

TAXONOMIC STUDIES OF TROPICAL AMERICAN PLANTS

By C. V. MORTON

INTRODUCTION

THIS paper, dealing with the tropical America flora, is devoted primarily to groups on which I have worked at intervals for a number of years—the Gesneriaceae and Solanaceae and the genus *Hybanthus* of the Violaceae. A few notes on Leguminosae are also included.

I am indebted to the curators of the following institutions for the loan of many valuable specimens: Field Museum of Natural History, Gray Herbarium of Harvard University, Missouri Botanical Garden, and New York Botanical Garden.

THE WEST INDIAN SPECIES OF COLUMNEA

In 1901 Urban¹ published a list of the West Indian species of *Columnea* (Gesneriaceae) in which ten species and nine varieties were recognized. In general he gave descriptions only for the novelties, and he gave no key. The present treatment differs a good deal from that of Urban. Fifteen species and three varieties are here keyed and described. The more abundant material now available shows that some of the varieties described by Urban are inconstant and of no especial taxonomic importance. On the other hand, two of them exhibit such pronounced differences that they merit the rank of species. Three new species have been described, by Urban and Britton, since the publication of Urban's list. Two of these are recognized here; the third is reduced to varietal status.

When sufficient material of a species was available I have selected and measured 50 representative leaves. I am thus able to state precisely the known maximum and minimum length and width, and I have computed also the average length and width, as well as the average ratio of length and width. The differences between the various species in these respects have frequently been found to be of diagnostic value.

KEY TO SPECIES

A. Corolla not strongly bilabiate.

Leaves of a pair subequal, not over 4.5 cm. long. Jamaica.. 1. *C. jamaicensis*

Leaves of a pair strongly unequal, the smaller stipule-like, the larger over 11 cm. long.

Leaf blades with scarlet spots beneath, sharply denticulate.

Corolla 2–2.2 cm. long. Hispaniola..... 2. *C. sanguinea*

Corolla 2.6–3 cm. long. Trinidad..... 2a. *C. sanguinea* var. *trinitensis*

Leaf blades lacking scarlet spots, obtusely low-crenate. Cuba.. 3. *C. cubensis*

AA. Corolla strongly bilabiate, the 4 posterior lobes connate into a lobed galea, the anterior lobe narrow and reflexed.

¹ Symb. Antill. 2: 358–364. 1901.

B. Corolla tube included in calyx (or in *C. argentea* slightly exerted, about 1.5 times as long as calyx), densely sericeous; galea usually longer than corolla tube, obviously bilobed at apex; calyx lobes 13–40 mm. long; ovary densely sericeous all over; stigma very slightly lobed; flowers commonly 2 or 3 in an axil; leaf blades 5–17 cm. long, 2.1–5.6 cm. wide, the veins 4–8 pairs.

Leaves red or reddish all over the lower surface. Calyx lobes conspicuously lacinate-toothed; corolla yellow and red-striped; leaf blades about 3.6 times as long as wide, strigillose on both sides. Western Jamaica.

4. *C. rutilans*

Leaf blades green on both sides.

Calyx bilabiate, the 4 anterior lobes connate for about one-third their length, the posterior shorter and deflexed, all entire. Corolla yellow; leaf blades hirsute, averaging 11.4 cm. in length and 5.1 cm. in width.

Western Jamaica..... 5. *C. subcordata*

Calyx regular, all the lobes free and subequal.

Filaments pilosulous. Calyx lobes subulate-toothed, often red; corolla yellow and red-striped; leaf blades 2.4 times as long as broad, averaging 7.5–8 cm. long and 3.3 cm. wide.

Hairs of upper leaf surface spreading, 5–8 cells long. Blue Mountains, Jamaica..... 6. *C. hirsuta*

Hairs of upper leaf surface appressed, 2-celled. Eastern Jamaica.

7. *C. fawcettii*

Filaments glabrous.

Calyx lobes glandular-denticulate, crimson. Cuba... 11. *C. tinctoria*

Calyx lobes entire, green or whitish.

Leaf blades and calyx sparingly and minutely strigillose with 2-celled hairs. Corolla yellow; leaf blades 2.4–2.8 times as long as wide.

Western Jamaica..... 8. *C. brevipila*

Leaf blades and calyx sericeous with longer hairs.

Calyx lobes densely white-sericeous; corolla yellow; leaf blades 3.4–3.7 times as long as broad. Western Jamaica.

9. *C. argentea*

Calyx lobes less densely sericeous-strigose, green; corolla yellow and red; leaf blades 2.7 times as long as wide. Western

Jamaica..... 10. *C. harrisii*

BB. Corolla tube over twice as long as calyx, merely pilosulous or puberulous; galea always much shorter than corolla tube, acute or truncate; calyx lobes 7–15 mm. long in flower; ovary glabrous or sericeous only at apex; stigma deeply 2-lobed; flowers solitary; leaf blades 1.8–4.5 cm. long, 0.7–2.4 cm. wide, the veins 2–4 pairs.

Ovary glabrous; galea truncate. Calyx lobes entire, narrowed toward base.

Hispaniola and Puerto Rico..... 12. *C. tulae*

Ovary hairy at apex; galea acute.

Leaf blades narrow, about 3.4 times as long as broad; corolla yellow, the throat 5–6 mm. wide, the free part of galea 5–6 mm. wide; calyx lobes entire, 7–10 mm. long, 1.8–2.2 mm. wide. Trinidad. 13. *C. tocoensis*

Leaf blades broader, 1.5–2.6 times as long as broad; corolla red, the throat 6–9 mm. wide, the free part of galea 9–13 mm. wide; calyx lobes often toothed, 9–15 mm. long, 2–5 mm. wide.

Leaf blades ovate to suborbicular, averaging about 1.5 times as long as broad, more or less toothed. Martinique, Montserrat.

14. *C. scandens*

Leaf blades ovate to oblong, 2.1–2.6 times as long as wide, entire or nearly so.

Calyx lobes coarsely toothed; leaf blades minutely strigillose, the hairs 2-celled, closely appressed. Grenada, St. Vincent.

14a. *C. scandens* var. *vincentina*

Calyx lobes entire or rarely with a single tooth; leaf blades more densely pubescent, the hairs longer, not at all appressed. Montserrat, Martinique, Tobago, Trinidad.

14b. *C. scandens* var. *aripoensis*

1. *Columnnea jamaicensis* Urban, Symb. Antill. 2: 359. 1901.

Pterygoloma repens sensu Griseb. Fl. Brit. W. Ind. 464. 1861, as to plant of Jamaica.

Scandent shrub up to 1.8 meters long, sparingly branched, the branchlets slender, about 2 mm. thick, sparingly strigose when young, soon glabrous, shining; leaves of a pair subequal or slightly unequal, petiolate, the petiole 5–10 mm. long, slender, very sparingly strigose; leaf blades oblong or ovate (average ratio of length to width 2:1), 3.1–4.5 cm. long (average length 3.6 cm.), 1.3–2.3 cm. wide (average width 1.8 cm.), acute, cuneate and oblique at base, very inconspicuously crenate toward apex, concolorous, sparingly and minutely strigillose on both sides, the hairs two cells long, sparingly ciliate with longer hairs, the primary veins 4 pairs; flowers solitary, axillary, ebracteate; pedicels 2.5–2.8 cm. long, thickened toward apex, strigose with reddish hairs; calyx lobes red at apex, greenish at base, erect, equal, free, ovate, 14 mm. long (10–12 mm. teste Urban), 5–7 mm. wide, acute, broadest near base, entire or with 1 or 2 minute glandular denticulations, bearing a few, minute, appressed hairs externally, glabrous within, ciliate with longer, many-celled, reddish hairs; corolla yellow, the tube with red lines, erect in calyx, slightly gibbous at posterior base, 2.8–3 cm. long, the tube about 3 mm. wide above base, 2–2.3 cm. long, tubular, very gradually enlarged to throat, this about 5 mm. wide, minutely puberulous externally, the limb about 9 mm. long, subregular, about 1 cm. wide, the 2 posterior lobes connate for 6–7 mm., the free parts about 2 mm. long, rounded, the lateral lobes connate to posterior for about 4 mm., the free parts about 4 mm. long and broad, the anterior lobe erect, oblong, about 9 mm. long, 3 mm. wide, all lobes pilosulous externally, glandular-pilosulous within; filaments glabrous; anthers quadrate, about 1 mm. long and broad; ovary glabrous except for few hairs at apex; style glandular-pilosulous; disk gland posterior, glabrous, entire.

Type from Springfield, St. Elizabeth Parish, Jamaica, *Wullschlaegel* 1290 (not seen).

SPECIMENS EXAMINED:

JAMAICA: Without special locality, *Purdie* (G). Bluefields Mountain, Westmoreland Parish, *Britton & Hollick* 1964 (F, NY); *Harris* 10200 (F, NY, US). Woodstock, Westmoreland Parish, alt. 420 meters, *Harris* 9836 (F, NY, US); *Britton* 1571 (NY, US).

The range of this distinctive species is evidently restricted. All the known localities are within a few miles of each other in southern Westmoreland and adjacent St. Elizabeth Parish.

2. *Columnnea sanguinea* (Pers.) Hanst. Linnaea 34: 384. 1865.

Besleria sanguinea Pers. Syn. Pl. 2: 165. 1807.

Dalbergaria phoenicea DeTussac, Fl. Antill. 1: 141. pl. 19. 1808. Type from Hispaniola, *DeTussac*.

Alloplectus sanguineus Mart. Nov. Gen. & Sp. 3: 57. 1829.

?*Collandra picta* Kl. & Hanst. in Otto & Dietr. Allg. Gartenz. 22: 162. 1854, non Lem. (1852). Based on cultivated material of unknown origin.²

Collandra phoenicea Don in Loud. Encycl. Pl. Suppl. 2: 1402. 1855.

Scandent shrub up to 1.5 meters long, the stems up to 7 mm. in diameter, densely long-hirsute; leaves opposite, the pairs very unequal; larger leaves of a pair subsessile (the petiole 2-8 mm. long), the blades oblong-lanceolate, 11-24 cm. long, 3.5-8 cm. wide, sharply acuminate, strongly oblique and unequal at base, membranaceous when dry, sharply serrate, hirsute on both sides, red-spotted beneath above the middle (sometimes obscurely so), the primary veins 6-8 pairs; smaller leaf of a pair stipule-like, sessile, lanceolate, 2-4 cm. long, 1-1.7 cm. wide, long-acuminate, strongly unequal at base, hirsute on both sides; flowers axillary, 2 or 3 in an axil, subsessile or short-pedicellate (up to 5 mm.); flowering calyx about 2 cm. long, the lobes entirely free, equal, erect, lanceolate, long-hirsute on both sides, subulate-toothed, the teeth long and narrow, about 4 on each side; corolla pale yellow, 2-2.2 cm. long, erect in calyx, a little saccate at posterior base but not spurred, the tube slightly ventricose in the middle, becoming about 5 mm. wide, contracted a little in throat, this 4 mm. wide, the limb small, about 5 mm. wide, the lobes subequal, about 3 mm. long; filaments connate at base, contorted, sparsely pilosulous; anthers connate in pairs, quadrate, about 2 mm. long and wide, the cells oblong, contiguous, not confluent; style thick, included, glabrous; ovary sparsely villous, conic, 5 mm. long; disk reduced to a posterior gland, this thick, about 2 mm. high, 4-dentate at apex, glabrous.

Type from the Dominican Republic, *Turpin* (not seen).

SPECIMENS EXAMINED:

HAITI: Mount Maleuve, alt. 780 meters, *Nash & Taylor* 1167 (F, Mo, NY, US). Port Margot, Morne Brigand, Massif du Nord, alt. 400 meters, *Ekman* H. 2635 (US).

DOMINICAN REPUBLIC: Maniel, near Barahona, alt. 600 meters, *von Tuerckheim* 2816 (NY); *Fuertes* 705 (US). Vicinity of Laguna, Samaná Peninsula, *Abbott* 256 (NY, US), 405 (US). Old Heart River (Jato Viejo), Samaná Peninsula, *Abbott* 1361 (US). Paradis, Prov. Barahona, *Abbott* 1629 (US). Lagunas de Cenoví, Prov. Monte Cristi, alt. 1,100 meters, *Valeur* 64 (US). Loma Bajita, Prov. Santiago, alt. 700-800 meters, *Valeur* 1008 (Mo, NY).

2a. *Columnnea sanguinea* var. *trinitensis* Morton, var. nov.

Folia majora oblongo-oblancoolata, 15-26 cm. longa, 5-10.3 cm. lata; corolla 2.6-3 cm. longa.

Differs from the typical form of the species in its larger and relatively somewhat broader leaf blades, and especially in its larger corolla, this 2.6-3 cm. long, the tube 9 mm. wide at middle, 7 mm. wide in throat, the limb about 7 mm. in diameter, the 3 anterior lobes 3.5 mm. long, connate at base for about 1.5 mm., about 2 mm. wide at base, the two posterior lobes free, about 4 mm. long and 3 mm. wide at base.

Type in the New York Botanical Garden, collected on Guayaguayare Road, Ortoire River, Trinidad, March 25, 1921, by Britton, Freeman, and Nowell (No. 2528). Isotypes in the Gray Herbarium and the National Herbarium.

² In this same volume this plant is referred to without description on three other pages, each time under a different generic name. On page 93 it appears as *Colleria picta*, on page 103 as *Kohleria picta*, and on page 118 as *Collania picta*. These are all errors for *Collandra picta*.

ADDITIONAL SPECIMENS EXAMINED:

TRINIDAD: Mount Tocuche, *Britton, Hazen, & Mendelson* 1333 (G, NY, US). Blanchisseuse Road, Hombersleys Trace, *Broadway* 5977 (F, Mo, US). Mora Forest via Sangre Grande, *Broadway* 5386 (F, Mo). Long Stretch, 25–26 mile posts, *Broadway* 6851 (F, Mo, US). Heights of Aripo, *Broadway* 9855 (G, NY, US).

The plant cited by Urban as *C. sanguinea* from Tobago (Morne d'Or, *Eggers* 5856) probably belongs to this variety. I have not seen it.

This geographic variety is rather weakly characterized by its larger corollas and somewhat larger and relatively broader leaves. A measurement of 50 leaves of each variety gives the following figures:

Typical form from Hispaniola: Average width 5.5 cm. (minimum 3.5, maximum 8 cm.); average length 17.4 cm. (minimum 11 cm., maximum 24 cm.); average ratio of length to width 2.8:1.

Var. *trinitensis*: Average width 7.27 (minimum 5 cm., maximum 10.3 cm.); average length 20 cm. (minimum 15 cm., maximum 26 cm.); average ratio of length to width 3.1:1.

3. *Columnnea cubensis* (Urban) Britton, *Torreyia* 5: 215. 1906.

Columnnea sanguinea sensu Griseb. *Cat. Pl. Cub.* 201. 1866, non Hanst.

Columnnea sanguinea var. *cubensis* Urban, *Symb. Antill.* 2: 359. 1901.

Stems unbranched, up to 60 cm. long, 6–7 mm. in diameter, densely hirsute; leaves of a pair very unequal; larger leaf blades short-petiolate, the petiole 7–11 mm. long, hirsute, the blades oblanceolate (ratio of length to width 3:1), 16–26 cm. long (average length 21 cm.), 5–8.5 cm. wide (average width 7 cm.), abruptly short-acuminate, very oblique and unequal at base, the upper base cuneate, the lower subcordate, membranaceous when dry, deep green above, paler beneath, not red-spotted beneath, low-crenate, pilose above, appressed-hirsute beneath, the primary veins 8 or 9 pairs; smaller leaf blades stipule-like, up to 3 cm. long and 1.2 cm. wide, sessile, overlapping the stem, subcordate and oblique at base, long-acuminate, hirsute on both sides; flowers 2 or 3 in an axil, subsessile, apparently ebracteate; calyx lobes green, free, erect, equal, lanceolate, about 15 mm. long, 2.5–3 mm. wide (excluding teeth), long-attenuate, subulate-toothed (the teeth about 4 to a side, up to 3 mm. long), long-hirsute on both sides, especially without, the hairs brownish; corolla yellowish white, about 2 cm. long, erect in calyx, a little gibbous at posterior base, the tube subcylindric, about 4 mm. wide at base, becoming 7 mm. wide at middle, densely hirsute externally, glabrous and eglandular within, gradually somewhat contracted to throat, this about 5 mm. wide, the limb small, regular, narrow, the lobes suborbicular, about 2 mm. long, rounded, erect, subequal, glabrous and eglandular within; filaments connate at base for 4 mm., glabrous; anthers quadrate, about 1.5 mm. long and wide, connate; ovary and style hirsute; disk reduced to a glabrous, 3-dentate, posterior gland.

Type from Monte Verde, Oriente, Cuba, *Wright* 357 (isotypes G, Mo).

ADDITIONAL SPECIMENS EXAMINED:

CUBA (Oriente): La Perla, *Shafer* 8523 (NY). Firmeza to Gran Piedra, *Shafer* 8979 (NY). Loma del Gato, *Clément* 596 (NY). El Yunque, *Underwood & Earle* 869 (G, NY). Las Ninfas, *Hioram & Batiste* 1567 (NY). Navas to Camp Buena Vista, *Shafer* 4435 (F, NY, US). Sierra Nipe, *Morton & Acuña* 3230 (US); *Shafer* 3197 (F, NY, US), 3841 (NY, US). Northern slopes of Sierra Maestra, above Río Yao, *Morton & Acuña* 3425 (US).

4. *Columnnea rutilans* Swartz, *Prodr. Veg. Ind. Occ.* 94. 1788.

Scandent unbranched shrub, the stems gray, terete, up to 7 mm. in diameter, the internodes often very short (0.7–3 cm. long), the old stems sparingly strigose, the young stems densely sericeous-substrigose or subtomentose, the hairs reddish,

the leaf scars very prominent; leaves opposite, those of a pair very unequal, the larger petiolate, the petiole 1.5–2.5 cm. long, densely red-sericeous; larger leaf blades narrowly lanceolate (ratio of length to width 3.6:1), more or less unsymmetrical, 8–17 cm. long (average length 13.3 cm.), 2.4–4.5 cm. wide (average width 3.7 cm.), long-acuminate, the base cuneate, or rounded on one side, strongly oblique and unequal, minutely and inconspicuously denticulate, strigillose above, the under surface red all over, closely and densely sericeous-strigose, the primary veins 6 or 7 pairs, prominent on the lower surface, the secondaries very inconspicuous; smaller leaf blades caducous, short-petiolate (about 3 mm.), the blades 2.5–4.5 cm. long, acuminate, rounded and oblique at base; flowers one to three in each leaf axil, apparently ebracteate, the peduncle 0.5–2 cm. long, densely red-sericeous-strigose; calyx red, covered on both sides with long red hairs, the lobes free to base, oblong, about 2.5 cm. long in flower, the posterior lobe shorter, about 2 cm. long, all erect, conspicuously lacinate-toothed below middle, the teeth oblong, up to 8 mm. long and 2 mm. wide, the apex of sepal rounded, inconspicuously crenate-dentate; fruiting sepals becoming 3.5 cm. long; corolla yellow with conspicuous red spots and lines within, 4.5–5 cm. long, erect in calyx, the posterior base saccate (3 mm.), the tube 5–6 mm. wide just above base, about 1.8 cm. long, the limb strongly bilabiate, the galea about 3 cm. long, 1.2 cm. wide in free part, deeply 2-lobed at apex, the lobes about 5 mm. long, the lateral lobes connate with galea for about 1.5 cm., the free parts triangular-oblong, ascending, about 1.5 cm. long and 0.8 cm. wide at base, the anterior lobe narrowly oblong, reflexed, about 2.2 cm. long, and 6 mm. wide; corolla tube densely sericeous outside, glabrous within, the lobes strigose outside, glandular-pilosulous within, ciliate; filaments connate at base for about 4 mm., glabrous, not contorted; anthers persistently connate in pairs, oblong, 3.5 mm. long, 2 mm. wide, the loculi narrowly oblong; ovary oblong, densely sericeous; style glandular-pilosulous; stigma stomatomorphic; disk gland posterior, glabrous, 1.5 mm. long, 3-denticulate at apex.

Type from Jamaica, *Swartz* (not seen).

SPECIMENS EXAMINED:

JAMAICA: Near Troy, Trelawny Parish, alt. 600 meters, *Harris* 8528 (NY), 8696 (NY), 9370 (NY); *Maxon* 2852 (NY, US). Dolphin Head, Hanover Parish, *Harris* 9265 (F, NY, US); *Britton* 2305 (NY). Peckham Woods, Clarendon, alt. 750 meters, *Harris* 11092 (NY, US).

5. *Columnea subcordata* Morton, sp. nov.

?*Columnea hirsuta* f. *wullschlaegelii* Urban, *Symb. Antill.* 2: 362. 1901. Type from Manchester, Jamaica, *Wullshlaegel* 959, not seen.

Folia inaequalia; lamina foliorum majorum oblonga, acuta, basi subcordata, non rubro-maculata, fere integra, utrinque parce hirsuta, venis primariis 5–7-jugis; folia minora subsessilia, suborbicularia vel late ovata; flores axillares, bini vel terni; calyx viridis, bilabiatus, lobis 4 anticis connatis, partibus liberis lanceolatis, acuminatis, integris, lobo postico libero, deflexo, omnibus utrinque hirsutis; corolla flava, externe breviter pilosula, valde bilabiata; filamenta pilosula; antherae oblongae; ovarium sericeum; discus in glandulam posticam bilobam glabram reductus.

Scandent shrub, the stems not branched, about 6 mm. in diameter, sparsely hirsute, the hairs long, few-celled; leaves unequal, very short-petiolate, the petiole 3–10 mm. long, long-hirsute; larger leaf blades of a pair oblong, 8.3–13 cm. long, 4.3–5.6 cm. wide, abruptly short-acute, subcordate and oblique at base, concolorous, not red-spotted, nearly entire, sparsely hirsute on both sides, the hairs hyaline, straight, 4- or 5-celled, the primary veins 5–7 pairs, not prominent; smaller leaf blades subsessile, suborbicular or broadly ovate, 3–3.5 cm. long, 2.5–2.7 cm.

wide, scarcely acute, subcordate at base; flowers axillary, 2 or 3 in an axil, the pedicels 1.5–2.2 cm. long, long-hirsute; calyx green, 2 cm. long in flower, bilabiate, the 4 anterior lobes connate for about 6 mm., the free parts lanceolate, about 3.5 mm. wide, acuminate, entire, the posterior lobe free, deflexed, about 15 mm. long and 2 mm. wide, all the lobes hirsute on both sides, the hairs white, spreading, many-celled; fruiting calyx accrescent, 2.2–2.5 cm. long; corolla yellow, not lined with red, 4.5–5 cm. long, a little oblique in the calyx, gibbous at posterior base, the tube 3 mm. wide above base, gradually enlarged upwardly, 2.2–2.4 cm. long, short-pilosulous externally, the galea about 2.5 cm. long, 8 mm. broad toward apex, bilobed, the lobes about 2 mm. long, the lateral lobes connate with galea, the free parts oblong, 10–12 mm. long, 4–6 mm. wide, the anterior lobe deflexed, linear-oblong, about 16 mm. long, 3.5–4 mm. wide, all the lobes glandular-pilosulous within; filaments pilosulous, eglandular; anthers oblong, 2 mm. long, 1.5 mm. wide; ovary sericeous; style glandular-pilose; disk reduced to a glabrous, bilobed, posterior gland.

Type in the U. S. National Herbarium, No. 1,479,223, collected on Mount Ridgway Road, Windsor, Parish of Trelawny, Jamaica, April 9, 1931, at 100–150 meters elevation, by Gerrit S. Miller (No. 1556).

It is possible that this may be Urban's *C. hirsuta* forma *wulfschlaegelii*, the type of which I have not seen. Urban, however, does not mention the distinctive character of this species, the bilabiate calyx. The four anterior calyx lobes are connate about one-third of their length, and the posterior is free, narrow, and shorter. They are all entire. In *C. hirsuta* the sepals are all free, subequal, and conspicuously subulate-toothed. The corolla of *C. subcordata* is apparently pure yellow, not brilliant scarlet and yellow as in *C. hirsuta*. The leaves also are different, those of *C. subcordata* being larger (average length 11.4 cm., average width 5.1 cm., compared to *C. hirsuta*, average length 7.5 cm., average width 3.4 cm.) and more strongly cordate at base. The hairs are long, as in *C. hirsuta*, but have fewer cells. The two species occupy different habitats, *C. subcordata* being found near sea level in the northwestern part of the island and *C. hirsuta* being confined to higher elevations of the Blue Mountains.

Even if Urban's f. *wulfschlaegelii* were known to be the same, it would be inadvisable to adopt that epithet for the species, because of the existence of *C. wulfschlaegiana* Hanst., also from Jamaica.

6. *Columnnea hirsuta* Swartz, Prodr. Veg. Ind. Occ. 94. 1788.

Columnnea hirsuta var. *genuina* Urban, Symb. Antill. 2: 361. 1901.

Columnnea hirsuta var. *pallescens* Urban, op. cit. 362. Type from St. Catherine's Peak, parish of St. Andrew, Jamaica, alt. 1,400 meters, Eggers 3663 (isotype US).

Columnnea hirsuta var. *concolor* Urban, loc. cit. Type from near Cinchona, parish of St. Andrew, Jamaica, alt. 1,600 meters, Fawcett 6366 (isotypes F, NY).

Scandent shrub up to 5 meters long, sparingly branched, the branchlets up to 6 mm. thick, densely long-hirsute, the hairs flaccid, many-celled; leaves of a pair unequal, the larger petiolate, the petiole up to 1.5 cm. long, hirsute; larger leaf blades oblong (average ratio of length to width 2.2:1), 4.8–12 cm. long (average length 7.5 cm.), 2.4–5.4 cm. wide (average width 3.4 cm.), rounded or broadly cuneate at base, oblique, acute or short-acuminate, inconspicuously crenate-denticulate, concolorous, not red-spotted beneath, hirsute on both sides, the hairs long, flaccid, about 8 cells long, the primary veins 5 or 6 pairs; smaller leaves short-petiolate (up to 5 mm.), ovate or suborbicular, 2.5–6 cm. long, 1.8–3.5 cm. wide, acute, slightly toothed; flowers 1 to 3 in each axil; peduncle about 1.5 cm. long, densely long-hirsute; calyx commonly red or reddish, the lobes

free to base, linear-attenuate, 2.7–4 cm. long in flower, 4 mm. wide near base, long-hirsute on both sides, remotely spinulose-denticulate, the teeth 1 or 2 on each side, subulate, 0.5–2 mm. long, ca. 0.4–1 mm. wide; corolla yellow with red stripes within, 4.3–5.5 cm. long, the posterior base saccate (4 mm.), the tube 4 mm. wide above base, 2.2 cm. long, densely sericeous outside, glabrate within, the galea about 2.8 cm. long, the free part about 1 cm. wide, deeply bilobed at apex, the lobes about 5 mm. long, the lateral lobes connate with galea for about 13 mm., the free parts linear-oblong, about 14 mm. long and 4.5 mm. wide, all the lobes sericeous outside, ciliate, glandular-pilosulous within; filaments connate at base for 6 mm., pilosulous above (the hairs eglandular); anthers connate in pairs, 2.5 mm. long, 2 mm. wide, the loculi parallel, slightly unequal; ovary oblong, densely sericeous; style densely glandular-pilosulous; stigma stomatomorphic; disk gland posterior, glabrous, 1.5 mm. long, deeply bilobed.

Type from Jamaica, *Swartz* (not seen).

SPECIMENS EXAMINED:

JAMAICA (St. Andrew Parish): Morces Gap to Vinegar Hill, alt. 1,175–1,500 meters, *Maxon & Killip* 694 (F, G, NY, US). Morces Gap, alt. 1,500 meters, *Maxon & Killip* 1722 (F, G, NY, US); *Nichols* 15 (F, G, Mo, NY, US). Cinchona, *Harris & Lawrence* C15158 (US). Cinchona to New Haven Gap, *Britton* 133 (NY). Near Mabess River, alt. 780 meters, *Harris* 9123 (NY). Lower eastern ridge of Mossmans Peak, alt. 1,600–1,700 meters, *Maxon* 9665 (US). Near St. Helens Gap, alt. 1,475 meters, *Maxon & Killip* 591 (US). Slopes above Tweedside, alt. 900 meters, *Maxon* 966. Blue Mountain Peak, *A. S. Hitchcock* (Mo).

Urban's varieties *pallescens* and *concolor* do not differ materially from typical specimens.

7. *Columnnea fawcettii* (Urban) Morton, comb. nov.

Columnnea hirsuta var. *fawcettii* Urban, *Symb. Antill.* 2: 363. 1901.

Scandent shrub, sparingly branched, the branchlets about 5 mm. thick, all except the youngest glabrate, these substrigose with short few-celled hairs; leaves of a pair unequal or subequal, rather long-petiolate, the petiole up to 17 mm. long, strigose; larger leaf blades oblong (average ratio of length to width 2.4:1), 6–10.5 cm. long (average length 8 cm.), 2.3–4.5 cm. wide (average width 3.3 cm.), short-acuminate, broadly cuneate and oblique at base, subcoriaceous, very remotely crenate-denticulate, short-strigillose on both sides, the primary veins 4 or 5 pairs; smaller leaf blades conform, subequal or much reduced and then only 3.5 cm. long and 1.9 cm. wide; flowers 1 to 3 in a leaf axil; pedicels 12–15 mm. long, densely hirsute; calyx red, densely hirsute on both sides, the lobes linear, 1.8–3 cm. long, acuminate, remotely spinulose-toothed, the teeth 2 or 3 (or 5?) to a side, subulate, 1–2 mm. long; corolla erect in calyx, red with yellow lines, 4.5–5.3 cm. long (rarely only 4 cm.), gibbous at posterior base, the tube about 4 mm. wide above base, about 1.8 cm. long, densely sericeous outside, glabrous within, the galea about 3 cm. long, the free part about 8 mm. wide, deeply bilobed, the lobes 6 mm. long, the lateral lobes connate with galea for about 1.5 cm., the free parts linear-oblong, 2 cm. long and 3.5 mm. wide, all the lobes sericeous outside, ciliate, glandular-pilosulous within; filaments pilosulous; anthers connate in pairs, 1.8 mm. long, 1.5 mm. wide; ovary densely sericeous; style glandular-pilosulous; disk reduced to a posterior bilobed, glabrous gland.

Type from Browns Town, St. Ann Parish, Jamaica, *Fawcett* 6587 (not seen).

SPECIMENS EXAMINED:

JAMAICA: Upper slopes of Mount Diablo, St. Catherine Parish, alt. 500–800 meters, *Maxon & Killip* 429 (F, G, NY, US); *Hunnewell & Griscom* s. n. (G).

Soho, St. Ann Parish, alt. 420 meters, *Harris* 11993 (NY, US). Hollymount, St. Catherine Parish, alt. 750 meters, *Britton* 757 (NY); *Maxon* 2334 (US); *Harris* 8896 (NY). Union Hill, near Moneague, St. Ann Parish, *Britton & Hollick* 2741 (NY). Grierfield, near Moneague, St. Ann Parish, *Britton* 2659 (NY). Vicinity of Millbank, Portland, alt. 200–300 meters, *Maxon & Killip* 133 (F, G, NY, US). Seamens Valley, Portland, alt. 150–250 meters, *Maxon & Killip* 81 (F, G, NY, US). John Crow Mountains, alt. 350–780 meters, *Britton* 3936 (NY), 4172 (NY); *Harris & Britton* 10700 (F, NY). Ridge east of Cuna Cuna Gap, St. Thomas Parish, alt. 750–840 meters, *Maxon* 9407 (G, US). Upper southern slopes of Maccasucker Bump, St. Thomas Parish, alt. 825–1,025 meters, *Maxon* 9523 (US).

At the time Urban described this plant as a variety of *C. hirsuta* he had a single specimen only. The abundant material now available shows that the two are specifically distinct. The upper leaf surface in *C. hirsuta* is truly hirsute, the hairs being long, flaccid, spreading, and 5–8-celled. In *C. fawcettii* the upper leaf surface is minutely and sparsely strigillose, the hairs being appressed and uniformly composed of only two cells—a short, hyaline basal cell and a bayonet-shaped, usually whitish, terminal cell. *C. fawcettii* is found in the parishes of St. Thomas, Portland, St. Ann, and adjacent St. Catherine, at relatively low elevations (150 to perhaps 1,000 meters), whereas *C. hirsuta* is confined to higher elevations in the Blue Mountains of the parish of St. Andrew.

8. *Columnnea brevipila* Urban, Symb. Antill. 6: 41. 1909.

Scandent shrub several feet long, the stems probably unbranched, 5–10 mm. thick, glabrous and shining, the young stems minutely and sparsely strigillose, the internodes short; leaves of a pair subequal, petiolate, the petiole 0.5–1 cm. long, strigillose; leaf blades oblong (ratio of length to width 2.4–2.8:1), 5–11 cm. long, 2.1–5 cm. wide, short-acuminate, cuneate at base, subcoriaceous, concolorous, not red-spotted, remotely and minutely crenulate-denticulate, minutely and sparsely strigillose on both sides, the hairs 2-celled, the terminal cell white, the primary veins 5 or 6 pairs; flowers 1–5 in an axil; pedicels 1.2–2 cm. long, strigillose, thickened at apex, subtended by two linear-lanceolate, green bracts, these 12–15 mm. long, entire, caducous; calyx green, the lobes all free, subequal, linear-lanceolate, 2–3 cm. long, 3.5–5 mm. wide, minutely strigillose on both sides, entire; corolla 4.5–5 cm. long, yellow, erect in calyx, gibbous at posterior base, the tube about 3 mm. wide above base, about 25 mm. long, sericeous-strigose externally, glabrous within, the galea about 2 cm. long, the free part 5–6 mm. wide, bilobed at apex (2 mm.), the lateral lobes connate with galea for 9 mm., the free part oblong, about 12 mm. long, 3.5–5 mm. wide, the anterior lobe reflexed, about 15 mm. long and 4 mm. wide, all sericeous outside, glandular-pilosulous within; filaments glabrous; anthers connate in pairs, about 2 mm. long, 1.5 mm. wide; style glandular-pilosulous.

Type from Kentucky Hill, Bluefields Mountains, Westmoreland Parish, Jamaica, alt. 600–750 meters, *Harris* 10199 (isotypes F, NY, US).

ADDITIONAL SPECIMEN EXAMINED:

JAMAICA: Bluefields Mountains, alt. 650 meters, *Britton & Hollick* 1953 (NY).

9. *Columnnea argentea* Griseb. Fl. Brit. W. Ind. 465. 1861.

Columnnea wulschlaegeliana Hanst. *Linnaea* 34: 414. 1865. Type from Jamaica, *Wulschlaegel* 960.

Scandent shrub, 80 cm. long, probably unbranched, the stems very thick (about 9 mm. diam.), white-sericeous at apex, the internodes short, the leaf scars very large; leaves of a pair probably equal or subequal, short-petiolate, the petiole 0.4–1 cm. long, white-sericeous; leaf blades oblong-lanceolate (ratio of length to

width 3.4–3.7 : 1), 7.5–13 cm. long. 2.5–3.5 cm. wide, acuminate, rounded at base, concolorous, not red-spotted, remotely and very inconspicuously denticulate, soft sericeous-strigose on both sides, the hairs 4- or 5-celled, hyaline, the primary veins 4 or 5 pairs; flowers 1–3 in an axil; pedicels 5–7 (16?) mm. long, densely white-sericeous; calyx lobes equal, erect, densely white-sericeous on both sides, oblong-linear, about 2 cm. long and 4 mm. broad in flower, acuminate, entire; corolla pale yellow, about 5 cm. long, erect in calyx, the tube about 3 cm. long, densely white-sericeous outside, the galea about 2 cm. long, about 7.5 mm. wide in the free part, shortly bilobed at apex (about 1 mm.), the lateral lobes connate with galea for about 9 mm., the free parts narrowly oblong, about 16 mm. long and 3 mm. wide, the anterior lobe reflexed, oblong-linear, 18 mm. long, 2.5 mm. wide, all lobes densely white-sericeous outside, glandular-pilosulous within; filaments glabrous; style glandular-pilosulous.

Type from Nazareth, Manchester Parish, Jamaica, *Wullschlaegel* (not seen).

SPECIMEN EXAMINED:

JAMAICA: New Green, Manchester Parish, *Britton* 3755 (NY).

10. *Columnea harrisii* (Urban) Britton in herb.

Columnea hirsuta f. *harrisii* Urban, *Symb. Antill.* 2: 363. 1901.

?*Columnea hirsuta* f. *hansenii* Urban, loc. cit. Type from Jamaica, *Hansen*, presumably at Berlin.

Frutex; folia inaequalia; lamina foliorum majorum oblonga, apice acuta vel breviter acuminata, basi rotundata vel late cuneata, remote denticulata, non rubro-maculata, utrinque sericeo-strigosa, pilis 3–5-cellularibus; calyx viridis, lobis lineari-lanceolatis, aequalibus, acuminatis, integris, utrinque sericeo-strigosis; corolla lutea et rubra, valde bilabiata, lobis intus glanduloso-pilosulis; filamenta glabra; ovarium sericeum.

Unbranched shrub, the stems ridged, about 5 mm. in diameter, shortly but densely hirsute toward apex, the internodes short; leaves of a pair unequal, the larger short-petiolate, the petiole 3–8 mm. long, short-hirsute; larger leaf blades oblong (ratio of length to width 2.7 : 1), 7.5–13 cm. long (average length of 30 leaves 10.5 cm.), 2.4–5.2 cm. wide (average width 3.9 cm.), acute or short-acuminate, rounded or broadly cuneate at base, oblique, remotely and inconspicuously denticulate, concolorous, not red-spotted, sericeous-strigose on both sides, the hairs hyaline, of 3–5 cells, subtortuous, the primary veins 7 or 8 pairs; smaller leaves very short-petiolate (1–2 mm.), the blades broadly ovate, 2.5–4.5 cm. long, 1.6–2.3 cm. broad, acute, crenulate; flowers 1–3 in each axil; pedicels about 1 cm. long, shortly and densely hirsute with hyaline, colorless hairs; calyx green, densely sericeous-strigose on both sides, the hairs colorless, several-celled, the lobes all free, erect, equal, linear-lanceolate, about 2 cm. long and 4 mm. wide in flower, somewhat accrescent in fruit, acuminate, entire; corolla yellow, sparingly striped with red, 3.8–5 cm. long, suberect in calyx, short-gibbous at posterior base, the tube about 3 mm. wide above base, 2.2 cm. long, white-sericeous outside, glabrous within, the galea about 2.5 cm. long, the free part about 8 mm. wide, bilobed at apex, the lobes 1.5 mm. long, the lateral lobes connate with galea for 1.2 cm., the free part oblong, 13 mm. long, 4.5 mm. wide, all the lobes sparingly sericeous outside, glandular-pilosulous within; filaments connate at base, glabrous; anthers 1.8–2.1 mm. long, 1.2 mm. wide, connate in pairs; ovary sericeous; style glandular-pilosulous; disk reduced to a bilobed, glabrous, posterior gland.

Type from Belvedere, Hanover Parish, Jamaica, alt. 160 meters, *Harris* 7522 (isotype NY).

SPECIMENS EXAMINED:

JAMAICA: Belvedere, Hanover Parish, *Fawcett* 8480 (F, NY). Kempshot, Hanover Parish, *Britton* 2438 (F, NY, US). Newmarket, Westmoreland Parish, *Britton* 1576 (NY).

This plant may not be regarded as a variety of *C. hirsuta*, as Urban referred it. It is distinguished by several important characters as follows:

Filaments glabrous; calyx lobes entire, sericeous; leaves appressed-sericeous, the hairs about 5 cells long; veins 7 or 8 pairs..... *C. harrisii*
 Filaments obviously pilosulous; calyx lobes subulate-toothed, long-hirsute; leaves hirsute, the hairs about 8 cells long; veins 5 or 6 pairs..... *C. hirsuta*

These two species occupy different ranges in Jamaica. *Columnea harrisii* occurs near sea level in the two westernmost parishes, whereas *C. hirsuta* is found at the higher elevations of the Blue Mountains in eastern Jamaica.

