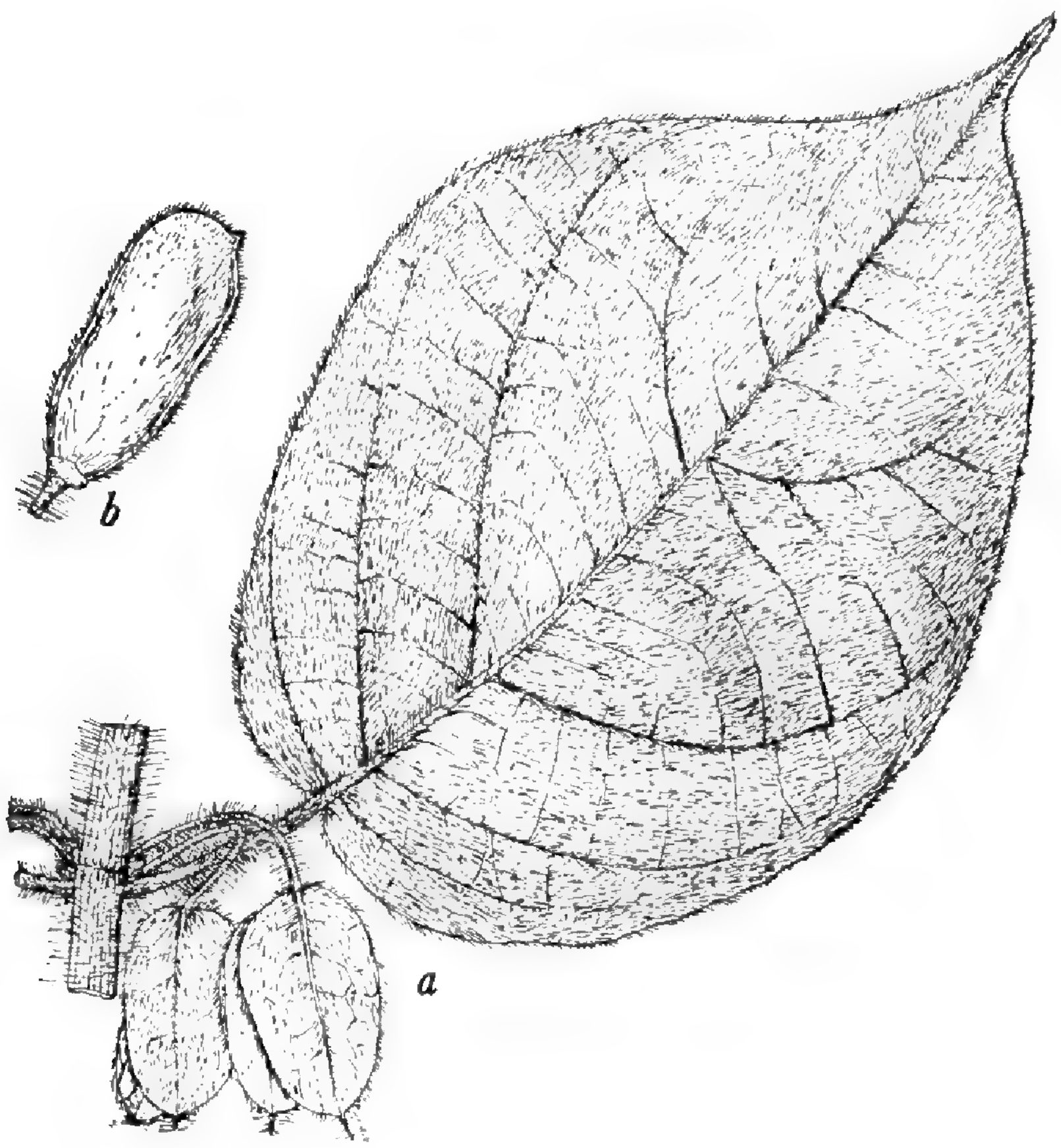

FIGURE 4.—*Mendoncia cordata* Leonard (*Cuatrecasas* 15216): *a*, Portion of plant showing leaf and inflorescence; *b*, drupe (immature). (*a*, Half natural size; *b*, natural size.)

conspicuous reticulations on the lower surface; petioles 2 to 3 cm. long, densely pilose, the hairs similar to those of the stem in color and length; flowers axillary, 1 to several in each axil; pedicels about 3.5 cm. long, slender, 0.75 mm. broad at base, gradually enlarged to 1.5 mm. at tip, densely pilose, the hairs spreading, similar in color and length to those of the stems; bracts ovate-elliptic, 3.5 cm. long, 2.5 cm. wide, rounded or obtuse at apex and tipped by a cauda 5 to 6 mm. long, shallowly cordate at base, both surfaces pilose, the hairs

spreading or ascending, those on the inner surface 0.25 mm. long, those of the outer surface a mixture of small hairs 0.25 to 1.5 mm. long and coarser ones up to 5 mm. long, the latter more abundant on the costa, tip, and mucro, the costa prominent and the veinlets reticulate; corolla not seen; calyx annular, subhyaline, 1.5 mm. high, equalling the disc; drupe (immature) oblong, flattened, 2 cm. long, 1 cm. wide, 3 mm. thick, pilose, the hairs spreading, 1 mm. long, confined chiefly to the margins.

Type in the U. S. National Herbarium, No. 1853784, collected in forest at La Planta on the right bank of the Río Anchicayá, Department of El Valle, Colombia, altitude 200 to 350 meters, September 27, 1943, by J. Cuatrecasas (No. 15216). An isotype is also in the U. S. National Herbarium, No. 1853785.

Mendoncia cordata is related to *M. speciosa*, but it is easily recognized by its cordate leaf blades and long, brown, spreading hairs on stems, pedicels, leaves, and bracts. The flowers of the upper portions of the plant seem to be erect, but older ones of the basal parts droop on recurved pedicels. Cuatrecasas gives the following color notes: "Ramos hojosas verde amarillentas, pálidas en el envés. Brácteas verde amarillento claro con venas verdes."

6. Mendoncia mirabilis Leonard, sp. nov. FIGURE 5

Planta volubilis, caulibus quadrangularibus, leviter sulcatis, hirsutis, pilis patentibus vel leviter retrorsis, palide brunneis; lamina foliorum membranacea, oblongo-ovata vel elliptica, apice breviter acuminata vel subapiculata, basi rotundata vel obtusa, in petiolum decurrens, parce hisuta, supra pilis e basi stellata orientibus instructa; flores solitarii, axillares; pedicelli pilosi; bracteae membranaceae, oblongo-ovatae, apice rotundatae, mucronatae, basi cordatae, hirsutae; corolla alba, glabra, lobis rotundatis; ovarium glabrum.

Slender twiner up to 5 meters high; stems subquadrangular, shallowly sulcate, hirsute, the hairs straight, spreading or slightly retrorse, up to 1.25 mm. long, light brown; leaf blades oblong-ovate to elliptic, 6 to 10 cm. long and 5.5 cm. wide, short-acuminate and subapiculate at tip, rounded to obtuse at base and decurrent on the petiole, thin, both surfaces sparingly hirsute, the hairs ascending, up to 1 mm. long, those of the upper surface arising from flat rounded more or less star-shaped bases, the costa and lateral veins (3 or 4 pairs) barely conspicuous; petioles up to 2.5 cm. long, pilose, the hairs ascending, up to 1 mm. long, confined mostly to the channels; flowers solitary, borne in the axils of the leaves, the peduncles 3 to 3.5 cm. long, 1 mm. thick at base, gradually enlarged to 2.5 mm. at

tip, retrorsely pilose, the hairs up to 1 mm. long, the bracts oblong-ovate, subpanduriform, rounded and mucronate at tip, cordate at base, 4.5 to 5 cm. long, 23 to 25 mm. wide near base, 20 to 23 mm. wide near middle, thin, hirsute, the hairs spreading or ascending, brownish, up to 1 mm. long, the costa and veins obscure; corolla 6 cm. long, white, bearing a dark blotch at throat (Haught), glabrous, the tube subcylindric, 1 cm. broad at base, about 8 mm. broad at middle, 12 mm. broad at throat, the limb 32 mm. broad, oblique, the lobes rounded, about 13 mm. long and wide; calyx thin, cupular, subhyaline; ovary glabrous; capsule not seen.

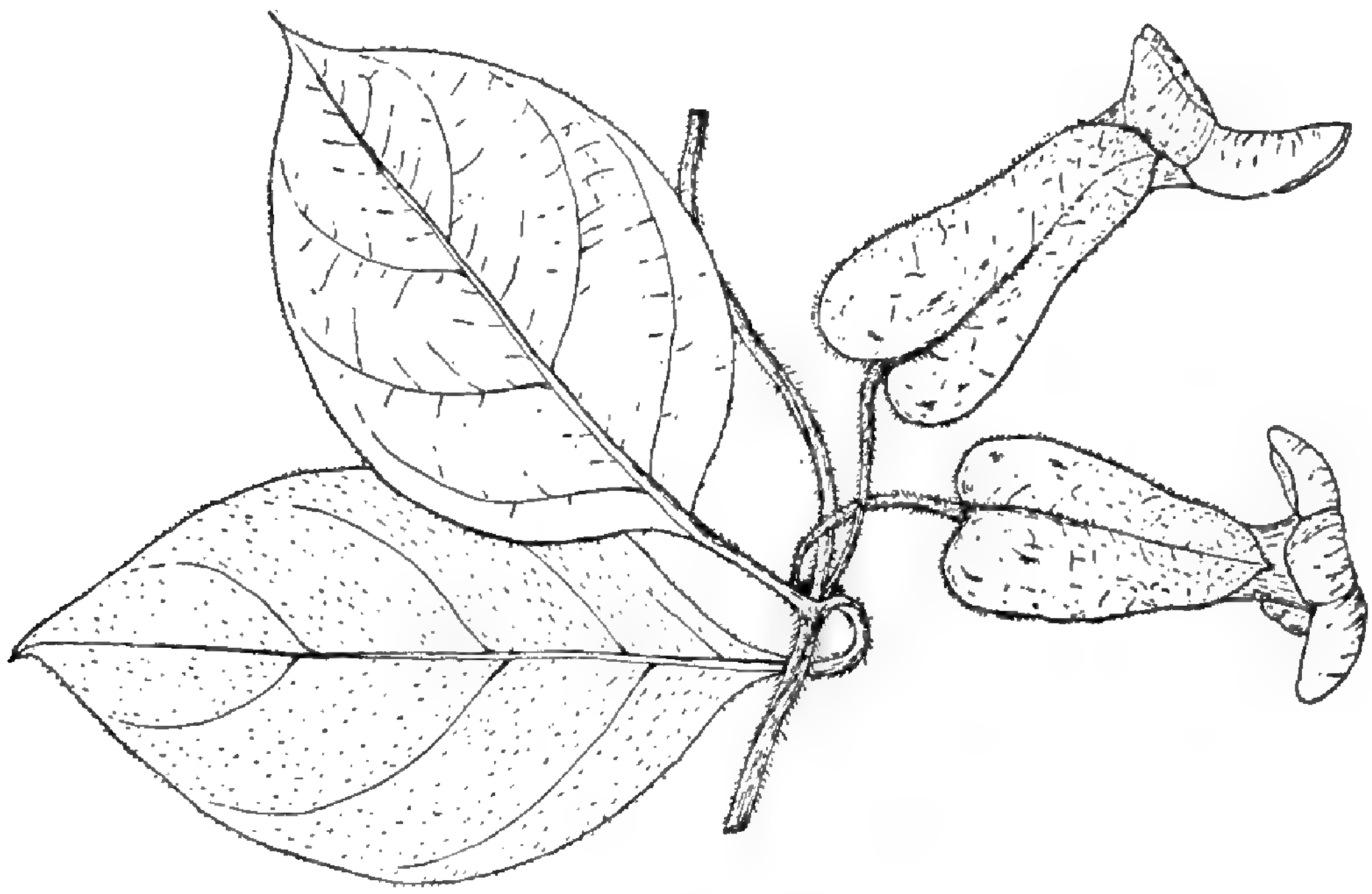

FIGURE 5.—*Mendoncia mirabilis* Leonard (*Haught* 4922): Portion of plant showing leaves and inflorescence (half natural size).

Type in the U. S. National Herbarium, No. 1950200, collected at edge of forest near Nicoclí, Department of Antioquia, Colombia, altitude 50 meters, June 27, 1946, by Oscar Haught (No. 4922). An isotype is likewise in the U. S. National Herbarium, No. 1950201.

Mendoncia mirabilis is related to *M. speciosa* but differs in having smaller leaf blades and cordate subpanduriform bracts. The leaf blades of *M. speciosa* are usually 10 to 17 cm. long instead of 6 to 10 cm. as in *M. mirabilis*, and its bracts are ovate, rounded, and connate at base.

7. Mendoncia speciosa Nees

Mendoncia speciosa Nees in DC. Prodr. 11: 54. 1847. Type locality: Atangues, Peru. Collector unknown. Type in the Hooker Herbarium, Kew.

Vine up to 5 meters high or more; stems quadrangular, retrorsely pilose, the hairs about 1 mm. long; leaf blades elliptic, 10 to 17 cm. long,

7 to 9 cm. wide, abruptly acuminate at apex and tipped by a mucro 1 to 2 mm. long, rounded at base, thin, veiny, scabrous above, sparingly pubescent, the hairs stiff, curved, up to 1 mm. long, more numerous on the upper surface than on the lower; petioles 1 to 1.3 cm. long; flowers 1 or 2 in each axil; pedicels 2 to 5 cm. long, glabrous or sparingly hirsute; bracts thin, ovate, 3.5 cm. long, about 2 cm. broad, connate below, rounded and mucronate at tip, rounded at base, sparingly pubescent; corolla white, glabrous, 5 to 6.5 cm. long, the throat mottled with light purple, the tube funnelform, 8 mm. broad at base, 15 to 20 mm. broad at throat, the lobes about 1 cm. long and 1.5 cm. wide, rounded, shallowly emarginate at apex; style 2.5 cm. long, the lower portion puberulent; ovary densely pubescent; fruit not seen.

Haught describes his No. 4282 as: "Slender twining plant, at least 5 m. high. Flowers showy, white, having a large dark brown blotch in throat." It was growing along a stream in a forest at an altitude of 450 meters. According to H. H. Smith (No. 1137) the corolla was white and its throat mottled with dark and light purple. Turrill[4] cites a specimen collected near Ocaña, Department of Santander, by Schlim (No. 19). The flowers of this specimen were likewise white with a purple throat.

Wooded mountain slopes of Colombia and Peru.

GOAJIRA: 14 km. southwest of Garraipía, *Haught* 4282 (US).

MAGDALENA: Valparaiso, vicinity of Santa Marta, *H. H. Smith* 1137 (Mo, NY, Ph).

8. **Mendoncia spraguei** Turrill

Mendoncia spraguei Turrill, Kew Bull. 1919: 412. 1919. Type collected at Mocoa, Caquetá, Colombia, by Sprague, No. 402, and deposited in the herbarium of the Royal Botanic Gardens, Kew.

Suffrutescent vine; stems terete, hirsute, the hairs spreading, yellow; leaf blades elliptic-ovate, up to 9 cm. long and 5 cm. wide, acuminate at apex, rounded or acute at base, pilose, the hairs of the upper surface arising from stellate bases; petioles 1.5 to 2 cm. long, hirsute, the hairs spreading, yellow; flowers 1 to 3, axillary; pedicels 1.5 to 2.5 cm. long, hirsute, the hairs yellow; bracts oblong or oblong-ovate, up to 3.5 cm. long, 1.5 cm. wide, abruptly contracted to a slender tip 5 mm. long at apex, rounded at base, hirsute, the hairs yellow; corolla up to 6 cm. long, the tube cylindric, curved, 5 mm. broad at base, 2.5 mm. at middle and 7 mm. at throat, the limb sublabiate; filaments short; anthers 9 to 10 mm. long, the basal lobes unequal, bearded; ovary minutely papillose; style up to 4.5 cm. long.

Known only from type material.

CAQUETÁ: Mocoa, Sprague 402 (isotype, US).

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[4] Kew Bull. 1919: 411. 1919.

9. **Mendoncia hirsuta** (Poepp. & Endl.) Nees

Mendozia hirsuta Poepp. & Endl. Nov. Gen. & Sp. 3:10. 1845. Type collected between Maynas and Yurimaguas, Peru, by Poeppig, No. 2252. Photographs of type material from the Berlin Herbarium (photo No. 5871) and from the Vienna Herbarium (photo No. 32694) are in the U. S. National Herbarium.

Mendoncia hirsuta Nees in DC. Prodr. 11:52. 1847. Based on *Mendozia hirsuta* Poepp. & Endl.

Stem subquadrangular, sparingly hirsute, the hairs 1 to 3 mm. long, spreading; leaf blades ovate to oblong-ovate or elliptic or sometimes sublanceolate, 6 to 14 cm. long, 3 to 7 cm. wide, gradually to abruptly narrowed to an acuminate tip, this often terminated by a mucro 1 to 3 mm. long, narrowed at base and decurrent on the petiole, membranaceous, hirsute, the hairs 1 to 2.5 mm. long, the costa and veins (3 or 4 pairs) prominent; petioles 1 to 3.5 cm. long, pilose; flowers solitary or in pairs; pedicels 2 to 3 cm. long, densely hirsute, the hairs spreading, tawny, about 2 mm. long; bracts oblong-elliptic to ovate, 2 to 2.8 cm. long, 8 to 12 mm. wide, rounded or obtuse at apex, mucronate (mucro up to 1 cm. long), rounded at base, thin, veiny, long-hirsute, the hairs 3 to 5 mm. long; corolla cream white, tinged with yellow distally, about 2.5 cm. long; ovary and calyx glabrous; fruit oblong, 15 to 17 mm. long, 9 to 10 mm. broad, compressed, oblique, obtuse or rounded at tip, glabrous, deep purple when ripe.

No Colombian specimens were examined. Turrill cites[5] a specimen collected at Naranjo, lower Magdalena River, by André.

The Guianas, Bolivia, Peru, Colombia.

10. **Mendoncia villosa** (Klotzch & Karst. ex Nees) Leonard, comb. nov.

Engelia villosa Klotzsch & Karst, ex Nees in DC. Prodr. 11: 721. 1947. Type collected at Colonia Tovar, Venezuela, by Karsten. Photograph of type material from the Berlin Herbarium (photo No. 5883) is in the U. S. National Herbarium.

Stem subquadrangular, hirsute, the hairs spreading or retrorse, up to 0.75 mm. long; leaf blades ovate to oblong-ovate, 5 to 10 cm. long, up to 6 cm. wide, obtuse to acute or abruptly and shortly acuminate at apex and tipped by a mucro 1 to 2 mm. long, obtuse to acutish at base, thin, hirsute above, the hairs arising from star-shaped bases, densely and softly hirsute or villous beneath, the hairs about 1 mm. long, spreading; petioles up to 2.5 cm. long, densely pilose; flowers 1 to several in each axil; pedicels 1.5 cm. long, densely hirsute, the hairs spreading or retrorse; bracts elliptic, up to 17 mm. long and 10 mm. wide, rounded or obtuse at both ends, tipped by a short mucro at apex, densely hirsute; corolla glabrous; calyx entire, glabrous; ovary glabrous; fruit not seen.

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[5] Kew Bull. 1919: 422. 1919.

This description was drawn from *Mutis* 895, collected in Colombia, locality unknown. Although the specimen compares favorably with the photograph of the type from the Berlin Herbarium, there remains the possibility that the two plants may belong to different species. More ample material and examination of an isotype may be necessary in order to establish the identity of *M. villosa.*

Venezuela and Colombia.

WITHOUT DEFINITE LOCALITY: *Mutis* 895 (US).

11. **Mendoncia puberula** (Mart.) Nees

Mendozia puberula Mart. Nov. Gen. & Sp. 3: 24. 1829. Type locality: "In Sylvis primaevis prope S. Crucis et alibi in montibus, Serra dos Orgãos, dictis, Provincia Sebastianopolitanae, ac similibus locis prope urbem Para."

Mendozia pubescens Poepp. & Endl. Nov. Gen. & Sp. 3: 11. 1845. Type collected in woods near Ega, northern Brazil, by Poeppig. A photograph of type material (photo No. 32696) from the Vienna Herbarium is in the U. S. National Herbarium. Poeppig and Endlicher cite *Mendozia puberula* Mart. *β micropus* as a synonym.

Mendozia selloviana Nees in Mart. Fl. Bras. 9: 10. 1847. Type collected in Brazil by Sellow, No. 91 (Berlin Herbarium).

Mendoncia selloviana Nees in DC. Prodr. 11: 53. 1847. Based on *Mendozia selloviana* Nees.

Mendoncia puberula Nees in DC. Prodr. 11: 53. 1847. Based on *Mendozia puberula* Mart.

Mendoncia splitgerberiana De Vriese in Nederl. Kruidk. Arch. 1: 353. 1848. Type collected near the Merveille Plantation, Surinam, by Splitgerber.

Suffrutescent vines; stems quadrangular, the young branches densely hirsute, the older ones more or less hirsute to glabrate, the tips cirrose; leaf blades elliptic-ovate, elliptic, or oblong-elliptic, up to 11.5 cm. long and 8.5 cm. wide but usually smaller, acuminate, more or less rounded or short-attenuate at base, the costa and lateral veins (5 or 6 pairs) prominent, the upper leaf surface hirsute or glabrescent, the hairs sometimes arising from star-shaped bases, the lower surface, at least the larger veins, hirsute; flowers 1 or 2, borne in the axils of the leaves, the pedicels 1 to 3 cm. long, more or less hirsute, the hairs spreading; bracts oblong-elliptic, 1.5 to 2 cm. long, 1 to 1.3 cm. wide, the tip obtuse or rounded, mucronate, densely hirsute with spreading hairs or sometimes hirtose-pubescent, the hairs about 1 mm. long, the inner surface glabrous; calyx annular, about 0.5 mm. long, glabrous; corolla 2.2 to 3.7 cm. long, glabrous; anthers 8 mm. long, filaments (free portion) about 3 mm. long, glabrous; drupe lenticular, compressed, ovate, 1.6 cm. long and 1 cm. in diameter, glabrous.

No Colombian specimens were examined. The description was compiled from that of Turrill.[6] Martius states in his description of *Mendozia puberula* that the corolla was white with blue or purple

[6] Kew Bull. 1919: 420. 1919.

spotted markings on the limb. Turrill cites Kalbreyer's specimen (No. 830) collected at Salazar, Santander, Colombia.

Forests of Surinam, Brazil, Colombia, and Ecuador.

12. Mendoncia sprucei Lindau

Mendoncia sprucei Lindau, Bull. Herb. Boiss. 5: 647. 1897. Type collected along the Rio Negro near San Gabriel da Cachoeira, Brazil, by Spruce, No. 2332. Photographs of type material from the Vienna Herbarium (photo No. 32679) and the Berlin Herbarium (photo No. 5877) are in the U. S. National Herbarium.

Suffrutescent vine up to 7 meters high; stems slender, subterete, sparingly hirsute or glabrous; leaf blades ovate to oblong-ovate, up to 9 cm. long and 6 cm. wide, short acuminate at apex (the tip blunt and bearing a slender mucro up to 2 mm. long), obtuse, rounded, or narrowed at base, sparingly appressed-pilose or densely so on costa and veins (3 or 4 pairs) beneath; petioles up to 4 cm. long, sparingly appressed-pilose; flowers usually solitary in the axils of the leaves; pedicels slender, up to 4 cm. long or more, usually sparingly appressed-pilose; bracts ovate, about 2 cm. long and 1 cm. wide, rounded to acute at apex and apiculate, rounded at base, sparingly appressed-hirtellous without, glabrous within; corolla cream-color with purple streaks in throat, glabrous, 3 cm. long, about 8 mm. broad at throat; fruit slightly flattened, about 2 cm. long and 10 mm. broad, purplish black, glabrous.

Usually found in dense forests of the lower mountain slopes between 40 and 750 meters. Colombia, Peru, and Brazil.

META: Villavicencio, *Pennell* 1384 (Col, Mo, NY, US).

NORTE DE SANTANDER: El Indio, Río Cubugón, region of Río Sarare, *Cuatrecasas* 13109, in part (US).

SANTANDER: Servitá, *Triana*, s. n. (Col).

13. Mendoncia glabrescens Leonard, sp. nov. FIGURE 6

Frutex volubilis, caulibus glabris, nodis parce adpresso-puberulis; lamina foliorum elliptica vel ovata vel oblonga vel obovata, apice abrupte acuminata, basi angustata, in petiolum oblique decurrens, subchartacea, glabra vel costa parce puberula, pilis minutis; flores in calcaribus axillaribus complanatis dipositi; pedicelli parce adpresso-puberuli; bracteae ovatae, apice obtusae et mucronulatae, ad apicem parce et obscure adpresso-puberulae; corolla alba, lobis suborbicularibus, rotundatis vel leviter emarginatis; drupa ovoidea, leviter compressa, glabra, caerulea.

A large branched vine up to 9 meters high; stems pale green (Cuatrecasas), glabrous except the nodes, these sparingly and inconspicuously appressed-puberulous; leaves elliptic, ovate, oblong or obovate, up to 12 cm. long and 8 cm. wide, rather fleshy, abruptly and

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slenderly acuminate at tip, narrowed at base, sometimes obliquely so, and decurrent on the petiole, glabrous, or the costa bearing a few minute whitish appressed hairs about 125μ long, the upper surface dull green, the lower a clear pale green (Cuatrecasas), the costa and lateral veins (4 or 5 pairs) rather prominent; petioles up to 2.5 cm. long, glabrous or bearing a few scattered hairs similar to those on the costa; flowers usually 5 to 7, borne on small flattened axillary spurs, the pedicels about 1 cm. long, reaching 2 cm. at maturity, bearing scattered appressed white hairs about 125μ long; bracts pale yellowish green, ovate, up to 12 mm. long and 7 mm. wide, obtuse and mucronate at tip, pubescent toward tip, the hairs 375 to 500μ

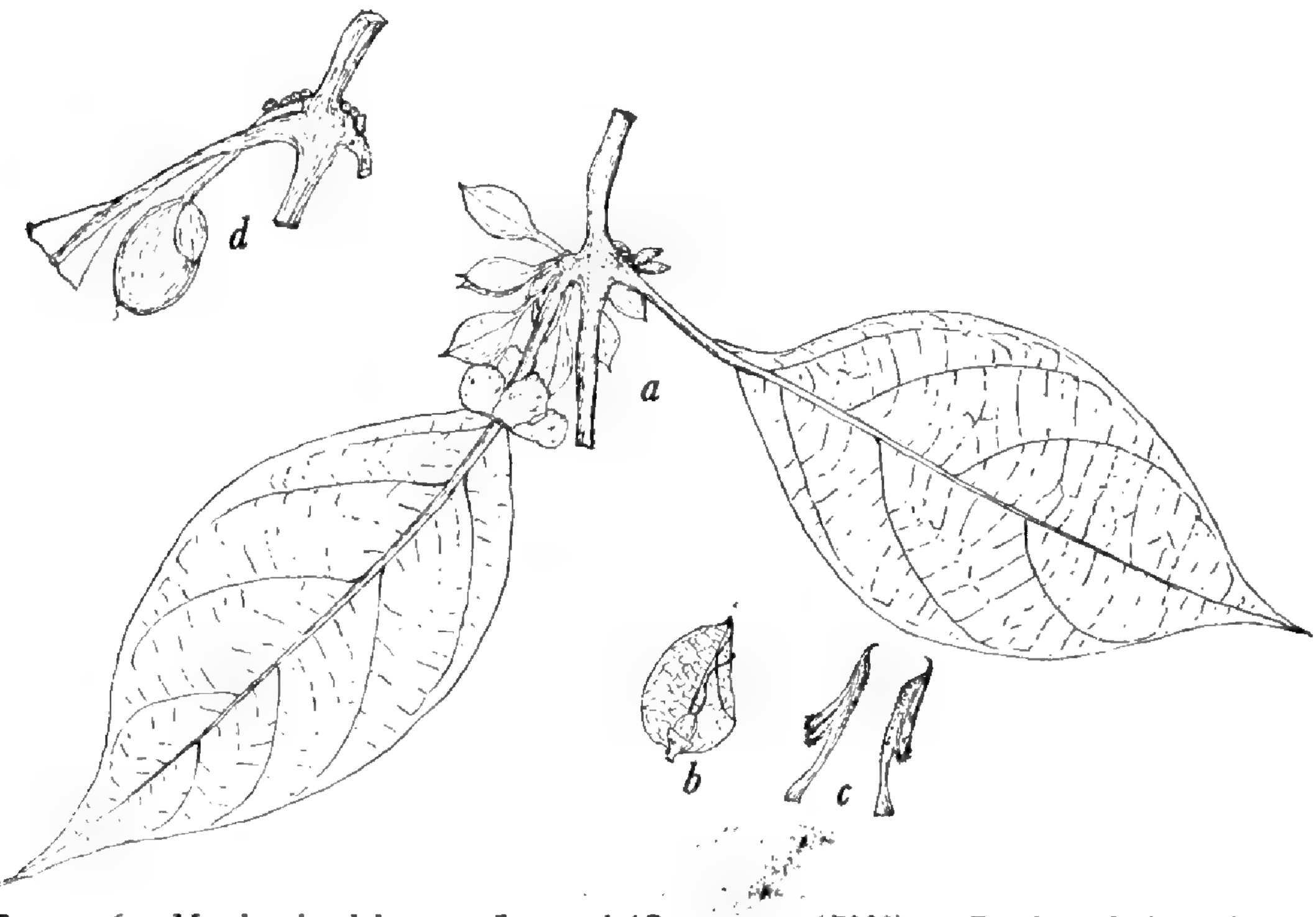

FIGURE 6.—*Mendoncia glabrescens* Leonard (*Cuatrecasas* 17238): *a*, Portion of plant showing inflorescence and a pair of leaves; *b*, bract (inner surface) and ovary; *c*, stamens; *d*, nodal portion of plant showing fruit and pedicel scars. (*a*, Half natural size; *b*, natural size; *c*, three times natural size; *d*, natural size.)

long, appressed or ascending; corolla white, glabrous, 12 to 15 mm. long, the tube 2 mm. broad at base, slightly restricted above the base, thence expanding to 5 or 6 mm. at mouth, the limb 12 to 15 mm. broad, the lobes suborbicular, about 7 mm. in diameter, rounded or shallowly emarginate, more or less erose, the tube glandular-papillose within; stamens attached 4 mm. above the base of the tube, 5 mm. long, the anthers 3 mm. long, sagittate, aristate, the slender tip often recurved, glandular-papillose dorsally, the tips of the basal lobes densely pilose; style 13 mm. long, glabrous; fruit resembling an elongated olive (Cuatrecasas), 18 mm. long, 13 mm. broad, 6 mm. thick, glabrous, olive when immature (Cuatrecasas), dark blue when ripe (Archer).

Type in the U. S. National Herbarium, No. 1853791, collected at Barco, along the Río Cajambre, Department of El Valle, Colombia, altitude 5 to 80 meters, April 21 to 30, 1944, by J. Cuatrecasas (No. 17238).

The following specimens are probably of this species: *Cuatrecasas* 15205 (fruiting), collected in forest near Hacienda La Planta, on the right bank of the Río Anchicayá, Department of El Valle, altitude 200 to 350 meters, September 27, 1943; *Cuatrecasas* 16847 (flowering), collected between La Trojita and Guadualito, Department of El Valle, altitude 0 to 5 meters, March 11, 1944; *Archer* 1708 (fruiting), collected between La Oveja and Quibdo, Chocó, April 1 to 2, 1931; *Cuatrecasas* 17182 (fruiting) (NY), also collected at Barco, along with the type.

Archer states that the common name of the plant is *higo silvestre* (fig of the woods) and the dark blue fruit has an odor like soap and is said to be poisonous. The species can be recognized by its nitid apparently glabrous leaves (hence its name *glabrescens*) and by its small white flowers, their tubes bearing within and near the throat minute spherical-tipped papillae resembling adherent pollen grains. Olive-green fruits measured by Cuatrecasas (No. 17182) before drying proved to be 18 mm. long, 16 mm. broad, and 12 mm. thick. The leaves and inflorescence of the type are strongly reflexed.

14. Mendoncia pennellii Leonard, sp. nov. FIGURE 7

Herba volubilis, caulibus quadrangularibus, breviter sulcatis, glabris vel ad nodos parce adpresso-pubescentibus; lamina foliorum ovata vel oblonga, apice abrupte acuminata et mucronulata, basi angustata, chartacea, glabra vel minute hirsuta, pilis in costa et venis lateralibus pluribus; petioli glabri vel parce hirsuti; flores pauci, in calcaribus axillaribus complanatis dispositi; pedicelli glabri vel apice adpresso-hirsuti; bracteae suborbiculares, apice mucronulatae, parce hirsutae, costa obscura; corolla alba, extus glabra, lobis obcordatis, reticulatis; ovarium glabrum.

Herbaceous climbing vine; stems subquadrangular, obscurely sulcate, glabrous or sparingly pubescent at and near the nodes, the hairs straight, closely appressed, about 625μ long; leaf blades ovate to oblong, up to 13 cm. long and 6.5 cm. wide, abruptly acuminate (the tip itself abruptly mucronate), rounded to narrowed at base, firm, glabrous or sparingly and minutely hirsute especially the younger leaves, the hairs confined chiefly to the costa and lateral veins (3 or 4 pairs), white, appressed or ascending, about 250 μ long, the costa and veins fairly prominent, the upper surface of the older leaves coarsely reticulate; petioles up to 3 cm. long, glabrous or sparingly hirsute, the

hairs similar to those of the leaf blades; flowers usually several, borne on flattened suborbicular axillary spurs, the pedicels 1 to 1.5 cm. long, glabrous or bearing toward tip a few closely appressed hairs about 0.25 mm. long; bracts suborbicular, up to 11 mm. long and 0.5 mm. wide, mucronulate, sparingly hirsute, the hairs appressed or ascending, up to 0.5 mm. long, the costa barely conspicuous; corolla white, glabrous (except a small area near the insertion of the stamens, this glandular-papillose), about 1 cm. long, the tube 4 mm. broad at base, narrowed at 1.5 mm. above base to 3 mm., expanded at mouth to 4 mm., the lobes obcordate, about 7 mm. long and 6 mm. wide toward tip, entire, reticulate-veined; stamens attached 3 mm. above the base of the corolla tube, the filaments 2 mm. long, the anthers sagittate, 2.5 mm. long, the basal lobes bearded; ovary glabrous; fruit not seen.

Type in the Gray Herbarium, collected in forest at Santurario, Department of Caldas, Colombia, altitude 2,000 to 2,300 meters, September 13 or 14, 1922, by Francis W. Pennell (No. 10601). An isotype is in the herbarium of the New York Botanical Garden.

Other collections are: *Killip* 11175, in woodland below La Cumbre, El Valle, altitude 1,400 to 1,700 meters, September 11 to 18, 1922 (GH, US); *Lawrance* 761, collected at El Humbo, Boyacá (Mo).

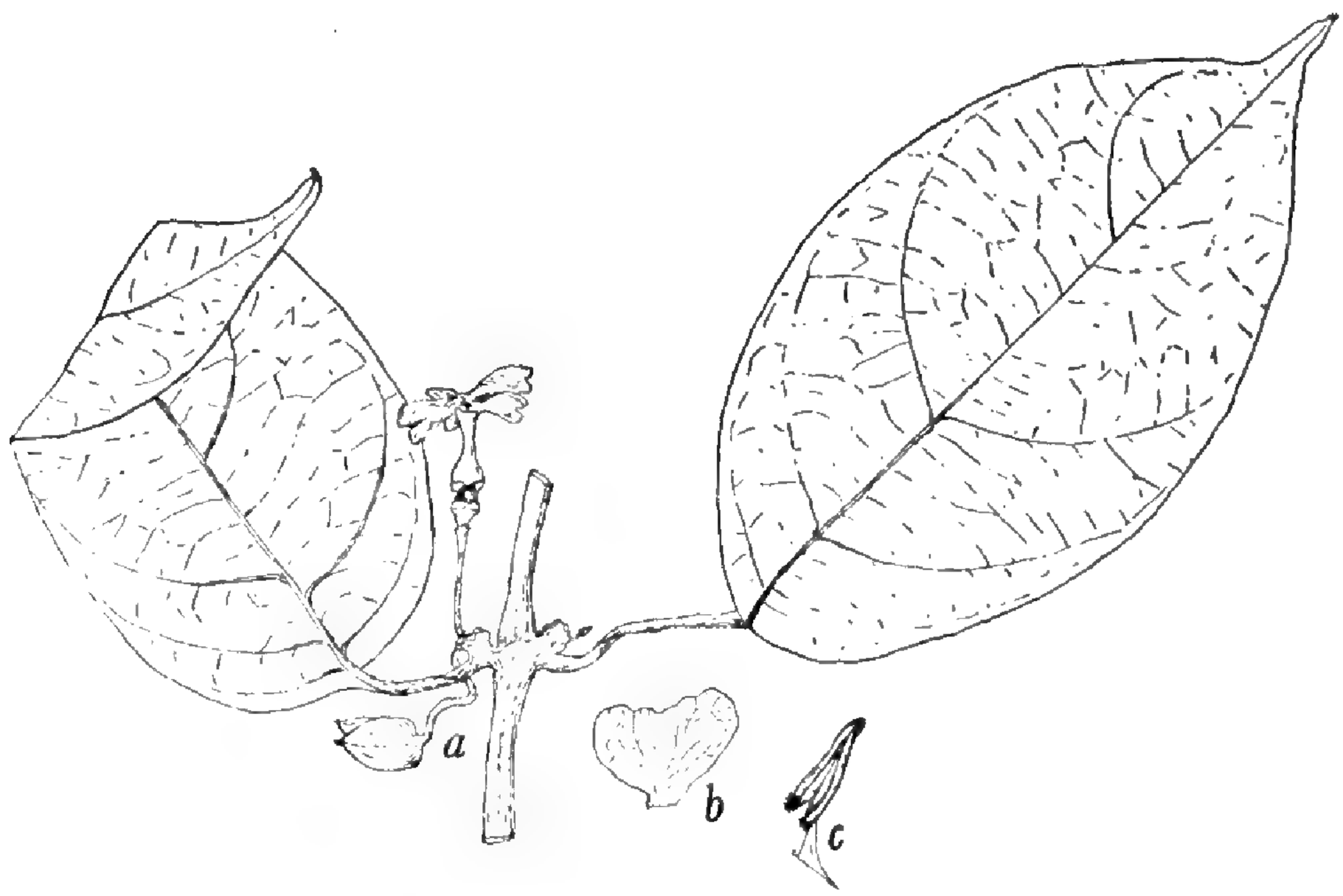

FIGURE 7.—*Mendoncia pennellii* Leonard (*Pennell* 10601): *a*, Nodal portion of plant showing a pair of leaves, spurs, and two flowers; *b*, a corolla lobe; *c*, stamen. (*a*, Half natural size; *b*, slightly larger than natural size; *c*, twice natural size.)

Mendoncia pennellii is closely related to *M. glabrescens*, differing chiefly in its almost glabrous corolla, the lobes being obcordate and entire instead of suborbicular and erose as in *M. glabrescens*, and by the thicker less slenderly acuminate leaf blades, their surfaces, at least those of the younger leaves, being more hirsute.

15. Mendoncia glomerata Leonard, sp. nov. FIGURE 8

Suffrutex volubilis, caulibus subteretibus, strigosis; lamina foliorum ovata, apice acuminata, mucronata, basi rotundata vel obtusa, in petiolum decurrens, membranacea, substrigosa, pilis adpressis vel ascendentibus; flores pauci vel numerosi, axillares; pedicelli sericei, pilis adpressis vel ascendentibus; bracteae ovatae, apice rotundatae vel obtusae, basi subrotundatae, dense et molliter sericeae, pilis subadpressis; corolla alba, extus glabra vel subglabra, intus puberula, limbo obliquo; calyx chartaceus, integer; ovarium glabrum.

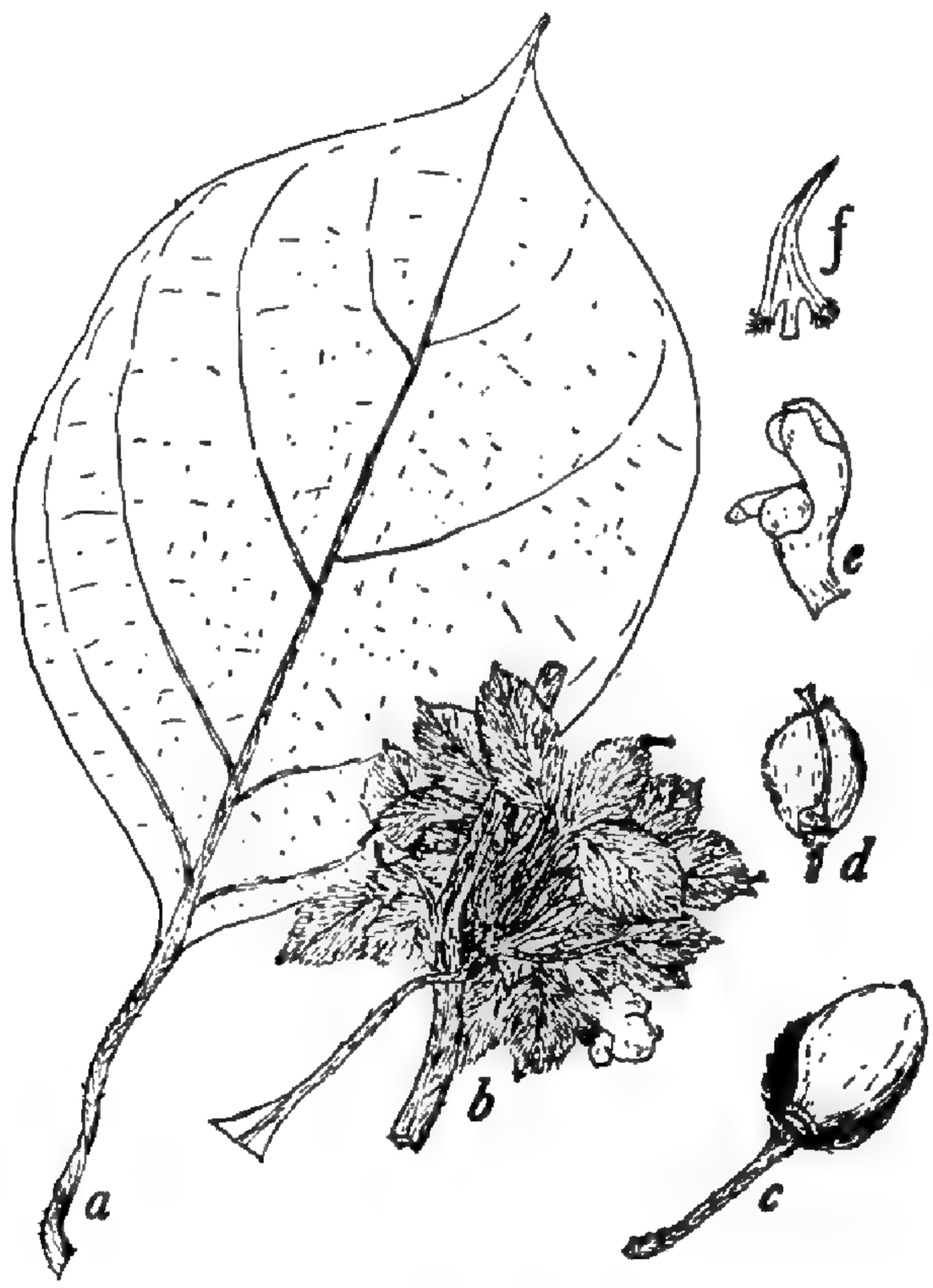

FIGURE 8.—*Mendoncia glomerata* Leonard (*Klug* 1710): *a*, Leaf; *b*, inflorescence; *c*, drupe; *d*, flower, showing calyx, disc, and pistil lying on the inner surface of a bract; *e*, corolla; *f*, stamen. (*a–e*, Natural size; *f*, twice natural size.)

Shrubby vine; stem subterete, grooved, strigose; leaf blades ovate, up to 8 cm. long and 4.5 cm. wide, acuminate and tipped by a mucro 1 to 3 mm. long at apex, rounded or obtuse at base and decurrent on the petiole, drying dark brown, thin, veiny, sparingly strigose or glabrate, the hairs confined chiefly to costa and lateral veins (4 pairs); petioles up to 2.5 cm. long, strigose; flowers several to numerous, forming compact axillary clusters; pedicels 1 cm. long or less, sericeous, the hairs appressed or ascending; bracts ovate, up to 12 mm. long and 8 mm. wide, rounded or obtuse at apex, apiculate, rounded at base, densely and softly sericeous, the hairs subappressed, whitish; corolla white, 1 to 1.5 cm. long, glabrous or subglabrous without, puberulous within,

the limb oblique, the basal lobes of the anthers terminating in pubescent discs; calyx chartaceous, entire; style 1 cm. long; ovary glabrous; fruit not seen.

Type in the U. S. National Herbarium, No. 1517993, collected in forest at Umbría, Comisaría of Putumayo, Colombia, altitude 325 meters, by G. Klug (No. 1710). Isotypes in the herbaria of the New York Botanical Garden and the Missouri Botanical Garden.

Mendoncia glomerata is a very distinct species, easily recognized by its relatively small and densely soft silky pubescent bracts and by the dense clusters of numerous small white flowers. The specific name *glomerata* alludes to the inflorescence.

16. Mendoncia rosea Leonard, sp. nov. FIGURE 9

Suffrutex volubilis, caulibus subquadrangularibus, adpresso-pubescentibus, pilis curvatis; lamina foliorum ovata vel oblongo-ovata, apice acuminata, mucronata, basi rotundata vel obtusa, supra parce hirtella, subtus molliter pubescens; petioli dense hirtelli, pilis fulvis; flores solitarii, axillares; pedicelli dense adpresso-hirtelli; bracteae oblongo-ovatae, apice obtusae vel rotundatae, basi rotundatae vel subtruncatae, dense et molliter adpresso-hirtellae, pilis curvatis, fulvis; corolla glabra, lobis ovalibus, apice rotundatis; calyx subinteger; ovarium dense pilosulum, pilis fulvis.

Suffrutescent vine; stem subquadrangular, appressed-pubescent, the hairs curved, about 1 mm. long; leaf blades ovate to oblong-ovate, up to 10 cm. long and 6 cm. wide, acute or gradually to somewhat abruptly acuminate and tipped by a mucro 1.5 mm. long, rounded or obtuse at base, rather sparingly hirtellous above (hairs ascending curved, about 0.5 mm. long), velvety pubescent beneath, the hairs curved, ascending, about 0.75 mm. long, more numerous and appressed on costa and veins (4 pairs); petioles 1 to 2 cm. long, densely hirtellous, the hairs appressed or ascending, fulvous; flowers solitary, axillary; pedicels 4 to 5 cm. long, densely appressed-hirtellous, the hairs fulvous; bracts reddish pink, oblong-ovate, 2 cm. long, 1.3 cm. wide, obtuse or rounded at apex and tipped by a mucro 1 mm. long, rounded or subtruncate at base, densely and softly appressed-hirtellous, the hairs curved, fulvous; corolla (immature) red?, glabrous, 2 cm. long, 7 mm. broad at base, narrowed just above the ovary to 4 mm., thence enlarged to 6 mm. but contracted to 4 mm. at throat, the lobes oval, 3 mm. long, 1.5 to 2 mm. wide, rounded at apex; anthers sagittate, the lobes bearing longitudinally a ventral band of small brownish papillose hairs; calyx subentire, brownish pilosulous except the glabrous margin; densely fulvous-pilosulous; style glabrous; fruit not seen.

Type in the U. S. National Herbarium, No. 1351252, collected in woods on Mesa de los Santos, Department of Santander, Colombia,

altitude 1,500 meters, December 11–15, 1926, by E. P. Killip & A. C. Smith (No. 15368). Isotype in the herbarium of the New York Botanical Garden.

Mendoncia rosea is closely related to *M. coccinea* Vell. but is distinguishable by its smaller densely fulvous pilosulous bracts (these truncate or more broadly rounded at the base) and by its acute gradually to somewhat abruptly acuminate leaf blades. The name *rosea* alludes to the reddish-pink bracts.

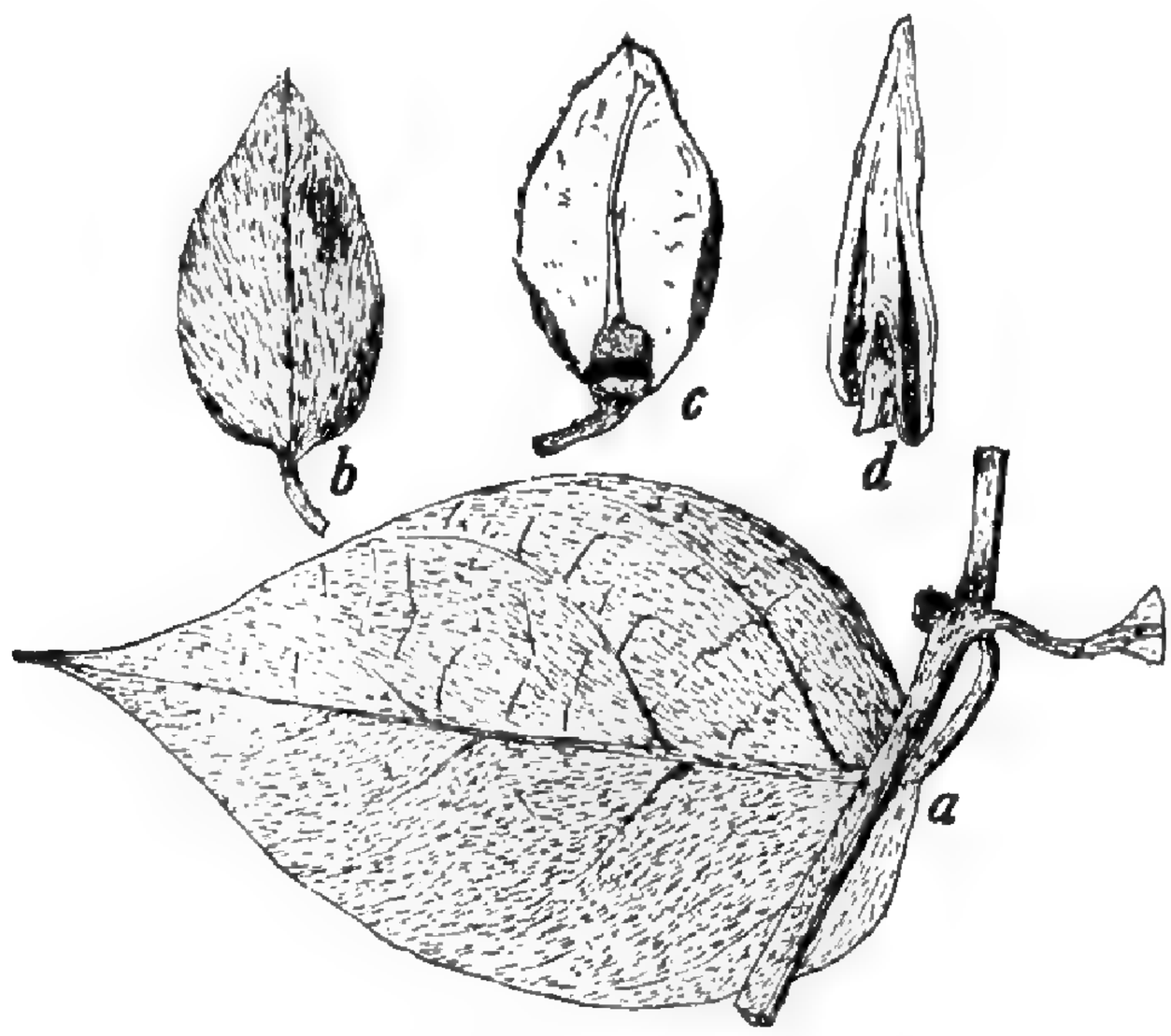

FIGURE 9.—*Mendoncia rosea* Leonard (*Killip & Smith* 15368): *a*, Node, showing stem and a leaf; *b*, bract; *c*, flower showing calyx, disc, and pistil on inner face of bract; *d*, stamen. (*a*, Half natural size; *b* and *c*, natural size; *d*, about twice natural size.)

17. Mendoncia coccinea Vell.

Mendoncia coccinea Vell. Fl. Flum. 263. 1790; Fl. Flum. Ic. 6: *pl. 86.* 1827. Type locality: "Silvis maritimis Pharmacopolitanis," Brazil.

Mendozia velloziana Mart. Nov. Gen. & Sp. 3: 22, *pl. 210.* 1829. Type collected in Brazil by Vellozo. Several paratypes are cited, all from Brazil.

Mendoncia velloziana Nees in DC. Prodr. 11: 52. 1847. Based on *Mendozia velloziana* Mart.

Stems (at least the upper portions), petioles, pedicels, and bracts densely and softly silky hirsute, the hairs tawny, appressed or ascending; leaf blades elliptic-ovate, 5 to 11 cm. long, 2 to 6 cm. wide, obtuse, rounded or short-acuminate, sometimes tipped by a small mucro (1 mm. long), obtuse, rounded or subcordate at base, scabrous above and hirtellous, the hairs minute, less than 0.5 mm. long, curved, appressed or ascending, arising from star-shaped bases, more numerous on costa and veins (4 pairs), beneath copiously and softly pubescent with curved ascending hairs, these about 0.75 mm. long; flowers 1 or 2 in each axil; pedicels 2 to 5 cm. long; bracts oblong-ovate to lance-ovate, 2 to 3 cm. long, 1 to 1.5 cm. wide, obtuse and apiculate, rounded at base, purplish before drying, the hairs fulvous, closely appressed,

up to 1 mm. long, the costa prominent; calyx 1 mm. long, undulate, glabrous; corolla red, 3 cm. long, 5 mm. broad at throat, slightly constricted below the middle, swollen at base, the lobes rounded, 2 to 3 mm. long, 2 mm. wide; ovary hirtellous toward tip; style glabrous; fruit obovoid, compressed, keeled, glabrous at least when mature, usually tipped by the persistent style.

The ripe fruit (*Ynes Mexia* 4508, Minas Gerais, Brazil) is dark purple.

The Caquetá specimen cited here was taken from a plant growing among rocks in a thicket at 400 meters, on March 29, 1940. The bracts of the Triana specimen from Meta do not exceed 20 mm. in length or 13 mm. in width. In contrast, those of the Triana specimen (without locality) cited by Turrill as the type of *M. coccinea* var. *elliptica* are 30 mm. long and 20 mm. wide. Thus these two Triana specimens represent different entities.

Forests. Brazil and southern Colombia.

CAQUETÁ: Florencia, Quebrada de las Perdices, *Cuatrecasas* 8859 (US).
META: Apiai, Llano de San Martín, *Triana* (Col).

17a. **Mendoncia coccinea** var. **elliptica** Turrill

Mendoncia coccinea var. *elliptica* Turrill, Kew Bull. 1919: 417. 1919. Type collected in Colombia by J. Triana.

Bracts broadly elliptic, 2.5 to 3 cm. long and 2 cm. wide. In other respects similar to the typical form.

Forests of Colombia.

NORTE DE SANTANDER: El Indio, Río Cubujón, 420–480 m. alt., region of Río Sarare, *Cuatrecasas* 13109, in part (US).

17b. **Mendoncia coccinea** var. **sparatteria** (Mart.) Turrill

Mendozia velloziana Mart. var. *sparatteria* Mart. Nov. Gen. & Sp. 3: 23. 1829. Type locality: Brazil. The word *sparatteria* is probably derived from σπαράσσω, to tear asunder, but the allusion is obscure.

Mendoncia velloziana var. *sparatteria* Nees in DC. Prodr. 11: 52, 1847. Based on *Mendozia velloziana* var. *sparatteria* Mart.

Mendoncia coccinea var. *sparatteria* Turrill, Kew Bull. 1919: 416. 1919. Based on *Mendozia velloziana* var. *sparatteria* Mart.

Mendoncia fulva Lindau, Bull. Herb. Boiss. 5: 646. 1897. Type collected between Panure and the Rio Uaupés, Brazil, by Spruce (No. 2683). Type in the Berlin Herbarium. A photograph (No. 5869) of this type is in the U. S. National Herbarium. An isotype is in the Gray Herbarium.

Leaf blades elliptic to ovate, obtuse to sharply acute or short-acuminate; bracts up to 3 cm. long and 1.7 cm. wide, truncate at base; densely yellowish pubescent, the hairs subappressed, more or less curved, up to 1 mm. long; fruit puberulous. Otherwise resembling the typical form.

In Minas Gerais this plant is known as *raiz preta* and is used as a purgative for cattle (*Mexia* 4135). No Colombian specimens were

seen, but since *Spruce* 2683 was collected between Panure and the Rio Uaupés, near the Colombia-Brazilian border, the variety has been included in this treatment.

Forests of Brazil and possibly Colombia.

18. Mendoncia litoralis Leonard, sp. nov. FIGURE 10

Frutex volubilis, caulibus subteretibus, sursum dense pilosis, deorsum subglabrescentibus, pilis sursum incurvo-adpressis, brunneis; lamina foliorum ovata vel elliptica, apice acuminata, basi obtusa vel subacuta, supra minute hirsuta vel subglabrescens, pilis e basi stellata orientibus instructa, subtus hirsuta, pilis adpressis brunneis, costa et venis aliquanto prominentibus; petioli dense hirsuti, pilis adpressis vel paulo patentibus; flores solitarii, axillares; pedicelli dense hirsuti, pilis patentibus vel retrorsis, brunneis; bracteae ovatae, apice rotundatae et apiculatae, basi rotundatae, intus glabrae, extus hirsutae, pilis patentibus; drupa orbiculata, glabra.

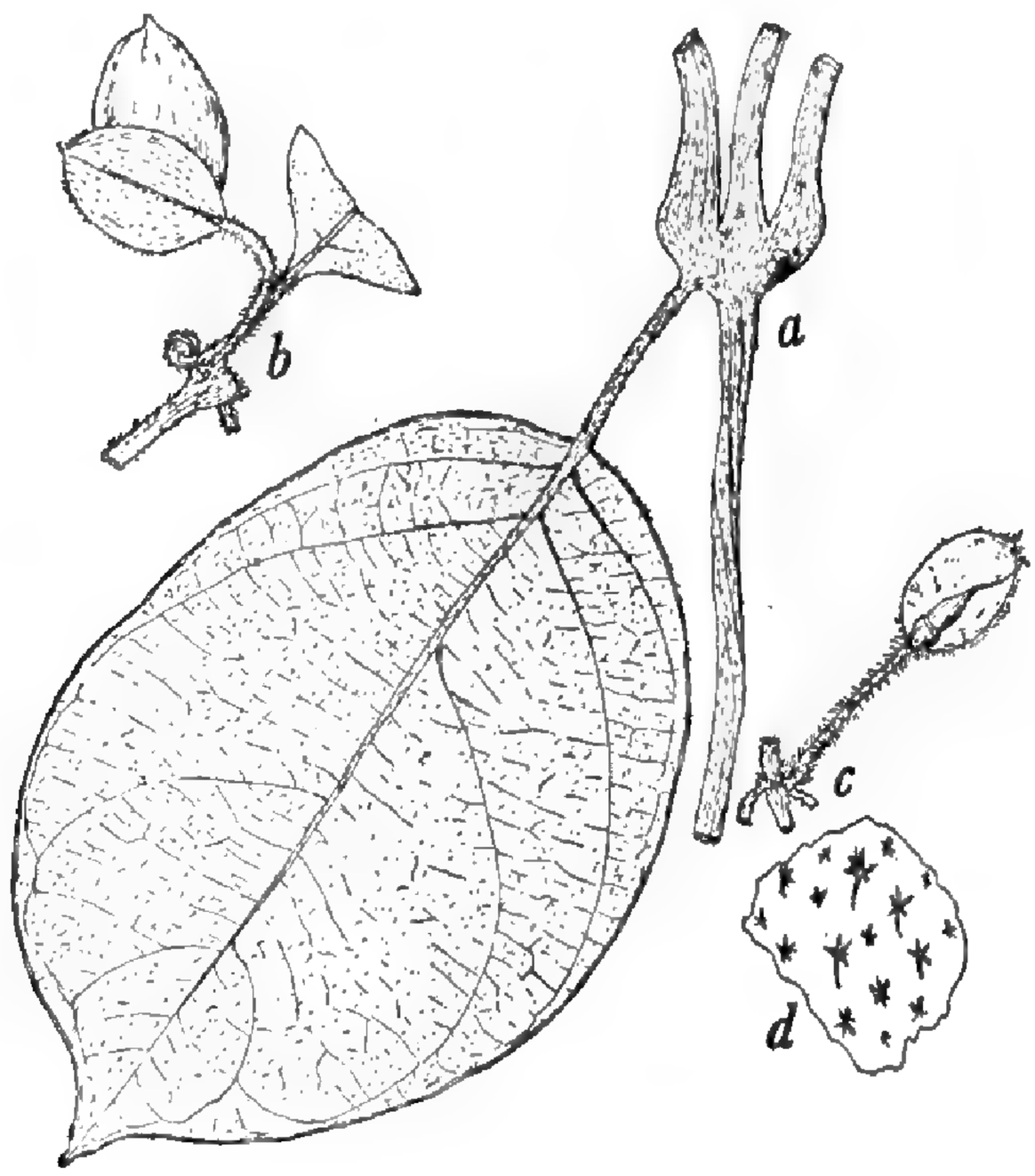

FIGURE 10.—*Mendoncia litoralis* Leonard (*Cuatrecasas* 17529): *a*, Node showing leaf; *b*, node showing fruit; *c*, node showing pedicel, inner surface of bract, and pistil; *d*, portion of the upper surface of a leaf blade showing hairs. (*a–c*, Half natural size; *d*, about three times natural size.)

Vines; stems subterete, densely hirsute above to glabrate below, the hairs straight, closely and upwardly appressed, yellowish brown, about 1 mm. long; leaf blades ovate to elliptic, 6 to 10 cm. long, 3.5 to 6.5 cm. wide, abruptly acuminate at tip, obtuse or acutish at base, the upper surface minutely hirsute or subglabrous, more or less rugose, roughened by the small obscure stellate hair bases, the lower surface

appressed-hirsute, the hairs of the costa and lateral veins (4 or 5 pairs) about 1 mm. long, those of the interspaces about 0.5 mm. long, their bases raised and stellate but not so prominently as those of the hairs of the upper surface, all yellowish brown, the venation of both surfaces rather prominent; petioles 1 to 2 cm. long, densely hirsute, the hairs appressed or slightly spreading, about 1 mm. long; flowers usually solitary in the axils of the leaf blades; pedicels about 1.5 cm. long, densely pilose, the hairs spreading or retrorsely spreading, 1 to 1.5 mm. long, yellowish brown; bracts ovate, 15 to 17 mm. long, 9 to 10 mm. wide, rounded and minutely apiculate at tip, rounded at base, glabrous within, hirsute without, the hairs spreading, 1 to 1.5 mm. long, yellowish brown, arising from rounded scalelike bases; corollas not seen; ovary glabrous; style about 12 mm. long, glabrous; drupe orbicular, 1.8 cm. long, 1.4 cm. broad, 5 mm. thick, glabrous.

Type in the U. S. National Herbarium, No. 1853796, collected at Silva, on the Río Cajambre, near the Pacific coast, Department of El Valle, Colombia, altitude 5 to 80 meters, May 5 to 15, 1944, by J. Cuatrecasas (No. 17529).

In general appearance *Mendoncia litoralis* strongly resembles *M. gracilis*, but it can be readily separated by the spreading pubescence of pedicels and bracts.

19. Mendoncia gracilis Turrill

Mendoncia gracilis Turrill, Kew Bull. 1919: 418. 1919. The type was collected at Mesa Grande on the Río Negro, Department of Cundinamarca, Colombia, 1,200 to 1,300 meters, by Lehmann, No. 8792, and is deposited in the herbarium of the Royal Botanic Gardens, Kew.

Stem subquadrangular, appressed-hirsute, the hairs tawny; leaf blades elliptic or oblong-elliptic, 6 to 14 cm. long, 3 to 7 cm. wide, acute or acuminate at apex, obtuse or rounded at base, firm, rather sparingly hirsute above (hairs arising from star-shaped bases), rather densely pubescent beneath, the hairs tawny, curved, ascending, the costa, veins (4 or 5 pairs), and veinlets prominent; petioles 1 to 3 cm. long, hirsute, the hairs appressed to ascending; flowers 1 to several in each axil; pedicels 2 cm. long, densely hirsute, the hairs appressed to ascending; bracts elliptic or oblong-elliptic, 1.5 cm. long, 0.8 to 1 cm. wide, obtuse and apiculate at apex, rounded at base, rather sparingly appressed-hirtellous; corolla white, proximally lined with reddish brown, 2.5 cm. long, 5 mm. broad at throat, the lobes suborbicular, about 7 mm. long and wide, shallowly emarginate; fruit elliptic-obovoid, slightly compressed, 1.5 to 2 cm. long, 1 to 1.2 cm. broad, glabrous.

Fields, pastures, and thickets on mountain slopes from 1,100 to 2,080 meters. Colombia.

ANTIOQUIA: Jardín, southwest of Antioquia, *Bro. Daniel* 2974 (GH, US). La Suiza, near Titiribí, *Archer* 818 (US). Támesis, vicinity of Medellín, *Toro* 960 (NY).

CUNDINAMARCA: Above Sasaima, Estacíon Santana, *Dugand & Jaramillo* 3871 (US).

CAUCA: Quindío, *Triana* s. n. (Col.).

EL VALLE: Vicinity of La Cumbre, *Killip* 11584 (NY, US). Miraflores, Palmira, *Killip* 6147 (NY, US). Alto de Miravalle, vicinity of Leonera, *Cuatrecasas* 18314 (US).

TOLIMA: Road from Fresno to Falán, Cañon del Río Gualí, *García-Barriga* 8337 (US).

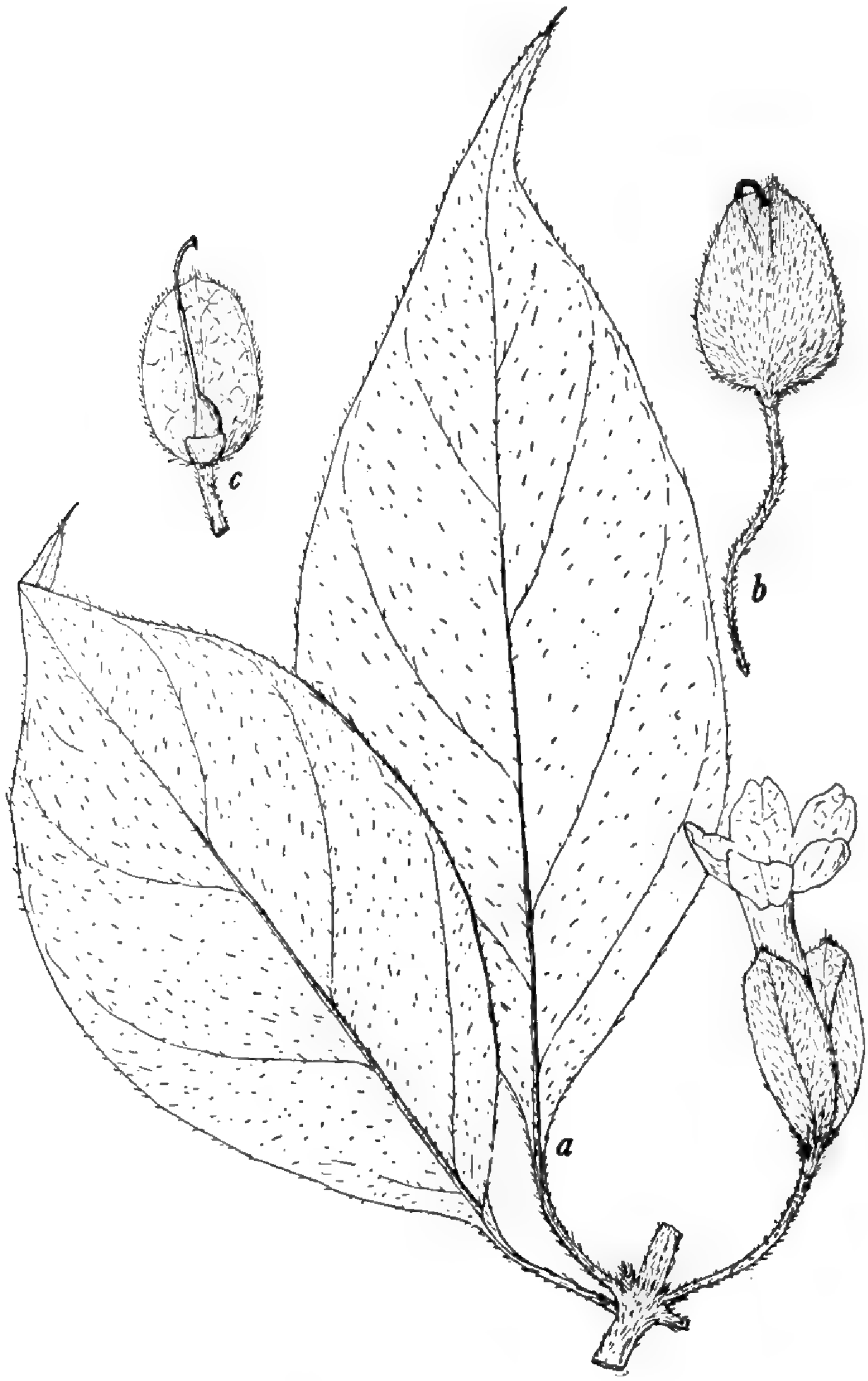

FIGURE 11.—*Mendoncia gilva* Leonard (*Haught* 1799): *a*, Node showing flower and pair of leaves; *b*, bract and pedicel; *c*, bract (inner surface), disc, and pistil. (All natural size.)

20. **Mendoncia gilva** Leonard, sp. nov. FIGURE 11

Herba vel suffrutex volubilis, caulibus subteretibus tenuiter pilosis vel ad nodos pilosis, pilis adpressis vel adscendentibus, fulvis; lamina foliorum oblonga-elliptica, subfalcata, apice acuminata, mucronata, basi angustata, tenuis, parce strigosa vel in costa et venis lateralibus dense strigosa; petioli pilosi; flores solitarii; bracteae ovatae vel ellipticae, apice rotundatae vel obtusae, mucronatae, basi rotundatae, pilosae, pilis fulvis; corolla gilva, lobis ovatis, emarginatis; pistillum glabrum.

Slender herbaceous or suffrutescent vines; stems subterete, moderately pilose or densely so at the nodes, the hairs appressed or ascending, 1 to 2 mm. long, fulvous; leaf blades oblong-elliptic, slenderly acuminate, the tip subfalcate and tipped by a slender mucro about 3 mm. long, narrowed at base, thin, rather sparingly strigose, the hairs more numerous and more fulvous on costa and lateral veins (3 or 4 pairs), these inconspicuous; petioles 2 to 3 cm. long, sparingly pilose, the hairs ascending; flowers solitary; pedicels 2 to 3 cm. long, pilose, the hairs ascending, about 1 mm. long, light fulvous; bracts ovate to elliptic, 2 cm. long, 14 mm. wide, rounded or obtuse and mucronulate at apex, rounded at base, moderately pilose, the hairs appressed to ascending, 1 to 1.5 mm. long, light fulvous; corolla 3 cm. long, cream color, glabrous, 3 cm. long, the tube about 4 mm. broad at base, slightly constricted above ovary, thence enlarged to about 8 mm. at throat, the lobes ovate, about 5 mm. long, emarginate; ovary, style, and calyx (entire) glabrous; fruit not seen.

Type in the U. S. National Herbarium, No. 1662515, collected in the San Juan Valley near Puerto Berrío, between Río Carare and Río Magdalena, Department of Santander, Colombia, altitude 100 to 700 meters, June 19, 1935, by Oscar Haught (No. 1799).

Mendoncia gilva is closely related to *M. odorata.* When compared with this species it can be easily recognized by its solitary flowers and by the much longer and less appressed hairs of the more densely pilose bracts. The name *gilva* alludes to the cream-colored flowers.

21. **Mendoncia odorata** Leonard, sp. nov. FIGURE 12

Suffrutex volubilis, caulibus subquadrangularibus vel teretibus, striatis, parce adpresso-hirtellis vel glabratis; lamina foliorum ovata vel ovato-elliptica, acuminata, mucronata, basi acuta vel obtusa, parce adpresso-hirtella vel glabrata, pilis supra e basi stellata orientibus instructa; flores axillares, fragrantes; pedicelli adpresso-hirtelli; bracteae ovatae vel oblongo-ovatae, obtusae, minute apiculatae, extus parce adpresso-hirtellae, intus glabrae; corolla subflava, lobis suborbicularibus; drupa ovoidea, leviter compressa, glabra.

A suffrutescent vine up to 5 meters high; branches subquadrangular to terete, striate, sparingly appressed-hirtellous to glabrate; leaf blades ovate to oblong-elliptic, up to 11 cm. long and 5 cm. wide, gradually to abruptly acuminate (the tip blunt and ending in a mucro about 2 mm. long), acute or obtuse at base, thin, sparingly appressed-hirtellous or glabrate, the hairs of the upper surface produced from star-shaped bases, the costa and veins (3 or 4 pairs) inconspicuous;

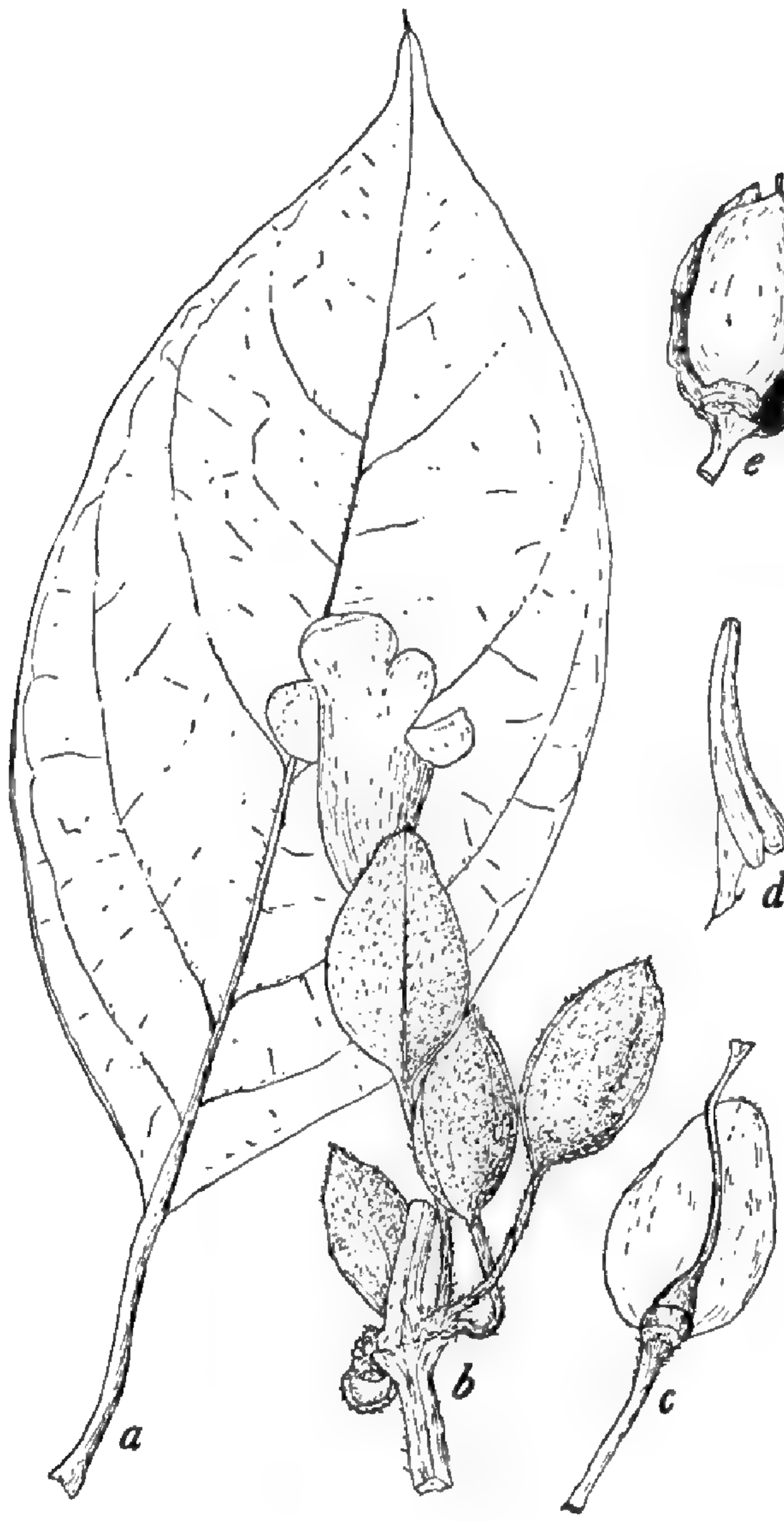

FIGURE 12.—*Mendoncia odorata* Leonard (*Haught* 2494): *a*, Leaf; *b*, inflorescence; *c*, flower with corolla and one bract removed to show disc and pistil; *d*, stamen; *e*, capsule. (*a*, *b*, *c*, *e*, Natural size; *d*, twice natural size.)

petioles up to 2 cm. long, glabrous or sparingly hirtellous; flowers 1 to several in each axil; pedicels up to 1.5 cm. long, appressed-hirtellous; bracts ovate to oblong-ovate, up to 2 cm. long and 1 cm. wide, obtuse and minutely apiculate at apex, rounded at base, sparingly appressed-hirtellous without, the hairs 0.5 mm. long or less, glabrous within; corolla cream with brownish markings, glabrous, fragrant, up to 3 cm. long, 6 mm. broad at base, narrowed 5 mm. above base to

3 or 4 mm., thence enlarged to 8 mm. at throat, 2-lipped, the lobes suborbicular, about 5 mm. in diameter; calyx glabrous, subentire; ovary and style glabrous; drupe ovoid, slightly compressed, 1.5 cm. long, barely 1 cm. broad, about 4 mm. thick, glabrous.

Type in the U. S. National Herbarium, No. 1706847, collected in second growth along the Río Negrito, 70 km. east of Villavicencio, Intendencia of Meta, Colombia, December 25, 1938, by Oscar Haught (No. 2494).

Other collections are: Caparrapí, in Cundinamarca, altitude 1,260 meters, *García-Barriga* 7720 (US); in the high forests of Mount Chapón, 3,000 feet, Bayacá, *Lawrance* 363 (Mo, NY).

Mendoncia odorata resembles *M. gracilis* in many respects but can be separated by its sparingly pilose stems. In *M. gracilis* the stem hairs are more numerous and usually closely appressed. The veins and veinlets of the leaf blades of *M. gracilis* are often much more prominent than those of *M. odorata.* The name *odorata* alludes to the fragrant flowers (*Haught* 2494).

22. Mendoncia mutisii Leonard, sp. nov. FIGURE 13

Suffrutex volubilis, caulibus subquadrangularibus, strigosis; lamina foliorum oblonga, apice acuminata, mucronata, basi angustata, submembranacea, supra parce pubescens, pilis e basi stellata orientibus instructa, subtus dense adpresso-pubescens, pilis in costa et venis lateralibus pluribus; flores solitarii vel parci; pedicelli adpresso-pubescentes; bracteae ellipticae, apice rotundatae et apiculatae, basi rotundatae, adpresso-pubescentes; corollae lobi emarginati; ovarium glabrum.

Stem subquadrangular, fulvous-strigose, the hairs closely appressed, about 0.75 mm. long; leaf blades oblong to oblong-ovate, up to 9 cm. long and 4 cm. wide, short-acuminate at apex and tipped by a mucro about 1 mm. long, narrowed at base, rather thin, sparingly hirtellous above (hairs ascending, slightly less than 0.5 mm. long, arising from star-shaped bases), rather copiously hirtellous beneath, the hairs curved, ascending, about 0.75 mm. long, those on the costa and veins (4 pairs) more numerous and more closely appressed; petioles up to 1 cm. long, densely fulvous, appressed-pilosulous; flowers 1 to several in the axils; pedicels 1.5 cm. long, densely fulvous, appressed-pilosulous; bracts elliptic, 12 to 13 mm. long, 8 to 9 mm. wide, rounded and apiculate at apex, rounded at base, rather copiously hirtellous without, the hairs curved, ascending or appressed, about 0.5 mm. long; pistil glabrous; calyx subentire, glabrous; corolla (immature) 1 cm. long, the lobes oval, 3 mm. long, 3 to 4 mm. wide, emarginate; anthers sagittate, slightly curved, 4 mm. long, 1.5 mm. wide at base, mucronate at tip, one basal lobe slightly longer than the other, both puberulous at tip; drupe not seen.

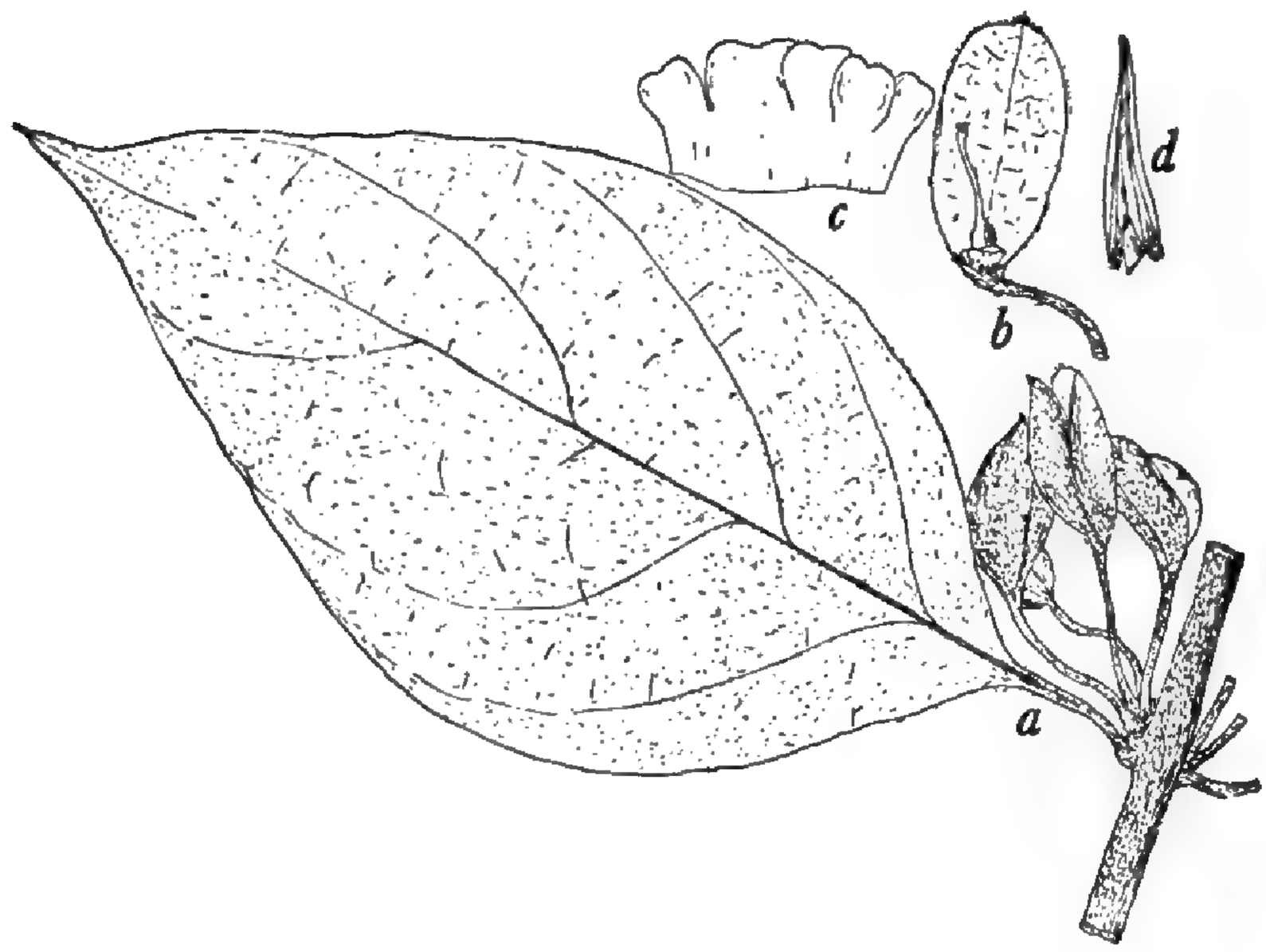

FIGURE 13.—*Mendoncia mutisii* Leonard (*Mutis* 916): *a*, Node, showing leaf and inflorescense; *b*, flower showing calyx, disc, and pistil on inner face of bract; *c*, tip of immature corolla spread to show lobation; *d*, stamen. (*a*, *b*, Natural size; *c*, *d*, about twice natural size.)

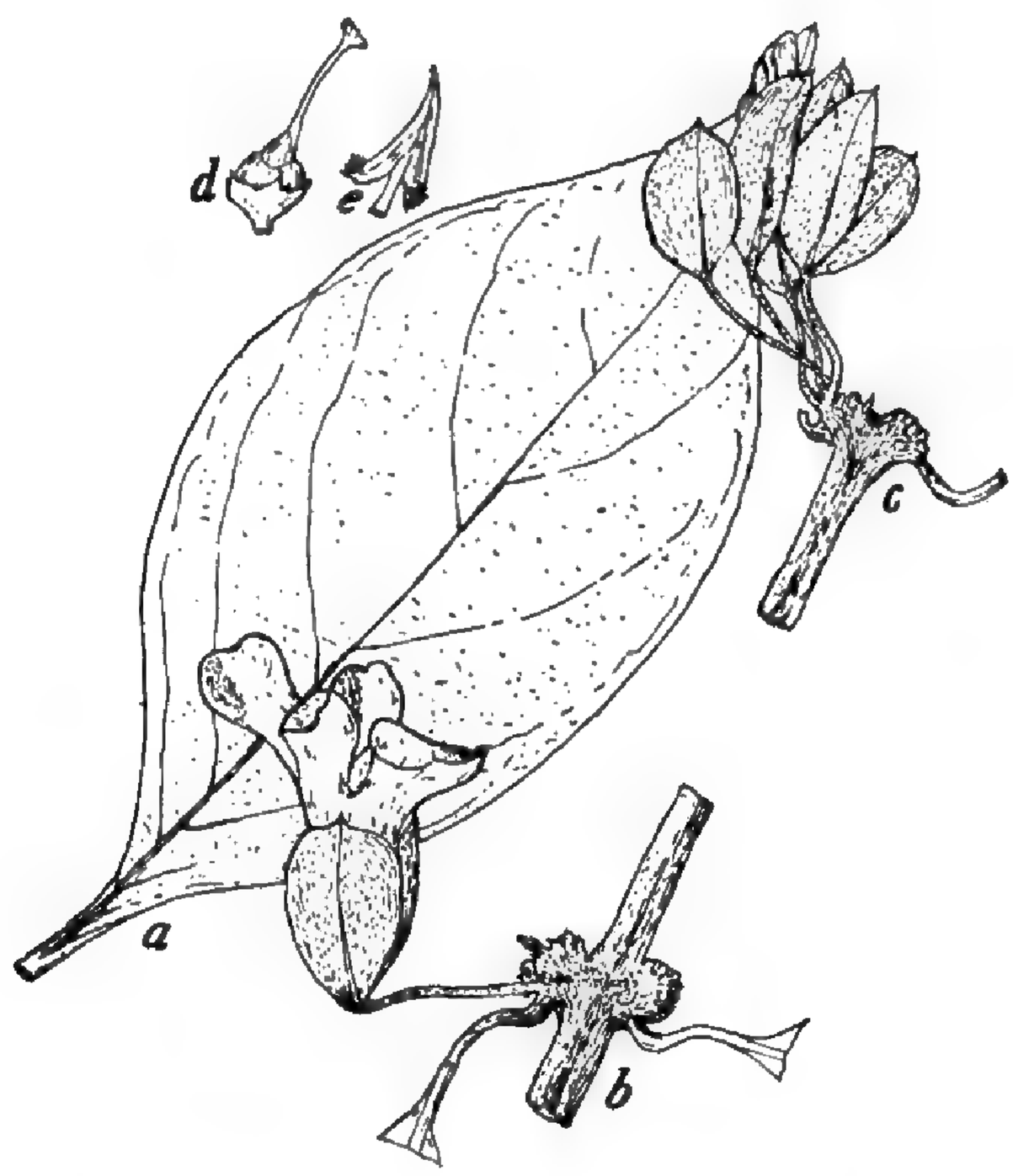

FIGURE 14.—*Mendoncia cuatrecasasii* Leonard (*Cuatrecasas* 11134): *a*, Leaf; *b*, node showing corolla; *c*, node above that pictured in *b*, showing unopened flowers; *d*, calyx, disc, and pistil; *e*, stamen. (*a*–*c*, Natural size; *d*, about four times natural size; *e*, about three times natural size.)

Type in the U. S. National Herbarium, No. 1562336, collected in Colombia by J. C. Mutis (No. 916).

Mendoncia mutisii is probably related to *M. albida*, but it has much smaller flowers and a more appressed pubescence.

23. **Mendoncia cuatrecasasii** Leonard, sp. nov. FIGURE 14

Herba vel suffrutex volubilis, caulibus subteretibus, glabris vel minute strigosis; lamina foliorum oblongo-ovata vel oblonga, apice acuminata, basi angustata, in petiolum decurrens, chartacea, glabra vel in costa et venis lateralibus minute strigosa; flores fasciculati; bracteae ellipticae utrinque rotundatae, apice mucronatae, extus minute strigosae, intus glabrae; corolla subflava, extus glabra, lobis intus ex parte puberulis; stamina barbata; calyx subhyalinus, erosus; stylus et ovarium et discus glabri.

Herbaceous or suffrutescent vines; stems subterete, glabrous or inconspicuously and minutely strigose; leaf blades oblong-ovate to oblong, short-acuminate at apex (the tip blunt and often mucronate), narrowed at base and decurrent on the petiole, drying yellowish brown, firm, glabrous, or the costa and lateral veins (4 pairs) inconspicuously and closely strigose; petioles up to 2 cm. long, glabrous or minutely strigose; flowers usually about 10, borne on short fan-shaped spurs, these axillary or terminating the short branches; pedicels about 1 cm. long, minutely strigose; bracts elliptic, 8 to 10 mm. long, 6 to 7 mm. wide, rounded at both ends, apiculate at apex, inconspicuously strigose, the hairs minute and closely appressed; corolla yellowish white, glabrous without, 2 cm. long, the tube 5 to 10 mm. long, the limb oblique, the lobes rounded, about 5 mm. long, an oblique lateral area of the inner surface of each lobe papillose-puberulous; calyx subhyaline, erose; style and ovary glabrous; fruit not seen.

Type in the National Herbarium of Colombia, collected along the San Miguel River, in damp forest of Quebrada de la Hormiga, Comisaría of Putumayo, Colombia, altitude 290 meters, December 17, 1940, by J. Cuatrecasas (No. 11134). Fragment of type in the U. S. National Herbarium, No. 1830082.

Mendoncia cuatrecasasii is related to *M. glomerata* Leonard but differs in certain well-marked characters. In *M. cuatrecasasii* the leaf blades are oblong-ovate to oblong instead of strictly ovate; they are firm, drying yellowish brown, instead of being thin and drying dark brown as in *M. glomerata*. The corollas are yellowish white, not pure white. The most contrasting character, however, lies in the bracts; in this new species they are inconspicuously and closely strigose, with the hairs minute (0.5 mm. long), but in *M. glomerata* they are soft and silky, the hairs loosely appressed and much longer (1 mm. long).

24. Mendoncia microchlamys Leonard, sp. nov. FIGURE 15

Suffrutex volubilis, caulibus subquadrangularibus, parce et minute strigosis, pilis sursum incurvis; lamina foliorum ovata vel elliptica, apice breviter acuminata et apiculata, basi rotundata, glabra vel parce strigosa, costa et venis subtus prominentibus; petioli glabri vel subglabri; flores in calcaribus axillaribus complanatis dispositi; pedicelli tenues, glabri, vel subglabri; bracteae parvae, ovatae, apice acutae, basi rotundatae, parce et minute adpresso-hirsutae; corolla parva, subviridis; ovarium glabrum.

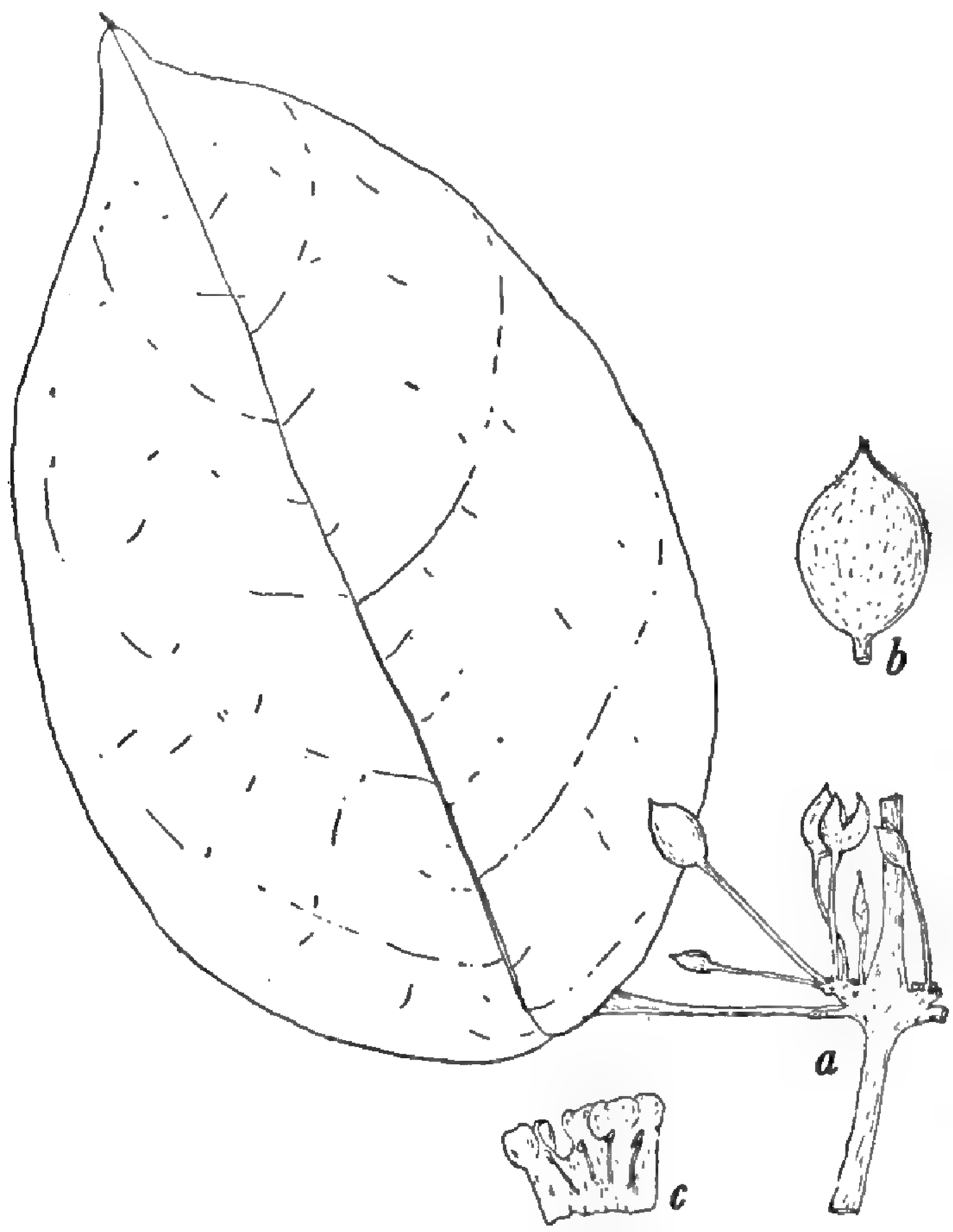

FIGURE 15.—*Mendoncia microchlamys* Leonard (*Lawrance* 264): *a*, Node showing leaf and inflorescence; *b*, bracts; *c*, dissected corolla (immature). (*a*, Natural size; *b*, twice natural size; *c*, about four times natural size.)

High climbing vines; stems subquadrangular, drying black, sparingly and minutely strigose, the hairs upwardly curved, 0.25 mm. long; internodes 10 to 11 cm. long; leaf blades elliptic-ovate, 5.5 to 8.5 cm. long, 3.3 to 5.3 cm. wide, short-acuminate and apiculate at tip, rounded at base, rather firm, drying black above and dark olive-brown beneath, glabrous or the costa of the undersurface bearing a few minute hairs, the costa and lateral veins (3 pairs) obscure above, more prominent beneath; petioles 1.5 to 2 cm. long, glabrous or sparingly hirsute, the

hairs 0.25 mm. long; flowers about 4, borne on short flattened axillary spurs; pedicels slender, 1 to 1.5 cm. long, subquadrate, glabrous or bearing a few minute hairs; bracts thick, ovate, blackened, 5 to 6 mm. long, 3.5 to 4 mm. wide, acute, rounded at base, sparingly and minutely appressed-hirsute, the hairs about 0.25 mm. long; corolla greenish white (immature), 2 mm. long, the lobes rounded, 0.5 mm. long and 0.75 mm. wide; ovary glabrous; fruit not seen.

Type in the herbarium of the Riksmuseet, Stockholm, collected in thick forest in the region of Mount Chapón, Department of Boyacá, Colombia, "altitude 3,600 feet," June 29, 1932, by A. E. Lawrance (No. 264).

Another collection is: Los Carpatos, Río Pichindé, El Valle, altitude 1,900 to 2,100 meters, *Cuatrecasas* 21641, U. S. National Herbarium, No. 1951303. Cuatrecasas accompanies his specimen with the following notes: An enormous vine, the stems clear sepia, whitish in cross section, the branches leafy, dull green, fleshy, and the bracts pale green.

Mendoncia microchlamys is easily recognized, as the specific name indicates, by its minute bracts and extremely small greenish-white flowers.

Subfamily 3. THUNBERGIOIDEAE

Thunbergioideae Lindau, Bot. Jahrb. Engler 18: 43. 1893; Engl. & Prantl, Pflanzenfam. IV. 3b: 291. 1895.

Vines or shrubs; leaves opposite, entire, toothed or lobed, petioled; cystoliths none; flowers axillary, pediceled, subtended by 2 usually conspicuous but free bracts; calyx annular or toothed; corollas usually conspicuous, white, yellow, or blue, the tube more or less curved and ventricose, the limb 5-lobed; stamens 4, the anthers 2-celled, the basal lobes blunt or spurred; pollen of the "Furchenpollen" (furrowed) or "Kammradpollen" (cog-wheeled) type; capsule beaked; seeds 2 in each cell; retinacula none, the funicles pulvinate.

Three genera are allotted to this subfamily, *Thunbergia*, *Pseudocalyx*, and *Meyenia*, all of African or Asiatic origin. Of these only a few cultivated or escaped species of *Thunbergia* are likely to be met with in the Western Hemisphere. *Thunbergia alata* has become so thoroughly established in some regions that it may appear to be native.

5. THUNBERGIA Retz.

Thunbergia Retz. Phys. Sällsk. Handl. 1: 163. 1776. The genus *Thunbergia* was named for Carl Peter Thunberg, a Swedish student of Linnaeus'. He traveled in South Africa and Japan writing floras of these regions. The genus is chiefly African, and it is indeed doubtful if any of its species

will ever be found native to the Americas. A dozen or more species occur in tropical or subtropical America, either under cultivation or as escapes. Type species: *Thunbergia capensis* Retz. (Africa).

Herbaceous vines, or shrubs; leaves usually hastate or cordate; flowers large, peduncled, axillary or borne in terminal racemes; bracts 2, foliaceous, large; calyx short, cupuliform, truncate or many-toothed; corolla with a slender tube enlarged into a spreading 5-lobed limb; stamens 4, didynamous, borne near the base of the corolla tube, the anthers with an apiculate connective, the lobes mucronulate at base; disc fleshy; ovary fleshy, the style dilated at apex; ovules 2 in each cavity; capsule coriaceous, abruptly flat-beaked, loculicidally dehiscent; seeds semi-globose, with a large excavation on the inner side.

KEY TO THE SPECIES

Petioles winged.
  Corolla usually orange or yellow with a dark purple eye ---------- 1. *T. alata*
  Corolla pure white ---------- 1a. *T. alata* var. *bakeri*
Petioles not winged.
  Calyx bearing about 12 slender, subulate teeth; corolla 3 cm. long or less, pure white ---------- 2. *T. fragrans*
  Calyx annular; corolla 5 to 6 cm. long, blue or rarely white -- 3. *T. grandiflora*

1. Thunbergia alata Bojer

Thunbergia alata Bojer; Sims, Bot. Mag. 52: *pl. 2591.* 1825. Type grown from seeds procured in Mauritius. The name *alata* alludes to the winged petioles.

A pubescent trailing or climbing vine usually about 1 meter long; leaves ovate to triangular-ovate, 4 to 8 cm. long, acute at apex, cordate or hastate at base, entire or remotely few-toothed, pubescent; petiole wing-margined, as long as the leaf blades or shorter; peduncles mostly longer than the petioles; bracts ovate-lanceolate, acute or acuminate, pubescent, about 1.5 cm. long; corolla 2.5 to 4 cm. long, yellow or orange usually with a dark purple eye; capsule depressed-globose, pubescent, 8 to 10 mm. in diameter, its stout beak about 1 cm. long.

Fields, along trails, edges of thickets, gardens, and open waste places in general. The specimens cited were collected 940 to 1,700 meters altitude. Tropical America, southern and eastern Africa, Hong Kong, Guam, Amboina, Philippine Islands.

ANTIOQUIA: Medellín, *Archer* 47 (US); *Toro* 12 (US). Valparaiso, *Pennell* 10802 (GH, Ph, US).

CALDAS: Wayside below Apía, *Pennell* 10291 (GH, NY). Roadside west of Armenia, *Pennell, Killip, & Hazen* 8635 (GH, Ph, NY, US).

CUNDINAMARCA: El Colegio, *Bro. Ariste Joseph* 1055 (US). Juntas, *Lehmann* 1854 (US). La Esperanza, *García-Barriga* 4704 (US). Along stream above Melgar, *Pennell* 2842 (US). Sasaima, *Bro. Nicéforo María* s. n. (US).

EL VALLE: Roadside near Cali, *Pérez-Arbeláez & Cuatrecasas* 6333 (US). Roadsides between Cabuyal and Solorza, *Cuatrecasas* 14461 (US). Vicinity of Zaragoza, *Cuatrecasas* 22764 (US).

1a. Thunbergia alata var. bakeri Hort. (A color variant.)

Flowers white, in other respects resembling the typical form. Color variants of *T. alata* are common. Many of these have been recognized as horticultural varieties or have actually been described as valid varieties or species. It is, however, difficult if not impossible to distinguish between these forms or varieties unless fresh flowers are examined or the dried specimens are accompanied by full color notes. The following key will serve to separate the entities listed in Bailey's Standard Cyclopedia of Horticulture:

Leaves variegated ..... *T. aurantiaca* subvar. *doddsii* Paxt.
Leaves green.
  Corolla uniform in color.
    Corolla pure white ..... *T. alata* var. *bakeri* Hort.
    Corolla sulphur yellow ..... *T. sulphurea* Hort.
    Corolla yellow ..... *T. lutea* Hort.
  Corolla with eye.
    Corolla white with dark center ..... *T. alata* var. *alba* Paxt.
    Corolla bright orange with dark center ..... *T. aurantiaca* Paxt.
    Corolla pale orange with white center ..... *T. fryeri* Hort.
    Corolla orange, yellow, buff, or cream with dark center ..... *T. alata* Bojer

CUNDINAMARCA: Field near La Vega, *Pérez-Arbeláez & Cuatrecasas* 5346 (US).

2. Thunbergia fragrans Roxb. FIGURE 16

Thunbergia fragrans Roxb. Pl. Coromand. 1: 47. 1795. Type collected at Samulcotah, India.

Thunbergia volubilis Pers. Syn. Pl. 2: 179. 1806. Type collected in India and deposited in the herbarium of Jussieu, Paris.

A slender finely pubescent vine up to 2 meters long, usually climbing; leaves ovate to ovate-lanceolate, acuminate at apex, hastate or cordate at base, entire or remotely few-toothed toward base; petioles slender, 1 to 4 cm. long; flowers axillary; peduncles 2 to 7 cm. long; bracts lanceolate or ovate-lanceolate, 1.5 to 2 cm. long; corolla white, 2.5 to 3 cm. long, the lobes crenate, nearly as long as the tube; capsule depressed-globose, about 8 mm. in diameter, tipped by a stout flattened subulate beak 1 to 1.5 cm. long.

VERNACULAR NAME: Enredadera blanca, pico de ave (*Duque-Jaramillo* 1804, 1936).

Roadsides, thickets, waste grounds in general. Naturalized after cultivation. Found in tropical regions throughout most parts of the world. Although specifically named *fragrans* there is considerable difference of opinion as to whether the flowers are actually fragrant. Some find them so, others find them fragrant only at certain times during the day, and still others fail entirely to detect any marked odor.

ANTIOQUIA: Titiribí, vicinity of Medellín, *Toro* 554 (NY). Valparaiso, vicinity of Medellín, *Toro* 1639 (NY).

BOLÍVAR: Vicinity of Cartagena, *Bro. Heriberto* 410 (US).

CHOCÓ: Clearing at Andagoya, *Killip* 35365 (US).

CUNDINAMARCA: Girardot, *Pérez-Arbeláez* 382 (US). Jerusalem, *Pérez-Arbeláez* 577 (US).

CAUCA: Orchards, Candelaria to Palmira, *Duque-Jamarillo* 1396 (Valle).

EL VALLE: Andalucia, *Dryander* 413 (US). Orchards and gardens, Cali, *Duque-Jaramillo* 1804 (US).

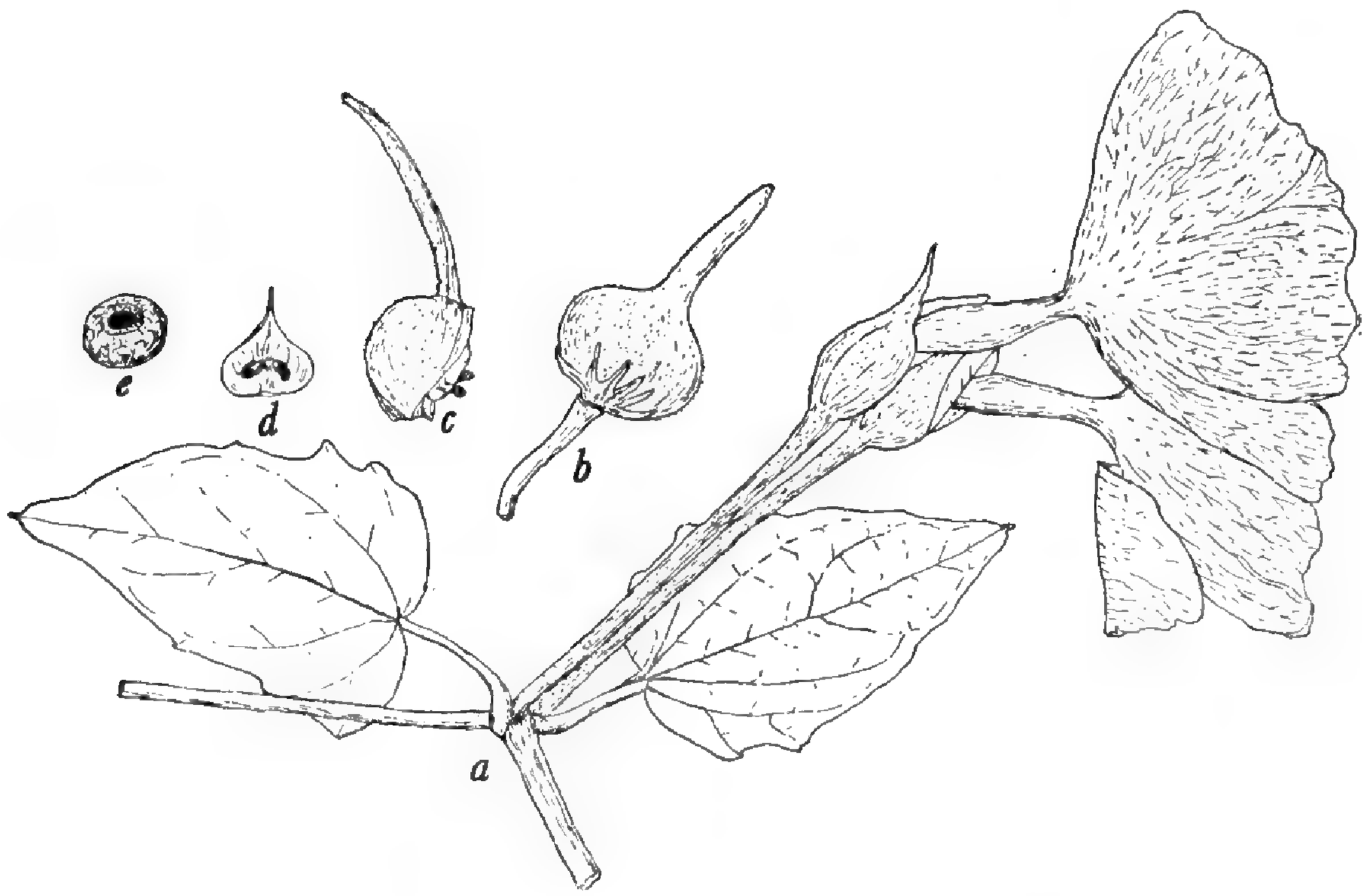

FIGURE 16.—*Thunbergia fragrans* Roxb. (*a*, *Killip* 35365; *b*, *Pérez-Arbeláez* 577; *c–e*, *Dryander* 413): *a*, Node showing inflorescence and a pair of leaves; *b*, capsule; *c*, a valve of the capsule; *d*, placenta septum showing the large papilliform retinacula; *e*, seed showing mouth of excavation. (All natural size.)

3. Thunbergia grandiflora Roxb.

Thunbergia grandiflora Roxb. Hort. Beng. 45. 1814; Fl. Ind. 3: 34. 1832. Type collected near Calcutta, India.

Thunbergia cordifolia Nees in DC. Prodr. 11: 55. 1847. Type collected at Assam and deposited in the Hooker Herbarium, Kew.

A large herbaceous or suffrutescent finely pubescent vine twining up high trees; tips of stems subquadrangular and narrowly winged on the angles; leaf blades ovate, up to 20 cm. long and wide, acuminate at apex, cordate or hastate at base (basal sinus usually broad and rounded), often coarsely toothed or lobed below the middle; petioles up to 10 cm. long; flowers axillary or borne on slender bracted, termi-

nal and often recurved racemes; spathe 2-valved, the valves obliquely oblong, up to 3.5 cm. long and 2 cm. wide, acuminate, striate-nerved and bearing small scattered black dots; corolla white or light blue, campanulate, up to 6 cm. long, the limb about 5 cm. broad; stamens included, the exterior cell of each posterior anther armed with a rigid sharp white curved spur about 3 mm. long; capsule globular, 16 mm. in diameter, tipped by a stout beak about 2 cm. long.

Gardens, thickets, forests. Planted or established as an escape in tropical regions throughout many parts of the world.

ATLÁNTICO: Barranquilla, *Bro. Elias* 794 (US).

CUNDINAMARCA: Girardot, *Pérez-Arbeláez* 379 (US). Granja Cafetera Enrique Soto, La Esperanza, *Gutiérrez* 410 (GH).

Subfamily 4. ACANTHOIDEAE

Acanthoideae Lindau in Bot. Jahrb. Engler 18: 43. 1893.

Retinacula subulate, usually curved, truncate and more or less fimbriate at tip, aestivation of corolla lobes contorted or imbricate.

KEY TO THE SPECIES

Corollas contorted at aestivation; stamens usually 4 ---------- A. CONTORTAE
Corollas imbricate at aestivation; stamens usually 2 ---------- B. IMBRICATAE

Series A. CONTORTAE

Contortae Lindau in Bot. Jahrb. Engler 18: 43. 1893.

Of the seven tribes listed by Dalla Torre and Harms (Genera Siphonogamarum), the following five are represented by one or more genera in Colombia:

1. Trichanthereae
2. Hygrophileae
3. Petalidieae
4. Ruellieae
5. Barlerieae

A key to the tribes has been constructed by Lindau (Engl. & Prantl, Pflanzenfam. IV. 3b: 287. 1891). His key, however, is based chiefly on pollen characters. Since pollen characters are very difficult to observe, the following artificial key based on more discernible traits will serve to separate the Colombian genera of these tribes:

Calyx segments very dissimilar, the posterior one usually the largest, the anterior pair more or less united; flowers borne in dense terminal spikes.
  Corolla large, 3 cm. long or more, subregular---------- 13. Barleria
  Corollas small, about 5 mm. long, 2-lipped.
    Flowers secund---------- 11. Phaylopsis
    Flowers not secund---------- 14. Teliostachya
Calyx regular or nearly so; inflorescence various.
  Shrubs or small trees; calyx segments often rounded or obtuse at tip.
    Basal lobes of the anther muticous---------- 7. Trichanthera

Basal lobes of the anther calcarate.
Corolla white, campanulate, about 2 cm. long or less; flowers borne in large loose panicles ---------- 6. Bravaisia
Corolla red or yellow, tubular, usually 4 cm. long or more; flowers borne in spikes, the rachis simple or branched ---------- 8. Sanchezia
Herbs, often more or less suffrutescent (rarely shrubs); calyx segments subulate or lanceolate, usually acute or acuminate.
Corolla 2-lipped; flowers solitary or fascicled, axillary; capsule cylindric ---------- 9. Hygrophila
Corolla regular or nearly so; inflorescence various; capsules stipitate.
Flowers borne in dense terminal quadrifarious spikes, the bracts closely imbricate ---------- 10. Blechum
Flowers axillary, or borne in loose terminal or axillary cymes or panicles (rarely in terminal heads) bracts usually small, rarely large and imbricate ---------- 12. Ruellia

Tribe 1. TRICHANTHEREAE Lindau

Trichanthereae Lindau in Bot. Jahrb. Engler 18: 44. 1893.

Herbs, shrubs, or trees; calyx 5-parted, the lobes rounded at tip; corolla regularly 5-lobed; stamens 2 or 3, free or united at the base into pairs; staminodes 2 or none; capsules oblong, short-stipitate; seeds 2 to 8.

KEY TO THE GENERA

Stamens 4; corolla campanulate, the tube relatively short.
Anther cells spurred at base ---------- 6. Bravaisia
Anther cells rounded at base ---------- 7. Trichanthera
Stamens 2; staminodes 2; corolla cylindric ---------- 8. Sanchezia

6. BRAVAISIA DC.

Bravaisia DC. Rev. Bign. in Bibl. Univ. Genève N. S. 17: 132. 1838. Originally placed in the family Bignonaceae by DeCandolle, this genus was first properly considered to belong to the family Acanthaceae by Bentham & Hooker (Gen. Pl. 2: 1084. 1876). It was named in honor of two brothers, C. and J. Bravais, whose notes on the leaves and flowers of the plant were utilized by DeCandolle in drawing his description. The material on which the generic description was based was collected by Vargas at Caracas, Venezuela. Type species: *Bravaisia floribunda* DC.

Onychacanthus Nees in DC. Prodr. 11: 217. 1847. Nees describes two species, *O. cumingii* (based on two specimens, one collected in Peru by Pavón and the other in Central America by Cuming, No. 1307) and *O. berlandierianus* (based on a specimen collected in Mexico by Berlandier, No. 108). The name *Onychacanthus* comes from ὄνυξ, claw or nail, and ἄκανθος, *Acanthus*, in allusion, probably, to the biungulate stigmas. Type species: *O. cumingii* Nees. Type locality: Peru.

Shrubs or trees; leaves petioled, opposite, entire; inflorescence a terminal subcorymbose panicle, each flower subtended by a pair of bracts; calyx segments 5, subcoriaceous; corolla white, yellow, or purplish, the tube short, the throat campanulate, the lobes 5, subequal, rounded, spreading; stamens 4, the anther cells contiguous, spurred at base; ovules 2 to 4 in each cell.

1. **Bravaisia integerrima** (Spreng.) Standl. FIGURE 17

Amasonia integerrima Spreng. Syst. Veg. 2: 765. 1825. The species was established by a short Latin description and the following citation of locality and collector: "Ad. fl. Magdalen, Bertero." Type Material is in the Delessert Herbarium. Photographs of this are in the U. S. National Herbarium, No. 7694, and in the herbarium of the Missouri Botanical Garden.

Bravaisia floribunda DC. Prodr. 9: 240. 1843. DeCandolle placed this species in the family Bignoniaceae, citing as synonyms *Bignonia bibracteata* Bertero, *Barleria anomala* Spreng., and *Amasonia integerrima* Spreng. He based his description on material collected at Santa Marta, Colombia, by Bertero, at Caracas, Venezuela, by Vargas, and in Mexico by Karwinski.

Onychacanthus cumingii Nees in DC. Prodr. 11: 217. 1847. Type collected in Peru by Pavón and deposited in the DeCandolle Herbarium, Geneva.

Onychacanthus berlanderianus Nees in DC. Prodr. 11: 217. 1847. Type collected at Tampico, Tamaulipas, Mexico, by Berlandier, No. 108 and deposited in the Moricand Herbarium, Geneva.

Onychacanthus speciosus Oerst. Nat. For. Kjöbenhavn Vid. Medd. 1854: 131. 1854. Type collected in rich forest of La Baranca, near Puntarenas, Costa Rica, by Oersted.

Onychacanthus arborea Karst. Fl. Columb. 2: 111. *pl. 149.* 1862–1869. Type collected in torrid mountainous region near Victoria and San Sebastian, Caracas, Venezuela.

Bravaisia integerrima Standley, Contr. U. S. Nat. Herb. 23: 1335. 1926. Based on *Amasonia integerrima* Spreng.

A dense tree up to 18 meters high; branches glabrous or finely puberulous, or tomentose when young; leaf blades oblong-elliptic, 8 to 28 cm. long, 3 to 10 cm. wide, acuminate or acute at apex, narrowed at base, entire or undulate, subcoriaceous, glabrous or the costa and lateral veins pilosulous; petioles up to 5 cm. long, but usually about 3 cm. long; flowers borne in leafy terminal, subcorymbose, trichotomously branched thrysi about 12 cm. long and 10 to 30 cm. broad, the branches subquadrangular, glabrous or puberulous, subtended by bracts resembling small leaves (1 to 8 cm. long, 0.5 to 4 cm. wide); pedicels 1 to 5 mm. long; bractlets ovate, 2 to 3 mm. long, 2 mm. wide, puberulous, ciliolate, subcarinate; calyx 4 to 5 mm. long, the segments ovate, 3 to 4 mm. long, 2 to 3 mm. wide, obtuse or rounded, puberulous and ciliolate; corolla white (or yellow) with a purple spot at the throat, glabrous (except the ciliate lobes), about 2 cm. long, the tube campanulate, about 8 mm. broad at throat, the limb about 2 cm. broad, the lobes 1 cm. long, 5 to 6 mm. wide, rounded or emarginate; capsule oblong, 10 to 12 mm. long, obtuse at apex, rounded at base, glabrous, 4-seeded; seeds flat, suborbicular, about 4 mm. in diameter, greenish, glabrous.

VERNACULAR NAMES: Sancarano (*Curran* 222); palo de agua (*Bro. Elias* 444, 487, 1265, 1507; *Dugand* 580); sancho araña (*Dugand* 580; *Curran* 308, 317).

Masses of aerial roots, after the fashion of mangroves, are often produced at the bases of the trees. The wood is said to be light cream

in color, medium heavy but not hard, and possessing a coarse uneven grain. It is suitable for packing boxes and food pails.[7]

Low wet woods and meadows. Peru; Colombia; Venezuela; north to Oaxaca and Tamaulipas, Mexico.

ATLÁNTICO: Woods near Arroyo de Piedras, *Dugand* 580 (US). Barranquilla, *Bro. Elias* 974 (US). Galapa, vicinity of Barranquilla, *Bro. Elias* 444 (US). Puerto Colombia, vicinity of Barranquilla, *Bro. Elias* 1265 (US), 1507 (US). Sabanalarga, vicinity of Barranquilla, *Bro. Elias* 487 (US). Usiacurí, *Dugand & García-Barriga* 2324 (US).

BOLÍVAR: Estrella, Caño Papayal, Lands of Loba, Curran 308 (GH, US); 317 (GH). Along the Mompos to Juana Sánchez trail, Island of Mompos, Lands of Loba, *Curran* 222 (US). Meadow at Morrocoquiel on the Río Sinú, *Pennell* 4697 (GH, Mo, NY, US).

MAGDALENA: Santa Marta, *Romero* 34 (Mo); *H. H. Smith* 1869 (GH, Mo, NY, Ph, US); *Bertero* s. n. (Mo, isotype).

FIGURE 17.—*Bravaisia integerrima* (Spreng.) Standl. (*a*, *b*, *Dugand & García-Barriga* 2324; *c*, *Pennell* 4697): *a*, Portion of stem showing inflorescence and leaves; *b*, portion of inflorescence showing capsule and calyx; *c*, stamen. (*a*, *b*, Natural size; *c*, twice natural size.)

7. TRICHANTHERA H. B. K.

Trichanthera H. B. K. Nov. Gen. & Sp. 2: 243, in obs. 1817. *Ruellia gigantea*, the type species, was first published by Humboldt and Bonpland in their Plantae Aequinoctiales (2: 75. *pl. 102.* 1809). It was redescribed in their Nova Genera et Species Plantarum (2: 243. 1817) with the following observation appended: "Certe distincti generis ob stamina exserta, antheras pilosas et capsulae loculos dispermos. Fortasse Trichanthera nominandum." Nees, in DeCandolle's Prodromus (11: 218. 1847), published a detailed

[7] Curran, Tropical Woods 19: 18. 1929.

generic description under the name *Trichanthera*. Derivation of *Trichanthera*: θρίξ, hair, and ἀνθηρός, anther. Type locality: "in sylvis fluvii Magdalenae, prope Badillas et juxta Ybague."

Shrubs or trees; leaves opposite, petioled, ovate to oblong, entire or undulate, the cystoliths numerous, small; inflorescence a terminal, dense, and many-flowered panicle or corymb; bracts small, triangular; calyx segments 5, obtuse; corolla regular, 5-lobed, tomentose, campanulate; stamens exserted, didynamous, the anthers ciliate, their basal lobes rounded; capsules 4-seeded, 2 seeds in each locule.

KEY TO THE SPECIES

Calyx lobes rounded; inflorescence racemose, secund; lower surface of the leaf blades inconspicuously pubescent ..... 1. *T. gigantea*
Calyx lobes obtuse or acute; inflorescence corymbose; lower surface of the leaf blades conspicuously pubescent ..... 2. *T. corymbosa*

1. Trichanthera gigantea (Humb. & Bonpl.) Nees FIGURE 18

Ruellia gigantea Humb. & Bonpl. Pl. Aequin. 2. 75, *pl.* 102. 1809. Type collected along the Magdalena River, near Badilla, Colombia, by Humboldt and Bonpland. Type material in the Berlin Herbarium and Hooker Herbarium, Kew.

Trichanthera gigantea Nees in DC. Prodr. 11: 218. 1847. Based on *Ruellia gigantea* Humb. & Bonpl.

Shrubs or trees up to 5 meters high (sometimes bushy and bearing adventitious roots), the top rounded; branches quadrate, the angles rounded, the tips minutely brown-tomentose; lenticels prominent; leaf blades ovate to oblong, up to 26 cm. long and 14 cm. wide, acuminate at apex, narrowed at base, glabrous, or the costa and veins pubescent; petioles 1 to 5 cm. long; inflorescence a terminal compact more or less secund panicle 5 to 15 cm. long and 4 to 5 cm. broad, brown-tomentose; bracts triangular, 3 mm. long; calyx 10 to 12 mm. long, brown-tomentose, the segments 7 to 10 mm. long, 5 mm. wide, rounded at apex; corolla 3 to 4 cm. long, red and glabrous proximally, yellowish and silky-tomentose distally, red and glabrous within, the tube 1 to 1.5 cm. long, the limb 2 to 3 cm. broad, the lobes oblong to oblong-ovate, 3 to 5 mm. wide; ovary tomentose; style 4 to 5 cm. long; capsule 1.5 to 2 cm. long, obtuse at apex, silky-pubescent, the hairs closely appressed; retinacula 3 mm. long, curved, truncate and erose at tip; mature seed 1 to 4 in each capsule, lenticular, 3 to 4 mm. broad, glabrous.

VERNACULAR NAMES: Aro-blanco (*Killip & Smith* 15452); nacedero (*Dryander* 37); rompebarringa (*Archer* 523).

Used in the vicinity of Fredonia, Antioquia, as a remedy for cattle (*Archer* 523).

Under the impression that the species belonged to the genus *Ruellia*, Humboldt and Bonpland named it *gigantea* because of its contrast

in size when compared with the other herbaceous or suffrutescent *Ruellia*.

Forests, thickets, roadsides, and clearings, often in moist situations. Colombia, Venezuela, Panama, and Costa Rica.

ANTIOQUIA: Vicinity of Fredonia, *Archer* 523 (US). Vicinity of Medellín, *Toro* 78 (NY). Titiribí, *Archer* 574 (US). Vicinity of Turbo, *Haught* 4549 (US).

BOLÍVAR: Sahagún, *Pennell* 4101 (NY, US). San Martín de Loba, Lands of Loba, *Curran* 54 (GH, US).

BOYACÁ: Vicinity of Boavita, *Cuatrecasas* 1924 (US). Moniquirá, *Pérez-Arbeláez & Cuatrecasas* 8132 (US).

CHOCÓ: Bahía Solano, near Ciudad Mutis, *Killip & García-Barriga* 33589 (US).

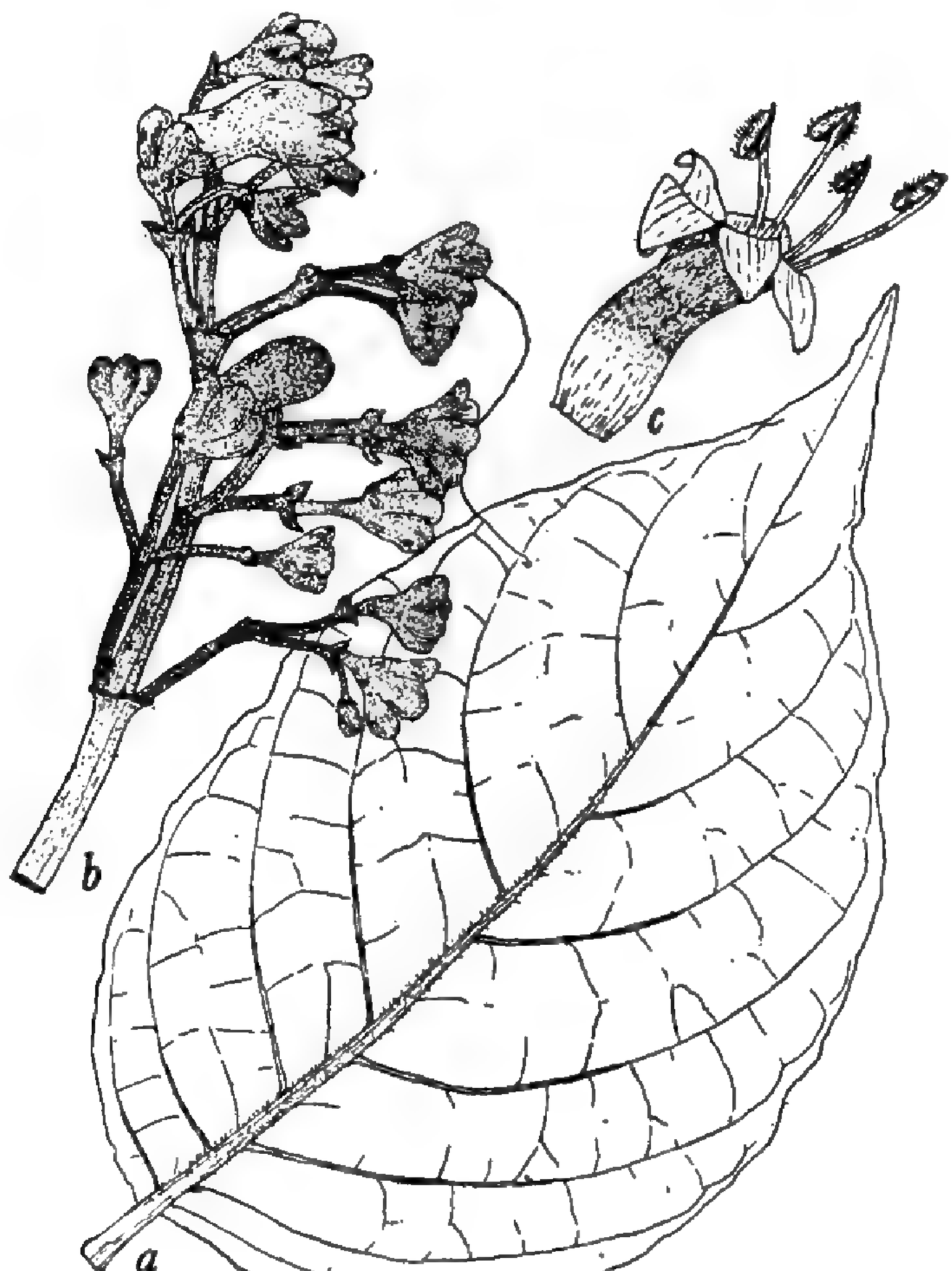

FIGURE 18.—*Trichanthera gigantea* (Humb. & Bonpl.) Nees (*a*, *b*, *Cuatrecasas* 13437; *c*, *Archer* 574): *a*, Leaf; *b*, inflorescence; *c*, corolla. (All half natural size.)

CUNDINAMARCA: Vicinity of Bogotá, *Hermann* 10926 (US). Caparrapí, *García-Barriga* 7658 (US). El Colegio, *Bro. Ariste Joseph* 1061 (US). Road to Girardot between La Esperanza and San Javier, *García-Barriga* 12193 (US); 12203 (US). La Mesa to Magdalena, *Triana* s. n. (NY, US). Hacienda Patasía, Pacho, *García-Barriga* 12543 (US). Hacienda La Victoria on the San Bernardo Trail near Sasaima, *García-Barriga* 12114 (US).

EL CAUCA: Cali, *García-Barriga* 4213 (US). El Tambo, *von Sneidern* 2652 (S); 2653 (S).

EL VALLE: Vicinity of Cali, *Pérez-Arbeláez & Cuatrecasas* 6332 (US). El Freijito, *Dryander* 47 (US). La Manuelita, Palmira, *Pennell & Killip* 6193 (GH,

NY, Ph). Hoya, between Quebradita del Retiro and Río Albán, *Cuatrecasas* 22631 (Ch). Timba, *von Sneidern* 1240 (NY, S).

MAGDALENA (?): Poponte, *Cyril Allen* 876 (Mo).

META: Villavicencio, *Killip* 34345 (US).

NORTE DE SANTANDER: Trail between Chinácota and Esmeralda, *Killip & Smith* 20891 (US). Culagá Valley, north of Labateca, *Killip & Smith*, 20534 (NY, US). Río Chitagá, región de Sarare, *Cuatrecasas* 13437 (US). Culagá Valley near Tapatá, *Killip & Smith* 20504 (NY, US).

PUTUMAYO: Puerto Porvenir above Puerto Ospina on the Río Putumayo, *Cuatrecasas* 10733 (Col).

SANTANDER: Bucaramanga, *Killip & Smith* 15452 (NY, US). Río Suratá Valley between El Jaboncillo and Suratá, *Killip & Smith* 16426 (US).

TOLIMA: Ibagué, *Holton* (NY).

WITHOUT LOCALITY: *Lehmann* 3040 (US).

2. **Trichanthera corymbosa** Leonard

Tricanthera corymbosa Leonard, Journ. Washington Acad. Sci. 20: 487. 1930. The type, collected in the Culagá Valley, near Tapatá, Norte de Santander, Colombia, 1,500 to 2,100 meters, March 4, 1927, by Killip & Smith, No. 20140, is in the U. S. National Herbarium, No. 1355268. Isotypes are in the Gray Herbarium and in the herbarium of the New York Botanical Garden.

Tree up to 3 meters high; branches brownish-tomentose or gray and glabrous with age, the angles rounded, the lenticels prominent; petioles 1 to 5 cm. long, brown-tomentose; leaf blades ovate, 10 to 22 cm. long, 5 to 15 cm. wide, abruptly acuminate (the tip blunt), rounded or abruptly narrowed at base and decurrent on the petiole, firm, shallowly crenate, sparingly pubescent above, the cystoliths numerous, the lower surface rather densely pubescent with soft webby hairs or subtomentose, especially on the costa and veins (about 10 pairs); inflorescence corymbose, 10 to 20 cm. broad, the branches subquadrangular, minutely brown-tomentose, the lenticels prominent; bracts leaflike, small, deciduous, those subtending the flowers triangular, 2 to 3 mm. long, 1 to 2 mm. wide, velvety brown-tomentose; calyx irregular (anterior lobe appreciably longer than the others), 1.5 to 2.3 cm. long, velvety brown-tomentose, the lobes oblong, 10 to 20 mm. long, 3 to 5 mm. wide, obtuse to acute, 5-nerved, the middle nerve more pronounced than the 4 lateral ones; corolla 3 cm. long, the tube 5 to 6 mm. broad, glabrous, the throat and lobes whitish or brown and densely tomentose without, purple and sparingly pubescent within, the limb 2.5 cm. broad, the lobes erect or spreading, ovate, 12 mm. long, 8 to 10 mm. wide, obtuse; stamens exserted, the filaments 15 mm. long, pilose at base, glabrous above, the anthers 7 mm. long and 2 mm. broad, the basal lobes 2 to 3 mm. long, obtuse, sparingly pilose along the sutures; capsule oblong, 1.5 to 2 cm. long, 5 to 7 mm. broad, acute or obtuse at apex, densely tomentose, the hairs brownish; mature seed not seen but probably lenticular and glabrous.

Known only from the type locality and from Tovar, Mérida, Venezuela (*Pittier* 12828).

8. SANCHEZIA Ruiz & Pav.

Sanchezia Ruiz & Pav. Fl. Peruv. Chil. Prodr. 5. *pl. 32*, 1794; Ruiz & Pav. Fl. Peruv. Chil. 1: 7. *pl. 8, fig. c. & b.* 1798. The genus was named for José Sánchez, a professor of botany at Cadiz.

Ancylogyne Nees in Mart. Fl. Bras. 9: 63, *pl.* 7. 1847. The name *Ancylogyne* is derived from ἀγκυλός, bent or curved, and γυνή, pistil. Nees published two species in Martius' Flora of Brazil, *A. munita* and *A. macrocnemis*, the latter identical with *S. oblonga* Ruiz & Pav. In DeCandolle's Prodromus (11: 221. 1847), Nees added two more species, *A. peruviana* and *A. capitata*. In 1866 Hooker (Bot. Mag. Curtis 92: *pl. 5594*) reestablished the name *Sanchezia*.

Erect herbs or shrubs, usually glabrous; flowers solitary or fascicled, usually large and conspicuous, yellow or red, borne on spikes or racemes, the flower clusters subtended by small or often large and partly connate bracts, these sometimes colored; calyx 5-parted; corolla tube cylindric, 5-lobed, the lobes equal; stamens 2, usually exserted; anthers 2-celled, longitudinally ciliate, mucronulate at base; staminodes 2; capsule oblong, 6 to 8-seeded; seeds orbicular.

Sanchezias are shrubby or subherbaceous plants bearing large firm leaves and attractive, bright yellow or purple, sessile flowers disposed in spikes or racemes. Natives of tropical America, these plants are mainly confined to wet forests of the northern Andes, but, being both attractive and adaptable to cultivation, they have reached regions far removed from their native haunts. Specimens of cultivated or escaped plants have been seen from Costa Rica, Cuba, Java, Siam, and Amboina. About 30 species are now recognized.

KEY TO THE SPECIES

Calyx shorter than the bracts.
- Bracts connate at least to middle; leaf blades elliptic-obovate--- 1. *S. pennellii*
- Bracts not connate or scarcely so; leaf blades oblong-elliptic---- 2. *S. speciosa*

Calyx longer than the bracts.
- Corolla essentially glabrous---------- 3. *S. lutea*
- Corolla distally retrorsely hirtellous.
  - Corolla bright rose---------- 4. *S. putumayensis*
  - Corolla ochre---------- 5. *S. parvibracteata*

1. Sanchezia pennellii Leonard

Sanchezia pennellii Leonard, Journ. Washington Acad. Sci. 16: 488. 1926. Type collected in a sandy loam forest along the Río Magdalena at Vuelta de Acuña, Antioquia, Colombia, altitude 125 to 130 meters, January 14, 1918, by Francis W. Pennell, No. 3798. Type in the U. S. National Herbarium, No. 1043822.

Low shrub; stems glabrous; leaf blades elliptic-obovate, 10 to 30 cm. long, 5 to 13 cm. wide, abruptly narrowed at apex to a blunt tip, gradually narrowed at base, crenate, glabrous bearing cystoliths 0.5 mm. long; petioles 4 cm. long; inflorescence spicate, the flowers 6 to 8, sessile, crowded in the axils of the bracts and forming fascicles 3 to 6

cm. in diameter; bracts 5 cm. long, connate below, loosely enclosing the flowers, the free portion broadly ovate, 3 to 3.5 cm. wide, abruptly narrowed to a blunt tip, orange-red, glabrous, bearing cystoliths; bractlets elliptic-obovate, 2.5 cm. long, 1 cm. wide; sepals ligulate-obovate, 10 to 15 mm. long, the 3 outer 3 to 5 mm. wide, the 2 inner 2 to 3 mm. wide, all rounded at apex, glabrous; corolla yellow, 4 to 5 cm. long, 6 to 7 mm. broad at throat, the lobes 3 mm. wide, rounded and emarginate at apex; filaments 4 cm. long, exserted 8 mm. beyond the throat of the corolla, pilose; staminodes 4 to 5 mm. long; style 5.5 cm. long, glabrous.

Wet woods, usually on banks of streams. Panama, Colombia, Peru.

ANTIOQUIA: Vicinity of Turbo, *Haught* 4545 (US). Vuelta de Acuña on the Río Magdalena, *Pennell* 3798 (NY, US).

BOLÍVAR: Boca Verde on the Río Sinú, *Pennell* 4573 (NY).

CHOCÓ: Andagoya, *Killip* 35399 (US). Negría, along the Río San Juan, *Killip* 35008 (US). Quibdó on the Río Atrato, *Archer* 1803 (US).

EL VALLE: Along the Río Calima near La Brea, *Cuatrecasas* 21205 (Ch). Along the Río Calima at La Trojita, *Cuatrecasas* 16322 (US).

MAGDALENA: St. Juancito, *Holton* (NY).

META: Llanos de San Martín, *Triana* s. n. (Col).

PUTUMAYO: On the Río San Miguel between the mouths of Río Bermega and Río Conejo, *Cuatrecasas* 11051 (US). On the Río San Miguel at the mouth of Río Conejo, *Cuatrecasas* 10918 (US).

SANTANDER: Between Río Sogamoso and Río Colorado in the vicinity of Barranca Bermeja, *Haught* 1538 (US). Brazo de Moro above Barranca Bermeja, *Niemeyer* 1 (US). Between Río Carare and Río Magdalena in the vicinity of Puerto Berrío, *Haught* 1835 (US).

VAUPÉS: San José del Guaviare, *Cuatrecasas* 7442 (US).

2. Sanchezia speciosa Leonard

Sanchezia speciosa Leonard, Journ. Washington Acad. Sci. **16**: 490. 1926. The type, collected in the Botanical Garden of Havana, Cuba, January 1905, by A. H. Curtiss, No. 622, is in the U. S. National Herbarium.

Plant shrubby; stem quadrangular; leaves oblong-elliptic, 10 to 25 cm. long, 3 to 7 cm. wide (the lowermost probably larger), gradually narrowed to a slender blunt apex, narrowed or rounded at base and decurrent on the petiole, glabrous, the margins undulate, the costa and lateral veins (9 to 12 pairs) prominent beneath, the cystoliths curved, about 0.5 mm. long; inflorescence a terminal simple or forked interrupted spike equaling or exceeding the upper pair of leaves; internodes 1 to 3 cm. long; flowers (3 or more) borne in bracted fascicles 1 to 2 cm. broad; bracts ovate, blunt at apex, glabrous, bearing cystoliths; bractlets oblong-elliptic, about 2 cm. long and 8 mm. wide, obtuse; sepals ligulate, 1.5 to 1.8 cm. long, 3 to 5 mm. wide, rounded at apex; corolla orange, the tube 4 to 6 cm. long, 7 to 8 mm. broad at throat, narrowed below the middle to 3 mm., glabrous, the lobes 3 to 4 mm. long, rounded, emarginate; stamens inserted about 5 mm. above

the base of the corolla tube, the filaments 4 to 4.5 cm. long, exserted 5 to 15 mm. beyond the mouth of the corolla, sparingly pilose; anthers 5 mm. long; staminodes 2.5 cm long; style 5 cm. long, equaling or exceeding the stamens; fruit not seen.

Usually found in cultivation but undoubtedly a plant of wet forests when growing in its natural haunts. The fact that the Putumayo specimen was collected from a plant growing wild is of great interest, since all the other material in the U. S. National Herbarium is from cultivated sources.

West Indies and Colombia.

PUTUMAYO: On the left bank of Quebrada de la Hormiga along the Río San Miguel, *Cuatrecasas* 11109 (US).

3. Sanchezia lutea Leonard, sp. nov. FIGURE 19

Frutex, caulibus quadrangularibus, glabris vel ad nodos parce pilosis; lamina foliorum oblonga, lanceolata, acuminata, basi angustata, in petiolum decurrens, undulata, glabra; petioli brevi, basi breviter connati; paniculae terminales, parce ramosae glabrae, floribus secundis, racemi bracteis lineari-lanceolatis suffulti; bracteae floriferae oblongo-ovatae; bracteolae oblongae; calycis segmenta lineari-oblonga vel oblanceolata, acuta, apice pubescentia; corolla aurantiaca, parce pubescens, lobis rotundatis, emarginatis; stamina exserta, filamentis pilosis; staminodia glabra; antherae pilosae.

Shrub up to 3 or 4 meters high; branches quadrangular, glabrous, or the nodes sometimes beset with a few stiff straight hairs about 0.5 mm. long; leaf blades oblong-lanceolate, up to 25 cm. long and 6.5 cm. wide, gradually narrowed from the middle to a slender and sometimes curved tip, acute at base and decurrent on the petiole, undulate, glabrous, the lateral veins (10 to 12 pairs) rather prominent beneath; petioles 1 to 1.5 cm. long, connate at base by a small ridge or narrow band of leaf tissue; flower clusters secund, borne in terminal glabrous racemes about 12 cm. long, these sparingly branched; lower pair of bracts subtending the branches of the inflorescence linear-lanceolate, 2 cm. long, about 3 mm. wide at the base, slenderly acuminate, the others successively smaller toward tip; bracts subtending the flower clusters oblong-ovate, 12 mm. long and 6 mm. wide (successively smaller toward tip of the inflorescence), acute; bractlets oblong, 13 mm. long, 3 mm. wide, thinner than the outer bracts, faintly nerved; calyx segments linear-oblong to oblanceolate, slightly irregular in size, about 13 mm. long, 3 to 5 mm. wide, acute, pubescent at the tip, obscurely parallel-veined; corolla orange yellow or pale salmon, sparingly pubescent distally, the hairs curved, the tube 3.5 to 4 mm. thick at base, narrowed above the ovary to 3 mm., thence enlarged to 8 mm., but the throat itself narrowed to 5 mm., the lobes oblong, 5 mm. long, 3 mm. wide, rounded and emarginate; stamens exserted 1 cm. beyond the throat of the corolla, the filaments pilose; staminodes

FIGURE 19.—*Sanchezia lutea* Leonard (*Cuatrecasas* 4627): *a*, Tip of branch showing leaf and inflorescence; *b*, bract subtending flower clusters; *c*, bract subtending flower; *d*, calyx segment; *e*, stamen and staminode (immature); *f*, anther, dorsal view to show sutures; *g*, anther, ventral view to show connective; *h*, corolla lobe; *i*, pistil (immature). (*a*, Half natural size; *b–e*, *h*, *i*, natural size; *f*, *g*, about twice natural size.)

12 mm. long, glabrous, the anthers 5 mm. long, their ventral surfaces pilosulous with straight erect hairs about 0.5 mm. long; ovary and style glabrous; fruit not seen.

Type in the U. S. National Herbarium, No. 1517331, collected at headwaters of Río Tutunendo, east of Quibdó, Intendencia of Chocó, Colombia, May 20 or 21, 1931, by W. A. Archer (No. 2174).

Cuatrecasas' No. 4627 (US), collected between Villavicencio and El Parrao, Meta, Colombia, 500 meters, November 10, 1938, and Camilo's No. 78 (GH), collected at Florencia, Caquetá, also represent the species.

Sanchezia lutea resembles *S. parviflora* Leonard, an Ecuadorian species, but differs in its larger orange-yellow or pale salmon corollas (3.5 to 4 cm. long). The corollas of *S. parviflora* are 3 cm. long and pale scarlet in color.

4. Sanchezia putumayensis Leonard, sp. nov. FIGURE 20

Frutex caulibus subquadrangularibus; lamina foliorum oblongo-elliptica, acuminata, apice curvata, basi angustata, in petiolum decurrens, glabra, integra vel undulata, costa et venis obscuris; paniculae terminales, parce ramosae, floribus in fasiculis paucifloris secundis dispositis; bracteae ovatae; bracteolae oblongae, glabrae vel apice hirtellae; calycis segmenta oblonga vel oblanceolata, intus glabra, extus punctulata, apice parce hirtella; corolla laete rosea, sursum retrorse hirtella, deorsum glabra, lobis rotundatis, emarginatis; stamina exserta, pilosa vel subtomentosa; antherae hirtellae; pistillum glabrum.

Shrubs up to 2 meters high; stems subquadrangular, the angles glabrous; leaf blades oblong-elliptic, up to 16 cm. long and 6 cm. wide, narrowed to a slender often curved apex (the tip blunt), narrowed at base and decurrent on the petiole, glabrous, entire or undulate, the costa and lateral veins (about 8 pairs) rather inconspicuous; inflorescence a panicle of 3 or 4 branches, up to 15 cm. long, the fascicles small, few-flowered, secund, except occasionally the lowermost, longer than the internodes; bracts ovate, up to 8 mm. long and 5 mm. wide, acutish, the veins obscure; bractlets oblong, up to 7 mm. long and 3.5 mm. wide, rounded, both bracts and bractlets glabrous except the sparingly hirsutulous tips; calyx up to 12 mm. long, oblong or oblanceolate, 3.5 to 4.5 mm. wide, acutish, glabrous without, puncticulate within, the tips sparingly hirsutulous; corolla bright rose, the tube 4 to 4.5 cm. long, about 4 mm. broad at base, narrowed above ovary to 3 mm., thence gradually enlarged, becoming 7 mm. broad at mouth, rather densely and retrorsely hirtellous distally with white hairs slightly less than 0.5 mm. long, glabrous proximally, the lobes about 4 mm. in diameter, rounded, emarginate; stamens exserted 15 to 20 mm. beyond the mouth of the corolla, the filaments densely pilose or subtomentose at and above insertion, the upper portions sparingly pilose, the hairs longer, reaching 2 mm. in length; anthers 5 mm. long, the cells ventrally hirtellous, the basal spurs 1 mm. long; style and stigma glabrous; fruit not seen.

Type in the U. S. National Herbarium, No. 1691751, collected in forest along the Río Putumayo, Comisaría of Putumayo, Colombia,

September 26 to October 10, 1930, by G. Klug (No. 1653). Isotypes are in the herbaria of the Missouri and New York Botanical Gardens.

Cuatrecasas' No. 10919 (US), collected near mouth of the Río Conejo, Putumayo, 300 meters and Triana's specimen (s. n.) (Col), collected at Barbacoas, Nariño, also represent the species.

Sanchezia putumayensis is near *S. sylvestris* Leonard, of Peru, from which it differs chiefly in its relatively narrower leaf blades with narrowed rather than obtuse bases, and by the pilosulous (distally) corollas (practically glabrous in *S. sylvestris*). The type (Klug 1653) was erroneously cited under *S. sylvestris* in the original description of that Peruvian species.

FIGURE 20.—*Sanchezia putumayensis* Leonard (*Klug* 1653): *a*, Tip of branch showing inflorescence and leaves; *b*, calyx opened and spread to show segments; *c*, bract subtending flower; *d*, a stamen and staminode; *e*, anther, showing sutures; *f*, anther, attachment of filament. (*a*, *d*, Half natural size; *b*, *c*, *e*, *f*, natural size.)

5. **Sanchezia parvibracteata** Sprague & Hutchinson

Sanchezia sprucei var. *salvadorensis* Donn. Smith, Bot. Gaz. 44: 116. 1907.

Type collected in a garden in the city of San Salvador, El Salvador, December, 1906, by Luis V. Velasco, No. 8985.

Sanchezia parvibracteata Sprague & Hutchinson, Kew Bull. 1908: 253. 1908. Type taken from a plant cultivated at Kew but originally grown in the Royal Botanic Gardens at Peradeniya, Ceylon, in 1905. The stock was collected somewhere in tropical America.

A large suffrutescent herb; stems smooth, subquadrangular, the angles rounded; leaf blades oblanceolate, up to 26 cm. long and 7 cm. wide or more, acuminate, subfalcate, narrowed at base and decurrent on the petiole, glabrous, undulate or shallowly dentate, puncticulate above, the costa and lateral veins (11 or 12 pairs) prominent beneath, the cystoliths on both surfaces numerous, about 0.5 mm. long; inflorescence a sparingly branched terminal panicle up to 16 cm. long, and 3 to 4 cm. broad, the fascicles usually several-flowered, sessile, subsecund, the bracts subtending them triangular-ovate, subconnate, 10 to 12 mm. long, about 6 mm. wide at base, the bracts subtending the flowers ovate, up to 16 cm. long and about 9 mm. wide, obtusish, glabrous, ciliolate; bractlets oblanceolate, 15 mm. long, about 4 mm. wide, sparingly puberulent without, ciliolate, both bracts and bractlets firm, green or yellowish toward tip; calyx 2 cm. long, the segments oblanceolate, 4 to 6 mm. wide, acutish, glabrous proximally, puberulous distally, ciliolate, yellow; corolla ochre, 4 to 5 cm. long, about 5 mm. broad immediately above the ovary, about 10 mm. in diameter at throat, rather densely pubescent distally with yellowish retrorsely curved hairs, the lower portion glabrous, the lobes oblong, about 6 mm. long and 4 mm. wide, emarginate; stamens exserted 7 to 8 mm. beyond mouth of corolla, the filaments tomentose at and above the insertion, thence sparingly pilose (the hairs up to 1.5 mm. long), but distally glabrous, the anthers 6 mm. long, 2.5 mm. broad, the sacs pubescent, the basal lobes ending in subulate spreading spurs about 1 mm. long; staminodes 15 mm. long, sparingly pilose; ovary and style glabrous; capsule not seen.

Usually found in gardens but sometimes growing wild along streams, possibly as an escape. Chiapas, Guatemala, El Salvador, Colombia.

PUTUMAYO: Banks of the Río Guamués between its mouth and San Antonio, *Cuatrecasas* 11231 (US).

Tribe 2. HYGROPHILEAE Nees

Hygrophileae Nees in Wall. Pl. Asiat. Rar. 3: 75. 1832.

Herbs or shrubs; flowers mostly crowded in the axils of the leaves; bracts usually small; calyx 4- or 5-parted; corolla ringent, 2-lipped, the upper lip 2-lobed or rarely entire, the lower one 3-lobed; stamens 4, didynamous, one stamen of each pair sometimes rudimentary, in some species 2 stamens only; anthers 2-celled, the cells parallel or

the basal lobes slightly divergent, these muticous or calcarate; pollen of the "Rippenpollen" type, the grains provided with pores, these on or between the ribs; capsules cylindric, usually seed-bearing to the base.

In this tribe, consisting of about six genera, *Hygrophila* is the only genus represented in the Western Hemisphere.

9. HYGROPHILA R. Br.

Hygrophila R. Br. Prodr. Fl. Nov. Holl. 479. 1810. The name comes from ὑγρός, wet, and φίλος, loving. Type species: *Hygrophila angustifolia* R. Br.

Herbs; flowers borne in axillary fascicles; bracts linear; calyx segments 5, subequal; corolla tube cylindric, slightly ampliate, the limb 2-lipped; stamens 4, didynamous, or 2 perfect stamens with 2 staminodes, the filaments of each pair united at base by a membrane; anthers 2-celled, muticous or mucronulate; posterior stigma lobe abortive; capsule oblong, nonstipitate; seeds 4 to 18, or more.

The genus *Hygrophila* is cosmopolitan. Of the numerous species described, only about 80 are now considered as valid.

1. Hygrophila guianensis Nees FIGURE 21

Hygrophila guianensis Nees, Lond. Journ. Bot. 4: 634. 1845. Type collected in British Guiana by Schomburgk, second collection, 331 (291).

Hygrophila conferta Nees in Mart. Fl. Bras. 9: 21. 1847. Two cotypes are cited, one collected "Ad flumen Rio dos Indios grande," Brazil, by Pohl, the other "prope Fazenda da Piedade" São Paulo, Brazil, by Sellow. The specific name *conferta* (dense, compact) probably alludes to the densely set flowers and capsules.

Herbs up to 50 cm. high, sparingly hirtellous to glabrate; stems obtusely quadrangular, branching; leaf blades lanceolate, 5 to 15 cm. long, 0.5 to 4 cm. wide, acuminate at both ends, entire; flowers sessile, clustered in the axils; calyx segments 5, lanceolate, about 5 mm. long, white-margined, pilose; corolla white, purplish, or yellow (*García-Barriga* 11524), puberulent, the tube 5 mm. long, the upper lip bidentate, 2.5 mm. long, the lower lip 3-lobed; stamens 4, didynamous, the filaments of each pair united at base; capsules narrowly oblong, 1.2 to 1.4 cm. long, glabrous, 16- to 18-seeded.

Marshy regions along streams or on shores of ponds or lakes occurring between sea level and 1,560 meters altitude. Mexico to central Argentina.

ANTIOQUIA: Barbosa, *Alfaro-P.* 27 (US). Medellín, *Archer* 460 (US); 899 (US); *Mesa* 82 (US). Porcesito, *Bro. Daniel* 897 (US).

CALDAS: Roadside west of Armenia, *Killip & Hazen* 8637 (GH). Santa Elena above Santuario, *Pennell* 10593 (GH, NY). Tabeja, west of Armenia, *Pennell, Killip, & Hazen* 8630 (US).

CHOCÓ: On the Río San Juan between Istmina and Condoto, *García-Barriga* 11524 (Col).

CUNDINAMARCA: La Mesa, *Triana* s. n. (Col). Road to Pacho, on the Río Murca, La Palma, *García-Barriga* 12390 (US). La Vega, *Pérez-Arbeláez & Cuatrecasas* 5369 (US). Albán, San José, *Pérez-Arbeláez* 2380 (US).

CAUCA: El Tambo, *von Sneidern* 311 (S). Bank of Río Palacé, north of Popayán, *Pennell & Killip* 8270 (GH). Río Micay, vicinity of Noanamito, *Cuatrecasas* 14236 (US).

FIGURE 21.—*Hygrophila guianensis* Nees (*a*, *b*, *Archer* 899; *c*, *Mesa* 82): *a*, Tip of stem showing leaves and inflorescence; *b*, flower and calyx; *c*, capsule and calyx. (*a*, Natural size; *b*, *c*, twice natural size.)

EL VALLE: Waste land near Buenaventura, *Killip* 5294 (GH, NY, US). Hacienda El Trejo, north of Palmira, *García-Barriga* 6327 (US). Quebrada Neuva to Cuchilla, east of Zarzál, Cauca Valley, *Pennell, Killip, & Hazen* 8493 (GH, NY). Along the Río Engaña, in the Río Digua Valley, *Killip* 34839 (US). Río de San Juan below Queremal, *Cuatrecasas* 23866 (US).

MAGDALENA: Pueblo Bello, *Bro. Apolinar Angel* 704 (US). Santa Marta, *H. H. Smith* 89 (GH, Ph, NY, US).

META: Near Río Guatiquía, vicinity of Villavicencio, *Pennell* 1551 (GH, NY).

PUTUMAYO: Bank of the Río Putumayo between Guamués and Puerto Asís, *Cuatrecasas* 11241 (US).

TOLIMA: Espinal to Cuamo, *Pennell & Rusby* 199a (NY). La Trinidad, Líbano, *Pennell* 3218 (NY).

WITHOUT DEFINITE LOCALITY: *Triana* (Col, NY).

Nees cites a specimen of his *Hygrophila rivularis* (in DC. Prodr. **11:** 87. 1847) collected from a river bank in Colombia (collector not given, Hooker Herbarium). *Hygrophila rivularis* is a Mexican species closely resembling and probably synonymous with *H. guianensis.* The Hooker Herbarium specimen might well be *H. guianensis.*

Tribe 3. PETALIDIEAE Lindau

Petalidieae Lindau in Bot. Jahrb. Engler 18: 45. 1893. In all, six genera belong to this tribe. Of these, *Blechum* only is native to America, the others occurring in the Old World. The tribe is based on *Petalidium,* a genus consisting of about a dozen species found mainly in tropical Africa.

Herbs or shrubs; calyx 4- or 5-lobed; bracts or calyx segments large, conspicuous; corolla regularly 5-lobed; stamens 4, fused in pairs at base of filaments and decurrent; staminodes none; anther lobes rounded or acute at base; capsules compressed, the partitions of the lobes parallel; seeds usually 2 in each section.

Spikes quadrifarious; calyx segments subequal, linear-subulate_ 10. **Blechum**
Spikes secund; calyx segments unequal, one ovate, nervose, the others linear. 11. **Phaylopsis**

10. BLECHUM P. Br.

Blechum P. Br. Civ. Nat. Hist. Jam. 261. 1756; Juss. Ann. Mus. Paris 9: 269. 1807. *Blechum* is a Greek name, more correctly applied to wild pennyroyal (*Mentha pulegium* L.) Type species *Ruellia blechum* L.

Perennial herbs; leaves petioled, crenate, repand-dentate, or entire; flowers borne in dense terminal spikes, the bracts imbricate; calyx 5-parted, the slightly unequal segments linear-subulate; corolla white or purplish, the tube slender, the limb nearly equally 5-lobed; stamens 4, didynamous, the anther sacs parallel; ovules few in each cavity; capsules broadly oblong with a short narrow base.

Although many species have been described from both the Eastern and Western Hemispheres, the genus *Blechum* actually consists of only about six tenable entities, these all native to tropical America. A close relationship exists between *Blechum* and *Ruellia,* but *Blechum* can be recognized readily by its dense 4-sided spikes and very small flowers. In the few cases where confusion might arise, the conclusive test can be made by an examination of mature capsules. In those of *Blechum* the disseptiment breaks away from the capsule wall as in *Dicliptera,* but in *Ruellia* it remains intact.

Corollas 1.5 cm. long; bracts puberulous and pilose__ 1. *B. brownei* f. *puberulum*
Corollas 2.5 cm. long; bracts pilose_____ 2. *B. haughtii*

1. Blechum brownei Juss. f. **puberulum** Leonard FIGURE 22

Blechum brownei Juss. f. *puberulum* Leonard, Journ. Washington Acad. Sci. **32:** 184. 1942. Type collected on dry roadbed along bank of Jean Rabel River, vicinity of Jean Rabel, Haiti, January 30, 1929, by E. C. and G. M. Leonard No. 12696. Type in the U. S. National Herbarium, No. 1451437.

Herbs; stems erect or ascending, 20 to 70 cm. high, the branches slender, more or less puberulous; leaves ovate, 2 to 7 cm. long, 1 to 5 cm. wide, acute or obtuse at apex, obtuse to acute at base, glabrous to sparingly pilose, thin, the cystoliths rather conspicuous; spikes dense, 4-sided, 3 to 6 cm. long; bracts ovate, pinnately veined, 1 to 2.5 cm. long, about 1 cm. wide, acutish at apex, rounded at base, loosely strigose and ciliate, and, in addition to the coarser hairs, more or less softly and densely puberulous, the hairs minute, curved, and white; corolla white or purplish, a little longer than the subtending bracts; capsules broadly oblong, about 6 mm. long, puberulous, 16-seeded; seeds flat, brown, about 1.5 mm. in diameter, apparently glabrous when dry, if moistened the edge bearing a densely set gelatinous band of minute straight white hairs.

FIGURE 22.—*Blechum brownei* Juss. forma *puberulum* Leonard (*a*, *d*, *Archer* 88; *b*, *c*, *Archer* 1417): *a*, Tip of branch showing inflorescence and leaves; *b*, corolla; *c*, a pair of stamens; *d*, capsule and calyx. (*a*, Natural size; *b*, *d*, twice natural size; *c*, about three times natural size.)

Many of the synonyms usually placed under *Blechum brownei* Juss., could the type be examined, would probably fall, at least in part, under this form. Although widely distributed and in many places a common plant, the lack or presence of the puberulous bracts, characterizing the form *puberulum*, is rarely mentioned in the numerous published descriptions.

Open waste or cultivated places in either dry or moist situations. Eastern and southern Mexico, throughout Central America, Panama,

northern South America, and the West Indies. Also in Guam, Formosa, and the Philippine and Caroline Islands.

ANTIOQUIA: Botero, Cauca Valley, *Pennell* 10974 (Ph). Medellín, *Archer* 14 (US); 88 (US). Granja de las Mercedes, Venecia, *Gutiérrez-V. & Barkley* 17C 523 (US). Puerto Berrío, *Archer* 1417 (US); *Pennell* 3752 (NY, US). Between Río Guapá and León, *Landa, Rivera, & Barkley* 18C 316 (US). Valparaíso, *Pennell* 10798 (Ph, NY, US).

ATLÁNTICO: Hacienda Riodulce, Los Pendales, *Dugand & Jaramillo* 4164 (US). Piojó, vicinity of Barranquilla, *Bro. Elias* 676 (US). Hacienda Cachubana, Usiacurí, *Dugand & García-Barriga* 2384 (US).

BOLÍVAR: Cartagena, *Bro. Hilarino Angel* 97 (US). Sincé, *Pennell* 4030 (NY).

CAUCA: Río Timbío, *von Sneidern* 2650 (S). Río Timbiquí, *Lehmann* 654 (NY).

CHOCÓ: Without definite locality, *Triana* s. n. (Col).

CUNDINAMARCA: La Esperanza, *García-Barriga* 4702 (US). Mesa, *Triana* s. n. (US).

EL VALLE: Buenaventura, *Killip* 5290 (Ph, NY, US). Cisneros, *Killip* 11451 (GH). Cliffs of Río Dagua, Córdoba, *Killip* 5078 (US). Córdoba, *Killip & García* 33400 (US). Between Gordona and Puerto Cabuyo, *Cuatrecasas* 14510 (US). Margarita, Río Digua Valley, *Killip* 34890 (US). La Trojita, on Río Calima, *Cuatrecasas* 16334 (US). Plantations of El Abismo, Pichindé, *Cuatrecasas* 18656 (US). Between Río Agua Bonito and Río Vieja, east of Zarzal, *Pennell, Killip, & Hazen* 8572 (Ph, NY, US).

HUILA: Natagaima, *Rusby & Pennell* 1178 (NY).

MAGDALENA: Mamacasaca, vicinity of Santa Marta, *H. H. Smith* 81 (NY). Mamatoca, vicinity of Santa Marta, *H. H. Smith* 2114 (NY, US). Masinga Viejo, vicinity of Santa Marta, *H. H. Smith* 1409 (Ph, NY, S). Papare, vicinity of Santa Marta, *H. H. Smith* 81 (Ph, NY). Playa Barba, vicinity of Santa Marta, *H. H. Smith* 81 (NY, US). Poponte, Magdalena Valley, *Cyril Allen* 841 (Mo).

META: Orocué on Río Meta, *Cuatrecasas* 4422 (US).

SANTANDER: Puerto Wilches, *Killip & Smith* 14767 (NY).

WITHOUT DEFINITE LOCALITY: *Triana* s. n. (NY).

2. Blechum haughtii Leonard, sp. nov. FIGURE 23

Herba, caulibus subquadrangularibus, glabris vel hirellis, interdum bifarium hirtellis; lamina foliorum ovato-lanceolata, apice acuta vel acuminata, basi angustata, in petiolum decurrens, tenuis, leviter serrata, supra pilosa, subtus parce hirtella; petioli tenues, hirtelli; spicae breves, terminales; bracteae dense imbricatae, ovatae, apice acutae, pilosae et ciliatae, leviter serratae; bracteolae lanceolatae, subintegrae, ciliatae; calycis segmenta lanceolata, acuminata, ciliata; corolla purpurea, hypocrateriformis, minute pubescens; capsulae ovoideae, puberulae.

Herbs up to 30 cm. high or more; stems subquadrangular (the angles rounded), glabrous, hirtellous, the hairs sometimes arranged in two lines; leaf blades lanceolate, up to 8 cm. long and 2.5 cm. wide, acute or acuminate (the tip itself sometimes blunt), narrowed at base and decurrent on the petiole, thin, shallowly serrate, the upper surface moderately pilose, the hairs 1.5 mm. long, curved, the lower surface sparingly hirtellous, the hairs up to 0.75 mm. long, the costa and

lateral veins rather inconspicuous; petioles 1 to 1.5 cm. long, hirtellous; spikes terminal, about 2 cm. long and broad; bracts imbricate, ovate, 17 mm. long, 11 mm. wide (or the uppermost somewhat smaller), acuminate or acute at apex, pilose and ciliate; bractlets lanceolate, 10 mm. long, 3 mm. wide at middle, acute, entire or nearly so, ciliate; corolla purple, hypocrateriform, finely pubescent, 2.5 cm. long, the cylindrical basal portion of the tube 1.5 mm. broad, the throat 6 mm. broad, the limb about 12 mm. broad, the lobes ovate, rounded, about 6 mm. long and broad; stamens included; capsule ovoid, puberulous.

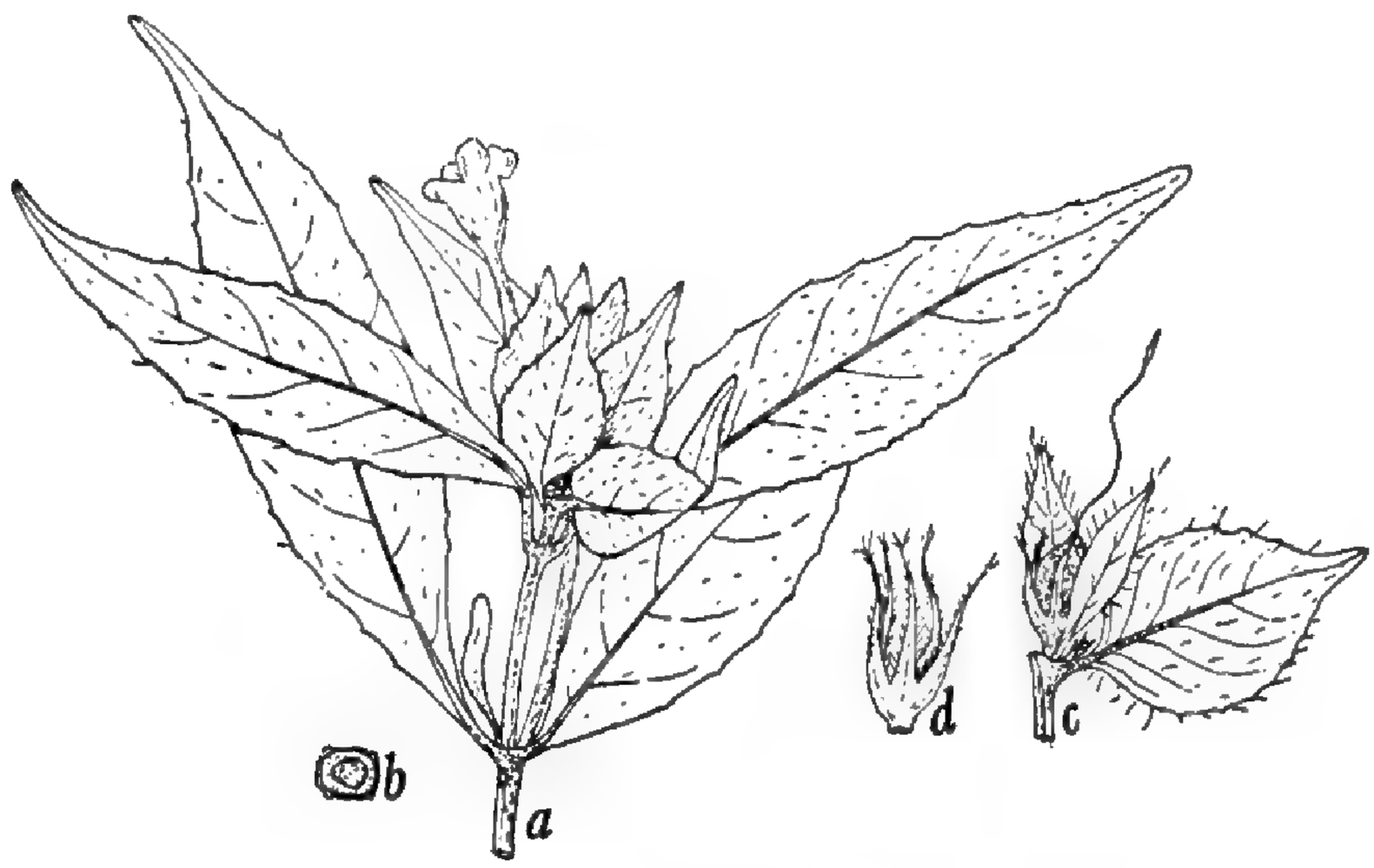

FIGURE 23.—*Blechum haughtii* Leonard (*Haught* 4976): *a*, Tip of branch showing inflorescence; *b*, cross section of stem; *c*, portion of inflorescence showing bract, bractlets, calyx, and ovary; *d*, calyx. (*a*, Half natural size; *b*, *c*, natural size; *d*, twice natural size.)

Type in the U. S. National Herbarium, No. 1950441, collected from wet soil on a ridge just east of Quebrada de los Indios, east of Turbo, Department of Antioquia, about 200 meters altitude, July 15, 1946, by Oscar Haught (No. 4976).

Blechum haughtii can be separated easily from *B. brownei* f. *puberulum* Leonard by its pilose leaf blades and bracts and large corollas (2.5 cm. long instead of 1.5 cm.). Its closest relative is *B. costaricense* Oerst., of Costa Rica and Panama. From this it can be distinguished by its relatively narrower leaf blades, their margins plainly serrate instead of entire, and by the more slenderly acuminate bracts. The leaf blades (or at least some of them) of *B. costaricense* are as much as 12 cm. long and 4 cm. wide.

DOUBTFUL SPECIES

BLECHUM ANGUSTIUS Nees

Blechum angustius Nees in DC. Prodr. 11: 467. 1847. Type collected at Cartagena, Bolívar, Colombia, January to February 1826, by Billberg, No. 1, deposited in the Berlin Herbarium.

A careful examination of isotype material of Billberg's No. 1, from the Stockholm Herbarium, discloses several traits; the seeds are strongly muricate, the corollas have 2 stamens and are bilabiate, and

the bark has a tendency to separate in thin strips from the stem. These characters indicate that Billberg's specimens should be classed in the genus *Tetramerium*.

11. PHAYLOPSIS Willd.

Phaylopsis Willd. Sp. Pl. **3**: 342. 1801. The derivation of *Phaylopsis* is somewhat obscure, but the name may possibly come from φαῦλος, mean, common, and ὄψις, appearance. Type species: *Phaylopsis parviflora* Willd. Type locality: India.

Perennial branching herbs; leaves petioled, opposite, ovate, entire or crenate; spikes terminal, dense, the flowers secund; bracts orbicular, closely imbricate, usually subtending 3 flowers; bractlets none; sepals 5, the posterior one ovate, veiny, the others linear-subulate; corollas small, the tube slender, cylindric, the 5 lobes rounded, subequal; stamens 4, didynamous, the anthers 2-celled, the cells parallel, the base of the lobes minutely mucronate; style and stigma linear; capsules clavate, compressed, 4-seeded, the placentae dehiscing from the base of the capsule; seeds discoid, white-pilose when moistened.

The ten or more species comprising the genus are found chiefly in Africa, Asia, and India.

1. Phaylopsis parviflora Willd. FIGURE 24

Phaylopsis parviflora Willd. Sp. Pl. **3**: 342. 1800. Type locality: India.

Prostrate or ascending much-branched herbs up to 40 cm. high; branches quadrangular or terete toward base, more or less puberulous, the hairs up to 175 μ long, retrorsely curved, confined chiefly to the angles, the smaller branches pilose, the hairs more or less spreading, white, some of them as much as 3 mm. long; leaf blades ovate, up to 9 cm. long and 4 cm. wide, short-acuminate (the tip itself rounded or obtuse), narrowed at base and decurrent on the petiole, thin, undulate, sparingly pubescent on both surfaces, the costa and lateral veins (5 or 6 pairs) very slightly prominent; petioles up to 2.5 cm. long, the pubescence like that of the stems; leaves of the lateral branches much smaller than the main stem leaves, usually not exceeding 3 cm. in length or 2 cm. in width, their petioles often long-pilose; spikes numerous, terminal and lateral, compact, up to 4 cm. long and 1.5 cm. broad, the flowers and bracts crowded and more or less secund; peduncles 4 or 5 mm. long, these and the rachis densely pilose, the hairs white and spreading, up to 3 mm. long, some of the shorter ones glandular; bracts suborbicular, up to 8 mm. long and 10.5 mm. wide, rounded or obtuse at tip, truncate at base and short-petioled, thin, reticulate-veined, glabrous or sparingly pilose, the margins ciliate, some of the hairs as much as 3 mm. long, the shorter hairs occasionally glandular; posterior segment of the calyx ovate, 8 mm. long, 4.5 mm. wide, obtuse

at apex, narrowed at base, thin, veiny, glabrous or sparingly pilose, the margins long-ciliate, the hairs spreading, up to 3 mm. long, the anterior segments lance-subulate, 7 mm. long, 0.75 mm. wide near base, the lateral pair similar but slightly shorter, all pilose, the pubescence a mixture of short hairs about 0.5 mm. long and longer ones as much as 2 mm. long, some of them gland-tipped; corollas whitish, about 7 mm. long, the tube slender, about 1 mm. broad at base and throat, the middle part about 0.5 mm. broad, the upper lip 2-lobed, the lobes oval, rounded, 1 mm. long and broad, the lower lip 3-lobed, the lobes slightly smaller than those of the upper lip; stamens about 2 mm. long, the filaments slender, the anthers 0.5 mm. long; capsule clavate, 5.5 mm. long, 2.5 mm. wide, 2 mm. from tip, 0.75 mm. thick, pointed, narrowed to a short stipitate base, glabrous except the tip, this sparingly puberulous, the sides of the valves scarious; seeds flat, suborbicular, 1.5 mm. long and 1.25 mm. broad, densely white-pilose when moistened, the hairs 0.5 mm. long.

FIGURE 24.—*Phaylopsis parviflora* Willd. (*Bro. Apollinaire* "F"): *a*, Branch, showing inflorescence and leaves; *b*, calyx; *c*, corolla; *d*, capsule; *e*, capsule dehisced. (*a*, Natural size; *b*, *d*, *e*, twice natural size; *c*, 2½ times natural size.)

Thickets in pastures. India, Madagascar, and tropical Africa. The specimens cited here constitute our first record of the plant occurring in America.

META: Restrepo, *García-Barriga* 5181 (US). Villavicencio, *Bro. Appollinaire* (US).

Tribe 4. RUELLIEAE Nees

Ruellieae Nees in Wall. Pl. Asiat. Rar. **3**: 75. 1832.

Herbs or shrubs; inflorescence various, the flowers axillary, sessile or in cymes, often forming panicles, sometimes spicate and subtended by leaflike bracts or spicate above and axillary below; corolla mauve,

purple, white, red, or rarely greenish, sometimes rudimentary (the flower cleistogamous), the limb regular or sublabiate, the tube more or less elongate, the upper expanded portion more or less ventricose, the lobes rounded, sometimes emarginate; stamens 4, didynamous; anthers 2-celled, the cells equal or nearly so, the basal lobes usually muticous; capsules clavate to subcylindrical, more or less flattened, 2- to many-seeded, the lower portion narrowed and sterile; seeds discoid, usually brown, often apparently glabrous when dry but variously musilaginous-pubescent when moistened.

The tribe consists of about 15 genera. Only one of these is represented in Colombia.

12. RUELLIA Plum. ex L.

Ruellia Plum. ex L. Sp. Pl. 634. 1753; Gen. Pl. ed. 5. 238. 1754. Named in honor of I. De la Ruelle, a French herbalist. Type species: *R. tuberosa* L.

Dipteracanthus Wall. Pl. Asiat. Rar. 3: 75. 1832. Usually herbs, the flowers axillary, solitary or produced in fascicles, sessile or short-peduncled, the uppermost flowers forming a raceme, the bracts often large and leaflike, the bractlets none or few and inconspicuous, the stamens included. The name is derived from δίπτερος, 2-winged, and ἄκανθος, referring to the genus *Acanthus*. Type species: *D. ciliatus* Nees. Type locality: Prome, Burma.

Aphragmia Lindl. Nat. Syst. ed. 2. 444. 1836. Meaning obscure. Type species: *A. haenkei* Lindl. Type locality: Mexico.

Cryphiacanthus Nees in Del. Sem. Hort. Verat. 1841. Derivation: κρύφιος, hidden, and ἄκανθος, the genus *Acanthus*. Type species: *C. barbadensis* Nees. Type locality: Barbados.

Scorodoxylum Nees in Benth. Pl. Hartw. 236. 1846. Meaning of name obscure. Type species: *S. hartwegianum*. Type locality: Mexico.

Stemonacanthus Nees in Mart. Fl. Bras. **9:** 53. 1847. Derivation: στήμων, stamen, and ἄκανθος, the genus *Acanthus*. Type species: *S. salviaefolius* Nees. Type locality: Brazil.

Arrhostoxylum Nees in Mart. Fl. Bras. **9:** 57. 1847. The group consists of more or less suffrutescent herbs with quadrangular stems, repand or crenate leaf blades, and conspicuous flowers borne in thyrsi terminating slender dichotomously branched peduncles (the peduncle sometimes simple, terminated by a head), the bracts deciduous, the corollas narrowly infundibular, the stamens exserted. Derivation: ἄρρωστος, weak, and ξύλον, wood or stems. Type species: *A. laxum* Nees. Type locality: Brazil.

Perennial herbs or shrubs; leaves petioled, entire, undulate, or rarely dentate; flowers usually large and showy, solitary or clustered in the axils or borne on terminal cymose panicles; calyx usually 5-parted, the segments often narrow; corolla red, yellow, white, or purple (usually mauve), funnelform or salverform, sometimes saccate, the tube usually narrow below, the upper portion more or less campanulate, the limb of 5 obtuse spreading lobes; stamens 4, didynamous, the anther sacs blunt at base; stigma lobes unequal; capsules oblong or clavate.

KEY TO THE SPECIES

A. Inflorescence paniculate, the flowers borne on simple or dichotomously branched peduncles.
  Flowers borne in headlike clusters, these terminating the peduncles. 1. *R. fulgida* var. *angustissima*
  Flowers borne on dichotomously branched peduncles.
    Corollas white.
      Peduncles flattened, pilose, once dichotomous ---------- 2. *R. tolimensis*
      Peduncles subterete, essentially glabrous, 2 to 3 times dichotomous. 3. *R. potamophila*
    Corollas red, pink, purple, or mauve.
      Calyx more or less glandular-pubescent.
        Corollas large, the limb 4 cm. broad ---------- 4. *R. malacosperma*
        Corollas small, the limb 1 to 1.5 cm. broad.
          Peduncles slender, 12 cm. long or more, glabrous ------ 5. *R. chariessa*
          Peduncles short, 3 cm. long or less, more or less pubescent.
            Capsules cylindric ---------- 6. *R. paniculata*
            Capsules clavate ---------- 7. *R. inundata*
      Calyx glabrous or, if pubescent, the hairs eglandular.
        Corollas mauve, the limb about 4 cm. broad ---------- 8. *R. tuberosa*
        Corollas red, the limb about 3 cm. broad or less.
          Calyx segments thin, obtusish, shorter than the calyx tube.
            Stems, peduncles, pedicels, and the under surface of the leaf blades glabrous or sparingly puberulous ---------- 9. *R. macrophylla*
            Stems (at least the upper portions), peduncles, pedicels, and the under surface of the leaf blades densely and softly puberulous. 9a. *R. macrophylla* var. *puberula*
          Calyx segments firm, linear or subulate, gradually narrowed from base to a slender tip, longer than the calyx tube.
            Plants grayish puberulous ---------- 10. *R. grisea*
            Plants not uniformly grayish puberulous.
              Lower surface of the leaf blades densely pubescent. 11. *R. ischnopoda*
              Lower surface of the leaf blades essentially glabrous.
                Calyx segments 3 mm. long ---------- 12. *R. caucensis*
                Calyx segments 8 mm. long ---------- 13. *R. rusbyi*
A. Inflorescence spicate, axillary, or if paniculate, not borne on slender peduncles.
  B. Rachis short, thick, conelike after the falling of the bracts and flowers; various parts of the plants bearing small resinous scales.
    Flowers borne in panicles.
      Corollas yellow, the stamens exserted about 2 cm. beyond the mouth of the corolla tube, the filaments strongly curved; corolla lobes about 1 cm. long ---------- 14. *R. longiflamentosa*
      Corollas red, the stamens exserted about 1 cm. beyond the mouth of the corolla tube, the filaments straight or slightly curved; corolla lobes usually 2 to 3 cm. long ---------- 15. *R. humboldtiana*
    Flowers borne in a terminal spike subtended by numerous large leafy bracts.
      Corollas large, 4 to 8 cm. long.
        Plants strongly hirsute ---------- 16d. *R. tubiflora* var. *hirsuta*
        Plants glabrous or more or less puberulous.
          Corollas white with purple throat. 16b. *R. tubiflora* var. *tetrastichantha* f. *bicolor*

Corollas uniform in color.
Corollas pure white----------16a. *R. tubiflora* var. *tetrastichantha*
Corollas not white.
Endemic in Costa Rica; corollas yellow.
16c. *R. tubiflora* var. *tetrastichantha* f. *flava*
Species of Panama and Colombia; corollas crimson, lilac, or red.
16. *R. tubiflora*
Corollas small, 4 cm. long or less.
Corollas pale violet----------16e. *R. tubiflora* var. *parviflora*
Corollas white----------16f. *R. tubiflora* var. *parviflora* f. *alba*
B. Rachis various or lacking, not short, thickish and conelike.
Pubescence of the inflorescence or at least that of the calyx lobes consisting in part of glandular hairs.
Plants glandular-puberulous---------- 17. *R. lorentziana*
Plants glabrous or sparingly pilose, only the calyx bearing scattered minute glandular hairs---------- 4. *R. malacosperma*
Pubescence eglandular.
C. Stems glabrous, puberulous, or pilosulous.
Corollas mauve.
Capsules clavate, puberulous; flowers axillary.
Leaf blades oblong to lanceolate; corollas 2.5 to 3 cm. long.
18. *R. geminiflora*
Leaf blades narrowly lanceolate; corollas 4 to 5 cm long.
18a. *R. geminiflora* var. *angustifolia*
Capsules cylindric, glabrous or the calluses bearing a few hairs; inflorescence verticillastrate, forming a naked interrupted spike.
19. *R. obtusa*
Corollas red, white, greenish, or pink.
Bracts bright red---------- 20. *R. colorata*
Bracts green.
Plants 4 to 5 meters high; leaf blades large (up to 30 cm. long and 17 cm. wide); corolla pale green----------21. *R. viridiflora*
Plants one meter high or less; leaf blades smaller (16 cm. long and 6 cm. wide or less); corolla blue, white, violet, or pink.
Leaf blades oblong-lanceolate, narrowed at base-- 22 *R. pennellii*
Leaf blades ovate, rounded or obtuse at base--- 23. *R. colombiana*
C. Stems or at least the uppermost portions densely pilose.
Flowers borne in terminal spikes, the bracts imbricate.
Spikes 3 cm. long or less; calyx 8 mm. long; leaf blades 8 cm. long and 3.5 cm. wide or less---------- 24. *R. aquatica*
Spikes as much as 12 cm. long; calyx 4.5 mm. long; leaf blades up to 16 cm. long and 8.5 cm. wide---------- 25. *R. lasiostachya*
Flowers borne in axillary bracted clusters.
Leaf blades oblong, elliptic, 12 cm. long or less--- 26. *R. putumayensis*
Leaf blades oblong-lanceolate, up to 24 cm. long-------- 27. *R. uribei*

1. **Ruellia fulgida** Andr. var. **angustissima** (Hochr.) Leonard, comb. nov.
Arrhostoxylum fulgidum Nees var. *angustissimum* Hochr. Bull. N. Y. Bot. Gard. **6**: 287. 1910. Type collected at La Paila, El Valle, Colombia, April 1853, by Holton, No. 599, deposited in the herbarium of the New York Botanical Garden. Isotype in the herbarium of the Royal Botanic Gardens, Kew.

Herbaceous or suffrutescent plants; stems quadrangular, sulcate, pubescent or glabrate, the hairs minute and curved; leaf blades lanceolate, sometimes falcate, usually 5 to 9 cm. long, 2 to 3 cm. wide, slenderly acuminate (the tip itself blunt), narrowed at base and decurrent on the petiole, both surfaces glabrous or sparingly pilose or the upper surface of the young leaves rather densely pubescent, the hairs straight or curved, the cystoliths prominent where not obscured by hairs; petioles usually 0.5 to 1 cm. long, glabrous or more or less plubescent; flowers sessile or subsessile, borne in heads at the tips of slender curved quadrangular axillary peduncles up to 11 cm. long, these glabrous or sparingly pilose, the cystoliths prominent; flowers several to a dozen or more in each head; bracts subtending the heads leaflike, up to 3 cm. long and 8 mm. wide; bractlets triangular to oblanceolate, 2 to 4 mm. long, about 1 mm. wide, glabrous or pubescent; calyx 4 to 8 mm. long, puberulous, some of the hairs glandular, the segments linear, 0.5 to 0.75 mm. wide; corolla red, glabrous or puberulous toward base, the tube funnelform, curved, 1.5 mm. broad at base, 5 to 7 mm. broad at mouth, the lobes ovate, 7 to 10 mm. long, 3 to 5 mm. wide, rounded at tip; stamens exserted to about 5 mm. beyond the mouth of the tube, the anthers oblong, 2 mm. long, 0.5 mm. wide; capsules 12 or 13 mm. long, 3 mm. broad, 8-seeded, puberulous, pointed at tip, the solid stipitate base about 4 mm. long and 1 mm. broad; retinacula slender, curved, about 2 mm. long; seed (immature) flat, orbicular, 1.5 mm. in diameter.

A sheet of Lehmann's No. 4739 in the Berlin Herbarium (photo in U. S. National Herbarium) bears in Lindau's handwriting an apparently unpublished name.

The variety *angustissima* differs from the typical form *R. fulgida* chiefly in the narrowness of the leaf blades and the shortness of the petioles. As Hochreutiner points out in his original description, the leaves of the typical form are 7.5 to 12 cm. long and 1.7 to 2.5 cm. wide and the petioles 2 to 8 cm. long. The height of the plant can scarcely be ascertained from the herbarium material examined, but a portion of the original label shown by the photo of the Berlin Herbarium sheet of Lehmann's No. 4739 bears the following legend: "Straucher dunnen, bei 1 m. hohen Stangel, Blat. . . ." The plants are probably erect when young, the stems ascending or even becoming procumbent with age.

Damp thickets or woods. Colombia, Venezuela, and Tobago.

CUNDINAMARCA: Vicinity of Bogotá, *Bro. Ariste-Joseph*, s. n. (US). Hacienda Paramillo, between Guaduas and Alto de Aguaclara, *García-Barriga* 12322 (US). Santandersito, *Silvano-J.* 178 (GH). Tenasuca, *Triana* s. n. (Col, NY, US).

ANTIOQUIA: Dabeiba, *Lehmann* 4739 (US).

EL VALLE: La Paila, *Holton* 599 (NY).

SANTANDER: San Gil, *Bro. Antonio-Miguel* 121 (GH).

WITHOUT LOCALITY: *Lehmann* 4739 (US).

2. Ruellia tolimensis Leonard, sp. nov. FIGURE 25

Herba vel suffrutex, caulibus quadrangularibus, leviter sulcatis, angulis anguste alatis, ciliatis; lamina foliorum oblongo-ovata, apice acuminata, basi angustata, in petiolum decurrens, glabra, costa et venis pilosis; pedunculi complanati, ciliati, dichotomo-ramosi; bracteae angustatae, oblongae, pilosae; pedicelli graciles glabri; calycis segmenta subulata, ciliata; corolla alba, glabra, leviter curvata, ventricosa, lobis ovatis vel ellipticis, rotundatis; capsulae clavatae, glabrae; semina ovata, marginibus madefactis puberulis; retinacula subulata, acute curvata.

FIGURE 25.—*Ruellia tolimensis* Leonard (*Cuatrecasas* 10529a): *a*, Leaf; *b*, portion of upper surface of leaf showing cystoliths; *c*, nodal region of stem and inflorescence; *d*, enlarged portion of peduncle to show flatness, wings, and pubescence; *e*, flower; *f*, stamen. (*a*, *c*, Half natural size; *b*, *f*, about twice natural size; *d*, 2½ times natural size; *e*, natural size.)

Plants herbaceous or suffrutescent; stems quadrangular, shallowly sulcate, the angles narrowly winged, the wings pilose, the hairs barely 1 mm. long, the cystoliths minute; leaf blades oblong-ovate, up to 17 cm. long and 7 cm. wide, rather slenderly acuminate, narrowed at base and decurrent on the petiole, thin, shallowly crenate, glabrous except the costa, lateral veins (10 pairs), and the margins, these pilose, the hairs about 0.5 mm. long, spreading or subappressed; petioles up to 3 cm. long, minutely pilose; flowers borne on axillary dichotomously branched peduncles, these up to 11 cm. long to the first fork, flattened, the edges pilose with white spreading hairs 0.5 mm. long, the secondary

peduncles 1.5 to 3 cm. long, flattened or obscurely quadrangular, the narrowly winged edges pilose with white spreading hairs 0.5 to 0.75 mm. long or when young the entire surface pilose; bracts narrowly oblong, narrowed at both ends, up to 14 mm. long and 4 mm. wide, but usually smaller, the margins pilose; pedicels slender, up to 14 mm. long, glabrous; calyx 8 to 10 mm. long, divided nearly to base, the segments subulate, 0.75 to 1 mm. wide at base, ciliate, the hairs about 0.25 mm. long; corolla 2.5 cm. long, white, glabrous, the lower portion of the tube slightly curved, about 2 mm. broad from base to 5 mm. above base, thence gradually enlarged to 7 mm. at throat, the enlarged portion slightly ventricose, the lobes ovate or elliptic, about 8 mm. long and 5 mm. wide, rounded, shallowly to rather deeply emarginate; stamens barely exserted; capsules clavate, glabrous, 1.5 cm. long, the solid stipitate base about 6 mm. long, the seed-bearing portion about 3 mm. broad, each capsule usually maturing 4 seeds, these ovate, flattened, about 3.5 mm. long and 2.5 mm. broad, the margins puberulous; retinacula slender, sharply curved or bent at an angle.