11. *Columnea tinctoria* Griseb. Mem. Amer. Acad. n. ser. 8: 526. 1863.

Scandent shrub, sparingly branched, the branches 4–5 mm. thick, sparingly hirsute at apex, glabrous below, the internodes short; leaves of a pair subequal or unequal, petiolate, the petiole up to about 15 mm. long, sparingly hirsute; leaf blades oblong or oblanceolate (average ratio of length to width 2.1 : 1), 5.8–10 cm. long (average length 8 cm.), 2.2–4.5 cm. wide (average width 3.8 cm.), acute or rarely (abnormally?) rounded at apex, cuneate or slightly rounded at base, subcoriaceous or membranaceous, concolorous, not red-spotted, remotely denticulate, strigose on both sides, the hairs minute, appressed, intermixed with long scattered spreading hairs (these often deciduous), the primary veins 4 pairs; flowers 1 to 3 in an axil; pedicels 10–18 mm. long, hirsute, subtended by 2 lanceolate bracts about 8 mm. long, these caducous; calyx crimson, the lobes free, erect, subequal, linear-oblong, 13–20 mm. long, 4 mm. wide, acute, remotely glandular-denticulate (the teeth 1 or 2 on each side), red-hirsute on both sides; corolla yellow, 3.8–4.2 cm. long, erect in calyx, gibbous at posterior base, the tube 4 mm. wide above base, about 2 cm. long, sparsely villous outside, the galea 2.2 cm. long, the free part about 7 mm. wide, bilobed at apex (about 2.5 mm.), the lateral lobes connate to galea for about 13 mm., the free parts triangular-oblong, about 1 cm. long and 5 mm. wide, the anterior lobe reflexed, linear-oblong, about 18 mm. long, 4 mm. wide, all lobes sparingly red-hirsute outside, glandular-pilosulous within; filaments glabrous; anthers connate in pairs, 1.5 mm. long, 1.2 mm. wide; ovary hairy; style glandular-pilosulous; disk reduced to a glabrous, bilobed, posterior gland.

Type from Monte Verde, Oriente, Cuba, *Wright* 358 (isotypes G, Mo).

ADDITIONAL SPECIMENS EXAMINED:

CUBA (Oriente): Monte Verde, *Wright* 1336 (G, Mo). El Yunque, alt. 300–600 meters, *Pollard & Palmer* 171 (NY, US); *Underwood & Earle* 1013 (NY). La Prenda, *Hioram* 4252 (NY). La Perla, *Shafer* 8498 (NY). Río Yamanigüey, *Shafer* 4239 (NY).

12. *Columnea tulae* Urban, Symb. Antill. 1: 409. 1899.

Columnea scandens var. β L. Sp. Pl. 638. 1753.

Columnea tulae var. *rubra* Urban, Symb. Antill. 1: 409. 1899.

Columnea tulae var. *flava* Urban, op. cit. 410. Type from near Aybonito, Puerto Rico, *Sintenis* 2694 (isotypes G, Mo, NY, US).

Scandent, epiphytic shrub; stems sparingly branched, 3–5 mm. thick, glabrate below, soft-pilosulous toward apex; leaves of a pair equal or nearly so, short-petiolate, the petiole 0.5–1 cm. long, pilosulous; leaf blades oval (average ratio of length to width 2.5:1), 2.2–4.5 cm. long (average length 3.3 cm.), 0.7–1.8 cm. wide (average width 1.3 cm.), rounded at apex, obliquely cuneate at base, concolorous, not red-spotted, entire, densely soft-pilosulous on both sides, the hairs hyaline, flaccid, subtortuous, 3 or 4 cells long, the primary veins 3 pairs, obscure; flowers solitary, axillary; pedicels 9–11 mm. long, densely white-pilosulous,

bibracteate at base, the bracts lanceolate, about 4 mm. long, entire, white-pilosulous; calyx green, the lobes equal, erect, lanceolate, 10-13 mm. long, 2.5-3 mm. wide, acuminate, narrowed toward base, the 4 anterior connate at base for 1 mm., the posterior free, pilosulous on both sides, the hairs colorless; corolla yellow, orange, or red, 3.5-4.9 cm. long, erect in calyx, very slightly gibbous at posterior base, the tube 2 mm. wide above base, 2.8-3.5 cm. long, very gradually enlarged, about 8 mm. wide in throat, rather sparsely pilosulous externally, glabrous within, the galea 10-14 mm. long, the free part about 7 mm. wide, truncate, not bilobed, the lateral lobes connate with galea for 4-5 mm., the free parts triangular, 6-7 mm. long, 3-4 mm. wide, the anterior lobe reflexed, oblong, about 6 mm. long, 1.5-2 mm. wide, all lobes pilosulous outside, glandular-pilosulous within; filaments bearing a few scattered glands, otherwise glabrous; anthers oblong 1-1.5 mm. long, 0.7-0.9 mm. wide; ovary glabrous; style glandular-pilosulous; stigma bilobed; disk gland posterior, large, glabrous, entire; berry white.

Type from Puerto Rico, *Bertero* 285.

SPECIMENS EXAMINED:

PUERTO RICO: Alto de la Bandera, *Britton & Shafer* 2121 (NY, US); *Cowell* 5489 (NY). Monte de Oro, *Stevens* 5583 (NY). Monte Torrecilla, alt. 900-1,100 meters, *Britton, Cowell, & Brown* 5531 (NY). Cayey, *Kuntze* 421 (NY). Sierra de Naguabo, *Sintenis* 1302 (F, G, Mo, NY, US); *Stevenson* 1562 (US); *Shafer* 3189 (NY, US), 3203 (NY); *Britton & Shafer* 2137 (NY). Mount Mandios, *Britton & Cowell* 945 (NY). Cerro de las Pinas, alt. 600-720 meters, *Britton, Matz & Chardon* 6881 (NY). Cialitos, *Britton & Britton* 7966 (NY). Mount Morales, *Britton & Cowell* 822 (F, NY, US). Sierra Luquillo, *Eggers* 1304 (US); *Heller* 719 (F, NY, US); *Wilson* 85 (NY); *Otero* 577 (F). El Yunque, *Boynton* 8225 (NY); *Sargent* 337 (US). Maricas, *Sintenis* 322 (US). Alto de la Piedra, alt. 750-950 meters, *Britton & Earle* 6089 (NY). Sierra de Yabucoa, alt. 250-550 meters, *Britton, Britton, & Earle* 6305 (NY).

HAITI: Massif de la Hotte, alt. 700 meters, *Ekman* H7592 (US). Massif du Nord, *Ekman* H4331 (US). High mountains southwest of St. Louis du Nord, *Leonard & Leonard* 14495 (US). Mount Maleuvre, *Nash & Taylor* 1147 (NY), 1152 (NY).

13. *Columnnea tocoensis* Britton, Bull. Torrey Club 53: 470. 1926.

Scandent, epiphytic shrub, the stems more or less branched, about 30 cm. long, 2-3 mm. thick, densely sericeous-strigose toward apex; leaves of a pair equal or nearly so, petiolate, the petiole 3-5 mm. long, strigose; leaf blades narrowly oblong (average ratio of length to width 3.4:1), 1.8-4.1 cm. long (average length 3.1 cm.), 0.7-1.3 cm. wide (average width 0.9 cm.), rounded at apex, cuneate at base, concolorous, not red-spotted, entire, subcoriaceous, softly appressed-pilosulous on both sides, the hairs 3- or 4-celled, the primary veins 3 pairs, very inconspicuous; flowers solitary, axillary; pedicels 5-6 mm. long, densely sericeous, subtended by 2 small, lanceolate, entire bracts; calyx green, the lobes erect, subequal, the 4 anterior connate at base for about 1 mm., the posterior nearly free, linear-lanceolate, narrowed toward base, 7-10 mm. long, 1.8-2.2 mm. wide, acuminate, entire, herbaceous, white-sericeous on both sides, especially at outer base; corolla yellow, not marked with red, 4-4.8 cm. long, erect in calyx, slightly gibbous at posterior base, the tube about 2 mm. broad above base, 2.4-3 cm. long, sparsely pilosulous externally with hyaline, colorless hairs, gradually ampliate to throat, this about 5 mm. wide, the galea 16-18 mm. long, the free part 5-6 mm. wide, acute at apex, not at all lobed or emarginate, the lateral lobes connate to galea about 7 mm., the free parts triangular, about 6 mm. long and 4 broad, the anterior lobe reflexed, narrowly oblong, about 11 mm. long, 2.5 mm. wide, all lobes sparsely pilosulous outside, glandular-pilosulous within; filaments glabrous; anthers

narrowly oblong, 1.5 mm. long, about 0.75 mm. wide; ovary sparsely sericeous at apex; style glandular-pilosulous; stigma 2-lobed; disk reduced to a glabrous, entire, posterior gland.

Type from Toco Road, Valencia, Trinidad, *Britton, Hazen, & Mendelson* 1785 (NY; isotypes G, US).

ADDITIONAL SPECIMENS EXAMINED:

TRINIDAD: Caroni River, south of Arima, *Britton & Britton* 2886 (NY, US). Oropuche, Valencia, *Broadway* 6176 (Mo), s. n. (F). Arena, *Broadway* s. n. (F, Mo). Cumuto, *Broadway* 5741 (F, Mo).

14. *Columnnea scandens* L. Sp. Pl. 638. 1753.

Glycanthes scandens Raf. Sylv. Tellur. 83. 1838.

Columnnea jacquiniana Presl, Bot. Bemerk. 146. 1844.

Scandent, epiphytic shrub, rooting at the nodes, sparingly branched, the stems 3–4 mm. in diameter, glabrate below, sericeous-strigose toward apex; leaves of a pair equal, short-petiolate, the petiole 4–5 mm. long, densely strigose; leaf blades broadly ovate to almost suborbicular (average ratio of length to width 1.5:1), 2.3–4 cm. long (average length 3.1 cm.), 1.5–2.4 cm. wide (average width 2.3 cm.), rounded at apex, obtuse or rounded at base, thick-chartaceous when dry, concolorous, rather obscurely crenate-dentate above middle, strigose on both sides, the hairs 2- or 3-celled, the primary veins 3 or 4 pairs, impressed beneath; flowers solitary, axillary; pedicels 8–11 mm. long, densely sericeous; calyx green, the lobes erect, subequal, nearly free, linear-lanceolate, 11–13 mm. long, 2–3.5 mm. wide, long-acuminate, narrowed toward base, entire, or the 3 posterior with a single tooth near base, all lobes strigose on both sides; corolla red, erect in calyx, 5–5.7 cm. long, a little gibbous at posterior base, the tube about 3.5 mm. wide above base, 2.8–3 cm. long, sparsely pilosulous externally, gradually widened to throat, this 8–9 mm. wide, the free part of galea 12–13 mm. wide, acute, the lateral lobes connate to galea for 9–11 mm., the free parts triangular, about 5 mm. long and broad, the anterior lobe reflexed, narrowly oblong, 14–15 mm. long, 3–4 mm. wide, all lobes sparsely pilosulous outside, glandular-pilosulous within; filaments glabrous; anthers narrowly oblong, 1.5 mm. long, 0.8 mm. wide; ovary hairy at apex; style glandular-pilosulous; stigma deeply bilobed; disk gland posterior glabrous, entire.

Type from Martinique, *Plumier*.

SPECIMENS EXAMINED:

MARTINIQUE: Deux-Choux, alt. 560–800 meters, *Duss* 1876 (NY), 4637 (NY, US).

MONTSERRAT: Blake Mountain, *Shafer* 489 (NY). Pond Mountain, *Shafer* 546 (F, NY, US).

The specimens from Montserrat are not exactly like those from Martinique, having somewhat hairier leaves and more prominently toothed calyx lobes.

14a. *Columnnea scandens* var. *vincentina* Morton, var. nov.

Lamina foliorum ovata vel oblonga, obtusa, parce strigillosa, pilis bicellularibus; calycis lobi subaequales, liberi, triangulari-lanceolati, basi perspicue dentati, substrigosi; corolla rubra.

Scandent, epiphytic shrub up to 30 cm. long, the stems sparingly branched, 2–6 mm. in diameter, strigose or subpilosulous at apex, glabrate below; leaves of a pair equal or nearly so, short-petiolate, the petiole 2–7 mm. long, pilosulous; leaf blades ovate to oblong (average ratio of length to width 2.1:1), 2.2–4.2 cm. long (average length 2.9 cm.), 1.2–1.9 cm. wide (average width 1.4 cm.), obtuse, obtuse to broadly cuneate at base, subcoriaceous, concolorous, entire or very inconspicuously denticulate, minutely and sparsely strigillose on both sides, the hairs composed of 2 cells only, the primary veins 2 or 3 pairs; flowers solitary,

axillary; pedicels 9–13 mm. long, pilosulous, the hairs often purplish; calyx green, the lobes erect, subequal, all free, triangular-lanceolate, 9–15 mm. long, 4–5 mm. wide, acuminate, slightly narrowed at base, conspicuously toothed below middle, with one or two long and broad teeth, substrigose (especially at base) with long, purplish hairs; corolla bright red, erect in calyx, 4.3–5.6 cm. long, gibbous at posterior base, the tube 3 mm. wide above base, 22–30 mm. long, pilosulous outside (the hairs red), gradually enlarged to throat, this 6–9 mm. wide, the free part of galea 10–11 mm. wide, acutish, the lateral lobes 6–9 mm. long, 3–4 mm. wide, the anterior lobe reflexed, linear, 10–15 mm. long, 2–2.5 mm. wide, all lobes pilosulous externally, glandular-pilosulous within; filaments glabrous; anthers oblong, about 2 mm. long and 1 mm. wide; ovary hairy at apex; style glandular-pilosulous; stigma deeply bilobed; disk gland posterior, glabrous, entire.

Type in the U. S. National Herbarium, No. 1,336,578, collected on Mount St. Andrews, St. Vincent, December 1889, at 600 meters elevation, by Baron Eggers (No. 6698).

ADDITIONAL SPECIMENS EXAMINED:

ST. VINCENT: Without specific locality, *H. H. & G. W. Smith* 16 (NY). Without specific locality or collector, July 1824 (G), perhaps collected by Guilding?

GRENADA: Mirabeau Mountains, May 26, 1906, *Broadway* (F, G, NY). Grand Etang, *Miller* 127 (US).

14b. *Columnnea scandens* var. *aripoensis* (Britton) Morton, comb. nov.

?*Columnnea rotundifolia* Salisb. Parad. Lond. 1: pl. 29. 1806. Type from Trinidad, *Buchanan*.

?*Columnnea speciosa* Presl, Abh. Böhm. Ges. Wiss. V. 3: 575. 1845. Described from cultivated specimens.

Columnnea aripoensis Britton, Bull. Torrey Club 53: 470. 1926.

Scandent epiphytic shrub, sparingly branched, 15–30 cm. long, the stems densely sericeous toward apex, about 4 mm. in diameter; leaves short-petiolate, the petiole 2–3 mm. long, densely strigose; leaf blades oblong (average ratio of length to width 2.6:1), 2–3.3 cm. long (average length 2.6 cm.), 0.8–1.5 cm. wide (average width 1 cm.), rounded or obtuse at apex, cuneate at base, entire, concolorous, subcoriaceous, softly and densely strigose on both sides, the hairs 2 or 3 cells long, the primary veins 3 pairs, obscure; flowers solitary, axillary; pedicels 8–15 mm. long, strigose, subtended by two small, lanceolate bracts; calyx green, the lobes subequal, connate at base for about 1 mm. (the posterior lobe nearly free), broadly lanceolate, 10–11 mm. long, 2.5–4 mm. wide, entire or the 3 posterior sometimes with a single short tooth near base, all rather sparingly strigose on both sides; corolla red, 4.6–5.8 cm. long, erect in calyx, slightly gibbous at posterior base, the tube about 2 mm. long above base, 3–3.7 cm. long, rather sparsely pilosulous outside, gradually enlarged to throat, the throat 6–8 mm. broad, the galea 2–2.3 cm. long, the free part 9–10 mm. wide, acute, the lateral lobes connate to galea for about 8 mm., the free parts triangular-oblong, about 8 mm. long and 4 mm. wide, the anterior lobe reflexed, linear, 10–13 mm. long, 2–2.5 mm. wide, all lobes sparsely pilosulous externally, glandular-pilosulous within; filaments glabrous; anthers oblong, 1.5–2 mm. long, 1–1.7 mm. wide; ovary slightly hairy at apex; style glandular-pilosulous; stigma bilobed; disk reduced to a glabrous, entire, posterior gland.

Type from Heights of Aripo, Trinidad, *Britton & Freeman* 2340 (NY).

ADDITIONAL SPECIMENS EXAMINED:

TRINIDAD: North Mountain Range, alt. 600 meters, *Graf* 2 (NY). Heights of Aripo, *Broadway* 9856 (NY). Woods of Ciparia, May 31, 1805, *Trinidad Herb.* 2514 (US).

TOBAGO: Caledonia Woods, *Broadway* 4005 (F).

I have seen the type of Britton's species and believe it wiser to use his epithet as the varietal name than the earlier epithets of Salisbury or Presl, since I am obliged to place these names from description only. Urban identifies these old names with the plant I am calling var. *vincentina*, but the descriptions agree better with *aripoensis*.

Salisbury's specimen was collected in Trinidad before 1806 by Buchanan, no specific locality being mentioned. It is quite possible that the specimen listed above (Woods of Ciparia, May 31, 1805) may be as isotype, for it seems rather unlikely that more than one person found this rare plant in Trinidad at that early time. It has been discovered there only three times in the intervening 139 years.

DOUBTFUL SPECIES

15. *COLUMNEA HISPIDA* Swartz, Prodr. Veg. Ind. Occ. 94. 1788.

Type from Jamaica, Swartz.

From description I am not able to identify this with any of the species known from Jamaica. It is perhaps a valid species, not collected again.

THE WEST INDIAN SPECIES OF *ALLOPLECTUS*

The most recent treatment of the West Indian species of *Alloplectus* (Gesneriaceae) is that of Urban,³ wherein the species are merely listed without descriptions or a key. The present treatment recognizes the same species, but three new varieties are described. Full descriptions of the older species have been drawn up from the more abundant material now available, and a key has been prepared.

KEY TO SPECIES

Calyx lobes entire, narrowed at base, hirsute on both sides. Jamaica.

1. *A. pubescens*

Calyx lobes toothed or laciniate.

Calyx lobes dissimilar, the anterior conspicuously toothed, the posterior one entire; flowers 2 or 3 in an axil; leaves relatively large, 4.2–11.5 cm. long.

Puerto Rico..... 2. *A. ambiguus*

Calyx lobes all similar; flowers solitary; leaves small, 1.6–5.5 cm. long.

Style glabrous; corolla throat and lobes eglandular within. Corolla yellow; calyx red, angled; ovary strigose all over. Lesser Antilles.

3. *A. cristatus*

Style glandular-pilosulous; corolla throat and lobes glandular-pilosulous within.

Sepals glabrous within, green; corolla red with narrow yellow stripes; ovary glabrous. Jamaica..... 4. *A. grisebachianus*

Sepals hairy within, red; corolla yellow; ovary hairy at apex. Hispaniola.

5. *A. domingensis*

1. *Alloplectus pubescens* (Griseb.) Fawc. Prov. List Fl. Jam. 28. 1893.

Pterygoloma pubescens Griseb. Flora Brit. W. Ind. 464. 1861.

Columnea pubescens Kuntze, Rev. Gen. Pl. 2: 472. 1891.

Scandent shrub, the stems sparingly branched, the branchlets 2–2.5 mm. thick, hirsute, the hairs colorless, many-celled; leaves of a pair equal or strongly unequal, petiolate, the petiole 6–17 mm. long, slender, hirsute; larger leaf blades oblong

³ Symb. Antill. 2: 356–358. 1901.

(average ratio of length to width 2.4: 1), 4.7–8.4 cm. long (average length 6.6 cm.), 2.2–3.1 cm. wide (average width 2.8 cm.), abruptly short-acuminate, cuneate at base, membranaceous, rather sharply but inconspicuously denticulate, hirsute on both sides, the hairs colorless, many-celled, the primary veins 4 or 5 pairs; smaller leaves short-petiolate (about 5 mm. long), the blades ovate to oblong, often only about 2.5 cm. long; flowers solitary, axillary, ebracteate; pedicels about 13 mm. long, hirsute, the hairs colorless, many-celled; calyx green, the lobes erect, free, oblong-lanceolate, about 11 mm. long, acuminate, narrowed at base, entire, hirsute on both sides, more densely so within, ciliate; corolla yellow (?), about 2.2 cm. long, erect in calyx, the tube about 2 cm. long, about 4 mm. wide at middle, slightly contracted in throat, strigose externally with colorless hairs, the limb about 6 mm. broad, nearly regular, the lobes about 2 mm. long.

Type from Portland, Jamaica, alt. 600 meters, *Wilson* (not seen).

SPECIMENS EXAMINED:

JAMAICA: Ridge east of Cuna Cuna Gap, St. Thomas Parish, alt. 750–840 meters, *Maxon* 9443 (NY, US)

The two Jamaican species occupy different ranges, *A. grisebachianus* being found in central Jamaica and *A. pubescens* in the easternmost part of the island.

2. *Alloplectus ambiguus* Urban, Symb. Antill. 1: 408. 1899.

Alloplectus ambiguus var. *chlorosepalus* Urban, loc. cit.

Alloplectus ambiguus var. *erythrosepalus* Urban, loc. cit. Type from Puerto Rico, *Eggers* 1302.

Scandent shrub, sparingly branched, the branchlets 4–6 mm. thick, hirsutulous toward apex (the hairs many-celled, colorless), glabrescent and shining below; leaves of a pair strongly unequal, petiolate, the petiole 2–16 mm. long, hirsutulous; larger leaf blades, oblong or elliptic (average ratio of length to width 1.9: 1), variable in size, 4.2–11.5 cm. long (average length 6 cm.), 2–4.9 cm. wide (average width 3.1 cm.), acute or short-acuminate, cuneate or rounded at base, oblique, membranaceous, concolorous, not red-spotted, inconspicuously crenate (the teeth commonly 6–8 on each side), hirsutulous above, strigillose beneath, the hairs minute, usually 2-celled, the primary veins 5 or 6 pairs; flowers 2 or 3 in an axil; pedicels 5–8 mm. long, hirsute, the hairs reddish or colorless; calyx green or red, the lobes erect, 6–9 mm. long in flower, dissimilar, the 2 anterior ovate, 5–6 mm. wide, coarsely toothed on both sides, the teeth 3 on each side, the lateral sepals oblong, about 4 mm. wide, toothed only on the anterior margin, the posterior sepal narrowly oblong, 2.5–3 mm. wide, entire, all hirsutulous on both sides; corolla yellow, erect in calyx, 19–22 mm. long, scarcely gibbous at base, the tube about 3 mm. broad above base, slightly ventricose at middle and 5 mm. wide, puberulous externally and also sparsely hirsutulous above with longer hairs, contracted in throat, this 4 mm. wide, the limb about 5 mm. wide, nearly regular, the lobes subequal, about 2 mm. long, glandular-pilosulous within; filaments glabrous; anthers broader than long, about 0.8 mm. long, 1.1 mm. wide; ovary hairy at apex; style glandular-pilosulous; disk gland posterior, glabrous, bilobed.

Type from Puerto Rico, *Eggers* 1303 (not seen)

SPECIMENS EXAMINED:

PUERTO RICO: Luquillo Mountains, *Wilson* 28 (NY, US), 86 (NY); *Heller* 709 (NY), 4617 (F, G, NY, US). Sierra de Naguabo, *Sintenis* 1301 (F, G, Mo, NY, US), 1303 (G, US); *Shafer* 2225 (NY), 3594 (F, NY, US); *Stevenson* 5273 (US). Monte Cerrote, *Britton & Brown* (F, Mo, NY, US). Alto de la Bandera, *Britton & Shafer* 2016 (NY, US); *F. L. Stevens* 7297 (NY). Alto de la Piedra, *Britton & Earle* 6092 (NY, US). Indiera Baja, *Britton & Britton* 7211 (NY). Mount Mandios, *Britton & Cowell* 931 (NY, US). Arroyo de los Corchos, *Britton, Cowell, & Brown* 5235 (G, NY). Cayey, *Kuntze* 479 (NY). Sierra de Jumos,

Sintenis 2777 (F). El Yunque, *Otero* 581 (F); *Johnston* 751 (NY); *Hess* 2794 (NY); *Boynton* 8222 (NY). Between Guayama and Cayey, *Britton, Britton, & Brown* 6537 (NY). Without locality, *Garber* 89 (G).

The color of the sepals seems too variable to be used in distinguishing varieties, as Urban attempted.

3. *Alloplectus cristatus* (L.) Mart. Nov. Gen. & Sp. 3: 57. 1829.

Besleria cristata L. Sp. Pl. 619. 1753.

Crantzia cristata Scop. Intr. Hist. Nat. 173. 1777.

Lophia phoenicea Desv. in Hamilt. Prodr. Pl. Ind. Occ. 47. 1825 (nom. abort.)

Columnea cristata Kuntze, Rev. Gen. Pl. 2: 471. 1891.

Scandent, epiphytic shrub, sparingly branched, the branches 2–4 mm. in diameter, densely strigose or subtomentose at apex (the hairs colorless, flaccid, many-celled), glabrescent below; leaves of a pair subequal, petiolate, the petiole 8–15 mm. long, densely pilosulous; leaf blades ovate to elliptic (average ratio of length to width 2:1), 3.8–5.5 cm. long (average length 4.9 cm.), 1.6–3.6 cm. wide (average width 2.5 cm.), short-acuminate at apex, cuneate at base, membranaceous, concolorous, not reddish beneath, conspicuously serrate (the teeth 11–23 on each side), substrigose above (the hairs 2- or 3-celled), strigillose beneath, the hairs minute, 2-celled, the terminal cell white, the primary veins 6 or 7 pairs; flowers solitary, axillary, ebracteate; pedicels 2–3 cm. long, densely hirsute; calyx red, angulate, the lobes erect, broadly ovate, about 2 cm. long in flower, 2 cm. wide (including teeth), deeply cordate at base, connate at base for about 3 mm., the posterior lobes smaller and narrower, all conspicuously lacinate-serrate (the teeth 9 or 10 on each side, up to 3 mm. long), strigillose on both sides; corolla yellow, oblique in calyx, 3 cm. long, gibbous at posterior base (3.5 mm.), the tube about 5 mm. wide above base, about 2.6 cm. long, densely pilosulous externally, scarcely ventricose, about 6.5 mm. wide at middle, not or scarcely contracted in throat, the limb about 8.5 mm. wide, nearly regular, the lobes 2–4 mm. long, glabrous and eglandular within; filaments glabrous; anthers broader than long, about 1.7 mm. long, 2.2 mm. wide; ovary strigillose all over; style glabrous; stigma stomatomorphic; disk gland posterior, glabrous, entire.

Type from Martinique, *Plumier*.

SPECIMENS EXAMINED:

MARTINIQUE: *Sieber* s. n. (Mo). Beyond L'Alma, *L. H. & E. Z. Bailey* 227 (US). Bois de Lorraine, *Duss* 1877 p.p. (NY). Poste Forestier de Donis-Balata, *Stehlé* 2133 (NY).

3a. *Alloplectus cristatus* var. *crenatus* Morton, var. nov.

A var. *typica* calycis lobis leviter crenatis non laciniato-serratis differt.

Differs from the typical variety in the calyx lobes being lightly crenate and not lacinate-serrate.

Type in the New York Botanical Garden, collected in St. Vincent, by H. H. & G. W. Smith (No. 147).

ADDITIONAL SPECIMENS EXAMINED:

GRENADA: *Sherring* 267 (F). Azimas Mountain, March 22, 1905, *Broadway* (NY, US). Mount St. Catherine, alt. 720 meters, *Eggers* 6160 (US). Grand-Etang, October 18, 1905, *Broadway* (F, G).

3b. *Alloplectus cristatus* var. *brevicalyx* Morton, var. nov.

A var. *typica* calycis lobis brevioribus, angustioribus, basi parum cordatis, dentibus paucioribus multo brevioribus differt.

Differs from the typical variety in its shorter and narrower calyx lobes, these about 15 mm. long and 10 mm. wide, scarcely cordate at base, the teeth fewer (4–7 on each side) and much shorter.

Type in the New York Botanical Garden, collected at Laudat, Dominica, in 1903, by F. E. Lloyd (No. 191).

ADDITIONAL SPECIMENS EXAMINED:

DOMINICA: *Cooper* 43 (NY). Boiling Lake, *Eggers* 602 (G). Along Imperial Road, *Hodge* 825 (NY, US). Corona, *Bailey* 768 (NY).

GUADELOUPE: *Duss* 2985 (F, NY, US). Bains-Jaunes, *L. H. & E. Z. Bailey* 156 (US); *Stehlé* 424 (US), 1148 (NY).

ST. KITTS: *Eggers* s. n. (US). Molyneaux Estate, *Britton & Cowell* 300 (NY, US).

4. *Alloplectus grisebachianus* (Kuntze) Urban, *Symb. Antill.* 2: 357. 1901.

Pterygoloma cristatum Griseb. *Fl. Brit. W. Ind.* 464. 1861.

Columnnea grisebachiana Kuntze, *Rev. Gen.*, Pl. 2: 472. 1891.

Alloplectus cristatus sensu Fawc. *Prov. List. Fl. Jam.* 28. 1893, non Mart.

Columnnea hunnewellii L. B. Smith, *Rhodora* 39: 275. 1937. Type from Mount Diablo, St. Ann Parish, Jamaica, *Hunnewell & Griscom* 14481 (G).

Scandent shrub, ramose, the branchlets about 2 mm. thick, rather densely and coarsely pilosulous, the hairs reddish, several-celled; leaves of a pair subequal, petiolate, the petiole 5–15 mm. long, the blades oval or ovate (average ratio of length to width 1.8:1), 2.6–5.5 cm. long (average length 4 cm.), 1.7–3 cm. wide (average width 2.2 cm.), abruptly short-acuminate, obtuse or rounded at base, remotely and inconspicuously denticulate, concolorous, membranous, appressed-hirsute on both sides, the hairs hyaline, 4 or 5 cells long, the primary veins 4 or 5 pairs; flowers solitary, axillary, ebracteate; pedicels about 1 cm. long, pilosulous with red hairs; calyx green, the lobes erect, free, lanceolate, 9–12 mm. long (the posterior lobe shorter, about 8 mm. long), 4–5 mm. broad including teeth, acuminate, lacinate with 4 or 5 prominent teeth on either side (the apical ones reduced to glandular-denticulations), sparsely hirsute outside with long, many-celled, reddish hairs and bearing also closely appressed 2-celled whitish hairs, glabrous within, long-ciliate with many-celled, reddish hairs; corolla red with narrow yellow stripes, 2.5–2.9 cm. long, erect in calyx, slightly gibbous at posterior base, the tube about 3 mm. wide above base, 2.3–2.5 cm. long, subventricose at middle (6–7 mm. wide), slightly contracted toward throat, sparsely pilosulous externally, with small, appressed hairs and scattered long, spreading ones, the limb about 7 mm. wide, nearly regular, the lobes subequal, about 1.5 mm. long, glandular-pilosulous within; filaments glabrous; anthers quadrate, 1–1.5 mm. long and broad; ovary glabrous; style glandular-pilosulous; disk gland posterior, glabrous, entire; berry white (teste Harris), red (teste Hunnewell).

Type from Jamaica, *Purdie*.

SPECIMENS EXAMINED:

JAMAICA: Hollymount, St. Catherine Parish, *Harris* 8891 (NY); *Britton* 718 (F, NY). Union Hill, near Moneague, St. Ann Parish, *Britton & Hollick* 2744 (NY). Mount Diablo, St. Ann Parish, *Hunnewell* 15357 (G, NY), s. n. (US). Peckham Woods, Clarendon Parish, alt. 750 meters, *Harris* 12766 (F, Mo, NY, US).

4a. *Alloplectus grisebachianus* var. *ochrotrichus* Urban, *Symb. Antill.* 5: 497. 1908.

Differs from the typical variety in having colorless instead of reddish hairs on the branchlets.

Type from Troy, Trelawny Parish, Jamaica, alt. 600 meters, *Harris* 8549 (isotype NY).

ADDITIONAL SPECIMENS EXAMINED:

JAMAICA: Troy, *Harris* 8820 (NY). Olive River, Manchester Parish, alt. 1,000 meters, *Harris* 8413 (F, NY).

5. *Alloplectus domingensis* Urban, Symb. Antill. 2: 357. 1901.

Scandent shrub, sparingly branched, the branchlets slender, 2.5–3 mm. thick, hirsute, the hairs many-celled, purplish; leaves of a pair subequal or strongly unequal, elliptic (average ratio of length to width 2.1:1), 1.6–5 cm. long (average length 3.2 cm.), 1–2.2 cm. wide (average width 1.5 cm.), obtuse or acutish, cuneate at base, membranaceous, rather prominently dentate or serrate, the teeth 4–8 on each side, green above, often red beneath (at least the veins), hirsute on both sides with reddish many-celled hairs, the primary veins 4 or 5 pairs; flowers solitary, axillary, ebracteate; pedicels 10–15 mm. long, densely red-hirsute; calyx red, the lobes erect, subequal, free, broadly ovate in outline, 10–14 mm. long in flower, 9–12 mm. wide including teeth, deeply and coarsely laciniate-toothed (the central part about 3 mm. wide, the teeth up to about 5 mm. long and 1.5 mm. wide 2 or 3 on each side), acuminate, red-hirsute outside, sparingly so within, long-ciliate; corolla yellow, not striped with red, erect in calyx, 2.4–2.6 cm. long, gibbous at posterior base, the tube about 3 mm. wide above base, 2.1–2.3 cm. long, slightly ventricose at middle (about 7 mm. wide), contracted toward throat (6 mm. wide), externally puberulous and bearing also scattered, long, many-celled hairs, the limb slightly oblique, about 8 mm. broad, the lobes about 3 mm. long, the posterior connate higher, glandular-pilosulous within; filaments glabrous; anthers broader than long, about 1.5 mm. long, 2 mm. wide; ovary sparsely hairy at apex; style glandular-pilosulous; disk gland posterior, glabrous, entire.

Type from Jiménez River, Dominican Republic, alt. 1,200 meters, *Eggers* 2314 (not seen).

SPECIMENS EXAMINED:

HAITI: Vicinity of Furcy, alt. 1,300 meters, *Leonard* 4630 (NY, US). Vicinity of Marmelade, Dept. du Nord, alt. 800 meters, *Leonard* 8359 (US). Vicinity of Bassin Bleu, alt. 630–1,500 meters, *Leonard & Leonard* 15058 (NY, US). Vicinity of Mission, Fonds Varettes, alt. 1,000 meters, *Leonard* 3802 (F, NY, US). Massif de la Selle, alt. 1,725 meters, *Ekman* H1129 (US). La Brande to Mount Balance, alt. 1,060 meters, *Nash & Taylor* 1724 (NY, US). Gonave Island, *Eyerdam* 280 (G, NY, US).

DOMINICAN REPUBLIC: Vicinity of Constanza, *von Tuerckheim* 3375 (NY); *Abbott* s. n. (US). Pac Mingo near Paradis, Prov. Barahona, alt. 500 meters, *Fuertes* 329 (F, G, Mo, NY, US). Vicinity of Paradis, Prov. Barahona, *Abbott* 1610 (US), 1583 (G, NY, US). Maniel, Prov. Barahona, alt. 600 meters, *von Tuerckheim* 2781 (NY).

5a. *Alloplectus domingensis* var. *microphyllus* Morton, var. nov.

A var. *typica* foliis parvis 1–2 cm. longis, 4.5–5 mm. latis, utrinque sparse strigillosis differt.

Differs from the typical variety in its small leaves (1–2 cm. long, 4.5–5 mm. broad), sparsely strigillose on both sides.

Type in the U. S. National Herbarium, No. 1,303,436, collected on Montagnes de la Hotte, Haiti, August 25, 1927, by W. J. Eyerdam (No. 351). Isotypes at G, NY.

NEW SPECIES OF BESLERIA

In 1939 I published ⁴ a revision of *Besleria* (Gesneriaceae), recognizing 137 species and considering four others as dubious. Since that time one species from Honduras ⁵ and three species and two varieties

⁴ Contr. U. S. Nat. Herb. 26: 395–474. 1939.

⁵ *Besleria macrocalyx* Morton, Field Mus. Publ. Bot. 9: 335. 1940.

from Panama⁶ have been described. Recent collections have disclosed two more new species from Panama, and 11 species and one variety from Colombia, which are here described. I have included also a few citations of additional specimens of rare species.

Besleria arborescens Morton, sp. nov.

Arbor parva, ramulis dense strigosis; folia lanceolata, supra glabra, subtus praecipue in venis strigosa, venis primariis 5-6-jugis; flores in axillis aggregati, pedicellis brevibus; calycis lobi liberi, ovati, rotundati, non mucronati, integri, externe dense subtomentosi, intus glabri; corolla erecta, tubulosa, externe dense pilosa, intus glabra, faucem versus glandulosa; ovarium dense tomentosum; discus annularis, glaber.

Small tree 5.4 meters high; ultimate branchlets deeply sulcate, 4 mm. in diameter, densely strigose, yellowish-subtomentose at apex; leaves opposite, equal; petiole 1.2-2.7 cm. long, channeled above, densely strigose; leaf blades lanceolate, 12-27 cm. long, 2.7-5.7 cm. broad, sharply long-acuminate, cuneate and sub-decurrent at base, membranaceous, entire, deep green and glabrous above, very pale beneath, strigose, especially on the midrib and veins, the primary veins 5 or 6 pairs; common peduncle obsolete, the pedicels aggregate in the leaf axils, few, very short (8 mm. long or less), densely strigose; calyx lobes free to base, very broadly ovate, about 6 mm. long and 3.5 mm. wide, venose, rounded at apex, not mucronate, subcoriaceous, densely subtomentose without, glabrous within, long-ciliate; corolla pink (teste Wedel), slightly oblique in the calyx, about 16 mm. long, not spurred, the tube cylindric, about 4 mm. wide, not ventricose, densely pilose externally, lacking a hairy ring within at insertion of stamens, glandular within the throat, the limb about 8 mm. wide, slightly bilabiate, the lobes orbicular; filaments short-connate at very base, flat, glabrous; staminodium conspicuous; ovary ovoid, densely white-tomentose; style pubescent; disk annular, somewhat thicker posteriorly, glabrous; fruit green, globose, densely short-pubescent.

Type in the U. S. National Herbarium, No. 1,823,808, collected in the vicinity of Chiriquí Lagoon, Province of Bocas del Toro, Panama, by H. von Wedel (No. 2353).

Besleria arborescens is referable to sect. *Eubesleria*, subsect. *Sessiles*, of my revision. It will key out in the neighborhood of *B. pennellii* Morton, a small subshrub of the high mountains of Colombia, to which it is probably not closely allied. The only species known from Central America with which it could be confused is the common *S. solanoides* H. B. K., which differs especially in its glabrous rather than densely pilose corolla.

Besleria attenuata Morton, sp. nov.

Frutex ramosus, ramulis hirsutis; petioli hirsuti; lamina foliorum anguste lineari-lanceolata, longe attenuata, basi cuneata, membranacea, remote denticulata, utrinque plus minusve hirsuta, venis primariis 8-9-jugis; pedunculus communis 2-4 cm. longus, apice bibracteatus, bracteis saepe foliosis, pedicellis 4-5, brevibus, hirsutis; calycis lobi alte connati, inaequales, acuminati, externe longe pilosi, intus glabri; corolla erecta, ecalcarata, tubo cylindrico, faucem versus ampliata, externe glanduloso-piloso, intus glabro, limbo terminali, parvo, regulari, lobis utrinque glanduloso-pubescentibus; filamenta in medio corollae tubi inserta, glabra; ovarium glabrum; stylus glaber; discus annularis, glaber.