Type in the National Herbarium of Colombia, collected in pasture lands at Armero, in the Magdalena Valley, Department of Tolima, Colombia, 400 meters altitude, October 6, 1940, by J. Cuatrecasas (No. 10529a). Fragment of type in the U. S. National Herbarium, No. 1854310. The name alludes to the Department of Tolima, where the type was procured.

Ruellia tolimensis is closely related to *R. potamophila* but can be separated by the pilose peduncles, these once instead of 2 or 3 times branched, and by the more numerous veins of the leaf blades (10 pairs instead of 8).

3. Ruellia potamophila Leonard, sp. nov. FIGURE 26

Suffrutex, caulibus subquadrangularibus, glabris, nodis tumidis, perspicue cystolithigeris; lamina foliorum oblongo-ovata, apice acuminata, basi angustata, integra vel leviter crenata; pedunculi subteretes, dichotomo-ramosi, glabri, parce et minute pubescentes; bracteae infimae foliosae, supremae parvae, spathulatae vel lineares; pedicelli parce pubescentes vel glabrati; calycis segmenta subulata; corolla alba, glabra, hypocrateriformis, leviter ventricosa, lobis ovatis, rotundatis vel emarginatis; capsulae clavatae, glabrae, stipite gracili.

Suffrutescent herbs up to 2 meters high; stems subquadrangular, glabrous, the nodes swollen, the cystoliths numerous and conspicuous; leaf blades oblong-ovate, up to 18 cm. long and 6.5 cm. wide, acuminate, narrowed at base, glabrous, entire or shallowy crenate, the costa and lateral veins (8 pairs) rather prominent, the cystoliths prominent; petioles up to 2 cm. long; flowers borne in lax dichotomously branched cymes, the peduncles up to 8 cm. long, subterete, the primary branches 3 to 4 cm. long, the others relatively shorter, all terete and, like the

peduncles, glabrous or sparingly and minutely pubescent, the hairs spreading; lower bracts leaflike, deciduous in some plants, the uppermost bracts spathulate or linear, 5 to 10 mm. long; pedicels 2 to 10 mm. long, minutely and sparingly pubescent or glabrate; calyx 7 to 10 mm. long, glabrous, the segments subulate; corolla white, 28 mm. long, glabrous, the lower half slender, 2 mm. in diameter, the upper half funnelform, slightly ventricose, 8 mm. broad at mouth, the lobes ovate, 6 to 8 mm. long, 3 to 5 mm. wide, rounded or shallowly emarginate, the stamens included; capsules 2 cm. long, glabrous, the stipe slender, 8 to 9 mm. long, the seed-bearing portion oval, 5 mm. broad, 4-seeded, pointed.

FIGURE 26. *Ruellia potamophila* Leonard (*a–f*, *Killip* 34747; *g*, *Cuatrecasas* 15035): *a*, Nodal region and leaf showing under surface; *b*, cross section of stem; *c*, portion of leaf blade (upper surface), showing arrangement of cystoliths at juncture of costa and a vein; *d*, inflorescence; *e*, cross section of peduncle; *f*, calyx; *g*, corolla. (*a*, *d*, Half natural size; *b*, *c*, *f*, *g*, about natural size; *e*, about four times natural size.)

Type in the U. S. National Herbarium, No. 1771543, collected in dense forest along the Río Engaña, Río Digua Valley, Department of El Valle, Colombia, 675 meters altitude, April 2 to 4, 1939, by E. P. Killip (No. 34747). Also represented by:

CALDAS: Santa Cecilia, 800 meters altitude, *von Sneidern* 5075 (Ch).

EL VALLE: Woods at Piedra de Moler, on the left bank of the Río Digua, 900 to 1,180 meters, *Cuatrecasas* 15035 (US). Below Queremal, along the Río San Juan, 1,300 to 1,500 meters altitude, *Cuatrecasas* 23947 (US).

Ruellia potamophila is related in a general way to *R. macrophylla*, but it is distinguishable by its white flowers, subulate calyx segments, and narrowly winged ciliate peduncles. The name *potamophila* (ποταμός, river, and φιλέω, loving) alludes to the plant's predilection for growing on banks of streams and rivers. It is usually found in densely wooded regions.

4. **Ruellia malacosperma** Greenm.

Ruellia malacosperma Greenm. Proc. Amer. Acad. **34**: 572. 1899. Type collected at Tampico, Tamaulipas, Mexico, by Pringle, No. 6806.

Herbaceous plants up to 0.5 meters high; stems subquadrangular, glabrous or sparingly pilose, the cystoliths minute and numerous; leaf blades narrowly oblong, acute or obtusish at apex, narrowed at base and decurrent on the petiole, up to 13 cm. long and 3.8 cm. wide, rather firm, entire or undulate, both surfaces glabrous or the costa and basal margins bearing a few white spreading hairs 1.5 to 2 mm. long, the cystoliths numerous and conspicuous under a lens; petioles up to 2 cm. long, sparingly long-pilose; flowers borne on once to twice dichotomously branched peduncles, these up to 8 cm. long, their branches 4 to 2 cm. long, all subquadrangular and glabrous, bearing conspicuous cystoliths, the ultimate forks flower-bearing; bracts linear, about 1 cm. long and 1.5 mm. wide at base or the uppermost smaller, all glabrous; calyx 13 to 15 mm. long, divided nearly to the base, the segments subulate, 1.25 mm. wide at base, gradually narrowed to tip and bearing minute scattered hairs on or near the margins, some of the hairs gland-tipped; corolla 5.5 cm. long, minutely pubescent, mauve, the tube about 4 mm. broad at base, gradually narrowed to 2 mm. at 1 cm. above base, thence enlarged to 2 cm. at mouth, the throat funnelform and somewhat ventricose, the limb 4 cm. broad, the lobes oval, about 1.5 cm. long and broad; capsules narrowly clavate, 23 cm. long, 8- to 20-seeded, glabrous or the apical calluses puberulous, the solid basal portion about 6 mm. long and 2 mm. broad, the seed-bearing portion 6 mm. broad; seed suborbicular, about 3 mm. in diameter, silky with white appressed hairs when dry but mucilaginous-pilose when moistened; retinacula 2 mm. long, slightly curved.

The majority of the collections in the U. S. National Herbarium, including the type, are from cultivation. In fact, the distribution of the species in its wild state cannot be definitely established. It is, however, probably a native of Mexico. The specific name comes from μαλακός, soft, and σπέρμα, seed, in allusion to the silky appressed

pubescence of the dry seed or even possibly to the spreading velvety mucilaginous pubescence of the moistened seed.

The plant cited below was collected on roadside in a cultivated hacienda at 1,000 meters altitude, July 4, 1943.

CAUCA: Between Gordona and Puerto Cabuyo, *Cuatrecasas* 14530 (US).

5. **Ruellia chariessa** Leonard, sp. nov. FIGURE 27

Herba vel suffrutex, caulibus quadrangularibus, plus minusve pubescentibus, angulis rotundatis; laminae foliorum oblongo-elliptica, apice subacuta, basi angustata, in petiolum decurrens, integra vel leviter crenata, glabra vel in costa parce pubescentes; pedunculi graciles, plus minusve curvati, glabri, quadrangulares, dichotomo-ramosi, bracteae oblanceolatae, apice rotundatae, basi angustatae, glabrae; calyx glanduloso-puberulus, segmentis anguste lanceolatis; pedicelli complanati, parce glanduloso-puberulenti; corolla purpurea, hypocrateriformis, limbo glabro, tubo pubescente; stamina inclusa; capsulae graciles, clavatae, glanduloso-puberulentes; semina purpurea, plana; retinacula curvata, subulata.

Shrub or suffrutescent herb; stems quadrangular, more or less pubescent, the hairs weak, upwardly curved or appressed, the angles rounded; leaf blades oblong-elliptic, up to 20 cm. long and 7.3 cm. wide, acutish at tip, narrowed at base and decurrent on the petiole, entire or shallowly crenate, drying dull green, glabrous or the costa inconspicuously pubescent beneath, this and lateral veins (10 or 11 pairs) rather prominent, the cystoliths numerous and conspicuous under lens; petioles up to 1.5 cm. long, pubescent; flowers borne in 1 to 3 times dichotomously branched panicles terminating slender, more or less curved, glabrous quadrangular peduncles up to 16 cm. long, the secondary branches up to 3 cm. long, the others successively shorter, all slender, quadrangular, glabrous or the uppermost finely pubescent; bracts oblanceolate, rounded at apex, narrowed at base, unludate or entire, the lowermost pair 16 mm. long and 4 mm. wide, the others successively shorter; calyx 4 to 5 mm. long, moderately glandular-puberulous, the hairs about 0.25 mm. long, the segments narrowly lanceolate, gradually narrowed to a bluntish tip, the costa more or less prominent; pedicels flattened, up to 2.5 mm. long, sparingly glandular-puberulous; corolla purple, 2 cm. long, the lower half of the tube slender, cylindric, 1.5 mm. broad, finely and inconspicuously pubescent, the upper half funnelform, glabrous, 7 mm. broad at mouth, the limb about 1 cm. broad, the lobes rounded; stamens short, included; capsules slenderly clavate, about 13 mm. long, puberulous, some of the hairs gland-tipped, the slender sterile basal portion about 7 mm. long and 1 mm. broad at base, enlarging to 1.25

mm. at base of seed-bearing cavity, this flattened and about 3 mm. broad; seeds 4 to 8, purplish when mature, round, flat, 2 mm. in diameter, the margins gelatinous-puberulous when moistened; retinacula curved, subulate, 1.5 mm. long, the slender tip more or less erose.

Type in the U. S. National Herbarium, No. 1950440, collected in forest east of Turbo, Department of Antioquia, Colombia, 50 meters altitude or less, July 2, 1946, by Oscar Haught (No. 4929). An isotype is also in the U. S. National Herbarium, No. 1950439.

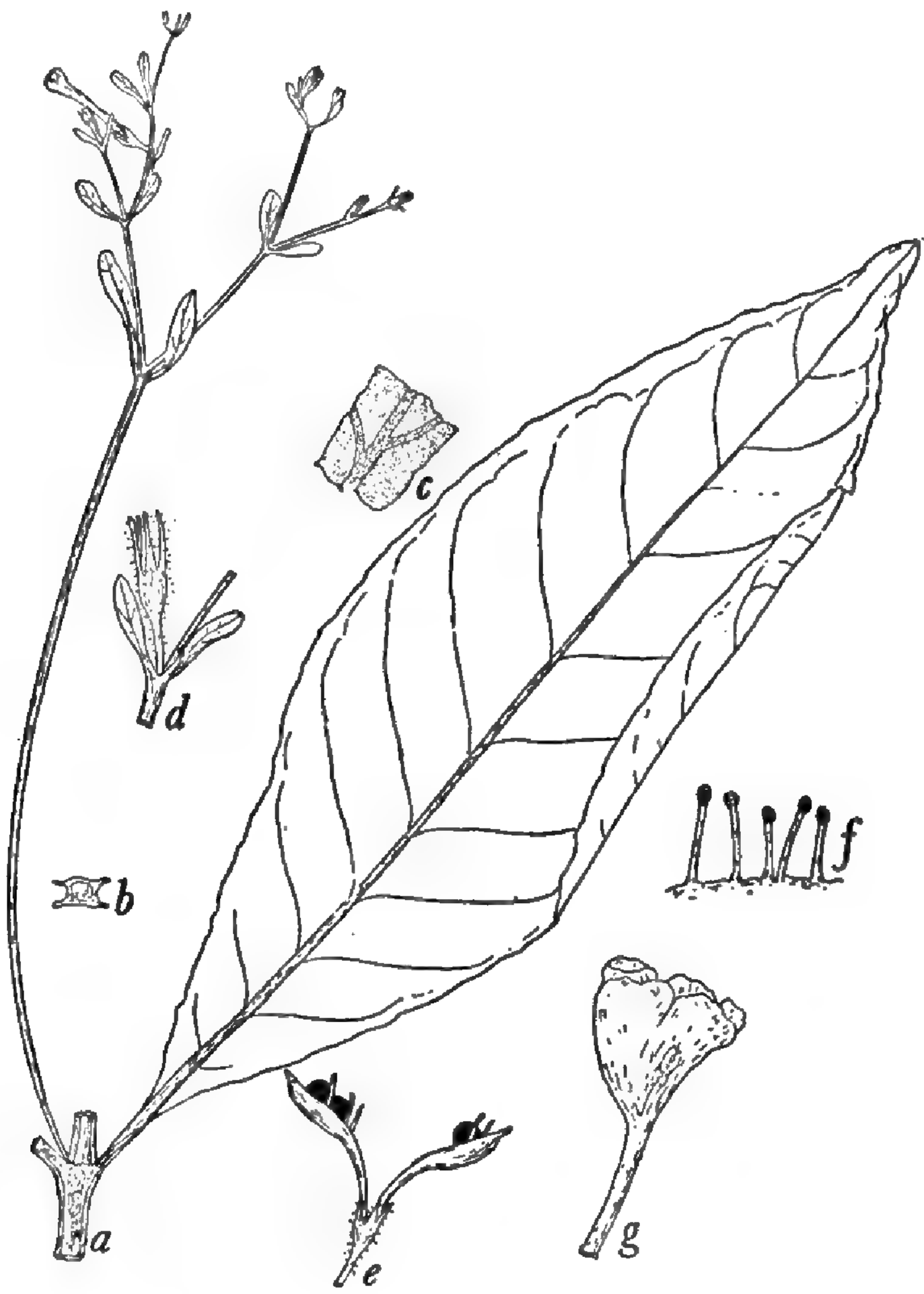

FIGURE 27.—*Ruellia chariessa* Leonard (*Haught* 4929): *a*, Node, leaf, and inflorescence; *b*, cross section of peduncle; *c*, portion of leaf to show cystoliths; *d*, portion of inflorescence showing bracts and calyx; *e*, calyx and capsule; *f*, glandular hairs of calyx; *g*, corolla. (*a*, Half natural size; *b*, about five times natural size; *c*, *e*, *g*, natural size; *d*, twice natural size; *f*, about eight times natural size.)

Ruellia chariessa is a well-marked species apparently with no close relative, at least in Colombia. Haught states that it has the leaves red beneath and is probably a widespread species. The name *chariessa* means graceful or pleasing.

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6. **Ruellia paniculata** L.

Ruellia paniculata L. Sp. Pl. 635. 1753. Linnaeus based his species on a brief description published in Hortus Cliffortianus (p. 313) and on Sloan's description and figure (Cat. Jam. p. 59 and Hist. 1: 158. *pl. 100, fig. 2*). The name was suggested by the large spreading panicles so conspicuous in mature plants.

Ruellia paniculata H. B. K. Nov. Gen. & Sp. 2: 239. 1817. Type collected at Turbaco, Bolívar, Colombia. *Ruellia paniculata* L. is cited as a synonym. Photograph No. 39433, of the Paris Herbarium sheet, is in the U. S. National Herbarium.

Ruellia viscosa H. B. K. Nov. Gen. & Sp. 2: 239. 1817. Humboldt bases his description on plants he collected "in ripa fluminis Apures" and "in sylvis Orinocensibus justa pagum Carichana."

Dipteracanthus paniculatus Nees in DC. Prodr. 11: 142. 1847. Based on *Ruellia paniculata* L.

Dipteracanthus turbacensis Nees in DC. Prodr. 11: 143. 1847. Type collected by Humboldt at Turbaco, Colombia, deposited in the Willdenow Herbarium.

Ruellia turbacensis Lindau in Engl. & Prantl, Pflanzenfam. IV. 3b: 309. 1895. Based on *Ruellia paniculata* H. B. K.

Herbaceous or suffrutescent plants; stems up to 1 meter high, erect, ascending or sometimes procumbent and rooting at the nodes, the pubescence a mixture of minute grayish hairs and longer glandular ones; petioles slender, 1 to 4 cm. long; leaf blades ovate to oblong-ovate, 3 to 17 cm. long and 1.5 to 6.5 cm. wide, obtuse or acute at apex, abruptly narrowed at base, glandular-pubescent, grayish-puberulous or glabrate; inflorescence axillary, divaricate or ascending, dichotomously branched; bracts leaflike, glandular-pubescent, those subtending the flowers 2 to 10 mm. long and 1 to 4 mm. wide; calyx 1 to 1.5 cm. long, glandular-pubescent, the segments linear-subulate, unequal; corolla blue, finely pubescent, 2 to 4 cm. long, the lobes oval, 6 to 7 mm. long, 5 mm. wide, the limb 1 to 1.5 cm. broad; capsule cylindric, 10 to 13 mm. long, 2 mm. in diameter, erect, pointed, glabrous, 8-seeded; seeds flat, 2 mm. long, 1.5 mm. wide, mucilaginous-pubescent when moistened.

VERNACULAR NAME: Culantro (*Bro. Elias* 720).

A strong penetrating rather unpleasant odor is often associated with the living plants ("Planta hedionda," *Dugand & Jaramillo* 4091). In Atlántico, Dugand states, the plants often grow in scattered colonies in dry thorny thickets.

Thickets and waste places in general. Usually found in dry situations from 0 to 200 meters altitude. Mexico to northern South America and the West Indies.

ATLÁNTICO: Barranquilla, *Bro. Elias* 433 (US); *Bro. Paul* B34 (US); 42 (US). Juan Mina, *Dugand* 1063 (US); *Dugand & Jaramillo* 4091 (US). Miramar, vicinity of Puerto Colombia, *Dugand* 3633 (US). Between Molinero and Arroyo de Piedras, *Dugand & García-Barriga* 2545 (US). Hacienda El Paraíso along the Río Magdalena between Palmar de Varela and Ponedera, *Dugand & García-Barriga* 2445 (US). Piojó, vicinity of Barranquilla, *Bro. Elias* 720 (US).

Ponedera, *Dugand & Jaramillo* 2740 (US). Puerto Colombia, *Bro. Ariste-Joseph* A946 (US); *Barkley & Gutiérrez* 1834. (US); *Bro. Elias* 821 (US); 1375 (US). Savanilla, *Donnell Smith* s. n. (US). Hacienda Cachubana, Usiacurí, *Dugand & García-Barriga* 2362 (US).

BOLÍVAR: Cartagena, *Bro. Heriberto* 303 (US); 304 (US); *Pennell* 4728 (NY). Tierrabomba, vicinity of Cartagena, *Billberg* 3 (S). Turbaco, *Pennell* 4743 (GH, NY, US).

MAGDALENA: Ciénaga, vicinity of Santa Marta, *H. H. Smith* 1359 (Ph, Mo, NY, US). Goajira on the Río Ranchería, *Haught* 4021 (US). Palmas, *Haught* 4766 (US).

7. Ruellia inundata H. B. K.

Ruellia inundata H. B. K. Nov. Gen. & Sp. 2: 239. 1817. Type collected on the banks of the Río Magdalena near Mompox and Badillas, Bolívar or Magdalena, Colombia. The banks of the Magdalena in this region are subject to overflow, hence the specific name *inundata*, in spite of the fact that the plants are more likely to be found in very dry situations. They seem to be partial to limestone soil.

Ruellia albicaulis Bertero in Spreng. Syst. 2: 822. 1825. The type of this species was collected also along the Río Magdalena in Colombia. It was so named because of the whitish glabrate stems (at least the lower portions) of the mature plants.

Aphragmia haenkei Lindl. Nat. Syst. 444. 1836. Type collected in Mexico by Haenke.

Dipteracanthus haenkei Nees in DC. Prodr. 11: 141. 1847. Several specimens are cited. Among these are Cuming's No. 1163, collected "in oris occidentalibus Columbiae et Panamae," and Bertero's specimen from Santa Marta (Berlin and De Candolle herbaria). A fragmentary specimen is in the herbarium of the Missouri Botanical Garden.

Herbaceous or suffrutescent plants up to 2 meters high; stems simple or branched, the tips glandular-pilose, the lower portions becoming whitish and glabrate; leaf blades oblong-lanceolate to ovate, up to 15 cm. long and 7 cm. wide, acuminate at apex, acute or rounded at base, denticulate, repand-crenulate or subentire, hispidulous or occasionally grayish-pubescent beneath; petioles up to 9 cm. long, pilose; inflorescence axillary, erect or ascending, dichotomously branched, sometimes forming a dense cylindric panicle, glandular-pubescent; bracts oblong, 3 to 8 mm. long, to 1 to 3 mm. wide; calyx 8 to 15 mm. long, glandular-pilose, the segments linear; corolla purplish, pubescent, 2 to 2.5 cm. long, the lobes rounded, about 5 mm. wide, the limb 1 cm. broad; stamens included; capsules clavate, 8 to 9 mm. long, 3 mm. wide, flattened, pointed, glabrous, 2- to 4-seeded; seeds flat, ovate, 4 mm. long and 3 mm. wide, smoothish when dry, mucilaginous-pubescent when moistened.

VERNACULAR NAME: Escobilla de ratón (*Bro. Elias* 1385).

Found along roadsides, on open slopes or in fields in either dry or moist situations. Mexico, Central America, Colombia, and Brazil.

ATLÁNTICO: Arroyo de Megua, *Dugand & Jaramillo* 2797 (US). Barranquilla, *Bro. Paul* B36 (US). Hacienda El Paraíso, on the banks of the Río Magdalena

between Palmar de Varela and Ponedera, *Dugand & García-Barriga* 2436 (US). Piojó, vicinity of Barranquilla, *Bro. Elias* 707 (US); 746 (US). Puerto Colombia, *Barkley & Gutiérrez-V.* 1835 (US); *Bro. Elias* 857 (US); 1155 (US); 1385 (US); s. n. (NY). Playa de Miramar, vicinity of Puerto Colombia, *Dugand* 3630 (US); 4014 (US). Savanilla, *Donnell Smith* s. n. (US).

BOLÍVAR: Cartagena, *Billberg* (S). La Popa, vicinity of Cartagena, *Billberg* (S); *Darbin* s. n. (S). Sincé, *Pennell* 4028 (GH, NY, US).

MAGDALENA: Barroblanco, *Haught* 4751 (US). Codazzi, *Haught* 3864 (US). Don Jaco, *H. H. Smith* 1410 (Mo, NY, Ph, US). La Paz, *Haught* 3930 (US). Santa Marta, *Bertero* s. n. (Mo).

8. **Ruellia tuberosa** L.

Ruellia tuberosa L. Sp. Pl. 635. 1753. The name *tuberosa* alludes to the thickened fusiform roots. These are especially conspicuous on living plants but usually inconspicuous in herbarium specimens. Type locality: Jamaica

Ruellia clandestina L. Sp. Pl. 634. 1753. The species was based on cleistogamous material, hence its name *clandestina* (concealed or hidden), alluding to the minute abortive corollas. Cleistogamy is exhibited in other members of the genus. Type locality: Barbados.

Cryphiacanthus barbadensis Nees in DC. Prodr. 11: 197. 1847, in part. Based on *Ruellia clandestina* and *R. tuberosa*. In his treatment of *C. barbadensis* Nees cites a number of *nomina nuda* found on herbarium sheets, representing a considerable geographical range, including Colombia, several of the West Indian Islands, Peru, Guiana, Mexico, Virginia, and Carolina. Some of this material is undoubtedly *Ruellia nudiflora* (Engelm. & Gray) Urb. or some of its varieties or even other species.

Roots thick-fibrous or fusiform; stems erect or ascending, usually branched, obscurely quadrangular, pilose or glabrate, bearing numerous minute cystoliths; leaf blades ovate or oblong, 2 to 11 cm. long, 1.5 to 6 cm. wide, obtuse at apex, abruptly narrowed at base to a short petiole, undulate-crisped, rather thick, sparingly pilose or glabrous, the cystoliths numerous; flowers one to several, borne in erect or ascending dichotomous cymes, the peduncles up to 4 cm. long, glabrous or pilosulous, obscurely quadrangular; bracts linear, 3 to 8 mm. long; pedicels 5 to 10 mm. long, puberulous or glabrate; calyx 15 to 28 mm. long, the tube very short, the segments narrowly linear or subulate, ciliate or glabrous, often spreading; corolla showy, mauve, 3 to 6 cm. long, sparingly puberulous, the throat narrowly campanulate, 15 mm. broad at mouth, the limb 2 to 4 cm. broad, the lobes suborbicular, 12 to 15 mm. wide, undulate or erose; stamens included; style 2 cm. long, glabrous, the stigma lobes unequal; capsules cylindric, 17 to 20 mm. long, 3 mm. broad, acute at apex, glabrous except the pilosulous callus; seeds 20 or more in each cavity, lenticular, 2 to 2.5 mm. in diameter, appearing glabrous when dry, mucilaginous-pilose when moistened.

VERNACULAR NAMES: Yuca-e-puerco, yuca de puerco (*Garganta-Fábrega* 1075).

In dry situations the plants seldom exceed 35 cm. in height, but in wet places they may reach the height of 1.5 meters (*Metcalf* 30019). Its bright mauve flowers make it a very attractive plant. During

certain seasons an abundance of blossoms is produced, but at other times scarcely a fully developed corolla can be found. At these times the plant produces an almost pure crop of cleistogamous flowers.

Roadsides, clearings, and open places in general, often in sandy loam. Partial to both dry and damp situations. West Indies and northern South America. It has been reported from Florida, Mexico, and Central America, but no authentic specimens have been examined from these regions.

ANTIOQUIA: Between Medellín and Antioquia, *Metcalf* 30019 (Mo, US).

BOLÍVAR: Caño Papayal, vicinity of Estrella, Lands of Loba, *Curran* 415 (GH, US). Cartagena, *Bro. Heriberto* 100 (US).

BOYACÁ: Valle de Soatá, *Cuatrecasas* 1088 (US); 1119 (US).

CUNDINAMARCA: Girardot, *Pennell & Rusby* 167 (GH, NY). La Mesa to San Javier, *García-Barriga* 12137 (Col); 12148 (US).

HUILA: Vicinity of Natagaima, *Rusby & Pennell* 1163 (GH, NY).

MAGDALENA: Gaira, vicinity of Santa Marta, *H. H. Smith* 746 (GH, Mo, NY, Ph, US). Santa Marta, *Pérez-Arbeláez* 4890 (US). Río Frío, Santa Marta, *Walker* 1205 (Mo, US). Sierra Nevada de Santa Marta, *Barkley & Araque* 20 (US); 21 (US).

META: Llano de San Martín, *Triana* s. n. (Col).

NORTE DE SANTANDER: Aguacaliente de San Luis (Cúcuta), *Miguel de Garganta-Fábrega* 1075 (Ch). Vicinity of Cúcuta, *Killip & Smith* 20978 (US). Petrólea (cultivated at Orlando, Florida), *Foster* 2360 (US).

TOLIMA: Tocaima, *Pérez-Arbeláez* 2471 (US). Río Magdalena, vicinity of Mariquita, *Triana* (Col, US).

WITHOUT LOCALITY: *Funck & Schlim* 694 (NY).

9. Ruellia macrophylla Vahl

Ruellia macrophylla Vahl, Symb. Bot. 2: 72, *pl. 39.* 1791. Type collected at Santa Marta by Rohr. Photograph of type in the U. S. National Herbarium, No. 22212.

Stemonacanthus macrophyllus Nees in DC. Prodr. 11: 205. 1847. Based in part on *Ruellia macrophylla* Vahl. Nees cites, among other collections, Rohr's Santa Marta specimen (Vahl Herbarium) and Goudot's specimen (Hooker Herbarium).

Plants erect, up to 2.5 meters high, shrubby at base; stems quadrangular, glabrous or sparingly puberulous; leaf blades ovate to oblong-elliptic or lanceolate, 6 to 24 cm. long, 3 to 9 cm. wide, acuminate, ending in a blunt tip, rounded or narrowed at base, decurrent on the petiole, undulate or shallowly crenate, glabrous or sparingly puberulous; petioles 2 to 6 cm. long, sparingly puberulous or glabrous; flowers few, borne on axillary peduncled cymes, the peduncles 4 to 18 cm. long, the branches of the cyme 1 to 8 cm. long, these and the peduncles glabrous or sparingly pilosulous, broadest at the nodes, often with a flower in the forks; bracts subtending the flowers lanceolate, 2 to 7 mm. long and about 1 mm. wide, those subtending the branches of the inflorescence somewhat larger, all glabrous or sparingly puberulous; pedicels 1 to 4 mm. long; calyx about 1 cm. long,

narrowly campanulate, glabrous or bearing a few minute hairs, the segments linear to lanceolate, about 4 mm. long and 2 mm. wide at base, acute to obtusish at apex; corolla scarlet or crimson, 4 to 5 cm. long, sparingly puberulous, the tube salverform, about 8 mm. broad at mouth, the limb 2.5 to 3 cm. broad, the lobes oblong, about 12 mm. long, 5 to 6 mm. wide, rounded or emarginate; ovary glabrous; style up to 4.5 cm. long, pilosulous; capsules clavate, 14 mm. long, 4 mm. broad, pointed at tip, narrowed to a solid stipitate base 4 to 5 mm. long and 2 to 2.5 mm. broad, glabrous, 16-seeded; retinacula bidentate at apex; seeds reddish brown, lenticular, 3 mm. broad, appressed-puberulous when dry, mucilaginous-pubescent with spreading hairs when moistened.

Damp shady places, in woods or thickets, often along streams or in ravines. Panama, West Indias, Colombia, Venezuela, Brazil, and Peru.

ATLÁNTICO: Barranquilla, *Bro. Elias* 788 (US). Hacienda Río Dulce, Los Pendales *Dugand & Jaramillo* 4155 (US). Piojó, vicinity of Barranquilla, *Bro. Elias* 695 (US).

BOLÍVAR: Sahagún, *Pennell* 4115 (GH, NY). Tierra Alta, along the Río Sinú, *Pennell* 4178 (in part) (GH, NY). Turbaco, *Bro. Heriberto* 460 (US).

MAGDALENA: Agua Dulce Road, vicinity of Santa Marta, *H. H. Smith* 381 (GH, Mo, NY, Ph, US). Agua Fría, north of Chiriguaná, *Haught* 3659 (US). El Recuerdo, Santa Marta mountains, *Niemeyer* 27 (US). Minca, *Bro. Apollinar-Angel* 515 (US). Poponte, *Cyril Allen* 865 (Mo). Río Magdalena, *Dawe* 789 (US). Santa Marta, *Bertero* s. n. (Mo); *Romero* 257 (Mo).

9a. **Ruellia macrophylla** Vahl var. **puberula** Leonard, var. nov.

A forma typica caulibus et pedunculis puberulentis et lamina foliorum subtus dense puberula recedit.

Erect subherbaceous plants up to 2 meters high; stems (at least the upper portions), branches of the inflorescence, and lower surface of the leaf blades densely and softly puberulous, the hairs straight or slightly curved, mostly spreading, about 0.25 mm. long. In other respects similar to the typical form.

Type in the U. S. National Herbarium, No. 1709427, collected in forest on sandstone soil near Codazzi, Department of Magdalena, Colombia, 300 meters altitude, October 15, 1943, by Oscar Haught, (No. 3746). An isotype is also in the U. S. National Herbarium, No. 1709428.

The flowers, according to Haught, are bright red and very showy.

A specimen in the Berlin Herbarium, bearing the name *Ruellia macrophylla β pubescens* Moritz,[8] may be this variety.

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[8] DC. Prodr. 11: 205. 1847.

A yellow-flowered form of *R. macrophylla* has been found in Venezuela.[9]

10. **Ruellia grisea** Leonard, sp. nov. FIGURE 28

Suffrutex, caulibus quadrangularibus, angulis acutis vel anguste alatis, puberulis; lamina foliorum ovata, apice subobtusa, basi obtusa vel rotundata, griseo-puberula; petioli puberuli; pedunculi quadrangulares, dichotomo-ramosi, puberuli; flores secundi; bracteae triangulares; pediceli graciles, puberuli; calycis segmenta subulata, puberula; corolla rubra, hypocrateriformis, glabra, lobis ovatis, rotundatis; stamina inclusa.

FIGURE 28.—*Ruellia grisea* Leonard (*Pérez-Arbeláez & Cuatrecasas* 8336): *a*, Tip of branch; *b*, cross section of stem; *c*, cross section of peduncle; *d*, portion of inflorescence to show dichotomous branching; *e*, bract subtending fork of inflorescence; *f*, bractlet and calyx; *g*, calyx, ovary, and stigma. (*a*, Half natural size; *b*, *d*, *e*, natural size; *c*, about 3½ times natural size; *f*, *g*, twice natural size.)

Suffrutescent herb; stems simple or branched, up to 1 meter high or more, erect or ascending, sulcate, quadrangular, the angles sharp or narrowly winged, puberulous, the hairs up to 0.5 mm. long, spreading or retrorsely curved; leaf blades ovate, up to 7.5 cm. long and 5 cm. wide, obtusish at apex, obtuse or rounded at base, entire or undulate,

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[9] *Ruellia macrophylla* Vahl var. *lutea* Leonard, var. nov.

A forma typica corolla lutea recedit.

Type in the U. S. National Herbarium, No. 1855197, collected near Rancho Grande, Parque Nacional, State of Aragua, Venezuela, 800 to 1,000 meters altitude, March 18, 1943, by E. P. Killip (No. 37107).

The leaf blades of the type of the variety are oblong-ovate, slenderly acuminate, rounded or abruptly narrowed at base, and decurrent on the petiole, the margins crenate, the under surface rather densely puberulous, the hairs curved and about 0.25 mm. long. Killip states that the plant is a shrub, 1.6 meters high, branched above, the branches lax and the corolla bright yellow.

both surfaces densely gray puberulous, the hairs up to 0.5 mm. long; petioles up to 2 cm. long, puberulous; flowers secund on dichotomously branched peduncles, the peduncles from base to first fork up to 7 cm. long, quadrangular, puberulous, the primary and secondary branches 5 to 15 mm. long, sulcate and densely puberulous, the ultimate branches sometimes forming short racemes; bracts leaflike but much smaller, deciduous; bractlets narrowly triangular, up to 2 mm. long; pedicels slender, 4 to 5 mm. long, puberulous; calyx 3 to 3.5 mm. long, puberulous, the segments subulate; corolla red, glabrous, about 22 mm. long, the narrow portion of the tube 5 mm. long, 2 mm. broad at base, narrowed to 1.5 mm., thence gradually enlarged to 8 mm. at mouth, slightly ventricose, the limb about 1 cm. broad, the lobes ovate, 7 mm. long, about 4 mm. wide, rounded; stamens barely reaching tip of corolla lobes, the anthers 3 mm. long and 1 mm. broad; ovary cylindric, 3 mm. long, glabrous; style about 8 mm. long, glabrous; stigma lobes linear, one 1 mm. long, the other 1.5 mm. long, both 0.25 mm. wide.

Type in the U. S. National Herbarium, No. 1795001, collected in a thicket on a dry savanna between Gigante and Rioloro, Department of Huila, Colombia, 820 to 860 meters altitude, March 19, 1940, by E. Pérez-Arbeláez and J. Cuatrecasas (No. 8336).

Ruellia grisea is characterized by its crowded red flowers, secund on dichotomously axillary peduncles, and by the fine gray pubescence. From this last character the species derives its specific epithet.

11. Ruellia ischnopoda Leonard, sp. nov. FIGURE 29

Herba vel suffrutex, caulibus quadrangularibus, parce vel dense pubescentibus, angulis acutis vel anguste alatis; lamina foliorum ovata vel elliptica vel oblonga, apice breviter acuminata, basi angustata vel rotundata, in petiolum breviter decurrens, integra vel leviter crenata, supra minute et parce pubescens, subtus dense pubescens; pedunculi quadrangulares, angulis acutis, pubescentibus; pedicelli graciles, pubescentes vel glabrati; bracteae oblongae, angustatae, deciduae; calyx parce et minute pubescens, segmentis subulatis; corolla hypocrateriformis, rubra, curvata, ventricosa, lobis ovatis, obtusis vel leviter emarginatis; stamina exserta; antherae lineares, curvatae; capsulae anguste clavatae, glabrae; semina plana, brunnea, marginibus madefactis dense mucoso-puberulentis.

Suffrutescent or herbaceous, up to 1 meter high; stems erect or ascending, quadrangular with sharp or narrowly winged angles, sparingly to rather densely pubescent, the hairs curved to straight and spreading; leaf blades ovate to elliptic or oblong-elliptic, 7 to 14 cm. long, 3 to 7 cm. wide, short-acuminate, narrowed or rounded at base and briefly decurrent on the petiole, entire or shallowly crenate, the upper surface sparingly pubescent, the lower densely so, the hairs

about 0.5 mm. long, the costa and lateral veins (8 or 9 pairs) fairly prominent, the cystoliths of the upper surface, if not obscured by the hairs, prominent; petioles 1 to 2.5 cm. long, pubescent; flowers borne on axillary dichotomously branched peduncles up to 14 cm. long, sharply quadrangular, straight or curved, pubescent, the hairs about 0.5 mm. long, the secondary peduncles, if present, about 1.5 cm. long, quadrangular, pubescent; pedicels slender, about 1 cm. long, finely

FIGURE 29.—*Ruellia ischnopoda* Leonard (*a*, *b*, *e*, *Haught* 2364; *d*, *Cuatrecasas* 19710): *a*, Tip of stem, showing leaves and inflorescence; *b*, small area of leaf blade (upper surface) showing cystoliths; *c*, cross section of peduncle; *d*, capsule and calyx; *e*, stamens. (*a*, *d*, Natural size; *b*, *e*, about three times natural size; *c*, about seven times natural size.)

and rather sparingly pubescent or glabrate; bracts at tip of the peduncle narrowly oblong, 1 to 1.5 cm. long and 1.5 to 3.5 mm. wide, early deciduous, the smaller bracts, subtending the branches of the inflorescence, narrowly spathulate or linear, about 1 mm. wide; calyx 8 mm. long, sparingly and minutely pubescent, the segments subulate, about 7 mm. long and 0.75 mm. wide at base, the cystoliths apparent; corolla bright red, salmon, or scarlet (Rusby & Pennell), about 3 cm. long,

glabrous or minutely and sparingly pubescent toward base, the tube narrowly funnelform, curved, ventricose, about 1 cm. broad at mouth, the lower unexpanded portion about 1 cm. long and 2 mm. broad, the lobes ovate, about 15 mm. long and 9 mm. wide, obtuse or emarginate at tip; stamens exserted about 5 mm. beyond the mouth of the tube, the anthers linear, curved, 3 mm. long and 0.5 mm. wide; ovary bearing a few minute glandular hairs; style glabrous, barely 3 cm. long, the stigma narrowly linear-lanceolate, 2 mm. long and 0.5 mm. wide; capsules narrowly clavate, 1.5 to 2.2 cm. long and 4 mm. broad, glabrous, the narrow solid stipe 5 to 8 mm. long and nearly 2 mm. broad; seeds flat, 3 mm. long and 2.5 mm. broad, brown, the margins densely white gelatinous-puberulous when moistened.

Type in the U. S. National Herbarium, No. 1706762, collected along the Río Totare near Palmarrosa, Department of Tolima, Colombia, October 18, 1938, by Oscar Haught (No. 2364). Also represented by:

CAUCA: El Tambo, *von Sneidern* 2643 (S).

CUNDINAMARCA: Fusagasugá, *Holton* 25 (NY).

EL VALLE: Anserma to Yotoco, *Lehmann* 3335 (US). El Carmen, *Cuatrecasas* 19710 (US).

HUILA: El Gigante, *Bro. Ariste-Joseph* s. n. (US). Vicinity of Neiva, *Rusby & Pennell* 1069 (GH, NY); 1104 (GH, NY).

TOLIMA: Ibagué, *Holton* 600 (NY).

WITHOUT DEFINITE LOCALITY: *Mutis* 440 (US); 1498 (US).

Ruellia ischnopoda is related to *R. ruiziana* (Nees) Lindau, a Peruvian species, but it can easily be separated by its smaller and relatively narrower and less shaggily pubescent leaf blades. The bracts and calyces of its Peruvian relative are, moreover, strongly hirsute instead of sparingly and minutely pubescent as in *R. ischnopoda.* The New York sheet of *Holton* 600 from Colombia bears the name *R. ruiziana* in Lindau's handwriting; yet Holton's collection resembles the specimens cited here under *R. ischnopoda* much more closely than it does the authentically named material of *R. ruiziana* from Peru (in the U. S. National Herbarium). The epithet *ischnopoda* comes from ἰσχνός, weak or feeble, and πούς, foot or stem, in allusion to the slender weak pedicels.

12. **Ruellia caucensis** Leonard, sp. nov. FIGURE 30

Suffrutex, caulibus subquadrangularibus, glabris vel ad nodos parce bifariam pilosulis; lamina foliorum oblongo-elliptica, apice acuminata, basi angustata, crenata vel leviter dentata, glabra vel in costa et venis prominentibus parce pubescens; pedunculi graciles, glabri, complanati, plus minusve curvati, anguste alati, apice plus minusve ramosi, glabri; calyx parvus, segmentis subulatis, ciliolatis; corolla rubra, glabra, ventricosa; stamina exserta; antherae lineares; capsulae clavatae, glabrae.

Stem subquadrangular, glabrous or sparingly and bifariously pilosulous near nodes; leaf blades oblong-elliptic, up to 12 cm. long and 4 cm. wide, slenderly short-acuminate, (the tip itself blunt to acute), rather firm, crenate or shallowly dentate, glabrous or the costa of the upper surface bearing a few small hairs, both costa and lateral veins (6 or 7 pairs) prominent; cystoliths prominent under a lens; petioles 1 to 2 cm. long, glabrous or the margins ciliate; flowers several, borne in subcapitate clusters or on short bifurcate branches terminating the

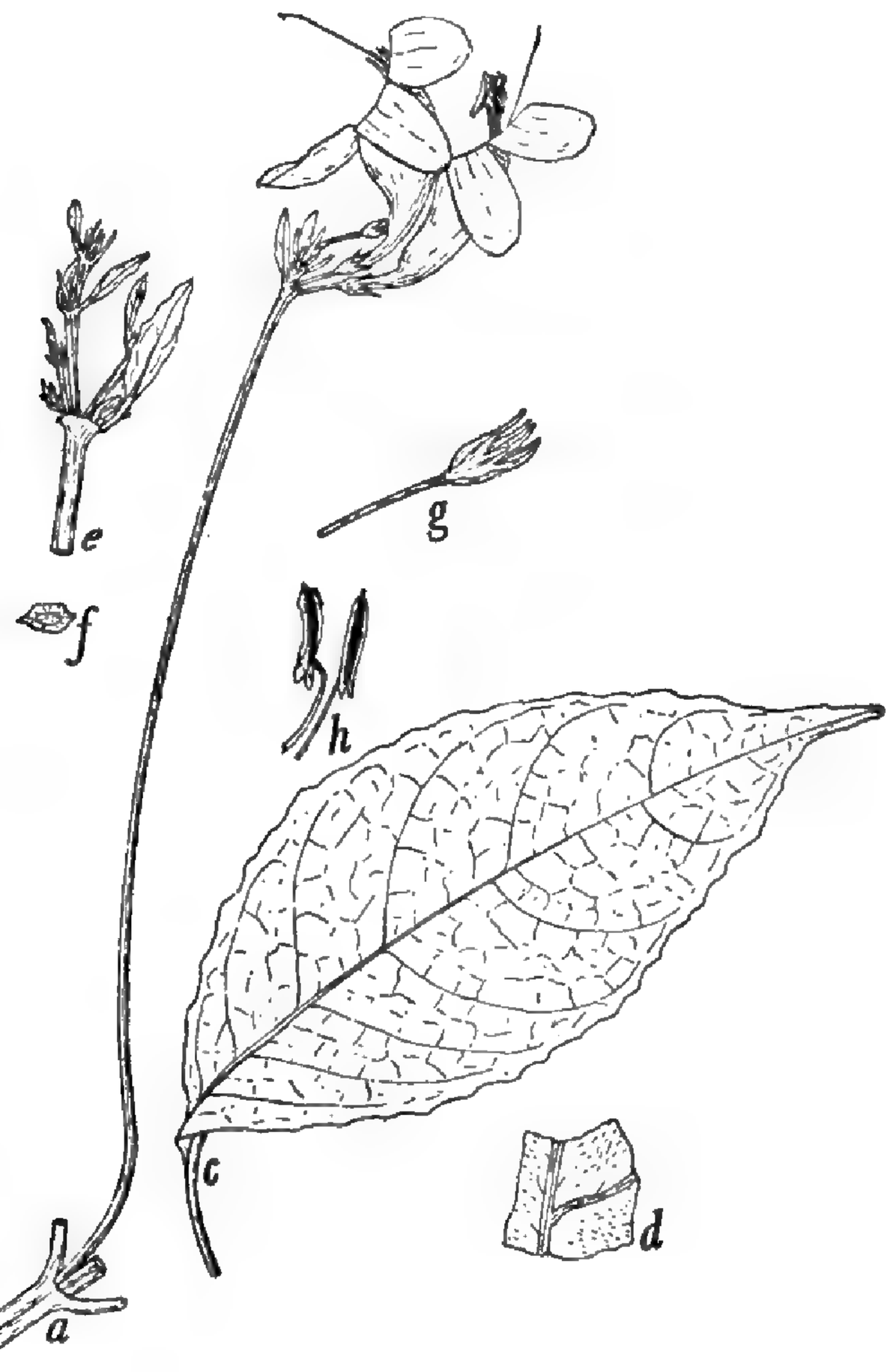

FIGURE 30.—*Ruellia caucensis* Leonard (*von Sneidern* 2647): *a*, Node and inflorescence; *b*, cross section of stem; *c*, leaf; *d*, enlarged portion of leaf blade (upper surface) showing cystoliths; *e*, inflorescence to show dichotomous branching; *f*, cross section of peduncle; *g*, calyx and pedicel; *h*, stamens. (*a*, *c*, Half natural size; *b*, *e*, natural size; *d*, *g*, *h*, twiec natural size; *f*, about three times natural size.)

long slender peduncles, these up to 15 cm. long, glabrous, flattened, narrowly winged, more or less curved, the branches, when present, 5 to 15 mm. long; bracts linear-lanceolate, 14 mm. long, 4 mm. wide or less; pedicels 5 mm. long, slender, glabrous; calyx 5 mm. long, glabrous except the sparingly ciliolate segments, these subulate, 3 mm. long and about 0.5 mm. wide; corolla red, 3 cm. long, curved, glabrous, the tube cylindric and about 2 mm. in diameter for about 7 mm. of

its length, thence enlarged to a ventricose funnelform throat about 1 cm. broad, the limb 3 cm. broad, the lobes oblong, 14 mm. long and 8 mm. wide, rounded; stamens exserted about 5 mm. beyond the mouth of the corolla tube, the anthers linear, 3.5 mm. long, about 0.5 mm. wide; style slender, exserted about 2 cm. beyond the corolla tube; ovary glabrous; fruit not seen.

Type in the herbarium of the Riksmuseet, Stockholm, collected in woods along the Río Timbío, Department of Cauca, Colombia, 1,100 meters altitude, September 15, 1938, by Kjell von Sneidern (No. 2647).

A specimen collected by Triana, s. n. (S), in the vicinity of Popayán, Cauca, also represents the species.

Ruellia caucensis is closely allied to *R. ischnopoda*, from which it differs chiefly in its glabrous character and in its much smaller calyx.

13. Ruellia rusbyi Leonard, sp. nov. FIGURE 31

Suffrutex, caulibus quadrangularibus, angulis rotundatis, glabris vel ad nodos parce pubescentibus; lamina foliorum oblongo-elliptica, apice acuminata, basi angustata, glabra, costa et venis prominentibus, petioli glabri; pedunculi recti vel curvati, infra complanati, superne quadrangulares, glabri, 1- vel 2-ramosi; bracteae lineares; pedicelli glabri; calyx glaber, segmentis lineari-subulatis, apice subobtusis; corolla punicea vel rubra, curvata, hypocrateriformis, glabra, lobis rotundatis vel leviter emarginatis; capsulae clavatae, glabrae; semina plana, ovata, madefactis dense mucoso-puberulis; retinacula subcucullata, apice truncata, plus minusve lacerata.

Suffrutescent herbs; stems quadrangular (the angles rounded), glabrous or bearing a few small hairs at or near the nodes; leaf blades oblong-elliptic, up to 15 cm. long and 6 cm. wide, acuminate at tip, narrowed at base, rather thin, drying dark olive or blackish, glabrous, the costa and lateral veins (7 or 8 pairs) rather prominent, the cystoliths conspicuous under a lens, 0.25 mm. long, straight or nearly so; petioles 0.5 to 10 cm. long, glabrous; flowers borne in axillary peduncled cymes, the peduncles 10 to 12 cm. long, straight or slightly curved, flattened toward base, quadrangular toward tip, glabrous, once to twice branched at tip, both branches and flowers produced at the nodes, the secondary peduncles up to 12 mm. long, quadrangular, glabrous, the lowest node subtended by a pair of linear leaflike bracts 8 to 12 mm. long and 4 mm. wide, their margins undulate, the bracts subtending the secondary peduncles linear, about 4 mm. long and 1 mm. wide, glabrous; pedicels (mature) slender, 12 mm. long, glabrous; calyx 10 mm. long, glabrous, the cystoliths numerous and prominent under a lens, the segments linear, 8 mm. long, 1 mm. wide at base, obtusish at tip; corolla pink or red; capsule

clavate, glabrous, 2 cm. long, 8-seeded, the seed-bearing portion 4 mm. broad at middle, the narrowed solid basal portion about 10 mm. long, 1.5 mm. wide at base and 2.5 mm. wide at base of cavity; seeds (immature) cordate, flat, about 3 mm. in diameter, gelatinous-puberulous when moistened; retinacula linear, 2.5 mm. long, the tip truncate and lacerate.

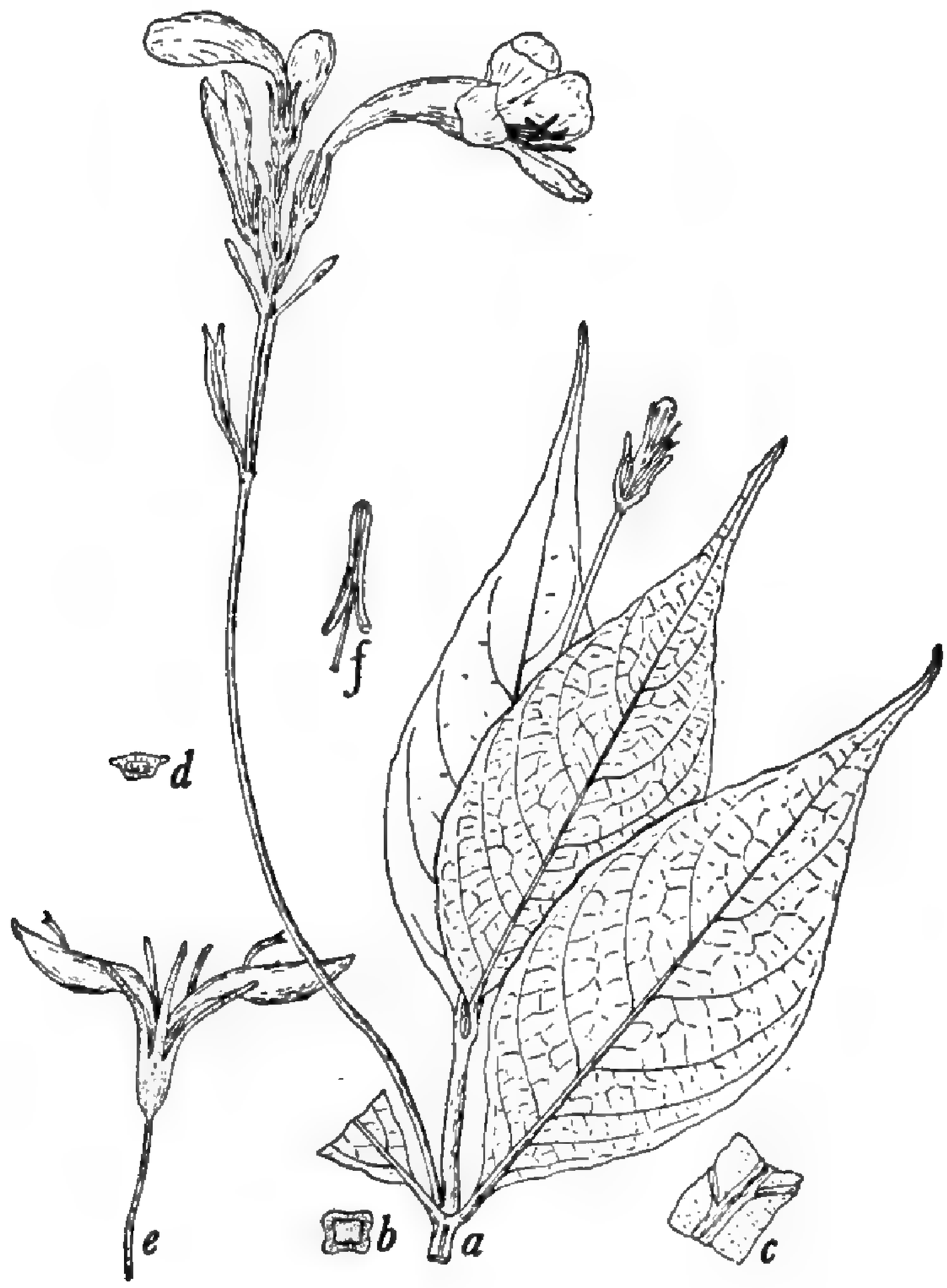

FIGURE 31.—*Ruellia rusbyi* Leonard (*a, b, f, Rusby & Pennell* 548; *c–e, Rusby & Pennell* 1000): *a*, Tip of branch; *b*, cross section of stem; *c*, portion of leaf blade to show cystoliths; *d*, cross section of peduncle; *e*, capsule; *f*, stamen. (*a*, Half natural size; *b*, natural size; *c*, about 1½ times natural size; *d*, four times natural size; *e*, twice natural size; *f*, three times natural size.)

Type in the Gray Herbarium, collected in forest east of Neiva, Department of Huila, Colombia, 1,300 to 1,800 meters altitude, August 1 to 8, 1917, by H. H. Rusby & F. W. Pennell (No. 1000). A fragment of the type is in the U. S. National Herbarium, No. 1933917; an isotype is in the herbarium of the New York Botanical Garden.

Rusby and Pennell's No. 510 (NY), collected east of Neiva, 700 to 1,500 meters altitude, and No. 548 (NY), collected in the same general region, 1,200 to 1,700 meters altitude, also represent the species.

Ruellia rusbyi is related to *R. caucensis.* In their general appearance and in the type of inflorescence the two species are very similar; yet there exist several differences by which they can be readily separated. The calyx of *R. caucensis* is smaller (5 mm. long instead of 10 mm. as in *R. rusbyi*), the channels of its petioles are definitely pubescent, and the leaf blades are shallowly dentate instead of undulate or entire, drying to a lighter olive-green.

14. **Ruellia longifilamentosa** Lindau

Ruellia longifilamentosa Lindau, Ann. Naturhist. Hofmus. (Wein) **16:** 72. 1901. Type collected in Cauca by Karsten.

Shrub up to 3 meters high; stems quadrangular above, terete below, gray-tomentose, the hairs about 0.5 mm. long; leaf blades oblong-ovate, up to 14 cm. long and 5.5 cm. wide, acuminate at apex (the tip itself blunt), more or less abruptly narrowed at base and decurrent on the petiole, the margins entire or undulate, the upper surface finely pubescent, the hairs up to 0.5 mm. long, more numerous on costa and veins, the lower surface densely velvety pubescent, the hairs spreading, straight or curved, densest on costa and veins (6 or 7 pairs), the venation prominent beneath, less so above; petioles up to 2 cm. long, tomentose; flowers borne in short racemes up to about 3 cm. long (including corollas), forming a terminal panicle about 10 cm. long and broad, its branches softly and finely pubescent, the lowermost up to 4.5 cm. long, the others successively shorter, the hairs about 0.25 mm. long, retrorsely curved, the pedicels up to 5 mm. long, finely pubescent, leaving prominent scars after falling, thus giving the rachis a conelike appearance; calyx finely pubescent and resin-dotted, the tube about 1 mm. long, the segments linear, about 1 cm. long, 2 mm. wide at base, acute at tip, densely pubescent, the hairs about 100μ long, spreading or recurved; corolla yellow, densely pubescent except at base, the hairs straight and spreading, up to 150 μ long, intermixed with resinous discs, the tube 3 mm. broad at base, gradually enlarged to 3 mm. at 2 mm. above base, thence abruptly expanding to 1 cm. at mouth, the enlarged portion oblique, the lobes oval, 1 cm. long and about 6 mm. wide, rounded and emarginate at tip, their margins ciliolate; stamens long-exserted at maturity, the filaments attached near base of expanded part of tube, about 3 cm. long, strongly curved, glabrous or sparingly puberulous near base, the anthers 4.5 mm. long, 2 mm. broad; ovary puberulous and resin-dotted, the style about 3.5 cm. long, sparingly and minutely pubescent; capsule clavate, 2 cm. long, 7 mm. broad and 5 mm. thick, finely and densely puberulous, bearing interspersed, minute resin discs, the cavity extending nearly to base, 8-seeded (?).

Ruellia longifilamentosa is characterized by its yellow flowers and long exserted, strongly curved stamens. In his comments on the spe-

cies, Lindau states that he is unable to relate this species to any other *Ruellia.* It should, however, be near *R. humboldtiana* and *R. tubiflora*, as indicated by its conelike rachis.

Found at altitudes between 1,050 and 1,550 meters, in Cauca and Cundinamarca.

CUNDINAMARCA: Finca La Esmeralda, Vereda Tórriba, San Francisco, *Garcia-Barriga* 10998 (US). Hacienda Curiche, El Peñón, between Río Bunque and Río Murca, *Garcia-Barriga* 12478 (US).

15. **Ruellia humboldtiana** (Nees) Lindau

Stemonacanthus humboldtianus Nees in DC. Prodr. 11: 206. 1847. Nees' description is based on Humboldt's No. 709, collected at the Hacienda Materolla, Aragua, Venezuela, and deposited in the Berlin Herbarium. A photograph of this specimen is in the U. S. National Herbarium, No. 18210. As a Greek-letter variety, Nees also cites here Linden's No. 1526, which he examined in the Hooker Herbarium. A photograph of an isotype in the Vienna Herbarium (U. S. National Herbarium, No. 32745) portrays an apparently glabrous plant with thin elliptical leaf blades, acute to obtusish at apex, and a small slender few-flowered thyrse. This Linden specimen might well represent an undescribed species.

Ruellia humboldtiana Lindau, Bull. Herb. Boiss. 3: 366. 1895. Based presumably on *Stemonacanthus humboldtianus* Nees.

Suffrutescent herbs; stems obscurely quadrangular, glabrous or the nodes and tips puberulous; leaf blades ovate to oblong-ovate or oblong-elliptic, 4 to 15 cm. long, 2.5 to 8 cm. wide, acuminate (the tip itself obtuse), acute or rounded at base and decurrent on the petiole, undulate, both surfaces pilosulous, the hairs confined chiefly to costa and lateral veins, the lower surface minutely punctate; petioles 1 to 1.5 cm. long, puberulous; inflorescence a thrysoid panicle up to 10 cm. long, the branches each bearing from several to 20 or more flowers, the rachis conelike, minutely puberulous; bracts lanceolate, about as long as the calyx, often deciduous; calyx 9 to 12 mm. long, puberulous, punctate, the segments linear-lanceolate, 6 to 9 mm. long, 1 mm. wide at base; corollas pink, red, or bright carmine, salverform, minutely pubescent, up to 6 cm. long, the tube slightly curved and ventricose, 3 mm. broad at base, narrowed above ovary to 2 mm., thence gradually enlarged to about 12 mm. at mouth, the limb up to 5 cm. broad, the lobes oblong-ovate, up to 3 cm. long and 8 to 9 mm. wide near tip, emarginate; stamens exserted; capsules clavate, puberulous, gland-dotted, 1.5 cm. long, 5 mm. broad, rather bluntly pointed, narrowed to a slender solid base about 3 mm. long; seed brown, appressed-puberulous, about 5.5 mm. long and 5 mm. wide.

Roadsides, borders of damp woods or thickets, and in open places in general. Found usually between 100 and 820 meters altitude. Panama, Colombia, and Venezuela.

META: Camino de Restrepo to Cumaral, *Garcia-Barriga* 5126 (US). Woods of the Ríos Ocoa and Apiay, Llanos Orientales, *Dugand & Jaramillo* 3113 (US).

Villavicencio and vicinity, *Bro. Apollinaire* s. n. (US); *Cuatrecasas* 4536 (US); *Haught* 2458 (US); *Killip* 34361 (US); *Pennell* 1630 (NY); *Pérez-Arbeláez* 50 (US). Tres Esquinas Mill, Villavicencio, *Helen Schiefer* 757 (GH).

NORTE DE SANTANDER: Santa Librada, Quebrada de la China, a tributary of the Río Cubugón, region of Río Sarare, *Cuatrecasas* 12976 (US).

VAUPÉS: Calamar on the Río Unilla, *Cuatrecasas* 7317 (US). Caño Popore, valley of the Río Apaporis, *Cuatrecasas* 7075 (US).

VICHADA: Vicinity of San José de Ocune, *Haught* 2812 (US); *Hermann* 10942 (US).

16. Ruellia tubiflora H. B. K.

Ruellia tubiflora H. B. K. Nov. Gen. & Sp. 2: 241. 1817. Type collected on shaded bank of Río Magdalena near Honda; Tolima, Colombia. The specific name alludes to the long tubular flowers.

Scorodoxylum hartwegianum Nees in Benth. Pl. Hartw. 236. 1846. Type collected in a shady place near the village of Guaduas, Bogotá, Colombia, by Hartweg.

Ruellia purdieana Hook. Bot. Mag. Curtis 73: *pl. 4298.* 1847. Named in honor of Purdie and based on cultivated material. The type may possibly have been grown from seed collected by Purdie in the Santa Marta region of Colombia.

Arrhostoxylum hartwegianum Nees in DC. Prodr. 11: 209. 1847. A new combination based on Hartweg's specimen from Guadas.

Ruellia stuebelii Lindau in Bot. Jahrb. Engler 21: 377. 1896. Type collected in the vicinity of Honda by Stuebel, No. 68a.

Suffrutescent herbs up to 1 meter high; stems ascending, subquadrangular, glabrous, or puberulous at tips and nodes, the upper portions bearing minute glandular scales; leaf blades oblong-elliptic, 6 to 24 cm. long, 6 to 9 cm. wide, more or less abruptly acuminate at apex (the tip itself blunt), narrowed at base and decurrent on the petiole, entire, undulate or shallowly crenate, glabrous, both surfaces bearing minute semitranslucent reddish glands, or, in absence of these, minute pits, the glands and pits more conspicuous on the lower surface than on the upper, the cystoliths (upper surface) numerous, slender, minute, the costa and lateral veins (7 to 9 pairs) fairly prominent; petioles 1 to 3 cm. long, glabrous or puberulous; inflorescence a short terminal spike subtended by leafy bracts 2 to 5 cm. long and 1.5 to 2 cm. wide, the rachis conelike, 5 to 12 mm. long, bearing 4 rows of conspicuous scars after the falling of bracts and flowers; bractlets triangular, 1 to 2 mm. long; pedicels 2 to 3 mm. long; calyx up to 15 mm. long, gland-dotted, the segments lanceolate, 3 to 14 mm. long, 1 to 2 mm. wide, glabrous or puberulous; corolla crimson, lilac, or red, sparingly puberulous, gland-dotted, about 4 cm. long, the tube infundibular, curved, 1 to 1.5 cm. broad at throat, the limb about 3 cm. broad, the lobes oval or suborbicular, 1 cm. long or more, spreading; anthers slightly exserted, sagittate, 3.5 mm. long; capsule clavate, 15 mm. long, about 8 mm. broad, puberulous or glabrate, gland-dotted, the solid basal portion 3 to 4 mm. long and broad, the retinacula curved,

slender, 5 mm. long, seeds 8 or more, flat, orbicular, 5 mm. in diameter, 1 mm. thick, appressed-pilose when dry, mucilaginous-pilose when moistened.

Ruellia tubiflora is extremely variable in the color and size of the corolla, in the type and abundance of the pubescence, and in the relative size, shape, and texture of the leaf blades. On the other hand, it is very constant in the type of inflorescence, the presence of the minute glandular scales, dots, or pits on various parts of the plant, especially the leaf blades, calyx, bracts, and capsules, and in the presence of the large leaflike bracts supporting the flower cluster. The typical form is glabrous or more or less puberulous and produces large purple or reddish flowers. White-flowered plants from Costa Rica were called *R. tetrastichantha* by Lindau. This name is often applied to the white-flowered plants of Colombia as well as to those with purple-throated corollas. Still other plants produce yellow flowers (Costa Rica), others, small white or purple ones, and one Colombian plant, although producing large white flowers, is strongly hirsute. These variations are here given varietal or form status.

The leaf blades of some of the specimens examined (*Cuatrecasas* 10529) are thin, drying green, but those of others (*Ariste-Joseph* A973) are thickish and turn blackish on drying. This variation might possibly be due to a difference in habitat, the thin-leafed plants growing in shaded regions and the thick-leafed ones in more open situations.

Damp forests or thickets at lower elevations (400 to 450 meters). Panama, Colombia.

BOLÍVAR: La Popa, vicinity of Cartagena, *Billberg* s. n. (S).
HUILA: Río Saldaña to Natagaima, *Rusby & Pennell* 250 (GH, NY).
META: Susumoco, vicinity of Villavicencio, *Triana* s. n. (Col).
TOLIMA: Armero, *Cuatrecasas* 10529 (US). Honda, *Bro. Ariste-Joseph* A973 (US). Río Seco, above Honda, *Holton* 282 (GH); *Triana* s.n. (Col).

16a. **Ruellia tubiflora** var. **tetrastichantha** (Lindau) Leonard, comb. nov.

Ruellia tetrastichantha Lindau in Pittier, Prim. Fl. Costar. 2: 300. 1900. The type of *R. tetrastichantha* was collected on the bank of the Río Corrozal near Santo Domingo de Osa, Costa Rica, April 1896, by A. Tonduz, No. 9984. The name *tetrastichantha* (τετρα-, four, and στίχος, a row or rank) alludes apparently to the short conical axis of the spike, this bearing four rows of conspicuous scars after the fall of the flowers and bracts.

Shrubs or suffrutescent herbs up to 4 meters high; stems subquadrangular, glabrous or puberulous toward tip, the hairs minute, brownish, curved; leaf blades oblong-elliptic to elliptic-ovate, 7 to 18 or occasionally 25 cm. long, 2.5 to 9 cm. wide, acuminate, sometimes abruptly so (the tip itself blunt), narrowed at base and decurrent on the petioles, the margins entire or shallowly crenate, both surfaces glabrous or the costa and lateral veins (8 or 9 pairs) brown-puberulous; calyx segments subulate to linear-lanceolate, up to 2 cm. long;

corollas pure white, 6 to 8 cm. long, funnelform, the mouth 1 to 2 cm. broad, the limb 2 to 3 cm. broad; capsules about 2 cm. long and 1 cm. broad.

Wet forests or thickets, often along roads and trails or on banks of streams. Generally found at lower altitudes. Costa Rica, Panama, Colombia.

CUNDINAMARCA: Jerusalem, *Pérez-Arbeláez* 576 (US).
CAUCA: La Costa, El Tambo, *von Sneidern* 864 (S).
META: Villavicencio, *Cuatrecasas* 4535 (US); 4631 (US); *Collector?* 188 (US).
SANTANDER: Vicinity of El Roble, *Killip & Smith* 19359 (NY, US).

16b. **Ruellia tubiflora** H. B. K. var. **tetrastichantha** (Lindau) Leonard, f. **bicolor** Leonard, f. nov.

A forma typica corolla grandis alba forcibus purpureis recedit.

Shrub or suffrutescent herb 1 to 2 meters high, essentially glabrous; leaf blades oblong-ovate, 10 to 20 cm. long, 4 to 8 cm. wide, slenderly and more or less abruptly acuminate, the tip often curved and blunt, narrowed at base and decurrent on the petiole, thin to subcoriaceous, the costa and veins (about 10 pairs) prominent, especially beneath; petioles 1 to 2.5 cm. long; corolla about 9 cm. long, white with blue, violet, or purple throat, sparingly puberulous, the tube funnelform, curved, 2 to 3 cm. broad at mouth, the limb 4 to 5 cm. broad, the lobes suborbicular, rounded or emarginate, 1.5 to 2 cm. long and broad; capsule clavate, 2 to 2.5 cm. long, about 6 mm. broad, blunt at tip; seed brown, about 5 mm. long and broad, densely appressed-pilose when dry.

Type in the U. S. National Herbarium, No. 1706866, collected along stream at Villavicencio, Intendencia of Meta, Colombia, 500 meters altitude, January 29, 1939, by Oscar Haught (No. 2569). The following collections also represent the new form:

BOYACÁ: El Humbo, *Lawrance* 564 (GH, Mo. NY, S).
META: Monte de Machadero, Ocoa, vicinity of Villavicencio, *Hermann* 11117 (US). Sitio de Montenegro, on the Guayuriba Road between Villavicencio and Ocoa, *Dugand & Jaramillo* 2920 (US). Villavicencio, *Killip* 34354 (US).

Borders of damp thickets and woods or along trails and roads. Found at elevations of about 500 meters. Endemic. The name *bicolor* alludes to the purple-throated white corollas.

16c. **Ruellia tubiflora** H. B. K. var. **tetrastichantha** (Lindau) Leonard f. **flava** Leonard, f. nov.

A forma typica corolla flava recedit.

Shrubs or suffrutescent herbs up to about 1.5 meters high; leaf blades oblong-elliptic, 15 to 25 cm. long, 8 to 10 cm. wide, abruptly short-acuminate, narrowed at base and decurrent on the petiole; corolla about 7 cm. long, yellow, puberulous, the tube funnelform, about 18 mm. broad at mouth, the limb about 2.5 cm. broad; capsules not seen.

VERNACULAR NAME: Corteza de venado (*Biolley* 16331).

Type in the U. S. National Herbarium, No. 472479, collected at Surubres near San Mateo, on the Pacific watershed, Alajuela, Costa Rica, 250 meters altitude, January 1901, by P. Biolley (No. 16331). Biolley's Nos. 17305 and 17323, collected in the same general region, 150 meters altitude, February 1909, also represent the new form.

Ruellia tubiflora var. *tetrastichantha* f. *flava* is easily recognized by its yellow flowers and large leaf blades.

16d. **Ruellia tubiflora** H. B. K. var. **hirsuta** Leonard, var. nov.

Frutex vel subfrutex hirsutus; corolla alba, grandis.

Shrub or suffrutescent herb; stem subquadrangular, hirsute, the upper portions subtomentose; leaf blades oblong to oblong-ovate, slenderly acuminate (the tip itself blunt), both surfaces rather densely hirsute, the hairs up to 1.5 mm. long; corolla up to 10 cm. long, white, finely puberulous, the tube infundibular, 1.5 cm. broad at mouth, the limb about 4 cm. broad.

Type in the U. S. National Herbarium, No. 1853779, collected toward El Parrao, vicinity of Villavicencio, Intendencia of Meta, Colombia, 500 meters altitude, November 10, 1938, by Cuatrecasas (No. 4591).

Another specimen is: *Bro. Apollinaire s. n.* (Bog, US), collected at Villavicencio, December 1928.

Except for its hairiness, *Ruellia tubiflora* var. *hirsuta* closely resembles the variety *tetrastichantha.*

16e. **Ruellia tubiflora** H. B. K. var. **parviflora** Leonard, var. nov.

Herba vel suffrutex, caulibus glabris; lamina oblonga, glabra, apice subobtusa, basi angustata, in petiolun decurrens, glabra; corolla purpurella.

Suffrutescent herb up to about 60 cm. high, stems subquadrangular, glabrous or obscurely puberulous at nodes; leaf blades oblong, 8 to 15 cm. long, 2.5 to 6 cm. wide, obtusish at apex, narrowed at base and decurrent on the petiole, glabrous or the veins and margins minutely and obscurely puberulous, the costa and lateral veins (10 to 12 pairs) prominent; petioles 1 to 2 cm. long; corolla about 4 cm. long, minutely puberulous, pale violet-white, infundibular, the tube about 1 cm. broad at mouth, the limb about 2 cm. broad; capsule clavate, 2 cm. long and 8 mm. broad, puberulous.

Type in the U. S. National Herbarium, No. 1858494, collected between San Pedro and La Joya, below Umbría, Comisaría of Putumayo, Colombia, January 16, 1945, by J. Ewan (No. 16785).

The collector found a single colony of these plants in partial shade of a small clearing. The pale violet-white flowers were inodorous.

16f. **Ruellia tubiflora** H. B. K. var. **parviflora** Leonard, f. **alba** Leonard, f. nov.

Herba; corolla parva, alba.

Herb; stems subquadrangular, glabrous; leaf blades oblong-ovate, 6 to 11 cm. long, 2 to 4 cm. wide, obtusish at apex, narrowed and decurrent on the petiole nearly to its base, glabrous; corolla minutely puberulous, white, 4 cm. long, the tube infundibular, about 12 mm. broad at mouth, the limb about 2 cm. broad.

Type in the National Herbarium of Colombia, collected in damp forest on the bank of the Río Mulato, at Mocoa, Comisaría of Putumayo, Colombia, 570 to 600 meters, December 26, 1940, by J. Cuatrecasas (No. 11276). Type fragment in the U. S. National Herbarium, No. 1853886.

The leaf blades of the specimen have a faint mottled area of lighter green about midway between the costa and margin. This character is probably all the more apparent in living plants.

17. Ruellia lorentziana Griseb.

Ruellia lorentziana Griseb. Abh. Boehm. Ges. Wiss. **24:** 259. 1879. Grisebach based his description on Lorentz's No. 1598, collected at Tucumán, Argentina.

Suffrutescent; stems erect, obscurely quadrangular, glandular-puberulous; petioles 1 to 3 cm. long, glabrous or sparingly pilose; leaf blades ovate, up to 16 cm. long and 9 cm. wide, obtuse at apex, narrowed at base and decurrent on the petiole, rather firm, crenulate-crisped, both surfaces glabrous or sparingly pilose, the cystoliths numerous and prominent; inflorescence a terminal interrupted narrow panicle, the branches 2- or 3-flowered; peduncles 1 to 3 cm. long, glandular-puberulous; bracts linear, 3 to 8 mm. long, glandular-puberulous; pedicels 1 to 2 mm. long; calyx 10 to 12 mm. long, glandular-puberulous, the tube 2 mm. long, the segments linear-subulate, unequal, 0.5 mm. wide near base; corolla, when fully expanded, 3 to 3.5 cm. long, sparingly puberulous, mauve, the narrow basal portion of the tube about 8 mm. long and 3 mm. in diameter, the upper portion campanulate, 10 to 13 mm. in diameter at mouth, the limb 3 mm. broad, the lobes rounded; stamens included; capsule fusiform, 2 cm. long, 4 mm. broad, abruptly narrowed and pointed at apex, narrowed at base (the solid basal portion about 4 mm. long), glandular-puberulous, 12- to 16-seeded; seed flat, ovate, subcordate at base, about 3 mm. long and 2 mm. broad, mucilaginous-pilose when moistened.

VERNACULAR NAME: Campanula morada (*Duque* 1446).

Ruellia lorentziana closely resembles *R. obtusa* Nees and *R. tuberosa* L. It can, however, be easily separated from these two species by its puberulous capsules and the glandular hairs of the inflorescence. The species was named in honor of Paul Guenther Lorentz, a collector of Argentine plants.

Along roads or railways and open waste places in general. Colombia, Peru, and Argentina.

CUNDINAMARCA: Vicinity of Apulo, *Killip, Dugand, & Jaramillo* 38257 (US). Nariño, *Pérez-Arbeláez* 399 (US). Tocaima, *Pérez-Arbeláez* 2518 (US).

EL VALLE: Vicinity of Aqueduct, Río Cali, *Duque* 1446 (Valle).

MAGDALENA: Sierra Nevada de Santa Marta, *Barkley & Araque* 22 (US).

TOLIMA: Mariquita, *Triana* s. n. (Col).

WITHOUT DEFINITE LOCALITY: *Holton* 598 (GH, NY).

18. **Ruellia geminiflora** H. B. K.

Ruellia geminiflora H. B. K. Nov. Gen. & Sp. 2: 240. 1817. Type collected in "locis temperatis, siccis prope Santa Ana et Ibague, Novo-Granatensium," 500 to 700 meters altitude, by Humboldt. Photograph (No. 29431) of the Paris Herbarium specimen in the U. S. National Herbarium.

Dipteracanthus geminiflorus Nees in Mart. Fl. Bras. 9: 40. 1847. Based on *Ruellia geminiflora* H. B. K.

Herb up to 50 cm. high; stems erect or ascending, pilosulous; leaf blades ovate, oblong, or lanceolate, short-petioled, 1.5 to 5 cm. long, 0.5 to 2 cm. wide, obtuse or acutish at apex, narrowed at base, entire, hirtellous; flowers axillary; calyx 10 mm. long or less, pilosulous, the segments linear-lanceolate; corolla mauve, pubescent, usually 2.5 to 3 cm. long, the lobes suborbicular, 5 to 10 mm. wide; capsules clavate, 8 mm. long, 4 mm. wide, puberulous, 4-seeded, the seeds apparently glabrous when dry, mucilaginous-pubescent when moistened.

VERNACULAR NAMES: Jasmín (*García-Barriga* 5107); yuquilla (*García-Barriga* 5158).

The name *geminiflora*, twin flower, was given to the species because the flower usually occur in pairs. Nees, on transferring the species to the genus *Dipteracanthus*, recognized five Greek-letter entities, namely α, *procumbens*, β, *hirsutior*, γ, *erectus*, δ, *subacaulis*, and ε, *angustifolius*. None of these have been validly published except β and ε.[10]

Pastures, savannas, open hillsides, and fields. Central America, West Indies, northern South America.

CUNDINAMARCA: Icononzo, *Pennell* 2783 (NY).

CAUCA: El Tambo, *von Sneidern* 1061 (S); 1062 (S). Río Timbío, *von Sneidern* 2651 (S).

EL VALLE: El Negro, *Dryander* 2337 (US). Vicinity of La Cumbre, *Pennell & Killip* 5970 (GH, NY). Pavas, *Pennell* 5475 (GH, NY, US). Potredillo to Miraflores, Palmira, *Pennell* 6047 (GH). Vicinity of Pavas, *Killip* 11635 (GH). La Paila, *Holton* 597 (NY, Ph).

HUILIA: East of Neiva, *Rusby & Pennell* 398 (NY).

META: Apiai, Villavicencio, *Cuatrecasas* 4727 (US). Cabuyaro, Río Meta, *García-Barriga* 5158 (Col). Sabana del Vergel, *García-Barriga* 5107 (US). San Martín, *Hermann* 11198 (US).

TOLIMA: Mariquita, *Pennell* 3675 (GH, Mo, NY, US).

18a. **Ruellia geminiflora** H. B. K. var. **angustifolia** (Nees) Griseb.

Dipteracanthus geminiflorus Nees var. *angustifolius* Nees in Mart. Fl. Bras. 9: 40. 1847. Type collected "prope Valenciam in Venezuela" by Moritz.

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[10] *Ruellia geminiflora* var. *hirsutior* Nees ex Hicken, Darwiniana 1: 140. 1924. *Ruellia geminiflora* var. *angustifolia* Nees ex Griseb. Fl. Brit. W. Ind. 451. 1861.

Dipteracanthus angustifolius Brem. Rec. Trav. Bot. Néerl. 35: 157. 1938. Based on *Dipteracanthus geminiflorus* Nees var. *angustifolius* Nees.

Ruellia geminiflora var. *angustifolia* Griseb. Fl. Brit. W. Ind. 451. 1861. Based on *Dipteracanthus geminiflorus* Nees var. *angustifolius* Nees.

Herbs up to 40 cm. high; stems subquadrangular, sulcate, densely to sparsely hirsute or glabrescent, the cystoliths inconspicuous; leaves sessile or subsessile, linear to narrowly lanceolate, up to 6.5 cm. long and 1.2 cm. wide or occasionally as much as 1.5 cm. wide, acute to obtusish (the tip itself blunt), narrowed at base, both surfaces densely to sparsely hirsute, the costa and lateral nerves (5 to 8 pairs) usually prominent beneath, the cystoliths obscure; flowers often opposite, usually terminal at blossoming stage; bractlets linear, up to 6.5 mm. long and 0.8 mm. wide, hirsute; calyx lobes linear-lanceolate, about 1.5 cm. long and 1 mm. wide near base, densely hirsute; corolla blue, pink, white, violet, or blue-violet, pubescent, 4.5 to 5 cm. long, the tube funnelform, about 2 cm. broad at throat, the narrow basal portion about 1 cm. long and 2 mm. in diameter, the lobes about 1.5 cm. long; capsule ovoid, 10 mm. long, 5 mm. broad, pubescent, apiculate, the sterile basal portion about 3 mm. long.

In addition to the narrowness of the leaf blades mentioned by Nees, Bremekamp states in his discussion of *Dipteracanthus angustifolius* that he finds a number of characters by which to separate his species from Humboldt's *R. geminiflora*, namely, "the stem is erect and not procumbent; the leaves are sessile, not shortly petiolate, at the top acute, not obtuse, and at the base cuneate, not rounded; the number of the nerve pairs varies between 5 and 8, instead of being always 5; bracteoles are present and not even small, instead of being absent; the calyx lobes are 15 mm. long and all of the same size, not posticous, one 10 mm. and the others shorter; the corolla is up to 5 cm. long, instead of 2.5–3.5 cm.; the capsule shortly pubescent, not more or less tomentose." Some of these differences are not very apparent in the Colombian specimens, which, in fact, seem in some respects to verge strongly toward the typical form, i. e. Humboldt's *R. geminiflora*. Inasmuch as eastern Colombia is at the edge of the range of the var. *angustifolia*, this could naturally be expected.

Savannas, meadows, open places in general. The specimens cited were collected from 100 to 500 meters altitude. Guiana, Venezuela, and eastern Colombia.

META: Caño Ijoa, road from Macapay to Barranca de Upía, *Haught* 2596 (US). Sabanas del Verjel, *García-Barriga* 5131 (US). Vicinity of Villavicencio, *Killip* 34330 (US).

VAUPÉS: San José del Guaviare, Río Guaviare, *Cuatrecasas* 7640 (US).

VICHADA: Along the Río Vichada at Bopimí, *Hermann* 11102.

19. Ruellia obtusa Nees

Ruellia obtusa Nees in DC. Prodr. **11**: 152. 1847. Type collected at Cartagena, Colombia, by Goudot, deposited in the Hooker Herbarium.

Herbs up to 70 cm. high; stems erect or ascending, quadrangular, narrowly winged, pilosulous or the internodes glabrescent; petioles up to 3 cm. long; leaf blades ovate, up to 15 cm. long and 9 cm. wide, obtuse or rounded at apex, abruptly narrowed at base and decurrent on the petiole, repand-crenate, both surfaces sparingly hirsute or glabrescent; flowers borne in an interrupted spike of verticillasters, the lowermost short-pediceled; bracts small, lanceolate, or those subtending the lower verticillasters leaflike; bractlets subulate, 1 to 3 mm. long; calyx segments subulate, about 15 mm. long, pilose and ciliate, the hairs up to 1 mm. long; corolla lavender or purplish pink, up to 5 cm. long, finely pubescent, the throat narrowly campanulate, 1.5 to 2 cm. in diameter at mouth, the limb about 3 cm. broad; stamens included; style glabrous; capsules cylindric, 2 to 2.5 cm. long, slightly flattened, glabrous or a few minute hairs on the calluses; seeds 20 or more, lenticular.

VERNACULAR NAME: Oreja de mula (*Bro. Elias* 247; 988).

The name *obtusa* alludes to the obtuse or round-tipped leaf blades.

Thickets, roadsides, waste places in general. Grows at low altitudes, usually below 300 meters.

ATLÁNTICO: Barranquilla, *Bro. Paul* C11 (US). Vicinity of Galapa and Baranoa, *Dugand & Jaramillo* 3280 (US). Hacienda El Paraíso on the Río Magdalena between Palmar de Varela and Ponedera, *Dugand & García-Barriga* 2539 (US). Puerto Colombia, *Pennell* 12047 (GH, NY, US); *Dugand & Jaramillo* 3242 (US); *Bro. Elias* 988 (US). Hacienda Cachubana, Usiacurí, *Dugand & García-Barriga* 2369 (US); 2383 (US); *Bro. Elias* 247 (US). Without definite locality, *Bro. Elias* s. n. (NY).

BOLÍVAR: Calamar, *Pennell & Rusby* 18 (NY). Juana Sanchez Trail, Island of Mompos, Lands of Loba, *Curran* 264a (US). Turbaco, *Killip & Smith* 14212 (NY, US); *Pennell* 4764 (GH, NY).

MAGDALENA: Vicinity of Fonseca, *Haught* 4348 (US).

SANTANDER: Puerto Wilches, *Rusby* 4799 (NY).

20. **Ruellia colorata** Baill.

Ruellia colorata Baill. Bull. Mens. Soc. Linn. Paris 2: 853. 1890. Type collected by Grisar in Peru or Ecuador.

Suffrutescent herbs; stems glabrous, quadrangular; leaf blades large, oblong-elliptic, up to 30 cm. long and 15 cm. wide, more or less abruptly acuminate, narrowed at base and decurrent on the petiole, thin, the margins undulate or shallowly or sometimes coarsely crenate, both surfaces glabrous, the cystoliths prominent under a lens, the costa and lateral veins (8 or 9 pairs) conspicuous; petioles up to 2 cm. long, glabrous; flowers borne in a terminal spike up to 12 cm. long and 8 cm. wide, bracts ovate, up to 6 cm. long and 3.5 cm. wide, acutish to obtuse at apex, rounded or slightly narrowed at base, both surfaces minutely and sparingly hirsute or glabrate, the margins entire, the peduncles up to 10 mm. long, these and the rachis more or less puberulous; bractlets linear, 1.5 cm. long, 2 mm. wide, obtusish at apex, red, sparingly

and minutely pubescent; calyx about 1 cm. long, red, sparingly and minutely pubescent, the segments lanceolate, 8 to 9 mm. long, 2 mm. wide; bracts ovate, up to 6 cm. long and 3.5 cm. wide, acutish to obtuse pubescent without, glabrous within, the tube about 6 mm. broad at base, narrowed to 2 mm. at about 10 mm. above base, thence rather abruptly enlarged to 7 mm., then gradually to 12 mm. at mouth, ventricose, the segments oblong, up to 19 mm. long and 9 mm. wide, rounded at tip, the filaments exserted 1 cm. beyond mouth of the corolla tube; anthers linear-lanceolate, 5.5 to 6 mm. long, 1 to 1.5 mm. wide at base, gradually narrowed to 0.5 mm. at tip; ovary glabrous; mature capsule not seen.

Dense forests. Peru, Ecuador, and southern Colombia.

PUTUMAYO: Río San Miguel in the region of Bermeja, *Cuatrecasas* 11027 (US). Río San Miguel, in the vicinity of Conejo, *Schultes* 3507 (US).

21. **Ruellia viridiflora** Leonard, sp. nov. FIGURE 32

Suffrutex, caulibus subquadrangularibus, glabris, angulis rotundatis, nodis verrucosis; lamina foliorum lanceolata vel rhombica, apice acuminata vel acuta, basi angustata, in petiolum decurrens, crenata, membranacea, supra glabra, subtus in costa et venis appresso-pubescentia; petioli brevi; flores numerosi, axillares; calycis segmenta lanceolata, acuminata, apice parce pilosula; corolla parce puberula, subviridis, tubo hypocrateriformi, lobis ovatis; stamina inclusa; capsula clavata, glabra.

Suffrutescent herb up to 5 meters high; stems quadrangular (the angles rounded), up to 2 cm. in diameter, glabrous, verrucose at nodes; leaf blades lanceolate to rhombic, up to 30 cm. long and 17 cm. wide, acuminate or acute, acute at base and decurrent on the petiole, crenate, rather thin, glabrous above, the cystoliths conspicuous under a lens, the costa and lateral veins (8 to 10 pairs) finely appressed pubescent; petioles 1 to 2 cm. long; flowers numerous, clustered in the axils of the upper leaves; calyx up to 7 mm. long, the segments lanceolate, acuminate, 6 mm. long and 2 mm. wide, glabrous below, sparingly pilosulose toward tip of segments; corolla 3 to 3.5 cm. long, pale green, sparingly puberulous, the tube hypocrateriform, the lower half slender, about 1.5 mm. in diameter, the upper half narrowly campanulate, about 8 mm. in diameter at mouth, 1.5 to 2 cm. broad, the lobes ovate; stamens included; capsule 17 mm. long, 4 mm. broad, clavate, the solid basal portions slender, comprising about one-half the length of the capsule, glabrous, 6-seeded; retinacula 2 mm. long.

Type in the Herbarium of the Riksmuseet, Stockholm, collected in thick forest 130 miles north of Bogotá at "El Humbo," Department of Boyacá, Colombia, "2500 feet" altitude, September 30, 1932, by A. E. Lawrance (No. 491). Isotypes are in the Gray Herbarium and the

herbaria of the Missouri and New York Botanical Gardens. A type fragment is in the U. S. National Herbarium, No. 59583.

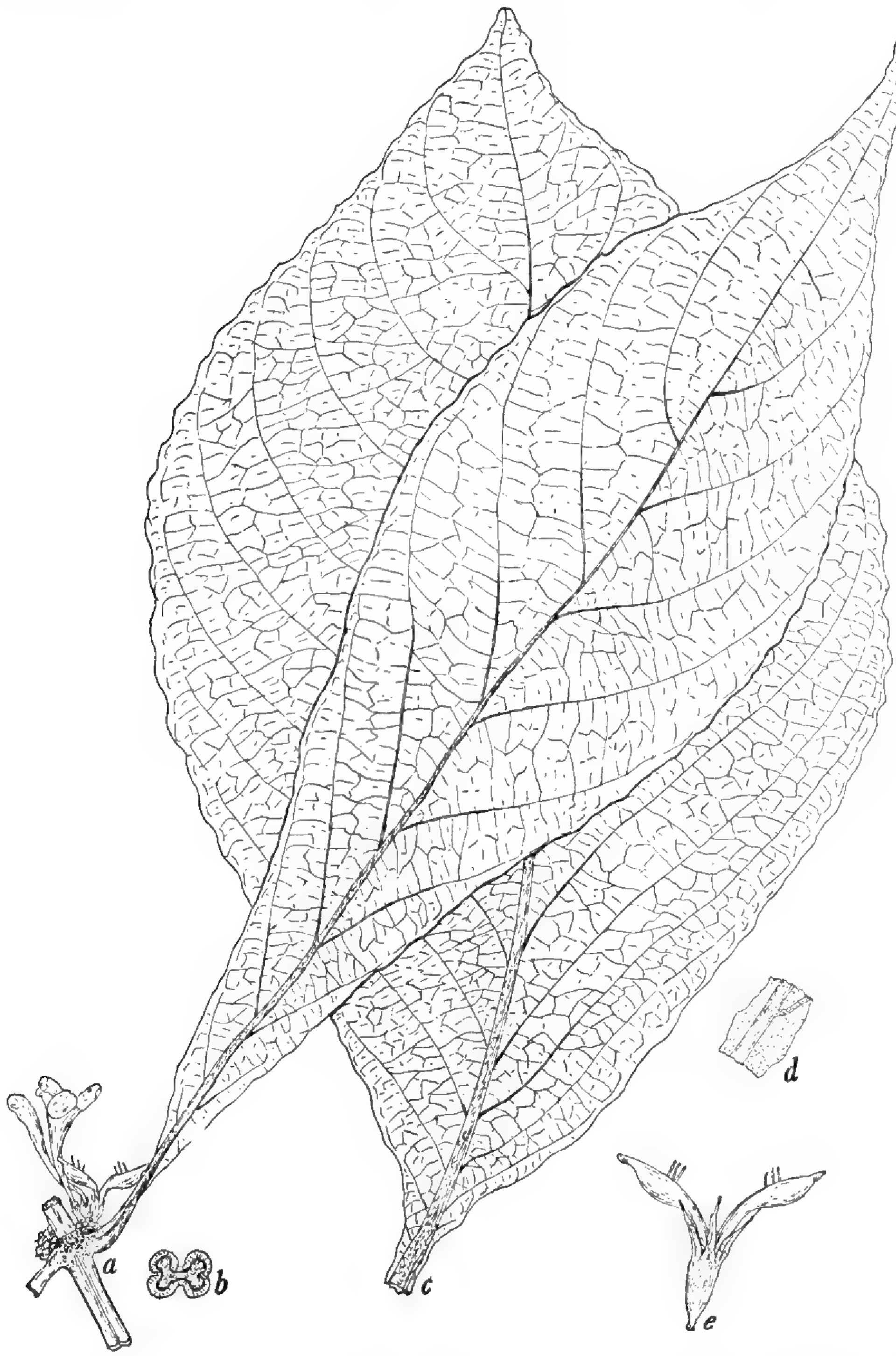

FIGURE 32.—*Ruellia viridiflora* Leonard (*Lawrance* 491): *a*, Node, showing inflorescence and leaf; *b*, cross section of stem; *c*, lower stem leaf; *d*, portion of leaf showing cystoliths; *e*, calyx and capsule. (*a*, *c*, Half natural size; *b*, *d*, *e*, natural size.)

Ruellia viridiflora is a well-marked species, easily recognized by its large size, large crenate leaves, and axillary clusters of pale green flowers.

22. Ruellia pennellii Leonard, sp. nov. FIGURE 33

Herba, caulibus infra suffrutescentibus, quadrangularibus, glabris vel parce (aliquando bifariam) pubescentibus, pilis albis, curvatis; lamina foliorum ovato-lanceolata, apice acuminata, basi angustata, in petiolum decurrens, undulata, glabra, in costa et venis pubescens, pilis parvis, adpressis; flores sessiles, spicam vel thyrsum contractum formantes; bracteae lanceolatae vel lineares, saepe grandes; bracteolae triangulari-subulatae, minute pubescentes; calycis segmenta lineari-subulata; corolla alba vel punicea vel rubra vel violacea, hypocrateriformis, tubo infra puberulento, lobis emarginatis, glabris; stamina inclusa; capsulae clavatae, glabrae, semina orbiculata, plana, brunneo-purpurea; retinacula curvata, subulata.

Herb, sometimes suffrutescent at base; stems up to 1 meter high, subquadrangular, glabrous or thinly pubescent with minute white curved hairs, these sometimes in lines; leaf blades ovate-lanceolate, up to 16 cm. long and 6 cm. wide, acuminate at apex, acute and decurrent on petiole at base, undulate, bright green, glabrous except the costa and lateral veins (6 to 8 pairs), these pubescent with small appressed hairs, the cystoliths numerous, conspicuous under a lens; petioles up to 4 cm. long, glabrous or minutely pubescent; flowers borne in small, opposite, sessile clusters, forming a terminal naked spike or contracted thyrse, the lowermost clusters in the axils of the upper leaves, the uppermost clusters confluent; rachis pubescent, the hairs minute, curved; bracts linear, 1 to 2 cm. long, 0.5 to 1 mm. wide, or occasionally larger and more leaflike; bractlets triangular-subulate, 1 to 5 mm. long, minutely pubescent; calyx 4 to 6 mm. long, the segments linear-subulate, 3 to 4 mm. long, about 0.5 mm. wide at base, dark colored in dried specimens, bearing a few minute hairs, the cystoliths prominent under a lens; corolla 3 to 3.5 cm. long, white, blue, violet, red, or pink with dark stripes, glabrous above, the lower half of the tube slender, pilosulous, about 1.5 mm. in diameter, the upper half campanulate, slightly oblique, 8 to 9 mm. at mouth, the limb about 1.5 cm. broad, the lobes ovate, about 10 mm. long and 7 mm. wide, emarginate, somewhat irregular; stamens included; capsules 12 mm. long, glabrous, the solid stipitate portion about 8 mm. long, the seed-bearing portion flattened, oval, about 3 mm. broad, 4-seeded; retinacula 1.5 mm. long; seed suborbicular, flat, reddish brown, 3.25 mm. broad, the flat surfaces glabrous, the margins minutely mucilaginous-tomentose when moistened.

Type in the U. S. National Herbarium, No. 1043209, collected in quebrada in forest, Tierra Alba on the Río Sinú, Department of Bolívar, Colombia, 70 to 150 meters altitude, by Francis W. Pennell

(No. 4658). Isotypes are in the Gray Herbarium and the herbarium of the New York Botanical Garden. The species is also represented by the following collections:

ANTIOQUIA: Banks of the Río Cauca at Puerto Valdivia, 240 to 260 meters altitude, *Metcalf & Cuatrecasas* 30075 (Mo, US).

FIGURE 33.—*Ruellia pennellii* Leonard (*a, b, e, Pennell* 4658; *c, d, f, g, Killip & García* 33559; *h, Haught* 1561): *a*, Tip of plant; *b*, cross section of stem; *c*, leaflike bract subtending flower cluster; *d*, same; *e*, portion of leaf blade (upper surface) to show cystoliths; *f*, calyx; *g*, corolla; *h*, capsule. (*a, c, d*, Half natural size; *b, e, g, h*, natural size; *f*, twice natural size.)

CALDAS: Moist soil at Manizales, near the Río Chinchina, 1,300 to 1,400 meters altitude, *Pennell* 10184 (GH, NY).

CAUCA: Primeval forest at El Tambo, 700 meters altitude, *von Sneidern* 971 (S); 1012 (S).

CHOCO: Dense forest along the Quebrada Jellita, Bahía Solano, 50 to 100 meters, *Killip & García* 33559 (US).

EL VALLE: Forest along the Río Sabaletas, Km. 29 of highway from Buenaventura to Cali, vicinity of Sabaletas, 25 meters altitude, *Killip & Cuatrecasas* 38857 (US).

SANTANDER: Magdalena Valley, in the vicinity of Barranca Bermeja between Sogamoso and Carare Rivers, 100 to 500 meters, *Haught* 2099 (US). Magdalena Valley, in the vicinity of Barranca Bermeja, between the Sogamosa and Colorado Rivers, 100 to 500 meters, *Haught* 1498 (US); 1561 (US); 1580 (US).

Ruellia pennellii is, apparently, distinct from all other Colombian species hitherto described, being related to the following new species, *R. colombiana.* The variation in the color of the corolla is indeed remarkable.

23. **Ruellia colombiana** Leonard, sp. nov. FIGURE 34

Herbae decumbentae, caulibus infra suffrutescentibus, quadrangularibus, angulis rotundatis, puberulis, pilis retrorso-curvatis; lamina foliorum ovata, apice abrupte acuminata, basi rotundata, crenata, supra glabra, subtus in costa et venis puberula, pilis adpressis; flores sessiles, axillares; bracteae et bracteolae subulatae; calycis segmenta lanceolato-subulata, puberula, ciliata; corolla caeruleo-purpurea, hypocrateriformis, tubo puberulo, lobis suborbicularibus, glabris, leviter emarginatis; stamina inclusa; capsulae clavatae, puberulae vel glabratae; semina brunnea, plana; retinacula subulata, recta, apice truncata, lacerata.

Herbs up to 1 meter high, suffrutescent at base, ascending, rooting at the lower nodes; stems subquadrangular, grooved and rounded on the angles, puberulous, the hairs 175μ long, retrorsely curved; leaf blades ovate, 6 to 9 cm. long, 3 to 6 cm. wide, abruptly acuminate at tip, rounded or obtuse at base, thin, the margins crenate, the upper surface dull green, glabrous, the lower surface grayish green, rather densely puberulous, the hairs up to 200μ long, gray, appressed, confined chiefly to costa and lateral veins (about 8 pairs) these fairly conspicuous both above and beneath; petioles 5 to 10 mm. long, appressed-puberulous; flowers clustered in the axils of the upper leaves, several in each fascicle; bracts subtending the flowers narrowly lanceolate, about 8 mm. long and 0.75 mm. wide, thick and subcarinate, sparingly puberulous, the hairs appressed, the bractlets similar but much smaller; calyx about 7 mm. long, the segments lance-subulate, 0.75 mm. wide, the tips blunt or rounded, sparingly puberulous and ciliate, the hairs appressed, about 100μ long; corolla bluish purple (azul lila), the upper portion glabrous, the lower inconspicuously puberulous, the hairs spreading, 75μ long, the tube 2 mm. broad at base, narrowed to 1.5 mm. at 3 mm. above base, thence abruptly enlarged to 8 mm. at throat, the limb 15 mm. broad, the enlarged portion of the tube slightly oblique, the lobes suborbicular, about 6 mm. long and 7 mm. wide, shallowly emarginate, the margins crenate; stamens attached to base of the expanded portion of the corolla tube, the longer of each pair about 5 mm. long, the shorter 3 mm. long, the filaments very slender, glabrous, the anthers 2 mm. long, 0.5 mm. wide; pistil 17 mm. long,

the ovary and style minutely hirsute, the hairs ascending, about 50μ long, the stigma lobe oblong, thin, 1.5 mm. long, 0.5 mm. wide; capsule clavate, 10 to 12 mm. long, minutely puberulous or glabrate, the solid stipitate base about 5 mm. long; seed flat, suborbicular, brown, the margins gelatinous-puberulous when moistened; retinacula erect, straight, subulate, truncate, 1.5 mm. long.

Type in the U. S. National Herbarium, No. 1852483, collected along the Río Calima at La Trojita, Department of El Valle, Colombia, 5 to 50 meters altitude, February 19 to March 10, 1944, by J. Cuatrecasas (No. 16424). The following also represent the species:

ANTIOQUIA: In dense damp woods between Villa Arteaga and Río Mutatá, *Johnston & Barkley* 18C448 (Med).

BOLÍVAR: River-flat of the Río Sinú at Boca Tai, 50 to 80 meters altitude, *Pennell* 4182 (NY). Moist forest, Las Dantas to Puerto Canoa, on the Río Esmeralda, 400 to 800 meters, *Pennell* 4526 (NY).

Ruellia colombiana is an indefinite species, differing from the polymorphic *R. pennellii* only in its rounded leaf bases and the general lack of the long narrow leaflike bracts of the inflorescence.

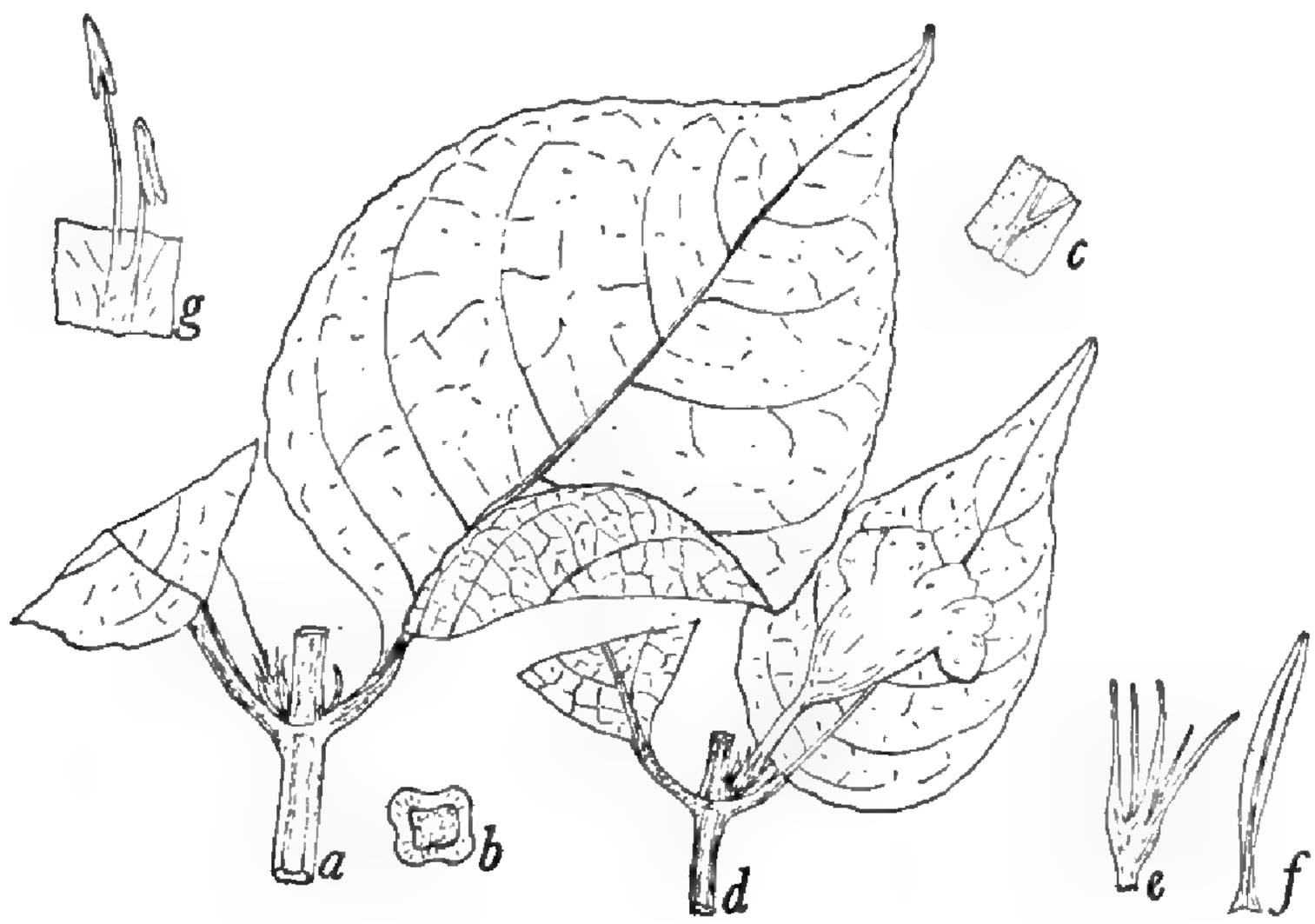

FIGURE 34.—*Ruellia colombiana* Leonard (*Cuatrecasas* 16424): *a*, Lower node, showing leaves and axillary flowers; *b*, cross section of stem; *c*, portion of leaf blade (upper surface) showing cystoliths; *d*, upper node; *e*, calyx, *f*, bract; *g*, a pair of stamens. (*a*, *d*, Half natural size; *b*, *c*, natural size; *d*–*g*, twice natural size.)

24. Ruellia aquatica Leonard, sp. nov. FIGURE 35

Herbae, caulibus erectis vel adscendentibus, subquadrangularibus, infra glabris, sursum pilosis; lamina foliorum oblongo-elliptica, apice obtusa vel rotundata, basi angustata, glabra; petioli glabri vel parce pilosi, spica terminalis; bracteae imbricatae, lanceolatae, apice obtusae, basi angustatae, pilosae, ciliatae; calycis segmenta lanceolata, ciliata; corolla purpurea, hypocrateriformis, minute pubescens, lobis ovatis; capsulae calvatae, glabrae; semina rubro-brunnea, plana,

suborbicularia, glabra, vel madefactis subtiliter mucoso-pubescentia; retinacula subulata, curvata, apice truncata, lacerata.

Herbs; stems erect or ascending, 20 to 30 cm. high, subquadrangular, glabrous below, pilose above, the hairs 1.5 mm. long; leaf blades oblong-elliptic, 2 to 8 cm. long, 1 to 3.5 cm. wide, obtuse or rounded at apex, sometimes bluntly acuminate, narrowed at base, glabrous, the cystoliths numerous; petioles up to 2 cm. long, glabrous or sparingly pilose; flowers borne in terminal bracted spikes up to 3 cm. long; bracts imbricate, lanceolate, about 15 mm. long and 6 mm. wide, obtuse at apex, pilose and strongly ciliate; bractlets linear, 13 mm. long,

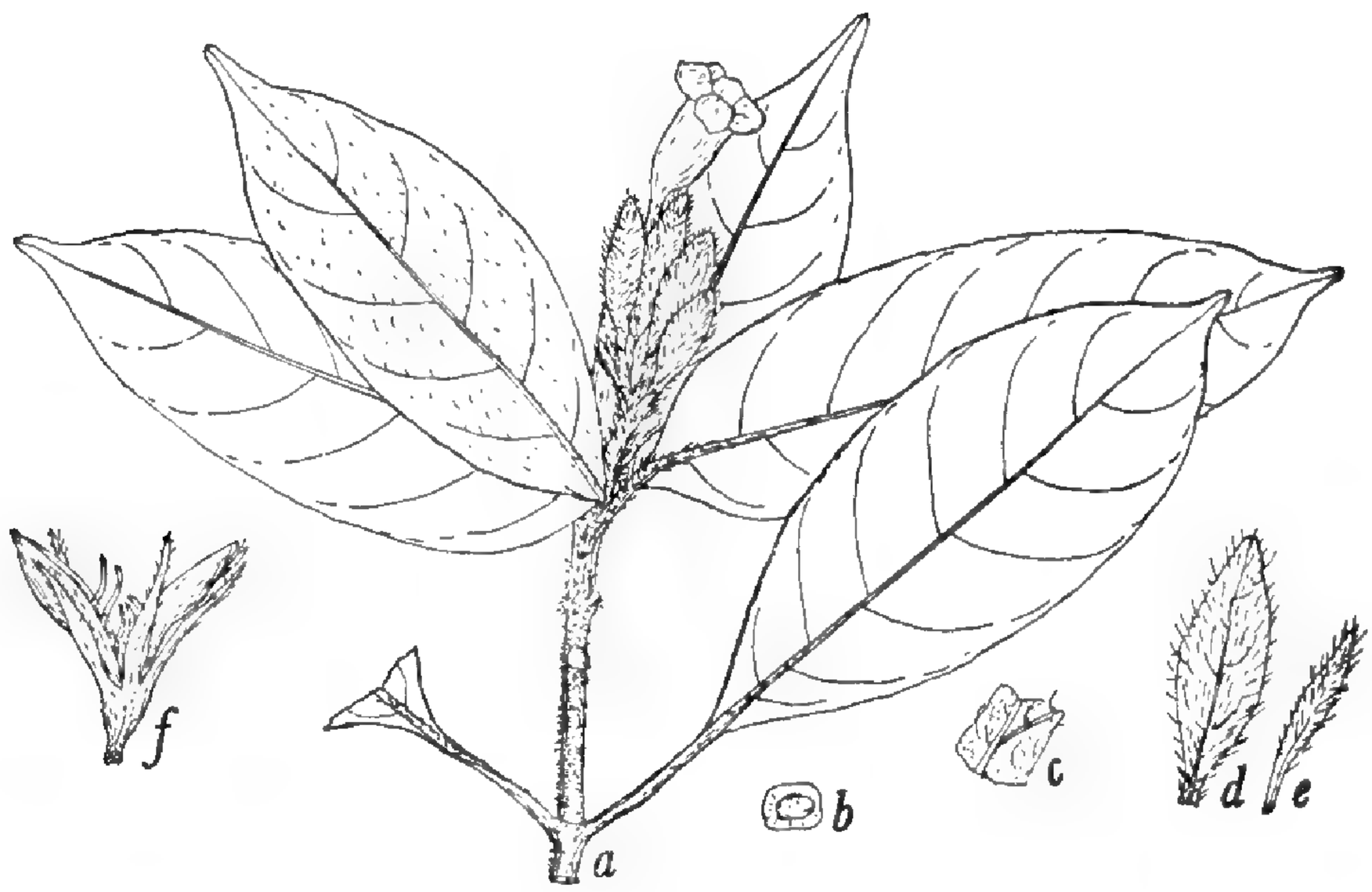

FIGURE 35.—*Ruellia aquatica* Leonard (*Haught* 1762): *a*, Tip of branch; *b*, cross section of stem; *c*, portion of leaf blade (upper surface) to show cystoliths; *d*, bract; *e*, bractlet; *f*, calyx and capsule. (*a*, Half natural size; *b–f*, natural size.)

1.5 mm. wide, pilose; calyx 8 mm. long, the tube glabrous, the segments lanceolate, 7 mm. long, 1.5 mm. wide near base, ciliate; corolla about 2.5 cm. long, purple, minutely pubescent, the tube hypocrateriform, the lower half slender, the upper half campanulate, about 6 mm. broad at throat, the limb 10 to 12 mm. broad, the lobes ovate; capsules 8 mm. long, about 3 mm. wide, clavate, glabrous, the solid basal portion about 1 mm. long, 6-seeded; seeds flat, reddish brown, suborbicular, 2 mm. long and 2.5 mm. broad, glabrous when dry, very finely mucilaginous-pilose when moistened; retinacula 1.5 mm. long, subulate, curved, truncate and lacerate at tip.

Type in the U. S. National Herbarium, collected in frequently submerged areas in the San Juan Valley (Camp VI), Department of Santander, Colombia, 100 to 700 meters altitude, June 9, 1935, by Oscar Haught (No. 1762).

Haught's No. 1496a, collected at Camp Mesa, vicinity of Barranca Bermeja, Magdalena Valley, between the Sogamoso and Colorado

Rivers, Santander, 100 to 500 meters altitude, also represents the species.

Ruellia aquatica is unlike any other Colombian *Ruellia* hitherto described. The name *aquatica* alludes to the habitat of the species.

25. **Ruellia lasiostachya** Leonard, sp. nov. FIGURE 36

Suffrutex, caulibus quadrangularibus, angulis rotundatis, dense pilosis vel subtomentosis, pilis brunneis; lamina foliorum ovata vel elliptica, apice subacuta (?), basi angustata, integra vel undulata, pilosa; petioli tomentosi; spica terminalis; bracteae magnae, imbricatae, infimae lanceolato-ovatae, supremae obtusae; bracteolae lineari-lanceolatae, dense pilosae; pedicelli glabri; calycis segmenta carinata, glabra vel apice minute pilosa; corolla purpurea (?), hypocrateriformis, minute pubescens, lobis ovatis; stamina inclusa; ovarium et stylus apice pilosi.

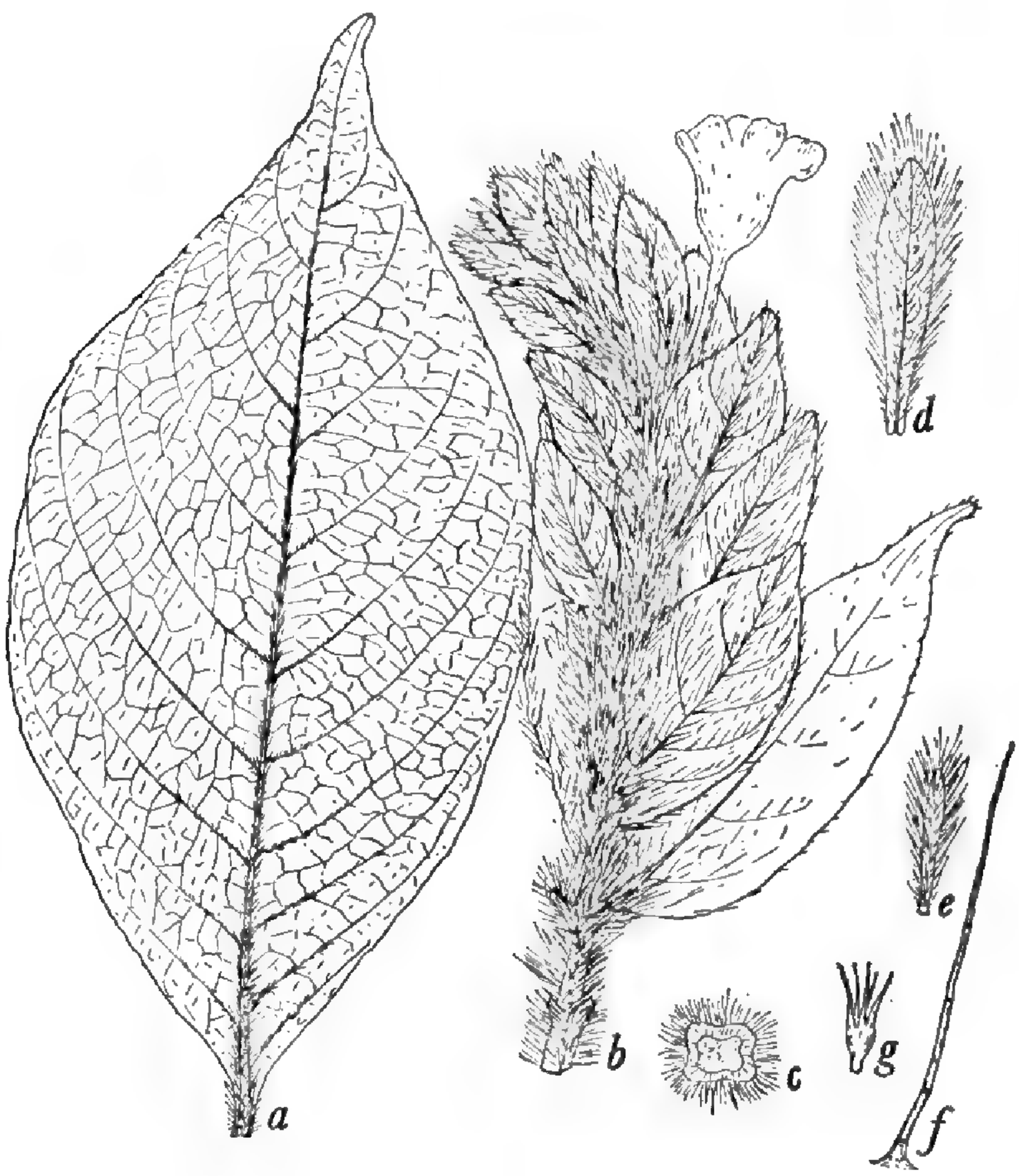

FIGURE 36.—*Ruellia lasiostachya* Leonard (*Uribe* s. n.): *a*, Leaf blade; *b*, inflorescence; *c*, cross section of stem; *d*, *e*, bractlets; *f*, hair from bractlet; *g*, calyx. (*a*, *b*, Half natural size; *c*, *d*, *e*, *g*, natural size; *f*, about eight times natural size.)

Suffrutescent herbs; stems obtusely quadrangular, densely pilose or subtomentose with brownish hairs up to 4 mm. long; leaf blades ovate or elliptic, 16 cm. long and 8.5 cm. wide, acute (?) at apex, narrowed at base, entire or undulate, both surfaces pilose, the hairs

1 to 2 mm. long, confined chiefly to the costa and lateral veins (10 to 12 pairs); petioles 15 mm. long or more, loosely tomentose; flowers borne in a dense terminal spike 12 cm. long and about 3 cm. broad, each flower cluster subtended by a large leaflike bract, the lowermost of these ovate-lanceolate, 9 cm. long, 3 cm. wide, thence gradually reduced toward tip, the uppermost ovate, about 14 mm. long and 8 mm. wide, all obtuse and closely imbricate; primary bractlets linear-lanceolate, about 10 mm. long and 1.5 mm. wide, densely pilose with yellowish hairs up to 4 mm. long; secondary bractlets oblong-lanceolate, 1.5 to 2 cm. long, 3 to 5 mm. wide, densely pilose; pedicels 1.5 cm. long, glabrous; calyx 4.5 mm. long, thin, glabrous or minutely pilosulous at tip of segments, these subulate, 3 mm. long, 1.75 mm. wide at base, keeled; corolla hypocrateriform, 3 to 3.5 cm. long, minutely pubescent, mauve (?), the lower half slender, cylindric, about 1.5 mm. in diameter, the upper portion campanulate, 12 mm. broad at mouth, the limb about 2 cm. in diameter, the lobes ovate, about 8 mm. long and 7 mm. wide, rounded; stamens included, ovary and lower portion of the style (2 cm. long) pilosulous.

Type in the Herbarium of the Instituto de la Salle, Bogotá, Colombia, collected in the Comisaría of Caquetá, Colombia, December 1930, by C. Uribe. Type fragment in the U. S. National Herbarium, No. 1692608.

Ruellia lasiostachya is probably related to *R. uribei*, but it is easily distinguished by its dense terminal spike and large imbricated bracts. The type material is very fragmentary, and thus the dimensions given for the leaf blades may prove too small when more ample material is examined. The name *lasiostachya* is derived from λάσιος, shaggy, and στάχυς, spike.

26. **Ruellia putumayensis** Leonard, sp. nov. FIGURE 37

Herba, caulibus quadrangularibus, fusco-pilosis; lamina foliorum oblongo-elliptica, apice subobtusa, basi angustata, tenuia, integra vel undulata, supra pilosa, subtus plus minusve adpresso-pilosa; petioli pilosi; flores axillares; bracteae ellipticae, apice subobtusae, basi acutae; bracteoli lineares, pilosae; calycis tubus glaber, segmentis angusto-triangularis, glabris vel apice minute pilosulis; corolla alba, lilacino-virgata, minute pubescens, hypocrateriformis, lobis ovatis, crenatis, rotundatis; stamina inclusa; ovarium et stylus pilosuli; capsulae clavatae, glabrae vel apice parce pilosulae; semina plana, orbiculata, marginibus madefactis mucoso-tomentosis; retinacula apice fimbriata.

Herb; stems subquadrangular, pilose, the hairs brownish, up to 5 mm. long; leaf blades oblong-elliptic, 4 to 12 cm. long, 1.5 to 6 cm. wide, obtusish at apex, acute at base, rather thin, entire or undulate, both surfaces pilose, the hairs up to 2.5 mm. long, those of the upper surface scattered, ascending, those of the lower surface confined to costa and lateral veins and more or less appressed; the cystoliths

minute but easily seen under a lens; petioles up to 8 mm. long, pilose; flowers borne in axillary bracted clusters 1.5 to 2 cm. long; bracts elliptic, 12 to 15 mm. long, 4 to 5 mm. wide, obtusish at apex, acute at base, long-pilose; bractlets linear, up to 7 mm. long and 0.75 mm. wide near base, 1-nerved, pilose; calyx 4.5 mm. long, glabrous or bearing several

FIGURE 37.—*Ruellia putumayensis* Leonard (*Klug* 1696): *a*, Node and leaf; *b*, cross section of stem; *c*, tip of plant showing inflorescence; *d*, bract and bractlets; *e*, capsule and calyx; *f*, corolla. (*a*, *c*, *f*, Half natural size; *b*, *d*, *e*, natural size.)

minute hairs near tip of segments, these narrowly triangular, about 3 mm. long, 0.75 mm. wide at base; corolla 3 to 3.5 cm. long, white, striped with lilac, minutely pubescent, hypocrateriform, the lower half slender, tubular, about 1.5 mm. in diameter, the upper half campanulate, about 1 cm. broad at mouth, the limb 1.5 to 2 cm. broad, the lobes ovate, crenate, rounded; stamens included; ovary and style pilosulous; capsule clavate, about 1 cm. long, and 5 mm. broad, the lower half slender and solid, glabrous or sparingly pilosulous toward tip, 4-seeded; seeds flat, suborbicular, reddish brown, about 3 mm. in diameter, the flat surfaces glabrous, the edges puberulous, mucilaginous-tomentose when moistened; retinacula 2.5 mm. long, fimbriate at apex.

Type in the U. S. National Herbarium No. 1517990, collected in forest at Umbría, Comisaría of Putumayo, Colombia, 325 meters altitude, November 1930, by G. Klug (No. 1696).

Ruellia putumayensis resembles no other *Ruellia* hitherto described. It can be recognized by its white lilac-striped corollas and the dense pilosity of the stems and the upper surface of the leaf blades.

27. **Ruellia uribei** Leonard, sp. nov. FIGURE 38

Herba, caulibus quadrangularibus, angulis obtusis, dense fusco-pilosis; lamina foliorum oblongo-lanceolata, apice acuminata, basi angustata, in petiolum decurrens, tenuia, integra vel undulata, parce pilosa, subtus pilis praecipue in costa et venis; petioli pilosi; flores sessiles, axillares; bracteae lineares, dense pilosae; calycis segmenta subulata, puberula; corolla pilosa hypocrateriformis, lobis ovalibus, rotundatis; stamina inclusa; stylus dense puberulus; ovarium tomentosum.

FIGURE 38.—*Ruellia uribei* Leonard (*Uribe* s. n., December 1930): *a*, Tip of branch; *b*, cross section of stem; *c*, leaf blade; *d*, portion of leaf blade (upper surface) showing cystoliths; *e*, bract; *f*, bractlet; *g*, calyx, style, and stigma; *h*, corolla. (*a*, *c*, *h*, Half natural size; *b*, *d*, *e*, *f*, natural size; *g*, 1½ times natural size.)

Herb; stems obtusely quadrangular, densely pilose with brownish hairs 1.5 to 2 mm. long; leaves oblong-lanceolate, up to 24 cm. long and 6.5 cm. wide, gradually narrowed from middle to a slender blunt pointed tip, acute at base and decurrent on the petiole, thin, entire or undulate, both surfaces rather sparingly pilose with hairs about 1 mm. long, those of the lower surface confined chiefly to costa and lateral veins (8 or 9 pairs), the upper surface bearing numerous cystoliths, these conspicuous under the lens; petioles 1 to 3.5 cm. long, pilose; flowers several, sessile or subsessile, clustered in the axils of the upper

leaves; bracts narrowly linear, 1.5 to 3 cm. long 0.5 to 1 mm. wide, densely pilose with brownish hairs up to 2.5 mm. long; bractlets similar but smaller; calyx 5 mm. long, the segments unequal, subulate, 2.5 to 3.5 mm. long, pilosulous with white hairs 0.5 mm. long or a few reaching 1 mm. in length; corolla erect, 3.5 to 4.5 cm. long, minutely pubescent, the tube narrowly hypocrateriform, about 1 cm. in diameter at mouth, the limb about 2 cm. broad, the lobes oval, 12 mm. long and 10 mm. wide, rounded, the stamens included; style densely pilosulous; ovary tomentose.

Type in the Herbarium of the Instituto de la Salle, Bogotá, Colombia, collected in the Comisaría of Caquetá, December 1930, by C. Uribe. Isotype in the U. S. National Herbarium, No. 1692607.

Among the Colombian Ruelliae, *R. uribei* is a well-marked species. It can be easily recognized by its long, narrow, pilose leaves, narrowly linear densely pilose bracts, and the relatively small irregular calyx. The color of the corolla is not apparent in the dried material.

SPECIES NOT POSTIVELY KNOWN FROM COLOMBIA

RUELLIA SPRUCEI Lindau, Bull. Herb. Boiss. 5: 653. 1897.

Type collected at Panuré on the Rio Vaupés, October 1852 to January 1853, by Spruce, No. 2605.

Panuré is in Amazonian Brazil, about 65 km. from the Colombian border, and not in Colombia as given by Lindau.

Tribe 5. BARLERIEAE Nees

Barlerieae Nees in Wall. Pl. Asiat. Rar. 3: 75. 1832.

Herbs or shrubs; stems usually subquadrangular; leaf blades ovate to lanceolate; flowers sessile, axillary or in terminal spikes, the bracts often large, conspicuous and imbricate; calyx irregular, often 4-parted; corolla infundibular, the narrow portion short, the expanded portion more or less elongated; stamens 4, didynamous; anther lobes parallel; capsules 4-seeded, seed-bearing to base.

Species of two of the nine genera comprising the tribe Barlierieae occur in Colombia.

KEY TO THE GENERA

Calyx segments 4; corollas large and conspicuous, subregular_____ 13. **Barleria**
Calyx segments 5; corollas small, 2-lipped, 5 mm. long or less__ 14. **Teliostachya**

13. BARLERIA L.

Barleria L. Sp. Pl. 636. 1753; Gen. Pl. ed. 5, 283. 1754. Named for Jaques Barrelier, a French botanist (1634 to 1673). More than 100 species have been described. These occur in tropical regions, mostly in the Old World. Type species: *Barleria prionitis* L. (India).

Shrubs or herbs; leaves opposite, entire; flowers axillary or borne in terminal bracted spikes; calyx deeply 4-parted, 2 of the segments

larger than the others; corolla usually yellow or blue, the tube about as long as the spreading limb or longer, the limb with 5 rounded lobes; stamens 4, didynamous, borne on the base of the corolla tube; style elongated; stigma obtuse, ovules 2 in each cavity; capsules ovoid to oblong; seeds flattened, ovate to suborbicular.

KEY TO THE SPECIES

Flowers borne in a terminal spike, yellow, turning purple on drying--1. *B. micans*
Flowers axillary, blue---------- 2. *B. cristata*

1. Barleria micans Nees

Barleria micans Nees; Benth. Bot. Voy. Sulph. 146. 1844. *Micans*: sparkling, glittering, in allusion to the attractively bracted inflorescence. Type locality: Taboga Island, Bay of Panama, Panama.

Barleria discolor Nees; Benth. Bot. Voy. Sulph. 146. 1844. *Discolor*: variegated, of various colors, in allusion to the leaf blades green above and silvery beneath. Type locality: Nicoya, Costa Rica.

Herbs, sometimes subligneous at base, 1 to 1.5 meters high; stems glabrous or strigose, terete; leaf blades ovate to narrowly lanceolate, 10 to 25 cm. long, usually about 4 to 5 cm. wide, long-acuminate at apex, attenuate or abruptly decurrent at base, sparingly strigose or hirtellous, the leaves subtending the spike subsessile; petioles 1 to 2 cm. long; flowers borne in a large dense terminal spike, the bracts ovate-lanceolate to broadly ovate, 2 to 3 cm. long, about 1 cm. wide, acute or obtuse, tipped by a small spine, chartaceous, veiny, more or less strigose, the margins with spinelike teeth up to 3 mm. long, sometimes drying bluish; bractlets narrowly linear, 1.5 to 2 cm. long; calyx segments very unequal, the anterior segment oblong, 1.5 to 2 cm. long, 1 to 1.4 cm. wide, bidentate at apex, the posterior segments slightly longer and narrower, acuminate at apex, the lateral segments narrowly lanceolate, about half as long as the others; corolla 5 to 5.5 cm. long, yellow, turning bluish purple when dry, the tube slender, the lobes oblanceolate, subequal, spreading; capsules cylindric, slender-pointed at apex, glabrous, 4-seeded.

Rocky banks and waste places in general; usually in more or less shaded situations. Colombia northwards to southern Mexico.

ATLÁNTICO: Hacienda Riodulce, Los Pendales, *Dugand & Jaramillo* 4154 (US). Piojó, *Bro. Elias* 735 (US). Sahagún, *Pennell* 4104 (GH, NY). Tubará, *Dugand & Jaramillo* 4061 (US).

SANTANDER: Between Bucaramanga and El Jaboncillo, Río Suratá Valley, *Killip & Smith* 16355 (NY, US).

2. Barleria cristata L. FIGURE 39

Barleria cristata L. Sp. Pl. 636. 1753. *Cristata:* cristate or crested, in allusion to the pectinate outer calyx segments. Type locality: India. An ample description is given by Linnaeus.

Herbaceous or suffrutescent at base, up to 1 meter high, the stems subterete, both strigose and puberulous, the minute hairs white and

curved, the appressed ones yellowish; leaf blades ovate-lanceolate, up to 10 cm. long and 3.5 cm. wide, acute at apex, narrowed at base, entire, strigose or both strigose and puberulent, the hairs often confined to costa and lateral veins; petioles about 1 cm. long; flowers solitary or paired, subsessile, borne in the axils of the leaves, or occasionally crowded in a headlike cluster at the ends of the branchlets; bracts linear-lanceolate, about 12 mm. long and 1.5 mm. wide, strigose; outer segments of the calyx ovate-lanceolate, 1.5 to 2.5 cm. long, veiny, spine-tipped, hirtellous, pectinate-toothed, the inner segments lanceolate, acuminate, 8 or 9 mm. long, 2 mm. wide, whitish, puberulous; corolla

FIGURE 39.—*Barleria cristata* L. (*Bro. Elias* 980): *a*, Tip of stem; *b*, cross section of stem; *c*, bract; *d*, posterior calyx segment; *e*, enlarged portion of calyx segment to show teeth and glandular hairs; *f*, one of the anterior calyx segments; *g*, ovary and style. (*a*, Half natural size; *b*, *e*, *g*, twice natural size; *c*, *d*, *f*, natural size.)

up to 6 cm. long, violet with paler spots at throat, finely pubescent, the tube hypocrateriform, straight, gradually enlarged from about 3 mm. in diameter at middle to 12 mm. at throat, the limb about 3 cm. broad, the lobes nearly equal, rounded, the 2 upper ones erect; 2 of the stamens perfect, reaching to mouth of tube, and 2 imperfect and much shorter; styles exserted; capsules subcylindric, about 12 mm. long and 4 mm. broad, glabrous, 4-seeded.

VERNACULAR NAME: Lila (*Dugand & García-Barriga* 2535).

Gardens. Found occasionally as an escape throughout tropical America.

ATLÁNTICO: Barranquilla, *Dugand & García-Barriga* 2535 (US); *Bro. Elias* 502 (US); 753 (US); 980 (US).

14. TELIOSTACHYA Nees

Teliostachya Nees in Mart. Fl. Bras. 9: 71. 1847. Τέλειος, perfect, and στάχος, spike in allusion to the well-defined spikes of the species. Nees separates *Teliostachya* from *Lepidagathis* Willd. and describes three species, *T. cataractae*, *T. diffusa*, and *T. alopecuroidea*, the last based on *Ruellia alope-*

curoidea Vahl. Bremekamp[11] justifies Nees' establishment of the genus *Teliostachya* as distinct from *Lepidagathis* by pointing out the following contrasting characters: In *Teliostachya* the spike is radically symmetric and definitely terminal, the anticous calyx lobes entirely free, the anther lobes are inserted at different heights, and the pollen grains are entirely free from reticulations. *Lepidagathis*, on the other hand, is characterized by a dorsal-ventral, often axillary inflorescence, the anticous calyx lobes are at least partly united, the anther lobes are at the same height, and the pollen grains are finely reticulate. Limited to tropical America and west Africa. Ten or more species are found in America. Type species: *T. cataractae* Nees. Type locality: Brazil.

Lepidagathis Willd. Sp. Pl. 3: 400. 1801. Λεπίς, scale or bract, ἀγαθίς, a round head, in reference to the bracted inflorescence. All the known species of this genus are natives of the Old World. Type species: *L. cristata* Willd. India.

Herbs; leaves entire, bearing cylindrical cystoliths; flowers borne in cylindrical or ovoid spikes composed of verticillasters, the spikes solitary or several, borne at the tips of the branches, the verticillasters (subtended by 3-nerved bracts or the lowermost by a pair of ordinary leaves) consisting of 3 to 7 flowers, the lateral flowers subtended by 1- to 3-nerved bracts; bractlets 1-nerved; calyx divided nearly to base, the upper lobe the largest, 3-nerved, the lateral lobes 1-nerved, the lower lobes slightly longer than the lateral ones, 1- or 2-nerved; corolla about as long as the calyx, the tube cylindric, the throat slightly enlarged, the limb 2-lipped, the upper lip obtuse, emarginate, or subentire, the lower lip 3-parted, the lobes subequal, obtuse; stamens 4, didynamous, barely exserted; anthers 2-lobed, the lobes attached at unequal heights, the lower or sometimes both lobes apiculate at base; ovules 2 in each cavity; style 2-lobed, the lobes semiglobose; capsules oblong, sexangular, acute, each valve bearing 2 seeds; retinacula short; seeds lenticular, yellow, covered with mucous hairs.

KEY TO THE SPECIES

Leaf blades ovate to elliptic; upper calyx segment 2 mm. wide. 1. *T. alopecuroidea*

Leaf blades lanceolate to narrowly elliptic; upper calyx segment 1.25 mm. wide.
- Leaf blades, thin sparingly pilosulous to glabrous; plants diffuse, often 30 cm. high ---------- 2. *T. lanceolata*
- Leaf blades firm, rather densely hirtellous; plants rigid, rarely over 23 cm. high ---------- 2a. *T. lanceolata* var. *crispa*

1. **Teliostachya alopecuroidea** (Vahl) Nees

Ruellia alopecuroidea Vahl, Eclog. Amer. 2: 49. 1798. *Alopecurus* and εἶδος, the form of i. e., resembling the genus *Alopecurus* L. Type collected in Montserrat, West Indies, by Ryan. Photograph of type in the U. S. National Herbarium, No. 22196.

Teliostachya alopecuroidea Nees in Mart. Fl. Bras. 9: 72. 1847. Based on *Ruellia alopecuroidea* Vahl.

Lepidagathis alopecuroides R. Br. ex Griseb. Fl. Brit. W. Ind. 453. 1864. A transfer based on *Ruellia alopecuroidea* Vahl.

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[11] Rec. Trav. Bot. Néerl. 35: 149. 1938.

Herbs up to 50 cm. high, usually much branched, erect, decumbent or ascending, sometimes rooting at the lower nodes, short-pilose; leaf blades thin, ovate to elliptic, 3 to 8 cm. long, 2 to 3 cm. wide, acute or obtuse at apex, narrowed at base, repand or entire; spikes usually terminal, 2 to 8 cm. long, 1 to 1.5 cm. in diameter, many-flowered; bracts lanceolate to oblong, about 6 mm. long, venose, ciliate; calyx segments unequal, 4 to 6 mm. long, the anterior pair lanceolate, connate at the base, the lateral pair linear, the posterior segment obovate; corolla white or violet, about as long as the calyx; stamens 4, free at base, the anther sacs parallel, slightly unequal, blunt at base; capsules sessile, glabrous, 4-seeded, about 4 mm. long.

Wet shaded banks in woods, thickets, and fields. Brazil, British Guiana, Colombia, French Guiana, Peru, Trinidad, Venezuela. Extending northward into Central America and the West Indies.

MAGDALENA: Poponte, Magdalena Valley, *Cyril Allen* 912 (Mo).
META: Villavicencio, *Hermann* 11156 (US).

FIGURE 40.—*Teliostachya lanceolata* Nees (*a–g*, *Cuatrecasas* 18716; *h–j*, *Cuatrecasas* 7586): *a*, Tip of stem; *b*, cross section of stem; *c*, section of stem to show groove; *d*, stem leaf; *e*, bracts; *f*, posterior calyx segment; *g*, anterior and lateral calyx segments; *h*, corolla; *i*, capsule; *j*, valve of capsule to show retinacula. (*a*, *d*, Half natural size; *b*, three times natural size; *c*, *e–j*, twice natural size.)

2. Teliostachya lanceolata Nees FIGURE 40

Teliostachya lanceolata Nees in Mart. Fl. Brass. 9: 74. 1847. Several cotypes from Brazil and one from Peru are cited.

Herbs up to 30 cm. high or more; stems ascending, rooting at the lower nodes, subquadrangular (the angles narrowly and obscurely winged), pubescent with appressed or ascending hairs about 0.5 mm. long (the lower portions sparingly pubescent or glabrate); leaf blades lanceolate or narrowly elliptic, up to 6 cm. long and 2.2 cm. wide, obtuse or acute (the tip blunt), narrowed at base, glabrous or the

costa and lateral veins (4 or 5 pairs, obscure) sparingly hirtellous, the hairs appressed; petioles up to 1.5 cm. long, winged; spikes terminating the branches, narrowly conic, up to 4.5 cm. long, about 1 cm. in diameter at base and 5 mm. near tip; cymes 3- to 5-flowered; bracts subulate (or the lowermost leaflike), up to 6 mm. long and 0.5 mm. wide, 3-nerved (the lateral pair faint), ciliate toward apex with small curved hairs; bractlets setiform, about 5 mm. long, sparingly hirtellous; calyx prominently nerved, the margins and nerves beset with scattered straight spreading hairs up to 0.5 mm. long, the posterior segment lanceolate, 5 to 7 mm. long, 1.25 mm. wide, gradually narrowed and cuspidate, 5-nerved with the outer pair of nerves marginal, the anterior segments subulate, 4 mm. long, 0.5 mm. wide, 3-nerved with the outer pair of nerves faint and submarginal, the lateral segment subulate, 3.5 mm. long, about 0.25 mm. wide, 1-nerved; corolla white or purplish, 4 mm. long, glabrous without or the lobes sparingly ciliate, pubescent within below insertion of the stamens, filaments glabrous, those of the longer pair 2 mm. long, those of the shorter pair 1.5 mm. long; style 3.5 mm. long, bearing a few hairs toward base; ovary pubescent at tip; capsule 3.5 mm. long, subhexagonal, hirtellous toward tip, the lower half glabrous; seeds flat, yellowish brown, about 1 mm. in diameter.

Wooded river banks usually in damp situations. Brazil, Colombia, Peru.

CHOCÓ: Bank of the Río San Juan, near Andagoya, *Killip* 35386 (US).
EL VALLE: Between Puente Sofía and Yanaconas, *Cuatrecasas* 18716 (US).
PUTUMAYO: Along the Río San Miguel between the tributaries Río Bermeja and Río Conejo, *Cuatrecasas* 11044 (US).
VAUPÉS: Along the Río Guaviare, *Cuatrecasas* 7586 (US).

2a. **Teliostachya lanceolata** Nees var. **crispa** Nees

Teliostachya lanceolata Nees var. *crispa* Nees in Fl. Mart. Bras. 9: 74. 1847. Type locality: "Maynas [Yurimaguas, Peru] et ad fluvium Amazonum." Type material in the Delessert Herbarium collected by Poeppig, No. 2240. A photograph of this sheet (No. 7823) is in the U. S. National Herbarium.

The variety differs from the typical form in that the mature plants are shorter (20 to 23 cm. high) and more rigid, the stems and leaf blades are rather densely hirtellous, the hairs up to 0.5 mm. long, appressed or ascending, and the margins of the leaf blades recurved.

The Colombian specimens cited do not show the strongly recurved leaves mentioned in the type description and shown in the photograph of Poeppig's specimen. This character may have been accentuated by a possible wilting or shriveling of the type material when the specimen was pressed.

On river banks. Colombia and Peru.

CALDAS: Near La Dorada, *Haught* 2138 (US).
META: Villavicencio, *Cuatrecasas* 1985 (US).

INDEX

[Synonyms in *italics*. Page numbers of principal entries in **boldface**]

	Page
Acanthaceae	4
Acanthoideae	2, 4, 44
Acanthus	1, 3, 4
mollis	3
spinosus	3
Afromendoncia	11
Amasonia integerrima	46
Anamú	8
Ancylogyne	51
capitata	51
macrocnemis	51
munita	51
peruviana	51
Aphelandra	1, 2, 3
aurantiaca	3
Aphragmia	66
haenkei	66, 77
Aro-blanco	48
Arrhostoxylum	66
fulgidum var. angustissimum	68
hartwegianum	90
laxum	66
Barleria	2, 44, **109**
anomala	46
cristata	**110**, 111
discolor	110
micans	**110**
prionitis	109
Barlerieae	44, **109**
Beloperone guttata	3
Bignonia bibracteata	46
Bignoniaceae	46
Blechum	2, 45, **60**
angustius	3, **63**
brownei	61
brownei f. puberulum	**60**, 61, 63
costaricense	63
haughtii	60, **62**, 63
Bravaisia	2, **45**
floribunda	45, 46
integerrima	**46**
campanula morada	94
Cilantro de monte	8
Contortae	**44**
Cryphiacanthus	66
macrophyllus	79
barbadensis	66, 78
Culantro	76
Dicliptera	1, 60
Dipteracanthus	66
ε angustifolius	95, 96
ciliatus	66
γ erectus	95
geminiflorus	95
geminiflorus var. *angustifolius*	95, 96
haenkei	77
β *hirsutior*	95
paniculatus	76
Dipteracanthus—Continued	Page
α *procumbens*	95
δ *subacaulis*	95
turbacensis	76
Ebermaiera	5
humilis	5
Elytraria	2, 5, **7**
apargiifolia	8
frondosa	7
imbricata	**7**, 9
scorpioides	7
squamosa	8
tridentata	7
virgata	7
Engelia	12
tovarensis	12
villosa	12, 21
Enredadera blanca	42
Erythracanthus	5
racemosus	5
Escobilla de ratón	77
Gilletiella	11
Hygrophila	2, 45, 58
angustifolia	58
conferta	58
guianensis	**58**, 59
rivularis	60
Hygrophileae	44, **57**
Imbricatae	44
Jacobinia magnifica	3
Jasmín	95
Justicia brunelloides	10
Imbricata	7
Lepidagathis	7, 111, 112
alopecuroides	112
cristata	112
Lila	111
Mendoncia	1, 2, 4, **11**, 12
albida	12, 38
aspera	12, **14**
coccinea	12, 13, **29**
coccinea var, elliptica	13, **30**
coccinea var. sparatteria	13, **30**
cordata	13, **16**, 17
cuatrecasasii	14, 37, **38**
fulva	30
gilva	14, 33, **34**
glabrescens	13, **23**, 24, 26
glomerata	13, **27**, 38
gracilis	13, **32**, 36
hirsuta	13, **21**
lindavii	12, **15**
litoralis	13, **31**
microchiamys	14, **39**, 40
mirabilis	13, **18**, 19
mutisii	14, **36**, 38
odorata	14, **34**, 35
pedunculata	13, **16**
pennellii	13, **25**, 26
pilosa	12, **14**

Mendoncia—Continued Page
puberula 13, **22**
rosea 13, **28**, 29
selloviana 22
speciosa 13, 18, **19**
splitgerberiana 22
spraguei 13, **20**
Mendoncia sprucei 13, **23**
Mendoncia velloziana 29
Mendoncia velloziana var. sparatteria 30
villosa 13, **21**
Mendoncioideae 2, 4, **10**
Mendozia 12
aspera 12, 14
hirsuta 21
pilosa 14
puberula 22
puberula β micropus 22
pubescens 22
racemosa 12
selloviana 22
velloziana 29
velloziana var. sparatteria 30
Mentha pulegium 60
Meyenia 40
Monochlamys 11
Nacedero 48
Nelsonia 2, 5, **10**
albicans 10
brunelloides **10**, 11
Nelsonioideae 2, **4**
Onychacanthus 45
arborea 46
berlandierianus 45, 46
cumingii 45, 46
speciosus 46
Oreja de Mula 97
Palo de agua 46
Petalidieae 44, **60**
Patalidium 60
Phaylopsis 2, 44, 60, **64**
parviflora **64**, 65
Pico de ava 42
Pseudocalyx 40
Raiz preta 30
Rompebarringa 48
Ruellia 1, 2, 3, 45, 48, 49, 60, **66**
albicaulis 77
alopecuroidea 111, 112
aquatica 68, **103**, 104
blechum 60
caucensis 67, **84**, 85, 88
chariessa 67, **74**, 75
clandestina 78
colombiana 68, **102**, 103
colorata 68, **97**
fulgida 69
fulgida var. amgustissima 67, **68**
geminiflora 68, **95**
geminiflora var. angustifolia 68, **95**
geminiflora var. hirsutior 59
gigantea 47, 48
grisea 67, **81**
humboldtiana 67, **89**
inundata 67, **77**
ischnopoda 67, **82**, 83, 86

Ruellia—Continued Page
lasiostachya 68, **105**, 106
longifilamentosa 67, **88**
lorentziana 68, **94**
macrophylla 67, 73, **79**, 80
macrophylla var. lutea 80
macrophylla var. puberula 67, **80**
macrophylla β pubescens 80
malacosperma 67, 68, **73**
nudiflora 78
obtusa 68, 94, **96**
paniculata 67, **76**
pennellii 68, **100**, 101, 103
potamophila 67, **71**, 72
purdieana 90
putumayensis 68, 106, **107**
ruiziana 84
rusbyi 67, **86**, 87
sprucei 109
stuebelii 90
tetrastichantha 91
tolimensis 67, **70**, 71
tuberosa 67, **78**, 94
tubiflora 68, 89, **90**, 91
tubiflora var. hirsuta 67, **93**
tubiflora var. parviflora 68, **93**
tubiflora var. parviflora f. alba 68, **93**
tubiflora var. tetrastichantha 68, **91**
tubiflora var. tetrastichantha f. bicolor 67, **92**
tubiflora var. tetrastichantha f. flava 68, **92**, 93
turbacensis 76
uribei 68, 105, **108**, 109
viridiflora 68, **98**, 99
viscosa 76
Ruellieae 44, **65**
Sancarano 46
Sanchezia 2, 3, 45, **51**
lutea 51, **53**, 54
oblonga 51
parvibracteata 51, **56**
parviflora 55
pennellii **51**
putumayensis 51, **55**, 56
speciosa 3, 51, **52**
sprucei var. *salvadorensis* 56
sylvestris 56
Sancho araña 46
Scorodoxylum 66
hartwegianum 66, 90
Soldado parado 8
Staurogyne 2, **5**
agrestis 7
argentea 5
lepidagathoides **5**, 6
Stemonacanthus 66
humboldtianus 89
salviaefolius 66
Teliostachya 2, 44, 109, **111**, 112
alopecuroidea 111, **112**
cataractae 111, 112
diffusa 111
lanceolata 112, **113**, 114
lanceolata var. crispa 112, **114**

Page
Tetramerium 3, 64
Thunbergia 2, 3, **40**
alata 40, **41**, 42
alata var. alba 42
alata var. bakeri 41, **42**
aurantiaca 42
aurantiaca subvar. doddsii 42
capensis 41
cordifolia 43
fragrans 41, **42**, 43
fryeri 42
grandiflora 41, **43**

Thunbergia—Continued Page
lutea 42
sulfurea 42
volubilis 42
Thunbergioideae 2, 4, **40**
Trichanthera 2, 44, 45, **47**, 48
corymbosa 48, **50**
gigantea **48**, 49
Trichanthereae 44, **45**
Verbena squamosa 7, 8
Yuca de puerco 78
Yuca-e-puerco 78
Yuquilla 95

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VOLUME 31, PART 2

THE ACANTHACEAE OF COLOMBIA, II

By EMERY C. LEONARD

SMITHSONIAN INSTITUTION
UNITED STATES NATIONAL MUSEUM
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II

PREFACE

Part I of the Acanthaceae of Colombia, comprising the subfamilies Nelsonioideae, Mendoncioideae, and Thunbergioideae, and the five tribes of the first series, Contortae, of the subfamily Acanthoideae, was published as Part I of Volume 31, Contributions from the United States National Herbarium, pp. 1–117, June 8, 1951. Part II consists of a treatment of the first five tribes of the second series, Imbricatae, of the subfamily Acanthoideae. Nine genera, including 106 species, of which 73 are described as new, are discussed in the present treatment.

JASON R. SWALLEN,
Head Curator, Department of Botany,
United States National Museum.

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CONTENTS

	Page
Introduction	119
Systematic treatment	119
Subfamily Acanthoideae (continued from Part 1)	119
Series Imbricatae	119
Tribe Aphelandreae	120
Neriacanthus	120
Stenandrium	124
Aphelandra	127
Encephalosphaera	280
Cyphacanthus	282
Tribe Rhombochlamydeae	285
Rhombochlamys	285
Tribe Asystasieae	287
Asystasia	287
Tribe Graptophylleae	289
Pachystachys	290
Tribe Pseuderanthemeae	291
Pseuderanthemum	292
Index	321

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ILLUSTRATIONS

FIGURES

		Page
41.	*Neriacanthus grandiflorus* Leonard	122
42.	*Stenandrium dulce* (Cav.) Nees	126
43.	*Aphelandra mutisii* Leonard	137
44.	*Aphelandra euopla* Leonard	139
45.	*Aphelandra porphyrocarpa* Leonard	141
46.	*Aphelandra phobera* Leonard	145
47.	*Aphelandra huilensis* Leonard	147
48.	*Aphelandra porphyrolepis* Leonard	149
49.	*Aphelandra crispata* Leonard	152
50.	*Aphelandra botanodes* Leonard	156
51.	*Aphelandra silvicola* Leonard	158
52.	*Aphelandra adscendens* Leonard	160
53.	*Aphelandra ochrolarynx* Leonard	162
54.	*Aphelandra uribei* Leonard	164
55.	*Aphelandra lonchochlamys* Leonard	166
56.	*Aphelandra puberula* Leonard	168
57.	*Aphelandra leiophylla* Leonard	171
58.	*Aphelandra nana* Leonard	173
59.	*Aphelandra sneidernii* Leonard	174
60.	*Aphelandra lamprantha* Leonard	178
61.	*Aphelandra lasia* Leonard	180
62.	*Aphelandra taborensis* Leonard	182
63.	*Aphelandra anomala* Leonard	186
64.	*Aphelandra glischrochlamys* Leonard	188
65.	*Aphelandra phlogea* Leonard	190
66.	*Aphelandra lasiophylla* Leonard	193
67.	*Aphelandra conformis* Leonard	195
68.	*Aphelandra colombiensis* Lindau ex Leonard	197
69.	*Aphelandra boyacensis* Leonard	199
70.	*Aphelandra arisema* Leonard	201
71.	*Aphelandra killipii* Leonard	203
72.	*Aphelandra cuatrecasasii* Leonard	205
73.	*Aphelandra craura* Leonard	208
74.	*Aphelandra pilosa* Leonard	211
75.	*Aphelandra schieferae* Leonard	215
76.	*Aphelandra parvispica* Leonard	218
77.	*Aphelandra mildbraediana* Leonard	220
78.	*Aphelandra barkleyi* Leonard	222
79.	*Aphelandra daemonia* Leonard	225
80.	*Aphelandra grandis* Leonard	227
81.	*Aphelandra aristei* Leonard	229
82.	*Aphelandra trianae* Leonard	231

Page
83. *Aphelandra albert-smithii* Leonard 233
84. *Aphelandra macrophylla* Leonard 236
85. *Aphelandra schultesii* Leonard 238
86. *Aphelandra haughtii* Leonard 241
87. *Aphelandra incarnata* Leonard 244
88. *Aphelandra sericantha* Leonard 249
89. *Aphelandra xanthantha* Leonard 249
90. *Aphelandra straminea* Leonard 252
91. *Aphelandra scolnikae* Leonard 254
92. *Aphelandra sericophylla* Leonard 256
93. *Aphelandra garciae* Leonard 258
94. *Aphelandra crenata* Leonard 260
95. *Aphelandra hodgei* Leonard 264
96. *Aphelandra longispica* Leonard 266
97. *Aphelandra lingua-bovis* Leonard 270
98. *Aphelandra fernandezii* Leonard 272
99. *Aphelandra chaponensis* Leonard 274
100. *Aphelandra pharangophila* Leonard 276
101. *Aphelandra arborescens* Leonard 278
102. *Encephalosphaera vitellina* Lindau 281
103. *Cyphacanthus atopus* Leonard 284
104. *Rhombochlamys rosulata* Lindau 286
105. *Asystasia gangetica* (L.) T. Anders 288
106. *Pachystachys riedeliana* Nees 291
107. *Pseuderanthemum haughtii* Leonard 294
108. *Pseuderanthemum idroboi* Leonard 296
109. *Pseuderanthemum leiophyllum* Leonard 298
110. *Pseuderanthemum poecilanthum* Leonard 300
111. *Pseuderanthemum ewanii* Leonard 303
112. *Pseuderanthemum pennellii* Leonard 304
113. *Pseuderanthemum sneidernii* Leonard 306
114. *Pseuderanthemum potamophilum* Leonard 309
115. *Pseuderanthemum hylophilum* Leonard 311
116. *Pseuderanthemum chaponense* Leonard 313
117. *Pseuderanthemum stenosiphon* Leonard 315
118. *Pseuderanthemum cuatrecasasii* Leonard 317

THE ACANTHACEAE OF COLOMBIA, II

By Emery C. Leonard

INTRODUCTION

Ten tribes are listed by Dalla Torre and Harms (Genera Siphonogamarum) in the series Imbricatae. Eight of these tribes are represented by one or more genera from Colombia. The following five tribes are discussed in the present treatment:

6. Aphelandreae
7. Rhombochlamydeae
8. Asystasieae
9. Graptophylleae
10. Pseuderanthemeae

The remaining three tribes, Odontonemeae, Isoglosseae, and Justicieae, will be reserved for treatment in Part III of the Acanthaceae of Colombia.

SYSTEMATIC TREATMENT

Subfamily 4. ACANTHOIDEAE (continued from Part 1) [1]

Series B. IMBRICATAE

Imbricatae Lindau, Bot. Jahrb. Engler 18: 46. 1893.

The following artificial key will serve to separate the Colombian genera represented in the five tribes listed above:

Anthers 1-celled.
- 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.
      - Spaltenpollen (ellipsoidal grains with 3 longitudinal clefts, often with a pore in each cleft) ---------- **17. Aphelandra**
      - Daubenpollen (differing from the spaltenpollen in having the clefts much broader and flatter (i. e., stave-shaped) and each containing a pore) ---------- **20. Rhombochlamys**

[1] E. C. Leonard. Contr. U. S. Nat. Herb., 31, pt. 1: 44. 1951.

Anthers 2-celled.
  Stamens 4 ..... 21. **Asystasia**
  Stamens 2.
    Corolla large, 2-lipped; staminodes, if present, rudimentary; bracts large. 22. **Pachystachys**
    Corolla usually small with a limb of 5 subequal spreading lobes; staminodes well developed; bracts small ..... 23. **Pseuderanthemum**

Tribe 6. APHELANDREAE Nees

Aphelandreae Nees, DC. Prodr. 11: 279. 1847.

Herbs or shrubs; leaves various; flowers borne in bracted spikes; calyx 5-parted, the segments subequal, membranaceous-chartaceous, striate; corolla hypocrateriform or infundibular, the limb subregular, bilabiate, or ringent; stamens 4, subdidynamous; anthers 1-celled, often connected by their hirsute tips; capsules clavate, 4-seeded.

KEY TO THE GENERA

Corolla lobes subequal, spreading, the tube narrow.
  Plants shrubby; bracts rather large, toothed, white or pink; staminodes slender. 15. **Neriacanthus**
  Plants herbaceous, often subacaulescent; bracts small, usually lanceolate, entire (in Colombian species), green; staminodes none .. 16. **Stenandrium**
Corollas 2-lipped, the tube usually infundibular, although narrowly so, but the mouth always appreciably broader than the base.
  Calyx 3-parted ..... 19. **Cyphacanthus**
  Calyx 5-parted.
    Pollen grains ellipsoidal bearing 3 longitudinal clefts, each of these often bearing a pore ..... 17. **Aphelandra**
    Pollen grains spherical, the markings forming 6 tetragons. 18. **Encephalosphaera**

15. NERIACANTHUS Benth.

Neriacanthus Benth., in Benth. & Hook. Gen. Pl. 2: 1096. 1876. This is one of the many generic names in the family Acanthaceae formed by adding a prefix to *Acanthus*. Here the prefix *Neri*, from νηρός, means wet, in allusion, undoubtedly, to the high damp mountain slopes, the natural habitat of the species. Type species: *Neriacanthus purdieanus* Benth. Type locality: Jamaica.

Aphanandrium Lindau; Engl. & Prantl, Pflanzenfam. IV, 3b: 323. 1895. The name is derived from αφανής, invisible, and ανδρός male sex, in allusion, no doubt, to the deeply included stamens. Type species: *Aphanandrium lehmannianum*.

Plants shrubby; leaves opposite, the blades entire or undulate; flowers borne in terminal or axillary peduncled spikes; bracts imbricate, entire, usually colored, conspicuous; bractlets shorter than the calyx; calyx deeply 5-parted, the segments narrow, the posterior one slightly wider than the others, all striate-nerved, their margins subhyaline; corolla tube subcylindric, the lobes imbricate, the posterior

lobe borne innermost and slightly larger than the others, the anterior pair borne outermost; fertile stamens 4, included; staminode filiform; anthers narrow, 1-celled, terminated by a slender tip; capsules short-stipitate, glabrous, nitid, finely punctate, 4-seeded, the basal portion solid; seeds flattened, suborbicular, subtended by blunt-tipped retinacula.

Previous to the present paper only two species have been proposed in this genus, *N. lehmannianus*, from Colombia and Perú, and *N. purdieanus* Benth. from Jamaica. The genus is easily recognized by its white, whitish or pinkish bracts, slender-tubed corollas, and 1-celled anthers.

KEY TO THE SPECIES

Corolla lilac, 4 cm. long ---------- 1. *N. grandiflorus*
Corolla white or yellow proximally, 2 cm. long ---------- 2. *N. lehmannianus*

1. **Neriacanthus grandiflorus** Leonard, sp. nov. FIGURE 41

Suffrutex, caulibus quadrangularibus, glabris; lamina foliorum oblongo-elliptica, apice acuminata, apice ipso obtuso, basi angustata, in petiolum decurrens, glabra, vel in venis parce puberulenta et in marginibus parce et minute hirsuta; petioli glabri; pendunculi glabri; spicae terminales; bracteae albae vel subvirides, minute punctatae, glabrae, oblongo-ellipticae, subacutae, basi angustatae, in marginibus minute serratae; bracteolae anguste lanceolatae, striatae, glabrae; calycis segmenta anguste lanceolata, glabra, basi carinata et indurata; corolla lilacina, supra puberula, infra glabra, tubo angusto, lobis rotundatis vel leviter emarginatis; capsulae glabrae, minute punctatae.

Suffrutescent plants up to 1 meter high; stems subquadrangular, glabrous, the basal portion about 5 mm. thick; leaf blades oblong-elliptic, 3 to 10 cm. long, 1.5 to 4.5 cm. wide, short-acuminate at apex (the tip itself blunt), gradually narrowed from middle or slightly above middle to base and decurrent on the petiole, the upper surface drying brown, the lower surface greenish brown, glabrous except the minutely and sparingly hirsute margins and the sparingly puberulous costa and veins (8 or 9 pairs), these fairly prominent; petioles 1 to 1.5 cm. long, glabrous; spikes terminal, about 8 cm. long and 3 cm. broad; peduncles 3–4 cm. long, glabrous; bracts greenish white, or at maturity white, glabrous, minutely and distantly punctate, oblong-elliptic, about 23 mm. long and 9 mm. wide, acutish, narrowed to 3 mm. at base, 10- or 12-veined, the margins minutely serrate toward tip, the teeth about 0.25 mm. long and 1.5 mm. broad at base; bractlets narrowly lanceolate, unequal, the larger 8.5 mm. long and 1.25 mm. wide, the smaller one 8 mm. long and barely 1 mm. wide, both acute, parallel-nerved and glabrous, the costa prominent; calyx segments subequal, narrowly lanceolate, 1 cm. long, 1 to 1.5 mm. wide, acute, glabrous, finely parallel-nerved, the basal portion carinate and indurate; corolla lilac, 4 cm. long, glabrous without from base to middle of tube, thence minutely puberulous, gla-

brous within except the medial region, this minutely hirsute, the hairs about 0.25 mm. long, white, spreading, the tube narrowly cylindric, 1.5 mm. broad except at the regions of the anthers, here enlarged to 2 mm., the limb 1.5 cm. broad, the lobes spreading, obovate, about 1 cm. long and 6 to 8 mm. wide, rounded or shallowly emarginate; stamens inserted about 2 cm. above the base of the corolla tube, the filaments 1 mm. long, pilosulous; anthers 3 mm. long, their tips adherent; capsules glabrous, clavate, 1.5 cm. long, 5 mm. broad, 2.5 mm. thick, minutely punctate; retinacula 2.5 mm. long, nearly straight, the tips cucullate; mature seed not seen.

FIGURE 41.—*Neriacanthus grandiflorus* Leonard (*Cuatrecasas* 15625): *a*, Tip of stem showing inflorescence and uppermost leaf blades; *b*, bract; *c*, bractlet; *d*, calyx opened to show lobes; *e*, valve of capsule showing retinacula. (*a*, Half natural size; *b–e*, natural size.)

Type in the U. S. National Herbarium, No. 1852711, collected in forest of La Laguna, on the left bank of Río Sanguininí, Department of El Valle, Colombia, 1,250 to 1,400 meters altitude, December 10 to 20, 1943, by J. Cuatrecasas (No. 15625).

Neriacanthus grandiflorus is a well-marked species definitely distinct from *N. lehmannianus* and easily separated from it by its large lilac flowers and by the nearly glabrous leaf blades. In *N. lehman-*

nianus the flowers are white and do not exceed 2 cm. in length and the leaf blades are generally puberulous. Likewise the bracts of this new species are much larger than those of *N. lehmannianus*. At least some of them are as much as 23 mm. long, instead of only 15 mm.

2. **Neriacanthus lehmannianus** (Lindau) Lindau

Aphanandrium lehmannianum Lindau; Engl. & Prantl, Pflanzenfam IV, 3b: 323. 1895. Named in honor of F. C. Lehmann, a collector of Costa Rican, Guatemalan, and Colombian plant specimens.

Neriacanthus lehmannianus Lindau, in Urb. Symb. Antill. 2: 209. 1900. Here, in an observation under *N. purdieanus* Benth., Lindau combines the genus *Aphanandrium* with *Neriacanthus*, and cites Lehmann's 7852 from Ecuador as type of the species.

Herbs, sometimes woody at base; stems usually simple, erect or ascending, terete or subquadrangular at tip, glabrous below, the upper portions more or less puberulous, the hairs minute, sordid, variously curved; leaf blades oblong-elliptic to oblanceolate, up to 13 cm. long and 4 cm. wide, acuminate or acute, narrowed at base, chartaceous, entire or undulate, the upper surface drying blackish, glabrous, minutely faveolate under lens, the costa and lateral veins (8 to 12 pairs) obscure, the lower surface drying olive, puberulous, the hairs sordid; petioles 1 to 1.5 cm. long, puberulous; flowers borne in peduncled spikes 3 to 6 cm. long and 1 to 1.5 cm. broad, the spikes terminal, solitary or in 2's or 3's, the peduncles 1 to 4 cm. long, these and the rachis quadrangular, glabrous or nearly so; bracts obovate, the larger and lowermost about 15 mm. long and 7 mm. wide, successively smaller toward tip of spike, all obtuse, more or less chartaceous, glabrous, irregularly and sparingly serrate, pink in living plants, drying reddish brown; bractlets narrowly lanceolate, 5 to 5.5 mm. long, about 0.75 mm. wide, gradually narrowed to a subulate tip, glabrous, carinate, striate-nerved, the costa prominent; calyx 6 to 6.5 mm. long, the segments linear-lanceolate, gradually narrowed to a subulate tip, the posterior segment 1 mm. wide, the lateral ones 0.5 mm. wide, and the anterior pair 0.75 mm. wide, all glabrous and striate-nerved; corolla white, or yellow proximally, glabrous, 1.5 to 2 cm. long, the tube 12 mm. long, 1 mm. broad at base, enlarged to 1.75 mm. at 3 mm. above base, thence gradually narrowed to 1 mm. at mouth, the upper portion subcylindric, the limb about 1 cm. broad, the lobes elliptic or obovate, emarginate, the posterior lobe 6 mm. long, 5 mm. wide, the lateral and anterior ones 6 mm. long, and 2.25 to 2.5 mm. wide; stamens inserted about the middle of the corolla tube, the filaments about 2 mm. long, these and the portion of the corolla tube in the vicinity of their insertion pubescent, the anthers 2 mm. long, 0.25 mm. broad, affixed midway between middle and base, their tips recurved; pistil about 1 cm. long, glabrous; capsules 12 mm. long, 4 mm. broad, pointed at apex, gla-

brous, nitid, minutely punctate, 4-seeded, the solid basal portion about 3 mm. long and 2 mm. broad, the seed brown, the retinacula 2 mm. long, rounded and cucullate at tip.

Damp woods or clearings on the higher mountain slopes or summits. The specimens cited were collected from 1,700 to 2,900 meters. Colombia to Peru.

CALDAS: La Linea, Quindío, *Dryander* 2140 (US).

CAUCA: Between Timbiqui and Micay, *Lehmann* B. T. 449 (NY).

EL VALLE: La Cumbre, *Hazen & Killip* 11152 (Ph, NY, US); *Pennell & Killip* 5789 (Ph, NY, US). San Antonio, *Dryander* 2288 (Valle); *Killip & García* 33678 (US), 33889 (US). Calí, *Lehmann* 2966 (US). Cuesta de Tocotá, on road from Buenaventura to Calí, *Pittier* 610 (US).

DEPARTMENT (?): Sommet de la Cordillera Occidental, *Langlassé* 44 (US).

16. STENANDRIUM Nees

Stenandrium Nees, in Lindl. Intr. Bot., ed. 2, 444. 1836. The name comes from στενός, narrow, and ανδρός, male sex, and alludes to the narrow anthers, a character common to the tribe Aphelandreae. Type species: *Stenandrium mandioccanum* Nees.

Small perennial, caulescent or acaulescent herbs, the leaves often radical; flowers borne in spikes, these sessile, subsessile, pedunculate or borne on slender scapes, the peduncles or scapes simple or branched; bracts ovate to lanceolate, herbaceous, entire or occasionally toothed; calyx segments 5, narrow, subequal, usually striate-nerved; corollas pink, white or purple, the tube slender, cylindric, more or less incurved and briefly ampliate at throat, the limb oblique, spreading, 5-lobed, the lobes obovate, rounded or retuse, imbricate; stamens 4, didynamous, affixed in the throat of the corolla tube, included, the filaments very short, the anthers oblong, 1-celled, conniving or subcohering in pairs, sometimes barbellate at tip, muticous at base; style subclavate at apex, briefly 2-lobed; ovules 2 in each cavity; capsules oblong to subfusiform, subterete; seeds 4 or fewer by abortion, plano-compressed, orbiculate, minutely hispid or muricate, subtended by rather long retinacula.

The species of this genus are widely distributed throughout the tropical and subtropical regions of America. The acaulescent ones are easy enough to recognize by virtue of their habit alone; the stemmed plants may confuse one at first sight by their very different appearance, but they always possess the characteristic flowers of the genus. More than 60 species are now recognized.

KEY TO THE SPECIES

Plants caulescent.

Stems glabrous; spikes borne in terminal trichotomous corymbs; leaf blades long-cuspidate ---------- 1. *S. corymbosum*

Stems pubescent; spikes borne on simple or forked peduncles; leaf blades acutish ---------- 2. *S. radicosum*

Plants acaulescent.
  Peduncles shorter than or but slightly exceeding the leaves; leaf blades ovate to oblong-ovate or oblong-elliptic, obtuse at apex ---------- 3. *S. dulce*
  Peduncles much exceeding the leaves; leaf blades oblong, acuminate. 4. *S. humboldtianum*

1. **Stenandrium corymbosum** Nees

Stenandrium corymbosum Nees, DC. Prodr. **11**: 727. 1847. Type collected in Colombia by Lobb (No. 171) (Hooker Herbarium, Kew). *Corymbosum* alludes to the flat-topped inflorescence, this contrasting with the usually peduncled spikes of the genus.

Herbs; stem about 30 cm. high, simple, more or less succulent, glabrous; leaf blades oblong, 10 to 12 cm. long, 2 to 2.5 cm. wide, obtusish and long-cuspidate at apex, acute at base, entire; petioles up to 18 mm. long; flowers borne in short spikes, these in turn borne in a spreading, 3-parted corymb; bracts oval, much longer than the calyx, obtuse, membranaceous, sessile, spreading; bractlets shorter than the calyx; corolla about 13 mm. long.

Not seen. Description compiled from the original.

Endemic.

2. **Stenandrium radicosum** Nees

Stenandrium radicosum Nees, DC. Prodr. **11**: 283. 1847. Type locality: "Prope S. Martha et Maracaybo in Colombia in silvis montanis humidis (h. Hooker), Moritz n. 1273 in h. gen. berol." A photograph of the type material from the Berlin Herbarium is in the U. S. National Herbarium (Field Mus. photograph No. 8686). *Radicosum* alludes to the numerous roots supposedly produced by the plant.

Stems rooting at base, leafy toward tip; leaf blades elliptic-oblong, up to 16 cm. long and 6 cm. wide, acutish at apex, narrowed at base and decurrent on the petiole; petioles slender, up to 4 cm. long; peduncles up to 8 cm. long, simple or forked; spikes lax, up to 5 cm. long, the bracts lanceolate, spreading, acuminate, bearing a pair of small marginal teeth near the apex, ciliate.

Specimen not seen. Description compiled from the original and the dimensions computed from the photograph.

The type locality as given by Nees is confusing. As Moritz is not known to have collected in Colombia his No. 1273 most likely came from the Venezuela side in the general vicinity of Maracaibo, Zulia. Since the species however may actually occur in the adjacent Santa Marta Mountains of Colombia, it has been included in the present treatment.

3. **Stenandrium dulce** (Cav.) Nees FIGURE 42

Ruellia dulcis Cav. Icon. Pl. **6**: 62. *pl. 585, fig. 2.* 1801. Type collected near Talcahuano, Chile, by Cavanilles. *Dulcis*, sweet, alludes, no doubt, to the esthetic appeal of the plant. This specific name was evidently suggested to Cavanilles by its vernacular name "canchelahua dulce."

Stenandrium dulce Nees, DC. Prodr. 11: 282. 1847. Based on *Ruellia dulcis* Cav.

Gerardia[2] *dulcis* Blake, Contr. Gray Herb. 52: 101. 1917. Based on *Ruellia dulcis* Cav.

Rootstocks 1 to several cm. long, 3 to 5 mm. in diameter; roots thick-fibrous; stem very short or lacking; leaf blades ovate to oblong-ovate or oblong-elliptic, up to 5 cm. long and 2.5 cm. wide, obtuse at apex, narrowed at base and decurrent on the petiole, rather firm, entire or slightly crenate, minutely punctate, more or less hirsute, the hairs spreading, up to 1 mm. long, confined mostly to costa and lateral veins (4 or 5 pairs); petioles up to 4 cm. long, both pilose and puberulous, or sometimes glabrous and sparingly ciliate, or, rarely, subtomentose;

FIGURE 42.—*Stenandrium dulce* (Cav.) Nees (*a*, *Pérez-Arbeláez* 3031; *b*, *c*, *Conde Hugo de Tarragón*, *Araque-M.* & *Barkley* 18Cu.100): *a*, Plant; *b*, bract and bractlets; *c*, calyx segment. (*a*, *b*, Natural size; *c*, twice natural size.)

flowers borne in sessile, subsessile or peduncled spikes, usually 2 to 3 cm. long or occasionally up to 6 cm. long, the peduncles, if present, both hirsute and puberulous; bracts oblong-lanceolate, 8 to 12 mm. long, 1.5 to 3.5 mm. wide, acute to acuminate, imbricate, inconspicuously 3-nerved, more or less punctate, ciliate, pilose, the hairs up to 2 mm. long, or sometimes both pilose and puberulous; bractlets narrowly lanceolate, about 5 mm. long and 0.5 mm. wide, 3-nerved, ciliate; calyx segments narrowly lanceolate, 6 to 7 mm. long, 1 mm. wide, striate-nerved, minutely ciliolate, the margins subhyaline; corolla purple, glabrous, up to 2 cm. long, the tube slender, about 1 mm. broad,

[2] The genus *Gerardia* L. commemorates John Gerard, a famous English herbalist (1545 to 1607). This genus, however, belongs to the family Scrophulariaceae, notwithstanding the fact that the first species treated by Linnaeus under *Gerardia* (Sp. Pl. 610. 1753) is of the family Acanthaceae. (Mon. Acad. Nat. Sci. Philadelphia 1: 419. 1935.)

slightly enlarged at base, the limb about 1.5 cm. broad, the lobes subequal, obovate, obtuse; capsules oblong, 2.5 mm. in diameter, glabrous or puberulous at tip; seeds flattened, ovate, 3 mm. long and 2.5 mm. broad, appressed-pilose.

A variable species inhabiting the grassy, upper slopes of the Andes. Colombia, Peru, Chile, Bolivia, Argentina.

CUNDINAMARCA: Páramo de Choachí, vicinity of Bogotá, *Gabriel* 6 (US). La Picotá, *Pérez-Arbeláez* 3031 (US). Southwest of Las Cruces, *Pennell* 2191 (NY, US). Sabana de Bogotá, *Dawe* 201 (US). San Cristóbal, Sabana de Bogotá, *Pring* 36 (Mo). Sabana de Bogotá, near Madrid, *Conde Hugo de Tarragón, Araque & Barkley* 18Cu.100 (US). Hacienda de Tequendama, *Triana* s. n. (Col).

4. **Stenandrium humboldtianum** Nees

Stenandrium humboldtianum Nees, DC. Prodr. 11: 284. 1847. Type collected at Atures, Venezuela, by Humboldt and deposited in the Berlin Herbarium. Photograph in the U. S. National Herbarium (Field Mus. Photograph No. 8683). Named in honor of Alexander von Humboldt.

Acaulescent; leaf blades oblong, acuminate, gradually narrowed to a short petiole, hirsute, entire; peduncle 15 to 20 cm. long; spikes loose; bracts lanceolate, slightly longer than the calyx, decussate, spreading; bractlets lanceolate, 2.5 to 3 mm. long, 1 mm. wide, acuminate, ciliolate; calyx segments lanceolate, about 4 mm. long, 0.5 to 1.5 mm. wide, puberulous at tip, striate-nerved; corolla 1.5 cm. long, the tube subcylindric, about 1.5 mm. broad, the segments obcordate, emarginate.

Colombia, Venezuela.

DEPARTMENT (?): Without locality, *Claes* (US).

17. APHELANDRA R. Br.

Aphelandra R. Br. Prodr. Fl. Nov. Holl. 475. 1810. Here under *Justicia* Robert Brown proposed the generic name *Aphelandra* to include the following species: *Justicia pulcherrima* Jacq., *J. scabra* Vahl, and *J. cristata* Jacq. Type species: *Justicia pulcherrima* Jacq. *Aphelandra* is from the Greek ἀφελής, smooth, and ανδρός, anther.

Hemisandra Scheidw. Bull. Acad. Sci. Bruxelles. 9: 22. 1842. Type species: *H. aurantiaca* Scheidw. *Hemisandra* is derived from two Greek words, ἡμι, half, and ανδρός, anther.

Lagochilium Nees, in Mart. Fl. Bras. 9: 83. *pl. 10.* 1847. Six species are described here by Nees. The first of these, *L. maximilianum* Nees, by virtue of its being illustrated, can be chosen as the type species. When compared with *Aphelandra*, the genus *Lagochilium* is characterized, according to Nees, by its nearly regular (subbilabiate) corolla limb and generally by its herbaceous nature. It seems in a way to be intermediate between *Aphelandra* and *Stenandrium*. The epithet is derived from the Greek words, λαγῶς, hare, and χείλος, lip, evidently from a fancied resemblance of one of the corolla lobes to a hare's lip.

Shrubs or suffrutescent herbs; leaves opposite, petiolate, the blades usually large, oblong to elliptic, toothed, lobed, entire, or crenate;

flowers of various shades of red, yellow, orange or occasionally white or cream, borne in terminal usually large-bracted spikes; flower-bracts entire or toothed, those of certain species bearing dorsally on either side a group of ocelli, these few, oval, brownish, rather conspicuous or very numerous and minute appearing even under magnification as a more or less irregular alveolar area; bractlets various, in a few species rudimentary; calyx divided nearly to the base into 5 segments, these usually lanceolate or oblong-lanceolate, coriaceous or chartaceous, striate-veined, the posterior segment usually broader than the others and sometimes toothed at tip (in a few species the calyx is rudimentary); corolla tube straight or curved, the limb usually bilabiate, the upper lip erect, bilobed or entire, the lower lip reflexed-spreading, 3-lobed, the middle lobe often larger than the lateral ones, these sometimes very small and adnate to the base of the upper lip; stamens 4, usually slightly exserted, but rarely if ever exceeding the upper lip of the corolla; anthers narrow, one-celled, often pilose dorsally and adhering at tips by webby hairs; capsules usually ovoid or cylindric, 4-seeded.

Aphelandra, one of the larger genera of the family, is restricted to tropical America. The flowering spikes are often large and beautifully colored, even to the bracts, and in certain species varigated or colored leaves occur. In spite of its attractiveness, however, these plants are rarely met with in cultivation, possibly because of culture difficulties. This may be explained by the fact that many of the species are shade plants from damp forests. In contrast to most genera of the family, there are no cystoliths.

Important characters in the genus *Aphelandra*, linking large series of species, are the presence of spiny interpetiolar bracts, the presence or absence of teeth, spiny or otherwise, on the margins of the leaf blades or flower bracts, and the presence or absence of ocelli on the flower bracts. These ocelli may be represented by one to several rather large oval brownish or blackish glands plainly visible under a lens or even to the unaided eye, or again they may be very numerous and minute, visible only under a high magnification. Without aid of a lens, these minute ocelli appear as more or less irregular dark alveolar areas on the bracts.

In one large group of species, chiefly the *pulcherrima-tetragona* complex, the lower lip of the corolla is apparently entire and seems to consist of a single segment. A careful examination will, however, reveal small lateral lobes, adnate to the basal portion of the upper lip with only their tips free and appearing as small rounded or triangular projections.

KEY TO THE SPECIES

A. Stems armed by spiny interpetiolar bracts.
  Corollas glabrous.
    Leaf blades glabrous beneath or essentially so.
      Corollas red ---------- 1. *A. runcinata*
      Corollas stramineous ---------- 1a. *A. runcinata* var. *straminea*
    Leaf blades pilose beneath ---------- 1b. *A. runcinata* var. *pilosa*
  Corollas pubescent, tomentose or hirtellous (unknown in No. 4).
    Leaf blades 3 cm. wide or less.
      Bracts spiny-margined; leaf blades densely pilose or subtomentose. 2. *A. mutisii*
      Bracts entire; leaf blades glabrous or essentially so ---------- 3. *A. euopla*
    Leaf blades, at least some of them, 5 cm. wide or more.
      Stems glabrous; calyx segments rounded and mucronate. 4. *A. porphyrocarpa*
      Stems minutely strigose, hirsute, or subtomentose, at least above; calyx segments obtusish to acute or acuminate.
        Corollas yellow.
          Leaf blades deeply incised; bracts triangular-ovate, acuminate, sparingly serrate (usually about 3 pairs of teeth); corollas 3.4 to 4 cm. long ---------- 5. *A. acanthus*
          Leaf blades shallowly incised; bracts lanceolate to oblong-ovate, serrate (4 to 9 pairs of teeth); corollas 4 to 6 cm. long ---------- 6. *A. phobera*
        Corollas red or orange red.
          Leaf blades deeply incised, the lobes triangular to oblong, up to 7 cm. long, the margins prominently and rather closely spinose-serrate; middle lobe of the lower corolla lip flat ---------- 7. *A. huilensis*
          Leaf blades serrate-dentate or shallowly incised, the segments broadly triangular, about 1 cm. long (larger leaves), the margins sparingly and distantly spinose-toothed; middle lobe of the lower corolla lip strongly cucullate ---------- 8. *A. porphyrolepis*
A. Stems unarmed, i. e., without spiny interpetiolar bracts.
  B. Leaf blades lyrate-pinnatifid or coarsely serrate.
    Leaves and corollas glabrous ---------- 9. *A. quercifolia*
    Leaves and corollas more or less pubescent.
      Bracts toothed ---------- 10 *A. lyrata*
      Bracts entire ---------- 11. *A. crispata*
  B. Leaf blades entire or undulate, or rarely shallowly crenate.
    C. Bracts toothed.
      D. Corollas up to 2 cm. long (2.5 cm. in No. 16).
        Bracts 2 mm. wide or less ---------- 12. *A. arnoldii*
        Bracts 3.5 to 8 mm. wide.
          Peduncles about 12 cm. long ---------- 13. *A. parviflora*
          Peduncles 6 cm. long or less.
            Leaf blades subcordate at base ---------- 14. *A. mollis*
            Leaf blades narrowed at base.
              Flowers borne in a terminal trifurcate panicle -- 15. *A. botanodes*
              Flowers borne in terminal or lateral spikes.
                Corolla 2.5 cm. long; costal and lateral veins of leaf blades bordered by white or yellow ---------- 16. *A. silvicola*
                Corolla 12 to 15 mm. long; leaf blades uniformly green.
                  Teeth of bracts about 0.5 mm. long ---------- 17. *A. adscendens*
                  Teeth of bracts up to 3 mm. long ---------- 18. *A. ochrolaryngæ*

D. Corollas 3 to 6 cm. long.
E. Bracts without ocelli.
Bracts narrow, 6.5 mm. wide or less.
Marginal teeth of bracts subulate---------- 19. *A. uribei*
Marginal teeth of the bracts low, minute---- 20. *A. lonchochlamys*
Bracts relatively wide (10 mm. or more).
Marginal teeth of the bracts subulate, up to 4 mm. long.
Lips of the corolla subequal and somewhat similar, the lateral lobes of the lower lip nearly as long as the middle one. 21. *A. puberula*
Lips of the corolla unequal and very dissimilar, the lower lip longer than the upper, the lateral lobes of the lower lip much smaller than the middle lobe---------- 22. *A. aurantiaca*
Marginal teeth of the bracts minute, about 0.25–1.5 mm. long.
Bracts glabrous---------- 23. *A. leiophylla*
Bracts puberulous.
Leaf blades relatively small (up to 7 cm. long and 23 mm. wide)---------- 24. *A. nana*
Leaf blades large (up to 20 cm. long and 8 cm. wide or more).
Lips of the corolla subequal, about 15 mm. long. 25. *A. sneidernii*
Lips of the corolla unequal and dissimilar, about 2 cm. long. 22. *A. aurantiaca*
E. Bracts bearing ocelli.
Ocelli borne in a depression.
Leaf blades oblong-elliptic, up to 6 cm. wide; bracts subrhombic, their tips spreading or recurved---------- 26. *A. impressa*
Leaf blades narrowly lanceolate or oblanceolate and not exceeding 21 mm. in width; bracts flat, their tips not spreading or recurved---------- 27. *A. lamprantha*
Ocelli borne on the flat surface of the bracts.
Lower surface of the leaf blades densely pilose, the hairs up to 1.5 mm. long---------- 28. *A. lasia*
Lower surface of leaf blades hirtellous or tomentose, the hairs mostly up to 0.5 mm. long.
Ocelli numerous, minute, appearing without a lens, as an alveolar area---------- 29. *A. taborensis*
Ocelli few, large and conspicuous.
Teeth bordering the bracts slender, up to 1.5 mm. long. 30. *A. deppeana*
Teeth bordering the bracts, if present, minute and inconspicuous. 52. *A. daemonia*
C. Bracts entire.
F. Ocelli lacking.
Hairs on the bracts, at least in part, gland-tipped.
Bracts ovate, 2 cm. wide; corolla yellow with purple spots. 31. *A. anomala*
Bracts lanceolate, 1.2 cm. wide or less; corolla red or flame color.
Bractlets lance-subulate, 2 mm. wide; bracts 2 cm. long and up to 7 mm. wide---------- 32. *A. glischrochlamys*
Bractlets lanceolate, 3.5 mm. wide; bracts up to 3 cm. long and 12 mm. wide---------- 33. *A. phlogea*

Hairs on the bracts eglandular (or absent).
Corolla bright red.
Leaf blades variegated, the costa and veins with adjoining area bright silver ---------- 34. *A. fascinator*
Leaf blades solid green.
Bracts and corolla glabrous, or the corolla pruinose. 35. *A. alexandri*
Bracts or corolla pubescent.
Rachis silvery pubescent ---------- 36. *A. lasiophylla*
Rachis puberulous.
Leaf blades oblong-ovate, 4 to 5 cm. wide; bracts rhombic-ovate, eciliate or minutely ciliolate at apex. 37. *A. conformis*
Leaf blades narrowly oblong-elliptic, 1 to 3 cm. wide; bracts oblong-lanceolate, ciliate, the hairs 0.5 to 0.75 mm. long.
Spikes solitary; leaves glabrous ---------- 38. *A. lawranceae*
Spikes 2 or more, crowded; costa and lateral veins of the lower surface of the leaf blades minutely puberulous or hirtellous ---------- 39. *A. colombiensis*
Corolla white, cream, reddish, or purple, not bright red.
Calyx segments well developed, 1 cm. long or more.
Bracts up to 15 mm. long, their veins obscure -- 36. *A. lasiophylla*
Bracts, at least some of them, 2.5 to 3.5 cm. long, their veins prominent.
Bracts subglabrous, eciliate ---------- 40. *A. boyacensis*
Bracts puberulous, strongly ciliate ---------- 41. *A. arisema*
Calyx segments vestigial (0.5–2 mm. long).
Bracts obtuse or rounded, their margins hyaline to the width 0.5 mm., the veinlets ending evenly to form a well-defined margin.
Plants nearly glabrous; flowers reddish ---------- 42. *A. killipii*
Plants pubescent, the upper part of the stems retrorsely strigose ---------- 43. *A. cuatrecasasii*
Bracts acute or acuminate, their margins, if hyaline, not evenly so.
Corolla white or pale cream; spikes cylindric. 44. *A. dolichantha*
Corolla purplish; spikes ovate ---------- 45. *A. craura*
F. Ocelli present.
G. Ocelli represented by 1 or more well-defined elliptical, brown, more or less nitid areas.
H. Rachis more or less covered with a white, flocculose tomentum.
Hairs of the stems more or less spreading.
Lower surface of the leaf blades pilose, the hairs up to 1.5 mm. long; bracts 9 mm. long, inconspicuously puberulous or glabrate ---------- 46. *A. pilosa*
Lower surface of the leaf blades densely and softly gray-pubescent, the hairs up to 1 mm. long; bracts 6 to 7 mm. long, densely and finely puberulous ---------- 47. *A. pulcherrima*
Hairs of the stems appressed.
Leaves subtending the branches of the paniculate inflorescence large and conspicuous, up to 36 cm. long and 10 cm. wide, their lower surfaces densely and softly pilose. 48. *A. schieferae*

Leaves subtending the branches of the inflorescence small, or else the spikes solitary or fascicled at the tips of the branches, the lower surfaces of the leaf blades sparingly and inconspicuously strigose.

Spikes slender-peduncled, forming small terminal panicles; spikes up to 8 mm. broad_____ 49. *A. parvispica*

Spikes subsessile, solitary or fascicled; spikes 8 to 15 mm. broad.

Leaf blades relatively small, up to 13 cm. long and 4 cm. wide; ocelli small and rather inconspicuous, up to 0.5 mm. long_____ 50. *A. mildbraediana*

Leaf blades large, up to 35 cm. long and 12.5 cm. wide; ocelli large and conspicuous, 0.5 to 1 mm. in diameter.

Bracts 7.5 mm. long, drying light brown; ocelli 6 or 7 in number, light brown, 0.5 to 0.75 mm. in diameter. 51. *A. barkleyi*

Bracts 5 mm. long, drying dark brown; ocelli solitary or occasionally several, very conspicuous, dark brown to almost black, up to 1 mm. in diameter_ 52. *A. daemonia*

H. Rachis glabrous, puberulous or hirsute, or if flocculose, the hairs brownish.

Bracts 2 cm. long or more.

Bracts ovate, rounded, appressed-pubescent to glabrate. 53. *A. grandis*

Bracts oblong-lanceolate, acuminate, finely and velvety pubescent.

Leaf blades densely and softly pilose beneath___ 54. *A. aristei*

Leaf blades glabrous or sparingly hirtellous beneath. 55. *A. trianae*

Bracts 1.2 cm. long or less.

Bracts acute to subacute.

Rachis glabrous or sparingly pilose; bracts up to 0.7 cm. long. 56. *A. albert-smithii*

Rachis clothed with a brownish flocculose tomentum.

Inflorescence a large terminal panicle of rather small spikes; ocelli minute and inconspicuous, up to 0.5 mm. in diameter_____ 57. *A. macrophylla*

Inflorescence consisting of a single spike or a fascicle of 3, these subsessile or short-pedunculate; ocelli conspicuous, up to 0.75 mm. in diameter.

Costa densely strigose on the upper surface of the leaf blades; bracts acute, 6 mm. long or less, 4 mm. wide, the ocelli up to 1.25 mm. long_____ 58. *A. schultesii*

Costa glabrous or sparingly strigose on the upper surface of the leaf blades; bracts subacute, 7.5 mm. long and 6 mm. wide, the ocelli up to 0.75 mm. long. 51. *A. barkleyi*

Bracts rounded or obtuse, or only the lowermost acute.

Stems hirsute, the hairs up to 1.5 mm. long__ 59. *A. haughtii*

Stems puberulous, the hairs about 0.25 mm. long. 60. *A. incarnata*

G. Ocelli numerous, minute, forming a dull, alveolar spot, this sometimes deciduous.

I. Corollas yellow, straw-color, or rose.

Bracts relatively large, up to 20 mm. long and 8–12 mm. wide; spikes (without corollas) 2 to 3 cm. broad.

Corollas densely pubescent, the hairs upwardly appressed. 61. *A. sericantha*

Corollas glabrous or papillose.

Bracts broadly rhombic-ovate, obtuse or rounded at tip. 62. *A. hartwegiana*

Bracts ovate-lanceolate, acute 63. *A. xanthantha*

Bracts smaller, up to 13 mm. long and 10 mm. wide; spikes (without corollas) up to 12 mm. broad (2 cm. in *A. crenata*).

Rachis white-tomentose.

Leaf blades large, up to 30 cm. long and 11.5 cm. wide; spikes up to 26 cm. long 64. *A. straminea*

Leaf blades smaller, up to 14 cm. long and 5 cm. wide; spikes up to 10 cm. long.

Lower surface of leaf blades moderately strigose. 65. *A. scolnikae*

Lower surface of leaf blades silky-pilose 66. *A. sericophylla*

Rachis glabrous or minutely pilose, the hairs, if present, 0.5 mm. long or less.

Corolla minutely hirsute; leaf blades entire or undulate. 67. *A. garciae*

Corolla papillose; leaf blades, at least the lower, strongly crenate 68. *A. crenata*

I. Corollas red or carmine.

J. Rachis flocculose-tomentose.

Stems densely to moderately strigose; leaf blades coriaceous.

Leaf blades densely silky-pilose beneath 66. *A. sericophylla*

Leaf blades glabrous or minutely strigose beneath.

Glabrous margins of the bractlets about 1 mm. wide; leaf blades drying dull green 65. *A. scolnikae*

Glabrous margins of the bractlets barely 0.5 mm. wide; leaf blades drying a nitid brown 69. *A. glabrata*

Stems glabrous, or the tips minutely and sparingly strigose; leaf blades membranaceous.

Bractlets 12 mm. long and 3 mm. wide, each bearing a well-defined tooth near base; spikes up to 13 cm. long and 1.5 cm. broad 70. *A. hodgei*

Bractlets 8 mm. long and 2 mm. wide, entire; spikes up to 30 cm. long and 8 mm. broad 71. *A. longispica*

J. Rachis glabrous or hirtellous, not floccose-tomentose.

Corollas densely hirtellous 61. *A. sericantha*

Corollas glabrous or puberulous.

Calyx conspicuously longer than the bracts.

Bracts acute 72. *A. blandii*

Bracts obtuse or subobtuse.

Bractlets 1 cm. long, 4 mm. wide, subacute. 62. *A. hartwegiana*

Bractlets 1.5 cm. long, 3 mm. wide, acuminate. 73. *A. lingua-bovis*

Calyx slightly shorter than bracts.

Bracts up to 2.5 cm. long 74. *A. fernandezii*

Bracts less than 1.2 cm. long.

Bracts glabrous 75. *A. chaponensis*

Bracts medially strigose.
Medial region of the bracts densely strigose.
76. *A. pharangophila*
Medial region of the bracts thinly strigose.
77. *A. arborescens*

1. **Aphelandra runcinata** Klotzsch

Aphelandra runcinata Klotzsch ex Nees, DC. Prodr. 11: 302. 1847. Nees bases his description on two cotypes, one collected on a river bank in a shady cinchona plantation at Mérida, Venezuela, December, by Moritz (Berlin Bot. Mus.), and the other in a *Chusquea* (bamboo) pasture, Quindío, Colombia, by Goudot (Hooker Herbarium). The name *runcinata* (i. e. saw-toothed or sharply incised) alludes to the sharply toothed leaf blades.

Shrubs up to 4 meters high; stems glabrous or nearly so, occasionally tomentulose toward tip, fleshy; leaf blades obovate to oblong-obovate or lanceolate, up to 30 cm. long and 10 cm. wide, acuminate, cuneate at base, chartaceous, the margins more or less narrowly recurved, dentate or incised-dentate, the excurrent nerves terminating in sharp spines 1 to 5 mm. long, the upper surface drying olive green, nitid, glabrous or sparingly floccose, the hairs confined chiefly to the costa and lateral veins (10 to 30 pairs), the lower surface drying dull green or brown, glabrous, or the costa and veins sparingly floccose, these more prominent beneath than above; petioles up to 2 cm. long, glabrous or sparingly floccose; interpetiolar bracts triangular, retrorse, up to 5 mm. long, 1- to 5-nerved, the nerves excurrent, ending in sharp, straight spines 1 to 4 mm. long; flowers usually numerous and crowded, borne in a simple terminal spike or in both terminal and lateral spikes, then forming a rather large pyramidal crowded or sometimes loose terminal paniculate inflorescence up to 20 cm. long and broad, the peduncles and rachises glabrous or floccose; bracts triangular, 7 mm. long, 5 mm. wide, glabrous, purplish red, ciliolate, obscurely nerved, the costa excurrent, ending in a small spine about 0.5 mm. long; bractlets lanceolate, 5 to 6 mm. long, 2.5 mm. wide, acuminate, purplish red, ciliolate; calyx segments oblong, about 9 mm. long, 2.5 to 3.5 mm. wide, obtuse to acute, mucronulate, glabrous, entire to erose or erose-dentate near tip, the upper portion more or less ciliate with glandular or eglandular hairs or both; corolla red, glabrous, 3.5 to 4 cm. long, the tube subcylindric, slightly curved, about 4 mm. broad near base, slightly constricted at about 5 mm. above the base, thence gradually enlarged to 5 mm. at mouth, the throat transversely undulate-rugose, the upper lip oblong-ovate, about 15 mm. long, 5 mm. wide, rounded, sometimes obscurely 3-lobed near the tip, ciliate, finely and sparingly pilose within, the lower lip definitely 3-lobed, the lobes ovate, 5 mm. long, 2.5 mm. wide, rounded; capsules oblong-clavate, 18 mm. long, about 3 mm. broad at base, 6 mm. broad at middle, obtuse, glabrous, minutely punctate; seed flat,

obliquely oblong, 5 mm. long, 3.5 mm. broad, 1.5 mm. thick, brown, minutely roughened.

Vernacular name: Cresta de gallo (*Pennell* 10940).

Flowering from April to February, but chiefly in December. Bro. Tomás (No. 770) states that the plants produce a white latex. The leaf blades vary greatly. Some are merely irregularly toothed, others range from moderately to rather deeply pinnatifid or incised. Likewise the venation varies from moderately to extremely prominent. On the other hand, little if any variation is to be found in the inflorescence. The corollas are, as Dawe (No. 766) expresses it, a striking red.

Wooded mountain slopes from 2,000 to 3,000 meters altitude. Colombia and Venezuela.

ANTIOQUIA: Boquerón, between Medellín and Palmitas, *Hodge* 6605 (GH, Med). Camino Real Antiguo to Boquerón de Medellín, *Barkley, Correa & Posada*, 101 (US). La Ceja, *Bro. Daniel* 2172 (US). La Sierra, near Medellín, *Archer* 1093 (US). Las Minitas, south of Caldas, *Pennell* 10940 (GH, NY). San Cristóbal to San Jerónimo, *Lehmann* 7846 (K).[3] Summit of Santa Elena, between Medellín and Rionegro, *Barkley, Araque & Gomez* 424 (US); *Gutiérrez* 1146 (Med, US); *Noval & Barkley* 18C.484 (US). San Pedro, *Bro. Tomás* 770 (US). Sonsón, *Lehmann* 7574 (K).

CALDAS: Caldas, *Dawe* 766 (NY, US). San Bernardino, *Pennell & Hazen* 10158 (GH). Manizales, *Triana* s. n. (NY, US).

CUNDINAMARCA: Dintel, between Facatativá and La Vega, *Pérez-Arbeláez & Cuatrecasas* 5320 (US).

SANTANDER: Western slopes of Mount Peña Blanca, near Charta, *Killip & Smith* 19262 (NY, US). Vicinity of Las Vegas, *Killip & Smith* 16138 (NY, US).

A photograph of Lehmann's 7574 deposited in the Berlin Herbarium is in the U. S. National Herbarium (Field Mus. photograph No. 8668). The Berlin sheet bears an unpublished name written by Lindau.

1a. **Aphelandra runcinata** var. **straminea** Leonard, var. nov.

A forma typica lamina foliorum subtus pilosa, pilis septatis, corollis stramineis recedit.

Leaf blades oblanceolate, shallowly incised, pilose beneath, the hairs conspicuously segmented; flowers straw-colored; otherwise resembling the typical form.

Type in the U. S. National Herbarium, No. 1950445, collected along the Subita-San Francisco road, Department of Cundinamarca, Colombia, 2,000 meters altitude, August 26, 1947, by Oscar Haught (No. 6108).

1b. **Aphelandra runcinata** var. **pilosa** Leonard, var. nov.

A forma typica lamina foliorum subtus dense pilosa, corollis puniceis recedit.

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[3] K, Herbarium of the Royal Botanic Gardens, Kew.

Lower surface of the leaf blades more or less densely pilose, otherwise similar to the typical form.

Type in the U. S. National Herbarium, No. 1954130, collected in dense forest on road along stream between Medellín and Rionegro, Department of Antioquia, Colombia, 2,000 meters altitude, November 17, 1948, by E. P. Killip, Fred A. Barkley, and Bro. Daniel (No. 39837). Bro. Daniel's No. 4024, collected at Las Palmas, Antioquia, at 2,200 meters and Toro's No. 1260, collected at Salgar, in the vicinity of Medellín, Antioquia, July 20, 1928, are both of this variety.

2. **Aphelandra mutisii** Leonard, sp. nov. FIGURE 43

Frutex, caulibus dense et molliter subtomentosis, pilis patulis vel retrorsis; lamina foliorum oblonga vel oblanceolata, subcoriacea, serrata, dentibus spinis acutis terminatis, supra nitida, pilosa, subtus dense et molliter pilosa vel subtomentosa, pilis fulvis, costa et venis prominentibus; petioli breves, subtomentosi; bracteae interpetiolares parvae, triangulares, spinis (1–5) acutis fulvis armatae; spicae terminales et laterales, densae, rhache dense pilosa, pilis fulvis; bracteae anguste oblongae, spinoso-dentatae, dense pilosae; bracteolae lanceolatae, parce spinoso-dentatae; calycis segmenta oblongo-lanceolata, spina parva terminata, apice puberula, basi glabra, ciliata, pilis aliquot glandulosis; corolla angusta, parce et minute pubescens, lobis ovalibus, rotundatis; capsulae glabrae, nitidae, minute punctatae.

Shrub; stems densely and softly pilose or subtomentose, the hairs yellowish, up to 1 mm. long, spreading or retrorse; leaf blades oblong to oblanceolate or narrowly obovate, up to 9 cm. long and 3 cm. wide, acute to acuminate, narrowed at base, subcoriaceous, serrate, the teeth rather closely set, 2 to 3 mm. long, each terminated by sharp, straight spines 2 to 3 mm. long, the upper surface nitid, rather sparingly pilose, the costa densely so, the hairs up to 1 mm. long, yellowish, the costa, lateral veins (about 20 pairs) and veinlets shallowly impressed, the veinlets reticulately anastomosing, the lower surface densely and softly tawny pilose or subtomentose, the costa and veins prominent, the reticulation obscured by the dense pubescence; petioles up to 5 mm. long, the pubescence similar to that of the stems; interpetiolar bracts small, triangular, up to 4 mm. long, sparingly pilose, the veins excurrent, ending in 1 to 5 straight sharp yellowish spines up to 6 mm. long, the middle one longer than the others; flowers borne in terminal or, with maturity, both terminal and lateral spikes, these dense, up to 5 cm. long and 2 cm. broad, the lowermost bracts integrading into stem leaves, the rachis densely tawny pilose, the bracts narrowly oblong, 1.5 to 2 cm. long, about 6 mm. wide, otherwise resembling the leaf blades; bractlets narrowly lanceolate, up to 8 mm. long and 3 mm. wide near the base, ending in a spine about 3 mm. long and bearing 1 or 2 shorter spines on the margins, rather densely pilosulous and ciliate except at the base, the hairs yellowish, the nerves prominent;

calyx segments oblong-lanceolate, about 1 cm. long, 2 to 3 mm. wide, tipped by a weak spine, puberulous toward tip, glabrous below, ciliate, some of the marginal hairs glandular; corolla about 3 cm. long, 7 mm. broad at mouth, red (?), sparingly and minutely pubescent, the upper lip erect, arched, about 7 mm. long and 4 mm. wide, 2-lobed, the lobes oval, about 2.5 mm. long and 1.5 mm. wide, rounded, the lower lip 3-lobed nearly to the base, the lobes subequal, about 5 mm. long, rounded; capsules 15 mm. long, 6 mm. broad, 4 or 5 mm. thick, blunt at tip, glabrous, nitid, minutely punctate.

FIGURE 43.—*Aphelandra mutisii* Leonard (*a*, *Mutis* 1943; *b–f*, *Triana* s. n.): *a*, Tip of plant, showing leaf blades and inflorescence; *b*, interpetiolar bract; *c*, bract; *d*, bractlet; *e*, calyx segment; *f*, upper half of corolla. (*a*, *c–f*, Natural size; *b*, twice natural size.)

Type in the U. S. National Herbarium, No. 1562333, collected in Colombia by J. C. Mutis (No. 1943). *Triana* s. n. (NY, US), collected near Pasto, Department of Nariño, Colombia, 2,500 meters altitude, 1851–1857, is also of this species.

Aphelandra mutisii can be easily distinguished from other Colombian tooth-leaved species of *Aphelandra* by the spiny bracts and the soft, tawny pubescence of the lower surface of the leaf blades and stems. Named for José Celestino Mutis, an early Spanish collector of Colombian plants.

3. **Aphelandra euopla** Leonard, sp. nov. FIGURE 44

Suffrutex spinosus, caulibus sursum subtomentosis, deorsum glabratis; lamina foliorum oblongo-elliptica, coriacea, glabra, in costa et venis prominentibus parce pubescens, marginibus serrato-dentatis, dentibus triangularibus, spina acuta patula terminatis; bracteae interpetiolares ovatae vel suborbiculares, serrato-dentatae, spinosae; spica terminalis vel subterminalis, rhache brunneo-puberula; bracteae lanceolatae, coriaceae, subcarinatae, costa prominente, spina terminata; calycis segmenta subaequalia, chartacea, lanceolata, apice abrupte acuta, plus minusve dentata, glabra, parce ciliolata, apice spina terminata; corolla apice lutea, basi aurantiaca, minute pubescens, tubo cylindrico, labio superiore erecto, bilobato, inferiore patulo trilobato, lobis ovalibus vel triangularibus; ovarium glabrum.

Shrubby, thorny plants up to 2 meters high; stems subtomentose toward tips, glabrate below; leaf blades oblong-elliptic, 6 to 7 cm. long, 2 to 3 cm. wide (the spines not included), coriaceous, glabrous or the costa and veins (10 or 12 pairs) bearing a few weak hairs, the margins serrate-dentate, the teeth triangular, 2 to 5 mm. high, ending in sharp spreading spines up to 5 mm. long, the upper surface bright green, drying light olive-green, the lower surface drying dark olive-green, the venation very prominent, especially on the lower surface, the veinlets coarsely reticulate toward margins; petioles up to 5 mm. long, rather sparingly pilose; interpetiolar bracts ovate or suborbicular, 3 to 5 mm. long and wide, serrate-dentate, the teeth terminating in spines, the terminal one as much as 7 mm. long; flowers borne in terminal and subterminal spikes 5 to 7 cm. long and about 2 cm. broad (the corollas excluded), the peduncles (about 8 mm. long) and rachis brown-puberulous; bracts lanceolate, about 20 mm. long including the terminal spine (2.5 mm. long), 4 mm. wide, acute, coriaceous, sparingly ciliate, otherwise glabrous, the costa prominent; bractlets narrowly lanceolate, 12 mm. long, including the terminal spine (2.5 to 2 mm. long), 2 mm. wide, acuminate, subcarinate, coriaceous, the costa prominent, terminating in a spine about 3 mm. long; calyx 1 cm. long, the segments subequal, chartaceous, lanceolate, 2.5 to 4 mm. wide, abruptly acute and at least some of them minutely dentate near tip (2 to 4 teeth), all terminating in a spine about 1 mm. long, glabrous or bearing a few minute hairs and sparingly ciliolate; corollas 4.5 cm. long, yellow distally, orange proximally (*Cuatrecasas*), finely pubescent, the hairs segmented, up to 0.5 mm. long or a few of them slightly longer, the tube slightly curved, 3 mm. broad at base, narrowed at about 5 mm. above base to 2.5 mm., thence rather abruptly enlarged to 5.5 mm., the throat 6 mm. broad, the portion from about 1.5 cm. above base to mouth tubular, the upper lip obovate, erect, 1 cm. long, 3 mm. wide at base, 4 mm. wide near tip, emarginate, the lobes triangular, obtuse, sometimes bilobed at tip, the lower lip 3-lobed, more or less spreading,

the lobes oval, 5 mm. long, 2.5 mm. wide, obtuse or rounded, the sinuses rounded; stamens and pistil terminating at tip of upper corolla lip, the filaments glabrous except at juncture with connective, here dorsally pilose, the hairs up to 1 mm. long; anthers 5 mm. long, pilose at tip; style glabrous; ovary glabrous; mature capsule not seen.

Type in the U. S. National Herbarium, No. 1900471, collected at Cuchilla de Barragán, valley of Río Bugalagrande, Department of El Valle, Colombia, 3,300 to 3,320 meters altitude, March 20, 1946, by J. Cuatrecasas (No. 20236).

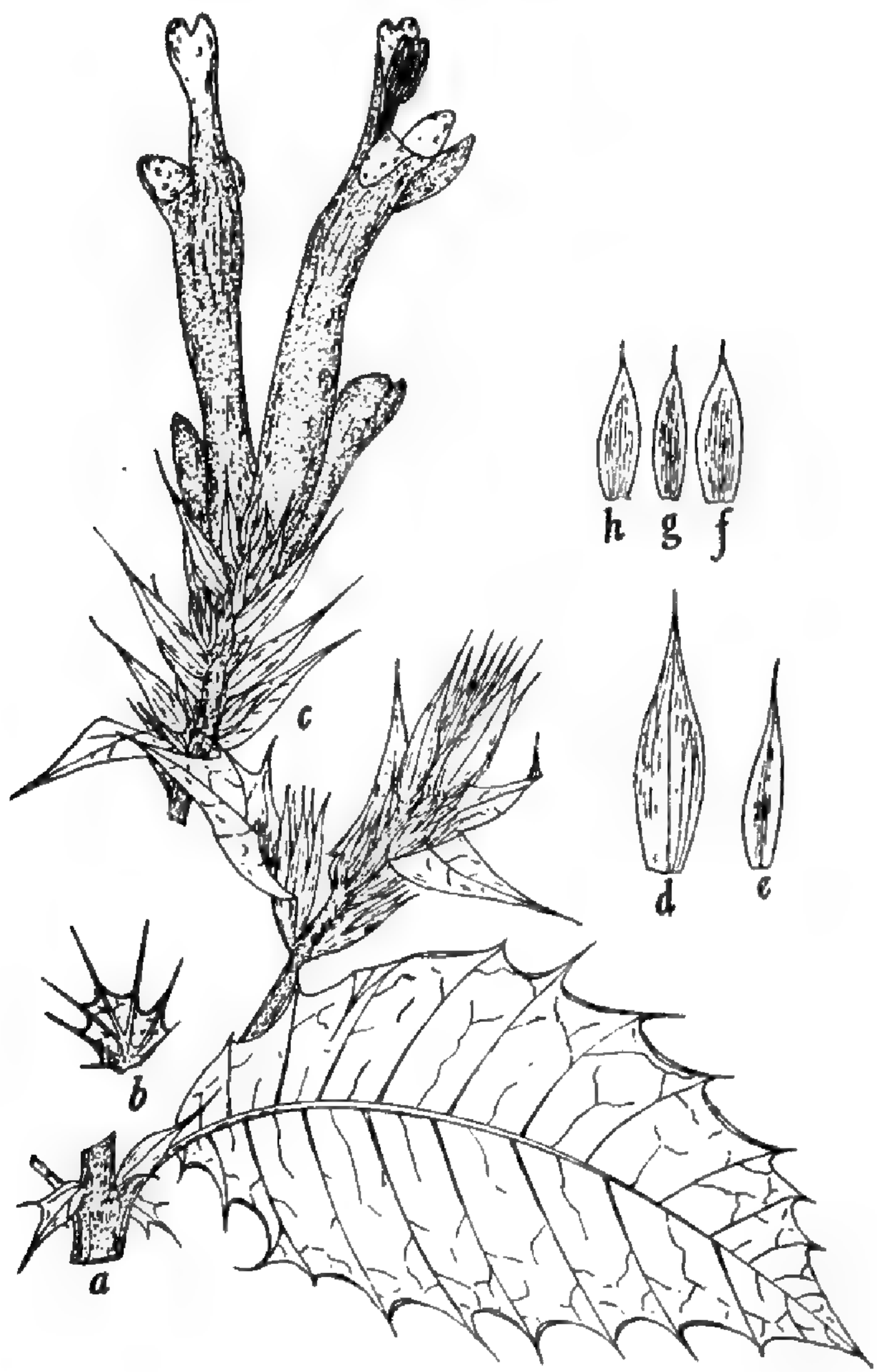

FIGURE 44.—*Aphelandra euopla* Leonard (*Cuatrecasas* 20236): *a*, Node with leaf, branch of inflorescence, and uppermost interpetiolar bracts; *b*, interpetiolar bract from lower node; *c*, tip of terminal spike; *d*, bract, *e*, bractlet; *f*, posterior calyx segment; *g*, lateral segment; *h*, anterior segment. (All natural size.)

Distantly related to *Aphelandra cirsioides* Lindau, of Ecuador and Peru, *A. euopla* can be separated readily from this by its relatively broader leaf blades and larger (20 cm. long) entire bracts. The leaf blades of *A. cirsioides* are rarely over 2 cm. wide and the bracts are only 15 mm. long and spiny-margined. The name *euopla* (εὔοπλος) means well-armed, in allusion to the spiny character of the plant.

4. **Aphelandra porphyrocarpa** Leonard, sp. nov. FIGURE 45

Frutex, caulibus glabris; lamina foliorum oblongo-lanceolata, apice acuta, basi angustata, leviter incisa, lobis ascendentibus, serratis, dentibus spinis parvis, acutis, fulvis armatis, utrinque hirsuta, pilis plus minusve appressis, subtus pilis praecipue in costa et venis positis, venulis crasse reticulatis; petioli glabri vel subglabri; bracteae interpetiolares minutae, spinis acutis fulvo-hirsutis vel subglabratis armatae; spica terminalis plus minusve laxa, rhache strigosa; bracteae acuminatae, serratae, dentibus spinis parvis armatis, strigosae (intus solum apicem versus), venis prominentibus; bracteolae lanceolatae, apice acutae, extus dense hirsutae, ciliatae, obscure nervatae; calycis segmenta oblongo-ovata vel obovata, apice rotundata, mucronata, dentata, aliquando dense subappresso-pubescentia, ciliata; capsulae oblongae, subobtusae, glabrae, minute punctatae; retinacula apice late cucullata.

Shrubs; stems glabrous; leaf blades oblong-lanceolate, up to 22 cm. long and 5 cm. wide, acute, narrowed at base, shallowly incised, the lobes ascending, about 5 mm. long and 15 mm. broad, the veins excurrent, terminating in small, sharp, yellowish spines up to 2 mm. long, the upper surface sparingly hirsute, the hairs about 0.5 mm. long, appressed, hirsute beneath, the hairs confined chiefly to costa and veins (about 20 pairs), the venation moderately conspicuous, the veinlets coarsely reticulate beneath; petioles up to 3.5 cm. long, glabrous or nearly so; interpetiolar bracts minute, consisting mainly of 3 to 6 sharp, yellowish, hirsute or glabrous, radiating spines from 1 to 6 mm. long; flowers borne in simple terminal spikes up to 25 cm. long and about 3 cm. broad, these rather lax, especially below, the rachis upwardly strigose, the hairs about 0.25 mm. long; bracts triangular, up to 15 mm. long and 6 mm. wide, acuminate, rather distantly serrate (about 6 pairs of teeth), the veins excurrent, terminating in spines up to 0.5 mm. long, the upper half strigose on both surfaces, the hairs about 175 μ long, the lower half glabrous, the costa and 1 or 2 pairs of nerves prominent; bractlets lanceolate, up to 9 mm. long and 3 mm. wide at base, obscurely nerved, rather densely hirsute without, ciliate, the hairs up to 0.5 mm. long; calyx supported by thick calluses, the segments oblong-ovate or obovate, 12 mm. long, 5 to 6 mm. wide, rounded, mucronate and dentate at tip (usually 2 pairs of minute teeth), ciliate, the outer surface and upper part of the inner surface minutely and rather densely pubescent, the hairs up to 125 μ long, appressed; corollas not seen; capsules purple, oblong, obtusish at apex, 5 mm. broad at base, 7.5 mm. broad at middle, 3.5 mm. thick, glabrous, minutely punctate; immature seed glabrous; retinacula 3 mm. long, the tips broadly cucullate.

Type in the herbarium of the New York Botanical Garden, collected in forest, east of Neiva, Department of Huila, Colombia, 1,800 to 2,300

meters altitude, August 1–8, 1917, by H. H. Rusby and F. W. Pennell (No. 891). Isotype in the U. S. National Herbarium, No. 1041528.

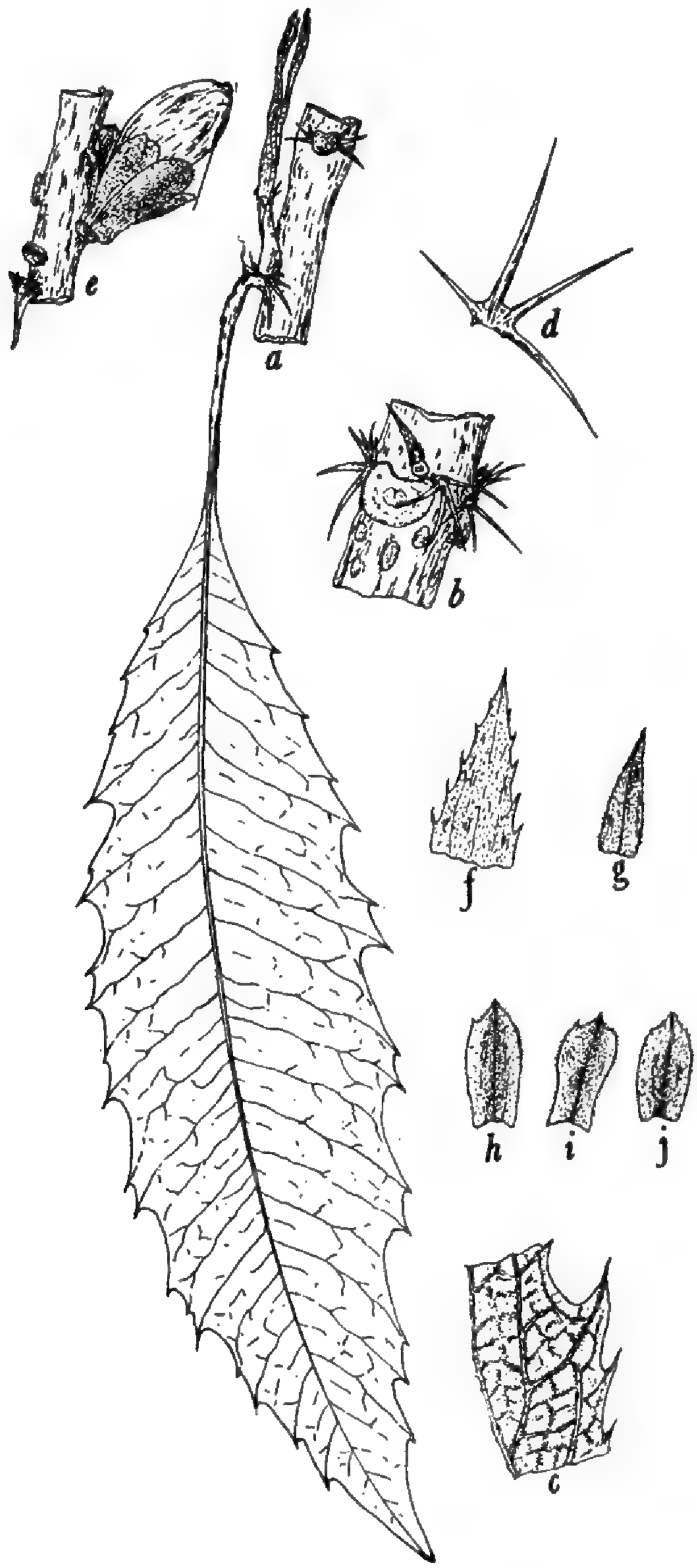

FIGURE 45.—*Aphelandra porphyrocarpa* Leonard (*Rusby & Pennell* 891): *a*, Node showing strongly reflexed leaf; *b*, node showing large leaf scars and interpetiolar bracts; *c*, portion of leaf blade (under side) to show venation and pubescence; *d*, interpetiolar bract; *e*, portion of spike to show calyx and fruit; *f*, bract; *g*, bractlet; *h*, posterior calyx segment; *i*, one of the lateral segments; *j*, one of the anterior segments. (*a*, *e*, Half natural size; *d*, twice natural size; *b*, *c*, *f–j*, natural size.)

Aphelandra porphyrocarpa is probably nearest *A. acanthus* but differs from it chiefly in the more spiny bracts (6 pairs of teeth instead of 4), the shallowly incised leaf blades, the glabrous stems, and the

relatively short, densely hirsute calyx segments, these with tips rounded, apiculate and erose-dentate. The specific epithet is from the Greek πορφύρα, purple, and καρπός, fruit.

5. **Aphelandra acanthus** Nees

Aphelandra acanthus Nees, DC. Prodr. 11: 302. 1847. Type collected in Quindío, Tolima, Colombia, by Humboldt (No. 5836). Type material in the Willdenow and Berlin herbaria. Photograph of the Berlin specimen in the U. S. National Herbarium (Field Mus. photograph No. 8695). *Acanthus* (ἄκανθα, thorny) is a generic name given by Linnaeus to a group of plants confined originally to tropical and subtropical regions of the Old World and characterized by large spiny leaves and 1-lipped corollas.

Coarse suffrutescent herbs up to 3 meters high; stems fleshy (at least the upper portions), hirsute to subtomentose, the hairs yellowish, about 0.5 mm. long, upwardly appressed or some of them more or less spreading, the lower portions of the stems glabrate; leaf blades oblong, up to 25 cm. long and 8 cm. wide, acute to acuminate at tip, narrowed at base, thin, pinnatifid, the lobes triangular, 2 to 5.5 cm. from sinus to tip, ascending, the margins rather sparingly serrate-dentate, the teeth triangular, 3 or 4 mm. long, the excurrent veins terminating in sharp spines up to 5 mm. long, both surfaces hirsute, the hairs confined chiefly to costa and veins, appressed, 0.5 to 0.75 mm. long, the costa and lateral veins (about 20 pairs) rather prominent, the veinlets coarsely and reticulately anastomosing; petioles up to 4 cm. long, the pubescence similar to that of the stem; interpetiolar bracts small, ovate, up to 4 mm. long, the nerves thick, terminating in 3 to 6 sharp, straight, yellowish, spreading or retrorse spines 2 to 10 mm. long, these hirsute or glabrate, the hairs up to 0.5 mm. long; flowers numerous, borne in simple, compact, terminal spikes up to about 20 cm. long and 2.5 to 3 cm. broad (excluding corollas), the pubescence of the rachis like that of the stems; bracts triangular-ovate, 1.5 to 2 cm. long, 5 to 6 mm. wide at base, acuminate, rather sparingly hirsute, the hairs more numerous on the outer surface than on the inner, the margins bearing about 3 pairs of low teeth, these and the tip terminated by sharp, yellowish, ascending, sparingly hirsute spines up to 2.5 mm. long; bractlets lanceolate, about 8 mm. long and 2 mm. wide at base, gradually narrowed to a slender tip, the costa excurrent, terminating in a small spine (0.5 mm. long), sparingly and minutely pubescent without, glabrous within, the margins ciliolate; calyx segments oblong-ovate, about 1 cm. long and 4.5 to 5 mm. wide, abruptly narrowed to an acute tip, striate-nerved, except the thin margins, sparingly and minutely pubescent without, glabrous within, ciliate, each segment terminated by a slender spine up to 1.5 mm. long; corollas 3.4 to 4 cm. long (from base to tip of upper lip), yellow, sparingly to rather densely tomentose or subtomentose except the glabrous basal portion, the hairs whitish, up to 0.75 mm. long, the

tube oblique, curved, 5 to 7 mm. broad at base, narrowed at from 3 to 8 mm. above base to 4 mm. broad, thence enlarged to 10 mm. at mouth, the upper lip erect, 15 to 18 mm. long, about 7 mm. wide near base, the lobes obovate, about 8 mm. long and 4.5 to 6.5 mm. wide, rounded, often mucronate, the lower lip more or less spreading, the lobes oval, 7 to 10 mm. long, about 6 mm. wide, rounded or shallowly emarginate; anthers reaching or slightly exceeding the upper lip, the filaments sparingly pilose toward tip, the anthers 7 mm. long, 2.5 mm. broad, apiculate at base, glabrous; ovary glabrous.

Found at altitudes from 2,200 to 2,400 meters, growing in clearings or wooded gullies. There seems to be no special flowering season. The stinging property mentioned by Killip and Varela (No. 34685) is unique for the family. Cuatrecasas (No. 23321) gives the following notes: "Arbusto o arbolito 3 met. Hoja verde clara brillante haz, verde pálida envés. Cáliz verde. Corola amarilla." Endemic.

CALDAS: Banks of the Río Otún, above Peñas Blancas, *Cuatrecasas* 23321 (US). Alaska, above Salento, *Pennell* 9704 (GH, US).

TOLIMA: Mediación, Quindío, *André* 2047 (K). Along the Quindío Highway between Cajamarca and summit of Divide, *Killip & Varela* 34685 (US). El Líbano to Murillo, Alto de Peñones, *García-Barriga* 12273 (US). La Palmilla, Quindío, *Triana* s. n. (NY).

6. **Aphelandra phobera** Leonard, sp. nov. FIGURE 46

Frutex vel arbor parva, caulibus spinosis, minute strigosis vel subtomentosis; lamina foliorum oblongo-lanceolata, acuta, basi angustata, marginibus leviter incisis, lobis triangularibus, ascendentibus, serratis, dentibus triangularibus, spinis acutis fulvis armatis, utrinque hirsuta, pilis appressis vel ascendentibus, venulis reticulatis; petioli strigosi; bracteae interpetiolares ovatae, spinis (3–10) acutis, fulvis, radiatis, plus minusve strigosis armatae; spica terminalis, magna, densa vel deorsum laxa; bracteae lanceolatae vel oblongo-ovatae, extus parce hirsutae, intus glabrae, venosae, serratae, dentibus acutis armatae; bracteolae lanceolatae, acuminatae, hirsutae, apice spina parva terminatae; calycis segmenta oblongo-lanceolata, apice abrupte acuminata, extus dense hirsuta, ciliata; corolla magna, flava, extus dense hirsuta, pilis fulvis, tubo subcylindrico curvato, labio superiore erecto, lobis oblongo-obovatis, rotundatis, emarginatis, labio inferiore patulo, lobis obovatis, rotundatis, integris vel mucronatis; stamina glabra; ovarium glabrum.

Shrubs or small trees up to 3 meters high; stems spiny, minutely strigose to subtomentose, the hairs yellowish, up to 0.75 mm. long; leaf blades oblong-lanceolate, up to 50 cm. long and 15 cm. wide, acute, narrowed at base, shallowly incised, the lobes triangular, ascending, up to 3 cm. long from sinus to tip, the margins moderately serrate, the teeth triangular, up to 5 mm. long and 8 mm. broad, these and the

tip armed with sharp, yellowish spines up to 5 mm. long, both surfaces hirsute, the hairs yellowish, appressed or ascending, 0.75 mm. long, denser on the costa and veins (about 20 pairs), the venation rather prominent, the veinlets coarsely reticulate; petioles 1 to 6 cm. long, the pubescence that of the stems; interpetiolar bracts ovate, up to 5 mm. long and broad, armed with 3 to 10 sharp, yellowish, radiating, strigose or glabrous spines, these varying from 1 to 25 mm. in length; flowers numerous, borne in simple terminal spikes up to 30 cm. long and 3 to 4 cm. broad (exclusive of corollas), these dense, or lax toward base; bracts lanceolate to oblong-ovate, up to 30 mm. long and 15 mm. wide (the lowermost somewhat longer, and relatively narrowed, resembling small leaf blades), acute, ending in a sharp, yellowish, spine 2 mm. long, sparingly hirsute without, the hairs up to 0.5 mm. long, glabrous within, veiny, the margins serrate, the 4 to 9 pairs of teeth 0.5 mm. high and 1 mm. wide; bractlets lanceolate, up to 2 cm. long and 3.5 mm. wide, acuminate, hirsute except the glabrous lower portion of the inner surface, striate-nerved, tipped by a spine 1.5 mm. long; calyx segments oblong-lanceolate, 13 to 14 mm. long, 4.5 to 6 mm. wide, abruptly acuminate and tipped by spines 0.5 to 1 mm. long, ciliate, the outer surface densely hirsute, the hairs ascending, about 0.5 mm. long, the hairs toward base gland-tipped, the inner surface glabrous except toward tip, the costa and veins obscured by the pubescence; corolla yellow, up to 6 cm. long (from base to tip of upper lip), densely hirsute except glabrous basal portion, the hairs ascending, yellowish, 0.5 mm. long, the tube subcylindric, curved, 1 cm. broad at base, narrowed to 6 mm. at 1 cm. above base, thence gradually enlarged, the throat about 11 mm. broad, the upper lip erect, 2 cm. long, the lobes oblong-obovate, 15 mm. long, up to 8 mm. wide, rounded and emarginate, the lower lip spreading, the lobes obovate, 11 or 12 mm. long and broad, rounded, entire or minutely mucronate; stamens reaching the upper lip of the corolla, or slightly exceeding it, glabrous, the anthers 1 cm. long and 3 mm. broad, the basal lobe rounded; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 1853810, collected along the Río Cali, between Puente de los Cárpatos and La Margarita, Department of El Valle, Colombia, 2,000 meters altitude, November 2, 1944, by J. Cuatrecasas (No. 18484). An isotype is also in the U. S. National Herbarium, No. 1853811.

CAUCA: Canaan, Mount Puracé, *Killip* 6796 (US). San José, San Antonio, *Pennell & Killip* 7392 (US). Crest of Cordillera Occidental, west of Tambo, *Haught* 5174 (US).

PUTUMAYO: La Cabaña, *Cuatrecasas* 11631 (US).

DEPARTMENT (?): *Mutis* 1944.

Closely related to *Aphelandra acanthus*, *A. phobera* is characterized by its larger, shallowly incised leaf blades, its larger and more spiny

interpetiolar bracts, longer spikes, longer and more spiny bracts, longer and more densely pubescent calyx segments, and larger corollas. The filaments, moreover, are strictly glabrous instead of sparingly pilose, as in *A. acanthus*.

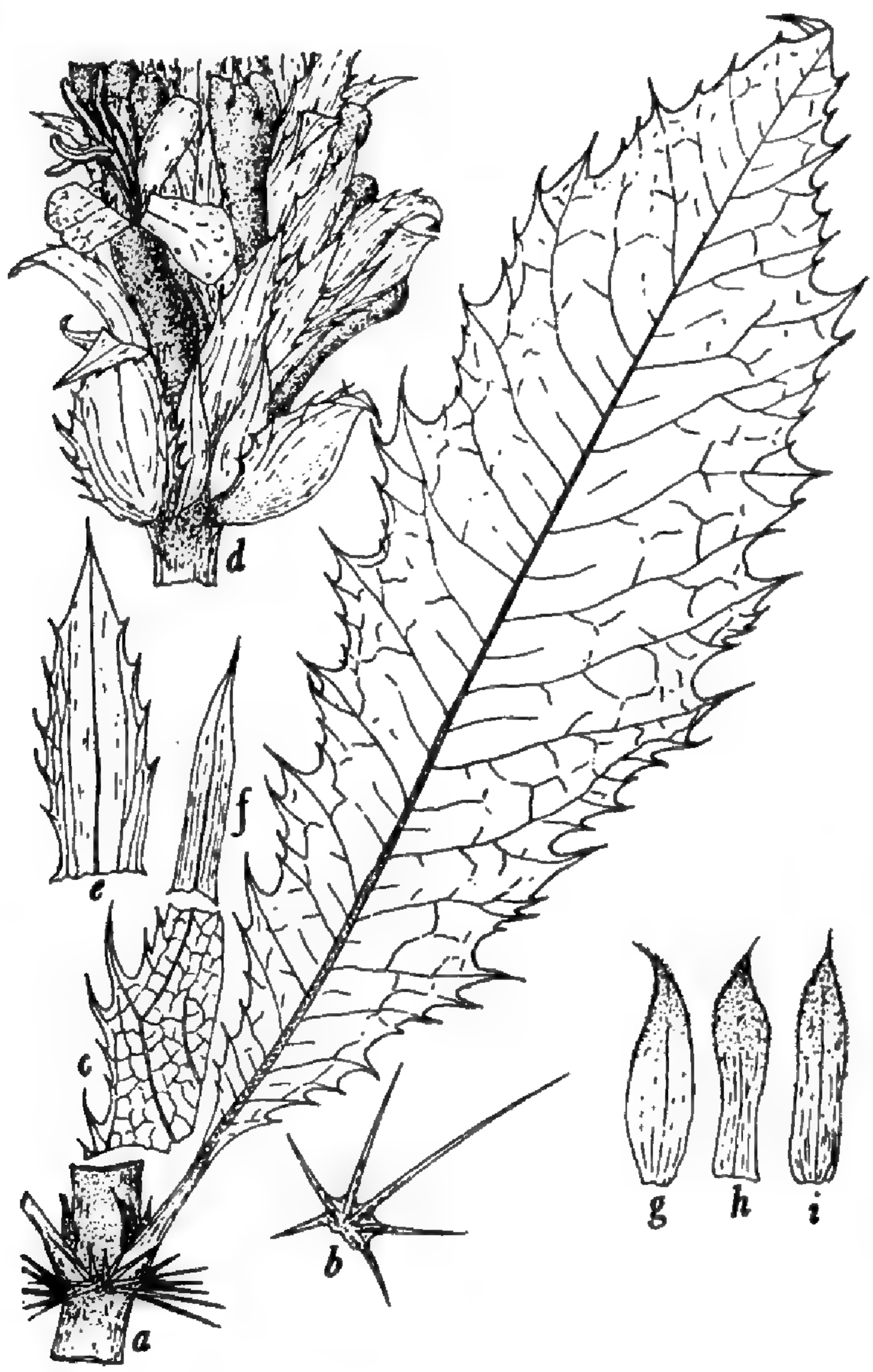

FIGURE 46.—*Aphelandra phobera* Leonard (*a–d*, *Cuatrecasas* 11631; *e–i*, *Cuatrecasas* 18484) *a*, Node showing leaf and interpetiolar bracts; *b*, interpetiolar bract; *c*, portion of unde surface of leaf blades to show venation; *d*, portion of spike; *e*, bract; *f*, bractlet; *g*, pos terior calyx segment; *h*, one of the lateral segments; *i*, one of the anterior segments (*a*, *d*, Half natural size; *b*, *c*, *e–i*, natural size.)

Aphelandra phobera is a forest plant frequenting the upper mountain slopes and summits at altitudes ranging from 2,000 to 3,100 meters. The type is accompanied by the following notes: "Hierba robusta 1–3 m. Tallo verde espinoso. Ramas id. verdes o verde rosadas. Bracteas verde claro. Caliz amarillo verdoso violaceo claro. Corola vivo amarillo. Hoja verde grisacea en el haz." The specific name is derived from the Greek φοβερός, frightful, in allusion to the numerous sharp spines.

7. **Aphelandra huilensis** Leonard, sp. nov. FIGURE 47

Suffrutex spinosus, caulibus sursum minute strigosis, deorsum glabratis; lamina foliorum oblongo-elliptica, incisa, dentibus et segmentis spinis acutis terminatis, parce strigosa; petioli parce strigosi; bracteae interpetiolares triangulares, parvae, spinis 2 acutis inaequalibus armatae; spicae terminales et laterales; bracteae ovatae, acuminatae, spinoso-dentatae, parce strigosae et ciliatae; bracteolae lanceolatae, acuminatae, integrae, parce strigosae, ciliatae, apice spina parva terminatae; calycis segmenta oblongo-lanceolata, puberula, ciliata, spina parva terminata; corolla rubra, plus minusve dense hirtella, tubo cylindrico, labio superiore erecto, bilobato, lobis rotundatis, emarginatis, labio inferiore patulo, trilobo, lobis rotundatis; ovarium glabrum.

Suffrutescent herbs up to 2 meters high or more; stems glabrate below, strigose toward tip, the hairs about 0.5 mm. long; leaf blades oblong-elliptic in outline, up to 25 cm. long and 12 cm. wide, acute to acuminate at apex and terminated by a yellowish spine 0.75 to 2 mm. long, narrowed at base, deeply incised, the lobes triangular to oblong, up to 7 cm. long, each lobe terminated by a small yellowish spine (1 to 2 mm. long), the entire margin serrate, the teeth 1 to 4 mm. high and broad, all spine-tipped, the upper surface sparingly strigose or the costa and veins (about 20 pairs) more densely so, the hairs about 0.75 mm. long, the lower surface more densely strigose, the hairs about 0.5 mm. long, those of the costa and veins appressed or ascending, the venation of the lower surface more prominent than that of the upper; interpetiolar bracts triangular, about 4 mm. long, bearing a pair of stout spines, one about 1 cm. long, the other 2 to 3 mm. long; spikes terminal and axillary, up to 10 cm. long and about 2 cm. broad, the rachis sparingly strigose; bracts about 2 cm. long and 8 mm. wide, acuminate, terminated by a spine about 1 mm. long, the inner surface glabrous, the outer surface rather sparingly strigose, the hairs 0.5 mm. long, the margins ciliate, bearing 1 to 4 pairs of spine-tipped teeth, the spines 1 to 2 mm. long; bractlets lanceolate, about 17 mm. long and 3 mm. wide near base, acuminate, terminated by a spine 1 mm. long, striate-nerved, the inner surface glabrous, the outer rather sparingly strigose, ciliate, the margins usually entire; calyx segments oblong-lanceolate, 23 to 25 mm. long, 3.5 to 5 mm. wide, minutely strigose, the inner surface only so toward tip, the hairs about 125 μ long, the margins thin, sparingly and minutely dentate; corolla 4 cm. long, red, rather densely hirsute except the glabrous basal portion, the hairs 0.25 to 0.5 mm. long, ascending, the tube 4 mm. broad near base, slightly contracted above the ovary, thence enlarged to 7 mm. and again contracted at mouth to 5 mm., the upper lip erect, 5 mm. long and 3 to 5 mm. wide, bilobed, the lobes 3 mm. long and

2.5 mm. wide, rounded, emarginate, the lower lip more or less spreading, about 4 mm. long, 3-lobed, the lobes ovate, 3.5 mm. long and broad, rounded, the middle lobe flat; stamens reaching the mouth of the corolla tube, the anthers 5 to 8 mm. long, 1.5 mm. broad, the filaments triangular in cross section, glabrous toward tip, strigose toward base; pistil glabrous.

Type in the Stockholm Herbarium, collected in virgin forests at La Plata, Department of Huila, Colombia, 2,600 meters altitude, March 20, 1939, by Kjell von Sneidern (No. 2649). A fragment of the type is in the U. S. National Herbarium, No. 1907334. Cuatre-

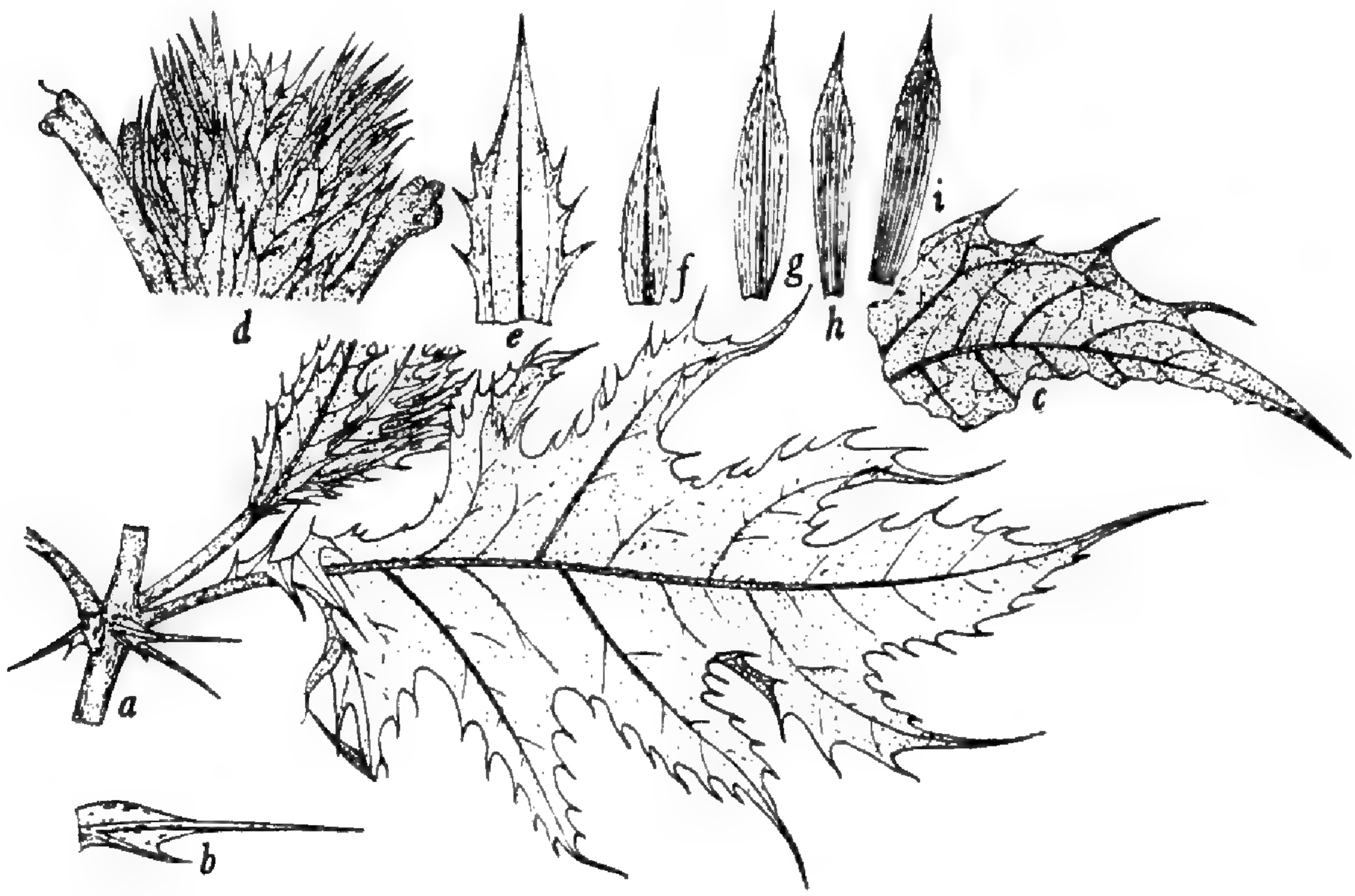

FIGURE 47.—*Aphelandra huilensis* Leonard (*Cuatrecasas* 23462): *a*, Node showing leaf, interpetiolar bracts and lower branch of panicle; *b*, interpetiolar bract; *c*, lobe of leaf blade (under side); *d*, tip of spike; *e*, bract; *f*, bractlet; *g*, posterior calyx segment; *h*, one of the lateral segments; *i*, one of the anterior segments. (*a*, *d*, Half natural size; *b*, twice natural size; *c*, *e*–*i*, natural size.)

casas' No. 23462, collected along the Río San José, at Aguabonita, in the region of Moscopán, Department of El Cauca, Colombia, 2,280 meters altitude, January 30, 1947, is of this species.

Related to *Aphelandra acanthus*, *A. huilensis* can be recognized readily when compared with that species by its red, hirsute corolla. In *A. acanthus*, the corollas are yellow and densely and softly pubescent or tomentose. The species is named for the Department of Huila.

On the label accompanying his specimen (No. 23462) Cuatrecasas gives the following description: "Sufrutex robusto, erguido, espinoso. Hoja verde glauco claro. Caliz rojizo. Corola roja. Anteras amarillas."

8. **Aphelandra porphyrolepis** Leonard, sp. nov. FIGURE 48

Suffrutex erectus, robustus, caulibus tenuiter tomentosis; lamina foliorum oblanceolata, acuminata, basi angustata, in petiolum decurrens, subcrassa, pubescens, marginibus serrato-dentatis vel deorsum incisis, lobis late triangularibus, dentibus spina parva terminatis; petioli pubescentes, pilis appressis; bracteae interpetiolares orbiculares, 3-dentatae, dentibus spina acuta terminatis; panicula laxa, terminalis, rhache tenuiter tomentosa, pulverulenta, purpurea; bracteae triangulares, acuminatae, puberulae, ciliolatae, purpureae; bracteolae triangulares, apice acuminatae, purpureae; calycis segmenta acuta vel submucronulata, ciliolata, obscure puberula, punctata; corolla cylindrica, minute pubescens, rubra, labio superiore obovato, labio inferiore 3-lobato, lobo medio cucullato, lobis lateralibus rotundatis, emarginatis; antherarum connectivum acute carinatum; ovarium glabrum.

Shrubby, up to 3 meters high, erect, robust; stems thinly tomentose; leaf blades oblanceolate, 17 to 35 cm. long, 5.5 to 13 cm. wide, acuminate, gradually narrowed from above middle to the base and decurrent on the petiole, rather fleshy, flexible, the margins serrate-dentate or the lower leaves shallowly incised, the lobes broadly triangular, up to 1 cm. long, about 6 on each side, these again sparingly and distantly serrate-dentate, the vein at the tip of each tooth terminating in a spine about 1 mm. long, the upper surface green, drying dark olive, the lower surface drying light olive, both surfaces sparingly pubescent, the hairs weak and appressed, about 0.5 mm. long, more numerous on the margins of the costa of the upper surface than elsewhere, the costa and veins (about 18 pairs) prominent; petioles 1 to 1.5 cm. long, appressed-pubescent; interpetiolar bracts orbicular, about 3 mm. long and broad, 3 to 5-toothed, the teeth terminating in stout spines 0.5 to 1 mm. long; flowers borne in spikes, these forming loose terminal panicles about 22 cm. long and 10 cm. broad, the branches of the panicles (up to 3.5 cm. long) and the rachises thinly tomentose, bright powdery purple; bracts triangular, 1 cm. long, 5 mm. wide, acuminate, puberulous, ciliolate, purple; bractlets triangular, 7 mm. long, 3 mm. wide at base, carinate, acuminate, puberulous, purple; calyx 6 mm. long, the segments oblong-lanceolate, 2.5 to 3.5 mm. wide, acute to submucronate, ciliolate, dorsally punctate and obscurely puberulous, purple; corollas about 5 cm. long, minutely pubescent, red or orange-red (*Cuatrecasas*), 4 mm. broad at base, narrowed at 5 mm. above base to 2.5 mm., thence rather abruptly enlarged to 5 or 6 mm., the cylindric portion of the tube usually curved, the upper lip obovate, 11 mm. long, barely 5 mm. wide near tip, obtuse, the lower lip 3-lobed, the middle lobe 5 mm. long and about 3 mm. wide, cucullate, the lateral lobes ovate, 5 mm. long, 4 mm. wide, rounded, emarginate; stamens

and pistil reaching tip of lower lip, glabrous, the anthers 6 mm. long, the connective sharply keeled, rounded at tip; ovary glabrous; mature capsule not seen.

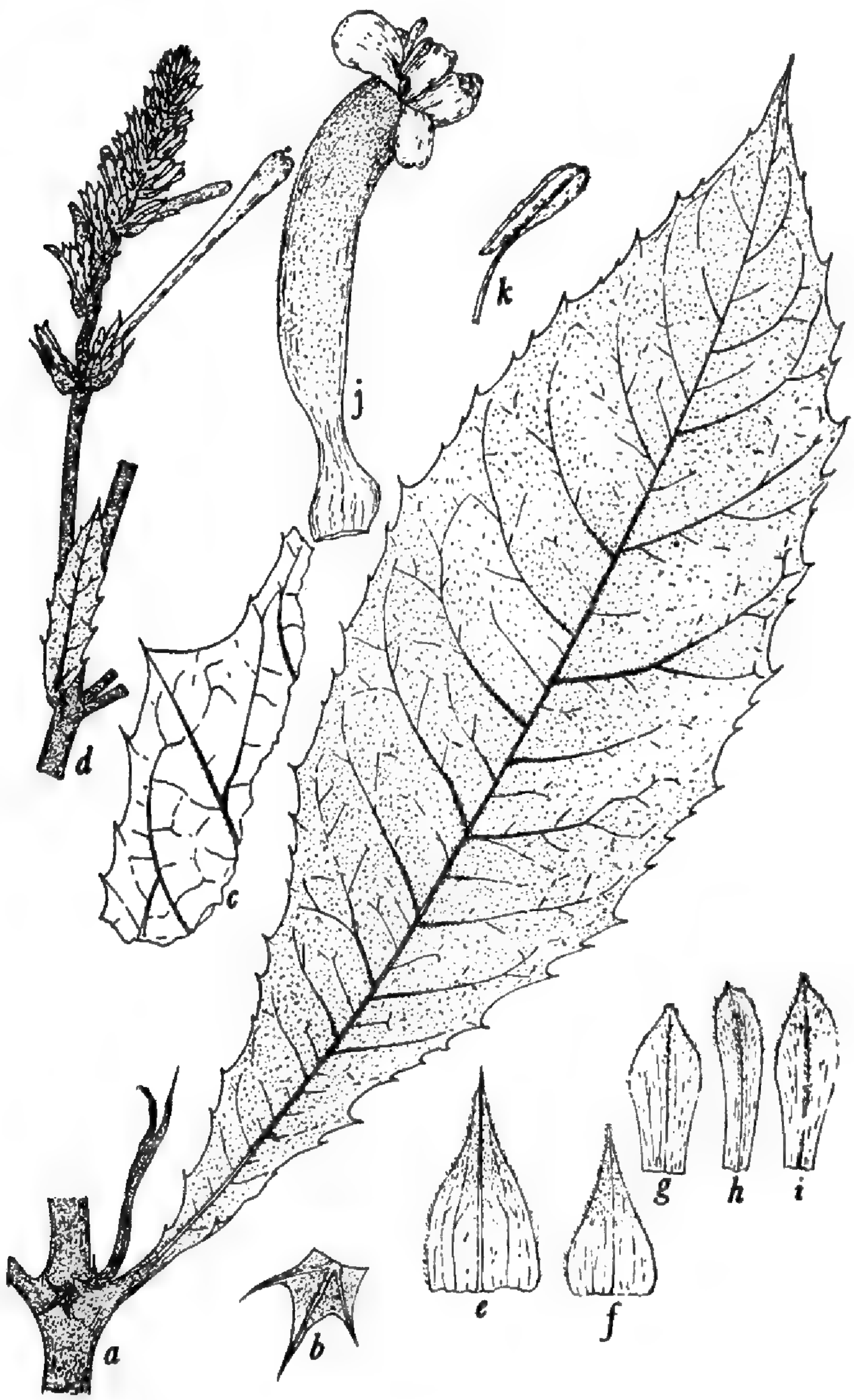

FIGURE 48.—*Aphelandra porphyrolepis* Leonard (*Cuatrecasas* 22283): *a*, Node showing leaf and interpetiolar bracts; *b*, interpetiolar bract; *c*, lobe of large leaf showing venation (lower surface); *d*, branch of panicle; *e*, bract; *f*, bractlet; *g*, posterior calyx segment; *h*, one of the lateral segments; *i*, one of the anterior segments; *j*, corolla; *k*, anther. (*a*, *d*, Half natural size; *b*, *e*, *f*, *k*, twice natural size; *c*, *j*, natural size; *g*–*i*, one and a half times natural size.)

Type in the U. S. National Herbarium, No. 1900486, collected on Mount Tabor, above Las Brisas, Department of El Valle, Colombia, 1,970 to 2,100 meters, October 19, 1946, by J. Cuatrecasas (No. 22283).

Aphelandra porphyrolepis is a well-marked species easily recognized by its purple, thinly tomentose inflorescence and the large dentate or shallowly incised leaves. The carinate connectives of the stamens and the strongly cucullate middle lobe of the lower lip of the corolla seem to be unique in the genus. The specific epithet is derived from the Greek words πορφύρα, purple, and λεπίς, scale or bract.

9. **Aphelandra quercifolia** Nees

Aphelandra quercifolia Nees, DC. Prodr. **11**: 302. 1847. Type collected at "Quindío la Palmita," Department of El Valle, Colombia, November, by Goudot. Type in the Hooker Herbarium, Kew.

Herbs; leaves oblong, acuminate, long-cuneate at base and decurrent on the petiole, remotely and coarsely sinuate-dentate, the teeth mucronate, both surfaces glabrous, the base of the petiole unarmed; flowers borne in spineless spikes; bracts lanceolate, reflexed, longer than the ovate calyx lobes; corolla smooth, the throat subinflated, the upper lip longer than the lower.

Not seen. Description compiled from the original. In his observations, Nees states that this species is closely related to *A. runcinata* but differs from that in having a shorter corolla with the upper part relatively broader and smooth instead of rugose, and in its unarmed stems.

10. **Aphelandra lyrata** Nees

Aphelandra lyrata Nees, DC. Prodr. **11**: 302. 1847. Three varieties are described by Nees: α *latibractea*, collected in Peru by McLean (Hooker Herbarium); β *laxior*, *Matthews* No. 782 collected in Peru; and γ *arguta*, collected by Lobb in "Colombia."[4] *Lyrata*, lyrate or pinnatifid, alludes to the pinnatifid leaf blades.

Stems erect, loosely pilose, often purple; leaf blades lyrate-pinnatifid, up to 30 cm. long, the sinuses rounded or obtuse, the segments ovate, angulate-dentate, the teeth mucronulate, unarmed, both surfaces laxly pilose; flowers borne in a terminal peduncled spike, the peduncle varying from long to short, laxly pilose; spikes 7 to 13 cm. long, more or less lax; bracts ovate to oblong, more or less dentate toward tip; bractlets linear-lanceolate, entire; corolla about 4 cm. long, glandular-pubescent, red, the lips about equal, 3-lobed, the lobes rounded; stamens glabrous.

No Colombian specimens seen. Description based partly on the original and partly on a specimen collected by the Wilkes Expedition at Obrajillo, Peru.

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[4] This is probably one of the many specimens collected by Lobb in Peru and erroneously ascribed to Colombia (see Killip, "The botanical collections of William Lobb in Colombia," Smiths. Misc. Coll. **87**, No. 11. 1932).

11. **Aphelandra crispata** Leonard, sp. nov. FIGURE 49

Suffrutex, caulibus sursum parce hirsutis, deorsum glabris; lamina foliorum oblongo-elliptica, apice acuminata, basi angustata, oblique truncata vel subcordata, marginibus grosse serratis, dentibus acutis, supra parce strigosa, subtus aliquanto dense pilosa, pilis ascendentibus vel subappressis, costa et venis prominentibus; petioli breves glabri vel parce hirsuti; spica terminalis, solitaria, pedunculata, rhache glabra; bracteae oblongo-ovatae, apice subobtusae, apiculatae, purpureae, coriaceae, glabrae, crispatae vel contortae, marginibus subhyalinis; bracteolae oblongae, acutae, basi carinatae, obliquae, glabrae, marginibus subhyalinis; calcycis segmenta oblongo-lanceolata, acuta, glabra, marginibus subhyalinis; corolla lutea, dense pubescens vel subtomentosa, labio superiore ovato, apice minute bilobato, lobis rotundis, labio inferiore 3-lobato, lobo medio cordato, obtuso, lobis lateralibus lanceolatis; ovarium glabrum.

Suffrutescent herbs; stems glabrous below, the upper portions sparingly hirsute, the hairs spreading, about 1 mm. long; leaf blades oblong-elliptic, up to 40 cm. long and 14 cm. wide, acuminate, narrowed from middle or slightly above middle to a very narrow, obliquely truncate or subcordate base 1 cm. wide, the veins terminating in broad teeth 1 to 3 mm. high and 2 to 2.5 cm. apart, the upper surface sparingly strigose, the hairs about 1.25 mm. long, the lower surface rather densely pilose, the hairs brownish, 0.75 to 1.25 mm. long, subappressed, those of the costa and veins (about 20 pairs) spreading horizontally, the venation prominent but more so beneath than above; petioles about 5 mm. long, glabrous or sparingly hirsute; spikes solitary, terminal, up to 11 cm. long and 5 cm. broad, moderately dense, the peduncle about 5 mm. long, hirsute, subtended by a pair of lanceolate, acuminate, leaflike bracts about 2.5 cm. long and 8 mm. wide, the rachis glabrous; bracts oblong-ovate, up to 4.5 cm. long and 17.5 mm. wide, obtusish at apex and minutely apiculate, livid purple, coriaceous, glabrous, noticeably crisped or twisted, closely veined, the margins subhyaline; bractlets oblong, 14 mm. long, 5.5 mm. wide at middle, acute, carinate and oblique at base, glabrous, the margins entire, subhyaline; calyx segments oblong-lanceolate, the posterior segment 16 mm. long and 4 mm. wide, the anterior pair 16 mm. long and 3.5 mm. wide, the lateral pair 13 mm. long and 3 mm. wide, all acute, glabrous, their margins subhyaline; corolla (immature) canary yellow, densely pubescent or subtomentose, the hairs 0.5 mm. long, the upper lip shorter than the middle lobe of the lower lip, ovate, minutely 2-lobed at tip, the lobes rounded, the lower lip 3-lobed, the middle lobe cordate, obtuse, the lateral lobes lanceolate, slightly shorter than the middle one; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 179548, collected in wet forest of Quebrada del Río Afán, near Mocoa, Comisaría de Putumayo, Colombia, 570 to 680 meters, December 27, 1940, by J. Cuatrecasas (No. 11352).

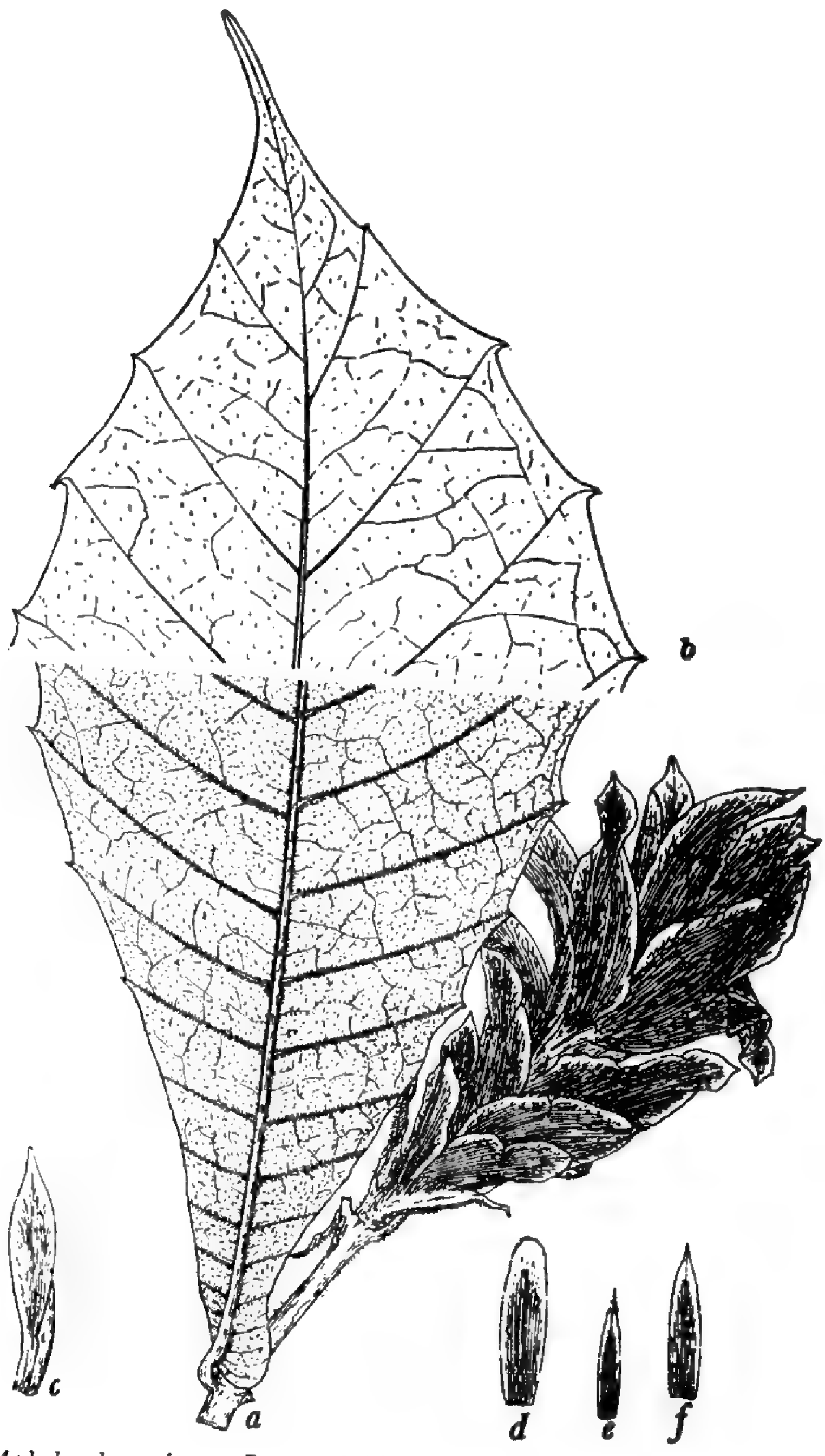

FIGURE 49.—*Aphelandra crispata* Leonard (*Cuatrecasas* 11352): *a*, Spike and lower portion of leaf (lower surface); *b*, upper portion of leaf blade (upper surface); *c*, bractlet; *d*, posterior calyx segment; *e*, one of the lateral segments; *f*, one of the anterior segments. (*a*, *b*, Half natural size; *c*–*f*, natural size.)

Apparently unrelated to any other Colombian species, *Aphelandra crispata* can be recognized readily by its large oblong-elliptic leaves with their coarsely serrate margins, bright yellow corollas, and large coriaceous, crisped, livid purple bracts. It is impossible to state

the dimensions of the mature corolla from the herbarium material examined. The name *crispata* alludes to the crisped, curled bracts.

12. **Aphelandra arnoldii** Mildbr.

Aphelandra arnoldii Mildbr. Notizbl. Bot. Gart. Berlin **11**: 63. 1930. Type collected in damp humus on wooded mountain slope at San Lorenzo, Department of Magdalena, Colombia, 2,150 meters altitude, February 1927, by Dr. Arnold Schultze (No. 771) and deposited in the Berlin Herbarium. Photograph of the Berlin type in the U. S. National Herbarium, No. 8697.

Herbs; stem short; roots long and numerous, extending apparently a little above the ground; leaf blades subrosulate, crowded, the blades narrowly elliptic to oblanceolate, 15 to 30 cm. long, short-acuminate at apex (the tip itself obtuse), long and narrowly decurrent on the petiole, the upper surface short-appressed-pilose, the costa plane, the lateral veins (15 to 17 pairs) forming angles of about 70 degrees, arcuate, ascending; petioles 4 to 6 cm. long; flowers borne in spikes, the scape axillary, about 25 cm. long, appressed-puberulous, extending above the rosette of leaves, the spike itself 5 to 8 cm. long; bracts erect-spreading, scarcely imbricate, lanceolate, 6 to 8 mm. long, barely 2 mm. wide, acute but scarcely pungent, ciliate, the hairs erect-spreading, the margins rarely bearing a few minute teeth, the internodes about 5 mm. long; bractlets similar to the bracts but only 4 mm. long and slenderly subulate-acute; calyx segments thinly scarious, pale, lanceolate to linear-lanceolate, 4 to 5 mm. long, the interior ones a little shorter than the others and noticeably narrower; corolla bright rosy, the tube narrowly cylindric, suberect, about 1 cm. long, the lobes of the lower lip broadly rounded, broadly cuneate toward base, the middle one 7 mm. long and 5 mm. wide, the lateral ones slightly smaller, the posterior pair much smaller (2.5 to 4 mm. long); stamens included, subequal, the filaments affixed a little above the middle of the corolla tube, the anthers oblong, obtuse, their tips cohering; ovary 1.5 mm. long.

Not seen. Description compiled from the original. Known only from type material.

13. **Aphelandra parviflora** Leonard

Aphelandra parviflora Leonard, Journ. Washington Acad. Sci. **25**: 439. 1935. Type collected in the region of Mount Chapón, Department of Boyacá, Colombia, June 10, 1932, by A. E. Lawrance (No. 201) and deposited in the Kew Herbarium. Isotypes are in the herbaria of the Missouri (No. 1039195) and the New York Botanical Gardens, and in the U. S. National Herbarium, No. 1572318. Lawrance's No. 291, collected in the same general region and deposited in the Kew Herbarium, is also this species. Photographs of it and the type are in the U. S. National Herbarium.

Herbs; stems 10 cm. high, or more, ascending, rooting at the lower nodes, strigose; leaves usually several, the blades oblong, up to 25 cm. long and 18 cm. wide, elliptic, obtuse or obtusish at apex, cuneate at base and decurrent on the petioles, entire or undulate, purple beneath,

sparingly strigillose, except the costa and lateral nerves (15 to 18 pairs), these strigose; petioles slender, up to 6 cm. long, strigillose; spikes slender, up to 13 cm. long, about 1 cm. in diameter, the peduncles up to 12 cm. long, strigose, bearing a pair of bractlike leaves about 2 cm. below the base of the spike; bracts rather loosely imbricate, erect-spreading, elliptic, 1 cm. long, 3 to 4 mm. wide, acuminate, ending in an obtuse tip, firm, veiny, sparingly strigose, bearing on each side several erect-spreading teeth up to 1.5 mm. long; bractlets lance-subulate, 3.5 mm. long, 1 mm. wide at base, thin, subhyaline, nerved; calyx segments narrowly oblong, acuminate, subequal, 5 to 6 mm. long, the posterior one 2 mm. wide, the anterior pair 1.5 mm. wide, the lateral pair 1 mm. wide, all subhyaline, striate-nerved, minutely glandular-ciliolate; corolla pale yellow, 1 to 1.5 cm. long, obliquely funnel-form, minutely and sparingly pubescent, the tube 1 mm. broad at base, about 4 mm. broad at mouth; limb about 8 mm. broad, the lips equal, the upper one 2-lobed, 5.4 mm. wide, the lower 3-lobed, the lobes orbicular, 4.5 mm. in diameter; stamens included.

The type was collected in a low thick forest 100 miles northwest of Bogotá, at an altitude of 3,500 feet. The plants were from 10 to 14 inches high, and very attractive. The flowers were yellow and inodorous.

BOYACÁ: Vicinity of Mount Chapón, *Laurance* 201 (Kew, Mo, NY, US), 291 (Kew).

14. **Aphelandra mollis** (Nees) Leonard, nov. comb.

Lagochilium molle Nees, DC. Prodr. 11: 292. 1847. Type collected in Colombia by Goudot and deposited in the Hooker Herbarium, Kew.

Decumbent herb; stems about 3 mm. in diameter, at least the lower portions fistulose, the ascending portion about 25 cm. high, pilose, the hairs sordid, upwardly appressed, up to or slightly exceeding 0.5 mm. in length; leaf blades ovate, up to 11 cm. long and 6 cm. wide, the greatest width at about ¼ the length of the blade from base, rather gradually narrowed thence to the obtuse tip, obtuse, rounded, or shallowly and obliquely cordate at base and narrowly decurrent on the petiole nearly to the stem, thin, entire or undulate, the upper surface glabrous or sparingly appressed-pilose, minutely faveolate under lens, the costa and lateral veins (8 to 10 pairs) inconspicuous, arcuate, the lower surface drying a lighter green than the upper, sparingly appressed-pilose; petioles up to 4.5 cm. long, the pubescence similar to that of the stems; flowers borne in 1 or 2 simple terminal spikes, the peduncles up to 6 cm. long, the rachis 4 to 6 cm. long, pilose, the hairs slender, sordid, appressed or ascending; bracts oblong-ovate, up to 14 mm. long and 5 mm. wide, acute to acutish, the tip itself obtuse, narrowed at base, thin, glabrous or sparingly pilosulous, delicately and inconspicuously veined, the margins minutely and distantly dentate

above middle, sparingly ciliolate, bractlets subulate, costate, subhyaline, ciliate; calyx 5 mm. long, the posterior segment broadly lanceolate, 1.25 mm. wide, obtuse and apiculate, the middle and anterior pairs lanceolate, 1 mm. wide, slenderly acuminate, all subhyaline, striate-nerved, glabrous, ciliolate; corolla 22 mm. long, glabrous or minutely and sparingly pubescent, a bright, soft yellow, the lower portion cylindric, 1 mm. broad, the upper narrowly ampliate, about 5 mm. broad at mouth, the lobes subequal, 6 to 7 mm. long, the lower lobe about 6 mm. wide, the others about 3 mm. wide, all rounded, the margins undulate; stamens 10 to 15 mm. long, the anthers 2 mm. long, 0.25 mm. wide, contiguous at least at tip by a webby tomentum; capsules 1 cm. long, about 2 mm. broad, pointed at apex, glabrous, minutely punctate, potentially 4-seeded, the seeds brown, 3 mm. long, 2 mm. wide, about 1 mm. thick, sparingly hirtellous, the hairs brown, appressed or ascending.

SANTANDER: Camp Mesa, in the vicinity of Barranca Bermeja, Magdalena Valley, between Río Sogamoso and Río Colorado, 100 to 500 meters altitude, *Haught* 1497 (US).

Haught's specimen was taken on January 5, 1935, from a suffrutescent plant producing a running woody rhizome and growing along a stream in rich alluvial soil. The flowers were bright yellow and very showy.

15. **Aphelandra botanodes** Leonard, sp. nov. FIGURE 50

Herba, caulibus glabris; lamina foliorum oblongo-elliptica, acuminata, basi angustata, membranacea, integra, glabra, costa et venis lateralibus aliquanto prominentibus; petioli glabri; inflorescentia terminalis, trifurcata, pedunculis puberulis, bracteis patulis vel ascendentibus, aliquanto distantibus, rhachis puberula; bracteae ovatae, acutae, membranaceae, glabrae, ciliatae, prope apicem par dentium parvorum ferentes, costa prominente; bracteolae oblique lanceolatae, acutae, subhyalinae, ciliatae, costa prominente; calycis segmenta parva, lanceolata, acuta, subhyalina, ciliolata; corolla parva (7 mm. longa), puberula, roseo-caerulea, tubo gracili, labio superiore ovato, obtuso, labio inferiore trilobato, lobis obovatis, obtusis, ciliatis; stamina inclusa, antheris apice acutis, pilosis, cohaerentibus, basi acutis, filamentis minimis et gracilibus; ovarium glabrum; styli graciles; stigma planum, lanceolatum, acutum.

Herbs; stems glabrous; leaf blades oblong-elliptic, up to 20 cm. long and 6 cm. wide, acuminate, narrowed at base, membranous, entire, glabrous, the costa and lateral veins (about 12 pairs) moderately prominent; petioles up to 2 cm. long, glabrous; flowers borne in a 3-parted inflorescence, the peduncle up to 4 cm. long, minutely strigose, the secondary peduncles 1 to 2 cm. long, slender, minutely strigose, the spikes 2 to 4 cm. long, dense, the bracts spreading or ascending, the

rachis puberulous, the internodes of the spikes up to 8 mm. long; bracts subtending the secondary peduncles lanceolate, 12 to 15 mm. long, 2 to 5 mm. wide, those subtending the flower clusters (these sessile or borne on puberulous peduncles up to 3 mm. long) ovate, 7 mm. long and 4 mm. wide, acute, thin, glabrous, sparingly punctate (the puncta appearing under microscope as small blunt projections), ciliate, the

FIGURE 50.—*Aphelandra botanodes* Leonard (*Triana* s. n., Novita): *a*, Node and lower leaf; *b*, tip of plant; *c*, bract; *d*, bractlet; *e*, posterior calyx segment; *f*, one of the anterior segments; *g*, one of the lateral segments; *h*, stamen; *i*, pistil. (*a*, *b*, Half natural size; *c*–*g*, twice natural size; *h*, six times natural size; *i*, about four times natural size.)

margins bearing towards tip a small pair of teeth, the costa prominent; bractlets obliquely lanceolate, carinate, 2 mm. long, 0.5 mm. wide, acute, subhyaline, ciliate, the costa prominent; calyx 3 mm. long, the segments lanceolate, acute, subhyaline, delicately nerved, the margins sparingly ciliolate, the posterior segment 1 mm. wide, the anterior and lateral segments slightly narrower; corolla puberulous, rose-blue ("roseo-cianeis") about 7 mm. long, the tube slender, 1 mm. broad at

base and throat, slightly wider above middle, the lips 3.5 mm. long, the upper lip ovate, about 2 mm. broad, obtuse, the lower lip 3-parted, the lobes divided nearly to base, obovate, about 1.5 mm. wide, obtuse, ciliate; stamens reaching the mouth of the corolla tube, the anthers about 2 mm. long and 0.5 mm. broad, acute at both ends, pilose and cohering at tip, the filaments slender, about 0.5 mm. long; ovary glabrous; style slender, 3 mm. long, the stigma flat, lanceolate, acute, 0.5 mm. long and 0.25 mm. wide.

Type in the Herbario Nacional Colombiano, collected at Novita, Department of Chocó, Colombia, 170 meters altitude, March, 1853, by J. Triana, s. n.

Triana's specimen (s. n., Col) collected at San Pablo, 100 meters altitude, March 1853, may be of this species. It differs, however, from the Novita specimen in having glabrous peduncles and lax spikes with lanceolate undulate bracts.

Aphelandra botanodes belong to the *Lagochilium* group given generic status by Nees (DC. Prodr. **11**: 290. 1847). These plants are usually small and herbaceous, standing midway between *Aphelandra* and *Stenandrium*. The name *botanodes* is the Greek word βοταγώδης, meaning herbaceous.

16. Aphelandra silvicola Leonard, sp. nov. FIGURE 51

Herba, caulibus parce ramosis, nodis infimis radicantibus, strigosis, pilis sursum appressis; lamina foliorum oblongo-lanceolata, apice obtusa vel subobtusa, in petiolum decurrenti-angustata, tenuis, integra, utrinque parce strigosa, costa dense strigosa, juxta costam et venas alba vel fulva; spica terminalis, rhache et pedunculo appresso-pubescentibus; bracteae imbricatae, ovatae, apice acutae vel subobtusae, molliter appresso-pubescentes; bracteolae lanceolatae, acuminatae, hyalinae, glabrae, costa opaca pubescente excepta; calycis segmenta lanceolata, subhyalina, minute parallelo-venosa, glanduloso-ciliata; corolla parce pubescens, tubo angustato, lobis suborbicularibus; stamina inclusa.

Herbs; stems ascending, sparingly branched, about 25 cm. high, rooting at the lower nodes, upwardly strigose; petioles up to 4 cm. long, winged, strigose; leaf blades oblong-lanceolate, up to 12 cm. long and 4 cm. wide, obtuse to obtusish at apex, narrowed at base, thin, entire, both surfaces thinly strigose except the costa, this densely so, the hairs about 0.5 mm. long, the costa and veins (7 or 8 pairs) banded by a narrow area of white or yellow; flowers borne in terminal, peduncled spikes, these 2 cm. long and 1.5 cm. broad, the peduncle 3 cm. long, both peduncle and rachis appressed-pubescent; bracts imbricate, somewhat spreading, ovate, 1 cm. long, 4.5 mm. wide, acute or obtusish at apex, bearing toward the tip 2 or 3 small triangular ascending teeth, 7-nerved, softly appressed-pubescent; bractlets broadly lanceolate, 6.5 mm. long, 2.25 mm. wide, acuminate, hyaline and finely

parallel-nerved, glabrous except the opaque pubescent costa; calyx segments lanceolate, acuminate, glabrous, subhyaline, finely parallel-nerved, minutely ciliolate with gland-tipped hairs, the posterior segment 6 mm. long and 1.5 mm. wide, the anterior pair slightly shorter, 1 mm. wide, the lateral pair 5 mm. long and 0.5 mm. wide; corolla 2.5 cm. long, sparingly pubescent, the tube narrow, 2 mm. in diameter at base, 4 mm. at throat, the lobes suborbicular, subequal, about 3 or 4 mm. long; stamens included; capsule not seen.

Type in the herbarium of the Riksmuseet, Stockholm, collected in the primitive forest of El Tambo, La Costa, Department of Cauca,

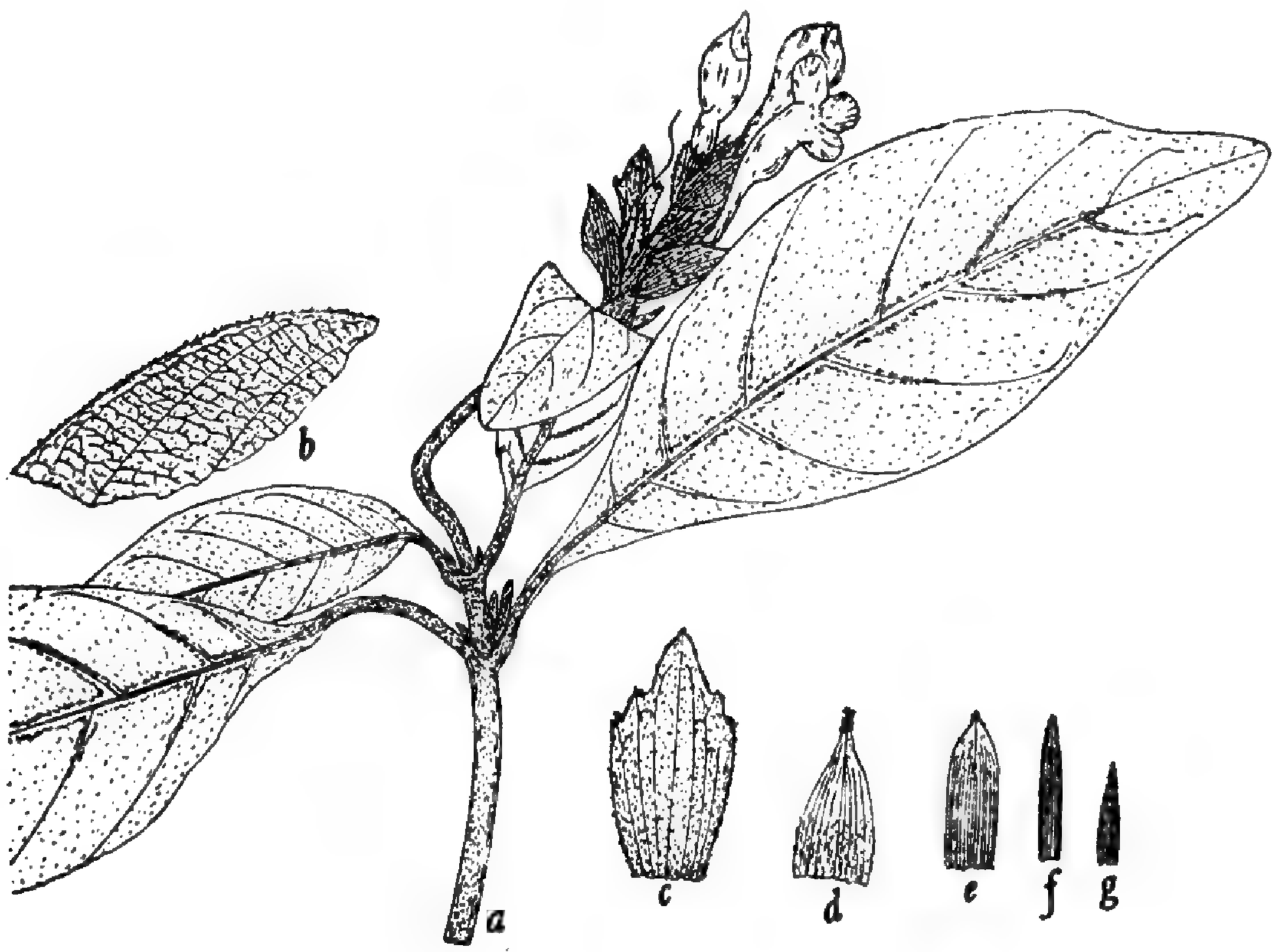

FIGURE 51.—*Aphelandra silvicola* Leonard (*von Sneidern* 923): *a*, Tip of stem showing leaves and inflorescence; *b*, section of leaf blade (upper surface) to show veinlets; *c*, bract; *d*, bractlet; *e*, posterior calyx segment; *f*, one of the anterior segments; *g*, one of the lateral segments. (*a*, *b*, Natural size; *c*–*g*, twice natural size.)

Colombia, 800 meters altitude, July 31, 1936, by Kjell von Sneidern (No. 923). Fragment of type in the U. S. National Herbarium.

A remote relationship exists between *Aphelandra silvicola* and *A. mollis* (Nees) Leonard, as suggested by a similarity of size, growth and character of the inflorescence. The two species should not be confused, however, because of the ovate-cordate leaf blades of *A. mollis*. The color of the corolla of *A. silvicola* is not apparent in the dried herbarium material.

17. **Aphelandra adscendens** Leonard, sp. nov. FIGURE 52

Herba, caulibus ascendentibus, parce strigosis, pilis sursum appressis, parce ramosis, nodis infimis radicans; lamina foliorum oblonga

vel obovata, apice rotundata vel abrupte breviter-acuminata, basi angustata, in petiolum decurrens, supra pilosa, pilis ascendentibus, subtus strigosa, pilis praecipue in costa et venis positis; petioli pubescentes; spicae terminales et laterales, rhache et pedunculo fulvo-strigosis; bracteae rhombeo-ovatae, breviter acuminatae, apice ipso obtuso, basi angustatae, extus dense pilosae, intus glabrae, marginibus parce serratae, venis 5, parallelis, gracilibus; bracteolae lanceolatae, carinatae, acutae, dorso pilosae, substriatae, marginibus subhyalinis, parce ciliatis; calycis segmenta lanceolata, acuta, striato-nervata, marginibus parce ciliatis; corolla parva, pallide incarnata, fauce flava, minute glanduloso-puberula, lobis 5, rotundatis, minute crenatis; antherae apice parce barbatae; filamenta gracilia, glabra; ovarium glabrum apice piloso excepto.

Herbs; stems ascending, rooting at the base, sparingly branched, about 4 mm. in diameter, rather sparsely strigose, the hairs upwardly appressed, 0.75 mm. long; leaf blades oblong to oblanceolate, up to 25 cm. long and 4.5 cm. wide, rounded or abruptly narrowed into a short obtusish tip about 2 mm. long, gradually narrowed from slightly above the middle to base and decurrent on the petiole, thin, entire, the upper surface drying brownish, pilose, the hairs ascending, up to 1.25 mm. long, the lower surface drying greenish, strigose, the hairs appressed, about 0.5 mm. long, confined chiefly to costa and lateral veins, these more prominent beneath than above; petioles up to 3 cm. long, the pubescence that of the blade; spikes terminal and lateral, up to 5 cm. long and 1 cm. broad, the peduncle slender, 2 to 3 cm. long, rather densely strigose, the hairs yellowish, up to 1 mm. long, the pubescence of the rachis the same as that of the peduncle; bracts rhombic-ovate, 10.5 mm. long, 5 mm. wide, short-acuminate (the tip itself blunt), narrowed at base, the outer surface densely pilose, the hairs 0.75 mm. long, subappressed, the margins just above the middle of the bract bearing 3 pairs of small, ascending teeth (0.5 mm. long), the inner surface glabrous, the five veins prominent but slender, parallel; bractlets lanceolate, carinate, substriate, 7.5 mm. wide at slightly below the middle, narrowly acute at tip, dorsally pilose, the hairs up to 1 mm. long, ascending, the marginal region thin, subhyaline, sparingly ciliate, the hairs minute, blunt; calyx segments lanceolate, the posterior segment 6.5 mm. long and 1.25 mm. wide near base, the anterior pair 6.25 mm. long and 1 mm. wide at base, the lateral pair 5 mm. long and 0.75 mm. wide, all striate-nerved, narrowed upwardly to a slender tip, the margins very sparingly ciliate, the hairs minute, papilliform; corolla about 12 mm. long, pale pink with yellow throat, minutely puberulous, the hairs gland-tipped, the tube 1.5 mm. broad from base to 4 mm. above base, thence enlarged to 3.25 mm. at throat, the lips equal, about 2 mm. long, the upper lip

about 4 mm. wide, bilobed at tip, the lobes about 1 mm. long, rounded, the three lobes of the lower lip about 3 mm. long, rounded and minutely crenate; stamens attached 4 mm. above the base of the corolla tube, 6 mm. long, the anthers 2 mm. long and slightly over 0.5 mm. wide, acute at base and sparingly bearded at tip, the filaments slender, glabrous; ovary pilose at tip, the hairs ascending; style 8 mm. long, slender, glabrous; capsule not seen.

Type in the Gray Herbarium, collected at side of brook in the high forest of El Umbo (130 miles north of Bogotá), Department of

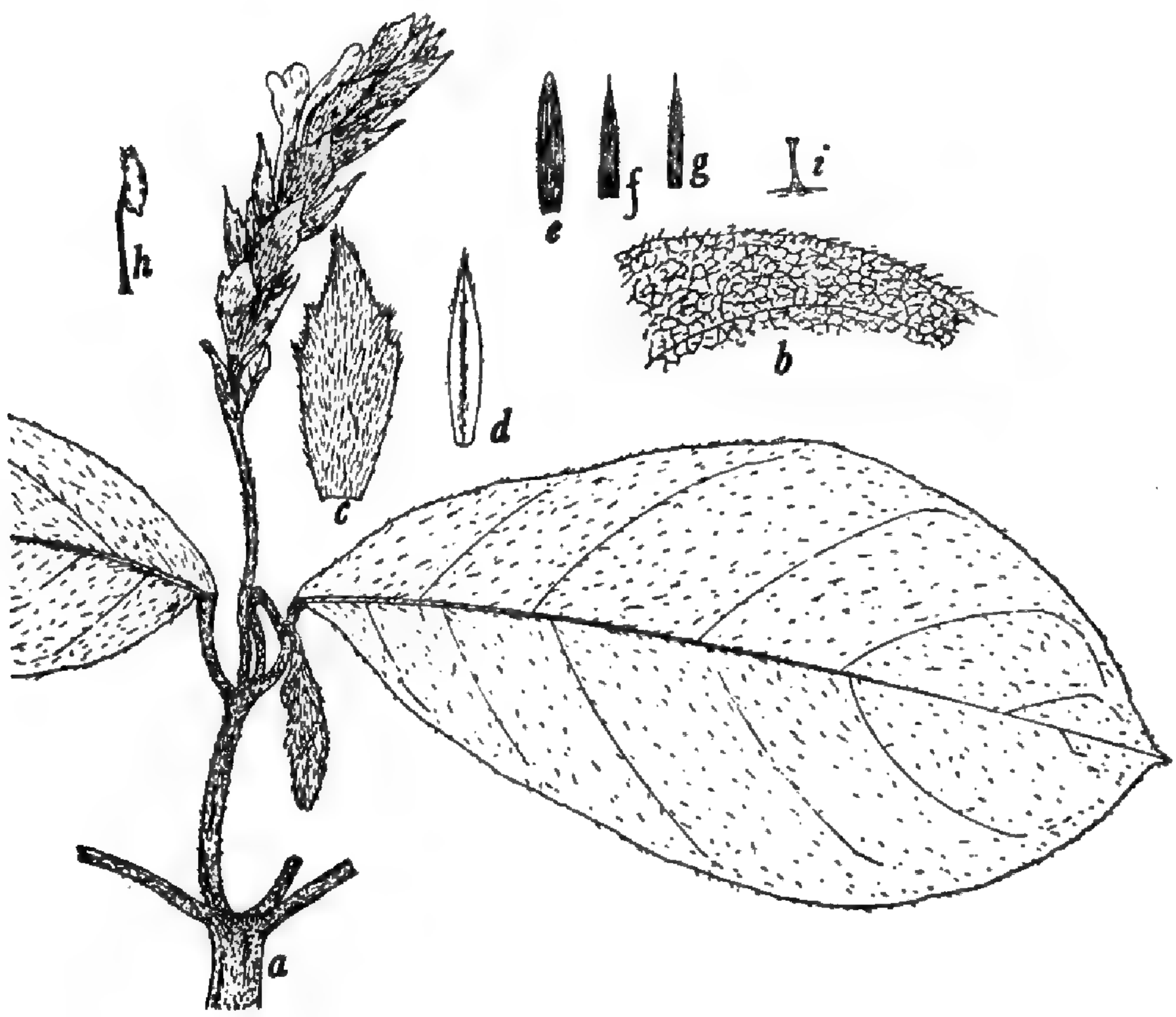

FIGURE 52.—*Aphelandra adscendens* Leonard (*Lawrance* 680): *a*, Tip of plant showing leaves and spike; *b*, portion of leaf blade to show veinlets; *c*, bract; *d*, bractlet; *e*, posterior calyx segment; *f*, one of the anterior segments; *g*, one of the lateral segments; *h*, stamen; *i*, type of marginal hairs on bractlets and calyx segments. (*a*, *b*, Natural size; *c*–*h*, twice natural size; *i*, about 64 times natural size.)

Boyacá, Colombia, about 1,000 meters altitude, March 17, 1933, by A. E. Lawrance (No. 680). Fragment of type in the U. S. National Herbarium, No. 1934972.

Aphelandra adscendens should be easily recognized by its ascending habit, small size, and by the rather densely pilose inflorescence. It has a superficial resemblance to Lindau's *Rhombochamys rosulata*, but that has a very short scape, rosulate leaves, glandular bracts and larger flowers (the tube 12 mm. long instead of 6 mm., as in *A. adscendens*).

18. Aphelandra ochrolarynx Leonard, sp. nov. FIGURE 53

Herba, caulibus aliquanto hirtellis, pilis sursum appressis; folia ad apicem caulis subconferta, laminis oblongo-ovatis vel oblongo-ellip-

ticis, subacutis, basi angustatis, submembranaceis, integris vel undulatis, supra dense pilosis, pilis appressis, costa et venis lateralibus obscuris, subtus adpresso-pilosis, pilis praecipue in costa et venis positis; petioli aliquanto breves, dense pilosi, pilis ascendentibus; spicae plures, terminales et subterminales, rhachibus et pedunculis aliquanto dense pilosis, subflavis; bracteae erectae vel adscendentes (maturae patulae), oblongo-rhombicae, acuminatae, dentatae, dentibus aliquanto longis, subulatis, ascendentibus, pilosae, pilis appressis; bracteolae oblongo-lanceolatae, acuminatae, subcarinatae, pilosae, pilis appressis vel ascendentibus; calycis segmenta anguste lineari-lanceolata, acuminata, tenuiter striata, parce et obscure ciliolata, pilis ascendentibus, glandulosis; corolla alba, fauce flava, parce et minute pubescens, labiis subaequalibus, lobis ovatis, rotundatis vel emarginatis; stamina exserta, filamentis glabris; capsulae ignotae.

Herbs; stems ascending, up to 7 cm. high, moderately hirtellous, the hairs upwardly appressed or ascending, 0.5 mm. long; leaves usually about 10, somewhat crowded at the tip of the stem, the blades oblong-ovate or oblong-elliptic, up to 12 cm. long and 5.5 cm. wide, subacute, narrowed at base, submembranaceous, entire or undulate, the upper surface rather densely appressed-pilose, the hairs up to 1 mm. long, yellowish, the costa and lateral veins (8 to 10 pairs) obscure, the lower surface appressed-pilose, the hairs about 0.75 mm. long, more numerous on the costa and lateral nerves; petioles up to 2 cm. long, densely pilose, the hairs about 1 mm. long, ascending; spikes several, terminal and subterminal, up to 11 cm. long, lax at maturity, the peduncles (up to 5 cm. long) and rachises rather densely yellowish pilose, the hairs 0.75 to 1 mm. long, upwardly appressed or ascending; bracts erect or ascending, spreading at maturity, oblong-rhombic, up to 15 mm. long and 6 mm. wide, acuminate, appressed-pilose (the hairs about 1 mm. long), the margins bearing 3 pairs of slender ascending teeth up to 3 mm. long and 0.25 mm. wide at base; bractlets oblong-lanceolate, up to 1 cm. long and 2 mm. wide, acuminate, subcarinate, moderately pilose dorsally with appressed or ascending hairs, finely and obscurely parallel-nerved; calyx segments narrowly linear-lanceolate, acuminate, finely striate, obscurely and sparingly ciliolate with ascending glandular hairs, the posterior segment 7 mm. long, 1 mm. wide, the anterior segments 6.5 mm. long and slightly over 0.75 mm. wide, the lateral segments 6 mm. long and 0.75 mm. wide; corollas about 15 mm. long, white with a yellow patch in front of the throat, finely and sparingly pubescent, the lips about 5 mm. long, the lobes ovate, rounded or shallowly emarginate; stamens exserted about 4 mm. beyond the mouth of the corolla throat, the filaments glabrous, the anthers 1.5 mm. long and 0.5 mm. wide, webby at tip; capsules not seen.

Type in the herbarium of the Royal Botanic Gardens at Kew, collected at San José, along the Río Putumayo, Colombia, August 3, 1899, by T. A. Sprague (No. 601).

The specific epithet is derived from the Greek, ὤχρα, yellow, and λάρυνξ, throat, in allusion to the yellow-throated corolla.

FIGURE 53.—*Aphelandra ochrolarynx* Leonard (*Sprague* 601): *a*, Plant; *b*, bract; *c*, bractlet; *d*, calyx; *e*, glandular marginal hairs of calyx segment. (*a*, Half natural size; *b–d*, twice natural size; *e*, about 50 times natural size.)

19. **Aphelandra uribei** Leonard, sp. nov. FIGURE 54

Suffrutex, caulibus parce ramosis, ascendentibus, nodis infimis radicantibus, minute hirsutis, pilis appressis vel patulis; internodia brevia; lamina foliorum oblongo-elliptica, apice acuminata, apice ipso obtuso,

basi plus minusve abrupte angustata, in petiolum decurrens, minute alveolata, subbullata, integra vel undulata, utrinque glabra, venis prominentibus, costa et venis supra pilos raros minutos ferentibus, subtus pubescentibus, pilis valde curvatis; petioli breves, pubescentes, pilis curvatis; spica terminalis, pedunculo brevi, rhache alata, parce puberula; bracteae lanceolatae, tenuiter acuminatae, subtiliter puberulae, venis 3, prominentibus, venulis grosse reticulatis, marginibus serratis, dentibus subulatis; bracteolae subulatae, puberulae; calycis segmenta puberula, striata, segmentum posterius oblongo-lanceolatum, segmenta anteriora et media lanceolata, apice subulata; corolla rubra, papilliformi-puberula, tubo angusto, labio superiore erecto, subobtuso, apice ipso minute apiculato, labio inferiore patulo, lobo medio elliptico, apice rotundato, lobis lateralibus obovatis, apicis rotundatis; antherae apice cohaerentes; filamenta parce hirsuta; ovarium glabrum.

Suffrutescent herbs up to 30 cm. high; stems sparingly branched, ascending, rooting at the lower nodes, 3.5 mm. in diameter, minutely hirsute, the hairs less than 0.25 mm. long, spreading to appressed; internodes short, 1 to 2 cm. long; leaf blades oblong-elliptic, up to 17 cm. long and 6 cm. wide, acuminate at apex, the tip itself blunt, narrowed at base, sometimes abruptly so and briefly decurrent on the petiole, firm, subbullate, the margins entire or undulate, the upper surface glabrous or the costa and lateral veins (6 to 8 pairs) bearing a few minute hairs, the lower surface drying a lighter green than the upper, the costa and veins pubescent, the hairs spreading and strongly curved, the venation of both surfaces fairly prominent, the leaf surfaces minutely alveolate; petioles (unwinged portion) 1 to 1.5 cm. long, pubescent, the hairs curved; spikes terminal, 8 to 13 cm. long, 8 to 10 mm. broad, the rachis winged, sparingly puberulous; bracts lanceolate, 19 mm. long, 6 mm. wide exclusive of teeth, slenderly acuminate, forming an angle of 10 degrees with the rachis, the margins about 6 mm. above base and immediately below apex bearing 4 or 5 slender ascending teeth up to 2 mm. long, both surfaces finely puberulous, the three principal veins prominent, indurate at base, the veinlets coarsely reticulate toward tip of bracts; bractlets subulate, 3.5 mm. long, about 0.5 mm. wide at base, puberulous; calyx puberulous, striate, the posterior segment oblong-lanceolate, 6.5 mm. long, slightly over 2 mm. wide, tipped by 2 or 3 slender lobes 0.5 to 1 mm. long, the anterior and middle pair of calyx segments lanceolate, 6 to 7 mm. long, 1 mm. wide, ending in slender acuminate or subulate tips; corolla red, about 4.5 cm. long, minutely and sparingly pubescent without, glabrous within except a narrow longitudinal band extending from basal part of middle lobe to below mouth of corolla tube, the lobes ciliolate, the tube about 2 mm. broad at base, gradually enlarged to 5 mm. at mouth, the upper

lip erect, oval, about 7 mm. long and 5 mm. wide, obtusish and minutely apiculate at tip, the lower lip spreading, the middle lobe elliptic, 13 mm. long, 8 mm. wide, obtuse or rounded, the lateral lobes obovate, 6 mm. long, 4.5 mm. wide, rounded at their tips; stamens equaling or slightly exceeding the upper lip, the anthers barely 4 mm. long, lightly adhering at tip, the filaments sparingly hirsute; ovary glabrous; capsules not seen.

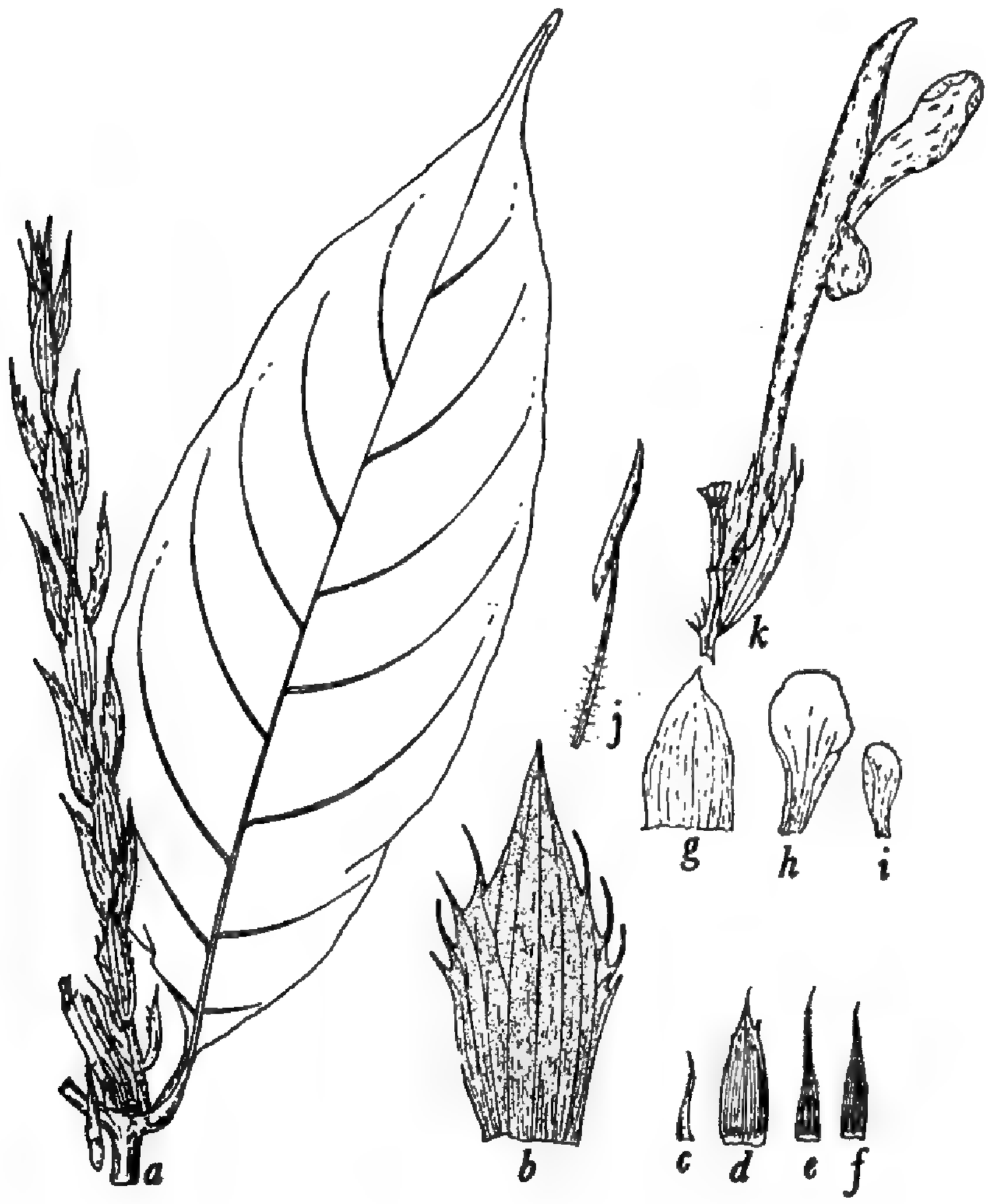

FIGURE 54.—*Aphelandra uribei* Leonard (*Uribe* 1437); *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, posterior calyx segment; *e*, one of the anterior segments; *f*, one of the lateral segments; *g*, posterior corolla lobe; *h*, middle lobe of lower lip; *i*, one of the lateral lobes; *j*, anther and upper portion of filament; *k*, portion of spike showing corolla. (*a*, Half natural size; *b*–*f*, twice natural size; *g*–*i*, *k*, natural size; *j*, about four times natural size.)

Type in the Uribe Herbarium, collected in the forests of Dabeiba, Department of Antioquia, Colombia, 400 meters altitude, January 11, 1947, by Lorenzo Uribe-Uribe (No. 1437). Fragment in the U. S. National Herbarium.

Aphelandra uribei can be recognized readily by its ascending stems with short internodes and by its narrow, slenderly acuminate, toothed bracts. There may be some relationship between this and *A. aurantiaca*.

20. **Aphelandra lonchochlamys Leonard, sp. nov.** FIGURE 55

Herba vel suffrutex, caulibus puberulis, pilis brunneis, retrorse curvatis, internodiis summis brevibus; lamina foliorum lanceolata, acuminata (apice ipso subacuta), basi angustata, in petiolum breviter decurrens, integra, supra glabra vel in costa pilos subappressos ferens, subtus glabra, purpurea, costa et venis puberulis vel in costa pilis minutis curvatis et rectis intermixtis praeditis; petioli recurvati, dense puberuli, pilis brunneis, curvatis; spicae solitariae, terminales, rhache puberula, pilis rectis, patulis, albidis; bracteae lanceolatae, puberulae, pilis glandulosis et eglandulosis intermixtis, ciliatae, remote et minute dentatae, costa et venis lateralibus prominentibus, venulis marginalibus crasse reticulatis; bracteolae subulatae, carinatae, parce hirtellae, pilis glandulosis et eglandulosis intermixtis, costa prominente; calycis segmenta subaequalia, lanceolata, subhyalina, graciliter acuminata, minute striata, parce puberula, pilis glandulosis et eglandulosis intermixtis, segmentum posterius et aliquando anteriora apice graciliter dentata; corolla coccinea, parce et minute pubescens, labio superiore erecto, acuto, labio inferiore trilobato, lobis ellipticis, abrupte acutis; stamina vix exserta; ovarium pubescens; capsulae ignotae.

Herb or suffrutescent shrub; stems puberulous, the hairs brown, about 60 μ long, retrorsely curved, the 3 uppermost internodes 3 to 5 mm. long, the others much longer; leaf blades lanceolate, up to 16 cm. long and 24 mm. wide, acuminate (the tip itself subacute), narrowed at base and briefly decurrent on the petiole, entire, the upper surface glabrous or the costa bearing a few subappressed hairs about 0.5 mm. long, the lower surface purple (*Sprague*), glabrous except costa and veins, these puberulous or the costa bearing additional straight subappressed hairs up to 0.5 mm. long, the venation obscure but more prominent beneath than above; petioles recurved, up to 1 cm. long, densely brown puberulous, the hairs curved; spikes terminal, solitary, about 8 cm. long and 2 cm. broad, the rachis puberulous, the hairs whitish, straight, spreading, about 0.25 mm. long; bracts lanceolate, up to 32 mm. long and 6.5 mm. wide, acute, puberulous (the hairs about 175 μ long, some of them gland-tipped), ciliate, the hairs up to 625 μ long, the costa and several pairs of lateral nerves prominent, the marginal veinlets coarsely reticulate, the teeth (2 or 3 pairs) about 175 μ long; bractlets subulate, 1 cm. long, 0.75 mm. wide near base, carinate, rather sparingly hirtellous, the hairs ascending, up to 0.4 mm. long, some of the shorter ones glandular, the costa prominent; calyx segments subequal, lanceolate, subhyaline, slenderly acuminate, finely striate, sparingly puberulous, the hairs up to 150 μ long, some of them gland-tipped, the posterior segment 2 mm. wide, the tip often terminating in 3 slender teeth, the anterior segments 1.25 mm. wide,

the lateral segments 1 mm. wide, both lateral and anterior segments with simple or 2- or 3-parted slender tips; corollas up to 4.5 cm. long, scarlet, finely and sparingly pubescent, the lips about 2 cm. long, the posterior lip erect, about 6 mm. wide, acute at tip, the lower lip spreading, the middle segment elliptic, abruptly acute, about 7 mm. wide, the lateral segments similar but only about 4 mm. wide; stamens slightly exserted; ovary pubescent.

Type in the herbarium of the Royal Botanic Gardens, Kew, collected at Mocoa, Intendencia of Caquetá, Colombia, 1898 or 1899, by T. A. Sprague (No. 394).

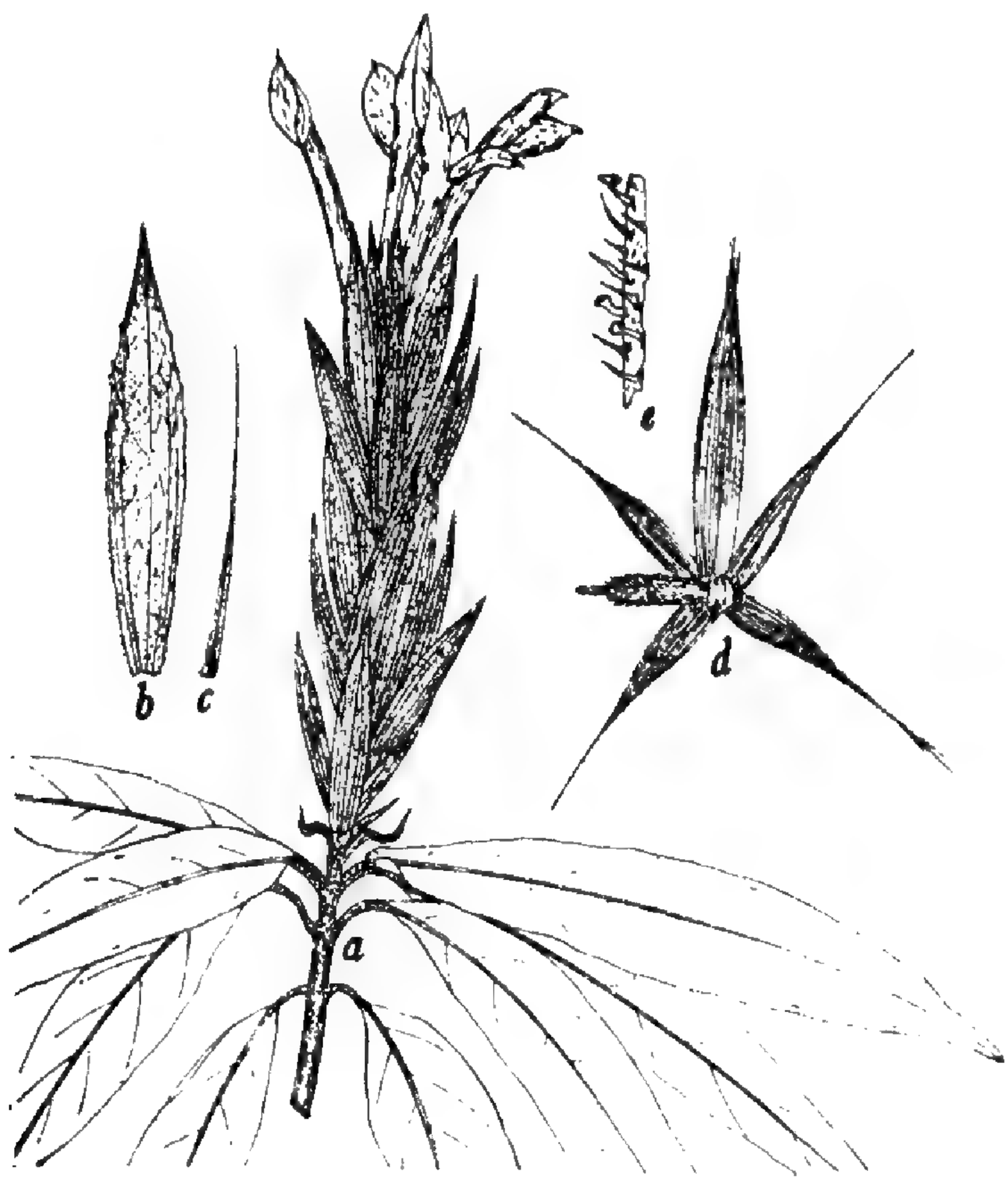

FIGURE 55.—*Aphelandra lonchochlamys* Leonard (*Sprague* 394): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, calyx, spread to show lobes and ovary; *e*, marginal hairs of calyx segments. (*a*, Half natural size; *b*, natural size; *c*, *d*, twice natural size; *e*, about 24 times natural size.)

The specific epithet is derived from the Greek λόγχη, spear, and χλαμύς, bract (military cloak), in allusion to the narrow lance-shaped bracts.

Aphelandra lonchochlamys is possibly related to *A. repanda* Nees (DC. Prodr. **11**: 728. 1847), based on *Mathews* 1238 from Peru. That species, however, has much larger leaf blades with strongly repand margins. Both species are in turn related to *A. aurantiaca*.

21. **Aphelandra puberula** Leonard, sp. nov. FIGURE 56

Suffrutex, caulibus glabris vel sursum puberulis; lamina foliorum ovata, apice acuminata, basi subcordata vel rotundata, in petiolum

decurrens, integra vel undulata, supra glabra vel in costa deorsum strigosa, subtus minute punctata, glabra, costa et venis puberulis; petioli strigosi; spica terminalis, rhache dense et subtiliter pubescente, pilis patulis; bracteae ascendentes, rhombicae, dentibus tenuibus, curvatis; bracteolae subulatae, striatae, puberulae; calycis segmenta subaequalia, striata, puberula, acuminata, apice dentata; corolla rubra, aliquanto dense pubescens, tubo angustato, labiis subaequalibus, labio superiore ovato, obtuso, labio inferiore trilobato, lobis subaequalibus, ovatis, obtusis; ovarium glabrum.

Suffrutescent; stems glabrous or puberulous toward tip; leaf blades ovate, 21 cm. long and 10 cm. wide, acuminate, subcordate to rounded at base and decurrent on the petiole, entire or undulate, bright green, the upper surface glabrous or the costa strigose toward base of blade, the lower surface minutely punctate, glabrous except the costa and lateral veins (11 or 12 pairs), these puberulous; petioles up to 3 cm. long, strigose; spike terminal, 15 cm. long, about 2 cm. broad, the rachis finely and densely pubescent, the hairs spreading; bracts imbricate, ascending, rhombic, up to 27 mm. long and 12 mm. wide, puberulous and veiny on both sides, the lower third and tip of bract entire, the upper portion bearing about 8 slender, more or less curved, subulate teeth up to 4 mm. long; bractlets subulate, 1 cm. long, striate, puberulous; calyx segments subequal, about 12 mm. long, striate, puberulous, slenderly acuminate, the posterior segment 4.25 mm. wide, 2- or 3-toothed at apex, the anterior segments 2.5 mm. wide, the lateral ones about 2 mm. wide, both anterior and lateral segments often bearing 1 or more minute teeth near tip; corolla 4 cm. long, red, rather densely pubescent, the tube narrow, 3 cm. long, about 3 mm. broad at base and 5 mm. broad at mouth, the lips subequal, the upper lip ovate, about 15 mm. long and 12 mm. wide, obtuse or rounded, the lower lip 3-lobed, the lobes subequal, ovate, about 12 mm. long and 7 mm. wide, obtuse; ovary glabrous; capsules not seen.

Type in the herbarium of the Riksmuseet, Stockholm, collected in primitive forest at La Costa, Department of El Cauca, Colombia, 900 meters altitude, July 27, 1936, by Kjell von Sneidern (No. 869). Fragment of type in the U. S. National Herbarium.

CAUCA: "Dense damp forests around El Peñol on the western slopes of the West Andes of Popayán, 1,800 to 2,000 meters altitude, May" [Lehmann's field notes], *Lehmann* 8632 (K). Lehmann states that the plant is a herbaceous shrub with slender, weakly ramified stems up to 1.3 meters in height and the leaves are dark green and the flowers of a luminous vermilion color.

Aphelandra puberula can be separated from *A. sneidernii* by its sharply toothed, conspicuously puberulous bracts. The bracts of *A. sneidernii* are so minutely puberulous as to appear, without a lens, to be glabrous and the teeth are barely 0.5 mm. long in contrast to the slender well-developed ones of *A. puberula*. *Aphelandra puberula*

can be distinguished from *A. impressa*, which has superficially similar bracts, by the shape of its leaf blades. These are subcordate or rounded at base instead of being gradually narrowed as in *A. impressa*. The specific name *puberula* alludes to the puberulous bracts.

FIGURE 56.—*Aphelandra puberula* Leonard (*von Sneidern* 869): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, posterior calyx segment; *e*, one of the anterior segments; *f*, one of the lateral segments. (*a*, Half natural size; *b–f*, natural size.)

22. **Aphelandra aurantiaca** (Schiedw.) Lindl.

Hemisandra aurantiaca Schiedw. Bull. Acad. Sci. Bruxelles **9**: 22. 1842. Type grown in the Jardin Botanique de Bruxelles in the year 1839 from seeds procured from Mexico. (Aurantiaca: orange colored, alludes to the color of the corollas.)

Aphelandra aurantiaca Lindl. Bot. Reg. **31**: *pl. 12*. 1845. Based on *Hemisandra aurantiaca*.

Aphelandra acutifolia Nees, DC. Prodr. **11**: 299. 1847. A number of cotypes are cited. The first mentioned was collected at Vitoc, Peru, by Ruiz and deposited in the Berlin Herbarium. The remaining cotypes were collected by various botanists in Peru, Mexico, and Surinam.

Herbaceous to suffrutescent, erect, up to 1.5 meters high, glabrous or sparingly pilose, the internodes 2 to 9 cm. long; leaf blades oblong-ovate to elliptic, the majority of them 8 to 20 cm. long and 2.5 to 12 cm. wide, acute to acuminate, gradually to abruptly narrowed at base and more or less decurrent on the petiole, sometimes obliquely so, chartaceous, glabrous or essentially so, sometimes bearing a few minute white hairs on the veins, the margins entire or undulate, the costa and lateral veins (10 to 12 pairs) prominent, arcuate, the upper surface nitid, obscurely and rather coarsely reticulate, minutely alveolate, the lower surface somewhat whitish, the reticulations obscure; petioles up to 10 cm. long, glabrous; flowers borne in simple terminal spikes up to 15 cm. long and 3 cm. wide (excluding the corollas), the rachis puberulous, the nodes flattened and slightly excavate; bracts imbricate, oblong-lanceolate, up to 3 cm. long and 1 cm. wide, acuminate, veiny, softly and densely puberulous, the hairs ascending, the margins ciliolate, serrate, the teeth up to 1.5 mm. long; bractlets narrowly lanceolate and slenderly acuminate; calyx about 1 cm. long, the posterior segment oblong, 3 mm. wide, acute, the lateral and anterior pairs linear-lanceolate, 1.5 mm. wide, the 5 segments and bractlets striate-nerved and puberulous, the nerves ending at the base of each segment in a callus about 1 mm. long; corollas 5 to 6 cm. long, red, orange or scarlet, sparingly puberulous, the upper lip oblong-ovate, about 2 cm. long and 1.2 cm. wide above the base, obtusish and entire at apex, the lower lip spreading, the lobes elliptic-ovate, the middle one up to 2.5 cm. long and 1.8 cm. wide, obtuse, the lateral ones similar but only about half as large; capsules 1.6 cm. long, sparingly puberulous; seeds hispidulous.

Aphelandra aurantiaca is a variable species and perhaps consists of a number of races or forms. The Mexican and Central American specimens in the U. S. National Herbarium have as a rule smaller and more slenderly toothed bracts than do the South American plants. The bracts of some of the North American plants are in fact practically pectinate. Red flowers seem to be more prevalent than yellow or orange ones.

Usually found in dense forests, from Mexico to Bolivia. Apparently rare in Colombia.

AMAZONAS: Loretoyacu River, Trapecio Amazónico, *Schultes* 6630 (Col).
DEPARTMENT (?): *Mutis* 1494 (US).

23. **Aphelandra leiophylla** Leonard, sp. nov. FIGURE 57

Suffrutex, caulibus subquadrangularibus, glabris; lamina foliorum oblongo-elliptica, aliquanto abrupte acuminata, apice ipso obtuso, basi angustata, in petiolum decurrens, undulata, glabra, minute alveolata, costa et venis supra obscuris, subtus prominentibus; petioli breves, glabri; spica solitaria, terminalis, subsessilis, rhache glabra; brac-

teae aliquanto arcte appressae, ellipticae, venosae, tenues, glabrae, minute et parce serratae; bracteolae subulatae, carinatae, venosae, pilos raros minutos papilliformes ferentes; calycis segmenta lanceolata, glanduloso-ciliolata, apice angustata, gracilia; corolla glabra, sursum rubra, deorsum subfulva, tubo angustato, labio superiore erecto, ovato, labio inferiore trilobato, lobis subaequalibus, ellipticis, acutis; filamenta glabra; antherae apice cohaerentes, dorso pilosae.

Suffrutescent herbs up to 1 meter high; stems subquadrangular, glabrous; leaf blades oblong-elliptic, up to 24 cm. long and 8.5 cm. wide, rather abruptly acuminate, the tip itself blunt, gradually narrowed from about the middle to base and decurrent on the petiole, undulate, glabrous, minutely alveolate, the alveoli more apparent on the under surface, the costa and veins (12 to 14 pairs) obscure above, prominent beneath; petioles (unwinged portion) about 1 cm. long, glabrous; spikes solitary, terminal, up to 16 cm. long, and 1.5 cm. broad, the bracts rather closely appressed, the rachis glabrous; peduncles 0.5 cm. long, 4 mm. in diameter; bracts elliptic, up to 22 mm. long and 10 mm. wide, acute, thin, veiny, glabrous, the margins minutely and distantly toothed, the teeth up to 0.25 mm. long; bractlets subulate, 6.5 mm. long, 1 mm. wide near base, carinate, veiny, bearing scattered, minute, papilliform hairs 25 μ long; calyx 9 mm. long, the segments lanceolate, the posterior segment about 4 mm. wide, tipped by 3 subulate lobes 1 to 1.5 mm. long, the other segments 1.5 to 2 mm. wide, gradually narrowed to slender spinelike tips, glabrous, ciliolate with minute gland-tipped hairs about 25 μ long, the nerves of each segment ending basally in a thick callus; corolla glabrous, red distally, yellowish proximally, 6 cm. long, the tube about 4 mm. broad at base, gradually enlarged to 7 mm. at mouth, the lips equal, 2 cm. long, the upper lip erect, ovate, about 14 mm. wide, obtusish at apex, the lower lip 3-lobed, the middle lobe about 1 cm. wide, the lateral lobes about 6 mm. wide, all acutish at apex; stamens 16 mm. long, the filaments dorsally pilose apically, the anthers 5 mm. long, cohering at their tips, the hairs about 0.75 mm. long; capsules not seen.

Type in the U. S. National Herbarium, No. 1852615, collected in woods at La Laguna on the left bank of the Río Sanguininí, Department of El Valle, Colombia, 1,250 to 1,400 meters altitude, December 10–20, 1943, by J. Cuatrecasas (No. 15436).

In relationship, *Aphelandra leiophylla* is closest to *A. aurantiaca*. In comparing the two species, however, one will notice the strictly glabrous bracts and the thicker, alveolate leaf blades of *A. leiophylla*. The corollas of the two species are also noticeably dissimilar. The corolla lips of *A. aurantiaca* are usually much larger than those of *A. leiophylla* and the lateral lobes of the lower lip are relatively much smaller than the middle one. In *A. leiophylla* the lobes of the lower

lip are similar in size. The name *leiophylla*, λεῖος, smooth, and φύλλον, leaf, alludes to the glabrous leaf blades.

Accompanying the type sheet is the following description by Cuatrecasas, drawn, evidently, from living material: "Hierba robusta de 60 cm. alt.; hoja verde obscura en el haz, claro en el enves; corolla roja, tubo amarillento."

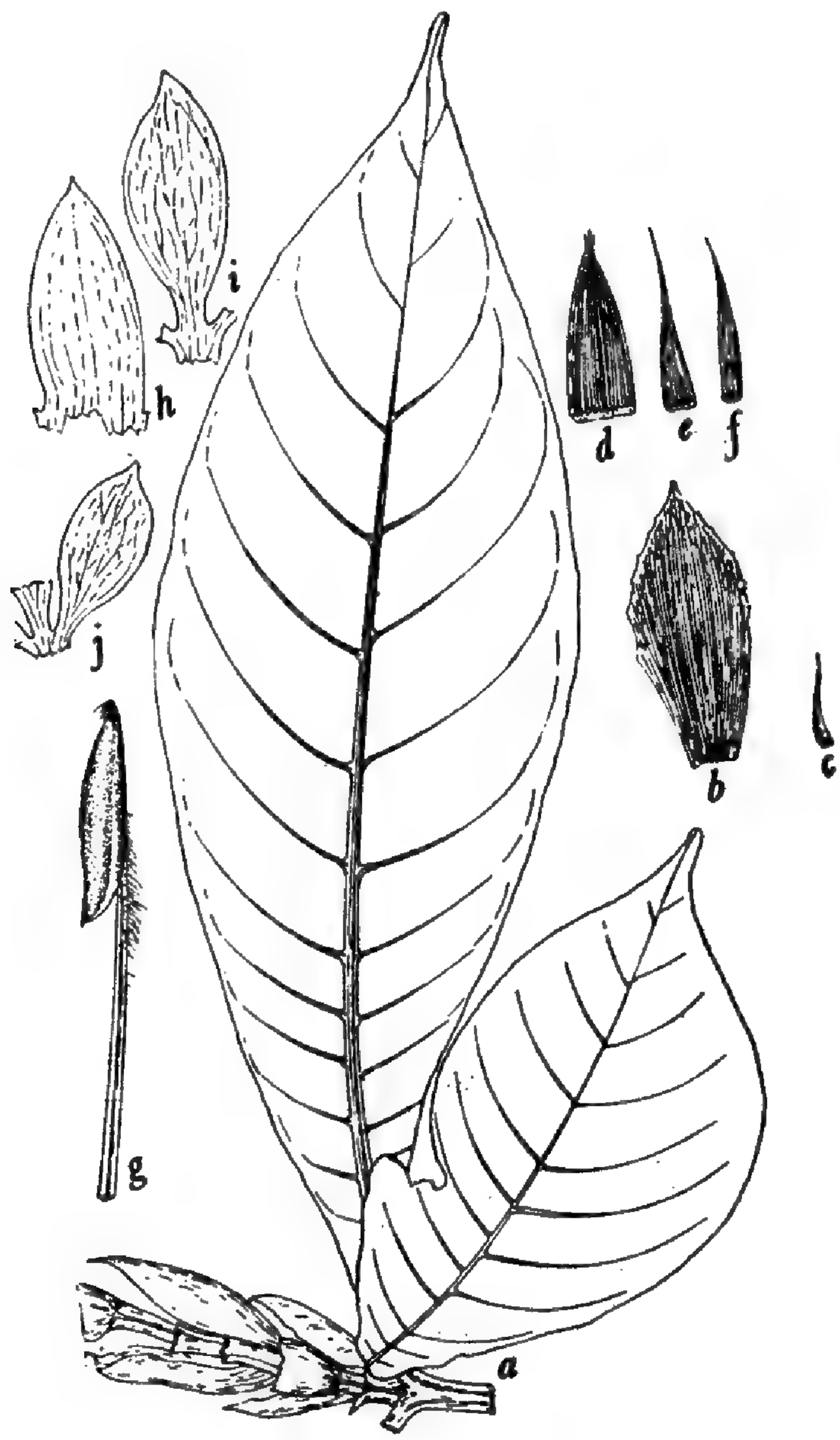

FIGURE 57.—*Aphelandra leiophylla* Leonard (*Cuatrecasas* 15436): *a*, Basal portion of inflorescence; *b*, bract; *c*, bractlet; *d*, posterior calyx segment; *e*, one of the anterior segments; *f*, one of the lateral segments; *g*, upper part of stamen; *h*, upper lip of corolla; *i*, middle lobe of lower lip; *j*, one of the lateral lobes of lower lip. (*a*, Half natural size; *b*, *c*, *h–j*, natural size; *d–f*, twice natural size; *g*, about three times natural size.)

24. **Aphelandra nana** Leonard, sp. nov. FIGURE 58

Suffrutex parvus, caulibus ascendentibus, deorsum teretibus, sursum quadrangularibus, aliquanto puberulis, pilis minutis, curvatis; lamina foliorum ovata vel ovato-lanceolata, acuminata vel breviter acuminata (apice ipso obtuso), basi angusta, in petiolum breviter

decurrens, utrinque glabra, costa et venis lateralibus obscuris, plus minusve puberulis, pilis curvatis; petioli puberuli, pilis curvatis; spicae terminales, solitariae, subcapitatae, pedunculo brevi, puberulo, rhache puberula, pilis rectis, patulis, subbrunneis; bracteae rhombeo-ovatae, acutae vel subacutae, minute brunneo-puberulae, marginibus serratis (dentibus 3 vel 4 paribus), costa et venis lateralibus prominentibus, venulis prope margines crasse reticulatis; bracteolae anguste lanceolatae, graciliter acuminatae, striatae, minute puberulae, pilis patulis; calycis segmenta subaequalia, lanceolata, striata, albida, subcoriacea, minute puberula, pilis patulis, segmentum posterius apice bidentatum, dentibus triangularibus, parvis, anteriora et lateralia graciliter acuminata; corolla coccinea, parce pubescens, tubo leviter curvato, labiis subaequalibus, labio superiore erecto, acuto, labio inferiore profunde lobato, lobis obovatis, obtusis; stamina vix exserta, filamentis deorsum minute et parce hirtellis; ovarium puberulum; capsulae maturae ignotae.

Suffrutescent, up to 30 cm. high; stems ascending, the upper portions quadrangular, moderately puberulous (the hairs up to 0.25 mm. long, curved), the lower portions terete, up to 3.5 mm. in diameter; leaf blades ovate to ovate-lanceolate, up to 7 cm. long and 23 mm. wide, acuminate to short-acuminate (the tip itself blunt), narrowed at base and briefly decurrent on the petiole, both surfaces glabrous except the costa and lateral veins (6 to 8 pairs), these more or less puberulous with curved hairs, the venation obscure but less so beneath than above; petioles up to 1.5 cm. long, moderately puberulous with curved hairs; spikes solitary, terminal, about 3 cm. long and 2.5 cm. broad, the peduncle 2 mm. long, puberulous with curved hairs, the rachis puberulous with minute brownish spreading hairs; bracts rhombic-ovate, 2.5 cm. long and 12–13 mm. wide, acute to subacute, minutely brown-puberulous, the margins above middle serrate with 3 or 4 pairs of sharp triangular teeth up to 1.5 mm. long, the costa and lateral veins rather prominent, the veinlets coarsely reticulate toward margins; bractlets narrowly lanceolate, 8.5 mm. long, 1.25 mm. wide near base, slenderly acuminate, striate, finely puberulous, the hairs spreading, up to 150μ long; calyx segments subequal, lanceolate, about 1 cm. long, striate, whitish, subcoriaceous, minutely puberulous, the hairs spreading, up to 150μ long, the posterior segment 3 mm. wide near base, bidentate at apex, the teeth triangular, 0.5 mm. long, the anterior segments 1.5 mm. wide near base, the lateral segments about 1.25 mm. wide, both anterior and lateral segments slenderly acuminate and tipped by several hairs up to 625μ long; corollas bright red, up to 5 cm. long, finely and sparingly pubescent, the tube slightly curved, 4 mm. broad at base, 5 mm. broad at mouth, the lips subequal, about 15 mm. long, the upper lip erect, ovate, 8 mm. wide near base, acute, the lower lip deeply 3-parted, the lobes obovate, obtuse, the middle lobe 1 cm. wide, the lat-

eral lobes 7 mm. wide; stamens exserted beyond the mouth of the corolla tube but barely reaching the tip of the upper lip, the filaments glabrous toward tip, the lower portions sparingly and minutely hirtellous; ovary puberulous; capsules not seen.

Type in the herbarium of the Royal Botanic Gardens, Kew, collected at Tabaca, in the forest-covered Magdalena watershed in the vicinity of Ocaña, probably near the boundary line of the Departments of Magdalena and Norte de Santander, Colombia, "5000 pds." altitude, 1851, by L. Schlim (No. 780).

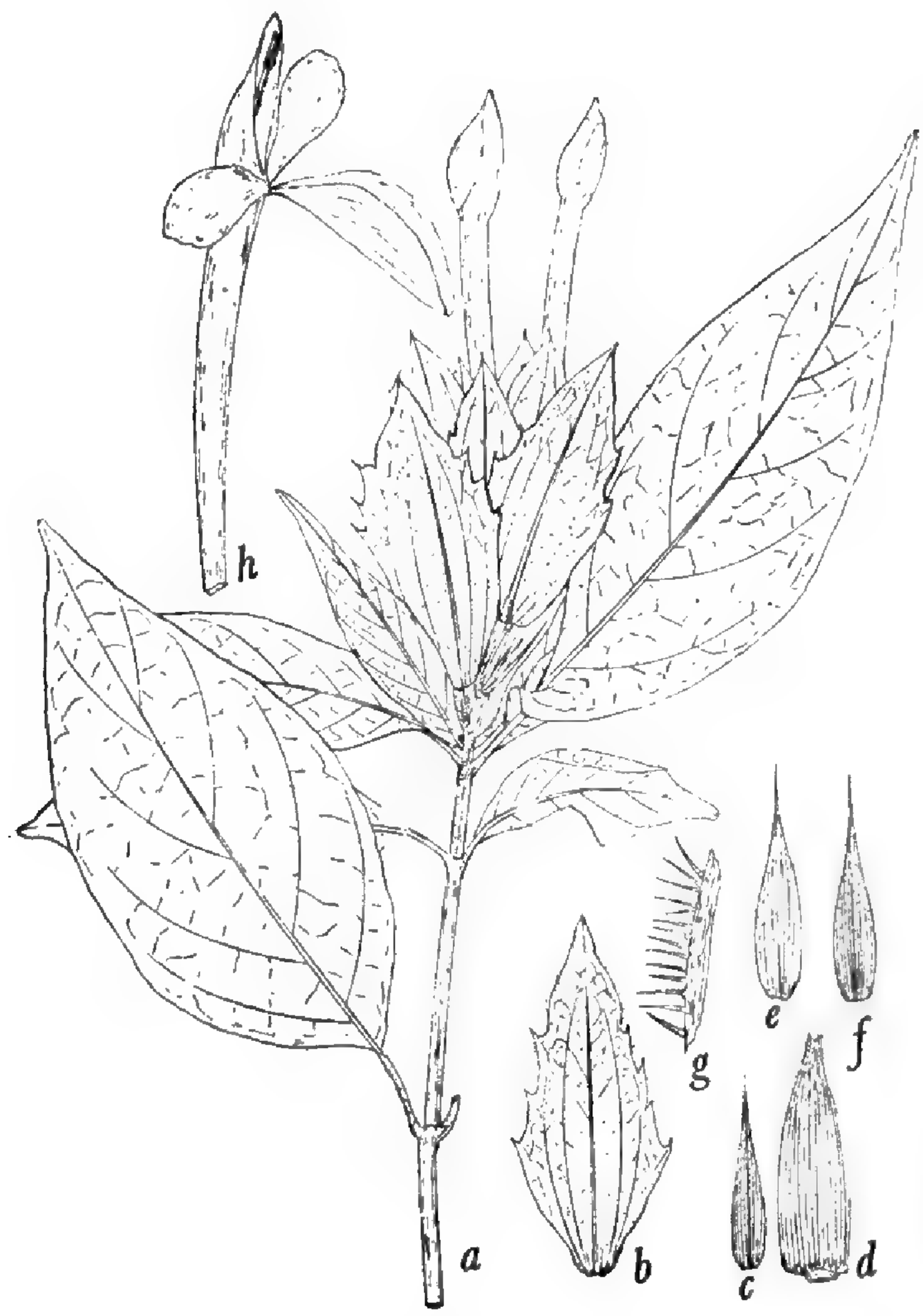

FIGURE 58.—*Aphelandra nana* Leonard (*Kalbreyer* 344): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, posterior calyx segment; *e*, one of the anterior calyx segments; *f*, one of the lateral calyx segments; *g*, marginal hairs of a calyx segment; *h*, corolla. (*a*, *b*, *h*, Natural size; *c*–*f*, twice natural size; *g*, about 40 times natural size.)

Kalbreyer's No. 344 (K), collected near Ocaña, "5500′" altitude, October 11, 1877, is also of this species.

Aphelandra nana is closely related to *A. aurantiaca* and differs from that species mainly in its small size. Schlim states that the flowers were fire red (rouge fouée). The following note accompanies Kalbreyer's specimen: "perenn. stem 6–12″ fl. bright red terminal; bush half shade." The specific epithet is from the Greek νᾶνος, dwarf, alluding to the small stature of the plant.

25. **Aphelandra sneidernii** Leonard, sp. nov. FIGURE 59

Suffrutex, caulibus glabris; lamina foliorum oblonga, apice acuminata, basi rotundata vel subacuta, obliqua, supra parce puberula, subtus glabra, costa et venis prominentibus, minute et obscure pubescentibus; petioli glabri, canalibus puberulis; spicae terminales, solitariae, sessiles, rhache puberula; bracteae arcte imbricatae, tenues,

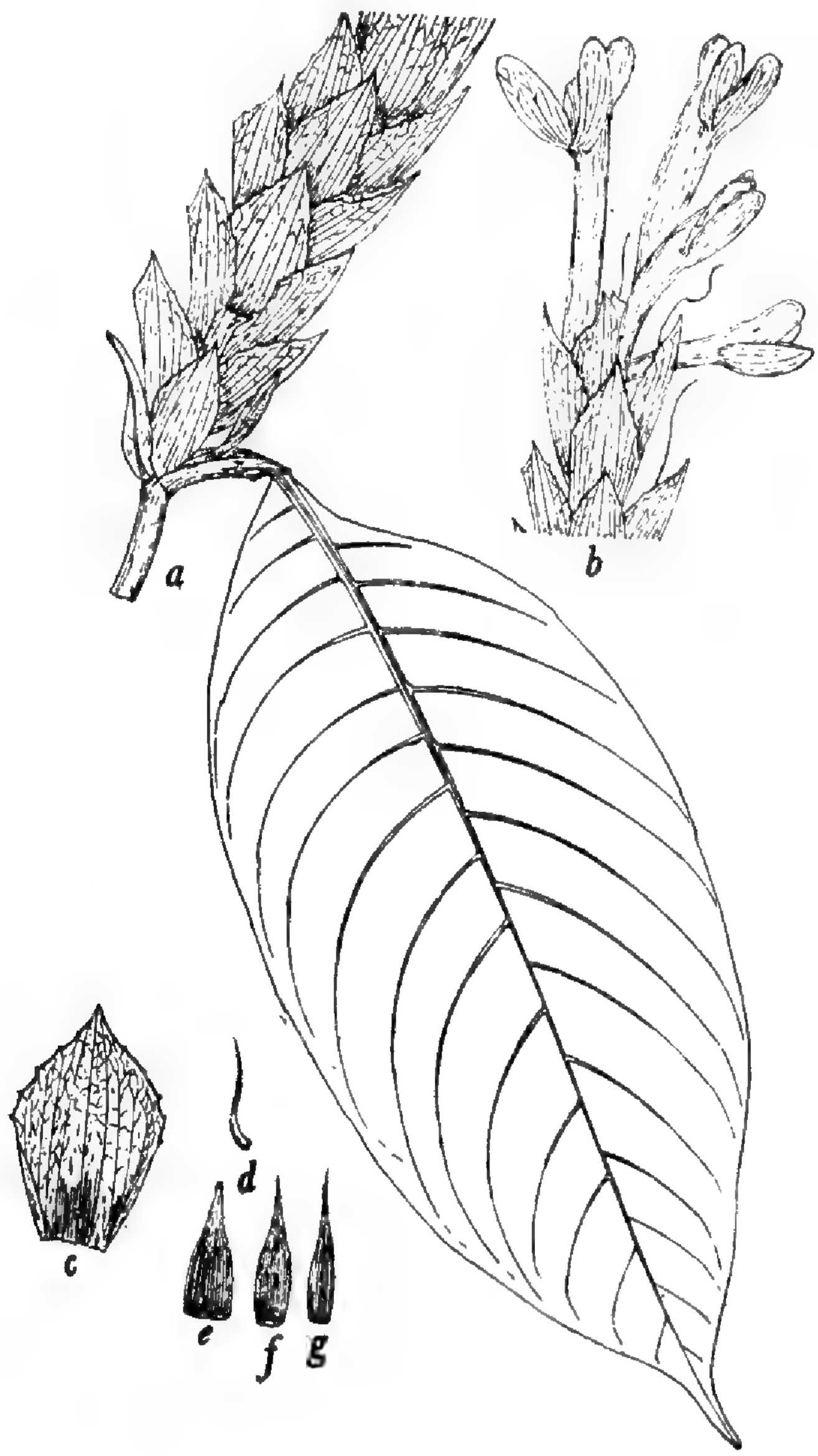

FIGURE 59.—*Aphelandra sneidernii* Leonard (*von Sneidern* 868): *a*, Basal portion of inflorescence; *b*, tip of spike; *c*, bract; *d*, bractlet; *e*, posterior calyx segment, *f*, one of the anterior segments; *g*, one of the lateral segments. (*a*, *b*, Three-fourths natural size; *c*–*g*, natural size.)

ovatae, serratae (dentibus utrinque 3 vel 4), venosae, minute brunneo-puberulae; bracteolae subulatae, puberulae; calycis segmenta lanceolata, acuminata, glabra vel apice puberula, segmentum posterius apice bidentatum; corolla lutea (?), minute pubescens, tubo cylindrico, labiis subaequalibus, labio superiore ovato, integro, labio inferiore trilobato, lobis ovatis, rotundatis; ovarium glabrum.

Suffrutescent; stems glabrous; leaf blades oblong, up to 18 cm. long and 8 cm. wide, acuminate at apex, rounded or subacute at base, sometimes obliquely so, bright green, the upper surface sparingly and inconspicuously puberulous, the lower surface glabrous except the costa and lateral veins (12 or 13 pairs), these prominent, minutely and inconspicuously pubescent; petioles up to 6 cm. long, glabrous or the channels puberulous; spike terminal, about 13 cm. long and 2 cm. broad, sessile, the rachis puberulous; bracts closely imbricate, ovate, thin, up to 23 mm. long and 12 mm. wide, acute, serrate (3 or 4 minute teeth on each side), both surfaces veiny and minutely brown-puberulous; bractlets subulate, about 7 mm. long and 1 mm. wide, carinate, puberulous; calyx segments lanceolate, about 12 mm. long, acuminate, striate, glabrous or puberulous at tips, the posterior segment 4 mm. wide, bidentate at apex, the anterior pair 2.5 mm. wide, the lateral pair 2 mm. wide, both pairs slenderly acuminate; corolla orange (?), minutely pubescent, 4 cm. long, the tube cylindric, about 2.5 mm. broad at base and 6 mm. broad at mouth, the lips subequal or the upper slightly longer than the lower, erect or slightly spreading, ovate, about 16 mm. long and 9 mm. wide, rounded, the lower lip 3-lobed, the lobes subequal, 13 mm. long, rounded, the middle lobe about 8 mm. wide, the lateral ones about 4 mm. wide; ovary glabrous.

Type in the herbarium of the Riksmuseet, Stockholm, collected in primitive forest of La Costa, El Tambo, Department of Cauca, Colombia, 1,200 meters altitude, July 27, 1936, by Kjell von Sneidern (No. 868). Fragment in U. S. National Herbarium, No. 2059876.

Aphelandra sneidernii may be related to *A. puberula*, but it differs in its minutely toothed and inconspicuously puberulous bracts.

26. **Aphelandra impressa** Lindau

Aphelandra impressa Lindau, Bull. Herb. Boiss. 5: 657. 1897. Type collected near San Cristóbal, Mérida, Venezuela, 950 meters altitude, by Funck & Schlim (No. 1244). The name *impressa* alludes to the pitlike impressions found on the dorsal surface of the bracts in which the glandular dots are imbedded.

Stems terete, the lower portions glabrous, the upper parts more or less puberulous, the hairs about 0.25 mm. long, straight or curved, upwardly appressed; leaf blades oblong-elliptic, 9 to 28 cm. long (including the winged petiole), 2.5 to 6 cm. wide, acuminate and more or less falcate at tip (the tip itself blunt), gradually narrowed from about the middle into a winged petiole, the margins entire or shallowly crenate, both surfaces sparingly and inconspicuously pubescent, the hairs about 0.25 mm. long, appressed, more numerous on the costa and veins (10 to 13 pairs), these rather prominent; petioles (unwinged portion) 5 to 15 mm. long, minutely and often densely strigose; spikes solitary or in 3's, terminal, 8 to 10 cm. long and 2 cm. broad (excluding

corollas and tips of bracts), the rachis densely brown puberulous; bracts closely imbricate, subrhombic, acuminate, often slenderly so and the tips spreading or recurved, both surfaces minutely brown puberulous, the teeth 8 to 10 on each side, these slender, ending in spines, 1.5 to 4.5 mm. long, the glandular area on either side of the midrib deeply impressed dorsally, the pit about 1.5 mm. long and 1 mm. broad; bractlets subulate, 8 mm. long and 1 mm. wide near the base, curved, carinate, minutely pubescent dorsally; calyx puberulous toward tip, 10 mm. long, the segments lanceolate, the posterior segment acuminate, 2.5 mm. wide, the others ending in a spinelike tip, 1.5 mm. wide near base; corolla purple or red, minutely pubescent, 5.5 to 6 cm. long, the tube 2.5 mm. broad at base, 5 to 7 mm. broad at mouth, the upper lip ovate, about 13 mm. long, 9 mm. wide, acuminate, entire, the lower lip 3-lobed nearly to base, the lobes oblong-elliptic, acuminate, the middle lobe 15 mm. long and 4.5 mm. wide, the lateral lobes 12 mm. long and 3.5 mm. wide; stamens exserted beyond the mouth of the corolla tube but not exceeding the upper lip, the filaments 3.3 to 4 cm. long, pubescent toward base, the anthers 5.5 mm. long and 0.5 mm. broad; style 4 to 5 mm. long; ovary glabrous; capsule not seen.

According to Cuatrecasas the plants of this species are shrubby, much branched, bear red (*rojo vivo*) corollas, have purple bracts and blossom chiefly in November and December. They occur usually between the altitudes of 240 and 1,240 meters. Found also in Venezuela and Brazil.

META: Between Villavicencio and Bogotá, *Sprague* s.n. (K). Guapayita, Cordillera La Macarena, *Idrobo & Schultes* 840 (US).

NORTE DE SANTANDER: Río Margua valley, between Junín and Córdoba, *Cuatrecasas* 13374 (Ch, US).

PUTUMAYO: Quebrada de Sipenae, left side of the Río San Miguel. *Cuatrecasas* 11007 (Ch, US).

VAUPÉS: Along the Río Guaviare, at San José del Guaviare, *Cuatrecasas* 7456 (US).

27. **Aphelandra lamprantha** Leonard, sp. nov. FIGURE 60

Herba, caulibus saepe simplicibus, ascendentibus, subquadrangularibus, minute hirtellis, pilis ascendentibus, sursum curvatis, internodiis brevibus; folia numerosa, erecta vel ascendentia, laminis anguste lanceolatis (apice ipso obtuso), basi angustatis, in petiolum decurrentibus, submembranaceis, undulatis, utrinque parce hirtellis, costa et venis lateralibus subtus aliquanto substrigosis; petioli graciles, hirtelli, pilis ascendentibus vel adpressis; spicae solitariae, terminales, subsessiles, rhache parce pubescente, pilis patulis, minutis; bracteae imbricatae, ascendentes, lanceolatae, extus puberulae et hirtellae (pilis minutis patulis et pilis majoribus ascendentibus intermixtis), intus puberulae vel basi glabrae, utrinque venis prominentibus, venulis crasse reticulatis dentibus gracilibus, spiniformibus, ascendentibus,

puberulis terminatis; ocelli minuti, depressi; bracteolae lanceolatae, graciliter acuminatae, subhyalinae, striatae, parce hirtellae, pilis ascendentibus, calycis segmenta lanceolata, subhyalina, subtiliter striata, apice hirtella et ciliata, segmentum posterius apice obtusum, mucronatum, anteriora et lateralia apice graciliter acuminata; corolla coccinea, apice parce et minute pilosula, tubo leviter curvato, labiis subaequalibus, labio superiore ovato, erecto, acuto, labio inferiore trilobato, lobis oblanceolatis, subacutis; stamina vix exserta; ovarium glabrum; capsulae ignotae.

Herbs up to 40 cm. high; stems mostly simple, ascending, subquadrangular, minutely hirtellous, the hairs ascending, upwardly curved, up to 0.5 mm. long, the internodes up to 2 cm. long; leaves numerous, erect or ascending, the blades narrowly lanceolate, up to 12 cm. long and 21 mm. wide (the tip itself blunt), narrowed and decurrent on the petiole, submembranaceous, undulate, both surfaces sparingly hirtellous or the costa and lateral veins of the lower surface rather densely so, the hairs subappressed, up to 0.5 mm. long, the venation moderately prominent; petioles slender, up to 3 cm. long, hirtellous, the hairs ascending or appressed, about 0.5 mm. long; spikes solitary, terminal, subsessile, about 6 cm. long and 1.5 cm. broad, the rachis sparingly pubescent, the hairs spreading, about 0.5 mm. long; bracts imbricate, ascending, lanceolate, 13 mm. long, 7 mm. wide above the middle, the pubescence of the outer surface a mixture of minute spreading hairs 250 to 370 μ long and larger ascending ones averaging 625 μ in length, the inner surface merely puberulous and glabrous toward base, the venation of both surfaces prominent, the veinlets coarsely reticulate towards margins, ending in slender spinose teeth (usually 8 pairs), these ascending, up to 3 mm. long, sparingly puberulous; ocelli minute, elliptic, about 125 μ long, aggregated in a veinless depressed area about 0.75 mm. in diameter, irregularly margined and located near the base of the third tooth from the tip on either side of the bract; bractlets lanceolate, 9 mm. long and 1.5 mm. wide near base, slenderly acuminate, subhyaline, finely striate, the dorsal region sparingly hirtellous, the hairs ascending, about 0.5 mm. long, the costa ending at base in a swollen callus; calyx segments lanceolate, subhyaline and finely striate but thickened and smooth at base, hirtellous and ciliate at tip, the hairs ascending, up to 625 μ long, the posterior segment 11 mm. long, 2.25 mm. wide at 3 mm. above the base, obtuse at apex, ending in a mucro 1.5 mm. long, the anterior segments 13 mm. long and 1.5 mm. wide near base, slenderly acuminate, the lateral segments 12 mm. long, 1.25 mm. wide near base, slenderly acuminate; corolla 5 cm. long, a vivid scarlet (*André*), sparingly and finely pilosulous toward tip, the hairs about 0.6 mm. long, spreading, the tube slightly curved, 2 mm. broad at base, 1.5 mm. broad at 5 mm. above base, 6 mm. broad at mouth, the upper lip ovate, about 17 mm. long and 12 mm.

wide, acute, the lower lip 3-lobed, the lobes oblanceolate, the middle lobe 12 mm. long, 5.5 mm. wide, subacute, the lateral lobes similar but slightly smaller; stamens slightly exserted beyond mouth of corolla tube, the anthers lying in the concavity of the upper lip; ovary glabrous; mature capsules not seen.

Type in the herbarium of the Royal Botanic Gardens, Kew, collected on the "Llanos" in the vicinity of Salitre, Department of Boyacá, Colombia, 408 meters altitude, January 10, 1876, by E. F. André (No. 1055).

FIGURE 60.—*Aphelandra lamprantha* Leonard (*André* 1055): *a*, Tip of plant; *b*, bract; *c*, ocelli; *d*, bractlet; *e*, posterior calyx segment; *f*, one of the anterior segments; *g*, one of the lateral segments; *h*, tip of one of the anterior segments; *i*, tip of corolla. (*a*, *i*, Half natural size; *b*, *d*–*g*, twice natural size; *c*, 4 times natural size; *h*, about 26 times natural size.)

Idrobo & Schultes' No. 1207, collected on the Sabanas de San Juan de Arama, Intendencia of Meta, 500 meters altitude, January 22, 1951, is also of this species.

Aphelandra lamprantha is closely related to *A. impressa*, agreeing in the acuminate pectinate bracts, these bearing an impressed area covered by numerous minute ocelli. If the two species are compared, however, differences are readily apparent. *Aphelandra lamprantha* is much smaller and herbaceous with leaf blades not exceeding 21 mm.

in width, the stems are hirtellous with ascending hairs, and the bracts lanceolate, ascending and straight rather than rhombic and recurved. *Aphelandra impressa* is shrubby, probably reaching a meter in height, the stems are puberulous at tips with upwardly appressed hairs and the leaf blades oblong-elliptic, reaching as much as 6 cm. in width. The specific epithet is from the Greek λαμπρός, bright or radiant, and ἄνθος, flower, in allusion to the brilliant scarlet blossoms.

28. **Aphelandra lasia** Leonard, sp. nov. FIGURE 61

Frutex, caulibus subquadrangularibus, dense pilosis, pilis albidis, patulis vel plus minusve retrorsis; lamina foliorum oblongo-elliptica, acuminata, basi angustata, in petiolum decurrens, integra vel undulata, supra parce pilosa, subtus dense pilosa, pilis albidis, patulis vel ascendentibus; petioli dense pilosi; spicae 5 vel plures, terminales et subterminales, rhache dense pilosa; bracteae imbricatae, fulvescentes, rhombicae, acutae, dense pilosae, integrae vel dentes 1-4, minutos, ascendentes ferentes, ocellis 5-10, ellipticis, approximatis, fuscis, conspicuis; bracteolae anguste lanceolatae, carinatae, extus dense pilosae, pilis, ascendentibus; calycis segmenta lanceolata, indurata, deorsum glabra vel subglabra, sursum dense pilosa; corolla punicea, parce puberula, labiis erectis, subaequalibus, labio superiore ovato, profunde bilobato, lobis lanceolatis, acuminatis, patulis, labio inferiore trilobato, lobo medio oblongo-lanceolato, lobis lateralibus triangularibus, acutis, in labio superiore basi adnatis; filamenta glabra antherae apice cohaerentes, dorso pubescentes; ovarium glabrum.

Shrubs up to 2 meters high; stems subquadrangular, at least the upper portions densely pilose, the hairs whitish, spreading or somewhat retrorse, up to 2 mm. long; leaf blades oblong-elliptic, up to 29 cm. long and 8 cm. wide, subacuminate, narrowed from about the middle to a winged petiole, entire or undulate, rather thin, the upper surface sparingly pilose, the hairs up to 1.5 mm. long, densely pilose beneath especially on the costa and lateral veins (about 22 pairs), the hairs whitish, spreading or ascending; petioles (unwinged portion) 5 to 10 mm. long, the winged portion 6 to 7 cm. long, both densely pilose; spikes up to 5 or more in number, terminal and subterminal, 5 to 10 cm. long, 2 cm. broad, the rachis densely pilose; bracts ascending, light brown, rhombic, about 18 mm. long and 9 mm. wide, densely pilose, entire or bearing 1 or 2 pairs of minute ascending teeth, the glandular area consisting usually of 5 to 20 elliptical ocelli 0.75 mm. long and barely 0.5 mm. wide, these dark brown, conspicuous against the light brown of the bract; bractlets narrowly lanceolate, carinate, 16 mm. long, 3 mm. wide near base, densely pilose without, the hairs ascending; calyx 19 mm. long, the segments lanceolate, the posterior one 5.5 mm. wide at about the middle, the anterior pair 3.5 mm. wide, the lateral pair 3 mm. wide, all indurate and glabrous or nearly so

to about 5 mm. from base, upper portions densely pilose; corollas bright red, rather sparingly puberulous, 6 cm. long, the tube 3 cm. long, 6 mm. broad at base, contracted at tip of ovary to 3 mm., thence gradually expanded to 7 mm. at mouth, the lips erect, about equal, 3 cm. long, the posterior lip about 8 mm. wide at basal part of the 2 lobes, these lanceolate, 17 mm. long, 5 mm. wide at middle, slenderly acuminate, spreading, the lower lip 3-lobed, the middle lobe free to base, oblong-lanceolate, 33 mm. long, 7 mm. wide at about the middle, the

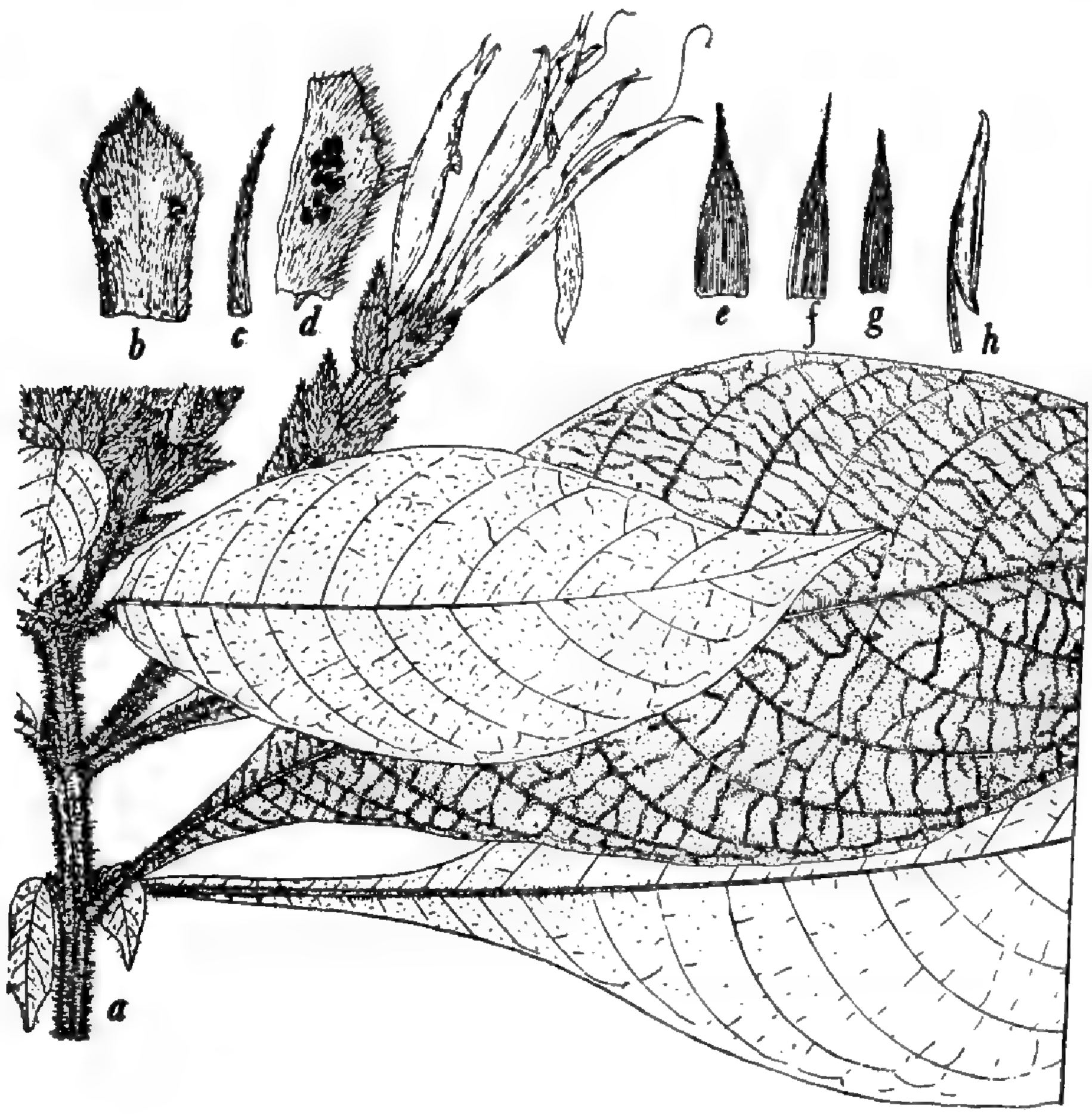

FIGURE 61.—*Aphelandra lasia* Leonard (*Haught* 3945): *a*, Tip of stem showing part of inflorescence; *b*, bract; *c*, bractlet; *d*, portion of bract to show ocelli; *e*, posterior calyx segment; *f*, one of the anterior segments; *g*, one of the lateral segments; *h*, tip of stamen. (*a*, Half natural size; *b*, *c*, *e*–*g*, natural size; *d*, about twice natural size; *h*, about three times natural size.)

lateral lobes triangular, 8 mm. long, 2.5 mm. wide near the base, acute, their upper margins adhering in part to the upper lip; stamens 5 cm. long, the filaments glabrous, the anthers 6.5 mm. long, adhering at tip, dorsally pubescent; style about 5.5 cm. long, glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 1708677, collected near a stream in forest above Manaure, Department of Magdalena, Colombia, 800 meters altitude, January 16, 1944, by Oscar Haught (No. 3945).

CUNDINAMARCA: Guaduas, *Triana* (Col, NY). Road between Guaduas and Alto de Aguaclara, at the Hacienda Paramillo, *García-Barriga* 12323 (US).

SANTANDER: Santa Bárbara, *Kalbreyer* 794 (K).

TOLIMA: Between El Líbano and Murillo, Alto de Peñones, *García-Barriga* 12268 (US).

Aphelandra lasia is related to *A. deppeana* but can be separated easily from that by its light brown (in herbarium material), densely pilose bracts with their few (if any) minute teeth (up to 1 mm. high). The bracts of *A. deppeana* are much smaller (8 to 15 mm. long instead of 18 mm.) and their teeth more numerous and conspicuous (up to 1.5 mm. long). The type differs slightly from the other specimens cited above in having fewer ocelli (5–10), less well developed bract teeth (some of the bracts actually entire), and in the somewhat smaller leaf blades, but agrees in general appearance. The name *lasia*, λάσιος, shaggy, alludes to the heavy pilosity of the leaves and spikes.

Kalbreyer's label bears the following data: "Aphelandra sp. shrub 15′ with long straggling branches; leaf herb., rough woolly; fl. bright red; forest border, moist slopes, banks, 5500′, S. Bárbara 6/11/78."

29. Aphelandra taborensis Leonard, sp. nov. FIGURE 62

Arbor parva ramosa, caulibus sursum dense strigosis, deorsum glabratis; lamina foliorum oblanceolata, breviter acuminata, apice ipso obtuso, basi angustata, supra glabra vel subglabra, subtus dense et molliter pubescens, pilis ascendentibus, curvatis, fulvis, costa et venis prominentibus; petioli aliquando breves, appresso-pubescentes; spicae pleurumque 3, terminales et subterminales, pedunculo et rhache dense fulvo-pubescentibus; bracteae ovatae, obtusae et minute apiculatae, roseo-purpureae, coriaceae, extus dense et molliter pubescentes, integrae vel apice bidentatae, dentibus minutis, ocellis cohaerentibus areolam parvam lacunosam formantibus; bracteolae lanceolatae, acuminatae, obliquo-carinatae, extus dense pubescentes, striato-nervatae; calycis segmenta lanceolata, acuta, extus puberula, striato-nervata; corolla punicea, tubo anguste hypocrateriformi, labio superiore erecto, elliptico, apice bilobato, lobis triangularibus, acutis, labio inferiore 3-lobato, lobo medio lanceolato, patulo, subobtuso et minute apiculato, lobis lateralibus triangulo-ovatis, subacutis, in labio superiore basi adnatis, stamina glabra, lobis basi apiculatis; ovarium glabrum.

Small branching tree; tips of the stems densely upwardly strigose, the lower portions glabrate; leaf blades oblanceolate, 12 to 13.5 cm. long, 3 to 4.5 cm. wide or those subtending the spikes smaller, acuminate, the tip itself blunt, gradually narrowed from above middle to the base, gray-green (*Cuatrecasas*), the upper surface drying olive, glabrous or nearly so or the younger leaves rather densely appressed-pubescent, the hairs about 0.5 mm. long, the lower surface drying grayish olive, densely and softly pubescent, the hairs on the costa and veins appressed, the others ascending, light brown, 0.5 mm. long,

the costa and lateral veins (11 or 12 pairs) prominent, especially on the lower surface; petioles about 1 cm. long, appressed-pubescent; spikes usually 3, terminal and subterminal, the peduncles 1 to 2 cm. long, densely brown-pubescent, the spikes 4 to 7 cm. long and 1.5 cm. broad, the rachis densely brown-pubescent; bracts ovate, 9 to 10 mm. long, 7.5 mm. wide, obtuse and minutely apiculate, rose-violet (*Cuatrecasas*), coriaceous, entire or tipped by a pair of minute teeth, densely

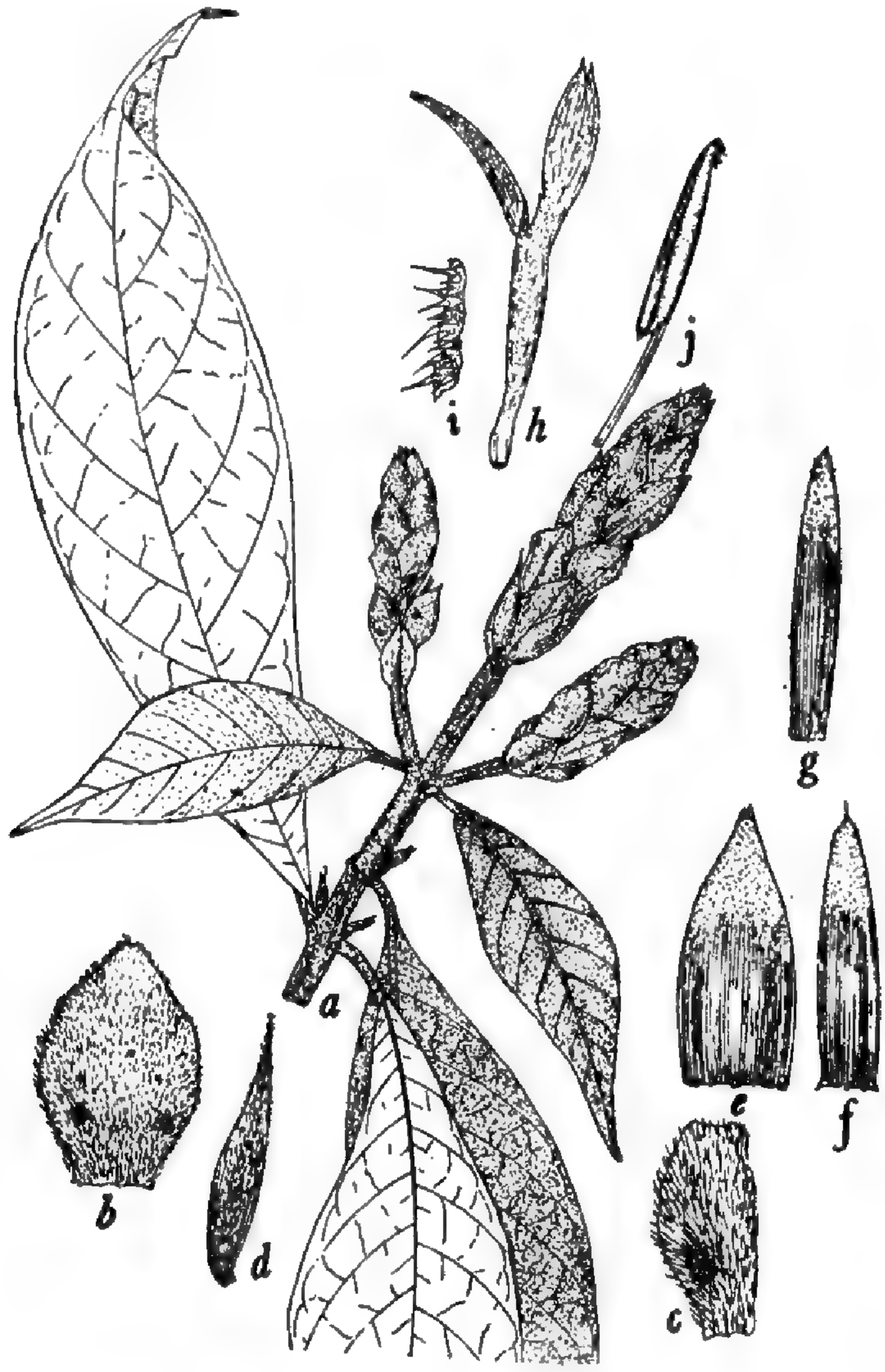

FIGURE 62.—*Aphelandra taborensis* Leonard (*Cuatrecasas* 22284): *a*, Tip of stem; *b*, bract; *c*, portion of bract to show glandular area; *d*, bractlet; *e*, posterior calyx segment; *f*, one of the anterior segments; *g*, one of the lateral segments; *h*, corolla; *i*, pubescence of corolla; *j*, anther. (*a*, *h*, Half natural size; *b*, *d*, *e*–*g*, natural size; *c*, twice natural size; *i*, about 24 times natural size; *j*, about three times natural size.)

and softly pubescent dorsally, the hairs barely 0.5 mm. long, the glandular area on either side poorly defined, the individual ocelli joined to form a small pitted area; bractlets lanceolate, 11 mm. long, 2.5 mm. wide, acuminate, obliquely carinate, densely pubescent dorsally, striate-nerved; calyx 14 mm. long, the segments lanceolate, the posterior segment 5 mm. wide, the anterior pair 3 mm. wide, the lateral pair 2.5 mm. wide, all acute, puberulous dorsally, striate-nerved; corollas up to 5.8 cm. long, bright red (*Cuatrecasas*), puberu-

lous, except the basal portion, the tube 2 mm. broad at base, enlarged to 3 mm., thence narrowed to 2 mm. at 7 mm. above base, then gradually enlarged to 5 mm. at throat, the upper lip erect, elliptic, 17 mm. long, about 8 mm. wide at middle, 2-lobed at apex, the lobes triangular, 2.5 mm. long, 1.5 mm. wide, acute, the lower lip 3-lobed, the middle lobe spreading, lanceolate, 24 mm. long, about 8 mm. wide below middle, obtusish and minutely apiculate at tip, the lateral lobes 9 mm. long, 1.5 mm. wide, subacute, their upper margins partly attached to the upper lip, their free portion triangular; stamens reaching the sinus of the upper lip, the filaments glabrous, the anthers 6 mm. long, their lobes minutely apiculate at base; pistil slightly exceeding the stamens; ovary glabrous; mature capsule not seen.

Type in the U. S. National Herbarium, No. 1900488, collected on Monte El Tabor, on the ridge of the Cordillera Occidental, above Las Brisas, Department of El Valle, Colombia, 1,970 to 2,100 meters altitude, October 19, 1946, by J. Cuatrecasas (No. 22284).

The pair of minute teeth found on some of the bracts together with an agreement in the general aspect suggests a relationship of *A. taborensis* with *A. deppeana* Schlecht. & Cham.

30. **Aphelandra deppeana** Schlecht. & Cham.

Aphelandra pulcherrima sensu H. B. K. Nov. Gen. & Sp. 2: 236. 1817, p. p. Two syntypes are cited, one collected in a cool, shady place near Turbaco, Colombia, and the other at the mouth of the Río Sinú, Colombia. The first cited is the true *A. pulcherrima* (Jacq.) H. B. K. characterized by entire bracts and softly pubescent (under surface) leaf blades. The second cited is marked by pectinate bracts and was later described by Nees as *A. pectinata.*

Aphelandra deppeana Schlecht. & Cham. Linnaea 5: 96. 1830. Type collected at Hacienda de la Laguna, Mexico, by Deppe and Scheide. Schlechtendal named the species in honor of Ferdinand Deppe.

Aphelandra pectinata Willd. ex Nees, DC. Prodr. 11: 297. 1847. Here is cited first in a series of syntypes the Río Sinú specimen mentioned above under *A. pulcherrima.* The specimen examined by Nees is in the Willdenow Herbarium, No. 11623. A photograph of this is in the U. S. National Herbarium (Field Mus. photograph No. 9511). The other syntypes cited by Nees under *A. pectinata* were procured by various collectors from Mexico, Central America, the Guianas, Colombia, and the West Indies. The name *pectinata* alludes to the pectinately toothed bracts.

Aphelandra haenkeana Nees, DC, Prodr. 11: 298, 1847. The first specimen cited by Nees among a number of syntypes is that collected at Acapulco, Guerrero, Mexico, by Haenke. The other syntypes were procured by different collectors from various stations in Mexico and Central America. Nees named the species in honor of Thaddaeus Haenke, a Bohemian botanist, who, in company with a French botanist, Luis Née, collected in various regions from Chile to Mexico during the later part of the eighteenth century.

Shrubs up to 4 meters high; stems stout, pubescent to subtomentose, the hairs sordid, variously curved, the internodes 5 to 7 cm. long, the lenticels oval to linear, 1 mm. long or less; leaf blades ovate-elliptic to lanceolate, 5 to 20 cm. long, 2 to 10 cm. wide, acuminate at the apex,

gradually to rather abruptly narrowed and decurrent on the petiole at base, entire, undulate, the upper surface more or less scabridulous, subnitid, glabrous to sparingly puberulous or pilose, the hairs up to 0.5 mm. long, the costa impressed, this and the lateral veins (12 to 16 pairs) often strigose, the lower surface sparingly to densely and softly pubescent or tomentose beneath, the hairs sordid; petioles (the unwinged portion) 1 cm. long or less, the pubescence that of the stems; flowers borne in spikes up to 20 cm. long and about 1 cm. broad, these terminal or both terminal and lateral, then forming a narrow terminal spicate thyrse; bracts ovate-elliptic, 8 to 15 mm. long, 4 to 6 mm. wide, acuminate, sparingly pilosulous without, glabrous within, rather strongly 5-nerved, bearing above the middle 1 to several slender marginal teeth up to 1.5 mm. long and, near the middle of the dorsal surface, 2 small submarginal glands about 0.5 mm. in diameter; bractlets lanceolate, 6 to 7 mm. long, 1.75 mm. wide, slenderly acuminate, dorsally pilosulous, the margins subhyaline; calyx lobes subequal, ovate to lanceolate, the posterior one about 3 mm. wide, the lateral pair 1.5 mm. wide, the anterior pair barely 2 mm. wide, all finely striate-nerved, subhyaline, sparingly pilosulous dorsally; corolla pale to bright red, orange, or crimson, pubescent distally, glabrous proximally, about 4 cm. long, the tube subcylindric, about 3 mm. broad at base, constricted to 2 mm. at 5 mm. above base, about 5 mm. broad at throat, the lips oblong-ovate, 4.5 to 5 mm. wide, subequal, the upper one erect, 2-lobed, narrowly triangular, the lobes 3.5 mm. long, 1.5 mm. wide at the base, acuminate, outwardly curved, the lower lip spreading, entire, acuminate, the tip curved, or if 3-lobed, the lateral lobes vestigial, appearing as mere notches near the base of the upper lip; stamens exserted; capsules oblong, 15 to 20 mm. long, about 8 mm. broad and 3 mm. thick, obtuse at the apex, glabrous, minutely and inconspicuously punctate; seed dull brown, orbicular, 4 mm. in diameter, 2 mm. thick, minutely roughened.

Flowering usually from October to February. The tips of the stems and the uppermost leaves of García-Barriga's No. 11727 were yellow when collected.

Partial to wooded or open river banks or adjacent slopes, usually at elevations from 130 to 380 meters (1,040 to 1,320 meters, *García-Barriga* 11727). Southern Mexico to northern South America; West Indies.

BOLÍVAR: Vicinity of Cartagena, *Bro. Heriberto* 357 (US). San Martín de Loba, Lands of Loba, *Curran* 99 (US); 111 (GH, US). Sincelejo, *Pennell* 4057 (NY, US).

BOYACÁ: On the Río Cusiana, at San Antonio, *Haught* 2613 (US).

CUNDINAMARCA: Hacienda Paramillo, between Guaduas and Alto de Aguaclara, *García-Barriga* 11727 (US).

MAGDALENA: Aguachica, *Schlim* 278 (K).

META: Río Casanare, at Esmeralda, *Cuatrecasas* 3816 (US). Río Meta, at La Venturosa, *Cuatrecasas* 4195 (US). Río Orinoco, at Puerto Carreño, *Cuatrecasas* 4046 (US). Sabanas de San Juan de Arama, *Idrobo & Schultes* 1223 (US). Vicinity of Villavicencio, *Haught* 2501 (US).

VAUPÉS: Cerro de Mitú, *Cuatrecasas* 6878 (US).

VICHADA: Along the Río Vichada, 7 km. northeast of San José de Ocuné, *Hermann* 10973 (US).

DEPARTMENT (?): *Mutis* 1489 (US).

31. **Aphelandra anomala** Leonard, sp. nov. FIGURE 63

Suffrutex, caulibus teretibus, in nodis minute pubescentibus vel pilosis; lamina foliorum oblonga, apice acuminata, basi angustata, in petiolum decurrens, utrinque molliter puberula, supra in costa et venis pilosa; petioli minute strigosi; spica terminalis, solitaria, bracteis imbricatis, erecto-patulis vel deorsum reflexis, rhache molliter glanduloso-pilosula; bracteae grandes, ovatae, tenues, acutae, glanduloso-pubescentes; bracteolae lineari-lanceolatae, striato-nervatae, molliter glanduloso-pubescentes; calycis segmenta lanceolata, subaequalia, tenuiter acuminata, striata, glanduloso-pubescentia; corolla flavida, purpureo-maculosa, glanduloso-pubescens, tubo angusto, labio superiore erecto, oblongo, apice bilobato, labio inferiore patulo, trilobato, lobo medio ovali, subobtuso, labiis lateralibus anguste ellipticis, parvis, obtusis.

Shrubby; stem terete, minutely pubescent or pilosulous at the nodes; leaves drooping; leaf blades oblong, up to 17 cm. long and 5.5 cm. wide (flowering stems), acuminate at apex, cuneate and decurrent on the petiole at base, both surfaces softly puberulous except the costa and veins of the upper surface, these pilose; petioles 1 to 2 cm. long; spike terminal, solitary, up to 16 cm. long, 3 to 4 cm. broad, the bracts closely imbricate, erect-spreading or the lowermost drooping, the rachis softly glandular-pilosulous; bracts ovate, about 3 cm. long, 2 cm. broad or the lowermost somewhat smaller, acute, thin, glandular-pubescent, colored(?), drying to light reddish; bractlets linear-lanceolate, 18 mm. long, 2 mm. wide at base, striate-nerved, soft glandular-pubescent; calyx segments subequal, lanceolate, the posterior one 4.5 mm wide, the two anterior each 3.5 mm. wide, the lateral ones each 2.5 mm wide, all slenderly acuminate, striate, glandular-pubescent; corolla about 5 cm. long, dull yellow, marked by small purple spots, glandular-pubescent, the hairs minute except on the lips, here intermixed with longer hairs reaching 2 mm. in length, the tube 4 mm. in diameter at base, 5 mm. at throat, the upper lip erect, oblong, 15 to 20 mm. long and 6 mm. wide, 2-toothed at apex, the teeth 2 mm. long, very acute, the lower lip 3-lobed, spreading, the middle lobe oval, about 25 mm. long and 11 mm. wide, obtusish, the lateral lobes narrowly elliptic, about 7 mm. long and 2 mm. wide, obtuse or rounded; ovary and capsules not seen.

Type in the U. S. National Herbarium, No. 1041351, collected along a quebrada thicket east of Neiva, Department of Huila, Colombia, 700 to 1,500 meters altitude, July 31, 1917, by H. H. Rusby and Francis W. Pennell (No. 470). An isotype is in the herbarium of the New York Botanical Garden. Holton's collection (K, NY) from Jicaramata near the Río Tuluá, Department of El Valle, is also of this species.

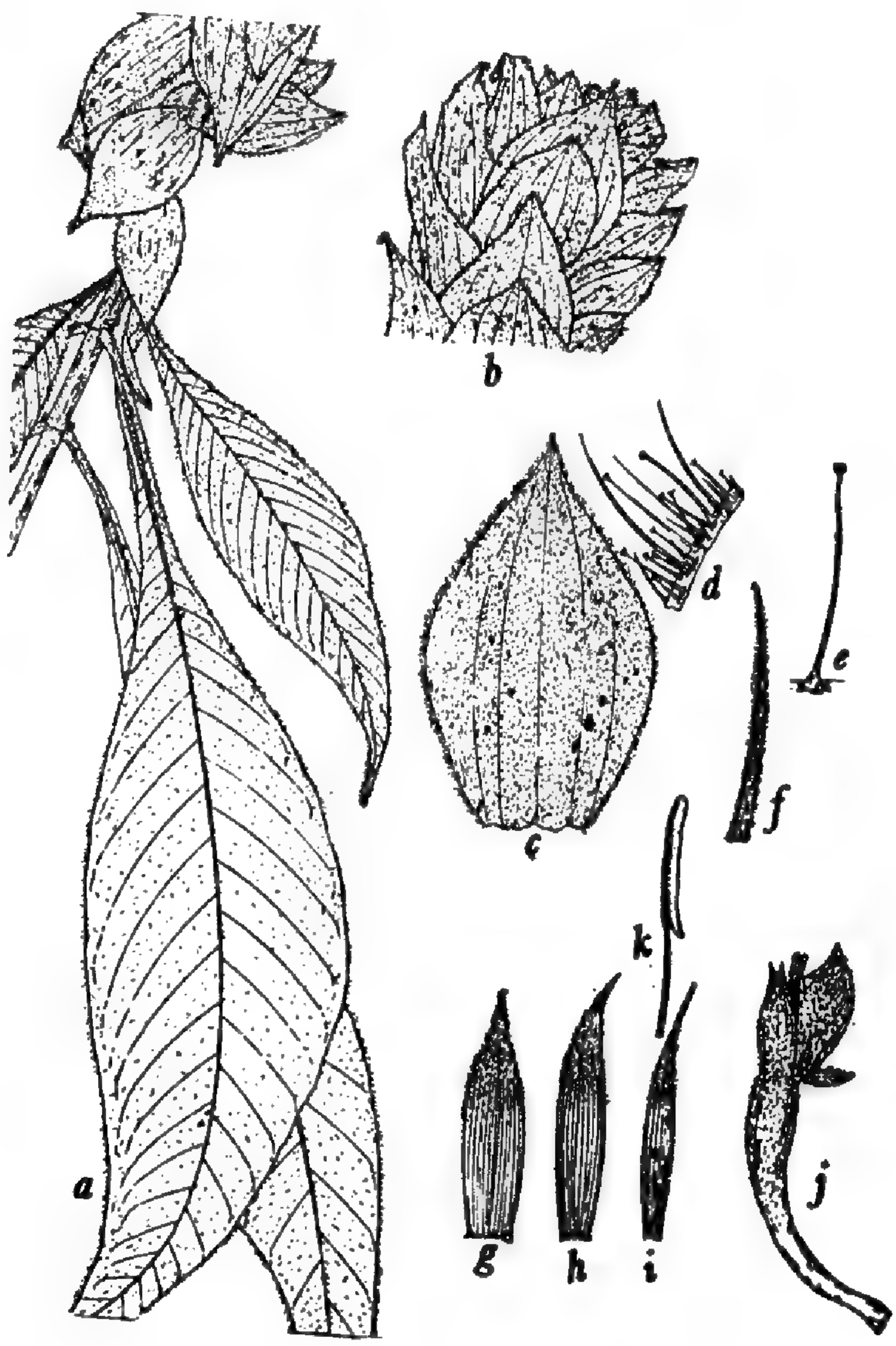

FIGURE 63.—*Aphelandra anomala* Leonard (*Rusby & Pennell* 470): *a*, Tip of stem showing basal portion of spike; *b*, tip of spike; *c*, bract; *d*, pubescence of bract; *e*, one of the glandular hairs from the bract; *f*, bractlet; *g*, posterior calyx segment; *h*, one of the anterior segments; *i*, one of the lateral segments; *j*, corolla; *k*, anther. (*a*, *b*, *j*, Half natural size; *c*, *f*, *g*–*i*, natural size; *d*, about 8 times natural size; *e*, about 17 times natural size; *k*, about 3 times natural size.)