Shrub 1 meter high, the branches numerous, about 3 mm. in diameter, the branchlets slender, 2 mm. in diameter, hirsute; petioles 7-19 mm. long, hirsute;

⁶ *Besleria allenii*, *B. allenii* var. *paucivenia*, *B. barbensis* var. *hirsuta*, *B. crassicaulis*, and *B. obliqua*, Ann. Missouri Bot. Gard. 29: 38-41. 1942.

leaf blades narrowly linear-lanceolate, the larger 25 cm. long and 4.5 cm. broad, long-attenuate, narrowly cuneate at base, membranaceous, remotely denticulate, very sparsely pilose above, hirsute beneath, especially along the midrib, the primary veins 8 or 9 pairs, the secondary inconspicuous; common peduncle 2–5 cm. long, sparingly hirsute, bibracteate at apex, the bracts sometimes leaflike and 15 mm. long; pedicels 4 or 5 on each peduncle, 8–10 mm. long, hirsute; calyx 10 mm. long, the lobes connate for $\frac{1}{2}$ to $\frac{2}{3}$ their length, unequal, 3 about 3.5 mm. long, the other 2 about 5.5 mm. long, all ovate, sharply acuminate, membranaceous, long-pilose externally, glabrous within; corolla yellow, 15–18 mm. long, erect in calyx, not spurred at base, the tube cylindric, about 2.5 mm. broad, not ventricose, gradually enlarged to throat, conspicuously short-pilose externally, the hairs gland-tipped, glabrous within, the throat about 5 mm. wide, the limb terminal, about 6.5 mm. wide, the lobes subequal, glandular-pubescent on both sides; filaments inserted in middle of corolla tube; ovary and style glabrous; disk annular, glabrous.

Type in the U. S. National Herbarium, No. 1,707,763, collected on trail from Gesén to San Juan, Department of Antioquia, Colombia, at 300 meters elevation, February 22, 1937, by Oscar Haught (No. 2164).

The present species belongs in *Eubesleria*, subsection *Elongatae*, and will key out to *B. peruviana* Fritsch, from which it may be distinguished as follows:

Leaf blades elliptic or lance-elliptic, nearly entire; pedicels 1.5–2 cm. long; calyx 15 mm. long; corolla tube glabrous externally..... **B. peruviana**

Leaf blades narrowly linear-lanceolate, not over 4.5 cm. broad, obviously denticulate; pedicels 8–10 mm. long; corolla tube densely glandular-pilose externally..... **B. attenuata**

There is also some relationship to *B. grandifolia* Schott of southern Brazil, which may be distinguished as follows:

Leaf blades elliptic, entire; calyx lobes glandular-pilosulous externally, coriaceous; ovary puberulous..... **B. grandifolia**

Leaf blades narrowly linear-lanceolate, denticulate; calyx lobes hirsute, eglandular, membranaceous; ovary glabrous..... **B. attenuata**

Bealeria calantha Morton, sp. nov.

Caules glabri; petioli crassi, glabri; lamina foliorum late elliptica, acuta, basi cuneata, integra, chartacea, mox utrinque glabra, margine perspicue longe ciliata, venis primariis ca. 6-jugis, secundariis prominulis; pedunculi communes brevissimi, pedicellis paucis, sparse pilosulis; calycis lobi liberi, erecti, aequales, ovati, integri, externe parce pilosi, intus glabri, longe ciliati; corolla erecta, ecalcarata, tubo cylindrico, non ventricoso, ad faucem ampliato, externe parce pilosulo, intus basi glabro, superne glanduloso, limbo terminali, bilabiato, magno, lobis patentibus, inaequalibus, glabris, parce ciliolatis; androecium glabrum; ovarium glabrum; stylus pilosus; discus annularis, uno latere brevior, glaber.

Shrub 1–2 meters high; branchlets angled, about 4 mm. in diameter, glabrous except at apex; petioles thick, about 2 cm. long, glabrous; leaf blades broadly elliptic, 11–11.5 cm. long, 5–6 cm. broad, acute, cuneate at base, chartaceous, entire, green and glabrous above, paler and entirely glabrous beneath except the youngest leaves (these sparsely strigillose), conspicuously long-ciliate, in young leaves the cilia forming a dense yellowish border 1 mm. thick all around the leaf, some of the cilia persistent even at maturity, the primary veins about 6 pairs, not impressed above, the secondary veins rather prominent, especially above; common peduncle very short or obsolete, the pedicels slender, 10–12 mm. long, very sparsely pilosulous; calyx lobes free, imbricate, erect, subequal, ovate, 7–10 mm. long, 3.5–5 mm. broad, acute, entire, sparsely pilose externally, glabrous within,

conspicuously long-ciliate; corolla orange, 15–19 mm. long, erect in calyx, not spurred at base, the tube cylindric, about 4.5 mm. thick, gradually enlarged to throat (this about 6 mm. wide), sparsely pilosulous externally, glabrous within at base, sparsely glandular toward throat, the limb terminal, 15 mm. broad, bilabiate, the lobes spreading, unequal, glabrous externally, ciliolate; androecium glabrous; anther cells confluent; ovary glabrous; style sparsely pilose; disk annular, but much lower on one side.

Type in the U. S. National Herbarium, No. 1,796,356, collected at Abra de San Andrés, below Gabinete, Cordillera Oriental, Department of Huila, Colombia, at 1,900–2,100 meters elevation, March 24, 1940, by J. Cuatrecasas (No. 8637).

Besleria calantha belongs in the section *Rhynchobesleria*, subsection *Labiatae*, but it is not similar to any of the three species of that group. *B. labiosa* Hanst. of Venezuela and *B. longipes* Urban of Trinidad differ in their thin, strongly toothed leaf blades. *B. crassa* Morton, of Colombia, may be distinguished as follows:

Leaf blades entirely glabrous, not ciliate; calyx lobes glabrous, not ciliate; corolla glabrous.....	B. crassa
Leaf blades conspicuously long-ciliate when young, the cilia forming a dense band 1 mm. thick, some of the cilia persisting at maturity; calyx lobes sparsely pilose externally, long-ciliate; corolla sparsely pilosulous externally, glandular within.....	B. calantha

***Besleria corallina* Fritsch.**

This species has been known only from the Department of Loreto, Peru. It may now be recorded from Colombia: Between Mocoa and Sachamates, Comisaría del Putumayo, alt. 1,400–1,500 meters, *Cuatrecasas* 11409.

***Besleria corallinoides* Fritsch.**

It is somewhat doubtful if the distinctions between *B. corallina* and *B. corallinoides* given in my revision invariably hold true. The two may always be distinguished, however, by the corollas, which are densely pilose in *B. corallina* and merely puberulous in *B. corallinoides*. The latter species, known previously only from Ecuador, has recently been collected in Colombia: Quebrada de la Hormiga, Comisaría del Putumayo, alt. 290 meters, *Cuatrecasas* 11088.

***Besleria ecuadorensis* (Fritsch) Morton.**

This rare species has been known only from the type from Niebly, Ecuador. A recent collection from Colombia is: Between Sachamates and San Francisco de Sibundoy, Comisaría del Putumayo, alt. 1,600–1,750 meters, *Cuatrecasas* 11474.

***Besleria eriocalyx* Morton, sp. nov.**

Frutex, ramis crassis, dense hirsutis; lamina foliorum late elliptica, acuminata, basi cuneata, integra, supra pilosa, subtus hirsuta, venis primariis 10–11-jugis; pedicelli in axillis foliorum aggregati, numerosi, breves; calycis lobi inaequales, ovati vel ovato-oblongi, magni, rotundati, integri, externe dense pilosi, intus glabri; corolla obliqua, ecalcarata, tubo valde inflato, externe dense piloso, intus annulum pilosum basi gerente, limbo terminali, minuto, lobis non ciliatis; antherae pilosae; ovarium glabrum; stylus pilosulus; discus semiannularis, glaber.

Shrub; stems thick, 9 mm. in diameter, quadrangular, conspicuously long-hirsute; petioles about 2.2 cm. long, long-hirsute; leaf blades broadly elliptic, 17–21 cm. long, 8–9.6 cm. broad, acuminate, cuneate at base, entire, chartaceous, green above, persistently pilose, pale beneath, conspicuously hirsute on veins and mesophyll beneath, the primary veins 10 or 11 pairs, the secondary veins obscure; common peduncle obsolete, the pedicels numerous, aggregate in the leaf axils, short (1 cm. or less), hirsute; calyx lobes free, unequal, erect, the anterior and

lateral pairs ovate, 9 mm. long, 5 mm. broad, the posterior one ovate-oblong, 11 mm. long and 8 mm. broad near base, all rounded, not mucronate, entire, venose, lacking a midrib, densely pilose externally, long-ciliate, glabrous within; corolla orange, oblique in calyx, not spurred, about 13 mm. long, the tube conspicuously inflated, becoming 7 mm. broad, densely pilose externally, densely white-pilose within in a ring at insertion of filaments, glabrous and eglandular within throat, conspicuously contracted in throat, the limb minute, terminal, about 5 mm. broad, the lobes rotund, glabrous, not ciliate; filaments glabrous; anthers coherent, long-pilose, the cells confluent; ovary glabrous; style pilosulous; disk semiannular, interrupted anteriorly, glabrous.

Type in the U. S. National Herbarium, No. 1,796,354, collected in woods at Abra de San Andrés, below Gabinete, Cordillera Oriental, Department of Huila, Colombia, at 1,900–2,100 meters elevation, March 24, 1940, by J. Cuatrecasas (No. 8611). A second collection in the Herbario Nacional Colombiano is from Guadalupe, Cordillera Oriental, Huila, alt. 1,900 meters, *E. Pérez Arbeláez & Cuatrecasas* 8354.

The three species *B. lasiantha*, *B. oxyphylla*, and *B. eriocalyx* here described form a natural group that does not fit well in any of the subsections of *Eubesleria* that I proposed in my revision of the genus. Although the calyx lobes are too long, in relation to the corolla, to agree with the delimitation of subsection *Sessiles*, I am referring them tentatively to that group. In my key to that subsection they will run at once to *B. densiflora* Fritsch of Peru, and they may indeed be really related to that species, still known from the original collection only. As a group they are characterized by the large, unequal, rounded calyx lobes, the relatively small, densely pilose corollas with strongly inflated tube (with a pilose ring within at base) and minute, regular limb, and especially by the pilose anthers.

These four species may be distinguished as follows:

- Calyx lobes 4 mm. long; corolla lobes ciliate..... **B. densiflora**
 Calyx lobes 9–11 mm. long; corolla lobes not ciliate.
 Stems densely hirsute; leaf blades pilose above, hirsute beneath. Calyx lobes densely pilose externally, entire..... **B. eriocalyx**
 Stems glabrous; leaf blades glabrous above, minutely strigillose on veins beneath.
 Calyx lobes regularly serrulate, pilose externally, not ciliate.. **B. oxyphylla**
 Calyx lobes entire or merely irregularly erose, glabrous except the strongly ciliate margins..... **B. lasiantha**

***Besleria florida* Morton, sp. nov.**

Frutex; caules hirsuti; petioli breves, hirsuti; lamina foliorum lanceolato-oblonga, acuminata, basi cuneata, membranacea, remote denticulata, utrinque praecipue in venis hirsuta, venis primariis 8–9-jugis; pedicelli axillares, pauci, hirsuti; calycis lobi liberi, suborbiculares, parvi, rotundati, subcoriacei, externe pilosi, intus glabri, ciliati; corolla erecta, ecalcarata, tubo ventricoso, faucem versus contracto, externe glabro, intus glanduloso, limbo terminali, parvo, lobis glabris, subaequalibus; filamenta glabra; ovarium glabrum; stylus glaber; discus annularis, glaber.

Terrestrial shrub, 1–1.5 meters high; stems little branched, 2–3 mm. in diameter, hirsute, the hairs deciduous, leaving the branchlets scabrous by the inflated bases; petioles about 2 cm. long, hirsute; leaf blades lance-oblong, up to 13 cm. long, 4 cm. broad, acuminate, cuneate at base, membranaceous, nearly entire (remotely glandular-denticulate), sparsely hirsute on both sides, especially on the veins beneath, the primary veins 8 or 9 pairs, the secondary inconspicuous; common peduncle obsolete, the pedicels aggregate in the leaf axils, few, 1.5–2 cm. long, hirsute; calyx lobes nearly free, erect, suborbicular, 3.5 mm.

long, 3 mm. wide, subcoriaceous, rounded, entire, venose, a little mucronate, sparsely pilose externally, eglandular, ciliate, glabrous within; corolla maroon (teste Killip), 13–17 mm. long, erect in calyx, not spurred at base, the tube about 5.5 mm. broad at base, ventricose upwardly, becoming 7 mm. broad, contracted toward throat, glabrous externally, lacking a hairy ring within at insertion of stamens, glandular within, especially toward throat, this about 4 mm. broad, the limb terminal, narrow, the lobes subequal, glabrous; androecium glabrous; ovary and style glabrous; disk low, annular, glabrous.

Type in the U. S. National Herbarium, No. 1,770,609, collected at Monte Frío, Yanaconas, Department of El Valle, Colombia, at 1,700–1,850 meters elevation, February 27–March 1, 1939, by E. P. Killip and H. García (No. 33713). A second specimen with smaller leaves and shorter petioles was collected at El Silencio, Yanaconas, El Valle, by Killip & García (No. 33753).

The relationship of this species is with the North American *B. hirsuta* (Oerst.) Hanst., which may be distinguished as follows:

Petioles elongate (up to 6.5 cm. long); leaf blades large (up to 9.5 cm. broad), the primary veins 11–13 pairs; calyx lobes 5 mm. long----- **B. hirsuta**

Petioles shorter (not over 2 cm. long); leaf blades smaller (not over 4 cm. broad, usually less), the primary veins 8 or 9 pairs; calyx lobes 3.5 mm. long.

B. florida

Besleria ignea var. **semiannularis** Morton.

COLOMBIA: Puerto Ospina, on Río Putumayo, Comisaría del Putumayo, alt. 230 meters, November 14, 1940, *Cuatrecasas* 10582.

Previously known only from the type from Florencio, Caquetá, Colombia.

Besleria inaequalis Morton, sp. nov.

Suffrutex, caulibus non ramosis, teretibus, dense strigosis; petioli breves; lamina foliorum anguste elliptica, parva, acuminata, basi cuneata, integra, supra glabra, subtus pallida, in venis strigosa, venis primariis ca. 5-jugis; pedicelli axillares, pauci, pilosuli; calycis lobi inaequales, anteriori lanceolati, acuminati, posterior ovatus, acutus, omnes integri, externe pilosi, intus glabri, venosi; corolla erecta, ecalcarata, tubo vix ventricoso, externe piloso, intus annulum pilosum basi gerente, in fauce contracto, intus glanduloso, limbo regulari, terminali, parvo, lobis eciliatis; filamenta basi pilosa; antherae glabrae; ovarium apice pilosum; stylus pilosulus; discus annularis, glaber.

Shrub 2 meters high; stems unbranched, at least upwardly, terete, about 5 mm. in diameter, densely and closely strigose; petioles very short, 4–8 mm. long, densely strigose; leaf blades narrowly elliptic, small, up to 10 cm. long and 3.5 cm. broad, short-acuminate, broadly cuneate at base, entire, chartaceous, dark green and glabrous above, pale beneath, conspicuously strigose on the veins beneath, the primary veins about 5 pairs, the secondary inconspicuous; common peduncle obsolete, the pedicels axillary, few (mostly only 1 or 2), 12–15 mm. long, pilosulous; calyx lobes free, erect, unequal, the anterior pair narrow-lanceolate, 1 cm. long, 2 mm. broad, long-acuminate, the lateral pair ovate-lanceolate, 9.5 mm. long, 3.5 mm. broad, acuminate, the posterior lobe ovate, 8 mm. long, 4.5 mm. broad, acute, all venose, lacking a conspicuous midrib, not mucronate, entire, densely pilose externally, glabrous within; corolla orange, erect in calyx, not spurred at base, 19–23 mm. long, the tube cylindrical, scarcely ventricose, 6–7 mm. thick, slightly contracted in throat, conspicuously pilose externally, pilose within in a ring at insertion of the filaments, glandular within near throat, the throat about 5 mm. broad, the limb terminal, about 6 mm. broad, the lobes subequal, rounded, glabrous, not ciliolate; filaments pilose at very base, glabrous elsewhere; anthers free, glabrous; ovary pilosulous at apex; style pilosulous; disk annular, glabrous.

Type in the U. S. National Herbarium, No. 1,798,384, collected between Puerto Asís and Umbría, Comisaría del Putumayo, Colombia, at 270–350' meters elevation, December 23, 1940, by J. Cuatrecasas (No. 11258).

Among the species of *Eubesleria*, section *Sessiles*, the present one is perhaps most closely related to *B. nemorosa* Morton, of the Western Cordillera of El Cauca and El Valle. The two may be distinguished as follows:

Calyx lobes subequal, ovate, 6–6.5 mm. long, merely acute; common peduncle elongate (rarely obsolete); stems soon glabrate..... ***B. nemorosa***
 Calyx lobes unequal, the anterior lanceolate, the lateral ovate-lanceolate, the posterior ovate, 8–10 mm. long, acuminate (except the posterior lobe); common peduncle obsolete; stem persistently and densely strigose.

B. inaequalis

***Besleria lasiantha* Morton, sp. nov.**

Frutex; caules glabri; lamina foliorum anguste elliptica, acuminata, basi cuneata, supra glabra, subtus fere glabra, venis primariis 6–7-jugis, secundariis obscuris; pedicelli in axillis aggregati, glabri; calycis lobi liberi, erecti, inaequales, late elliptici, rotundati, venosi, utrinque glabri, ciliati, erosi; corolla obliqua, ecalcarata, perspicue inflata, externe pilosa, intus basi annulum pilosum gerens, limbo terminali, minuto, glabro; antherae longe pilosae, connatae; ovarium glabrum; stylus vix pilosulus; discus semiannularis, glaber.

Shrub; stems slender, sparingly branched, glabrous except at tip, quadrangular, 3.5 mm. in diameter; leaves opposite, equal; petiole 10–13 mm. long, glabrous; leaf blades narrowly elliptic, 12–15 cm. long, 4.2–5.5 cm. broad, long-acuminate, cuneate at base, entire, chartaceous, green and glabrous above, not rugose, paler beneath, nearly glabrous except for a few minute, appressed hairs along the veins, the primary veins 6 or 7 pairs, the secondary obscure; common peduncle obsolete, the pedicels aggregate in the leaf axils, numerous, glabrous, about 1.2 cm. long, thickened apically; calyx lobes nearly free, conspicuously imbricate, unequal, erect, the anterior and lateral pairs broadly elliptic, 8–9 mm. long, 4–5 mm. broad, rounded, not mucronate, the posterior one 11 mm. long and 7 mm. broad, carinate, all reticulate-venose, lacking a midrib, glabrous on both sides, long-ciliate and erose-marginate; corolla orange, about 16 mm. long, oblique, not spurred at base, the tube prominently inflated anteriorly, 12 mm. broad, conspicuously pilose (the hairs colorless, jointed), conspicuously pilose within in a ring at base, strongly contracted in throat (this about 3.5 mm. broad), glabrous within throat, eglandular, the limb terminal, minute, about 5 mm. broad, the lobes rotund, about 2 mm. long and wide, glabrous; filaments glabrous, flattened; anthers quadrate, connate, the cells confluent, conspicuously pilose; ovary glabrous; style sparingly pilosulous; disk tall, semiannular, interrupted anteriorly, glabrous.

Type in the U. S. National Herbarium, No. 1,796,365, collected at Sucre, Cordillera Oriental, Territorio de Caquetá, Colombia, at 1,000–1,300 meters elevation, April 4, 1940, by J. Cuatrecasas (No. 9056).

An additional specimen was collected at Cajón de Pulido, Quebrada del Río Hacha, Cordillera Oriental, Territorio de Caquetá, Colombia, alt. 1,700 meters, by J. Cuatrecasas (No. 8753).

For relationships see under *B. eriocalyx* above.

***Besleria modica* Morton.**

ECUADOR: Vicinity of Río Margarjitas, Prov. Tungurahua, alt. 1,225 meters, *Penland & Summers* 134.

Previously known only from the type from the Province of Oro, Ecuador.

Besleria nitens Fritsch.

COLOMBIA: Road from Fresno to Falán, Cañon of Río Gualí, Tolima, alt. 1,120–1,700 meters, *H. García* 8338.

Previously known only from the type collected at Tequendama, Dept. Cundinamarca, Colombia.

Besleria obtusa Morton, sp. nov.

Caules non ramosi, superne tomentosi; folia apicem versus conferta, breviter petiolata; lamina foliorum oblanceolata, magna, obtusa vel rotundata, basi angustata, integra, chartacea, supra glabra, ciliata, subtus in costa tomentoso-hirsuta, venis primariis strigillosis, 7–9-jugis; pedicelli axillares, conferti, breves; calycis lobi lineari-lanceolati, liberi, magni, inaequales, longe acuminati, integri, externe dense tomentoso-hirsuti, intus glabri; corolla erecta, ecalcarata, tubo cylindrico, non ventricoso, externe parce pilosulo, intus glabro, faucem versus ampliata, limbo terminali, regulari; ovarium pilosulum; discus semiannularis.

Low, unbranched subshrub less than 1 meter high; stems terete, tomentose at apex; leaves few, clustered at apex of stem, short-petiolate, the petiole not over 1 cm. long, tomentose; leaf blades oblanceolate, 18–23 cm. long, 5.7–9.5 cm. broad, obtuse or rounded at apex, narrowed at base, entire, chartaceous, green and glabrous above, paler beneath, tomentose-hirsute along the midrib, sparsely strigose along the veins, ciliate-tomentose on the margins, the primary veins 7–9 pairs, the secondary obscure; common peduncle obsolete, the pedicels aggregate in the leaf axils, numerous, less than 5 mm. long; calyx lobes free, erect, linear-lanceolate, unequal, 8–15 mm. long, 1–2.5 mm. broad, long-acuminate, entire, densely tomentose-hirsute externally, glabrous within; corolla yellow, 18–25 mm. long, erect in calyx, a little saccate at posterior base but not spurred, the tube cylindric, about 3 mm. broad, very sparsely pilosulous externally, glabrous within, not ventricose, enlarged to throat, this 5–6 mm. broad, the limb terminal, the lobes orbicular, spreading, subequal, not ciliate, sparsely pilosulous externally, sparsely glandular within; androecium glabrous; ovary pilosulous; stigma large, bilobed; disk more or less reduced to a low, posterior curved gland, some remnants of the remainder of the annulus persistent.

Type in the U. S. National Herbarium, No. 1,799,989, collected at Villavicencio, toward El Parrao, Intendencia of El Meta, Colombia, at 500 meters elevation, November 10, 1938, by J. Cuatrecasas (No. 4636).

A second specimen was collected at Villavicencio, January 19, 1939, by Oscar Hought (No. 2540).

It is difficult to decide as to the relationship of the present species, but apparently it should be referred to subsection *Confertae*. The pubescence is intermediate, definitely of neither a strigose nor a hirsute type, the midrib beneath being tomentose-hirsute, but the veins strigose. Almost all the species of the hirsute group have the leaves persistently pilose above, rather than glabrous as in the present species. In this group it will key to *B. compta* Morton of Peru, which may be distinguished as follows:

Calyx lobes toothed, ovate-lanceolate, acuminate; corolla densely hirsute without; disk annular, entire; leaf blades hirsute above.....**B. compta**
 Calyx lobes entire, linear-lanceolate, obtuse or rounded; corolla sparingly pilosulous without; disk reduced to a posterior gland; leaf blades glabrous above.....**B. obtusa**

From all species of the strigose group, except *B. melancholica*, *B. obtusa* may be distinguished by its long, linear-lanceolate calyx lobes. *B. melancholica* (Vell.) Morton, of Rio de Janeiro, is utterly different in all its characters.

In the subsection *Sessiles* the present species would key to *B. trichostegia* Donn. Smith of Costa Rica, which differs in many respects, notably in its small calyx lobes (5 to 6 mm. long) and its thin, acuminate leaves, pilose on the upper surface.

***Besleria ovalifolia* Rusby.**

BOLIVIA: San Bartolomé, basin of Río Bopi, La Paz, alt. 750–900 meters, *Krukoff* 10421.

Previously known only from the type collected at Songo, Bolivia.

***Besleria oxyphylla* Morton, sp. nov.**

Caules glabri; lamina foliorum lanceolata, longe acuminata, basi cuneata, integra, supra glabra, subtus in venis minute strigillosa, venis primariis 8-jugis, secundariis obscuris; pedicelli in axillis foliorum aggregati, breves, sparse pilosi; calycis lobi ovati, serrulati, inaequales, externe pilosi, intus glabri, non ciliati; corolla erecta, ecalcarata, tubo valde inflato, externe piloso, intus basi anulum pilosum gerente, faucem versus valde contracto, limbo parvo, terminali, regulari; antherae pilosae; ovarium glabrum; stylus pilosulus.

Stems unbranched, rather thick, quadrangular, glabrous; petioles about 2.5 cm. long, glabrous; leaf blades lanceolate, 15–18 cm. long, 5–5.5 cm. broad, gradually long-acuminate, cuneate at base, chartaceous, entire, green and glabrous above, paler and sparingly strigillose beneath, the primary veins 8 pairs, impressed above, elevated beneath, ascending at an acute angle, the secondary veins obscure; common peduncle obsolete, the pedicels numerous, aggregate in the leaf axils, short (10 mm. long or less), not conspicuously enlarged apically, sparsely jointed-pilose; calyx lobes free, slightly unequal, ovate, the anterior and lateral pairs plane, about 9 mm. long and 4–5 mm. broad, the posterior one concave, 11 mm. long and 5.5 mm. broad, all narrowed upwardly but obtuse at apex, reticulate-venose, lacking a midrib, conspicuously serrulate, strongly pilose externally, glabrous within, not ciliate; corolla orange, about 16 mm. long, oblique in calyx, not spurred at base, the tube strongly inflated, becoming 8–9 mm. broad, white-pilose externally, pilose within in a ring at insertion of stamens, glabrous and eglandular in throat, strongly contracted in throat, this about 4 mm. broad, the limb terminal, minute, about 5 mm. broad, the lobes orbicular, spreading, minute, glabrous; filaments glabrous; anthers connate, pilose, the cells confluent; ovary glabrous; style pilosulous.

Type in the U. S. National Herbarium, No. 1,796,348, collected at Gabinete, Cordillera Oriental, Department of Huila, Colombia, alt. 2,300–2,450 meters elevation, March 22, 1940, by J. Cuatrecasas (No. 8502).

For relationship see comments under *B. ericalyx* above.

***Besleria rupestris* Morton.**

COLOMBIA: El Silencio, Yanaconas, El Valle, alt. 1,900–2,200 meters, *Killip & García* 33818, 33835.

Previously known in Colombia from La Costa, El Cauca. According to Mr. Killip's notes, the fruit is white.

***Besleria solanoidea* var. *dentata* Morton, var. nov.**

Lamina foliorum magna, perspicue dentata; pedunculus communis paullum evolutus, pedicellis paucis; corolla glabra; ovarium glabrum.

Leaf blades 12–15 cm. long, 5–6 cm. broad, conspicuously dentate; common peduncle slightly developed, 3–5 mm. long, the pedicels 1 or 2; corolla glabrous; ovary glabrous.

Type in the U. S. National Herbarium, No. 1,770,481, collected along Quebrada Jellita, Bahía Solano, Intendencia of El Chocó, Colombia, at 50–100 meters elevation, February 22, 1939, by E. P. Killip and H. García (No. 33558).

Besleria solanoides H. B. K. is the most variable and most widely distributed species of the genus. The present plant differs in its obviously dentate leaves, these being entire or subentire in the typical form. It may be specifically distinct, for it has a rather well developed peduncle, whereas I do not recall seeing more than a vestige of peduncle in any of the numerous specimens of *B. solanoides* that I have examined.

***Besleria spissa* Morton, sp. nov.**

Frutex; caules dense tomentosi; petioli breves, hirsuto-tomentosi; lamina foliorum late lanceolata, parva, acuminata, basi obtusa vel rotundata, integra, utrinque hirsuta, venis primariis 7-8-jugis, secundariis obscuris; pedicelli axillares, numerosi, breves; calycis lobi lanceolati, parvi, acuminati, glanduloso-serrulati, externe hirsuti, intus glabri; corolla calcarata, parva, tubo gradatim ampliato, faucem versus non contracto, externe piloso, intus glabro et eglanduloso, limbo terminali, parvo, regulari, glabro; androecium glabrum; ovarium apice pilosum; stylus pilosulus; discus annularis, glaber.

Shrub sparingly branched, the branchlets about 4 mm. in diameter, densely tomentose; petiole short, about 1 cm. long, densely hirsute-tomentose; leaf blades broadly lanceolate, small, 6-8 cm. long, 2.3-3.2 cm. broad, acuminate, obtuse or rounded at base, chartaceous, entire, persistently hirsute on both sides, the primary veins 7 or 8 pairs, the secondary inconspicuous; common peduncle obsolete, the pedicels crowded in the leaf axils, numerous, 5-7 mm. long in fruit, densely hirsute; calyx lobes free, erect, subequal, lanceolate, 6 mm. long, 2 mm. broad, long-acuminate, regularly and conspicuously glandular-serrulate, densely hirsute externally, glabrous within; corolla orange, oblique in calyx, not spurred, 11 mm. long, the tube cylindrical, about 3 mm. broad, gradually enlarged to throat, densely pilose externally, glabrous and eglandular within, the throat about 4 mm. broad, the limb terminal, about 5 mm. broad, the lobes suborbicular, subequal, glabrous, not ciliate; androecium glabrous; ovary sparsely pilose at apex; style pilosulous; disk annular, glabrous.

Type in the U. S. National Herbarium, No. 1,795,458, collected at Hoya del Río Tambito, Cerro de Munchique, Cordillera Occidental, Department of El Cauca, Colombia, at 2,000-2,500 meters elevation, July 16, 1939, by E. Pérez Arbeláez and J. Cuatrecasas (No. 6269).

The present species is probably related to *Besleria cinnabarina* Fritsch, which agrees in most characters, especially in the corollas being gradually enlarged to the throat, rather than contracted. It differs, however, in its serrulate (rather than entire) calyx lobes and relatively small, subequal corolla lobes.

***Besleria subcoriacea* Morton, sp. nov.**

Suffrutex; caules non ramosi, tomentosi; lamina foliorum subcoriacea, ovata vel ovato-lanceolata, breviter petiolata, acuta, integra, basi decurrens, subtus in venis et venulis tomentosa, venis primariis ca. 8-jugis, secundariis subtus perspicue reticulatis; flos solitarius, longe pedunculatus; calycis lobi inaequales, ovati vel ovato-oblongi, posticus deflexus, omnes rotundati, non mucronati, externe subtomentosi; corolla horizontalis, basi longe calcarata, tubo inflato, limbo terminali, valde bilabiato.

Terrestrial subshrub about 45 cm. high, with an elongate taproot; stem unbranched, about 5 mm. in diameter, terete, densely tomentose; leaves about 3 pairs, subequal, short-petiolate, the petiole about 1 cm. long, thick, densely tomentose; leaf blades ovate to ovate-lanceolate, 12-16 cm. long, 6.5-7.5 cm. broad, merely acute, cuneate at base, decurrent into petiole, entire, subcoriaceous, subconcolorous, glabrous above, densely tomentose on veins and veinlets beneath, the primary veins about 9 pairs, the secondary obscure above, prominently retic-

ulate beneath; flower solitary, axillary, the thick, tomentose peduncle about 2.3 cm. long; calyx lobes nearly free, unequal, the lateral and anterior pairs broadly ovate, about 15 mm. long and 11 mm. broad, the posterior one deflexed, ovate-oblong, about 17 mm. long, 10 mm. broad, all rounded at apex, not mucronate, subcoriaceous, pilose externally; corolla light pink (teste Killip), about 7 cm. long, horizontal in calyx, conspicuously curved, long-spurred at posterior base (the spur over 2 cm. long, acute, exerted from calyx), the tube prominently ventricose, becoming 1.8 cm. broad, sparsely pilosulous externally, a little contracted in throat, the limb terminal but facing upward, conspicuously bilabiate, the anterior lobes scarcely half as long as the posterior.

Type in the U. S. National Herbarium, No. 1,770,425, collected at Bahía Solano, in dense forest along Quebrada Jellita, Intendencia of El Chocó, Colombia, at 50–100 meters elevation, February 22, 1939, by E. P. Killip and H. García (No. 33486).

This is a remarkable plant, belonging to section *Neobesleria*, subsection *Herbaceae*, which I proposed for the single species *B. herbacea* Morton, known only from El Cauca, Colombia. These two are unlike the usual *Beslerias* in several ways. They are small, unbranched subshrubs, almost herbaceous in fact, whereas most *Beslerias* are definitely shrubby or even arborescent. The flowers are solitary, a very unusual condition in the genus. The corollas are the most distinctive feature, these being large (3.5–7 cm. long), conspicuously curved, borne horizontally in the calyx, and long-spurred at base. The limb is conspicuously bilabiate.

The two species may be separated as follows:

- Leaf blades membranaceous, serrate, hirsute on the veins beneath, the secondary veinlets inconspicuous; petioles elongate, slender; corolla spur rounded; calyx lobes 6–8 mm. broad..... **B. herbacea**
 Leaf blades subcoriaceous, entire, tomentose on the veins beneath, the secondary veins prominently reticulate beneath; petioles short, thick; corolla spur acute; calyx lobes 10–11 mm. broad..... **B. subcoriacea**

***Besleria subdecurrens* Morton, sp. nov.**

Arbor parva, ramulis strigosis; folia breviter petiolata, laminis obovatis, magnis, integris, supra glabris, subtus in venis strigillosis, venis primariis 7–9-jugis; flores in axillis foliorum aggregati; calycis lobi lanceolati, acuminati, integri, externe strigosi, intus glabri; corolla erecta, ecalcarata, externe fere glabra, intus glabra, limbo regulari; filamenta glabra; ovarium puberulum; stylus puberulus; discus semiannularis.

Tree 3.6 meters high; ultimate branchlets quadrangular, 6 mm. in diameter, densely strigose; leaves opposite, equal; petioles about 3 cm. long, thick, strigose; leaf blades obovate, large, about 23 cm. long, 11.5–12.5 cm. broad, abruptly and very shortly acuminate (5 mm.), narrowed toward base and decurrent into petiole, chartaceous, entire, the margins revolute, subconcolorous, glabrous above, essentially glabrous beneath except for the minutely strigillose midrib and principal veins, the primary veins 7–9 pairs; common peduncle obsolete, the pedicels numerous, aggregate in the leaf axils, slender, about 12 mm. long, sparsely strigose; calyx lobes free, lanceolate, subequal, about 8 mm. long, 2 mm. broad, sharply acuminate, entire, strigose without, glabrous within; corolla red (teste Wedel), 16–18 mm. long, slightly oblique in calyx, not spurred at base, the tube about 2 mm. broad at base, cylindric, slightly ventricose toward throat, becoming 4 mm. broad, slightly contracted in throat, nearly glabrous externally (microscopically puberulous), glabrous within, eglandular in throat, the limb 7–8 mm. broad, the lobes spreading, subequal, rotund, puberulous externally; filaments connate about 4 mm. at base, slender, glabrous; anthers persistently connate in pairs; stamino-

dium well developed; ovary and style minutely puberulous; stigma conspicuously bilobed; disk semiannular, interrupted anteriorly, glabrous.

Type in the U. S. National Herbarium, No. 1,823,793, collected at Old Bank Island, Chiriquí Lagoon, Province of Bocas del Toro, Panama, January 31, 1941, by H. von Wedel (No. 1926).

Besleria subdecurrens belongs in *Eubesleria*, subsection *Confertae*. The most closely related species is probably *B. membranacea* Morton, known only from the Amazonian watershed of Peru. That species differs in its elongate petioles (up to 11.5 cm. long), leaf blades not broadest above middle and not narrowed toward base, glabrous ovary, and wholly annular disk.

***Besleria tambensis* Morton.**

COLOMBIA: Istmina, on Río San Juan, El Chocó, alt. 75 meters, *Killip* 35459. Previously known only from the type from La Costa, El Cauca, Colombia.

***Besleria variabilis* Morton.**

COLOMBIA: Near San Antonio on Río Güamués, Comisaría del Putumayo, alt. 270–310 meters, *Cuatrecasas* 11226.

Previously known only from eastern Peru.

***Besleria ventricosa* Morton, sp. nov.**

Caules longe hirsuti; petioli elongati, hirsuti; lamina foliorum late ovata, acuta, basi truncata, denticulata, membranacea, utrinque dense hirsuta, venis primariis 13–15-jugis; pedicelli solitarii, axillares, breves; calycis lobi lineari-lanceolati, inaequales, longe acuminati, integri, externe hirsuti, intus glabri; corolla erecta, ecalcarata, tubo valde ventricosus, faucem versus contracto, externe piloso, intus basi annulum pilosum gerente, superne glabro, limbo terminali, parvo, regulari; filamenta basi pubescentia; ovarium glabrum; stylus glaber; stigma pilosum; discus semiannularis, glaber.

Stems sparingly branched, the upper about 5 mm. in diameter, the lower about 7 mm., long-hirsute, the hairs colorless, stiff, jointed; petioles elongate, up to 4 cm. long, densely hirsute; leaf blades broadly ovate, about 8 cm. long, about 6.5 cm. broad, acute, truncate and very broad at base, remotely denticulate, membranaceous, densely hirsute above, hirsute on the veins beneath, the primary veins 13–15 pairs, the secondary inconspicuous; flowers solitary, axillary, the peduncle obsolete, the pedicel slender, about 10 mm. long, hirsute; calyx lobes linear-lanceolate, unequal, slightly connate at base, 8–11 mm. long, 1.5–2 mm. broad, erect, long-acuminate, entire, densely long-hirsute externally, glabrous within; corolla orange, erect in calyx, a little gibbous posteriorly but not spurred, the tube about 5 mm. broad at base, conspicuously curved upwardly and ventricose, becoming 7 mm. broad, contracted to throat, pilose externally except toward base, pilose within in a ring at insertion of filaments, the throat about 5 mm. broad, glabrous and eglandular within, the limb terminal, small, subregular, the lobes pilose externally, glabrous within; filaments hairy at base; anthers glabrous; ovary and style glabrous; stigma pilose; disk gland semiannular, glabrous.

Type in the U. S. National Herbarium, No. 1,795,254, collected at Hoya del Río Tambito, Cerro de Munchique, Cordillera Occidental, Department of El Cauca, Colombia, at 2,000–2,500 meters elevation, July 16, 1939, by E. Pérez Arbeláez and J. Cuatrecasas (No. 6218). A second specimen was collected on Mount Derrumbo, El Cauca, Colombia, alt. 2,500–2,900 meters, July 1, 1922, by E. P. Killip (No. 7996).

In my revision of the genus, *Killip* 7996 was referred with a query to *B. riparia* Morton, and the description of that species contains some of its characters. The excellent specimen since collected by Pérez and Cuatrecasas shows the two to be distinct. They may be separated as follows:

- Leaf blades broadly elliptic, cuneate at base, sparingly hirsute above, the primary veins about 8 pairs; disk annular; style puberulous..... **B. riparia**
 Leaf blades broadly ovate, truncate at base, densely hirsute above, the primary veins 13-15 pairs; disk semiannular; style glabrous..... **B. ventricosa**

A REVISION OF CREMOSPERMA

Until 1935 Bentham's genus *Cremosperma* (Gesneriaceae) was known from a single species. At that time I published a paper⁷ keying and describing a total of ten species, one of which (*C. cinnabarinum*) I subsequently (1938) excluded from the genus. Recent collections have disclosed additional species, and I now know 17, all from Colombia and Ecuador.

Five new species are here described and additional collections of previously known species are listed. Bentham's original species, *C. hirsutissimum*, was known only from the type collections for over 90 years, until Kjell von Sneidern found it again in the same general region in 1935. The other species are almost equally rare and local.

KEY TO SPECIES

- Calyx lobes glabrous (except for the cilia in one species). Leaf blades rounded at apex, subcordate at base.
 Common peduncle glabrous; calyx lobes not ciliate; leaf blades glabrous above; corolla yellow; disk semiannular..... 1. **C. rotundatum**
 Common peduncle hirsute; calyx lobes ciliate; leaf blades hirsute above; corolla reddish; disk annular..... 2. **C. jucundum**
 Calyx lobes pubescent.
 Leaves of a pair unequal, the smaller much reduced; corolla tube scarcely ampliate.
 Calyx lobes linear-lanceolate, equaling the calyx tube; leaves sericeous-pilose above. Corolla white; disk annular..... 3. **C. cotejense**
 Calyx lobes rotund or ovate-deltoid, much shorter than the tube; leaves glabrous or glabrescent above.
 Smaller leaf of a pair suborbicular, rounded; corolla white; disk semiannular..... 4. **C. auriculatum**
 Smaller leaf of a pair lanceolate, acute; corolla yellow; disk reduced to a posterior gland..... 5. **C. congruens**
 Leaves of a pair equal or subequal; corolla tube often ampliate upwardly.
 Corolla 5-10 mm. long.
 Leaf blades densely appressed-strigose along veins beneath. Corolla white; calyx lobes linear-lanceolate, 2 mm. long; disk semiannular.
 6. **C. serratum**
 Leaf blades hirsute or tomentose beneath.
 Common peduncle glabrous or sparsely pilose; leaf blades glabrous above or sparsely pilose.
 Corolla much exceeding calyx; calyx lobes 1 mm. long; leaf blades entire or with a few remote serrulations; disk annular; corolla yellow, 8-10 mm. long..... 7. **C. ignotum**
 Corolla only slightly exceeding calyx; calyx lobes 2 mm. long or more; leaf blades regularly crenate; disk reduced to a solitary gland; corolla 7 mm. long..... 8. **C. sylvaticum**

⁷ Journ. Washington Acad. Sci. 25: 284-291. 1935, and *ibid.* 28: 348. 1938.

Common peduncle conspicuously hirsute; leaf blades hirsute above.
Disk annular.

Corolla white, 5 mm. long, the tube scarcely exerted from calyx; leaf blades densely hirsute above between the primary veins.

9. *C. parviflorum*

Corolla yellow, 8.5 mm. long, the tube obviously exerted; leaf blades uniformly hirsute above..... 10. *C. castroanum*

Corolla 12-17 mm. long.

Leaf blades elongate-tuberculate above. Calyx lobes linear-lanceolate, 5 mm. long, much exceeding the calyx tube; disk annular.

11. *C. nobile*

Leaf blades not tuberculate above.

Plants 30-60 cm. high; leaf blades 8-13 cm. long, not hirsute. Corolla yellow; disk annular..... 12. *C. cestroides*

Plants not over 25 cm. high; leaf blades not over 10 cm. long, hirsute.

Leaves mostly borne in whorls of 3 or 4. Corolla white; creeping rhizome not present..... 13. *C. pusillum*

Leaves opposite, not whorled.

Plants with stems arising from horizontal rhizome; leaf blades small, not over 3 cm. long and 1.8 cm. wide. Corolla white; calyx lobes linear-subulate, exceeding calyx tube. 14. *C. demissum*

Plants without a rhizome; leaf blades larger.

Calyx 7-9 mm. long. Corolla yellow.... 15. *C. hirsutissimum*

Calyx 5-5.5 mm. long.

Leaf blades suborbicular, rounded at apex; corolla white, slightly bilabiate, the lobes rather small (3 mm.).

16. *C. album*

Leaf blades broadly elliptic, acute; corolla yellow-orange, conspicuously bilabiate, the lobes large (5-7 mm.).

17. *C. monticola*

1. *Cremosperma rotundatum* Morton, sp. nov.

Herba parva, caulibus non ramosis, tomentosis; folia opposita, aequalia; petioli tomentosi, crassi; lamina foliorum ovalis, rotundata, basi subcordata, remote denticulata, supra glabra, subtus in venis tomentosa, venis primariis 5-6-jugis; pedunculus communis glaberrimus; flores numerosi, subumbellati, pedicellis glabris; calyx subcampanulatus, glaber, lobis suborbicularibus, quam tubo brevioribus, non ciliatis; corolla flava, tubo faucem versus valde ampliata; ovarium glabrum; discus semiannularis.

Terrestrial herb 30 cm. high or less, the stems unbranched, densely tomentose; leaves opposite, equal; petiole thick, up to 2 cm. long, tomentose; leaf blades oval, up to 12.5 cm. long and 7.3 cm. wide, rounded at apex, obliquely subcordate at base, membranaceous, nearly entire (remotely denticulate), glabrous and bright green above, whitish along midrib and principal veins beneath, the primary veins 5 or 6 pairs; common peduncle 1.5-5 cm. long, glabrous; flowers numerous, subumbellate, the pedicels about 5 mm. long, glabrous; calyx subcampanulate, 5 mm. long, glabrous on both sides, 10-costate, the tube 4 mm. long, the lobes equal, erect, suborbicular, 1 mm. long, 1.2 mm. wide, not ciliate; corolla pale yellow, about 15 mm. long, the tube pilosulous on both sides, gradually and conspicuously ampliata from a narrow base, becoming 6 mm. wide in throat, the limb about 8 mm. wide; ovary and style glabrous; disk semiannular.

Type in the U. S. National Herbarium, No. 1,772,123, collected between Quebrada Guarapo and Mandinga, south of Río Condoto, Intendencia of El Chocó, Colombia, altitude 120-180 meters, April 22-28, 1939, by E. P. Killip (No. 35411).

A second specimen was collected near junction of Río Condoto and Río San Juan, El Chocó, April 20, 1939, by E. P. Killip (No. 35114).

2. *Creмосperma jucundum* Morton, Journ. Washington Acad. Sci. 25: 288. 1935.

COLOMBIA: Antioquia.

3. *Creмосperma cotejense* Morton, Journ. Washington Acad. Sci. 25: 288. 1935.

COLOMBIA: Coteje on Río Timbiquí, El Cauca.

4. *Creмосperma auriculatum* Morton, Journ. Washington Acad. Sci. 28: 349. 1938.

ECUADOR: Mount Abitagua.

5. *Creмосperma congruens* Morton, Journ. Washington Acad. Sci. 25: 287. 1935.

COLOMBIA: Paine, Cundinamarca.

6. *Creмосperma serratum* Morton, sp. nov.

Herba parva, caulibus non ramosis, dense strigosis; folia opposita, aequalia; petioli longi, strigosi; lamina foliorum elliptica, acuta, basi cuneata, serrata, supra parce strigosa, subtus in venis dense strigosa, venis primariis 9–10-jugis; pedunculus communis elongatus, strigosus; flores numerosi, conferti, pedicellis brevissimis; calyx cylindricus, 10-costatus, externe dense appresso-hirsutus, lobis lineari-lanceolatis, quam tubo paullo brevioribus; corolla alba, tubo vix superne ampliata, sursum piloso, limbo parvo, bilabiato; ovarium glabrum; discus semiannularis.

Terrestrial herb about 25 cm. high; stems unbranched, densely strigose; leaves opposite, equal, long-petiolate, the petiole up to 2.5 cm. long, strigose; leaf blades elliptic, up to 8 cm. long and 4 cm. wide, acute, cuneate at base, membranaceous, serrate, sparsely strigose above, densely yellowish-strigose beneath on the veins and veinlets, the primary veins 9 or 10 pairs, elevated beneath; common peduncle 4.5 cm. long, strigose; flowers capitate, numerous, the pedicels very short (2 mm. long or less); calyx cylindric, 5 mm. long, 10-costate, densely appressed-hirsute, deeply 5-parted, the tube about 3 mm. long, the lobes linear-lanceolate, erect, connivent, 2 mm. long; corolla white, 6 mm. long, the tube about 1 mm. wide, scarcely ampliate upwardly, pilose externally at apex, the limb about 4 mm. wide, bilabiate, three lobes about 1.5 mm. long, the other two much smaller; ovary and style glabrous; disk semiannular.

Type in the U. S. National Herbarium, No. 1,771,974, collected on ridge along Yeracúf Valley, upper Río San Juan, Intendencia of El Chocó, Colombia, altitude 200–275 meters, April 24, 1939, by E. P. Killip (No. 35234).

7. *Creмосperma ignotum* Morton, Journ. Washington Acad. Sci. 25: 289. 1935.

COLOMBIA: Dagua Valley, El Valle. A second collection is: Buenaventura El Valle, alt. 50 meters, Killip & García 33282.

8. *Creмосperma sylvaticum* Morton, Journ. Washington Acad. Sci. 28: 348. 1938.

COLOMBIA: La Costa, El Cauca.

9. *Creмосperma parviflorum* Morton, sp. nov.

Herba parva, caulibus non ramosis, hirsutis; folia opposita, aequalia; lamina foliorum ovata vel ovato-elliptica, rotundata, basi oblique rotundata, crenata, supra inter venas primarias dense hirsuta, subtus ubique hirsuta, venis primariis ca. 6-jugis; pedunculus communis ca. 2 cm. longus, pedicellis brevissimis, numerosis; calyx cylindrico-turbinatus, 10-costatus, dense hirsutus, lobis oblongis; corolla alba, minuta, tubo cylindrico, externe glabro, intus piloso, limbo parvo, subregulari; ovarium glabrum; discus annularis.

Terrestrial herb about 25 cm. high; stems unbranched, appressed-hirsute, the hairs many-celled, reddish; leaves opposite, subequal, long-petiolate, the petioles about 2 mm. long, hirsute; leaf blades ovate or ovate-elliptic, up to 8 cm. long and 4.5 cm. wide, rounded at apex, obliquely rounded at base, regularly crenate, membranaceous, hirsute all over, the hairs reddish, the primary veins about 6 pairs; common peduncle 2 cm. long, hirsute; flowers capitate, numerous, densely crowded, the pedicels obsolete; calyx cylindric-turbinate, 4.2 mm. long, 10-costate, densely hirsute externally, the tube about 3 mm. long, glabrous within, the lobes oblong, subequal, erect, obtuse, glabrous within; corolla white, minute, about 5 mm. long, the tube about 1 mm. wide, cylindric, not amplified in throat, glabrous externally, pilose within, the limb about 3 mm. wide, the lobes subequal, spreading, ovate-oblong, pilosulous externally, glandular within at base; filaments inserted in middle of corolla tube, free from each other; anthers connate; ovary and style glabrous; disk high, annular, glabrous.

Type in the U. S. National Herbarium, No. 1,770,368, collected at Córdoba, Department of El Valle, Colombia, altitude 50-100 meters, February 17, 1939, by E. P. Killip and H. García (No. 33423).

10. *Cremosperma castroanum* Morton, Journ. Washington Acad. Sci. 25: 289. 1935.

COLOMBIA: Quibdó, El Chocó. Recent collections are: Between Quebrada Guarapo and Mandinga, El Chocó, *Killip* 35148; Istmina, El Chocó, *Killip* 35461; Gorgona Island, Nariño, *Killip & García* 33179.

11. *Cremosperma nobile* Morton, Journ. Washington Acad. Sci. 25: 290. 1935.
COLOMBIA: Armada, Nariño.

12. *Cremosperma cestroides* (Fritsch) Morton, Journ. Washington Acad. Sci. 28: 348. 1938.

Besleria cestroides Fritsch, Notizbl. Bot. Gart. Berlin 11: 962. 1934.

COLOMBIA: Guadalito, Antioquia.

13. *Cremosperma pusillum* Morton, Journ. Washington Acad. Sci. 25: 287. 1935.

COLOMBIA: Tambo de Savanilla, Nariño (?); Antioquia.

13a. *Cremosperma pusillum* var. *ecuadorensis* Morton, Journ. Washington Acad. Sci. 25: 287. 1935.

ECUADOR: Mount Pichincha.

14. *Cremosperma demissum* Morton, sp. nov.

Herba parva; rhizoma horizontale, elongatum; caules erecti, non ramosi, hirsuti; folia opposita, aequalia; petioli hirsuti; lamina foliorum oblique ovata, parva, rotundata, serrata, utrinque sparse hirsuta, venis primariis 4-5-jugis; pedunculus communis 13 mm. longus, pedicellis paucis; calyx cylindricus, 10-costatus, hirsutus, lobis quam tubo longioribus, lineari-subulatis; corolla alba, tubo apicem versus valde ampliato, limbo magno, patente, lobis inaequalibus magnis; ovarium glabrum; discus annularis.

Terrestrial herb with horizontal underground rhizome emitting at intervals erect, unbranched stems less than 10 cm. long, these hirsute; leaves opposite, equal; petioles up to 1 cm. long, hirsute; blades obliquely ovate, up to 3 cm. long and 1.8 cm. wide, rounded at apex, obtuse or rounded at base, membranous, serrate, sparsely hirsute on both sides, the primary veins 4 or 5 pairs; common peduncle about 13 mm. long, hirsute; flowers about 4 to a peduncle, the pedicels 2-3 mm. long, hirsute; calyx cylindric, about 7 mm. long, 10-costate, hirsute externally, glabrous within, deeply 5-parted, the tube about 3 mm. long, the lobes equal, erect, linear-subulate, attenuate; corolla white, 15 mm. long, the tube about 1 mm. wide at base, much enlarged toward throat, appressed-pilose externally,

glabrous within, the throat 6–7 mm. wide, the limb about 9 mm. wide, the lobes unequal, spreading, large, 3–3.5 mm. long; filaments inserted in middle of corolla tube, glabrous; ovary and style glabrous; disk annular.

Type in the U. S. National Herbarium, No. 1,775,527, collected in the vicinity of Puyo, Province of Napo-Pastaza, Ecuador, altitude 750–1,000 meters, September 1939, by A. F. Skutch (No. 4512).

15. *Creмосperma hirsutissimum* Benth. Pl. Hartw. 234. 1846.

COLOMBIA: Popayán, El Cauca. Additional collections are: La Costa, Distr. El Tambo, El Cauca, altitude 1,500 meters, *von Sneidern* 483; Cali, El Valle, *Figueroa* 894.

16. *Creмосperma album* Morton, Journ. Washington Acad. Sci. 25: 290. 1935.

COLOMBIA: Dagua Valley, El Valle; El Chocó. A specimen not previously reported is: Buenaventura, El Valle, altitude 50 meters, *Killip & García* 33251.

17. *Creмосperma monticola* Morton, sp. nov.

Herba parva, caulibus hirsutis; folia opposita, subaequalia, longe petiolata; petioli hirsuti; lamina foliorum late elliptica, acuta, perspicue serrata, membranacea, supra inter venas primarias hirsuta, subtus praecipue in venis hirsuta, venis primariis 7–8-jugis; pedunculus communis elongatus, pedicellis paucis, hirsutis; calyx cylindricus, 10-costatus, hirsutus, lobis deltoideis, parvis; corolla aurantiaca, tubo cylindrico, apice pilosulo, limbo magno, bilabiato, lobis magnis, inaequalibus, duobus deltoideis, acutis, tribus suborbicularibus, basi connatis, rotundatis; ovarium glabrum; discus semiannularis.

Herb about 25 cm. high; stems unbranched, densely long-hirsute; leaves opposite, subequal, long-petiolate, the petiole up to 2.6 cm. long, one-fourth as long to nearly equaling the blade, hirsute; leaf blades broadly elliptic, up to 10 cm. long and 5 cm. wide, acute, obliquely rounded at base, membranaceous, conspicuously serrate except at very base, concolorous, hirsute above between the primary veins (the veins themselves glabrous), hirsute beneath, especially on the primary veins, these 7 or 8 pairs, elevated beneath; common peduncle elongate, 4.5–6.5 cm. long, slender, sparsely hirsute; pedicels about 5, subumbellate, 5–6 mm. long, sparingly long-hirsute; calyx cylindric, green, about 5 mm. long, the tube 10-costate, 4 mm. long, sparsely hirsute externally, glabrous within, the lobes deltoid, equal, 1 mm. long, not ciliate; corolla brilliant yellow-orange (teste Cuatrecasas), about 17 mm. long, the tube cylindric, 1 cm. long, 2 mm. broad, pilosulous at apex, not enlarged toward throat, pilosulous within throat, the limb strongly bilabiate, 12–15 mm. broad, three of the lobes very large, spreading, united at base, suborbicular, about 7 mm. long, rounded at apex, the other two erect or deflexed, deltoid, about 5 mm. long, acute, all pilosulous externally, glabrous within; filaments inserted high in corolla tube, free from each other, glabrous; anthers connate, glabrous; ovary and style glabrous; disk semi-annular.

Type in the U. S. National Herbarium, No. 1,796,349, collected at Quebrada del Río Hacha, Cordillera Oriental, Territorio of Caquetá, Colombia, altitude 2,100–2,250 meters, March 23, 1940, by J. Cuatrecasas (No. 8552).

NEW SPECIES OF GUATEMALAN GESNERIACEAE

The following five new species were detected during the course of identifying the large Guatemalan collections of Gesneriaceae made by Paul C. Standley and Julian A. Steyermark. They are based partly on older collections previously misidentified.

***Alloplectus cucullatus* Morton, sp. nov.**

Frutex, caulibus vix ramosis, hirsutis; folia aequalia, longe petiolata; lamina foliorum elliptica, magna, breviter acuminata, basi cuneata, subtus viridis, serrulata, supra appresso-pilosa, subtus hirsuta, venis primariis 8-9-jugis; flores in axillis aggregati, pedicellis gracilibus; calyx ruber, lobis liberis, inaequalibus, suborbicularibus, concavis, apice cucullatis, subulato-fimbriatis, medio utrinque hirsutis; corolla rubra, horizontalis, basi calcarata, tubo longe hirsuto, faucem versus ampliata, limbo obliquo; ovarium dense hirsutum; stylus glaber; discus in glandulam posticam reductus.

Shrub 1.2-3.6 meters high; stems sparingly or not at all branched, 4-9 mm. in diameter, densely hirsute toward apex; leaves opposite, equal, long-petiolate, the petiole up to 10 cm. long, hirsute; leaf blades elliptic, large, up to 30 cm. long and 12 cm. broad, short-acuminate, cuneate at base, chartaceous, green beneath, inconspicuously serrulate, appressed-pilose above, hirsute beneath, the primary veins 8 or 9 pairs; flowers aggregate in the leaf axils, a common peduncle lacking, the pedicels slender, up to 4 cm. long, hirsute; bracts small, ovate, soon deciduous; calyx red, the lobes free, unequal, four subequal, suborbicular, about 2 cm. long, over 2 cm. broad, the posterior smaller, all concave, prominently curved and cucullate at apex, subulate-toothed (the teeth about 15 to a side), densely yellow-hirsute near the middle on both sides; corolla red, 4.5-5 cm. long, horizontal in calyx, short-spurred at base, the tube cylindrical, 5.5-6 mm. broad, densely long-hirsute externally, glabrous within, enlarged toward throat, this about 12 mm. broad, glandular within, the limb oblique, 15-16 mm. broad, the lobes unequal, glabrous within; filaments connate at base for 6 to 7 mm., glabrous, slender; anthers much broader than long, 1.5-2 mm. long, 3 mm. broad, the cells distinct, suborbicular, fully dehiscent; ovary densely hirsute; style glabrous; disk a large glabrous, posterior gland.

Type in the U. S. National Herbarium, No. 1,637,938, collected at "Zona Reyna," Department of Quiché, Guatemala, at 750-900 meters elevation, December 2, 1934, by A. F. Skutch (No. 1812).

ADDITIONAL SPECIMENS EXAMINED:

MEXICO: Tumbala, Chiapas, alt. 1,200-1,650 meters, *Nelson* 3352.

GUATEMALA: Between Sepacuité and Secanquim, Alta Verapaz, alt. 1,100 meters, *Pittier* 319. Sachichá, Alta Verapaz, alt. 1,000 meters, *von Tuerckheim* II 981 (Donn. Smith 8721). Finca Sepacuité, Alta Verapaz, *Cook & Griggs* 261. Secanquim, Alta Verapaz, *Goll* 160. Between Finca Chimoté and Finca Cubilgüitz, Alta Verapaz, alt. 300-500 meters, *Steyermark* 44191. Yalambo, Huehuetenango, *Seler* 3218. Maxbal, Sierra de los Cuchumatanes, Huehuetenango, alt. 1,500 meters, *Steyermark* 48871. Cerro Huitz, Huehuetenango, *Steyermark* 48609.

These specimens have mostly been identified previously as *A. tetragonus* (Oerst.) Hanst., a common Costa Rican species. The Chiapas specimen cited above forms the basis for the report of *A. tetragonus* from Mexico in Standley's "Trees and Shrubs of Mexico." Undoubtedly *A. cucullatus* is closely related to *A. tetragonus*, but the calyx lobes are very different. In *A. tetragonus* they are ovate, plane, and acute at apex. In the present species they are suborbicular and concave, the apex being outwardly curved and hood-shaped. It is impossible to flatten out the lobes without cutting them.

Although in this genus pubescence is usually a good specific character, being correlated with other differences, I consider the following collections to represent no more than a variety, which has pubescence of a strigose rather than a hirsute type.

***Alloplectus cucullatus* var. *substrigosus* Morton, var. nov.**

A var. *typica* caulibus strigosis, foliis subtus praecipue in venis substrigosis differt.

Stems densely strigose; leaf blades substrigose beneath, especially on the veins.

Type in the U. S. National Herbarium, No. 1,336,494, collected at Pansamalá, Department of Alta Verapaz, Guatemala, at 1,060 meters elevation, June 1885, by H. von Tuerckheim (No. 733).

ADDITIONAL SPECIMENS EXAMINED:

GUATEMALA: Finca Mocca, Alta Verapaz, *H. Johnson* 166. Mountains between Tactic and Tamahú. Alta Verapaz, alt. 1,500–1,600 meters, *Standley* 90619.

***Alloplectus guatemalensis* Morton, sp. nov.**

Planta epiphytica, caulibus dense breviter pilosulis, demum glabrescentibus; folia inaequalia, conformia; petioli non corrugati; lamina foliorum late oblanceolata, breviter acuminata, basi cuneata, membranacea, subtus viridis, integra, utrinque sparse strigillosa, venis primariis 8-jugis; pedicelli breves, breviter pilosuli; calycis lobi ovati, attenuati, basi cordati, integri, utrinque sparse strigillosi; corolla obliqua, subcalcarata, alba, lobis flavis, tubo crasso, fere glabro, limbo magno, lobis suberosis et undulatis; antherae oblongae, sagittatae, basi dehiscentes; ovarium dense pubescens; stylus pilosulus; discus in glandulam lobatam posticam reductus.

Woody epiphyte; stems little branched, ridged, straw-color, the younger densely short-pilosulous, the older glabrescent; leaf blades opposite, somewhat unequal but conform, short-petiolate, the petiole 10–15 mm. long, not corrugate, short-pilosulous; leaf blades broadly oblanceolate, up to 16 cm. long and 5 cm. broad, short-acuminate, cuneate at base, membranaceous, entire, sparsely and minutely strigillose on both sides, green beneath, the primary veins 8 pairs, the midrib not corrugate; flowers aggregate in the leaf axils, the pedicels 2 or 3, (or rarely the flowers solitary), 7–15 mm. long, densely short-pilosulous; bracts deciduous; calyx pale green, suffused throughout or at base only with rose-red, the lobes ovate, erect, subequal (the posterior somewhat shorter and broader), 22–25 mm. long, 10–14 mm. broad near base, connate at base, subcordate (the basal lobes spreading outwardly, making the calyx angular at base), sharply long-attenuate at apex, entire, sparsely strigillose on both sides, ciliolate; corolla cream-white, the lobes pale yellow outside, deeper yellow within (teste Steyermark), 3.4–4.1 cm. long, oblique in calyx, subcalcarate at posterior base, the tube subcylindric, not ventricose, 13–15 mm. broad, nearly glabrous without (bearing a few, fine, scattered, appressed hairs), glandular within, scarcely if at all contracted in throat, the limb 2–2.2 cm. broad, the lobes low and broad, subequal, spreading, glabrous or nearly so, not fimbriate or ciliate, suberose and a little undulate; filaments connate into a conspicuous sheath at base, glabrous, flattened; anthers oblong, 5.1 mm. long, 2.5 mm. broad, connate, sagittate at base, the cells discrete, parallel, dehiscent only at basal end; ovary densely tomentose; style sparsely pilosulous; disk reduced to a lobed, glabrous, posterior gland.

Type in Field Museum of Natural History, No. 1,058,748, collected at Finca El Porvenir on Cerro de Mono, southern slopes of Volcán Tajumulco, Department of San Marcos, Guatemala, at 1,400–1,700 meters elevation, March 9, 1940, by J. A. Steyermark (No. 37403); isotype in the U. S. National Herbarium.

I describe this as an *Alloplectus* because of its obvious affinity with the Mexican *Alloplectus strigosus* (Oerst.) Hanst. However, these two species are among those that perhaps show a closer relationship with *Drymonia* than with *Alloplectus* proper. The correct generic disposition must await future studies. From *A. strigosus*, the present species differs in its much broader corolla tube (this only

7-9 mm. broad in *A. strigosus*) and in the smooth petioles and midribs of the leaf blades, these conspicuously corrugate in *A. strigosus*.

The Guatemalan species *A. oinochrophyllus* Donn. Smith is also closely related but is distinguished by its definitely long-hirsute stems and smaller, thicker leaf blades, these being red on the lower surface.

***Columnea vinacea* Morton, sp. nov.**

Caules non ramosi, hirsuti; folia opposita, aequalia; lamina foliorum elliptico-oblonga, acuta vel acuminata, basi cuneata, serrulata, membranacea, supra pilosa, subtus vinacea, hirsuta, venis primariis 7-9-jugis; flores pauci, axillares; pedicelli breves, hirsuti; calycis lobi liberi, erecti, aequales, lineari-lanceolati, acuminati, basi non angustati, subulato-dentati, utrinque hirsuti; corolla flava, erecta, ecalcarata, tubulosa, tubo medio ventricoso, externe hirsuto, faucem versus contracto, limbo subregulari, parvo; antherae quadratae; ovarium pilosum; disci glandulae 5, 2 posticae connatae, majores, 3 anticae liberae, minores.

Epiphyte, 35 cm. long or less; stems unbranched, about 4 mm. in diameter, hirsute at apex, the internodes very short, the nodes thickened with very large leaf scars; leaves opposite, equal; petiole up to 2 cm. long, hirsute; leaf blades elliptic-oblong, up to 18 cm. long and 7 cm. broad, acute or acuminate, subequally cuneate at base, conspicuously serrulate, thin-membranaceous, green and pilose above, red all over beneath, subappressed-hirsutulous beneath, especially on the veins, the primary veins 7-9 pairs; flowers few, axillary, short-pedicellate, the pedicels up to 1.7 cm. long, brown-hirsute; calyx lobes erect, equal, linear-lanceolate, about 10 mm. long, 2 mm. broad, acuminate, not narrowed toward base, subulate-toothed (the teeth 2 or 3 to each side, up to 2.5 mm. long, 0.25 mm. broad), hirsute on both sides; corolla yellow, erect in calyx, not spurred, 4 cm. long, the tube 4 mm. broad at base, slightly ventricose in middle (8 mm. broad), contracted in throat (5 mm. broad), densely hirsute without, sparsely hairy within, the limb subregular, 10 mm. broad, the lobes slightly unequal, the larger suborbicular, 5 mm. long and broad, slightly undulate, not fimbriate, not ciliate, glabrous within; filaments glabrous; anthers quadrate, 2 mm. long and broad, dehiscing throughout; ovary densely pilose; disk glands 5, the two posterior connate.

Type in the U. S. National Herbarium, No. 1,841,834, collected on south slopes of Volcán Atitlán, Department of Sololá, Guatemala, June 11, 1942, by J. A. Steyermark (No. 47408).

ADDITIONAL SPECIMENS EXAMINED:

GUATEMALA: Barranco Eminencia, above San Rafael de la Cuesta, San Marcos, alt. 2,100-2,400 meters, *Standley* 68656. Volcán Santa Clara, Suchitepéquez, *Steyermark* 46698. ?Volcán Jumay, Jalapa, *Steyermark* 32327.

Only one species of the small section *Stygnanthe* has previously been known from North America, *C. calotricha* Donn. Smith, the type of which came from Cubilgüitz, Alta Verapaz, Guatemala. Although not found again in Guatemala, it has been collected once in Costa Rica. *Stygnanthe* has the nearly regular, only slightly bilabiate corolla of section *Collandra*, but the equal leaves of *Eucolumnea*. The two species differ as follows:

Calyx lobes spatulate, rounded at apex, narrowed at base, entire; disk gland solitary.....	<i>C. calotricha</i>
Calyx lobes linear-lanceolate, acuminate at apex, not narrowed at base, remotely subulate-toothed; disk composed of 2 large, connate posterior glands and 3 smaller anterior glands.....	<i>C. vinacea</i>

***Columnea viridis* Morton, sp. nov.**

Caules non ramosi, crassi, dense hirsuti; folia valde inaequalia, minora auriculiformia, subsessilia, majora oblanceolata, magna, breviter acuminata, basi

obliqua, remote denticulata, membranacea, utrinque hirsuta, non rubromaculata, venis primariis 8-9-jugis; flores axillares, breviter pedicellati; bracteae virides, lanceolatae, subulato-dentatae, hirsutae; calycis lobi liberi, erecti, lineari-lanceolati, longe attenuati, subulato-dentati, virides, utrinque dense hirsuti; corolla tubulosa, erecta, ecalcarata, dense hirsuta, calyce vix longior, limbo regulari, parvo; antherae quadratae; ovarium hirsutum; stylus glaber; discus in glandulam glabram posticam reductus.

Epiphyte; stems unbranched, 7 mm. in diameter, densely hirsute; leaves opposite, strongly unequal, the larger of a pair oblanceolate, up to 25 cm. long and 6.7 cm. broad, abruptly short-acuminate, strongly unequal at base, the upper base cuneate, the lower rounded, thick-membranaceous, inconspicuously denticulate, dark green above, paler beneath, not red-spotted, hirsute on both sides, the primary veins 8 or 9 pairs; petioles short, about 1 cm. long, densely hirsute; smaller leaves of a pair auriculiform, lanceolate, about 2 cm. long, long-attenuate at apex, sessile, hirsute on both sides; flowers 1 or 2 in an axil, very short-pedicellate; bracts ovate-lanceolate, about 18 mm. long, 6 mm. broad, long-attenuate, subulate-toothed, green, densely hirsute on both sides; calyx lobes free, erect, subequal, linear-lanceolate, about 18 mm. long, 3 mm. broad, long-acuminate, subulate-toothed (the teeth 4 or 5 to a side, up to 3 mm. long and 0.3 mm. broad), green, densely long-hirsute, the hairs rose-red (teste Steyermark); corolla yellow or orange-red, erect in calyx, not spurred at base, about 2 cm. long, the tube cylindric, about 5 mm. thick, not or scarcely ventricose, densely red-hirsute without, glabrous within, slightly narrowed toward throat, the limb not wider than the tube, subregular, the lobes about 2 mm. long, glabrous within, hirsute without; filaments connate about 4 mm. at base, glabrous; anthers quadrate, about 1.5 mm. long and broad, dehiscent throughout, connate in pairs; ovary sparsely hirsute; style glabrous; disk reduced to a truncate, glabrous, posterior gland.

Type in the U. S. National Herbarium, No. 860,535, collected at Sepacuité, Department of Alta Verapaz, Guatemala, December 15, 1904, by George P. Goll (No. 187).

ADDITIONAL SPECIMENS EXAMINED:

GUATEMALA: Cubilgüitz, Alta Verapaz, alt. 350 meters, *von Tuerckheim* II. 58 (Donn Smith 7641). Pansamalá, Alta Verapaz, alt. 1,250 meters, *von Tuerckheim* 1272. Between San Cristobal Verapaz and Chixoy, Alta Verapaz, alt. 1,200-1,300 meters, *Steyermark* 43920. Cobán, Alta Verapaz, *Standley* 71659. Pantín, below Tamahú, Alta Verapaz, alt. 600 meters, *Standley* 70545. Cerro Victoria, Sierra de los Cuchumatanes, Huehuetenango, alt. 800 meters, *Steyermark* 49640. Cerro Chiblac, Sierra de los Cuchumatanes, Huehuetenango, alt. 1,800-2,000 meters, *Steyermark* 49445. Between Bananera and La Presa, Montaña del Mico, Izabal, alt. 40-300 meters, *Steyermark* 38191.

BRITISH HONDURAS: Camp 33, alt. 840 meters, *Schipp* S683.

Columnnea viridis is closely allied to the Costa Rican *C. purpurata* Hanst. and has usually been so identified. That species has, however, much larger calyx lobes and bracts, bright red in color. In *C. viridis* the bracts and calyx lobes are green. The hairs of the inflorescence are said to be red, but they are brownish in dried specimens, whereas in *C. purpurata* they are persistently red.

Napeanthus bracteatus Morton, sp. nov.

Herba acaulescens, caulibus perbrevibus; folia numerosa, rosulata, oblanceolata, magna, acuta, deorsum attenuata, basi subcordata, membranacea, denticulata, supra strigillosa, subtus praecipue in venis subtomentosa, venis primariis ca. 15-jugis; pedunculus communis elongatus, bibracteatus, bracteis foliaceis, magnis, pedicellis 2-5, subglabratis, elongatis; calycis lobi liberi, lanceolati,

acuminati, integri, demum perspicue venosi et reticulati; corolla alba, campanulata, glabra, limbo magno, lobis patentibus, subinaequalibus; stamina 4, libera, corollae basi inserta; filamenta brevia, glabra; antherae loculi confluentes; ovarium glabrum; discus nullus.

Acaulescent herb from a thick taproot; stems not over 2 cm. long, the leaves densely crowded, rosulate; petioles very short or none; leaf blades oblanceolate, up to 26 cm. long and 7.5 cm. broad, usually somewhat smaller, acute, attenuate toward base, subcordate at very base, thin-membranaceous, denticulate, strigillose above, the hairs very delicate, tortuous, subtomentose beneath especially on the veins and veinlets, the primary veins about 15 pairs, arcuate and anastomosing toward margin; inflorescences numerous, basal, 10–14 cm. long, the common peduncle 5–10 cm. long, sparsely pilose, bibracteate at apex, the bracts green, foliaceous, herbaceous, ovate or ovate-lanceolate, 13–17 mm. long, 7–8 mm. broad, acute, entire, sparsely pilose on both sides; pedicels 2–5 from each peduncle, 2–5 cm. long, usually simple and 1-flowered, occasionally bibracteolate (the bracteoles similar to the bracts but smaller), nearly glabrous, very slender (about 0.25 mm. thick), straw-color; calyx lobes 5, free, lanceolate, equal, in flower about 9 mm. long, 2.5 mm. broad, acuminate, entire, membranaceous, inconspicuously veiny, sparsely pilose on both sides, ciliate, in fruit becoming thicker and conspicuously veiny, with 5 longitudinal nerves, connected here and there by cross veins; corolla white, campanulate, about 12 mm. long, the tube about 6 mm. long, glabrous on both sides, the limb slightly bilabiate, the lobes 6–7 mm. long, suborbicular, spreading, glabrous, not ciliate; stamens 4; filaments free from each other, inserted in base of corolla tube, about 2 mm. long, glabrous; anthers oblong, 1–1.5 mm. long, glabrous, the cells apically confluent; stamodium none; ovary and style glabrous; disk none.

Type in the U. S. National Herbarium, No. 408,323, collected at Secoyocté, near Finca Sepacuité, Department of Alta Verapaz, Guatemala, April 14, 1902, by O. F. Cook and R. F. Griggs (No. 614).

ADDITIONAL SPECIMENS EXAMINED:

GUATEMALA: Between Tactic and the divide on road to Tamahú, Alta Verapaz, alt. 1,500–1,600 meters, *Standley* 90621a, 90623. Mountains east of Tactic on road to Tamahú, *Standley* 71201.

Only two species of *Napeanthus* have been described from North America, *N. apodemus* Donn. Smith of Costa Rica and *N. saxicola* T. S. Brandeg. of Mexico. I have not seen a specimen of the latter, but from description I think it probable that the plant does not belong in this genus. The pedicels are described as ebracteate and axillary, not umbellate or racemose on an elongate, bracteate peduncle as in *Napeanthus*, and the anther cells are said to be distinct and not confluent as in *Napeanthus*. *N. apodemus* is a true *Napeanthus*, which may be distinguished as follows:

Bracts at apex of peduncle small, 5 mm. long or less; pedicels racemose, short; mature calyx lobes only about 5 mm. long; leaves entirely glabrous.

N. apodemus

Bracts at apex of peduncle foliaceous, 13–17 mm. long; pedicels subumbellate, elongate; mature calyx lobes 9–10 mm. long; leaf blades strigillose above, densely tomentose on the veins beneath..... **N. bracteatus**

The original species of the genus, *N. brasiliensis* Gardn., is known only from the Organ Mountains of Rio de Janeiro. *N. bracteatus* is very much closer to it than to *N. apodemus*. In habit the two are similar, but *N. brasiliensis* has smaller bracts (4 mm. long), relatively broader calyx lobes, and a rose-colored corolla.

SOME SOUTH AMERICAN SPECIES OF SOLANUM

The genus *Solanum* has not attracted the interest of botanists generally, and it has had few special students, the only modern authority on the genus as a whole being Dr. Georg Bitter, whose death prevented the completion of a projected monograph. That *Solanum* is reputed one of the most difficult genera is partly explained by the fact that it is one of the largest genera of plants. As early as 1852 Dunal had recognized 901 species. The Index Kewensis recognized about 987 species in 1895. Between 1895 and 1935 over 1,060 species were described. The total number of recognized species at present is well over 2,000. In addition there are a large number of synonyms, and many varieties have been proposed from time to time. Thus the total number of names to consider exceeds 3,000. Only a fraction of the species are represented in any one herbarium.

Some of the difficulties of the genus must, however, be attributed to its celebrated monographer, Michel Felix Dunal, the French botanist who devoted most of his life to a study of the Solanaceae. His first publication on the family was in 1811, and his researches culminated in his monograph published in 1852 in De Candolle's Prodrômus. Dunal was a careful worker, and his descriptions are models of accuracy. His conceptions of relationships are not reliable, however, inasmuch as related species are often widely separated in his treatment. In fact, the same species is sometimes described under different names in different sections of the genus. The monograph is difficult to use because there is no key and because the descriptions are not contrasting and do not clearly bring out the differential characters. Anyone who attempts to identify an unknown specimen of *Solanum* by means of Dunal's monograph feels as if lost in a maze of words.

I began working on *Solanum* 15 years ago and have continued at intervals ever since. It is now my conviction that the study of *Solanum* is indeed a lifetime task. Since there are other problems having greater interest for me, I have given up my intention of preparing a revision of the South American species. I present here merely a few notes concerning the distribution and nomenclature of some of the rarer species, as well as a partial treatment of the section *Leiodendron* in Colombia and a brief synopsis of the South American species of section *Lycianthes*.

SOLANUM, subgenus PACHYSTEMONUM

Section ANARRICHOMENUM

Solanum evolvulifolium Greenm. ex Donn. Smith, Bot. Gaz. 37: 211. 1904.

Type from La Palma, Costa Rica, Pittier 7413.

Previously known only from Costa Rica and Panama.

COLOMBIA: La Cumbre, El Valle, alt. 1,800–2,100 meters, *Pennell* 5714. Cerro de Munchique, El Cauca, 2,000–2,500 meters, *Pérez Arbeláez & Cuatrecasas* 6231.

Section ANTHORESIS

Solanum abutiloides (Griseb.) Bitter & Lillo, *Repert. Sp. Nov. Fedde* 12: 136. 1913.

Cyphomandra abutiloides Griseb. *Abh. Ges. Wiss. Göttingen* 24: 249. 1879.

Type from Jujuy, Argentina, *Lorentz*.

A rare species, apparently previously known only from the Province of Jujuy.

ARGENTINA (Prov. Salta): Quebrada de la Concha, alt. 1,300 meters, *Venturi* 9871. Campo Quijano, alt. 1,600 meters, *Venturi* 8051.

Solanum bogotense Dunal in DC. *Prodr.* 13¹: 121. 1852.

Type from Bogotá, Cundinamarca, Colombia, *Goudot* in 1846.

The following are new records for this little-known species:

COLOMBIA: Nevado del Cocuy, Boyacá, alt. 3,700 meters, *Cuatrecasas* 1307. Laguna de Cunta, Dept. Santander, alt. 3,800 meters, *Killip & Smith* 17969. Without locality, *Mutis* 1998.

From a photograph *Lehmann* 7566, from Páramo de la Pradera near Bogotá, alt. 2,500–3,000 meters, is the same. It bears a manuscript name of Bitter.