Aphelandra anomala is a unique species easily recognized by its rather large, thin, glandular-pubescent bracts and thickly purple-dotted, yellowish corollas.

32. Aphelandra glischrochlamys Leonard, sp. nov. FIGURE 64

Suffrutex vel frutex, caulibus glabris, subquadrangularibus; lamina foliorum oblongo-elliptica, acuminata, basi angustata, in petiolum

decurrens, submembranacea, integra vel leviter crenata, utrinque glabra vel subtus in costa et venis lateralibus parce et minute hirtella; petioli breves, crassi, glabri vel parce hirtelli; spicae terminales, solitariae, subsessiles, rhache dense glanduloso-pilosa, pilis patulis; bracteae oblongo-ellipticae, puberulae et glanduloso-pilosae, ciliatae; bracteae acuminatae, pilosae et ciliatae; calycis segmenta subaequalia, subcoriacea, striata, marginibus subhyalinis, pilosula, pilis glandulosis, patulis, apice bractearum longissimis, segmentum posterius lanceolatum, apice tridentatum, dentibus anguste triangularibus, segmenta anteriora et lateralia anguste lanceolata, apice graciliter acuminata; corolla coccinea(?), parce hirtella, pilis glandulosis vel eglandulosis, bilabiata, labio superiore erecto, ovato, acuto, labio inferiore trilobato, lobis obtusis, basi angustatis, lobo medio suborbiculari vel ovali, lobis lateralibus ellipticis, minoribus; stamina exserta, antheris utrinque acutis, apice flocculosis, filamentis unifariam pilosis; ovarium apice pilosum; capsulae ignotae.

Suffrutescent herbs or shrubs up to 1 meter high or more; stems glabrous, subquadrangular; leaf blades oblong-elliptic, up to 21 cm. long and 8 cm. wide, acuminate, narrowed at base and decurrent on the petiole, submembranaceous, entire or shallowly crenate, both surfaces glabrous except the costa and lateral veins of the lower surface, these sparingly and minutely hirtellous; petioles about 5 mm. long, thick, glabrous or sparingly hirtellous; spikes terminal, solitary, subsessile, up to 12 cm. long and 25 mm. wide (excluding corollas), the rachis densely glandular-pilose, the hairs spreading, up to 1 mm. long; bracts oblong-elliptic, 21 mm. long, 7 mm. wide, puberulous and glandular-pilose, the minute eglandular hairs intermixed with slender glandular ones up to 0.25 mm. long, the marginal hairs up to 1 mm. long; bractlets slenderly acuminate, pilose and ciliate, the hairs gland-tipped and about 0.5 mm. long, spreading; calyx segments subequal, 18 to 19 mm. long, subcoriaceous, striate with subhyaline margins, pilosulous, the hairs spreading, glandular, 0.25 to 0.3 mm. long or those near the tip up to 1.5 mm. long, the posterior segment lanceolate, 3.25 mm. wide near base, tridentate at tip, the teeth triangular-subulate, 1.25 to 4 mm. long, the lateral teeth shorter or longer than the middle one, all about 0.5 mm. wide at base, the posterior and anterior calyx segments narrowly lanceolate, the anterior pair 2 mm. wide near base, the lateral ones 1.5 mm. wide; corollas 4 to 7 cm. long, red (?), sparingly hirtellous, the hairs 0.25 to 0.3 mm. long, some of them gland-tipped, the tube 3.5 to 4 cm. long, 4.5 mm. broad at base, slightly narrowed above base, 6 mm. broad at mouth, the upper lip erect, ovate, 1.5 cm. long and 16 mm. wide, acute, the lower lip spreading, 3-parted, the lobes obtuse or rounded, narrowed at base, the middle lobe suborbicular to oval, up to 25 mm. long and 20 mm. wide, the lateral lobes elliptical, about 12 mm. long and 8 mm. wide; stamens exserted, equaling

or slightly exceeding the upper lip, the anthers 6 mm. long, 1 mm. wide, acute at both ends, webby at tip, curved dorsally, the filaments bearing a line of spreading white hairs about 0.75 mm. long, otherwise glabrous; ovary pilose at tip; capsules not seen.

Type in the herbarium of the Royal Botanic Gardens, Kew, collected along the road to Sonsón, Department of Antioquia, Colombia, by J. Triana. An isotype is also in that herbarium.

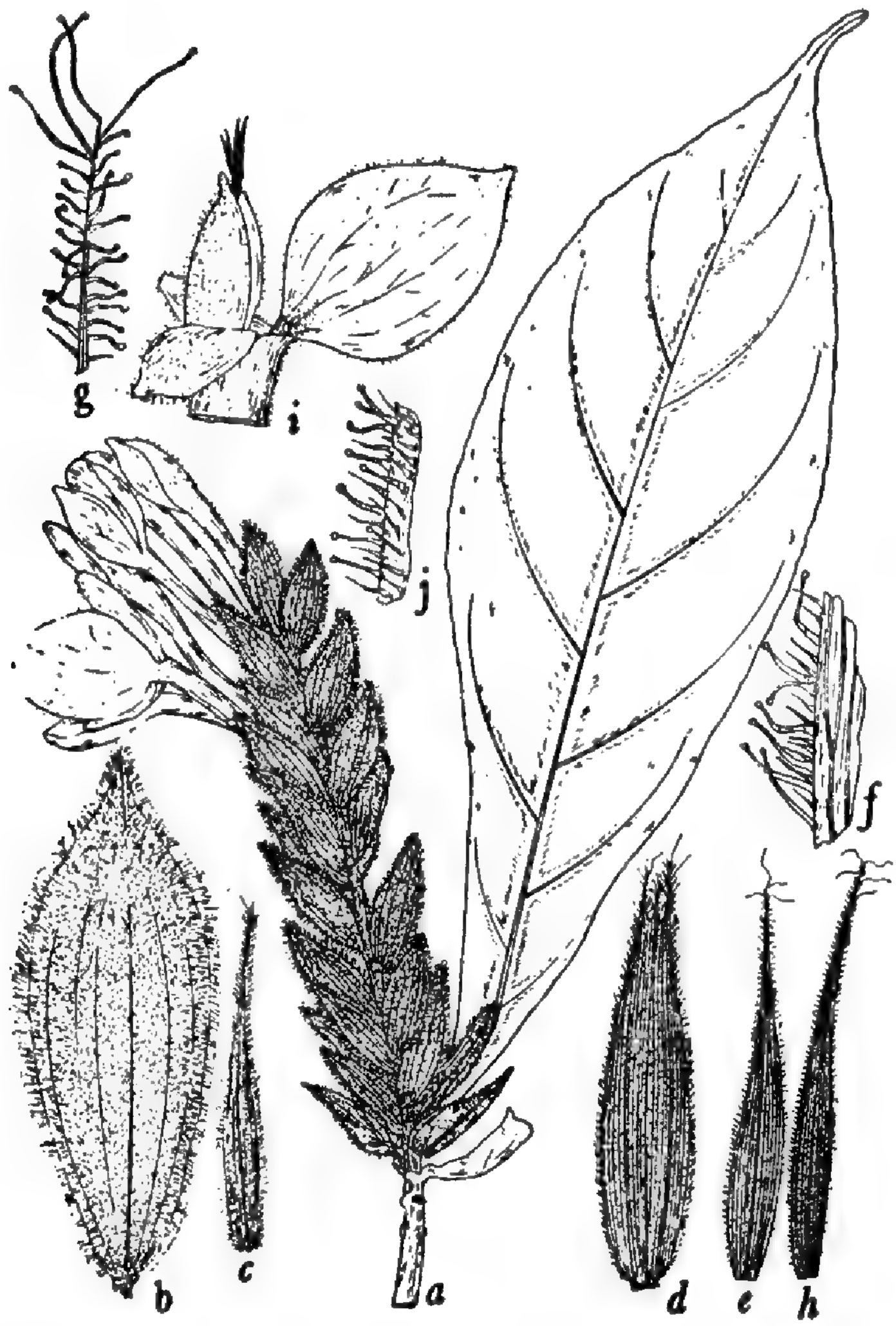

FIGURE 64.—*Aphelandra glischrochlamys* Leonard (*a–h*, *Triana* s.n.; *i*, *j*, *Patin* s. n.): *a*, Tip of plant (the shading on the leaf blade portrays the light area bordering costa and veins); *b*, bract; *c*, bractlet; *d*, posterior calyx segment; *e*, one of the anterior segments; *f*, marginal hairs of same; *g*, tip of same; *h*, one of the lateral calyx segments; *i*, tip of corolla; *j*, pubescence of corolla. (*a*, Half natural size; *b–e*, *h*, twice natural size; *f*, 18 times natural size; *g*, about 7 times natural size; *i*, natural size; *j*, 20 times natural size.)

A specimen collected in the Department of Antioquia, May, 1873, by Commander C. Patin (K), is also of this species.

The upper surface of the leaf blades of the type material has dried to a dull blackish olive with a lighter area bordering costa and lateral veins, suggesting that the upper surfaces of the fresh leaves may have been purple with costa and veins banded possibly with light green or

yellowish green. The specific epithet is derived from the Greek words γλίσχρος, sticky or clammy, and χλαμύς, military cloak (i. e., bract).

33. **Aphelandra phlogea** Leonard, sp. nov. FIGURE 65

Frutex, caulibus teretibus, glabris vel sursum parce puberulis; lamina foliorum oblongo-elliptica, acuminata, basi angustata, in petiolum decurrens, integra, supra subglabra, costa et venis parce hirsutis, subtus puberulis; petioli minute puberuli; spicae 1 vel plures, spica terminalis subsessilis, spicae laterales pedunculatae, bracteis imbricatis, ascendentibus vel appressis, rhache tenuiter et dense albo-pilosa, pilis nonnullis glandulosis; bracteae lanceolatae, apice acutae vel acuminatae, dense glanduloso-pilosae, pilis albis, rectis, patulis; bracteolae lanceolatae, acuminatae, glanduloso-pilosae; calycis segmenta lanceolata, acuminata, striato-nervata, glanduloso-puberula; corolla flammea, tenuiter pubescens, tubo angusto, leviter curvato, labio superiore erecto, elliptico, apice emarginato, labio inferiore patulo, trilobato, labio medio ovali, apice rotundato, lobis lateralibus aliquanto parvis, apice rotundatis; antherae apice cohaerentes, tomentoso-pilosae; ovarium glabrum.

Shrub up to 2 meters high; stems subterete, glabrous, or the uppermost portions sparingly puberulous; leaf blades oblong-elliptic, 9 to 16 cm. long, 2.5 to 5 cm. wide, rather slenderly acuminate, narrowed at base and decurrent on the petiole, entire, the upper surface subglabrous bearing a few scattered stout-based hairs, except on the costa and lateral veins (8 to 10 pairs), these sparingly hirsute, the hairs up to 0.5 mm. long, straight and spreading, the lower surface drying a lighter olive than the upper, puberulous, the hairs borne on the costa and veins barely 0.5 mm. long, the others much smaller; petioles (unwinged portion) 1 to 2 cm. long, including the winged portion up to 6 cm. long, finely puberulous; spikes 1 to several, terminal and subterminal, including flowers up to about 12 cm. long and 2.5 cm. broad, bracts ascending to appressed, the rachis finely and densely white-pilose, some of the hairs gland-tipped; terminal spike subsessile, the peduncles of the lateral ones up to 2 cm. long, densely puberulous; bracts lanceolate, 15 mm. long and 10 mm. wide or the lowermost as much as 3 cm. long and 12 mm. wide, acute to acuminate, densely white-glandular-pilose, the hairs 0.5 to 2 mm. long, straight and spreading; bractlets lanceolate, 18 mm. long, 3.5 mm. wide, acuminate, glandular-pilose; calyx about 17 mm. long, indurated at base, the posterior segment 4 mm. wide, the anterior pair 2 mm. wide, and the middle pair barely 3 mm. wide, all striate-nerved, glandular-puberulous, the hairs about 0.75 mm. long; corolla 5 cm. long, bright flame-color, finely and moderately pubescent, the hairs about 0.25 mm. long, the tube 3 cm. long, slightly curved, 4 mm. broad near the base, slightly constricted at tip of ovary, thence gradually enlarged to 6 mm. at mouth, the upper

lip erect, elliptic, 17 mm. long, 10 mm. wide, emarginate, the notch about 1 mm. deep, the lower lip spreading, the middle lobe oval, about 2 cm. long and 13 mm. wide, the lateral ones oblong, 1 cm. long and 4 mm. wide, all rounded; stamens slightly exserted beyond the upper lip; anthers 5.5 mm. long, slightly webby-pilose and adhering at their tips, the filaments pubescent or the upper portions of the two longer ones glabrous; ovary glabrous; capsules not seen.

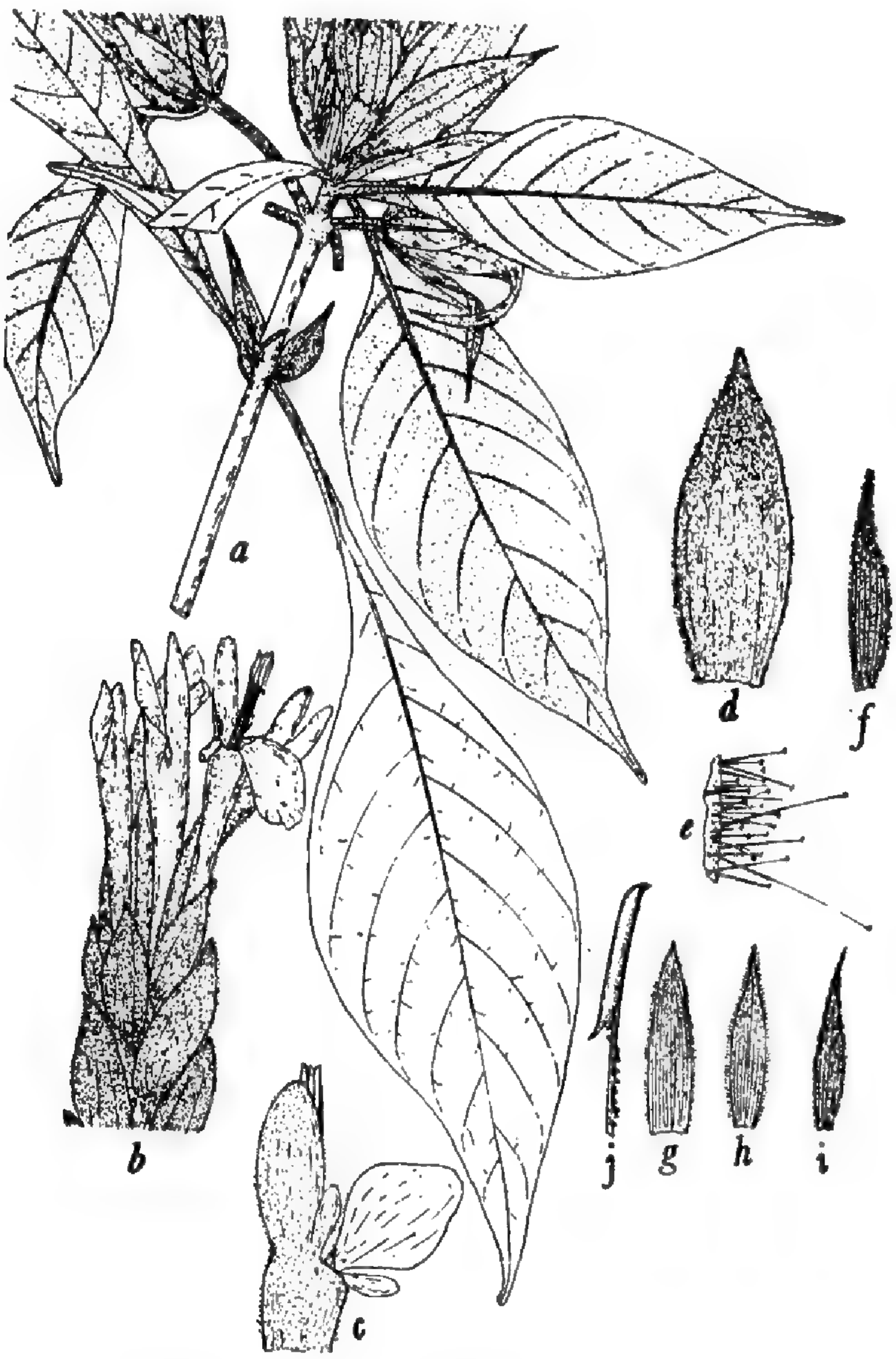

FIGURE 65.—*Aphelandra phlogea* Leonard (*Haught* 3944): *a*, Tip of stem showing base of inflorescence; *b*, tip of spike; *c*, tip of corolla to show lobes; *d*, bract; *e*, pubescence of bract; *f*, bractlet; *g*, posterior calyx segment; *h*, one of the anterior segments; *i*, one of the lateral segments; *j*, tip of stamen. (*a*, *b*, *c*, Half natural size; *d*, *f-i*, natural size; *e*, about 12 times natural size; *j*, 3 times natural size.)

Type in the U. S. National Herbarium, No. 1708676, collected in forest near stream above Manaure, Department of Magdalena, Colombia, 800 meters altitude, January 16, 1944, by Oscar Haught (No. 3944).

Aphelandra phlogea is probably related to *A. anomala* although the two species bear little resemblance to each other. *A. phlogea* is characterized by its bright, flame-colored corollas and by its rather large,

lanceolate, glandular-pilose bracts. Haught states in a note accompanying the type specimen that the flowers are very showy. The name *phlogea* (φλόγεος), flame-color, alludes to these brightly colored corollas.

34. Aphelandra fascinator Linden & André

Aphelandra fascinator Linden & André, Ill. Hort. 21: 42, *pl. 164*. 1874. Type locality: Colombia.

Suffrutescent, glabrous, the branches erect, terete, the young tips slightly puberulous; leaf blades large, 15 cm. long or more, 9 cm. wide, ovate, acute at apex, narrowed at base and decurrent on petiole, entire, the upper surface olive-green, the region bordering costa and lateral veins bright silver, the under surface reddish-violet with costa and veins dark violet; flowers borne in simple terminal spikes; bracts ovate, acuminate, ciliate, decussate, greenish purple, dorsally lineate; calyx segments acute, equaling one half the length of the corolla tube; corolla bright scarlet or cinnabar, the tube 7 to 8 cm. long, the limb 5 to 6 cm. broad, the upper lip erect, carinate, the lower 3-parted, the middle lobe ovate-spatulate, the lateral lobes ovate-unguiculate, spreading; stamens included.

I have seen no material of *Aphelandra fascinator* but the plate accompanying the original description suggests a relationship with *A. aurantiaca*. The name *fascinator* is a Latin word meaning enchanter.

35. Aphelandra alexandri Leonard

Aphelandra alexandri Leonard, Journ. Washington Acad. Sci. 25: 438. 1935. Type collected in high forest fringes at El Humbo, on Mount Chapón, 130 miles north of Bogotá, Department of Boyacá, Colombia, February 4, 1933, by A. E. Lawrance, No. 601. Type in the herbarium of the Riksmuseet, Stockholm. Fragment of type in the U. S. National Herbarium. Isotypes in the herbaria of the Kew, Missouri, and New York Botanical Gardens.

Suffrutescent, glabrous, up to 1 meter high; leaf blades elliptic, up to 15 cm. long and 5 cm. wide, acuminate, ending in a blunt point, narrowed at base and decurrent on the petiole, entire or undulate, green, the costa and lateral veins (9 to 10 pairs) rather prominent; petioles up to 3 cm. long, winged; flowers borne in terminal sessile spikes up to 10 cm. long and 2 cm. broad; bracts rather closely imbricate, erect or erect-spreading, brilliant red outside and yellow inside, oblong-elliptic, up to 18 mm. long and 3 mm. wide at base, and 1 cm. wide at middle, acute at apex, glabrous, subchartaceous, veiny; bractlets linear-subulate, 1 mm. wide at base, striate; calyx segments lanceolate, subequal, 8 or 9 mm. long, bearing triangular calluses at base (these conspicuous on the outside), the posterior segment oblong, 2.5 mm. wide, 2- or 3-toothed at tip, the anterior pair (1.5 mm. wide) and the lateral pair (1 mm. wide) narrowly lance-attenuate; corolla about 6 cm. long, red (?), glabrous except the lips, these minutely pruinose

within, the tube gradually enlarged from 4 mm. at base to 6 mm. at mouth, the upper lip erect, about 2 cm. long and 8 mm. wide, acute, the lower lip spreading, 3-lobed, the lobes subequal, oblong-obovate, about 2 cm. long, 7 to 8.5 mm. wide near the middle, acute or acutish at apex; stamens slightly exserted, the filaments sparingly, minutely, and inconspicuously pilose, the anthers 5.5 mm. long; capsules not seen.

A close relationship exists between *Aphelandra alexandri* and *A. lawranceae*. However, the bracts and corollas of *A. alexandri* are glabrous instead of pubescent as in *A. lawranceae*. The lower bracts of *A. alexandri* occasionally bear toward tip several definite but minute teeth.

The following note written by A. E. Lawrance accompanies the type specimen: "The two colors (brilliant red on the outside and yellow on the inside of the sepals) make the red appear orange. Outstanding plant worth propagating. Said to be used as a remedy for worms in children by boiling flowers in hot water and drinking same." The species is named for Alexander E. Lawrance.

36. **Aphelandra lasiophylla** Leonard, sp. nov. FIGURE 66

Frutex, caulibus teretibus, dense strigosis, pilis brunnescentibus, arcte appressis; lamina foliorum oblongo-elliptica, breviter acuminata, basi angustata, in petiolum decurrens, coriacea, integra vel undulata, supra glabra vel parce strigosa, subtus dense pilosa vel subtomentosa; petioli breves, crassi, dense pilosi vel subtomentosi, pilis brunnescentibus; spicae terminales, solitariae, subsessiles, bracteis laxe imbricatis, rhache argenteo-pubescente; bracteae anguste ovatae, coriaceae, glabrae, acutae, parce ciliolatae, costa et nervis lateralibus obscuris; bracteolae lanceolatae, attenuatae, acutae, carinatae, dorso albo-tomentosae, areis marginalibus angustis, glabris, striatis; calycis segmenta acuta, coriacea, obscure striata, molliter pubescentia, segmentum posterius oblongo-lanceolatum, anteriora lanceolata, lateralia anguste lanceolata; corolla (immatura) tenuiter pubescens; ovarium glabrum.

Shrubs; stems terete, densely strigose, the hairs light brown, 0.5 mm. long, closely appressed; leaf blades oblong-elliptic, up to 28 cm. long and 10 cm. wide, short-acuminate at apex, narrowed at base and decurrent on the petiole, coriaceous, entire or undulate, the upper surface glabrous or sparingly strigose, the lower surface densely brown pilose or subtomentose, the hairs ascending, up to 1 mm. long, the costa and lateral veins (about 15 pairs) prominent below, less so above; petioles up to 1.5 cm. long and 3 mm. in diameter, densely brown pilose or subtomentose; spikes terminal, solitary, subsessile, about 13 cm. long and 1.5 cm. broad, loosely imbricate, the rachis silvery and finely pubescent; bracts narrowly ovate, 1.5 cm. long, 7 mm. wide near base, acute, coriaceous, glabrous, sparingly ciliolate, the costa and lateral

nerves obscure; glandular area not apparent; bractlets lanceolate, 2.5 mm. wide near base, attenuate, acute, carinate, dorsally white-tomentose except a narrow marginal area, this glabrous, subhyaline and striate; calyx 14 mm. long, the segments coriaceous, obscurely striate, acute, finely pubescent, the posterior segment oblong-lanceolate, 5 mm. wide near base, the anterior pair lanceolate, 3 mm. wide near base, the lateral pair narrowly lanceolate, 2.5 mm. wide at base; corolla (very immature) finely pubescent; ovary glabrous.

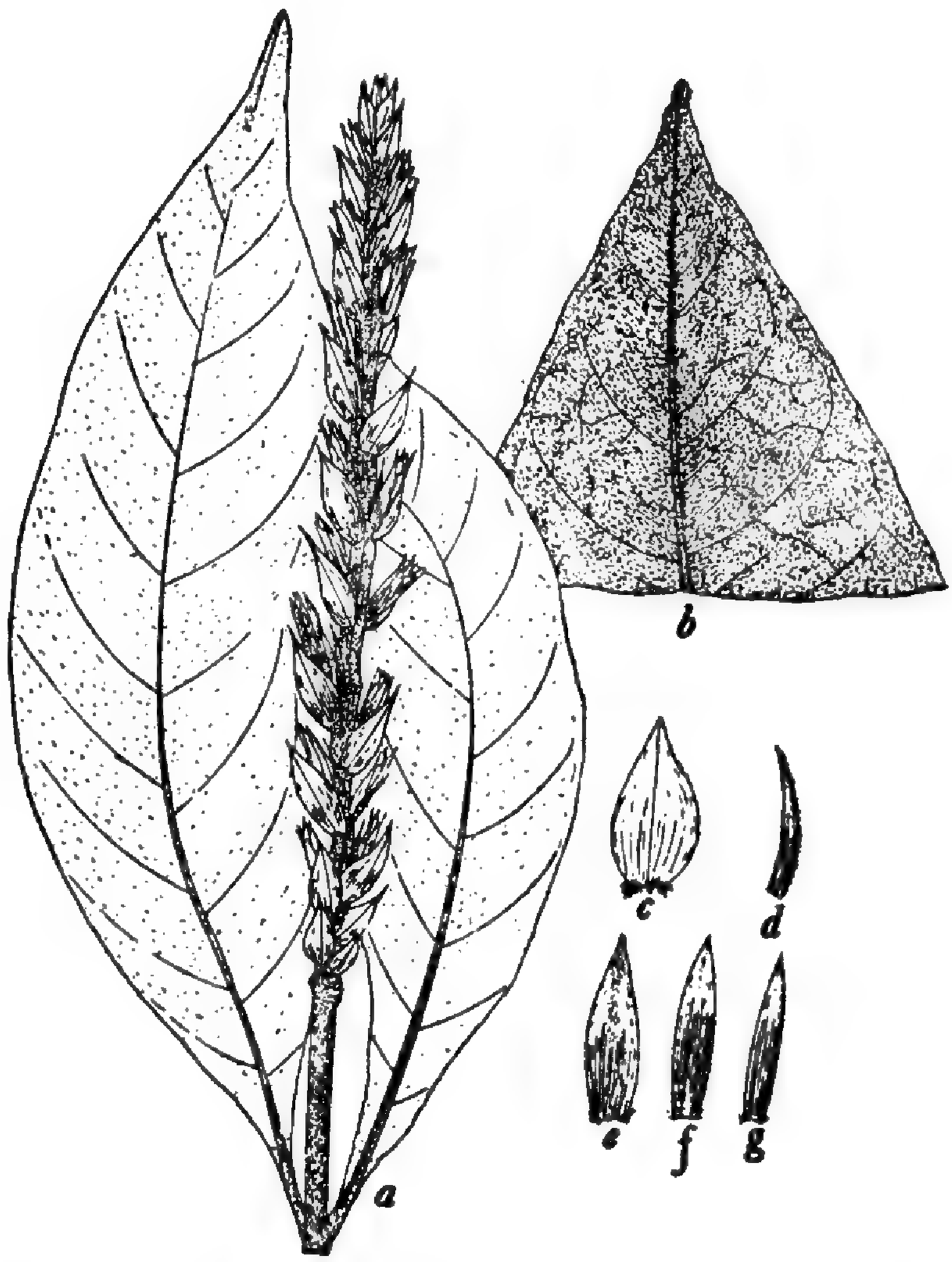

FIGURE 66.—*Aphelandra lasiophylla* Leonard (*Triana* s. n. Antioquia, Colombia): *a*, Tip of stem; *b*, tip of lower leaf blade (lower surface); *c*, bract; *d*, bractlet; *e*, posterior calyx segment; *f*, one of the anterior segments; *g*, one of the lateral segments. (*a*, *b*, Half natural size; *c*–*g*, natural size.)

Type in Herbario Nacional Colombiano, collected in the Department of Antioquia, Colombia, 1,300 meters altitude, May, 1852, by J. Triana (s. n.).

Aphelandra lasiophylla has apparently no close affinity to other Colombian species. Its distinguishing characters lie in the brown, densely pilose or subtomentose undersurfaces of the leaf blades and the solitary terminal spikes with a finely silvery pubescent rachis. The name *lasiophylla* is derived from λάσιος, shaggy, and φύλλον, leaf.

37. Aphelandra conformis Leonard, sp. nov. FIGURE 67

Herba, caulibus ascendentibus, subquadrangularibus, glabris vel parce hirtellis, pilis recurvatis; lamina foliorum oblongo-ovata, acuminata (apice ipso obtuso), basi angustata et breviter in petiolum decurrens, submembranacea, integra vel leviter crenata, utrinque glabra vel subtus in costa et venis lateralibus plus minusve strigosa; petioli breves, parce strigosi; spicae terminales, solitariae, subsessiles, rhache angulata, minute et parce puberula; bracteae rhombeo-ovatae, subacutae, submembranaceae, extus minute puberulae, intus subglabrae, eciliatae vel apice minute ciliolatae, venis prominentibus, venulis crasse reticulatis; bracteolae anguste lanceolatae, graciliter acuminatae, subcarinatae, striatae, subcoriaceae, apice striatae, minute puberulae; calycis segmenta subaequalia, subcoriacea, minute et obscure puberula, segmentum posterius lanceolatum, acuminatum, apice aliquando dentem minutum ferens, anteriora anguste, lanceolata, graciliter acuminata, lateralia lineari-lanceolata, graciliter acuminata; corolla aurantiaca, parce et subtiliter pubescens, bilabiata, labio superiore erecto, ovato, obtuso vel rotundato, inferiore trilobato, lobis obovatis, rotundatis, medio majore; ovarium parce puberulum; capsulae ignotae.

Herbs up to 40 cm. high; stems ascending, subquadrangular, glabrous or sparingly hirtellous, the hairs recurved, up to 0.25 mm. long; leaf blades oblong-ovate, up to 10 cm. long and 4 cm. wide, acuminate (the tip itself blunt), narrowed at base and briefly decurrent on the petiole, submembranaceous, entire or shallowly crenate, both surfaces glabrous or the costa and lateral veins (9 or 10 pairs) of the lower surface strigose, the hairs about 0.75 mm. long; petioles up to 1.5 cm. long, sparingly strigose, the hairs similar to those of costa and veins; spikes terminal, solitary, subsessile, 3 to 8 cm. long, about 2 cm. broad (without corollas), the rhachis angled, minutely and sparingly puberulous; bracts rhombic-ovate, 2 cm. long, 9 mm. wide, subacute, submembranaceous, rather prominently nerved, the veinlets coarsely reticulate, the outer surface minutely puberulous, the inner glabrous or nearly so, the margins eciliate or toward tip very minutely ciliolate; bractlets lance-subulate, 7 mm. long, 0.75 mm. wide at base, subcarinate, striate, subcoriaceous, minutely puberulous toward tip; calyx segments subequal, 8.5 to 9 mm. long, subcoriaceous, striate (the nerves swollen at base), minutely and inconspicuously puberulous, the posterior segment lanceolate, 2 mm. wide, acuminate, sometimes with a minute tooth near tip, the anterior segments narrowly lanceolate and slenderly acuminate, 1.5 mm. wide near base, the lateral segments linear-lanceolate, 0.75 mm. wide near the base, slenderly acuminate; corolla orange-scarlet, 5 cm. long, sparingly and finely pubescent, the hairs about 0.25 mm. long, the tube about 3 mm. broad at base, the mouth 7 mm. broad, the upper

lip erect, ovate, 13 mm. long and 12 mm. wide, obtuse or rounded, the lower lip 3-parted, the lobes obovate, rounded, the middle one 15 mm. long and 9 mm. wide, the lateral ones 13 mm. long and 7 mm. wide; stamens slightly exserted but shorter than the upper lip; ovary sparingly puberulous; capsules not seen.

Type in the herbarium of the Royal Botanic Gardens, Kew, collected in damp primeval woods near Viotá, Department of Cundinamarca, Colombia, 1,800 meters altitude, February 18, 1876, by Edouard François André (No. 1658). An isotype is also in the Kew herbarium.

FIGURE 67.—*Aphelandra conformis* Leonard (*a-g*, *André* 1658; *h*, *Triana*): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, posterior segment of calyx; *e*, one of the anterior segments; *f*, tip of same; *g*, one of the lateral segments; *h*, tip of corolla. (*a*, Half natural size; *b*, *h*, natural size; *c-e*, *g*, twice natural size; *f*, 15 times natural size.)

A Triana specimen (K) collected at Pandi, Department of Cundinamarca, 1,700 meters altitude, is also of this species.

The specific epithet alludes to its close relationship to the following species, *A. lawranceae*.

38. Aphelandra lawranceae Leonard

Aphelandra lawranceae Leonard, Journ. Washington Acad. Sci. 25: 437. 1935. Type in the U. S. National Herbarium, No. 1482539, collected in forest region at Agua Perro on Mount Chapón, Department of Boyacá, Colombia, 1,650 meters altitude, June 17, 1932, by A. E. Lawrance (No. 244). Named for Mrs. A. E. Lawrance.

Suffrutescent, up to 1.2 meters high; stems terete, glabrous, more or less verrucose, the internodes 1.5 to 4 cm. long; leaf blades narrowly oblong-elliptic, up to 17 cm. long and 3 cm. wide, acuminate at apex (the tip itself blunt), gradually narrowed from about the middle to base and decurrent on the petiole, entire or undulate, both surfaces glabrous, the lower surface often dark mauve; petioles up to 2 cm. long; spike terminal (sometimes subtended by a whorl of 4 or 5 pairs of leaves), sessile, up to 7 cm. long and 2 cm. broad, the rachis puberulous; bracts rather closely imbricate, erect-spreading, oblong-lanceolate, up to 2.5 cm. long and 9 mm. wide (narrowed to 5 mm. at base), abruptly acuminate to acute at apex, entire, puberulous, ciliate; bractlets narrowly lanceolate, up to 9 mm. long and 1.5 mm. wide, 1-nerved, striate, puberulous, some of the hairs glandular; calyx segments subequal, about 9 mm. long, narrowly lanceolate, acuminate, the posterior one 3 mm. wide, minutely bidentate at apex, the anterior pair 1.7 mm. wide, the lateral pair 1.5 mm. wide, all striate and puberulous toward tip (glandular and eglandular hairs mixed); corolla up to 6.5 cm. long, brilliant red, finely pubescent, the tube gradually enlarged from 3 mm. at base to 5 mm. at throat, the upper lip entire, oblong, about 15 mm. long and 6 mm. wide, the lower lip 3-lobed, the lobes subequal or the lateral ones slightly shorter, up to 2 cm. long, the middle lobe obovate, up to 8 mm. wide, the lateral lobes oblong, up to 6 mm. wide; filaments about 3.5 cm long, glabrous or minutely pubescent toward base; staminode slender, about 13 mm. long, pubescent at tip; style puberulous; ovary glabrous below, pilosulous above.

BOYACÁ: Mount Chapón, *Lawrance* 243 (K); 244 (K, US type); 252 (K, US).
CUNDINAMARCA: Bogotá, *Saunders* s. n. (K).

39. **Aphelandra colombiensis** Lindau ex Leonard, sp. nov. FIGURE 68

Suffrutex; caulibus parce ramosis, subteretibus, glabris vel parce hirtellis vel ad nodos aliquanto hirtellis; lamina foliorum anguste oblongo-elliptica, acuminata (apice ipso obtuso), basi angustata, in petiolum decurrens, submembranacea, integra vel undulata, utrinque glabra vel in costa hirtella et subtus in venis lateralibus puberula vel hirtella; petioli graciles, plus minusve hirtelli; spicae plures, terminales, subsessiles, confertae, rhache angulata, subtiliter puberula, pilis patulis; bracteae ascendentes, imbricatae, oblongo-lanceolatae, acutae, basi angustatae, submembranaceae, puberulae, ciliatae, pilis albis, patulis vel ascendentibus; bracteolae anguste lanceolatae, graciliter acuminatae, striatae, apice parce puberulae; calycis segmenta subaequalia, subcoriacea, striato-nervata, ciliolata, apice parce puberula, segmentum posterius lanceolatum, aliquando abrupte acuminatum, prope apicem aliquando pilos paucos minutos ferens, anteriora et lateralia anguste lanceolata, graciliter acuminata; corolla coccinea,

aliquando pubescens, tubo angusto, labio superiore erecto, oblongo-ovato, acuto, labio inferiore trilobato, lobis subaequalibus, patulis vel reflexis, oblanceolatis, subobtusis; stamina exserta, filamentis glabris, antheris linearibus, basi acutis, apice subobtusis, pubescentibus; stylus retrorse hirtellus; ovarium pilosum; capsulae ignotae.

Suffrutescent; stems up to 1.3 meters high, subterete, glabrous or very sparingly hirtellous or moderately hirtellous at the nodes, sparingly branched; leaf blades narrowly oblong-elliptic, up to 12 cm. long and 3 cm. wide, acuminate (the tip slender, often curved, its apex blunt), narrowed at base and decurrent on the petiole, sub-

FIGURE 68.—*Aphelandra colombiensis* Lindau ex Leonard (*Lehmann* 7440): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, posterior calyx segment; *e*, tip of same; *f*, one of the anterior calyx segments; *g*, one of the lateral segments; *h*, tip of same. (*a*, Half natural size; *b*, natural size; *c*, *d*, *f*, *g*, twice natural size; *e*, 20 times natural size; *h*, 16 times natural size.)

membranaceous, entire or undulate, both surfaces glabrous or nearly so except the costa and lateral veins (9 or 10 pairs), these rather obscure, the costa of both surfaces hirtellous, the hairs about 0.25 mm. long, subappressed, the lateral veins beneath puberulous or sparingly hirtellous; petioles up to 2.5 cm. long, slender, more or less hirtellous; spikes several, terminal, subsessile, crowded, forming a headlike cluster up to 8 cm. long and 5 cm. broad, these subtended by a pair of leaflike bracts about 7 cm. long and 8 mm. wide, the rachis angled, finely puberulous, the hairs spreading; bracts ascending, closely imbricate, oblong-lanceolate, 30 mm. long, 8 mm. wide slightly below middle, acute, narrowed toward base, submembranaceous, puberu-

lous, ciliate, the marginal hairs up to 0.75 mm. long, ascending to spreading, the costa and lateral nerves barely prominent; bractlets narrowly lanceolate, 11 mm. long, 1 mm. wide at base, slenderly acuminate, carinate, striate-nerved, sparingly puberulous toward tip; calyx segments subequal, subcoriaceous, striate-nerved, sparingly puberulous toward tip, the posterior segment lanceolate, rather abruptly acuminate, sparingly ciliolate at tip, a few of the hairs sometimes glandular, the anterior and lateral segments narrowly lanceolate, slenderly acuminate, sparingly ciliolate, the anterior ones 1.5 mm. wide near base, the lateral ones 1 mm. wide; corollas dark scarlet, up to 6 cm. long, rather densely pubescent, the hairs white, more or less curved, about 0.25 mm. long, the tube 2 mm. broad at base, 5 mm. broad at mouth, the upper lip erect, oblong-ovate, 2 cm. long, 9 mm. wide near base, acute, the lower lip 3-parted to base, spreading or reflexed, subequal, oblanceolate, about 18 mm. long and 4 mm. wide, subobtuse, obscurely veiny; stamens exserted about 15 mm. beyond the mouth of the corolla tube, the filaments slender, glabrous, the anthers linear, straight or slightly curved, about 5 mm. long and 0.5 mm. wide, acute at base, subobtuse and hairy at tip, the style sparingly and more or less retrorsely hirtellous; ovary pilose at tip; capsules not seen.

Type in the herbarium of the Royal Botanic Gardens, Kew, collected in dense bushwood formations on the Altos de Mismis above Supía, Department of Cauca, Colombia, 1,700 to 2,000 meters altitude, July 1891, by F. C. Lehmann (No. 7440).

A specimen of Lehmann's No. 7440 in the Berlin Herbarium bears in Lindau's handwriting his determination *Aphelandra colombiensis* n. sp. A photograph (No. 8662) of this specimen is in the U. S. National Herbarium.

40. **Aphelandra boyacensis** Leonard, sp. nov. FIGURE 69

Frutex, caulibus sursum strigosis; lamina foliorum obovata, apice abrupte acuminata, basi angustata, leviter sinuato-dentata vel integra, supra glabra vel parce strigosa, subtus dense strigosa, costa et venis lateralibus prominentibus; spica terminalis, subsessilis, oblongo-ovatis, bracteis imbricatis, rhache strigosa; bracteae oblongo-ellipticae, acutae vel subobtusae, apiculatae, tenues, virides, pergamentaceae, glabrae, costa pubescente excepta; bracteolae lanceolatae, glabrae, tenues, venosae, apice spina parva terminatae; calycis segmenta lanceolata, apice acuta vel acuminata, substriata; corolla subgilva, fauce flava, fragrans, pubescens, labiis aliquanto brevibus, subaequalibus, labio superiore erecto, bilobato, lobis ovatis, rotundatis, apiculatis, labio inferiore trilobato, lobis ovalibus vel suborbicularibus, obtusis; ovarium glabrum.

Shrubs 1 to 2 meters high, up to 5 cm. in diameter at base, the branches upwardly strigose; leaf blades obovate, up to 25 cm. long

and 12 cm. wide, abruptly acuminate at tip, narrowed at base to a short petiole 5 mm. long, shallowly sinuate-dentate or entire, glabrous above or sparingly strigose, the lower surface densely strigose, the hairs about 1 mm. long, the costa and the lateral veins (6 to 12 pairs) rather prominent, more so than above; flowers borne in a subsessile termi-

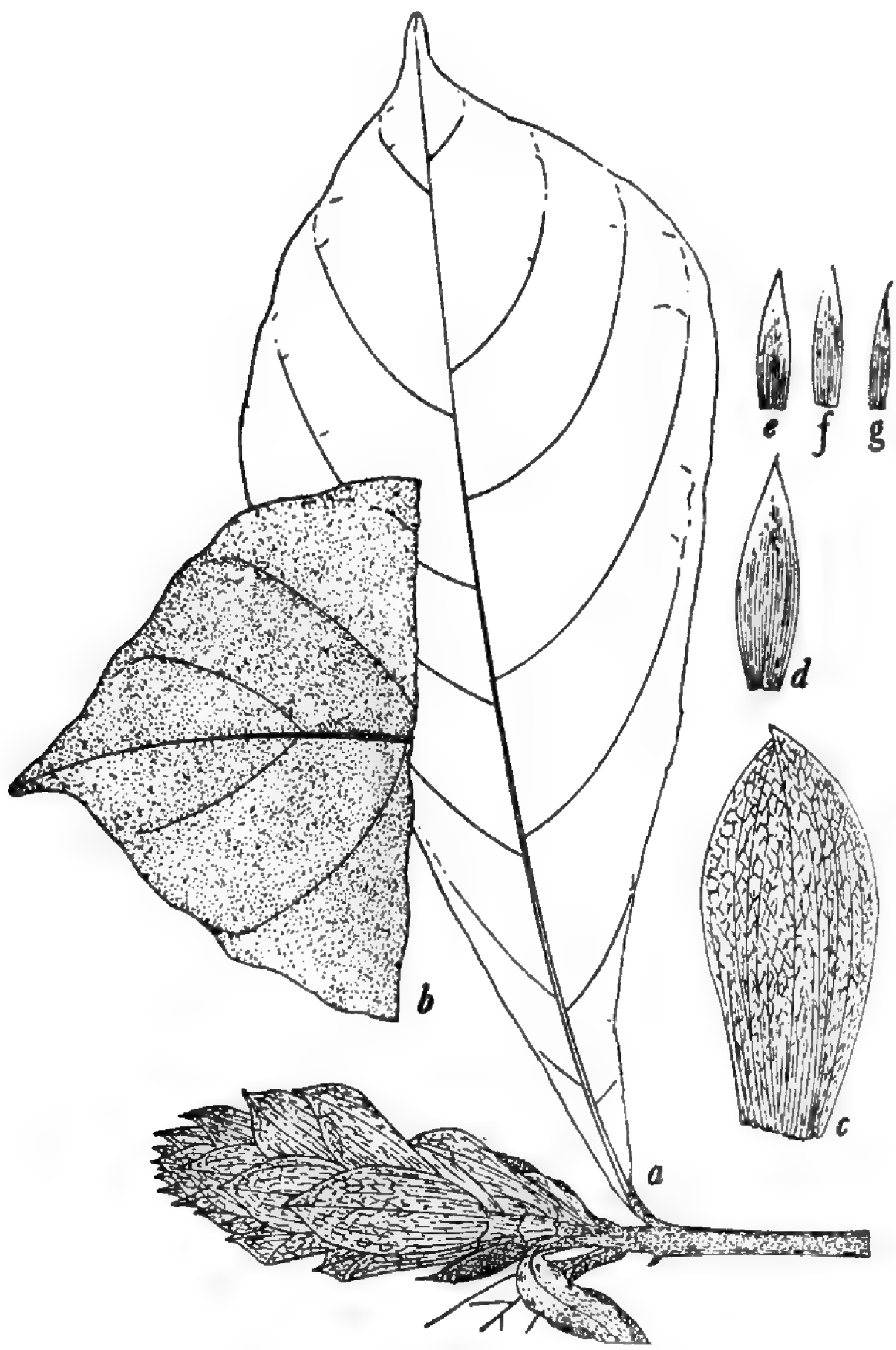

FIGURE 69.—*Aphelandra boyacensis* Leonard (*Lawrance* 565): *a*, Tip of stem; *b*, tip of leaf blade (lower surface); *c*, bract; *d*, bractlet; *e*, posterior calyx segment; *f*, one of the anterior segments; *g*, one of the lateral segments. (*a*, *b*, Half natural size; *c*–*g*, natural size.)

nal oblong-ovate spike about 7 cm. long and 3.5 cm. in diameter, the rachis sparingly strigose; bracts imbricate, oblong-elliptic, 3.5 cm. long, 17 or 18 mm. wide (the uppermost smaller), acute or obtusish (tipped by a point 0.5 mm. long), thin, green, coarsely reticulate (the meshes open), pergamentaceous, glabrous except the costa, this sometimes sparingly pubescent; bractlets lanceolate, 2 cm. long, 5 mm.

wide, glabrous, thin, veiny, each ending in a minute spine; calyx pale green, conical, the segments lanceolate, the posterior one about 15 mm. long and 3.5 mm. wide, the anterior pair slightly shorter and more narrowed, the lateral pair 13 mm. long and 3.5 mm. wide, all acute or acuminate and substriate; corolla pubescent without, about 3 cm. long, very fragrant, creamish, the throat yellow, the lobes ovate to suborbicular, about 8 mm. long; ovary glabrous; capsule not seen.

Type in the herbarium of the Riksmuseet, Stockholm, collected in a deep forest at El Humbo, Department of Boyacá, Columbia, "3,000 ft." altitude, November 7, 1932, by A. E. Lawrance (No. 565). Type fragments in the U. S. National Herbarium. Isotypes in the herbaria of the Missouri and the New York Botanical Gardens.

Aphelandra boyacensis has the general appearance of *A. prismatica* Nees of Brazil but can be separated by its larger and relatively wider leaf blades, these densely strigose beneath instead of practically glabrous, and by its shorter and broader spike. The corollas of *A. prismatica* have a more slender tube than do those of this new species and are yellow instead of cream and yellow. Named for the Department from whence the type was procured. Only a fragmentary corolla could be found for examination on the type specimen, this consisting practically of lobes only.

41. **Aphelandra arisema** Leonard, sp. nov. FIGURE 70

Herba vel suffrutex; lamina foliorum oblongo-lanceolata, acuminata (apice ipso obtuso), basi angustata, in petiolum decurrens, submembranacea, integra vel undulata, utrinque glabra vel subtus parce puberula; spicae terminales, solitariae (?), subsessiles, rhache angulata, subtiliter puberula, pilis patulis; bracteae ascendentes, imbricatae, oblongo-ellipticae, acutae, basi angustatae, puberulae, ciliatae, nervis prominentibus, venulis crasse reticulatis; bracteolae subulatae, striatae, puberulae; calycis segmenta lanceolata, graciliter acuminata, subchartacea, striata, puberula; corolla ignota; capsulae cylindrico-clavatae, apice obtusae et apiculatae, minute puberulae; retinacula recta, apice cucullata; semina plana, suborbiculata, glabra.

Herb or low shrub; leaf blades oblong-lanceolate, up to 30 cm. long and 6 cm. wide, rather slenderly and somewhat abruptly acuminate (the tip itself blunt), narrowed at base and decurrent on the petiole, submembranaceous, entire or undulate, glabrous or the lower surface sparingly puberulous; spike terminal, subsessile, solitary (?), up to 26 cm. long, 1.5 to 2.5 cm. broad, the rachis angled, finely puberulous, the hairs spreading; bracts ascending or nearly erect, rather closely imbricate, oblong-elliptic, 2.5 cm. long, 8 mm. wide at middle, acute, narrowed at base, puberulous, ciliate, the marginal hairs about 0.25 mm. long, the nerves rather prominent, the veinlets coarsely reticulate; bractlets subulate, 5 mm. long, 0.75 mm. wide near base, slenderly

acuminate, striate, puberulous; calyx 1 cm. long, the segments lanceolate, slenderly acuminate, subchartaceous, striate, puberulous, the posterior segment 2.5 mm. wide near base, the anterior segments 2 mm. wide and the lateral segments 1.5 mm. wide near the base; corolla not seen; capsules cylindrically clavate, about 1.5 cm. long, 5 mm. broad,

FIGURE 70.—*Aphelandra arisema* Leonard (*Triana* s. n., Nóvita): *a*, Spike; *b*, leaf; *c*, bract; *d*, bractlet; *e*, posterior calyx segment; *f*, one of the anterior segments; *g*, one of the lateral segments; *h*, tip of same; *i*, retinaculum. (*a*, *b*, Half natural size; *c*, natural size; *d-g*, twice natural size; *h*, 10 times natural size; *i*, 4 times natural size.)

2 mm. thick, obtuse and apiculate at tip, minutely puberulous; retinacula erect, nearly straight, about 3 mm. long, 0.75 mm. broad at base, the tip bluntly cucullate; seeds brown, flat, suborbicular, 2.5 mm. in diameter, glabrous.

Type in the herbarium of the Royal Botanic Gardens, Kew collected in the Province of Chocó, Nóvita, Colombia, 170 meters

altitude, March, 1853, by J. Triana. An isotype, badly fragmented, is in the Herbario Nacional Colombiano.

The lack of corollas on the material examined might possibly be due to cleistogamy. The type material is in rather poor condition and consists only of detached leaves and spikes. Nevertheless, the species seems clearly distinct. The specific epithet is from the Greek αηυ , meaning very remarkable.

A lighter area bordering the costa of the leaf blades, which is noticeable in the dried material, may indicate that, typical of a number of species of *Aphelandra* of the *Lagochilium* type, the leaf blades of the live plants were variegated, possibly purple with light greenish or whitish areas following costa and veins.

42. **Aphelandra killipii** Leonard, sp. nov. FIGURE 71

Suffrutex, caulibus glabris; lamina foliorum magna, elliptica vel obovata, apice acuminata, apice ipso obtuso, basi angustata, in petiolum decurrens, supra glabra vel costa pilos raros minutos appressos ferens, minute alveolata, subtus parce et minute pubescens, pilis appressis, costa et venis aliquanto prominentibus; petioli breves, glabri; spica solitaria, triangularis, sessilis, anguste conica, bracteis arcte imbricatis, rhache glabra; bracteae coriaceae, oblongae, apice rotundatae, mucronatae, obscure striato-nervatae, glabrae, marginibus hyalinis; bracteolae minutae, triangulares, graciliter acuminatae, trinervatae; calycis segmenta minuta, glabra, triangularia, segmentum posterius apice bidentatum, alia graciliter acuminata; corolla subrubra, deorsum glabra, sursum glanduloso-pubescens, tubo angusto, labio superiore ovato, apice bilobato, lobis rotundatis et minute apiculatis, labio inferiore trilobato, lobo medio suborbiculari, lobis lateralibus oblongis, apice, rotundatis, fasciculum parvum pilorum ferentibus; antherae apice cohaerentes, dorso tomentosae; ovarium glabrum.

Coarse suffrutescent plants up to 80 cm. high; stems glabrous; leaf blades elliptic to obovate, up to 28 cm. long and 14.5 cm. wide, acuminate (the tip itself blunt), narrowed from middle or slightly above the middle to base and decurrent on the petiole, subchartaceous, glabrous above or the costa bearing a few appressed hairs about 0.5 mm. long, minutely alveolate, the lower surface sparingly and minutely pubescent, the hairs 0.25 mm. long or less, appressed, the costa and lateral veins (12 to 14 pairs) conspicuous, more so beneath than above; petioles thick (unwinged portion), up to 1 cm. long, glabrous; spike solitary, terminal, sessile, slenderly conic, about 10 cm. long, 2 cm. broad near base, the bracts appressed, the rachis glabrous; bracts coriaceous, oblong, 3 cm. long, about 1 cm. wide slightly above the middle, rounded and minutely mucronate at apex (the margins hyaline), apparently striate-nerved (the meshes of the reticulations com-

pressed), glabrous; bractlets minute, triangular, 2 mm. long, about 1 mm. wide at base, slenderly acuminate, 3-nerved, subhyaline; calyx segments about 0.75 mm. long, the posterior segment apparently bidentate, the others triangular-subulate, glabrous; corolla reddish, glabrous proximally, glandular-pubescent distally, the hairs barely

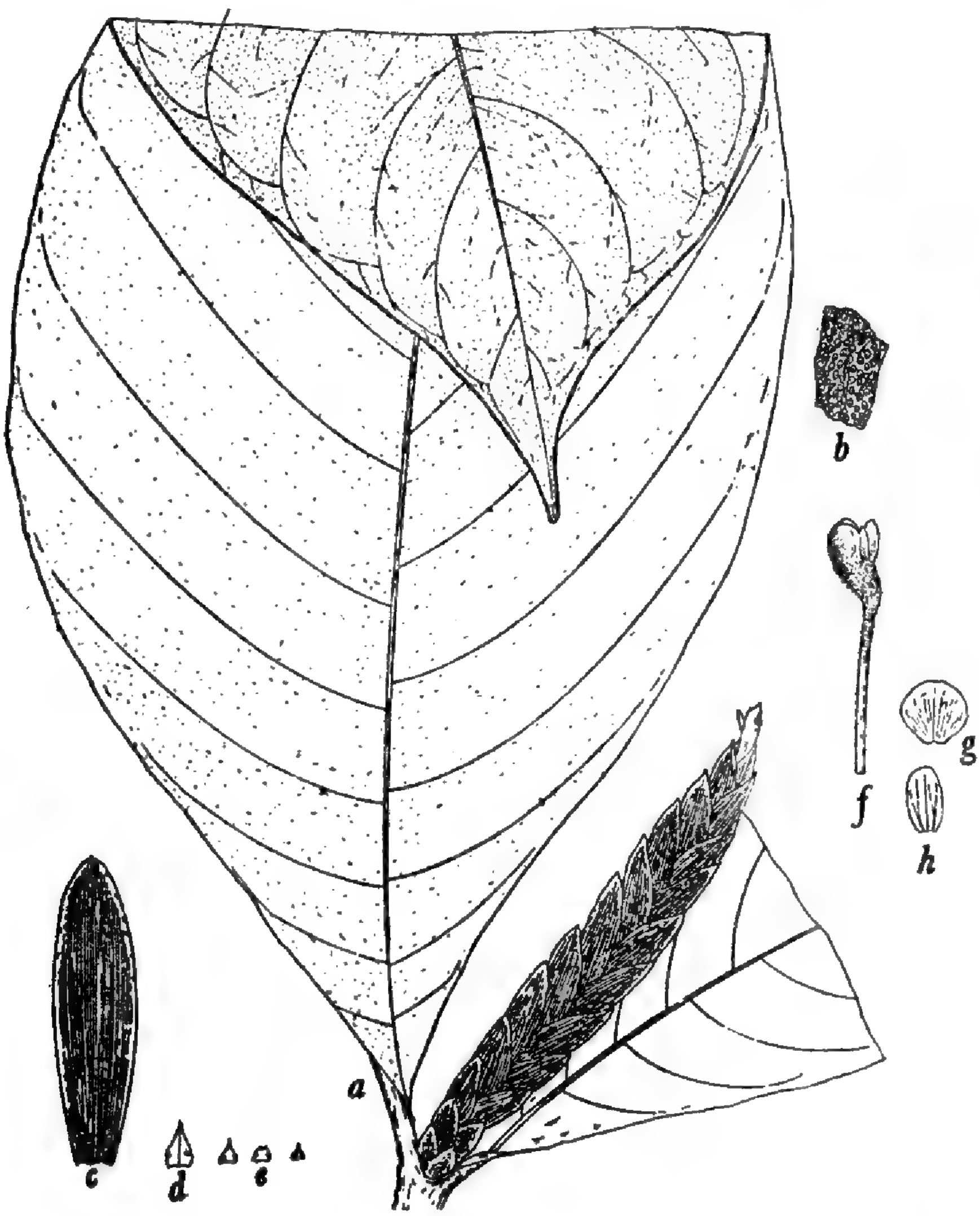

FIGURE 71.—*Aphelandra killipii* Leonard (*Killip* 35374): *a*, Tip of stem; *b*, upper surface of a portion of leaf blade to show markings (appearing alveolar under weak magnification); *c*, bract; *d*, bractlet; *e*, calyx segments; *f*, corolla; *g*, middle lobe of lower lip; *h*, lateral lobe. (*a*, *f*, Half natural size; *b*, about 10 times natural size; *c*, *g*, *h*, natural size; *d*, *e*, about one and a half times natural size.)

0.25 mm. long, the tube slender, the throat about 4 mm. broad, the upper lip ovate, about 4 mm. wide, bilobed at apex, the lobes rounded, about 1.5 mm. long, minutely apiculate, the middle lobe of the lower lip suborbicular, about 5 mm. long and 6 mm. wide, the lateral lobes oblong, about 6 mm. long and barely 3 mm. wide, obtuse, these and the lobes of the upper lip bearing a tuft of several minute hairs; stamens slightly exserted beyond the throat of the corolla, the anthers

barely 3 mm. long, adhering by the webby, dorsally borne hairs, these about 1 mm. long; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 1772091, collected in second growth forest at Andagoya, Department of Chocó, Colombia, 70 to 100 meters altitude, April 27, 1939, by E. P. Killip (No. 35374).

If compared with *Aphelandra dolichantha*, a related Colombian species, *A. killipii* can be recognized by its reddish flowers, glabrous stems, and obtuse bracts. The corolla of *A. dolichantha* is white or cream, the stem pubescent, at least toward tip, and the bracts acuminate.

43. Aphelandra cuatrecasasii Leonard, sp. nov. FIGURE 72

Suffrutex, caulibus deorsum glabris, sursum retrorso-strigosis, pilis brunneis; lamina foliorum oblongo-elliptica vel obovata, breviter acuminata, basi angustata, in petiolum decurrens, integra vel undulata, subcoriacea, supra glabra vel parce strigosa, subtus mediocriter vel dense strigosa; petioli strigosi; spica solitaria, terminalis, conica vel cylindrica, bracteis aliquanto laxe appressis, rhache strigosa; bracteae oblongo-ellipticae, apice subobtusae et apiculatae, striato-venosae, sursum glabrae, deorsum strigosae; bracteolae anguste lanceolatae, acuminatae, minutae, tenues; corolla gilva, dense brunneo-hirsuta, labiis subaequalibus, labio superiore oblongo, apice bilobato, lobis rotundatis, labio inferiore trilobato, lobo medio ovali, rotundato, lobis lateralibus lanceolatis, obtusis; ovarium glabrum.

Suffrutescent herbs up to 40 cm. high; stems glabrous below, the upper portions rather densely and retrorsely strigose, the hairs about 0.5 mm. long, brownish; leaf blades oblong-elliptic to obovate, up to 17 cm. long and 6.5 cm wide, short-acuminate, narrowed at base and decurrent on the petiole, subcoriaceous, entire or undulate, the upper surface green, glabrous or sparingly strigose, the hairs about 0.5 mm. long, the lower surface pale ashy, more densely strigose than above, the costa and veins (10 to 12 pairs) rather prominent; petioles (unwinged portion) about 1 cm. long, retrorsely strigose like the stems; spike solitary, terminal, about 12 cm. long, 2 cm. broad, the bracts rather loosely appressed, the rachis strigose; bracts oblong-elliptic, 3 cm. long, 14.5 mm. wide, obtusish and minutely apiculate at apex, apparently closely striate-veined (the meshes of the reticulations compressed), opaque, bordered by a narrow subhyaline margin about 0.5 mm. wide, the lower half of the bract strigose, the hairs 0.75 mm. long, the upper half glabrous; bractlets narrowly lanceolate, 6 mm. long, about 1 mm. wide at base, gradually narrowed into a slender tip, thin, sparingly strigose dorsally; calyx segments minute, triangular, about 0.75 mm. long and broad, acuminate, thin, subhyaline; corolla cream white, about 3 cm. long, densely hirsute, the hairs more or less appressed, 0.75 mm. long, brown, the tube 3.5 mm. broad at base, 5 mm.

broad at mouth, the lips about equal, the upper lip oblong, about 4 mm. wide, 2-lobed at tip, the lobes rounded, the middle lobe of the lower lip oval, about 9 mm. long and 7 mm. wide, rounded, the lateral lobes lanceolate, 8 mm. long and 2.5 mm. wide at middle, blunt at tip; stamens reaching the mouth of the corolla and probably slightly exserted; ovary glabrous; capsule not seen.

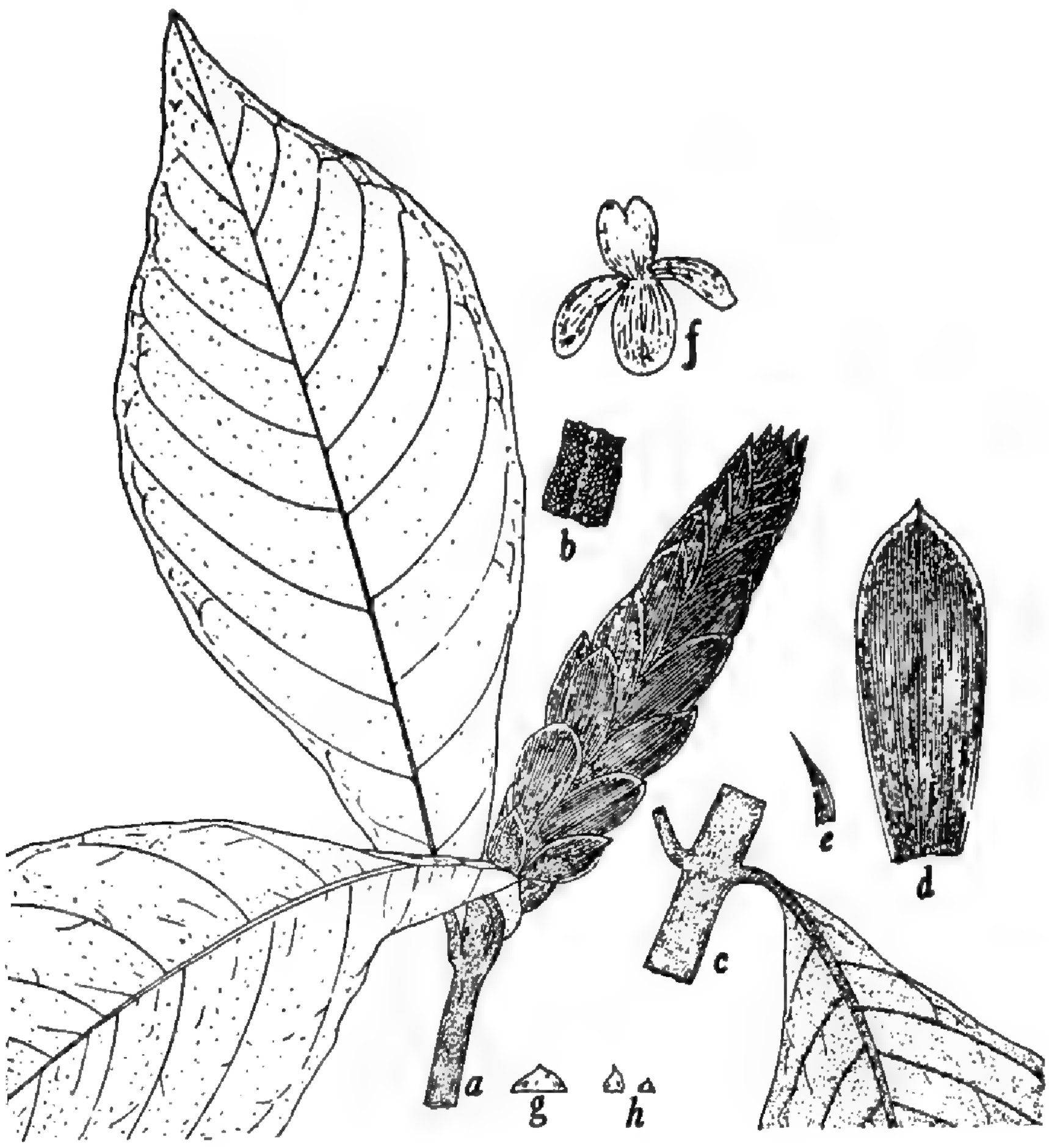

FIGURE 72.—*Aphelandra cuatrecasasii* Leonard (*Cuatrecasas* 16705): *a*, Tip of stem; *b*, microscopic view of upper leaf surface (appearing alveolate under lens); *c*, lower node showing part of leaf blade (lower surface); *d*, bract; *e*, bractlet; *f*, corolla limb; *g*, posterior calyx lobe; *h*, anterior and lateral lobes. (*a*, *c*, Half natural size; *b*, about 28 times natural size; *d–f*, natural size; *g*, *h*, about three times natural size.)

Type in the U. S. National Herbarium, No. 1852501, collected at La Trojita, along the Río Calima, Department of El Valle, Colombia, 5 to 50 meters altitude, February 19 to March 10, 1944, by J. Cuatrecasas (No. 16705). Killip's No. 34938 (US), collected in dense forest east of Buenaventura, El Valle, near sea level, April 12, 1939, is also this species.

Aphelandra cuatrecasasii, like *A. killipii*, is related to *A. dolichantha*, but differs by its obtusish bracts. The cream-colored corollas and narrow lanceolate bractlets of *A. cuatrecasasii* serve to distinguish

it from *A. killipii*, a species with reddish corollas and triangular bractlets.

The following field note accompanies the type: "Sufrutex, 30–40 cm.; hoja herbácea verde claro haz, pálida cenicienta envés; brácteas verdoso amarillento pálidas; corola blanco crema."

44. Aphelandra dolichantha Donn. Smith

Aphelandra dolichantha Donn. Smith, **Bot. Gaz. 27: 438.** 1899. Type collected at Suerre, Llanuras de Santa Clara, Costa Rica, 300 meters altitude, February 1896, by John Donnell Smith, No. 6689. Type in the U. S. National Herbarium, No. 1320095. The specific name is derived from two Greek words, δολιχός, long, and ἄνθος, flower.

Shrubs or suffrutescent herbs up to 1.2 meters high; stems glabrous, or pubescent toward tip, the hairs brownish, about 0.5 mm. long, retrorsely appressed; leaf blades elliptic to oblong-elliptic, up to 22 cm. long and 12 cm. wide, acute or short-acuminate at apex (the tip itself blunt), narrowed at base and decurrent on the petiole, pergamentaceous, lustrous, entire, the upper surface minutely alveolar, drying dark green, glabrous or bearing a few scattered appressed hairs less than 0.5 mm. long, the costa and lateral veins (usually to 8 to 14 pairs) plane or slightly elevated, less prominent than on the lower surface, this drying light green or olive, subglabrous to finely strigose, the hairs mostly less than 0.5 mm. long, evenly distributed or confined chiefly to costa and basal portions of the lateral veins, retrorsely appressed; petioles up to 3 cm. long, the pubescence similar to that of the stem; spikes terminal, cylindric, solitary or occasionally in 3's, up to 12 cm. long and 1.5 cm. broad, the rachis angular, pilose or subglabrous, the hairs fine, up to 1.5 mm. long, upwardly appressed to spreading; bracts closely imbricate or spreading with age, ovate-lanceolate, 2.5 to 4 cm. long, 1 to 1.3 cm. wide, acuminate, green, multinerved (the meshes of the reticulations compressed), glabrous or more or less appressed-pilose, the margins subhyaline but not well defined, minutely ciliolate; bractlets linear-subulate, 10 mm. long, 1 mm. wide at base, carinate, striate-nerved, sparingly pilose and minutely puberulous, the smaller hairs gland-tipped; calyx minute, the segments subulate to lance-subulate, 1.5 to 2 mm. long, less than 0.5 mm. wide at base, the pubescence similar to that of the bractlets; corolla white or pale cream, glandular-pubescent except the lobes, these glabrous, the tube slender, up to 6 cm. long but barely 2 mm. broad, the throat short and but slightly ampliate, about 4 mm. broad, the posterior lip oblong, 13 mm. long, 5 mm. wide, 2-lobed, the lobes about 3 mm. long and 2.5 mm. wide, rounded, the middle lobe of the lower lip oblong-elliptic, 18 to 20 mm. long, 6 to 7 mm. wide, the lateral lobes linear-oblong, 15 to 17 mm. long, 4 to 5 mm. wide, all rounded at apex; stamens included, the filaments about 6 mm. long, affixed at the base of the throat, the

anthers 3 mm. long, apiculate, adhering by a lateral beard; disc cupuliform; style included; capsules narrowly clavate, about 15 mm. long and 3 mm. broad, glabrous, minutely punctate; seed flattened, obliquely ovoid, 5.5 mm. long and 3.5 mm. broad, barely 1 mm. thick, smooth, brown.

A sciaphilous species blooming from October to May, *Aphelandra dolichantha* is readily distinguishable by its slender, white corolla and minute glandular calyces. Donnell Smith in his description of the type evidently mistook the bractlets for calyx lobes ("segmenta linearia 8–10 mm. longa") and failed to find the minute calyx altogether. The vernacular name in the Chocó is "Babosa" (*Archer* 2003).

In Colombia this plant is usually found between altitudes of 50 and 825 meters. Its range extends northward from Colombia into Guatemala.

CHOCÓ: La Concepción, 15 km. east of Quibdó, *Archer* 2003 (US).

EL VALLE: Córdoba, *Killip & Hernando García-Barriga* 33444 (US). Along the Río Calima, near Córdoba, *Killip* 11788 (US). Río Digua Valley, between La Elsa and Río Blanco, *Killip* 34738 (US).

45. **Aphelandra craura** Leonard, sp. nov. FIGURE 73

Suffrutex erectus, fragilis, caulibus retrorse strigosis; lamina foliorum obovata vel elliptica, apice rotundata vel subacuminata, basi angustata, in petiolum decurrens, subchartacea, undulata, supra parce strigosa, pilis minutis, subtus dense et molliter strigosa, pilis subbrunneis minutis, costa et venis aliquanto prominentibus; petioli breves, dense et minute strigosi; spicae solitariae vel plures fasciculatae, ovatae, sessiles, rhache plus minusve glabra; bracteae oblongae infimae apice obtusae, superiores apice acutae, subchartaceae, deorsum parce et minute pilosae, ut videtur striato-nervatae, maculis reticulorum angustis; bracteolae lanceolato-subulatae, integrae vel subinde dentem parvum ferentes, glabrae vel parce ciliolatae, trinervatae, subhyalinae; calycis segmenta ovata vel triangularia, apice acuminata vel rotundata et minute apiculata; corolla subpurpurea, tubo angustato, pubescente, pilis brunneis sursum appressis, labio superiore erecto, oblongo, apice bilabiato, lobis ovatis, subacutis, labio inferiore patulo, trilobato, lobo medio ovato, obtuso, labiis lateralibus lanceolatis, obtusis.

Plants suffrutescent, erect, brittle, up to 1 meter high; stems retrorsely strigose, at least above; leaf blades obovate to elliptic, rounded or subacuminate at apex, narrowed from middle or above middle to base and decurrent on the petiole, subchartaceous, undulate, the upper surface sparingly strigose, the hairs about 425 μ long, the lower surface densely and softly strigose, the hairs brownish, about 425 μ long, the costa thick, the lateral veins (about 10 pairs) more or less prominent;

petioles (unwinged portion) about 5 mm. long, densely strigose; spikes solitary or several, terminal, ovate, sessile, subtended by several small lanceolate bractlike leaves up to 27 mm. long and 6 mm. wide, these acute at apex, the rachis more or less glabrous; bracts oblong, up to 3 cm. long and 10 mm. wide, the lowermost obtuse, the upper acutish, sparingly and minutely pilose toward base, subchartaceous, apparently striate-veined, the meshes of the reticulations narrow;

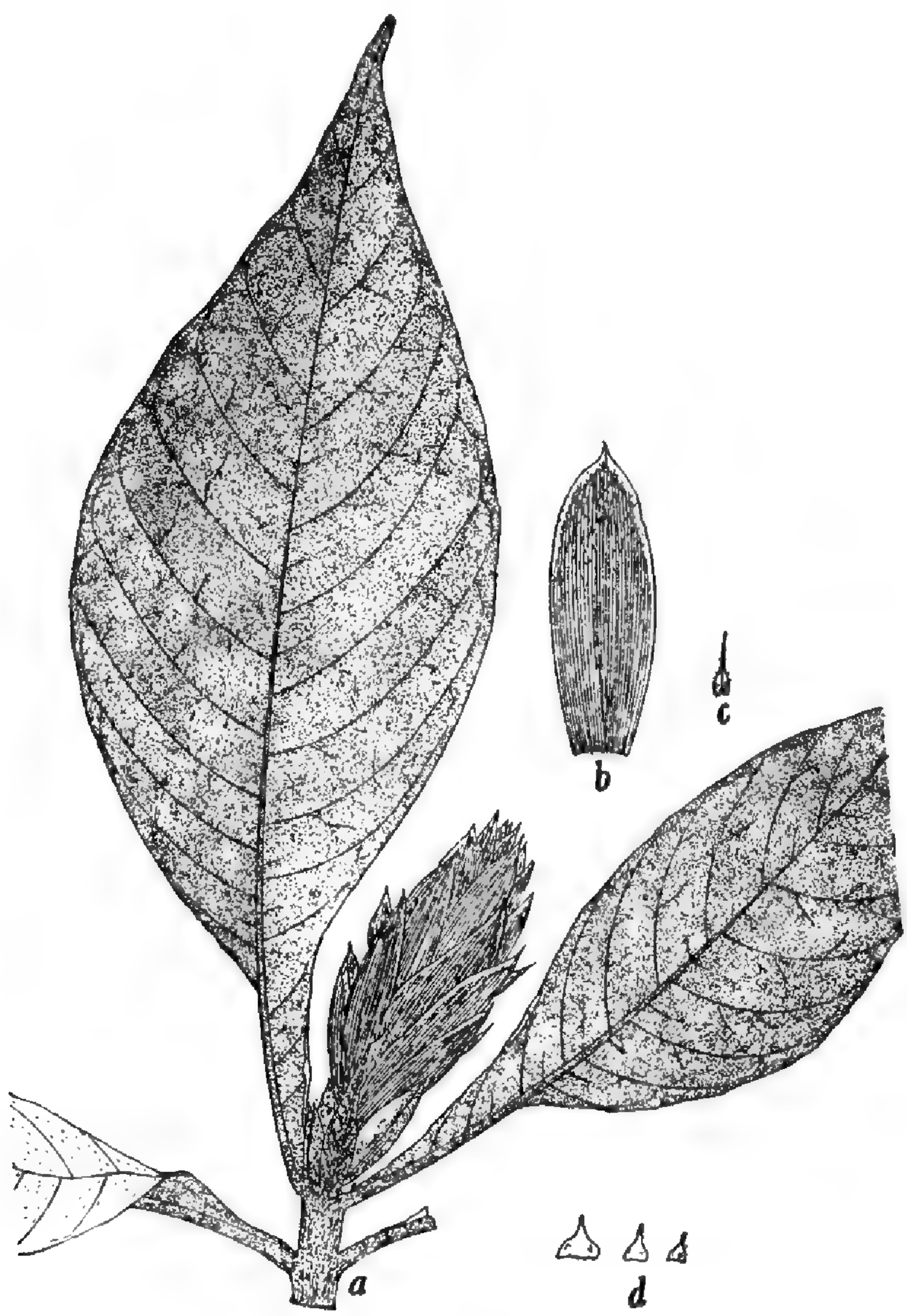

FIGURE 73.—*Aphelandra craura* Leonard (*Haught* 5337): *a*, Tip of stem; *b*, bract; *c*, bractlet; *d*, calyx segments. (*a*, Half natural size; *b*, natural size; *c*, about one and a half times natural size; *d*, about 4 times natural size.)

bractlets lance-subulate, up to 5 mm. long and 1 mm. wide at base, entire or occasionally bearing a small tooth toward tip, glabrous or bearing a few marginal hairs about 0.5 mm. long, 3-nerved, subhyaline; calyx segments minute, ovate to triangular, about 0.5 mm. long and 1 mm. wide, short-acuminate or rounded and minutely apiculate; corolla purplish, about 3 cm. long, pubescent except the glabrous basal portion, the hairs upwardly appressed, about 0.5 mm. long,

brownish, the tube slender, the upper lip erect, oblong, 7 mm. long (flower immature) and 4 mm. wide, bilobed at apex, the lobes ovate, about 2 mm. long and 1.5 mm. wide at base, subacute, the middle lobe of the lower lip spreading, ovate, 1 cm. long, 5.5 mm. wide, obtuse, the lateral lobes lanceolate, 1 cm. long and 3 mm. wide, obtuse at apex; ovary and capsule not seen.

Type in the U. S. National Herbarium, No. 1950443, collected along highway near Buenaventura, Department of El Valle, Colombia, 100 meters or less altitude, December 8, 1946, by Oscar Haught (No. 5337). *F. C. Lehmann* s. n. (K), from the same general locality, is also of this species. The label on the Kew sheet bears the following note: "Stengel bis 1 m. hoch, fingerdick. Blätter fast fleischig, matt grün. Blüthen rothlich-gelbeweiss."

A close relationship exists between *Aphelandra craura* and *A. dolichantha*. *Aphelandra craura*, however, has purplish corollas instead of white and the lower surfaces of the leaf blades are densely, softly, and almost silkily strigose. The name *craura* is from κραῦρος, meaning brittle, in allusion to the succulent, brittle stems.

46. **Aphelandra pilosa** Leonard, sp. nov. FIGURE 74

Frutex gracilis, parce ramosus, erectus vel ascendens, caulibus sursum subquadrangularibus, dense pilosis, pilis plus minusve patulis, brunnescentibus vel albidis, deorsum teretibus, glabratis; lenticellae minutae; lamina foliorum oblonga vel oblongo-elliptica vel late oblanceolata, apice plus minusve acuminata (apice ipso saepe curvato), basi angustata, in petiolum decurrens, subcoriacea, integra vel undulata, supra parce hirsuta, costa et venis lateralibus dense hirsutis, pilis brunneis, ascendentibus, subtus aliquanto dense hirsuta, pilis patulis vel ascendentibus; petioli breves, dense pilosi; spicae solitariae vel plures fasciculatae vel paniculas laxas formantes, rhache albo-tomentosa; bracteae imbricatae, rhombeo-ovatae, acuminatae, minute puberulae vel glabratae, deorsum minute pubescentes vel pilosae, coriaceae, ciliatae, costa et venis prominentibus; ocelli (3–6) elliptici, fusco-lucentes, contigui vel aliquando coalescentes; bracteolae lanceolatae, carinatae, striato-nervatae, carina dense albo-pilosa; calycis segmenta striato-nervata, puberula, apice acuta vel subobtusa et apiculata, ciliolata, segmentum posterius anguste ovatum, segmenta anteriora lanceolata, segmenta media lineari-lanceolata; corolla angusta, rubra, minute puberula, labio posteriore erecto, bilobato, lobis lanceolatis, tenuiter acuminatis, labio inferiore trilobato, lobo medio patulo, anguste elliptico, acuto, lobis lateralibus parvis, apice rotundatis, cum labio superiore basi connatis; stamina exserta, antheris dorso pilosis.

Slender shrubs up to 3 or occasionally 5 meters high, sparingly branched, the stems erect or ascending (sometimes tortuous), subquad-

rate and densely pilose toward tip, the hairs light brown or whitish, up to 2 mm. long, spreading, descending, or appressed, the lower portions of the stem terete, gray, glabrate, the lenticels minute and corky; leaf blades oblong to oblong-elliptic or broadly oblanceolate, the uppermost 15 to 30 cm. long and 5 to 10 cm. wide, the lowermost as much as 45 cm. long and 16.5 cm. wide, all more or less abruptly acuminate (the apex often more or less curved), gradually narrowed at base and decurrent on the petiole, subcoriaceous, entire or undulate, the upper surface drying olive or brownish, glabrate or sparingly hirsute, the costa and lateral veins densely so, the hairs light brown, appressed or ascending, 0.5 to 1 mm. long, the costa and lateral veins (14 to 20 pairs) flat or slightly raised, inconspicuous, the lower surface drying light olive-green, more densely pilose than above, the hairs 0.5 to 1.5 mm. long, appressed, ascending, or spreading, the venation rather prominent; petioles up to 1.5 or occasionally 2 cm. long, the pubescence similar to that of the stem; spikes solitary or, if several, fascicled, or often forming a loose panicle (the terminal spike subsessile, the lateral ones pedunculate) 5 to 17 cm. long, 5 to 7 cm. broad, the peduncles up to 4 cm. long, the pubescence that of the stems, the rachis white-cottony; bracts closely imbricate, rhombic-ovate, 9 mm. long, 6 to 6.5 mm. wide at 1.5 mm. above base, acute, minutely puberulous or glabrate, pubescent or pilose toward base, coriaceous, ciliate, the costa and several pairs of nerves on either side prominent below the middle of the bract, the ocelli 3 to 6, elliptic, about 1 mm. long and 0.75 mm. wide, flat, varnished, variously grouped, contiguous or sometimes fused; bractlets lanceolate, 8 mm. long and 2 mm. wide, carinate, the keel densely white-pilose, the hairs very fine, about 0.6 mm. long, ascending, striate-nerved, the nerves curved at base, the margins thin; calyx 8 to 8.5 mm. long, the posterior segment narrowly ovate, 3 mm. wide near middle, the anterior pair lanceolate, 2 mm. wide, the lateral pair linear-lanceolate, 1.5 mm. wide, these obtusish and apiculate, the others acute, all minutely puberulous, ciliate toward tip and striate-nerved, the nerves indurate at base; corolla red, minutely puberulous, 6.5 cm. long from base to tip of upper lip, the tube 3 mm. broad at base, narrowed to 2 mm. at 7 mm. above base, thence gradually enlarged to a slightly curved cylindric throat about 6 mm. broad, the upper lip erect, 2 cm. long, 7 mm. wide at base of lobes, these lanceolate, 1 cm. long, 4 mm. wide, slenderly acuminate, the middle lobe of the lower lip spreading, narrowly elliptic, 2.5 cm. long, slightly more than 6 mm. wide, acute, the lateral lobes adnate in part to the upper lip, their free portions 2 mm. long and 1.5 mm. wide, rounded at tip; stamens exserted about 15 mm. beyond the mouth of the corolla tube, the anthers 6 mm. long, 1 mm. broad, the basal lobes

minutely apiculate, the cells dorsally pilose; pistils glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 1774446, collected in woods and thickets of Zurubi, Caño Cuduyari, Comisaría of Vaupés, Colombia, 200 meters altitude, October 15, 1939, by J. Cuatrecasas (No. 7223).

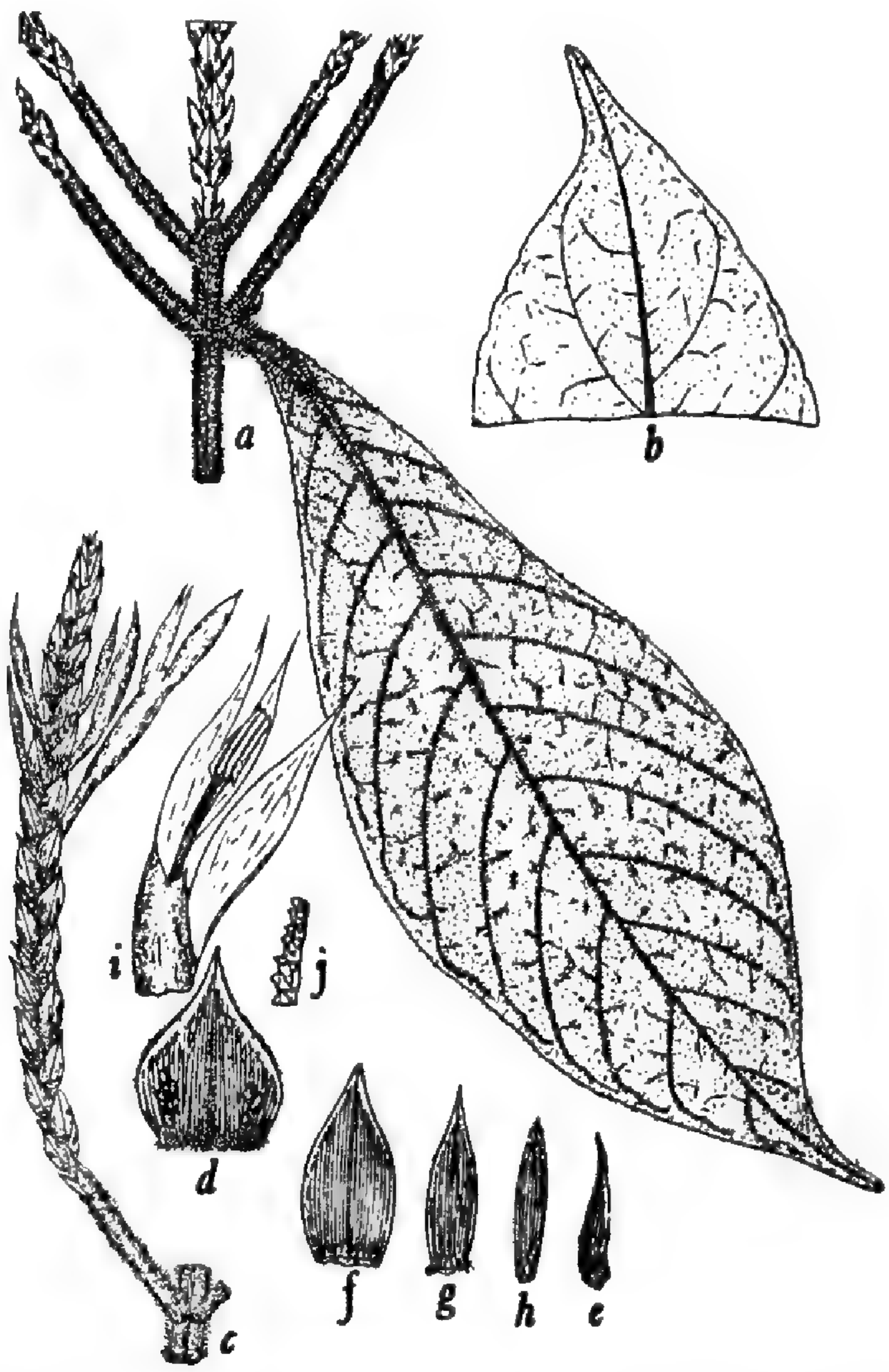

FIGURE 74.—*Aphelandra pilosa* Leonard (*Cuatrecasas* 7223): *a*, Tip of plant, showing lower part of inflorescence; *b*, tip of leaf blade (upper surface); *c*, branch of inflorescence; *d*, bract; *e*, bractlet; *f*, posterior calyx segment; *g*, one of the anterior segments; *h*, one of the lateral segments; *i*, tip of corolla; *j*, pubescence of the corolla. (*a-c*, Half natural size; *d-h*, twice natural size; *i*, natural size; *j*, about 20 times natural size.)

BOYACÁ: In warmer valleys, *Dawe* 900 (K).

CAQUETÁ: Woods at Sucre, 1,000 to 1,300 meters altitude, April 4, 1940, *Cuatrecasas* 9052 (US).

META: Woods of Caño Quenane, January 25, 1942, *Dugand & Jaramillo* 3117 (US). About 12 km. southeast of Villavicencio, 400 meters altitude, January 9, 1939, *Haught* 2536 (US).

PUTUMAYO: Wet woods along Río Putumayo at Puerto Ospina, 230 meters altitude, November 14, 1940, *Cuatrecasas* 10562 (US). Puerto Porvenir, above Puerto Ospina, 230 to 250 meters, November 19, 1940, *Cuatrecasas* 10656 (US).

VAUPÉS: Mesa La Lindosa, *Idrobo & Schultes* 631 (US); Río Guaviare at

San José del Guaviare, 240 meters altitude, November 6, 1939, *Cuatrecasas* 7478 (US).

Aphelandra pilosa resembles, in most respects, *A. pulcherrima* but unlike that species it has a dense, more or less spreading pubescence covering the upper portions of the stems and underside of the leaf blades, the hairs being up to 2 mm. long, instead of about 1 mm., as in *A. pulcherrima.* The name *pilosa*, hairy, alludes to this characteristic pubescence.

47. Aphelandra pulcherrima (Jacq.) H. B. K.

Justicia pulcherrima Jacq. Enum. Pl. Carib. 11. 1762: Stirp. Amer. 6, *pl. 2, fig. 4.* 1763. Type locality: "Habitat frequens Carthagenae in sylvaticus montis de la Popa." The illustration consists of a leaf and a corolla. *Pulcherrima* (very beautiful) alludes, no doubt, to the general aspect of the entire plant.

Aphelandra pulcherrima H. B. K. Nov. Gen. & Sp. 2: 236. 1817. Based on *Justicia pulcherrima* Jacq. Humboldt cites two collections, one from a shady place near Turbaco and the other from the mouth of the Río Sinú, both in Colombia. Photograph of the Turbaco plant in the U. S. National Herbarium (Field Mus. photograph No. 8713).

Shrubs or suffrutescent herbs up to 3 meters high; stems erect, sparingly branched, obscurely quadrangular toward tip, pubescent to tomentose, the hairs about 0.5 mm. long, straight and more or less spreading or variously curved, whitish, the lower portions of the stems terete, light grayish green, sparingly pubescent to glabrate, the lenticels scattered, elliptic, 0.5 to 1 mm. long, corky; leaf blades ovate to oblong-elliptic, 8 to 20 cm. long, 3.5 to 10 cm. wide, short-acuminate (the tip itself blunt and minutely apiculate to acutish), narrowed at base and decurrent on the petiole, entire, undulate or shallowly crenate, the supper surface drying olive, finely pubescent or glabrate, the hairs curved, less than 0.5 mm. long, subappressed, the costa flat or shallowly impressed, the lateral veins (16 to 20 pairs) 3 to 14 mm. apart, slightly raised, the lower surface drying to light green or gray, softly and usually densely pubescent, the hairs up to 1 mm. long, curved to nearly straight, the pubescence usually denser on costa and veins, these prominent, the veinlets finely reticulate; petioles about 5 mm. long, the pubescence similar to that of the costa; spikes solitary or several in a fascicle, quadrangular, terminal, subsessile, up to 10 cm. long and 8 mm. broad, the rachis white-cottony-tomentose; bracts rhombic-ovate, 6 to 7 mm. long, 4.5 to 5 mm. wide at middle, 2 to 3 mm. wide at base, acute at apex, dorsally finely and densely puberulous becoming white-pilose toward base, ventrally glabrous except toward margins, here finely pubescent, obscurely striate-nerved, the costa and a pair of lateral nerves prominent, reticulately veined toward margin; ocelli solitary, in twos, or sometimes several, distinct or more or less fused, conspicuous, orbicular to elliptic, 0.5 to 1 mm. long, about 0.75

mm. wide, dark brown or blackish, nitid; bractlets lanceolate, 7 mm. long, about 2 mm. wide near base, acute at apex, falcate, obliquely subcarinate, puberulous without, glabrous within, finely striate-nerved; calyx about 8 mm. long, the posterior segment oblong, 3 mm. wide, the lateral segments lanceolate, about 2 mm. wide, the middle pair narrowly lanceolate, 1.5 mm. wide, all acute and striate-nerved; corolla bright red or scarlet, minutely puberulous, 5 to 6 cm. long, about 3 mm. broad at base, narrowed to 1.5 mm. at tip of ovary, thence gradually enlarged and slightly ventricose, about 6 mm. broad at mouth, the upper lip erect, ovate, 15 mm. long, 9 mm. wide, 2-lobed, the lobes narrowly triangular, 9 mm. long and 4 mm. wide, slenderly acuminate, the lower lip 3-lobed, erect or spreading with age, the middle lobe linear-oblong, 24 mm. long and 7 mm. wide, abruptly acuminate, the lateral lobes about 3 mm. long and 1 mm. wide, obtusish, adnate in part to the upper lip; stamens exserted about 7 mm. beyond the mouth of the corolla tube; ovary and style glabrous; capsules oblong, obtuse at apex, glabrous.

VERNACULAR NAMES: Picigallo (*Elias* 860), Cresta de Gallo (*Elias* 705), Pié de Gallo (*Bro. Heriberto* 415), Pisigallo (*Dugand & Jaramillo* 4053), Titirigallo (*Dugand & Jaramillo* 4053).

Partial to damp, shady places, usually in thickets or low marshy regions. Found at low altitudes mostly under 900 meters. Mexico to northern South America and in a few West Indian localities.

ATLÁNTICO: Arroyo de Megua, *Dugand & Jaramillo* 2800 (US). Barranquilla, *Bro. Elias* 440 (US). Los Pendales, *Dugand & García-Barriga* 2549 (US); *Dugand & Jaramillo* 2701 (US). Luruaco, *Bro. Apolinar Angel* 491 (US). Piojó, vicinity of Barranquilla, *Bro. Elias* 705 (US). Puerto Colombia, *Bro. Elias* 860 (US). Tubará, *Dugand & Jaramillo* 4053 (US). Usiacurí *Araque & Barkley* 19At.081 (US); *Dugand & García-Barriga* 2273 (US).

BOLÍVAR: Arjona, *Killip & Smith* 14516 (NY, US). Caño Papayal, vicinity of Estrella, Lands of Loba, *Curran* 321 (US). Cartagena, *Billberg* s. n., Dec. 1825 (S); *Billberg*, s. n., 1826 (S); *Bro. Heriberto* 268 (US). Castillo La Popa, vicinity of Cartagena, *Araque & Barkley* 19Bo.033 (US). La Popa, *Billberg* s. n., Dec. 1825 (S). Montería, *Bechara, Araque & Barkley* 19Bo.218 (US). Sahagún, *Pennell* 4108 (NY). Turbaco, *Bro. Heriberto* 415 (NY, US); *Killip & Smith* 14310 (NY, US).

CUNDINAMARCA: Casas Viejas, *Triana* s. n., 1851–1857 (NY).

MAGDALENA: Codazzi, *Haught* 3759 (US). Poponte, *Cyril Allen* 845 (Mo).

META: Villavicencio, *Triana* s. n. (US).

NORTE DE SANTANDER: La Esmeralda, *Killip & Smith* 20931 (NY, US). Río Zulia, *Araque-Molina, Otálora & Barkley* 18NS.066 (US).

48. Aphelandra schieferae Leonard, sp. nov. FIGURE 75

Frutex, caulibus sursum dense cinereo-pubescentibus vel subtomentosis, pilis sursum appressis vel ascendentibus; lamina foliorum oblanceolata, apice acuta, basi angustata, in petiolum decurrens, crenata, supra parce hirtella, costa et venis lateralibus dense hirtellis,

pilis brunnescentibus, appressis vel ascendentibus, subtus dense et molliter pilosa, pilis ascendentibus vel patulis; petioli subtomentosi; paniculae magnae, laxae, frondosae, spicis saepe pluribus, parvis, axe et pedunculis tomentosis, rhache argenteo-tomentosa; bracteae vivae coccineae, siccae brunneae, triangulo-ovatae, subcarinatae, acutae, striatae, minute puberulae, ciliolatae; ocelli plurumque 2, brunnei, nitidi, obscure alveolati; bracteolae lanceolatae, carinatae, acuminatae, carina dense argenteo-pilosae, pilis ascendentibus, marginibus subhyalinis, glabris, ciliolatis; calycis segmenta lanceolata, minute striato-nervata, puberula, apice pilosa; corolla coccinea, anguste hypocrateriformis, minute puberula, pilis conicis, labio superiore anguste ovato, apice bilobato, lobis triangularibus, acuminatis, labio inferiore trilobato, lobo medio lanceolato, acuminato, lobis lateralibus parvis, cum labio superiore basi connatis; stamina vix exserta, antheris dorso pilosis; ovarium glabrum.

Shrubs about 1 meter high; stems subquadrangular, thick (up to 8 mm. in diameter at base of inflorescence), the upper portions densely gray-pubescent or subtomentose, the hairs upwardly appressed or ascending, about 0.5 mm. long; lenticels light brown, corky, prominent, orbicular, oval or elongate, up to 3 mm. long; leaf blades oblanceolate, up to 36 cm. long and 10 cm. wide (slightly above the middle), acute at apex, gradually narrowed from above middle to base and decurrent on the petiole, the margins crenate, the upper surface drying dark olive-green, the costa and lateral nerves (about 21 pairs) densely hirtellous, the hairs brownish, appressed or ascending, 0.25 to 0.5 mm. long, the surface between the veins sparingly and inconspicuously hirtellous, the lower surface drying a light grayish olive-green, densely and softly pilose, the hairs 0.25 to 0.75 mm. long, ascending or spreading or those on costa and veins somewhat appressed; petioles 2 to 3 cm. long, subtomentose; spikes terminal and axillary, forming a rather loose, leafy panicle up to 27 cm. long and 17 to 20 cm. broad, the branches of the panicle ascending, 1 to 13 cm. long, light gray-tomentose, the spikes up to 9 cm. long and 5 to 8 mm. broad, the rachis silvery tomentose, except the glabrous region adjacent to the posterior calyx segment; bracts bright scarlet, drying brown, triangular-ovate, subcarinate, 8 mm. long, 4.5 mm. wide at 2 mm. above base, thence gradually narrowed to a slender tip, coriaceous, coarsely striate, minutely puberulous, the margins ciliolate, the hairs up to 0.5 mm. long; ocelli occurring usually in pairs, elliptic, 1 mm. long and 1.75 mm. wide, brown, nitid, indistinctly alveolate; bractlets lanceolate, carinate, 7 mm. long, 2 mm. wide at 2.5 mm. above base, thence gradually narrowed to a slender tip, the keel densely silvery pilose, the hairs ascending, about 0.5 mm. long, the region adjacent to the keel puberulous, the marginal area subhyaline and glabrous, the margins

sparingly ciliolate; calyx 7 mm. long, the segments lanceolate, finely striate-nerved, minutely and inconspicuously puberulous, tipped by a tuft of hairs about 0.25 mm. long, the posterior segment 2.25 mm.

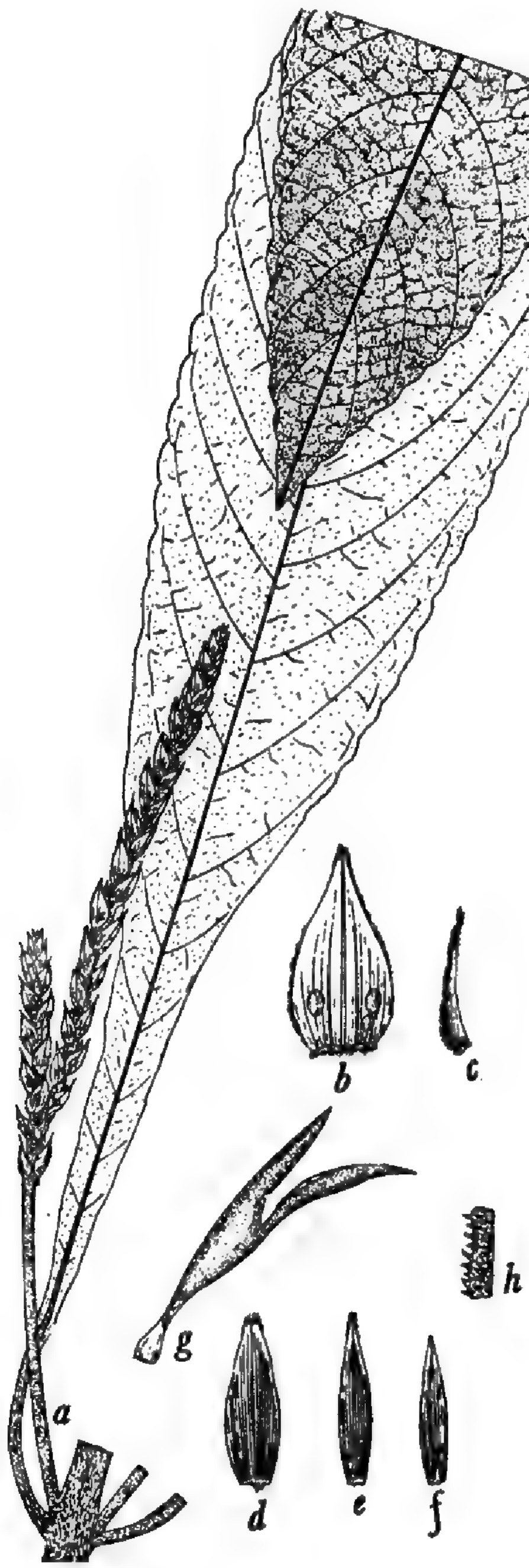

FIGURE 75.—*Aphelandra schieferae* Leonard (*Schiefer* 791): *a*, Node from inflorescence; *b*, bract; *c*, bractlet; *d*, posterior calyx segment; *e*, one of the anterior segments; *f*, one of the lateral segments; *g*, corolla; *h*, pubescence of the corolla. (*a*, *g*, Half natural size; *b-f*, twice natural size; *h*, about 40 times natural size.)

wide near base, the anterior pair 1.75 mm. wide, the lateral pair 1 mm. wide, all narrowed from near base to a sharp, slender tip; corolla bright scarlet, 5 cm. long from base to tip of upper lip, finely puberulous, the hairs conical, the tube 4 mm. broad near base, narrowed to

1.5 mm. at 7 mm. above base, thence enlarged to 7 mm. near mouth, the upper lip narrowly ovate, 21 mm. long and 6 mm. wide at middle, tipped by 2 triangular acuminate lobes about 3 mm. long and 1.5 mm. wide at base, the middle lobe of the lower lip lanceolate, 22 mm. long, 5 mm. wide, slenderly acuminate, the lateral lobes adnate to the lower part of the upper lip, their free portions small, about 1 mm. long; stamens slightly exserted beyond the mouth of the corolla tube, the anthers 6 mm. long and 1 mm. broad, retrorsely pilose dorsally; ovary glabrous; capsules not seen.

Type in the Gray Herbarium, collected in deep woods on hill back of Tres Esquinas Mill, Villavicencio, Intendencia of Meta, Colombia, July 12, 1945, by Helen Schiefer (No. 791). Fragment of type in the U. S. National Herbarium, No. 1934948. A Triana collection, without number (Col, NY), from Servitá, vicinity of Villavicencio, 300 to 900 meters altitude, December 1855, is also of this species.

If compared with any of the numerous segregates of *Aphelandra pulcherrima*, *A. schieferae* is conspicuous because of the large, oblanceolate, crenate leaves of the inflorescence, these softly pubescent beneath; the large, silky, subtomentose inflorescence; the silvery, tomentose rachis; and the triangular, sharply pointed bracts, ornamented with two pairs of rather large nitid elliptic ocelli.

49. Aphelandra parvispica Leonard, sp. nov. FIGURE 76

Frutex vel arbor parva, caulibus porrectis, teretibus, glabris vel sursum parce strigosis; lamina foliorum oblonga vel oblongo-lanceolata, reflexa, acuminata (apice ipso plus minusve curvato), basi angustata, membranacea, integra, supra glabra vel costa et venis lateralibus parce et minute strigosis, subtus glabra vel parce et minute strigosa; petioli aliquanto breves, glabri vel minute strigosi; paniculae terminales, spicis parvis, pedunculis parce et minute strigosis vel pedunculis ultimis dense hirsutis, pilis parvis, plus minusve patulis, rhache flocculoso-tomentosa, pilis albis; bracteae vivae rubrae, siccae rubro-brunneae, rhombico-ovatae, acutae vel subacutae, basi flocculoso-tomentosae, pilis albis, alibi subglabrae, vel infimae dorso strigosae, marginibus ciliolatis; ocelli 1 vel plures vel aliquando 0, minuti, elliptici, brunnei, nitidi; bracteolae rubro-brunneae (siccae), lanceolatae, acuminatae, carinatae, striato-nervatae, ciliolatae, carina albotomentosa; calycis segmenta obtusa vel subobtusa, ciliolata, striato-nervata, segmentum posterius anguste ovatum, anteriora lanceolata, lateralia anguste lanceolata; corolla rubra, papillosa, tubo leviter curvato et subventricoso, labio superiore erecto, anguste ovato, apice bilobato, lobis triangularibus, acuminatis, apice curvatis, labio inferiore trilobato, lobo medio patulo, lanceolato, apice acuminato, recurvato, lobis lateralibus obtusis, cum labio superiore basi connatis; stamina vix exserta; ovarium glabrum.

Shrub or small tree; branches sprawling, terete, glabrous or the tips sparingly strigose, the hairs closely appressed, sordid, less than 0.5 mm. long, the older portions of the stems gray, the lenticels scattered, corky, about 1 mm. long, inconspicuous; leaves reflexed, the blades oblong to lance-oblong, 7 to 19 cm. long, 1.8 to 5 cm. wide, acuminate, the tip more or less curved, cuneate at base, membranaceous to subcoriaceous, entire, the upper surface drying brown or olive-green, essentially glabrous, a few small subappressed hairs sometimes found on the basal part of the costa, this and the lateral veins (10 to 14 pairs) flat or slightly raised, inconspicuous, the lower surface drying a somewhat lighter shade than the upper, glabrous or very sparingly strigose, the hairs confined chiefly to costa and lateral veins, these rather prominent; petioles rather slender, up to 1 cm. long, glabrous or sparingly and minutely strigose; flowers borne in terminal panicles of small spikes 2 to 6 cm. long and 5 to 8 mm. broad, the panicles up to 10 cm. long and 8 cm. broad, the peduncles up to 4 cm. long, slender, sparingly and minutely strigose, or the ultimate peduncles densely hirsute, the hairs more or less spreading, all sordid, the rachis white-cottony-tomentose; bracts red, drying reddish brown, rhombic-ovate, 5 to 6 mm. long, 4 to 5 mm. wide, acute to acutish, white-cottony-tomentose at base, otherwise essentially glaborous except the lowermost, these strigose dorsally, the hairs about 0.5 mm. long, the margins ciliolate toward base, the costa and nerves prominent below middle; ocelli one to several or sometimes lacking, minute, elliptic, up to 0.5 mm. long, brown, nitid; bractlets red, drying reddish brown, obliquely lanceolate, 4.5 to 6 mm. long, 1 to 2 mm. wide, acuminate, carinate, ciliolate, dorsally white-tomentose, striate-nerved; calyx 5.5 to 8 mm. long, the posterior segment narrowly ovate, 2.5 to 3.5 mm. wide, the anterior pair lanceolate, 1.5 to about 2 mm. wide, the lateral pair narrowly lanceolate, 1 to 1.5 mm. wide, all obtuse to obtusish (the lateral pair apiculate), glabrous, ciliolate toward apex, striate-nerved; corollas 4 cm. long from base to tip of upper lip, red, papillose, some of the papillae tipped by minute hairs, the tube slightly curved and subventricose, 3.5 mm. broad at base, narrowed to 1.5 mm. at 5 mm. above base, thence enlarged to about 6 mm. at mouth, the upper lip erect, narrowly ovate, 12 mm. long, 2-lobed at apex, the lobes narrowly triangular, 3.5 mm. long, about 2 mm. wide, acuminate, the tip curved, the middle lobe of the lower lip lanceolate, spreading, acuminate, the slender tip recurved, the lateral lobes adnate to the basal part of the upper lip, their free portions triangular, barely 0.5 mm. long; stamens reaching the tip of the upper lip, the anthers 4 mm. long, 0.5 mm. wide, minutely apiculate at base; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 1850296, collected in the basin of the Río Margua, between Campohermoso and Río Negro,

vicinity of Sarare, Department of Norte de Santander, 1,200 to 1,500 meters altitude, November 8, 1941, by J. Cuatrecasas (No. 12883). Cuatrecasas, Schultes, & E. Smith's No. 12516 (Col, US, fragment No. 63419), collected in woods between El Alto del Loro and Alto de Santa Inés, vicinity of Sarare, 1,800 to 2,200 meters altitude, October 18 to 21, 1941, is also of this species.

Aphelandra parvispica is another species of the *A. pulcherrima* complex. Its outstanding characters are its rather small, almost glabrous, reflexed leaf blades, its panicles of relatively small spikes, and its minute, inconspicuous ocelli. Its nearest relative is, perhaps, *A. macrophylla.*

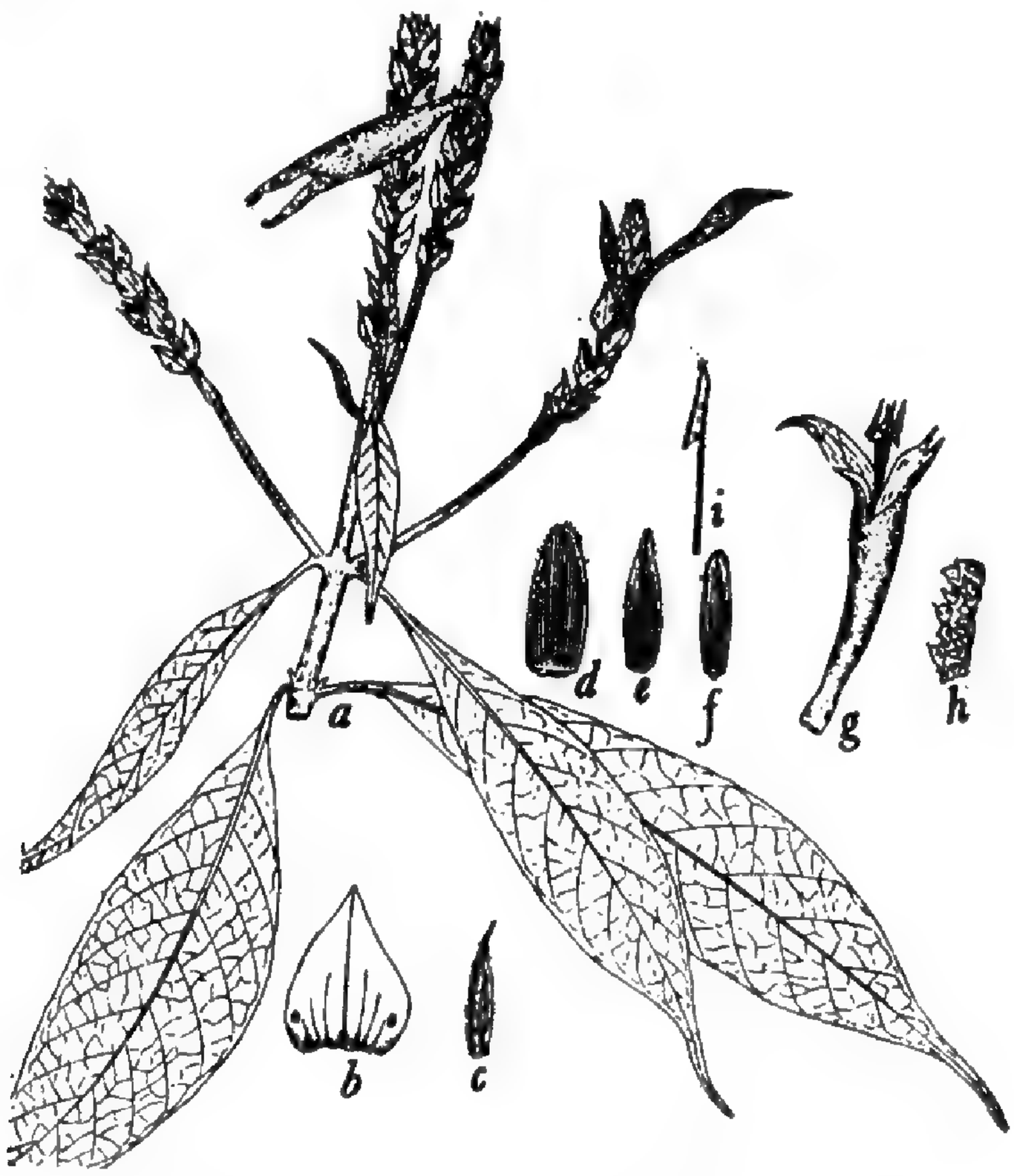

FIGURE 76.—*Aphelandra parvispica* Leonard (*Cuatrecasas* 12883): *a*, Tip of branch; *b*, bract; *c*, bractlet; *d*, posterior calyx segment; *e*, one of the anterior segments; *f*, one of the lateral segments; *g*, corolla; *h*, pubescence of corolla; *i*, stamen. (*a*, *g*, Half natural size; *b-f*, twice natural size; *h*, about 30 times natural size; *i*, natural size.)

50. **Aphelandra mildbraediana** Leonard, sp. nov. FIGURE 77

Frutex vel arbor parva, caulibus sursum quadrangularibus, dense strigosis (pilis parvis, albidis), deorsum teretibus, glabris; lamina foliorum oblongo-elliptica vel lanceolata vel oblongo-lanceolata, acuta vel acuminata (apice ipso obtuso et saepe curvato), basi angustata, in petiolum decurrens, subcoriacea, integra vel leviter crenata, supra viridis, nitida, subglabra, subtus pallido-olivacea (sicca), minute et aliquanto strigosa; petioli breves; spicae solitariae vel subinde 3, breves, subsessiles, rhache albo-flocculosa; bracteae arcte imbricatae, rhombico-ovatae, acutae vel obtusae, basi albo-flocculosae, sursum glabrae

vel tenuiter pubescentes, ciliatae; ocelli 1–3, elliptici, nitidi, fusco-lucenti; bracteolae oblique lanceolatae, subfalcatae, striato-nervatae, carinatae, carina dorso dense albo-pubescente, marginibus glabris; calycis segmenta oblongo-ovata, acuta, striato-nervata, tenuiter pubescentia vel glabrata; corolla rubra, minute papillosa, labio superiore erecto, anguste ovato, apice bilobato, lobis triangulo-ovatis, acuminatis, apicis patulis, lobo inferiore trilobato, lobo medio elliptico, acuminato (apice ipso apiculato et subcucullato), lobis lateralibus brevibus, triangulo-ovatis, cum labio superiore basi connatis; stamina vix exserta, antheris dorso tomentosis; ovarium glabrum.

Shrubs or small trees up to 3 meters high; stems erect or ascending, the tips quadrangular, densely strigose, the hairs whitish, straight, about 0.25 mm. long, the older portions of the stems terete, glabrous, gray, the lenticels minute, orbicular, corky; leaf blades oblong-elliptic to lanceolate or oblong-lanceolate, 8 to 13 cm. long, 2 to 4 cm. wide, acute to acuminate, the tip blunt and often curved, gradually narrowed at base, subcoriaceous, entire or shallowly crenate, the upper surface green, nitid, glabrous or sparingly and minutely strigose, the hairs barely 0.5 mm. long, the costa and lateral veins flat or slightly raised, the lower surface drying light olive green, minutely and rather sparingly strigose, the costa and veins more conspicuous than above; petioles up to 2 cm. long, strigose; flowers borne in terminal, solitary (occasionally 3), subsessile spikes up to 5 cm. long and 15 mm. broad, the rachis white-cottony; bracts closely imbricate, rhombic-ovate, up to 9 mm. long and 6 mm. wide at 2.5 mm. above base, acute to obtuse, white-cottony-pubescent at base, otherwise glabrous or sparingly pubescent, ciliate, the costa rather prominent, the 4 or 5 pairs of lateral nerves parallel and becoming obscure beyond middle of bract; ocelli 1 to 3, elliptic, about 0.5 mm. long, brown, nitid, varnished; bractlets obliquely lanceolate, subfalcate, 8 mm. long, carinate, 1 to 1.5 mm. wide, the keel densely white-pubescent, the margins glabrous, subhyaline, delicately striate-nerved; calyx 7 mm. long, the posterior segment 3.5 mm. wide, the anterior pair 3 mm. wide, the lateral pair 2.5 mm. wide, all oblong-ovate, finely pubescent or glabrate, striate-nerved, acute, ciliate toward tip; corolla 6 to 7 cm. long, red, minutely papillose, the tube about 4 mm. broad at base, contracted to 3 mm. at tip of ovary, thence gradually enlarged to a cylindric subventricose throat 7 or 8 mm. broad, the upper lip erect, narrowly ovate, 15 mm. long and 8 mm. wide, bilobed at apex, the lobes triangular-ovate, 7 mm. long, 4 mm. wide at base, acuminate, the tips outwardly curved, the middle lobe of the lower lip elliptic, spreading, 9.5 mm. wide, narrowed at base, subcucullate and apiculate at tip, the lateral lobes about 5 mm. long, the posterior edge adnate to lower part of upper lip, the free portions triangular-ovate, 1.5 mm. long, slightly over 1 mm. wide, obtuse; stamens exserted about 4 mm. beyond the mouth of the corolla tube,

the anthers 7 mm. long, 1.5 mm. wide, apiculate at each end, dorsally tomentose; ovary glabrous; mature capsules not seen.

Type in the U. S. National Herbarium, No. 703913, collected in forest ravine above Las Nubes, at Alto de Cielo, Department of Magdalena, Colombia, about "5,000 ft. altitude," December 18, 1898, by H. H. Smith (No. 1414). Isotypes (GH, Mo, Ph, NY, S).

MAGDALENA: San Lorenzo mountains, vicinity of Santa Marta, *Viereck* s. n. (US). Above Minca, Las Cumbres, in the foothills of the Sierra Nevada de Santa Marta, 2,000 meters altitude, *Hawkes* 587 (US).

NORTE DE SANTANDER: Ocaña, *Schlim* 537 (K); *Kalbreyer* 611 (K).

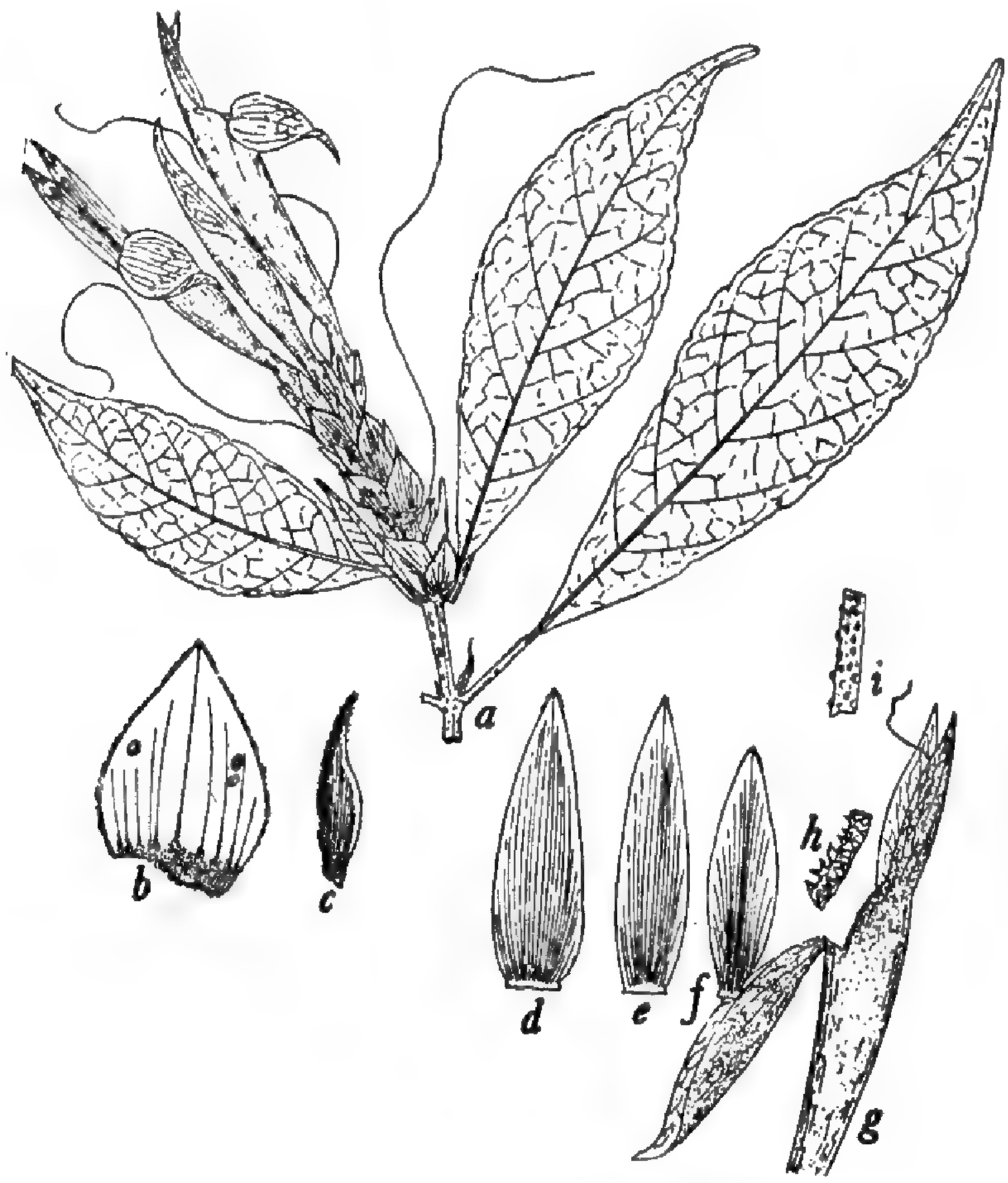

FIGURE 77.—*Aphelandra mildbraediana* Leonard (*H. H. Smith* 1414): *a*, Tip of stem; *b*, bract; *c*, bractlet; *d*, posterior calyx segment; *e*, one of the anterior segments; *f*, one of the lateral segments; *g*, tip of corolla; *h*, pubescence of corolla (from region near base of upper lip); *i*, pubescence of corolla (from about the middle of the tube). (*a*, Half natural size; *b-f*, twice natural size; *g*, natural size; *h*, *i*, about 25 times natural size.)

The rather small subglabrous leaf blades, short, relatively broad silky spikes and broad, finely pubescent calyx segments are characters by which one can recognize *Aphelandra mildbraediana* when compared with *A. pulcherrima* or its segregates. The species is named in honor of Johannes Mildbraed, a specialist in the family Acanthaceae.

Schultze No. 695, collected on wooded mountain slope at Casa Blanca, Colombia, 1,200 meters altitude, July 25, 1926, seems to be this species; a photograph of the Berlin specimen is in the U. S.

National Herbarium (Field Mus. photograph No. 8716). Schultze describes the plant from which he collected the specimen as a rare shrub 3 meters high producing gorgeous scarlet red flowers.

51. **Aphelandra barkleyi** Leonard, sp. nov. FIGURE 78

Suffrutex, caulibus glabris; lamina foliorum oblongo-elliptica, breviter acuminata (apice ipso obtuso), basi angustata, in petiolum decurrens, membranacea, undulata vel subcrenata, glabra vel subtus minute et parce strigosa, costa et venis lateralibus gracilibus sed prominentibus; petioli aliquanto breves, glabri vel minute et parce strigosi; spicae 1 vel plures, spica terminalis subsessilis, spicae laterales pedunculatae, pedunculis glabris, rhache albo-tomentosa; bracteae rhombico-ovatae, subacutae, brunnescentes (siccae), glabrae vel in area mediana minute pubescentes, marginibus dense ciliolatis; ocelli (6–7) suborbiculares, brunnei, nitidi, contigui; bracteolae lanceolatae, obliquae, carinatae, striato-nervatae, intus glabrae, extus pubescentes, marginibus subhyalinis; calycis segmenta acuta, coriacea, striato-nervata, apice pilosa, deorsum puberula, segmentum posterius anguste ovatum, anteriora oblongo-lanceolata, lateralia lineari-lanceolata; corolla coccinea, minute papillosa, tubo cylindrico, labio superiore erecto, oblongo-ovato, bilobato, lobis triangularibus, acuminatis, labio inferiore trilobato, lobo medio plus minusve patulo, apice acuminato et curvato, lobis lateralibus oblongis, subobtusis, cum labio superiore basi connatis; stamina vix exserta, antheris basi et apice obtusis et apiculatis, filamentis basi puberulis, sursum glabris; ovarium glabrum.

Suffrutescent shrub up to 1 meter high; stems glabrous; leaf blades oblong-elliptic, up to 35 cm. long and 12.5 cm. wide, short-acuminate (the tip itself blunt), more or less abruptly narrowed at base and decurrent on the petiole, membranaceous, entire, undulate or subcrenate, glabrous or the lower surface very sparingly and minutely strigose, the costa and lateral veins (15 or 16 pairs) slender but prominent; petioles (unwinged portion) up to 5 cm. long, glabrous or sparingly and minutely strigose; spikes 1 to several, up to 15 cm. or occasionally as much as 30 cm. long, 1 cm. broad, the terminal spike subsessile, the others short-peduncled, the peduncles up to 1 cm. long, glabrous, the rachis white-tomentose; bracts rhombic-ovate, light brown, 7.5 mm. long, 6 mm. wide at 3.5 mm. above base, subacute, drying light brown, glabrous or the medial region minutely and inconspicuously pubescent, the margins densely ciliolate, the costa and lateral nerves (several pairs) prominent; ocelli usually 6 or 7, suborbicular, 0.5 to 0.75 mm. in diameter, light brown, nitid, contiguous; bractlets lanceolate, oblique, carinate, 8 mm. long, 2 mm. wide near base, finely striate-nerved, subhyaline on margin, glabrous within, pubescent without, the hairs at tip 0.25 mm. long, the others shorter; calyx segments 8

mm. long, acute, coriaceous, striate-nerved, pilose at tip, the hairs up to 0.25 mm. long, otherwise minutely puberulous, the posterior segment narrowly ovate, 4 mm. wide, the anterior pair oblong-lanceolate, 3 mm. wide, the lateral pair linear-lanceolate, 1.5 mm. wide; corolla scarlet, minutely papillose, 5 to 5.5 cm. long, the tube 4 mm. broad at

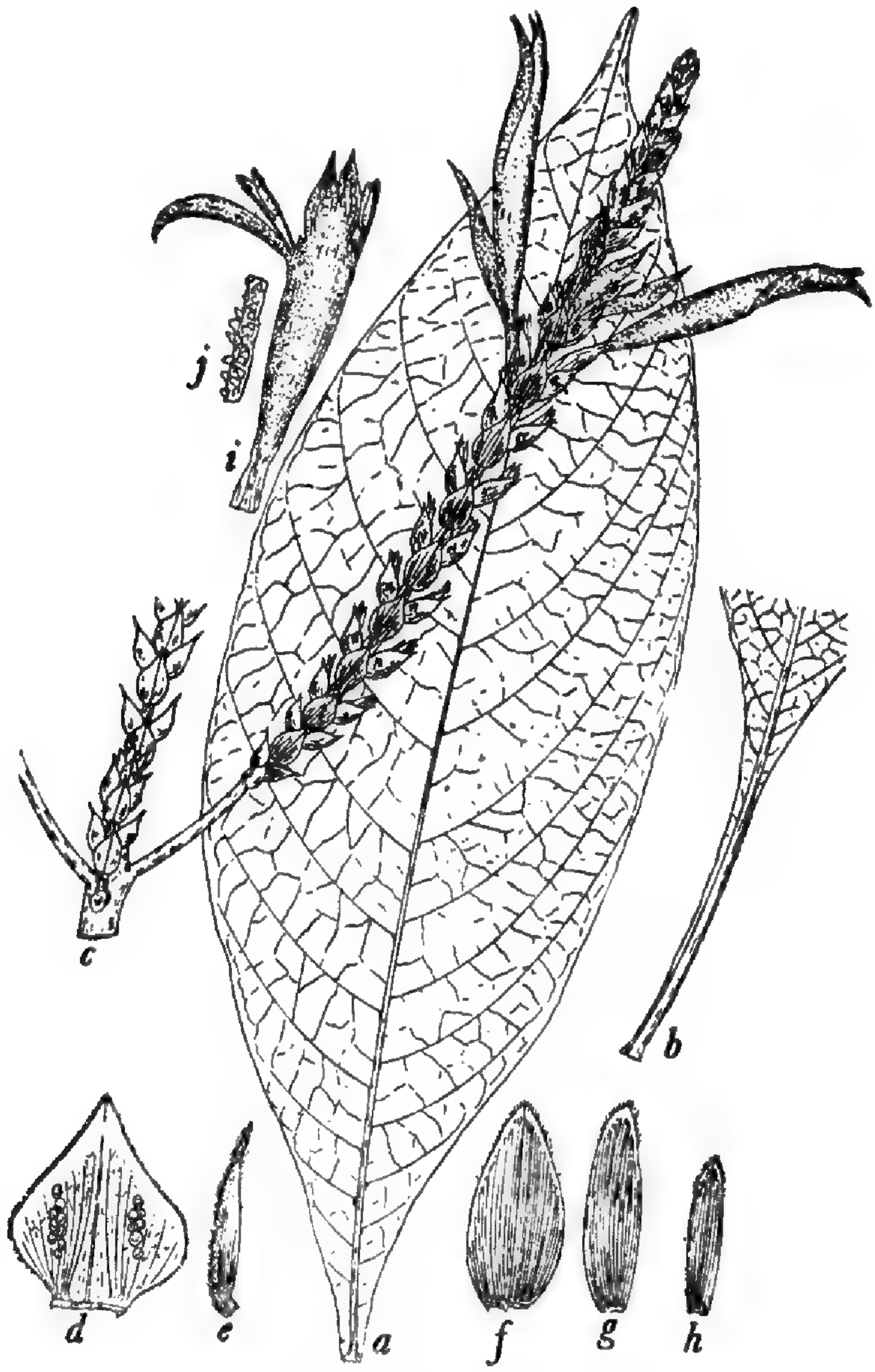

FIGURE 78.—*Aphelandra barkleyi* Leonard (*Araque-Molina & Barkley* 18M.0.33): *a*, Leaf near base of inflorescence; *b*, petiole of one of the lower stem leaves; *c*, portion of inflorescence; *d*, bract; *e*, bractlet; *f*, posterior calyx segment; *g*, one of the anterior segments; *h*, one of the lateral segments; *i*, corolla; *j*, pubescence of corolla. (*a-c*, *i*, Half natural size; *d-h*, natural size; *j*, about 20 times natural size.)

base, narrowed to 1.5 mm. at 6 mm. above base, thence enlarged to a subcylindric throat, 6.5 mm. broad at mouth, the upper lip erect, oblong-ovate, 18 mm. long, 7 mm. wide, bilobed at apex, the lobes triangular, 7 mm. long, 3.5 mm. wide at base, acuminate, the lower lip trilobed, the middle lobe more or less spreading, lanceolate, about 18 mm. long, 6 mm. wide, acuminate and recurved at tip, the lateral lobes

oblong, about 4 mm. long and 1 mm. wide, obtusish, their upper margins connate with the lower part of the upper lip; stamens reaching notch of upper lip, the anthers 6.5 mm. long, 1.5 mm. broad, obtuse and apiculate at both ends, the filaments puberulous near base, otherwise glabrous; ovary glabrous.

Type in the U. S. National Herbarium, No. 1954078, collected in rich soil of damp, rocky woods on the banks of the Río Guatiquía between the foothills and plains in the vicinity of Villavicencio, Intendencia of Meta, Colombia, 350 meters altitude, November 20, 1948, by Jorge Araque-Molina and Fred A. Barkley (No. 18M.033). An isotype is also in the U. S. National Herbarium.

CUNDINAMARCA: Quetamé to Villavicencio, *Pérez-Arbeláez* 35 (Col). Tequendama Casas, *Triana* s. n. (NY).

META: Woods along the Río Guatiquía, 500 meters altitude, March 18 and 19, 1939, *Killip* 34489 (US). Dense, humid forest along Río Güejar, 400 meters altitude, November 7, 1949, *Philipson, Idrobo & Fernandez* 1351 (US). Villavicencio, 500 meters altitude, November 9, 1938, *Cuatrecasas* 4538 (US); *Haught* 2528 (US). Ocoa, near Villavicencio, July 21, 1945, *Schiefer* 851 (US). Apiai, Llano de San Martín, *Triana* s. n. (Col).

Characters by which *Aphelandra barkleyi* may be recognized are its membranous, nearly glabrous leaf blades, its glabrous stems, and light brown, acute, rhombic-ovate bracts. Conspicuous on this light brown background of the bracts are the darker brown nitid ocelli so closely contiguous as to appear, without a lens, as a single spot. In general appearance *A. barkleyi* is somewhat like *A. lingua-bovis*, but that species has slightly larger bracts (up to 1.5 cm. long instead of only 7.5 mm.) bearing alveolar spots instead of well-defined ocelli. The spike of Schiefer's No. 851 is blackened with the characteristic light brown of the bracts obscured. The spikes of Haught's No. 2528 are exceedingly long (30 cm.) and the red corollas are tipped with yellow.

52. Aphelandra daemonia Leonard, sp. nov. FIGURE 79

Frutex parce ramosus, caulibus teretibus vel sursum subquadrangularibus, sursum dense strigosis, pilis arcte appressis, albidis, minutis, deorsum glabris; lamina foliorum ovata vel oblongo-elliptica, acuminata (apice ipso obtuso et plus minusve curvato), basi angustata, in petiolum decurrens, chartacea, crenata, supra parce strigosa vel glabra, subtus aliquanto strigosa, costa et venis aliquanto prominentibus; petioli alati, parce strigosi; spicae 1 vel plures, fasciculatae, plerumque aliquanto breves, terminales, subsessiles, rhache flocculoso-pubescente, pilis albis; bracteae imbricatae, quadrifariae, rhombeo-ovatae, subacutae vel obtusae, mucronatae, minute puberulae, ciliatae, costa et venis vix prominentibus; ocelli conspicui, magni, nitidi, brunnei, solitarii vel plures arcte contigui vel confluentes; bracteolae

lanceolatae, acuminatae, dorso flocculoso-tomentosae, pilis albis, marginibus hyalinis et glabris; calycis segmenta striato-nervata, coriacea, sursum puberula, marginibus hyalinis, segmentum posterius anguste ovatum, apice subacutum et subcucullatum, anteriora lanceolata, subobtusa et apiculata, lateralia anguste lanceolata, subobtusa et apiculata; corolla rubra, minute papillosa, basi excepta, tubo aliquanto angusto, vix ventricoso, labio superiore erecto, ovato, bilobato, lobis magnis, lanceolato-ovatis, acuminatis, labio inferiore trilobato, lobo medio patulo, oblongo, acuminato, apice recurvato, lobis lateralibus parvis, oblongis, subobtusis, cum labio superiore pro parte connatis; stamina vix exserta, filamentis glabris; ovarium glabrum.

Slender, sparingly branched shrubs; stems terete or subquadrangular toward tip, the upper portion densely and closely strigose, the hairs whitish, less than 0.5 mm. long, the lower portions of the stems glabrate, the lenticels orbicular to linear, the larger barely over 0.5 mm. long; leaf blades ovate to oblong-elliptic, 12 to 25 cm. long, 5 to 10 cm. wide, acuminate, the apex more or less curved (the tip itself blunt), gradually or abruptly narrowed to a winged petiole, chartaceous, the margins crenate, the upper surface drying olive brown, sparingly appressed hirsute to glabrate, the hairs about 0.5 mm. long, the costa flat or slightly impressed, the lateral veins (10 to 12 pairs) slightly raised, the veinlets inconspicuously and coarsely reticulate, the lower surface drying a slightly lighter shade than the upper and somewhat more densely hirsute, the costa and veins more conspicuous, the hairs whitish, appressed, 0.5 mm. long except at junction of costa with lateral veins, here up to 0.75 mm. long, spreading or ascending; petioles (unwinged portion) up to 1 cm. long, the winged portion becoming 1.5 cm. wide at 3 to 8 cm. above the base; smaller leaves subtending the inflorescence, subsessile, the buds and young leaves densely yellowish white-pilose; flowers borne in 1 or more terminal, subsessile spikes 6 to 8.5 cm. long and 8 to 10 mm. broad, the rachis cottony-white-pubescent; bracts closely imbricate, dark brown, rhombic-ovate, 5 mm. long and wide, acutish to obtuse, minutely mucronate, ofter bearing near middle several low blunt teeth 0.25 mm. long, coriaceous, minutely puberulous without, ciliolate, the costa and lateral nerves barely conspicuous, the ocelli elliptic, 1 mm. long and 0.75 mm. wide, dark brown or almost black, nitid, varnished, solitary or occasionally 2 or 3, then confluent or closely contiguous; bractlets lanceolate, 6 mm. long, 1.5 mm. wide, acuminate, carinate, dorsally white-cottony-tomentose, the margins hyaline and glabrous; calyx 7 mm. long, the posterior segment narrowly ovate, 4 mm. wide, acutish or subcucullate at tip, the anterior pair lanceolate, 2.5 mm. wide, the lateral pair slightly narrower, both anterior and lateral pairs obtusish

and apiculate, all striate-nerved, coriaceous, minutely puberulous toward tip, the margins hyaline, the nerves indurate at base; corollas 5.5 cm. long, red, minutely papillose except at the glabrous base, the tube 3 mm. broad at base, narrowed to 1.5 mm. at 9 mm. above base, thence enlarged to a tubular, slightly ventricose throat 5.5 mm. broad at mouth, the upper lip erect, 23 mm. long, 9 mm. wide, 2-lobed at tip,

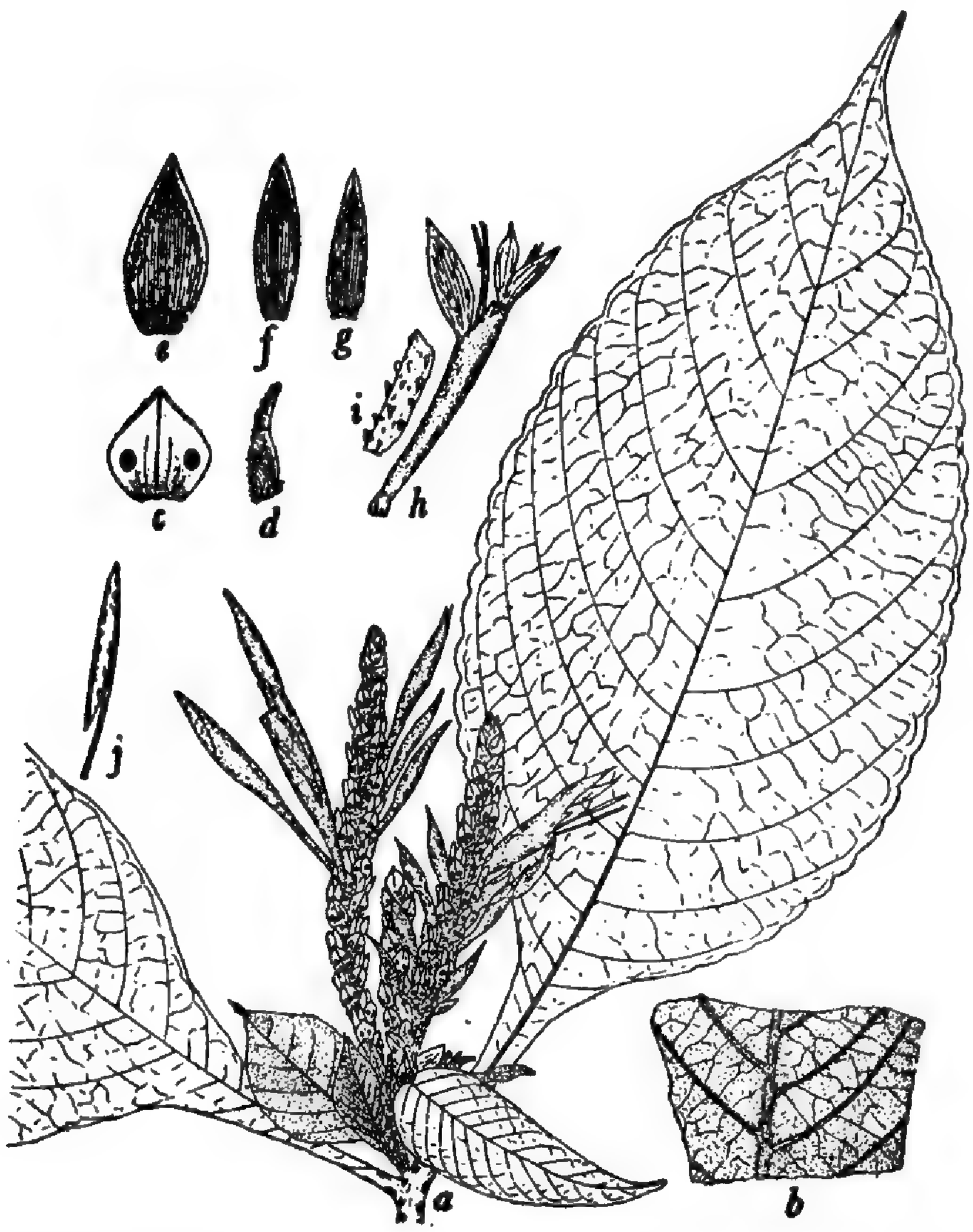

FIGURE 79.—*Aphelandra daemonia* Leonard (*H. H. Smith* 1415): *a*, Tip of stem; *b*, portion of leaf blade (undersurface); *c*, bract; *d*, bractlet; *e*, posterior calyx segment; *f*, one of the anterior segments; *g*, one of the lateral segments; *h*, corolla; *i*, pubescence of the corolla tube; *j*, anther. (*a*, *h*, Half natural size; *b*, natural size; *c-g*, *j*, twice natural size; *i*, about 40 times natural size.)

the lobes lance-ovate, 1 cm. long, 4 mm. wide at base, acuminate, the lower lip spreading, 24 mm. long, 7 mm. wide, acuminate, ending in a slender recurved tip, the lateral lobes adnate to the upper lip, the free portion oblong, 4.5 mm. long, 1.5 mm. wide, obtusish; stamens exserted 14 mm. beyond mouth of corolla tube, the filaments glabrous, the anthers 7 mm. long and 1 mm. broad, acute at both ends but scarcely apiculate; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 703914, collected in dry forests near Bonda, vicinity of Santa Marta, Department of Magdalena, Colombia, "below 3,000 feet" altitude, October 31, 1898, by H. H. Smith (No. 1415). Isotypes (Ch, GH, NY, Ph, S).

MAGDALENA: Guamacito, Santa Marta region, *Record* 36 (NY). Slopes of the Sierra Nevada de Santa Marta, 600 meters altitude, *Cardona, Gutiérrez & Barkley* 18C.077 (US). Tucurinca, *Romero* 583 (Ch.). Flood-plain forest, Cerrejón, 100 meters altitude, *Haught* 6730 (US).

Aphelandra daemonia is another species of the *A. pulcherrima* complex. Its distinguishing characters lie in the crenate, ovate to oblong-elliptic leaf blades, narrowed, and sometimes abruptly so, into slenderly winged petioles, and in the rather small, broad, obtuse bracts, ornamented with large, often solitary, nitid ocelli. These bracts have, in fact, a fanciful resemblance to a series of elfin faces peeping above the brilliant white tomentum of the rachis, thus the species name *daemonia* (δαιμόνιον, elf.). Dr. Samuel J. Record states that the wood is very hard.

53. **Aphelandra grandis** Leonard, sp. nov. FIGURE 80

Frutex, caulibus glabris; lamina foliorum magna, oblonga vel oblongo-ovata, apice breviter acuminata, apice ipso obtuso, basi angustata, in petiolum decurrens, integra vel undulata vel leviter crenata, glabra, costa et venis lateralibus pilos minutos appressos ferentibus; petioli graciles, glabri; spicae solitariae vel plures fasciculatae, magnae, terminales, subsessiles, rhache albopubescente; bracteae aliquanto imbricatae, magnae, rubrae, ovatae, apice rotundatae, striato-nervatae, sericeo-pubescentes, deorsum dense sericeo-pubescentes, pilis appressis, albis; ocelli multi, minuti; bracteolae lanceolatae, dense sericeo-pubescentes, pilis appressis; calycis segmenta triangularia, subaequalia, dense sericeo-pubescentia, pilis appressis; corolla flava, minute pubescens, labio superiore oblongo, bilobato, lobis triangularibus, acuminatis, labio inferiore trilobato, lobo medio lanceolato, acuto, lobis lateralibus parvis, obtusis, cum labio superiore pro parte connatis; capsulae oblongae, apice obtusae, sursum glabrae et nitidae, deorsum opacae, minute et dense punctatae.

Shrubs up to 3 meters high; stems glabrous; leaf blades oblong or oblong-ovate, up to 35 cm. long and 18 cm. wide, short-acuminate at apex (the tip itself blunt), narrowed at base and decurrent on the petiole, glabrous or the costa and lateral veins (usually about 15 to 20 pairs) bearing a few small appressed hairs, the margin entire, undulate or shallowly crenate; petioles slender, up to 10 cm. long, glabrous; spikes stout, one or several, in fascicles, terminal, sessile, up to 30 cm. long and about 2 cm. broad; bracts ovate, up to 25 mm. long and 12 mm. wide, rounded, pubescent to glabrate, often silky toward base, the hairs up to 0.75 mm. long, appressed, the ocelli numerous

(about 20), elliptic, minute (about 400 μ long and 250 μ wide); bractlets lanceolate, 11 mm. long, 3 mm. wide near base, obliquely carinate, densely pubescent, the hairs silky, appressed; calyx segments triangular, subequal, 12 or 13 mm. long, the posterior segment 7 mm. wide near base, the anterior pair 4 mm. wide, the middle pair 3 mm. wide, all acute, striate-nerved, densely pubescent with silky ap-

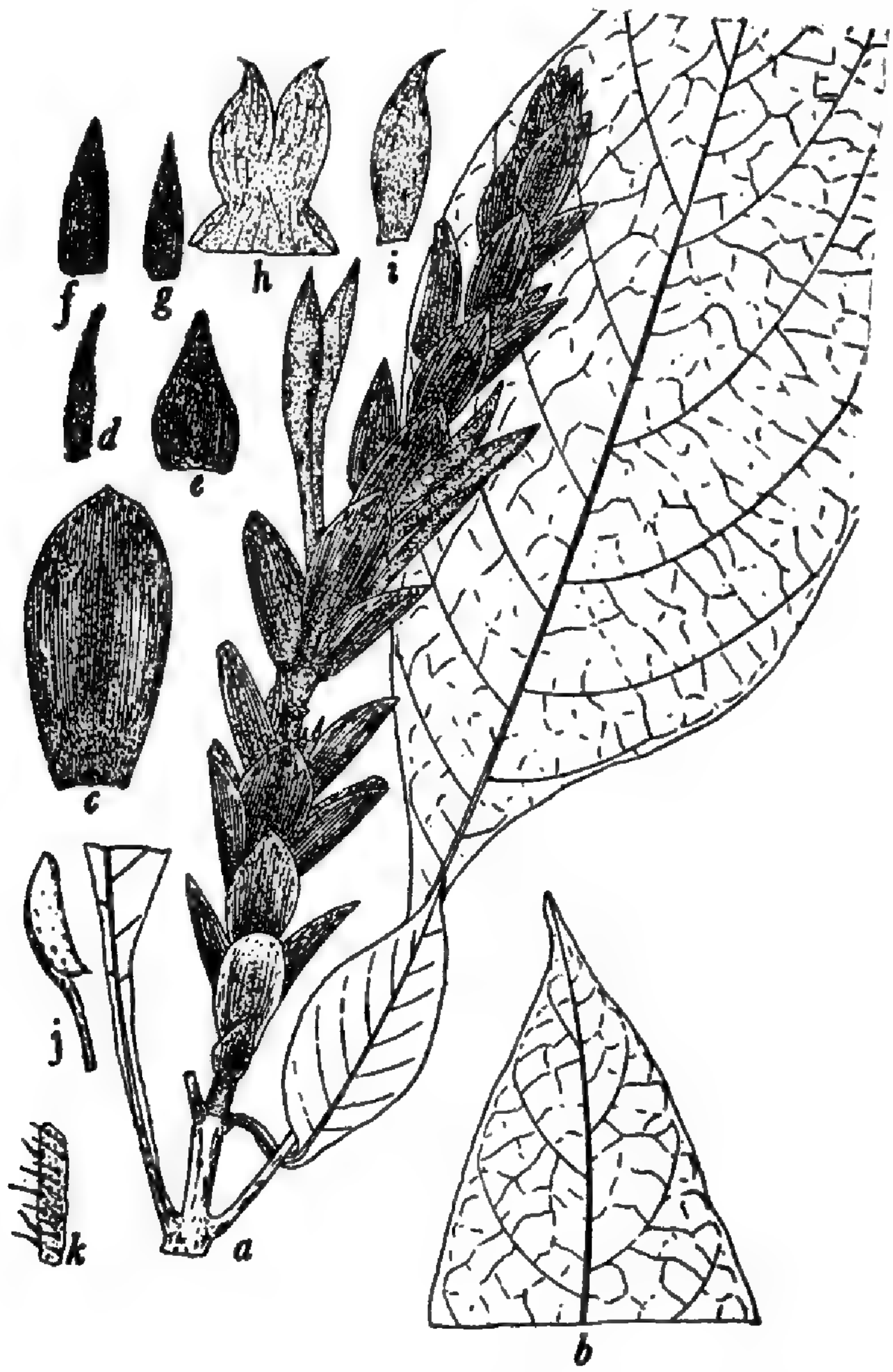

FIGURE 80.—*Aphelandra grandis* Leonard (*Guevara-Amórtegui* 260): *a*, Tip of stem; *b*, tip of leaf blade showing undersurface; *c*, bract; *d*, bractlet; *e*, posterior calyx segment; *f*, one of the anterior segments; *g*, one of the lateral segments; *h*, upper lip of corolla; *i*, middle lobe of lower lip; *j*, anther; *k*, pubescence of corolla. (*a*, *b*, Half natural size; *c*-*i*, natural size; *j*, about 3 times natural size; *k*, about 20 times natural size.)

pressed hairs except the subglabrous and subhyaline margins; corolla yellow, finely pubescent, 5.5 to 6 cm. long, 6 mm. broad at throat, the upper lip oblong, about 15 mm. long and 9 mm. wide, 2-lobed, the lobes triangular, about 6 mm. long and 5 mm. wide, acuminate, the lower lip 3-lobed, the middle lobe lanceolate, about as long as the upper lip, acute, the lateral lobes small, about 2.5 mm. long and 1 mm. wide, obtuse, their upper margins partly connate with the upper

lip; capsules oblong, 13 mm. long, 7 mm. broad, blunt at tip, nitid and glabrous toward tip, dull and minutely and densely punctate towards base; mature seed not seen.

Type in the U. S. National Herbarium, No. 1543966, collected at Albán, Department of Cundinamarca, Colombia, 1,699 meters altitude, in 1932, by B. Guevara-Amórtegui (No. 260). Ariste-Joseph's No. 1081 (GH, Ph, US), collected at Paime, Cundinamarca, and Haught's No. 1936 (US), collected in rich alluvial valley soil near Caimona Creek, Santander, 200 meters altitude, July 20, 1936, are also of this species.

The exceedingly large bracts and yellow corollas serve to distinguish *Aphelandra grandis* from among the numerous relatives of *A. pulcherrima*. *Grandis* (large) alludes to the size attained by the plant, its relatively large leaf blades, spikes, and flower bracts.

54. **Aphelandra aristei** Leonard, sp. nov. FIGURE 81

Suffrutex, caulibus sursum dense hirsutis, pilis subappressis vel ascendentibus; lamina foliorum oblongo-elliptica, subobtusa, basi angustata, in petiolum decurrens, integra vel undulata, supra aliquanto parce pilosa, subtus dense et molliter pilosa, pilis subappressis, brunnescentibus; petioli breves, dense et molliter pubescentes; spicae solitariae, terminales, rhache pilosula, pedunculo dense hirsuto, pilis subappressis vel patulis; bracteae ascendentes, non arcte appressae, rubro-brunnescentes (siccae), oblongo-lanceolatae, striato-nervatae, acuminatae, ciliatae, tenuiter et molliter pubescentes, pilis subappressis; ocelli minuti, elliptici, brunnescentes, glabri; bracteolae subulatae, dorso tenuiter et molliter pubescentes, striato-nervatae; calycis segmenta subaequalia, acuminata, striato-nervata, tenuiter pubescentia, segmentum posterius anguste ovatum, anteriora lanceolata, lateralia lanceolata; corolla flava (?), minute pubescens, labio superiore erecto, ovato, bilobato, lobis triangularibus, acuminatis, apicis curvatis, labio inferiore plus minusve patulo, trilobato, lobo medio oblongo, acuto, lobis lateralibus anguste ovatis, obtusis, liberis; stamina vix exserta; ovarium glabrum.

Shrubby; tips of stems densely hirsute, the hairs subappressed or ascending, about 0.5 mm. long; leaf blades oblong-elliptic, up to 14 cm. long and 6 cm. wide (the lowermost probably larger), obtusish, narrowed at base and decurrent on the petiole, entire or undulate, the upper surface rather sparingly pilose, the hairs about 0.75 mm. long, the lower surface densely and softly pilose, the hairs subappressed, brownish, about 1 mm. long; petioles up to 1 cm. long, densely and softly pubescent; spikes solitary, terminal, up to 15 cm. long and about 2 cm. broad, the rachis pilosulous, the peduncles up to 3 cm. long, the pubescence that of the stems; bracts ascending, not closely appressed, light brownish red (dry), oblong-lanceolate, up to 24 mm.

long, 4.5 mm. wide near base, 7 mm. wide at middle, prominently striate-nerved, acuminate, ciliate, finely pubescent, velvety, the hairs subappressed, the inner surface glabrous or nearly so; ocelli numerous, minute, up to 40 or more, elliptic, about 0.25 mm. long, light brown, glabrous but scarcely nitid; bractlets subulate, 1 cm. long, 1.5 mm. wide at base, finely and softly pubescent without, finely striate-nerved; calyx segments subequal, about 1 cm. long, the posterior seg-

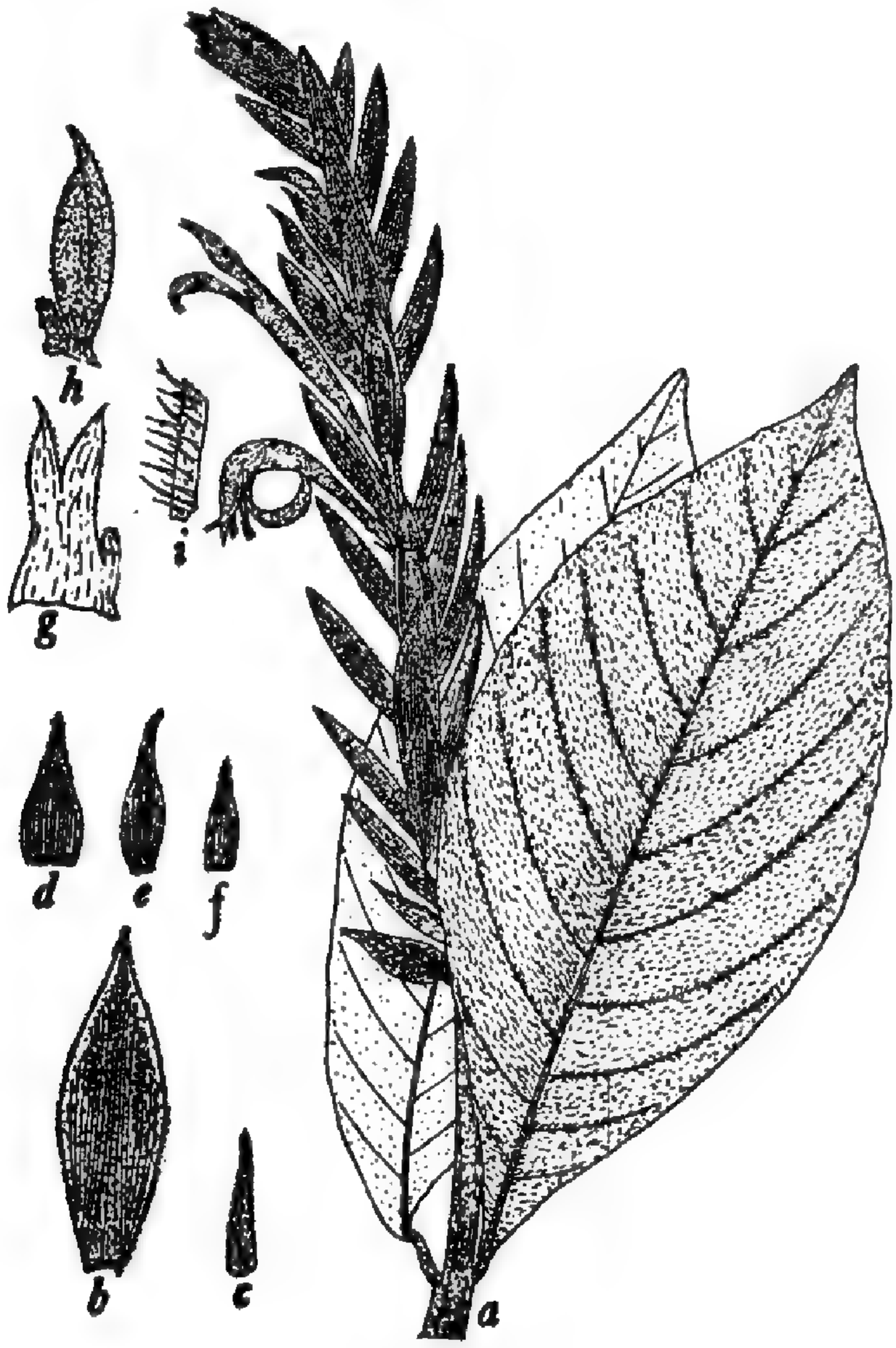

FIGURE 81.—*Aphelandra aristei* Leonard (*Ariste-Joseph*, s. n.): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, posterior calyx segment; *e*, one of the anterior segments; *f*, one of the lateral segments; *g*, upper lip of corolla (inner surface showing one of the partly adnate lateral lobes of the lower lip; *h*, lower lip of the corolla (outer surface); *i*, pubescence of corolla tube. (*a*, Half natural size; *b-h*, natural size; *i*, about 18 times natural size.)

ment narrowly ovate, 4 mm. wide slightly above base, the anterior segments lanceolate, 2.5 mm. wide, the lateral pair narrowly lanceolate, 2 mm. wide, all gradually narrowed from just above base to a slender tip, finely pubescent and striate-nerved; corolla yellow (?), finely pubescent, 3.5 to 4 cm. long, the upper lip erect, ovate, 2-lobed, the lobes triangular, acuminate, outwardly curved at tip, the lower lip more or less spreading, 3-lobed, the middle lobe oblong, 15 mm. long, 4.5 mm. wide, acute, the lateral lobes narrowly ovate, about 5

mm. long, 1.5 mm. wide, obtuse; stamens slightly exserted; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 1185109, collected at Pacho, Department of Cundinamarca, Colombia, August 1923, by Brother Ariste-Joseph (s. n.).

Aphelandra aristei resembles rather closely *A. flava* Nees, from the description of that species. There are, however, no glandular hairs ("bracteis . . . pubescentibus viscidulisque") present on the bracts, as in *A flava*; moreover, Nees makes no mention of ocelli.

55. **Aphelandra trianae** Leonard, sp. nov. FIGURE 82

Suffrutex vel frutex, caulibus deorsum teretibus, glabratis, sursum subquadrangularibus, hirsutis, pilis rigidis, curvatis, ascendentibus; lamina foliorum oblongo-ovata, acuminata, basi angustata, in petiolum decurrens, submembranacea, supra glabra vel parce strigosa, pilis minutis, subtus parce hirtella, costa et venis lateralibus aliquanto prominentibus; petioli breves, strigosi vel hirsuti; spicae solitariae, subsessiles, bracteis ascendentibus, vix imbricatis, rhache dense pilosa, pilis rectis, albescentibus, minutis, ascendentibus; bracteae aliquanto magnae, oblongae, acutae et aristatae, ciliatae, utrinque molliter griseo-pubescentes, pilis ascendentibus, costa et venis lateralibus aliquanto prominentibus, sed propter pubescentiam obscuris; ocelli plures (8–12), elliptici, arcte contigui, brunnei, obscuri; bracteolae anguste lanceolatae, attenuatae, apice tenues, carinatae, areis marginalibus tenuibus, striatis, subglabris, carina pilosa, pilis rectis, ascendentibus, argenteis; calycis segmenta coriacea, striato-nervata (nervis basi induratis), glabra, apice ciliata, segmentum posterius oblongo-lanceolatum, glabrum, attenuatum, acutum, anteriora lanceolata, glabra, acuta, apice ciliata; corolla (immatura) pubescens, pilis patulis, tubo subcylindrico, labio superiore ovato, bilobato, lobis triangularibus, acutis, labio inferiore trilobato, lobo medio lanceolato, acuminato, apice curvato, lobis lateralibus parvis, rotundatis, cum labio superiore basi connatis; stamina vix exserta, antheris apice obtusis, cohaerentibus, basi oblique obtusis, minute apiculatis, filamentis basi pilosis, sursum glabris.

Suffrutescent herbs or shrubs; stems subquadrangular, hirsute, the hairs stiff, curved, ascending, 0.5 to 0.75 mm. long, brownish, the lower parts terete and glabrate; leaf blades oblong-ovate, up to 15 cm. long and 6 cm. wide, acuminate, narrowed at base and decurrent on the petiole, submembranaceous, entire or undulate, the upper surface glabrous or sparingly strigose, the hairs about 0.5 mm. long, the lower surface sparingly hirtellous or the costa and veins (9 or 10 pairs) more densely so, the hairs ascending, up to 0.75 mm. long, the costa and veins moderately prominent; petioles up to 1 cm. long, rather densely strigose or hirsute; spikes solitary, subsessile, about 8 cm. long and 3

cm. broad, the bracts ascending, scarcely imbricate, the rachis densely pilose, the hairs straight, whitish, ascending, slightly over 0.5 mm. long; bracts oblong, 25 mm. long, about 5 mm. wide, acute and aristate, both surfaces softly gray-pubescent, the hairs ascending, about 0.5 mm. long, the margins ciliate, the hairs up to 1 mm. long, the costa and lateral veins rather prominent but obscured by the pubescence; ocelli numerous (8 to 12), obscure, about 0.75 mm. long, 0.5 mm. wide, elliptic, brown, contiguous; bractlets narrowly lanceolate, up to 14 mm. long, attenuate, carinate, the marginal region thin, striate, subglabrous, the keel densely pilose, the hairs straight, ascend-

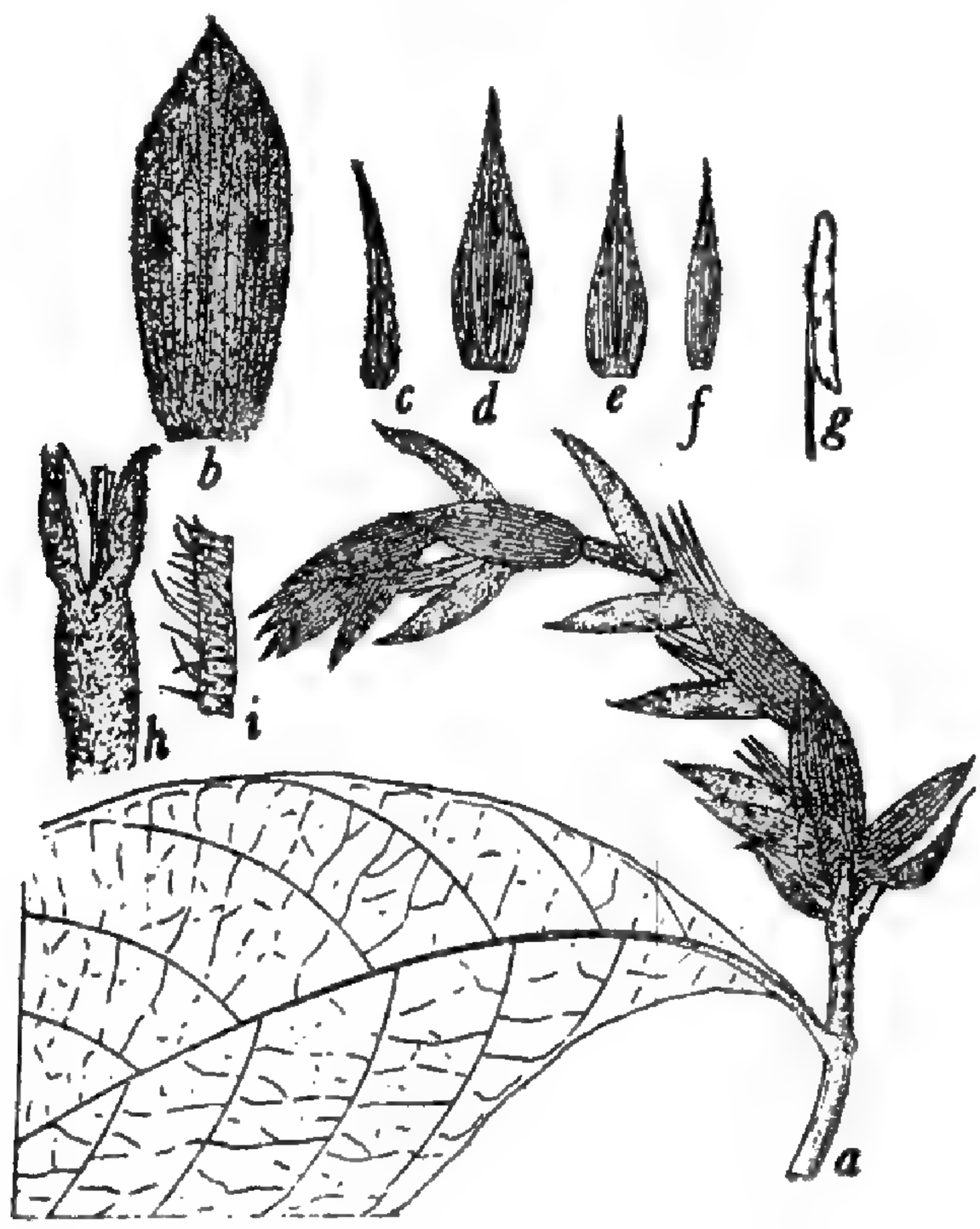

FIGURE 82.—*Aphelandra trianae* Leonard (*Triana* s. n., Quindío): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, posterior calyx segment; *e*, one of the anterior segments; *f*, one of the lateral segments; *g*, anther; *h*, tip of corolla; *i*, pubescence of corolla tube. (*a*, Half natural size; *b-f,h*, natural size; *g*, twice natural size; *i*, about 16 times natural size.)

ing, up to 1 mm. long, silvery; calyx 18 mm. long, the segments coriaceous, striate-nerved (the nerves indurate at base), glabrous, ciliate at tip, the posterior segment oblong-lanceolate, attenuate and sharply acute, 5 mm. wide near base, anterior segments lanceolate, glabrous, attenuate and slenderly acute, the upper half ciliate, lateral segments linear-lanceolate, 2 mm. wide near base, attenuate-acuminate, glabrous, ciliate at tip; corolla about 5 cm. long, rather densely pubescent, the hairs spreading, 0.5 mm. long, the tube 2.5 mm. broad near tip of ovary, 7 mm. broad at mouth, slightly curved, the upper lip (immature corolla) ovate, about 10 mm. long and 6 mm. wide, bidentate, the lobes triangular, 5 mm. long, 3 mm. wide at base, acute, the middle lobe of the lower lip lanceolate, 8 mm. long, 4 mm. wide, slenderly acuminate,

the tip recurved, the lateral lobes small, rounded, adnate to upper lip of corolla; stamens exserted, anthers 7 mm. long, 1.5 mm. broad, obtuse and cohering at tip, obliquely obtuse at base and minutely apiculate, the filaments pilose at base, glabrous upwardly; ovary glabrous.

Type in the herbarium of the Royal Botanic Gardens, Kew, collected in the Quindío Mountains near the Tolima-Caldas border, Colombia, February, 1853, by J. Triana, s. n.; isotype (Col).

Distinguishing characters of *Aphelandra trianae* are to be found in its rather large, silvery pubescent, oblong, ascending, acute bracts, its slenderly acute calyx segments, and its subglabrous to sparingly hirsute leaf blades (undersurface). There is much similarity in the spikes of this and *A. aristei*, but the leaf blades of that species are densely and softly pilose and the ocelli very minute and numerous.

56. **Aphelandra albert-smithii** Leonard, sp. nov. FIGURE 83

Frutex, caubibus teretibus, glabris vel sursum parce hirsutis; lamina foliorum late oblanceolata, breviter acuminata (apice ipso obtuso), basi angustata, in petiolum decurrens, subcoriacea, integra vel undulata, supra parce hirsuta, subtus aliquanto hirsuta, pilis longis (1 mm.), brunnescentibus, ascendentibus vel patulis, costa et venis lateralibus gracilibus sed prominentibus, venulis crasse reticulatis; petioli breves, hirsuti; spicae terminales, 1 vel plures, subsessiles vel breviter pedunculatae, pedunculis dense hirsutis, rhache glabra vel parce pilosa; bracteae brunneae (siccae), rhombico-ovatae, apice acutae et cuspidatae, ciliatae, minute et inconspicue puberulae vel basi pilosae; ocelli (fere 6) elliptici, brunnei, nitidi, contigui vel imbricati; bracteolae ovatae, acutae, obscure striato-nervatae, basi subauriculatae, aliquanto hirsutae, pilis brunnescentibus, costa aliquanto prominente, basi indurata; calycis segmenta striato-nervata, subcoriacea, apiculata, segmentum posterius oblongo-ovatum, apice apiculatum, anteriora et lateralia oblonga et acuta; corolla rubra, puberula, pilis minutis, conicis, tubo subcylindrico, labio superiore erecto, angusto, bilobato, lobis longis, lanceolatis, acuminatis, labio inferiore trilobato, lobo medio patulo, lanceolato, acuminato, lobis lateralibus triangularibus, acutis, cum labio superiore basi connatis; stamina vix exserta, filamentis gracilibus, basi retrorse hirsutis, sursum glabris; ovarium glabrum.

Shrub up to 3.5 meters high; stems terete, glabrous or the uppermost portions sparingly hirsute, the hairs appressed to spreading, up to 1.25 mm. long; leaf blades broadly oblanceolate, up to 18 cm. long and 6 cm. wide, short-acuminate (the tip itself obtuse), narrowed from above middle to a short, winged petiole, subcoriaceous, entire or undulate, the upper surface sparingly hirsute, the hairs ascending, about 0.75 mm. long, the lower surface rather densely hirsute, the hairs about 1 mm. long, ascending to spreading, light

brown, the costa and lateral veins (15 to 17 pairs) slender but prominent, the veinlets rather conspicuously and coarsely anastomosing; petioles (unwinged portion) up to 1 cm. long, hirsute; spikes terminal, solitary or several in a fascicle, the terminal spike subsessile, the lateral spikes short-pedunculate, up to 8 cm. long and 1 cm. broad, the peduncles up to 1 cm. long, densely hirsute, the rhachis glabrous or sparingly pilose; bracts drying brown, rhombic-ovate,

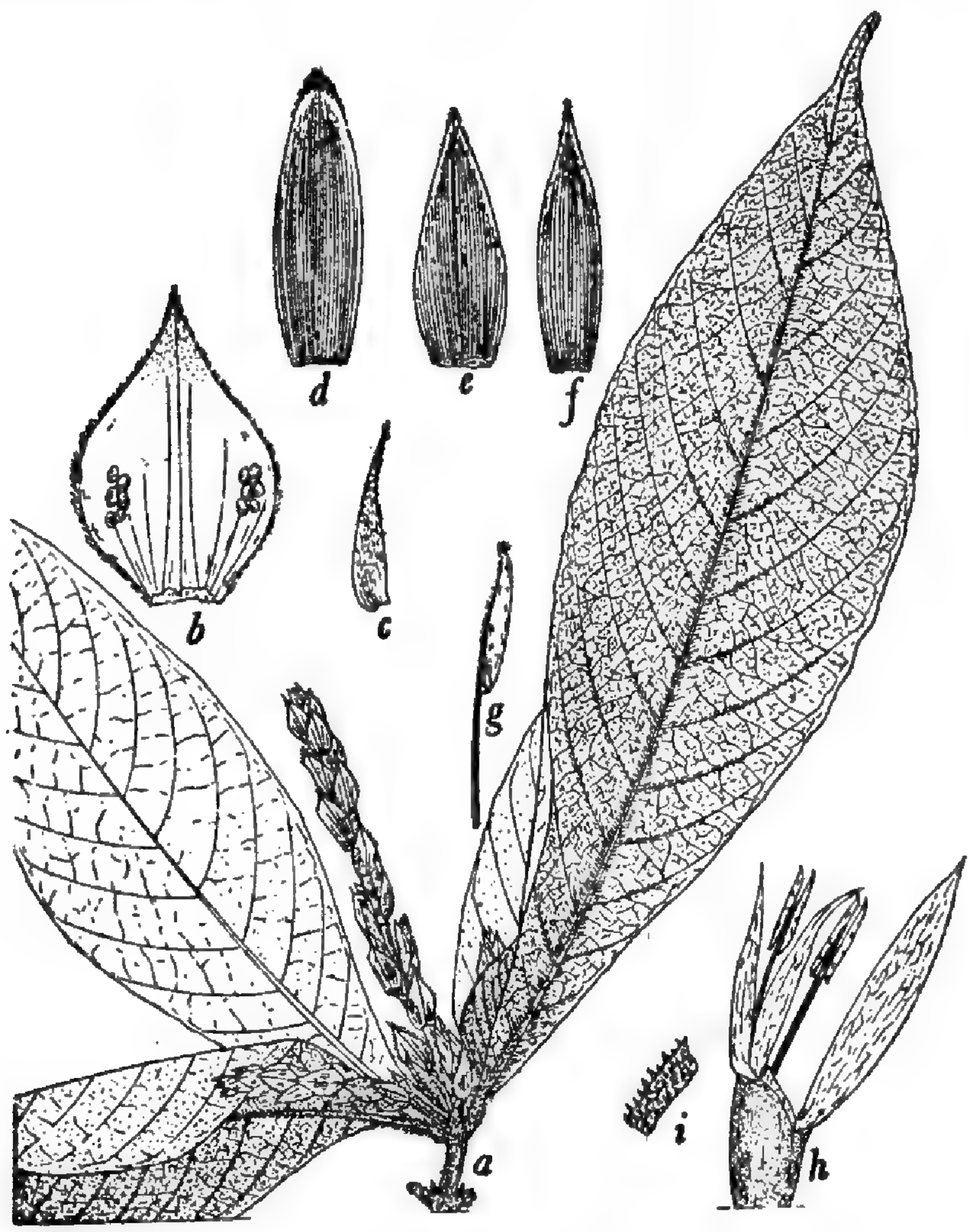

FIGURE 83.—*Aphelandra albert-smithii* Leonard (*Killip & Smith* 16283): *a*, Tip of stem; *b*, bract; *c*, bractlet; *d*, posterior calyx segment; *e*, one of the anterior segments; *f*, one of the lateral segments; *g*, anther; *h*, tip of corolla; *i*, pubescence of corolla tube. (*a*, Half natural size; *b-g*, twice natural size; *h*, natural size; *i*, about 25 times natural size.)

up to 11 mm. long and 7 mm. wide, acute and cuspidate at tip, minutely and inconspicuously puberulous or bearing a few longer hairs toward tip, the margins ciliate, the hairs 0.5 to 1 mm. long; ocelli usually 6, elliptic, dark brown, nitid, 0.75 to 1 mm. long, 0.5 to 0.75 mm. wide, contiguous or overlapping; bractlets ovate, obscurely striate-nerved, acute, 6 mm. long and 3.5 mm. wide, subauriculate at base, moderately hirsute, the hairs brownish, up to 0.5 mm. long, the costa rather prominent, indurate at base; calyx 9 to 11 mm. long, the segments puberulous, subcoriaceous, striate-nerved, indurate at base, the posterior segment

oblong-ovate, 4.5 mm. wide, rounded and apiculate, the anterior pair oblong, 3.5 mm. wide, acute and apiculate, the lateral pair similar but slightly narrower; corolla 5.5 cm. long, red, puberulous, the hairs minute and conical, the tube 3 mm. broad at base, narrowed to 1.5 mm. at 5 mm. above base, thence enlarged to a subcylindric throat 6 mm. broad at mouth, the upper lip erect, narrowly oblong, about 5 mm. wide, bilobed, the lobes lanceolate, 18 mm. long, 4 mm. wide, acuminate, the lower lip 3-lobed, spreading, the middle lobe lanceolate, 17 mm. long, 7 mm. wide near base, acuminate, the lateral lobes triangular, about 5 mm. long, acute, the upper margins adnate to the lower part of the upper lip; stamens barely reaching tip of the upper corolla lip, the anthers 5.5 mm. long and 1.5 mm. broad, the filaments slender, retrorsely hirsute at base, otherwise glabrous; ovary glabrous.

Type in the U. S. National Herbarium, No. 1352032, collected in a thicket in the Upper Río Lebrija Valley, northwest of Bucaramanga, Department of Santander, 400 to 700 meters altitude, December 29, 1926, by E. P. Killip and Albert C. Smith (No. 16283). An isotype is in the herbarium of the New York Botanical Garden.

The hirsute leaf blades and stems, the glabrous or sparingly pilose rachis and the narrow upper lip of the corolla with its long, slender lobes are characters by which *Aphelandra albert-smithii* can be recognized. Of the *A. pulcherrima-tetragona* complex it is probably closest to *A. haughtii*.

57. **Aphelandra macrophylla** Leonard, sp. nov. FIGURE 84

Arbor parva, caulibus sursum subquadrangularibus, aliquanto dense hirsutis, pilis sordidis, sursum appressis vel plus minusve patulis, deorsum teretibus, glabris; lamina foliorum oblongo-elliptica, magna, acuta vel breviter acuminata (apice ipso obtuso vel subacuto), basi angustata, in petiolum breviter decurrens, submembranacea, integra vel undulata, supra glabra vel pilos raros subappressos ferens, subtus tenuiter et parce hirsuta, pilis appressis vel aliquanto patulis, costa et venis lateralibus conspicuis; petioli plus minusve hirsuti; spicae multae, paniculam grandem terminalem ferentes, pedunculis dense hirsutis, pilis appressis vel ascendentibus, rhache flocculoso-pubescente, pilis sordidis; bracteae rhombeo-ovatae, acutae, flavae vel aurantiacae, ciliolatae, glabrae vel infimae dorso strigosae; ocelli saepe 2, minuti, opaci vel fusco-lucentes; bracteolae lanceolatae, carinatae, carina dense brunescenti-flocculosa, apice apiculatae; calycis segmenta striato-nervata, apice acuta vel subacuta, minute ciliolata, segmentum posterius anguste ovatum, anteriora oblongo-lanceolata, lateralia lanceolata; corolla papilloso-puberulenta, tubo rubro, anguste hypocrateriformi, leviter curvato et subventricoso, lobis aurantiacis, labio superiore ovato, bilobato, lobis triangularibus, apice tenuiter acuminatis, recurvatis, patulis, labio inferiore trilobato, lobo medio

oblongo-elliptico, apice acuminato, recurvato, lobis lateralibus triangularibus, subobtusis, cum labio superiore basi connatis; stamina vix exserta, filamentis glabris.

Small trees; branches subquadrangular toward tip, rather densely hirsute, the hairs sordid, 0.5 mm. long, closely upwardly appressed or more or less spreading, the lower portions of the stems terete, glabrate; leaf blades oblong-elliptic, 19 to 35 cm. long, 7 to 17 cm. wide, acute to short-acuminate (the tip itself obtuse or acute), gradually narrowed at base and briefly decurrent on the petiole, submembranaceous, entire or undulate, the upper surface glabrous or the uppermost leaves bearing a few appressed or subappressed hairs 0.5 mm. long, drying olive, the costa and lateral veins (16 to 20 pairs) flat or slightly raised, scarcely conspicuous, the lower surface drying a lighter olive than the upper, sparingly hirsute, the hairs sordid, closely appressed or more or less spreading, the costa and lateral veins more conspicuous than above; petioles (unwinged portions) 1.5 to 7 cm. long, the pubescence that of the stems; flowers borne in a large terminal panicle consisting of rather small spikes, the panicle up to 30 cm. long with a spread of 20 cm., the spikes 3.5 to 9 cm. long and about 6 mm. broad, the secondary peduncles, if present, 1 to 1.5 cm. long, the primary ones 4 to 7 cm. long, or the uppermost shorter, both peduncles and axis of the panicle rather densely hirsute, the hairs appressed or some of them more or less spreading, sordid, about 0.5 mm. long, the rachis sordid cottony-pubescent; bracts rhombic-ovate, 7 mm. long, 5.5 mm. wide, acute, coriaceous, yellow or orange, glabrous or the lowermost dorsally strigose, the straight upper margins ciliolate, the hairs up to 0.5 mm. long; ocelli as many as 4 but usually 2, minute, elliptical, 0.25 to 0.5 mm. long, opaque or varnished; bractlets lanceolate, 7 mm. long, 2 mm. wide, carinate, densely brown-woolly dorsally, apiculate at tip; calyx 7.5 mm. long, the posterior segment narrowly ovate, 3 mm. wide, the anterior pair oblong-lanceolate, 2 mm. wide, the lateral pair lanceolate, 1.5 mm. wide, all acute to acutish, minutely ciliolate toward tip, striate-nerved; corolla red (tube) and orange (lobes), papillose-puberulous, 5.8 cm. long from base to tip of upper lip, the tube 3 mm. broad near base, narrowed to 1.5 mm. at 5 mm. above base, thence enlarged gradually to a slightly curved subventricose throat, 6 mm. broad at mouth, the upper lip erect, ovate, 15 mm. long and 7 mm. wide, 2-lobed at tip, the lobes triangular, about 5 mm. long and 2 mm. wide at base, ending in slenderly acuminate recurved-spreading tips, the middle lobe of the lower lip oblong-elliptic, 17 mm. long and 5.5 mm. wide, the tip slender and recurved, the lateral lobes triangular, subobtuse, connate with the upper lip, their free portions, if any, about 1 mm. long and broad; stamens reaching the tip of the upper lip, the anthers 4.5 mm. long and 1 mm. broad, the basal lobe

minutely mucronate, the filaments exserted about 1 cm. above the mouth of the corolla tube, glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 1850294, collected on a north slope, between El Amparo and La Mesa at the source of the Río Negro, vicinity of Sarare, Department of Norte de Santander,

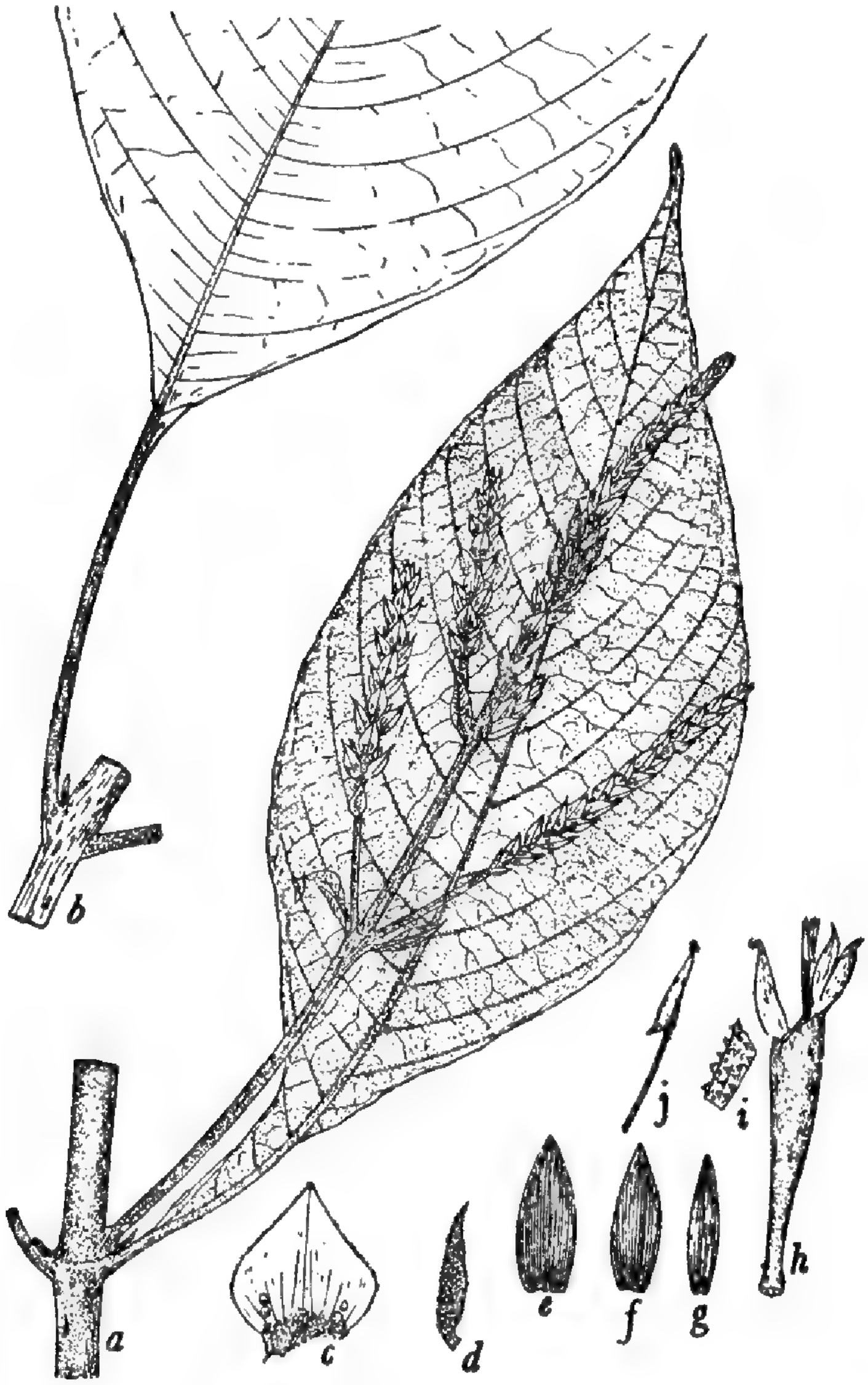

FIGURE 84.—*Aphelandra macrophylla* Leonard (*a*, *Cuatrecasas* 12897; *b* to *j*, *Cuatrecasas* 12873): *a*, Lowermost branch of inflorescence; *b*, node and basal portion of leaf blade (upper surface); *c*, bract; d, bractlet; *e*, posterior calyx segment; *f*, one of the anterior segments; *g*, one of the lateral segments; *h*, corolla; *i*, pubescence of corolla tube; *j*, anther. (*a*, *b*, *h*, Half natural size; *c*-*g*, twice natural size; *i*, about 20 times natural size; *j*, about twice natural size.)

Colombia, 1,400 to 1,700 meters altitude, November 7, 1941, by J. Cuatrecasas (No. 12873). Cuatrecasas' No. 12897 (US), collected between Campohermoso and the Río Negro, in the same general region as the type, 1,200 to 1,500 meters, November 8, 1941, and Schlim's No. 258 (NY), collected at Ocaña, Norte de Santander, also belong to this species.

Aphelandra macrophylla is related to *A. parvispica* but has larger leaves and longer petioles, the leaf blades of the latter reaching only 19 cm. in length and the petioles 1 cm. As in *A. parvispica*, the flowers are borne in terminal panicles but these in *A. parvispica* are much smaller (up to 6 cm. long), as are the individual spikes (up to 6 cm. long). The tomentum of the rachis of *A. macrophylla* is brownish instead of white as in *A. parvispica*. The specific name is from the Greek, μακρός, large, and φύλλον, leaf.

58. Aphelandra schultesii Leonard, sp. nov. FIGURE 85

Suffrutex, caulibus deorsum teretibus, glabris, sursum subquadrangularibus, plus minusve strigosis, pilis aliquanto longis; lamina foliorum oblonga vel oblongo-elliptica vel late oblanceolata, acuta vel acuminata (apice ipso obtuso), basi angustata, in petiolum decurrens, submembranacea, undulata vel leviter crenata, supra glabra vel parce strigosa, in costa et venis lateralibus dense strigosa, pilis brunnescentibus, subtus aliquanto hirsuta, pilis subappressis vel ascendentibus, brunnescentibus, costa et venis lateralibus gracilibus sed prominentibus; petioli aliquanto breves, dense hirsuti; spicae 1 vel plures, subsessiles vel breviter pedunculatae, pedunculis hirsutis; bracteae rhombico-ovatae, carinatae, acutae, minute puberulae, marginibus ciliolatae, costa et nervis lateralibus prominentibus, basi induratis; ocelli 2–4 vel plures, elliptici, brunnei, contigui; bracteolae lanceolatae, acuminatae, carina tomentosa, pilis brunnescentibus, marginibus striatae, glabrae, subhyalinae; calycis segmenta coriacea, acuta, apice tomentosa, deorsum glabra, striato-nervata, nervis basi induratis, segmentum posterius late lanceolatum, anteriora lanceolata, lateralia anguste lanceolata; corolla rubra, minute papilloso-puberula, tubo anguste hyprocrateriformi, labio superiore erecto, ovato-lanceolato, bilobato, lobis triangulo-ovatis, tenuiter acuminatis, labio inferiore trilobato, lobo medio oblongo-lanceolato, acuminato, lobis lateralibus, oblongis, obtusis, cum labio superiore basi connatis; stamina vix exserta, antheris apice flocculoso-tomentosis, adhaerentibus, filamentis basi puberulis, sursum glabris; capsulae apice subobtusae, glabrae, juventute pruinosae, minute punctatae.

Suffrutescent, up to 2 meters high; stems subquadrangular, more or less strigose toward tip, the hairs upwardly appressed, almost 1 mm. long, brownish, the lower parts of the stem terete, glabrous; leaf blades oblong to oblong-elliptic or broadly oblanceolate, up to 35 cm. long and 9.5 cm. wide, acute to acuminate (the tip itself blunt), narrowed at base and decurrent on the petiole, submembranaceous, undulate to shallowly crenate, the upper surface glabrous or sparingly strigose except the costa, this densely so, the hairs brownish, up to 0.75 mm. long, the lower surface moderately hirsute, the hairs subappressed to ascending, brownish, up to 0.75 mm. long, the costa and

lateral veins slender but prominent; petioles (unwinged portions) up to 3 cm. long, densely hirsute, the hairs subappressed to ascending, up to 1 mm. long; spikes solitary or several, up to 12 cm. long and 1 cm. wide, subsessile to short-pedunculate, the peduncles up to 15 mm. long, sparingly hirsute, the rachis tomentose, the hairs light brownish;

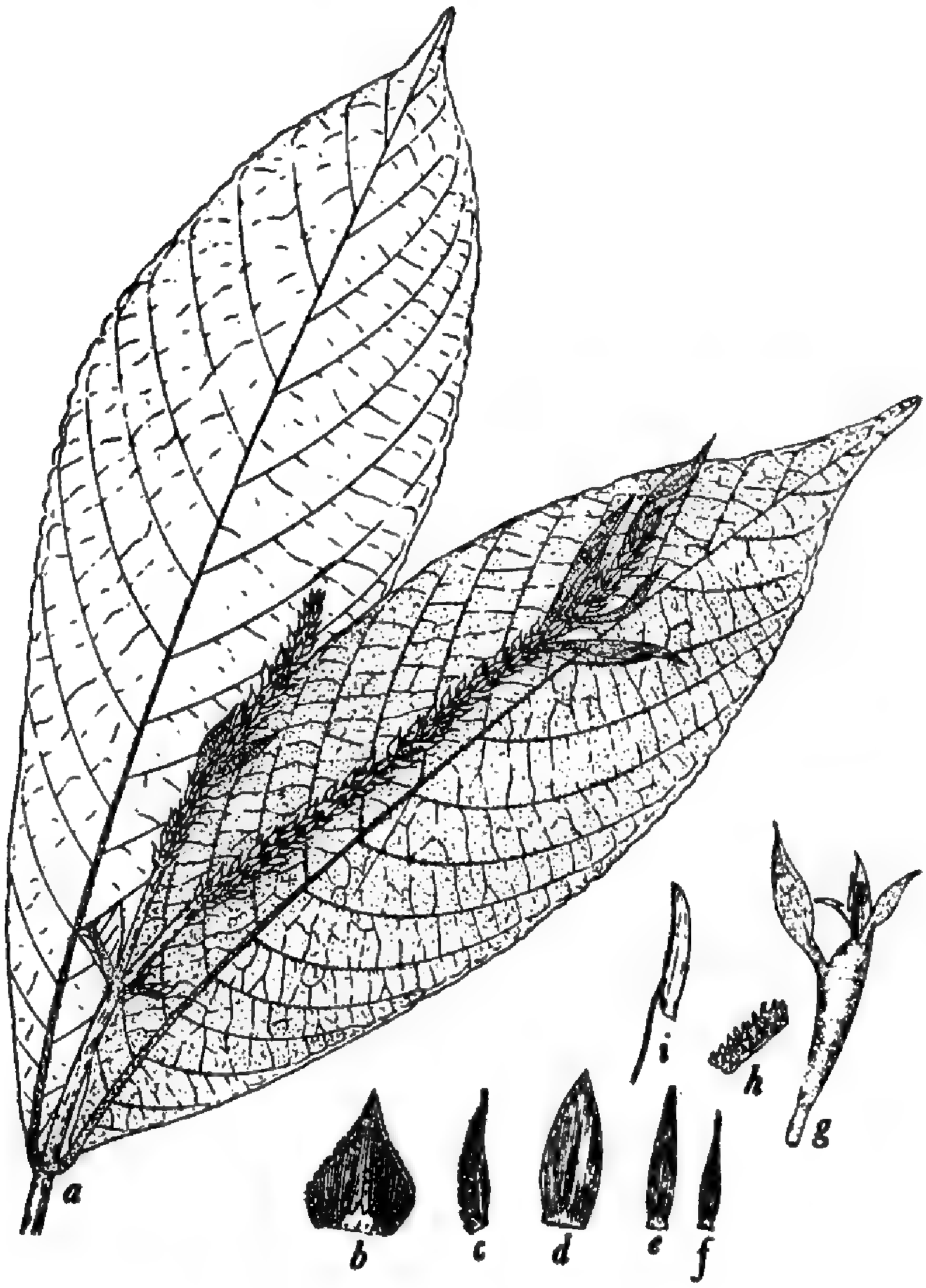

FIGURE 85.—*Aphelandra schultesii* Leonard (*Gutiérrez & Schultes* 936): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, posterior calyx segment; *e*, one of the anterior segments; *f*, one of the lateral segments; *g*, corolla; *h*, pubescence of corolla tube; *i*, anther. (*a*, *g*, Half natural size; *b*–*f*, twice natural size; *h*, about 20 times natural size; *i*, slightly more than twice natural size.)

bracts rhombic-ovate, 6 mm. long, 4 mm. wide near base, acute, coriaceous, minutely puberulous, the nerves prominent, the costa and adjacent pair of nerves indurate at base, the margins of the bracts ciliolate, the hairs up to 0.5 mm. long; ocelli 2 to 4 or occasionally as many as 7, elliptic, up to 1.25 mm. long and 0.75 mm. wide, brown, nitid, contiguous; bractlets lanceolate, acuminate, 7 mm. long, 2.5 mm. wide near base, carinate, the keel densely tomentose (the hairs

light brown), the margins striate, glabrous and subhyaline; calyx segments 7 mm. long, coriaceous, acute and sparingly tomentose at tip, essentially glabrous toward base, striate-nerved, the nerves indurate at base, the anterior segment broadly lanceolate, 2.5 mm. wide, the anterior pair lanceolate, 3 mm. wide, the lateral pair narrowly lanceolate, about 1 mm. wide; corolla red, minutely papillose-puberulous both within and without, up to 5.5 cm. long, the tube 1.5 mm. broad at base, enlarged to 2 mm. at 3 mm. above base and narrowed to 1 mm. at 8 mm. above base, thence gradually enlarged to 6 mm. at throat, the upper lip erect, ovate-lanceolate, about 2 cm. long, 7 mm. broad, bilobed at tip, the lobes triangular-ovate, 9 mm. long, 3.5 mm. wide, slenderly acuminate, the middle lobe of the lower lip oblong-lanceolate, 21 mm. long, 6.5 mm. wide, acuminate, the lateral lobes oblong, about 6 mm. long and 1 mm. wide, obtuse, their upper edges adnate to the lower part of the upper lip; stamens slightly exceeding the notch of the upper lip, the anthers 6 mm. long and 2 mm. broad, adhering at tip by a webby tomentum, the filaments puberulous near base, otherwise glabrous; ovary glabrous; capsules clavate (immature), 18 mm. long, 5 mm. broad toward tip, 1.5 mm. thick, glabrous, evanescently pruinose, minutely punctate; mature seed not seen.

Type in the herbarium of the Facultad de Agronomía, Medellín, collected in the vicinity of the portage of Yuruparí, Comisaría of Vaupés, Colombia, March 3, 1944, by G. Gutiérrez-V. and R. E. Schultes (No. 936). Gutiérrez & Schultes' No. 506 (fruiting), collected along the Río Vaupés in the vicinity of Miraflores, 300 meters altitude, January 3, 1944, is also of this species. Fragments of both specimens are in the U. S. National Herbarium.

Aphelandra schultesii can be associated with *A. macrophylla*, both having small acute bracts and a brown tomentum covering the rachis. However, the spikes of *A. macrophylla* form a large panicle and are usually much shorter (up to 9 cm. instead of 12 cm.) and its stems are more densely strigose, with shorter hairs (0.5 mm. long).

59. **Aphelandra haughtii** Leonard, sp. nov. FIGURE 86

Frutex gracilis, caulibus quadrangularibus, deorsum teretibus, glabratis, sursum dense hirsutis, pilis patulis, sordidis; lamina foliorum elliptico-oblonga vel late oblanceolata, tenuiter vel breviter acuminata, basi angustata, in petiolum decurrens, subcoriacea, integra, supra parce hirsuta, pilis ascendentibus brunneis, costa et venis dense hirsutis, subtus hirsuta; petioli hirsuti; spicae solitariae vel plures, terminales, subsessiles, rhache glabra vel parce pubescente; bracteae rhombico-ovatae, obtusae vel rotundatae, coriaceae, apice mucronulatae, parce hirsutae, basi glabrae, marginibus ciliolatae, costa et nervis lateralibus prominentibus, basi induratis; ocelli 6, elliptici, brunnei, contigui vel imbricati; bracteolae ovatae, obliquae, acuminatae, glabrae vel parce

puberulae, basi subcarinatae; calycis segmenta glabra, acuminata, striato-nervata, segmentum posterius anguste ovatum, anteriora lanceolata, lateralia anguste lanceolata; corolla coccinea, papilloso-puberula, tubo recto vel leviter curvato, subcylindrico, labio superiore erecto, elliptico, apice bilobato, lobis triangularibus, tenuiter acuminatis, labio inferiore trilobato, lobo medio patulo, oblongo-elliptico, acuminato, lobis lateralibus parvis, apice rotundatis, cum labio superiore basi connatis; stamina vix exserta.

Slender shrubs up to 4 meters high; stems terete, subquadrangular toward tip, densely hirsute, the hairs spreading, up to 1.5 mm. long, sordid, the lower portions glabrate, gray, minutely roughened by the scars of the fallen hairs, the lenticels minute, elliptic, 0.5 mm. long, inconspicuous; leaf blades elliptic-oblong or broadly oblanceolate, 12 to 28 cm. long, 4 to 9.5 cm. wide, slenderly or shortly acuminate, narrowed at base and decurrent on the petiole, subcoriaceous, entire, the upper surface drying brownish green, sparingly hirsute, the hairs up to 1.5 mm. long, ascending, the costa and lateral veins (10 to 14 pairs) flat or slightly raised, inconspicuous, densely hirsute-pilose, the hairs spreading, up to 2 mm. long, light brown, the lower surface drying slightly lighter than the upper, the pubescence that of the upper surface except that the hairs are slightly shorter; petioles (unwinged portion) 3 to 15 mm. long, hirsute-pilose; spikes terminal, solitary or several, sessile or subsessile, up to 6 cm. long, about 8 mm. broad, the rachis glabrous or bearing a few minute, inconspicuous hairs; bracts rhombic-ovate, 5 mm. long and 4.5 mm. wide, obtuse or rounded at apex, coriaceous, subappressed, sparingly hirsute toward tip, otherwise glabrous, the margins of the upper half sparingly ciliolate, the costa excurrent, ending in a small mucro, both costa and lateral nerves (2 pairs) rather prominent and strongly indurate at base; ocelli usually 6, elliptic, dark brown, 1 mm. long and 0.75 mm. wide, closely crowded or even overlapping; bractlets ovate, oblique, 4 mm. long and 2 mm. wide, acuminate, glabrous or sparingly puberulous toward tip, subcarinate at base; calyx glabrous, 7 mm. long, the posterior segment narrowly ovate, 4 mm. wide, acute, the anterior pair lanceolate, 2 mm. wide, acuminate, the lateral pair lanceolate, 1.5 mm. wide, acuminate, all of the segments striate-nerved and inconspicuously scurfy at tip, the costa more prominent than the lateral nerves; corolla scarlet, papillose-puberulous, 7 cm. long, the tube straight or sometimes slightly curved, subcylindric, about 2 mm. broad at base, 6 mm. broad at mouth, the upper lip elliptic, 24 mm. long and 8 mm. wide, bilobed, the lobes triangular, 10 mm. long and 5 mm. wide at base, slenderly acuminate, the tips spreading, the middle lobe of the lower lip spreading, oblong-elliptic, 27 mm. long, 7 mm. wide, acuminate, the lateral lobes 6 mm. long, partly adnate to the upper

lip, the free portion triangular, 1.5 mm. long and 1 mm. wide, rounded; stamens almost reaching the tip of the upper lip, the anthers 7 mm. long and 1 mm. broad, mucronate at base; capsules not seen.

Type in the U. S. National Herbarium, No. 1742219, collected at foot of the Cerro Armas, Santander, Colombia, 300 meters alti-

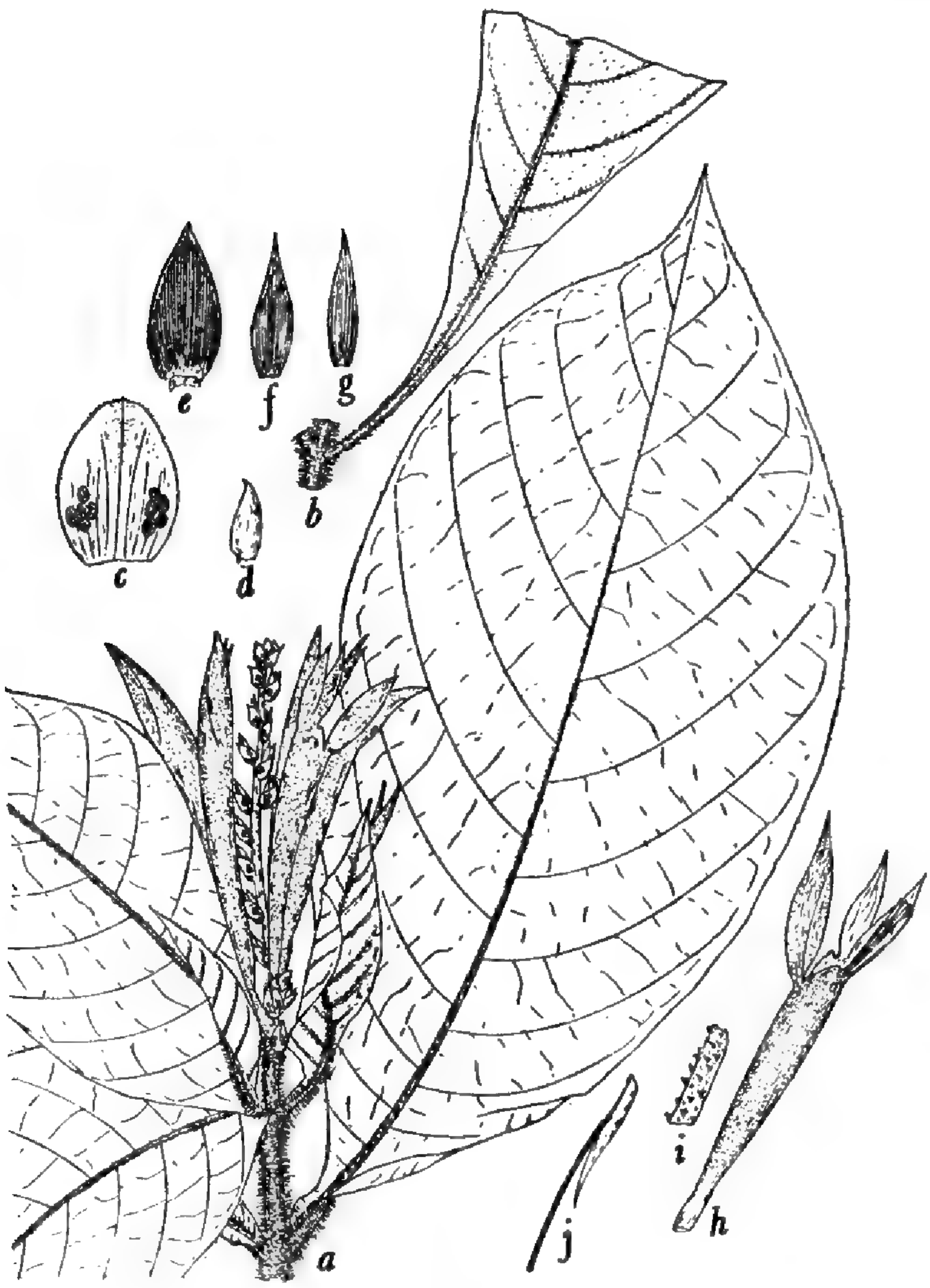

FIGURE 86.—*Aphelandra haughtii* Leonard (*Haught* 1948): *a*, Tip of branch; *b*, basal portion of one of the lower leaf blades (lower surface); *c*, bract; *d*, bractlet; *e*, posterior calyx segment; *f*, one of the anterior segments; *g*, one of the lateral segments; *h*, corolla; *i*, pubescence of corolla tube; *j*, anther. (*a*, *b*, *h*, Half natural size; *d*–*g*, twice natural size; *i*, about 15 times natural size; *c*, *j*, slightly more than twice natural size.)

tude, July 29, 1936, by Oscar Haught (No. 1948). Haught's No. 2086, collected along the Aguas Blancas Creek, about 25 km. south of El Centro, vicinity of Barranca Bermeja, Santander, 100 meters altitude, November 20, 1936, is also of this species.

Aphelandra haughtii is easily recognized by its small, ovate bracts, bearing well-defined ocelli, by its diminutive, nearly glabrous bractlets, and long crimson corollas. The densely hirsute stems and costa of

the upper surface of leaf blade are also very noticeable. It seems to have no close relative.

60. **Aphelandra incarnata** Leonard, sp. nov. FIGURE 87

Frutex vel suffrutex frondosus, caulibus sursum subquadrangularibus, deorsum teretibus, glabratis, sursum dense puberulis, pilis brunneis, retrorse curvatis; lamina foliorum oblanceolata, abrupte acuminata (apice ipso plus minusve curvato), basi angustata, in petiolum decurrens, subchartacea, integra vel leviter crenata, supra glabra vel subglabra, costa et venis lateralibus aliquanto dense pilosa, pilis fere rectis, appressis vel patulis, subtus subglabra, costa et venis lateralibus puberulis, pilis curvatis et appressis; petioli (pars non alata) breves, puberuli; spicae plures, terminales et subterminales, pendunculatae, pedunculis aliquanto gracilibus, puberulis, pilis sursum curvatis, rhache puberula, pilis fere rectis et patulis; bracteae rubrae (vivae), ovales, apice rotundatae vel obtusae, mucronatae (infimae acutae), sericeo-puberulae, dense ciliolatae; ocelli 6–8, suborbiculares, brunnei, nitidi; bracteolae lanceolatae, acuminatae, carinatae, striato-nervatae, puberulae, apice pilosae; calycis segmenta striato-nervata, apice acuta, cuspidata, ciliata, plus minusve erosa, basi glabra, segmentum posterius ovatum, anteriora lanceolata, lateralia anguste lanceolata; corolla fere incarnata (aliquando rubra), puberula, tubo subcylindrico, labio superiore erecto, ovato, bilobata, lobis lanceolatis, acutis, labio inferiore trilobato, lobo medio ovato-lanceolato, patulo, acuminato, carinato, lobis lateralibus parvis, triangulo-ovatis, obtusis, cum labio superiore basi connatis; stamina vix exserta, antheris apice apiculatis, basi acutis; capsulae clavatae, obtusae, glabrae, nitidae, minute punctatae; semina plana, brunnea, minute hispidula.

Shrubs or suffrutescent herbs up to 3 meters high; branches subquadrangular toward tips, terete below, rather densely brown-puberulous, the hairs about 0.25 mm. long, retrorsely curved; leaves numerous, the blades oblanceolate, up to 30 cm. long and 7 cm. wide, abruptly acuminate (the tip more or less curved), gradually narrowed from above the middle to a short, naked petiole (the petiole wing ending more or less abruptly), subchartaceous, entire or shallowly crenate, the upper surface glabrous or nearly so except costa and lateral veins (12 to 16 pairs), the costa rather densely pilose, the hairs appressed to spreading, nearly straight, 0.5 to 1 mm. long, the lateral veins puberulous, the hairs mostly curved and appressed, the lower surface minutely white-punctate under lens, essentially glabrous except costa and veins, these rather prominent and puberulous, the hairs minute and curved, the veinlets coarsely anastomosing; petioles (unwinged portions) up to 1 cm. long, puberulous, the hairs recurved; spikes more or less numerous, both terminal and subterminal, peduncled, up to 6 cm. long and 10 to 12 mm. broad, the peduncles rather slender, 2 to 3 cm. long, puberu-

lous, the hairs upwardly curved, the rachis puberulous, the hairs nearly straight and spreading; bracts red (living), oval, about 1 cm. long and 6 mm. wide, 3-nerved, rounded or obtuse, mucronate or the lowermost acute, silky-puberulous, densely ciliolate; ocelli usually about 6 or 8, well-defined, suborbicular, 0.5 to 0.75 mm. in diameter, brown, nitid; bractlets lanceolate, 5.5 mm. long, 1.5 mm. wide, acuminate, carinate, faintly striate-nerved, puberulous, pilose at tip; calyx segments striate-nerved, acute and cuspidate (the costa prominent), ciliate and more or less erose toward tip, glabrous toward base, the posterior segment ovate, 7 mm. long and 3 mm. wide, the anterior pair lanceolate, slightly over 1.5 mm. wide near base, the lateral pair more narrowly lanceolate, slightly over 1 mm. wide near base; corolla usually rose pink (sometimes red), puberulous, about 6 cm. long, the tube 3 mm. broad at base, 6 or 7 mm. broad at mouth, the upper lip erect, ovate, about 15 mm. long and 8 mm. wide, bilobed at tip, the lobes lanceolate, about 6 mm. long and 2 mm. wide at base, acute, the middle lobe of the lower lip spreading, ovate-lanceolate, about 21 mm. long, 7 or 8 mm. wide, acuminate, carinate, the lateral lobes partly adnate to the lower part of the upper lip, their free portions triangular-ovate, 2.5 mm. long, 2 mm. wide at base, obtuse; stamens reaching about midway between mouth of tube and tip of upper lip, the anthers 6.5 mm. long and 1 mm. broad near base, apiculate at tip, acute at base; capsules clavate, about 2 cm. long, 6 mm. broad near tip, 3 mm. broad near base, about 3 mm. thick, obtuse at tip, glabrous, nitid, minutely punctate; seed (immature) flat, brown, minutely hispidulous.

Type in the U. S. National Herbarium, No. 1662446, collected on Arenosa Creek, in the vicinity of Barranca Bermeja, Magdalena Valley, between the Sogamoso and Colorado rivers, Department of Santander, Colombia, 100 to 500 meters altitude, July 19, 1934, by Oscar Haught (No. 1315).

ANTIOQUIA: Gravel along stream bed, Malena, *Pennell* 3782 (NY). Dense, damp woods between Río Guapá and León, *Yepes, Blair & Barkley* 18C.300 (US); *Ruiz, Rivera & Barkley* 18C.388 (US).

BOLÍVAR: Forest along river, Boca Verde, on the Río Sinú, *Pennell* 4581 (NY).

CHOCÓ: Along stream in forest, Bahía Solano, *Haught* 5528 (US). Dense forest near Quebrada Seca, vicinity of Ciudad Mutis, *Killip & Garcia* 33576 (US).

SANTANDER: Along the Río Colorado, near El Centro, *Haught* 2098 (US).

In a general way *Aphelandra incarnata* resembles *A. sinclairiana* Nees, of Costa Rica and Panama. This new species is sufficiently distinct, however, in its puberulous stems, small spikes and bracts, and in its nitid glabrous capsules. In *A. sinclairiana* the stems are hirsute, the spikes up to 20 cm. long instead of only 6 cm., the bracts up to 2 cm. long (1 cm. in *A. incarnata*), and the capsules are densely puberulous. The name *incarnata* alludes to the pink corollas.

Lehmann's No. 7845 is scarcely different from the specimens cited above. It was collected on the Río Nuz, Antioquia, Colombia, and deposited in the Berlin Herbarium (Field Mus. photograph No. 8699). Lindau considered this to be new and proposed a name for it, but his species was, apparently, never published.

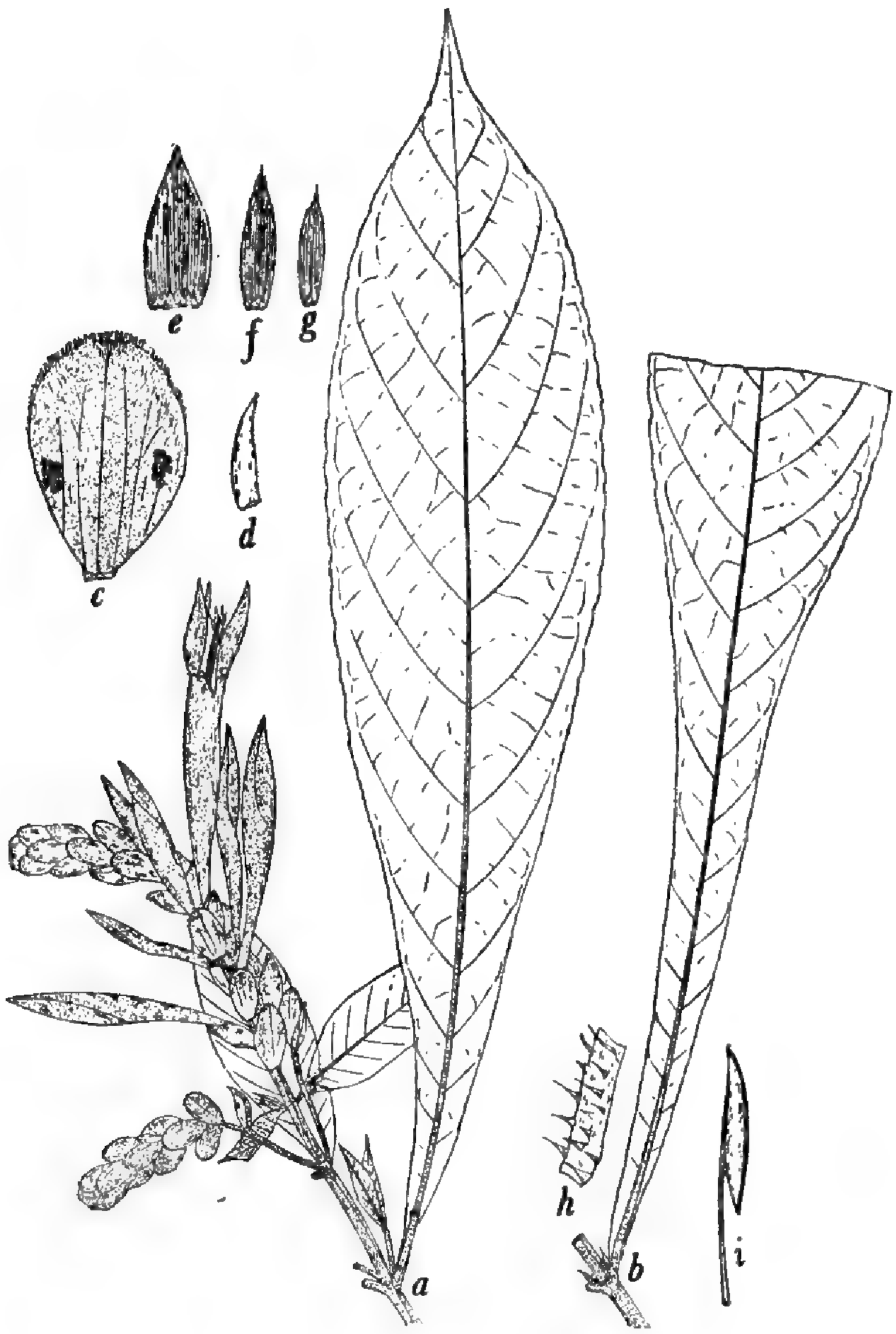

FIGURE 87.—*Aphelandra incarnata* Leonard (*Haught* 1315): *a*, Tip of branch; *b*, basal portion of one of the lower leaf blades; *c*, bract; *d*, bractlet; *e*, posterior calyx segment; *f*, one of the anterior segments; *g*, one of the lateral segments; *h*, pubescence of the corolla tube; *i*, anther. (*a*, *b*, Half natural size; *c*-*g*, twice natural size; *h*, about 15 times natural size; *i*, about 3 times natural size.)

The specimens cited were for the most part collected between sea level and 300 meters altitude. They all produced pink flowers, except the two Antioquia collections from the Río Guapá region, these having red corollas. Lehmann's No. 7845 according to his field notes produced blood-red flowers.

61. **Aphelandra sericantha** Leonard, sp. nov. FIGURE 88

Frutex, caulibus subteretibus, deorsum glabris, sursum minute strigosis; lamina foliorum oblongo-elliptica vel late lanceolata, acuminata, basi angustata, in petiolum decurrens, submembranacea, integra vel undulata, supra glabra vel parce et minute strigosa, costa et venis inconspicuis, subtus aliquanto et minute strigosa vel hirtella, pilis praecipue in costa et venis positis, costa et venis conspicuis, venulis crasse reticulatis; petioli parce et minute strigosi; spicae terminales, solitariae, subsessiles, rhache angulata, dense hirtella, pilis dilutobrunneis, ascendentibus; bracteae ovales, obtusae vel subacutae, apiculatae, coriaceae, basi minute pubescentes, sericeae, striatae, venulis prope margines reticulatis; bracteolae lanceolatae, acuminatae, glabrae vel apice hirtellae, basi carinatae, costa et striis tumidis et confluentibus; calycis segmenta subaequalia, lanceolata, subcoriacea, striata, glabra vel apice ciliata, costa et venis propinquis basi tumidis et confluentibus, segmentum posterius subobtusum, apice plus minusve laceratum, anteriora subobtusa, apiculata, lateralia acuta; corolla sursum dense sericeo-hirtella, pilis ascendentibus, subbrunneis, bilabiata, labiis subaequalibus, labio superiore erecto, ovato, apice bilobato, lobis parvis, rotundatis, labio inferiore patulo, trilobato, lobo medio lanceolato, lobis lateralibus parvis, triangularibus, cum labio superiore basi connatis; capsulae ignotae.

Shrubs up to a meter high or more; stems subterete, glabrous except the upper portions, these upwardly strigose, the hairs about 0.25 mm. long, closely appressed; leaf blades oblong-elliptic or broadly oblong-lanceolate, up to 20 cm. long and 5.5 cm. wide, acuminate, narrowed at base and decurrent on the petiole, submembranaceous, entire or undulate, the upper surface glabrous or thinly strigose, the hairs 0.25 mm. long, the venation rather inconspicuous, the lower surface drying a lighter olive than the upper, moderately and minutely strigose or hirtellous, the hairs confined chiefly to costa and veins (10 to 12 pairs), the venation conspicuous, the veinlets coarsely reticulate; petioles up to 5 cm. long, sparingly and minutely strigose; spikes terminal, solitary, subsessile, subtended by a pair of small leaves about 1.5 cm. long and 5 mm. wide, the rachis angled, densely hirtellous, the hairs light brown, ascending, 0.5 mm. long; bracts oval, 2 cm. long, 12 mm. wide, obtuse to subacute and apiculate, coriaceous, the basal portion minutely pubescent, silky, the hairs subappressed, light brown, 150 to 175 μ long, the inner surface evenly, sparingly and minutely puberulous with appressed hairs, the nerves closely parallel, the veinlets reticulate near the subhyaline margins; bractlets lanceolate, 8.5 mm. long, 2.25 mm. wide near base, acuminate (the lower portion carinate), glabrous except the hirtellous tip, striate-nerved, the costa and adjacent nerves

swollen and confluent at base; calyx segments subequal, 15 mm. long, lanceolate, subcoriaceous, striate-nerved, glabrous or ciliate at tip, the costa and adjacent lateral nerves swollen and confluent at base, the posterior segment 4.5 mm. wide, subobtuse and more or less lacerate, the anterior segments 2.5 mm. wide, subobtuse and apiculate, the lateral segments 2.25 mm. wide, acute; corolla up to 5 cm. long, densely and silkily hirtellous, except the glabrous basal portion, the hairs brown, ascending, about 250 μ long, the tube about 6 mm. broad at mouth, the upper lip erect, ovate, bilobate at tip, the lobes rounded, the lower lip spreading, the lateral lobes minute and connate with the basal portion of the upper lip, the free portion minute and triangular; capsules not seen.

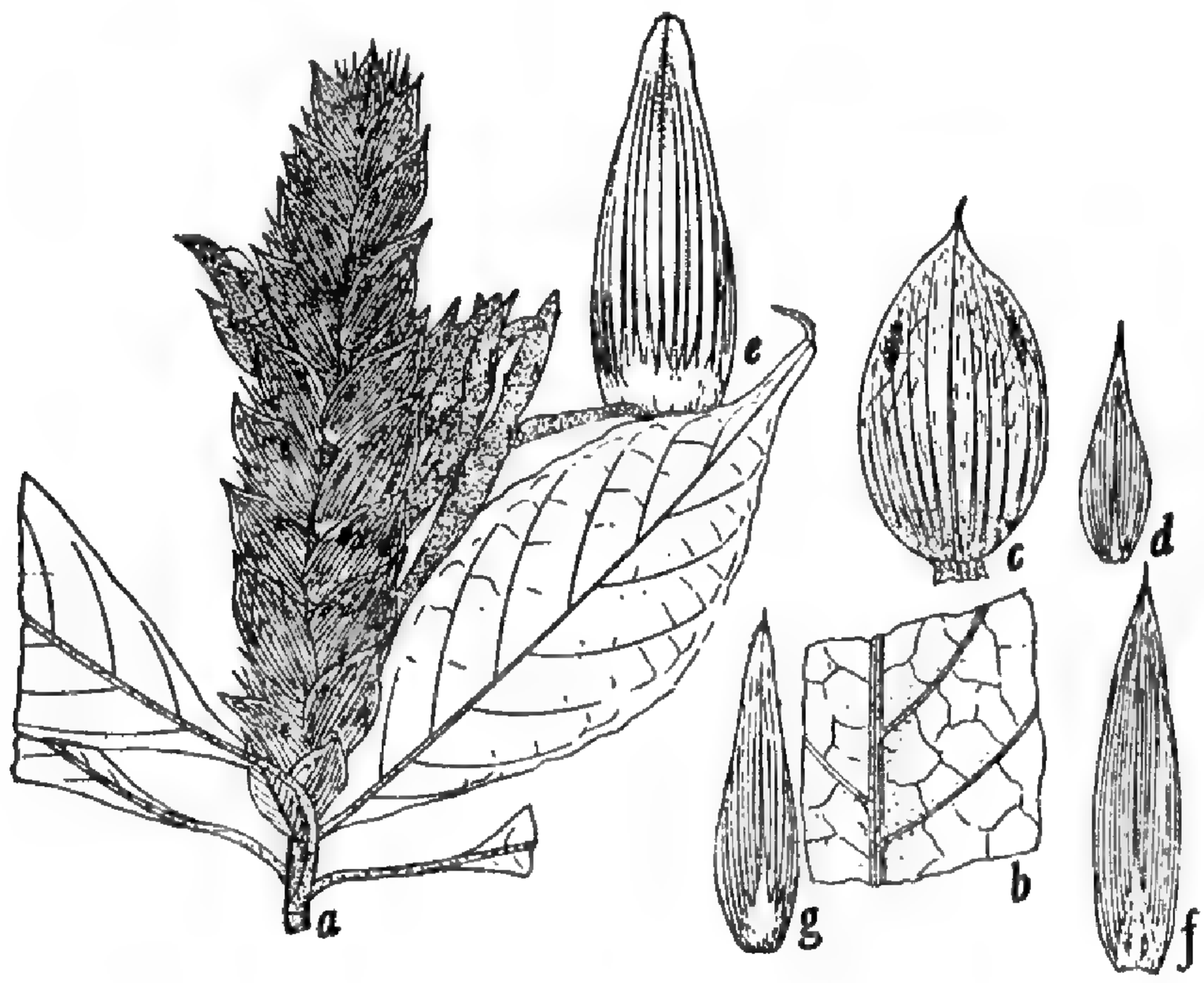

FIGURE 88.—*Aphelandra sericantha* Leonard (*Triana* s. n., Pácora): *a*, Tip of plant; *b*, portion of undersurface of leaf blade to show venation and pubescence; *c*, bract; *d*, bractlet; *e*, posterior calyx segment; *f*, one of the anterior segments; *g*, one of the lateral segments. (*a*, Half natural size; *b*, *c*, natural size; *d*-*g*, twice natural size.)

Type in the herbarium of the Royal Botanic Gardens, Kew, collected at Pácora, Department of Cauca, Colombia, 1,800 meters altitude, February 1852, by J. Triana, s. n. An isotype is in the National Herbarium of Colombia.

The specific epithet is from the Greek σηρικός, silken, and ἄνθος, flower.

62. **Aphelandra hartwegiana** Nees

Aphelandra hartwegiana Nees ex Benth. Pl. Hartw. 236. 1846. Type collected in shady woods (sylvis umbrosis) on the Hacienda de Palmar, near Guaduas, Cundinamarca, *Hartweg* 1270.

Slender shrubs or small trees up to 4 meters high; stems quadrangular toward tip, minutely strigose, the hairs about 0.25 mm. long, closely appressed, the lenticels narrowly elliptical, corky, up to 1 mm. long; leaf blades oblong-ovate to elliptic, up to 25 cm. long and 11 cm.

wide, acuminate (the tip itself obtuse and submucronulate), narrowed at base and decurrent on the petiole, subcoriaceous, entire or undulate, the upper surface glabrous, drying to olive or brownish, the costa shallowly channeled, the lateral veins (12 to 14 pairs) slightly raised, these and the costa scarcely conspicuous, the lower surface drying light olive, sparingly and inconspicuously strigose, the hairs about 0.5 mm. long, sordid, more numerous on costa and veins than elsewhere, those bordering costa sometimes more or less spreading; petioles (unwinged portion) 1.5 to 2 cm. long, minutely strigose; spikes terminal, solitary or often several, up to 45 cm. long and 3 cm. broad, the peduncles of the terminal spike up to 2 cm. long, those of the lateral spikes up to 14 cm. long, both peduncles and rachis stout, about 6 mm. in diameter, glabrous or sparingly and inconspicuously strigose; bracts red or orange (living), drying to brown (the border usually a blackish brown), broadly rhombic-ovate, 16 mm. long, 12 mm. wide, obtuse or rounded, more or less minutely apiculate, coriaceous, glabrous, the costa and lateral nerves prominent except toward tip, the ocelli replaced by irregular elliptic brown faveolate areas up to about 4 mm. long and 1.5 mm. wide; bractlets oblong, falcate, oblique, 1 cm. long, about 4 mm. broad, subcarinate, obtuse, glabrous except the minutely and sparingly hirsute keel, the hairs about 0.25 mm. long, ascending; calyx 21 mm. long, the posterior segment oblong-elliptic, 8.5 mm. wide, the anterior pair oblong, 4.5 mm. wide, the lateral pair linear-oblong, 3.5 mm. wide, all coriaceous, glabrous, obtusish to acute, submucronulate at tip; corolla 6 to 7 cm. long, glabrous, yellow or orange, the upper lip erect, lanceolate, 2 cm. long, about 6 mm. wide, bilobed at tip, the lobes triangular, about 5 mm. long and 3 mm. wide, acuminate and apiculate, the middle lobe of the lower lip spreading, lance-ovate, about 2 cm. long and 12 mm. wide, acuminate, the lateral segments about 7 mm. long, partly adnate to the upper lip of the corolla, their free portions triangular, about 1.5 mm. long and 1 mm. wide, obtuse; capsules (immature) obovoid, about 13 mm. long and 4 mm. in diameter, glabrous, nitid, minutely and sparingly punctate.

Wooded mountain slopes at lower elevations usually below 100 meters. Endemic. The species was named in honor of Karl Theodor Hartweg, a German collector of plants. During 1836 he traveled in Mexico to procure plant material for the Horticultural Society of London. He visited also Guatemala, Peru, Ecuador, Colombia and California.

Accompanying Cuatrecasas' No. 17605 is the following note: "Frutex; tallo sencillo 60 cm. Inflorescencia prismatico tetragonal de brácteas imbricadas rojo anaranjadas. Calix rojo anaranjado. Corola amarilla." Haught says of his No. 4699: "High slender shrub, to 4 m. high. Inflorescence a very showy, tetragonal prism of red bracts, large yellow flowers. Forests, usually along streams."

ANTIOQUIA: Villa Arteaga, *Hodge* 7053 (US). Near Chigorodó, *Haught* 4699 (US). Mutatá, *Uribe-Uribe* 1505 (US).

BOLÍVAR: Boca Verde, on the Río Sinú, *Pennell* 4580 (NY).

CHOCÓ: Cupica, *Fernández* 354 (US). Near Quebrada Seca, Bahía Solano, *Killip & García* 35639 (US).

EL VALLE: Barco on the Río Cajambre, *Cuatrecasas* 17231 (Valle). Le Brea, Río Calima, *Cuatrecasas* 21206 (Valle). La Trojita, Río Calima, *Cuatrecasas* 16355 (Valle). Isla de Golondro to La Amargua, Río Yurumanguí, *Cuatrecasas* 16069 (Valle). Silva, Río Cajambre, *Cuatrecasas* 17605 (Valle).

DEPARTMENT (?): Playa, *Lehmann* 9047 (NY).

63. **Aphelandra xanthantha** Leonard, sp. nov. FIGURE 89

Frutex, caulibus sursum subquadrangularibus, dense strigosis, pilis parvis, brunnescentibus, sursum appressis; lamina foliorum reflexa, oblongo-ovata, tenuiter acuminata, basi angustata, in petiolum decurrens, supra parce et minute strigosa, subtus aliquando dense strigosa, pilis rectis, parvis, arcte appressis, costa et venis lateralibus aliquanto prominentibus; petioli breves, dense et minute strigosi; spicae terminales, solitariae, subsessiles, rhache albotomentosa; bracteae ovato-lanceolatae, acutae, coriaceae, minute et inconspicue furfuraceae, glabrae, parce ciliolatae, costa aliquanto prominente, nervis lateralibus obscuris, marginibus tenuibus; areae alveolatae anguste ellipticae, obscurae; bracteolae anguste lanceolatae, tenuiter acuminatae, carinatae, marginibus tenuibus, glabris, graciliter striato-nervatis, carina dense pilosa, pilis albis, ascendentibus; calycis segmenta tenuia, coriacea, striato-nervata, minute et inconspicue puberula, segmentum posterius oblongum, apice rotundatum, anteriora lanceolata, apice obtusa et apiculata, lateralia anguste lanceolata, apice obtusa; corolla lutea, papillosa, tubo aliquanto angusto, subcylindrico, labio superiore ovato, acuminato, apice bilobato, lobis minutis, anguste triangularibus, labio inferiore trilobato, lobo medio ovato, subacuto, intus puberulo, lobis lateralibus minutis, rotundatis, cum labio superiore basi connatis; stamina vix exserta, antheris apice obtusis, cohaerentibus, basi obtusis et minute apiculatis, filamentis basi pilosis, sursum glabris; ovarium glabrum.

Shrubs; stems subquandrangular, densely strigose, the hairs brownish, upwardly appressed, about 0.25 mm. long; leaves reflexed, the blades oblong to oblong-ovate, up to 18 cm. long and 7 cm. wide, slenderly acuminate, narrowed at base and decurrent on the petiole, the upper surface sparingly and minutely strigose, the hairs 0.25 mm. long, the lower surface rather densely strigose, the hairs slightly less than 0.5 mm. long, closely appressed, the costa and lateral veins (9 or 10 pairs) fairly prominent; petioles (unwinged portion) up to 1 cm. long, densely and minutely strigose; spikes terminal, solitary, subsessile, up to 17 cm. long and 2 cm. broad (without corollas), the rachis white-tomentose; bracts red (living), ovate-lanceolate, 18 mm. long and

8 mm. wide at about 5 mm. above base, acute, coriaceous, glabrous, minutely and inconspicuously scurfy without, sparingly ciliolate, the costa fairly prominent, the lateral nerves obscure, the margins thin, the alveolar spots narrowly elliptic, about 2 mm. long and 0.5 mm. wide, obscure; bractlets narrowly lanceolate, 15 mm. long, 2.5 mm. wide near base, slenderly acuminate, carinate, the keel densely pilose,

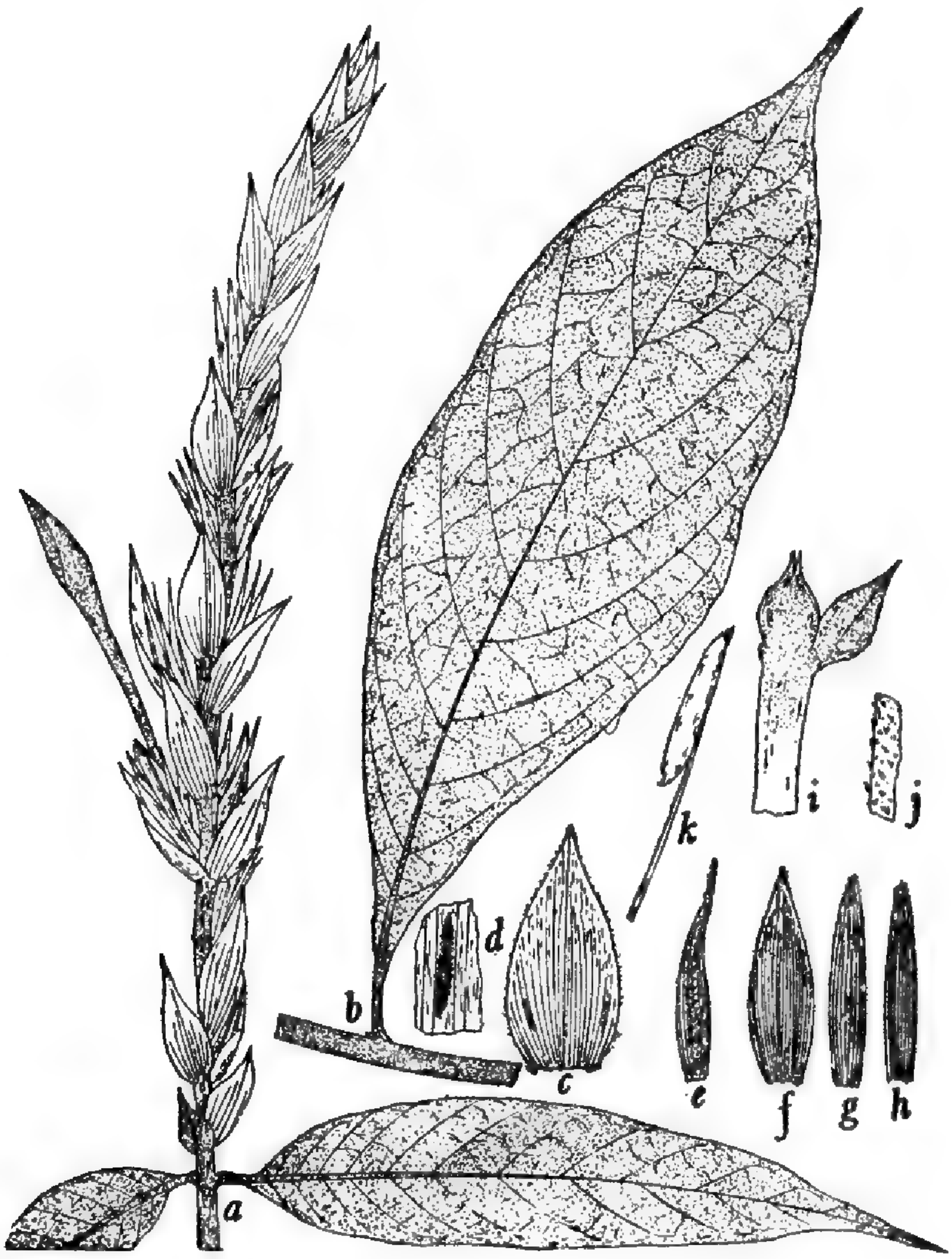

FIGURE 89.—*Aphelandra xanthantha* Leonard (*Uribe-Uribe* 1862): *a*, Tip of plant; *b*, leaf blade; *c*, bract; *d*, glandular area of bract; *e*, bractlet; *f*, posterior calyx segment; *g*, one of the anterior segments; *h*, one of the lateral segments; *i*, corolla (immature) partly spread to show lips; *j*, pubescence of corolla tube; *k*, anther. (*a*, *b*, Half natural size; *c*, *e*-*i*, natural size; *d*, about 5 times natural size; *j*, about 20 times natural size; *k*, twice natural size.)

the hairs white, ascending, 0.5 to 0.75 mm. long, the margins thin, glabrous and finely striate-nerved; calyx 18 mm. long, the segments thin and coriaceous, striate-veined, minutely and inconspicuously puberulous, the posterior segment oblong, 5 mm. wide, rounded at apex, the anterior segments lanceolate, 3.5 mm. wide, obtuse and apiculate at tip, the lateral segments narrowly lanceolate, 3 mm. wide, obtuse at apex; corollas yellow, about 5 cm. long, papillose without, glabrous within, except above insertion of filaments, here pilose, the tube rather

slender, subcylindric, about 3 mm. broad, the mouth about 5 mm. broad, the lips about 14 mm. long (immature), the upper one ovate, about 5 mm. wide, acuminate, bilobed at apex, the lobes minute, triangular, about 1 mm. long and 0.25 mm. wide, acute, the middle lobe of the lower lip ovate, 5 mm. wide, subacute, puberulous within, the lateral lobes attached to the lower part of the upper lip, their free portions about 1 mm. long and broad, obtuse; stamens barely exserted, the anthers 7 mm. long, about 1 mm. broad, obtuse at both ends, the lower lobes minutely apiculate, the tips cohering, the filaments glabrous except at base, here pilose; ovary glabrous.

Type in the U. S. National Herbarium, No. 1954767, collected in the woods of Paramitos, Nariño, Department of Antioquia, Colombia, 2,000 to 2,200 meters altitude, January 1949, by Lorenzo Uribe-Uribe (No. 1862).

Aphelandra xanthantha should be easily recognized by its large, red, ovate-lanceolate bracts, bearing inconspicuous, narrowly elliptical alveolar spots, and by its yellow corollas with relatively broad but rather short ovate upper lips minutely bilobed at tip. The name *xanthantha* comes from *ξανθός*, yellow, and *ἄνθος*, flower.

64. **Aphelandra straminea** Leonard, sp. nov. FIGURE 90

Suffrutex, caulibus teretibus, minute et sursum strigosis vel glabratis, pilis brunnescentibus; lamina foliorum elliptica, oblonga vel late oblanceolata, acuminata, apice ipso obtuso, basi angustata, in petiolum decurrens, submembranacea, integra vel undulata, supra nitida, glabra, subtus parce et minute strigosa, pilis brunnescentibus, costa et venis aliquanto prominentibus, venulis crasse reticulatis; petioli longi, glabri vel parce strigosi; spicae longae, terminales, solitariae, subsessiles, rhache flocculoso-tomentosa; bracteae decussatae, arcte imbricatae, rhombeo-ovatae, acutae vel subacuminatae, apice ipso rotundato, coriaceae, marginibus subhyalinis, deorsum ciliolatis, costa et venis lateralibus prominentibus, utrinque glabrae; areola opaca elliptica alveolata pro ocellis substituta; bracteolae lanceolatae, carinatae, carina dense et molliter pubescente, marginibus subhyalinis, ciliolatis; calycis segmenta striato-nervata, segmentum posterius oblongo-ovatum, apice obtusum, sursum pubescens, segmenta anteriora lanceolata, obtusa, apiculata, glabra, lateralia anguste lanceolata, obtusa et apiculata, glabra; corolla straminea, tubo angusto, aliquanto curvato, labio superiore erecto, anguste ovato, bilobato, lobis triangularibus, acuminatis, labio inferiore trilobato, lobo medio patulo, ovato, apice acuto et recurvato, lobis lateralibus parvis, rotundatis, cum labio superiore basi connatis; stamina vix exserta; capsulae oblongae, apice rotundatae, glabrae, minute punctatae; semina plana, brunnea, parce papillosa.

Suffrutescent herbs up to 2 meters high; stems terete, minutely and upwardly strigose, or glabrate, the hairs brownish, about 0.25 mm. long, the lenticels corky, conspicuous, light brown, up to about 0.75 mm. long; leaf blades elliptic to oblong or broadly oblanceolate, 20 to 30 cm. long, 7 to 11.5 cm. wide, or the uppermost smaller, acuminate at apex (the tip itself blunt), narrowed at base and decurrent on the petiole, submembranaceous, entire or undulate, the upper surface drying olive, nitid, glabrous, the costa and lateral veins (10 to 12 pairs) flat or slightly raised, moderately conspicuous, the lower surface drying a slightly lighter shade than the upper, rather sparingly and minutely strigose, the hairs brownish and about 0.25 mm. long, the costa and lateral veins raised and rather conspicuous, the veinlets coarsely but inconspicuously reticulate; petioles 5 to 15 cm. long (the upper half or third narrowly winged), glabrous or sparingly and minutely strigose; spikes terminal, solitary, subsessile, up to 26 cm. long and 12 mm. broad, quadrangular, the rachis white-cottony-tomentose; bracts decussate, closely imbricate, rhombic-ovate, 1 cm. long, about 7 mm. wide, acute to subacuminate (the tip itself rounded), coriaceous, the margins subscarious, ciliolate near base of bract, the costa prominent, inconspicuously excurrent at tip, the lateral nerves conspicuous except on the broad scarious margins, both surfaces glabrous, the ocelli replaced by dull alveolate oval areas about 1.5 mm. long and 1 mm. wide; bractlets lanceolate, 10 mm. long and 3 mm. wide, carinate, the keel densely soft-pubescent, the margins subglabrous, ciliolate; calyx 11.5 mm. long, the posterior segment oblong-ovate, 5 mm. wide, the anterior pair lanceolate, 3 mm. wide, the lateral pair more narrowly lanceolate, 2.5 mm. wide, all striate-nerved, the posterior segment sparingly and minutely pubescent, obtuse at apex, the other glabrous and minutely apiculate; corolla straw-color, tinged with pink (*Haught*), papillose without, slightly curved, about 5 cm. long, the tube about 5 mm. broad near base, narrowed to 3 mm. at 10 mm. above base, thence gradually expanded to about 7 mm. at mouth, the upper lip erect, 15 mm. long and 7 mm. wide, the 2 apical lobes narrowly triangular, about 6 mm. long and 3 mm. wide, the middle lobe of the lower lip spreading, ovate, 17 mm. long, 8 mm. wide, the apex acute and recurved, the lateral lobes partly adnate to the upper lip, their free portions about 1 mm. long and broad, rounded; stamens exserted about 5 mm. beyond the mouth of the corolla tube, the anthers about 6 mm. long and 1 mm. broad, their basal lobe muticous; capsules oblong, 14 mm. long and 6 mm. broad, rounded, glabrous, minutely punctate under a lens; seeds brown, flat, 4 mm. long and 3 mm. broad, sparingly papillose.

Type in the U. S. National Herbarium, No. 1662504, collected in a swampy forest at Puerto Araujo on the Río Carare, vicinity of Puerto

Berrio, Department of Santander, Colombia, 100 to 700 meters altitude, June 6, 1935, by Oscar Haught (No. 1750). An isotype is in the herbarium of the New York Botanical Garden. *Mutis* 1501 (S, US) is also of this species.

Aphelandra straminea can be separated from *A. hodgei*, *A. longispica*, and other closely related species by its straw-colored corollas,

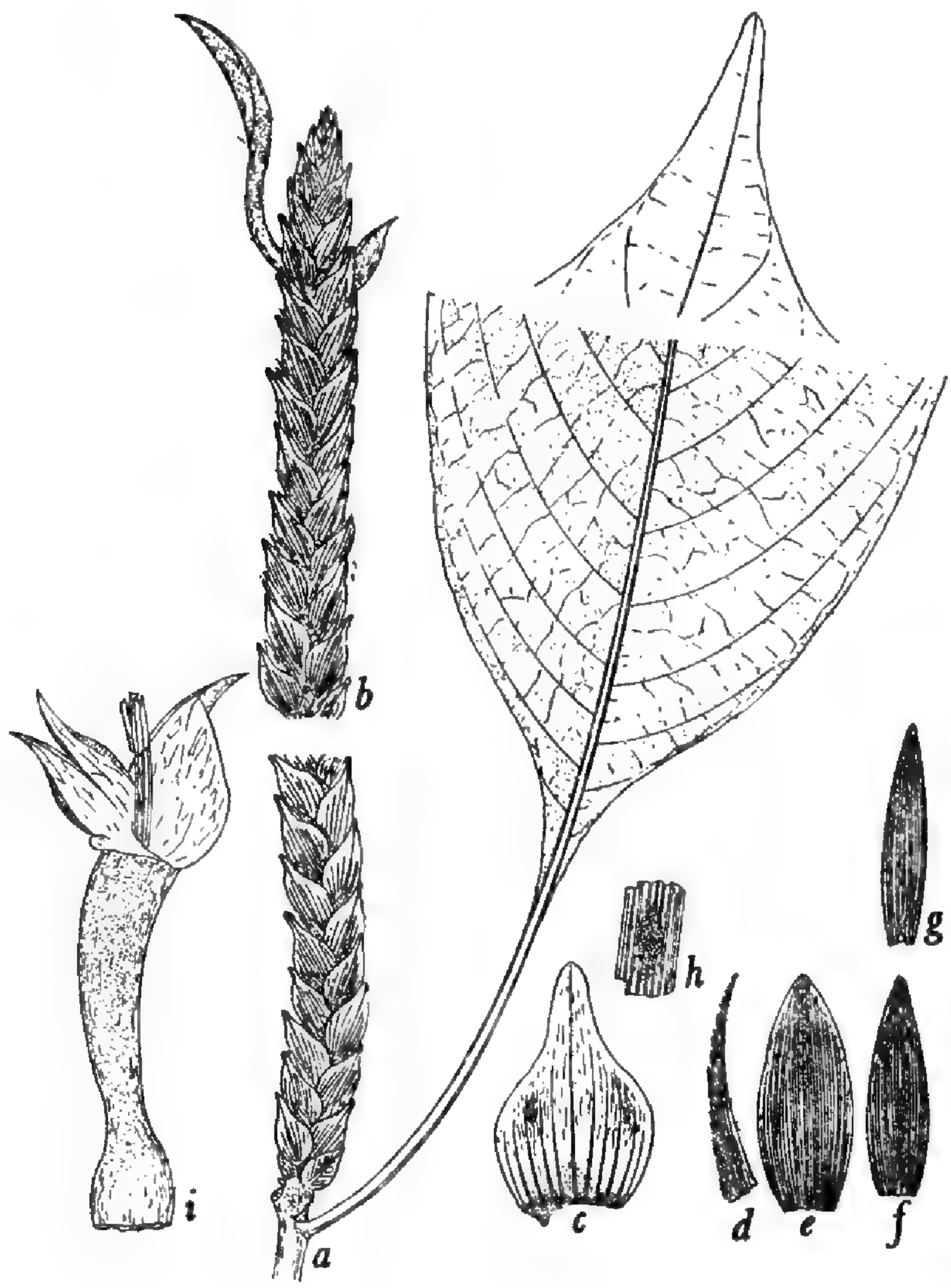

FIGURE 90.—*Aphelandra straminea* Leonard (*Haught* 1750): *a*, Tip of stem including basal portion of spike; *b*, tip of spike; *c*, bract; *d*, bractlet; *e*, posterior calyx segment; *f*, one of the anterior segments; *g*, one of the lateral segments; *h*, glandular area of bract; *i*, corolla. (*a*, *b*, Half natural size; *c*-*g*, twice natural size; *h*, about 3 times natural size; *i*, natural size.)

hence the specific name *straminea*. The spike of the Stockholm specimen cited above is atypical in being poorly developed (only about 5 cm. long).

65. **Aphelandra scolnikae** Leonard, sp. nov. FIGURE 91

Frutex, caulibus teretibus, strigosis, pilis arcte appressis; lamina foliorum oblongo-ovata vel elliptica, apice breviter acuminata (apice ipso obtuso), basi angustata, in petiolum decurrens, subcoriacea, undulata vel crenata, supra glabra vel subglabra, subtus aliquanto stri-

gosa, pilis brunnescentibus et arcte appressis, costa et venis lateralibus aliquanto prominentibus; petioli breves, dense strigosi; spicae plures, terminales et subterminales, breviter pedunculatae, pedunculis minute strigosis, rhache albo-flocculoso-tomentosa; bracteae rhombico-ovatae, brunnescenti-aurantiacae (siccae), acutae, ciliolatae, intus glabrae, extus strigosae (praecipue in area mediana), ad margines glabrae et subhyalinae, costa et nervis lateralibus obscuris, areis alveolatis ellipticis, brunneis; bracteolae lanceolatae, acuminatae, carinatae, carina dense pubescente, pilis albescentibus, ascendentibus; calycis segmenta coriacea, striato-nervata, apice subacuta, segmentum posterius oblongum, tenuiter pubescens (praecipue in area mediana), segmenta anteriora et lateralia anguste oblonga, deorsum glabra, sursum minute puberulenta; corolla ignota; capsulae subclavatae, apice rotundatae, glabrae.

Shrubs up to 3 meters high; stems woody, terete, upwardly strigose, the hairs closely appressed, about 0.25 mm. long; leaf blades oblong-ovate to elliptic, up to 14 cm. long and 5 cm. wide, short-acuminate (the tip blunt), narrowed at base and decurrent on the petiole, subcoriaceous, undulate to crenate, the upper surface glabrous or nearly so, the lower surface moderately strigose, the hairs about 0.25 mm. long, brownish, closely appressed, the costa and lateral veins (8 to 10 pairs) rather prominent; petioles (unwinged portion) up to 1 cm. long, densely strigose, the hairs about 0.25 mm. long; spikes several terminal and subterminal, pedunculate, up to 10 cm. long, about 1 cm. broad, the peduncles up to 1 cm. long and 1.5 mm. in diameter, minutely strigose, the rachis white-tomentose; bracts rhombic-ovate, drying brownish orange, 1 cm. long, 5.5 mm. wide slightly below middle, acute, subtomentose at base, the medial region moderately strigose (the hairs about 0.25 mm. long), the marginal region glabrous and subhyaline, ciliolate, the inner surface glabrous, the costa and lateral nerves inconspicuous, the alveolar spot elliptic, about 1 mm. long and 0.5 mm. wide, brown; bractlets lanceolate, 8 mm. long, 2 mm. wide, acuminate, carinate, the keel densely pubescent, the hairs whitish, ascending, slightly exceeding 0.5 mm. in length; calyx 11 mm. long, the posterior segment oblong, 3.5 mm. wide, the medial region finely pubescent, the hairs ascending, the anterior and lateral segments narrowly oblong, 2 to 2.5 mm. wide, glabrous toward base, minutely puberulous toward tip, all the segments coriaceous, striate-nerved and subacute at tip; corollas not seen; ovary glabrous; capsules subclavate, 12 mm. long, about 4 mm. broad and 3 mm. thick, rounded at tip, glabrous.

Type in the U. S. National Herbarium, No. 1954096, collected in tamp woods below te divide, Santa Elena, along te road between Medellhín and Rionegro, Department of Antioquia, Colombia, 2,500

meters altitude, April 2, 1949, by Fred A. Barkley, Rosa Scolnik, and Tomás G. Orozco (No. 523). Also of this species are: *Barkley, Ríos & Betancourt* 618 (US), collected in a densely wooded region near La Palmitas, Antioquia, 1,700 meters altitude, and *Scolnik, Barkley & Peña* 554 (US), collected in a damp open woods in the Boquerón de San Cristóbal, Antioquia, 2,500 meters altitude, March 5, 1949.

Aphelandra scolnikae is probably related to *A. glabrata.* A close examination of the specimens cited failed to reveal the least vestige of a corolla. Yet "flores amarillo-claras" constitutes a part of the

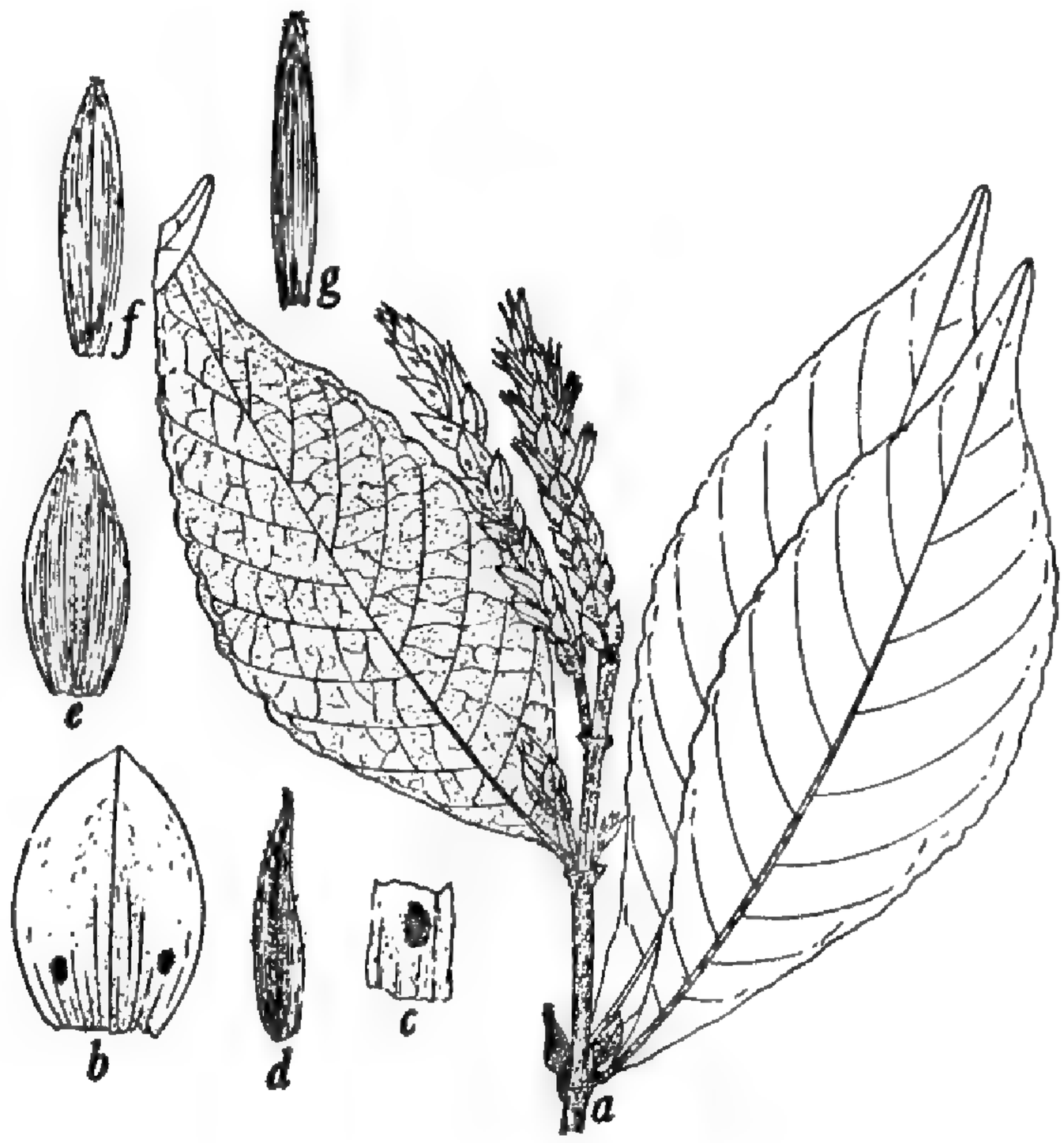

FIGURE 91.—*Aphelandra scolnikae* Leonard (*Barkley, Scolnik, & Orozco* 523): *a*, Tip of plant; *b*, bract; *c*, glandular area of bract consisting of numerous minute ocelli; *d*, bractlet; *e*, posterior calyx segment; *f*, one of the anterior segments; *g*, one of the lateral segments. (*a*, Half natural size; *b*, *d-g*, twice natural size; *c*, about 3 times natural size.)

data of the type sheet. The note that Barkley, Ríos, and Betancourt's No. 618 had "flores rojas," may have applied to red bracts, which were mistaken for corollas.

66. **Aphelandra sericophylla** Leonard, sp. nov. FIGURE 92

Frutex, caulibus teretibus, dense strigosis, pilis brunnescentibus; lamina foliorum elliptica, breviter acuminata, basi angustata, in petiolum decurrens, subcoriacea, integra vel undulata, supra glabra vel parce strigosa, subtus dense sericeo-pilosa, pilis albidis, ascendentibus, costa et venis lateralibus aliquanto prominentibus; petioli aliquanto breves, dense strigosi; spicae solitariae, subsessiles, breves, bracteis imbricatis, rhache tenuiter pilosa vel subtomentosa, pilis

albidis; bracteae rhombico-ovatae, obtusae, glabrae vel dorso parce et tenuiter pubescentes, marginibus tenuiter ciliatis, costa et nervis lateralibus aliquanto prominentibus; areolae alveolatae, opacae, ellipticae; bracteolae oblique lanceolatae, acuminatae, carinatae, area marginali glabra, striata, ciliata, carina dense et tenuiter pilosa, pilis ascendentibus; calycis segmenta coriacea, obscure striata, dorso tenuiter pubescentia, costa et venis lateralibus sursum obscuris, basi induratis, callum triangularem ferentibus, segmentum posterius anguste ovatum, apice subacutum et ciliatum, anteriora oblique lanceolata, acuta, lateralia anguste lanceolata, acuta; corolla (immatura) papillosa; ovarium glabrum.

Shrubs; stems terete or subterete, densely strigose, the hairs brownish, about 0.5 mm. long; leaf blades elliptic, up to 12 cm. long and 4 cm. wide, short-acuminate (the tip itself blunt), narrowed at base and decurrent on the petiole, subcoriaceous, entire or undulate, the upper surface drying to dark olive-brown, glabrous or sparingly strigose, the hairs confined chiefly to the costa, the lower surface drying to gray, densely and silky-pilose or subtomentose, the hairs whitish, up to 0.75 mm. long, ascending, the costa and lateral veins moderately conspicuous, more so beneath than above; petioles up to 1 cm. long, densely strigose; spikes solitary, terminal, curved, subsessile, up to 6 cm. long and 8 mm. broad, the bracts rather closely imbricate, the rachis finely pilose or subtomentose, the hairs whitish; bracts rhombic-ovate, 6 mm. long, 4 mm. wide at 2 mm. above base, obtuse, glabrous or finely and sparingly pubescent dorsally, the margins finely ciliate, the costa and lateral nerves rather prominent; alveolar area dull, elliptic, about 1.5 mm. long and 0.5 mm. wide; bractlets obliquely lanceolate, acuminate, carinate, 6 mm. long and 1.5 mm. wide, the keel densely and finely pilose, the hairs ascending, up to 1 mm. long, whitish, the marginal areas 0.5 to 1 mm. wide, glabrous, striate, the margins ciliate; calyx 6.5 mm. long, the segments coriaceous, obscurely striate, finely pubescent dorsally, the costa and lateral nerves obscure except at base, here indurate forming a thick triangular callus, the posterior segment narrowly ovate, 3.5 mm. wide, subacute, ciliate at tip, the anterior segments obliquely lanceolate, 2 mm. wide, acute, the lateral pair narrowly lanceolate, 1.5 mm. wide, acute; corolla (immature) papillose; ovary glabrous.

Type in the Herbario Nacional Colombiano, collected at Casas Viejas, Limbo, Department of Cundinamarca, Colombia, 100 meters altitude, February 1858, by J. Triana (s. n.). Fragment of type in the U. S. National Herbarium.

Lehmann's No. 5506 (K), collected in dense bush-woods on steep, stony mountain slopes between Las Juntas and El Naranjo, on the Río Dagua, Andes west of Cali, Department of El Valle, 300 to 1,000

meters altitude, is also of this species. Lehmann's field note is as follows: "Shrub up to 3 m. in height, with a candelabrum-shaped ramification. Leaves dark green, shiny, fairly robust. Flowers light blood-red."

Aphelandra sericophylla is close to *A. glabrata*, differing chiefly in the densely silky pilose lower surface of the leaf blades. The name *sericophylla* is derived from the Greek σηρικός, silky, and φύλλον, leaf.

FIGURE 92.—*Aphelandra sericophylla* Leonard (*Triana* s. n., Casas Viejas, Limbo): *a*, Tip of stem; *b*, tip of leaf blade (upper surface); *c*, bract; *d*, glandular area showing numerous minute ocelli; *e*, bractlet; *f*, posterior calyx segment; *g*, one of the anterior segments; *h*, one of the lateral segments; *i*, pubescence of corolla tube (immature). (*a*, *b*, Half natural size; *c*, *e-h*, twice natural size; *d*, about 3 times natural size; *i*, about 40 times natural size.)

67. Aphelandra garciae Leonard, sp. nov. FIGURE 93

Frutex gracilis, caulibus deorsum teretibus, glabris, sursum dense strigosis, pilis sordidis; lamina foliorum obovata vel late oblanceolata, breviter acuminata (apice ipso obtuso vel rotundato), basi angustata, in petiolum decurrens, submembranacea, supra glabra, minute alveolata, subtus parce strigosa, costa et venis aliquanto dense strigosis, pilis sordidis; petioli breves, dense strigosi; spicae terminales, solitariae, subsessiles, rhache minute pilosa, pilis ascendentibus; bracteae rhombico-ovatae, apice rotundatae et subapiculatae, coccineae (vivae), brunnescentes (siccae), intus glabrae, extus minute lepidotae, costa et nervis prominentibus, marginibus subhyalinis et ciliolatis; areola elliptica, opaca, alveolata pro ocellis substituta; bracteolae lanceolatae, subfalcatae, carinatae, marginibus striato-nervatis, subhyalinis, carina dense pilosa pilis brunnescentibus, ascendentibus; calycis segmenta

sursum pilosa, deorsum glabra, striato-nervata, acuta (apice ipso obtuso et minute apiculato), segmentum posterius oblongo-ellipticum, anteriora oblonga, lateralia lineari-oblonga; corolla flava, extus minute hirsuta, intus strigosa, tubo subcylindrico, leviter curvato, labio superiore erecto, elliptico, bilobato, lobis triangulari-ovatis, tenuiter acuminatis, labio inferiore trilobato, lobo medio patulo, ovato, acuminato, lobis lateralibus parvis, triangularibus, apice obtusis, cum labio superiore basi connatis; ovarium glabrum.

Shrub, up to 75 cm. high, slender, straight, the tips of the branches densely strigose, the hairs sordid, about 0.5 mm. long, the lower portions of the stems terete, glabrate, the lenticels minute, brown, corky, inconspicuous; leaf blades obovate or broadly oblanceolate, up to 30 cm. long and 11.5 mm. wide, short-acuminate (the tip itself obtuse or rounded), narrowed at base and decurrent on the petiole, submembranaceous, entire or undulate, the upper surface drying to olive-green, glabrous, minutely alveolate under lens, the costa and lateral veins flat or slightly raised, barely conspicuous, the lower surface drying to green or light olive-green, sparingly strigose, the hairs sordid, about 0.75 mm. long, the costa and lateral veins rather densely strigose, raised and more conspicuous than on the upper surface; petioles (unwinged portion) up to 1 cm. long, the pubescence similar to that of the stem; spikes solitary, terminal, up to 22 cm. long and 1 cm. broad, the peduncle barely 0.5 cm. long and 3.5 mm. in diameter, densely strigose, the rachis minutely pilose, the hairs barely 0.5 mm. long, ascending, yellowish; bracts rhombic-ovate, 12 mm. long, 8 mm. wide, rounded and subapiculate at apex, coriaceous, bright red (living), drying to yellowish brown, glabrous within, minutely scurfy without, the costa and nerves prominent, the margins subhyaline, ciliolate except toward base, the ocelli replaced by a dull elliptic faveolate area about 2.5 mm. long and 1 mm. wide; bractlets lanceolate, subfalcate, carinate, 12 mm. long, 2.5 mm. wide, the keel densely pilose, the hairs about 0.5 mm. long, light brown or whitish, ascending, the margins striate-nerved, subhyaline; calyx about 2 cm. long, the posterior segment oblong, elliptic, slightly over 5 mm. wide, finely pilose toward tip, the hairs whitish, subappressed, the anterior pair 4.5 mm. wide, the lateral pair somewhat narrower than the anterior pair and like them, glabrous or bearing a few hairs at tip, all of the segments acute (the tip itself blunt, minutely apiculate) and ciliate; corolla yellow, drying brown, minutely hirsute, the hairs subappressed or ascending, some of them as much as 0.5 mm. long, the tube slightly curved, 4 cm. long, 4 mm. broad at base, narrowed to 3 mm. at 5 mm. above base, thence gradually enlarged into a subcylindric throat 7 mm. broad at mouth, the upper lip erect, elliptic, 15 mm. long and 7 mm. wide, bilobed, the lobes triangular-ovate, about 8 mm. long, slenderly acuminate, the middle lobe

of the lower lip spreading, ovate, 15 mm. long, about 7 mm. wide, acuminate, strigose within, the hairs closely appressed, about 0.5 mm. long, the lateral lobes triangular, about 4 mm. long, partly adnate to the

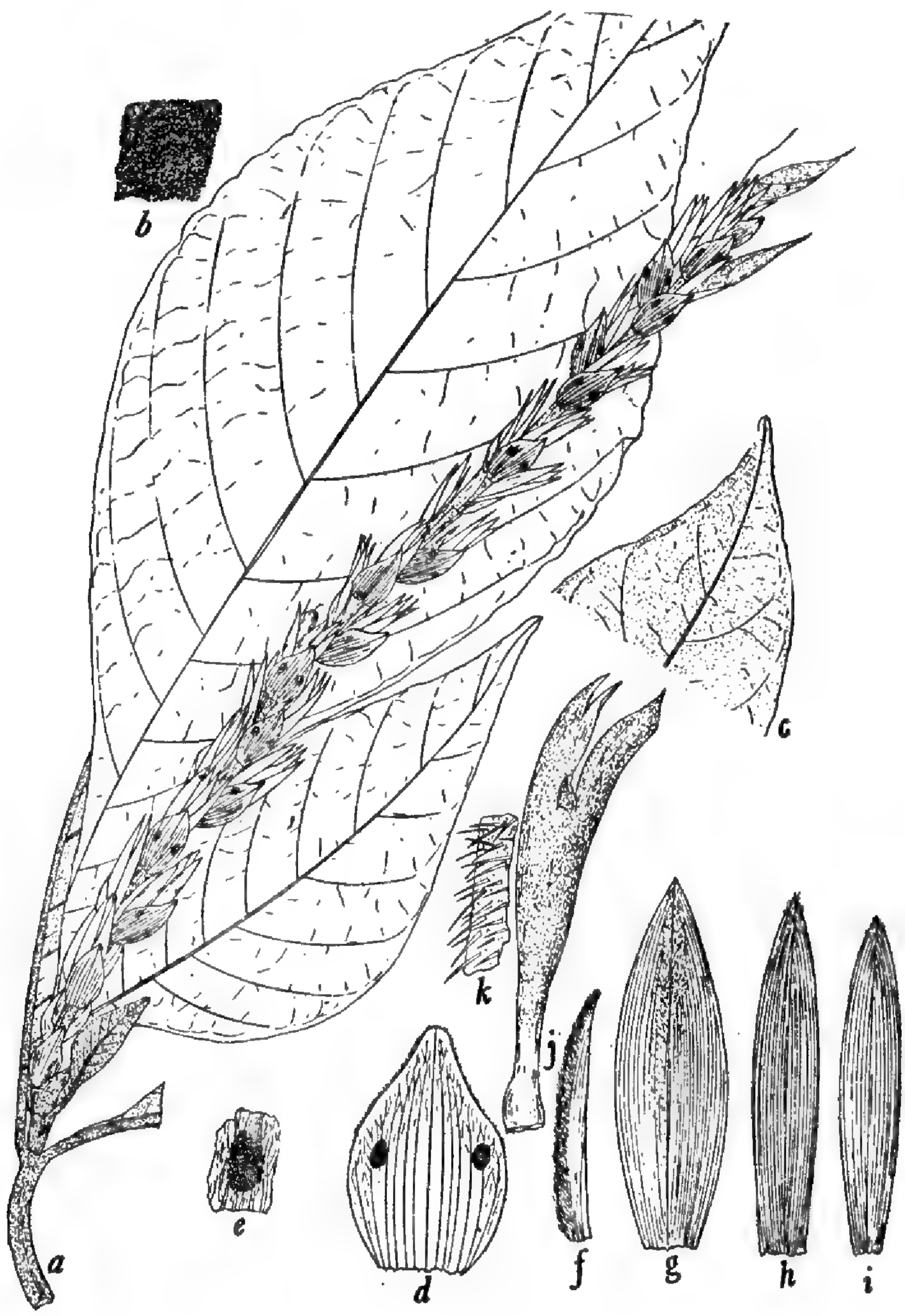

FIGURE 93.—*Aphelandra garciae* Leonard (*Killip & Garcia* 33532): *a*, Tip of plant; *b*, alveolar upper surface of leaf blade under strong lens; *c*, tip of leaf blade (lower surface); *d*, bract; *e*, glandular area of bract; *f*, bractlet; *g*, posterior calyx segment; *h*, one of the anterior segments; *i*, one of the lateral segments; *j*, corolla; *k*, pubescence of corolla tube. (*a*, *c*, Half natural size; *b*, about 20 times natural size; *d*, *f-i*, twice natural size; *e*, about 4 times natural size; *j*, natural size; *k*, about 16 times natural size.)

lower part of the upper lip, their free portions about 1.5 mm. long and 1 mm. wide, obtuse; ovary glabrous; stamens and capsules not seen.

Type in the U. S. National Herbarium, No. 1770464, collected in dense forest along the Quebrada Jellita, Bahía Solano, Department of

Chocó, Colombia, 50 to 100 meters altitude, February 22, 1939, by E. P. Killip and Hernando García-Barriga (No. 33532).

Aphelandra garciae is distinct from other species of the *Aphelandra pulcherrima-tetragona* complex in its yellow, minutely hirsute corollas (at least the lower lip strigose within), and in the minutely pilose rachis. Its closest relative is possibly *A. blandii.*

Killip and Cuatrecasas' No. 39123, collected in dense tidal forest along the banks of Quebrada Togoromá, Chocó, June 13, 1944, is undoubtedly of this species even though the color of the corolla is noted as red.

68. **Aphelandra crenata** Leonard, sp. nov. FIGURE 94

Frutex erectus, caulibus sursum quadrangularibus, glabris; lamina foliorum magna, oblongo-elliptica, breviter acuminata (?), basi angustata, in petiolum decurrens, submembranacea, valde crenata, utrinque glabra vel subtus in costa et venis parce puberula; spicae plures, terminales, subsessiles, laterales pedunculatae, pedunculis glabris vel parce et minute strigosis, rhache glabra; bracteae coccineae (vivae), ovatae, obtusae, coriaceae, costa prominente, in mucrone minuto terminantes; areola elliptica opaca, alveolata, nigro-brunnescente pro ocellis substituta; bracteolae lanceolatae, falcatae, carinatae, subacutae, carina dense hirsuta, pilis flavescentibus, ascendentibus, marginibus glabris, subhyalinis, apice plus minusve ciliatae; calycis segmenta glabra, ciliata, striato-nervata, apice rotundata et mucronata, basi indurata, segmentum posterius oblongum, anteriora anguste oblonga, lateralia lineari-oblonga; corolla rosea, dense papillosa, tubo subcylindrico, labio superiore erecto, elliptico, bilobato, lobis triangularibus, acutis, labio inferiore trilobato, lobo medio elliptico, apice mucronato, recurvato, lobis lateralibus parvis, ovatis, obtusis, cum labio superiore basi connatis; stamina vix exserta, antheris basi acutis.

An erect soft-wooded shrub; stems quadrangular toward tip, glabrous; leaf blades oblong-elliptic, up to 40 cm. long and 13.5 cm. wide, short-acuminate (?), narrowed at base and decurrent on the petiole, submembranaceous, prominently and irregularly crenate except the narrowed basal portion, the upper surface drying olive-green, glabrous, the costa and lateral veins (16 to 18 pairs) slightly raised, scarcely conspicuous, the lower surface drying to grayish olive-green, densely and minutely white-punctate under lens, glabrous or the costa and lateral veins sparingly puberulous, the hairs appressed or spreading; spikes several, up to 16 cm. long and 2 cm. broad, the terminal ones subsessile, the lateral borne on peduncles up to 3.5 cm. long, these glabrous or sparingly and minutely strigose, the rachis glabrous; bracts coriaceous, scarlet (*Haught*) in live plants, drying to light brown proximally, shading to blackish brown toward tip, glabrous,

ovate, 13 mm. long and 10 mm. wide, obtuse, the costa rather prominent, ending in a minute mucro, the flanking nerves fairly prominent except toward tip; ocelli replaced by elliptical, dull blackish brown faveolate areas up to 4 mm. long and 2 mm. wide; bractlets lanceolate, falcate, carinate, 10 mm. long, slightly over 3 mm. wide, acutish, the costa and keel densely hirsute, the hairs yellowish, ascending, about

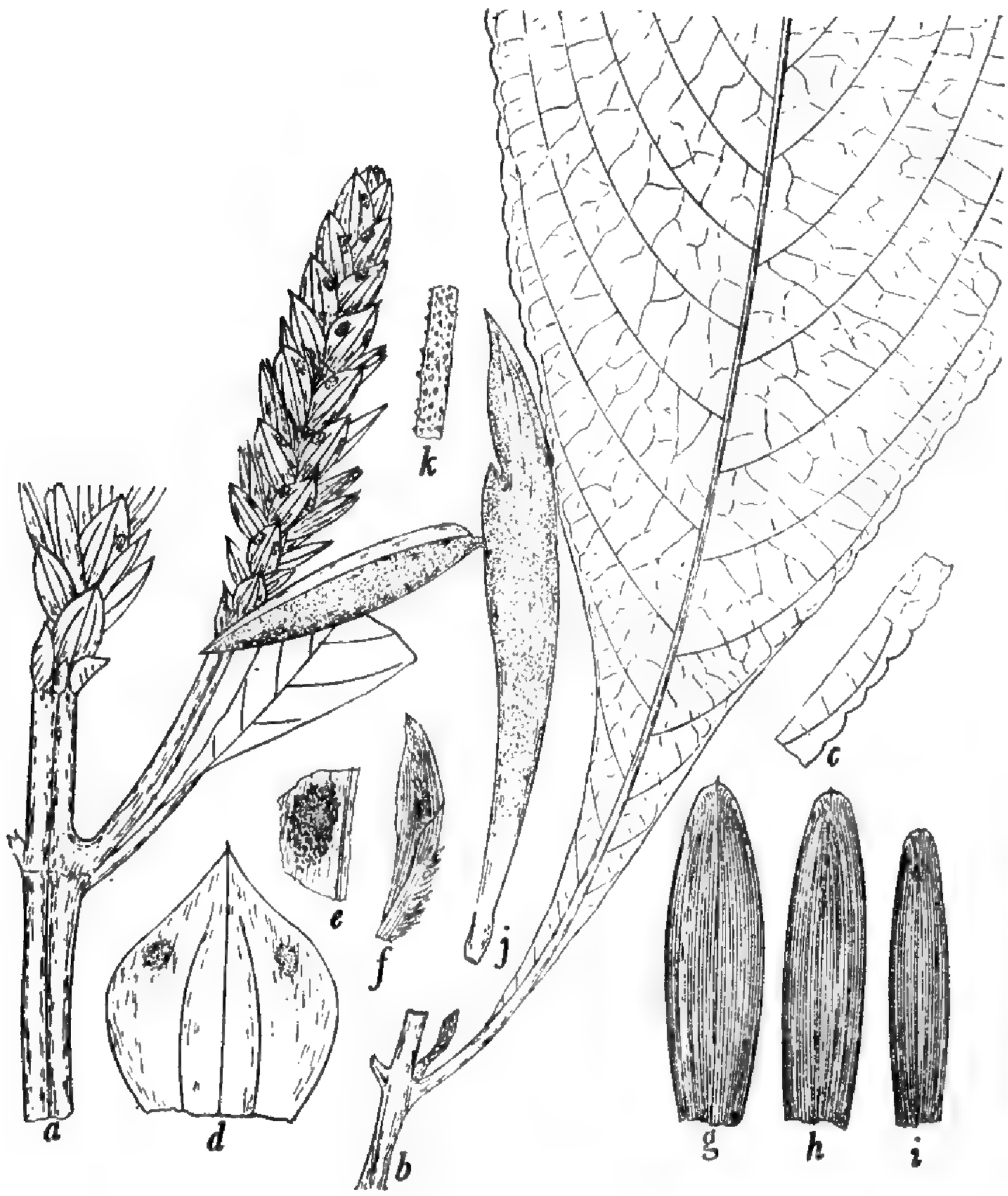

FIGURE 94.—*Aphelandra crenata* Leonard (*Haught* 1464): *a*, Basal portion of inflorescence; *b*, node showing lower portion of leaf blade (lower surface); *c*, crenation of margin from middle portion of leaf blade; *d*, bract; *e*, glandular area of bract; *f*, bractlet; *g*, posterior calyx segment; *h*, one of the anterior segments; *i*, one of the lateral segments; *j*, corolla; *k*, pubescence of corolla tube. (*a-c*, Half natural size; *d*, *f-i*, twice natural size; *e*, about 4 times natural size; *j*, natural size; *k*, about 20 times natural size.)

0.5 mm. long, the marginal area glabrous, bordered by a narrow subhyaline edging, the tip more or less ciliate; calyx 16 to 17 mm. long, the posterior segment oblong, slightly over 7 mm. wide, the anterior segments narrowly oblong, 5 mm. wide, the lateral segments linear-oblong, 3 mm. wide, all minutely scurfy within, glabrous and striate-nerved without, ciliate, rounded and minutely mucronate at tip, indurate at base; corollas rose, densely papillose, 7 cm. long from base

to tip of upper lip, 10 mm. broad at base, narrowed to 4 mm. at 8 mm. above base, thence enlarged to a slightly curved subcylindric throat, 7 mm. broad at mouth, the upper lip erect, elliptic, about 23 mm. long and 9 mm. wide, bilobed at tip, the lobes triangular, 9 mm. long, 4 mm. wide, acute, the middle lobe of the lower lip spreading, narrowly elliptic, 3 cm. long, 9 mm. wide, the submucronate tip slightly recurved, the lateral lobes about 1 cm. long, partly adnate to the lower part of the upper lip, their free portions 2 mm. long and 1.5 mm. wide, rounded; stamens exserted about 1 cm. beyond mouth of the corolla tube, the anthers 1 cm. long, 1.5 mm. broad, acute at base, blunt at tip; capsules not seen.

Type in the U. S. National Herbarium, No. 1662465, collected at Camp Zarzal, in the vicinity of Barranca Bermeja, in the Magdalena Valley, between the Sogamoso and Colorado rivers, Department of Santander, Colombia, 100 to 500 meters altitude, December 15, 1934, by Oscar Haught (No. 1464).

Idrobo and Schultes' No. 885, collected at Guapayita, Cordillera La Macarena, Meta, 500 to 600 meters altitude, December 20–28, 1950, is also of this species.

Aphelandra crenata is related to *A. hartwegiana*, differing in its rose-colored corolla, densely hirsute keel of the bractlets, and its rounded calyx segments. The specific name *crenata* alludes to the strongly crenate margins of the leaf blades.

69. Aphelandra glabrata Nees

Aphelandra glabrata Willd. ex Nees in DC. Prodr. 11: 296. 1847. Type collected between Fusagasugá and Pandi, Department of Cundinamarca, Colombia, by Humboldt. Photograph of type material from the Berlin Herbarium in the U. S. National Herbarium (Field Mus. photograph No. 8708).

Shrubs, or suffrutescent herbs, up to 2 meters high; stems terete, erect or ascending, sparingly branched, the tips densely and minutely strigose, the hairs brownish, appressed, the lower portions of the stem glabrate, the lenticels raised, corky, minute, orbicular to linear, the larger barely more than 0.5 mm. long; leaf blades obovate to elliptic or oblong or oblanceolate, 10 to 20 cm. long, 3 to 12 cm. wide, more or less abruptly acuminate (the tip itself blunt, the apex often curved), gradually narrowed to base, coriaceous, the upper surface drying olive to dark brown, nitid, glabrous or the costa minutely hirsute or in young leaves the entire surface hirsute, the hairs about 0.5 mm. long, appressed or spreading, the costa and lateral veins, usually 10 to 12 pairs, flat or slightly raised, the lower surface drying light olive or brown, the entire surface usually rather densely but minutely hirsute, the hairs about 0.5 mm. long, appressed or ascending, brownish; petioles (unwinged portion) up to 10 mm. long, the pubescence similar to that of the stems; flowers borne in 1 to several terminal subsessile

spikes 4 to 15 cm. long or occasionally as much as 20 cm. long, the rachis white-cottony; bracts red, closely imbricate, subrhombic, up to 7 mm. long and 5 mm. wide at 2.5 mm. above base, glabrous or softly pubescent dorsally without, densely ciliolate, the costa and 2 or more nerves on either side prominent, these flanked on either side by a flat, elliptic, subpunctate glandular spot about 1.5 mm. long and 1 mm. wide; bractlets lanceolate, oblique, 7 mm. long, 1.5 mm. wide, acute, carinate, the keel densely white-pilose, the hairs appressed to ascending, the margins subhyaline, ciliate at tip, delicately striate-nerved; calyx 7.5 mm. long, glabrous, striate-nerved, the posterior segment 4 mm. wide, obtuse, the anterior pair 2.25 mm. wide, the lateral pair 2 mm. wide, both pairs acute to obtuse; corollas 3.5 cm. long, bright red, glabrous, minutely punctate, the tube about 2.5 mm. broad at base, narrowed at tip of ovary to 1.5 mm., thence gradually enlarged to 4 mm. at mouth, the upper lip erect, 15 mm. long, about 7 mm. broad at base, narrowed to a slender 2-lobed tip, the lobes 3.5 mm. long, 1 mm. wide at base, slenderly acuminate, the middle lobe of the lower lip spreading, lance-elliptic, 4 mm. wide, obtuse at apex, conduplicate; capsules glabrous, 13 mm. long, 4.5 mm. broad, 3 mm. thick, sparingly and inconspicuously punctate; mature seed not seen.

Aphelandra glabrata can be recognized and readily separated from *A. pulcherrima* by its smooth, albicant stems and glossy leaves, characters which suggested the specific name. The flowering season extends from May through August. According to Killip, Dugand, and Jaramillo (No. 38155), the entire inflorescence takes on a deep purple color with age.

Woods and thickets, often along streams at various elevations ranging from 100 to 2,200 meters. Apparently endemic in Colombia.

ANTIOQUIA: Vicinity of Dabeiba, *Johnson & Barkley* 18C.409 (US); *Uribe-Uribe* 1436 (Col). Urabá, Río Rama, between Dabeiba and Urabá, *Uribe-Uribe* 1517 (Col).

CUNDINAMARCA: Along trail to Anapoima, east of Apulo, *Killip, Dugand, & Jaramillo* 38155 (US). Fusagasugá, *Holton* 595 (Ph, NY). Guaduas, *Bro. Ariste-Joseph* 1019 (US). Between Guaduas and Alto de Aguaclara, at the Hacienda Paramillo, *García-Barriga* 12358 (US). Nariño, *Pérez-Arbeláez* 417 (Col, US). Páramos of Guasca, toward Gachetá, *Bro. Ariste-Joseph* s. n. (NY, US). La Paila, *Triana* (Col). Quebrada Carmargo, north of Apulo, *Killip, Dugand, & Jaramillo* 38237 (US).

EL VALLE: Cali, *Herrera* 944 (US). La Cumbre, *Pennell* 5676 (Ph, NY, US). Río Dagua, *Killip* 35586 (US); *Lehmann* s. n. (K).

HUILA: East of Neiva, *Rusby & Pennell* 409 (US).

TOLIMA: Angostura de Honda, *André* 287 (K). Doima, *Haught* 2449 (US). Honda, *Bro. Ariste-Joseph* A360 (US).

DEPARTMENT (?): *Mutis* 720 (US), 1504 (US); *Triana* s. n. (NY, US).

70. **Aphelandra hodgei** Leonard, sp. nov. FIGURE 95

Suffrutex, caulibus glabris; lamina foliorum oblongo-elliptica, apice breviter acuminata (?), basi angustata, in petiolum decurrens, integra,

supra glabra, subtus parce et minute strigosa, costa et venis lateralibus prominentibus; petioli glabri; spica terminalis, solitaria, subsessilis, rhache dense sericeo-pubescente, pilis albis; bracteae coccineae, ovatae, obtusae, intus sursum puberulae, extus dorso puberulae, costa et venis lateralibus prominentibus; areola elliptica opaca alveolata pro ocellis substituta; bracteolae anguste lanceolatae, acuminatae, carinatae, carina dense albo-pubescente, ciliatae, basi dentem ascendentem subhyalinum ferentes; calycis segmenta acuta, chartacea, striato-nervata, fere glabra, apice pilos raros minutos ferentia, segmentum posterius angusto-ovatum, segmenta anteriora lanceolata, lateralia anguste lanceolata; corolla coccinea, minute papillosa, tubo subcylindrico, labio posteriore ovato, apice bilobato, lobis anguste triangularibus, subulatis, labio inferiore trilobato, lobo medio elliptico, apice acuminato, lobis lateralibus triangularibus, obtusis, cum labio superiore basi connatis; stamina vix exserta; antherae apice cohaerentes; ovarium glabrum.

Suffretescent; stems glabrous; leaf blades oblong-elliptic, up to 30 cm. long and 10 cm. wide, acuminate(?), narrowed at base and decurrent on the petiole, membranaceous, entire, glabrous above, the lower surface bearing a thin pubescence of inconspicuous, closely appressed, brownish, straight hairs about 0.25 mm. long, the costa and lateral veins (12 or 13 pairs) prominent; petioles up to 4 cm. long, glabrous; spikes terminal, solitary, subsessile, up to 13 cm. long and 1.5 cm. broad, the rhachis densely white-silky-pubescent, the hairs straight, ascending, about 0.5 mm. long; bracts scarlet, ovate, 12 mm. long and 8 mm. wide at 3 mm. above base, obtuse at apex, ciliolate, the inner surface puberulous toward tip, the outer surface sparingly puberulous on and near the costa, the hairs appressed and minute, the costa and 3 pairs of lateral veins prominent, the ocelli replaced by a small, opaque, oval, alveolar area up to 2 mm. long and 1 mm. wide; bractlets narrowly lanceolate, 12 mm. long and 3 mm. wide at 3 mm. above base, narrowed to a slender tip, carinate, the keel densely white-pubescent, the hairs fine, ascending, about 0.5 mm. long, the inner surface appressed-pubescent medially and toward tip, the margins ciliate, bearing near base an ascending, subhyaline tooth about 1 mm. long; calyx segments chartaceous, striate, bearing a few minute hairs toward tip, otherwise glabrous, the posterior segment narrowly ovate, 13.5 mm. long, 4.5 mm. wide at 3 mm. above base, the anterior segments lanceolate, 13.5 mm. long and 3.25 mm. wide at 3 mm. above base, the lateral pair narrowly lanceolate, carinate, 11 mm. long and 2.25 mm. wide at 3 mm. above base, all acute and minutely apiculate at tip; corolla 5 cm. long, scarlet, minutely papillate without, densely pilose within at and near the attachment of the stamens, the hairs white, ascending, about 0.75 mm. long, the tube 3 mm. broad at base, 4 mm. broad at 4 mm. above base, then gradually narrowed to 3.5 mm. at 12 mm. above base, thence gradually enlarged to 7 mm. at throat, the upper

lip ovate, 17 mm. long, 10 mm. wide at middle, bilobed at tip, the lobes narrowly triangular, 2 mm. long, 1 mm. wide at base, subulate at tip, the lower lip 3-lobed, the middle lobe elliptic, 6 mm. wide at middle, curved and acuminate at tip, the lateral lobes adhering in part to the upper lip, their free portions triangular, 1.25 mm. long, 1 mm. wide at base, obtuse; stamens slightly exserted, almost reaching the tip of the upper lip of the corolla, attached to the corolla tube at 6 mm. above base, the filaments sparingly pilose toward base, the anthers 7 mm. long and 1.5 mm. broad, their tips webby and slightly adhering; ovary glabrous; capsules not seen.

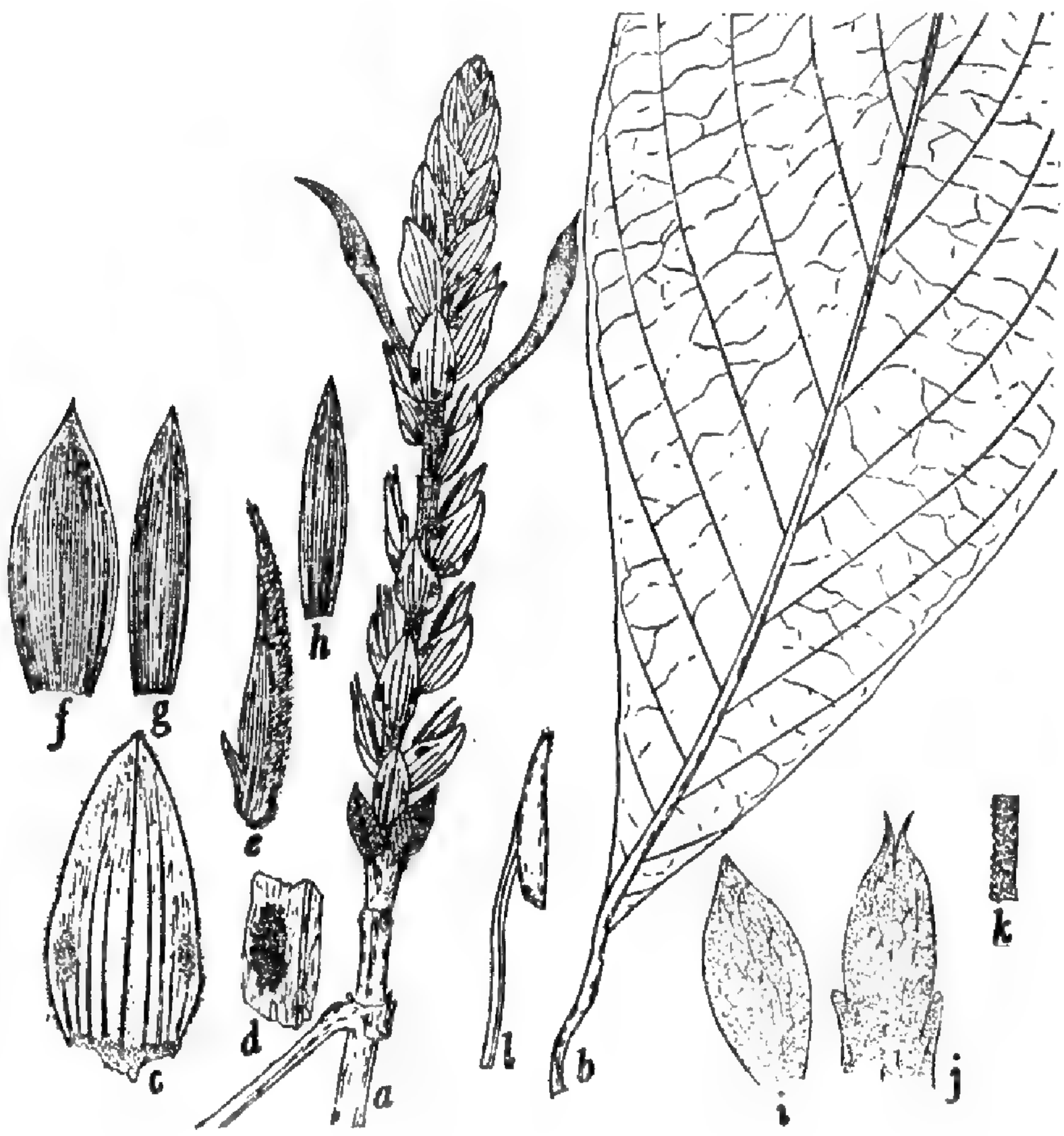

FIGURE 95.—*Aphelandra hodgei* Leonard (*Hodge* 6513): *a*, Spike; *b*, basal portion of leaf (lower surface); *c*, bract; *d*, glandular area; *e*, bractlet; *f*, posterior calyx segment; *g*, one of the anterior segments; *h*, one of the lateral segments; *i*, lower lip of corolla; *j*, upper lip; *k*, pubescence of corolla tube; *l*, anther. (*a*, *b*, Half natural size; *c*, *e*, *f*-*h*, twice natural size; *d*, about 4 times natural size; *i*, *j*, natural size; *k*, about 20 times natural size; *l*, about 2½ times natural size.)

Type in the Gray Herbarium, collected in forest along the Río Carare, east of Puerto Berrio, Department of Santander, Colombia, 300 to 400 meters altitude, September 28, 1945, by W. H. Hodge (No. 6513). Isotype in the herbarium of the Facultad de Agronomía, Medellín, Colombia.

Aphelandra hodgei is related to *A. straminea*, also from Santander, which has the same soft, silky pubescence on the rachis, the large, oblong-elliptic leaf blades, these glabrous above and inconspicuously

appressed-brown-hairy beneath, and firm, obtuse bracts with poorly defined glandular areas. *Aphelandra straminea* differs, however, in its much longer petioles and spikes. Peculiar, when compared with other related species, is the pair of thin but well-formed teeth on the inner margin of the bractlets near their base. Hodge states that the species is a common forest herb.

The leaf blades of the material cited were so completely eaten by insects that no description of their tips can be made.

71. **Aphelandra longispica** Leonard, sp. nov. FIGURE 96

Frutex, caulibus subteretibus, parce strigosis vel glabratis, pilis minutis, sursum appressis; lamina foliorum ovato-elliptica, late oblanceolata, apice acuminata vel subacuminata (apice ipso subobtuso), basi angustata, in petiolum decurrens, membranacea, integra vel undulata, subnitida, glabra vel subtus pilos raros minutos appressos ferens, costa et venis lateralibus prominentibus; petioli aliquanto breves, glabri vel parce et minute strigosi; spicae 1 vel plures, terminales, subsessiles, rhache albo-sericeo-pilosa, pilis gracilibus; bracteae arcte appressae, quadrifariae, ovatae, obtusae, coriaceae, glabrae, prominenter striato-nervatae, ciliolatae; areola elliptica, punctata pro ocellis substituta; bracteolae lanceolatae, acuminatae, carinatae, carina dense sericeo-pilosa, pilis albis, ascendentibus, marginibus subhyalinae, striato-nervatae, ciliatae; calycis segmenta membranacea, striato-nervata, glabra, acuta vel subacuta, segmentum posterius ovatum, segmenta anteriora et lateralia lanceolata; corolla rubra, minute et dense papillosa, tubo subcylindrico, labio superiore erecto, acuto, labio inferiore trilobato, lobo medio ovato, acuto, lobis lateralibus parvis, rotundatis, cum labio superiore basi connatis; stamina vix exserta; capsulae subclavatae, apice rotundatae, glabrae, nitidae, deorsum minute punctatae; retinacula apice cucullata.

Shrubs up to 1.5 meters high; stems subterete, sparingly strigose or glabrate, the hairs about 0.25 mm. long, upwardly appressed; leaf blades ovate-elliptic or broadly oblanceolate, up to 20 cm. long and 8 cm. wide, acuminate or subacuminate (the tip itself subobtuse), narrowed at base and decurrent on the petiole, thin, entire or undulate, subnitid, glabrous or the lower surface bearing a few scattered, minute, appressed hairs, the costa and lateral veins (10 to12 pairs) prominent, the veinlets coarsely reticulate; petioles (unwinged portion) 1 to 3 cm. long, glabrous or minutely and sparingly strigose, the channel shallow; spikes 1 or several, terminal, subsessile, up to 30 cm. long and 8 mm. broad, the rachis white-silky-pilose; bracts closely appressed, quadrifarious, ovate, 8 mm. long, 7 mm. wide, obtuse, coriaceous, glabrous, dull without, nitid within, prominently striate-nerved, ciliolate, the ocelli represented by an elliptic, dull, punctate area about 1.5 mm. long and 0.75 mm. wide; bractlets lanceolate, 8 mm. long, 2

mm. wide, acuminate, carinate, the keel densely silky-white-pilose, the hairs ascending, 0.5 to 0.75 mm. long, the marginal area subhyaline, striate-nerved, ciliate; calyx segments thin, striate-nerved, glabrous, the posterior segment 8.5 mm. long and 4 mm. wide, subacute, the

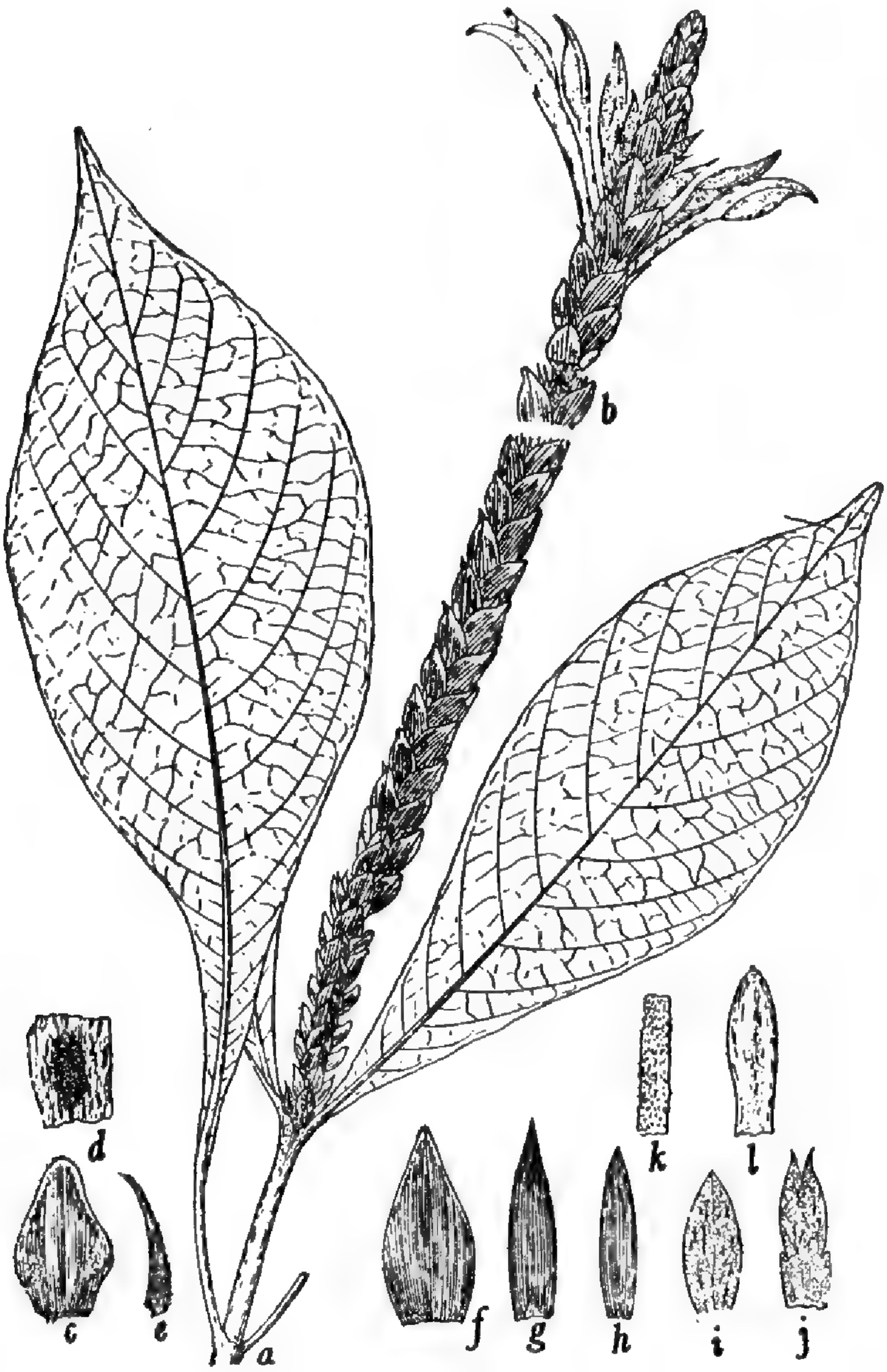

FIGURE 96.—*Aphelandra longispica* Leonard (*Killip, Dugand, & Jaramillo* 38346): *a*, Tip of plant showing leaves and lower half of spike; *b*, tip of spike; *c*, bract; *d*, a glandular area of bract; *e*, bractlet; *f*, posterior calyx segment; *g*, one of the anterior segments; *h*, one of the lateral segments; *i*, lower lip of corolla; *j*, upper lip; *k*, pubescence or roughening of the corolla tube; *l*, capsule, the dots representing puncta. (*a*, *b*, Half natural size; *c*, *e*, *f-h*, twice natural size; *d*, 4 times natural size; *i*, *j*, *l*, natural size; *k*, about 10 times natural size.)

anterior pair lanceolate, 8 mm. long, 2.5 mm. wide, acute, the inner pair lanceolate, 2 mm. wide, acute, subfalcate and subcarinate; corolla red, minutely and densely papillose, 5 mm. broad at base, narrowed at tip of ovary to 3 mm. then abruptly enlarged to 5 mm. and thence gradually to 6 mm. near mouth of tube, the upper lip erect, ovate, about

13 mm. long and 10 mm. wide, acute, the lower lip spreading(?), ovate, about 15 mm. long, 8 mm. wide, acute, the lateral lobes small, partly attached to upper lip, their free portions about 1.5 mm. long and 1 mm. wide, rounded; stamens reaching tip of upper lip; capsules subclavate, about 15 mm. long and 4 mm. in diameter, blunt at tip, glabrous, nitid, minutely punctate toward base; retinacula 3 mm. long, 1.5 mm. broad, cucullate at tip; seed not seen.

Type in the U. S. National Herbarium, No. 1855858, collected along the Quebrada Cabaña, Hacienda El Cucharo, between Tocaima and Pubenza, Department of Cundinamarca, Colombia, 380 to 600 meters altitude, May 8, 1944, by E. P. Killip, A. Dugand, and R. Jaramillo (No. 38346). Mutis' No. 1502 (US, 1562329), collected in Colombia, is also this species.

Aphelandra longispica closely resembles *A. straminea* in many respects, e. g. in the size and shape of the spikes, the numerous minute papillae covering the corolla, and the glabrous capsules minutely punctate toward base. The corollas, however, of *A. longispica* are red instead of stramineous, the leaf blades prevailingly smaller (up to 20 cm. long instead of 30 cm.), and the petioles much shorter (unwinged portion up to 3 instead of 12 cm.). The upper lip of the corolla of *A. longispica*, moreover, seems to be entire, instead of bilobed as in *A. straminea.*

72. **Aphelandra blandii** Lindau

Aphelandra blandii Lindau, Bull. Herb. Boiss. **5**: 656. 1897. Type collected at Santa Fé de Bogotá, Colombia, by Bland, and deposited in the Berlin Herbarium. Photographs of the type in the U. S. National Herbarium (Field Mus. photograph No. 8701; Copenhagen Herbarium No. 22154).

Suffrutescent; stems terete, glabrous except the tips, these sparingly strigose, the hairs upwardly appressed, about 0.5 mm. long; leaf blades oblong-ovate, 15 to 25 cm. long, 4 to 8 cm. wide, acuminate at apex, more or less abruptly narrowed at base into a broadly winged petiole, entire or shallowly crenate, the upper surface drying dull green, glabrous, the lower surface drying light green, glabrous except the costa and lateral veins (10 to 12 pairs), these sparingly pubescent; petioles (unwinged portion) about 1 cm. long, strigose; spikes one to several, terminal and axillary, 5 to 17 cm. long, about 1 cm. broad, the rachis glabrous; bracts lanceolate to ovate-lanceolate, 12 mm. long, 4 to 5 mm. wide, acute to acuminate, prominently 3-nerved, glabrous, ciliate, the ocelli replaced by dull, elliptical, alveolate areas up to 2 mm. long and 1.5 mm. wide; bractlets lanceolate, 8 to 10 mm. long, 1.5 to 2 mm. wide, carinate, the keel pubescent, the hairs whitish, ascending, about 0.5 mm. long; calyx segments oblong-lanceolate, 15 to 16 mm. long, 2 to 3.5 mm. wide, acute to acuminate and more or less apiculate, striate-nerved, glabrous; corolla up to 7 cm. long, minutely papillose, red, the tube up to 5 cm. long, 3 mm. broad at base, 5 mm.

broad at mouth, the upper lip oblong, ovate, erect, 23 mm. long, 5 mm. wide at base, 2-lobed at apex, the lobes lanceolate, acuminate, 8 mm. long, 3 mm. wide at base, the lower lip more or less spreading, 3-lobed, the middle lobe oblong, about 25 mm. long and 5 mm. wide, obtuse and apiculate, the lateral lobes oblong, about 5 mm. long and 2 mm. wide, subacute, adnate in part to the base of the upper lip; stamens barely reaching tip of upper lip, the anthers slender, about 7 mm. long and 1 mm. broad, glabrous; ovary 3 mm. long, glabrous; style about 5.5 cm. long; capsules subclavate, 15 mm. long, 6 mm. broad, 3 mm. thick, obtuse at tip and apiculate, glabrous, minutely and inconspicuously punctate; retinacula linear, 3 mm. long and 0.5 mm. broad, subcucullate at tip; seeds brown, flat, 4 mm. long, 3.5 mm. wide, 1 mm. thick, glabrous, the margins thin.

Lindau, comparing *Aphelandra blandii* with *A. hartwegiana*, states that *A. blandii* differs from that species by having acuminate bracts and calyx lobes and pubescent bractlets. He suggests also a relationship with *A. glabrata*, a species with a shorter calyx and a densely pubescent rachis.

Araque & Barkley's No. 19An.032 was collected in rich soil of a previously wooded mountain area at 2,700 meters altitude.

ANTIOQUIA: East of Bolívar, *Araque & Barkley* 19An.032 (US). Jericó, *Daniel & Tomás* 2589 (GH, US).

73. Aphelandra lingua-bovis Leonard, sp. nov. FIGURE 97

Suffrutex parvus, caulibus sursum subquadrangularibus, dense et minute strigosis, pilis sursum appressis, sordidis, deorsum teretibus, glabratis; lamina foliorum elliptica vel late oblanceolata, acuminata, basi angustata, in petiolum decurrens, subchartacea, integra vel undulata, supra glabra (vel folia novella supra parce strigosa), subtus minute et tenuiter strigosa, costa et venis lateralibus aliquanto inconspicuis; petioli strigosi; spicae solitariae vel plures, terminales, subsessiles, rhache glabra; bracteae rubrae (vivae), rhombico-ovatae subobtusae, mucronatae, glabrae vel apice pilos raros minutos ferentes, ciliatae, costa et venis lateralibus prominentibus; areola elliptica opaca brunnea alveolata pro ocellis substituta; bracteolae lanceolatae, acuminatae, carina hirsuta, pilis ascendentibus; calycis segmenta striato-nervata, segmentum posterius oblongo-lanceolatum, acutum, dorso strigosum, anteriora et lateralia anguste oblonga, acuta vel acuminata, glabra, apice ciliata; corolla rubra vel lutea, puberula, tubo subcylindrico, leviter curvato, labio superiore erecto, elliptico, bilobato, lobis triangularibus, acutis, labio inferiore trilobato, lobo medio lanceolato, acuto, lobis lateralibus parvis, triangularibus, acutis, cum labio superiore basi connatis; stamina vix exserta, antheris apice apiculatis, flocculoso-pilosis, basi apiculatis.

Small shrubs; stems simple or sparingly branched, terete or subquadrangular toward tip, densely and minutely strigose, the hairs upwardly appressed, sordid, 0.5 mm. long or less, the lower portions of the stems terete, glabrate, the lenticels corky, oval to linear, up to 2 mm. long; leaf blades elliptic, oblong or broadly oblanceolate, up to 36 cm. long and 14.5 cm. wide, acuminate, gradually narrowed to base and decurrent on the petiole, subchartaceous, entire or undulate, the upper surface drying to green or olive, glabrous or the younger leaves sparingly strigose, the hairs 0.5 mm. long, the costa and lateral veins (14 to 20 pairs) flat or slightly raised, fairly conspicuous, the lower surface drying to a somewhat lighter shade than the upper, finely and minutely strigose, the hairs appressed or a few of them spreading, about 0.25 mm. long, densest on costa and veins, these raised and fairly conspicuous; petioles (unwinged portion) up to 3 cm. long, the pubescence that of the stems; spikes solitary or several, terminal, up to 15 cm. long and 1.5 cm. broad, the peduncles about 5 mm. long, strigose, the rachis glabrous; bracts bright red (living), drying to brownish red, rhombic-ovate, 1.5 cm. long, 9 mm. wide, obtusish, glabrous or bearing a few minute hairs toward tip, minutely and sparingly scurfy without, the costa prominent and excurrent, ending in a minute mucro, the lateral nerves rather prominent, reticulately anastomosing toward tip, the margins ciliolate, the hairs about 0.25 mm. long, the ocelli replaced by dull brown, alveolar, elliptic areas up to 3 mm. long and 1 mm. wide; bractlets lanceolate, 15 mm. long, 3 mm. wide, acuminate, the keel hirsute, the hairs ascending, up to 0.75 mm. long; calyx 18 mm. long, the posterior segment oblong-lanceolate, 5 mm. wide, appressed hirsute dorsally, acute, the anterior pair narrowly oblong, about 3 mm. wide, the lateral pair slightly narrower than the anterior, both pairs glabrous, acute to acuminate, ciliate at tip, all 5 segments delicately striate-nerved; corolla 5.5 to 6 cm. long, bright red ("Chinese-red," *Archer*), or reddish yellow ("rojas-amarillas," *von Sneidern*), puberulous, the tube subcylindric, slightly curved, 3.5 mm. broad at base, 6 mm. broad at mouth, the upper lip erect, elliptic, 16 mm. long, 7 mm. wide, the lobes triangular, 4 mm. long, 3 mm. wide at base, slenderly acute, the middle lobe of the lower lip lanceolate, 18 mm. long, 6 mm. wide, acute, the lateral lobes 4 mm. long, partly adnate to lower part of upper lip, the free portions triangular, about 1.5 mm. long and 1 mm. wide, acute; stamens slightly exserted, the anthers 6 mm. long and 1 mm. broad at base, apiculate at both ends, webby-pilose at tip; capsules not seen.

Type in the U. S. National Herbarium, No. 1519101, collected at La Concepción, 15 kilometers east of Quibdó, Department of Chocó, Colombia, 75 meters altitude, April 30, 1931, by W. A. Archer (No. 2012).

ANTIOQUIA: Villa Arteaga, 150 meters altitude, August 4–8, 1947, *Hodge* 7012 (US).

CALDAS: Santa Cecilia, 800 meters altitude, November 30, 1945, *von Sneidern* 5080 (US).

The affinity between *Aphelandra lingua-bovis* and *A. garciae* is close. *A. lingua-bovis* differs, however, in its bright red or reddish yellow, finely puberulous corollas and strictly glabrous rachis. In *A. garciae* the rachis is finely pilose and corolla yellow and hirsute.

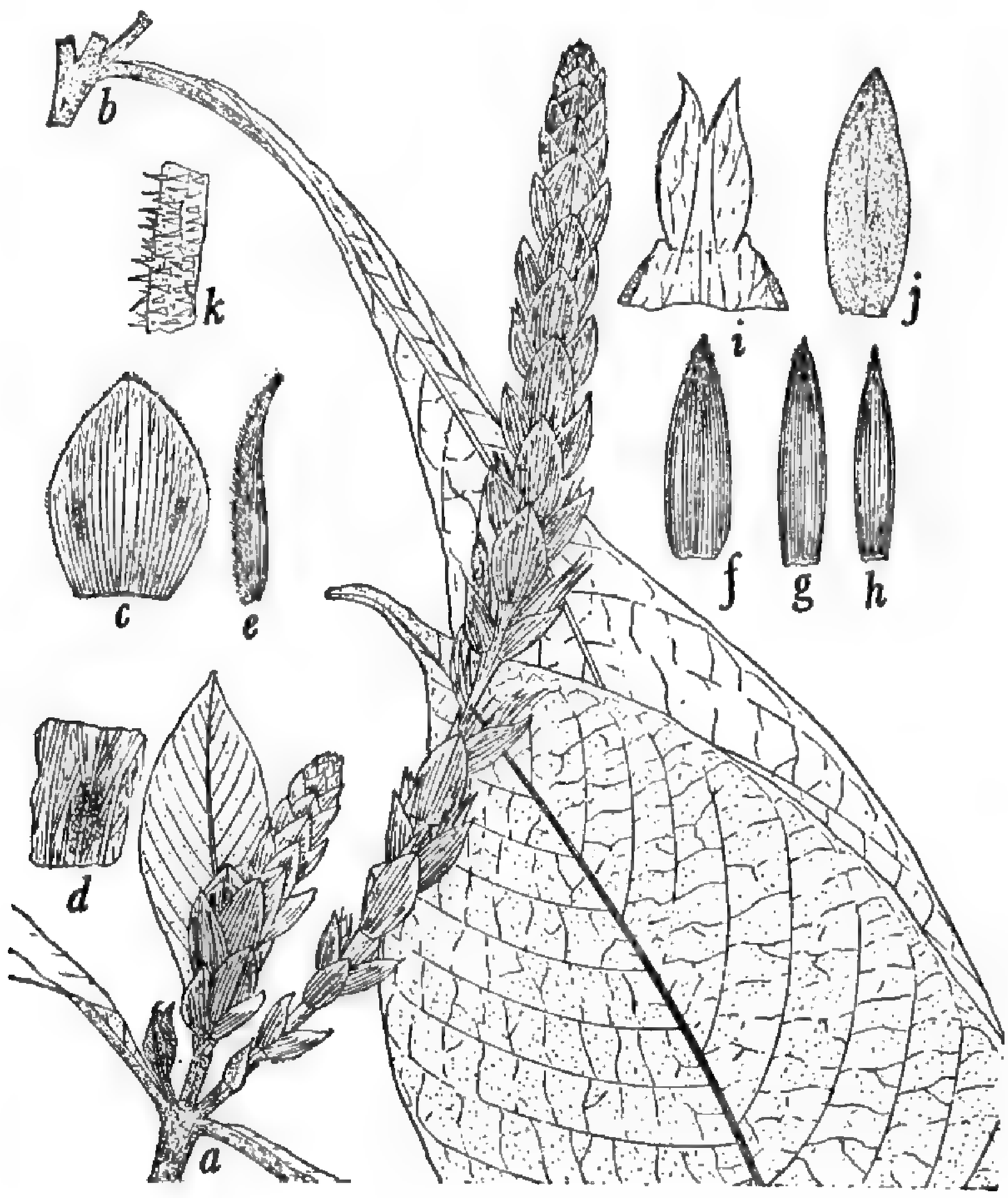

FIGURE 97.—*Aphelandra lingua-bovis* Leonard (*Archer* 2012): *a*, Inflorescence; *b*, node and leaf; *c*, bract; *d*, glandular area of bract; *e*, bractlet; *f*, posterior calyx segment; *g*, one of the anterior segments; *h*, one of the lateral segments; *i*, upper lip of corolla; *j*, lower lip; *k*, pubescence of corolla tube. (*a*, *b*, Half natural size; *c*, *e-j*, natural size; *d*, about twice natural size; *k*, about 18 times natural size.)

According to Archer the species is fairly common between La Oveja and Quibdó and produces "Chinese red" spikes of bright red corollas. The name *lingua-bovis* was suggested by its common name "lengua de vaca" (*Archer* 2012). The allusion of the common name is obscure, although it may possibly refer to a fancied similarity of the shape of the leaf blades to that of a cow's tongue.

74. **Aphelandra fernandezii** Leonard, sp. nov. FIGURE 98

Herba, caulibus subquadrangularibus, sursum dense et minute strigosis, pilis arcte adpressis; lamina foliorum elliptica vel late oblongo-

lanceolata, acuminata (apice saepe curvata), basi, angustata, in petiolum decurrens, membranacea, integra vel leviter crenata, supra glabra, minute alveolata, subtus parce hirtella, pilis ascendentibus vel subadpressis, praecipue in costa et venis prominentibus positis; petioli crassi, dense hirtelli; spicae terminales, solitariae, subsessiles, rhache glabra; bracteae rhombico-ovatae, imbricatae, subacutae, glabrae, prope apicem ciliatae, costa et nervis lateralibus prominentibus, venulis prope margines aliquanto crasse reticulatis, ocellis multis, minutis; bracteolae lineares, acuminatae, striatae, apice parce hirtellae; calycis segmenta subaequalia, glabra vel apice parce ciliata, striata, segmentum posterius oblongo-ellipticum, apice truncatum, emarginatum et apiculatum, anteriora lineari-lanceolata, acuminata, lateralia anguste lanceolata, acuminata; corolla coccinea (?), puberula, labio superiore erecto, ovato, apice bilobato, lobis triangularibus, labio inferiore lobata, lobo medio patulo vel reflexo, anguste ovato, obtuso, lobis lateralibus parvis, apice rotundatis, cum labio superiore basi connatis; stamina vix exserta, antheris basi acutis, apice subobtusis, dorso pilosis, filamentis triquetris, glabris vel angulis basi asperulis; ovarium glabrum; capsulae ignotae.

Herbs up to 1 meter high; stems subquadrangular, at least the upper portions densely and minutely gray strigose, the hairs about 0.25 mm. long, closely appressed; leaf blades oblong-elliptic or broadly oblong-lanceolate, up to 32 cm. long and 10.6 cm. wide at or slightly above middle, acuminate (the tip often curved), narrowed at base and decurrent on the petiole, membranaceous, entire or shallowly crenate, drying olive-green, the lower surface a lighter and a deeper greenish shade than the upper, the upper surface glabrous, minutely alveolate under a lens, the lower surface sparingly hirtellous, the hairs about 275 μ long, ascending or subappressed and confined chiefly to costa and lateral veins (9 to 11 pairs), these prominent on both surfaces; petioles stout, 2 cm. long, densely gray-hirtellous, the hairs similar to those of the stems; spikes terminal, solitary, subsessile, 9 cm. long, 3.5 cm. broad (measured from tips of bracts), the rachis angled, glabrous; bracts rather closely imbricate, rhombic-ovate, up to 26 mm. long and 16 mm. wide (the lowermost sterile ones much smaller), subacute, glabrous, ciliate near tip, the costa and adjacent nerves prominent, the veinlets obscurely and rather coarsely reticulate toward margins, the glandular spots about 3.5 mm. long and 1.5 mm. wide, the ocelli 50 μ in diameter, very numerous; bractlets linear, 13 mm. long, 2.25 mm. wide, acuminate, striate, sparingly hirtellous dorsally but more so at tip, the hairs ascending, up to 0.5 mm. long; calyx segments subequal, 23.5 mm. long, glabrous or ciliate at tip, coriaceous, striate, the posterior segment narrowly oblong-elliptic, 5 mm. wide, truncate, emarginate and apiculate at tip, the anterior segments linear-lanceo-

late, 3 mm. wide, acuminate, the lateral segments narrowly lanceolate, 2.5 mm. wide, acuminate; corolla about 6 cm. long, puberulous, the hairs 125 μ long, the tube 6 mm. broad at throat, the upper lip ovate, 23 mm. long, about 12 mm. wide, bilobate at tip, the lobes triangular, 5 mm. long and 3 mm. wide at base, acute, the lower lip spreading or reflexed, the middle lobe narrowly ovate, about 23 mm. long and 8 mm. wide near base, obtuse, the lateral lobes narrowly oval, 1.5 mm. wide, rounded at tip, adnate in part to the upper lip, their free portions 1.5 mm. long; stamens reaching notch of upper lip, the anthers 1 cm. long,

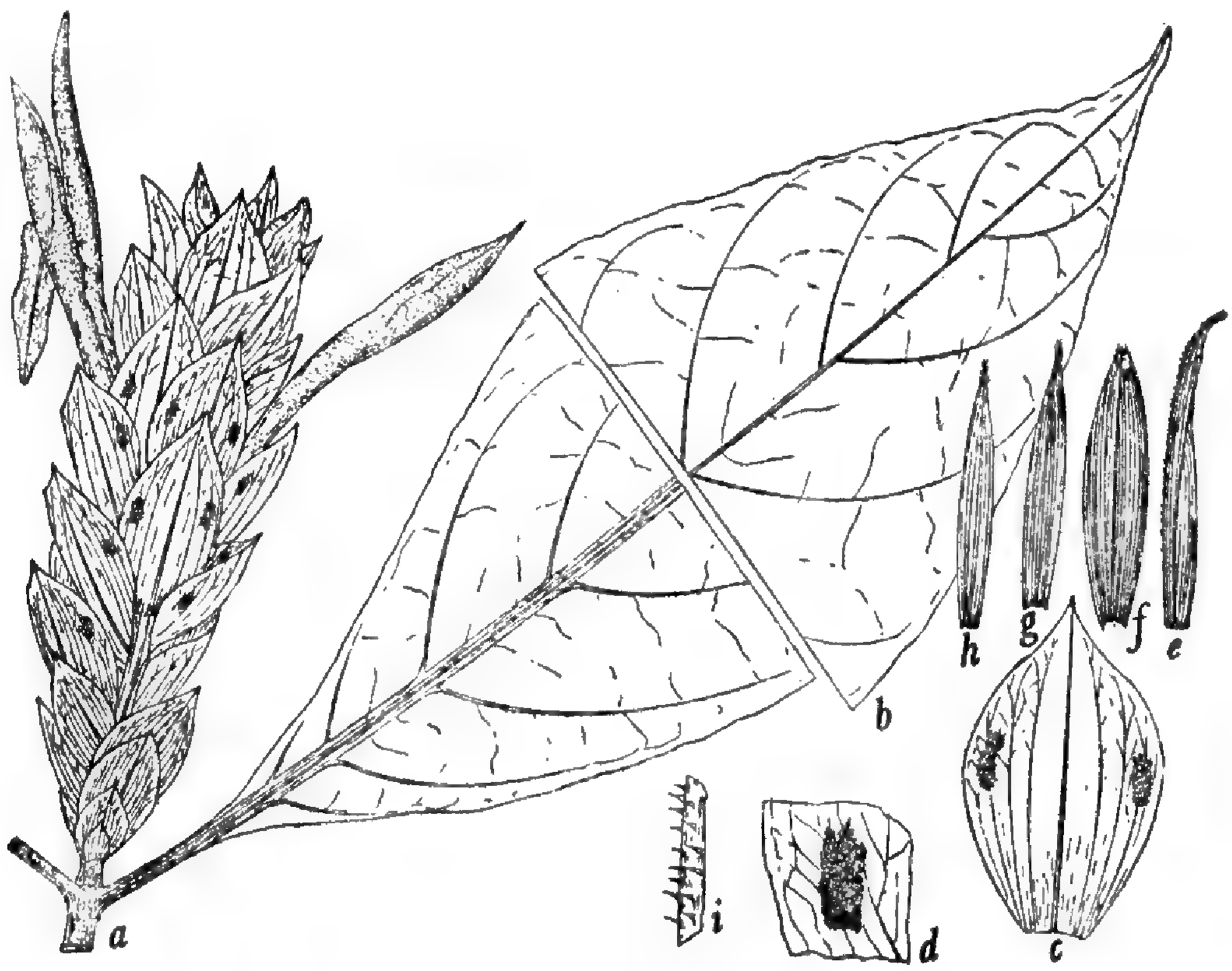

FIGURE 98.—*Aphelandra fernandezii* Leonard (*Fernández* 254): *a*, Tip of plant; *b*, tip of leaf blade (upper surface); *c*, bract; *d*, one of the alveolar spots on bract (composed of numerous minute ocelli); *e*, bractlet; *f*, posterior calyx segment; *g*, one of the anterior segments; *h*, one of the lateral segments; *i*, pubescence of corolla. (*a*, *b*, Half natural size; *c*, *f-h*, natural size; *d*, 3 times natural size; *e*, twice natural size; *i*, 15 times natural size.)

acuminate at base, subobtuse at tip, dorsally pilosulous, the filaments triquetrous, glabrous or the angles toward base minutely roughened; ovary glabrous; mature capsules not seen.

Type in the U. S. National Herbarium, No. 1997512, collected in woods at Ensenada de Utría, Department of Chocó, Colombia, June 5, 1950, by A. Fernández (No. 254).

Aphelandra fernandezii is a well-marked species characterized by its large, red, rhombic-ovate bracts and narrow calyx segments. As indicated by the nature of the corolla lobes, it is one of the *pulcherrima-tetragona* group.

75. **Aphelandra chaponensis** Leonard, sp. nov. FIGURE 99

Suffrutex, caulibus sursum subquadrangularibus, minute strigosis, pilis arcte et sursum appressis, sordidis; lamina foliorum oblong-elliptica vel late oblanceolata, acutae vel breviter acuminata (apice ipso subobtuso), basi angustata, in petiolum decurrens, submembranacea, integra vel undulata, supra parce et minute strigosa, pilis praecipue in costa et venis positis, subtus aliquanto parce et minute strigosa; spicae 1 vel plures, terminales vel subterminales, pedunculo aliquanto brevi, minute strigoso, rhache glabra vel parce pubescente; bracteae rhombico-ovatae, subobtusae vel subacutae, intus nitidae, extus opacae, glabrae (infima parce strigosa), marginibus subhyalinis, ciliolatis, costa et nervis lateralibus prominentibus; areola elliptica, opaca, punctata pro ocellis substituta; bracteolae lanceolatae, subfalcatae, obliquae, striato-nervatae, carinatae, carina hirtella, pilis ascendentibus, sordidis, marginibus glabris et subhyalinis; calycis segmenta obtusa, plus minusve apiculata, striato-nervata, sursum hirtella et ciliolata, deorsum glabra, segmentum posterius ovatum, anteriora oblongo-lanceolata, lateralia aliquanto anguste lanceolata; corolla rubra, papillosa, tubo subcylindrico, labio superiore ovato, bilobato, lobis anguste triangularibus, acuminatis, labio inferiore trilobato, lobo medio ovato, acuto, sursum apice carinato, lobis lateralibus ellipticis, rotundatis, cum labio superiore basi connatis; stamina vix exserta.

Suffrutescent herbs up to 3 meters high or more; stems (upper portions) subquadrangular, minutely strigose, the hairs closely and upwardly appressed, sordid, about 0.25 mm. long; leaf blades oblong-elliptic or broadly oblanceolate, 25 to 30 cm. long, up to 12.5 mm. wide, acute or short-acuminate (the tip itself blunt), narrowed at base and decurrent on the petiole, submembranaceous, entire or undulate, the upper surface drying olive-green, sparingly and minutely strigose, the hairs less than 0.25 mm. long, closely appressed and confined chiefly to costa and lateral veins (14 to 16 pairs), both costa and veins flat or slightly raised, inconspicuous, the lower surface drying a dull brownish green, the pubescence that of the upper surface but denser and more evenly distributed, the costa and veins slightly raised, more conspicuous than above; petioles up to 5 cm. long, the pubescence that of the costa; spikes 1 to several, terminal and subterminal, up to 12 cm. long and 10 to 15 mm. broad, the peduncles up to 12 mm. long and 4 mm. thick, the pubescence that of the stem, the rachis glabrous or bearing a few slender hairs 0.25 to 0.5 mm. long; bracts rhombic-ovate, 12 mm. long, 10 mm. wide, subobtuse to subacute, nitid within, dull, glabrous and minutely roughened without (the lowermost sparingly strigose), the margins subhyaline and ciliolate, the costa prominent to tip of bract but scarcely excurrent, the lateral nerves prominent except

toward tip, the ocelli replaced by dull pitted areas up to 1.5 mm. long and 1 mm. wide; bractlets lanceolate, 11 mm. long and 2.5 mm. wide, subfalcate and oblique, striate-nerved, carinate, the keel hirtellous, the hairs ascending, sordid, about 0.5 mm. long, gradually diminishing in length and number to the glabrous subhyaline margins, the inner surface silky-hirtellous toward tip, glabrous toward base; calyx up to 12 mm. long, the posterior segment ovate, 6 mm. wide, the anterior pair

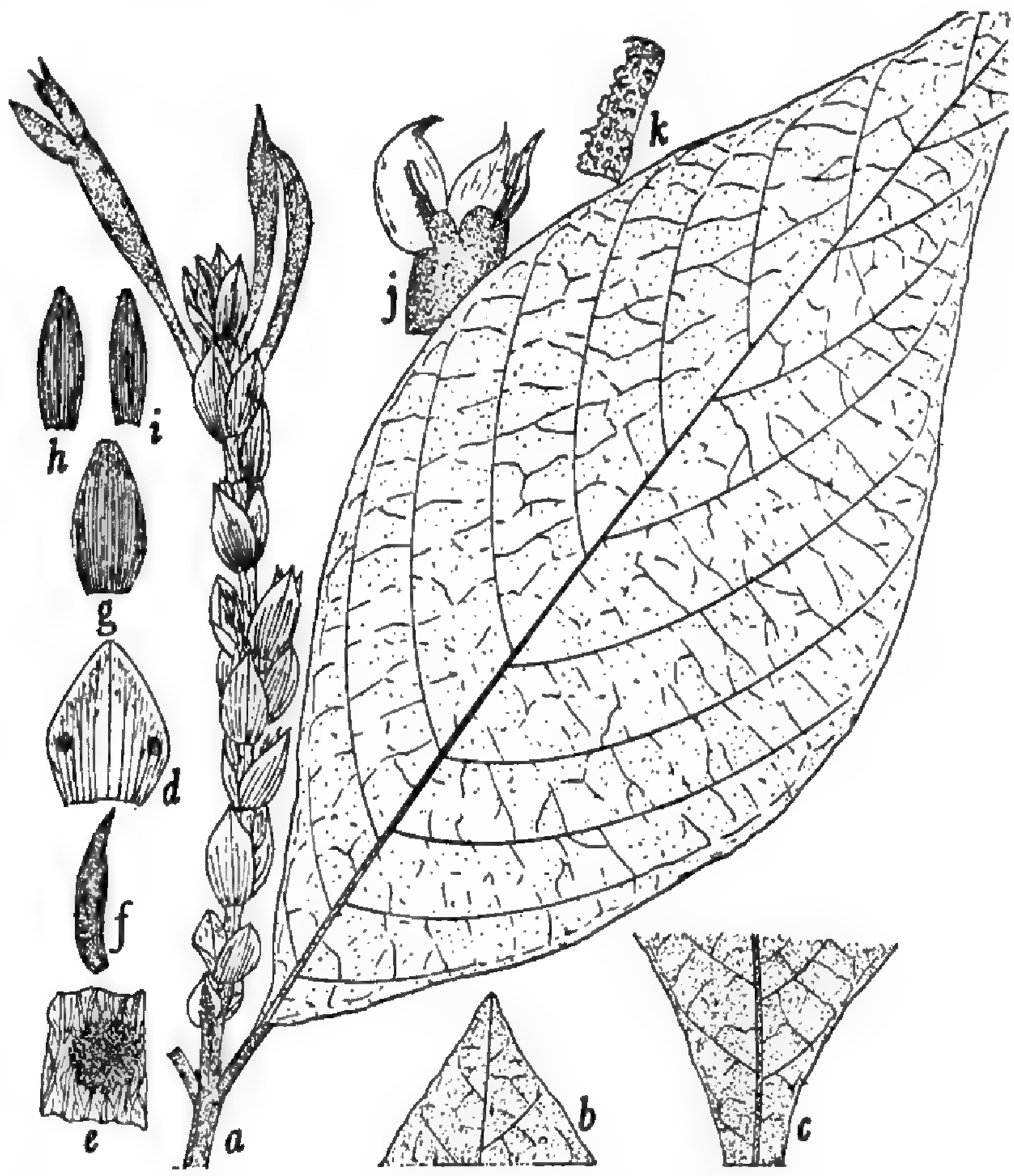

FIGURE 99.—*Aphelandra chaponensis* Leonard (*Lawrance* 18): *a*, Tip of plant; *b*, tip of leaf blade (lower surface); *c*, basal portion of leaf blade (lower surface); *d*, bract; *e*, glandular area of bract; *f*, bractlet; *g*, posterior calyx segment; *h*, one of the anterior segments; *i*, one of the lateral segments; *j*, tip of corolla; *k*, pubescence of corolla tube (most of the hairs broken). (*a*, *b*, *c*, Half natural size; *d*, *f-j*, natural size; *e*, twice natural size; *k*, about 20 times natural size.)

oblong-lanceolate, 3.5 mm. wide, the lateral pair more narrowly lanceolate, 3 mm. wide, all obtuse, more or less apiculate, finely striate-nerved, minutely hirsute and ciliolate toward tip, glabrous toward base; corolla 4 cm. long, red, papillose-puberulous, the upper lip erect, ovate, 1 cm. long, 7.5 mm. wide, bilobed at tip, the lobes narrowly triangular, 2.5 mm. long, 2 mm. wide at base, acuminate, the middle lobe of the lower lip ovate, 11 mm. long and 6 mm. wide, acuminate, carinate toward tip, the lateral lobes elliptic, 4 mm. long and 2 mm. wide, adnate in part to the upper lip of corolla, the free portions about

1.5 mm. long and broad, rounded; stamens reaching the tip of the upper lip, the anthers 7 mm. long and 1.5 mm. broad, the basal lobes obtuse; capsules not seen.

Type in the U. S. National Herbarium, No. 1572308, collected in dense forest in the region of Mount Chapón, Department of Boyacá, Colombia, "3,500 ft." altitude, May 8, 1932, by A. E. Lawrance (No. 18). Mutis' No. 1509 is also this species.

Aphelandra chaponensis is characterized by relatively small corollas, their lips much shorter and relatively broader than is usual in other species of the *A. pulcherrima-tetragona* complex. The leaf blades of this new species and those of *A. lingua-bovis* are very similar. The latter species, however, has a calyx more than twice as large, the segments of which are noticeably acute rather than obtuse.

76. Aphelandra pharangophila Leonard, sp. nov. FIGURE 100

Herba magna, caulibus sursum subquadrangularibus, strigosis, pilis sursum appressis; lamina foliorum oblanceolata, apice acuta vel acuminata, basi angustata, in petiolum decurrens, integra vel undulata, supra glabra vel subglabra, costa aliquando parce et minute strigosa, subtus aliquanto dense strigosa, pilis brunnescentibus; petioli breves, aliquanto dense strigosi; spicae solitariae, terminales, parvae, subsessiles, rhache glabra vel prope insertionem bractearum pilosa, pilis brunnescentibus; bracteae ovatae, apice rotundatae, intus glabrae, extus strigosae (praecipue in area mediana); bracteae infimae ubique strigosae, marginibus ciliatis, pilis patulis; areola elliptica, opaca, brunnescens, alveolata pro ocellis substituta; bracteolae anguste et oblique lanceolatae, acuminatae, carinatae, carina apice dense hirsuta, pilis brunnescentibus, ascendentibus, marginibus tenuibus, glabris, subtiliter striatis; calycis segmenta subtiliter striata, apice parce pilosa, deorsum glabra, segmentum posterius ovatum, acutum, anteriora lanceolata, acuta, lateralia anguste lanceolata, tenuiter acuminata; corolla coccinea, minute papillosa, tubo subcylindrico, labio superiore erecto, ovato, apice bilobato, lobis triangularibus, acuminatis, labio inferiore trilobato, lobo medio patulo, anguste ovato, acuminato, lobis lateralibus triangularibus, apice rotundatis, cum labio superiore basi connatis; stamina vix exserta, antheris parvis (4 mm. longis), basi rotundatis, apiculatis; ovarium glabrum.

Herbs, about 1.5 meters high; stems subquadrangular, strigose, the hairs upwardly appressed, brownish, 0.5 mm. long; leaf blades oblanceolate to broadly oblanceolate or obovate, up to 23 cm. long and 10 cm. wide, acute to acuminate at apex (the tip itself blunt), narrowed at base and decurrent on the petiole, drying olive brown, the margins entire or undulate, the upper surface glabrous or nearly so, the costa sometimes bearing a few small appressed hairs, the lower surface rather

densely pilose, the hairs brownish, appressed to ascending, about 0.5 mm. long; petioles about 1 cm. long, rather densely strigose, the hairs resembling those of the stem; spikes solitary, terminal, 3.5 to 10 cm. long, the peduncle 4 mm. long, densely strigose, the rachis glabrous or densely brownish pilose at and near insertion of the bracts, these ovate, 7 to 9 mm. long, 5 to 6 mm. wide, rounded at tip, glabrous within, densely brownish strigose without, the hairs borne medially for the most part (except the lowermost, these evenly disposed on the outer surface), the margins ciliate, the hairs 0.25 mm. long, spreading, the ocelli replaced by elliptic, dark brown, alveolate areas up to 1.25 mm.

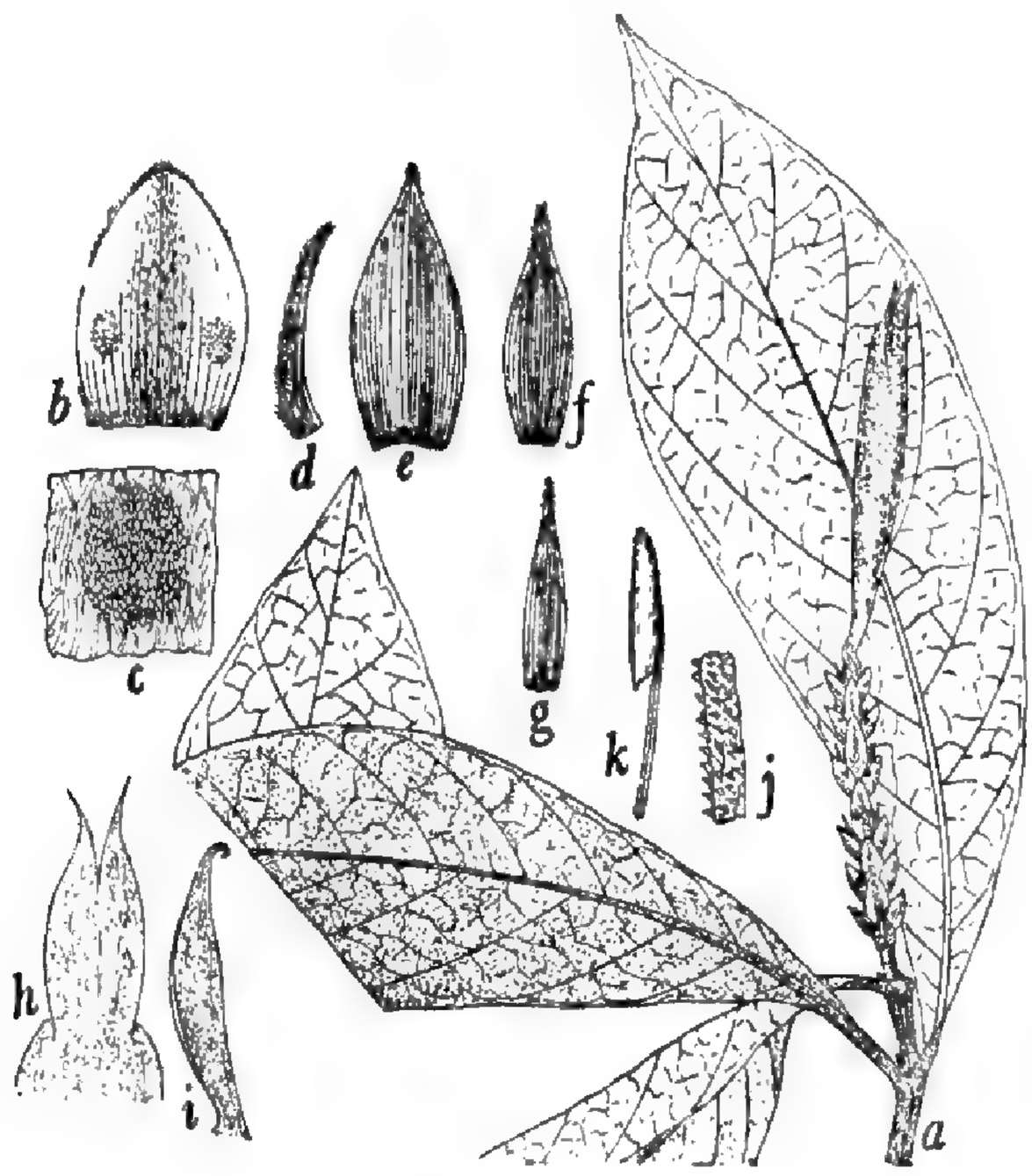

FIGURE 100.—*Aphelandra pharangophila* Leonard (*Killip* 5676): *a*, Tip of plant; *b*, bract; *c*, glandular area of bract; *d*, bractlet; *e*, posterior calyx segment; *f*, one of the anterior segments; *g*, one of the lateral segments; *h*, upper lip of corolla; *i*, lower lip of corolla; *j*, pubescence of outer surface of lower lip of corolla; *k*, anther. (*a*, Half natural size; *b*, *d*-*g*, twice natural size; *c*, 4 times natural size; *h*, *i*, slightly over natural size; *j*, about 22 times natural size; *k*, 2½ times natural size.)

long and 0.75 mm. wide; bractlets narrowly and obliquely lanceolate, 7 mm. long, 1 mm. wide at base, gradually narrowed to a slender tip, carinate, the tip of keel densely hirsute, the hairs brownish, ascending, 0.5 mm. long, the margins thin, glabrous and delicately striate; posterior segment of the calyx ovate, 7 mm. long, 4 mm. wide, acute, the anterior lobes lanceolate, 7 mm. long, 2 mm. wide, acute, the lateral lobes narrowly lanceolate, 6.5 mm. long, 1 mm. wide at base, slenderly acute, all of the segments finely striate, glabrous except at tips, here sparingly pilose, the hairs 0.5 mm. long; corolla 5.5 cm. long, bright red, minutely papillose, 3 mm. broad at base, narrowed at 4 mm. above base to 2 mm., thence enlarged to about 8 mm. at throat, the upper lip

erect, ovate, about 2 cm. long and 1 cm. wide, bilobate at tip, the lobes triangular and slenderly acuminate, about 3 mm. long, the middle lobe of the lower lip narrowly ovate, about 2 cm. long, 5 mm. wide near middle, slenderly acuminate at tip, the lateral lobes adhering to the lower part of the upper lip, their free portions triangular, 1.5 mm. long, 1 mm. wide at base, rounded at tip; stamens about 5 cm. long, the filaments glabrous toward tip, retrorsely pilose toward base, the hairs about 0.25 mm. long, the anthers 4 mm. long, 0.75 mm. wide, rounded and minutely apiculate at base; ovary glabrous; style about as long as the stamens (?); capsule not seen.

Type in the Gray Herbarium, collected in wooded ravine at La Cumbre, Department of El Valle, Colombia, 1,600 to 1,800 meters altitude, May 14–19, 1922, by E. P. Killip (No. 5676).

CAUCA: Aganche, *Lehmann* B. T. 1165 (K, NY).
TOLIMA: La Trinidad, Líbano, *Pennell* 3320 (NY). Quindío, *Triana* s. n. (Col).
WITHOUT DEFINITE LOCALITY: *Triana* s. n. (NY).

Aphelandra pharangophila is probably related to *A. taborensis* Leonard, agreeing rather closely in general appearance, in the size, shape, and pubescence of the leaf blades and in the color, texture and size of the corollas. The spikes of *A. taborensis* are, however, much more robust, the bracts being fully 10 mm. long and 7.5 mm. wide and their entire outer surface is densely and softly pubescent. The specific name is from the Greek φάραγξ, ravine, and φιλέω, to love.

77. Aphelandra arborescens Leonard, sp. nov. FIGURE 101

Frutex vel arbor parva, caulibus sursum subquadrangularibus, dense pilosis, pilis brunnescentibus, sursum appressis vel ascendentibus, deorsum glabratis; lamina foliorum oblongo-elliptica, acuminata, basi angustata, in petiolum decurrens, subchartacea, undulata vel integra, supra glabra vel costa et venis lateralibus plus minusve strigosa, subtus tenuiter pubescens, pilis parvis patulis vel ascendentibus, costa et venis prominentibus; petioli strigosi; spicae 1 vel plures, terminales, breviter pedunculatae, pedunculis et rhache pubescentibus, pilis appressis vel ascendentibus vel patulis, brunneis; bracteae coccineae, rhombicae, obtusae vel subacutae, dorso strigosae, marginibus ciliatis, glabris; areola opaca alveolata pro ocellis substituta; bracteolae lanceolatae, acuminatae, carinatae, dorso dense pubescentes, marginibus tenuibus, glabris; calycis segmenta subacuta, striato-nervata, sursum puberula; corolla coccinea, papillosa, tubo aliquanto angustato, labio superiore erecto, oblongo, bilobato, lobis triangularibus, acutis, apice curvatis, labio inferiore trilobato, lobo medio oblongo, apice obtuso, lobis lateralibus parvis, apice rotundatis, cum labio superiore basi connatis; stamina vix exserta, filamentis glabris, antheris dorso parce pilosis; ovarium glabrum.

Shrubs or small trees up to 5 meters high; stems glabrate below, the tips densely pilose, the hairs brownish, barely 0.5 mm. long, upwardly appressed or ascending; leaf blades oblong-elliptic, up to 25 cm. long and 8.5 cm. wide, acuminate, narrowed from about middle to base and decurrent on the petiole, subchartaceous, undulate or entire, the upper

FIGURE 101.—*Aphelandra arborescens* Leonard (*Cuatrecasas* 15400): *a*, Tip of stem showing leaves and inflorescence; *b*, basal portion of leaf blade (lower surface); *c*, bract; *d*, glandular area of bract; *e*, bractlet; *f*, posterior calyx segment; *g*, one of the anterior segments; *h*, one of the lateral segments; *i*, upper lip of the corolla; *j*, lower lip; *k*, pubescence of corolla tube (most of the hairs broken); *l*, anther. (*a*, *b*, Half natural size; *c*, *e-h*, twice natural size; *d*, 4 times natural size; *i*, *j*, natural size; *k*, about 25 times natural size; *l*, about 3 times natural size.)

surface drying dull green, glabrous or the costa and veins (13 to 15 pairs) more or less strigose, obscure, the lower surface drying yellowish, finely pubescent, the hairs barely 0.5 mm. long, yellowish, spreading or ascending, the costa and veins prominent; petioles (unwinged portion) 5 to 20 mm. long, strigose; spikes 1 to several, short-peduncu-late, 6 to 9 cm. long, about 1 cm. broad, the peduncles 5 to 20 mm. long, the pubescence that of the branchlets, the rachis rather sparingly pu-

bescent, the hairs barely 0.5 mm. long, more or less spreading, brownish; bracts carmine, rhombic, 1 cm. long, 5 mm. wide about the middle, glabrous except medially, here finely and thinly strigose, the margins ciliolate; ocelli replaced by an opaque, alveolar, brown, elliptic, more or less irregular area about 1.25 mm. long and 0.75 to 1 mm. wide; bractlets lanceolate, 6.5 mm. long, 1.75 mm. wide near base, acuminate, carinate, densely pubescent dorsally, the hairs ascending, about 0.5 mm. long, the margins thin, glabrous; calyx 9 mm. long, the posterior segment oblong, 4 mm. wide, the anterior segments lanceolate, 2 mm. wide, the lateral pair narrowly lanceolate, 1.5 mm. wide, all acutish, striate, puberulous toward tip, otherwise glabrous; corolla carmine, minutely papillose or bearing distally numerous microscopic spinelike hairs, the tube 5.3 cm. long, 3.5 mm. broad near base, constricted to 2.5 mm. at tip of ovary, thence gradually enlarged to about 7 mm. at mouth, the lips erect or slightly spreading, the upper lip oblong, 15 mm. long, about 5 mm. wide, bilobed, the lobes triangular, 5 mm. long, 2.5 mm. wide at base, acute, the tips outwardly curved, the middle lobe of the lower lip oblong, 15 mm. long, 6 mm. wide, rounded at tip, the lateral lobes triangular, 5 mm. long, the upper margin partly adhering to the upper lip, rounded at tip; stamens reaching the notch of the upper lip, the filaments glabrous, the anthers barely 5 mm. long, sparingly pilose dorsally, loosely adhering at tip; ovary glabrous; capsules not seen.

Type in the U. S. National Herbarium, No. 1852612, collected in woods at La Laguna, on the left bank of the Río Sanguininí, Department of El Valle, Colombia, 1,250 to 1,400 meters altitude, December 10–20, 1943, by J. Cuatrecasas (No. 15400).

CALDAS: Thicket along stream east of Belén, 1,500 to 1,700 meters altitude, September 15, 1922, *Pennell* 10624 (GH).

EL VALLE: Río Cauca, August 10, 1930, *Dryander* 681 (US). Junction of the Pichindecito and Pichindé rivers, 1,580 to 1,650 meters altitude, November 7, 1944, *Cuatrecasas* 18751 (Ch).

Distinguishing marks of *Aphelandra arborescens* are the brownish, more or less spreading hairs of the rachis, the finely strigose dorsal region of the bracts, the almost softly pubescent undersurface of the leaf blades, the hairs spreading or ascending, and the dull, irregular, alveolar areas replacing ocelli.

DOUBTFUL SPECIES

Aphelandra flava Nees

Aphelandra flava Nees in DC. Prodr. 11: 297. 1847. Type collected at Alto de Limba, Colombia, by Goudot and deposited in the Hooker Herbarium, Kew.

Fruticose; stems loosely pilose toward tip; leaf blades oblong, up to 23 cm. long and 7.5 cm. wide, sharply acuminate, acute at base and long-decurrent on the petiole, the upper surface sparingly pubescent, the lower densely and softly so; petioles 5 to 7.5 cm. long; spikes ob-

long, terminal, up to 7.5 cm. long, short-pedunculate; bracts oblong-ovate, 33 mm. long, acuminate, drying pale, striate-nerved, softly viscid-pubescent; bractlets plumose-ciliate, narrow; calyx segments subulate-acuminate, shorter than the bracts, plumose-ciliate at tip; corolla yellow, ringent, up to 33 mm. long, finely pubescent, the upper lip acuminate, the middle lobe of the lower lip oblong, obtuse, the lateral lobes much shorter, lanceolate, free.

No specimens seen. Description compiled from the original.

Aphelandra flava resembles in many aspects *A. aristei* but differs in the viscid pubescence of the bracts.

Aphelandra melgariensis Nees

Aphelandra melgariensis Nees in DC. Prodr. 11: 297. 1847. Type collected in Colombia by Humboldt. The type sheet, in the Willdenow Herbarium, No. 320, bore the determination "Justicia melgariensis."

Shrubby; leaf blades oblong-oval, attenuate at both ends, glabrous except the costa and lateral veins, these minutely hirsute; spikes terminal, short-peduncled, lax; bracts herbaceous, oblong, obtuse, entire, veiny, rough-pubescent; corolla pubescent.

No specimens seen. Description compiled from the original.

Nees compares this species with *A. schiedeana* Schlecht. & Cham. of Mexico and suggests that it may be merely a young stage of that species. It can be separated by its bracts which are only about half as long, are herbaceous instead of membranaceous, and which have more prominent nerves, some simple and some 2- or 3-forked. The bractlets of Humboldt's plant are described as linear, pubescent-ciliate and equal to the calyx in length, thus differing but slightly from those of the Mexican collections of *A. schiedeana* in the U. S. National Herbarium.

18. ENCEPHALOSPHAERA Lindau

Encephalosphaera Lindau, Bull. Herb. Boiss. II. 4: 322. 1904. The genus *Encephalosphaera* is a segregate of *Aphelandra* established on the basis of its spherical pollen grains and the presence of a staminode. Its name is derived from the Greek words, ἐν with κεφαλή, head, and σφαῖρα, sphere, and alludes to the globose pollen grains. Type species: *E. vitellina* Lindau.

Shrubs with the general appearance of *Aphelandra;* stamens 4; staminode 1, lobulate; anthers 1-celled, cohering at their tips by villous hairs; pollen globose, verrucose, the roughening serpentine-cerebriform, the fissures forming 6 tetragons; stigma shortly 2-lobed.

In contrast to the spherical roughened pollen grains of *Encephalosphaera*, the surface of each divided into 6 tetragonal sectors, those of *Aphelandra* are strictly of the "spaltenpollen" type, i. e., usually ellipsoidal with three clefts, a pitted extine, and sometimes with a pore in each of the clefts.

In addition to *E. vitellina*, *E. lasiandra* Mildbr., a Brazilian species, has been described (Notizbl. Bot. Gart. Berlin **11**: 68. 1930).

1. Encephalosphaera vitellina Lindau FIGURE 102

Encephalosphaera vitellina Lindau, Bull. Herb. Boiss. II. **4**: 323, 1904. Type collected in damp, rocky woods at Agua Clara, Popayán, Cauca, Colombia, 1,000 to 1,200 meters altitude, by Lehmann (No. 9048) and deposited in the Berlin Herbarium. Isotype in New York Botanical Garden. Photograph of type in the U. S. National Herbarium, No. 8722.

A sparingly branched shrub up to 1.3 meters high; branches essentially glabrous, up to 1 cm. in diameter; leaf blades ovate, 14 cm. long, about 8 cm. wide, long and subobliquely acuminate at apex, abruptly narrowed at the base and decurrent on the petiole, more or less car-

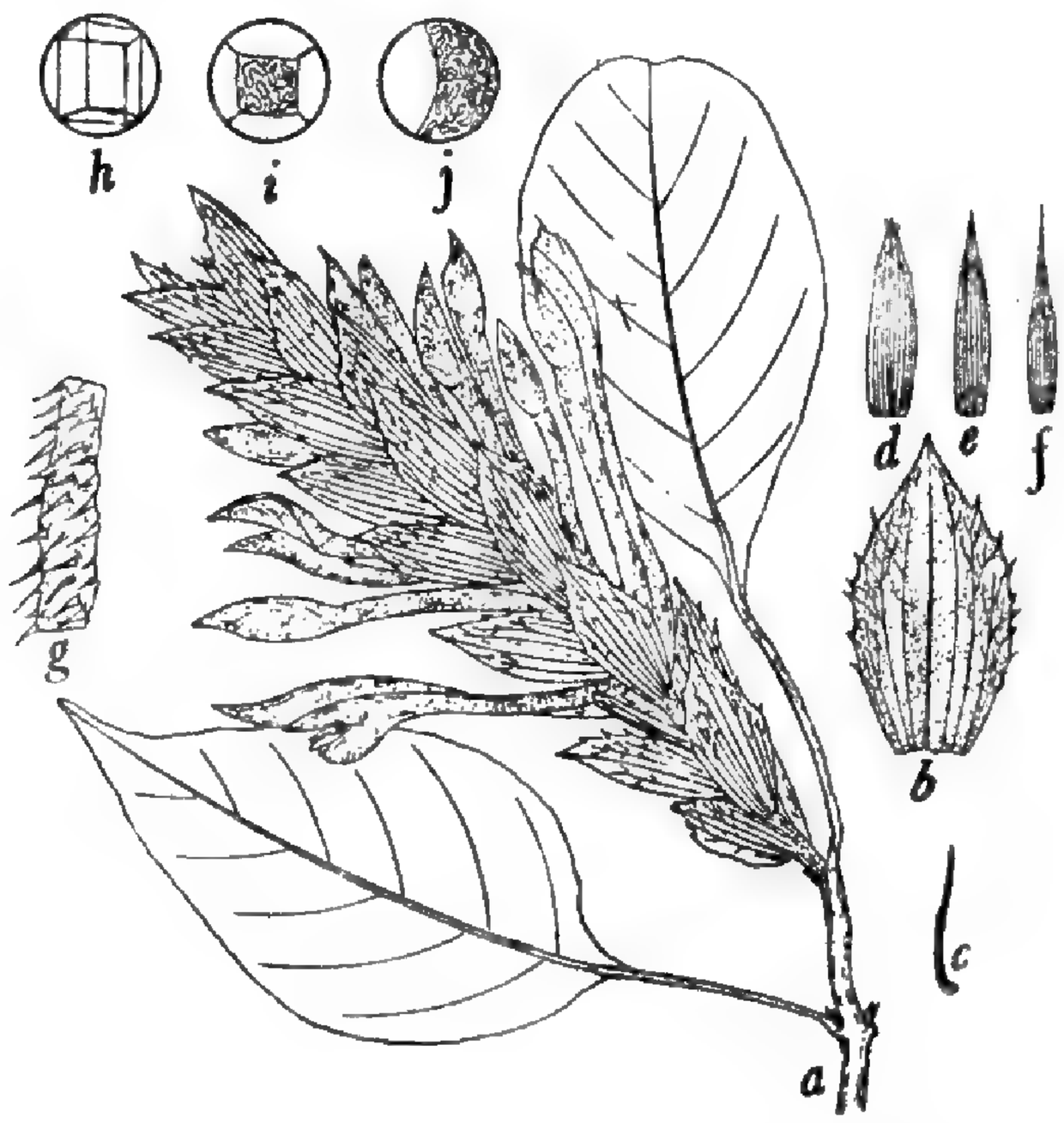

FIGURE 102.—*Encephalosphaera vitellina* Lindau (*Lehmann* 9048): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, posterior calyx segment; *e*, one of the anterior segments; *f*, one of the lateral segments; *g*, pubescence of corolla; *h-j*, diagrammatic drawings of pollen grains (copied from Lindau's sketches on the type sheet). (*a*, Half natural size; *b-f*, *h-j*, natural size; *g*, about 28 times natural size.)

nose, glabrous, the lateral nerves numerous, parallel, arcuate; petioles 2 to 4 cm. long, glabrous; spikes terminal, subsessile, a little shorter than the leaves, the rachis pubescent; bracts imbricate, ovate, 20 mm. long, about 11 mm. wide, acuminate, minutely pubescent, the margins bearing 7 to 8 minute teeth; bractlets linear, 8 mm. long, 0.75 mm. wide, minutely puberulous; calyx lobes subequal, 11 mm. long and 2 mm. wide, minutely puberulous especially toward the tip, the posterior segment bidentate at tip; corolla yellowish orange, puberulous, the tube 35 mm. long, 5 mm. broad at base, 7 mm. broad at mouth, the upper lip erect, 16 mm. long, 9 mm. wide at middle, acute at apex,

the lower lip 3-lobed, the lobes rounded, the middle lobe 20 mm. long and 10 mm. wide, the lateral lobes 16 mm. long and 7 mm. wide; filaments inserted above the base of the corolla tube, 40 mm. long, curved and pilose at base; anthers 5 mm. long, cohering at tip by villous hairs; pollen grains globose, 55 to 58 μ in diameter; staminode membranous, lobulate, minute; styles 45 mm. long, sparingly pilose, stigmas 2-parted; capsule not seen.

The name *vitellina*, yellowish orange, alludes to the color of the corolla.

19. CYPHACANTHUS Leonard, gen. nov.

Frutex; folia magna, opposita, oblongo-obovata, leviter dentata; panicula terminalis; spicae angustae, 6 vel plures; bracteae parvae, ovatae, acutae; bracteolae ovatae, rotundatae, mucronatae, bracteas aequantes; calycis segmenta 3, obtusa, bracteis duplo longiora; corolla anguste hypocrateriformis, labiis aequalibus, labio superiore cucullato, labio inferiore gibboso, trilobato, lobis suborbicularibus; stamina 4, inclusa, antheris unilocularibus; pollinis granulae oblongae, glabrae.

Shrubs; stems subquadrangular; leaves large, opposite, oblong-obovate, shallowly dentate, submembranaceous, the venation prominent, the lateral veins numerous; cystoliths none; petioles stout; panicles terminal, solitary, composed of 6 or more compact, narrow spikes; bracts small, ovate, acute, coriaceous; bractlets equaling the bracts in length, rounded, mucronulate, subcoriaceous, their margins thin and subhyaline; calyx composed of 3 deeply cut segments, these about twice as long as the bracts and bractlets, the posterior segment obtuse or rounded and bilobed at tip, the anterior pair acute; corolla hypocrateriform, the lips subequal, the upper lip arched and cucullate, rounded, the lower lip 3-lobed, gibbous, the lobes suborbicular; stamens 4, their filaments densely pilose, decurrent on the dorsal portion of the corolla tube, the anthers enclosed by the arched upper lip of the corolla, 1-celled, adnate at tip by webby hairs; pollen grains narrowly oblong, smooth.

The 3-parted calyx and gibbous lower lip of the corolla define the genus *Cyphacanthus* very clearly. These characters are unique, not only in the tribe Aphelandreae but in the family Acanthaceae as well. On the other hand, the 4 stamens with their slender unilocular anthers, the hypocrateriform 2-lipped corollas and the lack of cystoliths are characters by which this new genus can be associated with the other genera of Aphelandreae. It is closest of all to the genus *Aphelandra*. The slender, smooth, oblong pollen grains are also remarkable if compared with the variously etched grains of the other genera of the family.

The generic name is derived from the Greek words κῦφος, hump, and *Acanthus*, the name of the type-genus of the family.

1. **Cyphacanthus atopus** Leonard, sp. nov. FIGURE 103

Frutex, caulibus subquadrangularibus, hirtellis; lamina foliorum oblongo-obovata, breviter acuminata, basi angustata, in petiolum decurrens, membranacea, leviter dentata, supra glabra vel parce pilosa, costa et venis lateralibus obscuris, subtus aliquanto pilosis, costa et venis lateralibus prominentibus, venulis crasse reticulatis; petioli crassi, glabri vel minute et parse strigosi; panicula terminalis, pedunculis et rhachibus dense brunneo-hirtellis, pilis patulis; spicae angustae, floribus inferioribus deciduis; bracteae ovatae, acutae, mucronulatae, puberulae, apice glanduloso-hirtellae, costa prominente; braceteolae bracteas aequantes, ovatae, apice rotundatae et mucronulatae, glanduloso-hirtellae; calycis segmenta oblongo-ovata, obtusa, glanduloso-hirtella, striata, marginibus subhyalinis; corolla purpurea, sursum glanduloso-hirtella, tubo hypocrateriformi, leviter curvato, labiis subaequalibus, labio superiore obovato, erecto, apice truncato, cucullato, labio inferiore gibboso, trilobato, lobis suborbicularibus; stamina inclusa, filamentis dense pilosis; ovarium glabrum; capsulae ignotae.

Shrubs up to 2 meters high; stems subquadrangular (the angles rounded), hirtellous, the hairs 0.5 to 0.75 mm. long, spreading, brownish; leaf blades oblong-obovate, up to 47 cm. long and 15 cm. wide, short-acuminate (the tips blunt), gradually narrowed from approximately 15 cm. below tip to the base and decurrent on the petiole, submembranaceous, shallowly dentate (the teeth broad, obtuse, about 2 mm. high), the upper surface glabrous or sparingly pilose, the hairs up to 1.5 mm. long, ascending, the costa and lateral veins (about 30 pairs) rather obscure, the lower surface moderately pilose, the hairs up to 1 mm. long, ascending, more numerous on the costa and lateral veins than elsewhere, the costa and veins prominent, the veinlets coarsely reticulate, a veinlet ending at the tip of each tooth; petioles up to 5 cm. long (?), stout, 3 mm. in diameter, glabrous or minutely and sparingly strigose; panicles terminal, once- or twice-branched, the peduncles 1 to 2 cm. long, these and the rachises (5 to 7 cm. long) densely brown-hirtellous, the hairs spreading, about 0.5 mm. long, the spikes compact, the lowermost flowers soon deciduous, leaving prominent raised scars; bracts subtending the branches of the inflorescence triangular-ovate, about 7 mm. long and 4 mm. wide near base, acute, carinate, sparingly puberulous; flower bracts ovate, 7 mm. long, 4 mm. wide, acute, mucronulate (the mucro 0.25 mm. long), puberulous, bearing also toward tip a number of stouter glandular hairs up to 0.5 mm. long, the costa prominent, the margins subhyaline; bractlets ovate, 7 mm. long, 4 mm. wide, rounded and mucronulate at tip, in other respects similar to the bracts; calyx segments oblong-ovate, 13 mm. long, 5 mm. wide, obtuse, hirtellous, the hairs spreading or ascending, some of them glandular, the lower portion of the segments glabrous,

the margins subhyaline; corollas purple, about 5 cm. long, moderately hirtellous except the basal glabrous portion, the hairs about 0.25 mm. long, spreading or slightly retrorse, many of them glandular, the tube curved, 4 mm. broad at base, 2 mm. broad at 5 mm. above base, 7 mm. broad at mouth, the lips subequal, about 9 mm. long, the upper lip obovate, arched, about 8 mm. wide, cucullate, truncate, the lower lip somewhat spreading, gibbous, 3-lobed, the lobes suborbicular, about 3 mm. broad, the medial area within minutely tomentose, the margins glabrous; stamens decurrent on the dorsal portion of the corolla tube becoming free at about 5 mm. below the

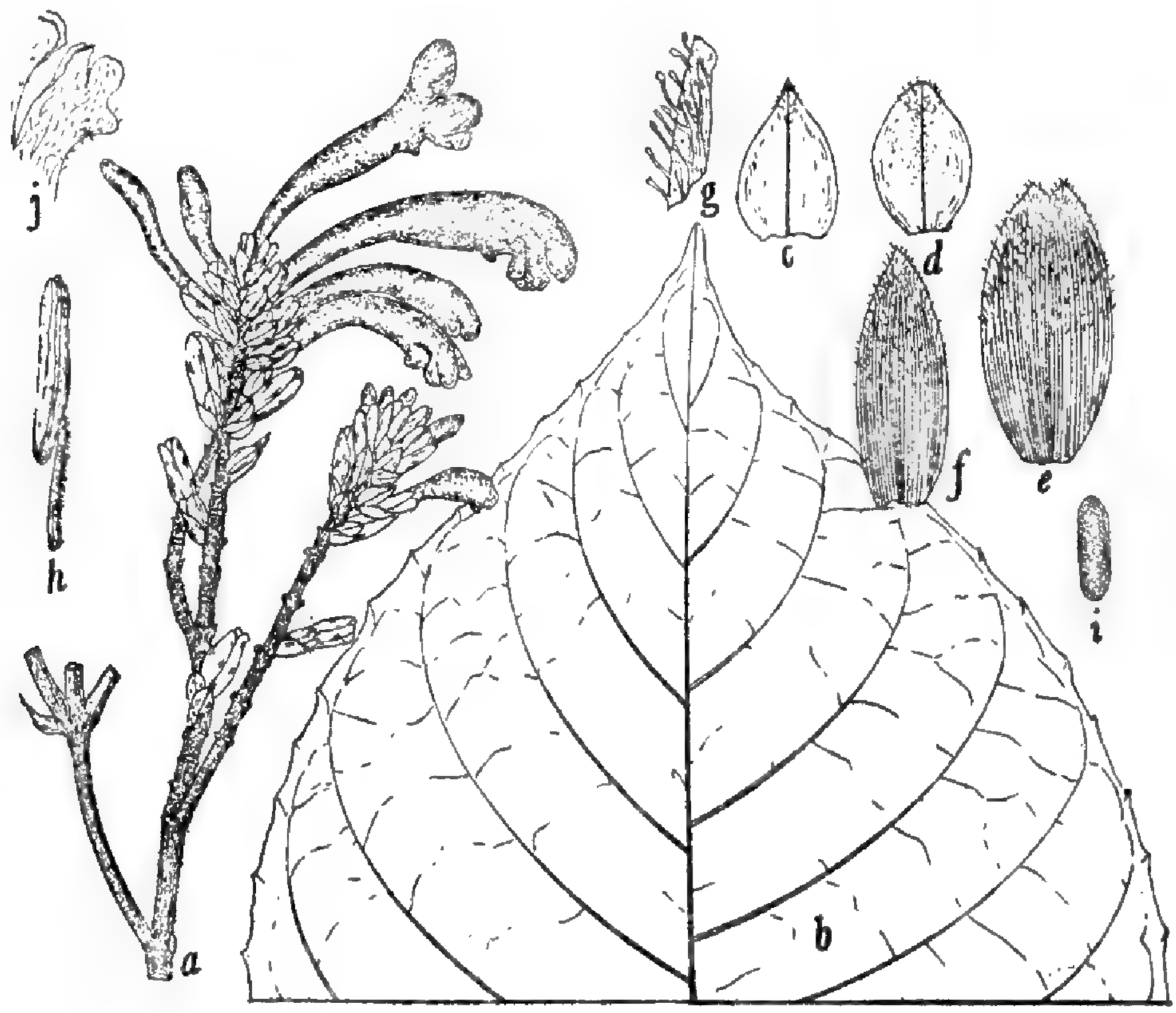

FIGURE 103.—*Cyphacanthus atopus* Leonard (*Lawrance* 502): *a*, Tip of panicle; *b*, tip of leaf blade; *c*, bract; *d*, bractlet; *e*, posterior calyx segment; *f*, one of the anterior segments; *g*, marginal pubescence near tip of anterior segment; *h*, anther; *i*, pollen grain; *j*, lower lip of corolla. (*a*, *b*, Half natural size; *c-f*, twice natural size; *g*, 15 times natural size; *h*, about 3 times natural size; *i*, 66 times natural size; *j*, 1½ times natural size.)

base of the corolla lips, the anthers oblong, 5 mm. long, 1.25 mm. wide, webby-pilose at tip, otherwise glabrous, enclosed by the curved upper lip of the corolla, the filaments densely pilose dorsally, the hairs 0.5 mm. long; pollen grains slenderly oblong, smooth, about 82 μ long and 43 μ in diameter; ovary glabrous; capsules not seen.

Type in the herbarium of the New York Botanical Garden, collected on streamside in high, thick forest at El Umbo, region of Mount Chapón, Department of Boyacá, Colombia, "2,500 feet" altitude, October 1, 1932, by A. E. Lawrance (No. 502).

The specific epithet is from the Greek ἄτοπος, meaning strange or marvelous.

Tribe 7. RHOMBOCHLAMYDEAE

Rhombochlamydeae Lindau; Engl. & Prantl, Pflanzenfam. Nachtr. 306. 1897.
The tribe contains a single genus, *Rhombochlamys*.

Herbs; flowers borne in terminal spikes, the bracts rhomboid; calyx segments 5; corollas hypocrateriform, the limb 2-lipped; stamens 4, anthers 1-celled; "daubenpollen."

Because of a resemblance of the pollen grains, Lindau associated his Rhombochlamydeae with the Old World tribe Andrographideae. But since in all other respects the two species he describes under *Rhombochlamys* are typical of *Aphelandra*, e. g., in such characters as the large rhombic bracts, and 4 stamens with slender, unilocular anthers, the creation of a new tribe was necessary.

20. RHOMBOCHLAMYS Lindau

Rhombochlamys Lindau, Bull. Herb. Boiss. **5**: 659. 1897. The name is derived from the Greek ῥόμβος, top, and χλαμύς, mantle, i. e., a top-shaped mantle, alluding to the rhombic bracts. Type species: *Rhombochlamys rosulata* Lindau.

Flowers borne in spikes; bracts rhomboid, the margins dentate; bractlets lanceolate, obtuse; calyx segments 5, equal; corolla tube subcylindric, slightly and gradually enlarged at mouth, the upper lip 2-lobed, the lower 3-lobed; stamens 4, the anthers unilocular.

Description compiled from the original.

In addition to the type species, Lindau describes *R. elata*, also from Colombia.

KEY TO THE SPECIES

Plants almost stemless; bracts 9 mm. long and 5 mm. wide, acuminate, glandular-pubescent ..... *R. rosulata*
Plants up to 50 cm. tall; bracts 13 mm. long and 8 mm. wide, obtuse, glabrous ..... *R. elata*

1. Rhombochlamys rosulata Lindau — FIGURE 104

Rhombochlamys rosulata Lindau, Bull. Herb. Boiss. **5**: 660. 1897. Type collected in damp sandy place on the Río Plata near Tolima, 1,300 meters altitude, December 23, 1882, by Lehmann (No. 2197). Photograph of the type material from the Berlin Herbarium in the U. S. National Herbarium, No. 8724. The Berlin specimen is poorly developed, consisting of a short portion of stem, 3 leaves and 2 spikes, one detached from plant. *Rosulata*, rosulate, i. e., forming a rosette, in allusion to the arrangement of the leaves.

Herbs, scapes very short; leaf blades dull green, 5 to 7 cm. long, 2 to 3 cm. wide, oval, rounded or abruptly short-acuminate at apex, narrowed at base and decurrent on the petiole, pubescent; petioles 7 to 15 mm. long; inflorescence a pubescent, long-pedunculate spike; bracts rhombic, acuminate at tip, narrowed at base, 9 mm. long, 5 mm. wide, glandular-pubescent, the margins bearing 2 pairs of minute teeth

toward tip, the nerves 6, parallel; bractlets lanceolate, 6 mm. long, 2 mm. wide, obtuse at tip, the margins ciliate; flowers pale lilac; calyx segments lanceolate, 5 mm. long, 1 mm. wide, puberulous; corolla tube 12 mm. long, 1.5 mm. broad at base, 3 mm. broad at throat, the upper lip bidentate, the teeth obtuse, 3 mm. long and 2.5 mm. wide, the lower lip 6 mm. long, the lateral lobes 4 mm. long and wide, the middle lobe 4 mm. long and 6 mm. wide, sinuate at apex; filaments 6 mm. long, affixed to middle of corolla tube, the anthers 2 mm. long, the tips

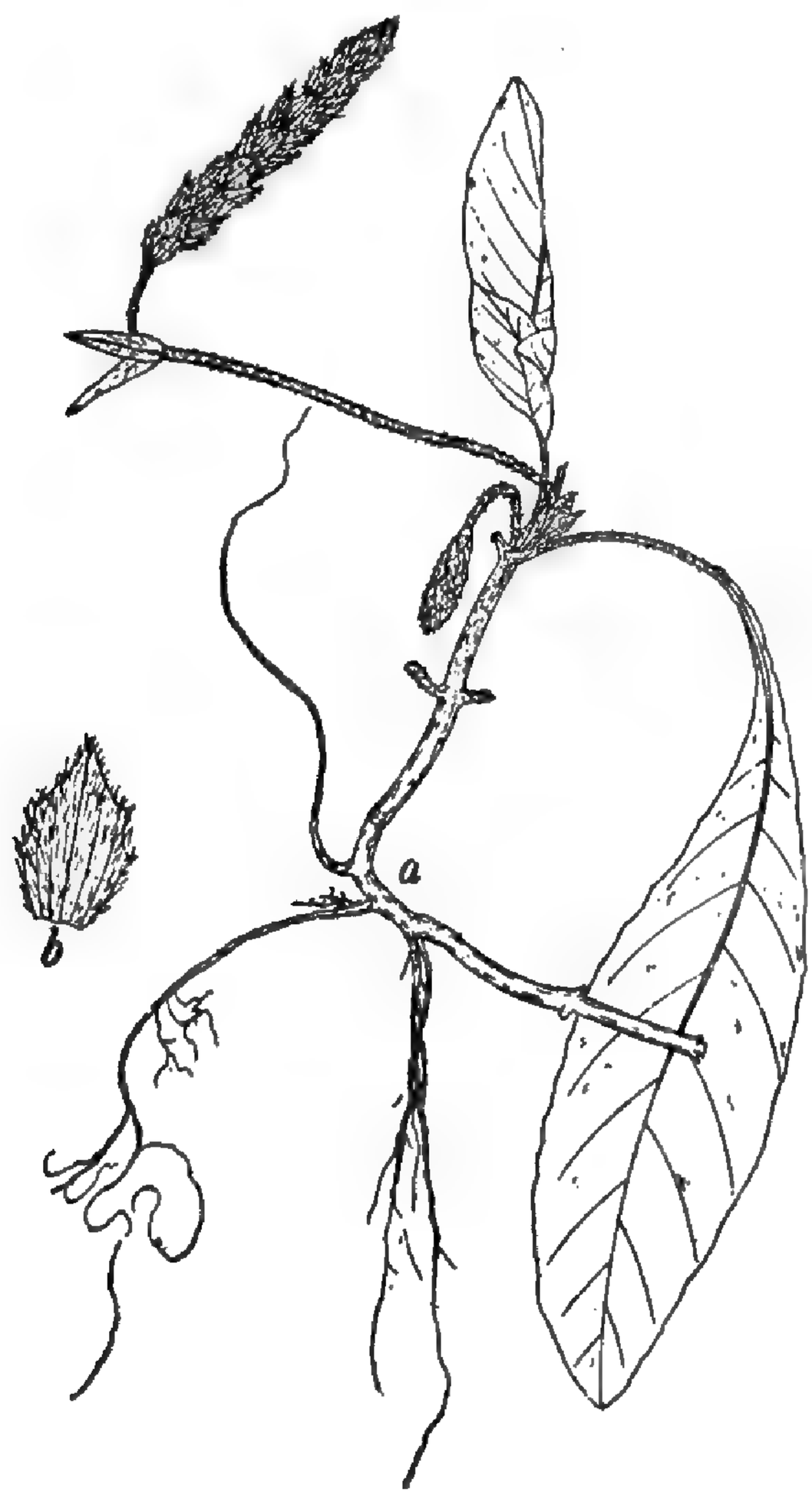

FIGURE 104.—*Rhombochlamys rosulata* Lindau (Photograph of *Lehmann* 2197): *a*, Plant; *b*, bract. (*a*, Natural size; *b*, twice natural size.)

barbate; pollen grains ellipsoidal, 46μ long and 36 to 38μ broad; ovary 1 mm. long; style 11 mm. long, the stigma subcapitate; capsules glabrous, 6 mm. long and 3 mm. broad, 8-seeded, very short-stipitate.

No specimens seen. Description compiled from the original.

Rhombochlamys rosulata and the following species, *R. elata*, strongly suggest the genus *Lagochilium* Nees (considered in this paper as a synonym of *Aphelandra*), which consists chiefly of small herbaceous or suffrutescent plants midway between *Stenandrium* and *Aphelandra*. Like *Encephalosphaera*, *Rhombochlamys* is based chiefly on pollen characters.

2. **Rhombochlamys elata** Lindau

Rhombochlamys elata Lindau, Bull. Herb. Boiss. 5: 661. 1897. Type collected in dense woods at Palmira, above La Vitrera, El Valle, Colombia, 1,600 to 2,000 meters altitude, June 17, 1883, by Lehmann (No. 2891). Photograph of Berlin Herbarium material in the U. S. National Herbarium, No. 8723. The name *elata* means lofty, probably referring to the height of the plant in comparison to that of *R. rosulata*.

Herb; stems up to 50 cm. high, terete, rarely branched, pubescent; leaf blades olive-green, oval, up to 12 cm. long and 3.5 cm. wide but usually somewhat smaller, narrowed at both ends, the costa pilose; petioles 12 to 20 mm. long. pubescent; spikes terminal or subterminal, one third the length of the leaves, the peduncle 1 cm. long, pubescent; bracts glabrous, imbricate, subrhombic, 13 mm. long, 8 mm. wide, obtuse, the margins bearing 5 acute teeth, the nerves 3, parallel; bractlets lanceolate, 3 mm. long, 0.75 mm. wide, ciliolate; flowers yellow; calyx segments lanceolate, 6 mm. long, 1 to 1.5 mm. wide, ciliolate; tube of the corolla 12 mm. long, 2 mm. in diameter at base, enlarged to 5 mm. at mouth, the upper lip 6 mm. long, 2-lobed, the lobes 2.5 mm. long and wide, obtuse, the lower lip 8 mm. long, 3-lobed, the middle lobe 6 mm. long and 5 mm. wide, the lateral lobes 5 mm. long and 8 mm. wide, all obtuse and subsinuate at tip; filaments 8 mm. long; anthers 2 mm. long, agglutinated at tip, barbate; ovary 2 mm. long; style 12 mm. long; capsules not seen.

No specimens seen. Description compiled from the original.

Tribe 8. ASYSTASIEAE

Asystasieae Lindau, Bot. Jahrb. Engler 18: 47. 1893. Of the nine genera listed in Dalla Torre & Harms' Genera Siphonogamarum, *Asystasia* alone is represented in Colombia.

Herbs or shrubs; inflorescence spicate, racemose or rarely panicled; bracts and bractlets mostly small; calyx usually 5-parted; corolla distinctly or only slightly 2-lipped; stamens 4; staminodes 1 or none; anthers usually 2-celled; stigma capitate or rarely lobed; capsules slenderly stipitate; seeds 2 or 4.