Solanum clematideum Bitter, *Repert. Sp. Nov. Fedde* 16: 86. 1919.

Type from Pindilie, Prov. Cuenca, Ecuador, alt. 2,600–3,000 meters, *Lehmann* 4948.

To Bitter's description may be added that the berries are spherical, about 8 mm. in diameter, and dark purple-black at maturity.

The following are new records:

ECUADOR: Between Loja and San Lucas, Prov. Loja, alt. 2,100–2,600 meters, *Hitchcock* 21497. Between Ibarra and Tulcán, Prov. Carchí, alt. 3,000 meters, *Hitchcock* 20947. Island in Lake Cuicochi, Prov. Imbabura, alt. 3,100 meters, *Penland & Summers* 761. El Ilalo, Prov. Pichincha, alt. 3,150 meters, *Balls* 5826. Cumbe, *Rose, Pachano, & Rose* 22963.

Section CAMPANULISOLANUM

Solanum codonanthum Bitter, *Repert. Sp. Nov. Fedde* 11: 235. 1912.

Type from Siambon, Sierra de Tucumán, Argentina, *Lorentz & Hieronymus* 818.

ADDITIONAL RECORDS:

ARGENTINA. SALTA: Alemania, alt. 1,300 meters, *Venturi* 9951. TUCUMÁN: Jerba Buena, alt. 650 meters, *Venturi* 58. Quebrada de Hualinchay, alt. 1,500 meters, *Venturi* 7775. Taff del Balle, alt. 2,600 meters, *Venturi* 2893. Papia, alt. 750 meters, *Venturi* 1090.

Section DULCAMARA

Solanum amygdalifolium Steud. *Nom. Bot. ed. 2.* 600. 1841.

Solanum angustifolium Lam. *Tabl. Encycl.* 2:18. 1793, non Mill. (1768.)

Type from Buenos Aires, Argentina, *Commerson*.

Solanum persicifolium Mart. *Flora* 21. *Beibl.* 78. 1838, non Dunal (1813).

Type from Sebastianopolis, Brazil, *Martius*.

Solanum handelianum Morong, *Ann. N. Y. Acad.* 7: 175. 1892.

Solanum brittonianum Morong, *op. cit.* 174. Type from Río Pilcomayo, Paraguay, *Morong* 1531.

This rather common species has usually been known as *S. angustifolium* Lam., a homonym. It is habitally much like *S. malacoxylon* Sendtn. but may be recognized by its angled rather than terete branchlets. In Argentina it is known

by the vernacular names *duraznillo blanco* and *amor porteño*. The Chilean plant that has sometimes been confused with *S. angustifolium* is *S. tomatillo* Remy.

Some records are:

PARAGUAY: Asunción, *Morong* 818.

ARGENTINA: Buenos Aires, *Molfino*; *Debeaux* 70; *Miers* 1429. Villa Luján, Tucumán, *Venturi* 272. Upper Paraná River, Misiones, *Ekman* 816.

Solanum leptocaulon Van Heurek & Muell Arg. Obs. Bot. 40. 1870.

Type from Larecaja, Bolivia, alt. 3,600 meters, *Mandon* 404 (isotype NY).

A synonym is *S. pongoense* Rusby (Mem. N. Y. Bot. Gard. 7: 348. 1927), the type of which came from Pongo de Quime, Bolivia, alt. 3,300 meters, *White* 165 (type NY).

Solanum lilacinum Rusby, Bull. Torrey Club 26: 156. 1899.

Type from Unduavi, Bolivia, alt. 2,400 meters, *Rusby* 779 (NY).

A synonym is *S. buchtienii* Bitter (Repert. Sp. Nov. Fedde 10: 558. 1912), whose type is from Unduavi, *Buchtien* 765 (isotype US).

Solanum miquelii Morton, nom. nov.

Solanum laetum Miq. Stirp. Surinam 135. 1850, non Kunze (1842).

Solanum sempervirens Dunal in DC. Prodr. 13¹: 88. 1852, non Miller (1768).

Type from British Guiana, *Schomburgk* 594.

Type from Surinam, *Focke & Kappler* 1599.

This is one of the commonest species in British Guiana. It is related to *Solanum pensile* Sendtn., of which a synonym may be *S. scandens* L. f. (1781), non Mill. (1768).

Solanum tinctum Morton, nom. nov.

Solanum penduliflorum Rusby, Descr. New S. Amer. Pl. 113. 1920, non Damer (1912).

Type from Santa Marta, Colombia, *H. H. Smith* 2661 (NY).

A distinctive species related to *S. pensile* Sendtn., *S. miquelii* Morton, *S. ipomoea* Sendtn., and *S. ipomoeoides* Chod. & Hassl.

A second collection is from Río Guaviare, Colombia, alt. 240 meters, *Cuatrecasas* 7579.

Solanum endotrichum Bitter, Repert. Sp. Nov. Fedde 12: 161. 1913.

Type from Miquinquirá near Bogotá, Cundinamarca, Colombia, *Idinael* 57.

Additional collections are:

COLOMBIA. CUNDINAMARCA: Bogotá, *Ariste-Joseph* A 418. SANTANDER: Vicinity of Vetás, alt. 3,100–3,250 meters, *Killip & Smith* 17267, 17313, 17327, 17388, 17910, 17916.

Section HERPYSTICUM

Solanum dalibardiforme Bitter, Repert. Sp. Nov. Fedde 11: 484. 1913.

Type from Quindío, Colombia, *Goudot* 19.

This singular species is a small, wide-creeping herb with long-petioled, violet-like leaves. A second collection is:

COLOMBIA. Quindío Highway, between Cajamarca and summit of divide, Tolima, alt. 2,400 meters, *Killip & Varela* 34519.

Section INDUBITARIA

Solanum callianthum Morton, sp. nov.

Frutex vel arbor parva, ramulis novellis subtomentosis, pilis patentibus, pluries furcatis; folia solitaria, petiolata, petiolo plus minusve tomentoso; lamina foliorum ovata vel oblongo-ovata, breviter acuminata, supra pilis furcatis deciduis instructa, subtus praecipue in venis et venulis pilis patentibus pluries furcatis praedita,

demum glabrescens, venis primariis 6-8-jugis; inflorescentia oppositifolia, pedunculo communi non furcato, subtomentoso, multifloro, pedicellis pilosis; calyx externe floccoso-subtomentosus, pilis ramosis, lobis deltoideis; corolla alba, rotata, plicata, externe pilosa, pilis ramosis; ovarium apice vel ubique longe pilosum; stylus basi pilosus.

Shrub or small tree, 1.5-3.6 meters high, the branchlets subtomentose when young, the hairs patent, several times furcate; leaves solitary, petiolate, the petiole up to 1.1 cm. long, more or less tomentose; leaf blades ovate or oblong-ovate, up to 11 cm. long and 7.5 cm. wide, short-acuminate, cuneate or obtuse at base, subchartaceous, entire, green, bearing a few deciduous, furcate hairs above, pilose beneath (especially on the veins and venules), the hairs patent, several times furcate, often subbullate above, the veins somewhat impressed, the primary veins 6-8 pairs, elevated beneath; inflorescence opposite the leaves, simple, scorpioid, the common peduncle 5-11 mm. long, subtomentose, not furcate, the rhachis 6-12 mm. long, many-flowered, the pedicels 5-8 mm. long, pilose, thickened at apex; calyx about 4 mm. long, 7 mm. wide at apex, floccose-subtomentose externally, the hairs branched, the lobes deltoid, about 2 mm. long, 2 mm. wide at base, acute, more or less thickened at apex; corolla white, about 11 mm. long, rotate, plicate in the sinuses, the tube about 6 mm. long, the lobes deltoid, incurved at apex, pilose externally, the hairs branched; filaments very short, about 1 mm. long, flattened, connate to middle, glabrous; anthers free, oblong, about 5 mm. long, 2.2 mm. wide; ovary globose, pilose at apex or all over, the hairs long, branched; style slender, about 1 cm. long, pilose at base; berry globose, about 1.5 cm. in diameter, pubescent when young, finally glabrous and shining.

Type in the U. S. National Herbarium, No. 1,795,321, collected at Boquerón de Chipaqué, Cordillera Oriental, Department of Cundinamarca, Colombia, at 3,100-3,200 meters elevation, December 31, 1939, by J. Cuatrecasas (No. 7898).

ADDITIONAL SPECIMENS EXAMINED:

COLOMBIA. CUNDINAMARCA: Macizo de Bogotá, alt. 3,000 meters, *Cuatrecasas* 5689, 5695. Sibaté, alt. 2,700-2,800 meters, *Pennell* 2429. Fusugasugá, alt. 2,650 meters, Sept. 1863, *Triana* 3855 (15). Camino de Guasca á Gachetá, *Ariste-Joseph* A 537, s. n. Simijaca, alt. 2,000 meters, *Pérez Arbeláez* 254. BOYACÁ: Valley of the Uvita, *Cuatrecasas* 1147. TOLIMA: Murillo, *Pennell* 3166. SANTANDER: Vicinity of Vetás, alt. 3,100-3,250 meters, *Killip & Smith* 17249. NORTE DE SANTANDER: Ocaña, *Schlim* 1117. EL CAUCA: Mount Santa Ana, *Pennell* 7449. Las Escaleretas, Moras Valley, *Pittier* 1370. WITHOUT SPECIAL LOCALITY: *Mutis* 1984, 2002, 3568.

The present species is evidently common in Colombia at higher altitudes. It seems odd that it has not been previously described. At one time I thought that it might be *Solanum venosum* H. & B., described from "Andibus Quinduensibus, alt. 1,300 hex." In the description, which is not very detailed, the most significant point is "branches floccose-pilose, the hairs thickish, pubescent . . ." This statement that the hairs themselves were "pubescent" appeared inexplicable to me until I came across a specimen collected by Killip and Hazen (No. 9168) somewhere near the type locality, at Magaña to Quindío Pass, Old Quindío Trail, Department of Caldas, Colombia. In this specimen the hairs of the stem are indeed peculiar, composed of a rather stout axis bearing innumerable short, spreading branches throughout its length. They resemble somewhat the stem hairs of *Solanum verbascifolium* L., but there is no other similarity to that species. I have little doubt that this specimen is *S. venosum*, especially as it agrees in all other respects with the description.

Solanum callianthum has a different type of hair, this being slender, spreading, and several to many times forked in the manner of deer antlers. In other respects, also, the two species are different, *S. venosum* having a compound, long-peduncu-

late inflorescence, larger leaves with more numerous veins, and a glabrous ovary and style. The inflorescence of *S. callianthum* is a simple, scorpioid, unilateral raceme.

***Solanum mutisii* Morton, sp. nov.**

Frutex vel arbor parva, ramulis novellis dense ferrugineo-tomentulosis, pilis furcatis; folia solitaria, petiolata, petiolo tomentuloso; lamina foliorum elliptica vel oblonga, acuta vel obtusa, utrinque dense ferrugineo-tomentulosa, pilis furcatis, mox glabrescens, venis primariis 6–8-jugis; inflorescentia oppositifolia, pedunculo communi obsoleto vel brevi, non furcato, densifloro, pedicellis novellis ferrugineo-tomentulosis; calyx externe minute tomentulosus, profunde partitus, lobis deltoideis, rotundatis; corolla alba, plicata, lobis late ovatis, apice tomentulosis; ovarium glabrum vel puberulum.

Shrub or small tree, the branchlets terete, 3–4 mm. in diameter, densely ferruginous-tomentulose when young, the hairs furcate; leaves solitary, petiolate, the petiole 5–18 mm. long, tomentulose, finally glabrate; leaf blades elliptic or oblong, 5–15 cm. long, 3–7 cm. wide, acute or obtuse, obtuse or broadly cuneate at base, papyraceous, entire, green, densely ferruginous-tomentulose when young (the hairs furcate), lacking spreading hairs on the veins, not bearded in the vein axils beneath, finally glabrate or minutely floccose-tomentulose, the primary veins 6–8 pairs; inflorescence opposite the leaves, simple, scorpioid, the common peduncle very short or obsolete, not furcate, 0–5 mm. long, the rhachis very short, 1–3 mm. long, densely flowered, the pedicels up to 8 mm. long, densely ferruginous-tomentulose when young; calyx about 2.5 mm. long, 8 mm. wide, minutely tomentulose externally, deeply parted, the lobes deltoid, 2 mm. long and broad, rounded at apex; corolla white, about 1 cm. long, plicate in the sinuses, the tube 4 mm. long, the lobes broadly ovate, glabrate externally, a little tomentulose at apex; filaments thick, 1 mm. long, connate to middle, glabrous; anthers free, oblong, 4 mm. long, 1.5 mm. wide; ovary glabrous or puberulous; style glabrous; berry globose, 10–12 mm. in diameter, velutinous or glabrescent.

Type in the U. S. National Herbarium, No. 1,563,674, collected in Colombia by J. C. Mutis (No. 1993).

ADDITIONAL SPECIMENS EXAMINED:

COLOMBIA. CUNDINAMARCA: Bogotá, *Ariste-Joseph* A252, s. n. Camino de Gachetá, January 1920, *Ariste-Joseph* A546. Monserrate, *Guevara Amórtegui* 255. Camino á la Calera, Munic. Usaqué, alt. 2,700–2,900 meters, Oct. 2, 1939, *García* 8058. Salto de Tequendama, May 1917, *Ariste-Joseph* A115. Boquerón near Bogotá, alt. 2,800 meters, January 1925, *A. Schultze* 111. Salto de Tequendama, alt. 2,500 meters, October 1938, *Cuatrecasas* 83, 93. SANTANDER: Western slope of Mount San Vicente, near Charta, alt. 2,500–2,700 meters, *Killip & Smith* 18994. Southern slope of Mount San Martín, near Charta, alt. 2,300–2,500 meters, *Killip & Smith* 19178. WITHOUT SPECIAL LOCALITY: *Mutis* 1980, 2000, 2003, 3565, 3581.

A very poor, sterile specimen from near Pasto, collected by Triana may also belong here.

The closest relationship of *S. mutisii* is with *S. callianthum* Morton, which may be distinguished as follows:

Hairs of young leaves, stems, pedicels and calyces short, densely matted, not at all spreading, the mature leaves glabrous or rarely floccose-tomentulose	<i>S. mutisii</i>
corolla glabrate except at apex of the lobes; ovary and style glabrous or merely puberulous	
Hairs of all parts long, spreading, conspicuously furcate, the leaves at maturity always bearing some persistent spreading hairs on the veins; corollas densely pilose; ovary and style long-pilose	<i>S. callianthum</i>

Section LEIODENDRON

This section is proving to be surprisingly rich in species in Colombia. I am describing here a few of the more outstanding new discoveries, but there remain a good many species still undescribed. The older species have been much confused in herbaria. I have not the materials to straighten out the taxonomy of the whole group, but I have prepared a partial key, which will distinguish the new species here described from those previously known from Colombia:

- Leaves triplinerved..... 1. *S. triplinervium*
 Leaves pinnately nerved.
 Leaf margin strongly undulate-crispate; inflorescence arising from the internode..... 2. *S. crispulum*
 Leaf margin plane; inflorescence opposite the leaves (except in *S. gracilescens*).
 Leaves with tufts of long, simple hairs in the axils of the veins beneath, these sometimes extending to the veins or adjacent leaf tissue.
S. psychotrioides H.B.K., *S. laevigatum* H.B.K., *S. anonifolium* H.B.K., *S. micranthum* Willd., *S. triste* Jacq., *S. leucocarpum* Rich., *S. calycopogon* Bitter, and *S. deflexiflorum* Bitter.
 Leaves without long hairs in the vein axils beneath or on the veins or lower surface.
 Calyx lobes strongly unequal in fruit, some over twice as long as others.
 Flowers small (corolla lobes 3 mm. long, anthers 1.6 mm. long); inflorescence pendulous, with elongate peduncle, rhachis, and pedicels..... 3. *S. irregulare*
 Calyx lobes equal.
 Anthers persistently connate at apex; corolla lilac, the lobes long-pilose.
 Inflorescence pendulous, with elongate peduncle, rhachis, and pedicels..... 4. *S. oxyphyllum*
 Anthers free throughout; corolla white, glabrous or short-glandular-pilosulous at apex or on the margins.
 Leaf blades 7-8 times as long as broad..... 5. *S. aquatile*
 Leaf blades broader.
 Inflorescence furcate; leaves bearing minute, simple, eglandular hairs on the surfaces, very large (22-32 cm. long, 11.2-18 cm. broad), solitary..... 6. *S. grandifolium*
 Inflorescence simple; leaves not hairy on the surface, at least at maturity, sometimes glandular, smaller, solitary or geminate.
 Corolla large (about 11 mm. long and over 2 cm. broad), conspicuously plicate in the sinuses, the lobes over 5 mm. broad; inflorescences extra-axillary, not opposite the leaves. Calyx lobes conspicuously mucronate..... 7. *S. gracilescens*
 Corolla smaller, not plicate in the sinuses, the lobes narrower; inflorescences opposite the leaves.
 Branchlets obviously puberulous with incurved hairs; calyx 0.5 mm. long. Inflorescence bearing only one flower in anthesis at a time; leaves solitary, the blades not over 7.7 cm. long..... 8. *S. dissimile*
 Branchlets glabrous or merely glandular; calyx 1.2 mm. long or more.
 Primary leaf veins 16-20 pairs. Leaves solitary.
 9. *S. marantifolium*

Primary leaf veins not over 10 pairs.

Leaves solitary. Peduncle elongate (10–14 mm.), the rhachis elongate (15–20 mm.), the pedicels very short (2 mm.)----- 10. *S. longevirgatum*

Leaves geminate, very unequal, the smaller of a pair less than half as long as the larger.

Ovary villous; style villous below-- 11. *S. cornifolium*

Ovary and style glabrous.

Inflorescence pedunculate (5–10 mm.). Rhachis glandular; calyx 1.2–1.8 mm. long. 12. *S. orgyale*

Inflorescence sessile.

Pedicels at anthesis 15–18 mm. long; calyx 2.5–3 mm. long; corolla 6.8–7.3 mm. long; anthers 4 mm. long----- 13. *S. gratum*

Pedicels at anthesis 4–7 mm. long; calyx 1.5 mm. long; corolla 3.5 mm. long; anthers 2 mm. long----- 14. *S. arboreum*

1. *Solanum triplinervium* Morton, sp. nov.

Frutex, ramulis glaberrimis, flexuosis; folia solitaria, petiolata, petiolo glabro; lamina foliorum oblanceolata, longe acuminata, basi cuneata, utrinque glaberrima, haud nigricans, triplinervis, venis secundariis numerosissimis, parallelis, marginem versus anastomosantibus; inflorescentia oppositifolia, pedunculo communi brevissimo, glabro, non furcato, multifloro, pedicellis secundis, glabris, gracilibus; calyx cyathiformis, basi cuneatus, truncatus, subinteger; corolla alba, lobis acutis; filamenta brevia, basi connata; antherae oblongae; ovarium glabrum.

Slender shrub about 2 meters high, the branchlets terete, about 3 mm. in diameter, glabrous, conspicuously flexuous, the internodes 2–3.5 cm. long; leaves solitary, petiolate the petiole about 1 cm. long, terete, glabrous; leaf blades oblanceolate, up to 25 cm. long and 8 cm. wide, long-acuminate, cuneate at base, a little oblique, glabrous and eglandular on both sides, not bearded in the vein axils beneath, entire, submembranaceous, pale green above, yellowish-green beneath, not darkening in drying, triplinerved, the nerves coming off at an acute angle, the abaxial nerve arising from the midrib 1.5–3 cm. above base, the adaxial 3–5.5 cm. above base, the secondary veins very numerous, parallel, coming out at about a right angle, anastomosing in a flexuous, submarginal veinlet; inflorescence opposite the leaves, scorpioid, the common peduncle very short, 2–3 mm. long, glabrous, not furcate, the rhachis glabrous, up to 10 mm. long, recurved, 24–36-flowered, the pedicels secund in two lines, the flowering 7–10 mm. long, slender, about 0.25 mm. thick, glabrous, the fruiting suberect, straight, about 16 mm. long, thicker, about 0.75 mm. in diameter at middle, thickened apically; calyx cyathiform, about 1.5 mm. long, 3.5 mm. wide at apex, the base cuneate, truncate, subentire; corolla white, 12 mm. in diameter, 5.5 mm. long, the tube about 3 mm. long, often ruptured in the sinuses, the lobes acute; filaments about 1 mm. long, glabrous, short-connate at base; anthers greenish-yellow, oblong, a little unequal, four about 2.5 mm. long, the fifth 3 mm. long; ovary globose, glabrous; style lightly curved, glabrous, about 4 mm. long; berry unknown.

Type in the U. S. National Herbarium, No. 1,770,148, collected on the east side of Gorgona Island, Department of Nariño, Colombia, in dense forest along stream, at 50–100 meters elevation, February 11, 1939, by E. P. Killip and H. García (No. 33169).

The triplinerved leaves of this species, strongly suggesting Melastomaceae, are anomalous in the Solanaceae. The present plant, which agrees in other respects with *Solanum*, section *Leiodendron* (in which the venation is regularly pinnate), I regard as constituting a new subsection:

Solanum, sect. *Leiodendron*, subsect. *Triplinervia*. Folia triplinervia, venulis secundariis numerosis, parallelis, ex angulo recto egredientibus, in venulam submarginalem anastomosantibus.

2. *Solanum crispulum* Morton, sp. nov.

Suffrutex, non ramosus, caulibus sursum pilosulis, glabrescentibus; folia solitaria, breviter petiolata; lamina foliorum oblonga vel ovato-oblonga, usque ad 17 cm. longa et 7 cm. lata, longe acuminata, basi late cuneata vel subrotundata, margine perspicue crispata, supra glaberrima, subtus juventute in nervo medio et venulis parce pilosula, venis primariis 6-8-jugis; inflorescentia extra-axillaris, non oppositifolia, pedunculo communi pilosulo, floribus confertis, pedicellis crassis, pilosulis; calyx basi angustatus, externe parce pilosus, lobis elongato-deltoideis, non mucronatis; corolla alba, lobis lanceolatis; antherae oblongae.

Subshrub up to 60 cm. high, not branched, the stems green, terete, about 5 mm. in diameter near base, pilosulous at apex (the hairs simple, eglandular), glabrous below; leaves solitary, short-petiolate, the petiole 8-10 mm. long, more or less pilosulous; leaf blades oblong or ovate-oblong, up to 17 cm. long and 7 cm. wide, long-acuminate, broadly cuneate or rounded at base, subcomplicate, pale green on both sides, not darkening in drying, papyraceous, conspicuously crispate at the margins, glabrous above, when young sparsely pilosulous beneath on the midrib and veins (the hairs minute, spreading, eglandular, persistent on the midrib), not bearded in the vein axils, the primary veins 6-8 pairs, coming off at an acute angle, arcuate, anastomosing toward the margin, elevated on both surfaces; inflorescence extra-axillary, not opposite the leaves, the common peduncle about 10 mm. long, pilosulous, the rhachis very short, about 10-flowered, the flowers crowded, the flowering pedicels about 8 mm. long, thick (about 1 mm. in diameter), pilosulous; calyx about 4 mm. long and 6 mm. broad at apex, narrowed at base, very sparsely pilose externally, the lobes elongate-deltoid, about 2 mm. long and 1.6 mm. wide at base, acute, not mucronate; corolla white, 7-8 mm. long, the tube 2 mm. long, the lobes lanceolate, 2-2.5 mm. broad, glandular externally at apex; filaments 1.5 mm. long, connate to middle or higher, glabrous; anthers oblong, 3 mm. long and 1.6 mm. wide; ovary globose, glabrous; style about 4 mm. long, thick, glabrous.

Type in the Herbario Nacional Colombiano, collected along the Río Tambito, Cerro de Munchique, Cordillera Occidental, Department of El Cauca, Colombia, at 2,000-2,500 meters elevation, July 16, 1939, by E. Pérez Arbeláez and J. Cuatrecasas (No. 6252); fragments in the U. S. National Herbarium.

The relationship of *S. crispulum* is uncertain, but it may perhaps be placed in *Leiodendron* even though the inflorescence is extra-axillary (as in *Morella*) rather than opposite the leaves. The leaf margin is so strongly undulate-crispate as to make it appear erose or serrate. The only species of *Solanum* that are said to show this character are two Brazilian species known to me from description only. According to description *Solanum serratum* Dunal, from the Organ Mountains, Rio de Janeiro, differs in being a larger, divaricately branched shrub, with a 1-flowered inflorescence opposite the leaves, which are described as "long-serrate." This species has perhaps been erroneously placed in section *Leiodendron*. The single fertile flower, with large fruit ("oviform, 1 inch long") is suggestive of the subgenus *Leptostemonum*. Since the flowers are not known, this plant is conceivably not a member of the genus *Solanum* at all.

The other Brazilian species with undulate-crisped leaves is *S. undulatum* Dunal, described from an unstated locality. This may be distinguished as follows (from description):

Leaves geminate, strongly unequal, the smaller ovate-orbicular, one fourth the size of the larger; larger leaf blades small, 6.2 cm. long and 1–1.2 cm. wide; calyx small, 2 mm. wide, the lobes mucronate; corolla 3 times as long as the calyx.

S. undulatum

Leaves solitary, all subequal; leaf blades much larger, 9–17 cm. long, 3–7 cm. wide; calyx 6 mm. wide, the lobes not mucronate; corolla about 2 times as long as calyx.----- **S. crispulum**

3. *Solanum irregulare* Morton, sp. nov.

Frutex, ramulis praecipue in nodis parce pilosis; folia geminata, majora breviter petiolata; lamina foliorum majorum ovata, acuminata, basi leviter decurrens, siccitate nigricans, glabrata, minute et inconspicue glandulosa, venis primariis 7–9-jugis; folia minora conformia sed subsessilia; inflorescentia nigricans, pendula, oppositifolia, pedunculo communi elongato, glabro, non furcato, multifloro, pedicellis gracilibus, secundis, glabris; calyx floriferus subturbinatus, pilis longis albis dissitis, lobis lineari-deltoides, acuminatis, fructiferus accrescens, valde irregularis, lobis inaequalibus; corolla alba, rotata, tubo brevissimo, lobis oblongis, acutis; filamenta brevissima, ad medium connata, glabra.

Ill-smelling shrub 1–2 meters high, the branchlets blackish, terete, sparsely pilose, especially at the nodes; leaves all geminate, the larger short-petiolate, the petiole 6–8 mm. long, glabrate; leaf blades ovate, 16–18 cm. long and 7–9 cm. wide, acuminate, cuneate and a little decurrent at base, membranaceous, entire, dark when dry, glabrate, minutely and inconspicuously glandular, the primary veins 7–9 pairs, a little elevated beneath, the secondary veins inconspicuous; smaller leaves up to 7.5 cm. long and 5 cm. wide, subsessile, conform; inflorescence blackish, pendulous, opposite the leaves, the common peduncle 1.5–2 cm. long, slender, glabrous, not furcate, the rhachis 2.5–3 cm. long, curved, glabrous, many-flowered, the pedicels about 1 cm. long, slender, secund, glabrous; calyx in flower subturbinate, about 2 mm. long and 3.5 mm. broad, externally bearing scattered, long, white hairs, the lobes linear-deltoid, about 1 mm. long, acuminate, entire, subequal; fruiting calyx accrescent, very irregular, the lobes unequal, two of them about 2 mm. long, one about 3.5 mm. long, and two about 5 mm. long; corolla white, rotate, stellate, about 9 mm. broad, the tube very short, about 1 mm. long, the lobes oblong, about 3 mm. long and 1.5 mm. broad, acute, glandular-papillose externally, not pilose; filaments very short, about 0.25 mm. long, connate to middle, glabrous; anthers oblong, about 1.6 mm. long, 1 mm. wide; ovary glabrous; style straight, glabrous.

Type in the U. S. National Herbarium, No. 1,707,166, collected at Puerto Sanchez, on Río Humea, Intendencia of El Meta, Colombia, in thickets along river, at 400 meters elevation, February 8, 1939, by Oscar Haught (No. 2587).

In calyx structure this species is unlike other members of the section *Leiodendron*. In anthesis the calyx is nearly regular, but after fertilization the lobes increase greatly but irregularly in size. Two lobes remain small (about 2 mm. long), two others become over 5 mm. long, and the fifth is intermediate in size. Other characters to be noted in distinguishing the present species are the dark color taken by the leaves, stems, and inflorescences in drying, the elongate, pendulous inflorescences, the geminate leaves (with the smaller of a pair conform, but about half the size of the larger), these glabrous and not bearded in the vein axils beneath but sparingly glandular, and the small flowers.

4. *Solanum oxyphyllum* Morton, sp. nov.

Arbor parva, ramulis glabris; folia solitaria vel geminata, petiolata, petiolo subtus glabro, supra canaliculato et perspicue puberulo et glandulifero; lamina foliorum oblonga, longe acuminata, basi rotundata vel subcordata, supra in nervo

medio et venis puberula, subtus glaberrima; inflorescentia oppositifolia, pendula, pedunculo communi elongato, glabro, multifloro, pedicellis glabris; calyx subcyathiformis, lobis mucronatis, denticulatis, parce glandulosis; corolla lilacina, tubo brevissimo, lobis lineari-lanceolatis, reflexis, externe capitato-glandulosis, longe pilosis; antherae angustae, apice connatae.

Small tree about 3 meters high, the branchlets slender, about 1.5 mm. in diameter, terete, smooth, glabrous; leaves solitary or geminate, petiolate, the petiole up to 2 cm. long, glabrous beneath, channeled above and conspicuously puberulous and glandular; larger leaf blades oblong, up to 11.5 cm. long and 5.5 cm. broad, sharply long-acuminate, rounded or subcordate at base, green, not darkening in drying, entire, membranaceous, puberulous above on the midrib and veins (the hairs minute, incurved), entirely glabrous beneath, not bearded in the vein axils; smaller leaves conform, shorter petiolate (up to 1 cm.), the blade up to 6.2 cm. long, cordate at base; inflorescence opposite the leaves, pendulous, the common peduncle up to 2 cm. long, glabrous, slender, the rhachis very slender, 6–10 cm. long, glabrous, many-flowered, the pedicels slender, about 13 mm. long, glabrous; calyx subcyathiform, about 2.5 mm. long and 5 mm. broad at apex, the lobes ovate, about 1.5 mm. long, mucronate, denticulate, glabrate, sparsely glandular; corolla lilac, about 12 mm. long, the tube very short (about 1.5 mm.), the lobes linear-lanceolate, reflexed, acuminate, capitate-glandular externally, long-pilose, especially on the margins; filaments about 1.5 mm. long, glabrous, connate to the middle; anthers narrow, about 4 mm. long and 0.75 mm. wide, connate at apex; ovary glabrous, globose; style slender, about 5 mm. long, glabrous.

Type in the U. S. National Herbarium, No. 1,518,016, collected at Umbría, Comisaría del Putumayo, Colombia, 0°54' N., 76°10' W., at 325 meters elevation, November 13, 1930, by G. Klug (No. 1776).

Solanum oxyphyllum has a number of features that are unusual in the section *Leiodendron*, notably in having the anthers persistently connate at apex, even in flowers in full anthesis. The calyx lobes are mucronate, as in many other species, but they are also minutely denticulate, a feature that I have not noted in any other species. Most species of *Leiodendron* have white flowers, rather than lilac as in this. The corolla lobes are unusually long and narrow, and are strongly pilose and glandular. The general aspect is also rather distinctive, owing to the subcordate-based, long-acuminate leaves and the very elongate, slender, pendulous inflorescences.

5. *Solanum aquatile* Morton, sp. nov.

Frutex virgatus, ramulis glabris, eglandulosis; folia solitaria vel subgeminata, subaequalia, breviter petiolata; lamina foliorum lineari-lanceolata, angusta, apice et basi attenuata, utrinque glaberrima, eglandulosa, venis primariis 9–11-jugis; inflorescentia oppositifolia, pedunculata, pedunculo glabro, furcato, multifloro; pedicelli graciles, glabri; calyx glaber, lobis deltoideis, acutis; corolla alba, lobis oblongis, glabris; filamenta ad medium connata, glabra; ovarium glabrum.

Slender shrub 1–2 meters high, sparsely branched, virgate, the stems subangulate, the branchlets short, straight, ascending at an acute angle, glabrous, eglandular; cauline leaves solitary, those of the branchlets subgeminata, subequal, subsessile or short-petiolate; leaf blades linear-lanceolate, up to 19 cm. long and 2.5 cm. wide, long-attenuate at apex, long-attenuate at base, decurrent into the petiole, entire, pale green on both sides, not darkening in drying, submembranaceous, glabrous and eglandular on both sides, not bearded in the vein axils, the primary veins 9–11 pairs, leaving at an acute angle, arcuate, anastomosing toward the margin; inflorescence opposite the leaves, 2–4 cm. long, the common peduncle

elongate, 5–18 mm. long, glabrous, furcate at apex, the rhachis short, many-flowered, the flowers crowded; pedicels about 8 mm. long in flower, slender, glabrous; calyx about 2.5 mm. long, 4 mm. broad, glabrous, the lobes deltoid, 1 mm. long, 1 mm. wide at base, acute, not mucronate; corolla white, about 11 mm. in diameter, about 7 mm. long, the tube short, 1.7–2 mm. long, the lobes spreading, oblong, about 5 mm. long, 1.5–2 mm. wide, acute, glabrous except for the minutely glandular-verrucose margins; filaments glabrous, about 1.5 mm. long, connate to the middle; anthers narrowly oblong, about 2.5 mm. long and 0.7 mm. wide; ovary globose, glabrous; style slender, about 4 mm. long, glabrous.

Type in the U. S. National Herbarium, No. 1,662,564, collected at Camp Aguila, Carare Valley, in the vicinity of Puerto Berrio, Department of Santander, Colombia, at 100–700 meters elevation, August 9, 1935, by Oscar Haught (No. 1868).

ADDITIONAL SPECIMENS EXAMINED:

COLOMBIA: Near La Jagua, 40 km. northeast of Chiriguana, Magdalena, August 20, 1938, *Haught* 2266. Bahía Solano, near Ciudad Mutis, El Chocó, at sea level, February 21–23, 1939, *Killip & García* 33608.

The type bears Mr. Haught's notation that the plant is "a slender shrub of watercourses, submerged in wet weather." *Haught* 2266 bears the comment "in bed of swift-flowing creek." The Killip and García specimen was collected from a plant growing in an open stream bed. This habit of growing in the beds of intermittent streams is very unusual, if not unique, in the genus *Solanum*.

Solanum aquatile may be distinguished from other Colombian species of the section *Leiodendron* by its elongate, very narrow, willowlike leaves, these entirely glabrous and eglandular, its glabrous stems and inflorescences, and its furcate peduncles. Its virgate aspect must be rather distinctive, the stem being erect, straight, and sparingly branched, the branches short and nearly erect.

The Killip and García specimen is in fruit. The berries are globose, fleshy, about 12 mm. long, glabrous, and apparently black.

6. *Solanum grandifolium* Morton, sp. nov.

Frutex, ramulis glabris; folia solitaria, longe petiolata, petiolo glabro; lamina foliorum maxima, ovalis, obtusa, basi late cuneata, pallide viridis, nitens, in venis primariis et mesophyllo parcissime pilosula, venis primariis ca. 12-jugis, venulis secundariis reticulatis; inflorescentia oppositifolia, pedunculo communi elongato, glabro, apice furcato, multifloro, rhachibus et pedicellis minutissime glanduloso-puberulis; calyx cyathiformis, externe parce glandulosus, subtruncatus vel leviter lobatus, lobis minutis, haud mucronatis, ciliolatis; corolla alba, tubo brevissimo, lobis oblongis.

Shrub, the branchlets thick, about 6 mm. in diameter, terete, glabrous; leaves solitary, long-petiolate, the petiole 3–4 cm. long, glabrous; leaf blades oval, 22–32 cm. long, 11.2–18 cm. wide, obtuse and slightly contracted at apex, broadly cuneate at base, a little oblique, scarcely decurrent, pale green, not darkening in drying, shining, entire, papyraceous, the midrib nearly glabrous, the primary veins and mesophyll very sparsely pilosulous (the hairs scattered, minute, straight, simple, eglandular), not bearded in the vein axils beneath, the primary veins about 12 pairs, elevated beneath, the secondary veins reticulate; inflorescence opposite the leaves, the common peduncle up to 2 cm. long, glabrous, furcate at apex, the rhachis up to 1.7 cm. long, many-flowered, minutely glandular-puberulous, the flowering pedicels short, 4–6 mm. long, slender, minutely glandular-puberulous; calyx cyathiform, about 1.5 mm. long and 3 mm. broad at apex, sparsely glandular externally, subtruncate or slightly lobed, the lobes scarcely evident or rarely up to 0.5 mm. long, about 1 mm. wide, rounded, not mucronate, ciliolate; corolla white, about 7 mm. long, the tube very short, about 1.5 mm. long, the lobes oblong, 2.5 mm. wide, scarcely acute, glandular-papillose externally at apex and on

margins; filaments about 1 mm. long, connate to middle, glabrous; anthers oblong, 3 mm. long and 1 mm. wide; ovary glabrous, globose; style straight, glabrous.

Type in the U. S. National Herbarium, No. 1,795,303, collected at San José del Guaviare, Comisaría del Vaupés, Colombia, at 240 meters elevation, November 4, 1939, by J. Cuatrecasas (No. 7394).

The present species may be distinguished from other Colombian species of section *Leiodendron* by its very large, shining leaves, bearing scattered, very minute, simple hairs all over the mesophyll of the lower leaf surface, but not bearded in the vein axils. It may also be distinguished from most of the other species by the pedunculate, furcate inflorescence.

7. *Solanum gracilescens* Morton, sp. nov.

Frutex, ramulis glandulosis, apice parce pilosulis; folia geminata, petiolata, petiolo crasso, juventute parce pilosulo; lamina foliorum acuminata, basis cuneata, haud nigricans, utrinque in mesophyllo parce glandulosa, in costa et venis parce glanduloso-pilosula, subtus in axillis venarum haud barbata, venis primariis 8-11-jugis; inflorescentia extra-axillaris, non oppositifolia, pedunculo communi nullo, rhachi simplici, multiflora, pedicellis gracilibus, parce glandulosis; calyx cupuliformis, glaber, leviter lobatus, lobis perspicue sub apice mucronatis; corolla alba, rotata, plicata; filamenta glabra, usque ad medium connata; antherae oblongae; ovarium glabrum.

Sparsely branched shrub, the branchlets about 4 mm. in diameter, glandular, sparsely pilosulous when young; leaves geminate, equal or unequal, petiolate, the petiole up to 2.5 cm. long, about 2 mm. thick, glandular and sparsely pilosulous when young; larger leaf blades up to 16 cm. long and 7.2 cm. wide, acuminate, cuneate at base, a little decurrent, papyraceous, entire, green, not darkening in drying, sparsely glandular on both sides on the mesophyll, sparsely glandular-pilosulous on the midrib and veins, not bearded in the vein axils beneath, the primary veins 8-11 pairs; smaller leaves conform; minute, axillary, stipule-like leaves developed; inflorescence extra-axillary, not opposite the leaves, a common peduncle not developed, the rhachis simple, curved, 5-6 mm. long, many-flowered, the flowering pedicels about 12 mm. long, slender, sparsely glandular when young, the fruiting thicker, 15-18 mm. long; calyx cuplike, 2.5-3 mm. long, 4-4.5 mm. wide, glabrous, lightly lobed, the lobes about 1 mm. long and 2 mm. broad at base, rounded, conspicuously mucronate below the apex; corolla white, rotate, about 2.2 cm. in diameter, about 13 mm. long, plicate in the sinuses, the lobes broadly ovate, acute, subhyaline at margin, glabrous, except for the minutely verrucose margins; filaments about 1.5 mm. long, glabrous, connate to middle; anthers oblong, about 4 mm. long and 1.5 mm. wide; ovary glabrous; style glabrous, about 5 mm. long; berry globose, about 10 mm. diameter, glabrous.

Type in the U. S. National Herbarium, No. 1,795,248, collected at Carpinterías, between the peaks of Munchique and Altamira, Cordillera Occidental, Department of El Cauca, Colombia, at 2,450-2,500 meters elevation, July 15, 1939, by E. Pérez Arbeláez and J. Cuatrecasas (No. 6170).