21. ASYSTASIA

Asystasia Blume Bijdr. 796. 1826. Type species: *A. intrusa* Blume (Java).

Herbs or shrubs; leaves entire; flowers borne in spikes or racemes, these lax or dense, simple or branched, unilateral; pedicels short; bracts and bractlets small, narrowly triangular to linear; flowers usually solitary, opposite or alternate, white, blue, purple, rose or yellow; sepals linear or narrowly oblong; corolla tube short to long, funnelform, ventricose or narrow, the 5 lobes subequal; stamens 4, perfect, subequal, didynamous; anthers oblong, the cells parallel, approximate, minutely spurred or muticous at base; ovary 4-ovulate, pubescent;

stigma minutely 2-parted or subcapitate; capsule elliptic, 2- or 4-seeded above, the base contracted and solid; seed compressed, orbicular or irregularly angular, rugose or tubercular, glabrous.

Approximately 70 species have been described in the genus, these chiefly from tropical Africa, Asia, and the East Indies. The generic name is probably from the Greek word ασύστατος (not holding together), in allusion to the widely spreading valves of the dehisced capsules.

1. Asystasia gangetica (L.) T. Anders. FIGURE 105

Justicia gangetica L. Amoen. Acad. 4: 299. 1759. Type locality: India. The name *gangetica* alludes to the type locality, the Ganges River.

Asystasia coromandeliana Nees in Wall. Pl. As. Rar. 3: 89. 1832. Type locality: India. The specific name again alludes to the type locality, Coromandel.

Asystasia gangetica T. Anders, in Thwaites, Enum. Pl. Zeyl. 235. 1859–64. Based on *Justicia gangetica* L.

FIGURE 105.—*Asystasia gangetica* (L.) T. Anders. (*a*, *Hasnali* 7926, Trinidad; *b*, *c*, *f*, *Hitchcock* 16536, British Guiana; *d*, *e*, *Rusby* & *Squires* 38, Venezuela): *a*, Tip of branch; *b*, node of inflorescence to show bracts; *c*, pubescence of inflorescence; *d*, anther; *e*, pistil; *f*, fruit. (*a*, Half natural size; *b*, *e*, 3 times natural size; *c*, about 26 times natural size; *d*, about 4 times natural size; *f*, natural size.)

Erect or ascending shrubs sometimes climbing or trailing; stems subquadrangular, branching, glabrous or sparingly pubescent, the hairs downwardly curved, about 0.25 mm. long; leaves ovate, up to 9 cm. long and 5 cm. wide, acute to rather abruptly acuminate, obtuse, rounded or subcordate at base and decurrent on the petiole, sparingly pubescent, the hairs confined chiefly to costa and lateral veins (4 or

5 pairs); petioles up to 3 cm. long, pubescent, the hairs spreading or curved, about 0.25 mm. long; spikes terminating the branches, up to 20 cm. long, the peduncles up to 5.5 cm. long, these and the rachis sparingly and minutely pubescent, the flowers more or less secund, the spikes subtended by a pair of short-petioled (3 to 5 mm. long) leaves slightly smaller than the average stem leaves; bracts and bractlets similar, triangular, acuminate, 1.5 to 2 mm. long, 0.75 to 1 mm. wide at base, ciliate, the hairs 0.5 mm. long; calyx about 1 cm. long, the segments linear-lanceolate, acuminate, about 8 mm. long and 0.75 to 1 mm. wide at base, rather sparingly hirsute, the hairs spreading, about 0.25 mm. long, some of them glandular, the tube more densely hirsute with the glandular hairs predominating; pedicels up to 4 mm. long, minutely hirsute, the hairs both glandular and eglandular; corolla hirtellous, white or pale yellow, drying yellow, the tube yellowish, green or purple (*fide A. S. Hitchcock* No. 16536, U. S. Nat. Herb. No. 1055847, collected at Georgetown, British Guiana), 3 to 4 cm. long, 3 mm. broad near base, narrowed to 3 mm. at 8 mm. above base, thence enlarged to 13 mm. at throat, the enlarged portion of the tube obconic, the lobes rounded, about 1.5 cm. in diameter, conspicuously and coarsely reticulate-veined; stamens in pairs, the longer pair about 13 mm. long, the shorter about 1 cm. long, the filaments of the longer stamens bearing a line of minute, glandular, spreading hairs, the anthers 3.5 mm. long and 1.5 mm. broad, short-apiculate at tip; ovary conical, 3 mm. long, densely pilosulous; style 16 mm. long, pilosulous at and near base; capsule clavate, 20 mm. long or more, minutely pilosulous, some of the hairs glandular; seeds 2, gray, about 3.5 mm. broad, roughened, the margins crenate.

Native to tropical Africa, Asia, and Malaya. Introduced into tropical America where it is cultivated or persists as an escape. In addition to Colombia, specimens from British Guiana, Venezuela, and Trinidad were examined.

BOLÍVAR: Cartagena, *Bro. Elias* 622 (US).

Tribe 9. GRAPTOPHYLLEAE

Graptophylleae Lindau, Bot. Jahrb. Engler 18: 47. 1893. Of the 12 genera included in this tribe in Dalla Torre & Harms, Genera Siphonogamarum, only *Pachystachys* is represented in Colombia. The tribe is based on *Graptophyllum*, a genus found chiefly in Australia and Polynesia.

Shrubs or herbs; inflorescence spicate or paniculate; calyx usually equally 5-parted, sometimes 2-lipped; stamens 2; staminodes 2 or none; anthers 2-celled, the cells equally or unequally attached, their bases acute, obtuse or spurred; mostly "rahmenpollen"; capsules stipitate, 4-seeded.

22. PACHYSTACHYS Nees

Pachystachys Nees in Mart. Fl. Bras. **9:** 99. 1847. Type species: ***Pachystachys riedeliana*** (Brazil). Nees described no other species in this treatment. Later the same year (DC. Prodr. **11:** 319. 1847) he republished this and added five other species. No further additions were made to the genus until Rizzini described *P. albiflora* from Brazil (Bol. Mus. Nac. Rio de Janeiro, n. s. **8:** 24, *pl.* 7. 1947. The generic name is derived from *παχος*, thick, large or stout, and *στάχυς*, spike.

Herbaceous or suffrutescent plants; leaves large, petioled; spikes terminal, dense; bracts conspicuous, herbaceous; bractlets small or none; flowers borne in a terminal spike of verticillasters consisting of 3 or 4 flowers each; calyx 5-parted, the segments relatively short; corolla ringent, slenderly obconic, curved, 2-lipped, the upper lip narrow, 2-lobed at tip, the lower lip 3-lobed, the lobes subequal, oblong or ovate; stamens 2, about as long as the corolla, attached near the base of its tube; anthers deeply sagittate, the basal lobes muticous, equal; staminodes, if present, rudimentary.

1. Pachystachys riedeliana Nees — FIGURE 106

Pachystachys riedeliana Nees in Mart. Fl. Bras, **9:** 99. 1847. Type locality: "Ad Villam de Borba in ditione fluv. Madeira," Brazil. Type collected by Riedel in whose honor the species was named.

Suffrutescent, erect, simple or sparingly branched plants up to 3 meters high; stems glabrous, terete or the upper portions subquadrangular; leaf blades oblong, elliptic or broadly oblanceolate, up to 23 cm. long and 8.5 cm. wide, acute to acuminate (the tip itself usually blunt), gradually to rather abruptly narrowed at base, glabrous, the margins entire, the costa and lateral veins (9 to 12 pairs) rather prominent; petioles up to 5 cm. long, glabrous; spikes solitary, terminal, up to 16 cm. long or more, the rachis finely puberulous; bracts rather loosely imbricate, ovate-lanceolate, 1.5 to 2.5 cm. long, 7 to 11 mm. wide (the terminal bracts somewhat smaller, the basal ones larger), acuminate, narrowed at base, short-petiolate, both surfaces puberulous, the lower surface more densely so, bearing additional glandular hairs; bractlets narrowly linear, about 3 mm. long and 0.5 mm. wide, sparingly puberulous; calyx campanulate, 4.5 mm. long, the segments narrowly triangular, about 3 mm. long and 1 mm. wide at base, acuminate, sparingly hirtellous; corolla scarlet, up to 7.5 cm. long, the tube curved, 4 mm. broad at base, gradually enlarged to 8 mm. at throat, the upper lip erect, lanceolate, 6.5 mm. wide near base, gradually narrowed to 1.5 mm. at tip, 2-lobed, the lobes obtuse, about 1 mm. long and wide, the lower lip 3-lobed, spreading, the lobes linear, rounded at tip, the middle lobe 17 mm. long and 3 mm. wide, the lateral ones up to 24 mm. long and 4 mm. wide; stamens attached near the base of the corolla tube, the filaments 5 cm. long, puberulous, the

anthers 7 mm. long, deeply sagittate, the basal lobes muticous; staminodes rudimentary, puberulous; ovary glabrous; capsules not seen.

Pachystachys riedeliana has often been confused with *P. coccinea* (Aubl.) Nees (DC. Prodr. **11:** 319. 1847) of French Guiana. Although the two species are superficially similar, they can readily be separated by the longer, linear calyx segments of *P. coccinea.*

Woods, margins of thickets, along trails or streams. West Indies and northern South America.

EL VALLE: Las Juntas, on the Río Dagua, *Lehmann* 1887 (US).

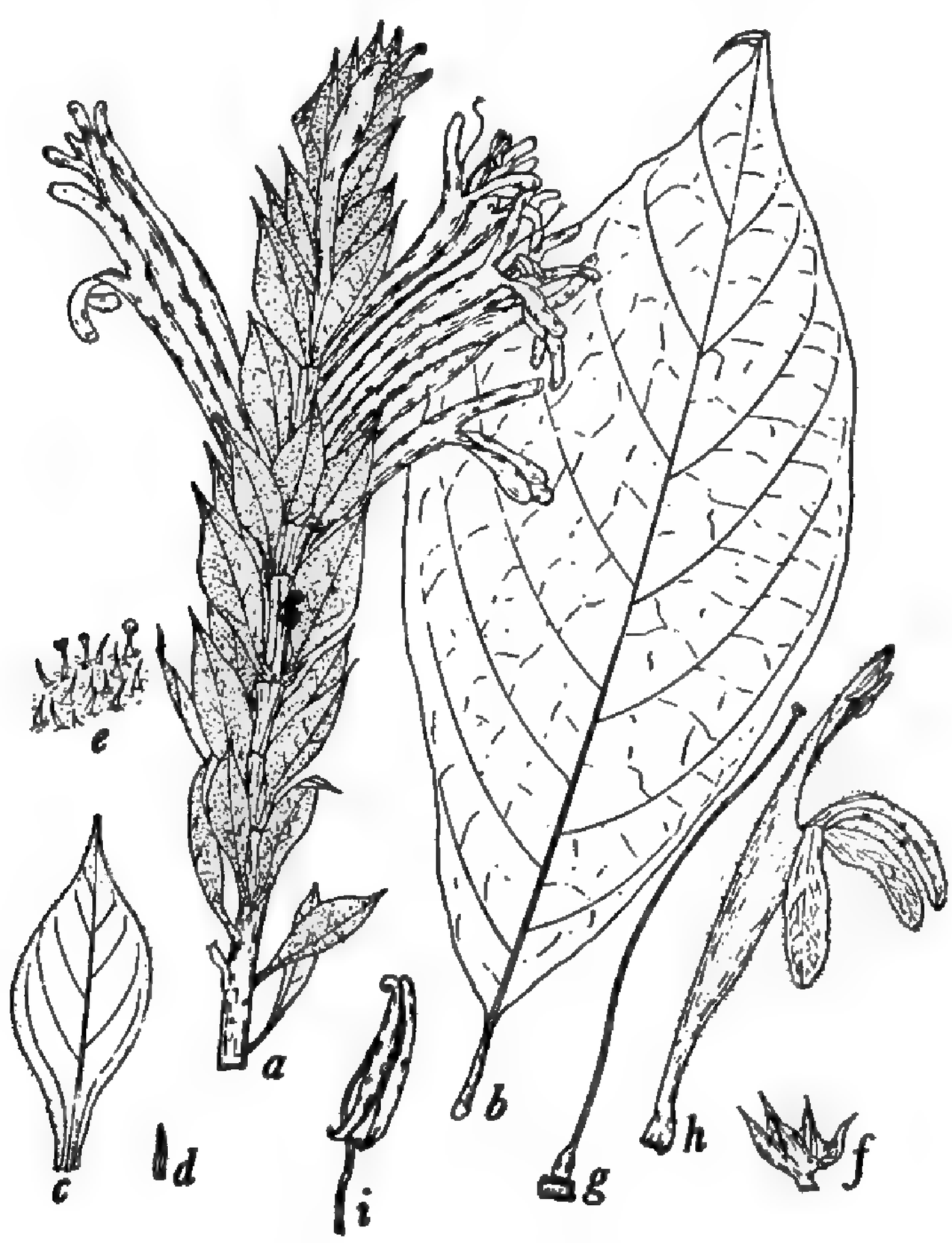

FIGURE 106.—*Pachystachys riedeliana* Nees (*a–e*, *Lehmann* 1887; *f–i*, *Eggers* 14135, Ecuador): *a*, Spike; *b*, leaf; *c*, upper surface of bract; *d*, bractlet; *e* pubescence of undersurface of bract; *f*, calyx; *g*, pistil; *h*, corolla; *i*, anther. (*a*, *b*, *h*, Half natural size; *c*, *d*, *g*, natural size; *e*, about 22 times natural size; *f*, *i*, twice natural size.)

Tribe 10. PSEUDERANTHEMEAE

Pseuderanthemeae Radlk. Sitzungsb. Math. Phys. Kl. Akad. Wiss. München **13:** 282. 1883. *Pseuderanthemum* Radlk. is the only one of the three genera listed in the tribe Pseuderanthemeae in Dalla Torre & Harms' Genera Siphonogamarum with representatives in America.

Herbs or shrubs; inflorescence spicate, racemose, thyrsiform, or paniculate; bracts and bractlets small; calyx 5-parted; corolla more or less 2-lipped; stamens 2; staminodes 2 or none; anther cells equally or unequally attached, acute or obtuse at base; "spangenpollen" (elliptical grains with 9 longitudinal clefts arranged in 3 groups, the broader

middle cleft of each group containing a pore) and "glatterpollen" (smooth or roughened, nearly spherical grains with 2 or 3 pores, these sometimes lying in very short clefts); capsules slenderly stipitate, 2- or 4-seeded.

23. PSEUDERANTHEMUM Radlk.

Pseuderanthemum Radlk. Sitzungsb. Math. Phys. Kl. Akad. Wiss, München **13**: 282. 1883. A genus found in tropical regions throughout the world. From ψευδής, false, and *Eranthemum*, an Old World genus belonging to the tribe *Ruellieae*, thus false *Eranthemum*. Type species: *Eranthemum alatum* Nees (Mexico).

Herbs or small shrubs; leaves opposite, usually ovate; flowers borne in terminal or axillary bracteate spikes, racemes or panicles, the bracts and bractlets subtending the flower clusters small; calyx segments 4 or 5, subulate; corolla white, blue, or pink, the tube slender, the limb spreading, the 5 lobes subequal; stamens 2, usually included; staminodes 2, minute; anthers cells muticous or acute at the base; capsules long-stipitate; seeds 2 or 4.

In his treatment of *Eranthemum* (DC. Prodr. **11**: 445. 1847) Nees classifies his species having subequal corolla lobes under two heads, one with large conspicuous bracts, all Old World species, under "a. *Grandibracteata*," and the other, with small inconspicuous bracts, partly New World and partly Old World species, under "b. *Parvibracteata*." To this latter section Radlkofer applied the generic name *Pseuderanthemum*.

KEY TO THE SPECIES

Leaf blades ovate, abruptly narrowed to a long, winged petiole; bracts subtending the lower branches of the inflorescence leaflike, orbicular or suborbicular, sessile or subsessile; corolla tube about 2 cm. long, very slender.
- Flowers dark red; flower bracts triangular, up to 2 mm. long--- 1. *P. haughtii*
- Flowers purple; flower bracts lanceolate, up to 4 mm. long---- 2. *P. idroboi*

Leaf blades elliptic or oblong to lanceolate or oblanceolate, rarely ovate, gradually narrowed to short, winged petioles; bracts subtending the inflorescence, or lower branches of the same, oblong, lanceolate, or linear-subulate, sometimes leaflike but not orbicular.
- Calyx more or less glandular-puberulous.
  - Leaf blades (lower surface) glabrous or bearing a few scattered, minute, stiff hairs; cystoliths black---------- 3. *P. leiophyllum*
  - Leaf blades (lower surface) definitely puberulous or hirtellous; cystoliths whitish.
    - Lobes of the corolla conspicuously purple-dotted------- 4. *P. poecilanthum*
    - Lobes of the corolla uniformly colored.
      - Corollas pure white---------- 5. *P. ellipticum*
      - Corollas violet or pink.
        - Leaf blades glabrous above, sparingly gland-dotted beneath. 6. *P. ewanii*
        - Leaf blades more or less hirtellous above, not gland-dotted beneath---------- 7. *P. pennellii*

Calyx eglandular.
  Leaf blades 2 cm. wide or less (or up to 3 cm. in No. 9).
    Calyx glabrous ---------- 8. *P. lanceum*
    Calyx puberulous ---------- 9. *P. sneidernii*
  Leaf blades, or at least some of them, 2.5 cm. wide or more.
    Rachis glabrous; leaf blades usually obtuse or rounded at tip. 10. *P. atropurpureum*
    Rachis pubescent; leaf blades acuminate.
      Flowers borne in simple or forked racemes.
        Leaf blades thin, up to 5.5 cm. wide ---------- 11. *P. potamophilum*
        Leaf blades firm, up to 4 cm. wide ---------- 12. *P. hylophilum*
      Flowers borne in panicles.
        Corolla densely glandular-papillose ---------- 13. *P. chaponense*
        Corolla sparingly puberulous or pubescent.
          Tube of corolla narrow, the throat 1.5 mm. broad. 14. *P. stenosiphon*
          Tube of corolla wider, the throat 2.3 to 3 mm. broad.
            Corollas white; shrubs ---------- 15. *P. cuatrecasasii*
            Corollas purplish; herbs ---------- 16. *P. dawei*

1. **Pseuderanthemum haughtii** Leonard, sp. nov. FIGURE 107

Herba, caulibus subquadrangularibus, bifariam pilosis, pilis plus minusve patulis, cystolithis subpunctiformibus, inconspicuis; lamina foliorum ovata, abrupte acuminata (apice ipso acuto, plus minusve curvato), basi rotundata, in petiolum decurrens, integra vel undulata, membranacea, supra glabra vel parce hirtella, costa et venis prominentibus, cystolithis gracilibus, subtus parce hirtella, pilis patulis praecipue in costa et venis positis, venis prominentibus; petioli alati, glabri vel marginibus et canale pilos minutos ferentes; panicula parce ramosa, terminalis, pedunculo et rhache plus minusve bifariam pilosis, pilis albis, patulis, fasciculis 1–3 floribus, sessilibus; bracteae infimae foliis similes, suborbiculares, acuminatae, basi rotundatae, subsessiles; bracteae supremae minutae, triangulares, acuminatae, ciliatae; bracteolae anguste triangulares, minutae, ciliatae; calycis segmenta lanceolata, subtiliter 3-nervata, ciliata; corolla atrorubra, tubo praegracili, lobis ovalibus, rotundatis; antherae subsessiles, lineares, curvatae; stylus et ovarium glabri.

Herbs up to 50 cm. high; stems subquadrangular, pilose in 2 lines, the hairs more or less spreading, about 0.75 mm. long, the cystoliths barely conspicuous under a lense; leaf blades ovate, 10 to 18 cm. long, 5.5 to 7 cm. wide, abruptly acuminate (the tip itself acute, straight or slightly curved), rounded at base and abruptly and broadly decurrent on the petiole, thin, the upper surface glabrous or bearing a few coarse hairs, the costa and lateral veins (9 or 10 pairs) conspicuous, the lower veins meeting the costa almost at right angles, the cystoliths linear, delicate, the lower surface sparingly hirtellous, the hairs about 0.25 mm. long, spreading, confined chiefly to costa and veins, these slightly more conspicuous than above; petioles 4 to 7 cm. long, glabrous or the

margins and channel bearing a few minute hairs, the winged portion of the petiole near base of leaf blade 1 to 1.5 cm. wide, thence gradually narrowed to its base; leaves of the small branches produced in the axils of the stem leaves ovate, about 2 cm. long and 1.5 cm. wide; panicle terminal, sparingly branched, the flowers subsessile, the peduncle 10 cm. long, the first internode 6 cm. long, the others suc-

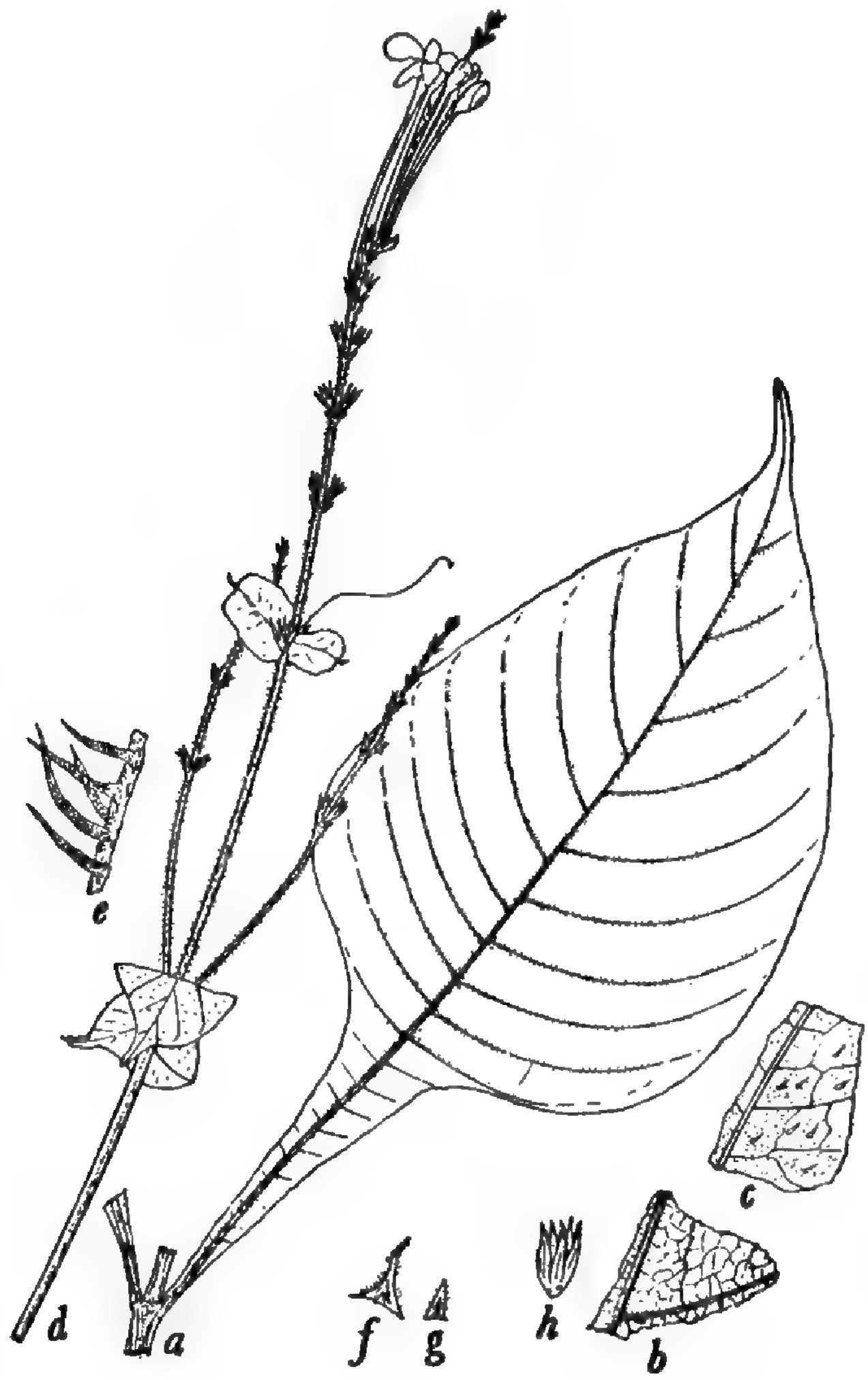

FIGURE 107.—*Pseuderanthemum haughii* Leonard (*Haught* 3974): *a*, Leaf; *b*, small portion of leaf (lower surface) to show venation in detail; *c*, small portion of leaf (upper surface) to show scattered hairs and cystoliths; *d*, inflorescence; *e*, pubescence of rachis; *f*, bract; *g*, bractlet; *h*, calyx. (*a*, *d*, Half natural size; *b*, *c*, natural size; *e*, 18 times natural size; *f*, *g*, twice natural size; *h*, slightly more than natural size.)

cessively shorter toward tip, the leaves subtending the panicle ovate-cordate, about 7 cm. long and 3.5 cm. wide near the base, acuminate, truncate or subcordate at base, subsessile, the short petiole winged, about 5 mm. long, the bracts subtending the lower branches of the inflorescence suborbicular, about 2.5 cm. long and wide, acuminate, rounded at base, subsessile, the bracts subtending the lowermost fascicle of flowers broadly elliptic, about 8 mm. long and 13 mm. wide,

apiculate and emarginate, the lowermost of the subsequent bracts triangular, acuminate, 2.5 mm. long and 1 mm. wide at base, ciliate, the others becoming smaller toward tip of inflorescence; the bractlets narrowly triangular, up to 1.5 mm. long, acute, the peduncle and rachis pilose, the hairs mostly spreading, about 0.5 mm. long, arranged more or less in two rows; calyx subsessile, 5 mm. long, the segments lanceolate, 3 mm. long, 0.75 mm. wide at base, faintly and delicately 3-nerved, ciliolate; corolla dark red, 3 cm. long, the tube very slender, 1.75 mm. broad at base, narrowed at 4 mm. above base to 1 mm., the mouth about 3 mm. broad, the lobes oval, 5 to 6 mm. long, about 4 mm. wide, rounded at tip; stamens inserted near mouth of corolla tube, the filaments very short, the anthers curved, about 1.5 mm. long, the staminodes subulate, 0.5 mm. long; ovary 3 mm. long, glabrous; style slender, glabrous, exserted about 5 mm. beyond mouth of the corolla tube; mature capsule not seen.

Type in the U. S. National Herbarium, No. 1708795, collected in coffee groves at Manaure, Department of Magdalena, Colombia, 500 meters altitude, January 23, 1944, by Oscar Haught (No. 3974).

Closely related to *P. alatum* (Nees) Radlk. of Mexico and Central America, *P. haughtii* differs chiefly in the shape of the leaf blades and the size of the calyx. The leaves of *P. alatum* are definitely cordate at base, the venation being subpalmate, the lowermost three pairs of veins arising nearly at a point, whereas in *P. haughtii* the leaf blades are somewhat rounded at base, and the venation is strictly pinnate. The calyx of *P. alatum* is much shorter, being only about 2 mm. long in comparison to the 5 mm. of *P. haughtii*, and the segments of the latter are glabrous or at most sparingly ciliolate instead of rather copiously ciliolate.

Pseuderanthemum cuspidatum (Nees) Radlk. may likewise have a resemblance to *P. haughtii*, but is described as having roughened, glabrous leaf blades and simple spikes.

2. **Pseuderanthemum idroboi** Leonard, sp. nov. FIGURE 108

Herba, caulibus subquadrangularibus, glabris vel sursum bifarium hirtellis, cystolithis minutis, parallelis; lamina foliorum ovata, breviter acuminata (apice ipso obtuso), basi in petiolum alatum gracilem subito angustata, membranacea, integra, glabra vel parce hirtella, supra costa et venis lateralibus obscuris, subtus aliquanto prominentibus; petioli graciles, alati; racemi terminales, simplices, graciles, pedunculo et rhache aliquanto hirtellis; pedicelli breves; bracteae infimae foliis similes, suborbiculares, obtusae, basi cordatae, bracteae supremae minutae, anguste triangulares, acutae, subcarinatae, aliquanto ciliatae, glabrae vel apice minute hirtellae, marginibus subhyalinis; bracteolae anguste lanceolatae, acutae, apice minute hirtellae;

calycis segmenta lineari-lanceolata, acuminata, apice minute hirtella et ciliolata; corolla purpurea, tubo praegracili, limbo patulo, lobis oblongis, obtusis vel rotundatis; stamina vix exserta; capsulae ignotae

Simple erect herbs up to 60 cm. high; stems subquadrangular, glabrous or the upper portions hirtellous in 2 lines, the cystoliths parallel, 250 μ long; leaves crowded at the tip of stem, the blades ovate, up to 14 cm. long and 8 cm. wide, short-acuminate (the tip itself blunt), abruptly narrowed into a slender, winged petiole, membranaceous, drying bright olive-green, entire, glabrous or sparingly hirtellous, the hairs of the upper surface coarse, about 0.5 mm. long, those

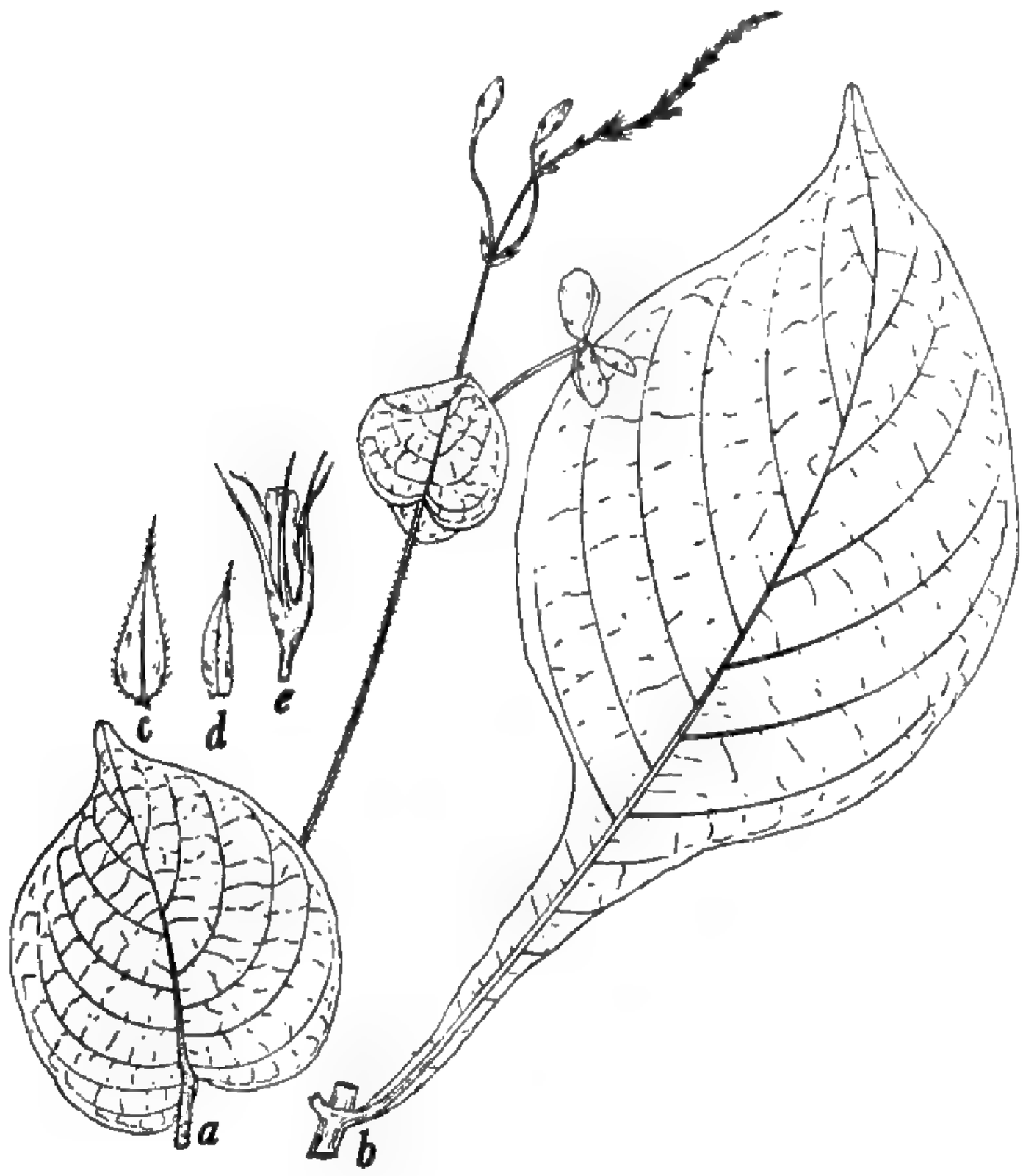

FIGURE 108.—*Pseuderanthemum idroboi* Leonard(*Id robo* 536): *a*, Inflorescence; *b*, leaf; *c*, flower bract; *d*, bractlet; *e*, calyx. (*a*, *b*, Half natural size; *c*, 4 times natural size; *d*, 6 times natural size; *e*, 4½ times natural size.)

on the lower surface smaller and finer, confined chiefly to costa and lateral veins (usually 8 pairs), the venation of the upper surface obscure, that of the lower more prominent and drying a bright yellowish green, the cystoliths slender, inconspicuous, 250 μ long; petioles 4 to 10 cm. long, including the wings, about 10 mm. wide at base of blade, thence gradually narrowed to base; raceme terminal, simple, slender, the peduncle 12 cm. long, the lowermost internode 7 cm. long, the others successively shorter toward tip, both peduncle and rachis moderately hirtellous, the hairs mostly spreading, straight or curved, 0.25 mm. long, the pedicels up to 1 mm. long; bracts subtending the spike and lowermost branches of the inflorescence leaflike, suborbicu-

lar, obtuse, cordate, the lowermost pair about 4 cm. wide, the second pair 2 cm. wide, the upper flower bracts lanceolate, 4 mm. long or less, 0.75 mm. wide at base, acute, subcarinate, moderately ciliate, minutely hirtellous at tip, the margins subhyaline; bractlets narrowly lanceolate, 1.5 mm. long, 0.5 mm. wide, acute, sparingly and minutely hirtellous at tip, otherwise glabrous; calyx segments linear-lanceolate, 2.5 mm. long, 0.25 to 0.5 mm. wide at base, acuminate, minutely hirtellous and ciliolate at tip; corolla 2.5 cm. long, purple (*morada*), the tube slender, 0.75 mm. in diameter except at mouth, here 1.5 mm. broad, the limb spreading, the lobes oblong, 9 mm. long, up to 4.5 mm. wide, rounded or obtuse, the stamens slightly exserted; capsules not seen.

Type in the U. S. National Herbarium, No. 2025691, collected on the margin of the Río Guejar, Sierra de La Macarena, Intendencia of Meta, Colombia, 500–1,000 meters altitude, August 29, 1950, by J. M. Idrobo (No. 536).

Pseuderanthemum idroboi is closely related to the preceding species, differing chiefly in color of flower and in the shape of the flower bracts.

3. Pseuderanthemum leiophyllum Leonard, sp. nov. FIGURE 109

Suffrutex, caulibus subquadrangularibus, sursum bifariam hirtellis, deorsum glabris, subpunctiformi-cystolithigeris; lamina foliorum lanceolata, apice acuminata, basi angustata, subauriculata, integra vel leviter undulata, subchartacea, supra glabra, subtus glabra vel minute et parce hispidula, cystolithis nigris, costa et venis aliquanto prominentibus; petioli breves; racemi terminales, rhache puberula, pilis pro parte glandulosis; pedicelli graciles, puberuli, pilis glandulosis et eglandulosis intermixtis; bracteae parvae, anguste triangulares, glabrae vel parce puberulae, aliquanto pilos glandulosos raros ferentes; bracteolae minutae; calycis segmenta lineari-lanceolata, acuta, puberula, pilis glandulosis et eglandulosis intermixtis; corolla alba vel purpurea, plus minusve curvata et ventricosa; stamina et staminodia glabra, inclusa; capsulae clavatae, puberulentae, apice obtusae; semina plana, verrucosa.

Suffrutescent plants up to 30 cm. high or more; stems subquadrangular, hirtellous in two lines (the hairs about 0.25 mm. long), the lower portions glabrate, the cystoliths subpunctiform; leaves subsessile, the blades lanceolate, up to 10 cm. long and 2.5 cm. wide, acuminate (the tip itself blunt), narrowed from about middle to a subauriculate base, entire or undulate, subchartaceous, the upper surface glabrous, the lower surface glabrous or minutely and sparingly hispidulous (the hairs about 100μ long), the cystoliths appearing black, the costa and lateral veins (7 or 8 pairs) rather prominent; petioles about 1 mm. long; flowers borne in terminal racemes up to 7 cm. long, the peduncles

up to 3 cm. long, puberulous in two lines, the rachis puberulous, the hairs about 0.25 mm. long, some of them gland-tipped, the pedicels slender, the lowermost up to 8 mm. long, successively shorter toward tip, all puberulous with both glandular and eglandular hairs; bracts narrowly triangular, the largest and lowermost up to 1 cm. long and 3 mm. wide at base, narrowed to an obtuse tip, bractlets similar but about half as large, both bracts and bractlets glabrous or sparingly puberulous, sometimes bearing a few additional glandular hairs;

FIGURE 109.—*Pseuderanthemum leiophyllum* Leonard (*Toro* 943): *a*, Tip of plant; *b*, node of inflorescence to show bracts and bractlets; *c*, calyx; *d*, pubescence of calyx; *e*, capsule (right valve complete). (*a*, *e*, Natural size; *b*, *c*, twice natural size; *d*, about 20 times natural size.)

calyx 6 mm. long, the segments linear-lanceolate, 5 mm. long, 1 mm. wide at base, acute, ending in a blunt tip, puberulous, the pubescence a mixture of glandular and eglandular hairs up to 150μ long; corolla white or purple(?), about 15 mm. long, the tube about 2 mm. broad at base, gradually expanded to 8 mm. at mouth, somewhat curved and ventricose, minutely and sparingly pubescent, the lobes ovate, about 6 mm. long and 4 mm. wide; stamens 4 mm. long, attached at 5 mm. above base of corolla, the anthers 2 mm. long, the staminodes 1 mm. long, both stamens and staminodes glabrous; capsules clavate, 21 mm.

long, puberulous, 4-seeded, the solid basal portion about 6 mm. long and 3 mm. broad, the tip blunt, the seed-bearing cavity 4 mm. broad, the seed flattened, about 3.5 mm. long and 3 mm. broad, verrucose, the retinacula linear, curved, about 3 mm. long, thin and acute at tip.

Type in the herbarium of the Facultad de Agronomía, Medellín, Colombia, No. 1905, collected at Támesis, Department of Antioquia, Colombia, February 1, 1928, by Rafael A. Toro (No. 943).

Pseuderanthemum leiophyllum is well marked and has no close resemblance to any other Colombian species. The color of the corolla is not apparent in the herbarium material. The name *leiophyllum* is derived from λεῖος, smooth, and φύλλον, leaf.

4. **Pseuderanthemum poecilanthum** Leonard, sp. nov. FIGURE 110

Herba erecta, caulibus subteretibus, glabris vel sursum parce puberulis, pilis minutis et appressis; lamina foliorum oblongo-elliptica, subacuta (apice ipso obtuso), basi angustata, in petiolum decurrens, submembranacea, marginibus leviter et crasse crenatis, supra glabra, costa et venis lateralibus obscuris, subtus parce puberula, pilis praecipue in costa et venis positis, costa et venis magis prominentibus; petioli puberuli; racemi solitarii, terminales, rhache et pedunculis glanduloso-pubescentibus, pilis patulis, albidis; pedunculus prope basin bracteas lineari-subulatas, carinatas, parce puberulas ferens; bracteae flores subtendentes similes sed minores; bracteolae minutae, subulatae, anguste triangulares; calycis segmenta lanceolata, acuminata, subtiliter 3-nervata, plus minusve glanduloso-puberula; corolla alba, lobis purpureo-maculatis; ovarium parce glanduloso-puberulum.

Erect herbs about 30 cm. high; stems subterete, glabrous or the upper portions sparingly puberulous, the hairs minute and appressed; leaf blades oblong-elliptic, up to 18 cm. long and 4.5 cm. wide, acutish, the tip blunt, gradually narrowed from middle or slightly above the middle to base and decurrent on the petiole, rather thin, the margins shallowly and coarsely crenate, the upper surface glabrous, the costa impressed, this and the lateral veins (5 or 6 pairs) obscure, the lower surface sparingly puberulous, the hairs confined chiefly to costa and veins, these slightly more prominent than on the upper surface; petioles 5 to 10 mm. long, puberulous; flowers solitary, borne in a terminal, peduncled raceme about 12 cm. long, the peduncle (5.5 cm. long) and rachis glandular-pubescent, the hairs spreading, barely 0.25 mm. long, whitish, the lower pair of bracts borne on the peduncle about 1 cm. above its base, linear-subulate, carinate, 0.5 mm. broad at base, sparingly puberulous, those subtending the flowers similar but smaller, 3 to 1.5 mm. long; bractlets subulate, narrowly triangular, the lowermost 1.5 mm. long and 0.5 mm. wide at base; calyx 6 mm. long, the segments glandular-puberulous without, the hairs spreading, the tube 0.5 mm. long, the segments lanceolate, 1 mm. wide at base,

acuminate, delicately 3-nerved; pedicels up to 3 mm. long, glandular-puberulous; corollas 1.5 cm. long, sparingly puberulous, white, the lobes purple-spotted, the tube 10 mm. long, 2 mm. broad near the base, contracted to 1.5 mm. at 3 mm. above base, abruptly expanded at summit, the mouth 5 mm. broad, 2-lipped, the lobes of the upper lip oblong,

FIGURE 110.—*Pseuderanthemum poecilanthum* Leonard (*Cuatrecasas* 10671): *a*, Tip of plant; *b*, small portion of leaf blade (upper surface) to show cystoliths; *c*, pubescence of peduncle; *d*, bract; *e*, bractlet; *f*, calyx, spread to show lobes. (*a*, *d*, Natural size; *b*, about 30 times natural size; *c*, about 25 times natural size; *e*, *f*, about twice natural size.)

9 mm. long and 4 mm. wide, those of the lower lip ovate, 7 mm. long, the lateral 4 mm. wide, the middle 4.5 mm. wide, all rounded; stamens about 1 cm. long, attached in the throat of the corolla, exserted, recurved, glabrous, the anthers 2 mm. long; staminodes 1.5 mm. long; style about 2 cm. long, sparingly puberulous near base, otherwise glabrous; stigma minute, about as broad as the style; ovary ovoid, 1.5 mm. long, sparingly glandular-puberulous; capsule not seen.

Type in the U. S. National Herbarium, No. 1798532, collected in wet forests of the Río Putumayo, at Puerto Porvenir, Comisaría de Putumayo, Colombia, 230 to 250 meters altitude, November 19, 1940, by J. Cuatrecasas (No. 10671). The name *poecilanthum* is derived from ποικίλος, speckled, and ἄνθος, flower.

Pseuderanthemum poecilanthum is a distinct species easily recognized by its glandular inflorescence and orchidlike blossoms.

5. **Pseuderanthemum ellipticum** Turrill

Pseuderanthemum ellipticum Turrill, Kew Bull. 1920: 69. 1920. Two cotypes are cited by Turrill, one collected in lanes and paths between coffee plantations at Fusagasugá, Department of Cundinamarca, Colombia, April, by Mrs. J. A. Tracey, the other in forest shade at Arizal, 1,700 meters altitude, May, by Kalbreyer. The epithet *ellipticum*, elliptic, alludes to the shape of the leaf blades.

Erect herbs 0.5 to 1 m. high or more; upper portion of the stem subquadrangular, rather densely hirsute, the hairs about 0.25 mm. long and more or less appressed, the lower portion of the stem terete and glabrous; leaves 8 or more, borne on the upper portion of the stem, the blades elliptic or elliptic-oblanceolate, up to 8 cm. long and 2.5 cm. wide, acuminate, the tips curved and blunt, narrowed at base and decurrent on the petiole, glabrous above, the costa and lateral nerves barely conspicuous, the cystoliths conspicuous under a lens, the lower surface glabrous except the costa and veins, these rather sparingly puberulous and conspicuous, the tertiary veins coarsely reticulate, the cystoliths less conspicuous than above; petioles up to 1 cm. long, channeled, puberulous; flowers several, crowded in clusters in a narrow terminal raceme up to 16 cm. long, the rachis and peduncle (about 6 cm. long) rather densely hirsute, the hairs barely 0.5 mm. long, loosely appressed or ascending, the first internode 1.5 cm. long, the others successively shorter, the lowermost pair of bracts borne at about the middle of the peduncle, linear-subulate, 6.5 mm. long, about 1 mm. wide at base, carinate, the keel and margins sparingly ciliate, the bracts subtending the flower clusters similar but smaller, 3 to 4 mm. long; bractlets subulate, 1.5 mm. long, ciliate; pedicels up to 2 mm. long, glandular-puberulous; calyx glandular-puberulous, the hairs spreading, up to 0.25 mm. long, the calyx tube about 1 mm. long, the segments lance-linear, acute, 6 to 7 mm. long, obscurely nerved; corolla white, about 2 cm. long, puberulous, the hairs spreading, up to 0.25 mm. long, the tube about 12 mm. long, slightly curved, 1.5 mm. broad at base, 2.5 mm. broad at throat, the upper portion slightly ampliate, the lobes ovate, subequal, rounded, about 6.5 mm. long and 3 to 4.5 mm. wide; stamens inserted at about the middle of the tube, the filaments 1.5 mm. long, the anthers about 2 mm. long, the lobes minutely apiculate at base; staminodes subulate, 0.5 mm. long; ovary about 2 mm. long,

glabrous, the style about 1 cm. long, the lower portion minutely hirsute; mature capsules not seen.

The specimens cited were collected at altitudes from 1,100 to 2,300 meters.

CALDAS: Tabeja, west of Armenia, *Pennell, Killip, & Hazen* 8630. (GH, NY).

CUNDINAMARCA: Albán, *Guevara-Amórtegui* 267 (US). Forest above Fusagasugá, *Pennell* 2700 (GH, NY, US). Between the quebradas of La María and La Victoria, Sasaima, vicinity of San Bernardo, *García-Barriga* 12589 (US). Wooded border of Laguna de Pedro Palo, Municipio de Tena, *Uribe-Uribe* 1754 (US).

6. **Pseuderanthemum ewanii** Leonard, sp. nov. FIGURE 111

Suffrutex, caulibus parce ramosis, deorsum teretibus, sursum subquadrangularibus, aliquanto hirtellis; lamina foliorum oblongo-elliptica, breviter subacuminata (apice ipso obtuso), basi angustata, in petiolum decurrens, subchartacea, integra vel undulata, supra subnitida, glabra, costa et venis obscuris, cystolithis prominentibus, in costa parallelis, subtus glabra (glandulis rotundis, sessilibus parce dissitis exceptis), costa et venis lateralibus prominentibus aliquanto hirtellis, venulis crasse reticulatis; petoli aliquanto breves; racemus angustus, terminalis, interruptus, pedunculo et rhache dense hirtellis; bracteae anguste lanceolatae, falcatae, carinatae, hirtellae; bracteolae lanceolatae, parvae, acutae, subcarinatae, hirtellae; pedicelli graciles, teretes, pilis subbrunneis, patulis, glandulosis et eglandulosis intermixtis praediti; calycis segmenta angusta, acuminata, hirtella, basi pilis glandulosis et eglandulosis intermixtis praedita; corolla pallidorosea, minute pubescens, marginibus loborum glabris, lobis patulis, ovatis, obtusis vel rotundatis; stamina inclusa; staminodia parva, curvata; ovarium et stylus glabri; capsulae ignotae.

Sparingly suffrutescent plants up to 1 meter high; stems terete below, subquadrangular above, moderately hirtellous, the hairs curved, ascending, about 0.25 mm. long; leaf blades oblong-elliptic, up to 13 cm. long and 4.5 cm. wide, short-subacuminate (the tip obtuse), narrowed at base and decurrent on the petiole, subchartaceous, entire or undulate, the upper surface subnitid, glabrous, the venation obscure, the cystoliths prominent, 125 to 175 μ long, those on the costa parallel, the lower surface with scattered sessile glands, otherwise glabrous, except the costa and lateral veins (5 or 6 pairs), these rather prominent, moderately hirtellous, the hairs appressed or ascending, about 0.25 mm. long, the veinlets coarsely and rather prominently reticulate; petioles up to 2 cm. long, hirtellous; raceme narrow and spikelike, terminal, up to 20 cm. long, the peduncle up to 9 cm. long, the lowermost internode 3 cm. long, the others successively shorter toward the tip, the peduncle and rachis rather densely hirtellous, the hairs more or less spreading, up to 0.5 mm. long, the flowers crowded into fascicles

of 10 to 15 flowers each at the nodes of the inflorescence; floral bracts narrowly lanceolate, long-acuminate, falcate, up to 6 mm. long, carinate, 1.5 mm. wide at base, hirtellous; bractlets lanceolate, up to 3 mm. long, 0.5 mm. wide at base, acute, subcarinate, hirtellous; pedicels up to 4 mm. long, terete, densely puberulous, the hairs brownish, spreading, up to 175 μ long, many of them gland-tipped; calyx segments up to 6 mm. long, 1 mm. wide at base, thence gradually narrowed to the slender tip, hirtellous, some of the hairs toward the base

FIGURE 111.—*Pseuderanthemum ewanii* Leonard (*Ewan* 15629): *a*, Tip of plant; *b*, leaf blade; *c*, bract; *d*, bractlet; *e*, calyx; *f*, pubescence of lower portion of calyx segment. (*a*, *b*, Half natural size; *c-e*, twice natural size; *f*, 20 times natural size.)

of the segments gland-tipped; corolla 2 cm. long, pale pink, finely pubescent but the margins of the lobes glabrous, the tube 2 mm. broad at base, enlarged to 2.5 mm. and again narrowed to 1.5 mm. at 5 mm. above base, the throat 3 mm. broad, the lobes spreading, ovate, up to 7 mm. long and 5 mm. wide, obtuse or rounded at tip; stamens included, about 3 mm. long; staminodes 0.75 mm. long, curved; ovary and style glabrous, the style about 12 mm. long; capsules not seen.

Type in the Tulane University Herbarium, collected on moist slope above stream in relict mountain rain-forest, Quebrada Chiniata, 7 km.

east of Hilo, Department of Cundinamarca, Colombia, 2,430 meters altitude, May 1, 1944, by Joseph A. Ewan (No. 15629).

7. **Pseuderanthemum pennellii** Leonard, sp. nov. FIGURE 112

Herba suffrutescens, caulibus subquadrangularibus, sursum plus minusve bifariam pilosis, deorsum glabratis; lamina foliorum oblongo-lanceolata, acuminata (apice ipso obtuso), basi angustata, in petiolum decurrens, marginibus integris vel undulatis, supra glabra vel parce hirtella, subtus mediocriter hirtella, pilis appressis, praecipue in costa et venis positis, cystolithis nigris; petioli plus minusve hirtelli; racemi simplices vel bifurcati, floribus (1–6) in fasciculis dis-

FIGURE 112.—*Pseuderanthemum pennellii* Leonard (*Pennell* 10684): *a*, Tip of plant; *b*, node of inflorescence; *c*, bract; *d*, bractlet; *e*, calyx; *f*, pubescence of calyx; *g*, corolla; *h*, stamen and staminode. (*a*, Half natural size; *b-e*, *h*, twice natural size; *f*, about 22 times natural size; *g*, natural size.)

positis; pedunculi et rhaches hirtelli, pilis brunnescentibus; bracteae et bracteolae subulatae, carinatae, parce hirtellae, pilis pro parte glandulosis; calycis segmenta anguste triangularia, hirtella, pilis rectis et patulis, pro parte glandulosis; corolla pallide violacea, pubescens, lobis ovatis, rotundatis; filamenta glabra; staminodia minuta.

Herbs up to 30 cm. high or more, suffrutescent at base; stems subquadrangular, the angles rounded, the lower portions glabrate, the upper parts pilose, the hairs about 0.75 mm. long, confined chiefly to two lines; leaf blades oblong-lanceolate, drying dark olive, up to 11 cm. long and 3.2 cm. wide, acuminate (the tip itself blunt), gradually narrowed at base and decurrent on the petiole, the margins entire or undulate, the upper surface glabrous or sparingly hirtellous, the lower

surface moderately hirtellous, the hairs appressed and confined chiefly to costa and veins (7 or 8 pairs), these rather prominent, the cystoliths blackish and inconspicuous except under lens; petioles 1 to 2 cm. long, more or less hirtellous; flowers borne in fascicles (1 to 6 flowers each) in simple or forked spikelike racemes up to 10 cm. long, or longer at maturity, the peduncles up to 4 cm. long, these and the rachis hirtellous, the hairs about 0.25 mm. long, upwardly ascending, brownish, the lower internodes about 1.5 cm. long (flowering stage), the others successively shorter toward tip of raceme, the lower pair of bracts lance-subulate, up to 6 mm. long and 1 mm. wide at base, carinate, the others gradually reduced in size toward tip of spike, the bractlets similar but much smaller, both bracts and bractlets rather sparingly hirtellous; pedicels up to 3.5 mm. long, hirtellous, the hairs spreading, up to 175 μ long, some of the shorter ones gland-tipped; calyx 4.5 mm. long, the segments narrowly triangular, 4 mm. long, 1 mm. wide at base, hirtellous, the hairs straight, spreading, 75 to 100 μ long, some of them glandular; corollas pale "hortense violet" (*Pennell*), 15 mm. long, pubescent (hairs spreading, up to 175 μ long), the tube 3 mm. broad at mouth, the lobes ovate, 3.5 mm. long, 2.5 to 3 mm. wide, rounded; stamens about 4 mm. long, the filaments glabrous, the anthers 1.25 mm. long, 0.75 mm. wide, the staminodes minute, 0.3 mm. long; capsules not seen.

Type in the U. S. National Herbarium, No. 1143046, collected at edge of woods near San Clemente, Department of Caldas, Colombia, 1,800 to 2,200 meters altitude, September 16, 1922, by Francis W. Pennell (No. 10684). An isotype is in the Gray Herbarium.

Another specimen of this species is Mutis' No. 1500 (US).

Pseuderanthemum pennellii closely resembles *P. ellipticum* Turrill, differing chiefly in its violet flowers, those of *P. ellipticum* being a pure white.

8. Pseuderanthemum lanceum (Nees) Radlk.

Eranthemum lanceum Nees in DC. Prodr. 11: 451. 1847. Type collected at Cuello, Department of Tolima, Colombia, by Goudot (Hooker Herbarium, Kew). The specific epithet, *lanceum*, lance or spear, alludes to the shape of the leaf blades.

Pseuderanthemum lanceum Radlk. Sitzungsb. Math. Phys. Kl. Akad. Wiss. München 13 286. 1883. Based on *Eranthemum lanceum* Nees.

Medial leaf blades lanceolate, 7.5 to 9 cm. long, 12.5 to 15 mm. wide, acuminate, gradually narrowed to base and decurrent on the petiole, glabrous above, the costa on the lower surface scabrous, the lower blades a little shorter and wider than the upper; petioles short; flowers borne in short axillary and terminal spikes; bracts, at least the lower, lanceolate or linear; calyx short, glabrous, the segments subulate; corolla 10.5 mm. long, white; capsule 12.5 mm. long.

No specimens seen. Description compiled from the original.

9. Pseuderanthemum sneidernii Leonard, sp. nov. FIGURE 113

Suffrutex, caulibus ascendentibus, subquadrangularibus, sursum gracilibus, parce puberulis, deorsum glabratis albidis, crassis; lamina foliorum lanceolata vel oblongo-lanceolata, acuta vel acuminata (apice ipso obtuso, plus minusve curvato), basi angustata vel rotundata, subauriculata, marginibus integris vel undulatis, supra glabra, cystolithis minutis subpunctiformibus, subtus puberula, pilis subappressis, minutis, brunnescentibus; petioli breves, glabri vel parce puberuli; paniculae terminales, pedunculis et internodiis leviter complanatis, parce

FIGURE 113.—*Pseuderanthemum sneidernii* Leonard (*Sneidern* 5042): *a*, Inflorescence; *b*, leaf; *c*, pubescence of rachis; *d*, node of inflorescence to show bracts and bractlets; *e*, calyx; *f*, calyx segment; *g*, corolla; *h*, stamen and staminode; *i*, valve of capsule. (*a*, *b*, Natural size; *c*, about 15 times natural size; *d*, *e*, *g*, *i*, twice natural size; *f*, 5 times natural size; *h*, 3 times natural size.)

puberulis, floribus solitariis vel fasciculatis; bracteae et bracteolae parvae, subulatae, glabrae vel parce puberulae; calycis segmenta anguste triangularia, acuta, parce puberula; corolla alba(?), tubo angusto, subcylindrico, limbo patulo, lobis ovatis, subobtusis; stamina glabra; staminodia minuta, sigmoidea; semina plana, verrucosa; retinacula apice tenuia et truncata.

Suffrutescent herbs up to 30 cm. high or more; stems ascending, subquadrangular, the upper portions slender, 1.5 mm. in diameter, sparingly puberulous, the older portions thickish, up to 3.5 mm. in diameter, whitish, glabrate; leaf blades lanceolate or oblong-lanceo-

late, the lowermost leaves up to 8 cm. long and 3 cm. wide, early deciduous, the upper leaves smaller and persistent, up to 5.5 cm. long and 1.8 cm. wide, all acute to acuminate (the tip itself blunt and more or less curved), narrowed or rounded, and more or less auriculate at base, the margins entire or undulate, the upper surface glabrous, the cystoliths numerous, minute and subpunctiform, the lower surface puberulous, the hairs subappressed, brownish, about 175 to 375 μ, long, the venation (lateral veins 6 or 7 pairs) more prominent beneath than above; petioles up to 2 mm. long, glabrous or sparingly puberulous; flowers borne in terminal panicles up to 10 cm. long and 5 cm. broad, the peduncles up to 2.5 cm. long, the lowermost internodes about 15 mm. long, the others successively shorter toward tip of inflorescence, both peduncles and rachis slightly flattened, sparingly puberulous, the flowers solitary or several, borne in bracted fascicles, the bracts subulate, the largest and lowermost pair about 2 mm. long; bractlets similar, up to 1 mm. long, both bracts and bractlets carinate, glabrous or bearing a few minute hairs; pedicels slender, up to 2 mm. long, puberulous; calyx 2 mm. long, the segments narrowly triangular (their tips slenderly acute), 0.5 mm. wide at base, sparingly puberulous; corolla about 1 cm. long, white(?), minutely puberulous or the lobes glabrous, the tube narrow, subcylindric, 1.5 mm. in diameter, the limb spreading, the lobes ovate, obtusish, about 4 mm. long and 3 mm. wide; stamens 3 mm. long, attached at 3 mm. above base of corolla tube, glabrous, the filaments slender, the anthers slightly more than 1 mm. long, 0.75 mm. broad, the staminodes minute, filiform, 0.5 mm. long, more or less sigmoid; capsules clavate, puberulous, about 15 mm. long, 4-seeded, the seed-bearing portion about 8 mm. long, 4 mm. broad and 2 mm. thick; seed light brown, flattened, about 3 mm. in diameter, verrucose; retinacula 3 mm. long, curved, thin and truncate at tip.

Type in the U. S. National Herbarium, No. 1954100, collected at Pueblo Rico, Department of Caldas, Colombia, 1,700 to 1,900 meters altitude, February 15, 1946, by Kjell von Sneidern (No. 5042).

The salient characters of *Pseuderanthemum sneidernii* are its small, lanceolate leaves, graceful panicles, minute calyx, and broad-limbed corollas abruptly contracted to narrow subcylindric tubes. The color of the flower is not apparent in dried material. It is probably white but possibly faint purple.

10. **Pseuderanthemum atropurpureum** (Bull) Bailey

Eranthemum atropurpureum Bull, Gard. Chron. **1:** 619. 1875, not Hook, f. 1902. Type grown in the Establishment for New and Rare Plants, King's Road, Chelsea, London, S. W., by William Bull. Although publishing the species in an advertisement, Mr. Bull gives an adequate description and, inasmuch as the Gardener's Chronicle is a periodical well known to botanists and available in most botanical libraries, Dr. L. H. Bailey agrees that *Eranthemum atropurpureum* is a legitimate name. (Gentes Herb. **4:** 351.

1940). The specific epithet alludes to the purple leaf blades (*ater*, dark, and *purpureum*, purple.)

Pseuderanthemum atropurpureum Bailey, Gentes Herb. 1: 130. 1923. Based on *Eranthemum atropurpureum* Bull.

Shrubs or small trees up to 2 meters high; stems glabrous except for a tuft or band of small yellowish hairs borne on or near the stipular ring, the cystoliths subpunctiform; leaf blades ovate or oval to oblong, up to 15 cm. long and 7 cm. wide, short-acuminate to obtuse and apiculate at apex, narrowed at base, purple, glabrous, the margins entire, undulate or sometimes obscurely lobed, both surfaces bearing numerous minute subpunctiform cystoliths; petioles up to 1.5 cm. long, glabrous; flowers rather numerous, crowded in subsessile fascicles, these forming narrow terminal racemes or sparingly branched panicles, the peduncles (usually up to 4 cm. long), rachis and pedicels (up to 6 mm. long) glabrous or nearly so; bracts oblong, the lowermost about 5 mm. long and 2.5 mm. wide, the others successively smaller toward the tip of the inflorescence, all ciliolate; calyx segments narrowly triangular, up to 2.5 mm. long and 1 mm. wide at base, acute, ciliolate; corolla 15 to 20 mm. long, glabrous, purple or white with purple spotted throat, the limb 15 to 20 mm. broad, the lobes ovate, about 1 cm. long and 7 mm. broad, rounded; ovary glabrous; mature capsules not seen.

VERNACULAR NAME: San Joaquín (*Ariste-Joseph* s. n.); San José (*Dugand* 3605).

The native country of *Pseuderanthemum atropurpureum* is not definitely known, but was probably somewhere in Polynesia. It is found frequently in tropical America, either under cultivation or as an escape. Pickel (No. 2361, Brazil) states on his label that the capsules are purple.

ATLÁNTICO: Barranquilla *Bro. Elias* 143 (US); 234 (US); *Bro. Paul* 25 (US), Miramar, Puerto Colombia, *Dugand* 3605 (US).

BOLÍVAR: Cartagena, *Bro. Apolinar-Angel* 762 (US); *Bro. Hilarino-Angel* 109 (US).

CUNDINAMARCA: Girardot, *Pérez-Arbeláez* 385 (US). La Esperanza, *Pérez-Arbeláez* 3148 (US). La Mesa to San Javier, *García-Barriga* 12049 (US).

TOLIMA: Honda, *Bro. Ariste-Joseph* A375 (US); s. n. (Bog).

11. **Pseuderanthemum potamophilum** Leonard, sp. nov. FIGURE 114

Frutex, caulibus glabris vel sursum puberulis, cystolithis numerosis, minutis, subpunctiformibus; lamina foliorum oblonga-elliptica, acuta vel subacuta, basi sensim angustata in petiolum decurrens, supra glabra, costa et venis obscuris, subtus glabra, costa et venis aliquanto prominentibus, pilis paucis, minutis, in costa positis, cystolithis numerosis, linearibus, conspicuis; petioli breves, parce puberuli; thyrsi angusti, terminales, floribus in fasciculis condensatis positis, pedunculo et rhache pubescentibus; bracteae et bracteolae parvae, lineares, cilia-

tae; pedicelli breves, puberuli; calycis segmenta lineari-lanceolata, ciliata; corolla alba vel pallide lilacina, minute puberula, lobis subaequalibus, patulis, anguste ovatis, apice rotundatis vel leviter emarginatis; stamina glabra; staminodia minuta, filiformia; ovarium parce puberulum.

Shrubs; stems glabrous or the uppermost internodes puberulous, the cystoliths numerous, minute, subpunctiform, conspicuous under a

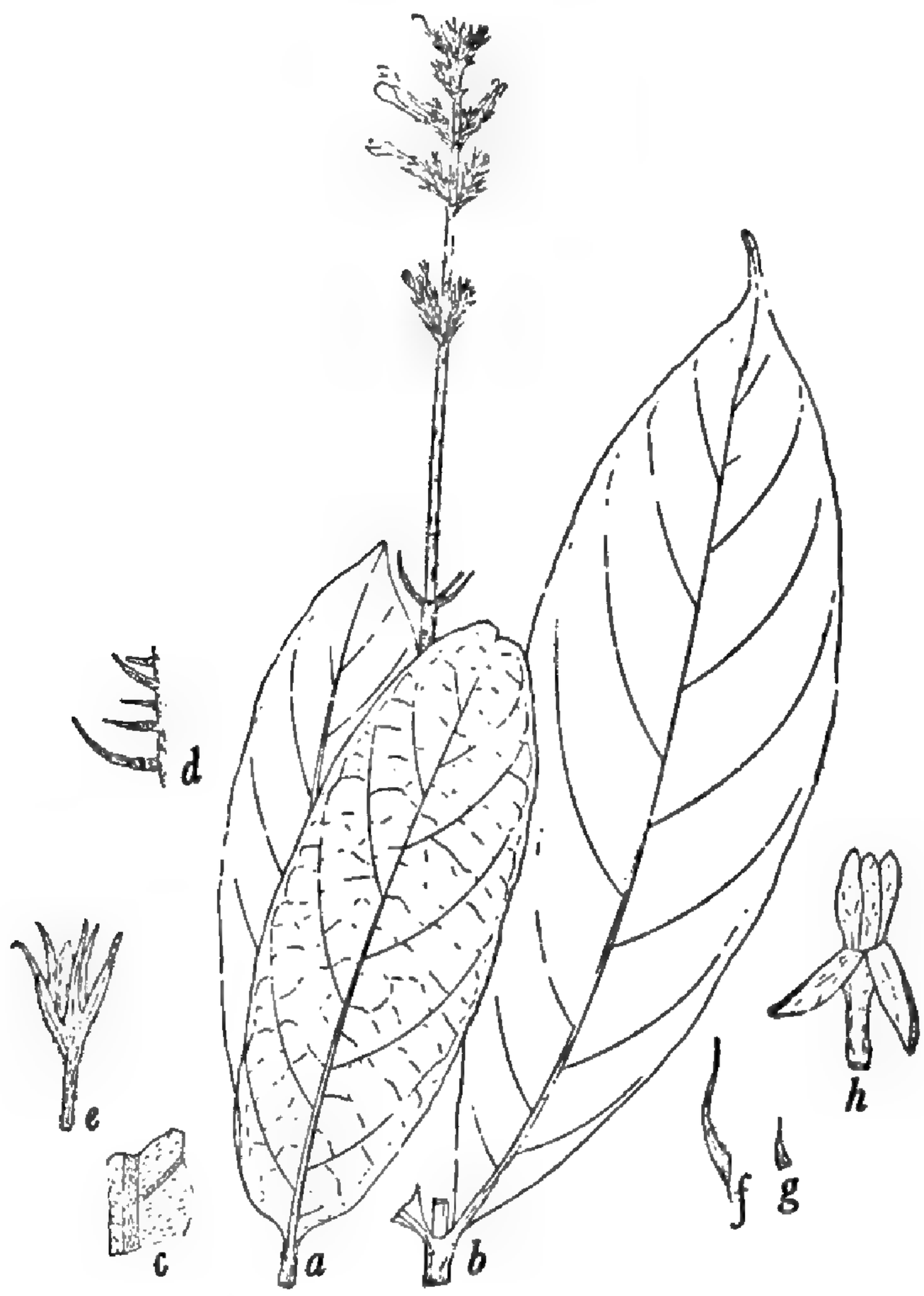

FIGURE 114.—*Pseuderanthemum potamophilum* Leonard (*a*, *b*, *d*, *Cuatrecasas* 11086; *c*, *e–h*, *Cuatrecasas* 10629): *a*, Tip of plant; *b*, leaf and one of the lower nodes; *c*, small portion of leaf blade (lower surface) enlarged to show cystoliths; *d*, pubescence of rachis; *e*, calyx; *f*, bract; *g*, bractlet; *h*, corolla. (*a*, *b*, Half natural size; *c*, *h*, natural size; *d*, about 18 times natural size; *e*, 5 times natural size; *f*, *g*, twice natural size.)

lens; leaf blades oblong-elliptic, up to 13.5 cm. long and 5.5 cm. wide, acute or subacuminate (the tip itself blunt), gradually narrowed to base and decurrent on the petiole, thin, entire or undulate, the upper surface glabrous, the costa impressed, this and the lateral veins (6 to 8 pairs) scarcely prominent, the lower surface glabrous with a few minute hairs borne on the costa, the venation rather prominent, the cystoliths of both surfaces numerous, linear, about 0.25 mm. long, conspicuous under a lens; petioles up to 5 mm. long, sparingly puberulous; racemes narrow, terminal, spikelike, up to 10 cm. long, peduncled, the

flowers rather numerous, crowded in sessile or short-peduncled fascicles, the peduncle up to 6.4 cm. long and, as is the rachis, rather densely pubescent with whitish, more or less ascending hairs up to 0.25 mm. long, the lower internode about 4 cm. long, the others becoming successively shorter toward tip of raceme, the uppermost flowers becoming contiguous; bracts narrowly linear, the lower pair 5.5 mm. long and 1 mm. wide at base, the others successively smaller toward tip of raceme; bractlets narrowly lanceolate, 1.5 to 2 mm. long, acute or acuminate; calyx about 4 mm. long, the segments narrowly lanceolate, 0.5 mm. wide at base, ciliolate, the pedicels up to 1 mm. long, minutely puberulous; corolla white or pale lilac, minutely puberulous, the tube 12 mm. long, 1.5 mm. broad at base, 2.5 mm. broad at mouth, the lobes subequal, spreading, narrowly ovate, about 1 cm. long and 3.5 mm. wide, rounded or shallowly emarginate at tip; stamens inserted at about the middle of the corolla tube, glabrous, the filaments 1.5 mm. long, slender, the anthers 1.5 mm. long, the staminodes filiform, about 1 mm. long; ovary about 2 mm. long, puberulous; style reaching the mouth of the corolla tube, puberulous, the stigma minute, capitate; capsules not seen.

Type in the Herbario Nacional Colombiano, collected in a wet forest along the Río Putumayo at Puerto Porvenir, Comisaría of Putumayo, Colombia, 230 to 250 meters altitude, November 17, 1940, by J. Cuatrecasas (No. 10629). Fragment of type in the U. S. National Herbarium, No. 1995427.

Cuatrecasas' No. 11086, collected in wet forests of Quebrada de la Hormiga, Río San Miguel, Putamayo, 290 meters altitude, December 16, 1940, is also of this species (Col).

The leaf blades of *Pseuderanthemum potamophilum* are large for the genus and, under a lens, the cystoliths are noticeably numerous and conspicuous on both surfaces of the blades. The species is further marked by the dense, crowded sessile or short-pedunculate fascicles of white or whitish flowers, these forming a narrow, spikelike raceme. The specific epithet is derived from ποταμός, river, and φιλέω, to love.

12. Pseuderanthemum hylophilum Leonard, sp. nov. FIGURE 115

Herba vel frutex gracilis, caulibus subteretibus, deorsum glabris, sursum pubescentibus, pilis ascendentibus, curvatis; lamina foliorum lanceolata, anguste acuminata, basi angustata, subauriculata, firma, integra vel undulata, supra glabra, costa impressa, venis obscuris, subtus parce puberula, pilis praecipue in costa et venis positis, venis prominentibus, cystolithis minutis et inconspicuis; petioli breves, puberuli; racemi terminales, puberuli, angusti, simplices vel bifurcati, pedunculo et rhache pubescentibus, pilis curvatis, ascendentibus, brunnescentibus; bracteae parvae, subulatae, ciliatae; bracteolae minutae, subulatae, ciliatae; calycis segmenta angusta, lanceolata,

acuminata, puberula; pedicelli breves, puberuli, graciles; corolla (immatura) parva, alba (?), pubescens.

Suffrutescent herbs or shrubs up to 1 meter high or more; stems subterete, glabrous below, pubescent at tip, the hairs curved, ascending, about 0.25 mm. long; leaf blades lanceolate, up to 18 cm. long and 4 cm. wide, slenderly acuminate, narrowed gradually from about the middle to base, there abruptly narrowed and subauriculate, drying dark olive-green, firm, entire or undulate, the upper surface glabrous, the costa impressed, the venation obscure, the lower surface sparingly

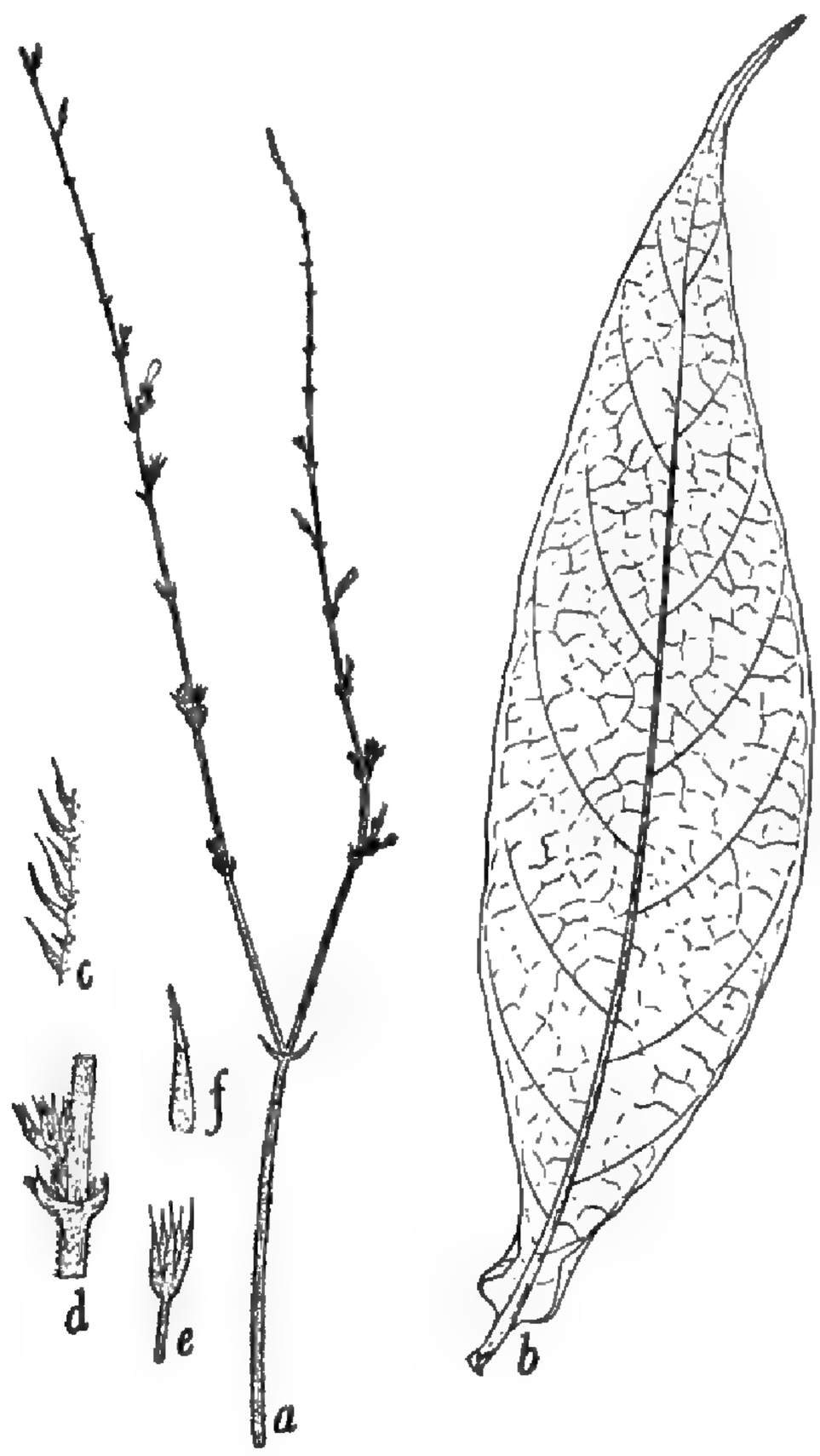

FIGURE 115.—*Pseuderanthemum hylophilum* Leonard (*Cuatrecasas* 15317): *a*, Inflorescence; *b*, leaf; *c*, pubescence of rachis; *d*, node of inflorescence; *e*, calyx; *f*, calyx lobe. (*a*, *b*, Half natural size; *c*, about 10 times natural size; *d*, about 1½ times natural size; *e*, 3 times natural size; *f*, 4 times natural size.)

puberulous, the hairs confined chiefly to the costa and lateral veins (8 to 10 pairs), these rather prominent, the cystoliths minute and inconspicuous even under a lens; petioles up to 1 cm. long, puberulous; flowers solitary or several borne in fascicles in narrow spikelike terminal simple or forked racemes up to 18 cm. long, the peduncle up to 6.5 cm. long, this and the rachis pubescent, the hairs brownish, curved, ascending, about 0.25 cm. long, the lowermost internode of the rachis about 2 cm. long, the others successively shorter toward the tip of the raceme, the lowermost pair of bracts leaflike, narrowly lanceolate, up to 1.5 cm. long, the others subulate, 2 mm. long and about 0.5 mm.

wide at base, ciliate, reduced in size toward tip of raceme; bractlets similar but slightly smaller than the bracts; calyx 3 to 3.5 mm. long, puberulous, the segments narrowly lanceolate, slightly more than 0.5 mm. wide at base, acuminate at tip; pedicels slender, about 2 mm. long, puberulous; corolla (immature) about 8 mm. long, white (?), pubescent, the hairs more or less spreading, about 0.3 mm. long; capsules not seen.

Type in the U. S. National Herbarium, No. 1852697, collected in woods at La Elsa, on the right bank of Río Digua, Department of El Valle, Colombia, 1,000 to 1,200 meters altitude, November 9, 1943, by J. Cuatrecasas (No. 15317). An isotype is in the herbarium of the Chicago Natural History Museum.

Such characters as its slender, simple or forked racemes and its lanceolate, slenderly acuminate, chartaceous leaf blades serve to identify *Pseuderanthemum hylophilum.* Only immature corollas are present on the type material; the color of these is not apparent. The specific epithet is derived from ὕλη, forest, and φιλέω, to love.

13. Pseuderanthemum chaponense Leonard, sp. nov. FIGURE 116

Suffrutex, caulibus deorsum teretibus, glabris, sursum subquadrangularibus, aliquanto puberulis, pilis sursum curvatis; lamina foliorum oblongo-ovata, acuminata (apice plus minusve curvato), basi angustata, aliquanto firma, integra vel undulata, supra glabra, costa et venis lateralibus obscuris, subtus parce hirtella, pilis ascendentibus, costa et venis lateralibus aliquanto prominentibus; petioli glabri vel puberuli; thyrsi angusti, interrupti, in ramis axillaribus terminales vel paniculam terminalem formantes, pedunculis et rhachibus puberulis, pilis minutis, curvatis; bracteae infimae foliaceae; bracteae supremae lineares, acutae, parce puberulae et ciliolatae; bractolae subulatae, acuminatae, subglabrae vel parce ciliolatae; fasciculi 4–8-flori; pedunculi breves, puberuli; calycis segmenta linearia, acuminata, glabra vel parce ciliolata et hirtella; corolla alba, tubo angusto, basi glabro, sursum dense glanduloso-papilloso, lobis oblongis subobtusis; stamina inclusa, filamentis brevibus, glabris; staminodia brevia; capsulae ignotae.

Suffrutescent plants up to 1 meter high or more; stems simple or branched, the lower parts terete and glabrous, up to 2.5 cm. in diameter, the upper parts subquadrangular, moderately puberulous with curved hairs about 0.25 mm. long; leaf blades oblong-ovate, up to 9 cm. long and 5 cm. wide, acuminate, the tip often curved, narrowed at base, moderately firm, entire or undulate, the upper surface glabrous, the venation obscure, the cystoliths minute, blackish, 125μ long, the lower surface sparingly and inconspicuously hirtellous, the hairs ascending, about 100μ long, the costa and lateral veins (5 or 6 pairs) more prominent than above; petioles mostly 1 to 3 cm. long, 1 mm. thick, glabrous

or puberulous with curved hairs; panicles up to 6 cm. long and 1.5 cm. broad, interrupted, the peduncle up to 4 cm. long, the lowermost internode about 2 cm. long, the others successively shorter toward tip, both peduncles and rachises puberulous with upwardly curved hairs up to 175μ long, the lowermost branches of the inflorescence subtended by leaves appreciably smaller than the stem-leaves, the uppermost flower clusters subtended by linear bracts up to 4.5 mm. long and 0.75 mm. wide at base, sparingly puberulous and ciliolate; bractlets subulate, up to 2 mm. long and 0.5 mm. wide at base, acuminate, subglabrous,

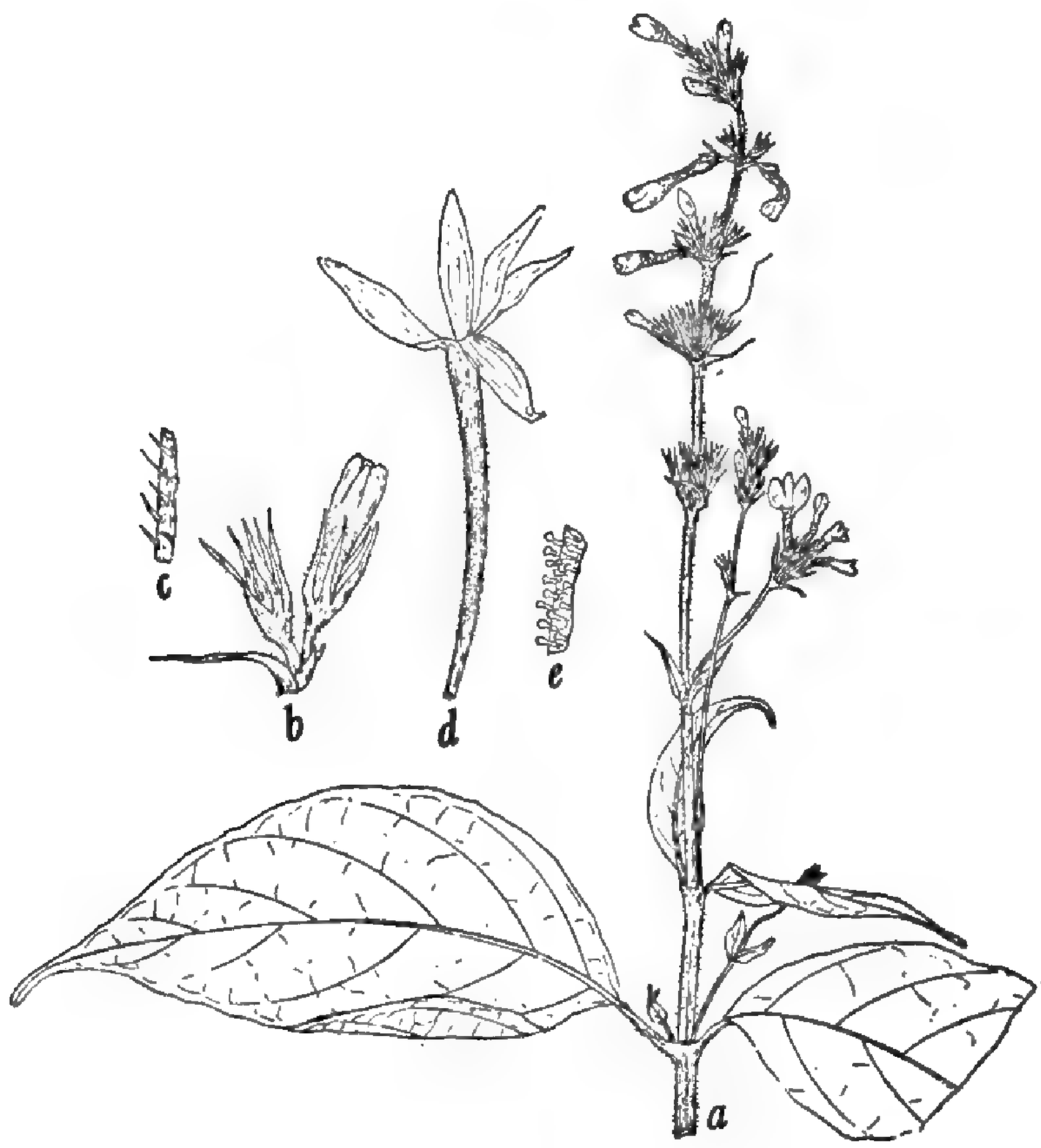

FIGURE 116.—*Pseuderanthemum chaponense* Leonard (*Lawrance* 441): *a*, Tip of plant, half natural size. *Pseuderanthemum chaponense* f. *lilacinum* Leonard (*Lawrance* 501): *b*, Portion of fascicle showing bract, bractlet and calyx; *c*, pubescence of calyx segment; *d*, corolla; *e*, pubescence of corolla tube. (*b*, *d*, 3 times natural size; *c*, 20 times natural size; *e*, 30 times natural size.)

sparingly ciliolate; flowers usually about 4 to 8 to a cluster, the pedicels 1 mm. long, sparingly puberulous; calyx 4 mm. long, the segments linear, 3 to 4.75 mm. long, 0.5 mm. wide at base, acuminate, glabrous or sparingly ciliolate and hirtellous, the hairs up to 125μ long; corolla white, the tube narrow, 0.75 mm. broad at base, gradually enlarged to 1.5 mm. at mouth, the basal portion glabrous (1.5 mm.), the remainder of the tube densely glandular-papillose, the lobes oblong, about 4 mm. long and 1 to 1.5 mm. wide, subobtuse; stamens included, 3 mm. long, the filaments 1.5 mm. long, glabrous; staminodes minute, barely 0.25 mm. long; ovary glabrous; mature capsules not seen.

Type in the herbarium of the New York Botanical Garden, collected on bank of stream in forest, El Umbo region, the vicinity of Mount Chapón in the western part of the Department of Boyacá, Colombia, "3,000 ft." altitude, September 19, 1932, by A. E. Lawrance (No. 441).

Pseuderanthemum chaponense can be easily recognized by the slender, densely glandular-papillose corolla tube, and narrow corolla lobes.

13a. **Pseuderanthemum chaponense** Leonard f. **lilacinum** Leonard, f. nov.

A forma typica corolla lilacina recedit.

Type in the herbarium of the New York Botanical Garden, collected on the bank of a stream in dense forest in El Umbo region, western part of the Department of Boyacá, Colombia, "2,500 ft." altitude, October 1, 1932, by A. E. Lawrance (No. 501).

The type specimen of *Pseuderanthemum chaponense* f. *lilacinum* was collected from a plant "2–4 ft." high with stems up to "½ inch" in diameter. Mr. Lawrance states that it was "beautiful in the forest and similar to lilac." The label on *Lawrance* 441, the typical white-flowered form, states that the plant was 15–20 feet high, with stems up to an inch in diameter. These data are probably erroneous. The specimen indicates that the plant is subherbaceous, slender-stemmed, and probably only a meter high or less.

14. **Pseuderanthemum stenosiphon** Leonard, sp. nov. FIGURE 117

Herba, caulibus simplicibus, subquadrangularibus, pilosis, pilis septatis, patulis vel ascendentibus; lamina foliorum oblongo-elliptica, plus minusve falcato-acuminata (apice ipso obtuso), basi angustata, aliquanto firma, integra vel undulata, supra glabra, sub lente minute alveolata, cystolithis pluribus, conspicuis, subtus aliquanto hirtella, pilis praecipue in costa et venis prominentibus positis, venulis crasse reticulatis; petioli hirtelli, pilis brunneis, curvatis; paniculae terminales, parce ramosae, fasciculis dispositis, pedunculis et rhachibus hirtellis, pilis ascendentibus, septatis; bracteae infimae foliaceae; bracteae supremae anguste lanceolatae, acutae, glabrae vel parce hirtellae et ciliolatae; bracteolae bracteis similes sed minores; pedicelli graciles, puberuli; calycis segmenta anguste lanceolata, acuta, parce puberula; corolla dilute caerulea, puberula vel marginibus loborum glabra, tubo angusto, limbo lato, lobis ovatis, obtusis vel rotundatis; stamina brevia; staminodia minuta; ovarium puberulum; capsulae ignotae.

Herbs up to 30 cm. high or more; stems simple, subquadrangular, pilose, the hairs septate, spreading or ascending, about 0.5 mm. long; leaf blades oblong-elliptic, up to 11 cm. long and 3.5 cm. wide, more or less falcate-acuminate (the tip itself blunt), narrowed to rounded

at base, moderately firm, entire or undulate, the upper surface glabrous, minutely alveolate under lens, the cystoliths numerous, conspicuous under lens, 175 μ long, the lower surface moderately hirtellous, the hairs ascending or appressed, confined chiefly to costa and veins (6 to 7 pairs), these more prominent than above, the veinlets rather prominently and coarsely reticulate; petioles 1.5 cm. long, hirtellous with brownish, curved hairs; flowers arranged in fascicles of usually 2 to 8 flowers each, forming sparingly branched terminal panicles up to 7 cm. long, the peduncles up to 5.5 cm. long, the lower-

FIGURE 117.—*Pseuderanthemum stenosiphon* Leonard (*Pennell* 4436): *a*, Tip of plant; *b*, leaf; *c*, pubescence of rachis; *d*, bract; *e*, bractlets; *f*, calyx; *g*, pubescence of calyx segment. (*a*, *b*, Half natural size; *c*, 22 times natural size; *d*, *e*, 6 times natural size; *f*, 2½ times natural size; *g*, 20 times natural size.)

most internode 2.5 cm. long, the others successively shorter toward tip, both peduncle and rachis hirtellous, the hairs ascending, up to 0.5 mm. long, septate; bracts subtending the lowermost branches of the inflorescence linear to narrowly lanceolate, leaflike, 1 to 2 cm. long, 1 to 6 mm. wide; bracts subtending the fascicles narrowly lanceolate, up to 3 mm. long, about 1 mm. wide at base, acute, glabrous or sparingly hirtellous and ciliolate; bractlets similar to the bracts, but slightly smaller; pedicels slender, up to 3 mm. long, 0.25 mm. in diameter, puberulous; calyx segments narrowly lanceolate, about 3 mm. long and 0.5 mm. wide, acute, sparingly puberulous; corolla 12

mm. long, white tinged with blue (*Pennell*), puberulous or the lobes glabrous toward margins, the tube narrow, 1.25 mm. broad near base, narrowed at 1.5 mm. above base to 0.75 mm., thence abruptly enlarged from about the middle to 1.5 mm., the limb 8 mm. broad, the lobes ovate, 5 mm. long, subobtuse or rounded; stamens attached at middle of tube, 2 mm. long, the anthers 1.5 mm. long, 0.5 mm. broad, the staminodes 0.5 mm. long; ovary puberulous, mature capsules not seen.

Type in the herbarium of the New York Botanical Garden, collected at edge of forest about Antizales, Department of Bolívar, Colombia, 1,500–1,800 meters altitude, February 25 or 26, 1918, by Francis W. Pennell (No. 4436).

Pseuderanthemum stenosiphon can be recognized among its close relatives by the bluish flowers with very narrow corolla tubes. Hence the specific epithet, στενός, slender, and σίφων, tube.

15. Pseuderanthemum cuatrecasasii Leonard, sp. nov. FIGURE 118

Frutex, caulibus subscandentibus, subquadrangularibus, glabris vel pilis plus minusve bifariam pilosis; lamina foliorum lanceolata, anguste et aliquando falcato-acuminata, basi angustata, marginibus saepe recurvata, supra subnitida, glabra vel basi hirtella, costa et venis lateralibus aliquanto obscuris, cystolithis minutis et inconspicuis, subtus parce hirtella, pilis praecipue in costa et venis positis, costa et venis aliquanto prominentibus; petioli subtus glabri vel hirtelli, supra pilosi; panicula terminalis, valde ramosa, ramis interruptis, floribus paucis in fasciculis dispositis, pedunculis et rhachibus hirtellis; bracteae infimae parvae, subulatae, glabrae vel parce hirtellae; bracteae supremae parvae, anguste triangulares, glabrae vel subglabrae; bracteolae similes sed minores; pedicelli graciles, puberuli; calycis segmenta anguste triangularia, acuta, glabra vel parce ciliolata; corolla alba, minute puberula, pilis pro parte glandulosis, lobis ovalibus, rotundatis vel obtusis; stamina brevia, filamentis glabris, basi cum staminodium parvum curvatum adnatis; capsulae clavatae, minute puberulae, stipitibus gracilibus; retinacula lanceolata, tenuia, acuta; semina suborbicularia, plana, glabra, tuberculata.

Shrubs up to 2 meters high, the branches vinelike, subquadrangular, glabrous or sparingly pilose, the hairs more or less disposed in 2 lines, up to 0.75 mm. long, spreading or ascending, septate, the larger stems glabrous, subnitid, clothed with a light brownish bark; leaf blades lanceolate, up to 12 cm. long and 3 cm. wide, slenderly acuminate or falcate-acuminate, narrowed at base, the edges often recurved (giving the leaf the appearance of being hastate), rather firm, entire or undulate, the upper surface subnitid, glabrous or hirtellous at base, the costa and lateral veins (5 or 6 pairs) barely prominent, the cystoliths minute and inconspicuous, the lower surface sparingly hirtellous, the hairs about 0.25 mm. long, ascending or subappressed, confined chiefly

to costa and lateral veins, these more prominent than above; petioles 5 to 10 mm. long, glabrous or hirtellous or the channels pilose with spreading straight or curved hairs up to 0.75 mm. long; panicles terminal, rather freely branched, up to 12 cm. long and 9 mm. broad, the flowers more or less secund, 2 to 8 at each node, the peduncle (up to 8 cm. long) and rachis (lowermost internode 2 or 3 cm. long, the

FIGURE 118.—*Pseuderanthemum cuatrecasasii* Leonard (*a–d, g, Cuatrecasas* 21646; *e, f, h, Cuatrecasas* 23848): *a*, Panicle; *b*, portion of panicle to show bract, bractlets and calyx; *c*, node with leaf blade; *d*, pubescence, edge of calyx segment; *e*, corolla; *f*, pubescence of corolla; *g*, stamen and staminode; *h*, valve of capsule. (*a, c*, Half natural size; *b*, twice natural size; *d*, 34 times natural size; *e*, 1½ times natural size; *f*, 23 times natural size; *g*, 4 times natural size; *h*, natural size.)

others successively shorter toward tip) hirtellous with ascending septate hairs up to 0.75 mm. long; bracts subtending the lowermost branches of the inflorescence subulate, 4 mm. long, 0.75 mm. wide at base, glabrous or sparingly hirtellous; bracts subtending the flower clusters narrowly triangular, 2 mm. long, 0.5 mm. wide at base, acute, glabrous or nearly so, the bractlets similar to the bracts but slightly smaller; pedicels slender, 2 to 3 mm. long, puberulous; calyx segments narrowly triangular, 2 mm. long, 0.5 mm. wide at base, acute, glabrous

or sparingly ciliolate; corallas white (or the buds purplish white) (*Cuatrecasas*), 12 mm. long, minutely puberulous with glandular and longer eglandular hairs intermixed, the tube 1.5 to 2 mm. broad at base, slightly narrowed at 2 mm. above base, thence gradually enlarged to 3 mm. at throat, the lobes oval, 5 to 6 mm. long, 2.5 to 3.25 mm. wide, rounded or obtuse; stamens attached at 4.5 mm. above base of corolla tube, 3 mm. long, the anthers 1.25 mm. long and 0.75 mm. broad, the filaments glabrous, united at base with curved staminodes 0.5 mm. long; capsules clavate, 18 mm. long, 3.5 mm. in diameter, the stipe slender, 11 mm. long, 1 mm. broad at base, 2.5 mm. broad at base of seed-cavity, the surface of the capsule sparingly and minutely puberulous, the retinacula lanceolate, thin, 2.5 mm. long, 0.75 mm. wide at base, gradually narrowed to an acute tip; seeds 2 in each cavity, suborbicular, flat, about 3 mm. in diameter, glabrous, the surface strongly tuberculate.

Type in the U. S. National Herbarium, No. 1950028, collected at Los Cárpatos in the valleys of the Cali and Pichindé rivers, Department of El Valle, Colombia, 1,900–2,100 meters altitude, September 23, 1946, by J. Cuatrecasas (No. 21646).

Cuatrecasas' No. 23848 (US) (fruiting specimen), collected below Queremal along the Río San Juan in the Río Dígua Valley, El Valle, 1,300–1,500 meters altitude, March 19, 1947, is also of this species.

Pseuderanthemum cuatrecasasii is very closely related to *P. dawei* Turrill and may prove after more material can be examined to be only a form or variation of that species. It differs chiefly in the size of the plant and the color of the flower.

16. **Pseuderanthemum dawei** Turrill

Pseuderanthemum dawei Turrill, Kew Bull. **1920**: 69. 1920. Type in the Kew Herbarium, collected in the Cauca Valley, Colombia, July 5, 1920, by M. T. Dawe (No. 847). Isotypes in the U. S. National Herbarium (No. 142565) and the herbarium of the New York Botanical Garden.

An erect herb; tips of the stems sparingly hirsute, the hairs about 0.25 mm. long, arranged more or less in two rows, the cysotoliths subpunctiform, inconspicuous; leaf blades oblong-elliptic, 8 to 16 cm. long, 2.5 to 5.7 cm. wide, slenderly acuminate (the tip itself blunt, more or less curved), narrowed at base and decurrent on the petiole, the upper surface glabrous, bearing subpunctiform cystoliths conspicuous under a lens, the costa (impressed) and lateral veins (about 9 pairs) rather prominent, the lower surface glabrous except costa and veins, these prominent and sparingly puberulous, the hairs curved, the cystoliths less abundant and conspicuous than those of the upper surface; petioles (unwinged portions) up to 1.2 cm. long, the channel sparingly puberulous, glabrous beneath; flowers one to several, borne in fascicles in sparingly branched terminal panicles about 16 cm. long and 12 cm.

broad, the peduncles up to about 8 cm. long, the lower internode 1 to 1.5 cm. long, the others successively shorter toward the tips of the panicle, both peduncle and rachises more or less flattened, sparingly puberulous, the hairs curved; bracts linear-lanceolate, acute, glabrous or nearly so; bractlets minute, linear-lanceolate, barely 1 mm. long; calyx segments lanceolate, 2.5 mm. long, 0.5 mm. wide at base, puberulous, 3-nerved; pedicels up to 2 mm. long, puberulous; corolla purplish, 7 to 8 mm. long, puberulous, some of the hairs glandular, the tube 1.5 mm. broad at base, 2.3 mm. broad at mouth, the lobes subequal, elliptic-ovate, 2.5 to 3 mm. long, 1.5 to 2 mm. wide, rounded at tip, stamens attached at about the middle of the corolla tube, the filaments about 0.5 mm. long, the anthers 1 mm. long, the staminodes subulate, about 0.25 mm. long; ovary cylindric, about 1.5 mm. long, minutely puberulous; style 3 mm. long, the lower portion puberulous; capsules not seen.

Usually found in wooded ravines or in dense, damp woods of mountain slopes between 1,400 and 1,800 meters altitude. The flowering season extends from June to August. Killip notes that the corollas are purple-red (No. 5692). Lehmann gives the following field note: "Weed with thin weakly ramified stems up to 1 meter in height. Leaves thin, skinny, dark green, with a greasy sheen. Flowers white, softly washed with lilac violet."

EL VALLE: La Cumbre, *Killip* 5692 (US). Roldanillo, *Lehmann* 8534 (K).

EXCLUDED SPECIES

Pseuderanthemum cordatum (Nees) Radlk.

Type collected at Atacamas, Ecuador, by Sinclair. Erroneously cited as from Colombia by Nees (DC. Prodr. **11**: 450. 1847) and from Panama in Index Kewensis.

INDEX

[Synonyms in *italics*. Page numbers of principal entries in **boldface**]

Page

Acanthoideae **119**
Andrographideae 285
Aphanandrium 120, 123
  lehmannianum 120, 123
Aphelandra 119, 120, **127**, 128
  acanthus 129, 141, **142**, 144, 147
  acutifolia 168
  adscendens 129, **158**, 160
  albert-smithii 132, **232**, 233, 234
  alexandri 131, **191**, 192
  anomala 130, **185**, 186, 190
  arborescens 134, **277**, 278, 279
  arisema 131, **200**, 201
  aristei **132**, **228**, 229, 230, 232, 280
  arnoldii 129, **153**
  aurantiaca 130, 164, 166, **168**, 169, 170, 173
  barkleyi 132, **221**, 222, 223
  blandii 133, 259, **267**, 268
  botanodes 129, **155**, 156, 157
  boyacensis 131, **198**, 199, 200
  chaponensis 133, **273**, 174, 275
  cirsioides 139
  colombiensis 131, **196**, 197, 198
  conformis 131, **194**, 195
  craura 131, **207**, 208, 209
  crenata 133, **259**, 260, 261
  crispata 129, **151**, 152
  cuatrecasasii 131, **204**, 205
  daemonia 130, 132, **223**, 225, 226
  deppeana 130, 181, **183**
  dolichantha 131, 204, **206**, 207, 209
  euopla 129, **138**, 139
  fascinator 131, **191**
  fernandezii 133, **270**, 272
  flava 230, **279**
  garciae 133, **256**, 258, 259, 270
  glabrata 133, 254, 256, **261**, 262, 268
  glischrochlamys 130, **186**, 188
  grandis 132, **226**, 227, 228
  haenkeana 183
  hartwegiana 133, **246**, 261, 268
  haughtii 132, 234, **239**, 241
  hodgei 133, 252, **262**, 264
  huilensis 129, **146**, 147
  impressa 130, 168, **175**, 178, 179
  incarnata 132, **242**, 243, 244
  killipii 131, **202**, 203, 204, 205, 206
  lamprantha 130, **176**, 178
  lasia 130, **179**, 180, 181
  lasiophylla 131, **192**, 193
  lawranceae 131, 192, **195**

Aphelandra—Continued — Page

  leiophylla 130, **169**, 170, 171
  lingua-bovis 133, 223, **268**, 270, 275
  lonchochlamys 130, **165**, 166
  longispica 133, 252, **265**, 266, 267
  lyrata 129, **150**
  lyrata γ arguta 150
  lyrata β laxior 150
  lyrata α latibractea 150
  macrophylla 132, **218**, **234**, 236, 237, 239
  melgariensis **280**
  mildbraediana 132, **218**, 220
  mollis 129, **154**, 158
  mutisii 129, **136**, 137
  nana 130, **171**, 173
  ochrolarynx 129, **160**, 162
  parviflora 129, **153**
  parvispica 132, **216**, 218, 237
  pectinata 183
  pharangophila 134, **275**, 276, 277
  phlogea 130, **189**, 190
  phobera 129, **143**, 144, 145
  pilosa 131, **209**, 211, 212
  porphyrocarpa 129, **140**, 141
  porphyrolepis 129, **148**, 149, 150
  prismatica 200
  puberula 130, **166**, 167, 168, 175
  pulcherrima 131, 183, **212**, 216, 218, 220, 226, 228, 262
  quercifolia 129, **150**
  runcinata 129, **134**
  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
  sericophylla 133, **254**, 256
  silvicola 129, **157**, 158
  sinclairiana 243
  sneidernii 130, 167, **174**, 175
  straminea 133, **250**, 252, 264, 267
  taborensis 130, **181**, 182, 183, 277
  trianae 132, **230**, 231, 232
  uribei 130, **162**, 164
  xanthantha 133, **248**, 249, 250
Aphelandreae 119, **120**
Asystasia 120, **287**
  coromandeliana 288
  gangetica **288**
  intrusa 287

Page
Asystasieae 119, **287**
Babosa 207
Canchelahua dulce 125
Cresta de gallo 135, 213
Cyphacanthus 119, 120, **282**
atopus **283**, 284
Encephalosphaera 119, 120, **280**, 286
vitellina 280, **281**
Eranthemum 292
alatum 292
atropurpureum 307, 308
lanceum 305
Gerardia 126
dulcis 126
Graptophylleae 119, **289**
Graptophyllum 289
Hemisandra 127
aurantiaca 127, 168
Imbricatae **119**
Isoglosseae 119
Justicia 127
asystasia 288
cristata 127
gangetica 288
pulcherrima 127, 212
scabra 127
Justicieae 119
Lagochilium 127, 286
maximilianum 127
molle 154
Neriacanthus 119, **120**, 123
grandiflorus **121**, 122
lehmannianus 121, 122, **123**
purdieanus 120, 121, 123
Odontonemeae 119
Pachystachys 120, 289, **290**
albiflora 290
coccinea 291
riedeliana **290**, 291

Page
Picigallo 213
Pié de gallo 213
Pisigallo 213
Pseuderanthemeae 119, **291**
Pseuderanthemum 120, 291, **292**
alatum 295
atropurpereum 293, **307**, 308
chaponense 293, **312**, 313, 314
chaponense f. lilacinum **314**
cordatum 319
cuatrecasasii 293, **316**, 317, 318
cuspidatum 295
dawei 293, **318**
ellipticum 292, **301**, 305
ewanii 292, **302**, 303
haughtii 292, **293**, 294, 295
hylophilum 293, **310**, 311, 312
idroboi 292, **295**, 296, 297
lanceum 293, **305**
leiophyllum 292, **297**, 298, 299
pennellii 292, **304**, 305
poecilanthum 292, **299**, 300, 301
potamophilum 293, **308**, 309, 310
sneidernii 293, **306**, 307
stenosiphon 293, **314**, 315, 316
Rhombochlamydeae 119, **285**
Rhombochlamys 119, **285**, 286
elata 285, 286, **287**
rosulata 160, **285**, 286, 287
Ruellia dulcis 125, 126
San Joaquín 308
San José 308
Stenandrium 119, 120, **124**, 286
corymbosum 124, **125**
dulce **125**, 126
humboldtianum 125, **127**
mandioccanum 124
radicosum 124, **125**
Titirigallo 213

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THE ACANTHACEAE OF COLOMBIA, III

By EMERY C. LEONARD

SMITHSONIAN INSTITUTION
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WASHINGTON, D. C.

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PREFACE

Part I of the Acanthaceae of Colombia, comprising the subfamilies Nelsonioideae, Mendoncioideae, and Thunbergioideae and the five tribes of the first series, Contortae, of the subfamily Acanthoideae, was published as Part 1 of Volume 31, Contributions from the United States National Herbarium, pp. 1-117, June 8, 1951. Part II, Contributions from the United States National Herbarium, Volume 31, Part 2, pp. 119–322, 1953, included the first five tribes of the second series, Imbricatae, of the subfamily Acanthoideae. Part III consists of a treatment of the remaining three tribes of the second series, Imbricatae, of the subfamily Acanthoideae. These tribes consist of 17 genera and 160 species, of which 126 species are described as new. Also included in Part III are supplements to Parts I and II. The supplement to Part I includes 10 new species, while that of Part II has 20 new species. Part III concludes the treatment of the Colombian Acanthaceae.

Jason R. Swallen,
Head Curator, Department of Botany,
United States National Museum.

SEP 25 1958 300952

CONTENTS

	Page
Introduction	323
Systematic treatment	323
Subfamily Acanthoideae (continued from Part 2)	323
Series Imbricatae (continued from Part 2)	323
Tribe Odontonemeae	325
Subtribe Diclipterinae	325
Tetramerium	325
Dicliptera	327
Subtribe Odontoneminae	387
Odontonema	388
Razisea	400
Siphonoglossa	402
Tribe Isoglosseae	404
Subtribe Porphyrocominae	404
Fittonia	405
Kalbreyeriella	408
Syringidium	415
Megaskepasma	417
Subtribe Isoglossinae	418
Habracanthus	419
Hansteinia	484
Stenostephanus	486
Tribe Justicieae	487
Justicia	487
Pelecostemon	648
Jacobinia	650
Chaetochlamys	659
Chaetothylax	662
Supplement	671
Part 1	671
Part 2	698
Appendix	751
List of Numbered Specimens, Parts 1–3	751
Errata, Parts 1 and 2	770
Index	775

143952

ILLUSTRATIONS

FIGURES

Page

119. *Tetramerium nervosum* Nees ---- 326
120. *Dicliptera trianae* Leonard ---- 333
121. *Dicliptera sciaphila* Leonard ---- 335
122. *Dicliptera uribei* Leonard ---- 338
123. *Dicliptera bogotensis* Leonard ---- 340
124. *Dicliptera caucensis* Leonard ---- 342
125. *Dicliptera conformis* Leonard ---- 344
126. *Dicliptera ochrochlamys* Leonard ---- 347
127. *Dicliptera cuatrecasasii* Leonard ---- 348
128. *Dicliptera killipii* Leonard ---- 351
129. *Dicliptera driophila* Leonard ---- 353
130. *Dicliptera garciae* Leonard ---- 355
131. *Dicliptera ewanii* Leonard ---- 357
132. *Dicliptera haughtii* Leonard ---- 359
132a. *Dicliptera koiei* Leonard ---- 361
133. *Dicliptera danielii* Leonard ---- 363
134. *Dicliptera scandens* Leonard ---- 365
135. *Dicliptera sarcochroma* Leonard ---- 367
136. *Dicliptera hazenii* Leonard ---- 370
137. *Dicliptera inamoena* Leonard ---- 372
138. *Dicliptera megalochlamys* Leonard ---- 374
139. *Dicliptera batilliformis* Leonard ---- 377
140. *Dicliptera sanctae-martae* Leonard ---- 379
141. *Dicliptera rhombochlamys* Leonard ---- 381
142. *Dicliptera nanodes* Leonard ---- 382
143. *Dicliptera columbiana* Leonard ---- 384
144. *Dicliptera compacta* Leonard ---- 386
145. *Odontonema coccineum* Leonard ---- 389
146. *Odontonema stenostachyum* Leonard ---- 392
147. *Odontonema ampelocaule* Leonard ---- 394
148. *Razisea spicata* Oerst ---- 401
149. *Siphonoglossa calcarea* Leonard ---- 403
150. *Fittonia argyroneura* Coem ---- 406
151. *Kalbreyeriella cabrerae* Leonard ---- 409
152. *Kalbreyeriella gigas* Leonard ---- 414
153. *Syringidium atropurpureum* Lindau ---- 416
154. *Megaskapasma erythrochlamys* Lindau ---- 418
155. *Habracanthus syscius* Leonard ---- 422
156. *Habracanthus trichotus* Leonard ---- 424
157. *Habracanthus cuatrecasasii* Leonard ---- 427
158. *Habracanthus aglaüs* Leonard ---- 429
159. *Habracanthus pycnostachys* Leonard ---- 431

Page
160. *Habracanthus hispidulus* Leonard 433
161. *Habracanthus heliophilus* Leonard 435
162. *Habracanthus erythranthus* Leonard 438
163. *Habracanthus putumayensis* Leonard 440
164. *Habracanthus floriferus* Leonard 442
165. *Habracanthus callianthus* Leonard 444
166. *Habracanthus pilosus* Leonard 446
167. *Habracanthus killipii* Leonard 448
168. *Habracanthus charien* Leonard 450
169. *Habracanthus smithii* Leonard 453
169a. *Habracanthus xanthothrix* Leonard 455
170. *Habracanthus xantholeucus* Leonard 457
171. *Habracanthus ampelinus* Leonard 459
172. *Habracanthus caucensis* Leonard 461
173. *Habracanthus antipharmacus* Leonard 463
174. *Habracanthus oresbius* Leonard 467
175. *Habracanthus corei* Leonard 469
176. *Habracanthus lamprus* Leonard 471
177. *Habracanthus congestus* Leonard 473
178. *Habracanthus pennellii* Leonard 475
179. *Habracanthus microcalyx* Leonard 478
180. *Habracanthus hylobius* Leonard 480
181. *Habracanthus scolnikae* Leonard 482
182. *Hansteinia charitopes* Leonard 485
183. *Justicia cystolithosa* Leonard 494
184. *Justicia chlorostachya* Leonard 496
185. *Justicia ischnorhachis* Leonard 499
186. *Justicia charadrophila* Leonard 502
187. *Justicia oreopola* Leonard 504
188. *Justicia archeri* Leonard 507
189. *Justicia blackii* Leonard 509
190. *Justicia infelix* Leonard 511
191. *Justicia fuchsiifolia* Leonard 516
192. *Justicia neurochlamys* Leonard 518
193. *Justicia rhodoides* Leonard 520
194. *Justicia daidalea* Leonard 522
195. *Justicia aëthes* Leonard 525
196. *Justicia chrysocoma* Leonard and *J. rohrii* Vahl 527
197. *Justicia chrysea* Leonard 530
198. *Justicia croceochlamys* Leonard 533
199. *Justicia chaponensis* Leonard 537
200. *Justicia unguiculata* Leonard 539
201. *Justicia pampolystachys* Leonard 542
202. *Justicia hyperdasya* Leonard 544
203. *Justicia schultesii* Leonard 546
204. *Justicia erythrantha* Leonard 550
205. *Justicia leptochlamys* Leonard 552
206. *Justicia gutierrezii* Leonard 554
207. *Justicia macarenensis* Leonard 556
208. *Justicia pharmacodes* Leonard 559
209. *Justicia phytolaccoides* Leonard 561
210. *Justicia xanthostachya* Leonard 563

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VOLUME 31

THE ACANTHACEAE OF COLOMBIA

By EMERY C. LEONARD

Associate Curator of Phanerogams

United States National Museum

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Publications of the United States National Herbarium

The United States National Herbarium, which was founded by the Smithsonian Institution, was transferred in the year 1868 to the Department of Agriculture and continued to be maintained by that department until July 1, 1896, when it was returned to the official custody of the Smithsonian Institution. The Department of Agriculture, however, continued to publish the series of botanical reports entitled "Contributions from the United States National Herbarium," which it had begun in the year 1890, until, on July 1, 1902, the National Museum, in pursuance of an act of Congress, assumed responsibility for the publication. The first seven volumes of the series where issued by the Department of Agriculture.

REMINGTON KELLOGG,
Director, United States National Museum.

Errata—Part 3

Page 426, line 9 from bottom : For "ultimal" read "ultimae."
Page 487, line 9 from bottom : For "*adhatoda*" read "*hyssopifolia.*"
Page 770, after line 1 insert the following line :

Page 3, line 17 : For "*Jacobinia magnifica*" read "*Jacobinia carnea* (Lindl.) Nicholson."

Page 772, line 14 : For "Page ii" read "Page iii."
Page 776, Index : For "Cyphaeanthus" read "Cyphacanthus."

CONTENTS

Page

PART 1. The Acanthaceae of Colombia, I: Subfamilies Nelsonioideae, Mendoncioideae, Thunbergioideae, Acanthoideae. (Published June 8, 1951) . . . 1–117

PART 2. The Acanthaceae of Colombia, II: Subfamily Acanthoideae, continued. (Published November 10, 1953) 119–322

PART 3. The Acanthaceae of Colombia, III: Subfamily Acanthoideae, completed. (Published February 4, 1958) 323–781

The Acanthaceae of Colombia

Page
211. *Justicia cabrerae* Leonard 567
212. *Justicia leucerythra* Leonard 569
213. *Justicia enarthrocoma* Leonard 571
214. *Justicia sanchezioides* Leonard 574
215. *Justicia homoea* Leonard 576
216. *Justicia porphyrocoma* Leonard 583
217. *Justicia sciota* Leonard 586
218. *Justicia phlebophylla* Leonard 588
219. *Justicia malacophylla* Leonard 590
220. *Justicia pelianthia* Leonard 593
221. *Justicia anabasa* Leonard 595
222. *Justicia aurantiaca* Leonard 597
223. *Justicia jacobinioides* Leonard 599
224. *Justicia novogranatensis* Leonard 601
225. *Justicia atacta* Leonard 605
226. *Justicia ephemera* Leonard 607
227. *Justicia chloanantha* Leonard 609
228. *Justicia helonoma* Leonard 612
229. *Justicia namatophila* Leonard 619
230. *Justicia idiogenes* Leonard 623
231. *Justicia fusagasugana* Leonard 625
232. *Justicia scytophylla* Leonard 627
233. *Justicia killipii* Leonard 629
234. *Justicia graphophylla* Leonard 632
235. *Justicia petraea* Leonard 634
236. *Justicia sterea* Leonard 636
237. *Justicia sciera* Leonard 638
238. *Justicia stereostachya* Leonard 640
239. *Justicia hodgei* Leonard 643
240. *Justicia hygrobia* Leonard 645
241. *Pelecostemon trianae* Leonard 649
242. *Jacobinia axiologa* Leonard 653
243. *Jacobinia amphibola* Leonard 656
244. *Chaetochlamys columbiensis* Leonard 661
245. *Chaetothylax leucanthus* Leonard 664
246. *Chaetothylax haughtii* Leonard 666
247. *Chaetothylax huilensis* Leonard 668
248. *Staurogyne leptocaulis* Leonard 672
248a. *Mendoncia trichota* Leonard 674
248b. *Mendoncia phalacra* Leonard 675
248c. *Mendoncia garciae* Leonard 677
249. *Hygrophila tyltha* Leonard 681
249a. *Ruellia aurantiaca* Leonard 688
250. *Ruellia grantii* Leonard 690
251. *Ruellia macarenensis* Leonard 693
252. *Ruellia gorgonensis* Leonard 695
253. *Teliostachya petraea* Leonard 697
254. *Stenandrium humboldtianum* Nees 700
255. *Aphelandra grangeri* Leonard 702
256. *Aphelandra gilva* Leonard 705
257. *Aphelandra andrei* Leonard 708
258. *Aphelandra quadrifaria* Leonard 710

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

[1] E. C. Leonard, Contr. U. S. Nat. Herb. 31, pt. 2: 119–322. 1953.

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 "Spangenpollen" (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

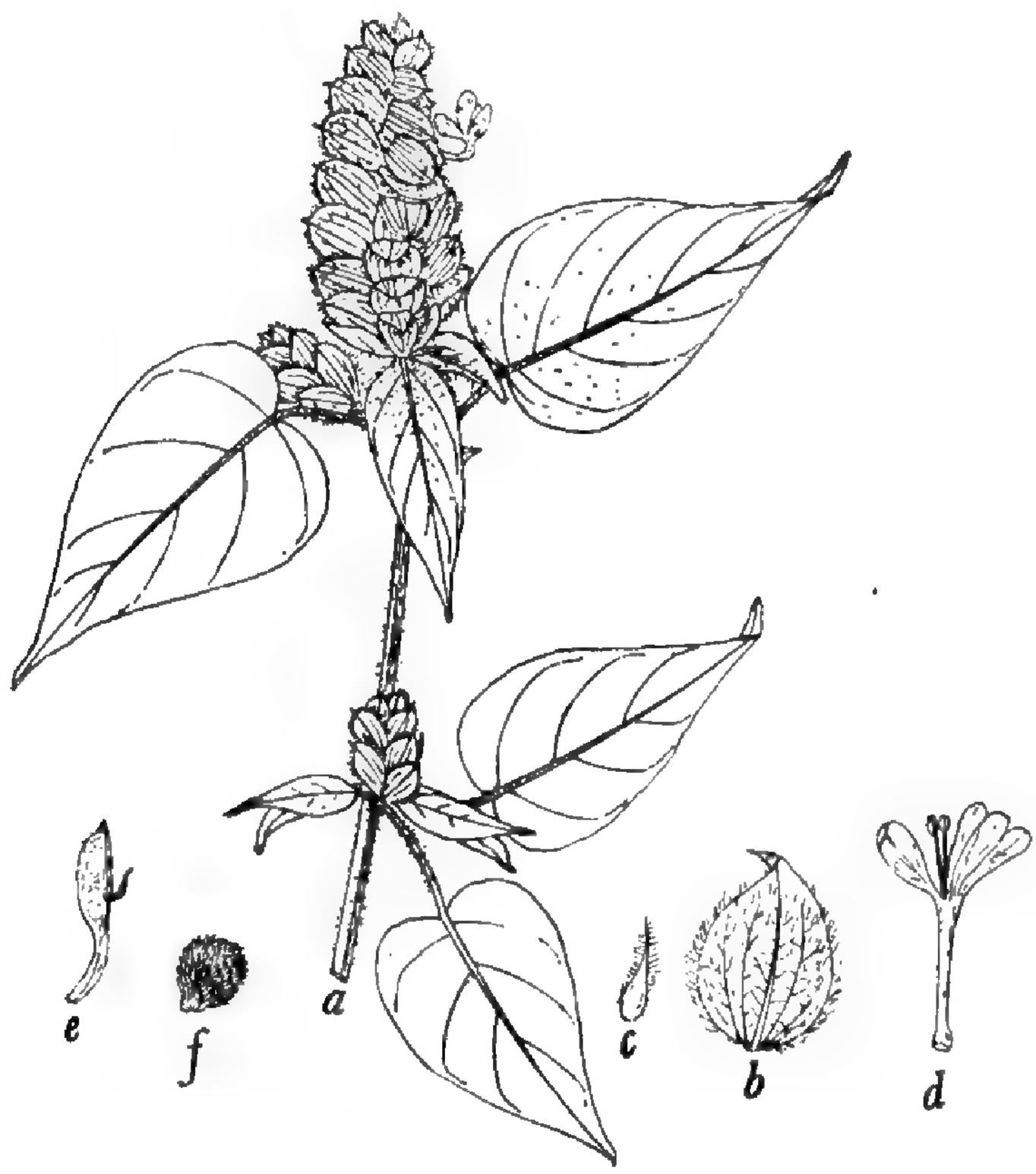

FIGURE 119.—*Tetramerium nervosum* Nees (*a–c*, *Haught* 4760; *d–f*, *Pennell* 4026): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, corolla; *e*, valve of capsule; *f*, seed. (*a*, Half natural size; *b–d*, natural size; *e*, *f*, about twice natural size.)

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-obvate, 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. Δικλίς, 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. cuatrecasasii*
      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 subobtuse 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. cuatrecasasii*
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. hazenii*
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 Linneaus. 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 spathulate 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 subulates, 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" (σκιά, shade, and φίλος, loving) alludes to a preference to dense forests.

5. **Dicliptera uribei** Leonard, sp. nov. FIGURE 122

Herba, caulibus subhexagonis, bifariam hirtellis, pilis parvis, retrorse curvatis; lamina foliorum anguste ovata, acute vel subacuminata, 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, thyrsum 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 thyrse 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

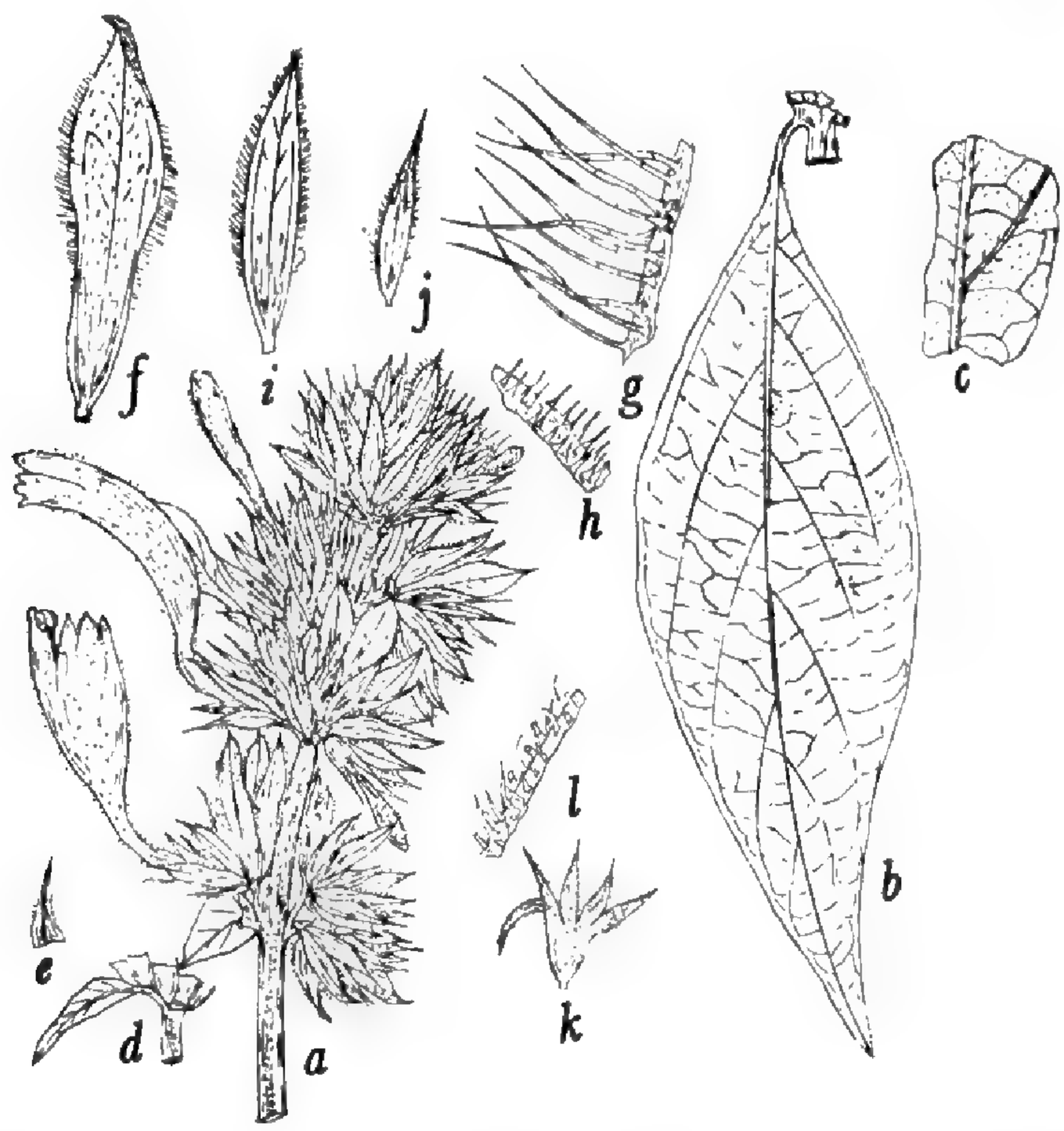

FIGURE 122.—*Dicliptera uribei* Leonard (*Uribe-Uribe* 343): *a*, Inflorescence at tip of stem; *b*, leaf; *c*, portion of leaf blade at costal region (lower surface) in detail to show venation, pubescence and cystoliths; *d*, one of a pair of bracts subtending a lowermost cyme; *e*, one of a pair of 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-Uribe (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

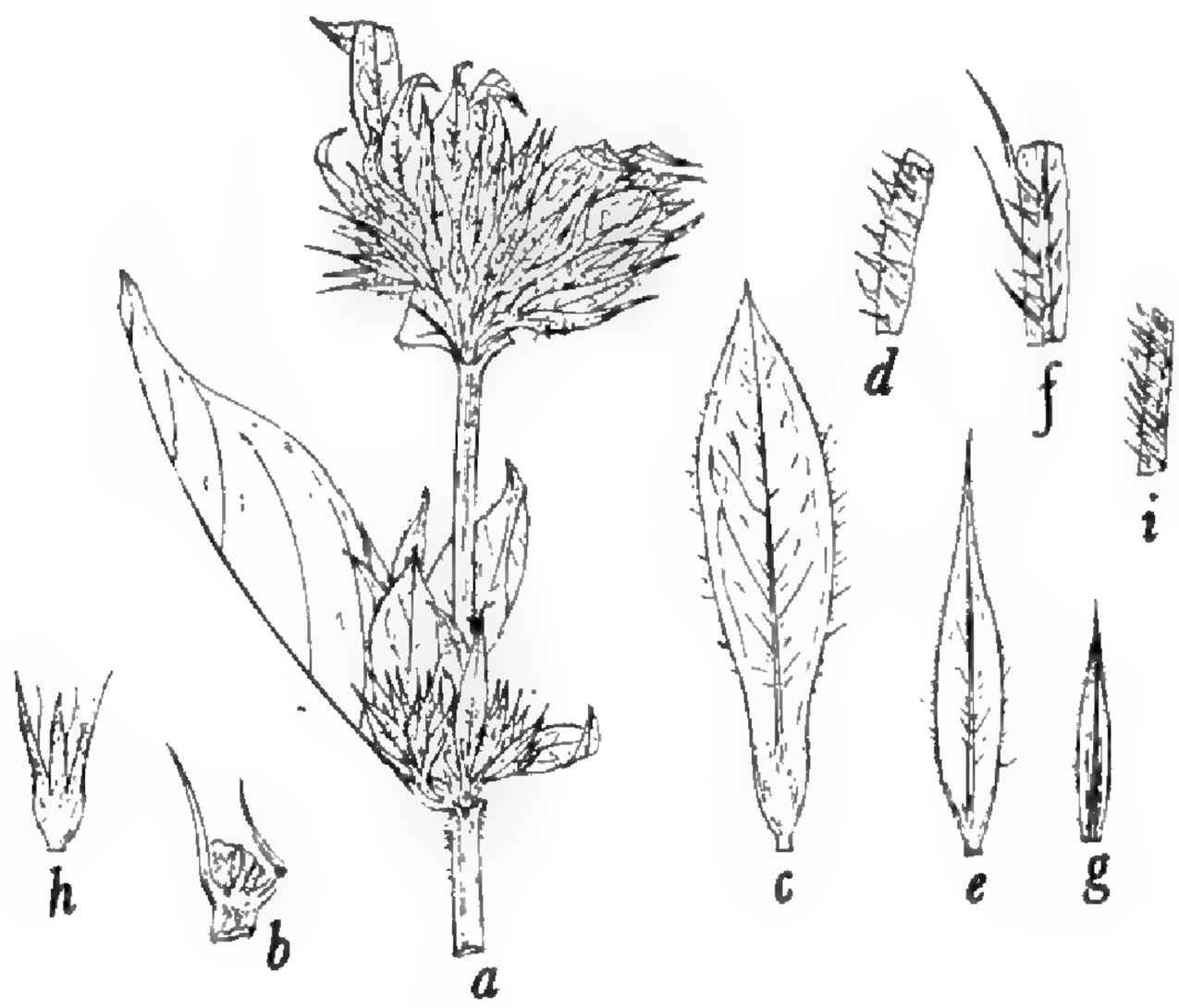

FIGURE 123.—*Dicliptera bogotensis* Leonard (*Triana*, Salto de Tequendama): *a*, Inflorescence; *b*, base of cyme to show subtending bracts; *c*, larger outer bract subtending the cymule; *d*, marginal hairs of same; *e*, smaller outer bract subtending the cymule; *f*, costal hairs of same; *g*, one 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 conspicous 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 subsessile, 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 diamter, 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 Tequendama, 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,

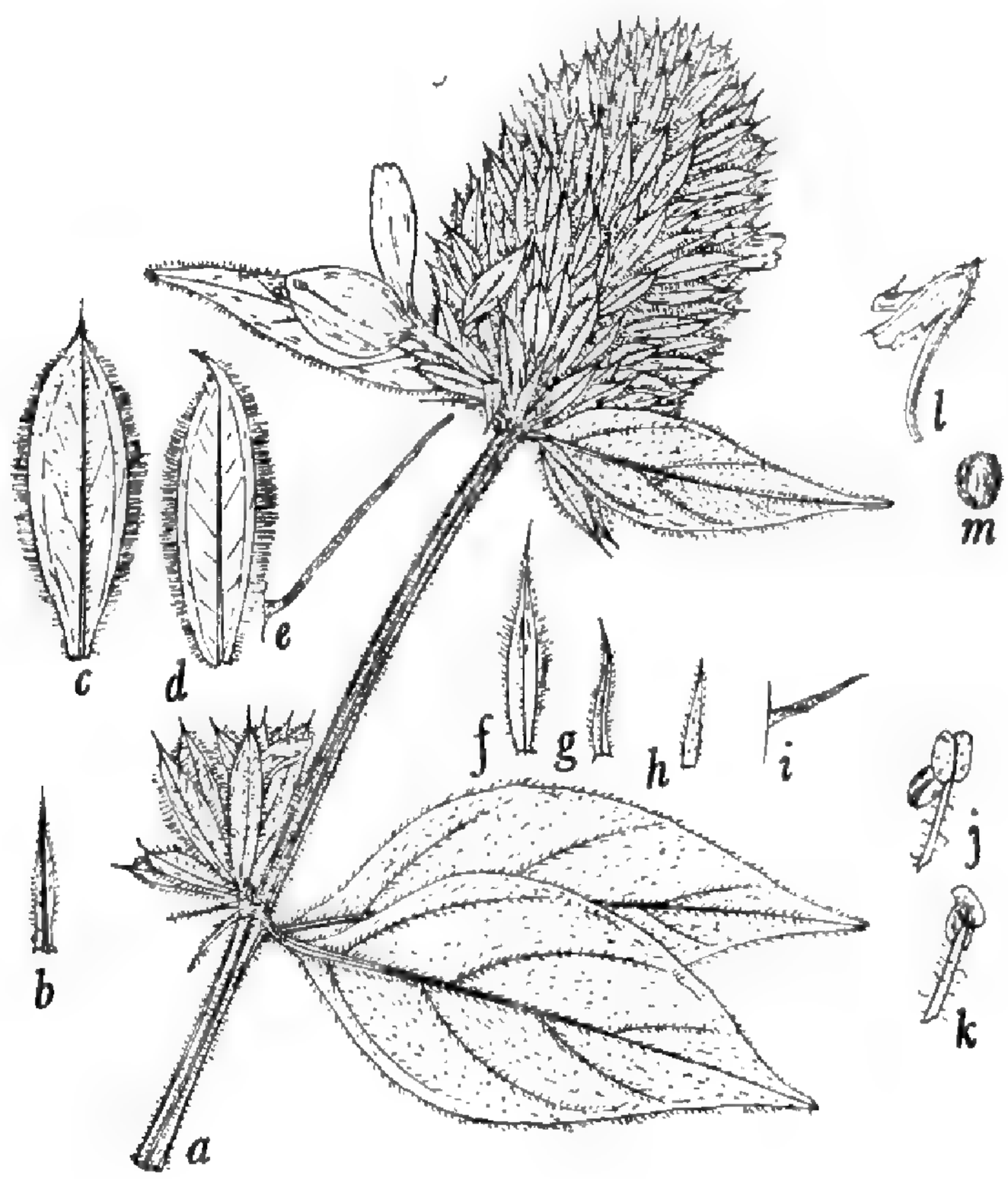

FIGURE 124.—*Dicliptera caucensis* Leonard (*Pérez-Arbeláez & Cuatrecasas* 5977): *a*, Tip of plant; *b*, one of a pair of bracts subtending cyme; *c*, outer bract subtending cymule; *d*, inner bract; *e*, a hair from the margin of one of these bracts; *f*, *g*, inner bracts subtending flowers; *h*, 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*, 2½ 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,

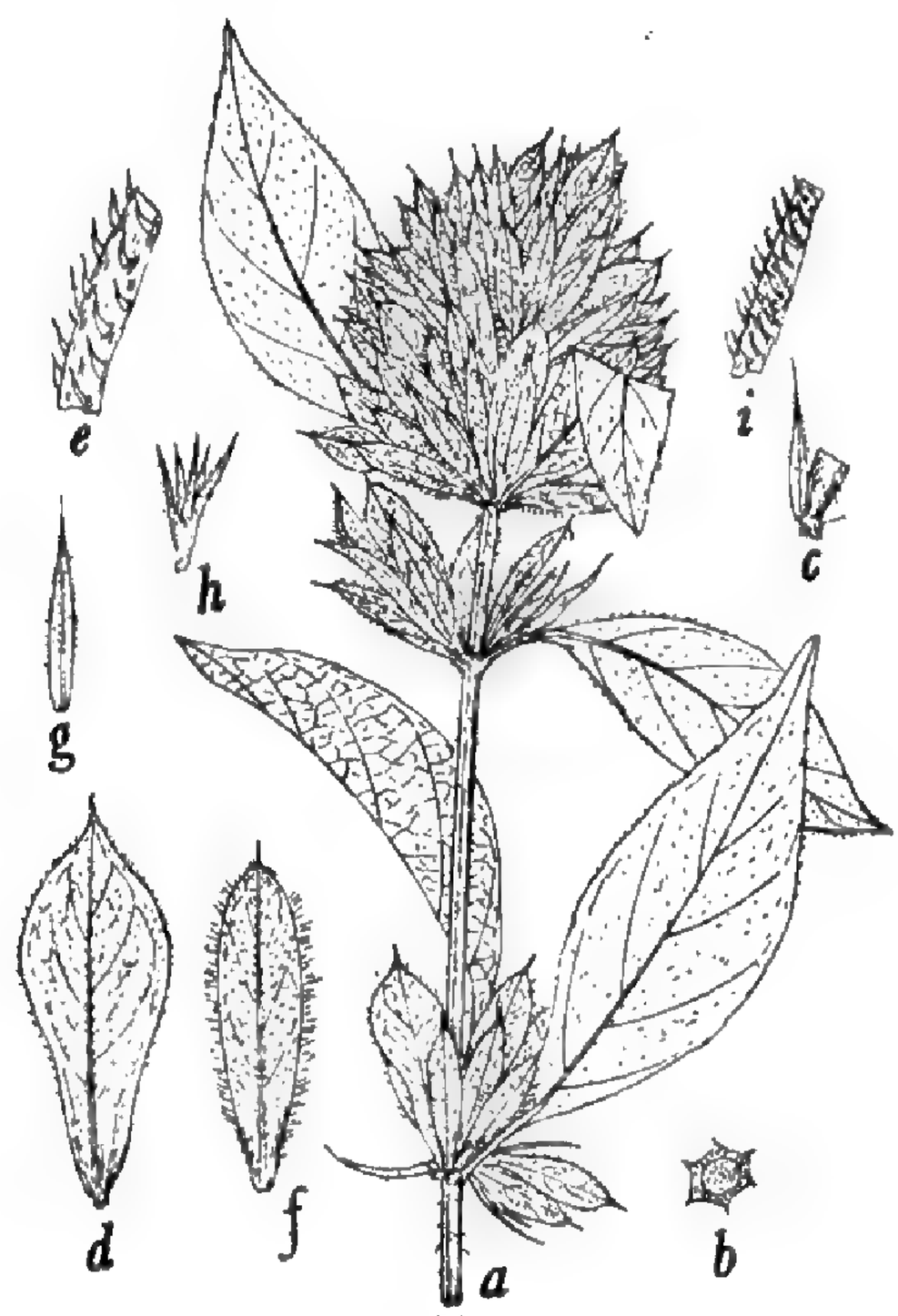

FIGURE 125.—*Dicliptera conformis* Leonard (*Triana*, Almaguer, El Cauca): *a*, Inflorescence; *b*, cross-section of stem; *c*, one of a pair of bracts subtending a cyme; *d*, the larger outer bract subtending a cymule; *e*, marginal hairs of same; *f*, the smaller outer bract subtending the cymule; *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 bracteae superiori similis; bracteae 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 thyrse 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 subobtuso, 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 thyrse short-peduncled, the others sessile or subsessile, the cymes usually several flowered, the rachis and peduncles more or less puberulous, the bracts subtending the cymules 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 4½ times natural size; *c–e*, *g*, *h*, *j*, twice natural size; *f*, about 11½ 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, subobtuse 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 (*ὠχρός*, 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 thyrse, 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 Pichindecito 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 cuatrecasasii, 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 mumerous 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, thyrsum 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 thyrse, 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

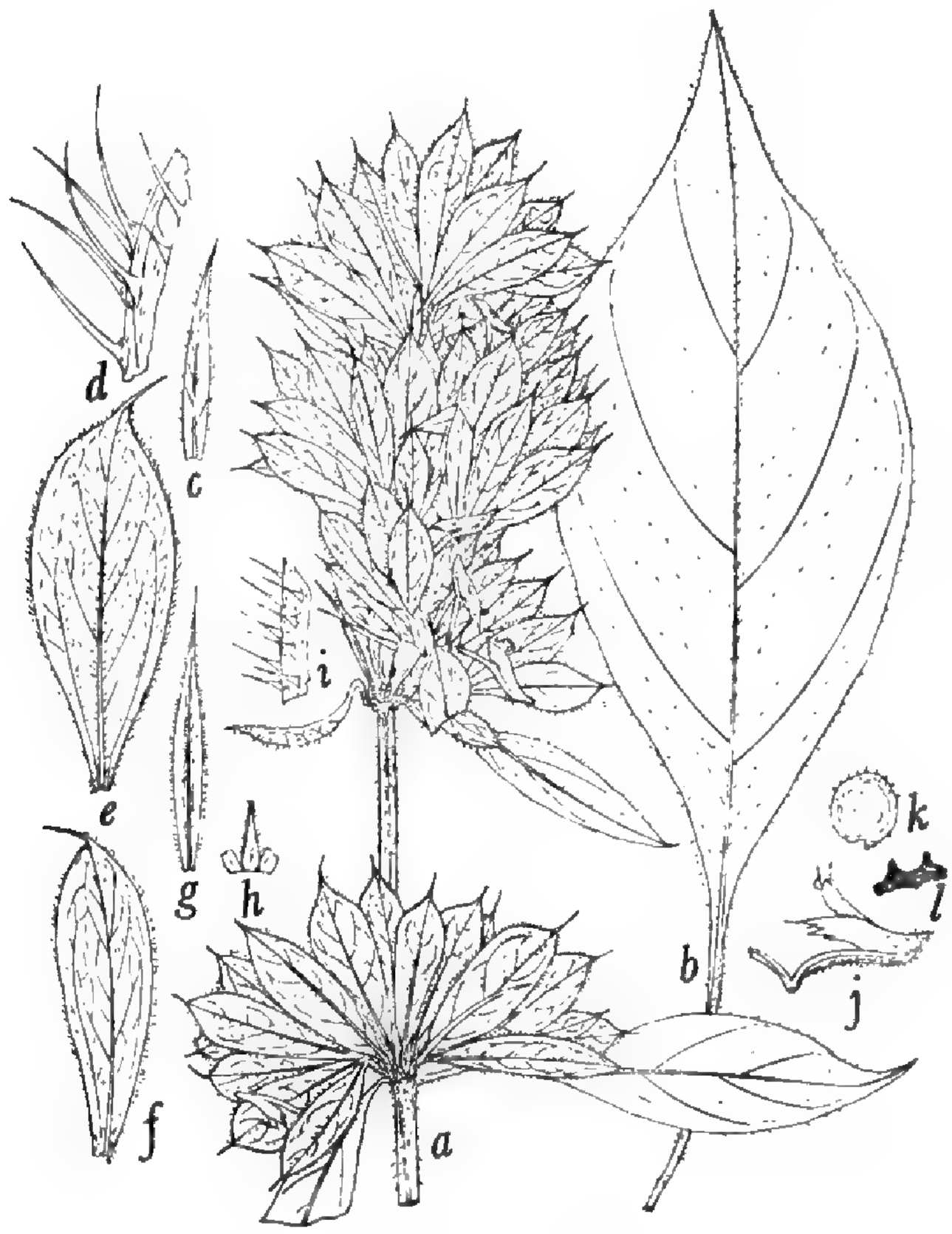

FIGURE 128.—*Dicliptera killipii* Leonard (*Killip* 6818): *a*, Tip of branch; *b*, leaf; *c*, bract subtending cymes; *d*, marginal hairs of the larger outer bract subtending the cymule; *e*, the larger of the outer pair of bracts subtending the cymule; *f*, the smaller bract of the large pair; *g*, 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 exserted 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,

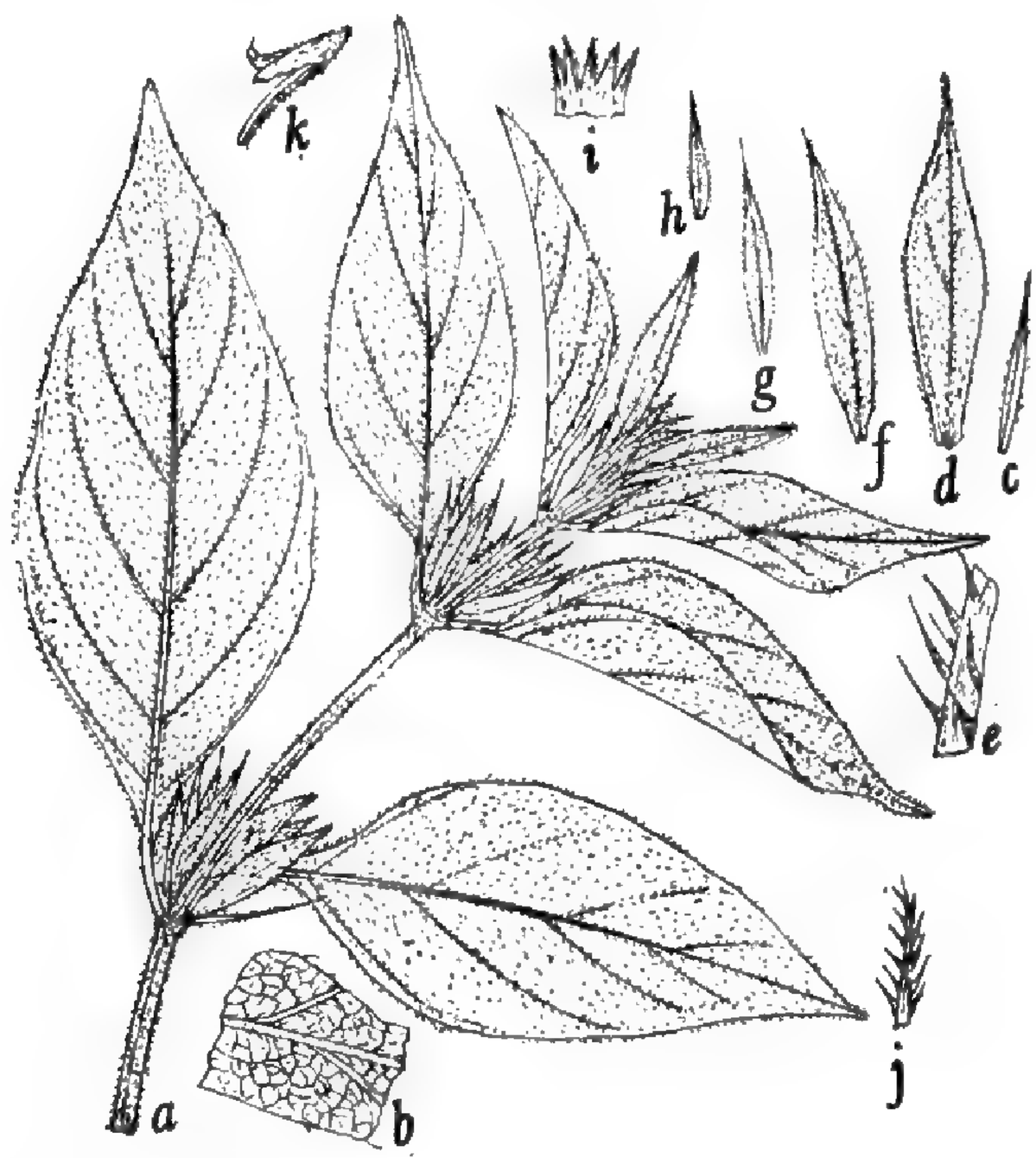

FIGURE 129.—*Dicliptera driophila* Leonard (*Cuatrecasas* 20947): *a*, Tip of branch; *b*, portion of leaf blade (upper surface) to show reticulation of veinlets; *c*, one of a pair of outer bracts subtending a cyme; *d*, the larger of a pair of outer bracts subtending a cymule; *e*, marginal hairs of 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*, 1½ 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 δρίος, thicket, and φίλος, loving.

14. **Dicliptera garciae** Leonard, sp. nov. FIGURE 130

Suffrutex, caulibus erectis vel ascendentibus, subhexagonis, sulcatis, sursum pubescentibus, deorsum glabratis; laminae foliorum (verticillasteres subtendentes) ovatae, subacutae, basi rotundatae vel obtusae, integrae, subcoriaceae, utrinque pubescentes, pilis praecipue in costa et venis positis, 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

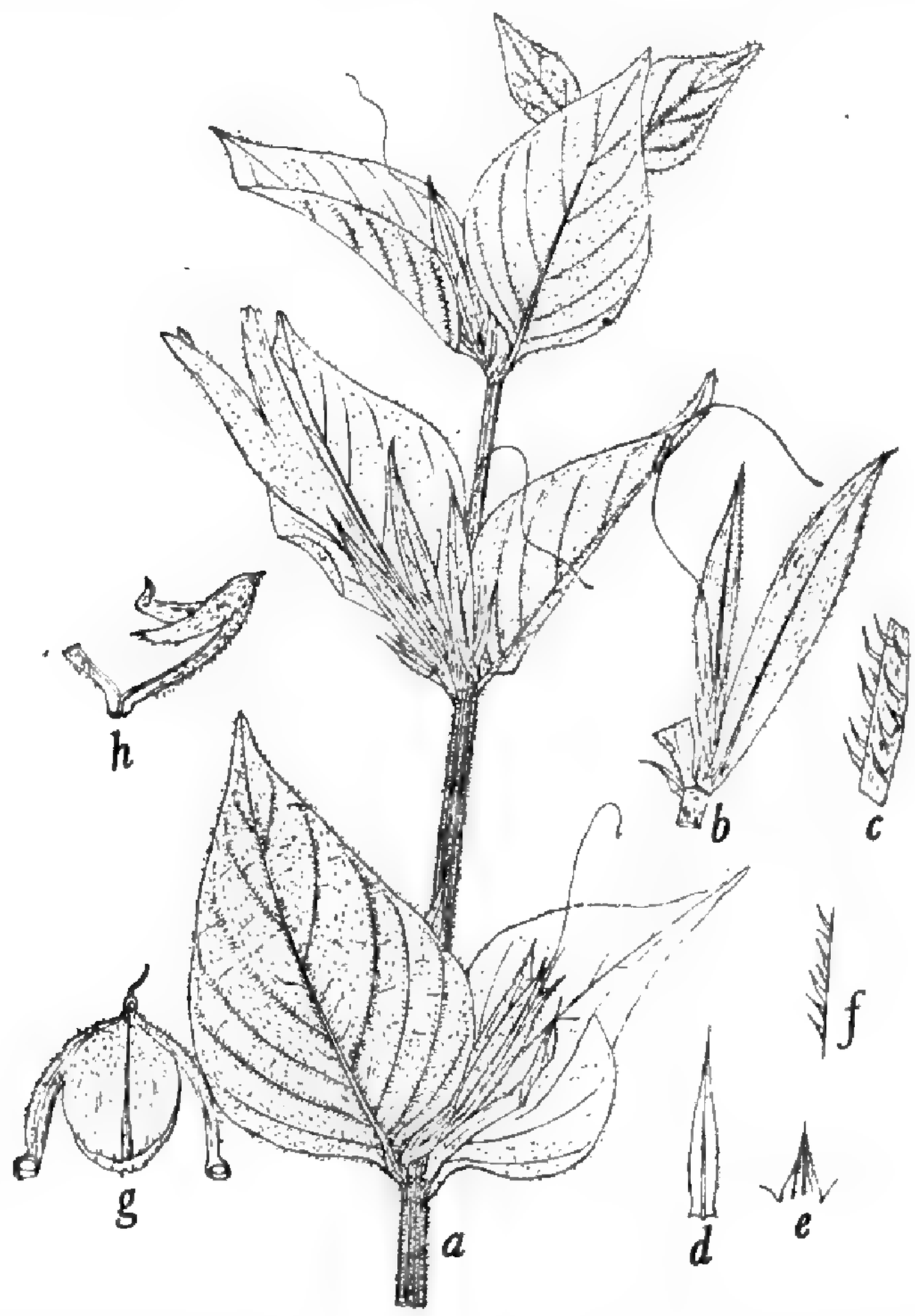

FIGURE 130.—*Dicliptera garciae* Leonard (*Cuatrecasas & García-Barriga* 9820): *a*, Tip of plant; *b*, cymule; *c*, portion of one of the larger bracts of the cymule enlarged to show pubescence; *d*, one of the innermost bracts; *e*, one of the calyx segments; *f*, hairs from margin of calyx segment; *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; bracteae 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, 125μ 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 thyrse 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 100μ 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 275μ 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 250μ 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, albidae (vel costa viridi), utrinque hirtellae; calycis segmenta anguste lanceolata, acuta, albida, minute ciliolata et puberula, pilis marginis rectis, ascendentibus apice acutis, pilis superficium erectis, apice truncatis; corolla punicea, subtiliter pubescens, tubo anguste hypocrateriformi, labiis suberectis

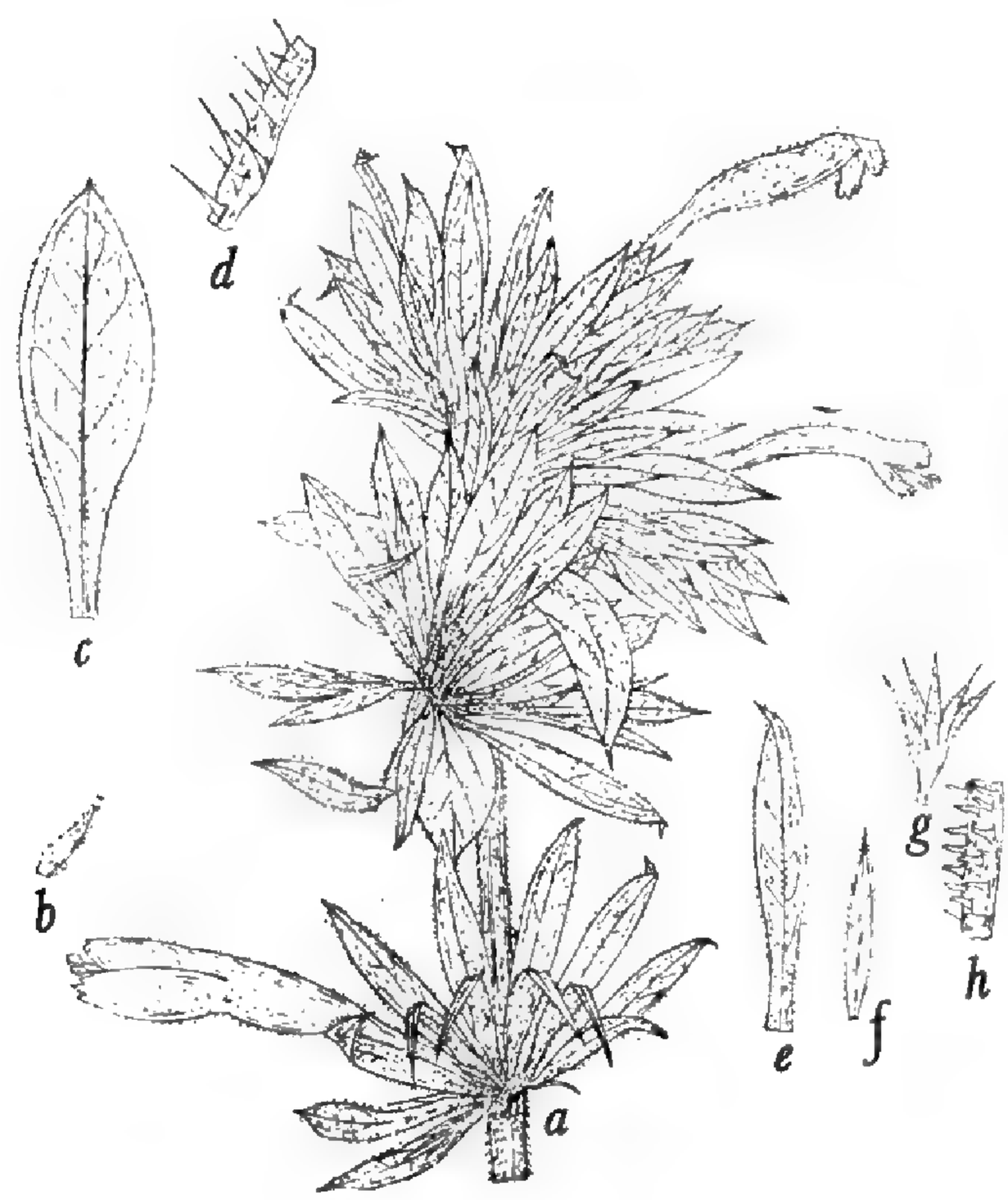

FIGURE 132.—*Dicliptera haughtii* Leonard (*Haught* 6179): *a*, Inflorescence; *b*, one of a pair of bracts subtending the cyme; *c*, the larger of the outer bracts subtending the cymule; *d*, marginal hairs of same; *e*, the smaller of the outer bracts subtending the cymule; *f*, one of the innermost bracts; *g*, calyx; *h*, pubescence of calyx. (*a*, Natural size; *b*, *c*, *e*, *f*, twice natural size; *d*, 6 times natural size; *g*, 2½ times natural size, *h*, 12 times natural size.)

subaequalibus, labio superiore apice subobtuso, 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 thyrse 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 subsessiles, 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-

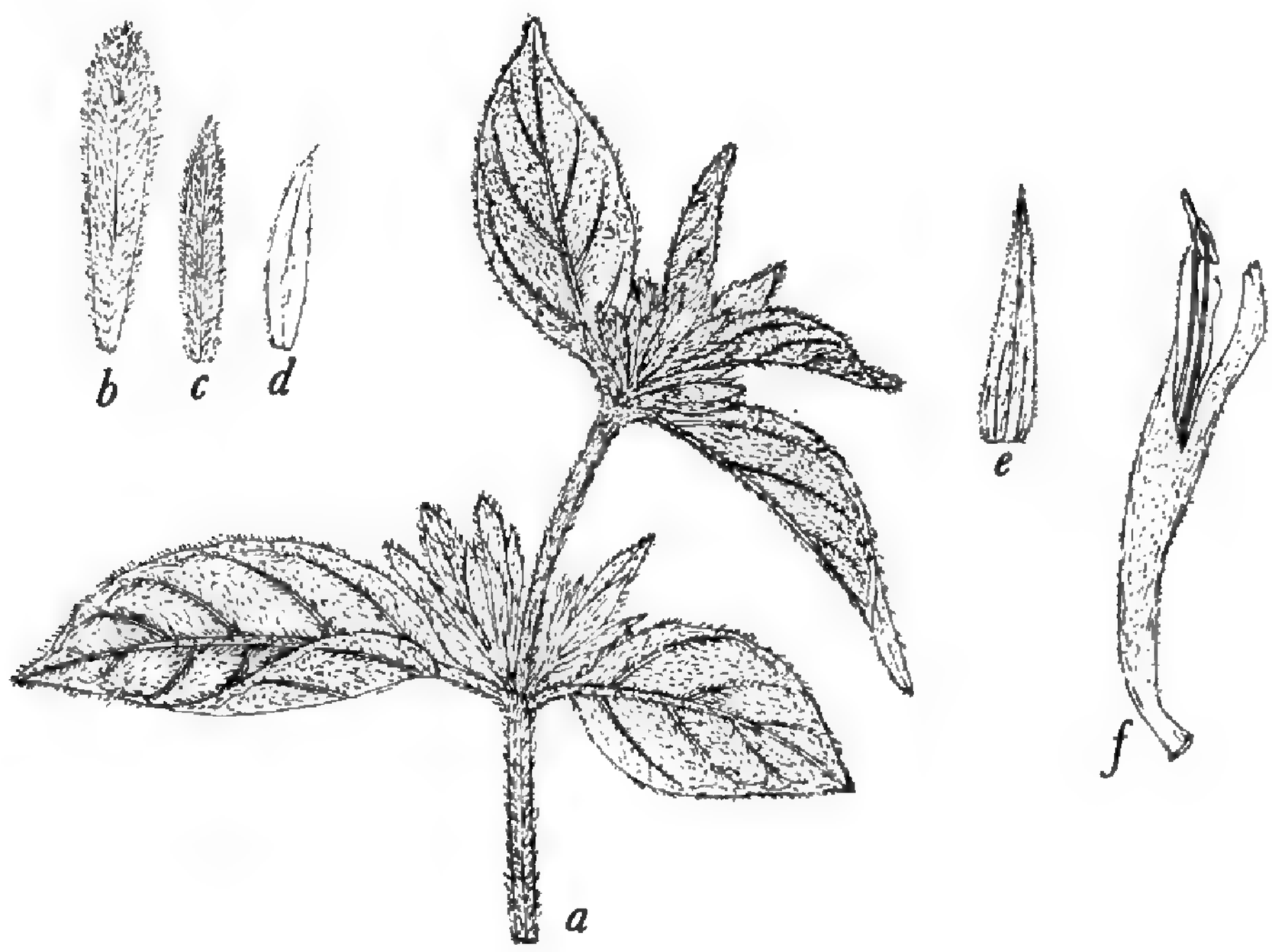

FIGURE 132a.—*Dicliptera koiei* Leonard (*Kφie* 5056): *a*, Tip of plant; *b*, outer bract subtending cymule; *c*, inner bract subtending cymule; *d*, one of inner bracts subtending calyx; *e*, calyx segment; *f*, corolla. (*a*, *f*, Natural size; *b–d*, twice natural size; *e*, 3½ times natural size.)

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 thyrse 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 exserted 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. Køie (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 positis; 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, subobtuso, labio inferiore oblongo, apice 3-lobato, lobis parvis, triangularibus, obtusis; stamina vix exserta, filamentis planis, deorsum parce pilosis.

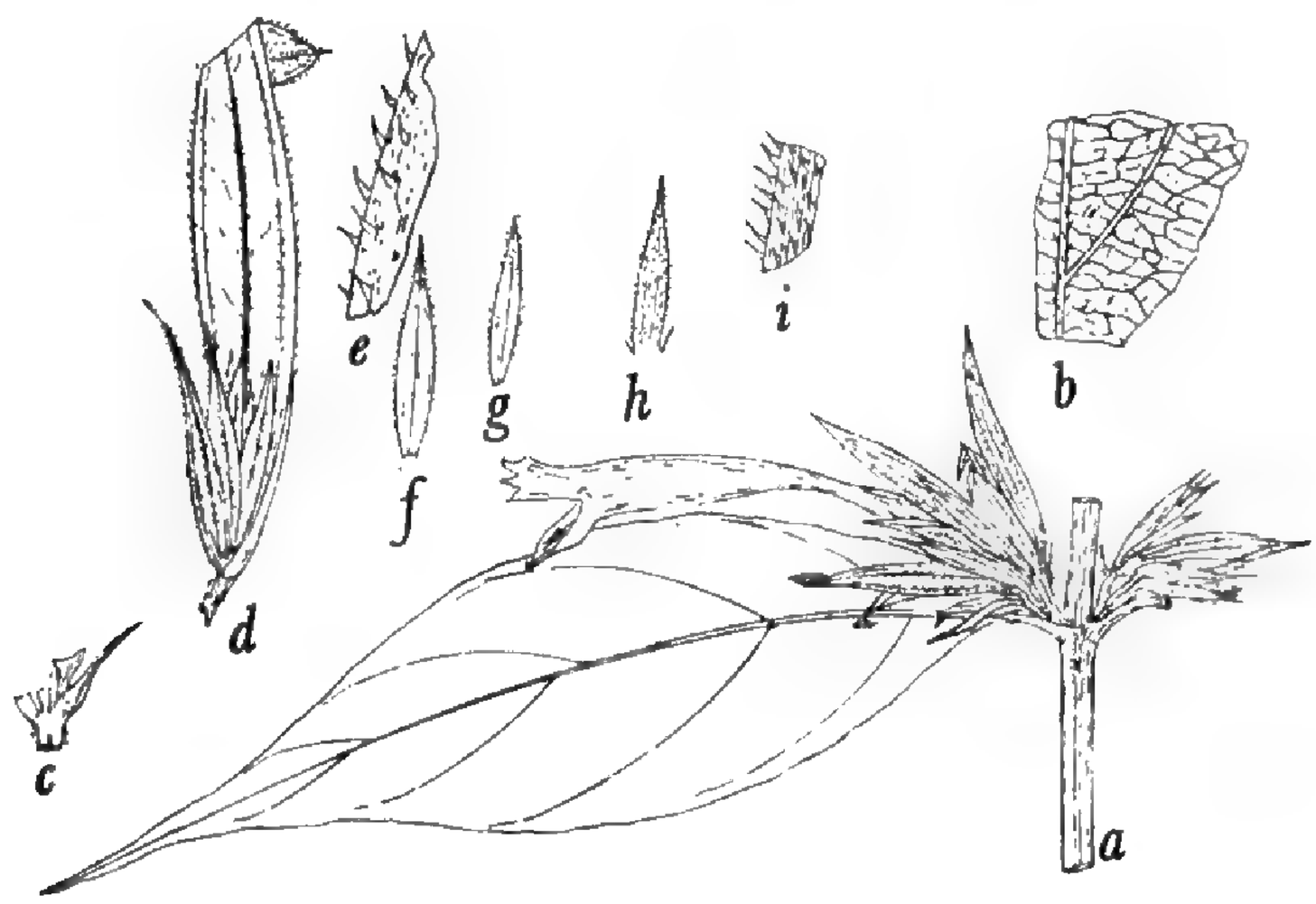

FIGURE 133.—*Dicliptera danielii* Leonard (*Bro. Daniel* 2970): *a*, Node showing leaf and inflorescence; *b*, portion of leaf blade (upper surface) to show reticulation of veinlets; *c*, one of the pair of bracts subtending the cyme; *d*, cymule; *e*, pubescence of margin of the larger outer bract subtending 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, membraneous, 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, inconspicious 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, albidae, 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-

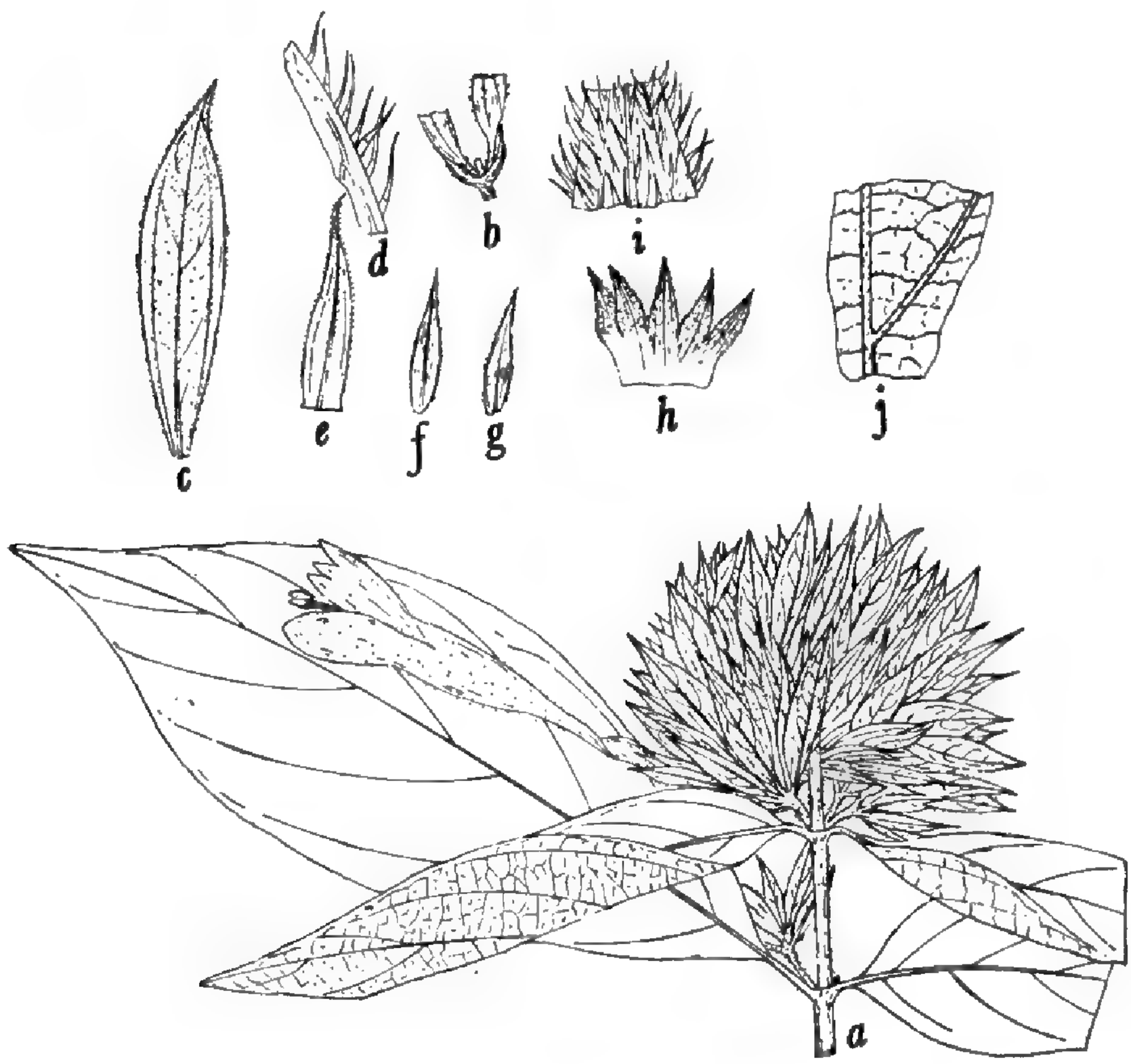

FIGURE 134.—*Dicliptera scandens* Leonard (*Archer* 1354): *a*, Tip of plant; *b*, base of cyme to show subtending bracts; *c*, the larger outer bract subtending the cymule; *d*, marginal hairs of same; *e*, smaller outer bract subtending the cymule; *f*, one of the larger pair of innermost bracts; *g*, 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*, 1½ 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 μ 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

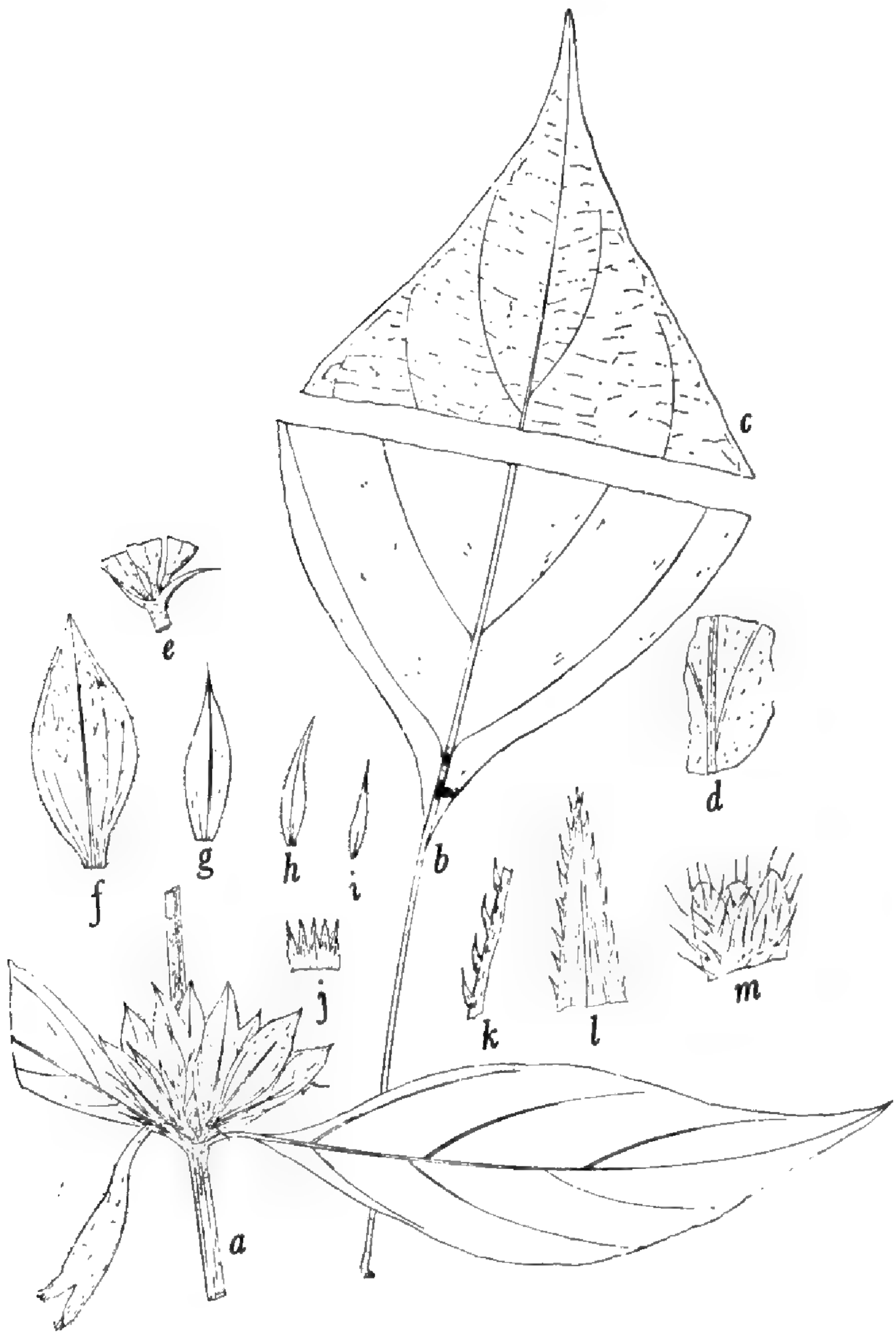

FIGURE 135.—*Dicliptera sarcochroma* Leonard (*Cuatrecasas* 15468): *a*, Node showing inflorescence; *b*, basal portion of stem leaf (upper side); *c*, tip of same (lower side); *d*, portion of leaf blade (lower surface slightly enlarged to show cystoliths); *e*, basal portion of cyme to show subtending 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*, 1½ 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 Sanjuniquín, 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 realted to *D. cuatrecasasii*, 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. cuatrecasasii* is much more crowded than that of *D. sarcochroma*, forming dense terminal spikelike thyrsi. The epithet *sarcochroma* (*σάρξ*, flesh, and *χρῶμα*, 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 membranacous, 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, ciliolate, 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*, 12½ times natural size; *h*, 10 times natural size; *i*, 2½ 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 bracteae superiori similis; bracteae 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 exserted, 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.

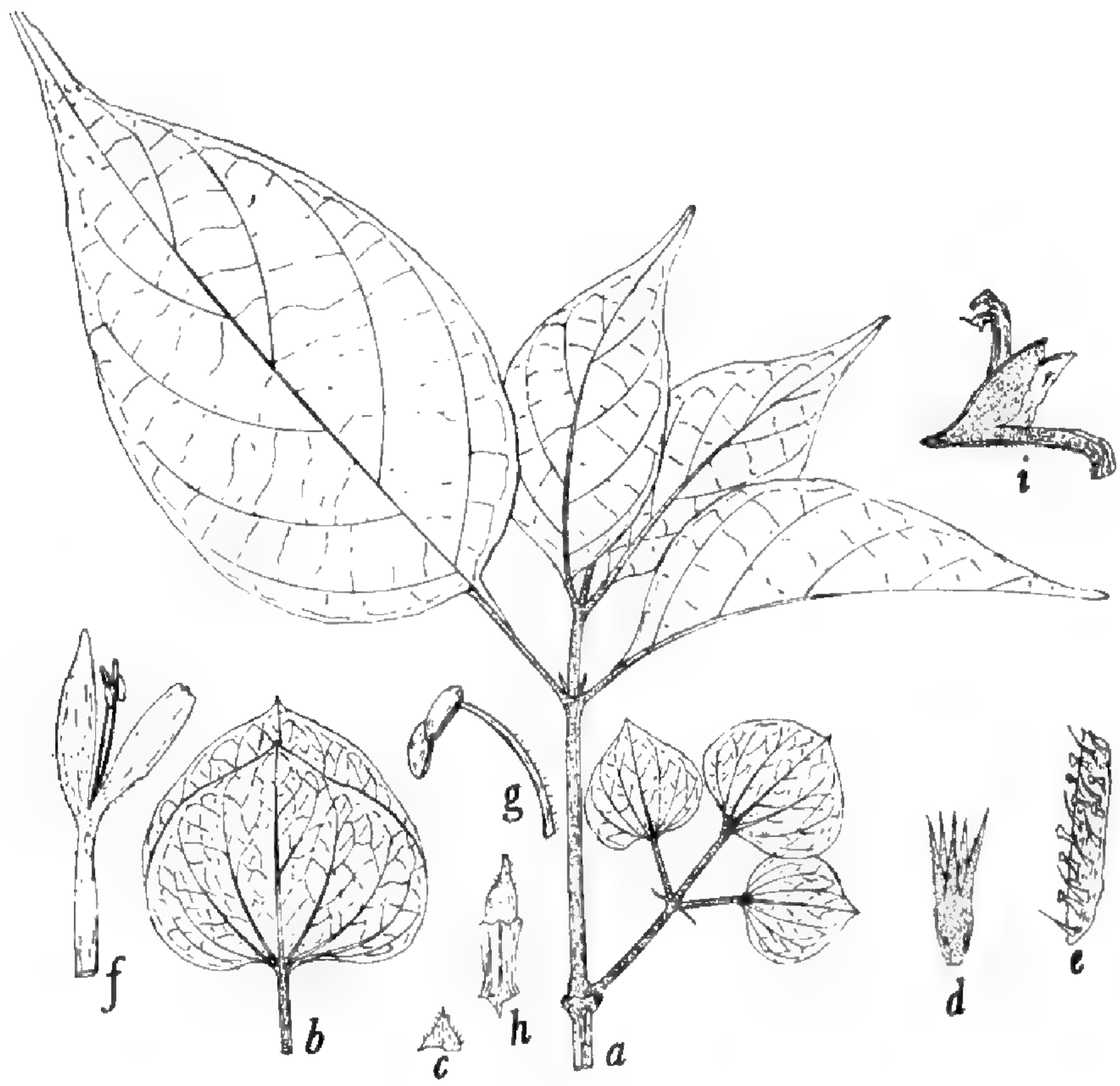

FIGURE 138.—*Dicliptera megalochlamys* Leonard (*a–e, i, Pennell* 4499; *f–h,* Herb. Bayón): *a,* Tip of plant; *b,* cymule bracts; *c,* one of the inner bractlets; *d,* calyx; *e,* pubescence of calyx; *f,* corolla; *g,* tip of stamen; *h,* ovary and disk; *i,* disrupted capsule valve. (*a,* Half natural 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 200μ 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, ciliolate 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 exserted 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 175μ 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, subsessile, 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

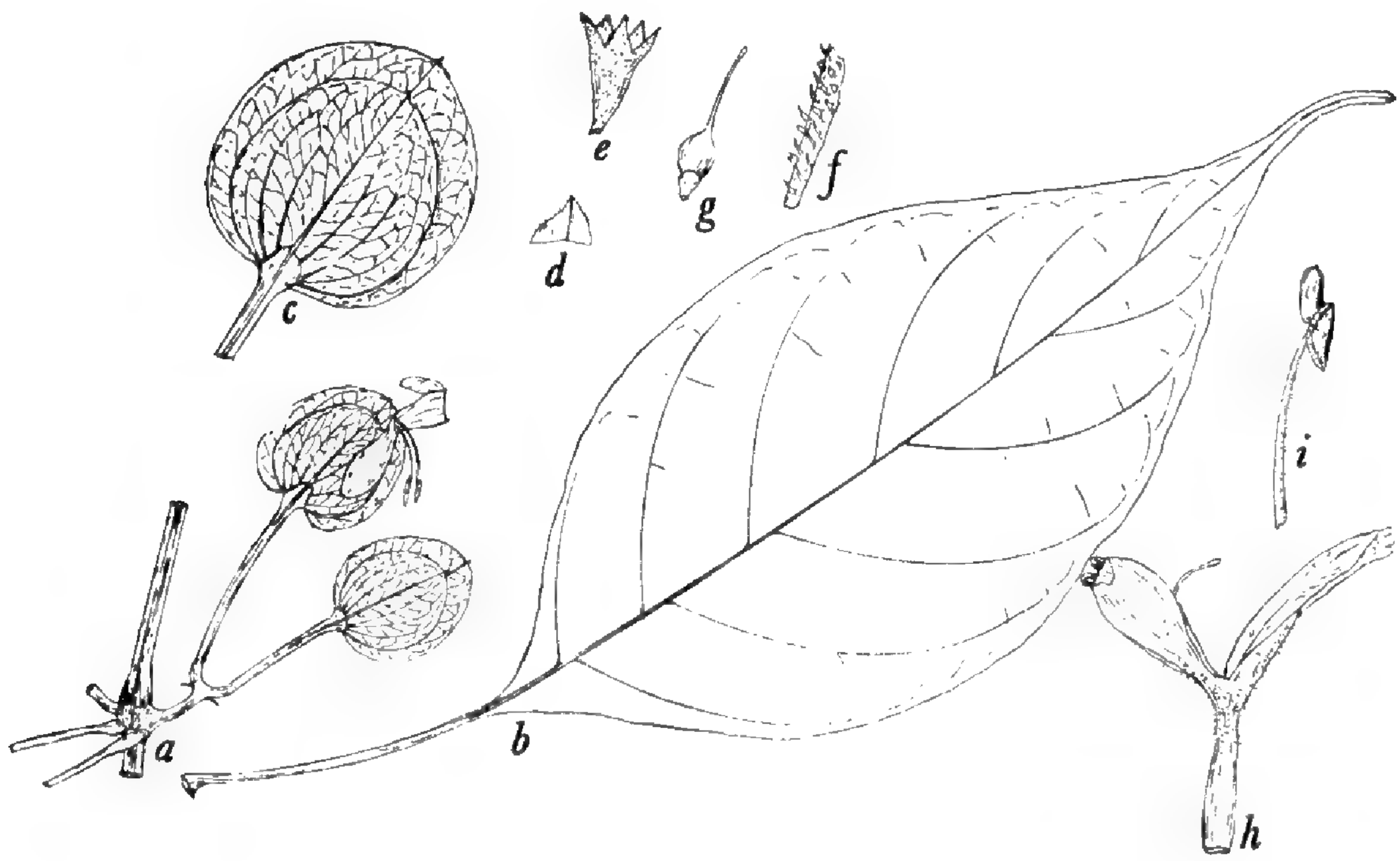

FIGURE 139.—*Dicliptera batilliformis* Leonard (*Lawrance* 258): *a*, Node showing portion of inflorescence; *b*, stem leaf; *c*, cymule; *d*, one of the inner bracts; *e*, calyx; *f*, pubescence of calyx; *g*, pistil; *h*, corolla; *i*, tip of stamen. (*a*, *b*, Half natural size; *c*, *h*, natural size; *d*, *e*, *i*, 2½ times natural size; *f*, about 25 times natural size; *g*, 3½ 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 sub lente 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, subsessiles; 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-

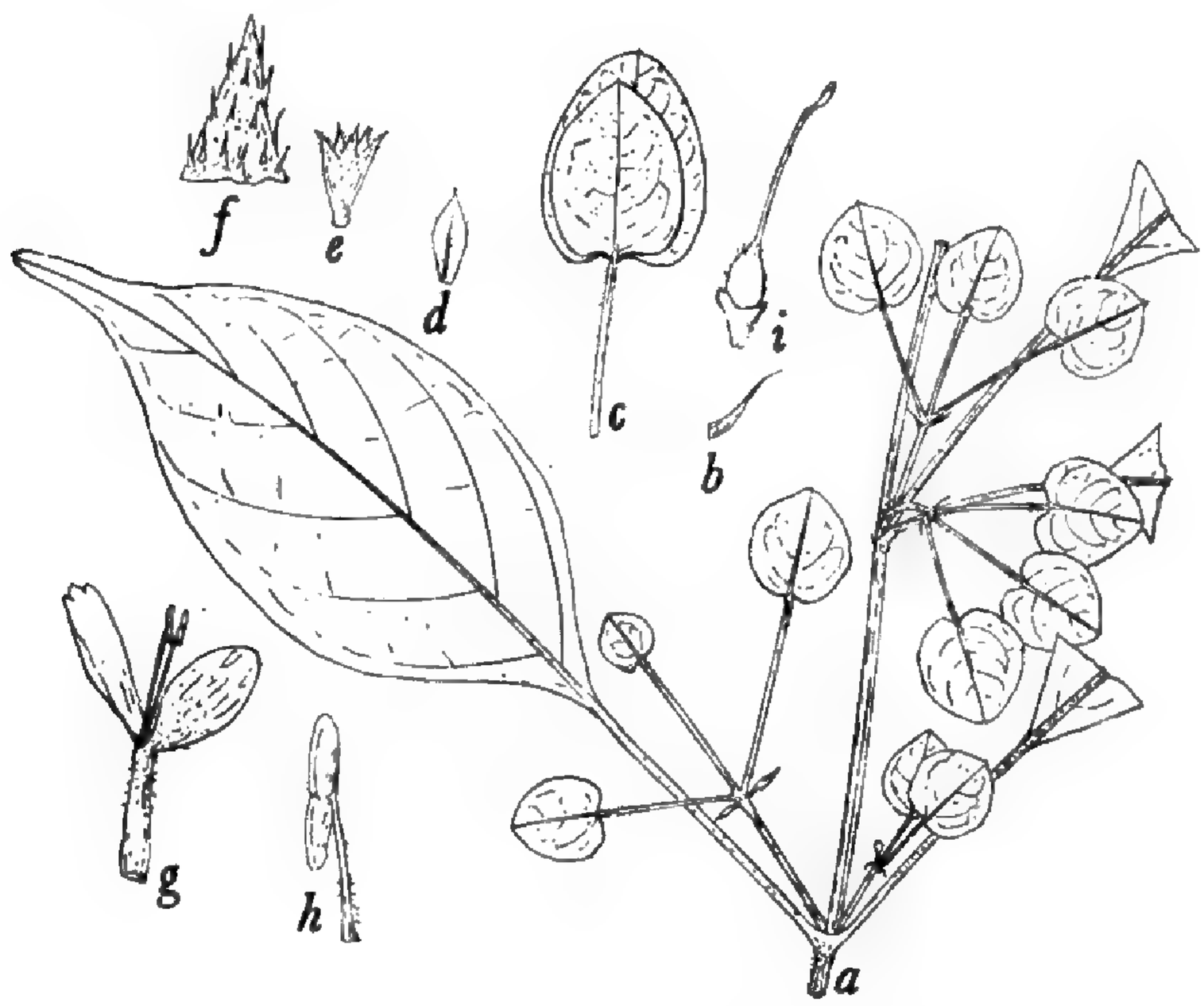

FIGURE 140.—*Dicliptera sanctae-martae* Leonard (*H. H. Smith* 1411): *a*, Inflorescence; *b*, one of a pair of bracts produced at peduncle node; *c*, cymule bracts; *d*, one of the innermost bracts subtending flowers; *e*, calyx; *f*, tip of calyx segment to show pubescence; *g*, corolla; *h*, tip of stamen; *i*, pistil. (*a*, Half natural size; *b*, *d*, *e*, 3 times natural size; *c*, *g*, natural size; *f*, 40 times natural size; *h*, 4½ 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, subobtuso, 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 100μ long and ascending) intermixed with gland-tipped hairs about 25μ 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 exserted 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 ῥόμβος and χλαμύς, 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*, 4½ times natural size; *e*, 40 times natural size.)

subobtuso), basi angustata, aliquanto firma, integra vel undulata, utrinque glabra, costa et venis lateralibus obscuris, cystolithis sub lente 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,

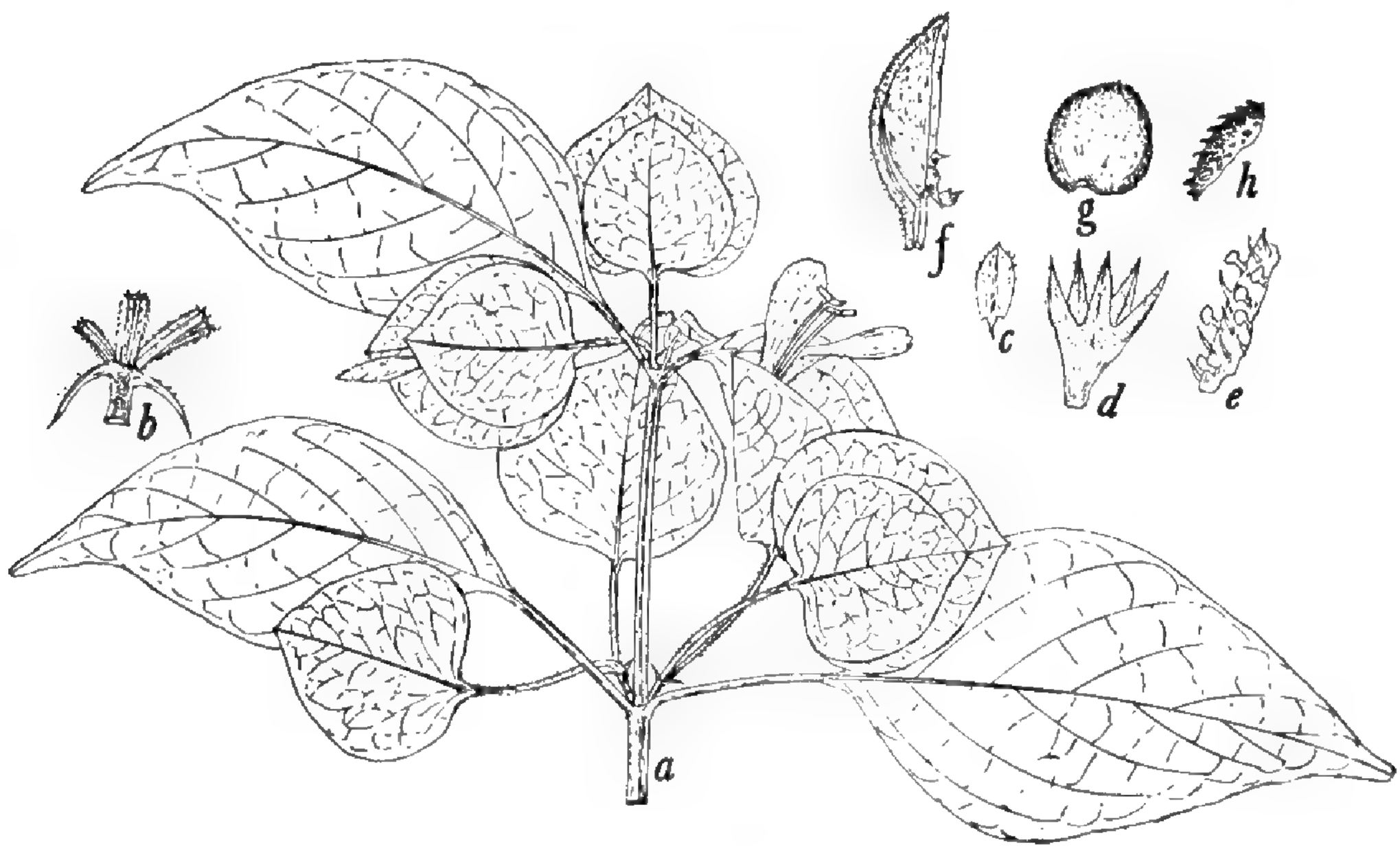

FIGURE 143.—*Dicliptera columbiana* Leonard (*García-Barriga* 12355): *a*, Tip of plant; *b*, node at base of cyme to show bracts and winged peduncles; *c*, one of the innermost bracts subtending flowers; *d*, calyx; *e*, pubescence of calyx; *f*, capsule valve; *g*, seed; *h*, surface of seed to show roughening. (*a*, Natural size; *b*, twice natural size; *c*, 5 times natural size; *d*, 4 times natural size; *e*, 35 times natural size; *f*, 2½ 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,

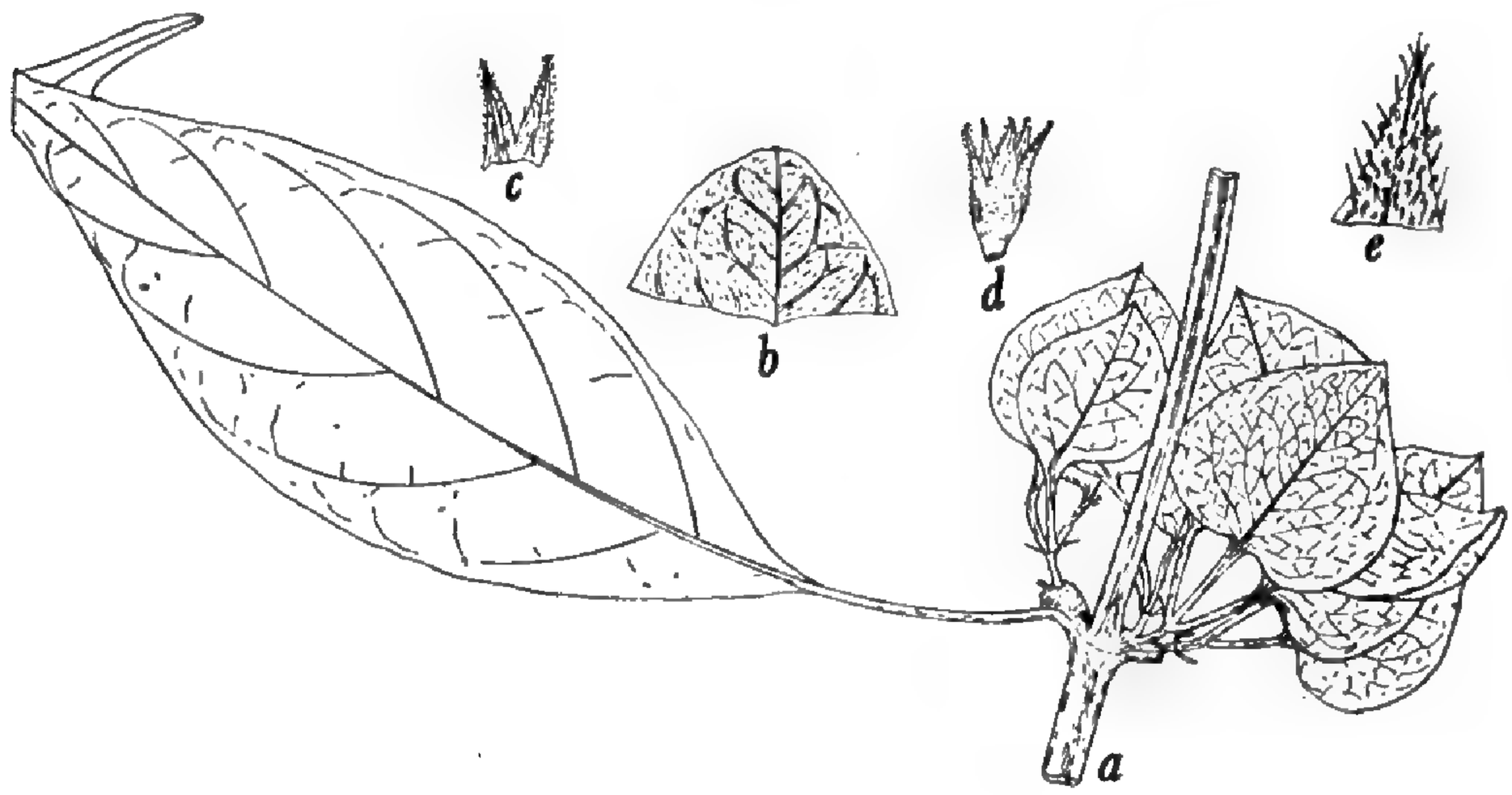

FIGURE 144.—*Dicliptera compacta* Leonard (*Triana*, Copó): *a*, Node to show inflorescence and leaf blade; *b*, tip of cymule bract to show venation and cystoliths; *c*, a pair of the innermost bracts; *d*, calyx; *e*, tip of calyx segment to show pubescence. (*a*, Natural size; *b*, twice natural size; *c*, 3½ 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 375μ 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 100μ 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 *νῆμα*, 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*, thyrse, and *ἄκανθος*, 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 exserted 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. ampelocaule*
- 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;

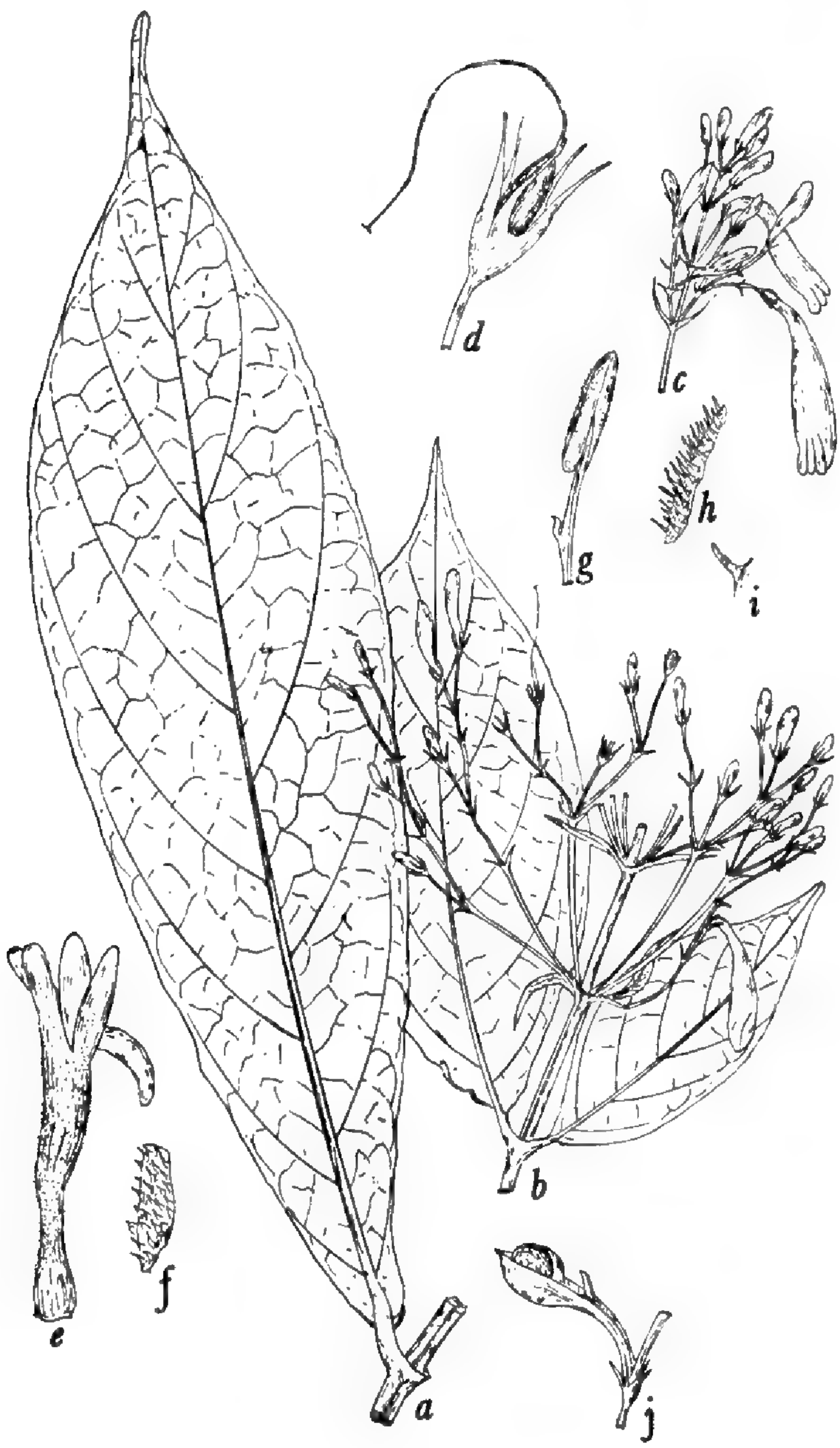

FIGURE 145.—*Odontonema coccineum* Leonard (*a–i*, *Haught* 2055; *j*, *Haught* 2841): *a*, Leaf blade; *b*, basal portion of panicle; *c*, tip of panicle; *d*, calyx and pistil; *e*, corolla; *f*, pubescence of corolla enlarged to show shape of hairs; *g*, stamen and staminode; *h*, pubescence of anther; *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, ininferiore 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, 125μ 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 ampelocaule** 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

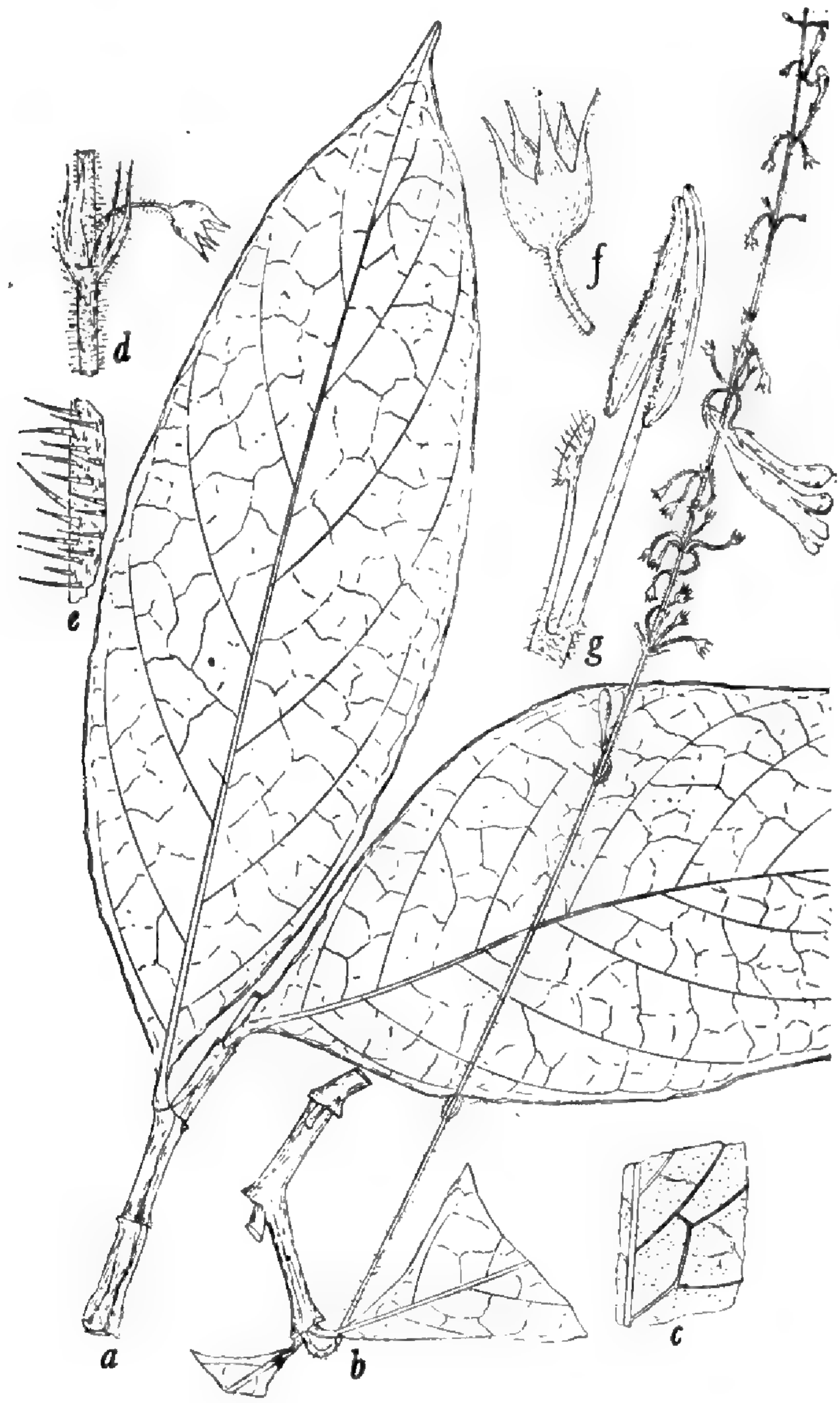

FIGURE 147.—*Odontonema ampelocaule* Leonard (*García-Barriga* 12473): *a*, Section from lower part of stem showing leaves; *b*, tip of branch showing inflorescence; *c*, portion of leaf blade (upper surface) showing veinlets and cystoliths; *d*, node of raceme showing bracts and bractlets; *e*, portion 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 brevioria, 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 ampelocaule* 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 καυλός, 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.