8. *Solanum dissimile* Morton, sp. nov.

Frutex ramosus, ramulis crassis, novellis incurvo-puberulis; folia solitaria, breviter petiolata, petiolo parce puberulo; lamina foliorum acuminata, viridis, glaberrima, venis primariis 5-8-jugis; inflorescentia oppositifolia, pedunculo communi brevi, puberulo, non furcato, pedicellis gracilibus, glabris; calyx minutus, leviter lobatus, lobis non mucronatis, externe apice parce puberulis; corolla alba, parva, tubo brevissimo, lobis reflexis, oblongo-linearibus; filamenta ad medium connata, glabra; antherae oblongae; ovarium glabrum.

Slender shrub about 2.4 meters high, the branchlets about 2.5 mm. in diameter, terete, conspicuously incurved-puberulous when young, glabrescent; leaves solitary, short-petiolate, the petiole up to 5 mm. long, sparsely puberulous; leaf blades 5–7.7 cm. long and 1.8–2.8 cm. broad, acuminate, broadly cuneate or obtuse at base, membranaceous, entire, green, not darkening in drying, entirely glabrous, not bearded in the vein axils, the primary veins 5–8 pairs; inflorescence opposite the leaves, the common peduncle short, about 2 mm. long, puberulous, not furcate, the rhachis about 2 mm. long, up to 6-flowered, the flowering pedicels slender, about 10 mm. long, glabrous, thickened at apex, the fruiting thicker, about 20 mm. long; calyx minute, about 0.5 mm. long, lightly lobed, the lobes about 0.25 mm. long, rounded, not mucronate, puberulous externally at the apex; corolla white, about 6 mm. long, the tube very short, about 1 mm. long, the lobes reflexed, oblong-linear, about 5 mm. long and 2 mm. wide, glabrous except for the papillose margins; filaments about 1 mm. long, connate to the middle, glabrous; anthers oblong, about 3.5 mm. long and 1.5 mm. wide; ovary glabrous; style slender, about 5.5 mm. long, glabrous; berry globose, about 13 mm. in diameter, glabrous.

Type in the U. S. National Herbarium, No. 1,355,466, collected near Loso, north of Toledo, Department of Norte de Santander, Colombia, in woods along stream, at 2,200–2,400 meters elevation, March 6–7, 1927, by E. P. Killip and A. C. Smith (No. 20415).

Solanum dissimile may be distinguished from other Colombia species of the section *Leiodendron* by its puberulous, eglandular branchlets, its small, solitary leaves, and its reduced inflorescences, with a short peduncle and rhachis, bearing only one flower in anthesis at a time. The calyx is smaller than in any other species of *Leiodendron*.

9. *Solanum marantifolium* Bitter, Repert. Sp. Nov. Fedde 11: 13. 1912.

Type from Popayán, El Cauca, Colombia, *Lehmann* 8513 (photograph US).

COLOMBIA: Bahía Solano, El Chocó, *Killip & García* 33541.

10. *Solanum longevirgatum* Bitter, Repert. Sp. Nov. Fedde 18: 67. 1922.

Type from Popayán, El Cauca, Colombia, alt. 2,000–2,500 meters, *Lehmann* 8511 (photograph US).

11. *Solanum cornifolium* H. & B. ex Dunal, Sol. Syn. 21. 1816.

Type from between Palacé and Popayán, El Cauca, Colombia, *Humboldt*.

12. *Solanum orgyale* Morton, sp. nov.

Frutex, ramulis novellis glanduloso-leprosis, mox glabratis; folia omnia geminata, valde inaequalia, majora longe petiolata, petiolo glabro; lamina foliorum majorum rhombea vel elliptica vel elliptico-oblonga, acriter acuminata, basi longe cuneata, glaberrima, eglandulosa, venis primariis 7–10-jugis; folia minora breviter petiolata, elliptica vel ovata, breviter acuminata vel obtusa vel emarginata; inflorescentia oppositifolia, simplex, pedunculo communi glanduloso, multifloro, pedicellis confertis, inconspicue glanduloso-pilosulis; calyx cupuliformis, glabratus, leviter lobatus, lobis vix mucronatis; corolla alba, parva, lobis oblongis.

Erect shrub 2 meters high, the young branchlets glandular-leprose, soon glabrous, terete, about 3 mm. in diameter; leaves all geminate, very unequal, the larger long-petiolate, the petiole up to 3 cm. long, glabrous; larger leaf blades rhombic or elliptic or elliptic-oblong, up to 26.5 cm. long and 12 cm. wide, abruptly and sharply acuminate, long-cuneate at base and a little decurrent into petiole, papyraceous, entire, green, not darkening in drying, glabrous on both sides, not bearded in the vein axils beneath, eglandular, the primary veins 7–10 pairs, coming off at an acute angle; smaller leaves short-petiolate (the petiole up to 8 mm. long), elliptic or ovate, 4.5–9.5 cm. long and 2.2–5.3 cm. wide, short-

acuminate or obtuse or emarginate, cuneate at base; inflorescence opposite the leaves, the common peduncle 5–10 mm. long, not furcate, glandular, the rhachis 0.5–3.5 cm. long, curved, densely glandular, many-flowered, the pedicels crowded, secund in two lines, glandular-pilosulous, about 4 mm. long, 0.3–0.5 mm. in diameter, the fruiting thicker; calyx cup-shaped, 1.2–1.8 mm. long, 2.5–4 mm. wide at apex, glabrate, lightly lobed, the lobes scarcely 0.5 mm. long, scarcely mucronate, the fruiting calyx accrescent, about 4 mm. long; corolla white, 3–6 mm. long, the tube short, 0.8–1.5 mm. long, the lobes oblong, acutish, minutely glandular-papillose externally; filaments 0.5–0.8 mm. long, connate at base, glabrous; anthers oblong, 2.2–3 mm. long, 0.8–1.2 mm. wide; ovary glabrous; style short; berry red (teste Haught), 5 mm. in diameter.

Type in the U. S. National Herbarium, No. 1,707,360, collected at San Fernando, between Río Carare and Puerto Berrio, Department of Santander, at 300 meters elevation, June 30, 1939, by Oscar Haught (No. 2850).

Solanum orgyale belongs to the section *Leiodendron*. It has no outstanding characters but does not agree with any other species known from the Andean region. Points that will aid in distinguishing it are the geminate, unequal, glabrous, and eglandular leaves, the glandular inflorescence and young stems, the short pedicels, and the small flowers.

13. *Solanum gratum* Bitter, Repert. Sp. Nov. Fedde 18: 59. 1922.

Type from Colonia Tovar, Venezuela, Moritz 1701.

It is not certain that this species occurs in Colombia.

14. *Solanum arboreum* H. & B. ex Dunal, Sol. Syn. 20. 1816.

Type from Cumanacoa, Venezuela, Humboldt (photograph US).

Reported from Colombia, but it is not certain that it occurs there.

Section LYCIANTHES

In 1917 Dr. E. Hassler segregated *Lycianthes* as a distinct genus, recognizing three species, *L. lycioides*, *L. candicans*, and *L. dombeyi*, all actually forms of a single collective species that is very common at high elevations in the Andes. The segregation was based on the peculiar structure of the fruit, which is not a fleshy, many-seeded berry, as in other species of *Solanum*, but is 8-seeded, each seed being enclosed within distinct sclerotic partition walls. In other respects, however, *Lycianthes*, as delimited by Hassler, is similar to species that he retained in *Solanum*. This single character does not seem to me sufficient to justify the segregation of *Lycianthes* as a distinct genus.

In 1919 Dr. Georg Bitter greatly enlarged the generic concept of *Lycianthes*, recognizing 134 species. As delimited by Bitter the genus consists of those species of *Solanum* that have both the inflorescence axillary and the calyx truncate. However, neither of these characters is peculiar to *Lycianthes*, axillary inflorescences being characteristic of *Solanum*, section *Polybotryon* in a strict sense (section *Bassovia* of Bitter), and truncate calyces being found in several species belonging to unrelated sections of *Solanum*.

The segregation of *Lycianthes* has been defended on the grounds that, inasmuch as *Solanum* is so large, the separation of a good-sized, recognizable group is a decided convenience. I admit that *Solanum* is inconveniently large. However, if it is thought desirable on the grounds of convenience to reduce the size of the genus, a very much better case can be made out for segregating as distinct genera the two traditional subgenera *Pachystemonum* and *Leptostemonum*. This would approximately cleave the genus in half. Moreover, these two subgenera are separated by more fundamental characters than those possessed by *Lycianthes*. *Leptostemonum* has spiny leaves and stems, and attenuate anthers with a minute terminal pore; *Pachystemonum* has unarmed leaves and stems, and oblong anthers

dehiscent by a large, introrse pore. Of the hundreds of species of *Solanum*, I know of only a few that do not show this correlation of characters. Yet such a segregation is unthinkable and, so far as I know, has never been suggested.

The argument for the recognition of *Lycianthes* is not acceptable, not only because the characters are not distinctive, but chiefly, so long as natural relationships are held as a guide, because *Lycianthes* is so obviously more closely related to *Pachystemonum* than *Pachystemonum* itself is to *Leptostemonum*. So long as these two more distantly related groups are retained in the same genus, one can not segregate a weakly characterized offshoot from one of them.

Bitter's treatment of the *Lycianthes* group is good, although difficult to use, the differences between the species not being clearly indicated. There is no key. The sectional arrangement is excellent, but the division into series is based on a character that Bitter believed fundamental but about which I am skeptical. In the berries of certain species of *Lycianthes* (also of other sections of *Solanum*) there occur minute "stone granules," possibly roughly similar in origin to the stone cells in the fruits of *Pyrus*. Bitter claimed that the presence or absence of these "stone granules," their number, position, and size were constant in a given species of *Solanum*. Whether this is so will have to be determined by extensive field work. I am inclined to doubt the taxonomic significance of this character, since by using it Bitter was able to segregate so many otherwise similar species from the common *Solanum nigrum*. In any case it is difficult of practical application in the study of herbarium material.

Inasmuch as the species of this section have never been keyed, and especially since Bitter's monograph was published in a serial available only in the largest libraries, it seems worth while to present the following brief treatment of the South American species. The keys will undoubtedly require modification, a large percentage of the species still being known from a single collection only. In addition, there are a good many undescribed species present in recent collections, especially in those from Colombia. The reduction of *Lycianthes* obviously necessitates a good many new names and combinations. I have avoided making any transfers of doubtfully valid species. For convenience the species are treated regionally.

THE SPECIES OF SOLANUM, SECTION LYCIANTHES, IN COLOMBIA,
VENEZUELA, AND ECUADOR

KEY TO SPECIES

- Berry 8-celled, each cell wall sclerotic, enclosing a single seed; leaves small 0.6–2.5 cm. wide (*Eulycianthes*)..... 1. *S. lycioides*
- Berry 2-celled, lacking sclerotic partitions, many-seeded; leaves over 2.5 cm. wide.
- Plants herbaceous or suffrutescent, prostrate or climbing, radicanat at nodes.
- Flowers solitary; hairs simple.
- Leaves ovate-elliptic, obviously longer than broad; filaments unequal, two 1 mm. long, three 1.5–1.8 mm. long (*Kittoides*)... 2. *S. profunderugosum*
- Leaves cordate or reniform, as wide as long; filaments equal, 0.9–1 mm. long (*Asaropsis*)..... 3. *S. asarifolium*
- Plants shrubs or trees, not radicanat at the nodes.
- A. Filaments unequal; hairs at least partly stellate or furcate (except in *S. cyathocalyx*) (*Eupolymeris*).
- Calyx truncate, teeth wholly lacking.
- Inflorescence 2–5-flowered; hairs all simple; corolla 12 mm. long; one filament 2 mm. long, four 1 mm. long... 4. *S. cyathocalyx*
- Inflorescence 10–14-flowered; hairs stellate; corolla 18 mm. long; one filament 4.5 mm. long, four 1.5 mm. long... 5. *S. integrum*

Calyx truncate, 5- or 10-toothed below the margin.

Calyx teeth 5 only----- 6. *S. quinquelobatum*

Calyx teeth 10.

Anthers connate in pairs, one free; leaf blades 12.5-15.7 cm. long, coriaceous, shining, glabrous on both sides at maturity.

7. *S. semiconnatum*

Anthers all free; leaves otherwise.

Hairs of stems glandular at apex----- 8. *S. magdalenense*

Hairs eglandular.

Calyx with reflexed teeth borne at or below the middle, the upper part forming a membranous cup 2.5-3 mm. long, this truncate or slightly lobed----- 9. *S. urnigerum*

Calyx otherwise, the apical part not membranous.

Longer calyx teeth 3-7 mm. long.

Anthers stellate-pubescent on the connective; longer calyx teeth 5-7 mm. long. Hairs of stems and leaves stipitate----- 10. *S. dendriticothrix*

Anthers glabrous on connective; longer calyx teeth 3-4 mm. long.

Longer filament 6 mm. long, the four shorter 2-2.5 mm. long; anthers 6.5 mm. long; leaves subglabrous at maturity except on veins----- 11. *S. caucaense*

Longer filament 3-4 mm. long the four shorter 1.5-2 mm. long; anthers 5 mm. long; leaves subtomentose at maturity----- 12. *S. meridionale*

Longer calyx teeth 2 mm. long or less.

Calyx teeth spreading or reflexed in fruit, not exceeding the calyx tube. Young branchlets closely ferruginous-tomentose; leaves 4-7 cm. broad.

Leaf blades rounded at base----- 13. *S. pauciflorum*

Leaf blades cuneate at base----- 14. *S. crassidens*

Calyx teeth suberect, exceeding the calyx tube.

Stems, leaves, and calyx densely ferruginous-tomentose.

Berry 10-12 mm. in diameter (teste Bitter).

15. *S. ornatum*

Stems glabrous at maturity; berry 6-8 mm. in diameter.

Leaves ovate, rounded at base, abruptly decurrent into petiole.

Leaf blades 4-8 cm. long, 2.8-4 cm. broad, persistently stellate-pubescent; corolla rather densely hairy; calyx stellate-pubescent; pedicels 1.5-2.3 cm. long; inflorescence 4-6-flowered----- 16. *S. lentum*

Leaf blades 9-10 cm. long, 4-4.7 cm. broad, glabrescent at maturity; corolla papillose; calyx nearly glabrous; inflorescence 1-5-flowered... 17. *S. geminatum*

AA. Filaments equal; hairs all simple (*Simplicipila*).

Calyx truncate, without teeth----- 18. *S. holocalyx*

Calyx truncate, 10-toothed below the margin.

Inflorescence 15-25-flowered; corolla about 5 mm. long. Leaf blades densely and closely strigose on both sides, long-acuminate, the smaller of a pair conform; fruit subspherical... 19. *S. radiatum*

Inflorescence 1-5-flowered; corollas larger.

Corolla commonly 9-11 mm. long.

Flowers solitary, larger leaves 1.3-5.5 cm. wide. Leaves glabrate above, setulose on veins beneath----- 20. *S. xylopiifolium*

Flowers about 5 in an axil; larger leaves 6.5–8.5 cm. wide.

21. *S. ulei*

Corolla 15–25 mm. long.

Smaller leaf of a pair stipule-like, 1 cm. long or less, orbicular, rounded at apex..... 22. *S. cundinamarcae*

Smaller leaf over 1 cm. long, acute.

Stems and leaves substrigose..... 23. *S. lasiophyllum*

Stems and leaves hispid..... 24. *S. lehmannii*

1. *Solanum lycioides* L. Mant. Pl. 45. 1767.

Solanum lycioides var. *tomentosum* Dunal, Hist. Sol. 174. 1813. Type from Peru, Ruiz.

Solanum phillyreoides H. & B. ex Dunal, Sol. Syn. 24. 1816. Type from between Tenerife and Badillas, Magdalena Valley, Colombia, Humboldt.

Solanum candicans Dunal, Sol. Syn. 23. 1816. Type from Peru, Ruiz.

Solanum lycioides var. *iodasterum* Dunal in DC. Prodr. 13¹: 162. 1852. Type from San Antonio, Ecuador, Hartweg 1302.

Fregirardia angustifolia Dunal, op. cit. 506. Type from San Antonio, Ecuador, Hartweg 1302, erroneously cited as 1802.

Solanum lycioides var. *parvifolium* Wedd. Chlor. And. 2: 107. pl. 55. 1857. Type from Prov. Tacna, Peru, Weddell.

Solanum pseudolycioides Rusby, Bull. Torrey Club 26: 193. 1899. Type from La Paz, Bolivia, alt. 3,000 meters, Rusby 833 (isotype US).

Solanum lycioides var. *angustifolium* Dammer, Bot. Jahrb. Engler 49: 216. 1913 (*nomen nudum*).

Lycianthes lycioides Hassl. Ann. Cons. Jard. Genève 20: 181. 1917.

Lycianthes candicans Hassl. loc. cit.

Lycianthes lycioides var. *parcipila* Bitter, Abh. Naturw. Ver. Bremen 24: 325. 1919. Type from Calicali near Quito, Ecuador, Lehmann 383b.

Lycianthes lycioides var. *brachyodon* Bitter, loc. cit. Type from Rfo Gaillabamba, Prov. Pichincha, Ecuador, Stuebel 51a.

Lycianthes lycioides var. *iodastera* Bitter, loc. cit.

Lycianthes lycioides subsp. *tomentosa* Bitter, op. cit. 327.

Lycianthes lycioides subsp. *parvifolia* Bitter, op. cit. 328.

As the number of synonyms suggests, this species is exceedingly variable, especially in the size and pubescence of the leaves. It is abundant throughout most of the Andes.

2. *Solanum profunderugosum* (Bitter) Morton, comb. nov.

Lycianthes profunderugosa Bitter, Abh. Naturw. Ver. Bremen 24: 406. 1919

Type: Lehmann 6987. Bitter's specimen lacked locality data. The entry for this number in Lehmann's notebook, a copy of which is in the National Museum, reads as follows: "Colombia. Grows on steep mountain slopes on the western slopes of the western Andes of Popayán, 1,600–2,200 meters. Flowers in March and April."

A specimen from La Gallera, Micay Valley, El Cauca, alt. 2,000–2,200 meters, July 1, 1922, collected by E. P. Killip (No. 7949), agrees with the description and with a photograph of the type.

3. *Solanum asarifolium* Kunth & Bouché, see page 62.

4. *Solanum cyathocalyx* Van Heurck & Muell. Arg. Obs. Bot. 65. 1870.

Lycianthes cyathocalyx Bitter, Abh. Naturw. Ver. Bremen 24: 400. 1919. Type from Chanduy, Prov. Guayas, Ecuador, Spruce 6501.

5. *Solanum integrum* Morton, nom. nov.

Lycianthes sanctae-marthae Bitter, Abh. Naturw. Ver. Bremen 24: 377. 1919, non *Solanum sanctae-marthae* Bitter (1913).

Type from Santa Marta, Colombia, H. H. Smith 1189 (isotype US).

6. *Solanum quinquelobatum* Morton, nom. nov.

Lycianthes floccosa Bitter, Abh. Naturw. Ver. Bremen 24: 398. 1919, non *Solanum floccosum* Mart. & Gal. (1845).

Type from Chunchí, Andes of Quito, Ecuador, *Spruce* 6036.

7. *Solanum semiconnatum* Morton, nom. nov.

Lycianthes coriacea Bitter, Abh. Naturw. Ver. Bremen 24: 379. 1919, non *Solanum coriaceum* Dunal (1813).

Type from Tuquerres, road to Barbacoas, Colombia, *Triana*.

8. *Solanum magdalenense* Morton, nom. nov.

Solanum campylocladum var. *magdalenae* Dunal in DC. Prodr. 13¹: 173. 1852, non *S. magdalenae* Dammer (1906).

Lycianthes magdalenae Bitter, Abh. Naturw. Ver. Bremen 24: 381. 1919.

Type from Magdalena Valley, Colombia, *Goudot* in 1846.

A recent collection of this rare species is: Vicinity of Barranca Bermeja, Magdalena Valley, Santander, Colombia, alt. 100-500 meters, *Haught* 1463.

9. *Solanum urnigerum* (Bitter) Morton, comb. nov.

Lycianthes urnigera Bitter, Abh. Naturw. Ver. Bremen 24: 376. 1919.

Type from Ocaña, Norte de Santander, Colombia, *Schlim* 1120.

A second collection is: Mocoa, Comisaría del Putumayo, Colombia, *García* 4608.

10. *Solanum dendriticothrix* (Bitter) Morton, comb. nov.

Lycianthes dendriticothrix Bitter, Abh. Naturw. Ver. Bremen 24: 375. 1919.

Type from Arracocho and Quebrada Grande, Dept. Cundinamarca, *Triana* (photograph US).

Lycianthes herbert-smithii Rusby (Bull. Torrey Club 53: 213. 1926), based on *H. H. Smith* 1179 (isotype US) from Sierra del Líbano, Santa Marta, Colombia, is probably a synonym.

11. *Solanum caucaense* (Bitter) Morton, comb. nov.

Lycianthes caucaensis Bitter, Abh. Naturw. Ver. Bremen 24: 359. 1919.

Type from Miraflores, above Palmira, Dept. El Cauca, Colombia, alt. 1,600 meters, *Pittier* 884 (US).

The typical form of the species has the corolla obviously stellate-pubescent outside along the middle of the lobes. In the lowlands of western Colombia occurs the following variety.

11a. *Solanum caucaense* var. *glabrescens* Morton, var. nov.

A var. *typica* corollis apicibus lorum exceptis omnino glabris differt.

Differs from the typical variety in the corolla being glabrous except at the apices of the lobes.

Type in the U. S. National Herbarium, No. 1,519,156, collected at Tutunendo, Intendencia del Chocó, Colombia, at 80 meters elevation, May 19-20, 1931, by W. A. Archer (No. 2132).

ADDITIONAL COLLECTIONS EXAMINED: Quibdó, Río Atrato, Chocó, *Archer* 1919; Andagoya, Chocó, *Killip* 35494.

12. *Solanum meridionale* Morton, nom. nov.

Lycianthes columbiana Bitter, Abh. Naturw. Ver. Bremen 24: 372. 1919, non *Solanum columbianum* Dunal (1852).

Type from between Tenerife and Badillas, Magdalena Valley, Colombia, *Humboldt* (photograph US).

A second collection is: La Cumbre, Dept. El Valle, Colombia, alt. 1,600-2,000 meters, *Pennell* 5406.

13. *Solanum pauciflorum* Vahl, *Eclog. Amer.* 1: 20. 1796.

Solanum neglectum Dunal, *Hist. Sol.* 177. 1813. Type from West Indies, Plumier.

Solanum speciosum Dunal, *op. cit.* 179. Type from West Indies, Plumier.

Lycianthes pauciflora Bitter, *Abh. Naturw. Ver. Bremen* 24: 341. 1919.

Bitter records this species only from the Lesser Antilles, Trinidad, and Tobago. It grows also in Venezuela: Hills of Guaremales at La Fortaleza on road from Puerto Cabello to San Felipe, State of Carabobo, alt. 100–500 meters, Pittier 8803. Between Ocumare and Maracay, State of Aragua, Pittier 11867. Rancho Grande, State of Aragua, alt. 1,040 meters, L. Williams 10269.

14. *Solanum crassidens* Morton, *nom. nov.*

Lycianthes ecuadorensis Bitter, *Abh. Naturw. Ver. Bremen* 24: 363. 1919, non *Solanum ecuadorensis* Bitter (1920).

Type from Balao, Ecuador, Eggers 14386.

ADDITIONAL SPECIMEN:

ECUADOR: Archidona, Prov. Napo-Pastaza, alt. 650 meters, Meria 7312.

15. *Solanum ornatum* Morton, *nom. nov.*

Lycianthes ferruginea Bitter, *Abh. Naturw. Ver. Bremen* 24: 339. 1919, non *Solanum ferrugineum* Jacq. (1798).

Type from Colonia Tovar, Venezuela, Gollmer.

I have seen a photograph of Moritz 1642, the second specimen cited by Bitter, and there is in the National Herbarium a specimen merely labeled "Colombia, Moritz," which agrees with the photograph. The following specimens are to be referred to this species:

VENEZUELA: Colonia Tovar, State of Aragua, alt. 1,800–2,000 meters, Pittier 13514. Costabo, State of Miranda, Tamayo 397.

COLOMBIA: Líbano, Dept. Tolima, alt. 1,100–1,300 meters, Pennell 343. Mutis 1983, *sin. loc.*

16. *Solanum lentum* Cav. *Icon. Pl.* 4: 336. *pl. 308.* 1797.

Solanum cumanense Roem. & Schult. *Syst. Veg.* 4: 662. 1819. Type from Cumaná, Venezuela, Humboldt 71 (photograph US).

Solanum virgatum var. *caracasenum* O. E. Schulz in Urban, *Symb. Antill.* 6: 190. 1909. Type from Caracas, Humboldt 748.

Lycianthes lenta Bitter, *Abh. Naturw. Ver. Bremen* 24: 364. 1919.

Lycianthes lenta var. *endopsila* Bitter, *op. cit.* 367, *nom. abort.* Type from Caracas, Humboldt 748.

Lycianthes lenta var. *scotinophila* Bitter, *loc. cit.* Type from San Mateo, State of Aragua, Venezuela, Otto 788.

VENEZUELA: La Ceiba, at sea level, E. Reed 920. Río Chico, State of Miranda, Jahn 1211, 1248. Santa Rosa, State of Lara, Pittier 13088. Lara, Saer 118. Barquisimeto, Turbio River, Pittier 11179.

COLOMBIA: Barranquilla, Elias 934. San Martín de Loba, Dept. Bolívar, Curran 27, 37.

17. *Solanum geminatum* Vahl, *Eclog. Amer.* 1: 21. 1796.

Solanum sylvaticum H. & B. ex Dunal, *Hist. Sol.* 24. 1816. Type from Cumaná and Bordones, Venezuela, Humboldt.

Lycianthes geminata Bitter, *Abh. Naturw. Ver. Bremen* 24: 392. 1919.

Type from French Guiana, Rohr.

VENEZUELA: Guaremales, State Carabobo, alt. 10–100 meters, Pittier 9404.

COLOMBIA: Turbaco, Bolívar, alt. 200–300 meters, Killip & Smith 14311. Santa Marta, H. H. Smith 1177. Calamar, Bolívar, alt. 20 meters, Killip & Smith 14721.

18. *Solanum holocalyx* (Bitter) Morton, comb. nov.

Lycianthes holocalyx Bitter, Abh. Naturw. Ver. Bremen 24: 459. 1919.

Type from Santo Domingo, Ecuador, *Sodi* 114/38 (photograph US).

PERU: Balsapuerto, Loreto, alt. 150–550 meters, *Killip & Smith* 28446, 28507, 28555, 28557, 28572.

The following specimens represent the same, or a very closely allied species for which there is no available name.

PERU. JUNIN: Colonia Perené, alt. 600 meters, *Killip & Smith* 25152. Río Paucartambo Valley near Perené Bridge, *Killip & Smith* 25314. Near La Merced, east of Quimiri Bridge, alt. 800–1,300 meters, *Killip & Smith* 23940. SAN MARTÍN: Juan Jui, Alto Río Huallaga, alt. 400–800 meters, *Klug* 4261.

19. *Solanum radiatum* Sendtn. in Mart. Fl. Bras. 10: 53. 1846.

Lycianthes radiata Bitter, Abh. Naturw. Ver. Bremen 24: 433. 1919.

Type from between Tena and La Mesa, Bogotá, Colombia, *Hartweg* 1293 (photograph US).

COLOMBIA: El Gigante, Huila, *Ariste-Joseph* in 1920. Mount San Martín, Santander, alt. 2,300–2,500 meters, *Killip & Smith* 19136. Vicinity of Charta, Santander, *Killip & Smith* 19293. Mount Peña Blanca, Santander, alt. 2,500–2,600 meters, *Killip & Smith* 19263. Vicinity of La Baja, alt. 3,000 meters, *Killip & Smith* 18117. Loso, Norte de Santander, *Killip & Smith* 20473. Near Medellín, Antioquia, *Archer* 1090. Pinares above Salento, Caldas, 2,700–2,900 meters, *Pennell* 9326. La Ceja, Antioquia, *Daniel* 2183. Florida, *Pérez Arbeláez* 2560a. Salto de Tequendama, Cundinamarca, alt. 2,250–2,300 meters, *Cuatre-casas* 206. La Sierra, 18 km. north of Medellín, Antioquia, *Archer* 1364.

From description *Solanum goudotii* Dunal (*Lycianthes goudotii* Bitter) does not seem to differ appreciably.

20. *Solanum xylopiifolium* Dunal in DC. Prodr. 13¹: 179. 1852.

Lycianthes xylopiifolia Bitter, Abh. Naturw. Ver. Bremen 24: 454. 1919.

Lycianthes xylopiifolia var. *intermedia* Bitter, op. cit. 455. Type from Colonia Tovar, Venezuela, *Moritz* 345.

Lycianthes xylopiifolia var. *maxima* Bitter, op. cit. Type from Colonia Tovar, Venezuela, *Gollmer*.

Type from Colonia Tovar, Venezuela, *Moritz* 825.

VENEZUELA: Agua Negra, D. F., *Tamayo* 1229. Colonia Tovar, State Aragua, *Pittier* 9378, 10036, 10057; *Allart* 318.

COLOMBIA. SANTANDER: Río Suratá Valley, alt. 2,000–2,300 meters, *Killip & Smith* 16674. Vicinity of California, alt. 2,800 meters, *Killip & Smith* 16891. Mount San Vicente, *Killip & Smith* 18998. Mount San Martín, *Killip & Smith* 19169. La Baja, *Killip & Smith* 17191. NORTE DE SANTANDER: Pamplona to Toledo, alt. 2,800–3,000 meters, *Killip & Smith* 19994. Pica-Pica Valley, above Tapatá, alt. 2,100–2,400 meters, *Killip & Smith* 20212. Loso, *Killip & Smith* 20464.

21. *Solanum ulei* (Bitter) Morton, comb. nov.

Lycianthes ulei Bitter, Abh. Naturw. Ver. Bremen 24: 437. 1919.

Lycianthes ulei subsp. *dolichodonta* Bitter, op. cit. 438. Type from Balao, Ecuador, *Eggers* 14409 (isotype US).

Lycianthes ulei var. *strigulosa* Bitter, loc. cit. Type from San Miguel, Ecuador, *Sodi* 114/46.

Type from Deringal San Francisco, Río Acre, Amazonas, Brazil, *Ule* 9764 (isotype US).

22. *Solanum cundinamarcae* (Bitter) Morton, comb. nov.

Lycianthes cundinamarcae Bitter, Abh. Naturw. Ver. Bremen 24: 447. 1919.

Type from Cipacón, Dept. Cundinamarca, Colombia, alt. 2,800 meters, *Lehmann* 2602.

COLOMBIA: Albán, Cundinamarca, alt. 1,600 meters, *Guevara Amórtegui* 275.

23. *Solanum lasiophyllum* H. & B. ex Dunal, Sol. Syn. 25. 1816.

?*Solanum quindiuense* Zahlbr. Beih. Bot. Centralbl. 13: 82. 1902. Type from Quindío, Colombia, alt. 2,700–3,400 meters, *Princess Therese*.

Lycianthes lasiophylla Bitter, Abh. Naturw. Ver. Bremen 24: 449. 1919.

Type from between Menezes and Teindala, Andes of Pasto, Colombia, *Humboldt*.

The following specimen seems to agree fairly well with the description:

COLOMBIA: Aguabonita, below San Miguel, Dept. Cundinamarca, alt. 2,700 meters, *Balls* 7414.

24. *Solanum lehmannii* (Bitter) Morton, comb. nov.

Lycianthes lehmannii Bitter, Abh. Naturw. Ver. Bremen 24: 444. 1919.

Lycianthes lehmannii subsp. *gibbosiaspera* Bitter, op. cit. 445. Type from Páramo de Guanacas, Popayán, Dept. El Cauca, Colombia, *Lehmann* 5561.

Type from Alto de Cuitambo on Mount Sotará, Colombia, *Lehmann* 6192 (photograph US).

COLOMBIA. EL CAUCA: Río Flautas, Río Paez Valley, alt. 2,900 meters, *Pittier* 1217. Paletará to Calaguala, alt. 3,000–3,200 meters, *Pennell* 7110. Carpinterías, 2,450–2,500 meters, *Pérez Arbeláez & Cuatrecasas* 6174. Cerro de Munchique, alt. 2,000–2,500 meters, *Pérez Arbeláez & Cuatrecasas* 6216.

Lycianthes rufinervia Rusby, based on *Bassovia ferruginea* Rusby (type from Santa Marta, *H. H. Smith* 1182), is very close to *S. lehmannii*.

DUBIOUS SPECIES

SOLANUM CHRYSOPHYLLUM H. & B. ex Dunal, Sol. Syn. 25. 1816.

Type: "Crescit in Regno Quitensi," *Humboldt*.

SOLANUM LANUGINOSUM H. & B. ex Dunal, Sol. Syn. 25. 1816.

Type: "Crescit in Regno Quitensi prope Mulalo," *Humboldt*.

LYCIANTHES HYPOCHRYSEA Bitter, Abh. Naturw. Ver. Bremen 24: 452. 1919.

Type from Nanegal Valley, Ecuador, *Sodirol* 114/37 (photograph US).

Since this may be identical with one of the two old species of *Humboldt* and *Bonpland* mentioned above, it does not seem desirable to transfer it to *Solanum*. The following specimen apparently belongs here:

ECUADOR: Tena, Prov. Napo-Pastaza, alt. 400 meters, *Meria* 7148.

LYCIANTHES SODIROLI Bitter, Abh. Naturw. Ver. Bremen 24: 436. 1919.

Type from Mount Corazón, Ecuador, alt. 2,000–2,800 meters, *Sodirol* 114/40 (photograph US).

Apparently to be referred to this species is the following specimen:

ECUADOR: Quevedo, Cantón Vinces, Prov. Los Ríos, alt. 50 meters, *Meria* 6592.

LYCIANTHES NOVOGRANATENSIS Moldenke, Phytologia 1: 16. 1933.

Type from El Umbo Region, Colombia, *Laurance* 478.

From description this species is probably the same as *S. xylopiifolium*.

LYCIANTHES RECTICARPA Rusby, Bull. Torrey Club 53: 210. 1926.

Type from Santa Marta, Colombia, *H. H. Smith*.

THE SPECIES OF SOLANUM, SECTION LYCIANTHES, IN ARGENTINA AND PARAGUAY

KEY TO SPECIES

- Berry 8-celled, the partitions sclerotic, each cell enclosing a single seed; leaves not over 1 cm. wide..... 1. *S. lycioides*
- Berry 2-celled, the partitions not sclerotic, many-seeded; leaves over 1 cm. wide. Stems creeping, rooting at the nodes; flowers solitary; leaf blades cordate, as wide as long..... 2. *S. asarifolium*
- Stems erect, not rooting at the nodes; flowers fasciculate; leaf blades not cordate, longer than broad.
- Filaments strongly unequal, one 6 mm. long, the other four 2 mm. long. Corolla white, 2.3–3 cm. broad; anthers 5 mm. long; hairs all stellate. 3. *S. australe*
- Filaments shorter, less strongly unequal.
- Anthers 3 mm. long and 1.5–2 mm. wide; corolla purple, 2–2.5 cm. broad; hairs of calyx and upper leaf surface mostly simple; calyx lobes strongly unequal..... 4. *S. rantonnetii*
- Anthers 2 mm. long, 0.8 mm. broad; corolla white, 1.6 cm. broad; hairs of calyx and upper leaf surface almost all branched; calyx lobes subequal. 5. *S. saltense*

1. *Solanum lycioides* L. See page 57.

Only var. *parvifolium* Wedd. occurs in this region. It has been found only in the Province of Jujuy at high elevations (about 3,000 meters).

2. *Solanum asarifolium* Kunth & Bouché, Ind. Sem. Hort. Berol. 1845: 10. 1845; *Linnaea* 19: 386. 1847.

Solanum violifolium var. *majus* Dunal in DC. Prodr. 13¹: 164. 1852. Type from Santa Cruz, Bolivia, *d'Orbigny* 619.

Solanum chodatianum Huber, Bol. Mus. Goeldi 4: 602. f. 7a, b. 1906. Type from Contamana, Brazil, *Huber*.

Solanum violifolium f. *chacoense* Hassl. Repert. Sp. Nov. Fedde 15: 220. 1918. Type from Río Pilcomayo, Paraguay, *Rojas* 275.

Solanum violifolium var. *asarifolium* Hassl. loc. cit.

Solanum violifolium var. *decadontum* Hassl. loc. cit. Type from Río Pilcomayo, Paraguay, *Morong* 920 (isotype US).

Lycianthes asarifolia Bitter, Abh. Naturw. Ver. Bremen 24: 423. 1919.

Type from a cultivated plant in Berlin (photograph US).

VENEZUELA: Guaremales, *Pittier* 9129. Barquisimeto, Lara, *Saer* 263. Guinand Estate, Siquire Valley, Miranda, *Pittier* 5972. La Molea, *Eggers* 13534.

BOLIVIA: Cochabamba, *Bang* 1235. Charagua, Chaco, *Cárdenas* 2625. Without locality, *Bang* 2521.

BRAZIL: Seringal San Francisco, Amazonas, *Ule* 9761. Coxipó da Ponte, Cuyabá, Matto Grosso, *Kuhlmann* 4506.

ARGENTINA: Campo Grande, Orán, Salta, alt. 600 meters, *Venturi* 7763.

3. *Solanum australe* Morton, nom. nov.

Solanum pseudolycioides Chod. & Hassl. Bull. Herb. Boiss. II. 4: 84. 1904, non Rusby (1899).

Lycianthes pseudolycioides Bitter, Abh. Naturw. Ver. Bremen 24: 352. 1919. Type from Arroyo Mocooy, Paraguay, *Hassler* 4912.

RANGE: Paraguay and Brazil.

PARAGUAY: Alto Paraná, *Fiebrig* 5692.

4. *Solanum rantonnetii* Carr. ex Lescuyer in Hérincq, Hort. Franc. II. 1: 197. pl. 16. 1859.

Solanum corniculatum Hiern in Warming, Nat. For. Kjöbenhavn Vid. Medd. 29: 45. 1877. Type from Brazil, *Glaziou* 1078.

Solanum urbanum Morong, Ann. N. Y. Acad. 7: 177. 1892. Type from Asunción, Paraguay, *Morong* 147.

Solanum muticum N. E. Brown, Kew Bull. 1894: 6. 1894. Type from a cultivated plant originally from Paraguay.

A detailed description is given by Bitter (Repert. Sp. Nov. Fedde 12: 458. 1913).

5. *Solanum saltense* (Bitter) Morton, comb. nov.

Lycianthes saltensis Bitter, Abh. Naturw. Ver. Bremen 24: 335. 1919.

Type from Cuachipas, Province Salta, Argentina, *Lorentz & Hieronymus*.

ARGENTINA: El Duraznito, alt. 550 meters, *Venturi* 1667. La Posta, Sierra de Medina, alt. 800 meters, *Venturi* 2392. Cerro del Campo, alt. 1,500 meters, *Venturi* 10344, 10363. Las Brenas, alt. 250 meters, *Venturi* 10186.

The name *S. saltense* is unfortunately much like that of the Brazilian species *S. saltiense* S. Moore, but both must stand since they differ by a letter and have different derivations.

THE SPECIES OF SOLANUM, SECTION LYCIANTHES, IN BRAZIL

KEY TO SPECIES

Stems creeping, rooting at the nodes; flowers solitary. Hairs all simple (*Asaropsis*).

Calyx teeth 5..... 1. *S. asarifolium*

Calyx teeth 10, alternately unequal..... 2. *S. violifolium*

Stems erect, not rooting at the nodes; flowers not solitary. Calyx teeth 10, alternately unequal.

Filaments unequal (*Eupolymeris*).

Hairs all simple. Calyx teeth in fruit 8–9 mm. long (5–6.5 mm. long in flower)..... 3. *S. longidentatum*

Hairs at least partly stellate.

Hairs of calyx and upper leaf surface mostly simple; corolla violet; filaments not strongly unequal, three 2–3 mm. long, two 1.5 mm. long..... 4. *S. rantonnetii*

Hairs all stellate; corolla white (not known in *S. japurense* or *S. stellato-pubescens*); filaments strongly unequal, one about 3 times as long as the other four (not known in *S. stellato-pubescens*).

Calyx lobes in fruit 5–7 mm. long; berry 1.6–2 cm. in diameter.

5. *S. stellato-pubescens*

Calyx lobes in fruit not over 4 mm. long; berry 1–1.4 cm. in diameter.

Flowers 2–3 in an axil; leaf blades nearly glabrous beneath at maturity except on the veins..... 6. *S. japurense*

Flowers 4–9 in an axil; leaf blades persistently pubescent beneath.

Corolla hairy on back of lobes..... 7. *S. hypomalacum*

Corolla glabrous except on margins and apex..... 8. *S. australe*

Filaments equal. Hairs all simple. (*Simplicipila*).

Corolla 15–16 mm. in diameter; anthers 4 mm. long; primary veins 6 or 7 pairs..... 9. *S. coffeifolium*

Corolla 10 mm. in diameter; anthers 2 mm. long; primary veins 13 or 14 pairs..... 10. *S. ulei*

1. *Solanum asarifolium* Kunth & Bouché. See page 62.
2. *Solanum violifolium* Schott ex Spreng. Syst. Veg. 4, Cur. Post. 403. 1827.
Boldoa repens Spreng. Syst. Veg. 1: 179. 1825, non *Solanum repens* alior.
Lycianthes violifolia Bitter, Abh. Naturw. Ver. Bremen 24: 425. 1919.
Type: Not stated.
BRAZIL: Rio de Janeiro, *Ule* (Mus. Nac. Rio Jan. 25614); *Brade* 10747 (Mus. Nac. Rio Jan. 25751). Excelsior, Rio de Janeiro, *Brade* (Mus. Nac. Rio Jan. 25855). Paraná, *Dusén* 4131 (Mus. Nac. Rio Jan. 25876).
3. *Solanum longidentatum* (Bitter) Morton, comb. nov.
Lycianthes longidentata Bitter, Abh. Naturw. Ver. Bremen 24: 356. 1919.
Type from Estella, Seringal San Francisco, Rio Acre, Amazonas, Brazil, *Ule* 9733 (isotype US).
BRAZIL: Near Palmares, São Paulo de Olivença, Amazonas, *Krukoff* 8443.
4. *Solanum rantonnetii* Carr. See page 63.
BRAZIL: Campinas, São Paulo, *Campos Novaes* 6138.
5. *Solanum stellato-pubescens* (Dunal) Morton, comb. nov.
Solanum japurensse var. *stellato-pubescens* Dunal in DC. Prodr. 13¹: 174. 1852.
Lycianthes stellato-pubescens Bitter, Abh. Naturw. Ver. Bremen 24: 351. 1919.
Type from Bahia, Brazil, *Sello*.
BRAZIL: Agua Preto, Bahia, *P. R. O. Silva* 1912 (Hoehne 35126).
6. *Solanum japurense* Dunal in DC. Prodr. 13¹: 174. 1852.
Lycianthes japurensis Bitter, Abh. Naturw. Ver. Bremen 24: 350. 1919.
Type from Rio Japura, Amazonas, Brazil, *Martius*.
7. *Solanum hypomalacum* (Bitter) Morton, comb. nov.
Lycianthes hypomalaca Bitter, Abh. Naturw. Ver. Bremen 24: 344. 1919.
Type from Estella, Seringal Auristella, Rio Acre, Amazonas, Brazil, *Ule* 9734 (isotype US).
BRAZIL: Tres Casas, Humayta, Amazonas, *Krukoff* 6364. Mouth of Rio Embira, Amazonas, *Krukoff* 4874.
8. *Solanum australe* Morton. See page 62.
BRAZIL: Hector Legrú, São Paulo, *Gehrt* (Hoehne 5343), Araraquara, São Paulo, *Loefgren* 4326 (Hoehne 15405), 1161 (Hoehne 15402).
9. *Solanum coffeifolium* (Bitter) Morton, comb. nov.
Lycianthes coffeifolia Bitter, Abh. Naturw. Ver. Bremen 24: 432. 1919.
Type from Monte Mó, Amazonas, Brazil, *Ule* 9737 (isotype US).
10. *Solanum ulei* (Bitter) Morton. See page 60.
Type from Seringal San Francisco, Amazonas, Brazil, *Ule* 9764.

DUBIOUS SPECIES

- LYCIANTHES CEARAENSIS Bitter, Abh. Naturw. Ver. Bremen 24: 346. 1919.
Type from Serra de Maranguape, Ceará, Brazil, alt. 600 meters, *Ule* 9103 (isotype US).
I do not transfer this species to *Solanum* because it may be too near *S. ornatum* Morton (*Lycianthes ferruginea* Bitter). It is very near *S. guianense* Dunal also. The specific epithet would be invalid under *Solanum* because of the old species *Solanum cearense* Dunal.

THE SPECIES OF SOLANUM, SECTION LYCIANTHES, IN PERU

KEY TO SPECIES

Berry 8-celled, the partitions sclerotic, each enclosing a single seed; leaf blades small, not over 2.5 cm. broad..... 1. *S. lycioides*

Berry 2-celled, the partitions not sclerotic, many-seeded; leaf blades usually over 2.5 cm. broad.

Filaments unequal.

Stems glabrous or nearly so; leaves glabrous except on midribs and margins and in the vein axils beneath, the hairs all simple. Calyx teeth 4–8 mm. long.

Leaf blades 1.8–3.1 cm. broad, 6.5–8.5 cm. long; inflorescence 4–6-flowered..... 2. *S. acutangulum*

Leaf blades 5.5–8 cm. broad, 13.5–19.5 cm. long; inflorescence 10–12-flowered..... 3. *S. stenlobum*

Stems obviously pubescent, the hairs at least partly stellate or furcate; leaf blades usually hairy, at least when young.

Calyx teeth in flower 4–8 mm. long, unequal.

Hairs of stems and leaves eglandular; leaf blades nearly glabrous above except on veins, 6–8 cm. broad..... 4. *S. luxurians*

Hairs of stems and leaves at least partly glandular; leaf blades glandular-pilose above on the surface, 3–4.5 cm. broad..... 5. *S. sprucei*

Calyx teeth in flower 0.5–2.5 mm. long, equal or unequal.

Hairs all stellate, stipitate; filaments strongly unequal, one 4–5.5 mm. long, four 1–2 mm. long; leaf blades large, 6–14.5 cm. long, 3–6 cm. broad.

Leaf blades glabrous above except on veins; calyx teeth equal, 1 mm. long..... 6. *S. poeppigii*

Leaf blades stellate-pubescent all over upper surface; calyx teeth unequal, 1.5–2.5 mm. long..... 7. *S. glandulosum*

Hairs partly simple, partly furcate; filaments less strongly unequal, two 1.5–2 mm. long, three 2.5 mm. long; leaf blades smaller, 3.2–5.6 cm. long, 2–3 cm. broad..... 8. *S. jelakii*

Filaments equal. Hairs all simple.

Anthers at least partly connate. Leaves almost entirely glabrous.

9. *S. coffeifolium*

Anthers all free.

Calyx teeth absent. Leaf blades large, oblique, glabrous above, strigose beneath..... 10. *S. holocalyx*

Calyx teeth present.

Calyx teeth minute, scarcely exceeding the truncate calyx margin. Leaf blades narrowly linear-lanceolate (0.4–1.3 cm. broad); corolla small, 12 mm. in diameter..... 11. *S. brachylobum*

Calyx teeth larger, exceeding the calyx margin.

Leaf blades large (12–20 cm. long), strongly oblique, glabrous above, strigose beneath especially on veins. Opposite leaf minute, stipuliform; stems strigose; inflorescence 2–5-flowered; primary veins 14–16 pairs..... 12. *S. conspicuum*

Leaf blades otherwise.

Primary leaf veins 12–18 pairs. Stems and leaves hirsute.

13. *S. medusocalyx*

Primary leaf veins not over 10 pairs.

Smaller of the paired leaves stipuliform, orbicular, rounded at apex.

- Leaf blades densely pubescent on both sides. 14. *S. chrysothrix*
 Leaf blades glabrous except on midribs. 15. *S. biformifolium*
 Smaller of the paired leaves more or less conform with the larger,
 acute.
 Leaf blades 4.5–5 cm. broad, subsericeous-strigose on both sur-
 faces; inflorescence about 5-flowered 16. *S. densestrigosum*
 Leaf blades narrower; inflorescence 1- or 2-flowered.
 Leaf blades glabrous above except on veins. 17. *S. lineatum*
 Leaf blades pubescent above.
 Leaf blades not over 1 cm. broad. 18. *S. acutifolium*
 Leaf blades broader.----- 19. *S. tarmense*

1. *Solanum lycioides* L. See page 57 for synonymy.
Solanum dombeyi Dunal is close to this species but may be distinct. It differs chiefly in having relatively broader leaf blades, rounded rather than narrowed at base. It is known only from the type, collected between Tarma and Chinchu, Dept. Junín, Peru, by Dombey (No. 245) (photograph US).
2. *Solanum acutangulum* Griseb. in Lechl. Berb. Amer. Austr. 58. 1857.
Solanum compressibaccatum Bitter, Repert. Sp. Nov. Fedde 12: 456. 1913.
 Type from the Department of Loreto, Peru, *Ule* 6800 (photograph US).
Lycianthes acutangula Bitter, Abh. Naturw. Ver. Bremen 24: 357. 1919.
Lycianthes acutangula subsp. *compressibaccata* Bitter, op. cit. 358.
 Type from San Gaván, Peru, *Lechler* 2354.
3. *Solanum stenlobum* Van Heurck & Muell. Arg. Obs. Bot. 69. 1870.
Bassovia stenloba Britton in Rusby, Mem. Torrey Club 4: 232. 1895.
Lycianthes stenloba Bitter, Abh. Naturw. Ver. Bremen 24: 358. 1919.
 Type from Tarapoto, Peru, *Spruce* 4210 (photograph US).
4. *Solanum luxurians* Morton, nom. nov.
Lycianthes pearcei Bitter, Abh. Naturw. Ver. Bremen 24: 355. 1919, non
Solanum pearcei Britt. (1895).
 Type from "Corico," Peru? *Pearce* s. n.
 PERU (Dept. Loreto): Mishuyacu, near Iquitos, alt. 100 meters, *Killip & Smith* 29849; *Klug* 1321, 1484.
5. *Solanum sprucei* Van Heurck & Muell. Arg. Obs. Bot. 67. 1870.
Lycianthes sprucei Bitter, Abh. Naturw. Ver. Bremen 24: 380. 1919.
 Type from Tarapoto, Peru, *Spruce* 4352.
6. *Solanum poeppigii* (Bitter) Morton, comb. nov.
Lycianthes poeppigii Bitter, Abh. Naturw. Ver. Bremen 24: 345. 1919.
 Type from Maynas, Dept. Loreto, Peru, *Poeppig* 2406.
7. *Solanum glandulosum* Ruiz & Pav. Fl. Peruv. Chil. 2: 35. pl. 167, f. b. 1799.
Solanum vitocense Dunal in DC. Prodr. 13¹: 348. 1852. Type from Vitoc near Tarma, Peru, *Ruiz* 39.
Lycianthes glandulosa Bitter, Abh. Naturw. Ver. Bremen 24: 348. 1919.
 Type from Peru, *Ruiz* (photograph US).
 PERU (Dept. Loreto): Gamitanacocha, Río Mazán, alt. 100–125 meters, *Schunke* 178.
8. *Solanum jelskii* Zahlbr. Ann. Naturhist. Hofmus. Wien 7: 7. 1892.
Lycianthes jelskii Bitter, Abh. Naturw. Ver. Bremen 24: 399. 1919.
 Type from Cutervo, Peru, *Jelski* 47 (photograph US).
9. *Solanum coffeifolium* (Bitter) Morton. See page 64 for synonymy.
 PERU (Dept. Junín): Puerto Bermúdez, alt. 375 meters, *Killip & Smith* 26635.
10. *Solanum holocalyx* (Bitter) Morton. See page 60 for synonymy and citation of specimens.

11. *Solanum brachylobum* Van Heurck & Muell. Arg. Obs. Bot. 71. 1870.
Lycianthes brachyloba Bitter, Abh. Naturw. Ver. Bremen 24: 457. 1919.
 Type from Tarapoto, Peru, *Spruce* 459.
12. *Solanum conspicuum* Morton, nom. nov.
Lycianthes tarapotensis Bitter, Abh. Naturw. Ver. Bremen 24: 440. 1919.
 non *Solanum tarapotense* Van Heurck & Muell. Arg. (1870).
 Type from Tarapoto, Peru, *Spruce* 4182.
 There is in the National Herbarium a photograph of the second specimen cited by Bitter, namely, *Ule* 6483, collected at Tarapoto.
 PERU (Dept. Loreto): Pongo de Manseriche, alt. 250 meters, *Mexia* 6347.
13. *Solanum medusocalyx* Bitter, Repert. Sp. Nov. Fedde 12: 549. 1913.
Lycianthes medusocalyx Bitter, Abh. Naturw. Ver. Bremen 24: 437. 1919.
 Type from Sierra de Escaler, Dept. Loreto, Peru, alt. 1,200 meters, *Ule* 6804 (photograph US).
 I identify with some doubt the following collection as this species:
 PERU (Dept. Junín): Yapas, Pichis Trail, alt. 1,350–1,600 meters, *Killip & Smith* 25446.
14. *Solanum chrysothrix* (Bitter) Morton, comb. nov.
Lycianthes chrysothrix Bitter, Abh. Naturw. Ver. Bremen 24: 448. 1919.
Lycianthes chrysothrix subsp. *dolichopoda* Bitter, Repert. Sp. Nov. Fedde 18: 317. 1922. Type from Pataz, Dept. Libertad, Peru, *Weberbauer* 7401 (photograph US).
 Type from Cassapi, Peru, *Poeppig* in 1829.
15. *Solanum biformifolium* Ruiz & Pav. Fl. Peruv. Chil. 2: 32. *pl. 161, f. a.* 1799.
Lycianthes biformifolia Bitter, Abh. Naturw. Ver. Bremen 24: 443. 1919.
 Type from Chinchao, Peru, *Ruiz* (photograph US).
16. *Solanum densestrigosum* Bitter, Bot. Jahrb. Engler 50, Beibl. 111: 65. 1913.
Lycianthes densestrigosa Bitter, Abh. Naturw. Ver. Bremen 24: 443. 1919.
 Type from Peru, *Weberbauer* (photograph US).
17. *Solanum lineatum* Ruiz & Pav. Fl. Peruv. Chil. 2: 31. *pl. 158, f. b.* 1799.
Lycianthes lineata Bitter, Abh. Naturw. Ver. Bremen 24: 442. 1919.
 Type from Muña, Peru, *Ruiz*.
18. *Solanum acutifolium* Ruiz & Pav. Fl. Peruv. Chil. 2: 33. *pl. 162, f. b.* 1799.
Lycianthes acutifolia Bitter, Abh. Naturw. Ver. Bremen 24: 453. 1919.
 Type from Muña, Peru, *Ruiz* (photograph US).
19. *Solanum tarmense* (Bitter) Morton, comb. nov.
Lycianthes tarmensis Bitter, Abh. Naturw. Ver. Bremen 24: 451. 1919.
 Type from Huacapistana, Prov. Tarma, Dept. Junín, Peru, alt. 2,000 meters, *Weberbauer* 2141 (photograph US).
 PERU (Dept. Junín): Huacapistana, alt. 1,800–2,400 meters, *Killip & Smith* 24322. Carapata, above Huacapistana, alt. 2,700–3,200 meters, *Killip & Smith* 24394.

DUBIOUS SPECIES

- LYCIANTHES WEBERBAUERI Bitter, Abh. Naturw. Ver. Bremen 24: 446. 1919.
 Type from east of Chachapoyas, Amazonas, Peru, alt. 2,500–2,700 meters, *Weberbauer* 4452 (photograph US).
 I do not transfer this and the following species to *Solanum*, because I am not convinced of their validity. In the foregoing key they will both run to *S. tarmense*.
- LYCIANTHES ALOPECOCLADA Bitter, Abh. Naturw. Ver. Bremen 24: 456. 1919.
 Type from Cuchero, Peru, *Poeppig* 1075.

Solanum cutacense H. B. K. Nov. Gen. & Sp. 3: 38. 1818.

Type from Ayavaca and Río Cutaco, Peru, *Humboldt*.

Solanum heterochondrum Bitter, Bot. Jahrb. Engler 54, Beibl. 119: 15. 1916.

Lycianthes heterochondra Bitter, Abh. Naturw. Ver. Bremen 24: 335. 1919.

Type from Sandía, Peru, alt. 2,100–2,300 meters, *Weberbauer* 532 (isotype US).

THE SPECIES OF SOLANUM, SECTION LYCIANTHES, IN BOLIVIA

I have not studied the Bolivian species of *Lycianthes* to any extent. However, in order that all the South American species of the subgenus may be at least mentioned, I list below without comment those described from this country. It is very probable that some of those listed here are synonyms, and some of those described by Rusby may not belong in this section or even in the genus *Solanum* at all. All are endemic except the two widespread species *S. lycioides* and *S. asarifolium*. Very few of them have ever been referred to *Solanum*, so I list them all under *Lycianthes*.

1. *Lycianthes actinocalyx* (H. Winkl.) Bitter, Abh. Naturw. Ver. Bremen 24: 338. 1919.

Brachistus actinocalyx H. Winkl. Repert. Sp. Nov. Fedde 7: 245. 1909. Type from Charopampa, near Mapiri, alt. 570 meters, *Buchtien* 1432 (isotype US).

Brachistus virgatus H. Winkl. loc. cit. Type from San Carlos, near Mapiri, alt. 750 meters, *Buchtien* 1433 (isotype US).

Lycianthes buchtienii Bitter, Abh. Naturw. Ver. Bremen 24: 337. 1919.

2. *Lycianthes apiculata* Bitter, Abh. Naturw. Ver. Bremen 24: 452. 1919.

Type from Sirupaya, near Yanacachi, South Yungas, alt. 2,100 meters, *Buchtien* 327 p. p.

3. *Lycianthes asarifolia* (Kunth & Bouché) Bitter. See page 62.

4. *Lycianthes coccinea* (Rusby) Rusby, Bull. Torrey Club 53: 210. 1926.

Brachistus coccineus Rusby, Bull. N. Y. Bot. Gard. 8: 117. 1912.

Type from San Buenaventura, *R. S. Williams* 623 (isotype US).

5. *Lycianthes fasciculata* (Rusby) Bitter, Abh. Naturw. Ver. Bremen 24: 334. 1919.

Brachistus fasciculatus Rusby, Bull. N. Y. Bot. Gard. 4: 423. 1907.

Solanum fasciculatum Bitter, Repert. Sp. Nov. Fedde 13: 100. 1914.

Type from Bolivia, *Bang* 2871 (isotype US).

6. *Lycianthes fendleri* (Rusby) Rusby, Bull. Torrey Club 53: 210. 1926.

Bassovia fendleri Rusby, Bull. Torrey Club 26: 197. 1899.

Type from Yungas, *Rusby* 770.

7. *Lycianthes hispida* (Rusby) Rusby, Bull. Torrey Club 53: 210. 1926.

Brachistus hispidus Rusby, Bull. Torrey Club 26: 162. 1899.

Type from Guanai, *Bang* 2524.

8. *Lycianthes heterodonta* Bitter, Abh. Naturw. Ver. Bremen 24: 333. 1919.

Type from Sirupaya, near Yanacachi, alt. 2,100 meters, *Buchtien* 327, p. p. (isotype US).

9. *Lycianthes hylophila* Bitter, Abh. Naturw. Ver. Bremen 24: 336. 1919.

Type from Prov. de la Cordillera, *Weddell* 3597.

10. *Lycianthes inaequilatera* (Rusby) Bitter, Abh. Naturw. Ver. Bremen 24: 439. 1919.

Bassovia inaequilatera Rusby, Mem. Torrey Club 6: 90. 1896.

Brachistus inaequilaterus Rusby, Bull. N. Y. Bot. Gard. 4: 470. 1907.

Type from between Tipuani and Guanai, Dept. La Paz, *Bang* 1708 (isotype US).

11. *Lycianthes leptocaulis* (Rusby) Rusby, Bull. Torrey Club 53: 218. 1926.
Brachistus leptocaulis Rusby, Bull. Torrey Club 26: 63. 1899.
Type from Guanai, *Bang* 2657.
12. *Lycianthes lycioides* L. See page 57.
13. *Lycianthes medians* Bitter, Repert. Sp. Nov. Fedde 18: 317. 1922.
Type without locality, *Bang* s. n.
14. *Lycianthes polycarpa* Rusby, Bull. Torrey Club 53: 212. 1926.
Type from Beni River, *Rusby* 798.
15. *Lycianthes pyrifolia* Rusby, Bull. Torrey Club 53: 212. 1926.
Type from Espiritu Santo, near Cochabamba, alt. 750 meters, *Buchtien* 2816.
16. *Lycianthes reflexa* Rusby, Bull. Torrey Club 53: 211. 1926.
Type from Bolivia, *Bang* 2617 (isotype US).
17. *Lycianthes sancti-caroli* (H. Winkl.) Bitter, Abh. Naturw. Ver. Bremen 24: 354. 1919.
Brachistus sancti-caroli H. Winkl. Repert. Sp. Nov. Fedde 7: 245. 1909.
Type from San Carlos near Mapiri, *Buchtien* 1439 (isotype US).
18. *Lycianthes strigosa* (Britton) Bitter, Abh. Naturw. Ver. Bremen 24: 434. 1919.
Brachistus strigosus Britton in Rusby, Bull. Torrey Club 26: 109. 1899.
Type from Yungas, alt. 1,900 meters, *Rusby* 786 (isotype US).
19. *Lycianthes subfalcata* (Rusby) Rusby, Mem. New York Bot. Gard. 7: 349. 1927.
Brachistus subfalcatus Rusby, Bull. New York Bot. Gard. 8: 117. 1912.
Type from San Buenaventura, *R. S. Williams* 660 (isotype US).
20. *Lycianthes tomentella* Rusby, Bull. Torrey Club 53: 211. 1926.
Type from Yungas, *Bang* 630 (isotype US).
21. *Lycianthes viridis* Rusby, Mem. New York Bot. Gard. 7: 350. 1927.
Type from Meguilla, *White* 439 (isotype US).

THE SPECIES OF SOLANUM, SECTION LYCIANTHES, IN THE GUIANAS

Only two species have ever been collected in any of the Guianas. They are known there from the original collections only.

1. *Solanum guianense* Dunal in DC. Prodr. 13¹: 166. 1852.
Lycianthes guianensis Bitter, Abh. Naturw. Ver. Bremen 24: 347. 1919.
Type from French Guiana, *Martin*.
2. *Solanum geminatum* Vahl. See page 59.
Type from French Guiana, *Rohr*.

Section PSEUDOCAPSICUM

Solanum karstenii Dunal in DC. Prodr. 13¹: 151. 1852.

Type collected in Colombia by Karsten (photograph US).

This species is rather common in Venezuela but has apparently not been found again in Colombia except for the following recent collection: La Paz, Dept. Magdalena, *Haught* 2329.

Section TUBERARIUM

Solanum gigantophyllum Bitter, Repert. Sp. Nov. Fedde 11: 368. 1912.

Type from Siambon, Tucumán, Argentina, *Lorentz & Hieronymus* 802.

Easily recognized by its large leaves, decurrent on the stem in broad wings.

Additional collections are:

ARGENTINA: Los Baños, Salta, alt. 1,000 meters, *Venturi* 9414. Volcán, Jujuy, alt. 2,600 meters, *Venturi* 9532.

Subgenus LEPTOSTEMONUM

Solanum allophyllum (Miers) Standley, Journ. Washington Acad. Sci. 17: 16. 1927.

Pionandra allophylla Miers in Seem. Bot. Voy. Herald 174. 1857.

Solanum ellipsoideibaccatum Bitter, Repert. Sp. Nov. Fedde 11: 486. 1913.

Type from Santa Marta, Colombia, *H. H. Smith* 1153.

Known previously only from Panama and Colombia. It may now be reported from Venezuela.

COLOMBIA: La Popa, near Cartagena, Bolívar, *Killip & Smith* 14080.

VENEZUELA: San Martín, on Río del Palmar, Zulia, *Pittier* 10530. Vicinity of Mene Grande, Zulia, *Pittier* 10610.

Solanum asperrimum Bitter & Moritz, Repert. Sp. Nov. Fedde 16: 393. 1920.

Type from Las Lagunitas, Mérida, Venezuela, *Moritz* 1024 (photograph US).

Judged from the description and photograph a good many specimens from Venezuela, Colombia, Peru, and Brazil have been erroneously identified as this species. Of the specimens that I have seen, I should refer to it only the following:

COLOMBIA. NORTE DE SANTANDER: Loso, alt. 2,200-2,400 meters, *Killip & Smith* 20475. Between Pamplona and La Isla, *Killip & Smith* 19798. SANTANDER: Mesa de los Santos, alt. 1,500 meters, *Killip & Smith* 15071. BOYACÁ: Mount Chapón, alt. 1,200 meters, *Lawrance* 290.

Solanum confusum Morton, sp. nov.

Solanum clavatum sensu Bitter, Repert. Sp. Nov. Fedde 12: 464. 1913, non Rusby (1896).

Solanum clavatum Rusby (Mem. Torrey Club 6: 87. 1896) was based on *Bang* 1118 from Mount Tunari, Bolivia. Unfortunately this number is a mixture. One element has the anthers obtuse with large, introrse pores, and pedicels clavate and angled toward apex. It bears mature fruits. The other element has attenuate anthers with a small apical pore, terete, nonclavate pedicels and no fruits. Rusby's description applies to the former element, e. g., "pedicels clavate and quadrangular at summit; . . . anthers obtuse, the pores directed about equally upward, inward and laterally; . . . fruit dull, about 1 cm. in diameter." His description of the habit also applies only to this element—"glabrous, much-branched shrub, the branchlets crowded, irregular, short and stout, very leafy, the internodes 0.5-1 cm. long." In fact, the entire description, except perhaps for the maximum dimensions of the leaves, was apparently drawn from this element.

Later Rusby apparently realized that two species were involved, but seems to have misinterpreted his own species. On the sheet in the New York Botanical Garden that agrees with the description he crossed off the name *clavatum* and substituted *S. aureifolium* Rusby, a species founded on *Bang* 1119. He evidently believed that *Bang*'s numbers 1118 and 1119 had become mixed. This is not true, however. There are three species involved. *Solanum aureifolium* bears a close habital similarity to the true *S. clavatum*, but it is different. Both belong to the section *Leiodendron*.

In 1913 Bitter founded his new section *Cyphomandropsis*, based on *Solanum stuckertii* Bitter of Argentina, and referred "*S. clavatum* Rusby" to it, remarking that Rusby's description showed a multitude of inaccuracies. He was basing his opinion on a specimen of *Bang* 1118 lent him from the National Herbarium. This specimen represents the second element of *Bang* 1118, as mentioned above;

and since it belongs to a different section of the genus from true *S. clavatum*, it is small wonder that Bitter found Rusby's description inaccurate.

Bitter gave a complete description in Latin of the species of the section *Cyphomandropsis* he was calling "*S. clavatum*." Inasmuch as this species has no available name, I am calling it *S. confusum*. The type is in the U. S. National Herbarium, No. 1,177,847, collected near snow-line on Mount Tunari, Bolivia, in 1891, by M. Bang (No. 1118 in part). Bitter's description need not be repeated here.

A second specimen of *S. confusum* is Bang 2618, from an unspecified locality in Bolivia. It was distributed as *S. clavatum* Rusby.

Solanum crinitipes Dunal in DC. Prodr. 13¹: 317. 1852.

Solanum formosum H. B. K. Nov. Gen. & Sp. 3: 44. 1818, non Weinm. (1810). Type from Maypures, on Orinoco River, *Humboldt*.

Type from Ecuador, *Hartweg* 1300 (isotype NY).

This common species from Colombia and Ecuador has usually been identified as *S. formosum* H. B. K., which may not be the same. In any case the name is not available, being a homonym.

Solanum crotonifolium H. & B. ex Dunal, Sol. Syn. 18. 1816.

Type from Cartagena, Colombia, *Humboldt* (photograph US).

This species has remained obscure, because in the Prodr. Dunal placed it in the wrong subgenus. Although spineless it belongs in *Leptostemonum*, not in *Pachystemonum*, section *Anthoresis*, where Dunal placed it. The following collections are at hand:

COLOMBIA: La Dorada, Caldas, alt. 200–400 meters, *Haught* 2128. Mompos Island, Magdalena River, *Ariste-Joseph* in 1921. Doima, Tolima, alt. 700 meters, *Haught* 2447. Honda, Tolima, *Pennell* 3573. Fusugasugá to Pandi, Cundinamarca, alt. 1,000–1,300 meters, *Pennell* 2729. Bosa, Cundinamarca, *García* 4705.

Solanum fastigiatum Willd. Hort. Berol. 235. 1809.

A synonym is *Solanum regnellii* Hiern (Nat. For. Kjoeb. Vid. Medd. 1877–78: 54), based on *Regnell* I. 345, from Minas Geraes, Brazil (isotype US).

Solanum flagellare Sendtn. in Mart. Fl. Bras. 10: 68. 1846.

Type from Brazil, *Sello* (photograph US).

The following specimens agree very well with the photograph:

BRAZIL (São Paulo): Pinheiros, *Loefgren* 1761 (Hoehne 15293). Ipiranga, *Edwall* (Hoehne 15296). Butantán, *Hoehne* 610. Casa Verde, *Kuhlmann* (Hoehne 31614).

Solanum hieronymi Kuntze, Rev. Gen. Pl. 3²: 226. 1898.

Type from Río Juramento, Salta, Argentina, *Lorentz & Hieronymus* 361 (NY).

ARGENTINA. TUCUMÁN: Dept. Cruz Alta, alt. 460 meters, *Venturi* 2413. Estancia Las Paras, alt. 3,200 meters, *Venturi* 7046. CATAMARCA: Andalgalá, *Jørgensen* 1066. Anconquiya, alt. 3,000 meters, *Venturi* 7045. SANTIAGO DEL ESTERO: Estancia El Remate, alt. 500 meters, *Venturi* 6042. Cerro El Remate, alt. 550 meters, *Venturi* 5686.

The vernacular name in Argentina is *pocote*.

Solanum hirsutissimum Standl. Journ. Washington Acad. Sci. 17: 15. 1927.

Type from Panama.

In describing this species Standley remarked that it looked like an introduced weed but that he could find no name for it. I have not been able to find one either, although I feel fairly confident that it is introduced from the Old World. It is rather close to the commonly introduced Old World species *S. mammosum* L. It is evidently spreading, for it has turned up recently from Costa Rica and may now be reported from Ecuador.

ECUADOR: Valley of Pastaza River, Prov. Tungurahua, alt. 1,300-1,800 meters, *Hitchcock* 21785. Napo, Prov. Napo-Pastaza, alt. 400 meters, *Mexia* 7125.

Solanum hoehnei Morton, nom. nov.

Solanum decurrens Vell. Fl. Flum 89. 1825; Ic. 2: pl. 126. 1827, non Balbis (1810).

Solanum alatum Dunal in DC. Prodr. 13¹: 234. 1852, non Moench. (1794).

BRAZIL: Organ Mountains, *Gardner*. Macahé, *Riedel* 394. Conceição, São Paulo, *Hoehne* 24490. Ribeirão Pires, São Paulo, *Edwall* 3228.

A peculiar form, with leaves several times as large as in the typical form and of a different color and texture was collected on the Corcovado by Schwacke (Mus. Nac. Rio Jan. 25885).

NOTES ON BOUCHETIA

The Texas plant known for many years as *Bouchetia erecta* DC. has more recently been known as *Bouchetia anomala* (Miers) Britt. & Rusby, based on *Nierembergia anomala* Miers.⁸ Miers based his species primarily on plants collected by himself in the province of Córdoba, Argentina, but included also in his concept a specimen collected at San Felipe, Texas (*Drummond* III 245). Later in the same year Sendtner⁹ described the same species from Argentina as *N. staticifolia* Sendtn. In a supplement to his treatment¹⁰ he recognized the identity of his species with that of Miers, but stated that Miers had confused two species and that the plant of Texas should be called *N. miersiana* Sendtn. He provided no description of the Texas species, his name thus being a *nomen nudum*.

Bouchetia erecta DC. was described subsequently and independently,¹¹ based on Mexican collections. *Bouchetia erecta* and *B. anomala* have usually been considered identical, but a study of the two has convinced me that there are two entities involved. Despite its name "*erecta*," the plant of Texas and Mexico is not erect but is decumbent, with slender, rather short, ascending branches. *B. anomala* is more robust, taller, and commonly erect. The really important difference between the two is, however, the pubescence, not in the quantity but in the type. *B. erecta* is sometimes rather densely but usually sparingly puberulous with short, incurved, eglandular hairs on the stems and leaves; *B. anomala* is, on the upper leaves and stems, densely glandular-hirtellous, the hairs being stiff, spreading at right angles and not at all incurved, and tipped by a conspicuous capitate gland. Considering the great geographic isolation of these two forms, it seems reasonable to consider them as representing distinct species. The synonymy may be summarized as follows:

⁸ Lond. Journ. Bot. 5: 175. 1846.

⁹ In Mart. Fl. Bras. 10: 179. 1846.

¹⁰ Op. cit. 200.

¹¹ DC. Prodr. 13¹: 589. 1852.

Bouchetia anomala (Miers) Britt. & Rusby, Trans. N. Y. Acad. 7: 12. 1887.

Nierembergia anomala Miers, Lond. Journ. Bot. 5: 175. 1846.

Nicotiana breviflora Gill. ex Miers, loc. cit. in syn.

Nierembergia staticifolia Sendt. in Mart. Fl. Bras. 10: 179. 1846.

RANGE: Uruguay, Argentina (Prov. Córdoba, Tucumán, Misiones, Formosa), and Chile(?).

Bouchetia erecta DC. Prodr. 13¹: 589. 1852.

Nierembergia miersiana Sendtn. in Mart. Fl. Bras. 10: 200. 1846 (*nomen nudum*)

Nierembergia anomala var. *uniflora* Dunal in DC. Prodr. 13¹: 588. 1852.

Leucanthea roemeriana Scheele, Linnaea 25: 258. 1852.

RANGE: Central and southern Texas and Mexico (Puebla, Michoacán, San Luis Potosí, Hidalgo, Nuevo León, Coahuila).

An additional synonym of *Bouchetia anomala* is probably *Nierembergia graveolens* var. *grandifolia* Kuntze,¹² the type of which came from Jujuy, Argentina. In the recent revision of *Nierembergia* by R. Millan¹³ this variety is placed as a synonym of *N. browallioides* Griseb. However, there is no indication that Millan saw any authentic material. An isotype in the National Herbarium is unquestionably *Bouchetia anomala*. Nevertheless, it is possible that Kuntze's plants were a mixture of two species.

A LIST OF URUGUAYAN PETUNIAS, WITH ONE NEW SPECIES

Through the kindness of Señor Diego Legrand I have been able to study a good collection of Uruguay petunias. The species of *Petunia* are fairly well understood now, as a result of the excellent monograph by Dr. R. E. Fries. The following species are known to occur in Uruguay: *P. thymifolia* (St. Hil.) Sendtn., *P. humilis* R. E. Fries, *P. felipponei* Sandw., *P. pubescens* (Spreng.) R. E. Fries, *P. axillaris* (Lam.) Britt. & Rusby, *P. pygmaea* R. E. Fries, *P. parviflora* Juss. and *P. violacca* Lindl. The collection above mentioned contained one new species, described herewith.

Petunia scabridula Morton, sp. nov.

Fruticulus parvus, basi valde ramosus, ramulis ubique scabridulis; folia inferiora fasciculata, superiora alterna vel suprema subopposita, laminis ovato-lanceolatis, parvis, basi amplexicaulibus, utrinque scabridulis, nervis obscuris; pedicelli graciles; calyx externe glanduloso-hirtellus, lobis ovato-lanceolatis; corolla rosea, infundibuliformis.

Eupetunia; small shrub 12–18 cm. high, much-branched especially at base, the branchlets terete, about 1 mm. in diameter, scabridulous, the hairs hyaline, very short, articulate, patent, capitate-glandular at apex; leaves alternate (the uppermost subopposite, the lower fasciculate), ovate-lanceolate, 2–5 mm. long, 1–2 mm. wide, acute, not at all attenuate at base, amplexicaul, thick, scabridulous on both sides (the hairs similar to those of the branchlets), the margin plane, the nerves obscure; inflorescence of the usual type for the genus, the pedicels slender, up to 15 mm. long; calyx 7–8 mm. long (in flower), glandular-hirtellous externally, the tube about 4 mm. long, the lobes ovate-lanceolate, 3–4 mm. long; corolla rose, infundibuliform, about 17 mm. long, sparsely glandular-pilosulous externally, the limb about 2 cm. broad; stamens 5, all fertile, equal, the filaments affixed

¹² Rev. Gen. Pl. 3²: 223. 1898.

¹³ Darwiniana 5: 487–547. 1941.

to the base of the corolla tube, glabrous; style slender, glabrous; stigma capitate, not at all bilobed; seeds minute, subreniform, scarcely 0.75 mm. long.

Type in the U. S. National Herbarium, No. 1,441,438, collected at Mosquitos, Department of Canelones, Uruguay, November 2, 1928, by C. Osten (No. 20060).

Of the Uruguayan species of *Petunia*, *P. scabridula* is most closely related to *P. humilis*, *P. thymifolia*, and *P. pubescens*; but these all have spatulate leaves, attenuate to the base, rather than broadened at base and amplexicaul as in *P. scabridula*. The very harsh, scabrous pubescence in the new species is also distinctive, as are the dwarf habit, woody, intricately branched stems, and the minute, closely fasciated lower leaves.

THE GENUS HYBANTHUS IN CONTINENTAL NORTH AMERICA

In 1930 I prepared a tentative treatment of the North American species of *Hybanthus* (Violaceae), but publication was delayed, because the types of several of the older species were not available for study. Since that time G. K. Schulze has published a paper¹⁴ on the genus, but this deals almost entirely with the South American species, the only North American herbaceous species mentioned being the three that grow also in South America.

It thus seems worth while to offer the present preliminary synopsis, even though four of the older species still can not be placed and notwithstanding the fact that some of the names here adopted may be displaced when the types of these older species are studied. The only recent treatment of the North American species is by Philip Dowell.¹⁵ This work is, however, inaccurate and inadequate in several respects. Seven species are described as new, but no mention at all is made of eight older species described from Mexico or Central America. The key is scarcely usable, because of emphasis on alternate or opposite leaves, a character of doubtful value in this genus. Four of the six species placed in the opposite-leaved group either always or usually have alternate leaves. Many of the other key distinctions used by Dowell are equally unreliable, being mostly variable leaf and stipule characters.

HISTORY OF THE GENUS

The first description of any species of this group is found in the "Iter Hispanicum" of Peter Loeffling published in 1758, in which a new genus *Calceolaria* is proposed. Three species are described but not given specific names according to the Linnaean binomial system of nomenclature. These are: 1, *Calceolaria caule simplici hirsuto*, etc.; 2, *Calceolaria caule suffruticoso brachiato*, etc.; and 3, *Calceolaria frutescens*, etc.

¹⁴ Morphologisch-systematische über die Gattung *Hybanthus*, Bot. Jahrb. Engler **67**: 437-492. 1936.

¹⁵ North American Species of *Calceolaria*, Bull. Torrey Club **33**: 547-556. 1906.

In 1760 Jacquin¹⁶ published the genus *Hybanthus* based on *H. havanensis* Jacq. In 1763 Linnaeus¹⁷ reduced both *Calceolaria* and *Hybanthus* to *Viola*. Loeffling's species No. 1 became *Viola calceolaria* L.; No. 2, *Viola oppositifolia* L.; and No. 3 was combined with *Hybanthus* Jacq. and called *Viola Hybanthus* L. Later the name *Calceolaria* was applied to a genus of Scrophulariaceae. The Vienna Congress of 1905 conserved the name *Hybanthus* Jacq. for the genus of Violaceae, rejecting *Calceolaria* Loeffl.