Thyrsacanthus 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 subtetragonal, 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 125μ 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 50μ 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 225μ 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 125μ 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 150μ 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 Ariguaní, 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). Tucurinca, *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 150μ 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,

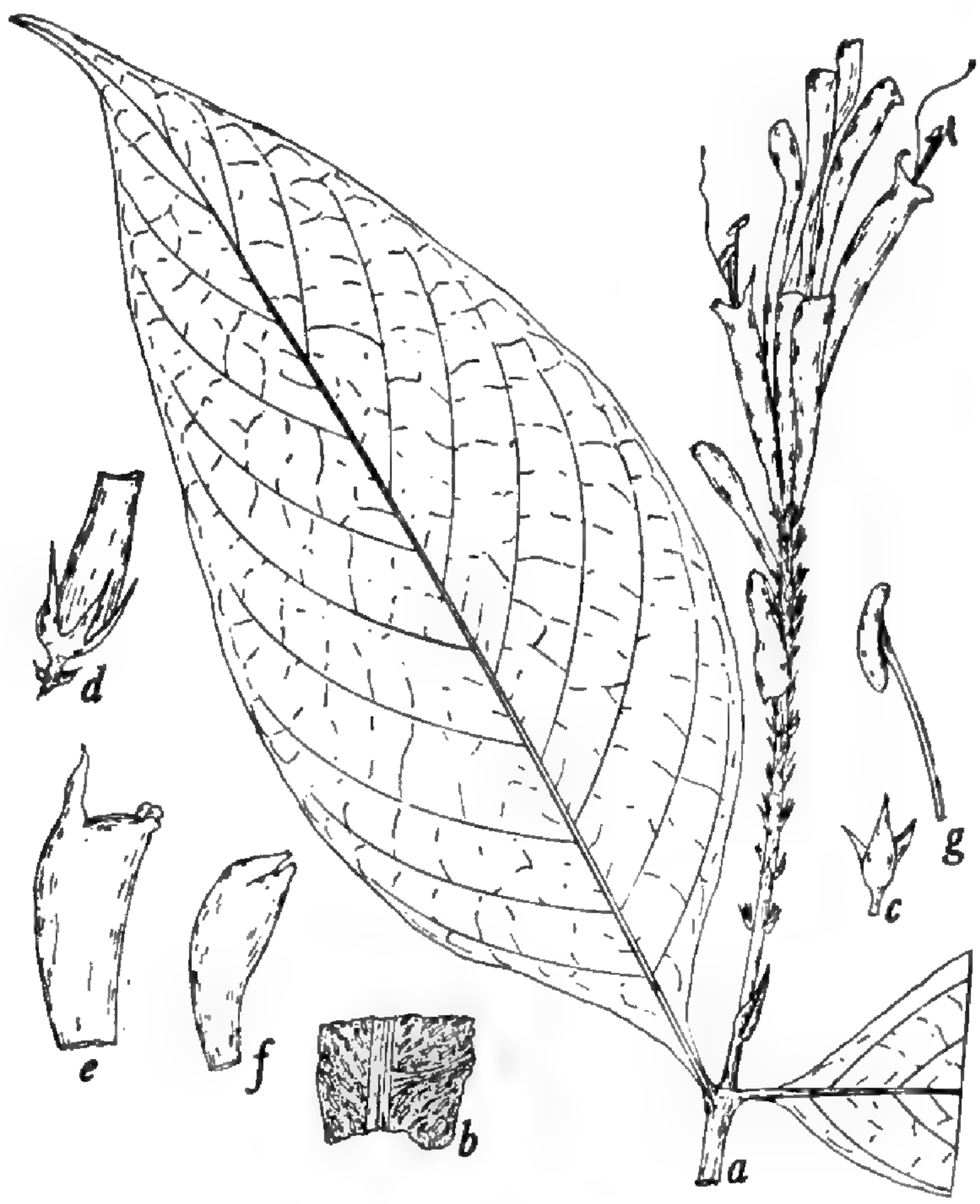

FIGURE 148.—*Razisea spicata* Oerst. (*Lawrance* 198): *a*, Tip of plant; *b*, portion of the leaf blade to show cystoliths and minute papillae of the lower surface; *c*, bract and bractlets; *d*, calyx; *e*, tip of expanded corolla; *f*, tip of corolla before expansion; *g*, anther. (*a*, Half natural size; *b*, 23 times natural size; *c*, 3½ times natural size; *d*, 1½ times natural size; *e*, *f*, natural size; *g*, 2½ 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 exserted 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 exserted 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

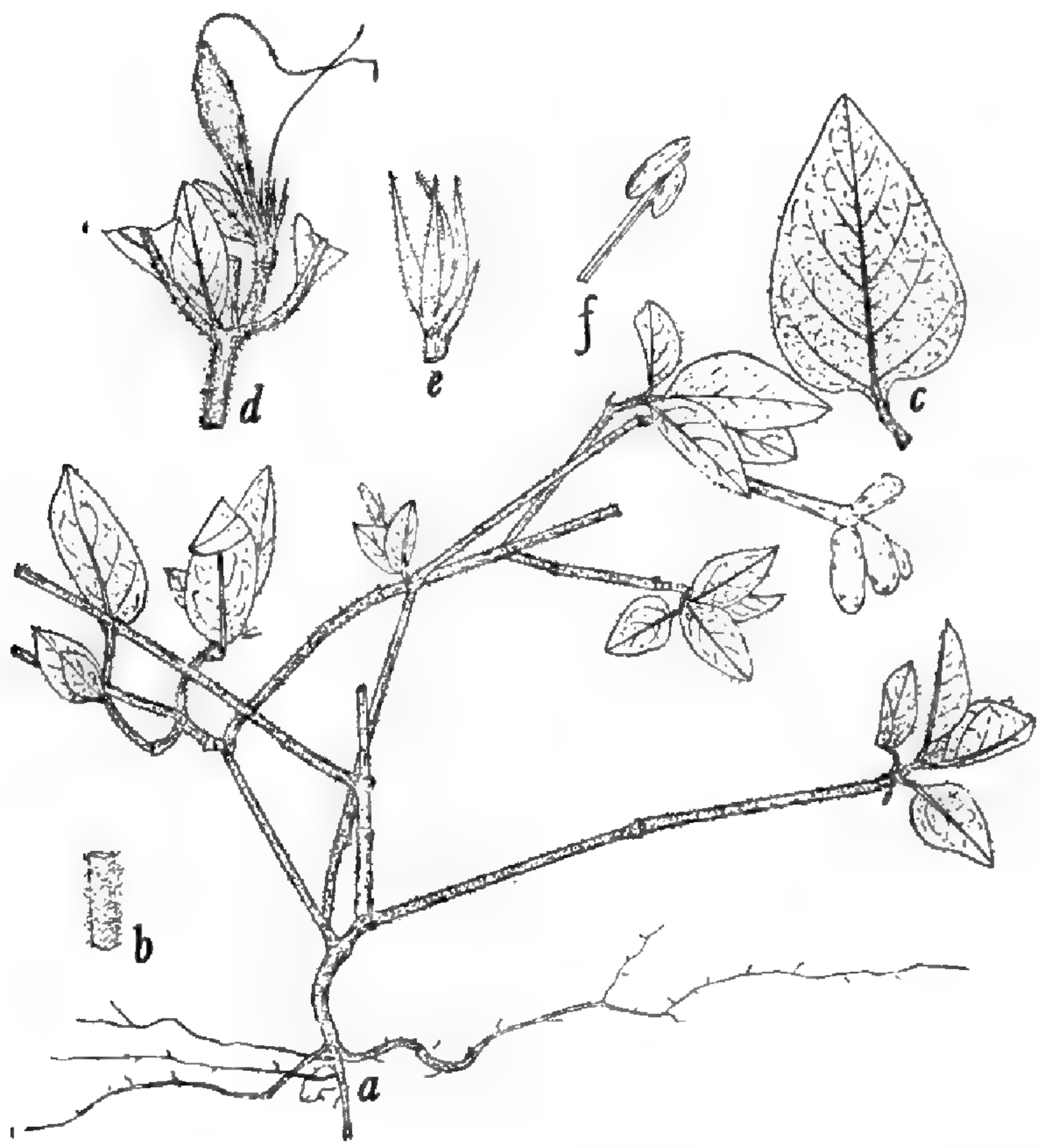

FIGURE 149.—*Siphonoglossa calcarea* Leonard (*Haught* 3929): *a*, Portion of plant; *b*, portion of stem to show pubescence; *c*, leaf; *d*, node from upper portion of stem to show inflorescence; *e*, calyx and one of a pair of bractlets; *f*, anther. (*a*, *c*, Natural size; *b*, *d*, twice natural size; *e*, 2½ 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.

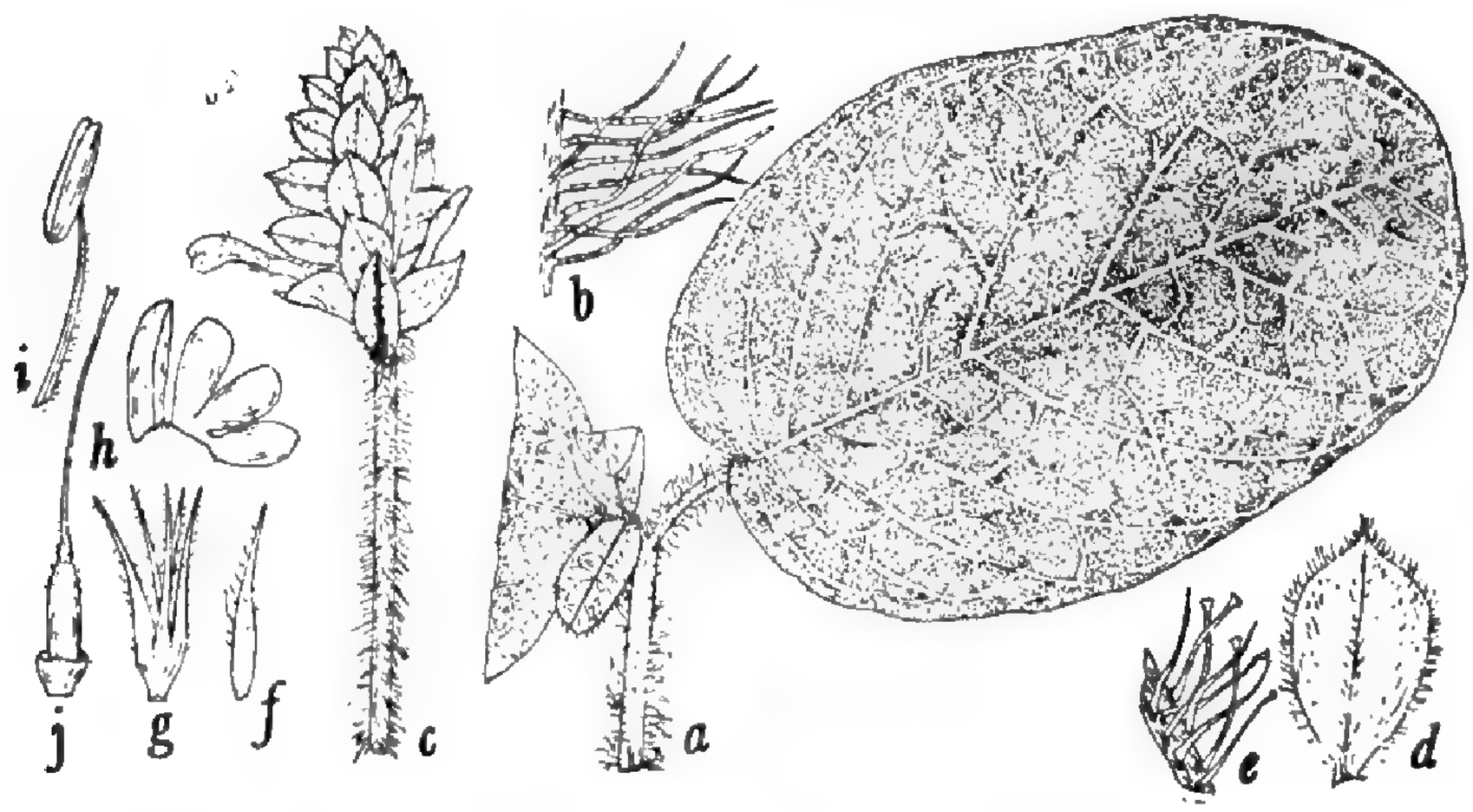

FIGURE 150.—*Fittonia argyroneura* Coem. (*a*, *b*, *Killip* 35534; *c–e*, *h*, *i*, *Allard* 22279 (Perú); *f*, *g*, *j*, *White* 2348 (Bolivia)): *a*, Tip of sterile plant; *b*, pubescence of stem; *c*, spike; *d*, bract; *e*, marginal hairs of bract; *f*, one of a pair of bractlets; *g*, calyx; *h*, 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 Digua 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. cabrerae*); 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. cabrerae*
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 cabrerae** 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 cabrerae* 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*, 1⅓ natural size; *g*, natural size; *h-j*, 4 times natural size; *k*, 1⅓ 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, exserted several mm. beyond mouth of corolla tube but slightly shorter than lips (perhaps more exserted 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 cabrerae 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

Ka'breyeriella 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 225μ 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, exserted 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). Paime, *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 Sanquininí, *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 150μ 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,

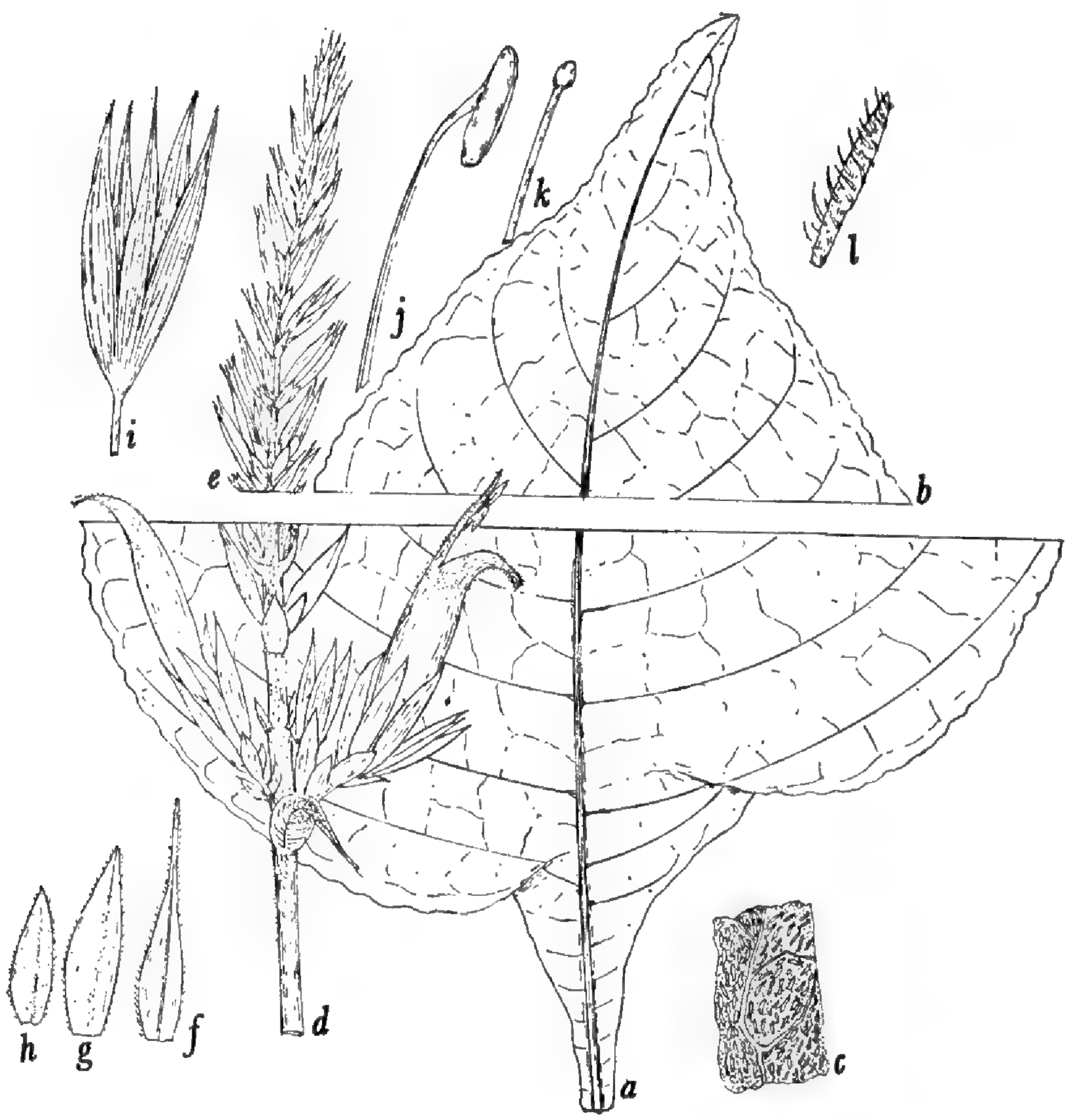

FIGURE 152.—*Kalbreyeriella gigas* Leonard (*Cuatrecasas* 11271): *a*, Base of leaf blade; *b*, tip of same; *c*, enlarged portion of lower surface to show cystoliths and minute papillae; *d*, base of inflorescence; *e*, tip of same; *f*, lower bract; *g*, one of the upper bracts; *h*, one of a pair 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*, 1¼ 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 exserted 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 σῦρινξ, 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 exserted 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 Espíritu 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,

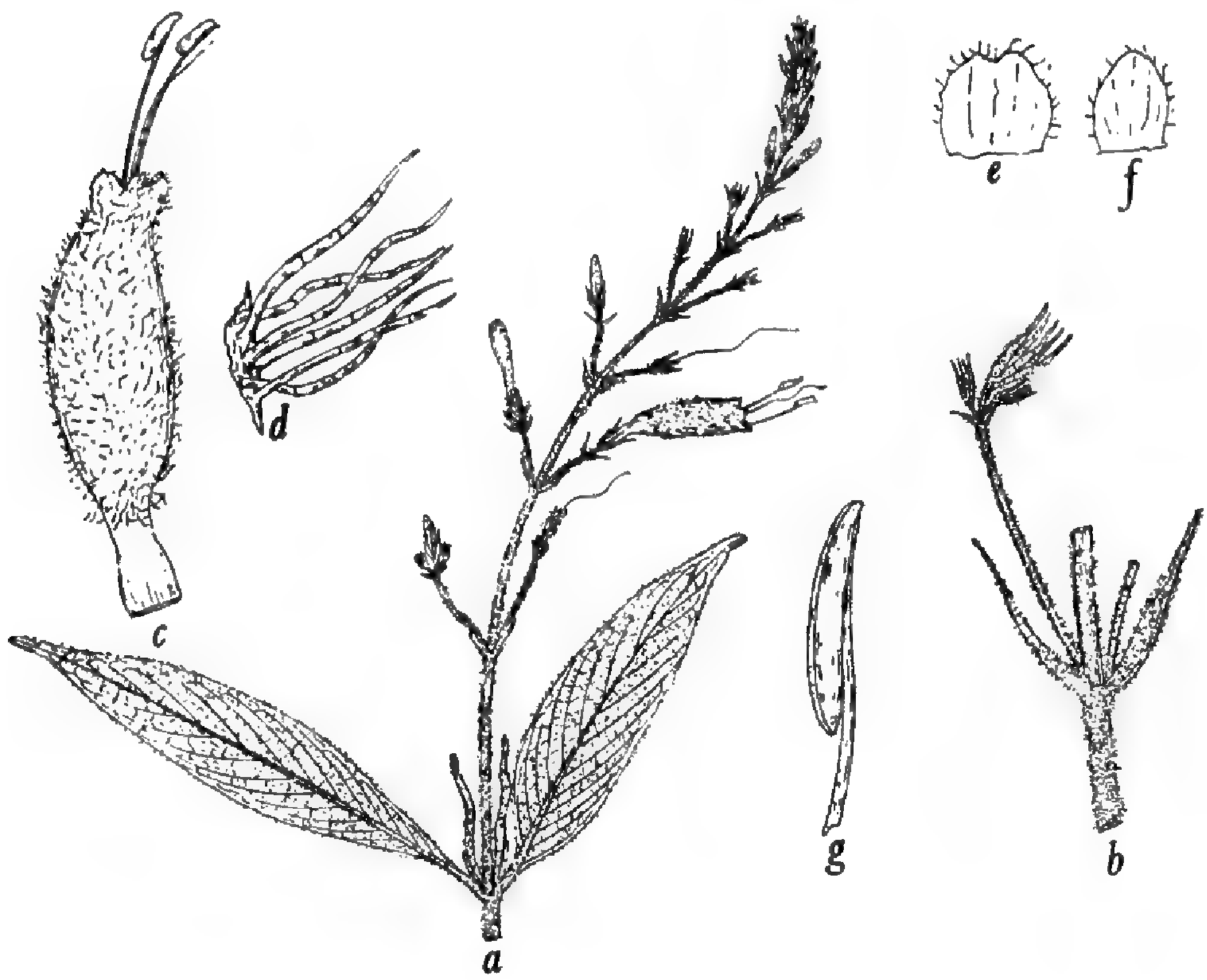

FIGURE 153.—*Syringidium atropurpureum* Lindau (*Kalbreyer* 1252): *a*, Tip of plant; *b*, node of inflorescence; *c*, corolla; *d*, hairs from corolla; *e*, posterior lip of the corolla; *f*, one of the anterior lobes; *g*, anther. (*a*, Half natural size; *b*, 3 times natural size; *c*, 1½ times natural 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 exserted

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: Espíritu 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 subcapicate; 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 erthyrochlamys* 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 exserted 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 ἁβρός, graceful, and ἄκανθος, 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, exserted, divergent, the anthers 1-celled, the filaments attached below the middle of the anther; style exserted, 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. cuatrecasasii*
      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,

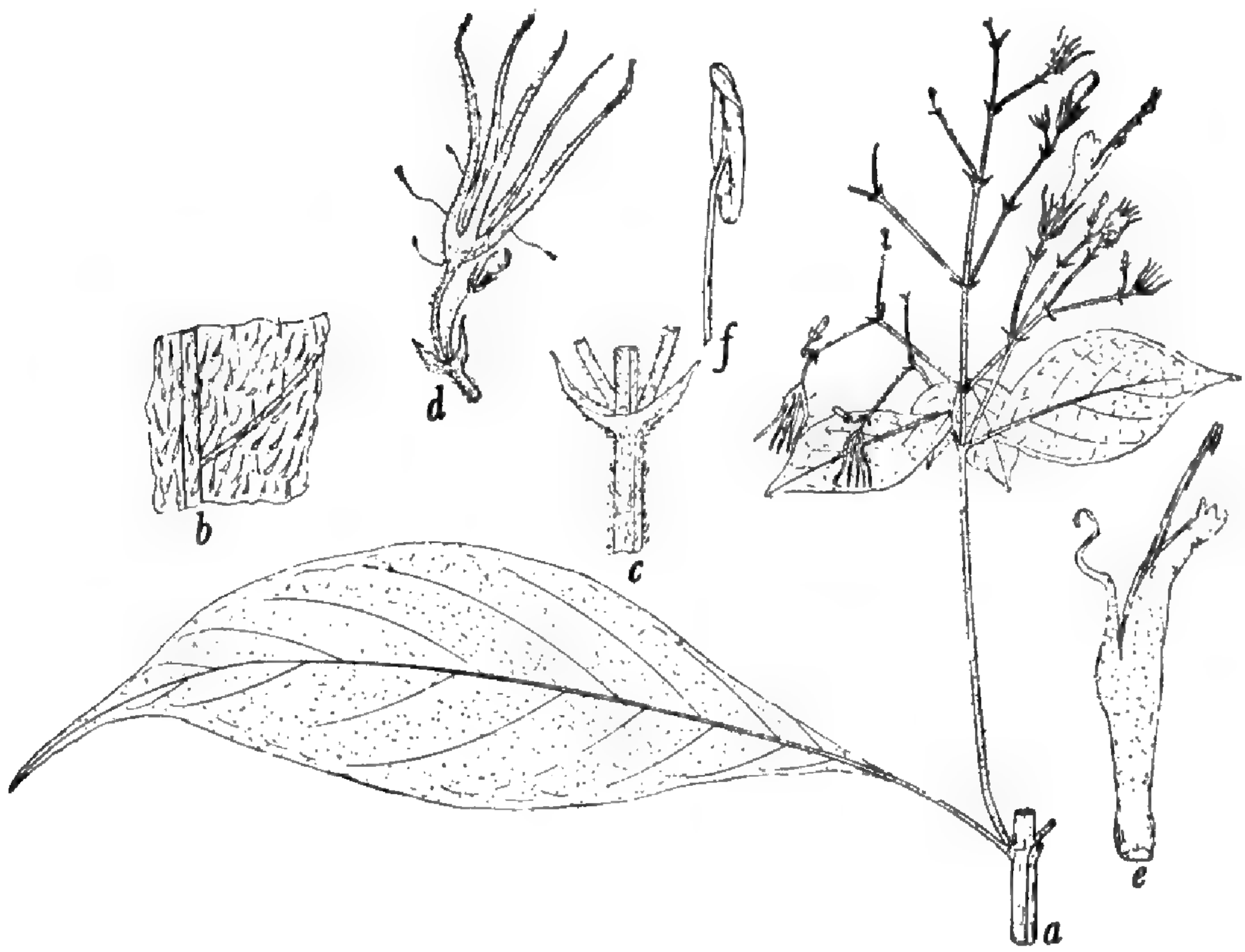

FIGURE 155.—*Habracanthus syscius* Leonard (*Fosberg & Fassett* 21733): *a*, Node showing lateral panicle and leaf blade; *b*, portion of tip of leaf blade (upper side enlarged to show pubescence); *c*, node of inflorescence enlarged to show bracts and pubescence; *d*, calyx; *e*, corolla; *f*, anther (cell dehisced). (*a*, Natural size; *b*, about 10 times natural size; *c*, 4 times natural size; *d*, 2½ times natural size; *e*, 2½ times natural size; *f*, 6½ 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, exserted 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 σύσκιος, 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 subobtuso), 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 subobtusa, subtiliter 3-nervata,

aliquanto pilosa, pilis brevibus eglandulosis et pilus 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 subhelicoideis, 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

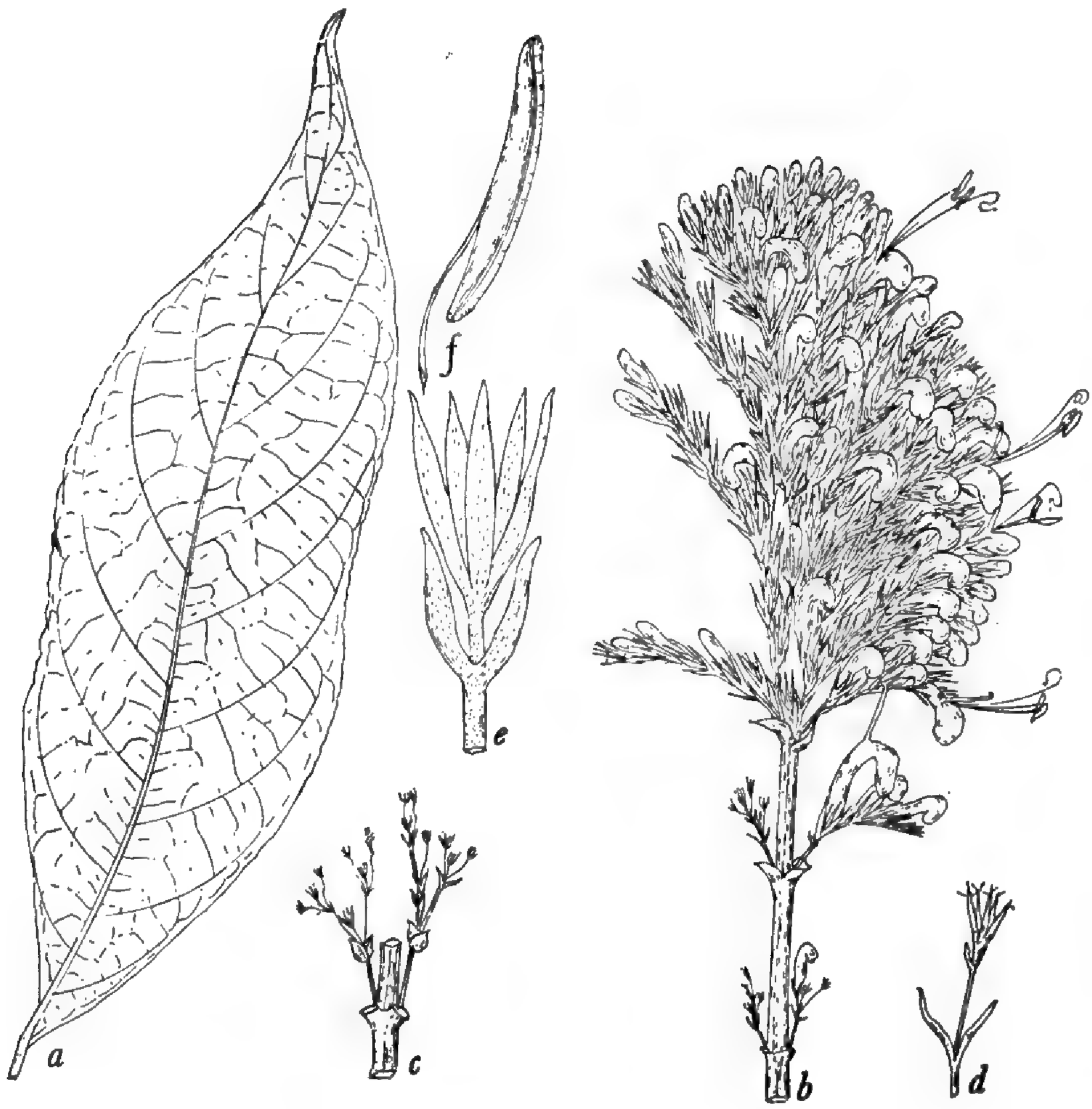

FIGURE 157.—*Habracanthus cuatrecasasii* Leonard (*Cuatrecasas* 8740): *a*, Leaf blade; *b*, inflorescence; *c*, node of stem showing small axillary and usually sterile panicles; *d*, calyx and bracts of same; *e*, calyx and bracts from flowering panicle; *f*, anther. (*a*, Half natural size; *b*, *c*, 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 exserted 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 aglaüs** Leonard, sp. nov. FIGURE 158

Herba erecta, caulibus subquadrangularibus, glabris, cystolithis numerosis, parallelis; lamina foliorum ovata (ultimae 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, ultimae 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

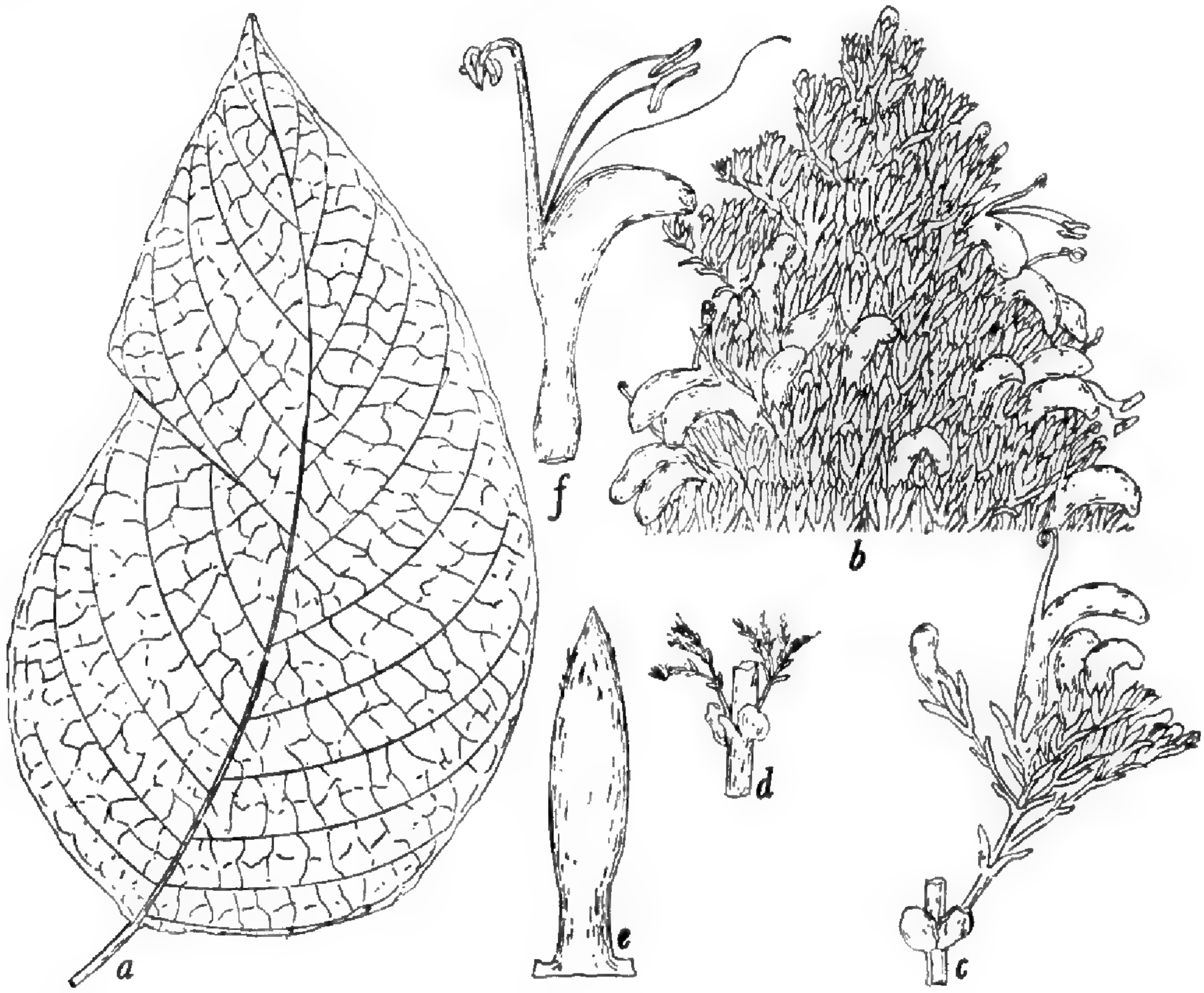

FIGURE 158.—*Habracanthus aglaüs* Leonard (*Cuatrecasas* 11435): *a*, Leaf blade; *b*, tip of panicle; *c*, node from just below tip of panicle; *d*, node at base of panicle; *e*, calyx segment; *f*, corolla. (*a*, Half natural size; *b–d*, natural size; *e*, 5 times natural size; *f*, about 1¼ times 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 exserted 1 to 2 cm. beyond the mouth of the corolla tube, glabrous, the anthers 6 mm. long and 1.5 mm. thick, muticous at both ends; style exserted 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 cylindric 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 subsessile 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,

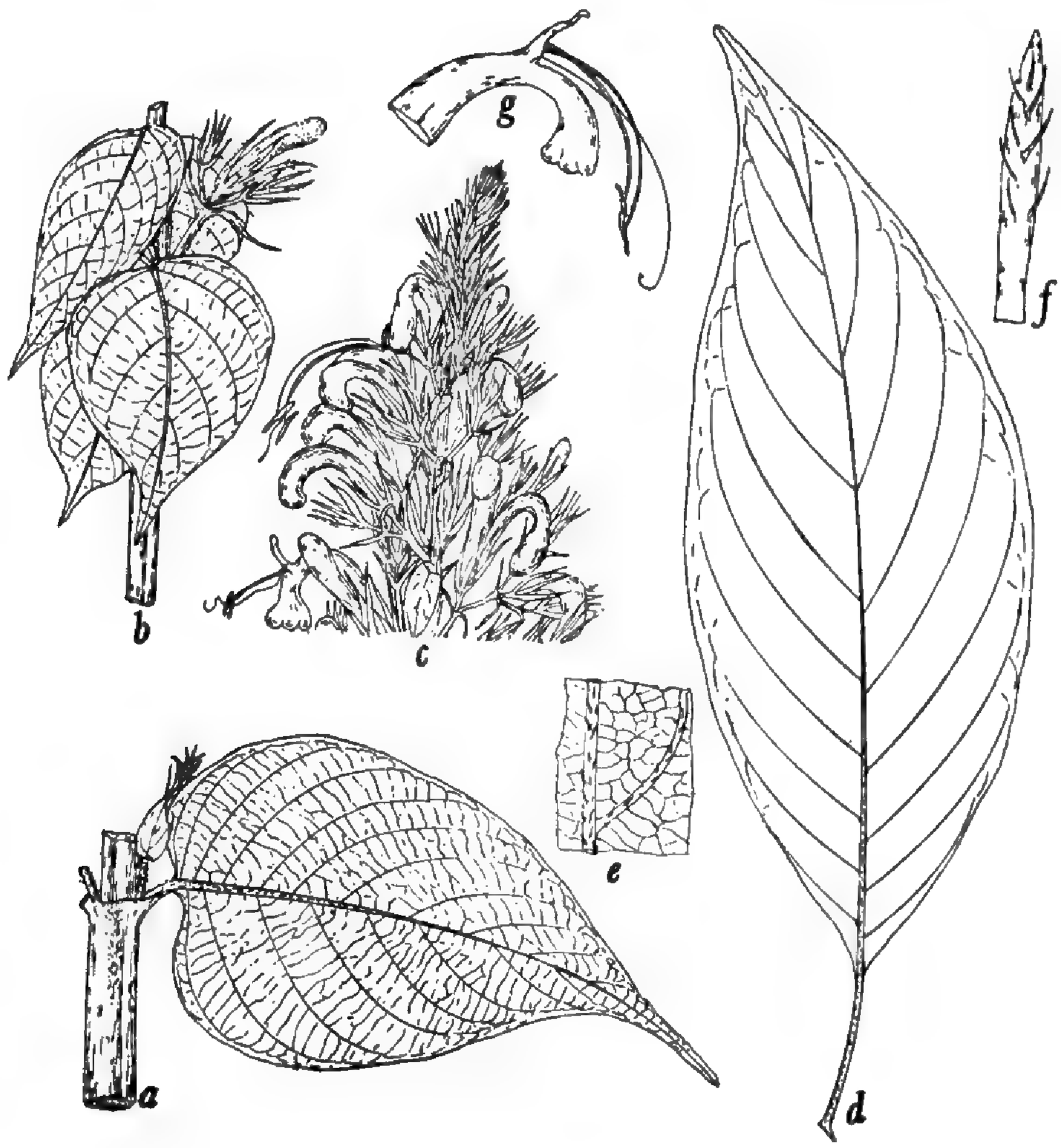

FIGURE 159.—*Habracanthus pycnostachys* Leonard (*Cuatrecasas* 18515): *a*, basal node of inflorescence; *b*, section of inflorescence near its base; *c*, tip of inflorescence; *d*, leaf; *e*, portion of leaf blade (lower surface) to show venation; *f*, calyx segment; *g*, corolla. (*a–c*, Natural size; *d*, half natural size; *e*, *g*, about 1½ 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 Dígua, 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; bracteae 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 ventricoso, 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*, 3½ 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 exserted 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*, 12½ 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 subsessile 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 exserted 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

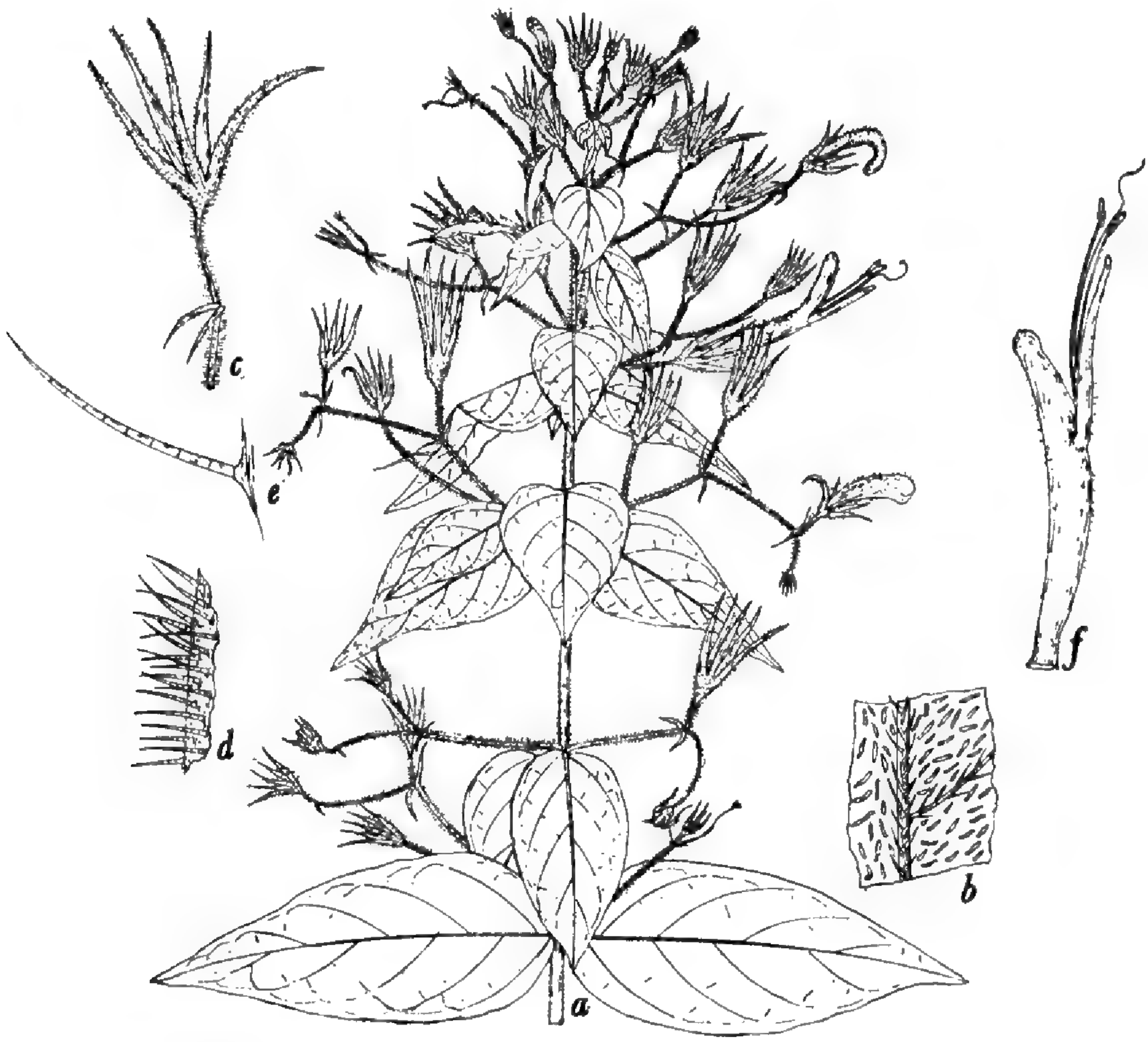

FIGURE 162.—*Habracanthus erythranthus* Leonard (*Scolnik, Araque-M., & Barkley* 19An. 340): *a*, Tip of plant; *b*, portion (under surface) of leaf blade enlarged to show trichomes and cystoliths; *c*, calyx and bracts; *d*, portion of pedicel enlarged to show trichomes; *e*, one of the trichomes; *f*, 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 subobtuso), 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 subobtuse) 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

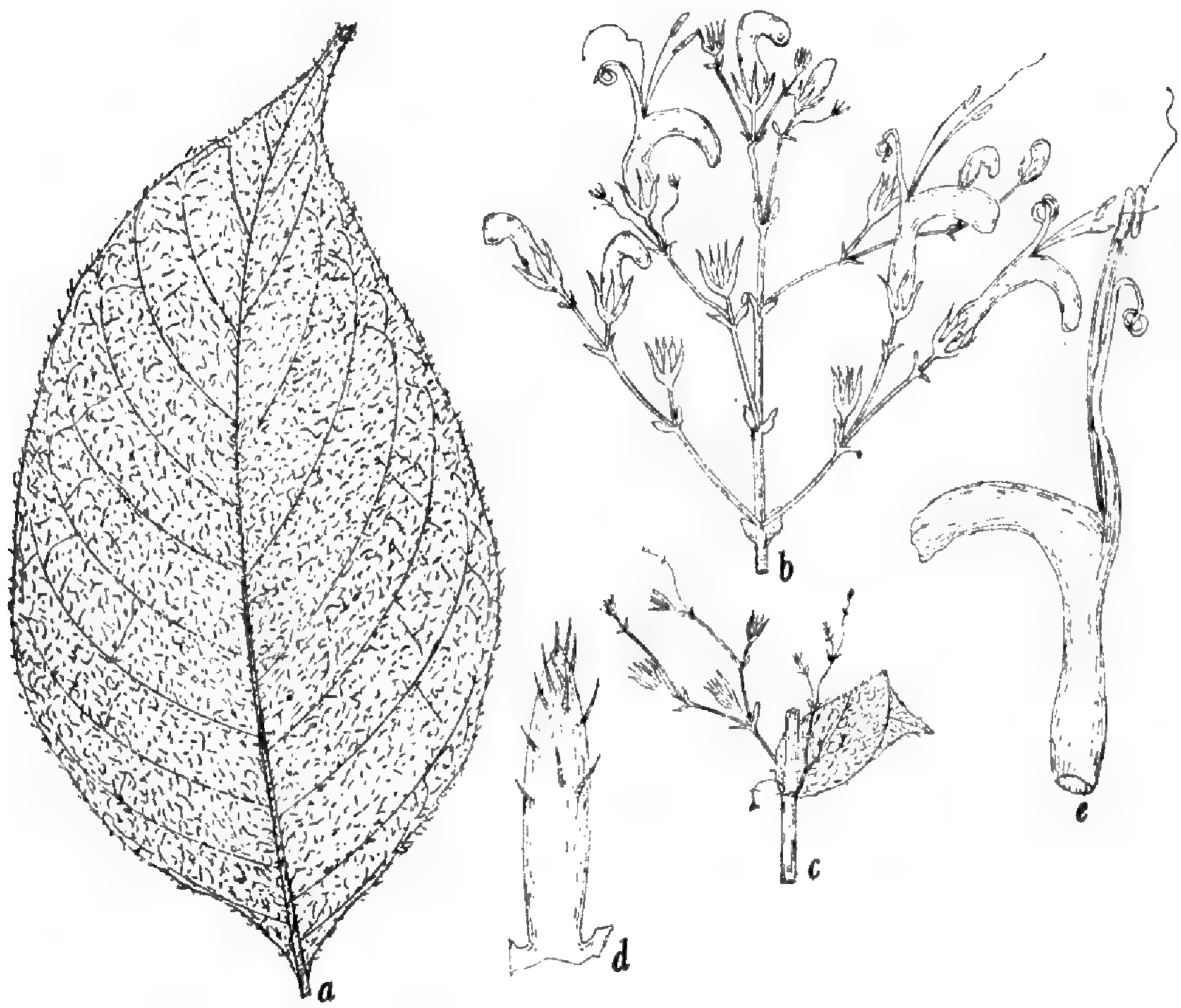

FIGURE 163.—*Habracanthus putumayensis* Leonard (*Schultes & Villarreal* 7740): *a*, Leaf blade; *b*, tip of panicle; *c*, basal node of same; *d*, calyx segment; *e*, corolla. (*a–c*, Natural size; *d*, 6 times natural size; *e*, 2½ times natural size.)

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 exserted 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,

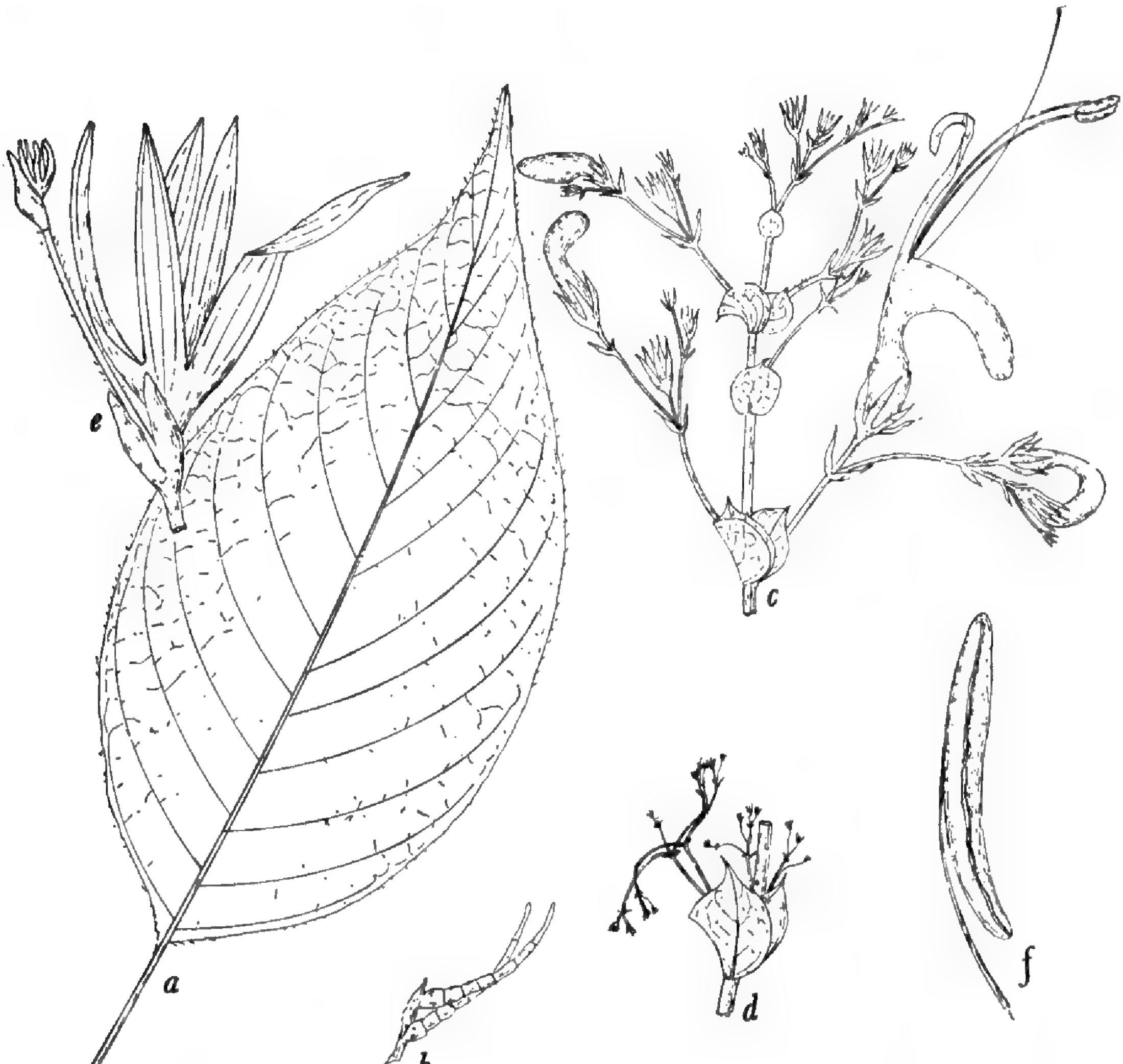

FIGURE 164.—*Habracanthus floriferus* Leonard (*Cuatrecasas* 8519): *a*, Leaf blade; *b*, hairs from margin of leaf blade; *c*, the upper flower-producing portion of the panicle; *d*, one of the lowermost nodes from the sterile basal portion of the panicle; *e*, calyx; *f*, anther. (*a*, Half natural size; *b*, 42 times natural size; *c*, *d*, natural size; *e*, about 4 times natural size; *f*, 5½ 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, muticous 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; bracteae 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 cincinato, 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 exserted 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 subobtuso), 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

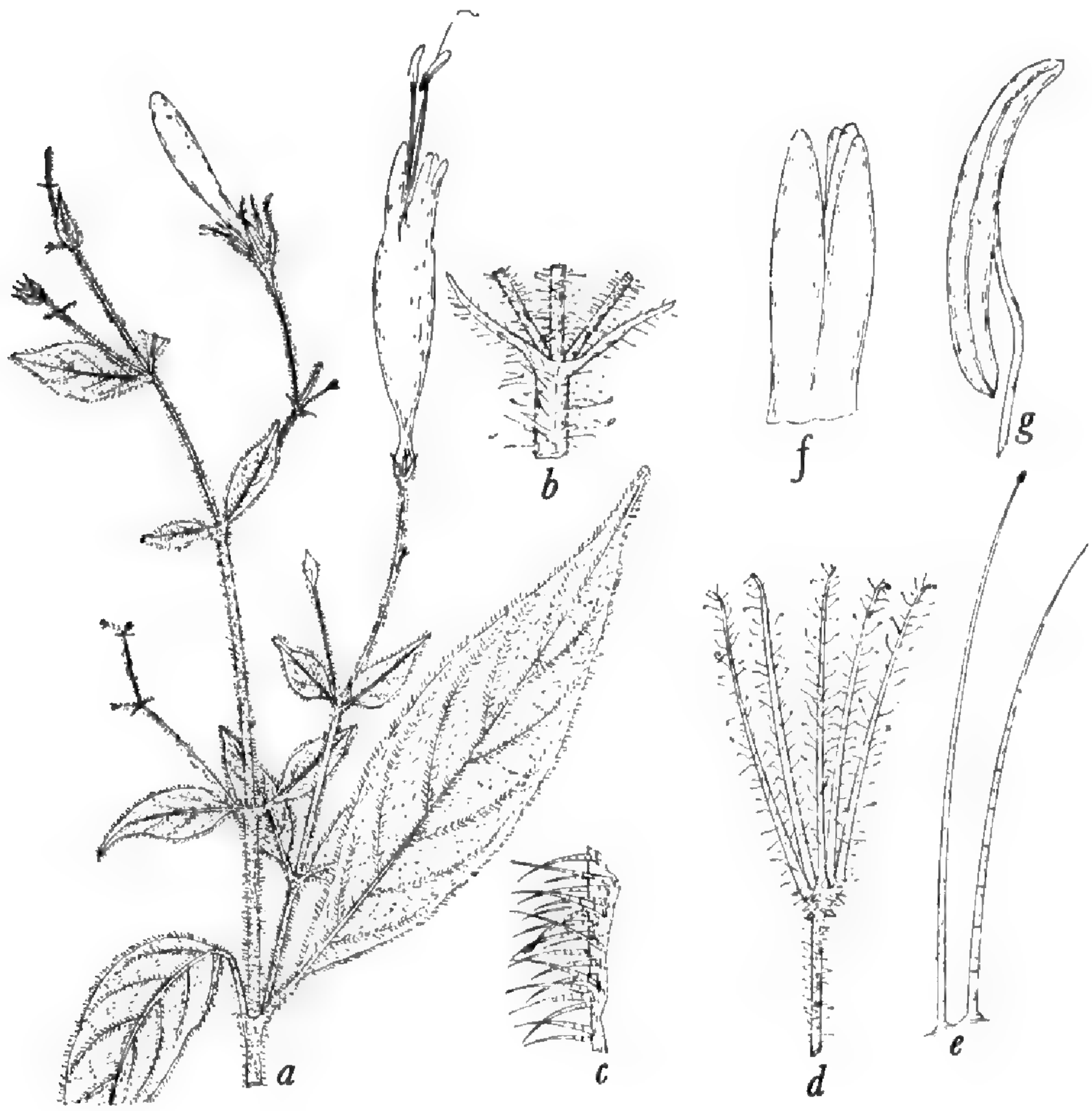

FIGURE 166.—*Habracanthus pilosus* Leonard (*Grant & Fosberg* 9343): *a*, Tip of plant; *b*, node of inflorescence showing the bracts subtending the pedicels; *c*, portion of rachilla enlarged to show pubescence; *d*, calyx; *e*, a glandular and an acute-tipped trichome from calyx segment; *f*, tip of corolla; *g*, anther. (*a*, Natural size; *b*, 6 times natural size; *c*, 7½ times natural size; *d*, 2½ times natural size; *e*, 40 times natural size; *f*, 3 times natural size; *g*, 8½ 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 exserted 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 exserted 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.

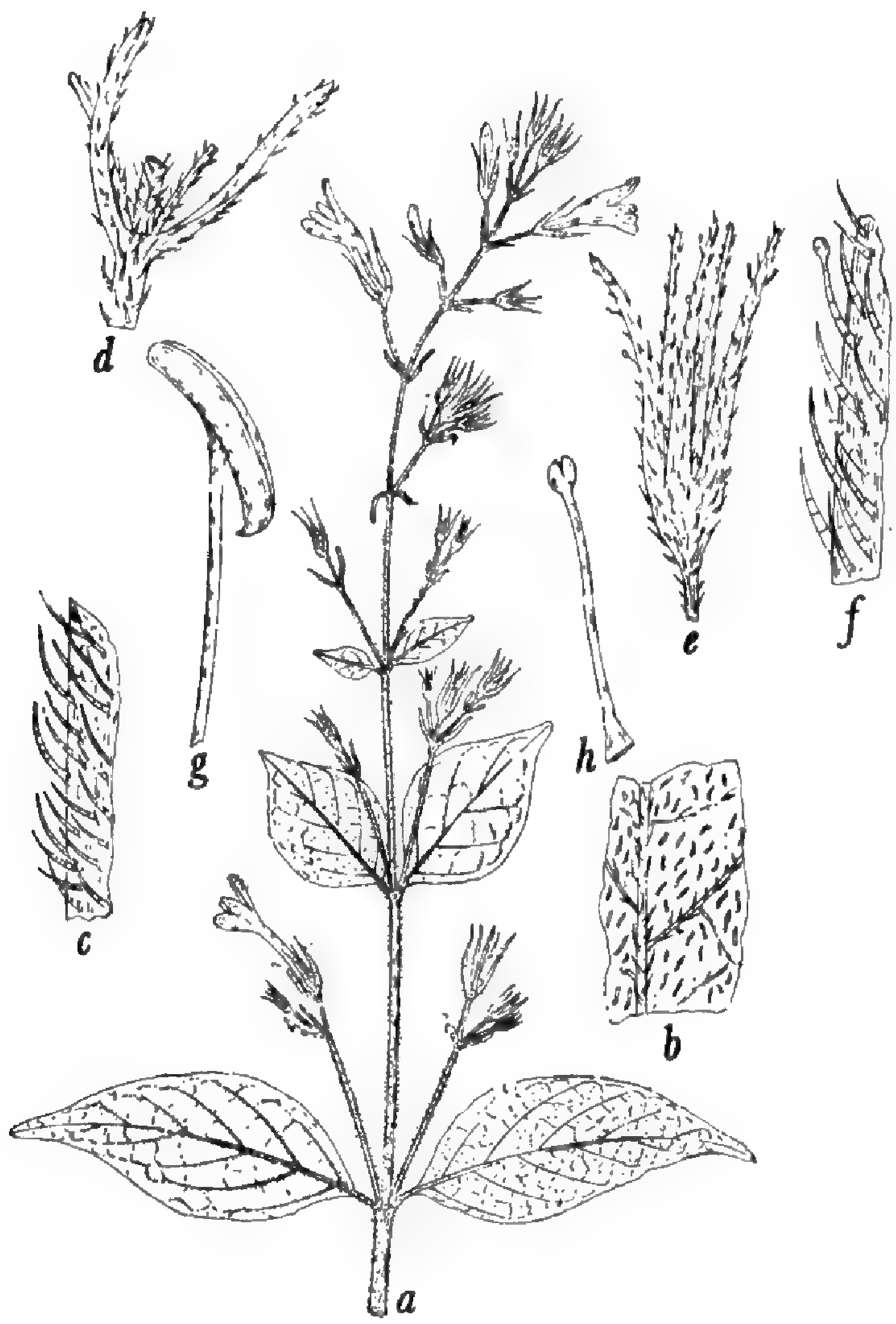

FIGURE 168.—*Habracanthus chatien* Leonard (*Grant* 9439): *a*, Tip of plant to show upper portion of inflorescence; *b*, portion of undersurface of leaf blade to show pubescence and cystoliths; *c*, portion of rachis enlarged to show pubescence; *d*, node of inflorescence to show bracts; *e*, calyx; *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, subobtuse 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 excerted, 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 χαρίεν, 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 exserted 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 exserted 4 to 15 mm. beyond the mouth

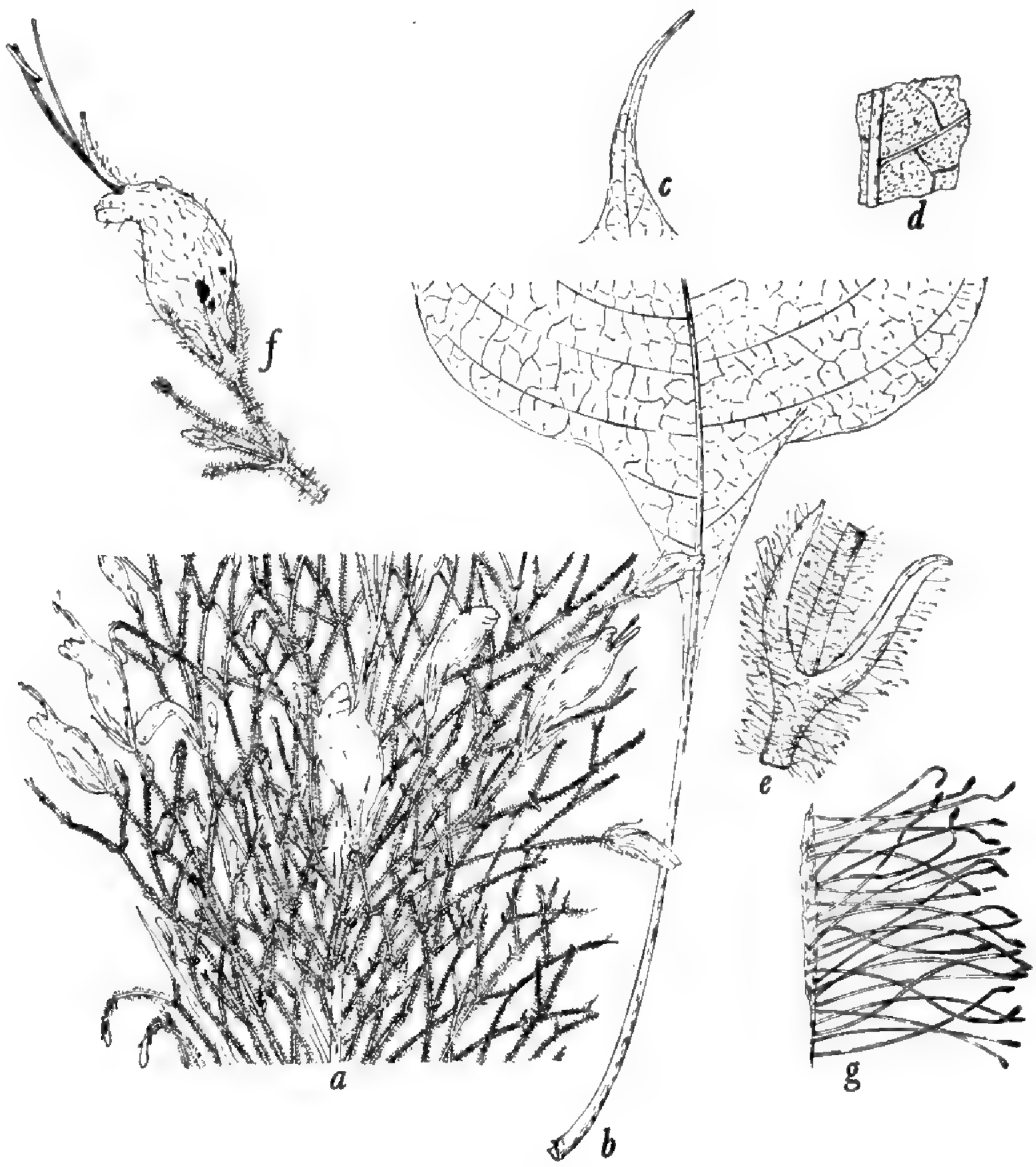

FIGURE 169.—*Habracanthus smithii* Leonard (*Killip & Smith* 19257): *a*, Section (about middle) of inflorescence; *b*, basal portion of leaf blade; *c*, tip of leaf blade; *d*, portion of leaf blade (upper surface) enlarged to show cystoliths; *e*, bracts; *f*, corolla; *g*, portion of pedicel enlarged 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 flavidus, retrorse curvatis, conspicue articulatis; lamina foliorum oblongo-elliptica, acuminata (apice ipso subobtuso), 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 positis, 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; bracteae 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-

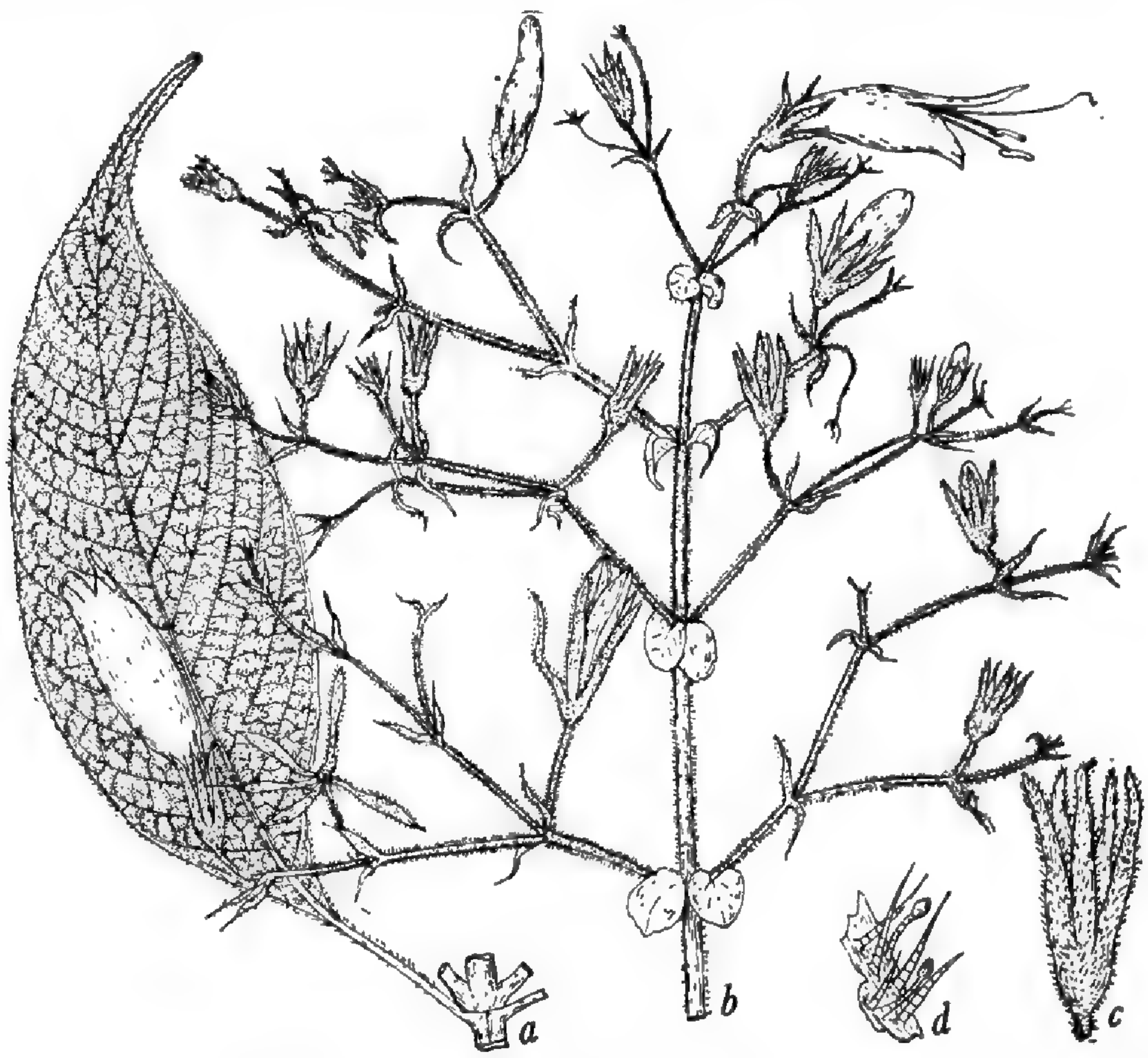

FIGURE 169a.—*Habracanthus xanthothrix* Leonard (*Køie* 4671): *a*, Leaf and node of stem; *b*, tip of inflorescence; *c*, calyx; *d*, portion of calyx enlarged to show hairs. (*a*, Half natural size; *b*, natural size; *c*, 2½ times natural size; *d*, 50 times natural size.)

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 exserted 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 subobtuso), sparse et minute hirtellae; calycis segmenta lanceolata, acuta (apice ipso subobtuso), 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

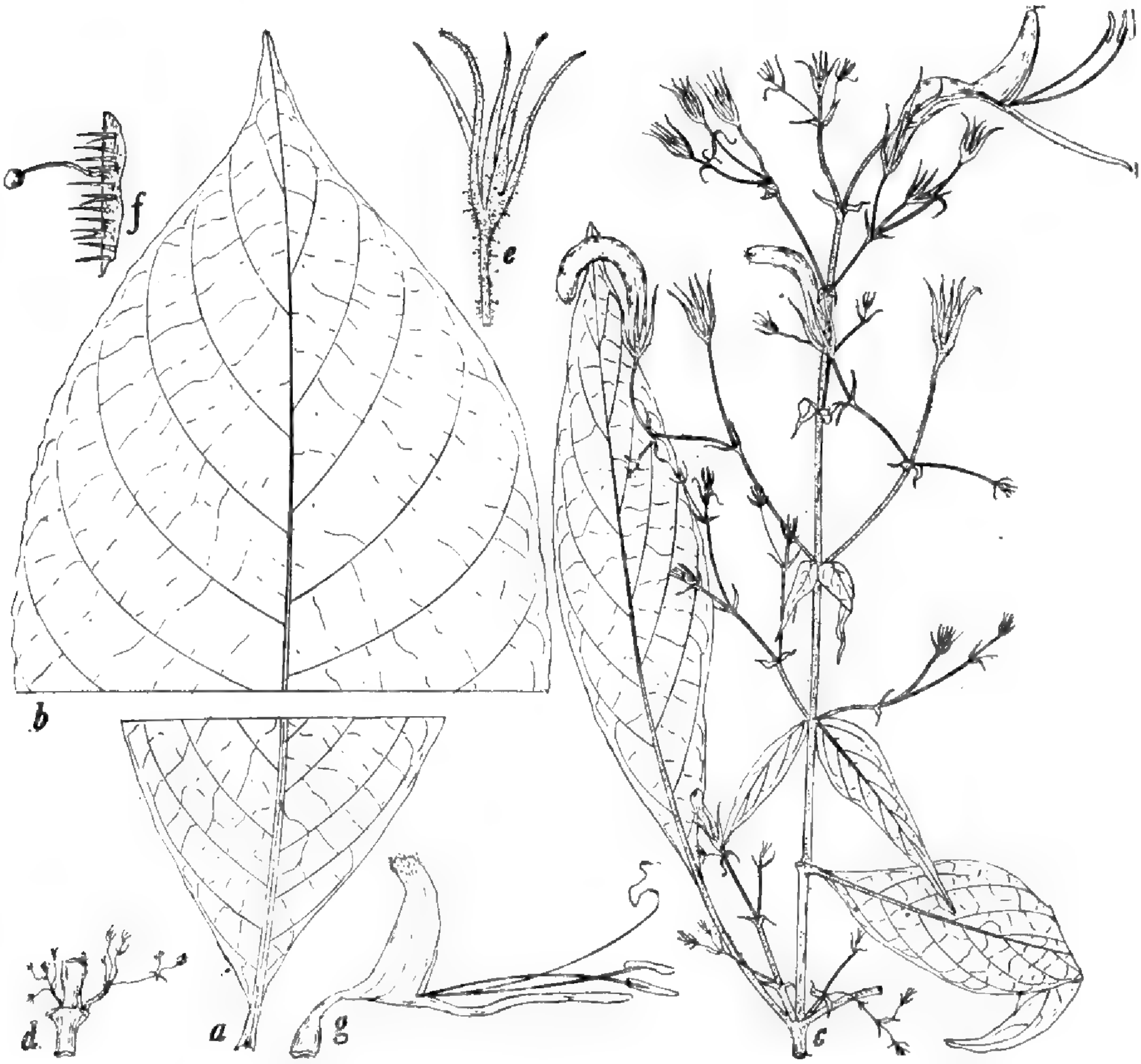

FIGURE 170.—*Habracanthus xantholeucus* Leonard (*Grant & Fosberg* 9326): *a*, Basal portion of leaf blade; *b*, upper half of same; *c*, panicle; *d*, node of stem showing small sterile axillary panicles; *e*, calyx; *f*, portion of pedicel enlarged to show pubescence; *g*, corolla. (*a*, *b*, Half natural size; *c*, *d*, *g*, natural size; *e*, 2½ 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,

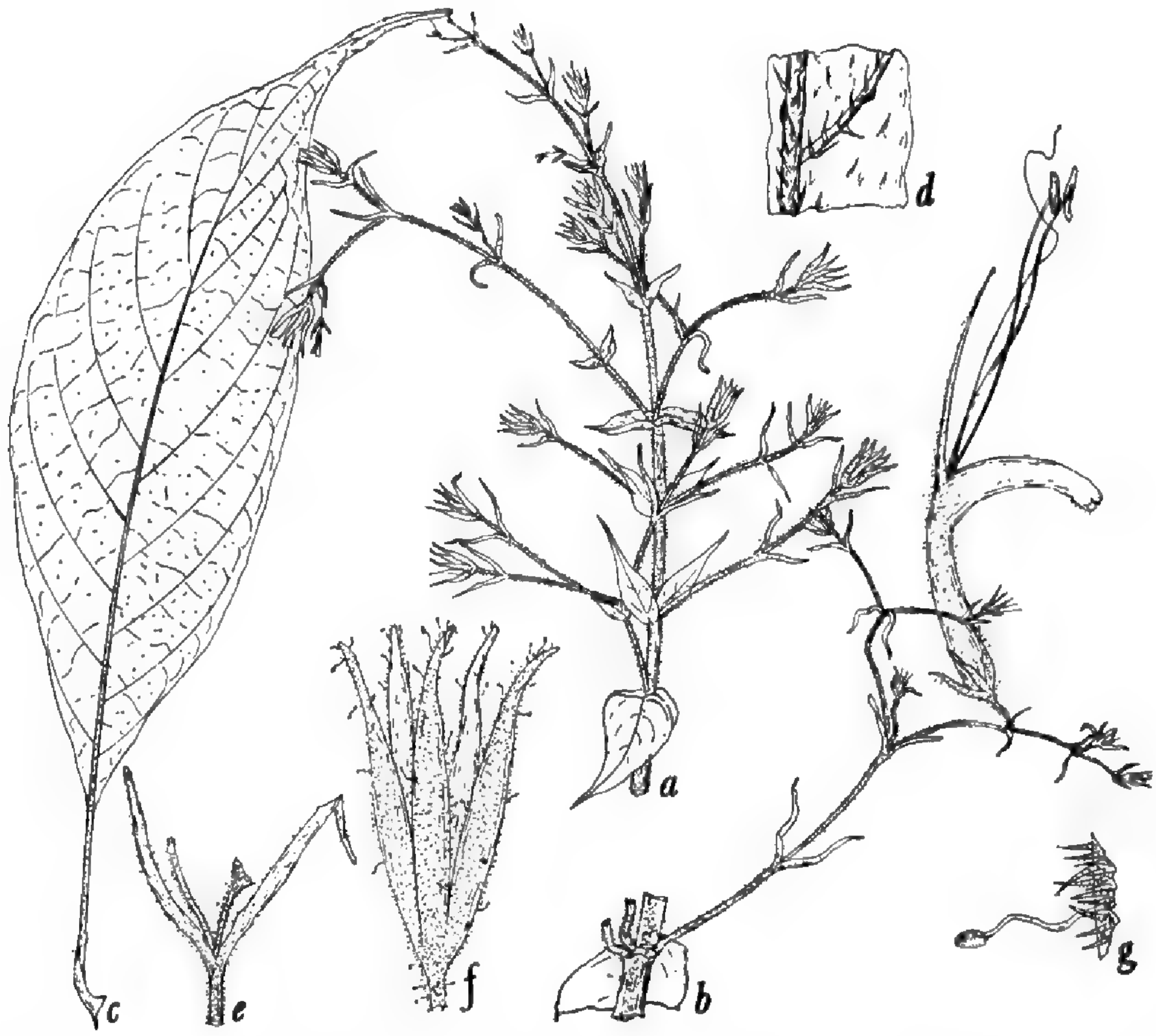

FIGURE 171.—*Habracanthus ampelinus* Leonard (*Grant* 9647): *a*, Tip of panicle; *b*, portion of inflorescence about 15 cm. below tip; *c*, leaf; *d*, portion of leaf blade (upper surface) enlarged to show pubescence; *e*, ultimate bracts; *f*, calyx; *g*, portion of calyx segment enlarged to show pubescence. (*a*, *b*, Natural size; *c*, half natural size; *d*, 8 times natural size; *e*, 3½ 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 exserted 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; bracteae ramos panicularum subtendentes ovatae, sessiles, apiculatae; pedicelli graciles, cystolithis minutis praediti; bracteae 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,

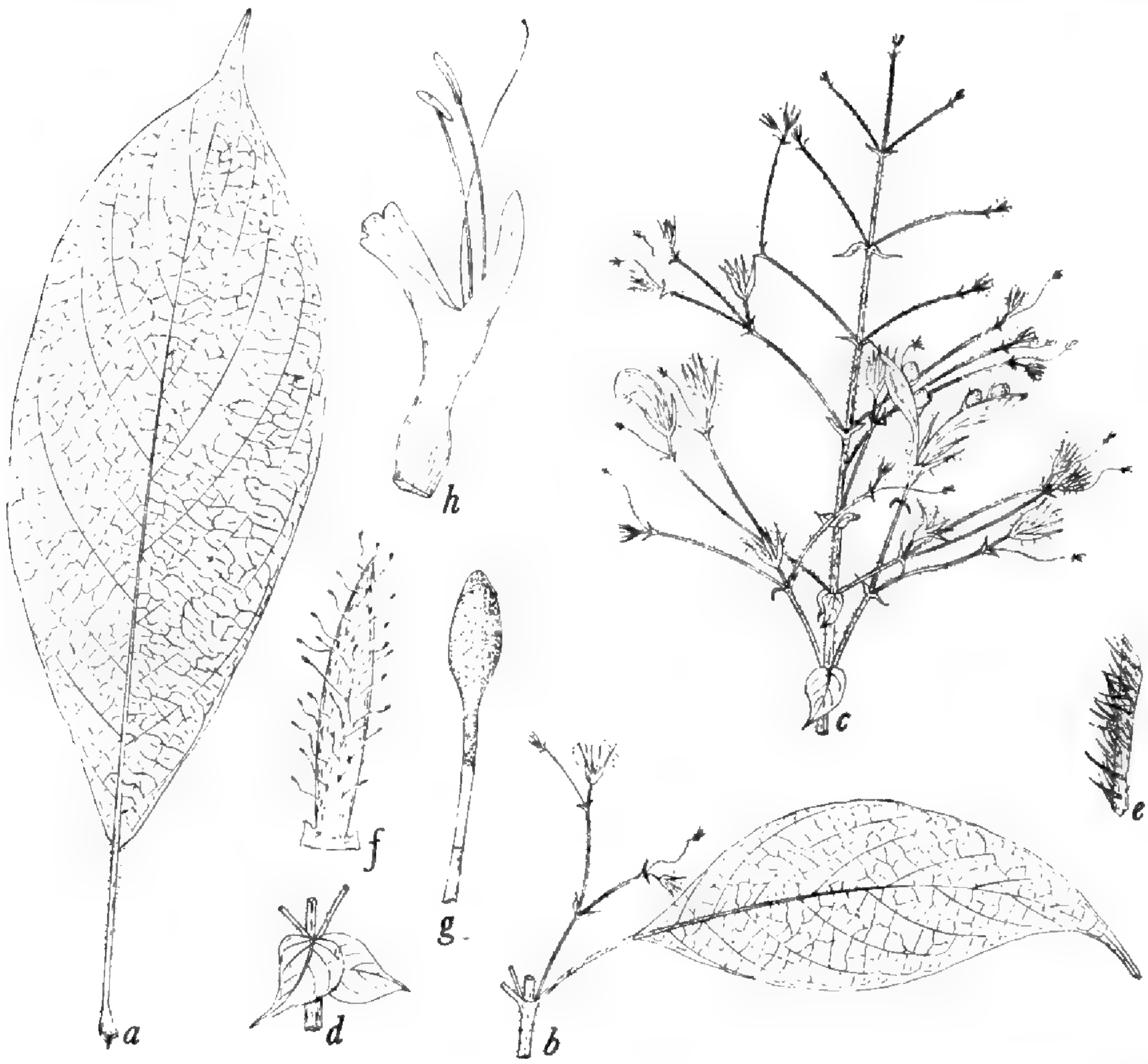

FIGURE 172.—*Habracanthus caucensis* Leonard (*a*, *Fosberg* 19941; *b–h*, *Cuatrecasas* 23468): *a*, Leaf; *b*, lowermost node of inflorescence; *c*, tip of inflorescence; *d*, a pair of bracts subtending lateral branches near base of panicle; *e*, portion of rachis from upper part of panicle enlarged to show pubescence; *f*, calyx segment; *g*, trichome from calyx; *h*, corolla. (*a*, Half natural size; *b*, *c*, natural size; *d*, 1⅔ times natural size; *e*, about 20 times natural size; *f*, 4 times natural size; *g*, 150 times natural size; *h*, 1⅔ 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, exserted 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 ventricoso, 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*, 1½ 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 exserted 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 subobtuse 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 χεῖλος, 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 acminate 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 ciliolate 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 ciliolate, 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,

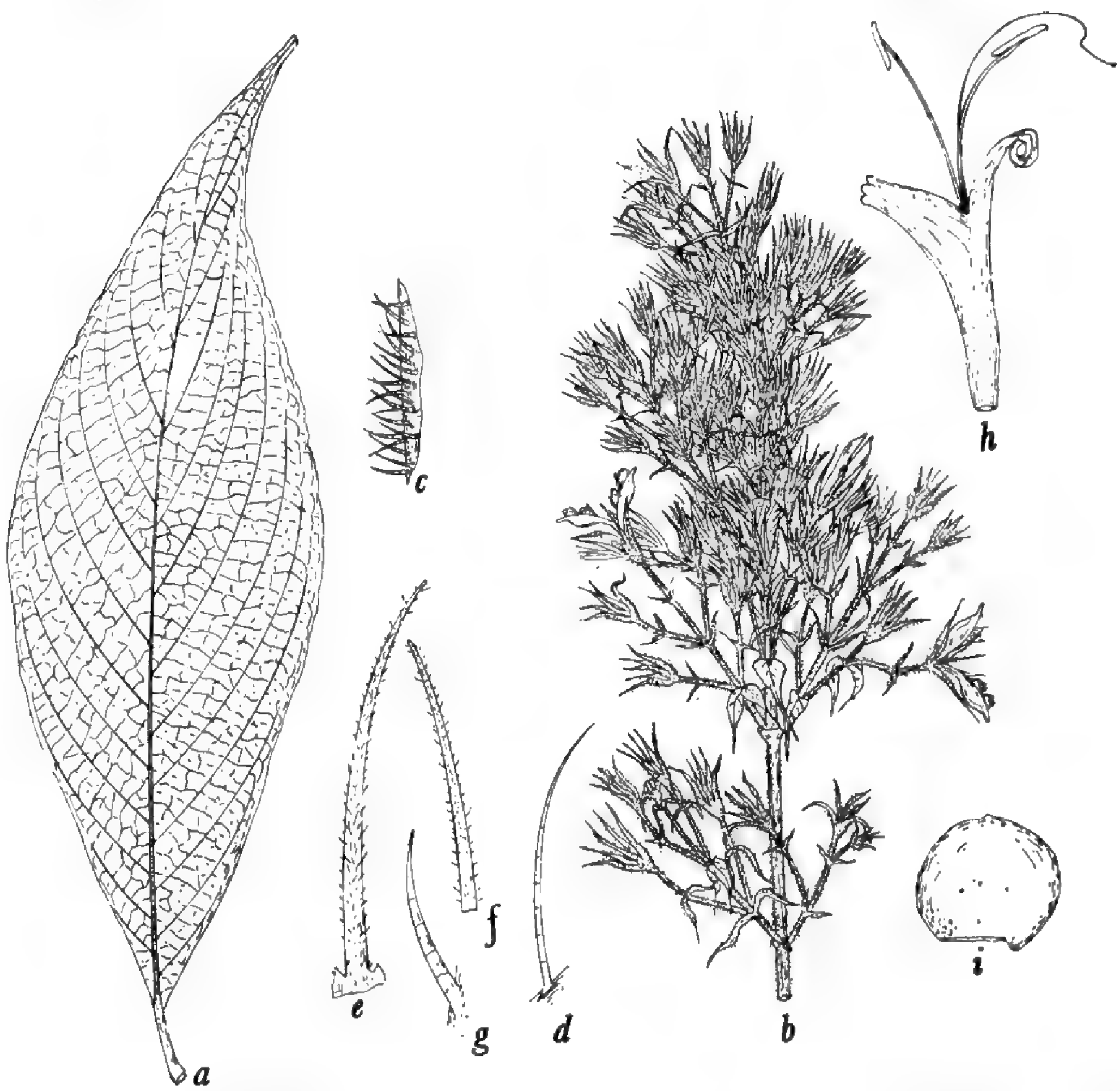

FIGURE 174.—*Habracanthus oresbius* Leonard (*Pennell* 7556): *a*, Leaf; *b*, panicle; *c*, portion of rachis enlarged to show pubescence; *d*, a hair from rachis; *e*, calyx segment (outer surface); *f*, upper half of calyx segment showing cystoliths and marginal hairs (inner surface); *g*, one of the 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 1½ 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 ὀρέσβιος, 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 positis, 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 subquandrangular, 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, ciliolate 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, ciliolate 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

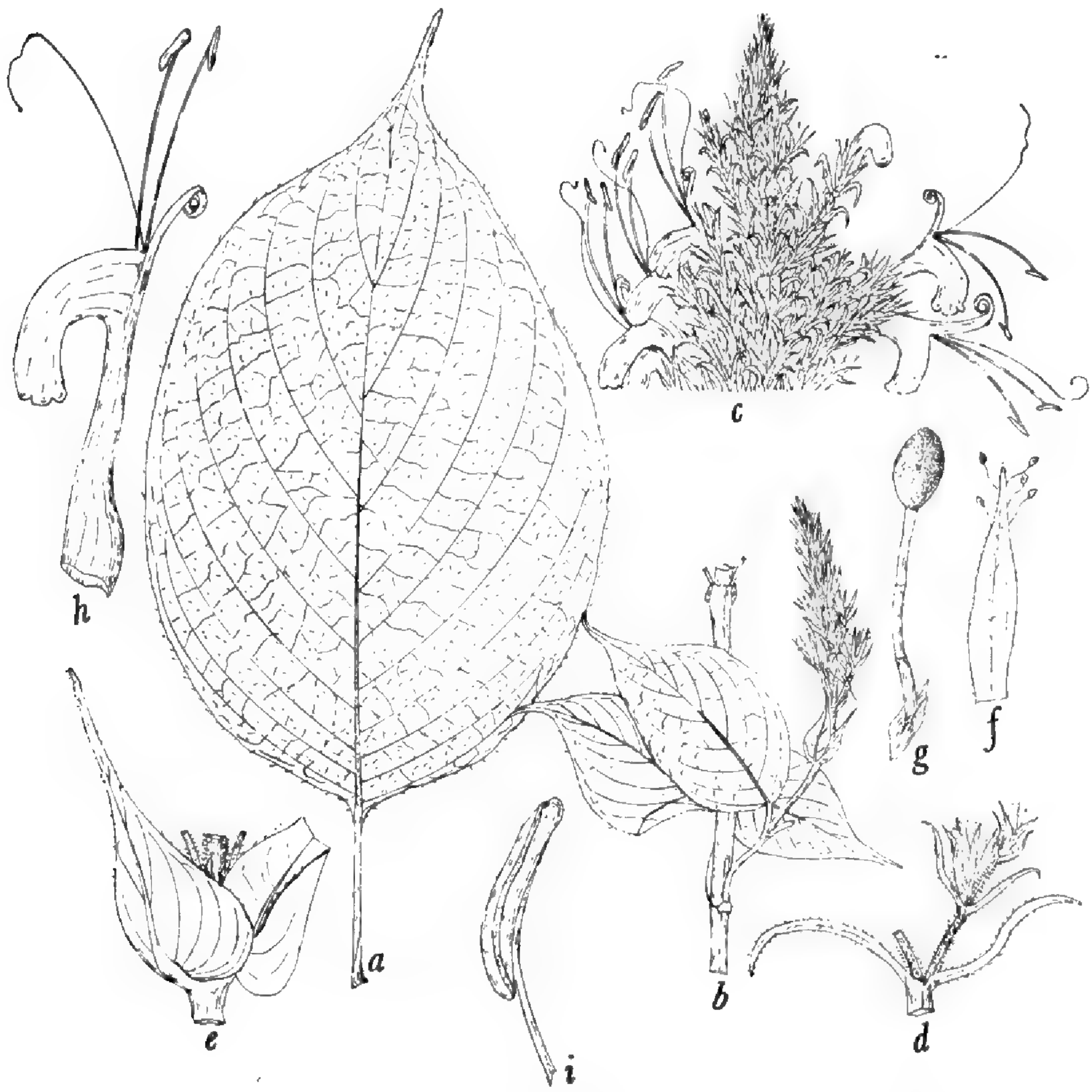

FIGURE 175.—*Habracanthus corei* Leonard (*Core* 1200): *a*, Leaf; *b*, the lowermost node of inflorescence; *c*, tip of inflorescence; *d*, node of inflorescence to show uppermost bracts; *e*, node of rachis to show bracts; *f*, calyx segment; *g*, trichome from tip of calyx segment; *h*, corolla; *i*, anther. (*a*, Half natural size; *b*, *c*, natural size; *d*, twice natural size; *e*, 2½ times natural size; *f*, *i*, 5 times natural size; *g*, 40 times natural size; *h*, about 1½ times natural size.)

ones about 1 mm. wide, all rounded; stamens exserted 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*, 5½ times natural size; *e*, 2⅓ times natural size; *f*, 5½ 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 exserted about 12 mm. beyond the mouth of the corolla, glabrous, the anthers linear, 4.5 mm. long, 1.25 mm. thick; style exserted 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; panicula 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 subobtuso, 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 exserted 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.

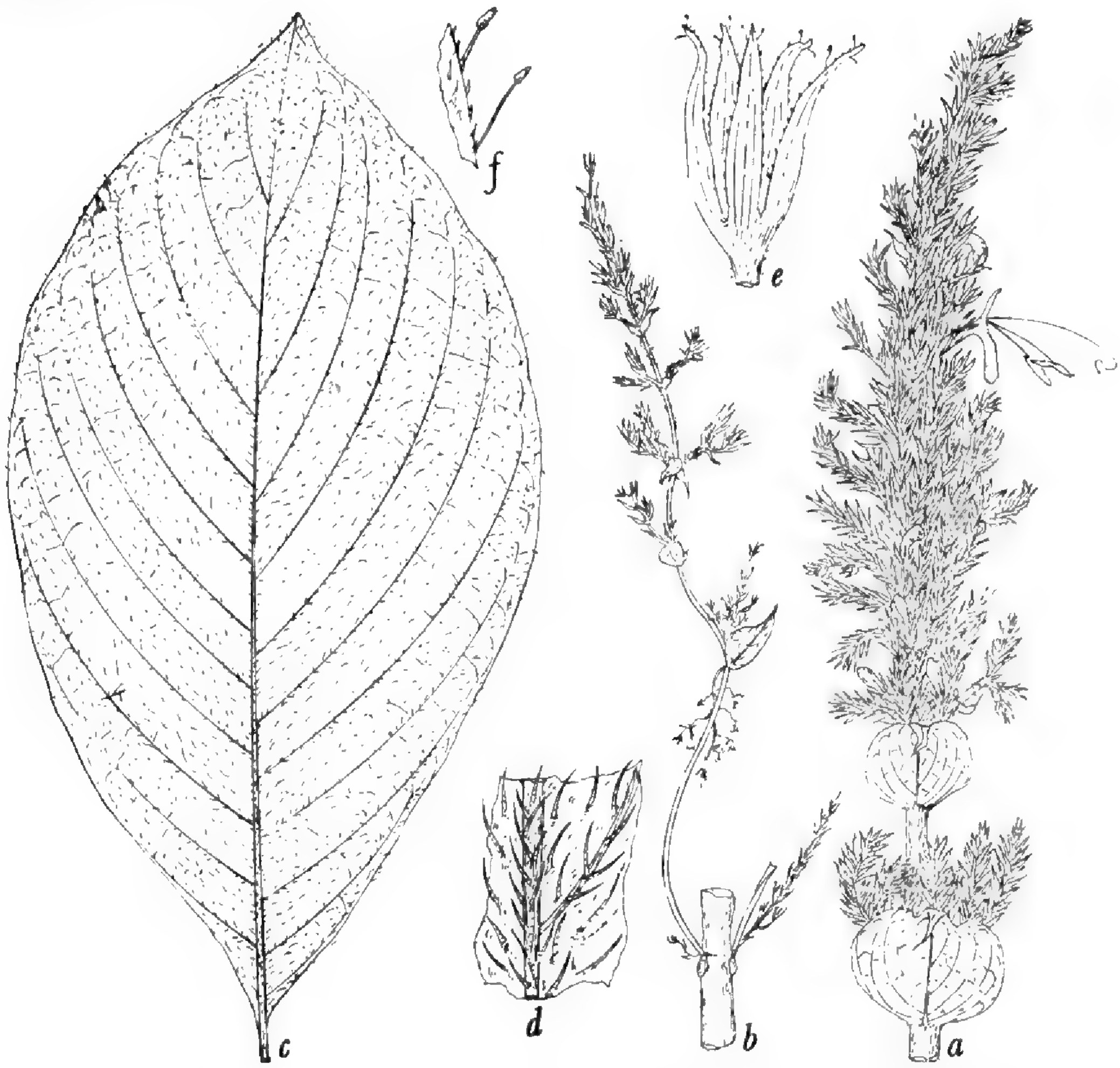

FIGURE 177.—*Habracanthus congestus* Leonard (*von Sneidern* 2646): *a*, Upper half of panicle; *b*, lowermost part of panicle; *c*, leaf blade; *d*, portion of leaf blade enlarged to show pubescence; *e*, calyx; *f*, portion from near tip of calyx segment enlarged to show pubescence. (*a*, Half natural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

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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 subobtusa 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*, 2¼ 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 subobtuso, 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 dicho-

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*, 2½ 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 subobtuso), 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 exserted 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 ὑλόβιος, 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 subobtusa), 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-

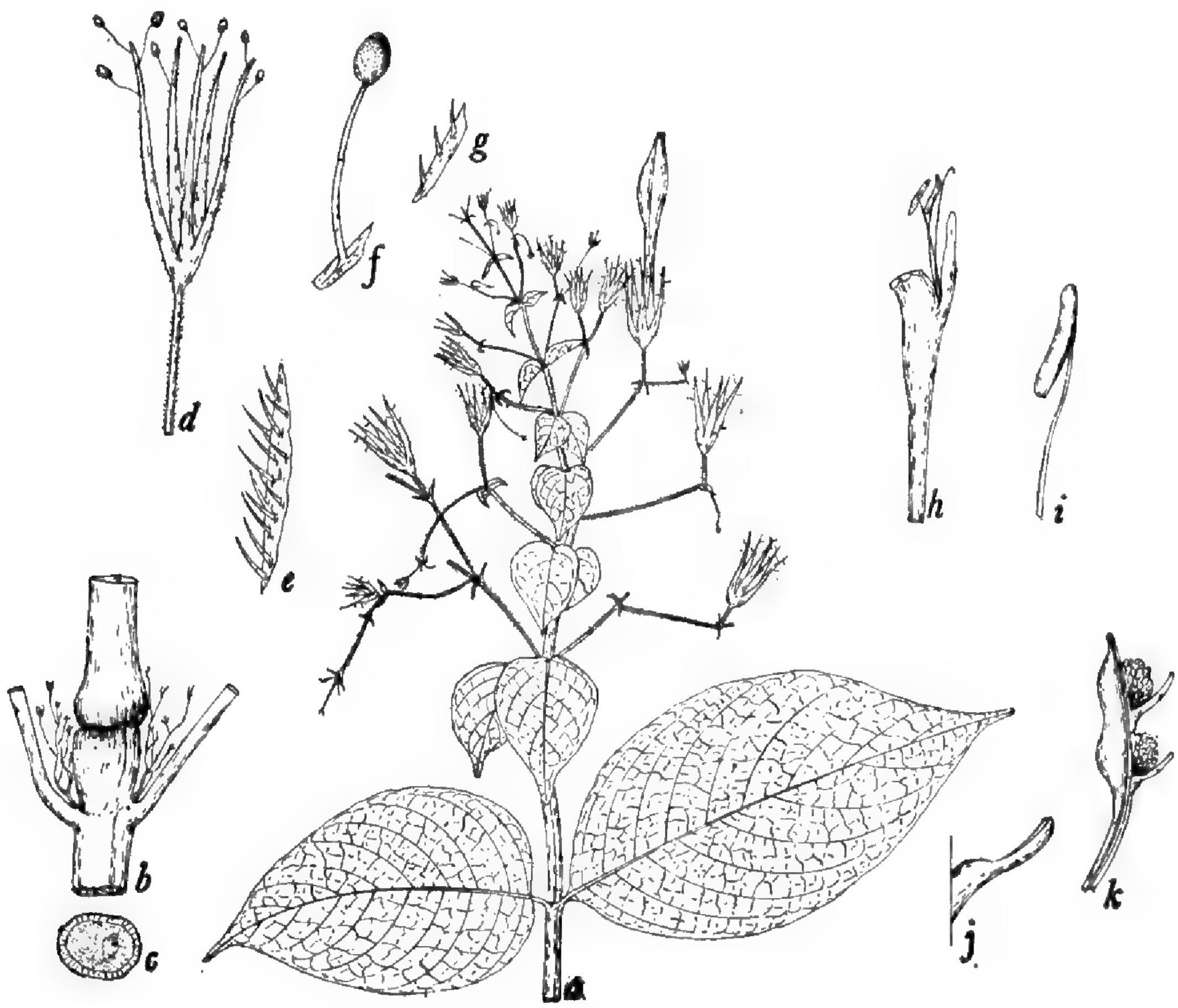

FIGURE 181.—*Habracanthus scolnikae* Leonard (*Scolnik, Barva-López & Barkley* 19 An. 199): *a*, Tip of plant to show inflorescence; *b*, a lower node to show tumescence and small lateral panicles; *c*, cross-section of stem near node to show pith area; *d*, calyx; *e*, portion of pedicel enlarged to 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 exserted 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 paucos 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

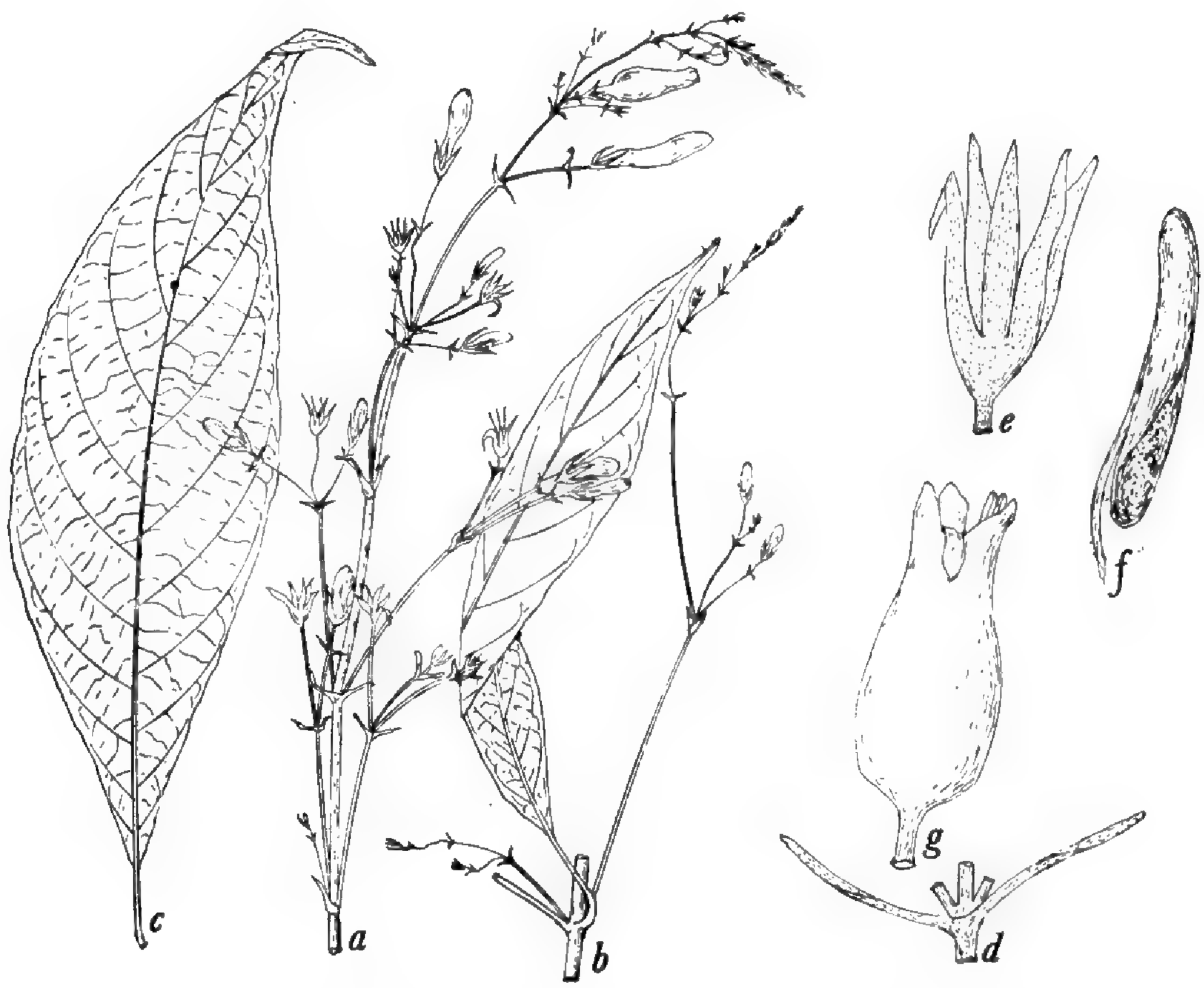

FIGURE 182.—*Hansteinia charitopes* Leonard (*Fosberg* 19791): *a*, Upper half of panicle; *b*, lower node of panicle; *c*, leaf blade; *d*, bracts; *e*, calyx; *f*, anther; *g*, corolla. (*a*, *b*, Natural size; *c*, half natural size; *d*, 5 times natural size; *e*, 6 times natural size; *f*, 7 times 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, thyrsiform, 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 exserted, 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 muticous; 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 στάχυς, 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: ῥυτίς, wrinkle or crease, and γλῶσσα, tongue, alluding apparently to the ridged or roughened palate of the corolla. Three syntypes are cited: *R. origanoides*, *R. ecklonianа*, 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 tetrastichous 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 exserted 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 brasiliana* Roth (Nov. Plant. Sp. 17. 1821). Consequently, Bremekamp has made the new combination *Beloperone brasiliana* 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. hyperdasya*
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 spathulate, 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. cabrerae*
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. sanchezioides*
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 spathulate; 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 ciliolate 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 lobes 1 mm. wide; stamens exserted about 9 mm. beyond

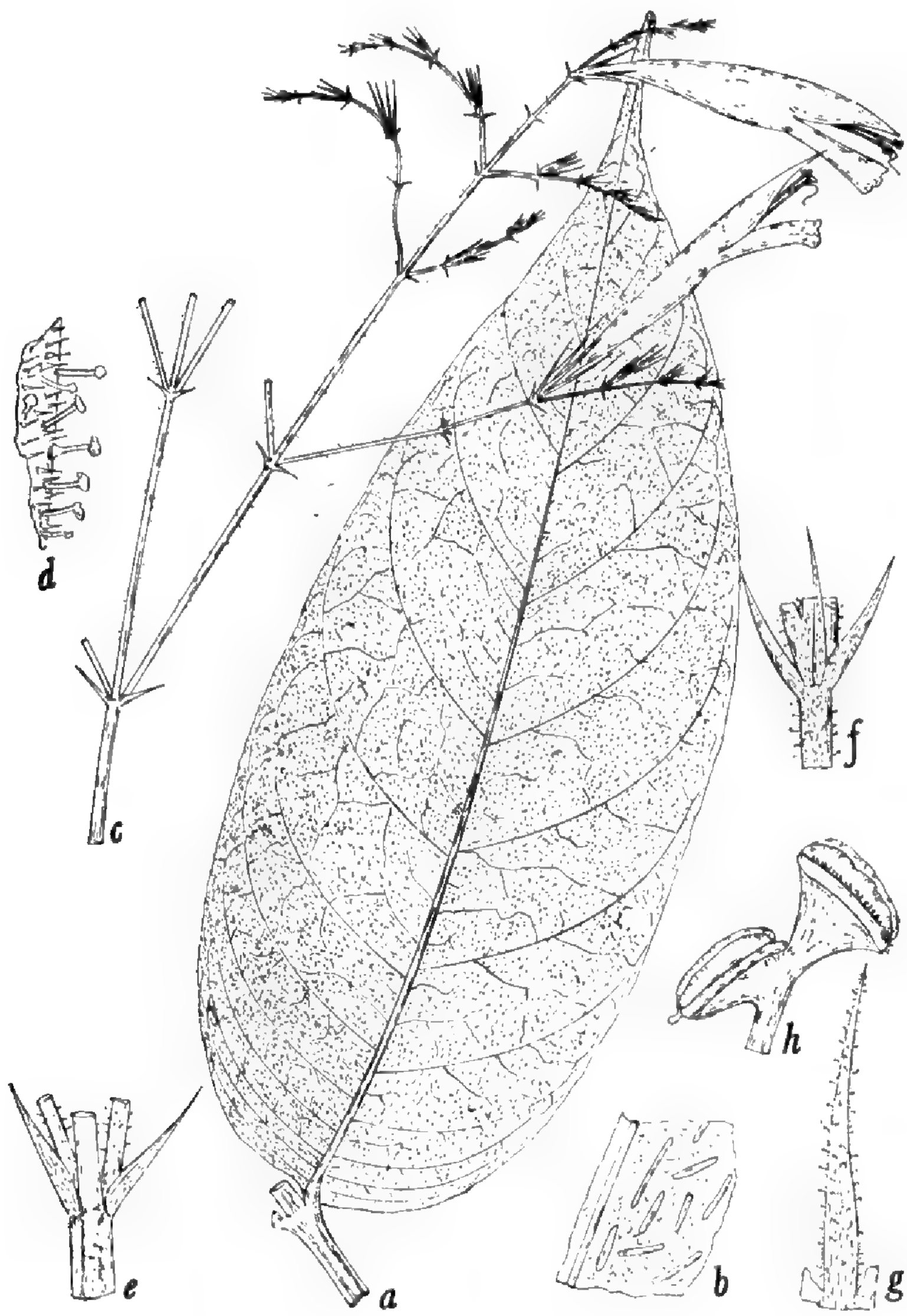

FIGURE 183.—*Justicia cystolithosa* Leonard (*Idrobo & Schultes* 825): *a*, Leaf showing cystoliths; *b*, small area of leaf blade (lower surface) enlarged to show cystoliths; *c*, portion of inflorescence; *d*, portion of an internode of the inflorescence enlarged to show pubescence; *e*, one of the 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*, 11½ 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 radicantibus), 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 appresso-pilosula, 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

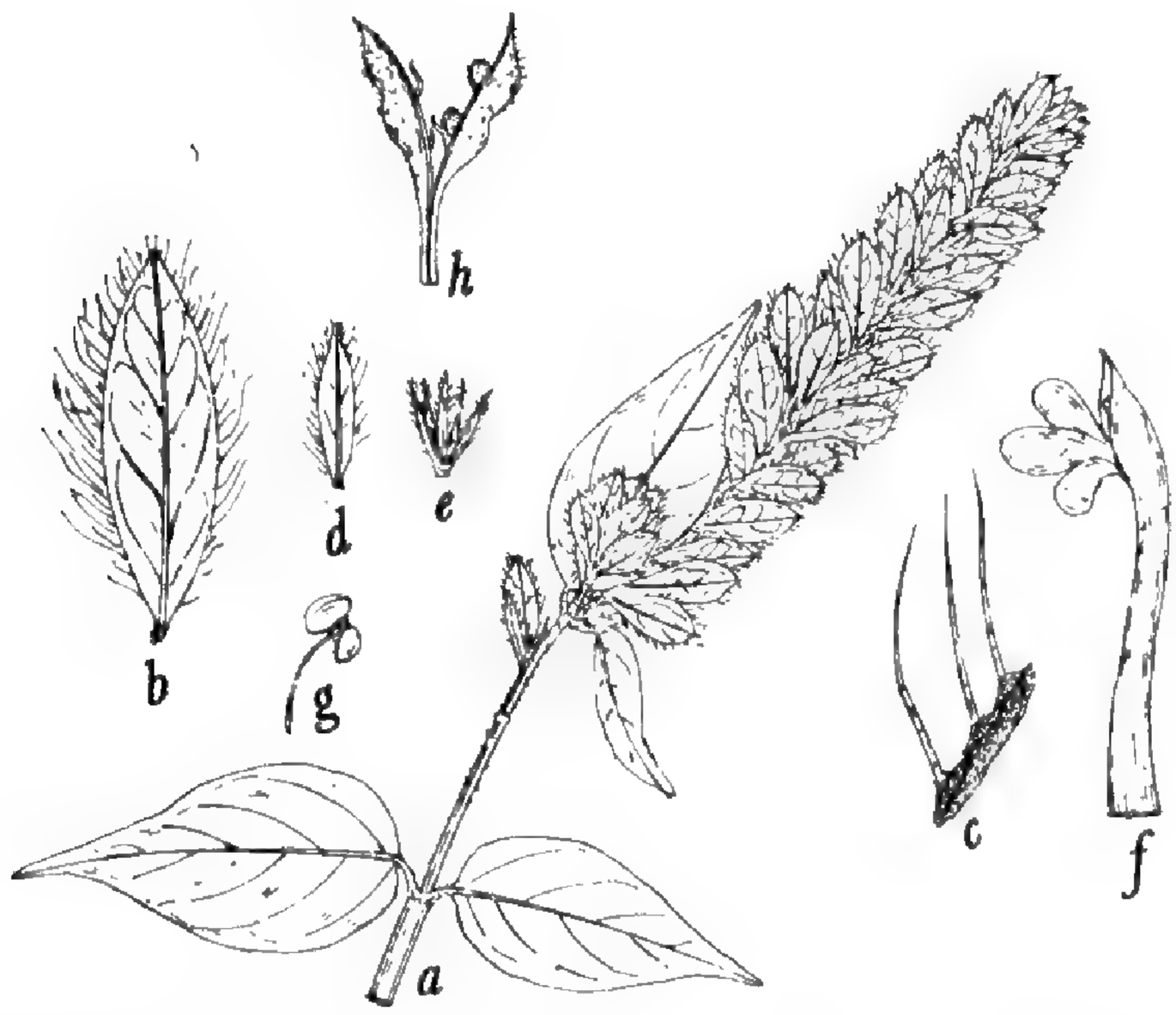

FIGURE 184.—*Justicia chlorostachya* Leonard (*a–e, h, Killip & García* 33671; *f, g, García-Barriga, Hawkes & Villarreal* 12960): *a*, Tip of branch to show spike; *b*, bract; *c*, enlarged hairs from margin of bracts; *d*, bractlet; *e*, calyx; *f*, corolla; *g*, anther; *h*, capsule, (*a*, Natural 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-Agredo* 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 Sanquininí, *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 Kananarí, *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.

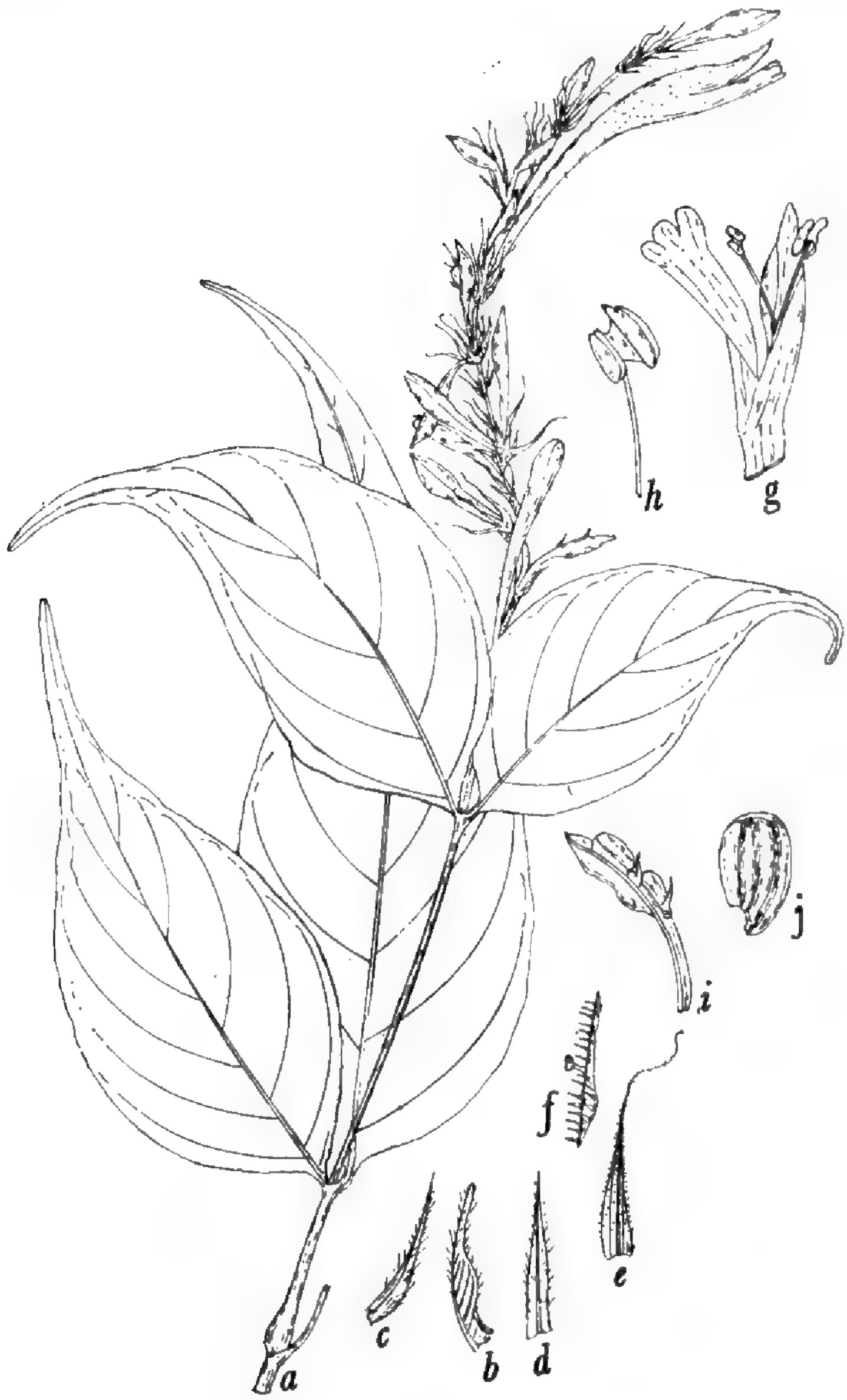

FIGURE 185.—*Justicia ischnorhachis* Leonard (*a–f, i, j, Apollinaire* "D"; *g, h, Apollinaire* "H"): *a*, Tip of branch showing inflorescence and leaves; *b*, bract; *c*, bractlet (side view); *d*, bractlet, dorsal view; *e*, calyx segment; *f*, pubescence from margin of calyx segment; *g*, tip of corolla; *h*, anther; *i*, valve of capsule; *j*, seed. (*a*, Natural size; *b–e*, 3⅓ times natural size; *f*, 16 times natural size; *g*, 1⅔ times natural size; *h*, 5⅔ 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 exserted 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 ἰσχνός, slender, and ῥάχις, 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*, 6⅔ 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 exserted 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 φιλός, 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*, 1⅓ 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 Harbarium 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 *ὀρεοπόλος*, 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*, 6½ 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 lateralibus 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 hirtellous, 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 exserted, 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 alone the Loretoyacu River, in the "trapecio 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 subquadrangulari, glabro vel aliquanto hirsuto, pilis curvatis, rhache hirsuta; bracteae 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, cuneformi, 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*, 3½ times natural size; *d*, 4 times natural size; *e*, *f*, 3 times natural size; *g*, 5 times natural size; *h*, twice natural size; *i*, 3⅓ 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 exserted 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 exserted 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 fuchsiifolia** 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 secundus, 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, ciliolate, 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, ciliolate, 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 exserted 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 fuchsiifolia* 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-

nent, 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

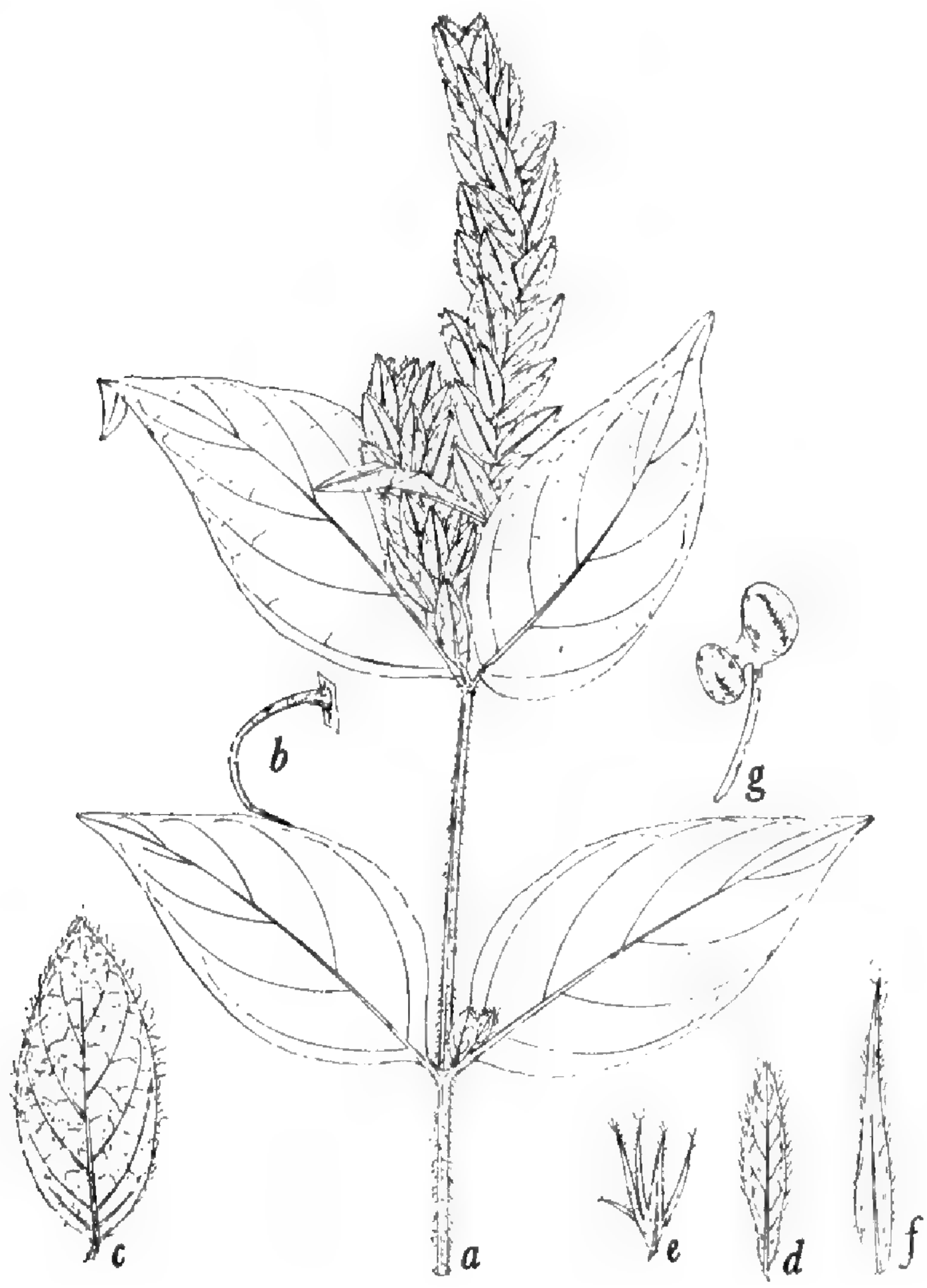

FIGURE 192.—*Justicia neurochlamys* Leonard (*García-Barriga* 14096): *a*, Tip of plant to show inflorescence and leaves; *b*, a hair from stem; *c*, bract; *d*, bractlet; *e*, calyx; *f*, calyx segment; *g*, anther. (*a*, Natural size; *b*, about 40 times natural size; *c*, *d*, 2½ times natural size; *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 exserted 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,

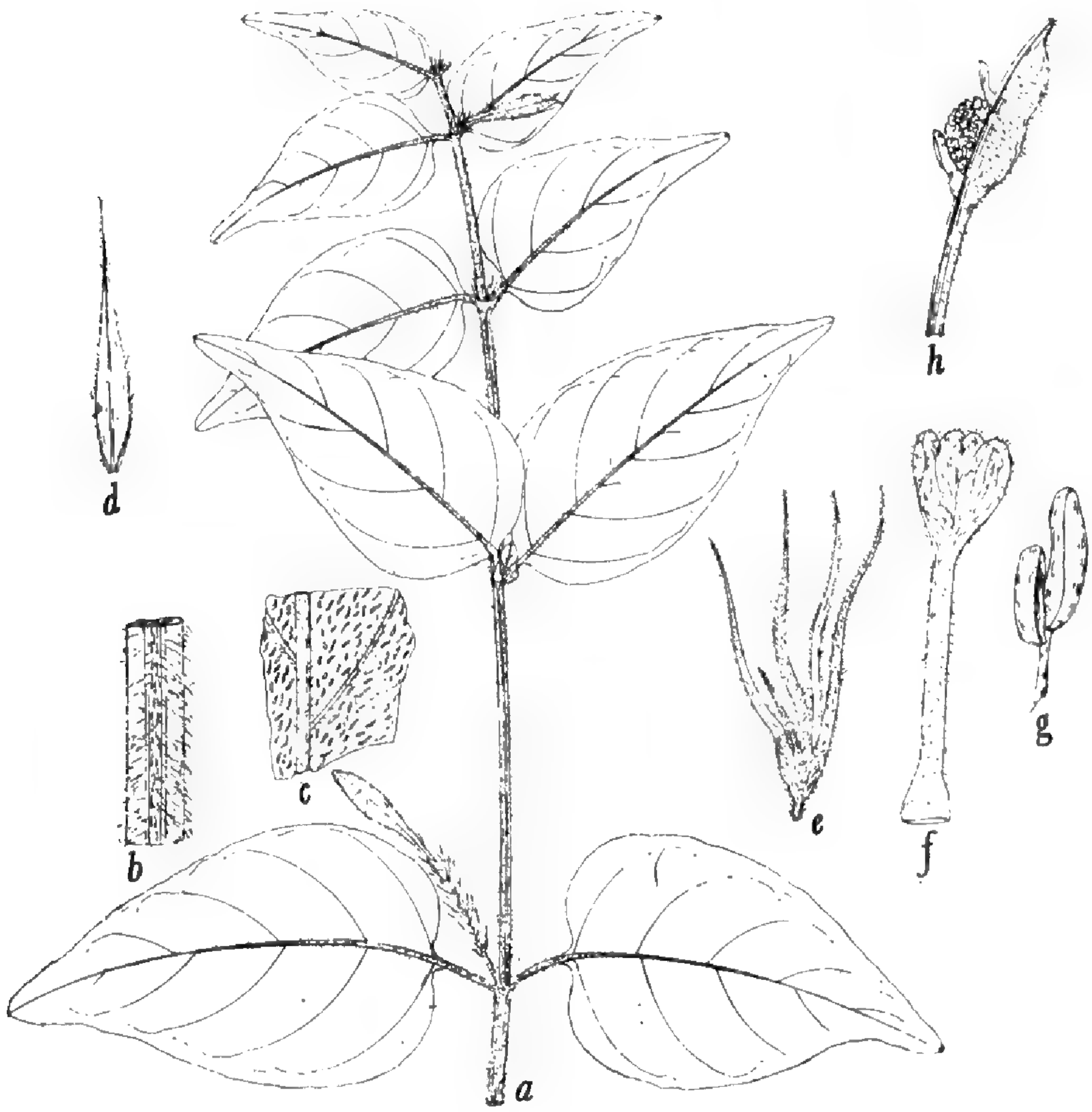

FIGURE 193.—*Justicia rhodoides* Leonard (*a–e*, *h*, Smith 1358, collected Nov. 29; *f*, *g*, *Smith* 1358, collected June 6): *a*, Tip of plant; *b*, portion of stem enlarged to show pubescence and cystoliths; c, portion of the under side of a leaf blade enlarged to show pubescence and cystoliths; *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 exserted, 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.

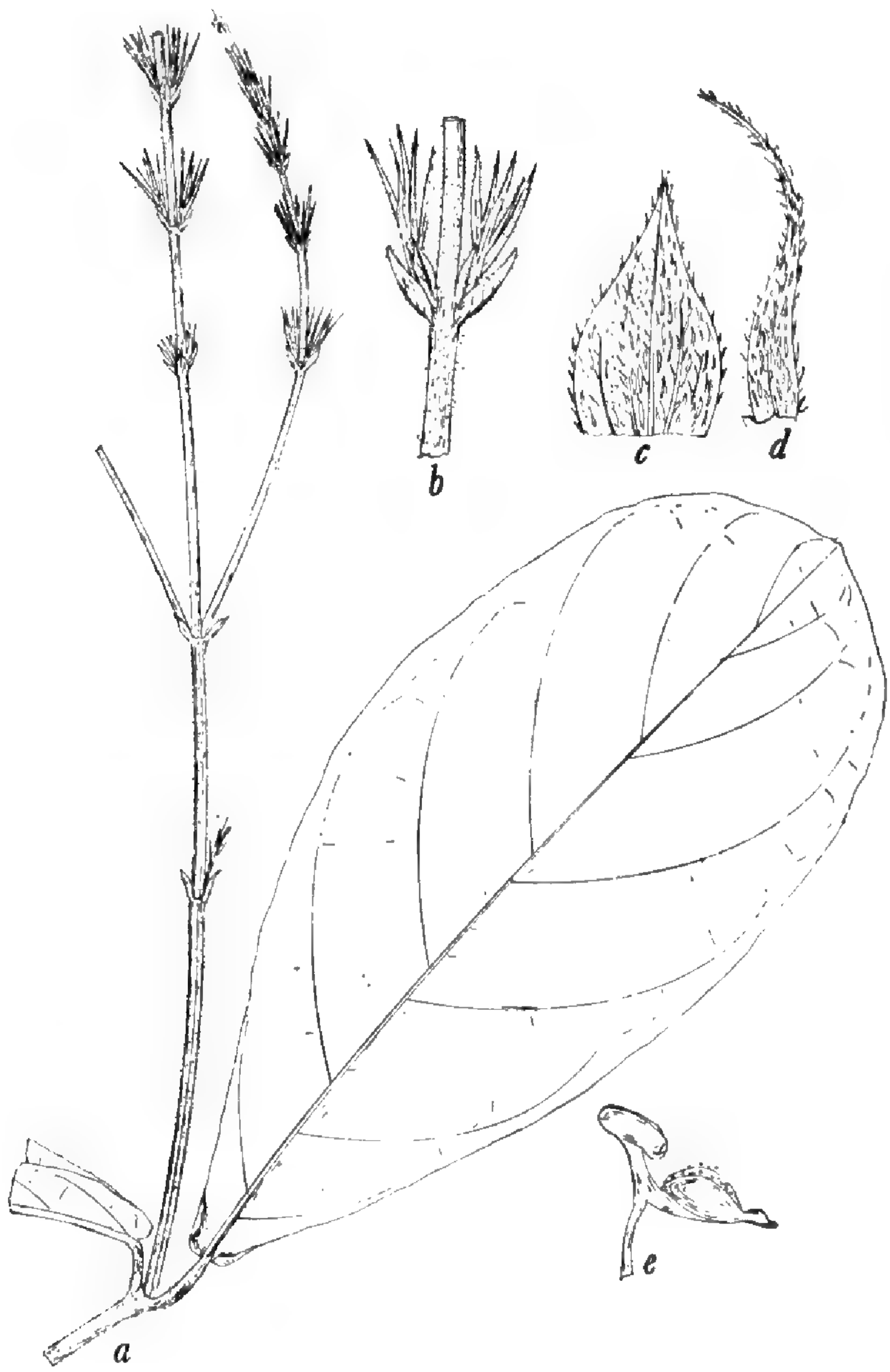

FIGURE 194.—*Justicia daidalea* Leonard (*Haught* 1603): *a*, Tip of plant showing leaf and lower part of inflorescence; *b*, node of inflorescence showing bracts, bractlets and calyx; *c*, bract; *d*, one of the calyx segments; *e*, anther. (*a*, Natural size; *b*, about 2½ times natural size; *c*, *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-

nent 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, ciliolate, 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 ciliolate, 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 exserted, 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*, 3½ times natural size; *c–e*, 3 times natural size; *f*, 8 times natural size; *g*, 6 times natural size; *h*, 2½ 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; stesm 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

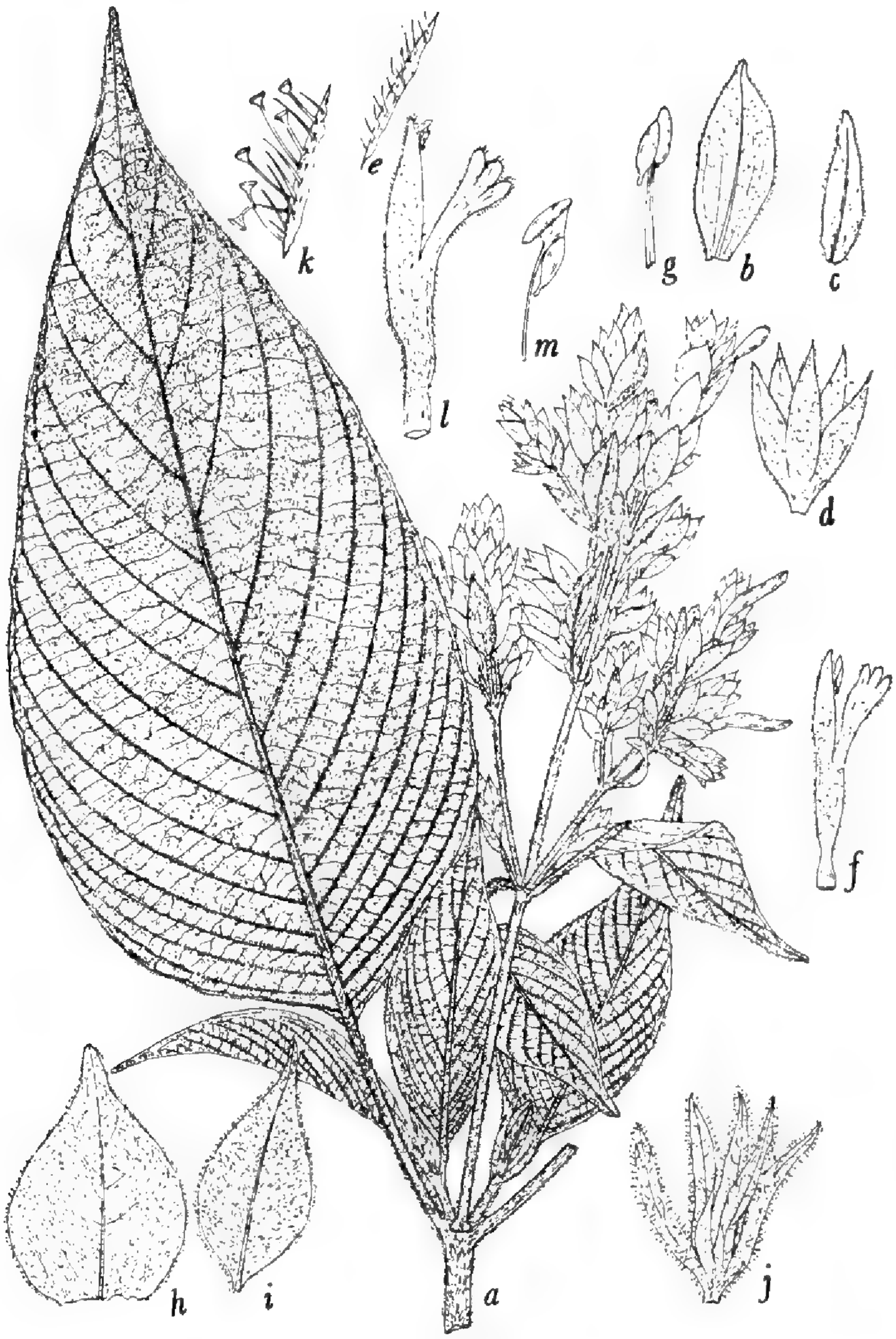

FIGURE 196.—*Justicia chrysocoma* Leonard, *a–g* (*Killip & Smith* 16797) and *Justicia rohrii* Vahl, *h–m* (*Killip & Smith* 21100): *a*, Tip of plant showing inflorescence and leaves; *b*, bract; *c*, bractlet; *d*, calyx; *e*, pubescence from margin of bract; *f*, corolla; *g*, anther; *h*, bract; *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*, natura sze; *g*, 3½ 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 exserted, 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). Cincinati, *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 positis, 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; bracteae firmae, lanceolatae, acutae, glabrae vel apice parce hirsutae, marginibus dense ciliatis, pilis fulvis, longis, costa prominente; bracteae firmae, 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 (*Cuatrecasas* 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 150μ 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-pubescens, 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.

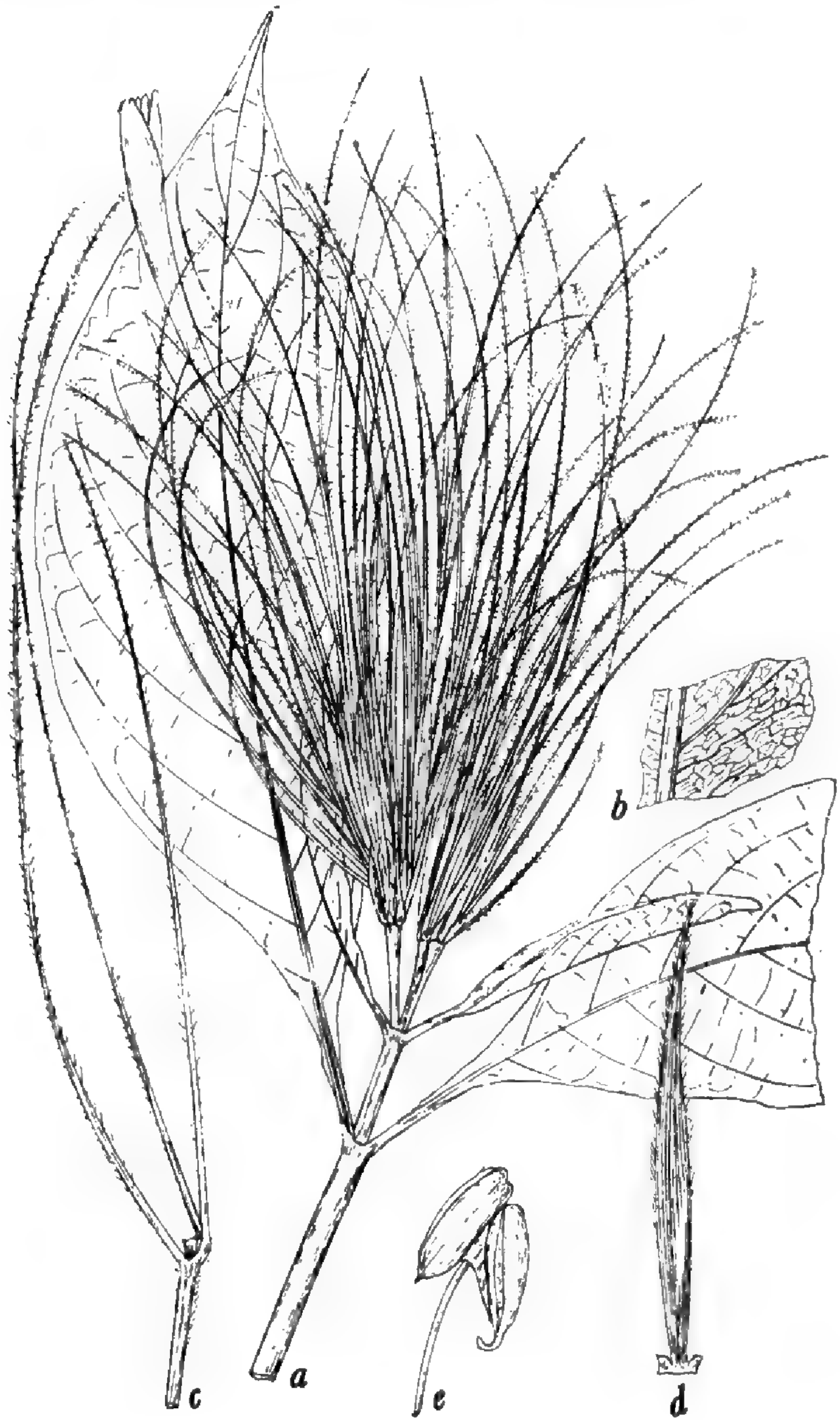

FIGURE 198.—*Justicia croceochlamys* Leonard (*Cuatrecasas* 7383): *a*, Tip of plant to show inflorescence and leaves; *b*, portion of leaf blade (under surface) in detail to show venation; *c*, bract and bractlets; *d*, one of the calyx segments; *e*, anther. (*a*, *b*, Natural size; *c*, *d*, 2½ times natural size; *e*, about 3 times natural size.)

Herbs or suffrutescent plants up to 70 cm. high; stems subquadrangular, 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 150μ 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 Higuerón, 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 positis, 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

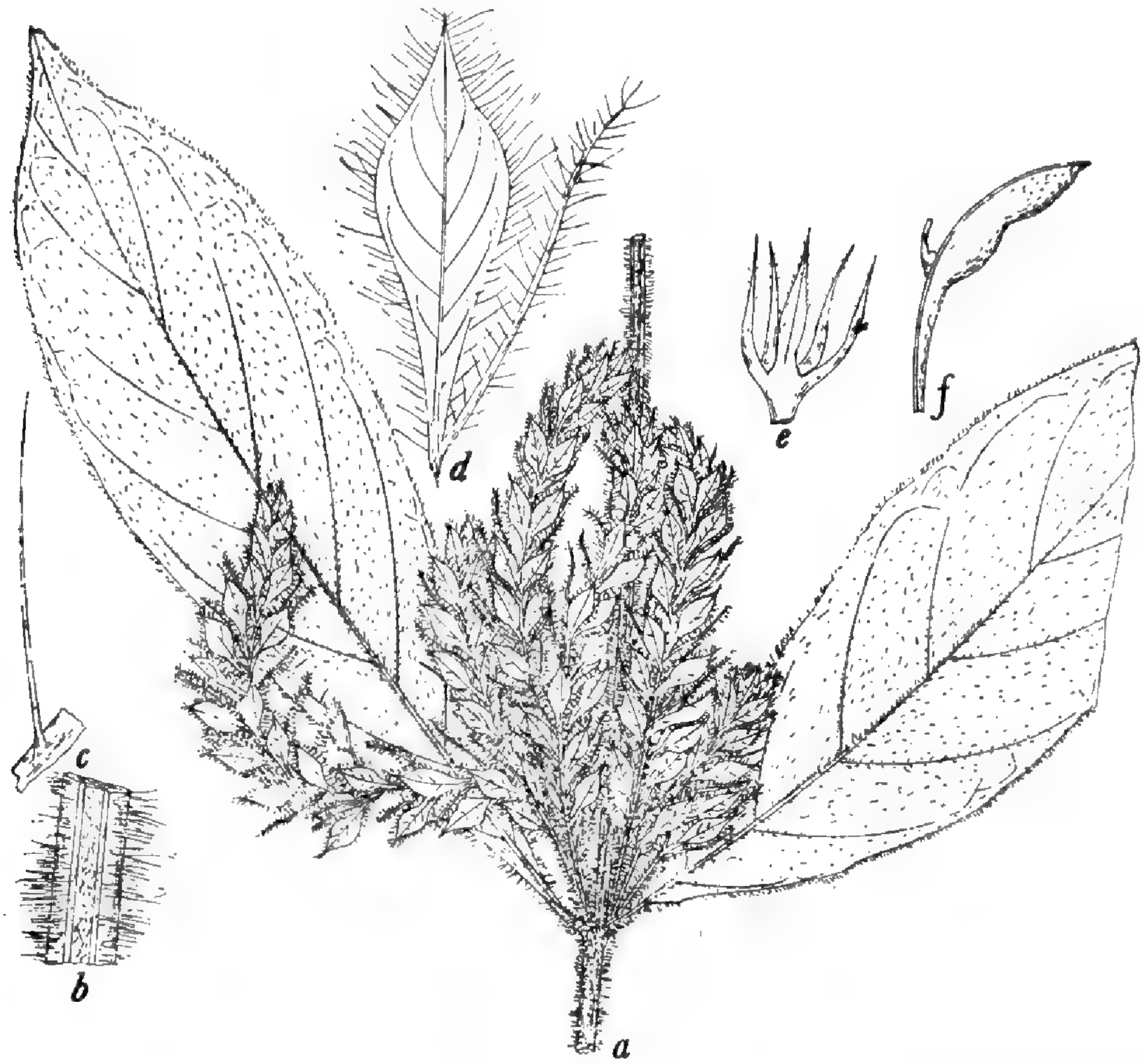

FIGURE 199.—*Justicia chaponensis* Leonard (*Lawrance* 60): *a*, Node showing inflorescence and leaves; *b*, portion of stem enlarged to show pubescence; *c*, a hair from the stem; *d*, bract and bractlet; *e*, calyx; *f*, valve of capsule. (*a*, Half natural size; *b*, twice natural size; *c*, 10 times 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; bracteae 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

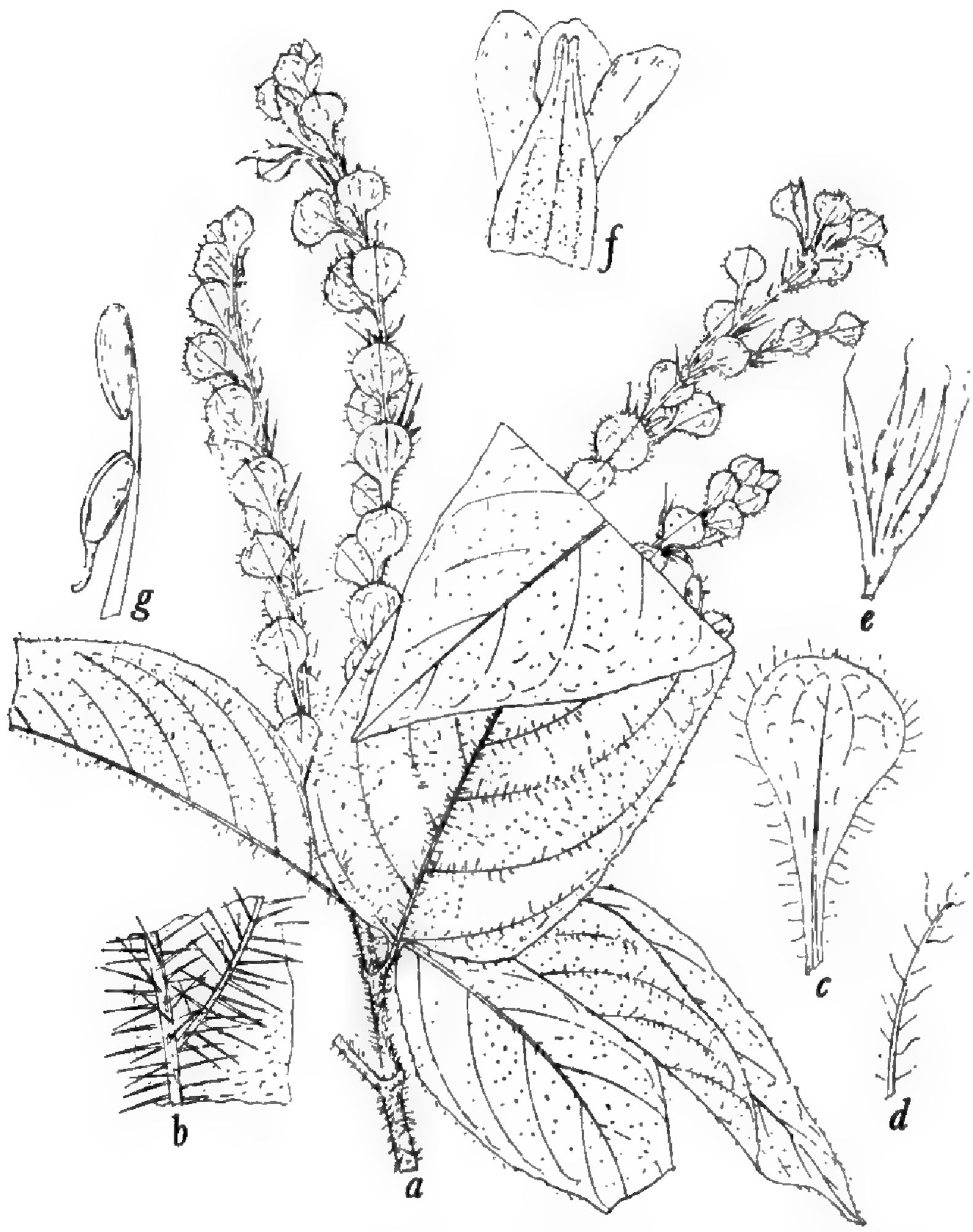

FIGURE 200.—*Justicia unguiculata* Leonard (*a–f*, *Schiefer* 813A; *g*, *Schiefer* 813): *a*, Tip of plant showing inflorescence and leaves; *b*, portion of leaf blade (under surface) to show pubescence; *c*, bract; *d*, bractlet; *e*, calyx; *f*, corolla lips; *g*, anther. (*a*, Natural size; *b*, about 2½ times natural size; *c*, twice natural size; *d*, 3 times natural size; *e*, 4 times natural size; *f*, 3½ 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, cuneate, 6 mm. wide at base of lobes, these ovate, about 4 mm. long and 2 to 3 mm. wide, rounded at tip; stamens exserted 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 ungulate 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

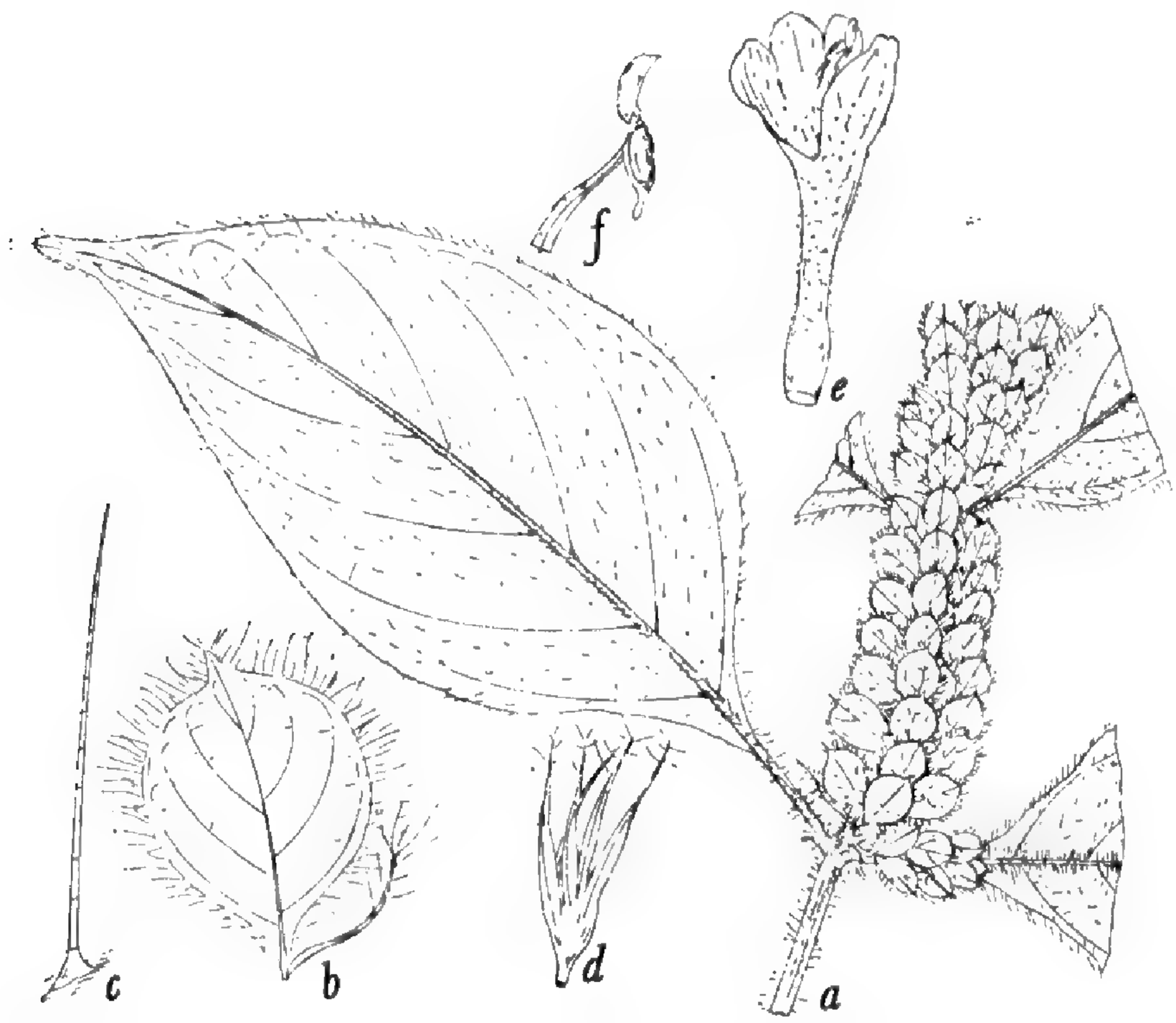

FIGURE 201.—*Justicia pampolystachys* Leonard (*Klug* 1724): *a*, Portion of plant showing lower part of the inflorescence and a leaf blade; *b*, bract and bractlet; *c*, a trichome from margin of bract; *d*, calyx; *e*, corolla; *f*, stamen (*a*, Half natural size; *b*, *e*, twice natural size; *c*, 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*, 3½ times natural size; *e*, natural size; *f*, 2½ 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

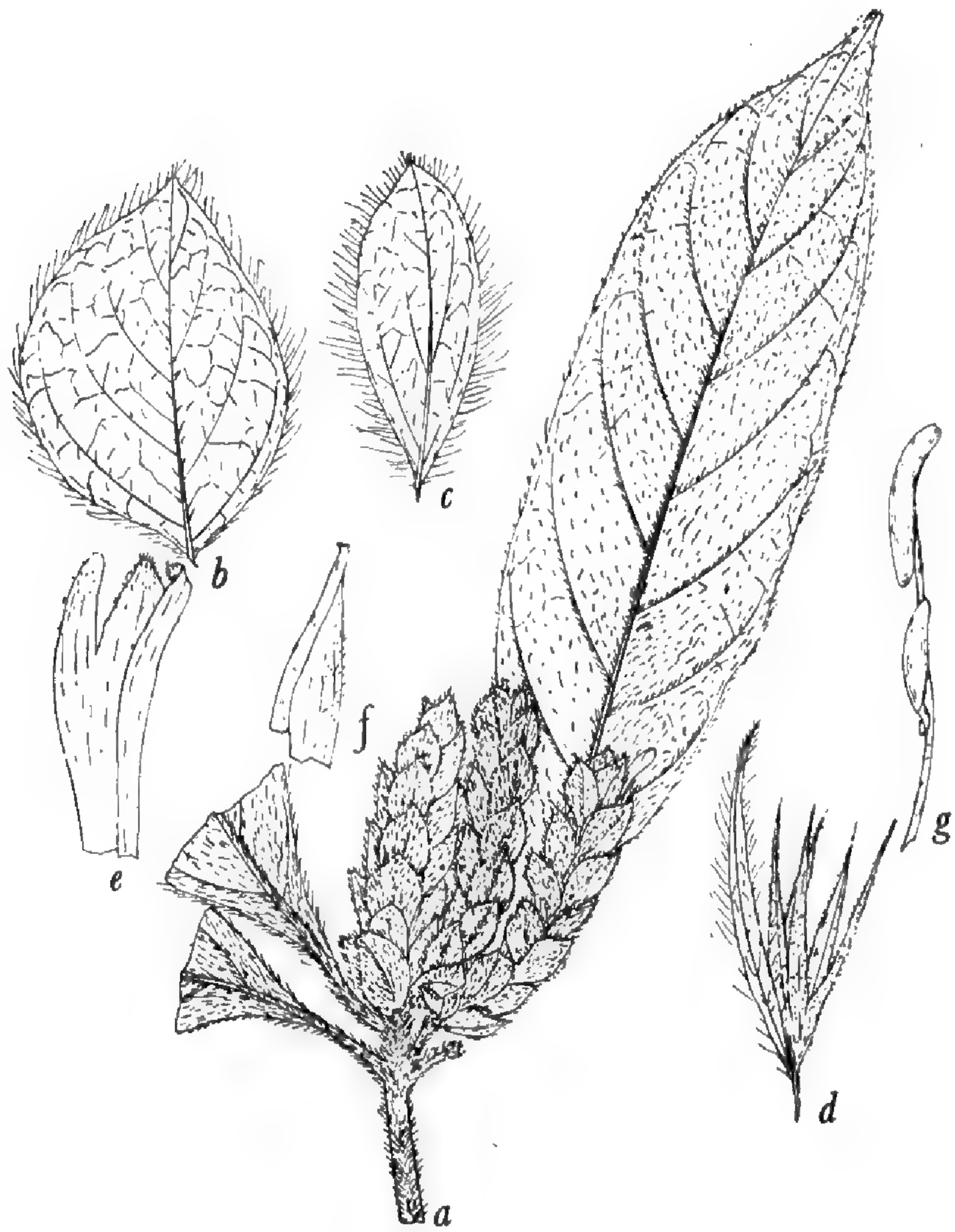

FIGURE 203.—*Justicia schultesii* Leonard (*Schultes & Cabrera* 13322): *a*, Tip of stem showing a leaf and the inflorescence; *b*, bract (dorsal); *c*, bract (ventral); *d*, calyx and one of a pair of bractlets; *e*, lower corolla lip; *f*, upper lip of same; *g*, anther. (*a*, Half natural size; *b*, *c*, 3 times natural size; *d*, 3½ times natural size; *e*, *f*, 2½ 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 250μ 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 spathulate, 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 exserted 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-

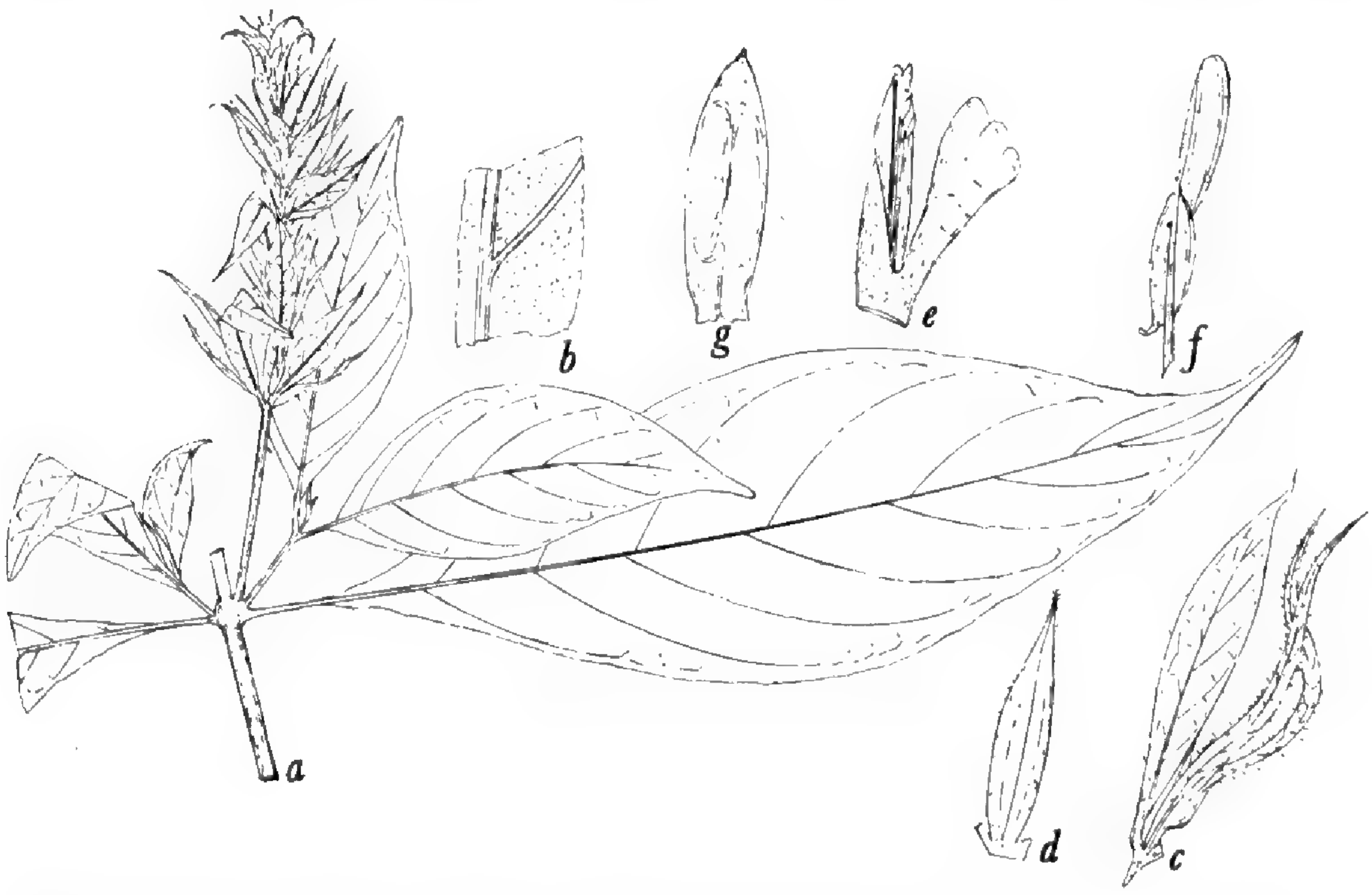

FIGURE 204.—*Justicia erythrantha* Leonard (*Killip, Dugand & Jaramillo* 38284): *a*, Node toward tip of plant showing a spike, branchlets and leaf blade; *b*, portion of leaf blade (under surface) enlarged to show pubescence and cystoliths; *c*, bract and bractlets; *d*, calyx segment; *e*, tip of corolla; *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-Uribe'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 *ἄνθος*, 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 exserted 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 subobtuso) 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,

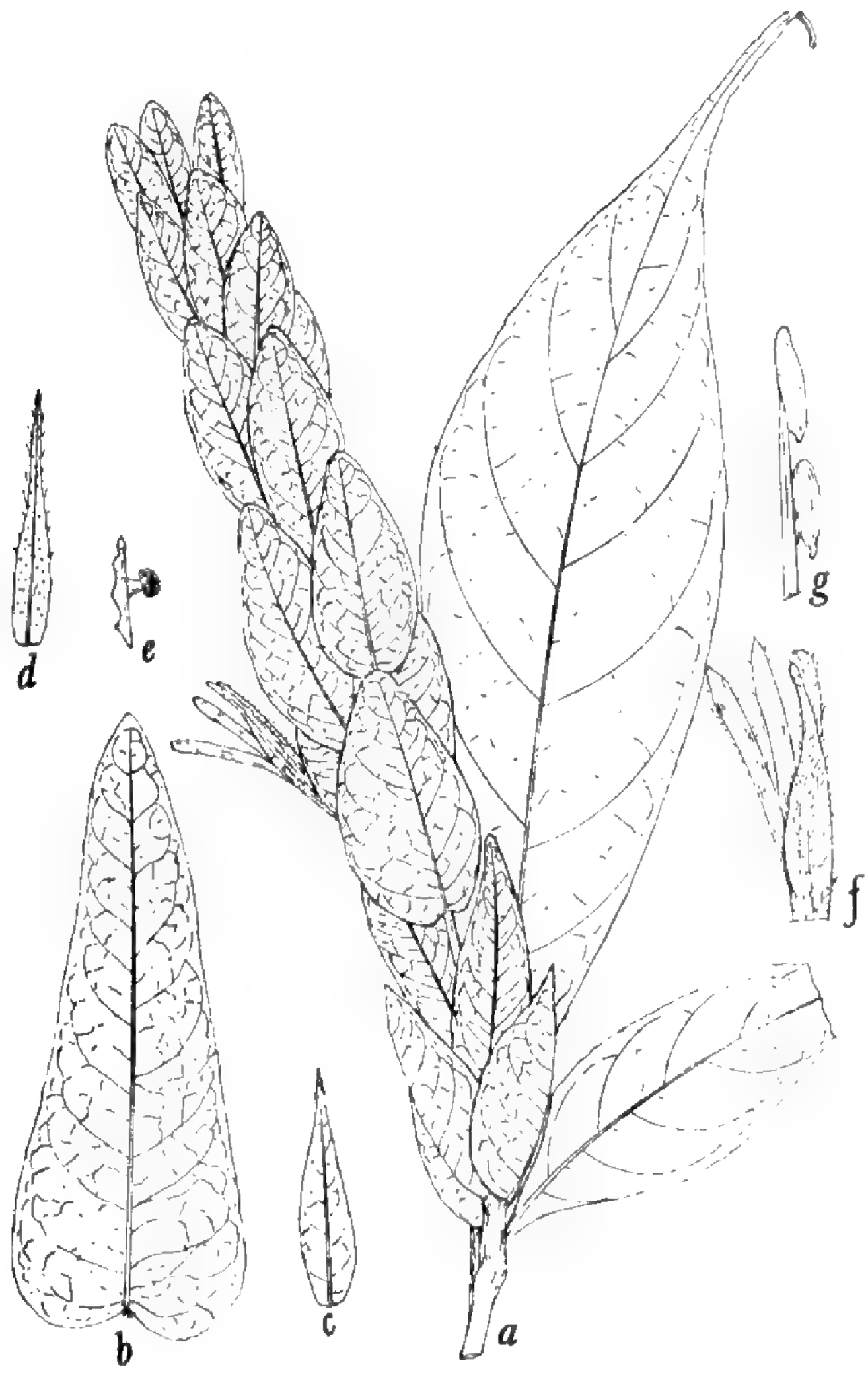

FIGURE 207.—*Justicia macarenensis* Leonard (*Philipson, Idrobo & Fernández* 1578): *a*, Tip of plant showing spike and leaf blades; *b*, bract; *c*, bractlet; *d*, calyx segment; *e*, a glandular hair from calyx segment; *f*, tip of corolla to show lips; *g*, anther. (*a*, Half natural size; *b*, *c*, *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 125μ 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 exserted 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 Ríohacha, 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 spathulate 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

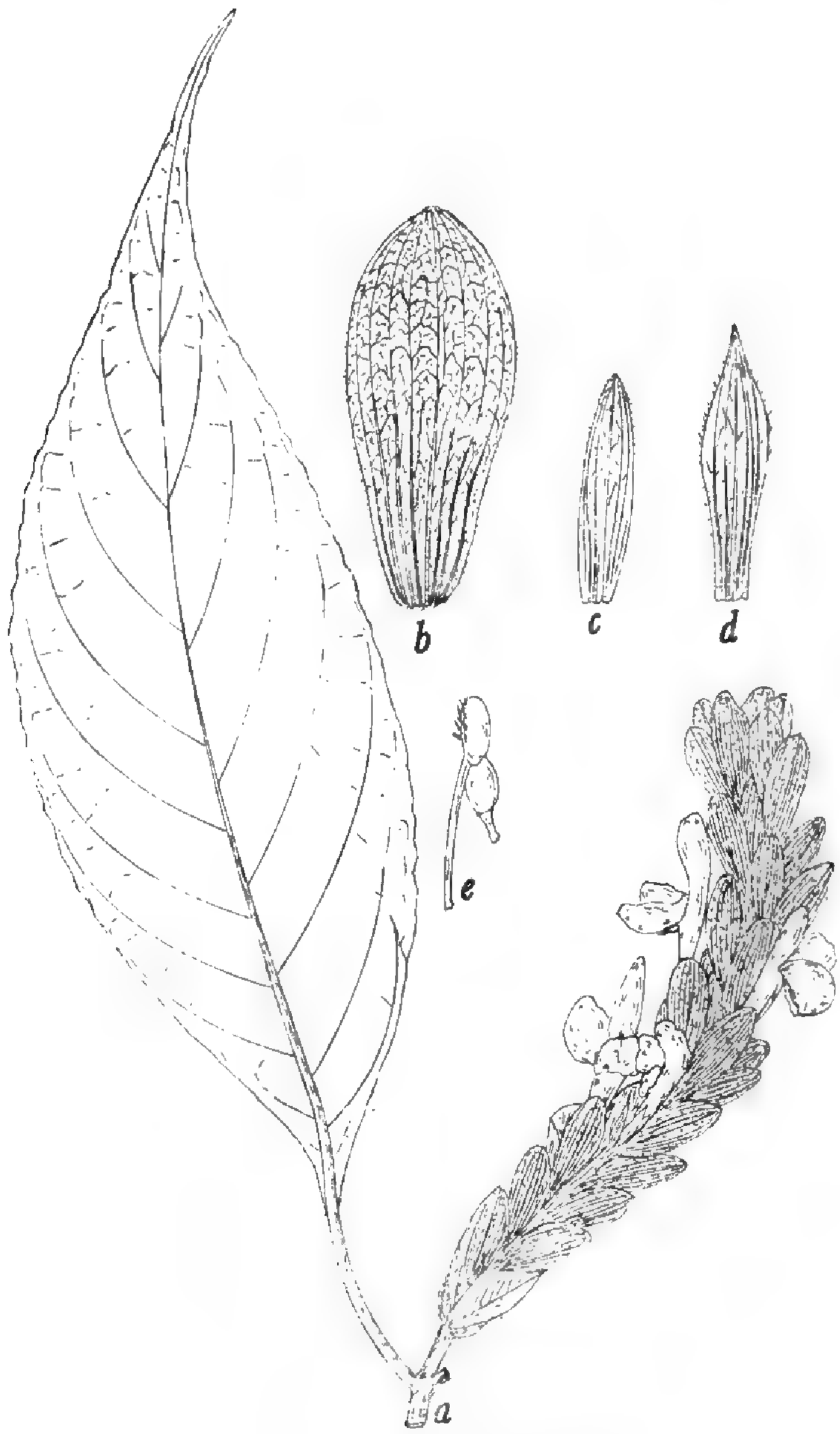

FIGURE 209.—*Justicia phytolaccoides* Leonard (*Haught* 6242): *a*, Tip of stem showing spike and leaf; *b*, bract; *c*, bractlet; *d*, calyx segment; *e*, anther. (*a*, Half natural size; *b–d*, twice natural size; e, 3½ times natural size.)

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 exserted 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 muticous, 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 Aguaclara, 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; bracteae membranaceae, imbricatae, sulphureo-flavae, elliptico-ovatae, utrinque acutae, hirtellae, pilis crassis glandulosis et pilis gracilibus

eglandulosis intermixtis, costa et venis lateralibus gracilibus; bracteolae bracteis similes sed minores; calycis segmenta puberula, pilis papilliformibus, crassis, glandulosis et pilis gracilibus eglandulosis 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,

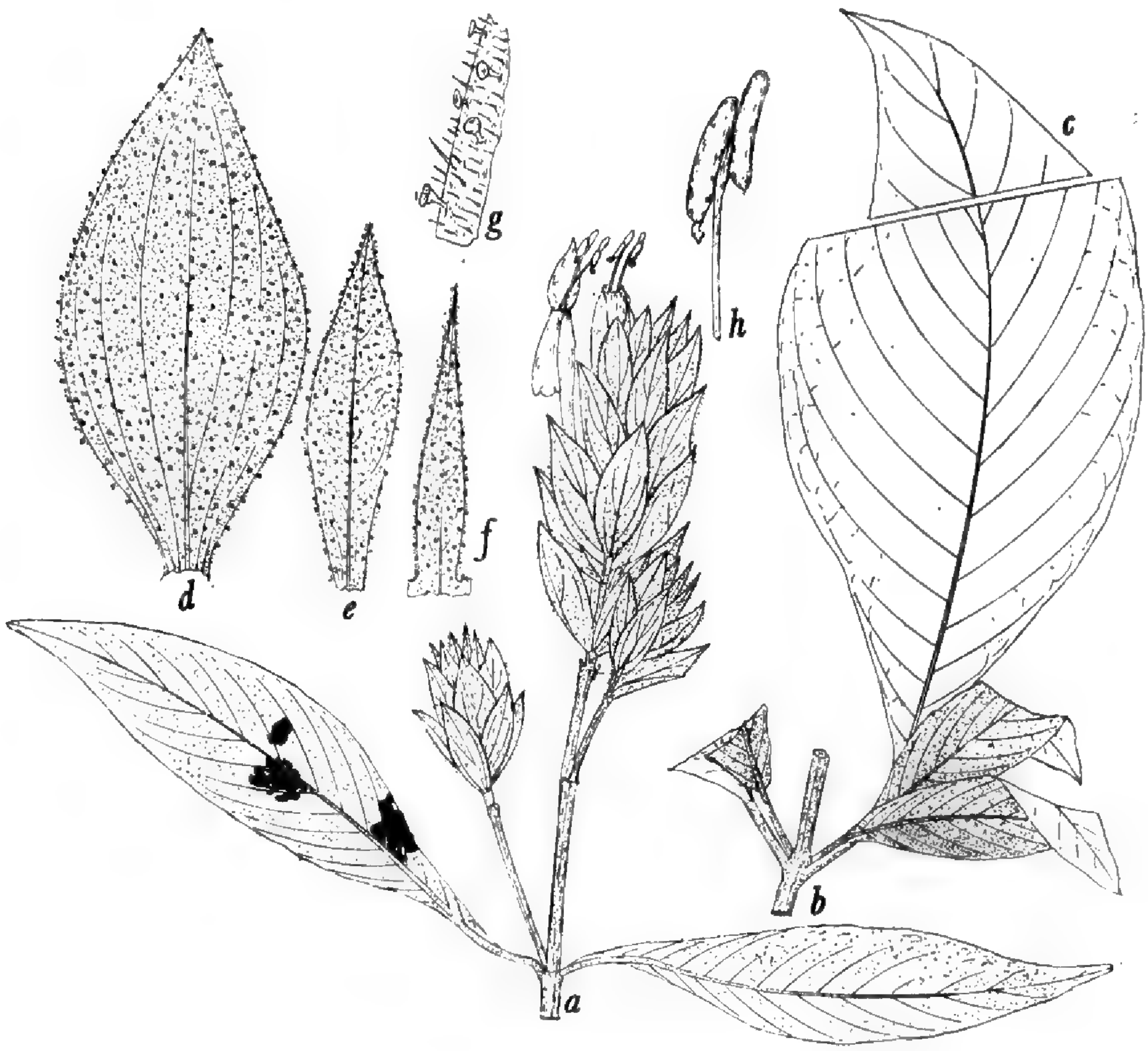

FIGURE 210.—*Justicia xanthostachya* Leonard (*Kalbreyer* 930): *a*, Tip of plant; *b*, node of stem to show leaf blades; *c*, tip of leaf; *d*, bract; *e*, bractlet; *f*, segment of calyx; *g*, portion of bract enlarged to show pubescence; *h*, anther. (*a–c*, Half natural size; *d–f*, twice natural size; *g*, 23½ times natural size; *h*, 4½ 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-

nent 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 exserted, 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 cabrerae** 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; bracteae 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 cabrerae* 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 exserted 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, subappressed, 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,

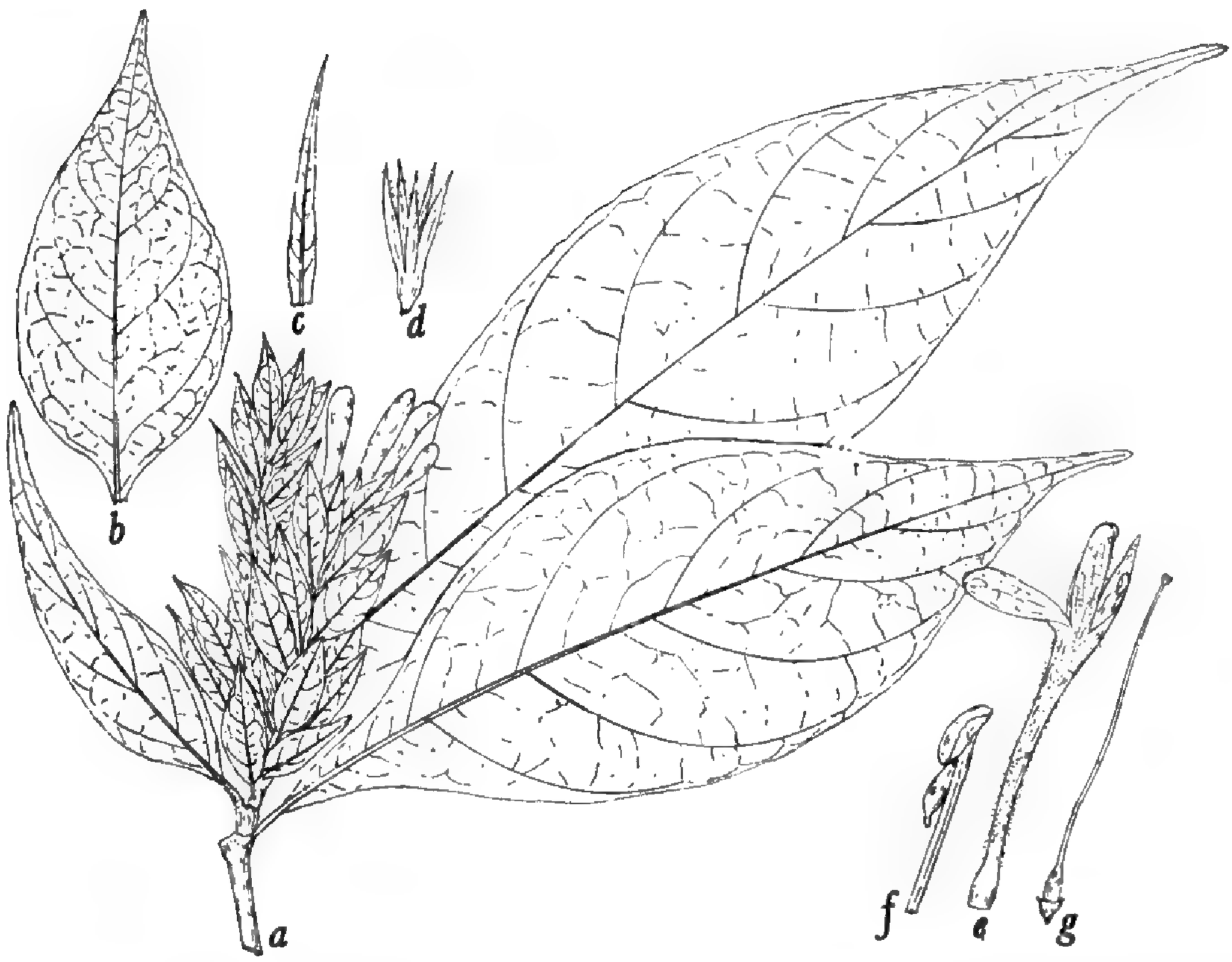

FIGURE 212.—*Justicia leucerythra* Leonard (*Haught* 6729): *a*, Tip of plant showing leaves and inflorescence; *b*, bract; *c*, bractlet; *d*, calyx; *e*, corolla; *f*, anther; *g*, pistil. (*a*, Half natural size; *b–d*, twice natural size; *e*, *g*, natural size; *f*, 4 times natural size.)

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 exserted 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 Higuerón, Usiacurí, 100 meters altitude, *Dugand & García-Barriga* 2287 (US).

MAGDALENA: Forest east of Codazzi, 200 meters altitude, *Haught* 3739 (US). Fucurinca, *Romero-Castañeda* 557 (Ch, US). Hacienda Juan León, 150 meters altitude, *Haught* 4763 (US).

Justica leucerythra bears a general resemblence 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 λευκέρυθρος, 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, aureo-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, fila-

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 subquadrangular, 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.

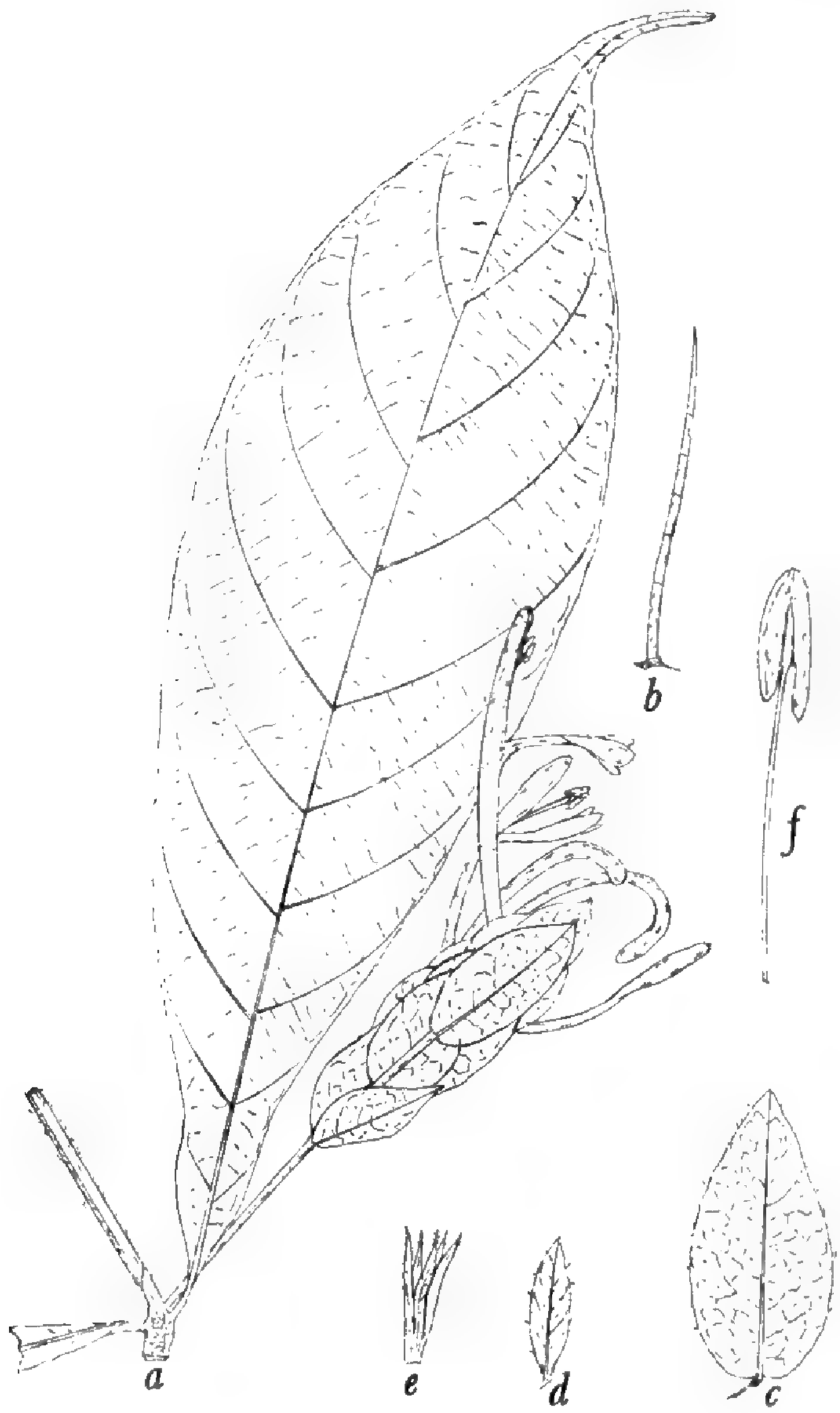

FIGURE 213.—*Justicia enarthrocoma* Leonard (*Grant* 10900): *a*, Tip of stem, showing leaf and inflorescence; *b*, hair from upper portion of stem; *c*, bract; *d*, bractlet; *e*, calyx; *f*, anther. (*a*, Half natural size; *b*, 36 times natural size; *c–e*, slightly less than natural size; *f*, 3½ 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 hiretellous 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 exserted 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 ἔναρθρος, jointed, and κόμη, hair.

38. **Justicia sanchezioides** 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 sanchezioides* 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 1⅓ 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 sanchezioides 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

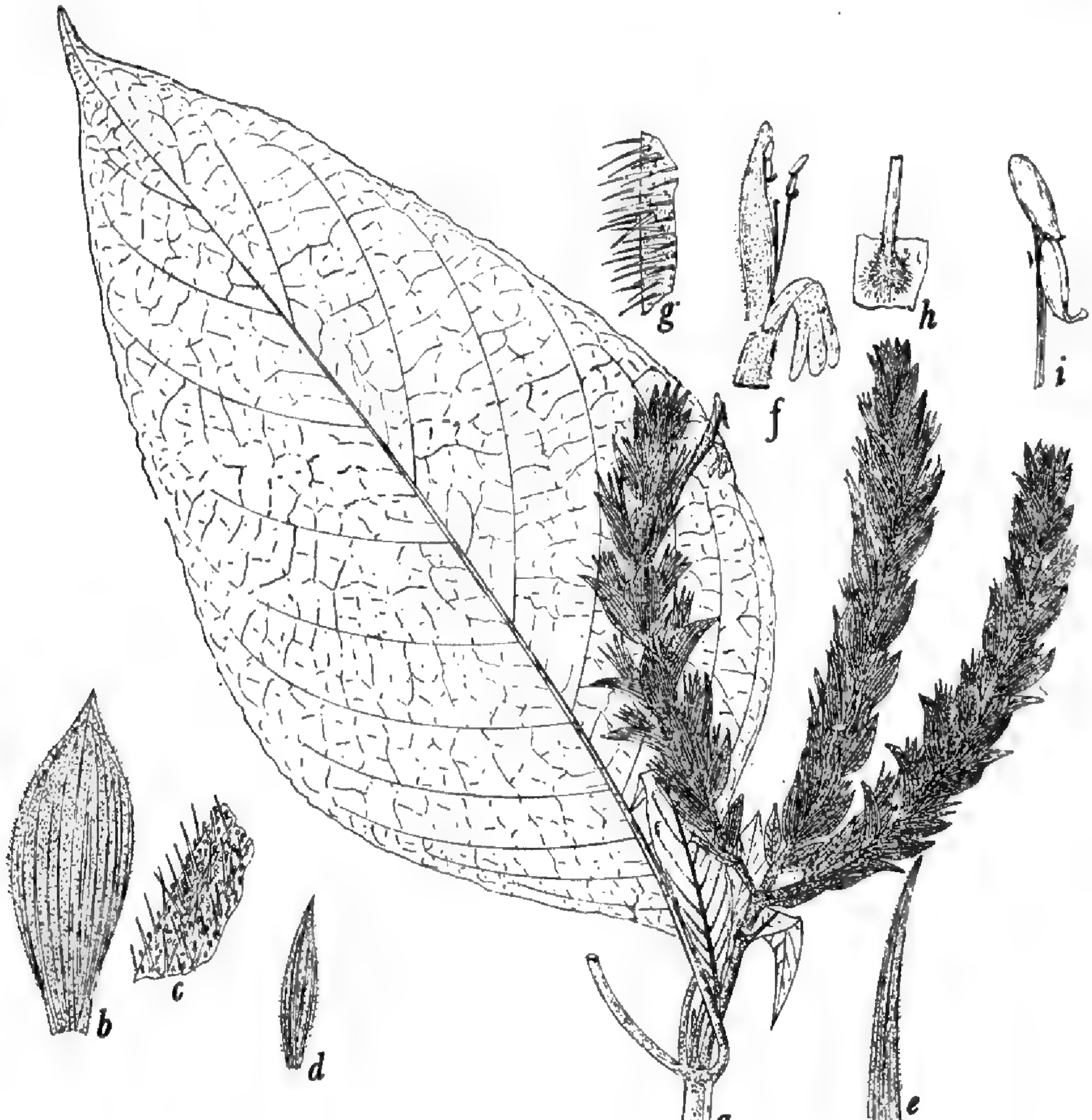

FIGURE 215.—*Justicia homoea* Leonard (*Haught* 4565): *a*, Tip of plant; *b*, bract; *c*, portion of bract to show nature of pubescence; *d*, bractlet; *e*, calyx segment; *f*, tip of corolla; *g*, portion of corolla tube enlarged to show nature of pubescence; *h*, base of stamen; *i*, anther. (*a*, 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 cylindric, 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 exserted 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 ὅμοιος, 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 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-Uribe* 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 ἄνθος, 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, quadrangulari, 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.

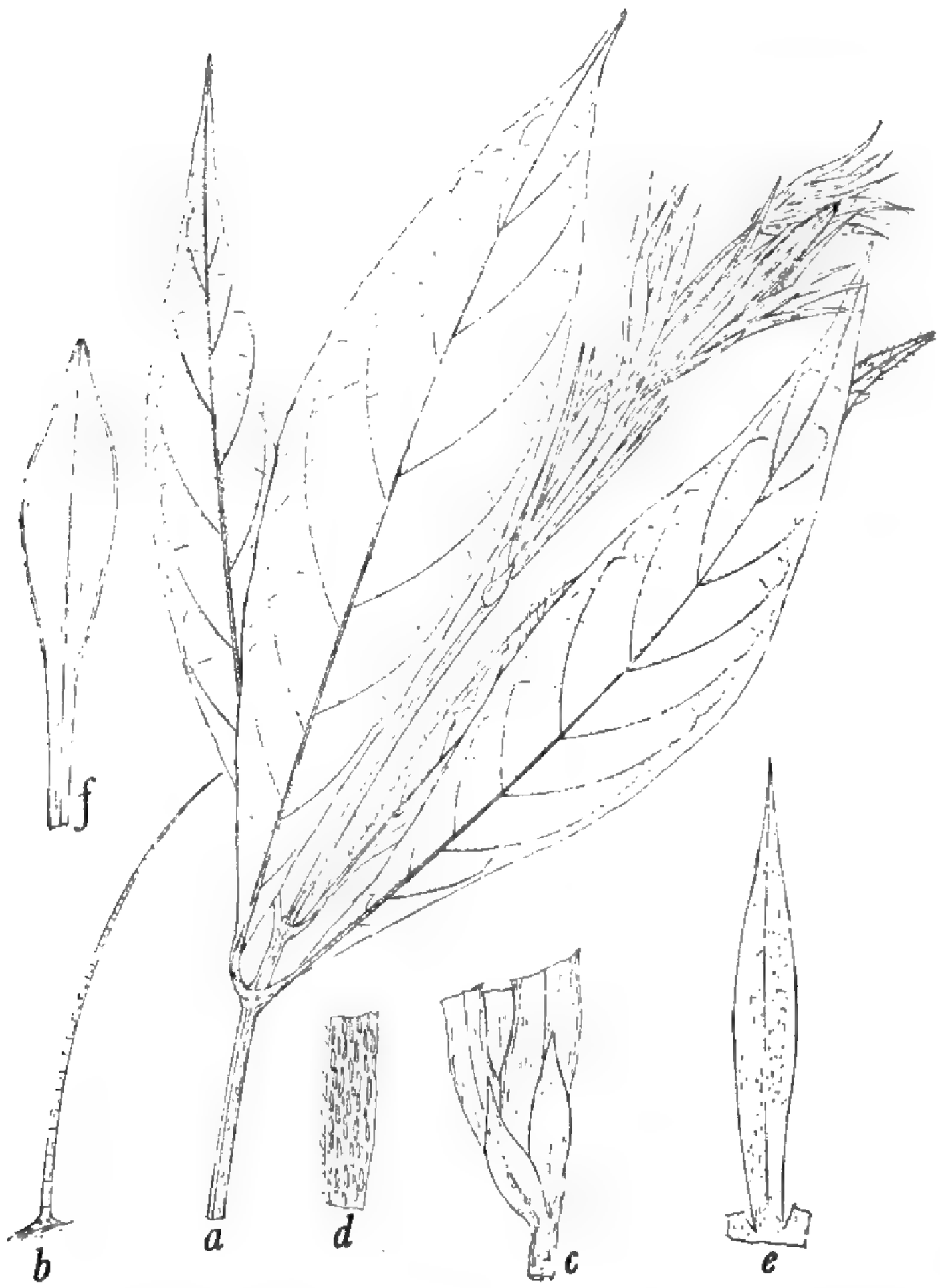

FIGURE 216.—*Justicia porphyrocoma* Leonard, sp. nov. (*Ariste-Joseph* "B"): *a*, Tip of plant to show leaves and inflorescence; *b*, a hair from the upper surface of a leaf blade; *c*, node of inflorescence to show a bract and bractlet; *d*, a small portion of a bract to show cystoliths and ciliolated margin; *e*, a calyx segment; *f*, valve of a capsule, dorsal view. (*a*, Natural size; *b*, 25 times natural size; *c*, 2½ times natural size; *d*, about 9 times natural size; *e*, 1⅔ times natural size; *f*, twice natural size.)

Type in the U. S. National Herbarium, No. 1122813, collected at Paime, 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*, 3½ 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; bracteae arcte appressae, ovatae, acutae, valde 5–7-nervatae, puberulae; bracteae 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*, 2½ 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 φλέψ, vein, and φύλλον, leaf.

45. Justicia malacophylla Leonard, sp. nov. FIGURE 219

Frutex, caulibus subquadrangularibus, sursum dense hirtellis vel plus minusve tomentosis, 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*, 1⅓ 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 exserted 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 bifariously 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 bifariously 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

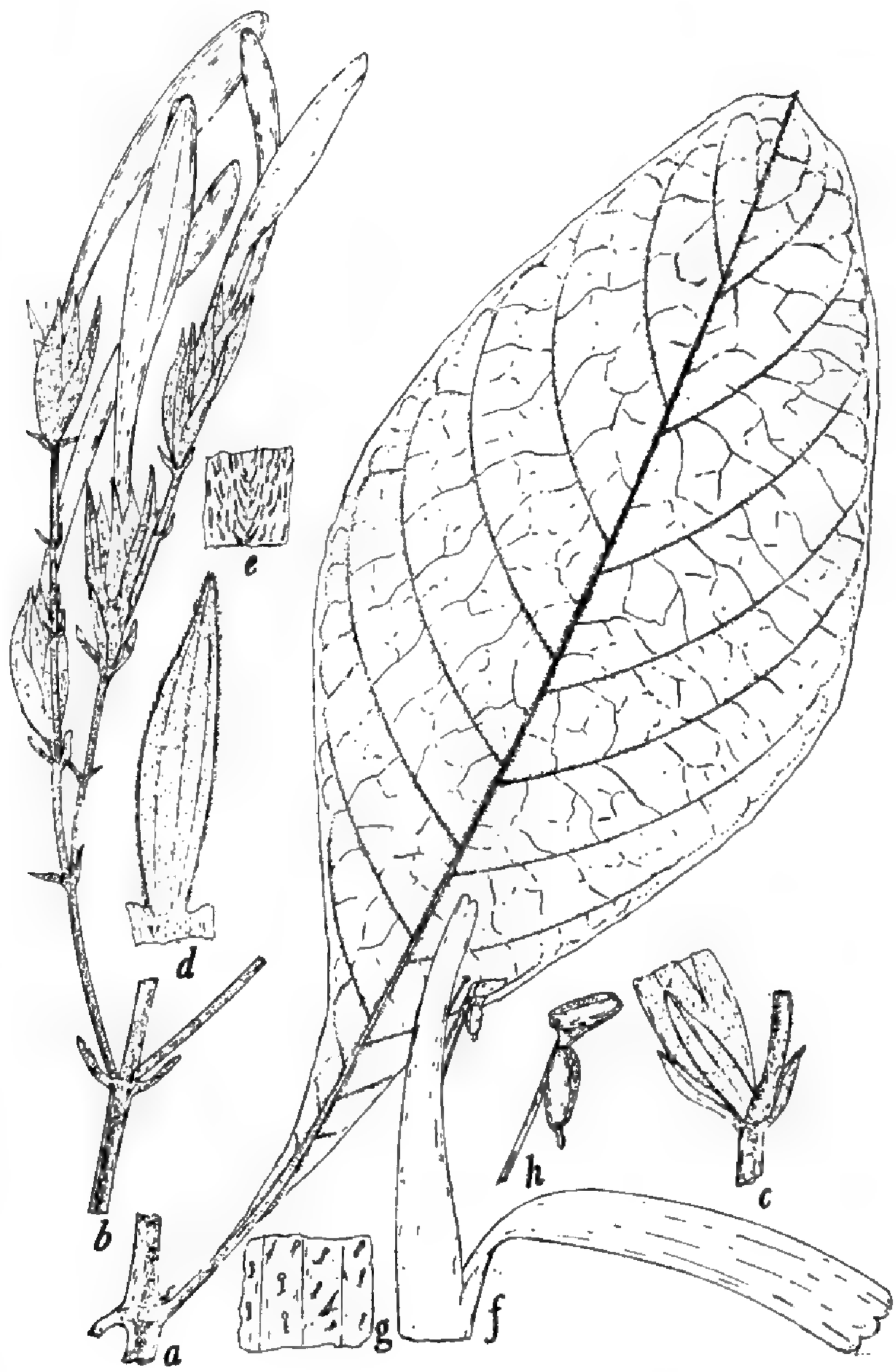

FIGURE 220.—*Justicia pelianthia* Leonard (*Cuatrecasas* 11157): *a*, Node and leaf; *b*, basal branch of inflorescence; *c*, node of inflorescence to show bracts and one of a pair of bractlets; *d*, a segment of the calyx; *e*, dorsal portion of calyx segment enlarged to show hairs and cystoliths; *f*, 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 8½ times natural size; *g*, 11½ 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, exserted 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 πελιός, livid, and ἄνθειον, 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, deorsum 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*, 4½ times natural size; *c*, 2½ 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 exserted, 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 subhelicoid cymes 2.5 to 4 cm. long (excluding corollas), the peduncles

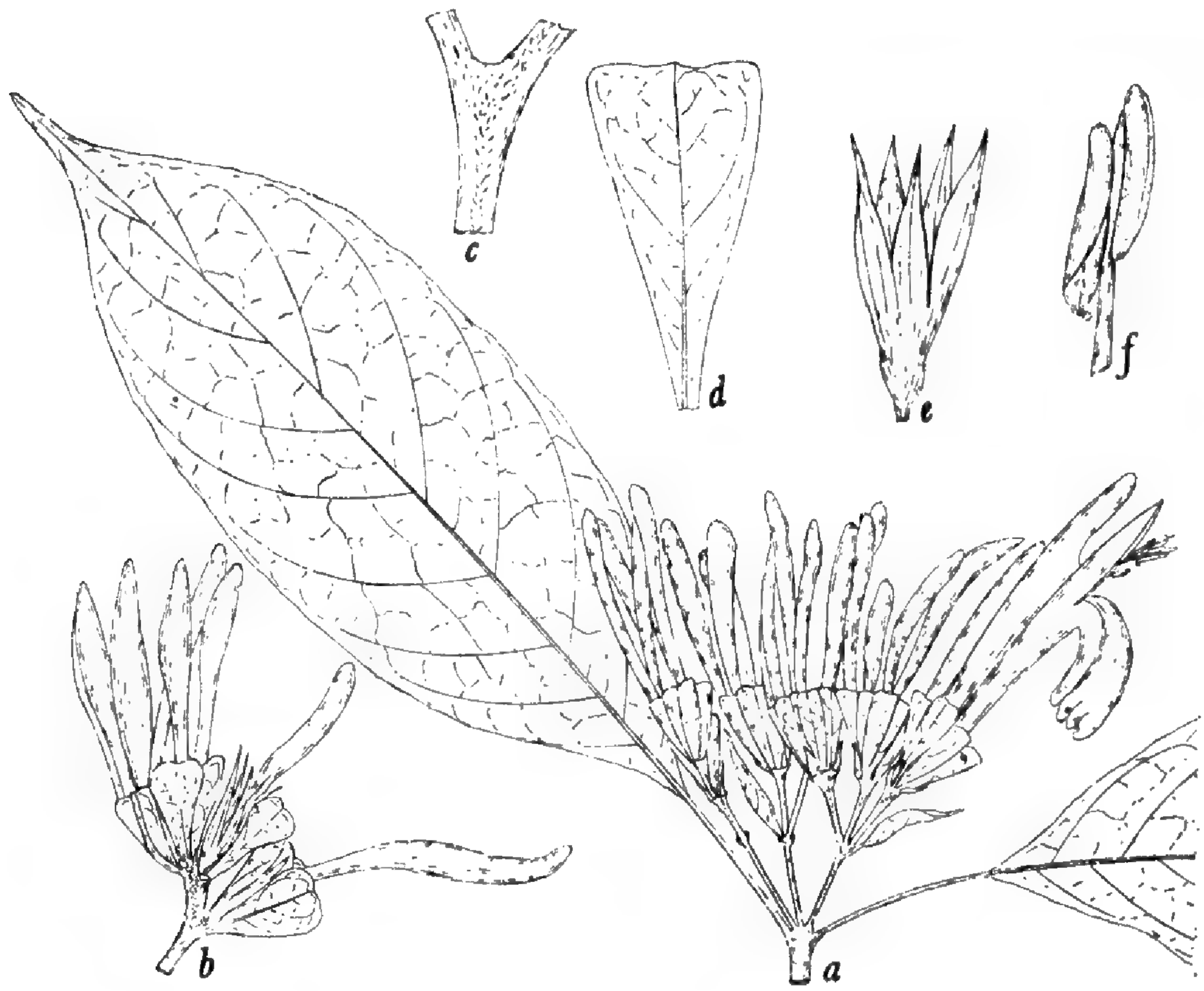

FIGURE 222.—*Justicia aurantiaca* Leonard (*Grant & Fosberg* 9341): *a*, Tip of plant showing leaves and inflorescence; *b*, portion of cyme; *c*, ultimate node of inflorescence to show pubescence; *d*, bract; *e*, calyx; *f*, anther. (*a*, *b*, Half natural size; *c*, 4 times natural size; *d*, 3 times natural size; *e*, 2½ 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 Helicona, 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 exserted 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*, 4½ times natural size; *e*, slightly more than natural size; *f*, 23 times natural size; *g*, 2½ 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 ciliolate, 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 exserted 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, viridialba, 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,

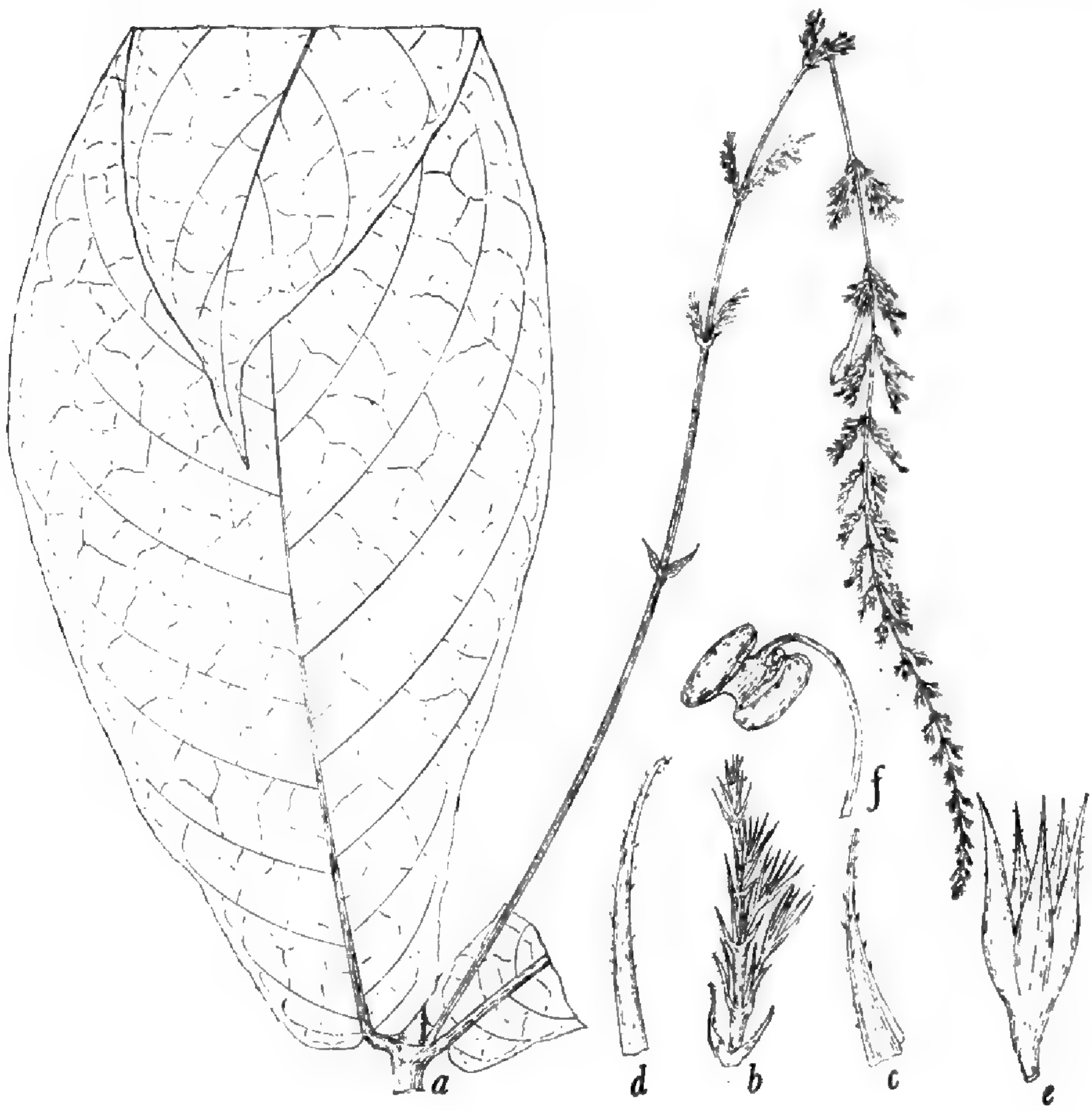

FIGURE 225.—*Justicia atacta* Leonard (*Fosberg* 21244): *a*, Tip of plant; *b*, spike; *c*, bract; *d*, bractlet; *e*, calyx; *f*, anther. (*a*, Half natural size; *b*, 4½ times natural size; *c*, *d*, 12 times natural size; *e*, 8 times natural size; *f*, 6 times natural size.)

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 ἄτακτος, 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 linearia, 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 subquadrangulari, puberulo, pilis sursum curvatis, parvis, ramis panicularum puberulis; flores in apicibus ramorum spissi, sessiles vel subsessiles; bracteae ramos ultimos panicularum sudtendentes 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 viridialba, 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.

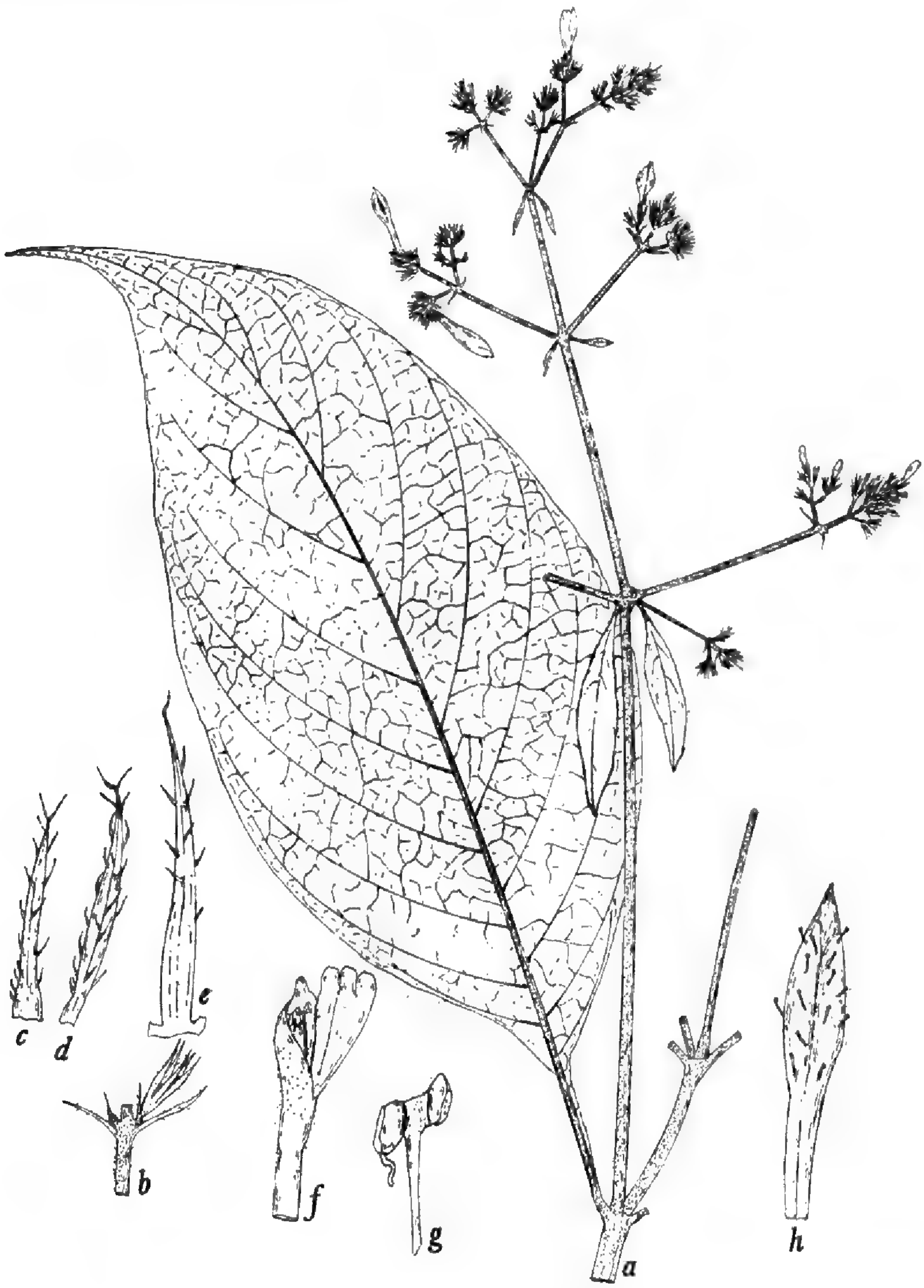

FIGURE 227.—*Justicia chloanantha* Leonard (*a–e, h, Cuatrecasas* 11137; *f, g, Cuatrecasas* 10933): *a*, Node from near tip of plant showing leaf blade and branch of the inflorescence; *b*, node from tip of inflorescence showing bracts, bractlets and calyx; *c*, bractlet; *d*, bract; *e*, a segment 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*, 7½ 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, sparing 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 χλοανός, greenish, and ἄνθος, flower.

55. **Justicia helonoma** Leonard, sp. nov. FIGURE 228

Frutex, caulibus quadrangularibus, glabris vel sursum parce bifariam tomentosis; 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*, 1½ times natural size; *f*, 50 times natural size; *g*, 6½ 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

retrorse, 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 exserted 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 exserted 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 panicled 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, subquadrangular, 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 200μ 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, exserted 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); *Garcia-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 Martin, 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 lineas divisorias de la geometria de los parques."

57. **Justicia comata** (L.) Lam.

Dianthera comata L. Syst. Nat., ed. 10, 850. 1759. Type locality: Jamaica.
Justicia comata Lam. Encyl. **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 150μ long, not often conspicuous; petioles up to 2 cm. long (including winged portion), the uppermost leaves often subsessile; inflorescence terminal or axillary, the flowers secund in slender simple or branched spikes, these fascicled 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 300μ) 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 exserted 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 exserted 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 subsessile 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 Esperenza, Granjo Cafetera Enrique Soto, *Gutierrez* 416 (Ch, Med, US).

EL VALLE: Barco, Río Cajambre, *Cuatrecasas* 17093 (US). Río Anchicayá, between Sabaletas and Quebrada del Tátabro, *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 subsessile 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*, 1½ 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 exserted 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 *νᾶμα*, 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 exserted 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, Chiriguaná, *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 subobtuso et emarginato, 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-

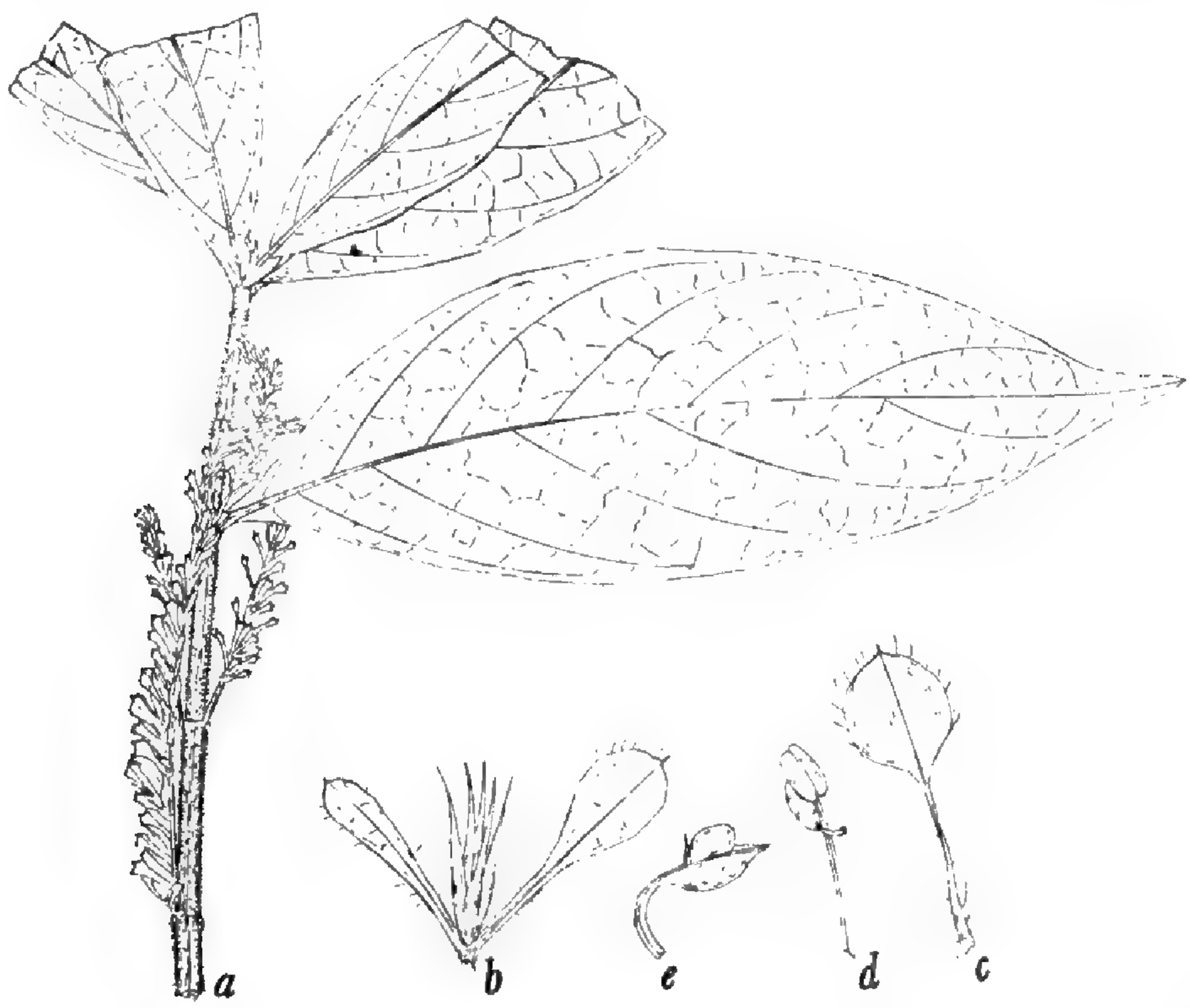

FIGURE 230.—*Justicia idiogenes* Leonard (*a*, *b*, *Cuatrecasas* 10757; *c–e*, *Klug* 1813): *a*, Tip of plant to show inflorescence and leaves; *b*, calyx, bract and bractlet; *c*, bract; *d*, stamen; *e*, capsule valve. (*a*, Half natural size; *b*, 4 times natural size; *c*, 5½ times natural size; *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 subobtuse), 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, subsessile, 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 spathulate, 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 exserted 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 *ἰδιογενής*, 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,

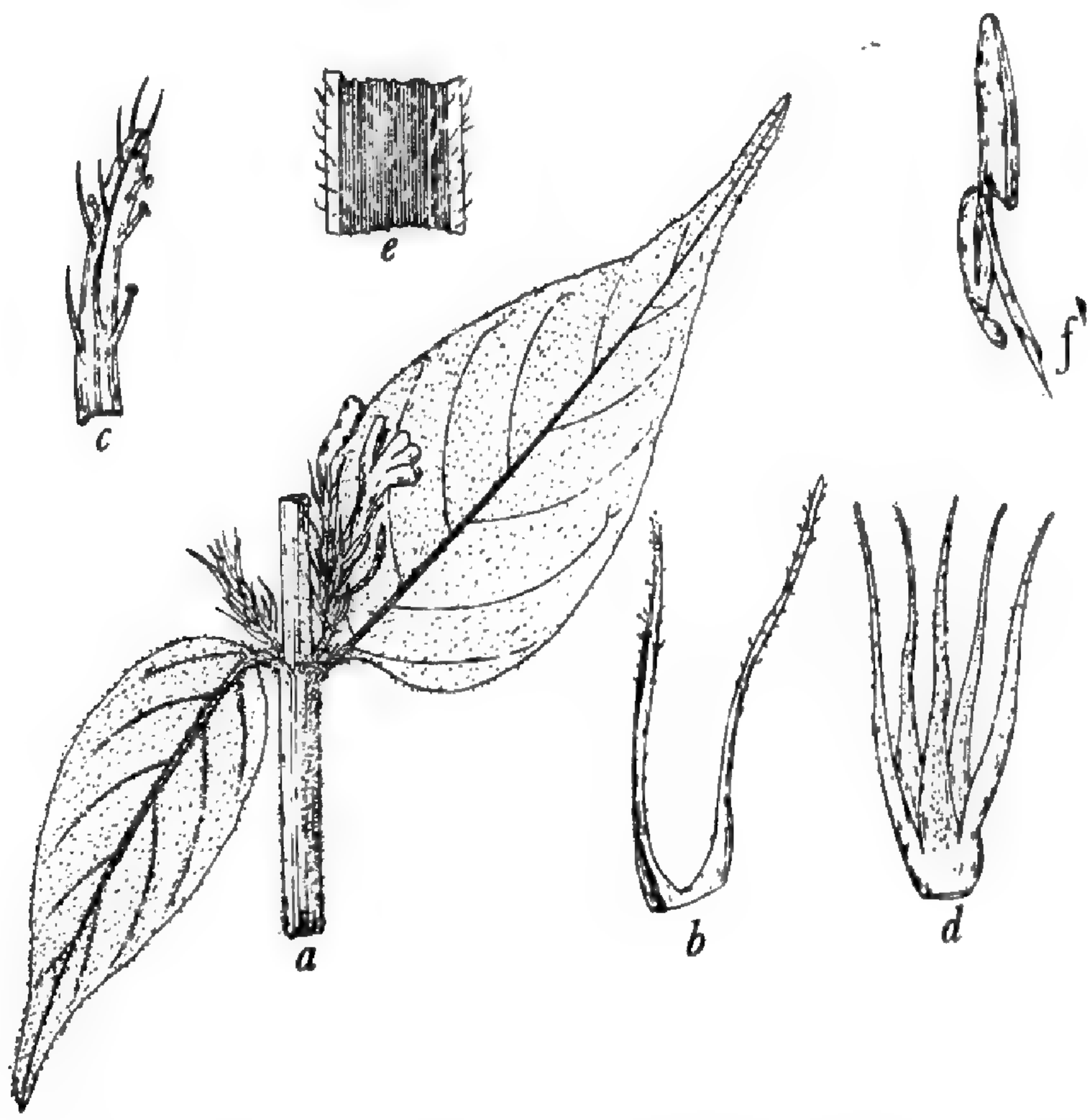

FIGURE 231.—*Justicia fusagasugana* Leonard (*André* 1517): *a*, Node of stem showing inflorescence; *b*, bracts; *c*, tip of bract enlarged to show type of hairs; *d*, calyx; *e*, section of calyx segment (outer surface) enlarged to show hyaline margins; *f*, anther. (*a*, Natural size; *b*, 3½ times 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-

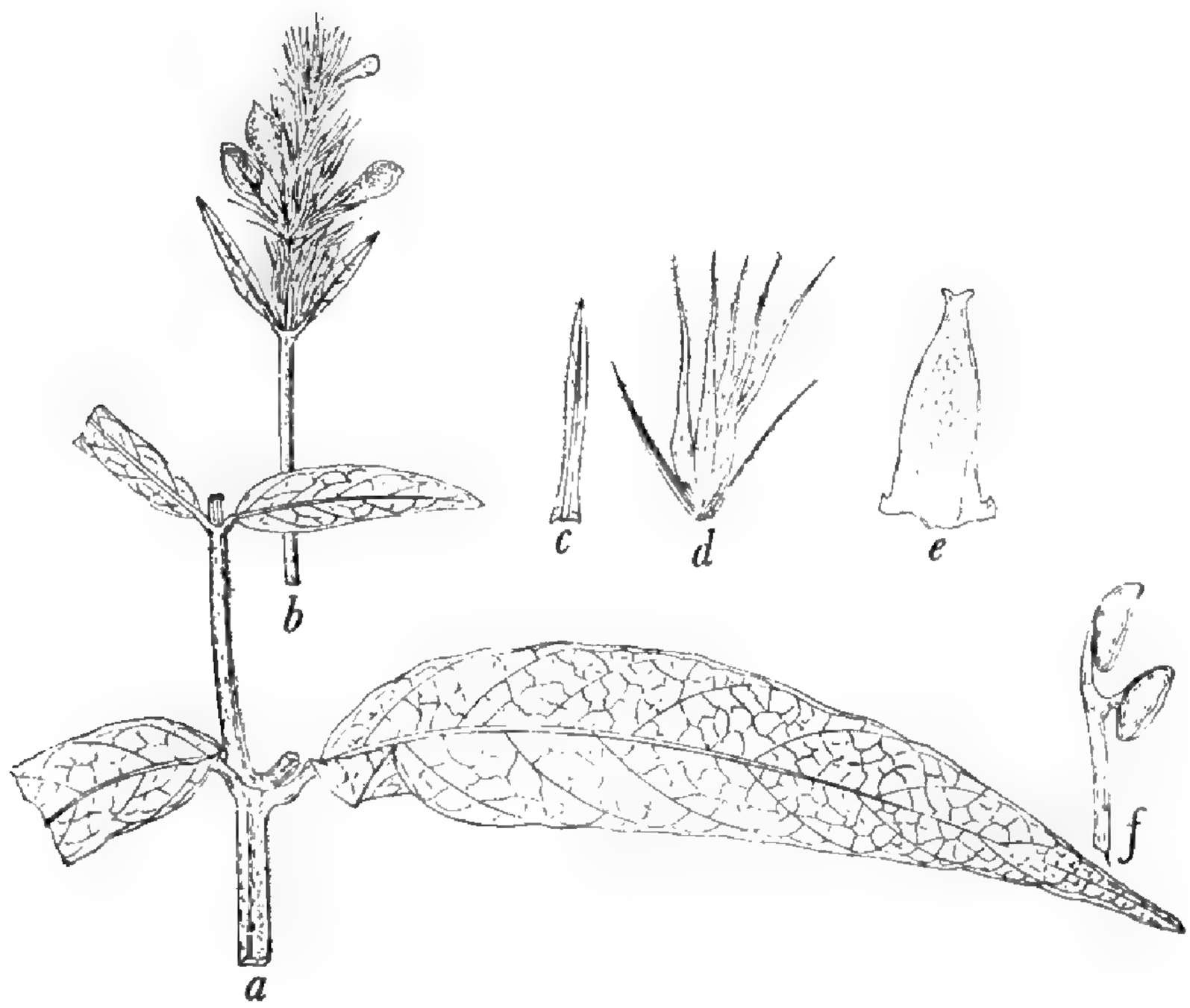

FIGURE 232.—*Justicia scytophylla* Leonard (*Schultes & Cabrera* 17545): *a*, Portion of stem 5 cm. below spike; *b*, spike; *c*, bract; *d*, calyx and bractlets; *e*, upper lip of corolla; *f*, anther. (*a*, *b*, Natural size, *c*, *e*, 3⅓ times natural size; *d*, 3 times natural size; *f*, about 9 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 exserted, 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, quadrangulari, 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*, 1½ 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, antrorse 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 antrorse hirtelli, pilis rigidis; rhaches subquadrangulares, dense hirtellae, pilis rigidis, antrorse 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,

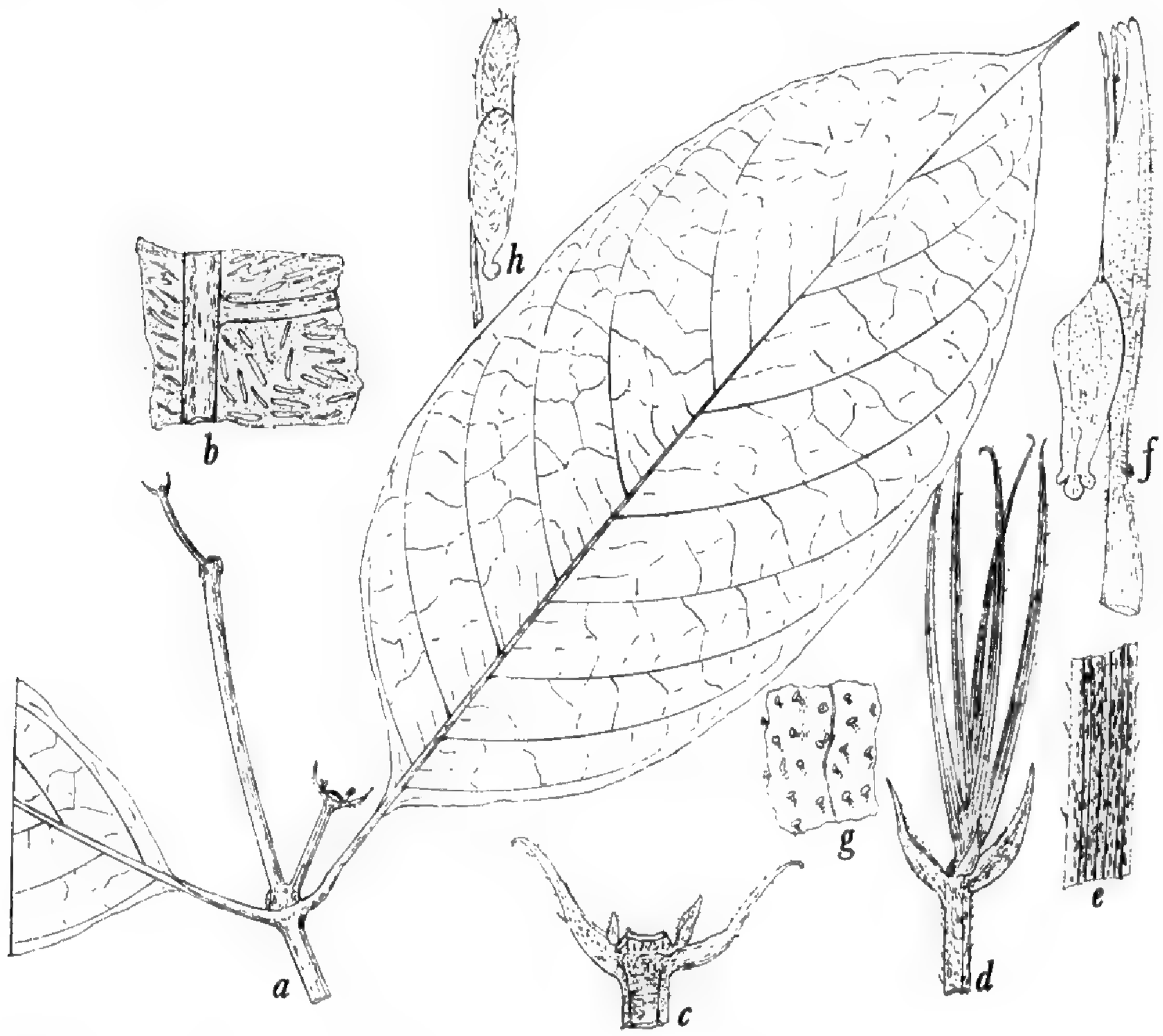

FIGURE 234.—*Justicia graphophylla* Leonard (*Pennell* 4500): *a*, Section of plant showing node, internode, leaf, peduncle and lowermost pairs of bracts (spikes fragmented); *b*, portion of leaf blade (under surface) enlarged to show veins and cystoliths; *c*, lowermost pair of bracts; *d*, section 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 radicantibus, 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; bracteae 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 exserted, 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,

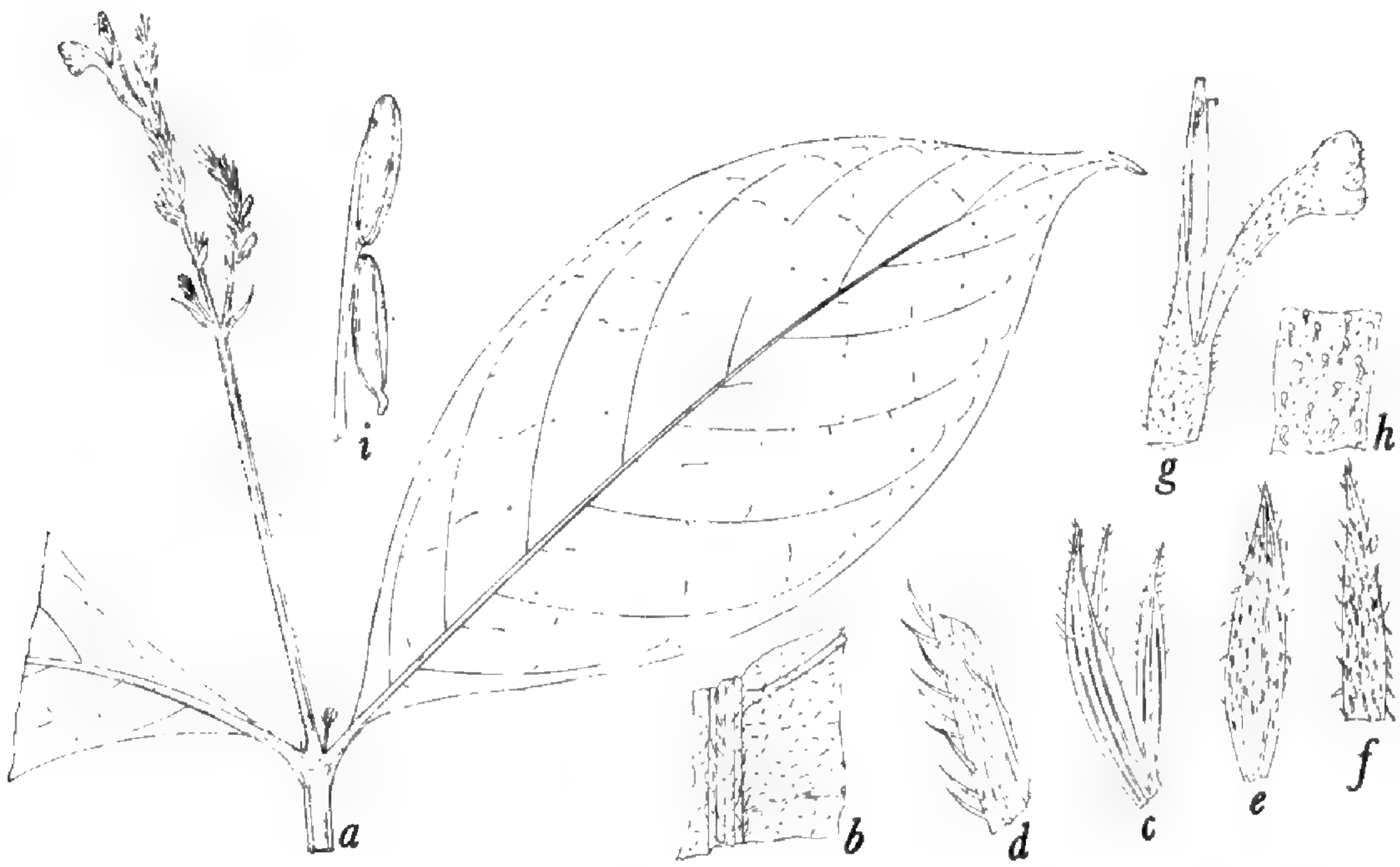

FIGURE 236.—*Justicia sterea* Leonard (*Cuatrecasas* 16811): *a*, Tip of plant to show leaf and inflorescence; *b*, portion of leaf blade (lower surface) enlarged to show pubescence and cystoliths; *c*, bract and bractlets; *d*, margin of bract (near tip) enlarged to show pubescence; *e*, calyx segment (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 Agronómia 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 radicantibus, 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 sciera* 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*, 6½ 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 σκιερός, 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, firmae, 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

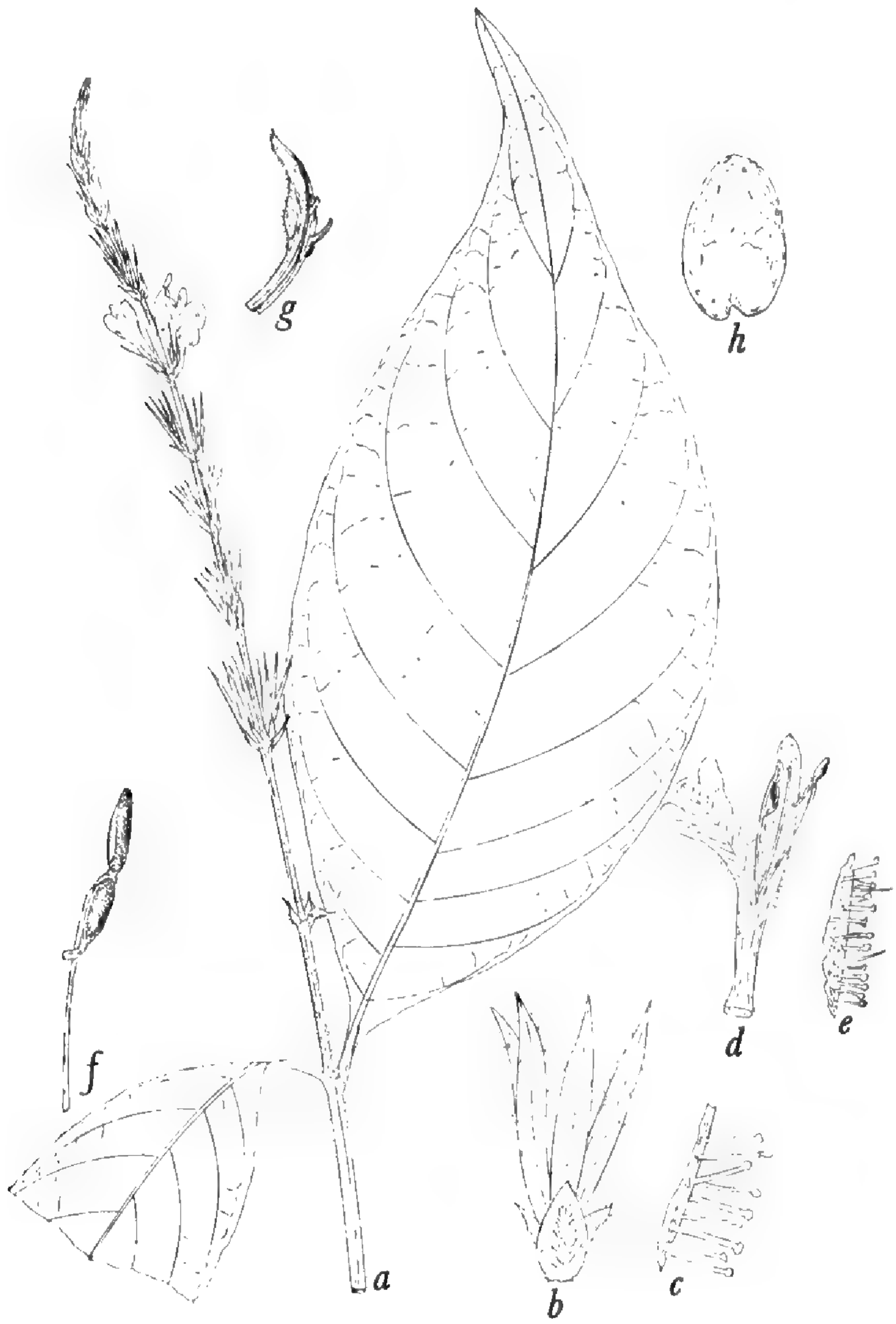

FIGURE 238.—*Justicia stereostachya* Leonard (*Cuatrecasas* 13061): *a*, Tip of plant showing leaf blades and spike; *b*, calyx, bracts and bractlets; *c*, hairs from dorsal region of bract; *d*, corolla; *e*, pubescence of corolla; *f*, anther; *g*, capsule valve; *h*, seed. (*a*, Natural size; *b*, about 3 times natural size; *c*, 30 times natural size; *d*, twice natural size; *e*, 4 times natural size; *f*, 7½ times natural size; *g*, 1½ 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 exserted 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 retinacula 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 ciliolate 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 ciliolate 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 exserted 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*, 7½ times natural size; *c*, 25 times natural size; *e*, 5 times natural size; *f*, *g*, 2½ 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, conduplicatae, 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 rstigose; 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 ὑγρόβιος, 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.

Suffrutescent, 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 Jillita, 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

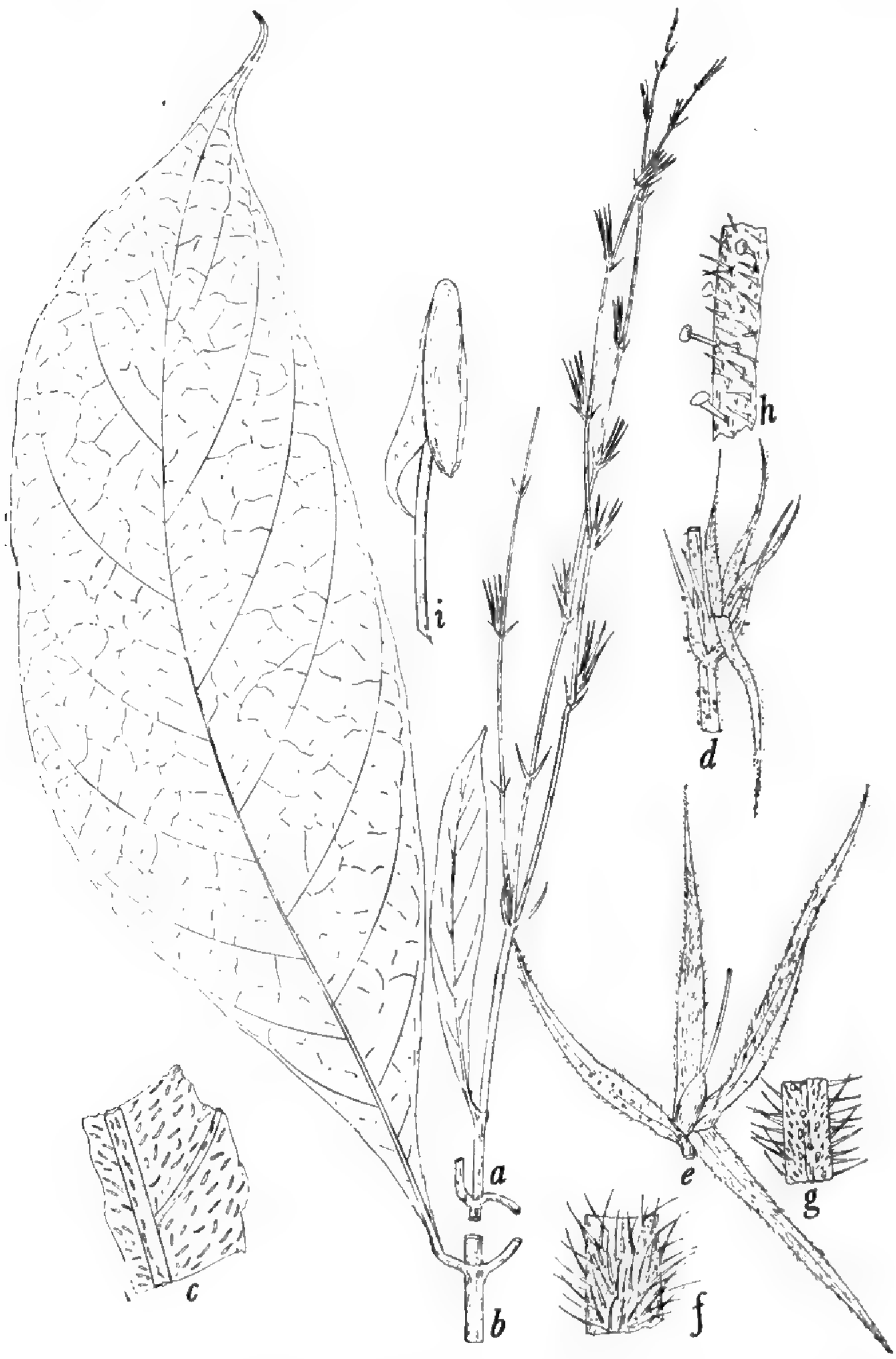

FIGURE 241.—*Pelecostemon trianae* Leonard (*Triana*, Villavicencio): *a*, Inflorescence; *b*, node showing leaf; *c*, portion of the under surface of a leaf blade enlarged to show cystoliths; *d*, node of inflorescence; *e*, calyx; *f*, portion of calyx segment (inner surface) enlarged to show pubescence; *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 ἀνθηρός, 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, spathulate, 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 subquadrangular, 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 pilos paucos ferens, subtus aliquanto dense hirsuta, pilis patentibus vel ascendentibus, pilis praecipue in costa et venis lateralibus prominentibus positis, 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 ungulatae, 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 parellelis, 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

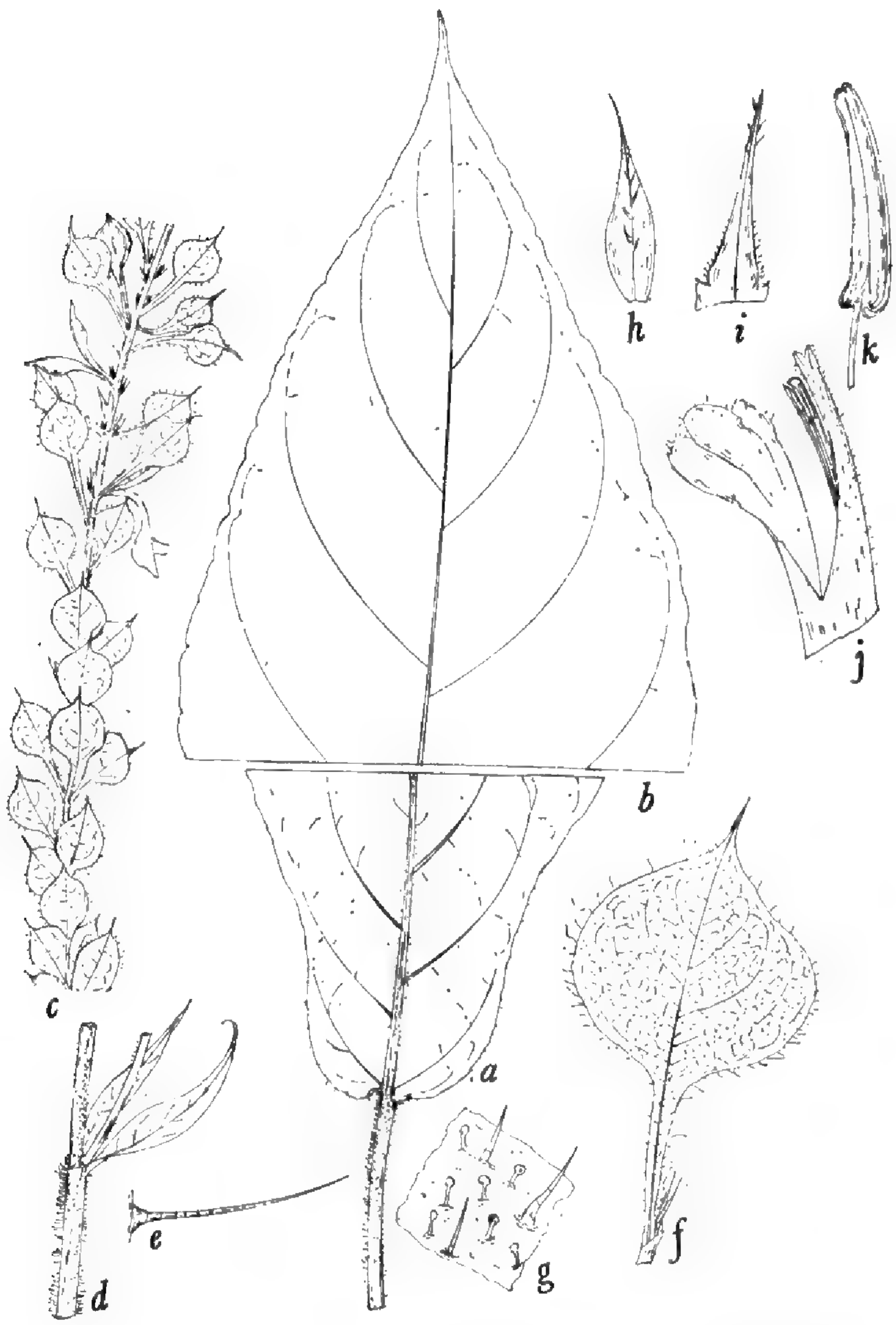

FIGURE 242.—*Jacobinia axiologa* Leonard (*Haught* 1986): *a*, Basal portion of leaf blade; *b*, tip of leaf blade; *c*, portion of spike (middle); *d*, basal node of inflorescence; *e*, one of the hairs from basal node; *f*, bract; *g*, pubescence of lower surface of bract; *h*, one of a pair of bractlets; *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 ciliolate; 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 ciliolate 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,

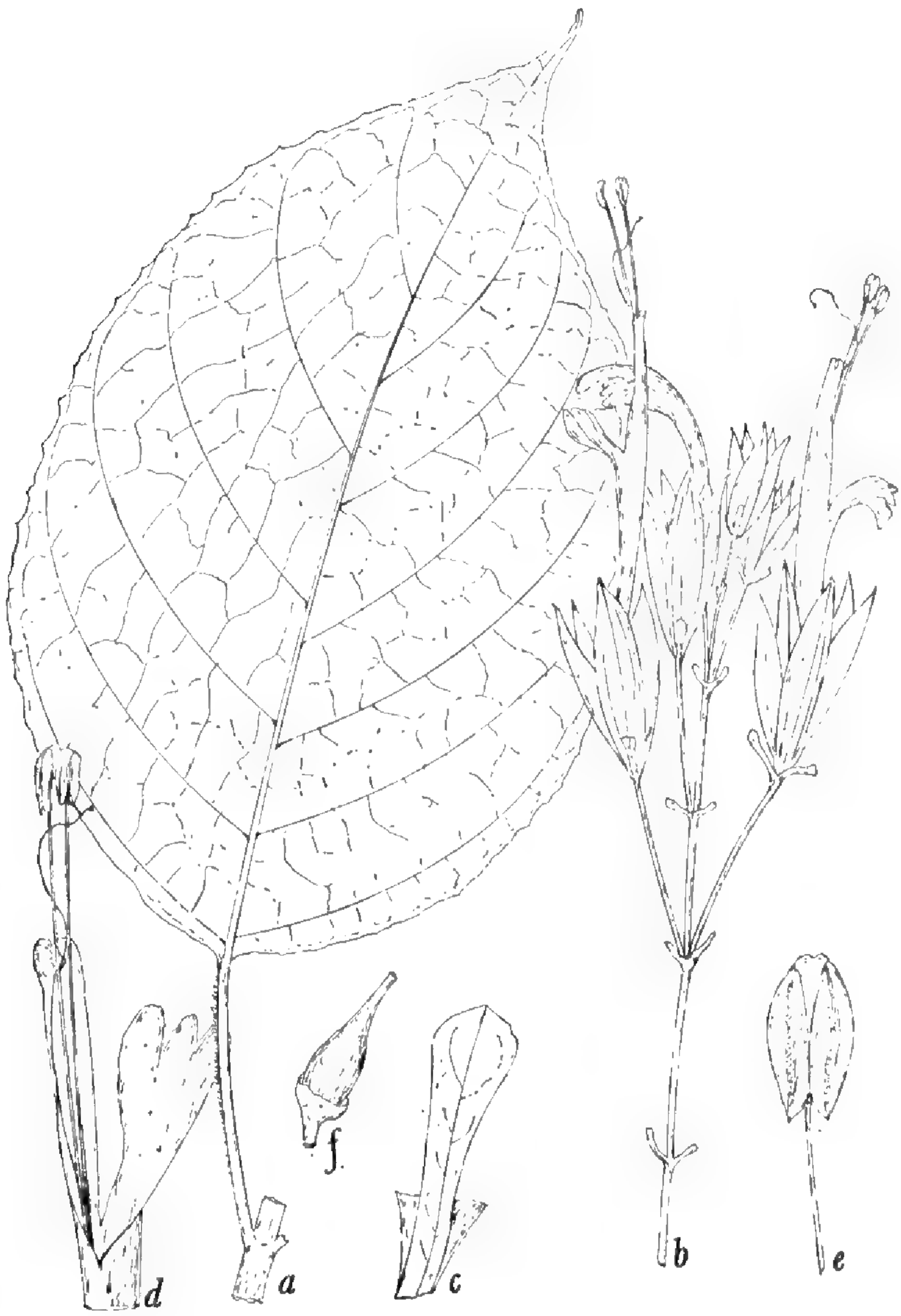

FIGURE 243.—*Jacobinia amphibola* Leonard (*Cuatrecasas* 23467): *a*, Leaf; *b*, branch of panicle; *c*, bract; *d*, tip of corolla to show lips, stamens and style; *e*, anther; *f*, ovary. *a*, *b*, Natural size; *c*, 5 times natural size; *d*, 1½ times natural size; *e*, 4 times natural size; *f*, 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 grisaceo 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 ciliatus; 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 exserted about 4 mm. beyond the mouth of the corolla, the

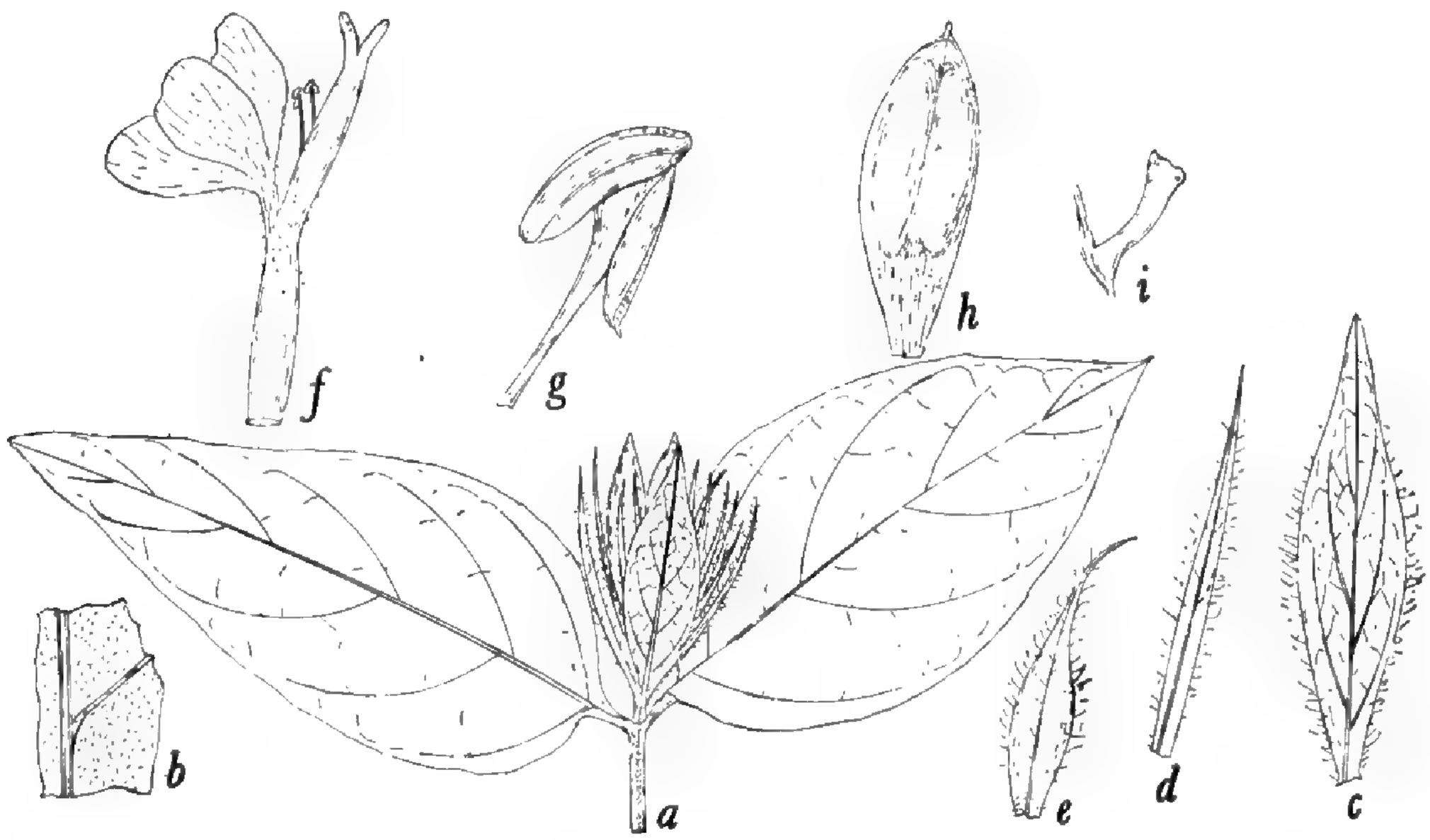

FIGURE 244.—*Chaetochlamys columbiensis* Leonard (*Haught* 2414): *a*, Tip of plant to show inflorescence and leaves; *b*, portion of leaf blade (medial area and lower surface) to show cystoliths; *c*, bract; *d*, bractlet; *e*, a calyx segment; *f*, corolla; *g*, anther; *h*, a capsule valve (dorsal surface); *i*, retinaculum. (*a*, Natural size; *b–e*, twice natural size; *f*, 1½ natural size; *g*, 7 times natural size; *h*, 1⅘ 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. tocantinus* 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*, 4½ 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 cylindric, 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; bracteae lineari-lanceolatae, 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 ciliolate; 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*, 3½ times natural size; *d*, 1½ 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 cylindric, 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 exserted, 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, vestigal 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,

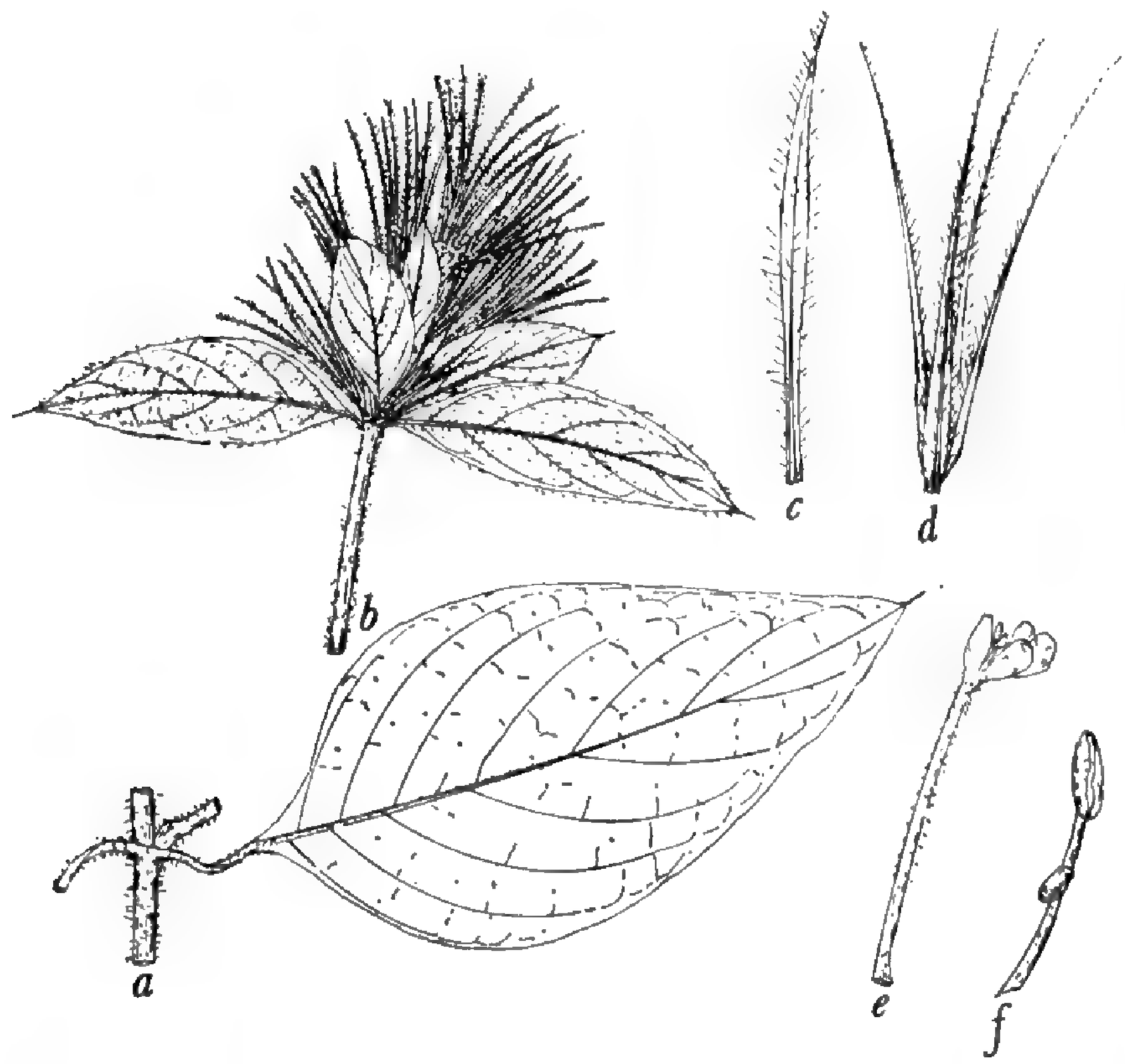

FIGURE 247.—*Chaetothylax huilensis* Leonard (*a, b, S. Galen Smith* 1164; *c–f, Rusby & Pennell* 486): *a*, Stem node and leaf; *b*, tip of plant showing inflorescence; *c*, bract; *d*, calyx; *e*, corolla; *f*, anther. (*a, b*, Natural size; *c, d*, 3 times natural size; *e*, twice natural size; *f*, 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 exserted 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-

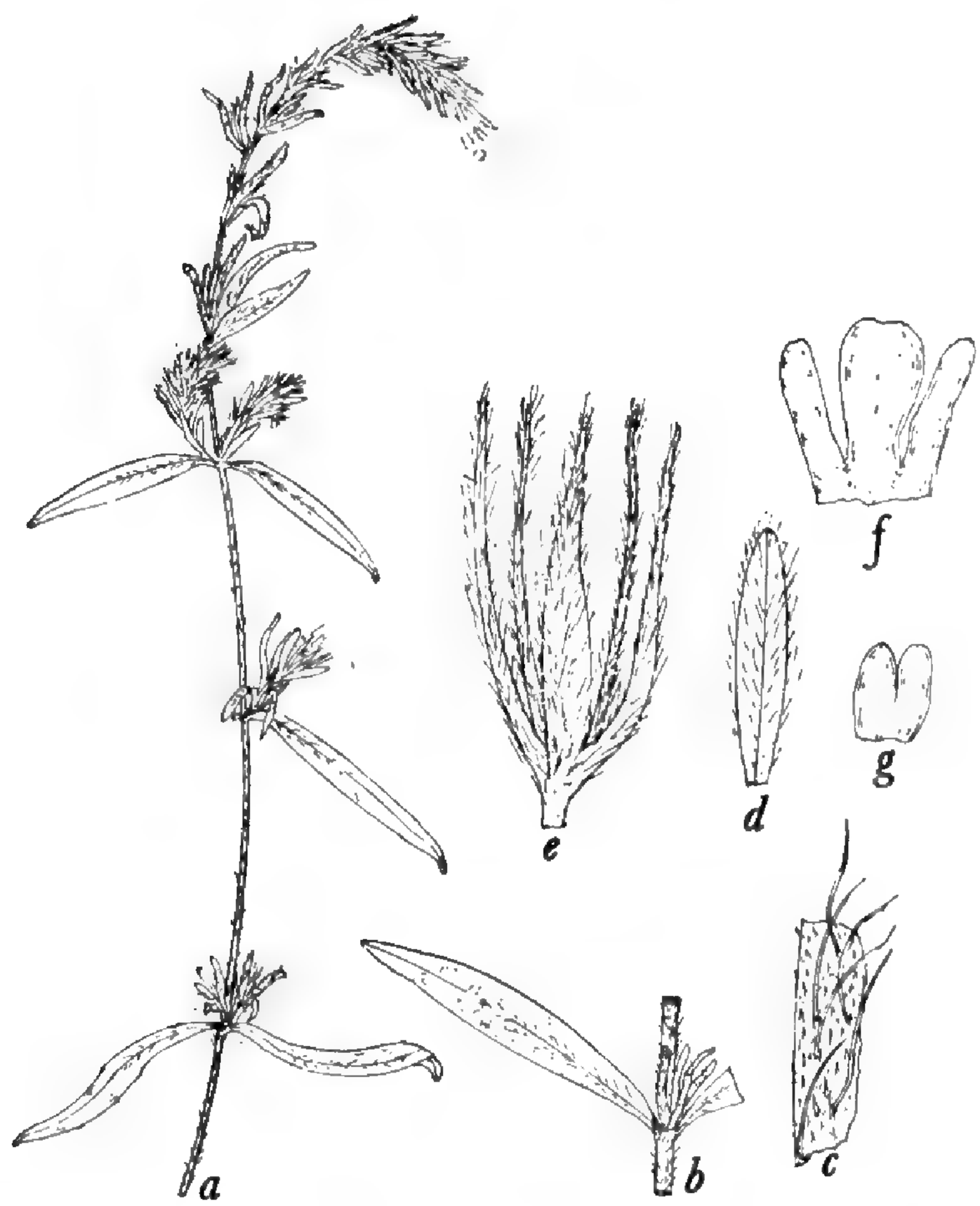

FIGURE 248.—*Staurogyne leptocaulis* Leonard (*Sprague* 27): *a*, Branch; *b*, node of stem enlarged to show leaf in detail; *c*, portion of leaf blade (upper surface) enlarged to show pubescence; *d*, bractlet; *e*, calyx; *f*, lower lip of corolla; *g*, upper lip of same. (*a*, Natural size; *b*, twice natural size; *c*, 10 times natural size; *d*, 8 times natural size; *e*, 5 times natural size; *f*, *g*, 4½ 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.

Staurogyne 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. Leafl. 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, exserted 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 Kananarí), 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;

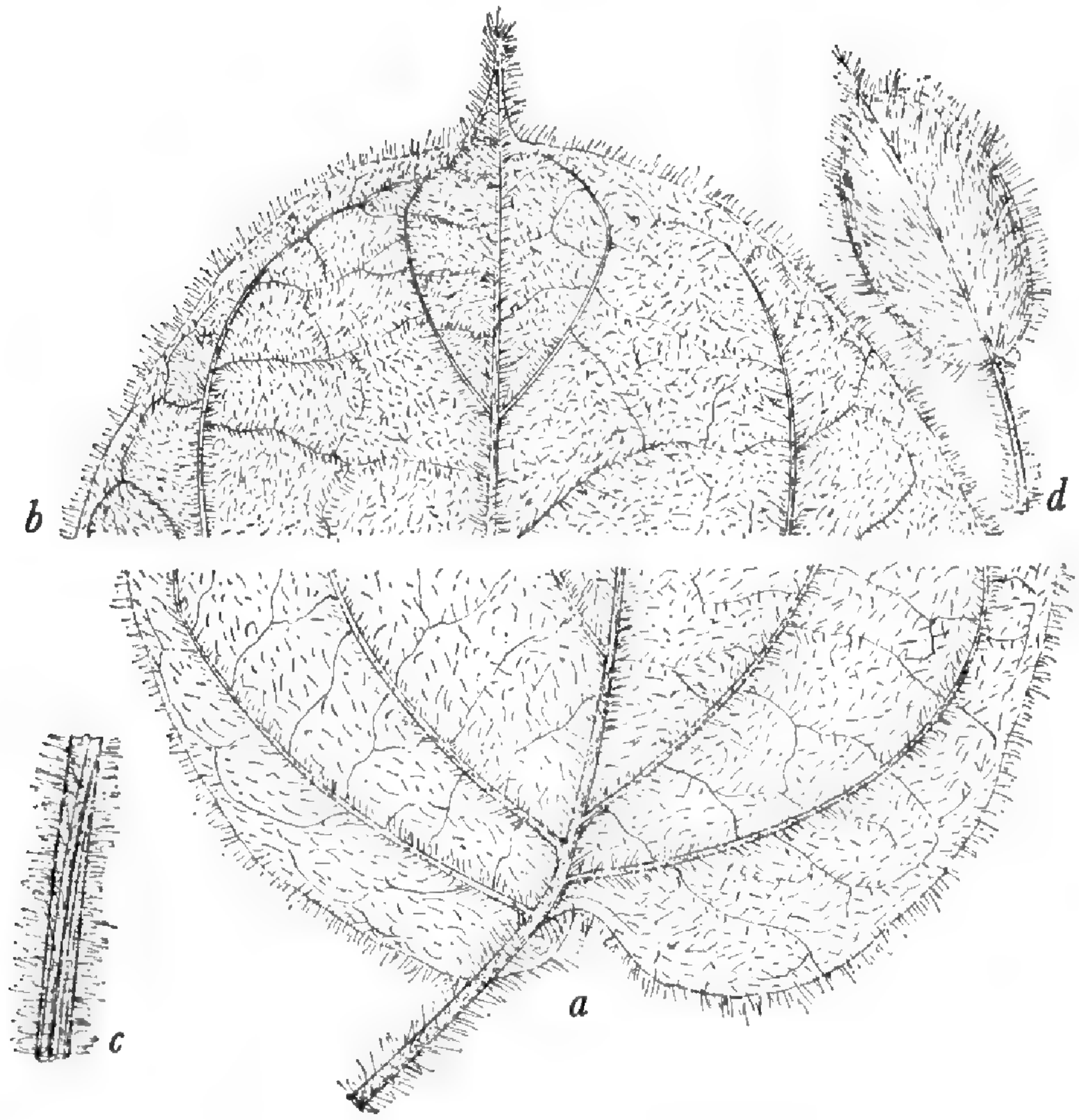

FIGURE 248a.—*Mendoncia trichota* Leonard (*Koie* 5043): *a*, Lower portion of leaf; *b*, upper portion of leaf; *c*, portion of stem; *d*, bract. (*a*, *b*, Half natural size; *c*, *d*, natural size.)

lamina foliorum grandis, ovata, apice acuminata, basi cordata, tenuis, integra, ciliata, utrinque pilosa, pilis ascendentibus, 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

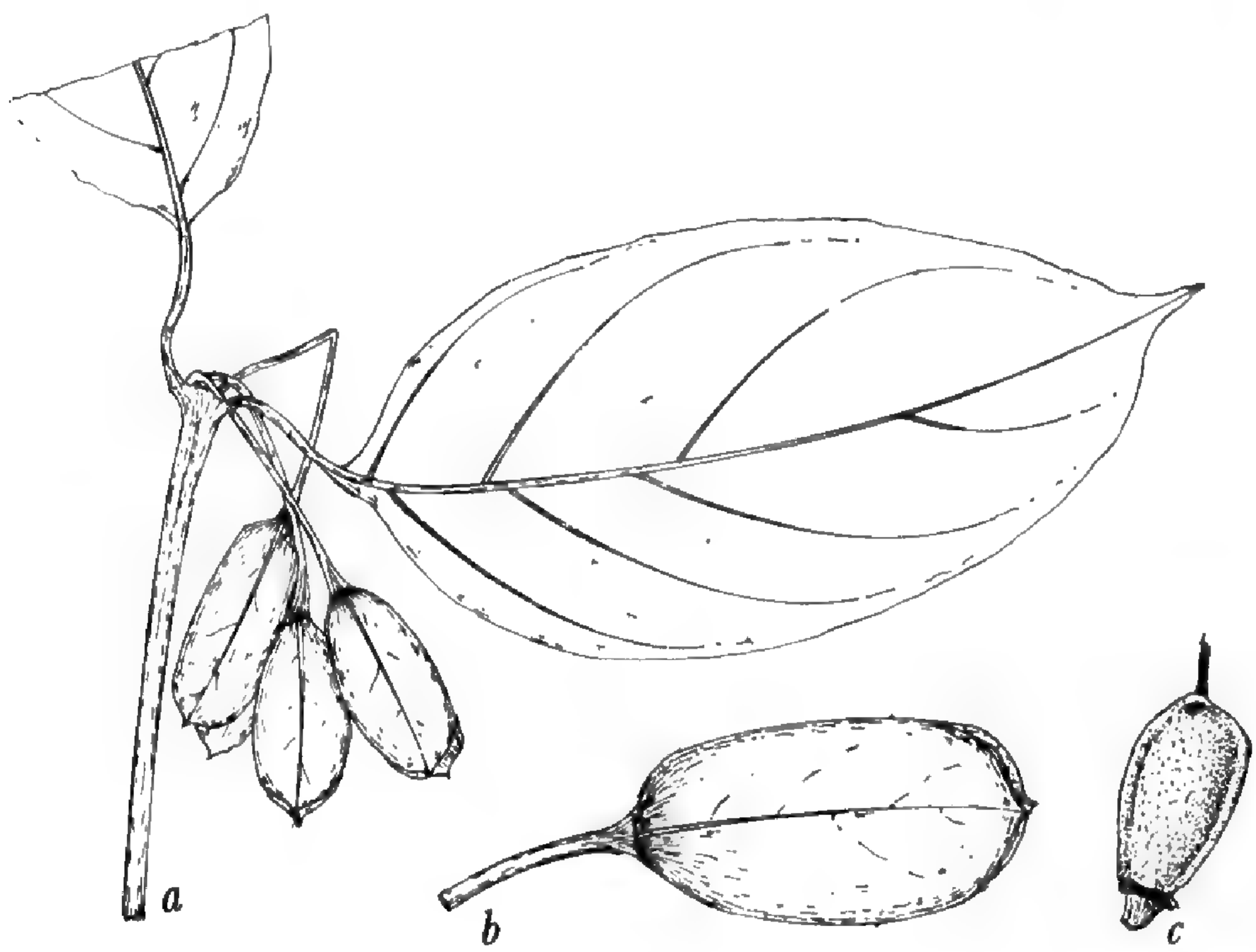

FIGURE 248b.—*Mendoncia phalacra* Leonard (*García-Barriga* 14403): *a*, Portion of plant; *b*, bracts; *c*, drupe. (*a*, Half natural size; *b*, *c*, natural size.)

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,

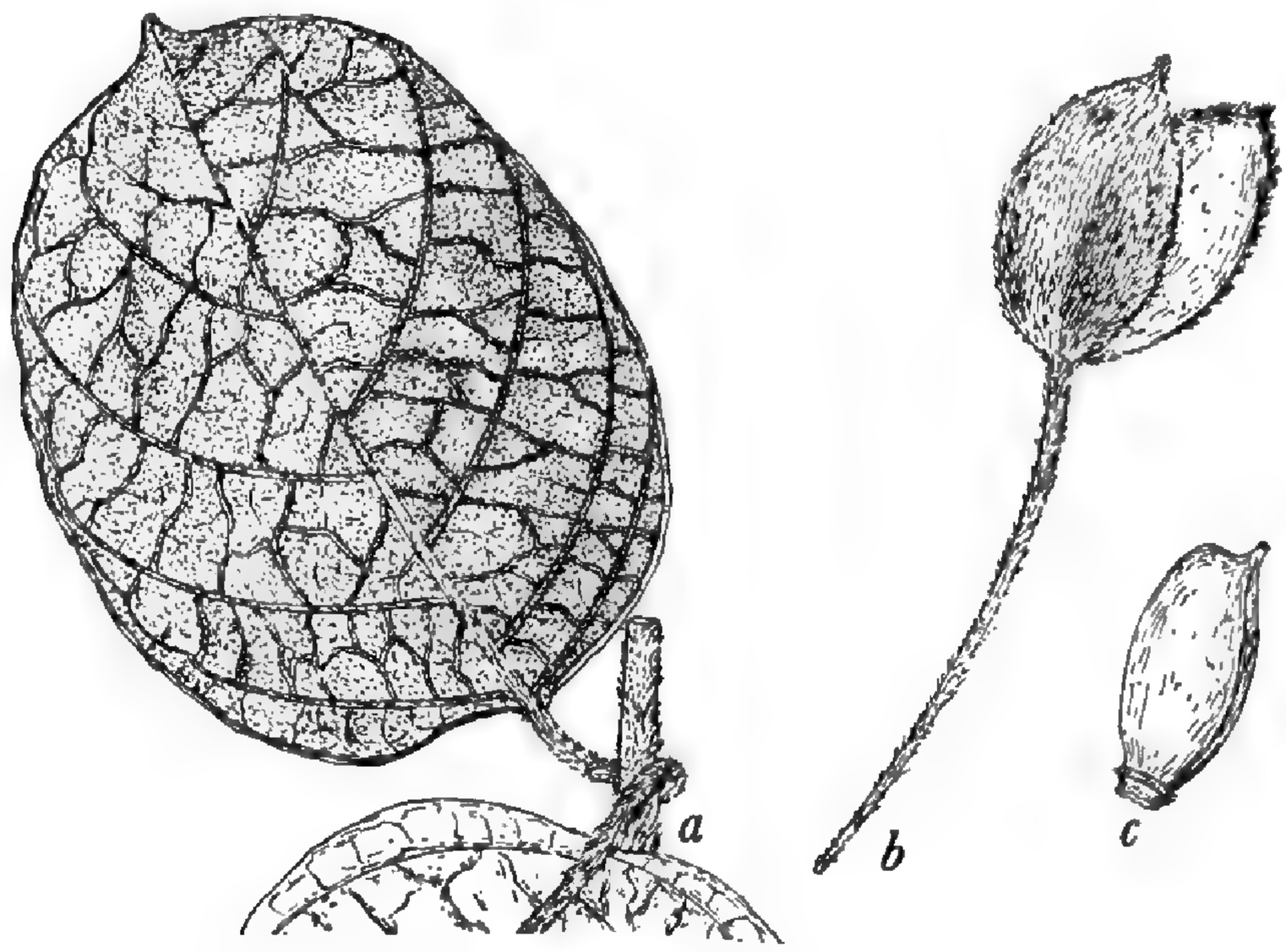

FIGURE 248c.—*Mendoncia garciae* Leonard (*García-Barriga* 14399): *a*, Node showing leaves. both upper and lower surface, and portion of stem; *b*, bracts and pedicel; *c*, drupel (*a*, Half natural size; *b*, *c*, natural size.)

firma, supra parce puberula, integra, subtus dense et molliter tomentosa, pilis flavescentibus, 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. Leafl. 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 *θίς*, beach, and *φίλος*, 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-

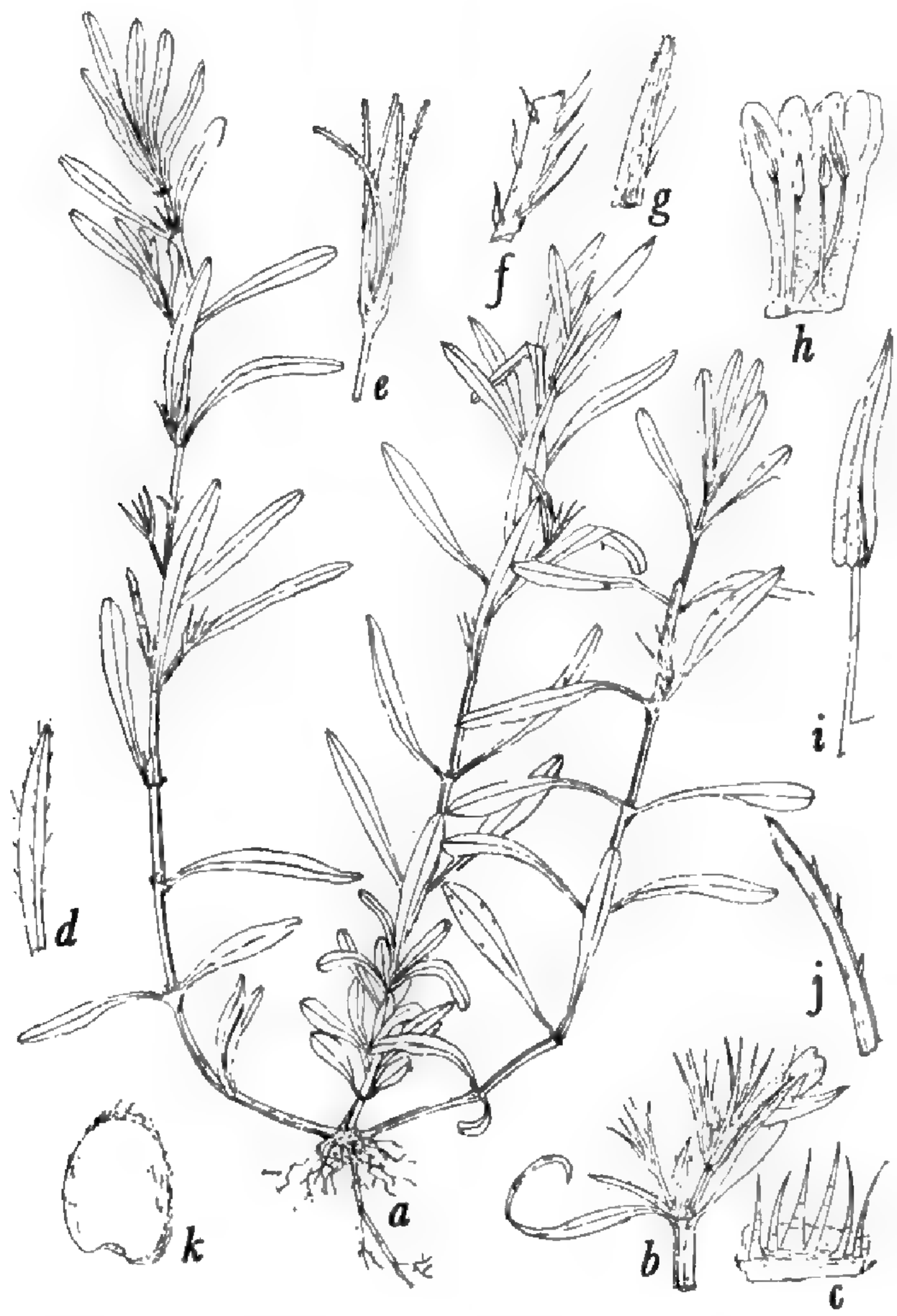

FIGURE 249.—*Hygrophila tyttha* Leonard (*a–j*, *Killip* 35383; *k*, *Cuatrecasas* 16672): *a*, Plant; *b*, node showing inflorescence; *c*, interpetiolar hairs; *d*, bract; *e*, calyx; *f*, portion of mature calyx segment to show pubescence; *g*, tip of young calyx lobe; *h*, upper portion of corolla 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*, 3½ times natural size; *f*, 35 times natural size; *g*, 6 times natural size; *h*, 2½ 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 ciliolate, 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 ciliolate 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* Wendland has been rejected in favor of *Phaulopsis* does not render specific names published unter *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: Tucurinca, *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 Guadelupe 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 [*humboltianus*].

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 Prodromus. 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. Prodromus, 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). Isotype: 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 Kananarí, *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 subobtuso), 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*, 2½ times natural size; *d*, 2½ 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, *Garcia-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

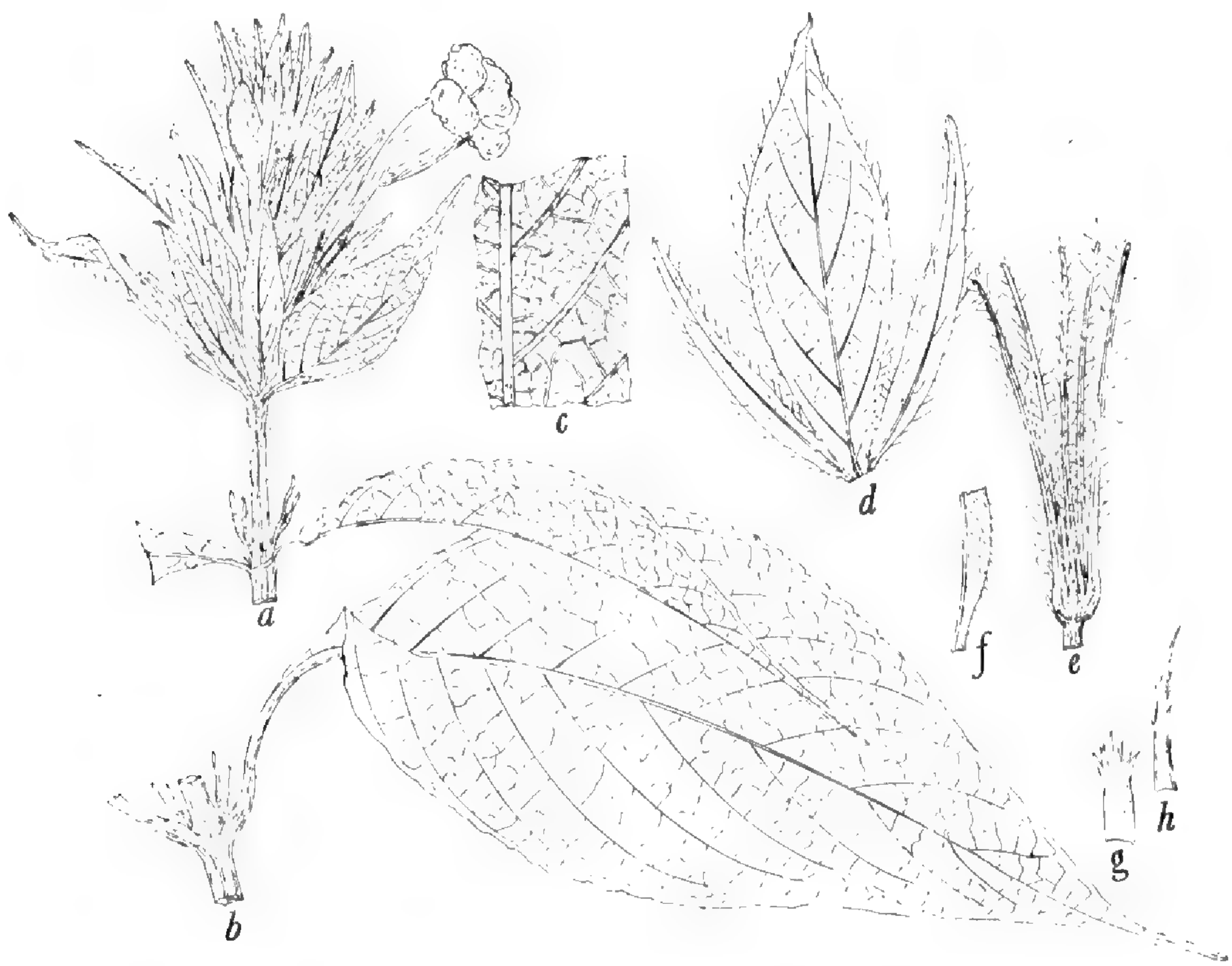

FIGURE 250.—*Ruellia grantii* Leonard (*Grant* 10013): *a*, Inflorescence; *b*, stem node and leaf; *c*, portion of under surface of leaf blade enlarged to show venation and cystoliths; *d*, bract and bractlets; *e*, calyx; *f*, portion of capsule near its base enlarged to show pubescence; *g*, tip of 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; bracteae 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 o 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 subsessile 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 cylindric, 1.5 mm. in diameter, the upper portion funnelform, 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 radicantibus, 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

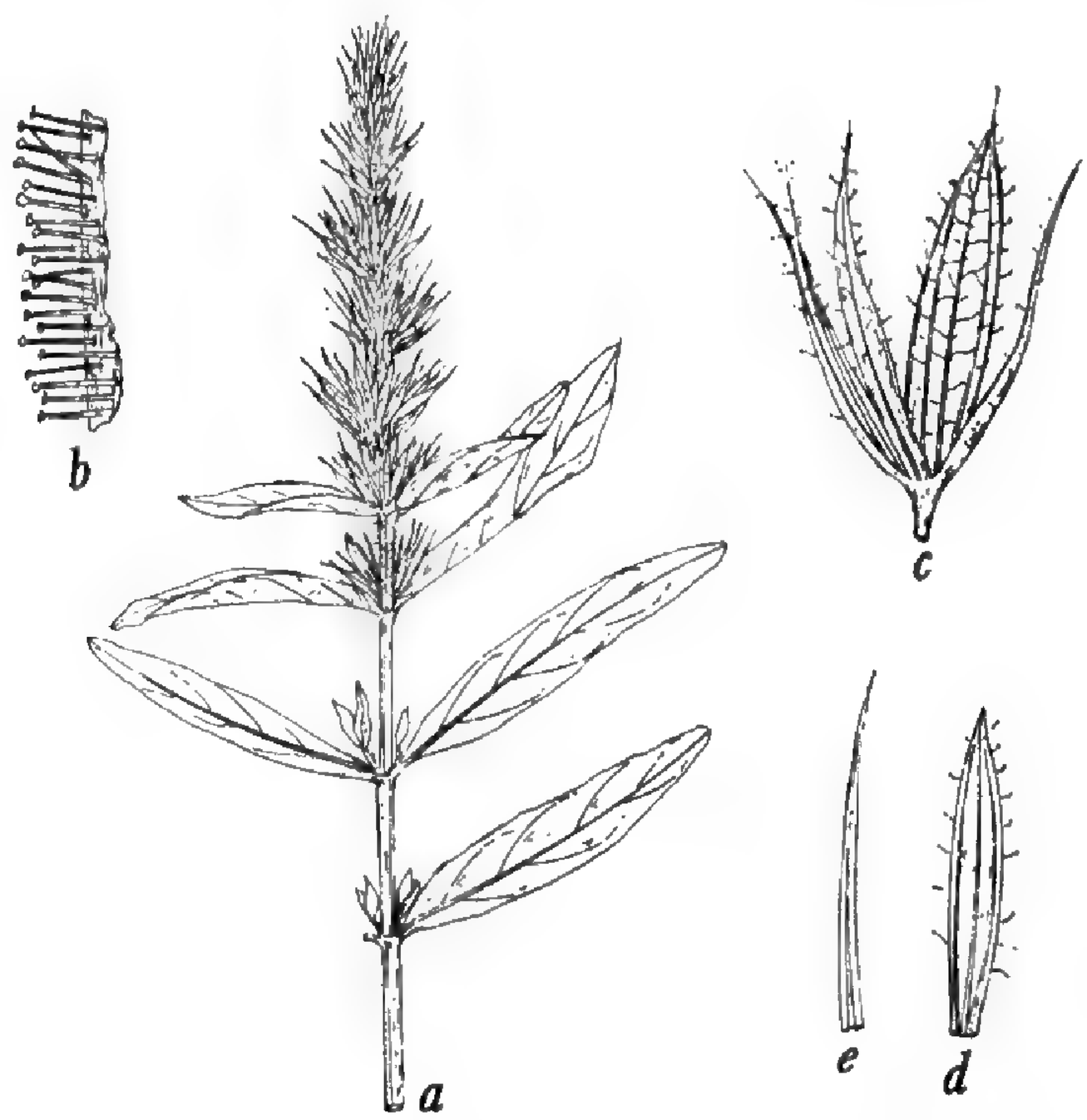

FIGURE 253.—*Teliostachya petraea* Leonard (*Schultes & Cabrera* 15342): *a*, Tip of plant; *b*, portion of uppermost internode enlarged to show glandular pubescence; *c*, calyx; *d*, bract; *e*, bractlet. (*a*, Natural size; *b*, 40 times natural size; *c–e*, 4 times natural size.)

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.) Ness. (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

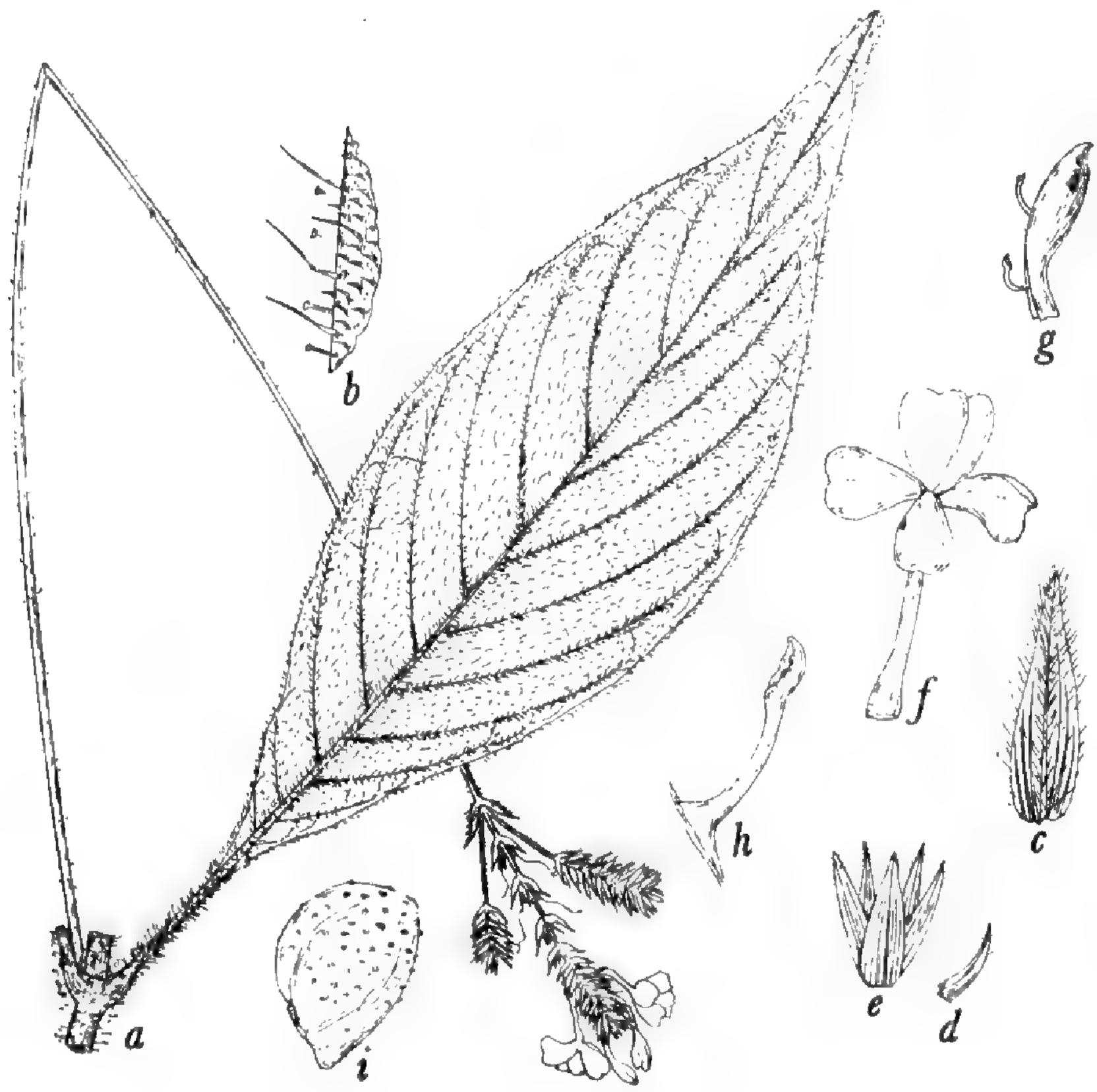

FIGURE 254.—*Stenandrium humboldtianum* Nees (*Ewan* 15622): *a*, Node with a leaf and flower branch; *b*, portion of peduncle enlarged to show pubescence; *c*, one of the lowermost bracts; *d*, bractlet; *e*, calyx; *f*, corolla; *g*, capsule valve; *h*, retinaculum; *i*, seed. (*a*, Half natural size; *b*, about 30 times natural size; *c–e*, about 3 times natural size; *f*, 1½ 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; bracteae interpetiolares parvae, rhombicae, integrae vel dentatae, spinosae; spicae terminales sessiles, rhache dense puberula; bracteae 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

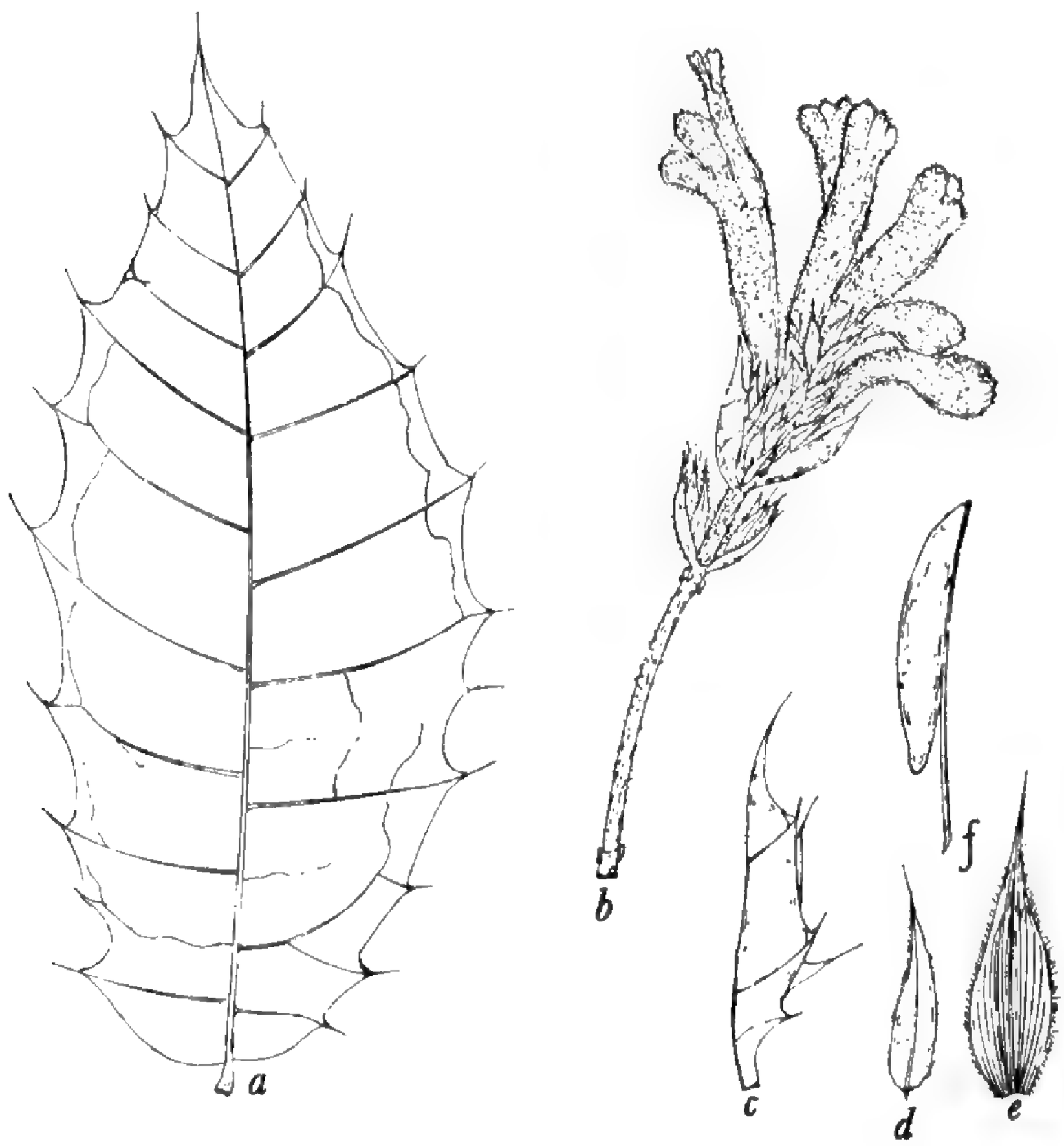

FIGURE 255.—*Aphelandra grangeri* Leonard (*Granger & Rodriguez-A* 10): *a*, Leaf, *b*, spike; *c*, bract; *d*, bractlet; *e*, one of the calyx segments; *f*, anther. (*a*, Natural size; *b*, two-thirds natural size; *c*, 1⅓ times natural size; *d*, *e*, twice natural size; *f*, 5½ times natural size.)

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.

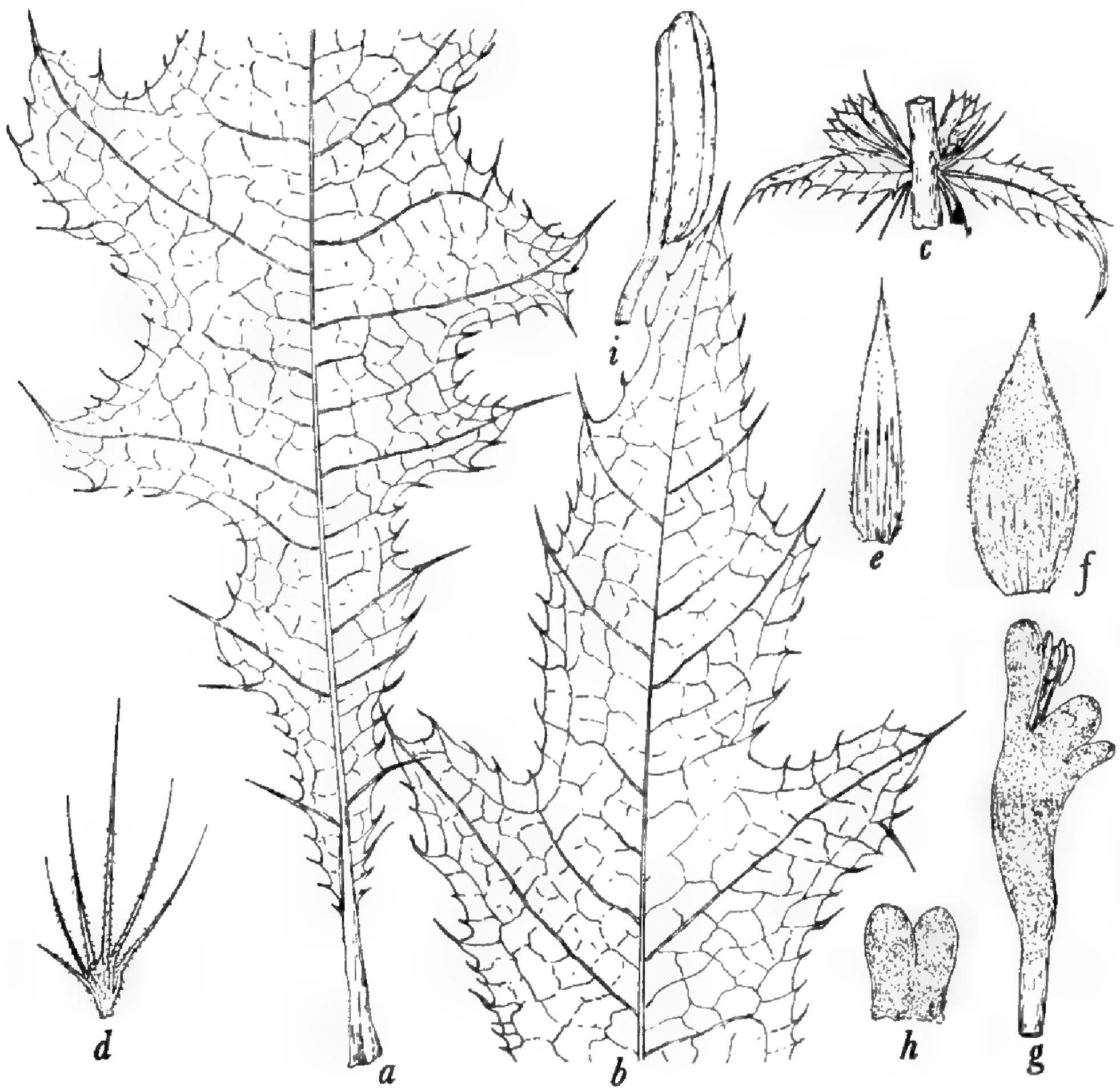

FIGURE 256.—*Aphelandra gilva* Leonard (*Ewan* 16501): *a*, Lower half of leaf blade; *b*, upper half of same; *c*, lowermost node of spike; *d*, interpetiolar bract; *e*, bractlet; *f*, calyx segment; *g*, corolla; *h*, upper lip of corolla; *i*, anther. (*a*, *b*, Half natural size; *c*, ⅘ natural size; *d*, 6 times natural size; *e*, 3 times natural size; *f*, 3½ times natural size; *g*, *h*, 1⅓ 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 Sneidern* 1512 (S).

NARIÑO: Sparsely wooded brushy ravine, Quebrada Panacual, 8 kilometers south of Piedrancha, Río Guabo drainage, *Fosberg* 21113 (US).

TOLIMA: Quindio, *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 radicantibus, 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, striata-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*, 2⅔ 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 ciliolate, 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 ciliolate, 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 exserted but not exceeding the lips,

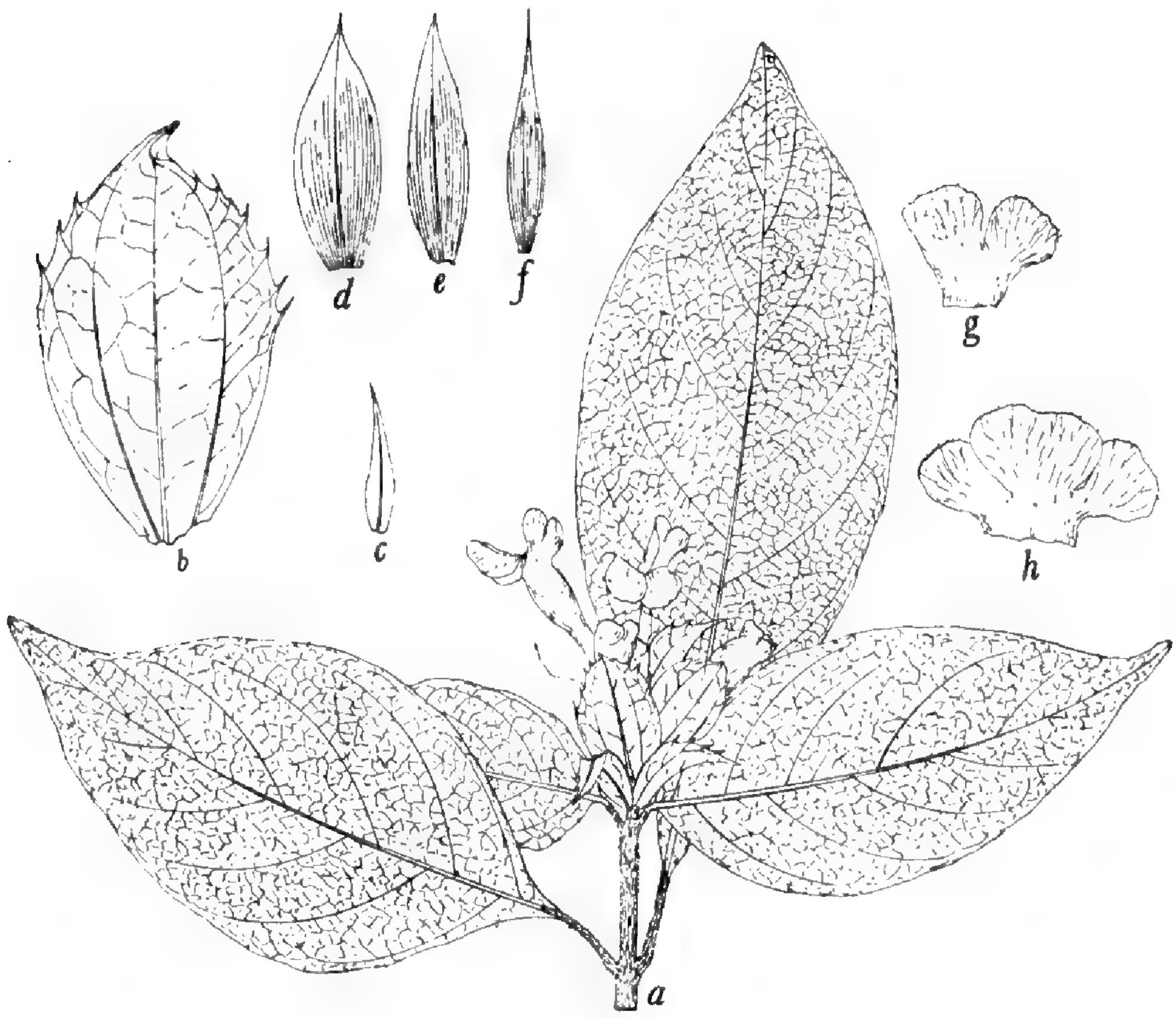

FIGURE 258.—*Aphelandra quadrifaria* Leonard (*Grant* 9811): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, posterior calyx segment; *e*, one of the anterior segments; *f*, one of the lateral segments; *g*, upper lip of the corolla; *h*, lower lip. (*a*, Natural size; *b–f*, about 3 times natural 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-

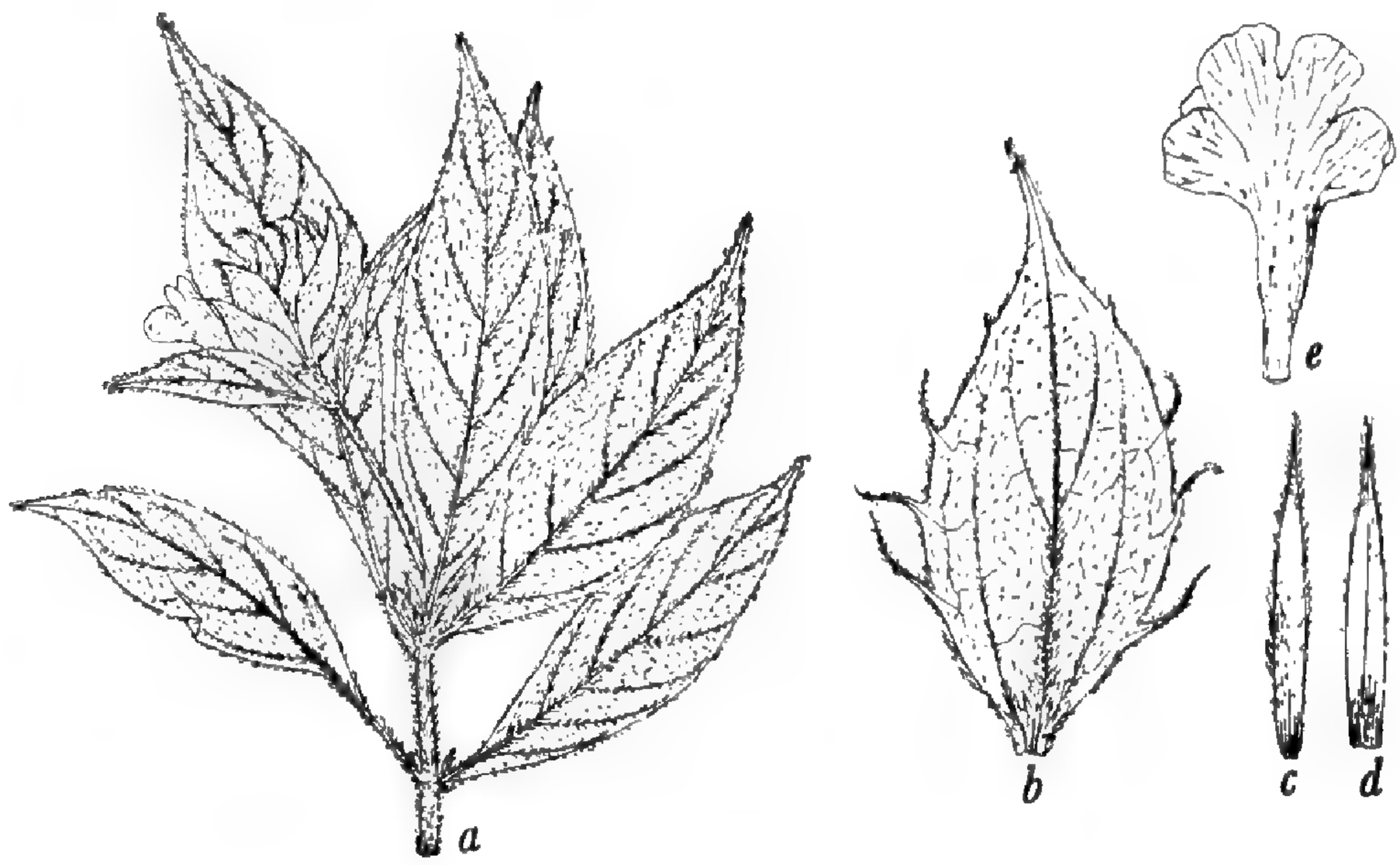

FIGURE 259.—*Aphelandra fosbergii* Leonard (*Grant & Fosberg* 9319): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, calyx segment; *e*, upper portion of corolla. (*a*, Half natural size; *b–d*, twice natural size; *e*, slightly over natural size.)

cendentibus, 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 positis, 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.

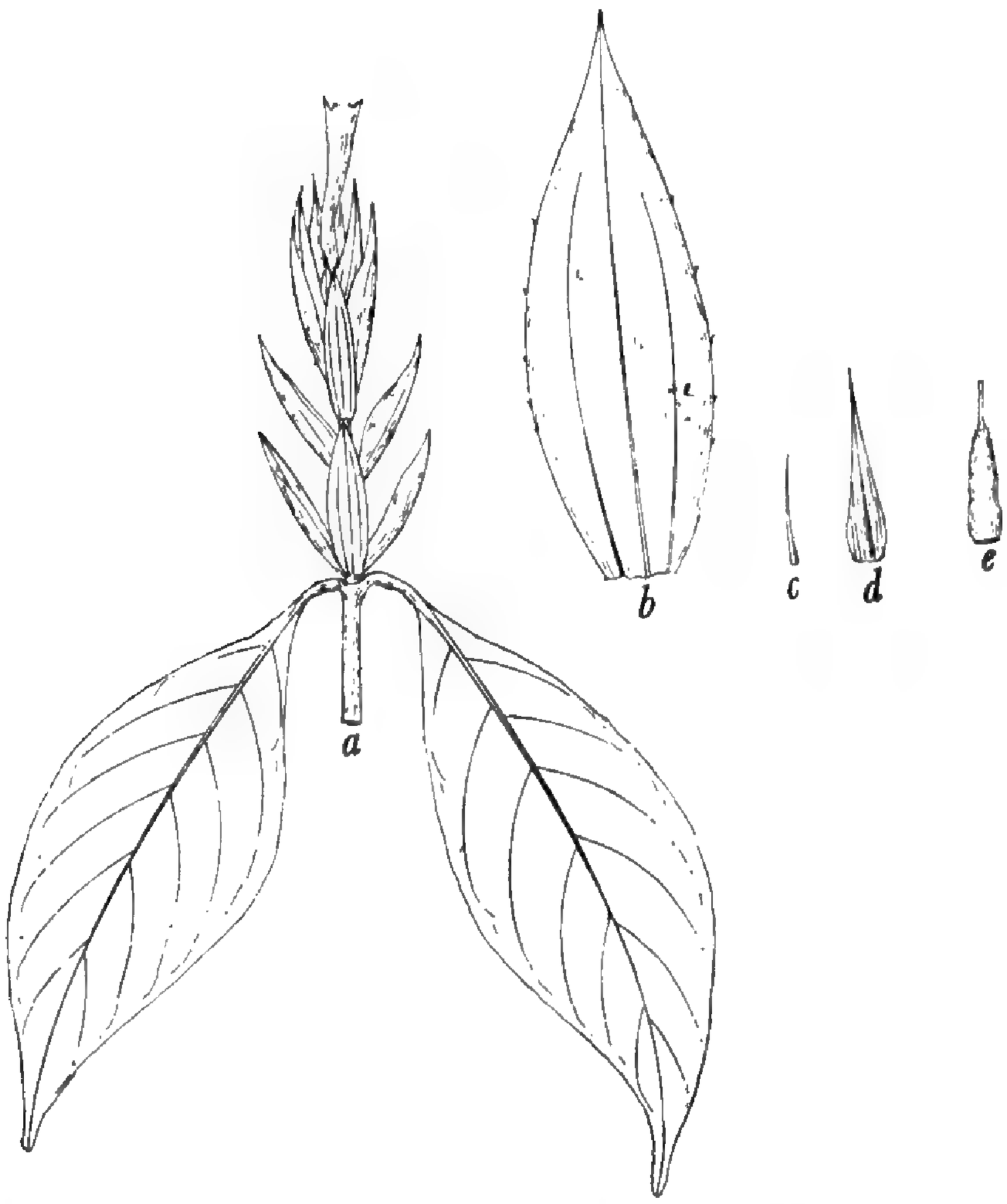

FIGURE 260.—*Aphelandra phalacra* Leonard (*Jervise* s. n.): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, calyx segment; *e*, ovary. (*a*, Half natural size, *b–d*, twice natural size; *e*, 3 times natural size.)

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; bracteae 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, ciliolate, 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*, 2½ 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 ciliolate 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 subobtuso), 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; bracteae 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 subobtuse), 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,

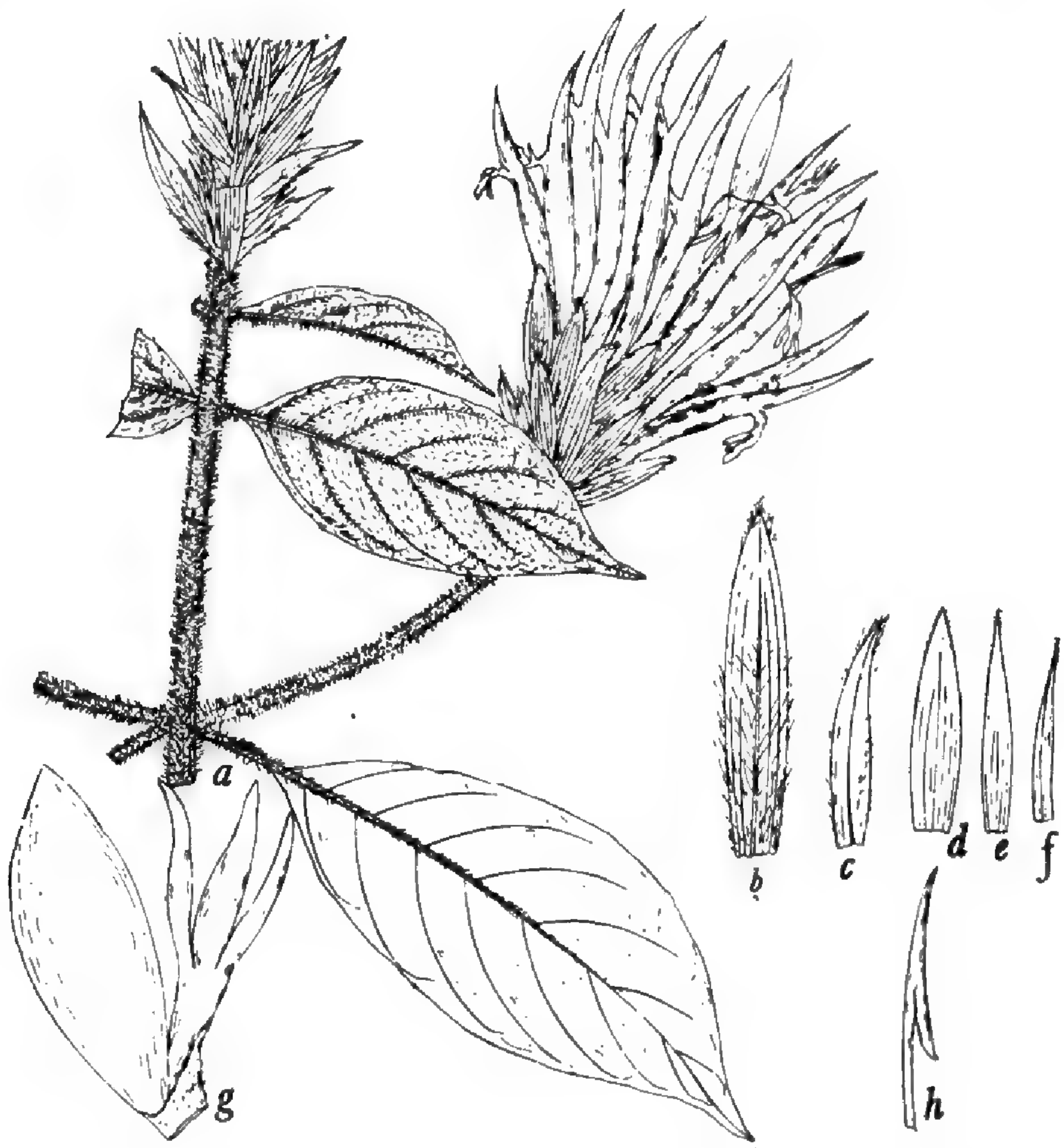

FIGURE 262.—*Aphelandra pinarotricha* Leonard (*Grant, Killip & Fosberg* 9124): *a*, Tip of plant; *b*, bract; *c*, bractlet; *d*, posterior calyx segment; *e*, an anterior segment of the calyx; *f*, a lateral segment; *g*, corolla lips; *h*, anther. (*a*, Natural size; *b–g*, about twice natural size; *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 πιναρός, 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 exserted 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 Acacías and San Martín, 430 meters, July 28, 1946, *Uribe-Uribe* 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)

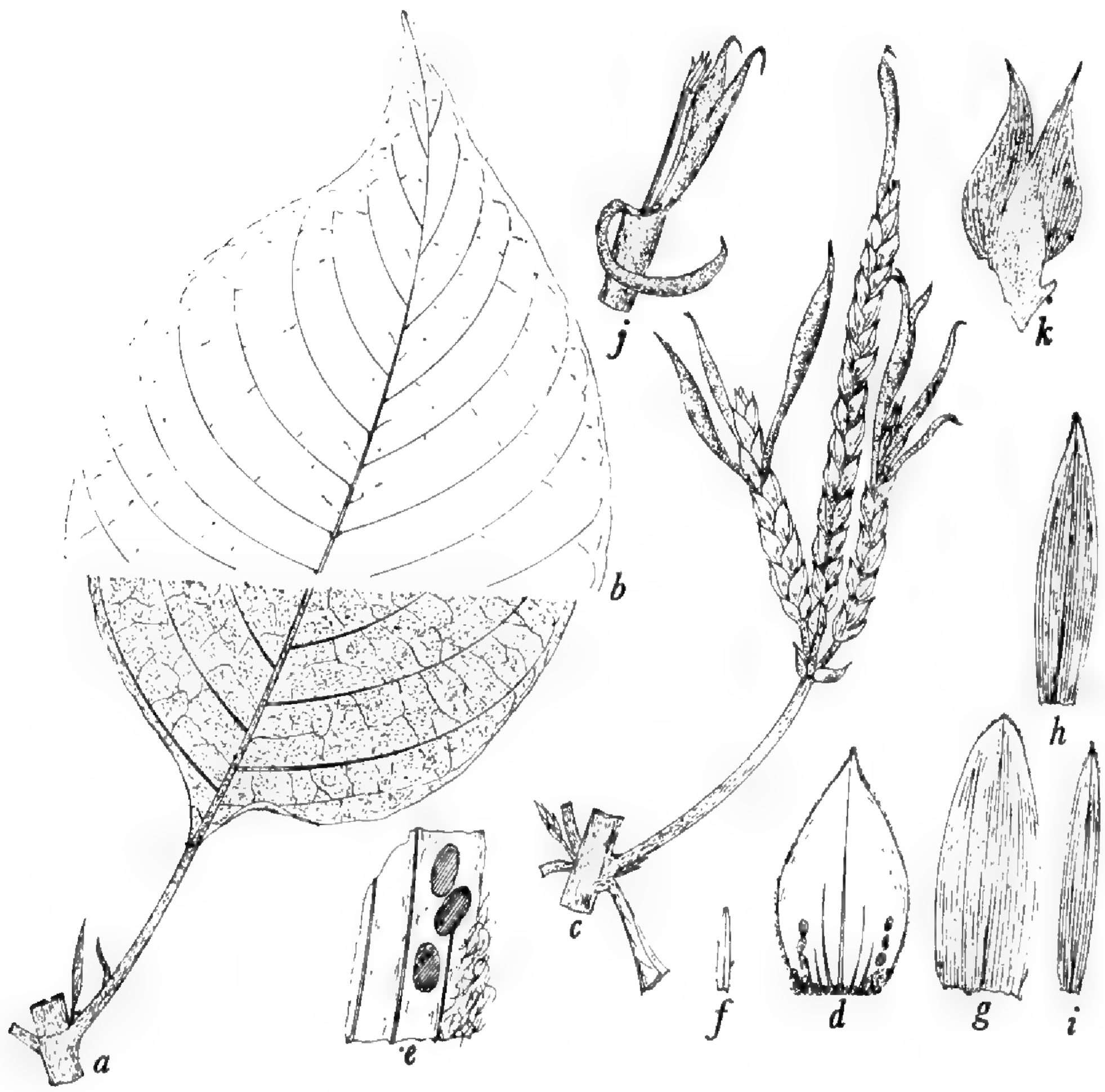

FIGURE 264.—*Aphelandra coccinantha* Leonard (*Fosberg* 19131): *a*, Node with basal portion of leaf blade; *b*, tip of leaf blade; *c*, lowermost node of inflorescence showing a branch with 3 spikes; *d*, bract; *e*, ocelli; *f*, bractlet; *g*, posterior calyx segment; *h*, one of a pair of anterior 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 1½ 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, subobtuse, glabrous, subhyaline, the posterior calyx segment ovate, 7 mm. long, 3 mm. wide near base, ciliolate toward tip, otherwise glabrous, striate-nerved, subobtuse, 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, subobtuse, 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).

Alphelandra 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 ἄνθος, 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 subobtuso), 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-

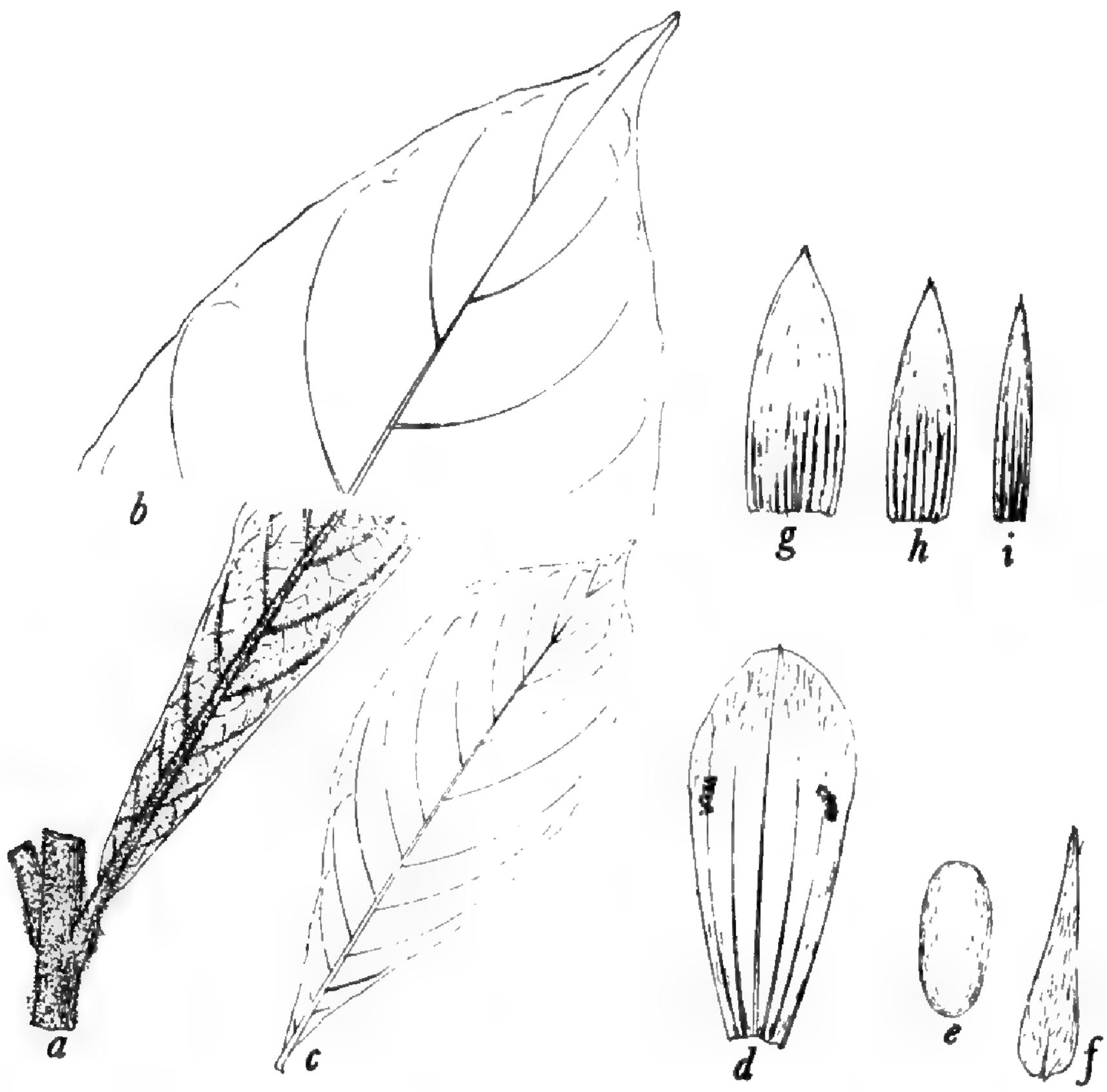

FIGURE 265.—*Aphelandra trichota* Leonard (*Fosberg & Fassett* 21809): *a*, Node with basal portion of leaf; *b*, tip of leaf blade; *c*, leaf, reduced to show shape; *d*, bract; *e*, ocellus; *f*, bractlet; *g*, posterior calyx segment; *h*, an anterior segment; *i*, a lateral segment. (*a*, *b*, Half natural size; *c*, about ⅙ natural size; *d*, natural size; *e*, about 40 times natural size; *f*–*i*, twice natural size.)

nervata, segmentum superiorus 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 τριχωτός, 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, subobtusa 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,

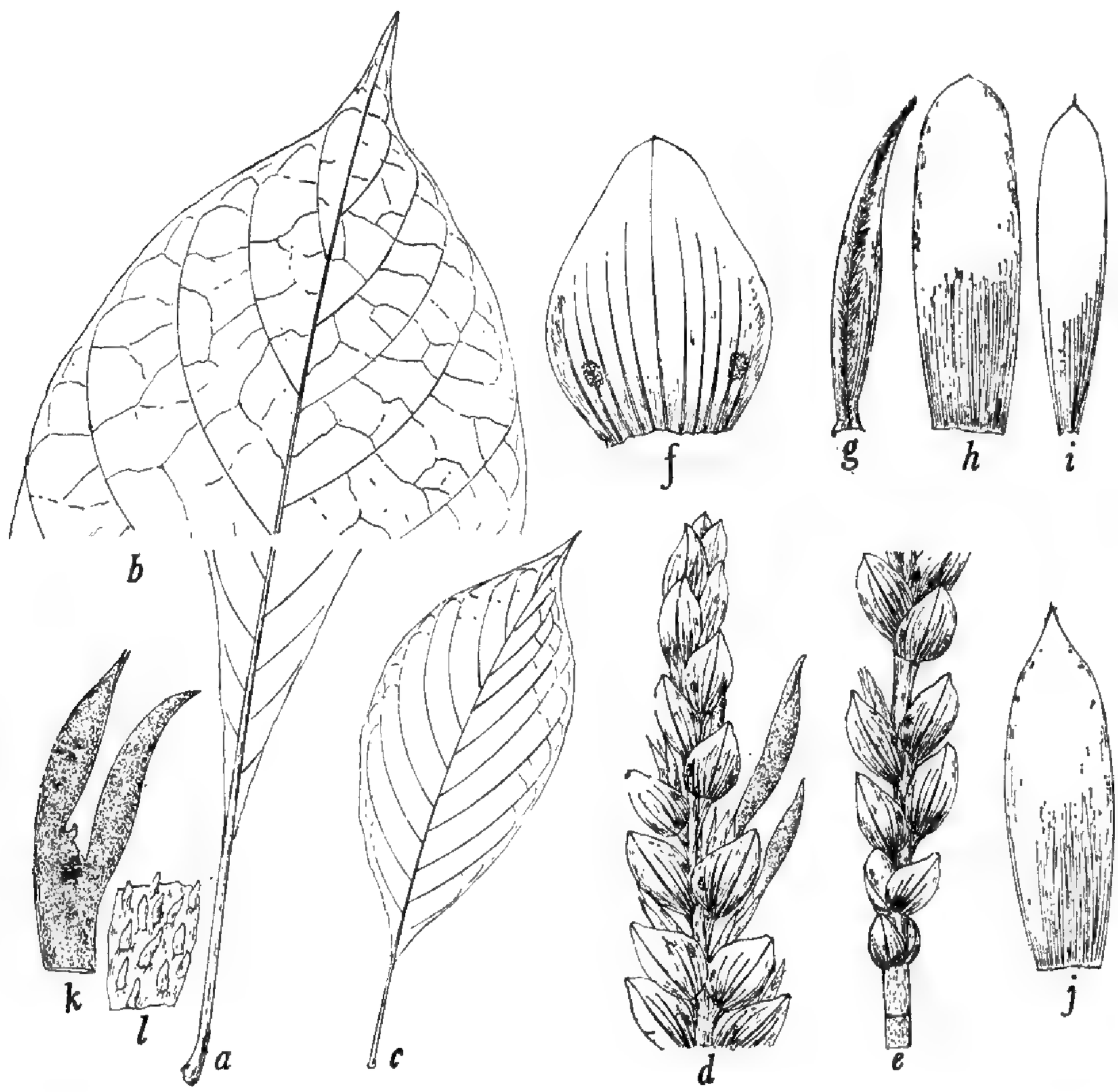

FIGURE 266.—*Aphelandra atecmarta* Leonard (*Grant* 9167): *a*, Basal part of leaf; *b*, tip of leaf; *c*, leaf reduced to show shape; *d*, tip of spike; *e*, base of spike; *f*, bract; *g*, bractlet; *h*, posterior calyx segment; *i*, a lateral calyx segment; *j*, an anterior calyx segment; *k*, tip of corolla; *l*, portion of corolla enlarged to show pubescence. (*a*, *b*, *d*, *e*, Half natural size; *c*, ⅙ natural size; *f*–*i*, 2½ 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 Caraucha 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 ἀτέκμαρτος, 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 Sneidern* 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. cuatrecasasii*
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 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.

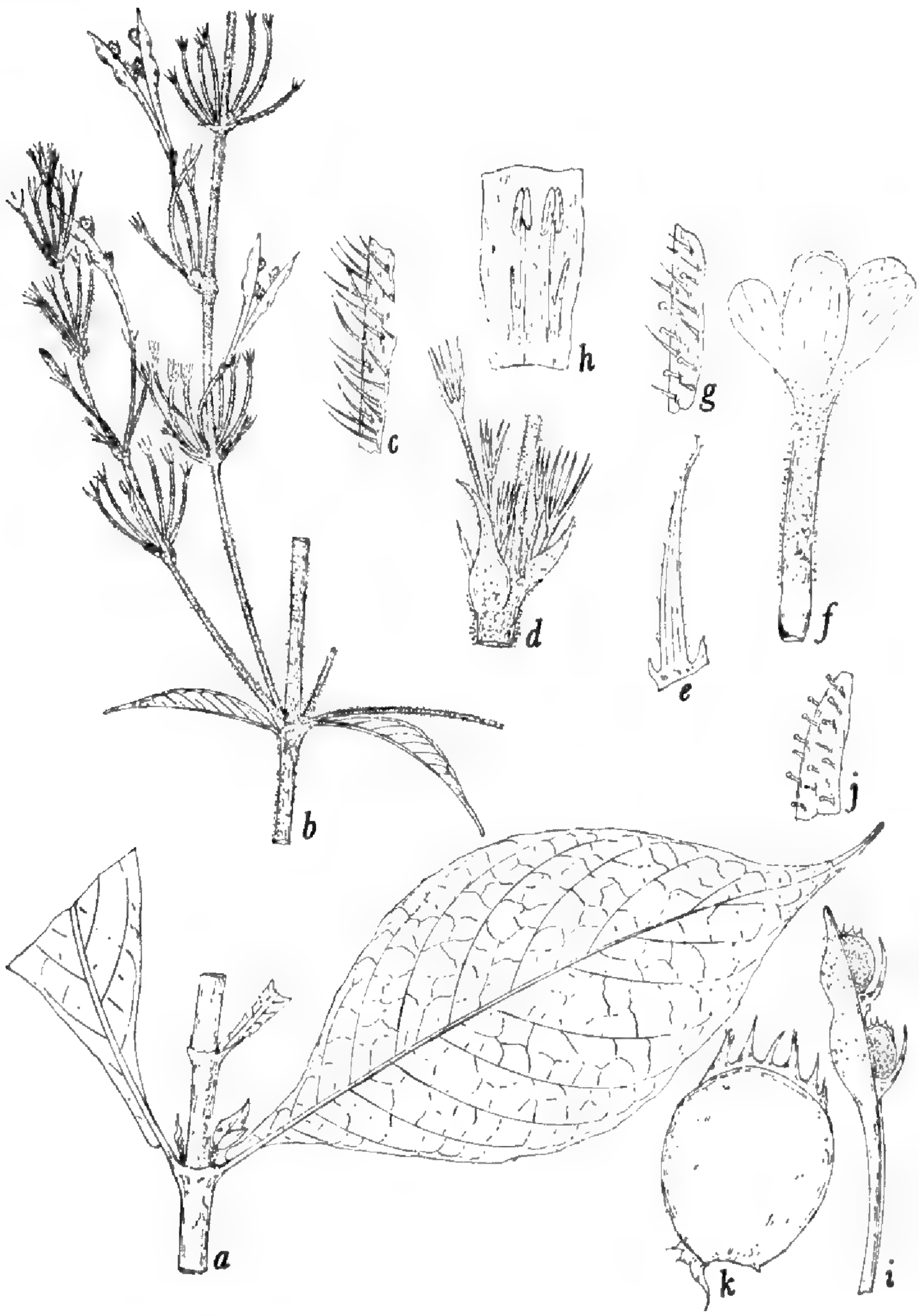

FIGURE 267.—*Pseuderanthemum ctenospermum* Leonard (*Cuatrecasas* 16433): *a*, Stem node showing leaves; *b*, lower node of panicle; *c*, portion of internode of panicle enlarged to show pubescence; *d*, node from near tip of panicle to show bract and bractlets; *e*, calyx segment; *f*, corolla; *g*, 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 κτείς, 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-oblanceolata 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

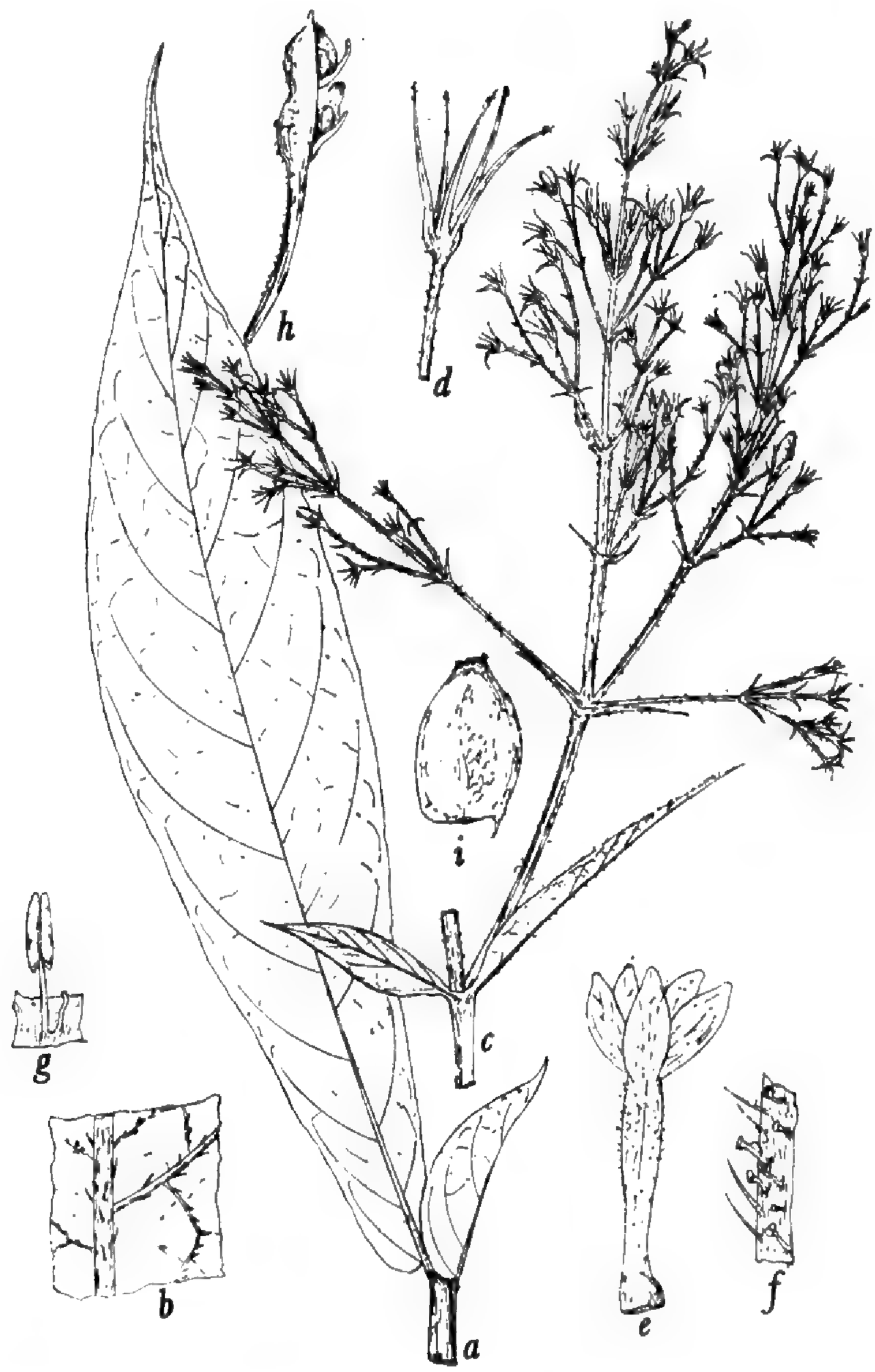

FIGURE 268.—*Pseuderanthemum chilianthium* Leonard (*Killip* 35270): *a*, Node of stem to show pair of dissimilar leaves; *b*, portion of lower surface of leaf blade enlarged to show pubescence; *c*, branch of panicle; *d*, calyx; *e*, corolla; *f*, portion of corolla tube enlarged to show pubescence; *g*, stamen and staminode; *h*, capsule valve, *i*, seed. (*a*, *c*, Half natural size; *b*, 5 times natural size; *d*, 3½ 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 cylindric, 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 Yeracüí 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 Concepcíon, 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 colollas 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 χιλιο-, thousand, and ἄνθειον, 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.—*Pseuderanthemum 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; bracteae ramos panicularum subtendentes foliaceae sed minores, sessiles; bracteae 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.

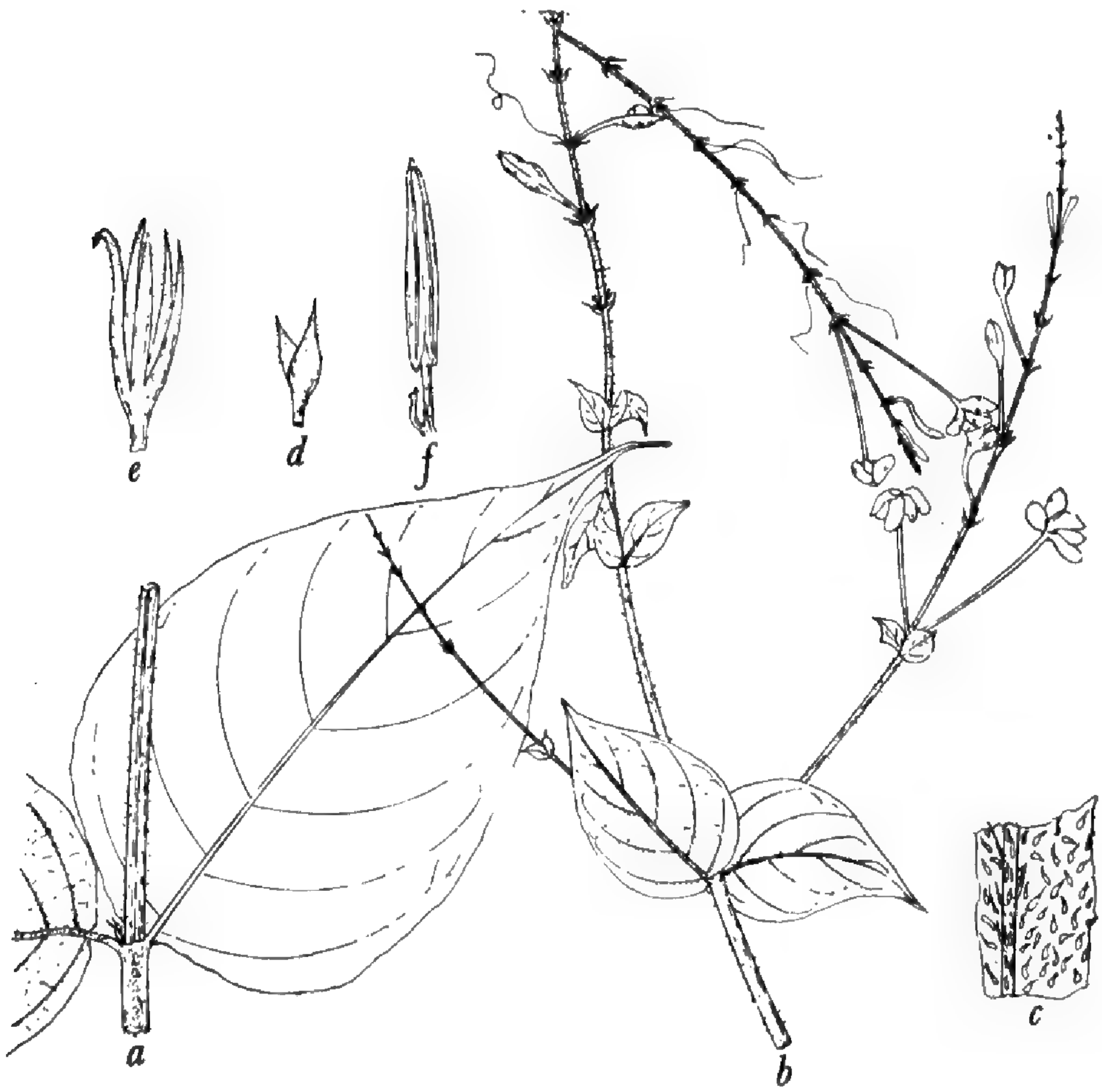

FIGURE 270.—*Pseuderanthemum cladodes* Leonard (*Lehmann* 7266): *a*, A lower node showing leaf blade; *b*, inflorescence; *c*, portion of leaf blade (upper surface) showing cystoliths; *d*, bracts; *e*, calyx; *f*, stamen and staminode. (*a*, Natural size; *b*, half natural size; *c*, 20 times natural 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

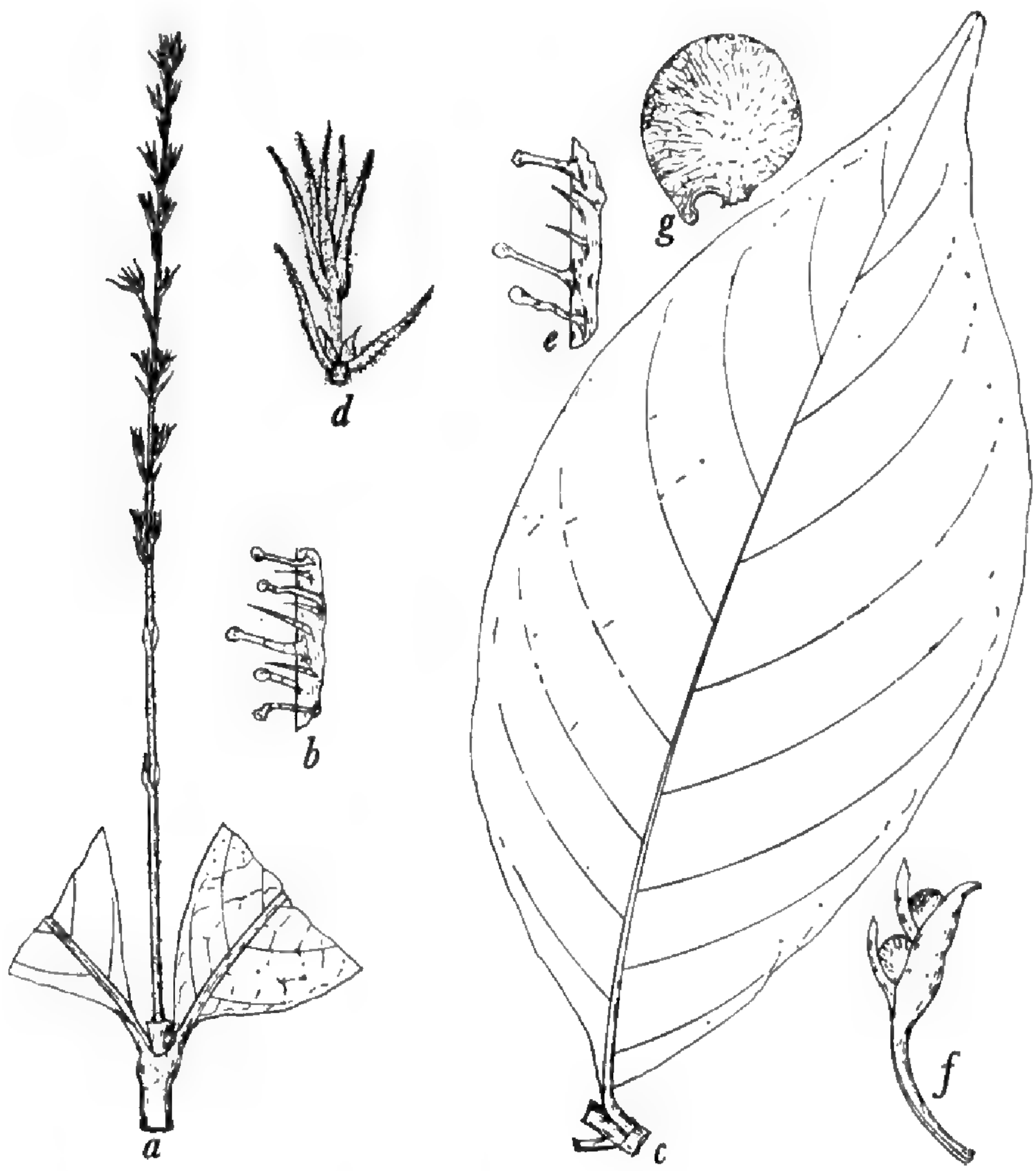

FIGURE 271.—*Pseuderanthemum galbanum* Leonard (*García-Barriga* 14377): *a*, Tip of plant; *b*, portion of rachis enlarged to show pubescence; *c*, leaf; *d*, calyx, pedicel, bracts and bractlets; *e*, portion of calyx segment enlarged to show pubescence; *f*, valve of capsule; *g*, seed. (*a*, *c*, Half natural size; *b*, *e*, about 50 times natural size; *d*, 3 times natural size; *f*, natural size; *g*, 3½ 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-

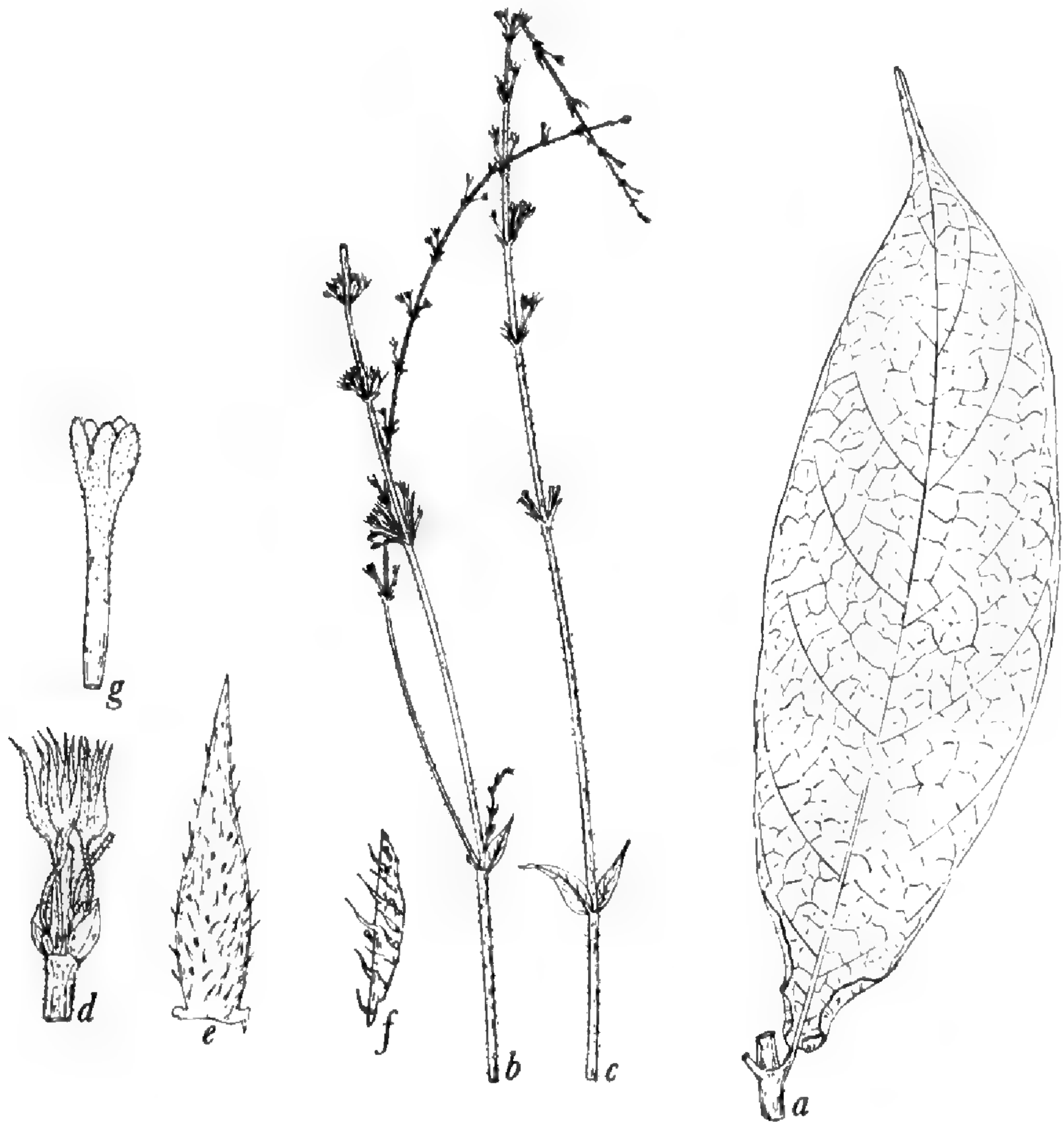

FIGURE 272.—*Pseuderanthemum micranthum* Leonard (*Triana* s. n.): *a*, Leaf and node; *b*, inflorescence; *c*, inflorescence (Col); *d*, node of inflorescence; *e*, a segment of the calyx; *f*, portion of calyx segment enlarged to show pubescence; *g*, corolla. (*a–c*, Half natural size; *d*, 3 times 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, subsessile 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 *ἄνθος*, 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 cymules 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 spathulate, 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*, 1½ times natural size; *d*, 3½ 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 θρίξ, hair, in allusion to the papillose puberulence of the corolla.

21. **Pseuderanthemum stenosiphon** 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*, 2½ 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

ALFARO-P., S.

27. Hygrophila guianensis

ALLEN, CYRIL

25. Justicia laevilinguis
368. Odontonema bracteolatum var. parviflorum
628. Justicia chaetocephala
839. Elytraria imbricata
841. Blechum brownei f. puberulum
844. Justicia sciota (type)
845. Aphelandra pulcherrima
865. Ruellia macrophylla
866. Odontonema bracteolatum
876. Trichanthera gigantea
912. Teliostachya alopecuroidea
913. Justicia pectoralis
934. Ruellia geminiflora

ALLEN, PAUL H., AND ALLEN, DOROTHY O.

3229. Ruellia tubiflora var. tetrastichantha

ANDRÉ, EDOUARD

266. Sanchezia pennellii
287. Aphelandra glabrata
301. Justicia comata
402. Ruellia pennellii
447. Justicia phytolaccoides
512. Sanchezia pennellii
513. Sanchezia pennellii
665. Stenandrium dulce
900. Ruellia tubiflora var. tetrastichantha
1014. Ruellia tubiflora var. tetrastichantha f. bicolor
1055. Aphelandra lamprantha (type)
1094. Justicia ischnorachis
1203. Ruellia aurantiaca (type)
1439 Ruellia ischnopoda
1445. Ruellia tolimensis
1517. Justicia fusagasugana (type)
1658. Aphelandra conformis (type)
1713. Ruellia tuberosa
1859bis. Ruellia geminiflora
1865. Ruellia lorentziana
1881. Ruellia ischnopoda
2047. Aphelandra acanthus
2406. Ruellia lasiostachya
2848. Ruellia rusbyi
2916. Ruellia ischnopoda
4661. Aphelandra andrei (type)

ANTONIO-MIGUEL, BROTHER

121. Ruellia fulgida var. angustissima

APOLINAR-ANGEL, BROTHER

488. Justicia bracteosa
490. Justicia leucerythra
491. Aphelandra pulcherrima
496. Ruellia paniculata
515. Ruellia macrophylla
704. Hygrophila guianensis
762. Pseuderanthemum atropurpureum

APOLINAR-MARÍA, BROTHER

92. Justicia sanchezioides
157. Justicia pectoralis

ARAQUE-M., JORGE, & BARKLEY, FRED A.

18An.360. Ruellia geminiflora var. angustifolia
19An.032. Aphelandra blandii
19At.081. Aphelandra pulcherrima
19Bo.033. Aphelandra pulcherrima
19Bol.83. Elytraria imbricata
19Ch.034. Thunbergia grandiflora
19Ch.058. Justicia comata
19Ch.112. Justicia comata
18M.015. Justicia filibracteolata var. leucantha

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

BILLBERG, 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 cuatrecasasii (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 sanchezioides (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 cuatrecasasii (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 cuatrecasasii
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 cuatrecasasii (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 cuatrecasasii (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 cuatrecasasii (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 cuatrecasasii
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 ampelocaule (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 (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
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 chilianthium (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. Blechum 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. Blechum 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. Pseuderanthemum 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. Pseuderanthemum 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. Pseuderanthemum 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 runcinata

PAUL, BROTHER

B–7. Elytraria 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 carthaginensis
2783. Ruellia geminiflora
2812. Justicia carthaginensis
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 carthaginensis
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 stenosiphon (type)

4453. Pseuderanthemum stenosiphon
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 daemonia

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 daemonia
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 cabrerae
12701. Justicia cabrerae (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 cabrerae (type)
19093bis. Aphelandra crispata
19095. Kalbreyeriella cabrerae
19633. Aphelandra pilosa

SCHULTES, RICHARD EVANS, & LÓPEZ, FRANCISCO

10400K. Mendoncia lasiophyta (type)

SCHULTES, RICHARD EVANS, & VILLARREAL, 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 scolnikae

SCOLNIK, ROSA; BARKLEY, FRED A.; & SAIZ-A., LUIS E.

428. Justicia chlorostachya

SCOLNIK, ROSA; BARVA LÓPEZ, NEMESIO; & BARKLEY, FRED A.

19An.199. Habracanthus scolnikae (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. Pseudteranthemum ellipticum
1857. Aphelandra runcinata
1862. Aphelandra xanthantha (type)
2029. Ruellia pennellii
2115. Aphelandra runcinata
2151. Mendoncia lindavii
2207. Ruella 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 "Mare 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 "plubescent" 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 ἄνθος, 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 "οτάχυς" read "στάχυς."
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 "*βοταγώδης*" read "*βοτανώδης.*"
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 "*ἀρίσημος.*"
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 "Sanguininí" read "Sanquininí."
Page 283, line 11: For "braceteolae" read "bracteolae."
Page 290, line 7: Add parenthesis after "1947"; for "ηάχος" 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
Acanthaceae 1, 2, 4
Acanthoideae 2, 4, **44**, 119, 323
Acanthus 1, 3, 5, 282
  mollis 3
  spinosus 3
Adhatoda 487
  carthaginensis 547
  hyssopifolia 487
  periplocifolia 584
  reflexiflora 584
  zeylanica 487
Afromendoncia 11
Amasonia integerrima 46
Anamú 8
Ancylogyne 51
  capitata 51
  macrocnemis 51
  munita 51
  peruviana 51
Androgrаphideae 285
Aphanandrium 120, 123
  lehmannianum 120, 123
Aphelandra 1, 2, 3, 119, 120, **127**, 128, 157, 280, 282, 286, 324, **701**
  acanthus 129, 141, **142**, 144, 147, **706**
  acutifolia 168
  adscendens 129, **158**, 160
  albert-smithii 132, **232**, 233, 234
  alexandri 131, **191**, 192
  andrei **707**, 708
  anomala 130, **185**, 186, 190
  arborescens 134, **277**, 278, 279
  arisema 131, **200**, 201, **718**
  aristei 132, **228**, 229, 230, 232, 280
  arnoldii 129, **153**
  atecmarta **726**, 727, 728
  aurantiaca 3, 130, 164, 166, **168**, 169, 170, 173, 191
  barkleyi 132, **221**, 222, 223, **721**
  blandii 133, 259, **267**, 268
  botanodes 129, **155**, 156, 157, **706**, 708, 716
  boyacensis 131, **198**, 199, 200
  chaponensis 133, **273**, 274, 275
  cirsioides 139
  coccinantha **721**, 722, 723
  colombiensis 131, **196**, 197, 198
  conformis 131, **194**, 195, **718**
  craura 131, **207**, 208, 209
  crenata 133, **259**, 260, 261, **726**, 728
  crispata 129, **151**, 152, **706**
  cuatrecasasii 131, **204**, 205, **718**
  daemonia 130, 132, **223**, 225, 226
  deppeana 130, 181, **183**, **714**
Aphelandra—Continued
  diachyla **714**, 715
  dolichantha 131, 204, 205, **206**, 207, 209
  euopla 129, **138**, 139, 703
  fascinator 131, **191**
  fernandezii 133, **270**, 272
  flava 230, **279**, 280
  fosbergii **711**, 712
  garciae 133, **256**, 258, 259, 270
  gilva **704**, 705, 706
  glabrata 133, 254, 256, **261**, 262, 268, **726**
  glischrochlamys 130, **186**, 188
  grandis 132, **226**, 227, 228
  grangeri **701**, 702, 703
  grantii **718**, 719, 720
  haenkeana 183
  hartwegiana 133, **246**, 261, 268, **725**
  haughtii 132, 234, **239**, 241
  hodgei 133, 252, **262**, 264
  huilensis 129, **146**, 147, **706**
  impressa 130, 168, **175**, 178, 179
  incarnata 132, **242**, 243, 244, **723**
  killipii 131, **202**, 203, 204, 205, 206
  lamprantha 130, **176**, 178, **714**
  lasia 130, **179**, 180, 181, **714**
  lasiophylla 131, **192**, 193, **716**
  lawranceae 131, 192, **195**
  leiophylla 130, **169**, 170, 171
  lingua-bovis 133, 223, **268**, 270, 275, **728**
  lonchochlamys 130, **165**, 166, 714
  longispica 133, **252**, **265**, 266, 267
  lyrata 129, **150**
  lyrata var. arguta 150
  lyrata var. latibractea 150
  lyrata var. laxior 150
  macrophylla 132, 218, **234**, 236, 237, 239, **721**, 723
  melgariensis **280**
  mildbraediana 132, **218**, 220
  mollis 129, **154**, 158
  mutisii 129, **136**, 137
  nana 130, **171**, 173
  ochrolarynx 129, **160**, 162
  parviflora 129, **153**
  parvispica 132, **216**, 218, 237, 720, 721
  pectinata 183
  phalacra **712**, 713, 714
  pharangophila 134, **275**, 276, 277, **728**
  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
Asystasieae 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
Blechum 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**
cuatrecasasii 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

Dicliptera—Continued
killipii 329, **350**, 351
koiei 329, **360**, 361
megalochlamys 329, **373**, 374, 378, 386
nanodes 329, **382**, 384
ochrochlamys 328, **346**, 347
pilosa 328, **341**
rhombochlamys 329, **380**, 381
sanctae-martae 329, **378**, 379, 380
sarcochroma 329, **366**, 367, 368
scandens 329, **364**, 365
sciaphila 328, **334**, 335, 336
trianae 328, **332**, 333, 334
uribei 328, **336**, 338
vahliana 328, **331**, 332
Diclipterinae **325**
Dipteracanthus 66, 684
angustifolius 96
ciliatus 66, 684
geminiflorus 95, 689
geminiflorus var. *angustifolius* 95, 96
geminiflorus var. *erectus* 95
geminiflorus var. *hirsutior* 95
geminiflorus var. *procumbens* 95
geminiflorus var. *subacaulis* 95
haenkei 77
leucanthus 696
paniculatus 76
prostratus 684
turbacensis 76, 771
Ebermaiera 5
humilis 5
Elytraria 2, 5, 7, **673**
apargiifolia 8
frondosa 7
imbricata 7, 9, **673**
scorpioides 7
squamosa 8
tridentata 7
virgata 7
Encephalosphaera 119, 120, **280**, 286, 324
lasiandra 281
vitellina 280, **281**
Engelia 12
tovarensis 12
villosa 12, 21
Enredadera blanca 42
Eranthemum 292, 728, 729
alatum 292
atropurpureum 307, 308
lanceum 305
palatiferum 729
Erythracanthus 5
racemosus 5
Escobilla de ratón 77
Fittonia 323, 404, **405**
argyoneura **405**, 406, 407
gigantea 405, 407
verschaffeltii 405, **407**
Galeottia 484
gracilis 484
Gallito 536
Gerardia 126
dulcis 126
Gilletiella 11
Glockeria 484
Graptophylleae 119, **289**
Graptophyllum 289
Gymnostachyum verschaffeltii 407
Habracanthus 324, **419**, 486
aglaüs 419, **428**, 429
ampelinus 420, **458**, 459
antipharmacus 420, **462**, 463, 464, 465
callianthus 420, **443**, 444
caucensis 420, **460**, 461
charien 420, **449**, 450, 451
congestus 421, **472**, 473
corei 420, **468**, 469, 470
cuatrecasasii 419, **426**, 427
cyaneus 419, 425, **426**
diversicolor 421, 464, **474**
erythranthus 420, **436**, 438, 439
floriferus 420, **441**, 442
heliophilus 420, **434**, 435
hispidulus 420, **432**, 433, 434
hylobius 421, **479**, 480
killipii 420, **447**, 448, 449
lamprus 421, **470**, 471
macrochilus 420, **465**
microcalyx 421, **477**, 478
oresbius 420, **465**, 467
pennellii 421, **475**, 477
pilosus 420, **445**, 446
putumayensis 420, **439**, 440
pycnostachys 419, **430**, 431, 432
scolnikae 421, 438, 477, **481**, 482, 483
silvaticus 419
smithii 420, **452**, 453, 454
syscius 419, **421**, 422, 423
trichotus 419, **423**, 424, 425
xantholeucus 420, **456**, 457, 458
xanthothrix 420, **454**, 455
Hansteinia 324, 419, **484**, 486
charitopes **484**, 485
gracilis 484
Hemisandra 127
aurantiaca 127, 168
Hygrophila 2, 45, 58, **680**
angustifolia 58
conferta 58
guianensis **58**, 59, **680**
rivularis 60
tyttha **681**
Hygrophileae 44, **57**
Imbricatae 44, **119**, 323
Isoglosseae 119, 323, **404**
Isoglossinae **418**
Isopo rojizo 652
Jacobinia 324, 487, **650**
amphibola 651, **655**, 656
axiologa 541, 651, **652**, 653, 655
carnea 3, **651**, 770
lepida 650
lindaviana **659**
magnifica 3, 651, 770
spicigera 651, **657**
tinctoria 651, **658**
Jasmin 95

Justicia 127, 324, **487**, 647, 648
adhatoda 487
aëthes 489, **524**, 525
anabasa 491, **594**, 595, 596
archeri 489, **505**, 507, 508
assurgens 330
atacta 491, **604**, 605, 606
aurantiaca 491, **596**, 597, 598
blackii 489, **508**, 509
bracteolata 398
bracteosa 489, **535**, 536
brasiliana 488
breviflora 514
brunelloides 10, 770
cabrerae 490, **566**, 567
carnea 651
carthaginensis 490, **547**, 548, 560, 646
chaetocephala 489, **531**
chaponensis 489, **536**, 537, 538
charadrophila 489, **501**, 502, 503
chinensis 327
chloanantha 491, **608**, 609, 611
chlorostachya 488, **495**, 496, 519
chrysea 489, **529**, 530, 531
chrysocoma 489, **525**, 527, 528, 529
coccinea 388
comata 488, 492, 614, **615**, 617, 647
cristata 127
croceochlamys 489, **532**, 533, 534
cuzcoensis 611
cystolithosa 488, **492**, 494, 495, 503
daidalea 489, **521**, 522, 523, 524
enarthrocoma 490, **570**, 571, 572
ephemera 491, **606**, 607, 608
erythrantha 490, **549**, 550, 551
filibracteolata 490, 491, **577**, 603
filibracteolata var. aurantiaca 579 **581**
filibracteolata var. azurea **579**
filibracteolata var. leucantha 579, **580**, 581
filibracteolata var. lilacina 579, **581**
filibracteolata var. pubescens 579, **580**
fuchsiifolia 489, **514**, 516, 517
furcata 626
fusagasugana 492, **624**, 625, 626
gangetica 288
glabribracteata 570
graphophylla 492, **631**, 632, 633
gutierrezii 490, **553**, 554
helonoma 491, **611**, 612, 613
hodgei 492, **642**, 643, 644
homoea 490, **575**, 576, 577
hygrobia 492, **644**, 645
hyperdasya 490, 538, **543**, 544, 545
hyssopifolia 487
idiogenes 492, **622**, 623
imbricata 7
infelix 489, **510**, 511, 512
interrupta 397
ischnorhachis 489, **498**, 499, 501, 505
jacobinioides 491, **598**, 599, 600
killipii 492, **628**, 629, 630
laevilinguis 492, **621**, 622
leptochlamys 490, **551**, 552
leptophylla 508
Justicia—Continued
leucerythra 490, **568**, 569, 570, 572
lucida 388
macarenensis 490, **555**, 556, 557
malacophylla 491, **589**, 590, 591
martiana 492, **620**, 621
melgariensis 280
namatophila 492, **618**, 619, 620
neurochlamys 489, **517**, 518, 519
novogranatensis 491, **600**, 601
obtusifolia 621
oreopola 489, **503**, 504, 505
pampolystachys 490, 538, **541**, 542, 545
pectoralis 492, **613**, 614, 617
pectoralis var. stenophylla 492, **615**
pelianthia 491, **591**, 593, 594
periplocifolia 491, **584**
petraea 492, **633**, 634, 635
pharmacodes 490, **557**, 559
phlebophylla 491, 577, **587**, 588, 589, 633
phytolaccoides 490, **560**, 561
pilosa 541
pleurolarynx 489, **512**
polygonoides 489, 512, **513**, 514, 525
porphyrocoma 490, **582**, 583
pulcherrima 127, 212
reflexiflora 584
rhodoides 489, **519**, 520, 521
rohrii 490, 527, 528, 529, **564**
rubra 396
sanchezioides 490, **572**, 574, 575
sanctae-martae **646**
scabra 127
schultesii 490, **545**, 546
sciera 492, **637**, 638
sciota 491, **585**, 586
scytophylla 492, **626**, 627
secunda 491, **602**, 603
secunda var. leucantha 491, **604**
sessilis 521
spicigera 657
sterea 492, 630, **635**, 636, 637, 644
stereostachya 492, **639**, 640, 641
steyermarkii **523**
unguiculata 489, **538**, 539, 541
xanthostachya 490, **562**, 563
Justicieae 119, 323, **487**
Kalbreyeriella 324, 404, **408**
cabrerae **408**, 409, 411
gigas 408, **412**, 414, 415
rostellata 408, **411**, 415
Lagochilium 127, 157, 202, 286, 707, 708, 718
maximilianum 127
molle 154
Lepidagathis 7, 111, 112, 696, 772
alopecuroidea 112, 772
cristata 112
Leptostachya 488
comata 615
crinita **647**
martiana 620
martiana var. *hispida* 621
virgata 488
wallichii 488

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
Nacedero 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**
ampelocaule 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
cuatrecasasii 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, 7'5
leiophyllum 292, **297,** 298, 299, 729, **741**
micranthum 729, 730, **743,** 744
pennellii 292, **304,** 305, 730, **745**
poecilanthum 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
alopecuroidea 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
Ruellieae 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
thinophila 680
thinophyla f. glabra 680
Sancho araña 46
San Joaquín 308
San José 308
Scorodoxylum 66
hartwegianum 66, 90
Sericographis 650
rigida 650
tinctoria 658
Siphonoglossa 323, 387, **402**
calcarea **402,** 403
ramosa 402
Soldado parado 8
Staurogyne **2, 5, 671**
agrestis 7
argentea 5
lepidagathoides **5,** 6, 7, 673
leptocaulis **671,** 672, 673
Stemonacanthus 66, 684
humboldtianus 89, 685
macrophyllus 79
salviifolius 66, 684
Stenandrium 119, 120, **124,** 127, 157, 286, 324, **699,** 708
corymbosum 124, **125**
dulce **125,** 126, **699**
humboldtianum 125, **127, 699,** 700, 701
mandioccanum 124
radicosum 124, **125**
Stenostephanus 324, 415, 419, **486**
lobeliaeformis 486
puberulus **486**
Stethoma pectoralis 613
Syringidium 324, 404, **415**
atropurpureum **415,** 416
Tango rojizo 652
Teliostachya 2, 44, 109, **111,** 112, **696**
alopecuroidea 111, **112**
Teliostachya—Continued
cataractae 111, 112
diffusa 111
lanceolata 112, **113, 696**
lanceolata var. crispa 112, **114, 696**
petraea **696,** 697, 698
Tetramerium 3, 64, 324, **325**
nervosum **325,** 326
polystachyum 325
Thunbergia 2, 3, **40, 678**
alata 40, **41,** 42, **678**
alata var. alba 42
alata var. bakeri 41, **42**
aurantiaca 42
aurantiaca subvar. doddsii 42
capensis 41
cordifolia 43
fragrans 41, **42,** 43, **678**
fryeri 42
grandiflora 41, **43, 678**
grandiflora f. alba **679**
grandiflora f. citrina **679**
lutea 42
sulphurea 42
volubilis 42
Thunbergioideae 2, 4, **40**
Thyrsacanthus 388
barlerioides 388
bracteolatus 400
interruptus 397
ruber 396, 397
Titirigallo 213
Trichanthera 2, 44, 45, **47,** 48, **679**
corymbosa 48, **50, 679**
gigantea **48,** 49, **679**
Trichanthereae 44, **45**
Verbena *squamosa* 7, 8
Yerbabuenilla 647
Yuca de puerco 78
Yuca-e-puerco 78
Yuquilla 95

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