After Linnaeus, no more species of *Hybanthus* from continental North America were described until 1797, when Ortega published *Viola verticillata*, which was shortly thereafter raised to generic rank as *Solea* Spreng.¹⁸ *Ionidium* Vent.¹⁹ was based on a new species, *I. polygalifolium*, soon found to be synonymous with *Solea verticillata*. Nevertheless, *Ionidium* obtained wide recognition, almost up to the present time.²⁰

In his monograph²¹ of the Violaceae, Gingins recognized four genera of this alliance: *Pombalia* Vand., *Pigea* DC., *Ionidium* Vent., and *Hybanthus* Jacq. These have been considered congeneric by most recent authors. However, it is possible that a monographic study of all the species might show that several genera can be recognized with propriety.

THE UNITED STATES SPECIES

There are only three species native to the United States, one of which is common in the Southwest, and one widespread in the Eastern States (*H. concolor*, commonly known as "green violet"). The latter has often been maintained as a distinct genus, *Cubelium*, but it can not be separated from *Hybanthus*, unless that genus be split up into a number of small genera. It is to be noted also that *Cubelium* Raf. is a *nomen nudum*.

KEY TO SPECIES

Glands of the two lower filaments connate into a single large gland. 1. **H. concolor**
Glands of the two lower filaments distinct.

Flowers only slightly zygomorphic, the labellum little longer than the other petals; connectives of the two lower anthers glabrous. . . 2. **H. verticillatus**

Flowers strongly zygomorphic, the labellum twice as long as the other petals, or more; connectives of the two lower anthers hairy. . . 3. **H. attenuatus**

1. **Hybanthus concolor** (Forst.) Spreng. Syst. Veg. 1: 805. 1825.

Viola stricta Muhl. Trans. Amer. Phil. Soc. 3: 178. 1793 (*nomen nudum*).

Viola concolor Forst. Trans. Linn. Soc. Bot. 6: 309. pl. 28. 1802.

Solea stricta Spreng. Pl. Pugill. 1: 22. 1813, not *S. stricta* Spreng. Syst. Veg. 1: 803. 1825.

Ionidium sprengelianum Roem. & Schult. Syst. Veg. 5: 401. 1819.

¹⁶ Enum. Pl. Carib. 17. 1760.

¹⁷ Sp. Pl. Ed. 2. 1327. 1763.

¹⁸ Journ. Bot. Schrad. 1800²: 192. 1801.

¹⁹ Jard. Malm. pl. 27. 1803.

²⁰ E. g., Britt. & Wils. Sci. Surv. Porto Rico 5: 597. 1924.

²¹ DC. Prodr. 1: 287-316. 1824.

Viola sprengeliana Steud. Nom. Bot. 887. 1821.

Cubelium concolor Raf. Cat. Bot. Gard. Trans. Univ. 13. 1824.

Noisettia acuminata DC. Prodr. 1: 290. 1824. Type: "In Amer. bor."

Solea concolor Ging. in DC. Prodr. 1: 306. 1824.

Ionidium concolor S. Wats. Bibl. Ind. 81. 1878.

Calceolaria concolor Kuntze, Rev. Gen. Pl. 1: 41. 1891.

RANGE: Southern Canada and Eastern United States south to the Gulf of Mexico and west to Michigan, Kansas, and Mississippi.

2. *Hybanthus verticillatus* (Ortega) Baill. Hist. Pl. 4: 345. 1873.

Viola verticillata Ortega, Hort. Matr. Dec. 4: 50. 1797.

Solea verticillata Spreng. Journ. Bot. Schrad. 1800²: 192. 1801.

Ionidium polygalifolium Vent. Jard. Malm. pl. 27. 1803. Type: Cultivated plant.

Viola polygalifolia Poir. in Lam. Encycl. 8: 648. 1808.

Ionidium verticillatum Roem. & Schult. Syst. Veg. 5: 399. 1819.

Ionidium gracile Moc. & Sessé ex Ging. in DC. Prodr. 1: 309. 1824. Type: Mexico, Mociño & Sessé.

Ionidium lineare Torr. Ann. Lyc. N. Y. 2: 168. 1828. Type: On Red River, Ark., James.

Ionidium stipulaceum Nutt. ex Torr. & Gray, Fl. N. Amer. 1: 144. 1838. Type from plains of Red River, Ark., Nuttall.

Ionidium lineare var. *platyphyllum* A. Gray, Pl. Wright. 1: 12. 1850. Type from Valley of Limpia, Tex., Wright.

Calceolaria gracilis Kuntze, Rev. Gen. Pl. 1: 41. 1891.

Calceolaria linearis Kuntze, loc. cit.

Calceolaria verticillata Kuntze, loc. cit.

Hybanthus verticillatus var. *platyphyllus* Cory, Bull. Texas Agr. Exp. Sta. 550: 73. 1938.

RANGE: Kansas, Oklahoma, Colorado, Texas, New Mexico, Arizona, and throughout the Mexican Plateau.

The species is well known and the specimens are so numerous that I do not cite them. This, the commonest North American species of the genus, is remarkably variable in the shape of the leaves, which may be linear, oblong, oblanceolate, or even obovate. The indument varies from villous to puberulous, but some plants are nearly glabrous. Most plants have entire leaves, but a form with toothed leaves is occasionally found (var. *platyphyllus*).

I am indebted to Dr. L. B. Smith for pointing out that the citation for the publication of the combination *Hybanthus verticillatus* given in the Index Kewensis (namely, Baill. Bot. Med. 2: 841. 1884) is not the earliest. American authors have wrongly ascribed it to A. Nels. (in Coult. & Nels. Man. Bot. Rocky Mts. 323. 1909).

3. *Hybanthus attenuatus* (H. & B.) G. K. Schulze, Notizbl. Bot. Gart. Berlin 12: 114. 1934.

Ionidium attenuatum H. & B. ex Roem. & Schult. Syst. Veg. 5: 402. 1819.

Ionidium riparium H. B. K. Nov. Gen. & Sp. 5: 378. 1821 (*nom. abort.*).

Viola calceolaria Moc. & Sessé ex Ging. in DC. Prodr. 1: 311. 1824, in syn., non L. (1763).

Ionidium calceolarium Ging. in DC. Prodr. 1: 311. 1824. Type: Mexico, Mociño & Sessé.

Ionidium parietariifolium DC. Prodr. 1: 308. 1824. Type from Veracruz and Peru.

Ionidium parietariifolium var. *Houstonii* DC. loc. cit.

Solea parietariifolia Spreng. Syst. Veg. 1: 803. 1825.

Solea riparia Spreng. op. cit. 804.

Ionidium riparium var. *aestivum* Gray, Pl. Wright 2: 16. 1852. Type from Sonora, Wright 859.

Calceolaria mocinoana Kuntze, Rev. Gen. Pl. 1: 41. 1891. (New name for *I. calceolaria* Ging.)

Calceolaria riparia Kuntze, loc. cit.

Hybanthus parietariifolius Loes. Bull. Herb. Boiss. II: 3: 214. 1903.

Calceolaria riparia var. *houstonii* Dowell, Bull. Torrey Club 33: 554. 1906.

Hybanthus riparius Standl. in Standl. & Cald. List. Prel. Pl. Salvador 152. 1925.

Mercurialis glabra M. E. Jones, Contr. West. Bot. 18: preprint 68. 1933. Type from Guadalajara, Mexico, M. E. Jones.

RANGE: Arizona to South America.

SPECIMENS EXAMINED (selected):

ARIZONA: Goodding 985; Harrison 9172; Kearney & Peebles 10417, 10592. CHIHUAHUA: Palmer 25, 93. SONORA: Wright 859. SINALOA: Rose 1831. NAYARIT: Palmer 1826; Ferris 5715. COLIMA: Palmer 86. JALISCO: Rose & Painter 7642. MORELOS: Pringle 6391. MICHOACÁN: Arsène 2851. GUERRERO: Rusby 151. MEXICO: Hinton 4341. PUEBLA: Purpus 3416. VERACRUZ: Bourgeau 2661. YUCATÁN: Gaumer 791. GUATEMALA: Seler 2557; Donnell Smith 1983; Bernoulli 68; von Tuerckheim II. 1248. HONDURAS: Standley 54070. EL SALVADOR: Standley 22004, 22368. NICARAGUA: Mazon, Harvey, & Valentine 7126. COSTA RICA: Pittier 2189, 8778; Tonduz 13822. PANAMA: Pittier 2755, 3561; Standley 27035, 27980.

THE MEXICAN HERBACEOUS SPECIES

I recognize here 12 herbaceous species from Mexico. There are four others listed at the end as dubious. There are only three woody species known from Mexico, two of which were treated by Standley in the "Trees and Shrubs of Mexico," viz., *H. yucatanensis* Millsp. (Yucatan) and *H. mexicanus* Ging. (San Luis Potosí). The third species is *H. salacioides* G. K. Schulze, described from Veracruz.

KEY TO SPECIES

Labellum not much longer than the other petals, short-clawed; connectives of the two lower anthers glabrous.

Leaves sessile, narrow, thick; stipules often foliaceous; flowers solitary.

1. *H. verticillatus*

Leaves petiolate, usually broader, thin; stipules very small; flowers often pseudo-racemose.

Leaves closely and finely serrulate..... 2. *H. serrulatus*

Leaves coarsely serrate to subentire..... 3. *H. fruticosus*

Labellum twice as long as the other petals, or more; connective of the two lower anthers at least slightly hairy.

Plants annual..... 4. *H. attenuatus*

Plants perennial.

Leaves lanceolate to linear-lanceolate..... 5. *H. oppositifolius*

Leaves broader.

Leaves rounded at base..... 6. *H. occultus*

Leaves cuneate at base.

Lip of corolla villous..... 7. *H. potosinus*

Lip glabrous or minutely puberulous.

Ovary and capsule hairy..... 8. *H. longipes*

Ovary and capsule glabrous.

Capsule 8–12 mm. long, long-beaked.

Leaves acuminate, with numerous short, sharp teeth. 9. *H. elatus*

Leaves acute, with fewer, larger, blunter teeth. 10. *H. verbenaceus*

Capsule 5 mm. long or less, scarcely beaked.

Leaves glabrous; stems pubescent in lines; pedicels short; corolla lip glabrous.----- 11. *H. humilis*

Leaves puberulous beneath, sparsely pilose above; stems equally puberulous throughout; pedicels long; lip puberulous.

12. *H. thiemei*

1. *Hybanthus verticillatus* (Ortega) Baill. Hist. Pl. 4: 345. 1873. See page 76 for synonymy and range.

2. *Hybanthus serrulatus* Standl. Journ. Washington Acad. Sci. 17: 312. 1927. Known only from the type collection, *Langlassé* 558, from the Sierra Madre of Michoacán or Guerrero, Mexico.

3. *Hybanthus fruticosus* (Benth.) I. M. Johnst. Proc. California Acad. IV. 12: 1097. 1924.

Ionidium fruticosum Benth. Bot. Voy. Sulph. 7. pl. 2. 1844. Type from Cape San Lucas, Baja California, *Barclay*.

Ionidium fruticosum var. *dentatum* A. Gray, Proc. Amer. Acad. 5: 154. 1861.

Calceolaria fruticulosa Kuntze, Rev. Gen. Pl. 1: 41. 1891.

Calceolaria fruticulosa subsp. *flavescens* Dowell, Bull. Torrey Club 33: 551. 1906. Type from Guaymas, Sonora, *E. Palmer* 253.

Calceolaria tenuifolia Dowell, op. cit. 550. Type from San José del Cabo, Baja California, *T. S. Brandegee* 18.

Hybanthus fruticosus var. *flavescens* I. M. Johnst. Proc. California Acad. IV. 12: 1097. 1924.

Hybanthus tenuifolius Standl. Journ. Washington Acad. Sci. 17: 168. 1927.

Hybanthus peninsularis M. E. Jones, Contr. West. Bot. 18: preprint 59. 1933.

Type from Cayuca Ranch, Baja California, *M. E. Jones* 27830.

RANGE: Baja California and Sonora.

SPECIMENS EXAMINED:

BAJA CALIFORNIA: *Brandegee* 17, 18; *Xantus* 4; *Purpus* 421; *Jones* 27830, 27832; Santa Margarita Island, *Brandegee* s. n. SONORA: *Palmer* 253, 258; *Johnston* 4297, 4366.

Specimens collected at different times in the year look very different. The early leaves are broad and coarsely toothed. *Hybanthus tenuifolius* and *H. peninsularis* were founded on specimens of this type. Later, these leaves drop off and are replaced by narrow, almost linear, subentire leaves. The Sonora specimens are var. *flavescens*, distinguished by having glabrous leaves.

4. *Hybanthus attenuatus* (H. & B.) G. K. Schulze, Notizbl. Bot. Gart. Berlin 12: 114. 1934. See page 76 for synonymy and range.

5. *Hybanthus oppositifolius* (L.) Taub. in Engl. & Prantl, Pflanzenfam. 3⁴: 333. 1895.

Viola oppositifolia L. Sp. Pl. ed. 2, 1327. 1763.

Ionidium oppositifolium Roem. & Schult. Syst. Veg. 5: 395. 1819.

Ionidium angustifolium H. B. K. Nov. Gen. & Sp. 5: 377. 1821.

Ionidium longifolium Moc. & Sessé ex Ging. in DC. Prodr. 1: 311. 1824. Type from Mexico, *Mociño & Sessé*.

Solea oppositifolia Spreng. Syst. Veg. 1: 803. 1825.

Calceolaria longifolia Kuntze, Rev. Gen. Pl. 1: 41. 1891.

Calceolaria oppositifolia Kuntze, loc. cit.

Hybanthus longifolius Melch. in Engl. & Prantl, Pflanzenfam. ed. 2, 21: 359. 1925.

Hybanthus angustifolius Standl. Journ. Washington Acad. Sci. 17: 168. 1927.

RANGE: Mexico, Guatemala, and South America.

SPECIMENS EXAMINED:

TAMAULIPAS: *Palmer* 469; *Runyon* 899. SAN LUIS POTOSÍ: *Rose & Hough* 4868; *Purpus* 5329; *Pringle* 5011; *Pennell* 17914. VERACRUZ: *Ervenburg* 210; *Purpus* 2353, 8552; *Orcutt* 5192. GUATEMALA: *von Tuerckheim* 3595.

The species called *H. oppositifolius* by Standley in the "Flora of Costa Rica" is *H. attenuatus*.

6. *Hybanthus occultus* (Polak.) Standl. Field Mus. Publ. Bot. 18: 714. 1937.

Ionidium occultum Polak. Linnaea 41: 548. 1877. Type from La Carpintera, Costa Rica, *Polakowsky* s. n.

Calceolaria occulta Kuntze, Rev. Gen. Pl. 1: 41. 1891.

Calceolaria nigricans Dowell, Bull. Torrey Club 33: 554. 1906. Type from San Pedro Sula, Honduras, *Thieme* 5127.

Ionidium nigricans Donn. Smith, Enum. Pl. Guat. 8: 219. 1907.

Hybanthus nigricans Standl. Journ. Washington Acad. Sci. 17: 169. 1927.

Hybanthus purpusii Standl. Field Mus. Publ. Bot. 8: 141. 1930. Type from Zacuapan, Veracruz, *Purpus* 13012.

RANGE: Mexico to Costa Rica.

SPECIMENS EXAMINED:

VERACRUZ: *Purpus* 13012, 14087, 2008; *Liebmann* 638. GUATEMALA: *Johnson* 714. HONDURAS: *Thieme* 5127. COSTA RICA: *Pittier & Tonduz* 4383; *Pittier* 4160; *Kuntze* 2233; *Standley* 35501.

E. P. Killip very kindly compared the type of *I. occultum* at Berlin with *Purpus* 2008 and found that the two specimens agreed in essential characters.

7. *Hybanthus potosinus* Morton, sp. nov.

Herba perennis, erecta, vix ramosa; caules pilosi; folia alterna, stipulata, stipulis minimis, breviter petiolata; lamina elliptica, rotundata, basi obtusa, crenata, utrinque pilosa; flores solitarii, breviter pedicellati; calycis lobi ovati, pilosi; petala superiora parva; labellum longum, externe pilosum; filamenta brevissima, connectivis antherarum inferiorum sparse pilosis, appendiculis ovatis, acutis, antheras aequantibus; capsula glabra.

Perennial herb 15–30 cm. high, erect, scarcely branched; stems terete, pilose, the hairs hyaline, straight, long, widely spreading; leaves alternate, stipulate, the stipules minute, about 1.2 mm. long, subulate, membranaceous, pilose, persistent; petiole short, about 2 mm. long, pilose; leaf blades elliptic, the largest 2.2 cm. long and 1.4 cm. wide, rounded at apex, obtuse at base, crenate, pilose on both sides; flowers solitary, axillary, short-pedicellate, the pedicels up to 5 mm. long, pilose, articulate near the apex, bibracteolate; calyx lobes ovate, green, pilose, acute, more or less unequal, the two lower about 4 mm. long, the 3 upper about 3 mm. long; petals 5, unequal, the 2 upper oblong, about 2.5 mm. long and 1.5 mm. wide, truncate, triplinerved, the 2 lateral about 4 mm. long, the fifth (labellum) about 7 mm. long, unguiculate, the claw 3-nerved, bidentate above base, the blade orbicular, about 4 mm. wide, pilose externally; stamens 5, more or less connate, the filaments very short, the two lower glanduliferous, the connectives of the lower anthers sparsely pilose, the appendages membranaceous, ovate, acute, equalling the anthers; ovary glabrous; capsule green, 3-valved, about 5.5 mm. long, glabrous, acute at apex; seeds spherical, yellow, about 1.6 mm. in diameter.

Type in the U. S. National Herbarium, No. 463,705, collected at Minas de San Rafael, San Luis Potosí, Mexico, July 1911, by C. A. Purpus (No. 5050) Isotypes in the Gray Herbarium and the New York Botanical Garden.

7a. *Hybanthus potosinus* var. *pennellii* Morton, var. nov.

Differt a var. *typica* foliis acutioribus, calycis lobis acuminatis, et floribus plus minusve majoribus, labello ca. 10 mm. longo, 6 mm. lato.

Differs from the typical variety in its acutish leaves, acuminate calyx lobes, and somewhat larger flowers, the labellum being 10 mm. long and 6 mm. broad.

Type in the U. S. National Herbarium, No. 1,640,001, collected at Alamar, Pabillo, southeast of Galeana, Nuevo León, Mexico, July 2-3, 1934, by F. W. Pennell (No. 17231).

8. *Hybanthus longipes* (Dowell) Standl. Journ. Washington Acad. Sci. 17: 168. 1927.

Calceolaria longipes Dowell, Bull. Torrey Club 33: 551. pl. 19. 1906. Type from between San Richardo and Ocozucuantla, Chiapas, Mexico, Nelson 2961.

RANGE: Known only from the type.

9. *Hybanthus elatus* (Turcz.) Morton, comb. nov.

Ionidium elatum Turcz. Bull. Soc. Nat. Moscou 36¹: 556. 1863. Type from Mexico, Ghiesbreght 47.

Calceolaria elata Kuntze, Rev. Gen. Pl. 1: 41. 1891.

Calceolaria brevis Dowell, Bull. Torrey Club 33: 552. 1906. Type from Jumay-tepeque, Guatemala, Heyde & Lux 3943.

Calceolaria glabra Dowell, loc. cit. Type from Jalapa, Veracruz, L. C. Smith 1840.

Ionidium breve Donn. Smith, Enum. Pl. Guat. 8: 219. 1907.

Hybanthus brevis Standl. in Standl. & Cald. List. Prel. Pl. Salvador 152. 1925.

Hybanthus glaber Standl. Journ. Washington Acad. Sci. 17: 168. 1927.

RANGE: Mexico and Guatemala.

SPECIMENS EXAMINED:

VERACRUZ: L. C. Smith 1840; Botteri 895. OAXACA: Conzatti & Cancino 2432. GUATEMALA: Heyde & Lux 2943; Heyde 449; von Tuerckheim II. 1354.

Hybanthus glaber has somewhat larger leaves, more attenuate at each end, but does not seem specifically different.

10. *Hybanthus verbenaceus* (H. B. K.) Loes. Bull. Herb. Boiss. II. 3: 215. 1903.

Ionidium verbenaceum H. B. K. Nov. Gen. et Sp. 5: 379. pl. 497. 1821.

Solea verbenacea Spreng. Syst. Veg. 1: 803. 1825.

Calceolaria verbenacea Kuntze, Rev. Gen. Pl. 1: 41. 1891.

Calceolaria rosei Dowell, Bull. Torrey Club 33: 555. 1906. Type from Guanajuato, Rose & Hough 4851.

Hybanthus rosei Standl. Journ. Washington Acad. Sci. 17: 169. 1927.

Hybanthus pumilio Standl. Field Mus. Publ. Bot. 8: 142. 1930. Type from Esperanza, Puebla, Purpus 5604.

RANGE: Mexico and Guatemala.

SPECIMENS EXAMINED:

COAHUILA: Palmer 55; Pennell 17327. SAN LUIS POTOSÍ: Palmer 219. GUANAJUATO: Rose & Hough 4851. PUEBLA: Arsène 1119, 5213; Purpus 3412, 3413, 5604. OAXACA: Liebmann 637; Galeotti 4500. CHIAPAS: Ghiesbreght 660. GUATEMALA: Skutch 472.

E. P. Killip compared *H. rosei* with the type of *H. verbenaceus* at Berlin and pronounced them the same. The greater or lesser development of the stipules stressed by Dowell is not of importance.

11. *Hybanthus humilis* (Rose & Dowell) Standl. Journ. Washington Acad. Sci. 17: 169. 1927.

Calceolaria humilis Rose & Dowell, Contr. U. S. Nat. Herb. 10: 125. pl. 42. 1906. Type from Tizapan, Federal District, Mexico, Pringle 9653.

RANGE: Known only from the type collection.

12. *Hybanthus thiemei* (Donn. Smith) Morton, comb. nov.

Ionidium thiemei Donn. Smith, Bot. Gaz. 40: 1. 1905. Type from San Pedro Sula, Honduras, Thieme 5628.

RANGE: Southern Mexico to El Salvador.

SPECIMENS EXAMINED:

CAMPECHE: Lundell 937. GUATEMALA: Cook & Martin 198. HONDURAS: Thieme 5628. EL SALVADOR: Standley 19729, 21190, 22294. PANAMA: Alston & Allen 1859.

DOUBTFUL SPECIES

IONIDIUM BOTTERII Turcz. Bull. Soc. Nat. Moscou 36¹: 556. 1863.

Calceolaria botterii Kuntze, Rev. Gen. Pl. 1: 41. 1891.

Type from Orizaba, Veracruz, Botteri s. n.

IONIDIUM GALEOTTII Turcz. Bull. Soc. Nat. Moscou 27²: 339. 1854.

Calceolaria galeottii Kuntze, Rev. Gen. Pl. 1: 41. 1891. Type from Jalapa, Veracruz, Galeotti 7085.

IONIDIUM LASIOCARPUM Presl, Rel. Haenk. 2: 96. 1831.

Calceolaria lasiocarpa Kuntze, Rev. Gen. Pl. 1: 41. 1891.

Described from western Mexico from a collection by Haenke. It is, from description, probably the same as *H. serrulatus*, but I hesitate to make a new combination without seeing authentic material.

IONIDIUM LOBELIODES Schlecht. Linnaea 12: 203. 1838.

Calceolaria lobelioides Kuntze, Rev. Gen. Pl. 1: 41. 1891.

Type from Oaxaca, Muhlenpfordt s. n.

THE CENTRAL AMERICAN SPECIES

There are 11 species in Central America, four of which (*H. prunifolius*, *H. yucatanensis*, *H. costaricensis*, and *H. guanacastensis*) are woody. The remaining (herbaceous) species are mostly the same as those of Mexico. The recently proposed genus *Orthion* seems well founded and includes two species originally described as *Hybanthus*.

KEY TO SPECIES

Two lower filaments with a long, slender, recurved, pubescent spur. Large shrubs, with flowers over 3 cm. long..... 1. *H. prunifolius*

Two lower filaments not spurred.

Filaments long and slender, free. Ovary densely pubescent; corolla lip over 2 cm. long, calyx lobes toothed; perennial herbs with densely villous leaves.

2. *H. calceolaria*

Filaments shorter and stouter, at least partly connate.

Glands of the two lower filaments connate into a single large gland; flowers in cymes..... 3. *H. yucatanensis*

Glands of the two lower filaments distinct.

Flowers only slightly zygomorphic, the labellum little longer than the other petals.

Leaves up to 1.3 cm. long; flowers about 3 mm. long. 4. *H. costaricensis*

Leaves 4–10 cm. long; flowers about 6 mm. long. 5. *H. guanacastensis*

Flowers strongly zygomorphic, the labellum much exceeding the other petals..... *H. attenuatus*, *H. oppositifolius*, *H. occultus*, *H. elatus*, *H. verbenaceus*, and *H. thiemei*, as distinguished above in key to Mexican species.

1. *Hybanthus prunifolius* (H. & B.) G. K. Schulze, Notizbl. Bot. Gart. Berlin 12: 114. 1934.

Viola prunifolia H. & B. ex Roem. & Schult. Syst. Veg. 5: 391. 1819.

Ionidium anomalum H. B. K. Nov. Gen. et Sp. 5: 381. 1821.

Solea anomala Spreng. Syst. Veg. 1: 804. 1825.

Calceolaria anomala Kuntze, Rev. Gen. Pl. 1: 41. 1891.

Hybanthus anomalus Melch. in Engl. & Prantl. Pflanzenfam. ed. 2, 21: 359. 1925.

RANGE: Costa Rica to northern South America.

SPECIMENS EXAMINED:

COSTA RICA: *Tonduz* (Donn. Sm. 7234; Herb. Nat. C. R. 10038), (Donn. Sm. 7235; Herb. Nat. C. R. 10065). PANAMA: *Hayes* 33; *Standley* 27462, 31261, 31317, 40795; *Williams* 780, 781; *Pittier* 6530.

2. *Hybanthus calceolaria* (L.) G. K. Schulze, Notizbl. Bot. Gart. Berlin 12: 114. 1934.

RANGE: British Honduras and South America.

SPECIMENS EXAMINED:

BRITISH HONDURAS: *Lundell* 4230.

For synonymy see Schulze in Bot. Jahrb. Engler 67: 461. 1936. This species is common and widespread in South America. The plant of British Honduras may conceivably be an introduction.

3. *Hybanthus yucatanensis* Millsp. Field Mus. Publ. Bot. 1: 404. 1898.

Hybanthus cymosus Bartl. Proc. Amer. Acad. 43: 56. 1907. Type from Gualan, Guatemala, *Deam* 385.

Type from Yucatán, *Gaumer* 469.

RANGE: Yucatán, Campeche, and Guatemala.

SPECIMENS EXAMINED:

GUATEMALA: *Deam* 385; *Blake* 7685; *Cook & Martin* 127.

4. *Hybanthus costaricensis* Melch. in Engl. & Prantl, Pflanzenfam. ed. 2, 21: 359. 1925 (*nomen subnudum*); G. K. Schulze, Bot. Jahrb. Engler 67: 450. 1936.

Type from Tablazo, Costa Rica, *Brade* 2526.

5. *Hybanthus guanacastensis* Standl. Journ. Washington Acad. Sci. 17: 168. 1927.

Type from Los Ayotes, Costa Rica, *Standley & Valerio* 45423.

SPECIMENS EXAMINED:

COSTA RICA: *Standley & Valerio* 45423, 45346, 46161, 46197.

THE MEXICAN HERBACEOUS SPECIES OF AESCHYNOMENE

In "Trees and Shrubs of Mexico," Standley lists 17 species of *Aeschynomene* (Leguminosae), some of which are often herbaceous. The few additional species of the genus occurring in Mexico are treated below. In addition to these, the following species, of which I have seen no specimens, remain to be placed: *Aeschynomene bracteolans* Riley, *A. chiapensis* T. S. Brandeg., *A. mimosoides* C. & S., and *A. versicolor* Wend.

KEY TO SPECIES

- Plants erect, virgate, sparingly appressed-puberulous; leaflets minute, numerous, linear-oblong..... 1. *A. pinetorum*
- Plants prostrate, usually viscid-pubescent; leaflets few, broadly oblong to obovate. Legume long-stipitate, the stipe 3-4 times as long as calyx; pod appressed-puberulous..... 2. *A. falcata*
- Legume short-stipitate, the stipe equaling or only twice as long as calyx.
Pod densely viscid-pubescent..... 3. *A. viscidula*
Pod glabrous or slightly hispidulous.
Pod glabrous.
Leaflets strongly reticulate-veined beneath, strongly ciliate; plant branched at base only..... 4. *A. picachensis*
Leaflets more inconspicuously reticulate, not ciliate; plant diffusely branched..... 5. *A. acapulcensis*
Pod hispidulous..... 6. *A. brasiliana*

1. *Aeschynomene falcata* (Poir.) DC. Prodr. 2: 322. 1825.

Hedysarum falcatum Poir. in Lam. Encycl. 6: 448. 1804.

Aeschynomene elegans Cham. & Schlecht. Linnaea 5: 583. 1830.

Aeschynomene falcata var. *elegans* Kuntze, Rev. Gen. Pl. 1: 158. 1891.

Aeschynomene arenicola T. S. Brandeg. Univ. California Publ. Bot. 10: 408. 1924.

The form occurring in Veracruz and Chiapas is var. *plurijuga* Benth., of which var. *elegans* is a synonym.

2. *Aeschynomene pinetorum* T. S. Brandeg. Univ. California Publ. Bot. 10: 408. 1924.

The type is C. A. Purpus 9064, from Hacienda Montserrate, Chiapas, Mexico. The relationship of this species is with *A. paniculata* Willd., but the segments of the pod are larger and pubescent, and they are not suborbicular, but semiorbicular. This may be the same as *A. hedysaroides* Mart. & Gal., the original description of which is inadequate.

ADDITIONAL RECORDS:

MEXICO: Sierra de Tonala, Chiapas, Purpus 6635. Santa Efigenia, Oaxaca, Nelson 2851. San Juan Guichicovi, Oaxaca, Nelson 2735. Between Guichicovi and Lagunas, Oaxaca, Nelson 2751.

3. *Aeschynomene viscidula* Michx. Fl. Bor. Amer. 2: 75. 1803.

Secula viscidula Small, Fl. Miami 90, 200. 1913.

This species, which is rather common in the United States along the Gulf coast from Florida to Texas, has occasionally been reported from tropical America. All specimens I have seen that have been so named are misidentified, except one. This is Pringle 5627, from hills near Oaxaca City, Mexico. I have only seen a fragmentary specimen of this collection, but it appears indistinguishable from the United States plants.

4. *Aeschynomene picachensis* T. S. Brandeg. Univ. California Publ. Bot. 6: 181. 1915.

Type from Cerro de Picacho, Oaxaca, Mexico, July 1914, C. A. Purpus 7162.

RANGE: Known only from the type collection.

5. *Aeschynomene acapulcensis* Rose, Contr. U. S. Nat. Herb. 5: 191. 1899.

Type from Acapulco, Guerrero, Mexico, Oct. 1894-March 1895, E. Palmer 126.

RANGE: Known only from the type collection.

6. *Aeschynomene brasiliiana* (Poir). DC. Prodr. 2: 322. 1825.

Cassia biflora Mill. Gard. Diet. ed. 8, No. 14. 1768, non L. (1753).

Hedysarum brasilianum Poir. in Lam. Encycl. 6: 448. 1804.

Cassia houstoniana Collad. Hist. Nat. Med. Cass. 132. 1816.

Aeschynomene biflora Fawc. & Rendle, Fl. Jamaica 4: 27. 1920.

Fawcett and Rendle were in error in taking up the name *biflora* for this species, Miller's name being a later homonym of the well-known species *Cassia biflora* L. In the "Flora of Costa Rica" Standley has followed Fawcett and Rendle.

Although common in Central and South America, this species is rare in Mexico. I have seen only one specimen, *Orcutt* 6479, from Tonalita, Jalisco; it was erroneously determined as *A. viscidula*.

NOTES ON OTHER SPECIES

Aeschynomene rosei Morton, nom. nov.

Aeschynomene fruticosa Rose, Contr. U. S. Nat. Herb. 5: 192. 1899, non Moc. & Sessé (1889).

A well-marked species, still known only from the type collection from Topolobampo, Sinaloa. The identity of *A. fruticosa* Moc. & Sessé is uncertain.

Aeschynomene virginica (L.) B. S. P. Prel. Cat. N. Y. 13. 1888.

Hedysarum virginicum L. Sp. Pl. 750. 1753.

Aeschynomene hispida Willd. Sp. Pl. 3: 1163. 1800.

In "Trees and Shrubs of Mexico," Standley has used the name *A. hispida* for this common species.

Aeschynomene ciliata Vogel, Linnaea 12: 84. 1838.

This species, the type of which is from Brazil, has not been reported before from North America. There is in the National Herbarium a single specimen from Laguna de Curahueso, Tabasco, Mexico, collected April 8, 1889, by J. N. Rovirosa (No. 443). The relationship is with *A. virginica*, but *A. ciliata* may be distinguished by its strongly ciliate standard.

Aeschynomene rudis Benth. Pl. Hartw. 116. 1843.

Aeschynomene hispidula sensu Standley, Contr. U. S. Nat. Herb. 23: 490. 1922, non H.B.K.

The true *A. hispidula* of Colombia, as shown by specimens compared with the type by E. P. Killip, is a quite different plant. It is a much-branched shrub or small tree to 20 feet, with densely glandular-pubescent branches. The lomenta are shorter and broader, with fewer, more coriaceous segments.¶

NOTES ON PHASEOLUS

The genus *Ramirezella* Rose²³ is recognized by Piper²⁴ in his treatment of American Phaseolineae on the basis of its keel being merely curved and not curled or coiled as in *Phaseolus*. This is, however, an arbitrary and often nonexistent distinction, for in many of the species the keel is curled in exactly the same way as in *Phaseolus*, section *Sigmoidotropis*. It is true that the bracts in *Ramirezella* are larger and more conspicuous than in the species of section *Sigmoidotropis*, but they are not more so than in some species of *Euphaseolus*. Two of the species have already been described as *Phaseolus*, namely

²³ Contr. U. S. Nat. Herb. 8: 44. 1903.

²⁴ Op. cit. 22: 669. 1926.

Phaseolus buseri Micheli and *P. lozani* Rose. The type species of *Ramirezella* is *R. strobilophora* (B. L. Rob.) Rose, which may be known as *Phaseolus strobilophorus*.²⁵ An additional valid species is *Phaseolus pubescens*.²⁶ The remaining four species of *Ramirezella* are highly critical.

Phaseolus esperanzae Seaton, Proc. Amer. Acad. 28: 118. 1893.

Phaseolus floribundus Piper, Contr. U. S. Nat. Herb. 22: 690. 1926.

The types of these two species are identical. Piper separated them on the basis of the bracts, those of *P. floribundus* being said to be 5 mm. long and those of *P. esperanzae* 2 mm. long. In the specimens they are of equal length, averaging about 4 mm., none being either as long as 5 mm. or as short as 2 mm.

Phaseolus amblyosepalus (Piper) Morton, comb. nov.

Alepidocalyx amblyosepalus Piper, Contr. U. S. Nat. Herb. 22: 672. 1926.

The genus *Alepidocalyx* Piper differs from *Phaseolus* only in the absence of a bractlet at the base of the calyx. The three species referred to the genus by Piper are dissimilar in appearance and do not seem closely related except by this one character. It seems, therefore, that the genus is not tenable, being based on a single purely artificial character. The present species is apparently rare and has been known only from the type specimen collected somewhere in Durango by P. Ibaña García. Dr. Pennell has found it at El Salto, Durango, at an altitude from 2,570–2,800 meters (No. 18351). His specimen is almost identical with the type. *Alepidocalyx parvulus* (Greene) Piper becomes again *Phaseolus parvulus* Greene. *Alepidocalyx anisophyllus* Piper is somewhat dubious, so I do not transfer it to *Phaseolus*.

²⁵ *Phaseolus strobilophorus* Morton, comb. nov., based on *Vigna strobilophora* B. L. Rob. Proc. Amer. Acad. 27: 167. 1892.

²⁶ *Phaseolus pubescens* Morton, comb. nov., based on *Ramirezella pubescens* Rose, Contr. U. S. Nat. Herb. 8: 45. 1903.

LIST OF NEW SPECIES AND VARIETIES

<i>Alloplectus cristatus</i> var. <i>brevicalyx</i>	<i>Columnnea vinacea</i>
<i>Alloplectus cristatus</i> var. <i>crenatus</i>	<i>Columnnea viridis</i>
<i>Alloplectus cucullatus</i>	<i>Cremosperma demissum</i>
<i>Alloplectus cucullatus</i> var. <i>substrigosus</i>	<i>Cremosperma monticola</i>
<i>Alloplectus domingersis</i> var. <i>micro-</i> <i>phylla</i>	<i>Cremosperma parviflorum</i>
<i>Alloplectus guatemalensis</i>	<i>Cremosperma rotundatum</i>
<i>Besleria arborescens</i>	<i>Cremosperma serratum</i>
<i>Besleria attenuata</i>	<i>Hybanthus potosinus</i>
<i>Besleria calantha</i>	<i>Hybanthus potosinus</i> var. <i>pennellii</i>
<i>Besleria eriocalyx</i>	<i>Napeanthus bracteatus</i>
<i>Besleria florida</i>	<i>Petunia scabridula</i>
<i>Besleria inaequalis</i>	<i>Solanum aquatile</i>
<i>Besleria lasiantha</i>	<i>Solanum callianthum</i>
<i>Besleria obtusa</i>	<i>Solanum caucaense</i> var. <i>glabrescens</i>
<i>Besleria oxyphylla</i>	<i>Solanum confusum</i>
<i>Besleria solanoides</i> var. <i>dentata</i>	<i>Solanum crispulum</i>
<i>Besleria spissa</i>	<i>Solanum dissimile</i>
<i>Besleria subcoriacea</i>	<i>Solanum gracilescens</i>
<i>Besleria subdecurrens</i>	<i>Solanum grandifolium</i>
<i>Besleria ventricosa</i>	<i>Solanum irregulare</i>
<i>Columnnea sanguinea</i> var. <i>trinitensis</i>	<i>Solanum monticola</i>
<i>Columnnea scandens</i> var. <i>vincentina</i>	<i>Solanum orgyale</i>
<i>Columnnea subcordata</i>	<i>Solanum oxyphyllum</i>
	<i>Solanum triplinervium</i>

LIST OF NEW NAMES AND NEW COMBINATIONS

<i>Aeschynomene rosei</i>	<i>Solanum hypomalacum</i>
<i>Columnnea fawcettii</i>	<i>Solanum integrum</i>
<i>Columnnea harrisii</i>	<i>Solanum lehmannii</i>
<i>Columnnea scandens</i> var. <i>aripoensis</i>	<i>Solanum longidentatum</i>
<i>Hybanthus elatus</i>	<i>Solanum luxurians</i>
<i>Hybanthus thiemei</i>	<i>Solanum magdalenense</i>
<i>Phaseolus amblyosepalus</i>	<i>Solanum meridionale</i>
<i>Phaseolus pubescens</i>	<i>Solanum miquelii</i>
<i>Phaseolus strobilophorus</i>	<i>Solanum ornatum</i>
<i>Solanum australe</i>	<i>Solanum poeppigii</i>
<i>Solanum caucaense</i>	<i>Solanum profunderugosum</i>
<i>Solanum chrysothrix</i>	<i>Solanum quinquelobatum</i>
<i>Solanum coffeifolium</i>	<i>Solanum saltense</i>
<i>Solanum conspicuum</i>	<i>Solanum semiconnatum</i>
<i>Solanum crassidens</i>	<i>Solanum stellato-pubescens</i>
<i>Solanum cundinamarcae</i>	<i>Solanum tarmense</i>
<i>Solanum dendritocothrix</i>	<i>Solanum tinctum</i>
<i>Solanum hoehnei</i>	<i>Solanum ulei</i>
<i>Solanum holocalyx</i>	<i>Solanum urnigerum</i>